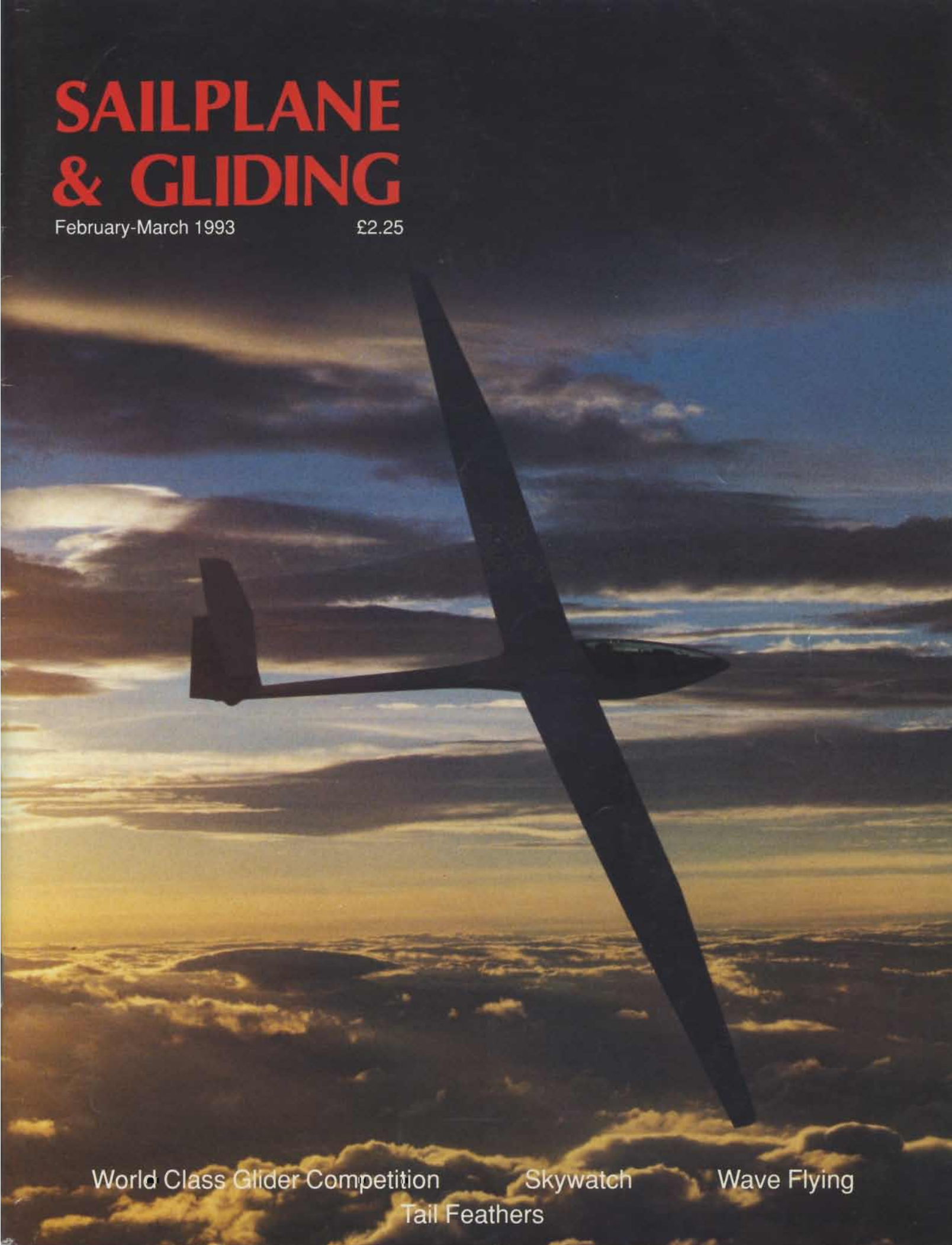
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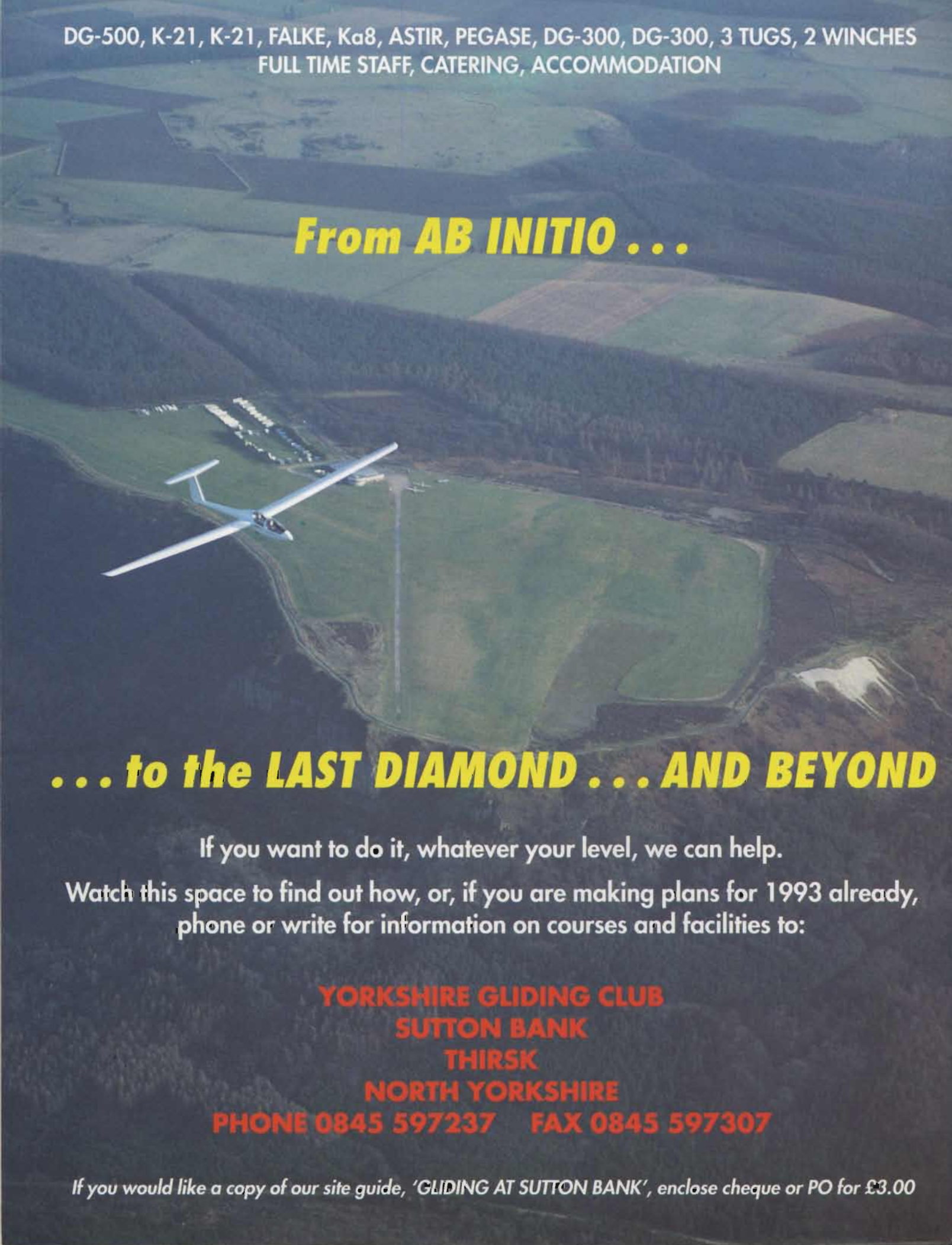
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# SAILPLANE & GLIDING

Magazine of the
British Gliding Association

February-March 1993
Volume XLIV No. 1

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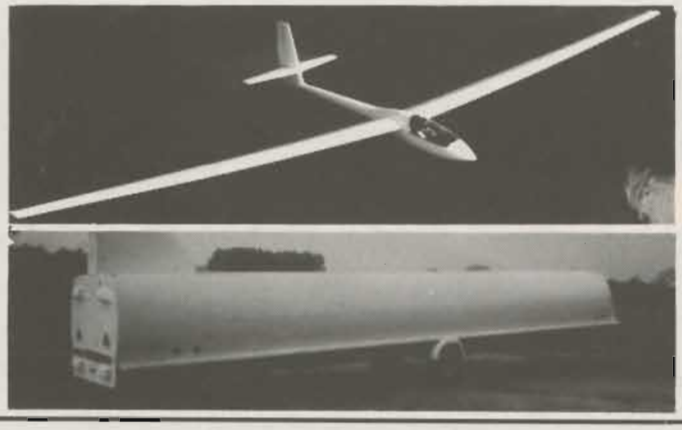
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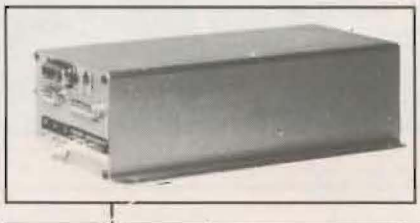
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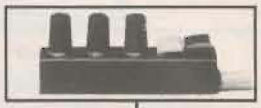
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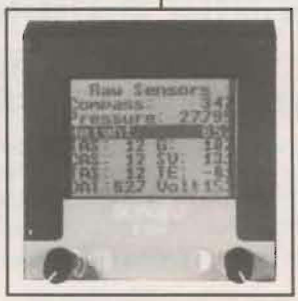
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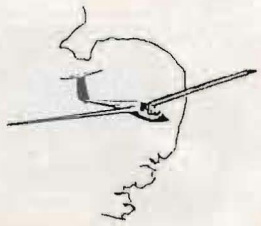
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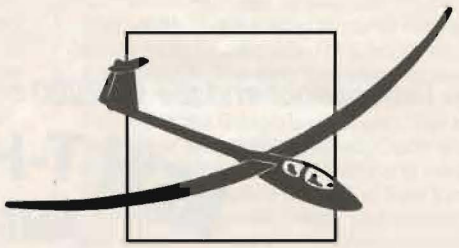
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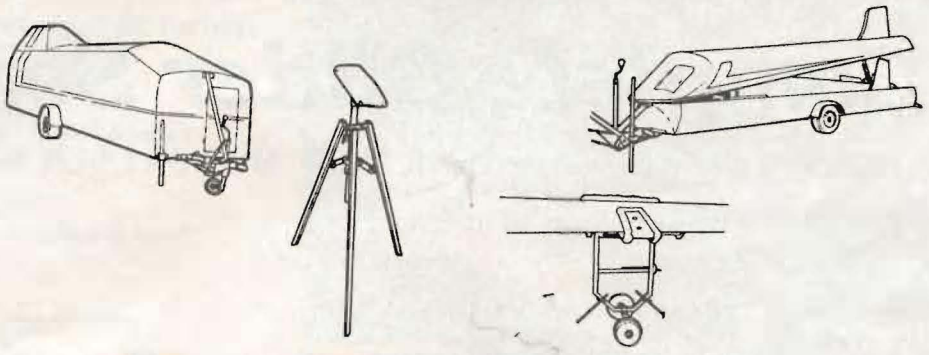
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# YOUR LETTERS

### *HOW ABOUT A VETERAN'S COMP?*

Dear Editor,

Once reaching this vast age we seem to be passed over as golden oldies. From the point of view of the bureaucrats I have the feeling we are rather looked upon as has-beens with our practical and theoretical senses fast waning.

So perhaps a senior citizens' Comp would be looked upon with relish for those coming up to sixty. If anyone is interested, write to me at the Black Mountains GC with the idea of forming a committee to work out a fair system, using maybe standard handicapping plus age points.

JOHN L. ROLLS, *Talgarth GC*

### *DAVID'S ANSWER*

Dear Editor,

My observations on the letter from David Salmon in the last issue, p311, are as follows:

In his article "Be a Safer Pilot" *(1992 S&G Yearbook)*, p36, Bill Scull's remarks on high speed flight gave the impression that the never-exceed speed was a true airspeed limit at all heights, hence causing David Salmon to wonder why the laws of aerodynamics have apparently changed.

For a typical modern sailplane, VNE would correspond to a fixed equivalent airspeed at all heights up to about 10000ft and to a constant true airspeed at greater heights. If the placarded VNE is 135kt then, assuming that the indicated airspeed is substantially the same as the EAS, this would correspond to a TAS of 157kt at 10000ft. The IAS corresponding to this TAS at 20000ft is then 115kt and at 30000ft it is 96kt. Bill quoted these last figures but did not indicate how they were derived.

Conventionally, only the "low altitude" value of VNE would be placarded in the cockpit but the Flight Manual would give a table of "high altitude" VNE in terms of IAS as a function of height, generally corresponding to a fixed TAS.

The constant TAS limit is associated with flutter. Flutter may occur when parts of an aircraft can deflect in various ways ("modes") and the consequential aerodynamic, inertial and elastic loads due to one mode can influence another, perhaps in a different part of the aircraft. For example, a wing can oscillate in bending up and down: it can also twist and ailerons can flap up and down. In the Reference, about 40 modes of a sailplane are identified, so the potential number of interactions is enormous. Fortunately, only a few are normally significant.

In the 1948 edition of British Civil Airworthiness Requirements, Section E, there is no specific mention of flutter, other than fleeting references to "vibration or snatching of the controls". Limitations were therefore based on the static strength of the structure, leading to constant EAS (and hence IAS) limitations applying at all heights.

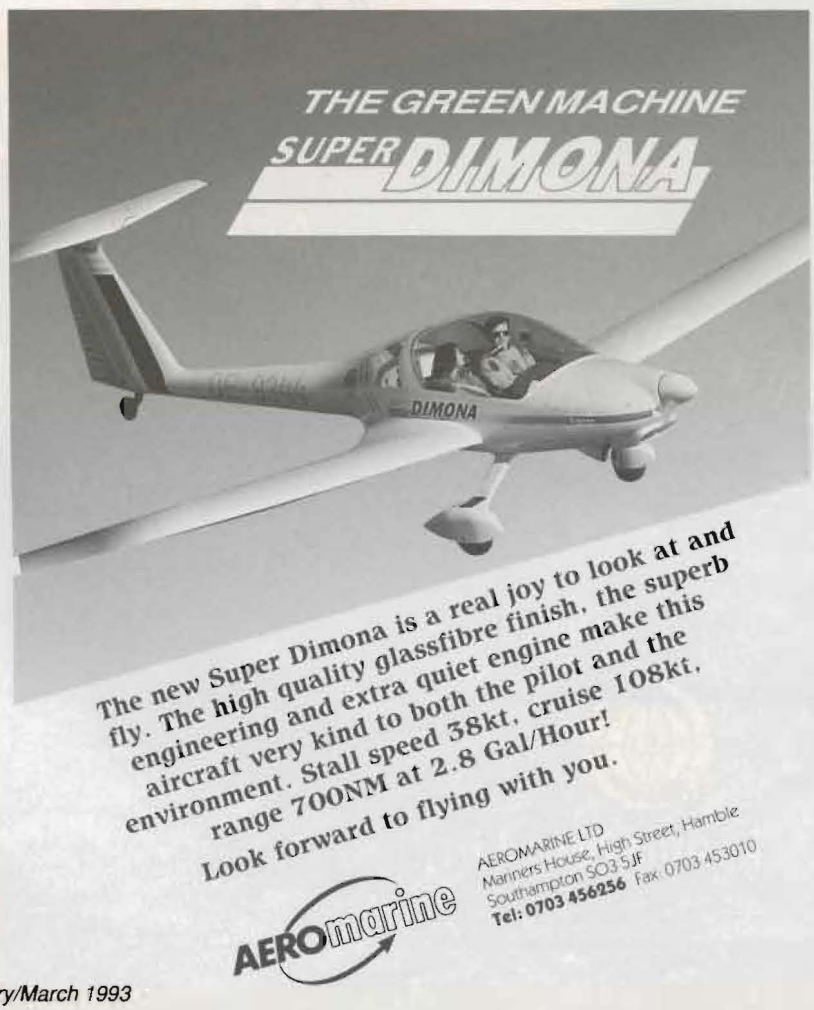
In the 1960 BCAR, a whole chapter is devoted to flutter prevention. A formula is given for the Critical Flutter Speed in knots EAS and, after measuring the wing torsional stiffness, this speed must be calculated at a height not less than 10000ft. The wing torsional stiffness must be such that the Critical Flutter Speed is at least 1.25 times the Design Dive Speed. The formula includes a "wing relative density" term which depends on the local air density and hence the Critical Flutter Speed calculated from this formula will vary with height. The variation turns out to be small and, taking into account the 1.25 factor, can normally be neglected. So, again, we are left with constant EAS and IAS limitations. The same formula but with metric units appears in the Ref.

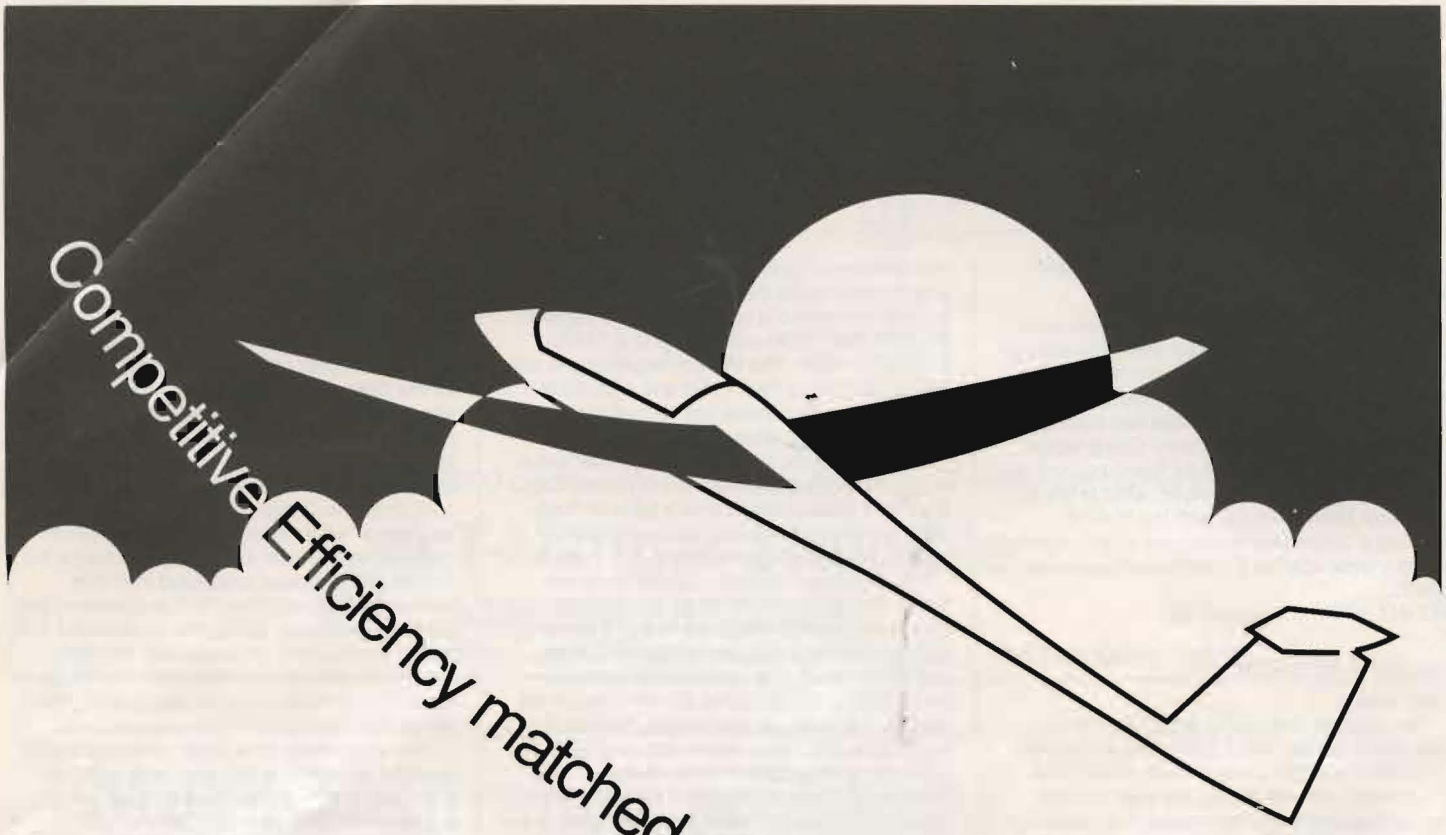
The above formula is rather empirical and of doubtful relevance to sailplane wing geometries. Also it only deals with one particular type of flutter. With the advent of flexible GRP structures, opportunities for flutter increased and carbon has not brought much relief since aspect ratios have increased and wing sections have become thinner. A much more extensive analysis of flutter modes is therefore required. The current Joint Airworthiness Requirements (JAR-22) specify what is required in general terms (". . . an analytical method, which will determine any critical speed in the range up to 1.2VD . . .") and leave it to the designer and certificating authority to do something sensible. A convention has been established whereby the calculations relate to a height of 3000m (approx 10000ft) and flight tests are carried out as near to this height as possible. At lower heights, VNE will still depend on static strength and will be a constant EAS.

Tests at greater heights are normally impracticable and detailed calculations are very expensive, so an approximate rule has been formulated to deal with greater heights. In the equations which determine Critical Flutter Speeds, some terms (*eg*, aerodynamic forces) depend on EAS. Others (*eg*, those related to local changes of incidence as a wing flaps up and down) will depend, in part, on TAS. Intuitively, one might suppose that the variations of Critical Flutter Speed with height might lie somewhere between a constant EAS law and a constant TAS law. If VNE is made to correspond to the same TAS at all heights above 3000m, then this will be conservative, since it is more restrictive than constant EAS. The TAS has then to be converted into IAS for the benefit of the pilot gazing at his airspeed indicator. This is the current convention and has so far been found safe. In principle, there is the possibility that some hitherto unsuspected flutter mode might appear a great height, but it hasn't happened yet.

It is important to note that this convention does not imply that Critical Flutter Speed actually corresponds to a fixed TAS: it simply works on the principle that a TAS limit is conservative and safe.

So far, this has not been incorporated in airworthiness requirements but something like it (largely incited by myself) is likely to appear in ➡



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The lessons of all this are:

(a) Read the Flight Manual and do what is says, and

(b) Do not take the line that because the stated values of VNE are conservative, you can invent your private rule. A glance at the Ref should discourage that!

Finally, David Salmon, whose perceptive letter started this discussion, may rest assured that the laws of aerodynamics (and mechanics, and structures) have not changed: they are simply being applied with more discernment and caution.

**Reference:** Stender, S. and Kiessling, F. "Aerolastic Flutter Prevention in Gliders and Small Aircraft". DLR Institut fur Aeroelastik, Göttingen. (Obtainable from OSTIV).

FRANK IRVING, *Richmond, Surrey*

### PILOT ERROR VERSUS EXPERIENCE

Dear Editor,

Please allow an absolute beginner to ask a basic question about gliding and accidents. I had my first flight in September and still find it difficult to stop grinning! My only regret is the years wasted by not beginning sooner.

The October issue, p277, lists the BGA Accident Summary covering, roughly, the first five months of 1992. Several things struck me about the reported accidents.

First, there were no less than 38 reported accidents during the period, which I assume is not the most active part of the year. Do you maintain statistics for accident rates per flying hour?

***We welcome your letters but please keep them as concise as possible and include your full name and address. We reserve the right to edit and select.***

The second thing which stands out is that some 63% of the reported accidents appear to have been caused by pilot error, or were pilot error related.

A close look appears to show that the pilots who were involved in pilot error accidents had an average gliding experience of over 500hrs each.

My question for discussion is: ***"Why do very experienced glider pilots have pilot error accidents?"***

JOHN STEWART-SMITH, *Crantock, Cornwall*

**Bill Scull, BGA director of operations, replies:** Your name is noted as a possible member of the BGA Safety Committee! It's most encouraging that newcomers to gliding show such interest. Safety awareness is an important part of training. May I wish you long, happy and safe gliding involvement.

Yes, we do analyse the data in various ways but pilot error is the cause of most of them. Pilot experience seems to have little bearing on this. Pilots with 1000 or 10 000hrs have accidents. There may be different underlying causes – complacency, over-confidence, not in current practice or converting to a new type of glider. In the latter every pilot can be regarded as inexperienced.

A permutation of the above should suffice as an answer. You choose!

### EDGEHILL REGIONALS

Dear Editor,

Some whingers who flew last year in the Edgehill Regionals and complained about the weather and other elements, may like to know that Mike Cuming will take over and direct the competition this year. So if anything gets *muggered* up it will be his fault. Already he wants to change the date – possibly to August 14-22.

And furthermore, I can't help noticing that even if we never got anywhere that week, we did end up with four contest days . . . Dunstable and the Inter-Services Club Class only managed three.

MARY MEAGHER *(organiser), Oxford*

### THE VENTUS C

Dear Editor,

Derek Piggott's very readable article in the last issue, p319, quite rightly describing the Ventus C as a "classic glider", may have missed an opportunity for any potential Ventus C owner to read about the classic potential problems associated with flying the turbo variant of this glider.

If Derek felt he had the spare time, it would be interesting to read about a flight test of the Ventus CT, to include, of course, slow speed flight and spinning in the various possible configurations.

There is a tendency for describing all the best features of gliders under test in *S&G*, whilst glossing over the not so good points. There is nothing dangerous about any gliders that are available for us to buy, but reports need to be balanced.

PETER STRATTEN, *Bicester, Oxon*

**Derek Piggott replies:** If Peter Stratten feels there is a special problem with the CT version of the Ventus, he should encourage the BGA Technical Committee to investigate it and let everyone know their findings. To date I haven't heard of any problems.

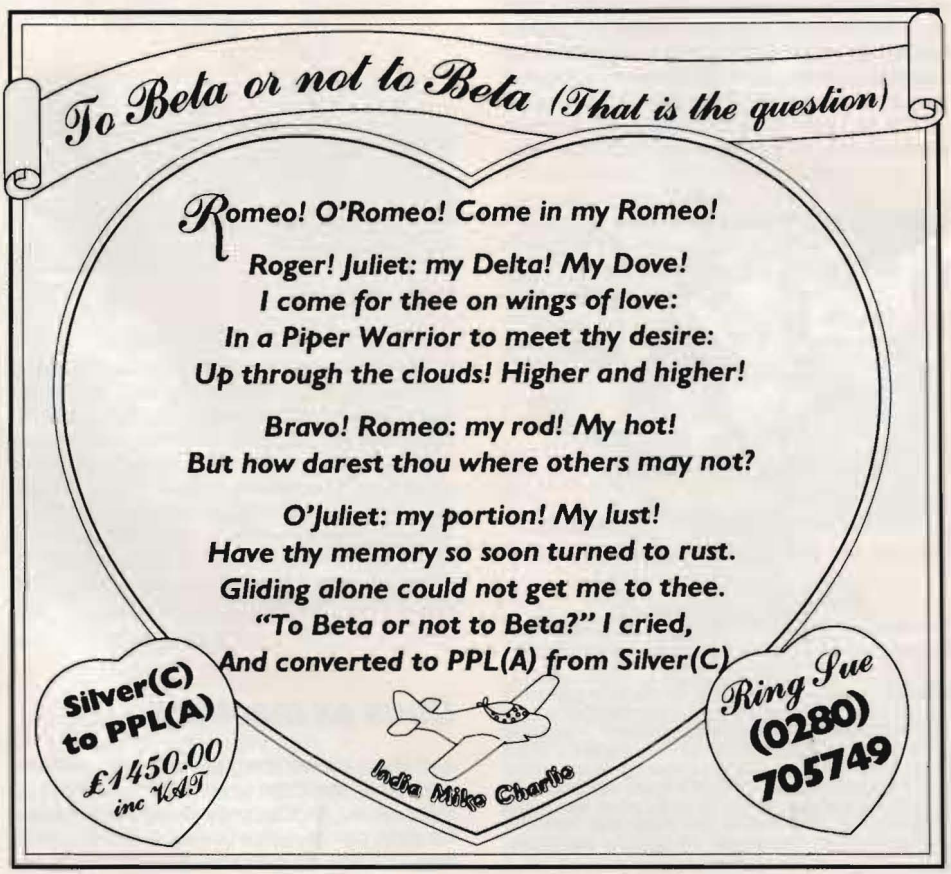
### TRAILER COMMENT

Dear Editor,

You would think that Phil Lever would have learned his lesson with the spectacular jack-knife of his trailer in France. (See the last issue, p309.)

Instead of worrying what effect the temperature has on the stability of his trailer as he drives along at 85mph, my suggestion would be to study the **Highway Code** or **Laws and Rules for Glider Pilots** regarding towing trailers.

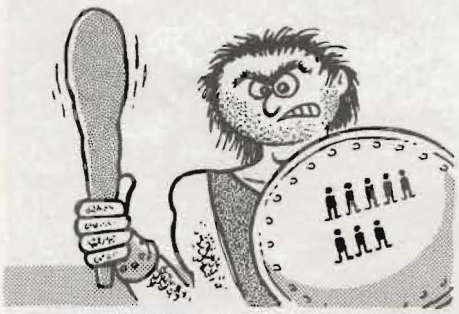
JULIAN DAY, *Wakefield, Yorks*



# TAIL FEATHERS

## *TINSFOS again or History as it should have been writ*

In ancient times, a great warrior was the scourge of the Hebrews. He was a Philistine, which I think means that when he was bored with breaking heads he liked nothing better than to watch Match of the Day with a six-pack at his elbow. One day a brave young fellow came forth, took up his sling and hurled a pebble at Goliath, for that was his name. The pebble whistled past



**This carnage went on for months.**

G's ear. G stepped forward with a snort of contempt, and "Whap!", the poor lad was stone dead. This carnage went on for months. Finally, whether by dint of assiduous practice or sheer luck, a youth named David confronted Goliath, and "Ziiing-Whap!" – the giant fell on his face. At this, all the scribes and chroniclers leapt to their feet, seized their clay tablets and papyri and crowed with one voice "Now at last we have something worth putting in that great book we are writing!"

Thus it comes about, children, that people the world over believe that the little guy will always beat the big guy, just as from reading another ancient book they discover that a tortoise will beat a hare any time. So people who read a lot are deluded into thinking that little gliders are better than big gliders, and are indeed prepared to spend more on a new glider of 15 cubits[1] than a slightly worn glider of 25 cubits, though the latter will slay the the little glider stone dead today, tomorrow and unto the end of the millenium.

Maybe there are are times when it's better to be a Philistine, what don't read much, like, yer know, John.

*[1]Yeah, I know a cubit ain't a metre, but biblical poetic licence reigns here.*

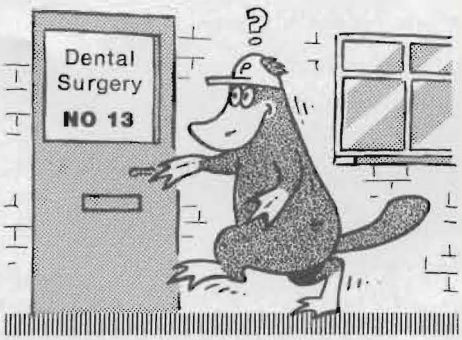


**Better to be a Philistine.**

## *A mere coincidence*

There is a bizarre group of people who find mystic significance in numbers, and twist and manipulate them to prove anything they like. I'm not thinking of politicians, nor of mathematicians or scientists (though Isaac Newton was obsessed with weird necromantic ideas that seem to us a million miles away from the age of enlightenment that he ushered in) but of pure cranks, who will add the Queen's birthday to the square root of the height of St Paul's Cathedral and derive the date of the end of the world.

I am not one of those kinds of crank, though I may well be any other kind. But I am intrigued by something that dawned on me only last night, after finishing a six-pack. When I was 15 I got my A badge in a Cadet, glide angle 15:1. When age 25 was reached I was allowed to fly the club Olympia, with an L/D of 25. Then at 27, the K-7 with an L/D of 27. At 31 the Skylark 3 at around 31[2]. At 44 I was flying the Kestrel 19 at – you guessed it. At 47 the Nimbus 2, at 57 the ASH-




**I am not one of those kinds of cranks.**

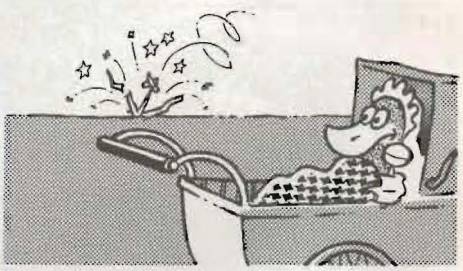
25 – and just before the day I turn 59 next spring, a lovely pair of winglets promises to add another couple of points to the 57, threatening to send the whole thing gently into earth-orbit.

All sorts of strange ideas might now seize the numerologists (I looked the word up in the **Shorter Oxford Dictionary**, and it doesn't exist, so I had better copyright it) who will see a clear case of cause and effect: "Think of the amazing performances we could get in the 21st century if Plat goes on till he's 100!" I can see myself being kidnapped from my rocking-chair by a gang of aged alumni of the akafliegs, bearing duelling scars, cropped hair and heavy accents "Put der olt geezer on der life-support machine, Gerhard. Maybe ve can sqveeze anuzzer five points out of him."

*[2]The 36:1 claimed at one time for the 18m Skylark 3 was an optimistic revision, quite unjustified, of the original much lower manufacturer's estimate. The same goes for the 30:1 claimed for the 15m Skylark 2 at the same time. When the Skylark 2 was rigorously tested at Dunstable in the late 1950s the figure was nearer 25 than the 30 claimed for it. The awful news was never disseminated, in the best British tradition of least said soonest mended. The Skylark 2's big sister was probably over-hyped to the same extent.*



**Gently into earth-orbit.**

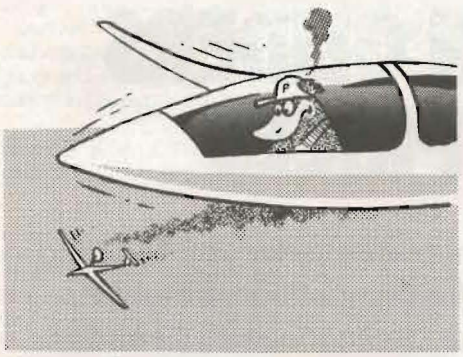


**Lots of them did.**

Rational-minded people will rebut the theory with an elegant *reductio ad absurdum*:. When Plat was born in 1934, gliders should have plummeted straight into the ground the moment they were launched. Well, lots of them did, but one would have to admit that a few of them were covering the countryside pretty effectively. So much for the pseudo-science of numerology. All the same, if I celebrate my 80th birthday with a new glider capable of, yes, 80 to 1, I shall start looking over my shoulder . . .

## *Deus ex machina*

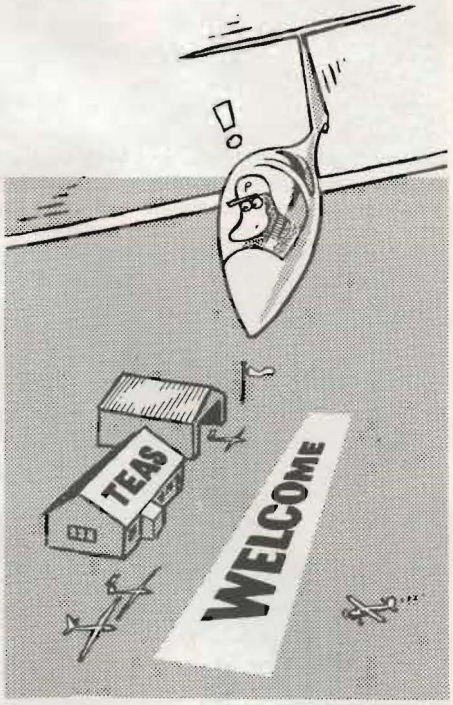
Just about the worst argument for motor gliders is that they avoid the need for field landings on cross-countries. Currently the drill is to deploy the dirty, smelly, noisy device at 1500ft. Lower than that and life gets complicated, not to say



**Dirty, smelly, noisy device.**

terminated, because of the finite risk that the engine won't start together with the bricklike performance and mental workload. We all know of spectacular prangs that have resulted from the very fact that the pilot relied on an engine, whereas if he'd treated the aircraft purely as a glider and not as a rather capricious aeroplane, no damage would have occurred. (The lovely Stemme two-seater avoids much of that criticism, but what do they cost now? Over £110000?)

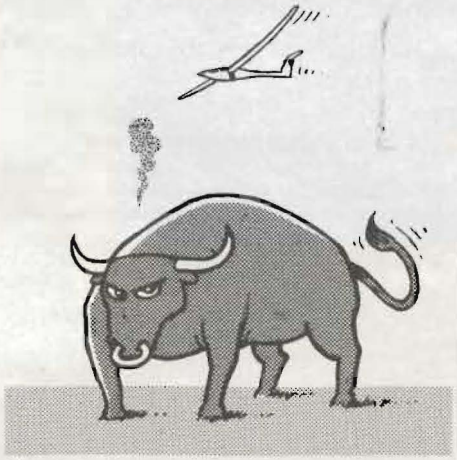
If motor gliders really were safer the insurance companies would encourage us to install




**Welcoming us to drop in.**

engines by lowering the premiums, but they don't. They aren't safer, that's why.

However the debate, which will doubtless rage for years to come, is really one of attitude and emotion, rather than calculation. Just ask yourself this question: if at regular four mile intervals, dotted all over Britain, there were safe little airfields welcoming us to drop in so that the risks of damage in a farmer's field or on a windswept moor never arose, would that increase your enjoyment of cross-country flying or would it spoil it? Many of us would doubtless say "Marvellous!" adding "Do they serve cream teas?". However I asked JJ, and he firmly said such an absence of any risk would spoil his enjoyment. If you don't sweat a bit it's no fun, he says. Well, I tend to agree, though my opinion on the matter varies according to how desperately close the trees and rocks are getting. What



**Lot of time below 1000ft.**

is certain is that since I have a talent for spending a lot of time below 1000ft, even on good days, I would have missed the most memorable flights of my life if I'd had a motor. So I'm with JJ so long as my nerve holds.

The best argument for engines in gliders is that they enable you to travel to where some exciting gliding can be done, or even to tour whole continents with a toothbrush and a folding bicycle in the luggage compartment. So if ever you see me with a motor in my glider, that's my ready excuse.



Peter Fuller

Platypus put aside his port and Stilton over Christmas to work on his special feature for the *1993 S&G Yearbook*.



# THE BENEVOLENCE OF ST BONIFACE

St Boniface Down on the Isle of Wight has been there as long as I can remember. It is a south facing hill which after a couple of miles becomes a cliff sheltering the Undercliff, beloved of the nineteenth century romantics, from the north winds. When I was a boy the downs were smooth turf; now they are covered by evergreen oaks.

corner from St Boniface and faces east across Sandown bay; it's a friendly hill and a cliff gives a line of lift back home to Sandown Airport.

Though I have worked many sea breeze fronts over St Boniface. I am cautious of this hill. South winds are rare and I've never ventured far round its corner in the hill lift.

When I took off the wind was SSE. The east facing hill wasn't working well so I thought I would try "round the corner". I am circumspect about St Boniface because it has always spelt drama – a horse mistook me for a hayrick there when I was three and I still have a hole in my ear to prove it.

Creeping over Ventnor, I found lift and, flying in figures of eight, rose to 2300ft. Looking down, I could just recognise the almost healed scars of bomb craters. What terror it struck into me when the Ju 88s dive bombed the radar station there. They say that the oaks grew after the bombs dug up the chalk. Now I could see the undersides of the leaves glistening as the wind lifted them.

Courage returned and I decided to try to soar the six miles to St Catherine's lighthouse at the southern extremity of the Island. This line of hills is radio-active. First the dreary dirge of "Volmet South" broke in on the radio followed by the click of Ventnor radar, then an interesting conversation, eavesdropped on the ship to shore telephone at Niton. I blushed and turned off the radio.

Coming back and slowly losing height, I knew there was only one landing field in the Undercliff. It was not quite long enough for the Stuka which tried it in 1940 but the K-6 might just fit in. Back over Ventnor cemetery where the Stuka pilot rests, we picked up height again, then on over St Boniface and back round the corner to Sandown bay. The wind might just have been on the tall cliffs six miles away at Culver, the eastern extremity of the island, but no there was just zero sink. So after 1hr 4min home to land. You run out of land quickly on the IOW.

On the ground we gave some encouragement to the boys and girl to try "round the corner". Andy Noctor got his 5hrs – St Boniface was benevolent after all.

# COMPETITION GLIDERS AT BARGAIN PRICES

**Mike helped to evaluate the flight performance and handling qualities of the World Class Glider Competition prototypes during September and October at Oerlinghausen, Germany. See his brief report in the last issue, p341**

This design competition was launched by the International Gliding Commission (IGC) to try and find a cheap, simple glider which would offer respectable performance at modest cost. It had to have a kit built option, be of a conventional construction with a fixed wheel and big air-brakes, an L/D of at least 30, stall speed of no more than 35kt, min sink no worse than 1kt plus a degree of crashworthiness and pilot protection in excess of current JAR 22 rules.

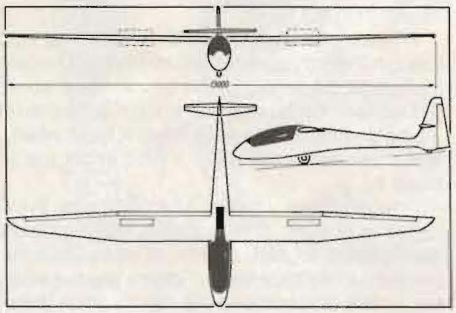
Forty-five serious design proposals were considered and 12 selected for the prototype evaluation. In the end only seven made it to the evaluation and only five were test flown.

An international jury of volunteers included representatives from all over the world with Tony Segal having his own special group to consider crashworthiness and human factors.

The competition was very successful in challenging the established thinking that only 15 metres will do and the entrants deserve great credit for their ingenuity and effort. Regardless of the outcome of the competition, there will be a substantial knock-on effect in production sailplane standards as a direct result of these prototypes – especially in the areas of simple rigging and crashworthiness.

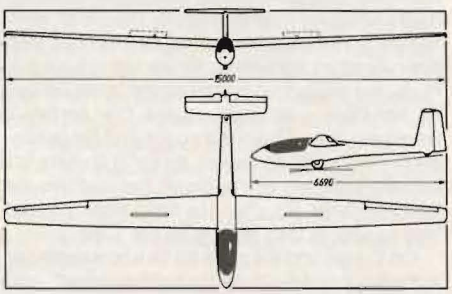
The seven we evaluated were:-

### *The Cygnet (USA)*



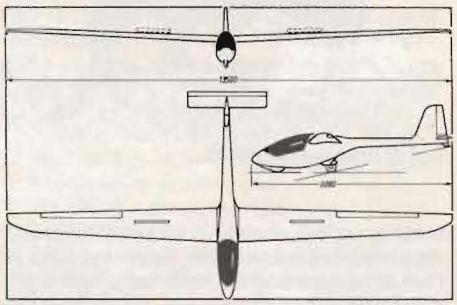
This was probably the only glider which truly encapsulated the spirit of the contest. The team were great enthusiasts and assembled their kit glider despite remarkably little background knowledge of gliding. Unfortunately it wasn't ready for flight testing but I hope they go on to develop it – or possibly a Mark 2 version – to go into production in the USA. This interesting machine had a ballistic recovery parachute system.

### *The PZL 51.2 Junior (Poland)*



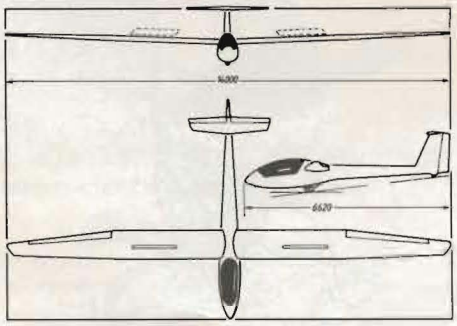
This was just a standard production Junior with an auto-connecting elevator and a ballast tank. It was very disappointing that PZL hadn't taken the opportunity to introduce some welcome improvements to this popular sailplane.

### *PW-5 (Poland)*



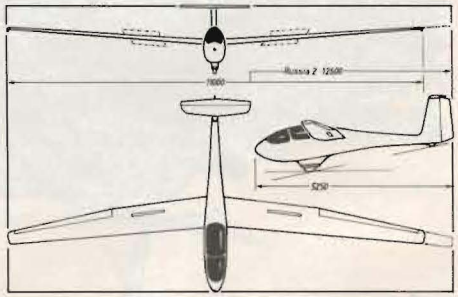
One of a series from the Technical University of Warsaw, this is an attractive and clever design. The prototype was slightly incomplete but fit for test flying. The glider handled nicely but was very uncomfortable for me (6ft 1in) to fly. An impressive entry.

### *L-33 "Solo" (Czechoslovakia)*



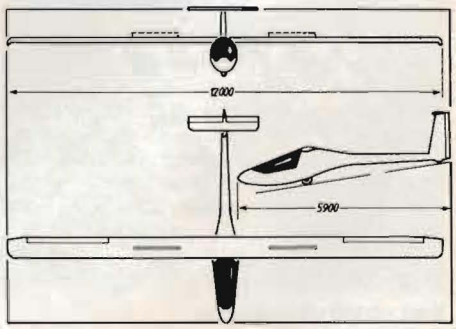
The single-seater follow-on from the L-13 Blanik and L-23 Super Blanik, this was the only all-metal design. It was beautifully made (in the LET factory, not as a kit!) and was in all respects ready for testing. Unfortunately it also was uncomfortable and had quite unacceptable stall/spin characteristics, although it was otherwise nice to fly. The rigging system was clever and wonderfully simple but didn't seem to work very well when I tried it!

### *Russia 1 and 2 (Russia)*



These were the babies of the competition, 11 and 12 metres respectively and weighing in at 99 and 110kg. The reasons for their light weight was that they were incomplete – although flyable – but had amazing simplicity and were astonishingly easy to rig. This is the first time I have ever seen a genuine one-man rig (in seconds, too!). Development of these little gliders could turn into latter day K-8s if they prove as durable.

### *Velino (Italy)*



Sponsored by the Aero Club of Italy, this is an interesting machine with an unusual high camber aerofoil section. It has a very stylish construction and presentation and several neat ideas.

### *Summary*

As always, the machines tended to be a little

behind programme and a little overweight. However they all had some really good features and represent a major step forward in simplified glider technology. It was a pleasure and an education to be involved in the evaluation.

**NB.** There isn't a deadline for the results of the competition but we expect to hear very soon.

**Key to photographs. A. Russia 11m. B. "Big" Russia (12½m) and "Small" Russia (11m). C. PZL 51.2 Junior. D.Velino. E.Cygnet. F. L33 on the left and PW-5 at the launch point. Photos by Mike.**



A↑ B↓






C↑




D↑



E↑ F↓



# HUNGARIAN RHAPSODY – often in blue

**A team of seven pilots and their crews, lead by team manager Andy Lincoln, took part in the 6th European Championships in Hungary in July. Ted Lysakowski, who flew a Ventus in the 15 Metre Class, reports**

It was an amazing competition: 12 contest days out of a possible 12, excellent conditions, lots of high speed flying, lots of sun, balmy evenings, excellent local cuisine. Add super organisation run by local ace flyers, mix in the warmth of an east European welcome – and you will begin to get the flavour of Bekescsaba, the venue of the 6th European Gliding Championships, hosted by the Aeroclub of Hungary, from July 17-30.

To begin with, we had some misgivings. The dates of the UK Standard and 15 Metre Nationals clashed with the Europeans and so an agonising choice was needed. Hungary did seem to be a long way away. Would the troubles in the former Yugoslavia interfere? The local weather was said to be prone to poor vis and to thunderstorms. But gentle inquiries to Hungary produced encouraging results and the Poles, consulted on the conditions, said "just like Poland".

To the team who elected to go there it soon proved to be the right decision.

Bekescsaba is about 200km SE of Budapest, right on the Romanian frontier, in the great plain of Hungary. It is a large grass airfield on the outskirts of Bekescsaba town, the capital of Bekes province. Bekescsaba Aeroclub enjoys the facilities built in the days of government subsidies and these are lavish by our standards, although now the free market mode prevails.

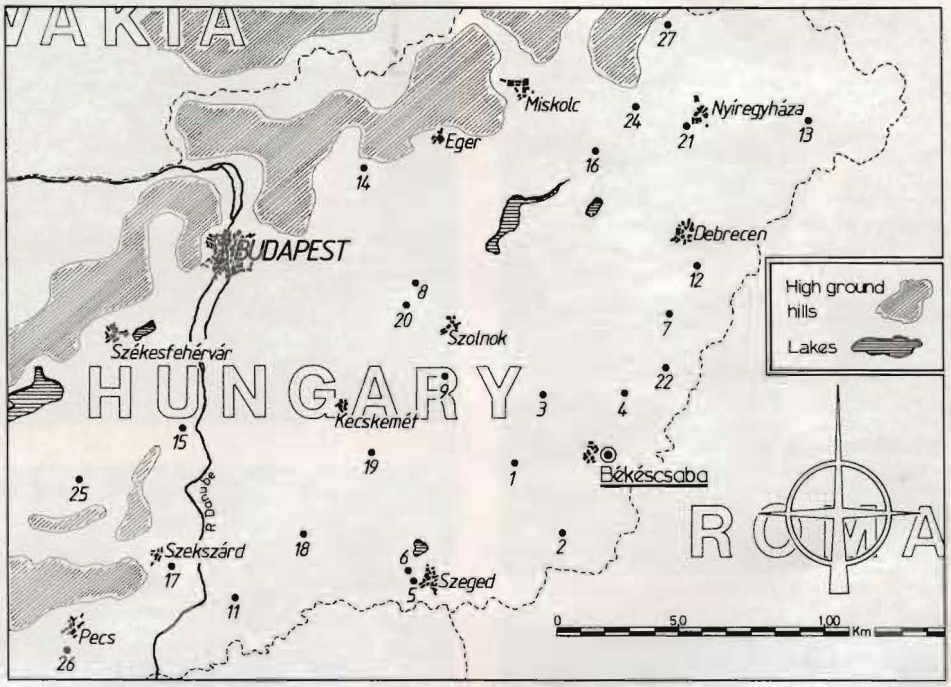
The task area was the eastern half of Hungary – mainly the flat, prosperous agricultural region with an extensive network of rivers and irrigation canals. The northern side had some wooded hills rising to about 3500ft.

Navigation was something of a problem because the ground did not quite match our 1/2 million maps. Some of the rivers and reservoirs were dry, while others were there in real life but not on the maps. The local 300000 scale road maps proved to be very popular. A GPS – not allowed in international Comps until 1993 – would have been of great help.

The organisation was not only functionally excellent but also enlightened: it declared at the outset that all the tasks would be closed circuit speed tasks, with no POST tasks favoured by some gliding activists but disliked by most competition pilots. All the relevant day information was distributed on briefing sheets, so that Georgy Szentgyorgyi ("Saint George"), the director, rarely needed more than 15min for the daily 10am briefing, to be followed by a grid announcement of which of the pre-briefed tasks was to be flown.

Kalman Szabo's Met contained a wealth of up to date information and his forecasts were remarkably accurate, although not always believed; his descriptions of "bubble" or "chimney" thermals with 3.5m/sec mean rates of climb were particularly evocative. And in the midst of the dismal summer of 1992 the weather was kind to us throughout, even if a number of days did not prove to be of the classic type.

Over the 12 contest days the average task distance was 270km in Standard, 330km in 15 Metre and 405km in Open. Setting off on a 420km task at 2pm seemed daunting enough at the time, but on many days it would have been possible to fly 50 to 100km further in each Class and – in the context of the conditions – the tasks often seemed underset to us.




**Steve Longland's map of the contest area.**

As a result, day scores were often devalued to less than 1000pts because the winners took less than 3hrs to complete the task. But the organisers may have been constrained by the military, the conditions often did not look all that good, did generally switch off as forecast and the task setter had to make assumptions about speeds etc, which could be misleading . . .

On Day 6 Denis Flament (France) took 2hrs 11min to complete a 310.5km Open Class triangle at an average speed of 141.4km/h; the slowest in the Open was 109km/h. The best speed in the 15 Metre Class that flew the same task on that day was 129.4km/h. The Standard flew a similar 270km triangle which Gabor Halasi (Hungary) won at 121.4km/h in an ASW-24.

Day 9 looked suspect, so Standard was set a 201km triangle which the Polish trio of Franciszek Kepka, Claus Trzeciak (ASW-24s) and Tomasz Rubaj (SZD 55) completed in 1hr 34min, at 128km/h. The 15 Metre flew a 257km triangle that Paul Janssens (Belgium), LS-6A, won in 2hr 13min at 115.8km/h. Gerrit Kurstjens (Holland) in the Open covered 358km at 122.2km/h, flying a Nimbus 4.

In good conditions and with a 6000ft cloudbase you can go a long way fast and still expect to get a decent thermal at a respectable height!

But it was not all plain sailing. The weather in the NE sector was – somewhat inexplicably – worse than elsewhere and often blue, so that there the operating mode was low grovel. That could be disconcerting if only 100km earlier you were over the hills in the NW in 8kt thermals to 7000ft, going like the clappers at 110kt. On days with a fair amount of cu the conditions would cycle, which is OK on task, but can cost precious minutes if the cycle goes against you on the latter part of the final leg; the converse is also true. On some days visibility was poor and navigation required a lot of attention, particularly when looking into the sun from 5000ft at featureless landscape.

The Open and 15 Metre Classes both had days of mass landouts. Nearly 90% of the 15 Metre landed out on the last leg of the 507km tri-

angle on Day 8 and the Open's equivalents were on Days 4 and 14. Over the 12 contest days there were **193 outlandings** – so who could really be sure about the under-setting?

**The teams that did well operated in pairs,** flying in close proximity (say up to 200m apart), fully co-operating all the time, from the general concept of the flight to the search for the best core under a given cloud. Pair flying was best developed by the French, Polish and Czechoslovak teams, but – in a less structured form – it was also practised by the German, Danish, Dutch, Belgian and other teams. It clearly requires discipline and mutual trust. At times one pilot may get higher and the pair must then decide how to tackle that and when, but a complete separation would be accepted only in unusual circumstances.

In the 15 Metre Class the French pair of Gilbert Gerbaud and Eric Napoleon (LS-6BS) was very impressive and held the overall lead almost throughout the Championship. Pavol Cerny and Milos Dedera (Ventus Bs) of Czechoslovakia were also very strong and consistent and took the 3rd and 4th places.

In the Standard Class Kepka, Rubaj and Trzeciak fought hard to secure a similar result and by Day 9 held the top three places, but the latter two had minor slip ups in subsequent days and only Kepka remained on top in the final placings. All three fought a close battle with Ricardo Brigliadori (Italy), Discus A, and Claus Triebel (Germany), LS-7, who moved in to the 2nd and 3rd places, respectively.

In the Open, numerically weakest, there may have been less evidence of team flying. The French pair of Gerard Lherm and Denis Flament flew different gliders (Nimbus 4 and ASW-22B, respectively) and had an upset through Flament's early landout on Day 2, which put him out of the running for top places. But Flament had a string of excellent results on other days and Lherm developed a good lead and held it to the end. The Polish pair of Wujczak (ASW-22B) and Pozniak (ASH-25) also co-operated closely and that helped Wujczak to gain 2nd place.

With practice, pair flying **works**, as two heads can observe and interpret more clues better than one. It is interesting, however, to note that the Continentals reserve that method for international events only and expressly prohibit pair flying in their Nationals, which – rightly, in my view – they regard as a Championship of individual pilots.



**Ted Lysakowski, on the left, with Brian Spreckley. All photos by Sue Hinder.**

What of the Brits? We all had some very good day results, learned a lot, did well on the whole – but many others did better. The results show the story. In all Classes, the winners routinely practise or compete in strong conditions that are so completely different from even a very good day in Britain. So, here is to the next time . . .Al Kay and John Gorringe (ASH-25s), who were able to fly the UK Nationals in their Class several days later, put that experience to good use by taking the top two places – as reported in the last issue, p330.

### *European Championships*

After the Worlds, this is the next premier international gliding competition. It is held every other year – alternating with the Worlds – and the concept calls for an event run to international standards but with low overheads to keep the cost down.

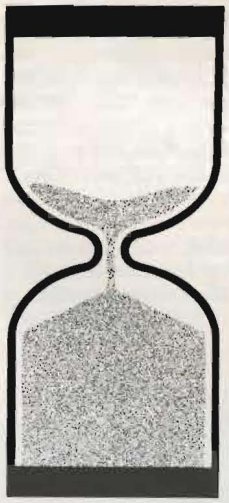
Whatever it gives away to the Worlds in razzmataz, it more than makes up in quality. Given that European gliding is numerically the strongest of all the world regions, it also has extraordinary depth and most countries have many pilots – other than the Names – who are at the leading edge of competition and cross-country flying. The result is a competition of **very** high standard, where every task is flown aggressively and well.

How do you get in into the British team for the Europeans? All you need is to do very well in the UK held UK Nationals in the preceding year.

The BGA had the wisdom to declare an unambiguous method of qualifying for the Europeans, based entirely on results. You qualify in the Class in which you competed in the Nationals. The Champion and the runner up get in definitely. The No. 3 may well get in if one of the other two drops out because of *eg* wanting to fly in the pre-Worlds. The No. 4 may get in if he or she is lucky. What could be simpler and fairer?

### *What impressed me most?*

- The standard of flying – see text.
- Excellent organisation.
- That so few spoken words were needed for a comprehensive task briefing.
- Very few photo penalties. The method was simple. In the sector-OK; up to 45° out of sector-100pts; more than 45° out of sector- no control. We in the UK are the only ones who persist with the graduated penalties method: ➡

**TIME IS RUNNING OUT!**

**Now is the time for your C of A – Don't leave it until the Spring like everyone else! Make sure you are ready for the first good day of 1993!**

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An aerial view of the site.





Above: Standard Class winners (left) with the 15 Metre Class on the right and the Open Class below.



theoretically sound, but often the source of unnecessary aggro.

- That the good conditions were so excellent.
- The Ventus that is excellent with winglets and with the C of G well aft (a fin tank is essential) and gives nothing away to the LS-6. Ventus owners please note. (The usual disclaimers, etc.)
- That, with all that flying, there were no accidents or incidents.
- That the 18 assorted Brits got on so well together for 20 days.

## Results

*As % of Total Day Winner Pts*

| **Standard** | | |
|---|---|---|
| Entries | **45** | |
| Total Day Win Pts | **9652** | 100% |
| 1. F. Kepka, ASW-24 | (PL) | 93.2% |
| 2. R. Brigliadori, Discus A | (I) | 91.2% |
| 3. C. Triebel, LS-7 | (D) | 91.1% |
| 23. P. Gaisford, Discus B | (GB) | 76.9% |
| 32. W. Kay, ASW-24 | (GB) | 69.9% |
| 37. D. Campbell, Discus B | (GB) | 65.1% |

| **15 Metre** | | |
|---|---|---|
| Entries | **29** | |
| Total Day Win Pts | **10647** | 100% |
| 1. G. Gerbaud, LS-6B | (F) | 90.7% |
| 2. E. Napoleon, LS-6B | (F) | 87.5% |
| 3. P. Cerny, Ventus | (CS) | 86.5% |
| 15. B. Spreckley, LS-6C | (GB) | 75.5% |
| 16. E. Lysakowski, Ventus B | (GB) | 75.1% |

| **Open** | | |
|---|---|---|
| Entries | **14** | |
| Total Day Win Pts | **11458** | 100% |
| 1. G. Lherm, Nimbus 4 | (F) | 92.3% |
| 2. S. Wujczak, ASW-22B | (F) | 91.4% |
| 3. K. Holighaus, Nimbus 4 | (CS) | 91.3% |
| 7. A. Kay, ASH-25 | (GB) | 87.7% |
| 12. J. Gorringe, ASH-25 | (GB) | 77.7% |

## Statistics

| | *Standard* | *15 Metre* | *Open* |
|---|---|---|---|
| **Distance** | | | |
| Km Set | 150093 | 114785 | 67880 |
| Km/Day | 278 | 329 | 404 |
| Km Flown | 141470 | 105626 | 65867 |
| Completion | 94.2% | 92.0% | 97.3% |
| **Max Speed** | | | |
| Km/h | 128.0 | 129.4 | 141.4 |
| Over Task | 201.0km | 310.5km | 310.5km |

| **Gliders** | | | | | |
|---|---|---|---|---|---|
| | Discus: 21 | LS-6: 12 | Nimbus 4: 4 | | |
| | ASW-24: 8 | Ventus: 11 | Nimbus 3: 4 | | |
| | LS-7: 4 | Other: 6 | ASH-25: 4 | | |
| | LS-4: 4 | | ASW-22B: 2 | | |
| | SZD 55: 3 | | | | |
| | Other: 5 | | | | |

## Our two best days

| | |
|---|---|
| P. Gaisford | 8, 18 |
| W. Kay | 8, 9 |
| D. Campbell | 17, 17 |
| E. Lysakowski | 5, 7 |
| B. Spreckley | 2, 2 |
| J. Gorringe | 1, 6 |
| A. Kay | 1, 2 |



The top three-quarters of the railway line.



The bottom "station" of the line with the glider ready to be hoisted to the top.

# Z AT ZAR

**Tom Zealley attended the International Gliding Commission meeting last September as the BGA delegate. It was held at the Polish Mountain Gliding school at Zar near Bielska Biala in the south of Poland**

This was the second meeting of IGC confined to European gliding matters. The first was held a year ago in what was East Germany – at Schönhagen, south of Berlin. This year we were invited to Zar for our meeting and were most courteously looked after by our Polish hosts.

Before going, I looked hard on a map of southern Poland to try and find Zar. I failed, because it turns out that Zar is the name of a relatively small mountain and the village at the bottom where the gliding club is situated is called – wait for it – Miedzybrodzie-Zywieckie. No wonder they call it Zar! (Actually it gets a little easier when it is explained to you that the village is midway between two fords – Miedzybrodzie; and then when the village was cut in two by the formation of a hydro-electric lake, each half of the village had the name of the nearest big town added on at the end to distinguish it from the other half; Zywiec is the town just south of Zar.)

Gliding at Zar started before the war – bungying off the top of Zar hill which is 1200ft above the landing field at the bottom. Landing back at the top was to be preferred: there was a large flat area at the top and the hangars and clubhouse used to be there as well. Unfortunately, about 12 years ago it was decided to use the top of Zar as the site for a large reservoir for feeding a hydro-electric generating plant at the bottom. However, a very fine new replacement clubhouse and hangars were built next to the bottom field and that was where we were accommodated and held our European IGC meeting.

Before the war there was no road up to the top of Zar and it took 2hrs for a horse to drag a glider to the top. Immediately after the war they installed a winch to drag the gliders to the top, but someone had to walk up with the wingtip and it's fairly steep. The walk took 20min and was pretty exhausting, especially as the last bit was rather fast as the cable on the drum built up and increased its diameter!

A few years later, a grand full-sized railway system was built from top to bottom with two large flat railway trucks each capable of carrying two fully rigged gliders. The trucks were connected by wire cable *via* an electric powered engine-house and counter-balanced each other – one going down as the other was hauled up, with a double track passing place in the middle.

This marvellous system fell into dis-use when the hydro scheme was being built, but it has recently been reinstated. Although it is not possible to land at the top now, (unless your glider is fitted with floats), there is still room to bungy launch gliders from the top. We saw a lot of bungying including a flight by the president of IGC. Particularly active were two Gapas – Polish designed glass-fibre Daglings which were briefly described in the October issue, p268.

The landing field at the bottom of Zar is somewhat sloped. In fact you always take off downhill from near the hangars and you always land uphill and finish up close to the hangars: all very convenient. Apart from bungying from the top of Zar (and even from the top corner of the bottom field), launching from the bottom field is normally by aerotow using, amongst others, the mighty Wilga.

Something that was new to me, and probably to most delegates, was glider flying at night. I gather it's part of their normal training programme: it sorts out the men from the boys! On the second evening we were there a line of small lights as a flare path was laid out on the field and the gliders and tugs were fitted with red and green wingtip lights. Otherwise everything was dark – very dark. A large number of delegates took two-seater rides; but not the writer! There was only one incident: a glider landed slightly off the correct line and caught its wingtip on a wooden post on its landing run. No one was hurt and the damage wasn't too bad.

The Polish Aero Club and glider people were extremely kind and considerate. They helped us with all our travel arrangements and apart from the meeting itself they arranged visits to the PZL glider factory in Bielska Biala and to the subterranean hydro-electric plant which is fed from the Zar reservoir.

Along with a number of others, I made the journey from Zar to the PZL Glider factory, in the Aero Club's Antonov. This is an enormous biplane with a 1000hp engine and carrying capacity of ten or more. It flies slowly and can easily land and take-off from the Zar glider field. However, a brief session in the right hand seat revealed the controls to be a bit heavy. A number of delegates were able to fly from Warsaw to Zar and back in the Antonov.

For anyone who wants a gliding holiday amongst beautiful scenery and pleasant helpful people with very reasonable living costs, I commend Zar.

*Please contact the BGA office for a copy of the brochure and the 1993 price list.*

The glider arriving at the top.



And being bungyed. Photos by Tom.



# DESIGNED BY MEN FOR MEN

**Towards the end of last season a female pilot died when she apparently lost control during a winch launch. The main contributory factor was a soft cushion *behind* the pilot which compressed during the initial acceleration. Bill Scull, BGA director of operations, co-chairman of the Safety Committee and chairman of the OSTIV Training and Safety Panel, discusses how important it is to take account of pilot size**

The headline was coined by Alan Patching, the chairman of the OSTIV working group on crashworthiness, which is part of the OSTIV Sailplane Development Panel. The group recently reviewed data on pilot size and the safety implications are considered here. Pilots come in assorted sizes. Some can climb into a glider with the minimum amount of fuss; all the controls fall readily to hand and no packing or ballast is needed. For others it may not be quite so easy. For instance, Tynna needs ballast and extensive packing to fly her K-6 in comfort and safety.



**Pilots come in assorted sizes. Tynna Morrice is 5ft and Bill is 6ft 5in.**

There are no pilot size design requirements in either OSTIV Airworthiness Standards or JAR-22, but for the new World Class glider competition it was recommended that they should be from 1.55 – 1.95m (61 – 76.8in) and, ideally, from 1.50 – 2.00m (59 – 78.75in). If you are under 5ft or over 6ft 5in then you might still have problems.

Some basic anthropometric data obtained by Tony Segal and analysed by Peter Saundby showed the problems of the smaller pilot. The minimum height (1.55m) would exclude 2% of Japanese men but no western males, 12% of USAF females, 25% of British women and 50% of Japanese female civilians.

The recommended minimum height of 1.50m would reduce the number of British women excluded to 2%. The short answer (pun intended) is that if you are about 5ft then you will have problems. But you know that anyway, don't you? This article is concerned with solutions so read on.



**Tynna needs 40lb (18kg) of ballast, 6in of cushions behind as well as a parachute and an energy absorbing cushion to sit on. Note that the packing (top left of picture) is high density chip foam with a layer of energy absorbing material (dark grey) as well. The latter is strictly redundant but meets the criterion of minimal compressibility.**

### *Cockpit ergonomics*

There was much debate at the OSTIV meeting on adapting the cockpit for the smaller pilot – an issue raised by the BGA Women in Gliding Group who were represented at the meeting by Elaine Carver from the Derby & Lancs GC.

It would seem fairly straightforward to have a range of seat-back and rudder pedal adjustments to fit any size of pilot. Another possibility is a movable stick position – remember the Capstan? In practice it's not so easy, as any glider designer will tell you, but our main concern is with existing gliders and the next point to consider is the shape and proportions of pilots.

### *Pilots' proportions*

Two people of the same height may have quite different proportions. In the cockpit one critical dimension is inside leg length, strictly buttock-heel length, and the small pilot may have to sit so near the control column to reach the rudder pedals that backward movement of the stick is restricted, or they may not have the full range of rudder pedal movement. And neither of these limitations is acceptable.

If the pilot slides forwards this will further restrict backward movement and may even push the stick forward, especially if the glider is nose down. There has been one fatal accident where this may have been a factor. If the pilot is unable to apply full rudder then spin recovery is unlikely. But what about the acceleration during a winch launch with soft cushions behind the pilot? The risk is obvious – even less rudder control and, in the worst case, none.

The only solution if your legs are too short for full rudder control is rudder pedal adaptions. Words of advice I heard for the first time came from Terry Joint, the CFI at Lasham – "Adjust the rudder pedals until they are comfortable, then bring them back two notches for a winch launch". This only applies of course to pedals that can be adjusted in flight.

### *More ergonomics*

Supposing the pilot has adapted the cockpit to reach the stick and rudder pedals, then what



**Full and free movement? The pilot must be able to operate the stick and rudder through their full range but not at full stretch. The leg and arm should still be bent – the latter only just in this case. However, stick full forward and full aileron is a rare combination. Note that the airbrake lever falls readily to hand.**

about the other controls? Here the considerations are not only reach but strength.

**Airbrakes** may be difficult to close from the full-open position, especially if the control force is high and the pilot is sitting well forward.

It may be necessary to fit an extension to the **cable release** if at the limit of the pilot's reach. What happens if the pilot slides backwards at all?

The **undercarriage lever** may need considerable force to operate, especially locking and unlocking. Some pilots give up on this one and fly with the wheel down; others need two hands to operate it.

**Flaps** should not be a problem unless, perhaps, the load to select landing flap is excessive.

The difficulty is that the problems may not become apparent until the first flight(s) on type. Every pilot new to a glider should regard him or herself as inexperienced and do their utmost to ensure they can reach and operate all controls **before flying**.

## Cockpit adaptions

Strictly speaking the main adaptation is cushions, After a recent fatal accident (not at Lasham) Phil Phillips, co-chairman of the safety committee and manager at Lasham, was seen confiscating soft cushions, such was his concern.

Let's look at our female pilot's solution.

The material used behind the pilot really is critical. If the initial acceleration of a winch launch causes cushions to compress then the pilot may lose control of the rudder. Worse, as the pilot slides backwards he, but more likely she, may move the stick back inadvertently and at a time when they should probably be moving it forward to counter the tendency to pitch nose up. Incidentally, this risk can be reduced with anti-slip mats on the seat – an RAFGSA requirement.

The detail of any rudder pedal adaptions are obviously specific to the type of glider and the pedal arrangement. Beware of pendulous pedals! Can you operate the pedals with your heels on the floor? If not then build up the floor so that you can and make sure the adaption is properly secured.

## Harness or straps

I'm sure all pilots know the principle of fastening the harness or straps. For best effect the lap strap should be firmly in place over the pelvic protrusions. The shoulder straps should be tight enough to avoid significant forward movement and any upwards and backwards movement with a reclining seat-back. If you overtighten the shoulder straps this is to the detriment of the correct lap strap position.

There may be other considerations for the smaller pilot. Do the straps adjust sufficiently to be tightened as much as required? Do the shoulder straps go back horizontally or are they inclined slightly downwards from the pilot's shoulders? If, in the latter case, the straps incline upwards (from shoulders to attachment points) then the risk of sliding upwards and backwards in the winch launch case is increased. The solution? Firm packing underneath the pilot to meet the shoulder strap angle criterion.

Straps may also tend to slacken in flight. Aeroplane discipline is to tighten the straps before a crash landing and this isn't a bad practice. The same should apply in gliders if the impending crash is recognised in time.

One solution is better straps. It is interesting that Gerhard Waibel (designer of Schleicher's W series) sandblasts the harness fitting of his own glider to reduce the tendency to slip. It wears out the straps rather quickly but must be safer. Another possible modification is to fit a five or six-point harness but this isn't always an easy adaption. This point was also debated at the OSTIV meeting with the recommendation that the extra straps could be released and reconnected in flight (for plumbing reasons!). It was also recognised that a seat design which supported the thighs with a well-fitted four-point harness was effective in reducing the submarining risks – principally a problem in the crash case but not exclusively so.

## Cockpit ballast

A ballast weight for the sole owner is less of a problem than in a syndicate or club glider. If the weight has to be removable then the arrangement must be properly secure so that it can't slide forward in reduced *g* or turbulence and be strong enough for all but the worst crash case. Dog-lead clips and strong cable attachments to the lap strap attachments have remained intact in one fatal crash. In future, design requirements will obviate the need to use lead cushions.

It is better to have a special attachment in a forward position but accessibility may be a problem. If there is a regular need to use ballast then a proper attachment should be considered. Design approval would be required but this isn't difficult to arrange – speak to a BGA inspector or repair organisation.



**This sheet lead seat weight (shown also in the second photo) is moulded to the shape of the seat and held in place with four screws. Photos: Terry Joint.**

If ballast is needed then its importance cannot be over-emphasised. Pilots have died because they did not bother to fit the ballast and even just flying the glider at the aft C of G limit (*ie*, minimum cockpit load). Remember the recommendation for inexperienced pilots to ballast their glider to at least 15kg in excess of the minimum figure.

## Summary

All pilots, but especially small pilots, possibly with problems of strength and reach, should be absolutely sure the following apply:

1. All the controls are easy to reach and operate through their full range, with a margin to spare.
2. Cushions behind them are firm and virtually incompressible under all normal loads.
3. Cushions underneath are of energy absorbing material.
4. Lap straps are properly located over the pelvis.
5. Shoulder straps are so located as to hold the pilot down in the seat, albeit slightly.
6. The seat has an anti-slip mat, especially if not properly contoured to support the thighs.
7. Ballast weights are properly secured and preferably have a margin above the minimum specified cockpit load.

Realise that you may need some hours of preparation to get ready for a type conversion.



At 2500ft with a steady 2kt on the vario we put away the "mechanical thermal."



We almost looked into the eyes of a loan pair of sheep grazing near the top as we turned close in.

# CONNEL – MOUNTAINS AND MAGIC

DAVID CHAPLIN

**After David read Tony Shelton's article in the June issue, p132, his appetite was whetted to explore the possibilities of mountain flying at a place which sounded different to the more established wave sites**

After a week at Aboyne, three of our syndicate members took the DG-500M to the west coast. My impression of Connel Airfield was that the pioneering spirit of gliding was alive and well. Stalwart members of Connel GC, which operates mainly at weekends, were busy erecting their new clubhouse, a primary school building. We were greeted by Tony Shelton who runs Argyll and West Highland Gliding Centre on weekdays between spring and autumn. Launching is by autotow and I felt the club needed more members and to be able to aerotow, which is of course easier said than done.

During our three days' stay we had brilliant sunshine while the rest of the country had rain with severe flooding in the south. We had several thermal flights in and around the mountains but unfortunately the wave wasn't working.

One flight, however, will remain in my thoughts as an outstanding experience and typical of the different sort of gliding which Connel has to offer the adventurous pilot. What follows isn't a description of a record breaking height or distance flight, nor is it written in praise of self launching sailplanes; it is a memory of a 100km O/R on Tuesday, September 22 in the DG-500M which lasted a mere 1hr 40min.

Total engine time, used at the beginning of the flight, was 9min and without the self launching facility the flight wouldn't have taken place on that day. It was all below the 3000ft cloudbase with many of the mountain tops hidden in cloud. Re-use of the engine was talked about on several occasions but was never a serious consideration.

By 4pm my syndicate partners had left for home and the wind had strengthened to about 15-20kt from N to NW. Tony suggested the increased wind might be producing funnel lift on the nearby slopes at Benderloch and we decided to try it from a self launch before derigging.

At 2500 we were well below the tops of the mountains and beyond Benderloch, with a steady 2kt on the vario, we put away the "mechanical thermal" and Tony and I flew closer and closer to the slopes. The gentle but steady lift was being funnelled up the valleys against the north facing slopes like a chimney effect.

Orographic cloud rolled off the tops to join the main cloud above and indicated the lift. Tony said: "This is what it's all about. Don't expect the lift to be any higher than 200ft above the top like normal hill lift and stay out of the cloud." The hard granite faces gave me no encouragement to enter cloud! We almost looked into the eyes of a pair of sheep grazing near the top of a ridge as we turned close in. The orographic cloud continued to rise and roll off the tops as we skirted along.

The ridges in the adjoining valley of Glen Creran seemed almost to beckon us to try further into the mountains. Crossing the gulleys between the ridges meant flying through sink. I thought of my Tutor flying days at Sutton Bank and was pleased with the safety afforded by span.

From ridge to ridge we soared, neither gaining nor seriously losing height. We rounded

TP-Glen Coe car-park.



Heading out into the lowering sun towards Mull over the Firth of Lorn. Photos by David.



Beinn Fhionnlaidh and in the distance lay Lock Leven and Glen Coe. As we approached Glen Coe I saw the awesome Aonach Egach ridge top covered by cloud and my mind flashed back twenty years to when it was covered in ice and snow I walked its narrow length. The orographic cloud was still rolling off the western end of the glen and as Glen Coe village came in sight I saw the first field big enough for landing. We turned into Glen Coe and the steep sided valley topped by cloud looked tight for the 22m wingspan. The wind seemed to be lessening suggesting a weather change and a loss of lift, so we started the journey back.

I photographed an eagle soaring the slopes ahead. As we turned underneath him to gain height, he stalled like Jonathan Livingston Seagull. Gradually we gained the distance back, riding the slopes almost as if on a magic carpet. We returned to Connel at a safe height and headed out into the lowering sun towards Mull over the Firth of Lorn.

I said to Tony that with his knowledge of the mountains and my second mortgage the flight had been fantastic, He agreed and said that he had never been so far into the mountains below the tops without thermal or wave.

***"Close proximity to such great lumps of granite concentrates the mind to fly accurately and gives immense satisfaction."***

For me it was a lesson in mountain flying for which I was so grateful and will never forget in a hurry. Close proximity to such great lumps of granite concentrates the mind to fly accurately and gives immense satisfaction.

There are vast acres of mountains to explore around Connel which perhaps is an ideal training ground for Alpine flying. The area is stunningly beautiful and the opportunities for spectacular gliding seem to be endless. It is well worth the long trailer tow.

### *VINTAGE RALLY*

There were 55 gliders in the 20th International Vintage Glider Rally at Terlet, Holland in August, 21 from Britain. With six flying days, 189.16hrs were flown from 200 winch launches and 245 aerotows, giving only 25.5min/flight.

After the first four hot days, most of our tents were broken or swept away during the night by storm force winds. Luckily no gliders were damaged.

Michael Maufe, taking his BAC-7 to its first international rally, was awarded the Musée de l'air et de l'Espace's grand prize for his efforts.

The 21st International rally will be held at Zbrazlavice, 70km SE of Prague, during early August.

CHRIS WILLS



# GPS – SAINT OR SINNER?



**David, who has more than 700hrs, a Gold badge and one Diamond, flies a Nimbus 3 from Bicester where he is an instructor. He started gliding with Aquila GC in 1973, took it up seriously with the Cranfield Club in 1978 and was their secretary for many years.**

With GPS now becoming more available it may be a good time to remind current users of the fallibility of GPS and give some pointers to those considering buying a GPS receiver.

GPS is an *aid* – it should not be relied upon as the sole source of navigational reference. Information on the serviceability of GPS is now available by fax to users by ringing The UK Civil Satnav Group GPS Information Service on 0336 40599. The information in this bulletin is updated weekly and gives information on availability of satellites and their predicted performance.

Before readers accuse me of being a Jonah on the subject let's have a look at a couple of potential problems:

The US Department of Defence, who operate the GPS system, state that:

"Users of GPS are cautioned that the system is not fully operational. Signal availability and accuracy are subject to change due to an incomplete constellation (*ie* the number of satellites available) and operational test activities. Selective availability was activated at Standard Positioning Service accuracy levels (plus or minus 100m for 95% of the time) at 0400UTC on July 1, 1991. Variations may be seen in the effect of Selective Availability during testing, but the effect should not exceed standard positioning service levels."

The imposition of Selective Availability means that there is no guarantee that a civilian standard GPS receiver has a horizontal fix better than plus or minus 100m for 95% of the time. Accuracy will be plus or minus 300m for 99.9% of the time.

On Friday, October 16, a problem with a Block II GPS satellite resulted in many receivers computing a totally inaccurate position between 0749 and 1737hrs. As a matter of interest how many people at Aboyne (or anywhere else for that matter) noticed?

So how does this affect its use with regard to gliding?

1. The initial inputting of way points requires a great deal of time and patience if you wish to build up a reasonable library for TPs. Don't do it on your own: get someone else to check what you've done. Inputting an easterly co-ordinate instead of westerly co-ordinate can have a fundamental effect on your day. If you haven't got access to a published list of co-ordinates how confident are you of your ability to accurately plot latitude and longitude from a chart?
2. GPS will give a track from wherever you are to where you want to go in a straight line regardless of what's in the way (clouds stuffed with hills, controlled airspace etc) so don't throw away your aeronautical charts.
3. Airmanship – don't let your eyes become glued to the GPS receiver – maintain a good lookout – after all on a good cross-country day 100kt of groundspeed = 50m/sec, so GPS is only good for telling you where you were and where you are going.

There is another problem to be considered with GPS receivers currently available. Where do you put it? At present receivers are either mounted on the top of the instrument coaming or attached to the side of the cockpit wall by various Heath-Robinson devices. I have seen very few securely panel mounted receivers; is this safe? Perhaps some readers have ideas on ergonomics of a GPS equipped cockpit.

I am in no doubt having used GPS coupled to a locator on cross-country flights that it may be close to the greatest invention since sliced bread and goes considerably towards relieving some of the anxiety associated with cross-country flying – and not wishing to enter into a debate on the Willsonian ethics of having a piece of equipment such as GPS, let's not forget the basics. After all we managed well enough without it.

### SIMON WINS VETERANS COMP

The "Coupe Europenne des Veterans" is held each year at Brienne le Chateau on an ex Nato aerodrome with a single vast runway located about 100 miles east of Paris. One of the attractions is that this is in the Champagne region and a bottle is awarded as a daily prize.

A veteran is defined as someone who has been gliding for more than 25 years or is over the age of 50. Simon Redman says that since he meets both these qualifications by a comfortable margin, he decided to enter with his LS-6 as a change from the usual British competition.

The veterans event was held in conjunction with a French two-seater competition from August 2 to 14. The Classes were scored separately but otherwise were completely integrated. There were 23 entries divided about equally between the two Classes.

Brienne 1992 suffered from the variable weather which seemed to have been prevalent last year but there were five completed tasks with an average length of 209km and speeds of over 100mph were achieved on two days. Simon won four of the five days and the competition by over 1000pts. He says it is a very well organised event, deserves more support and thoroughly recommends it to any reasonably competent old glider pilot who likes drinking champagne. (Must apply to most of the gliding movement. Ed.)

# SCOTTISH AND WELSH WAVE

## This is an account of two wave flights, the first for all three Diamonds at Aboyne and the second at Glyndwr

The following description will show that I am really a novice in this aspect of soaring and how good fortune was on my side as they are my only two encounters with real wave.

Both flights followed an expedition to Portmoak with our much loved "all flap and no brake" PIK 20B. On the first in April 1990 I visited Aboyne and had a 3hr soaring flight in strengths of up to 10kt with the strengthening westerly wind promising better things for the next day.

The following morning I rushed to the airfield and after much scratching and scraping, working really hard for 2hrs, I couldn't manage more than 6000ft. Feeling very over-heated, prickly, uncomfortable and thoroughly disgruntled with my performance, I landed.

Refreshed and cooler I returned for the afternoon performance. Dave White, the duty instructor who the day before had given me invaluable information on wave flying technique and working the local wave system, promised the wave contact point was in its regular place over Loch Kinord in the lee of the high ground to the west.

Releasing over the loch at 2500ft I was continuing to climb in smooth air until turbulent air and sink abounded and I realised I was falling out of the base of the wave. It meant more searching and some anxious moments before I eventually established a beat across the loch between two ground reference points which steadily increased to 8kt of lift.

Elated I watched the altimeter winding around as I rose past the ragged edges of the lower cumulus and eventually it indicated 10000ft – higher than I had ever been in a glider. The panoramic view of the rust brown mountains spread out below with the green Dee valley threading its way between them and fluffy white cumulus dotted above was fabulous.

It then became increasingly misty and I realised I was approaching an upper layer of stratus and the canopy had iced up. At 18 000ft the lift was weakening noticeably and I pushed forward to the next even higher bar ahead. I guessed 90kt indicated to be a good speed as I rushed through the intermediate sinking air, losing about 5000ft before climbing again.

I had no anxiety about navigation as the river Dee showed as a reassuring silver thread through the now tiny dots of scattered cumulus and wave bars below. In gradually weakening lift and with oxygen now on full flow I worked my way up to 22 500ft, the top of the climb.

Relaxing for a few moments I hung seemingly motionless, suspended in brilliant light amidst the vast panorama of gold tinted clouds far below and the pale blue sky above. The sense of peace and isolation was immense. If only I had found room for the camera – but perhaps the memory is the best recorder of this probably once in a lifetime experience.

My second wave flying experience was last April 18th. Returning from Portmoak I called in at Glyndwr GC at Denbigh, North Wales. Clearer air and westerly winds were forecast and I had heard of the excellent potential for wave climbs at this magnificently spacious flat grass site in the Vale of Clwyd. It is close enough to winch launch on to the Clwydian range of hills whose west facing ridge produces excellent lift throughout its 15 mile length. It is ideally placed to phase in with the lee wave produced by Snowdon and the Cambrian mountains to the west.



**Mike, photographed with his wife Barbara, has been a member of Devon & Somerset GC since 1960. For ten years he ran Dunkeswell GC with his wife. He has 1600 gliding hours, 400 power, is a tug pilot and instructor and shares a PIK and a Super Cub with Barbara. Photo: David Wolff.**

I took an excellent winch launch and joined the slope about one third of the way below its 1500ft summit. Not knowing the intricacies of the humps and rifts, I stuck to a point where turbulent lift took me to the level of the top of the TV mast crowning the hill which was a useful marker for the airfield.

I soared the ridge, gradually gaining experience and venturing further afield, but the turbulence was very fatiguing and after an hour I had had enough. Apparently the wave system was creating the turbulence which made ridge flying difficult and that the ridge wasn't always like that! Things could easily change as the pattern shifted.

By the afternoon the blue sky could be seen through open standing wave slots in the generally ragged cumulus cover. Taking a second launch I climbed once again on the ridge to 2000ft. The air was less turbulent and the lift more substantial. Turning directly into wind I could see Ruthin in the sunlight shining through the wave slot and I quickly climbed to 2800ft.

Pushing forward and approaching the upwind edge of the ragged cumulus base I worked in and around the contours of cloud trying to stay in clear visual air. I climbed quickly up the edges of the slot until I was in clear air above and going up at 4kt in smoother air. At 6000ft I felt that I might become trapped under a thin veil of stratus which threatened to engulf me but through which I could see the sun.

I increased speed and, still climbing, pushed forward to the knife-like leading edge of this lenticular looking cloud which capped the cumulostratus below. All above was clear blue sky and I was still climbing at 3 to 4kt. I would guess the wave slot was less than a mile long and beating back and forth along it seemed quite unnecessary. After some time I found the best technique to stay centrally positioned in the system was to sit facing straight into wind and using as aiming points the only other two wave caps visible which were ahead but at a lower level.

As I climbed steadily through 11 000ft and with oxygen on, I couldn't believe my luck. When flying at 45kt I gradually drifted back downwind. The dead smooth air giving way to a slight flutter rather like a pre stall buffet warned me to increase speed to 55kt to re-establish my position.

***It now occurred to me that I might exceed the height of my previous wave climb***

Passing 18000ft at 3kt I hadn't moved at all and could still see Ruthin through the wave slot below. The distance between my wave bar and the two ahead appeared insufficient to give any greater amplitude to my climb but still I went up, slowly but surely at 2kt and passing 20 000ft. It now occurred to me that I might well exceed the height of my previous wave climb and this on only my second real wave experience!

As I approached 24000ft the rate of climb had diminished to 1kt and I was now searching around in different positions to ensure that I really had reached the top, I scraped a further 700ft. This flight had produced 24700ft in one straight climb off the ridge – far more easily achieved than my previous wave climb.

Basking in the warming rays of the sun and wearing only one extra pair of socks and a quilted flying suit, amazingly I was still quite warm and only then found it necessary to put

on my gloves. I was enjoying all the same marvellous sensations as on my previous wave flight – the only difference was the solid cloud cover below. Miles ahead to the west was a lone lenticular at about my level which I guessed would be above Snowdonia. What astronomical heights would be gained by future pilots prepared to press on into this primary wave?

The slot I had come through an hour ago, and which was the only indication of my position over the ground, looked infinitesimal. It was my only way back with any certainty so with flap fully extended I spiralled downwards on the long journey to terra firma, hoping there was still time for Barbara to have a go.

Descending through 12 000ft I made what later proved to be a bad decision. Through the brilliant whiteness of the cloud tops I could see another small opening which I judged to be further north along the valley and therefore closer to the site. At 8700ft I had the choice of descending through my now apparently narrowing original slot or going for the new, smaller aperture.

Through both I could see the odd glimpse of roads, houses and green fields so I knew I wouldn't emerge over high ground and should have 2500ft below cloud to sort things out. Heading for the smaller hole, which was now no more than a wingspan's width, I dived almost vertically through it and emerged from brilliant whiteness into grey overcast gloom.

Pulling off my speed I settled just below the ragged mass of over-developed cumulus at 2400ft. I could see the coast and the ridge with the TV mast about five miles away, but somehow I felt disorientated and decided to check the chart.

As I am now encumbered with reading glasses I put these on, only to find them repeatedly steaming up – the lenses were still ice cold from the high altitude and I gave up further attempts at IMC map reading and headed off towards the TV mast and base.

On realising that in the rough unpredictable air the chances of finding the site were becoming remote, I decided that with 1800ft it would be prudent to choose a good field and land. It was gusty and I studied the surface for indications of wind direction.

I circled trying to judge my drift over the ground, but without success and was now at 1000ft. I then saw a steeply upward sloping field which I thought might be into wind but should this not be so at least the uphill landing would reduce my ground round. Using full flap and sideslip I made a safe arrival at the top of the slope. Opening the canopy I found the wind was blowing behind my left ear! I had landed near the town of Mold.

No wonder I had felt disorientated – my badly chosen hole in the cloud had brought me out on the downwind side of the range and although I was heading for the TV mast, it was from the opposite direction. Well lessons learned and no harm done!

Back at Glyndwr I was told that I had broken the site record. From my limited experience in wave soaring, I would definitely recommend this site for its wave potential has by no means been fully exploited and I am sure this site record won't stand for long.



# BOHEMIAN ADVENTURES

**Gillian tells of her experiences at the Czechoslovakian Women's Nationals at Ceske Budejovice in southern Bohemia last August**



**Gillian (left) with Jill Burry and Oliver Spreckley debriefing after another hard day!**

We awoke on the first morning to brilliant sunshine and the sound of a winch singing in the distance. For the first time in years my stomach fluttered at the prospect of going flying. I had half been hoping it would rain.

Not the sentiments of a glider pilot you might think, but this was different. The first competition in a country I had never flown in – what would the fields be like, how would I navigate, how would I communicate with the natives, would they have 'phones? Then there were the more immediate problems of understanding the briefing, launching behind what looked like flying skips and understanding the weather over foreign terrain.

Competition flying isn't everyone's cup of tea but going abroad to compete provides that added spice to appeal to the Paul Theroux in us. This was an adventure more than a serious event for Jill Burry and me but the good weather did eventually squeeze out the competitive streak in us.

To fly in eastern Europe still has many practical barriers, the most important being airspace restrictions, but to fly as part of an organised competition avoids many of these hassles. The competition was in two Classes – the 15 Czech made Gradients, a metal fuselage and glass-fibre wing glider of little better performance than a K-6E, and the handicapped International Class with 12 entries including a Ventus, LS-6, Discus, ASW-19 and ASW-15.

Apart from us there were two other foreigners – a Hungarian and a Pole and the four of us were the only pilots with crews. In Czechoslovakia women are fighting for the opportunity to fly in mixed competitions, but the problem is purely a lack of gliders. Although they have many active clubs, most of the flying is in Blaniks. As there are only about 40 high performance single-seaters, these do the rounds of all the competitions and trailers are almost unheard of, hence the lack of crews. Almost all retrieves were by aerotow and on the day when everyone landed out, some did not get back until the next morning.

In theory the airspace restrictions were prohibitive, mainly because military permission has to be gained for all cross-countries. We were not allowed to stray more than 15km off track and the upper ceiling was usually around 7500ft. But on a few days the director did get permission for us to fly into the mountains that form the border with Austria.

# MOWBRAY VALE – STOP PRESS INSURANCE

It will have come to the attention of many glider owners and clubs that all is not well.

The purpose of this notice is to reassure you regarding the current position.

The non-aviation business of Mowbray Vale has been taken over by the ARNOTT GROUP. However all matters relating to aviation have been passed to us.

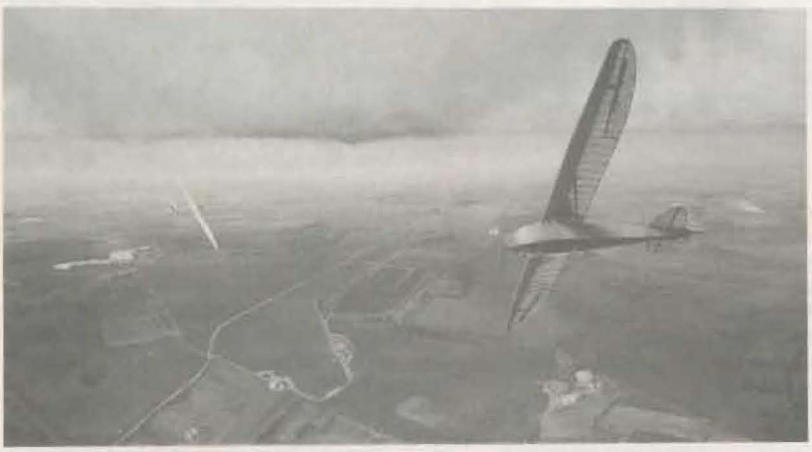
In the past much of the glider and fixed wing business which you may have given to Mowbray was then passed to us for placing in the Lloyd's or London Insurance Company market.

In those cases where we have handled business you only have to show that the premium was paid to Mowbray Vale in order to validate your insurance. We do now have the various records for the Mowbray Vale office and will do our best to contact clients as necessary.

If you as a Mowbray Vale client experience any difficulties or are in any way concerned please do contact our London office and speak with Tim Proctor, Tom Ellis or other members of our aviation staff.

We are here to help you, and equally would appreciate your help to see that nobody is uninsured.

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**The Czechoslovakian made Gradient.**

He was visibly emotional when he gave the news at briefing. We were delighted because the stable conditions in the flat lands made cross-countries almost impossible for a few days, whilst in the mountains we had beautiful cumulus to 7500ft.

The terrain was similar to southern England – beautiful, green rolling countryside but with bigger fields, more forests and a much smaller population. Many of the TPs were the magnificent castles for which Bohemia is famous.

We flew on eight of the 12 days and on the day everyone landed out the task was 411km. Five of the eight days were blessed with cumulus with bases ranging from 5000 to 7500ft and winners' speeds were from 80 to 110km/h. On the blue days with thermals from 4500 to 6200ft top speeds were from 65 to 80km/h. The average task length was 250km and in the International Class most competitors flew about 2000km.

And landing out? No worries – Jill and I landed in the same field on the second day and were whisked away on the back of mopeds to the local hostel, served beer, sausages and something like schnapps, all on the house. We showed them our letter from the competition organisation and they rang in for us, giving all the wrong directions! Luckily we had a handheld radio so when we had had enough beer we installed ourselves on the side of the road into the village and eventually guided the trusty crews in by radio.

The Czechs are obviously proud of their history in aviation having produced many aircraft and gliders and with a good record at world level in gliding. This was explained by the amazing support given this competition. They had the help, advice and financial support of the Czech Aeroclub; Jaroslav Vach, their national team manager and coach, was present and one of the team pilots (placed 3rd in the Europeans) was flying a Janus during the competition. The organisation, especially the Met, was very professional and the social life was enjoyable.

The real reason for our visit was to case the joint for this coming season when the Women's European Championships will be at this site starting on July 24. The competition will be fierce.

The 1992 winner of the International Class was Hana Zejdova (Ventus), a professional gliding instructor. She flies in Australia and the French Alps during the winter and last year a Discus at her home club in the summer. The Germans couldn't come this time as the dates clashed with their Women's Nationals, but they hold the 15 Metre Class title. This January Czechoslovakia became two countries, a development we hope won't affect the competition this summer.

Leading results of the International Class:- 1. H. Zejdova (Ventus) 5787pts, 2. E. Petranova (Discus) 5655pts and 3. L. Kuthanova (Discus) 5596pts – all Czechs -, 10. G. Spreckley (LS-6c) 4943pts, 12. J. Burry (LS-6c) 4260pts.

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### *MOUNTAIN FLYING SKILLS*

British pilots visiting the French Alps for the first time are often frustrated to see their fellow aviators achieving interesting and challenging cross-countries whilst their own lack of mountain skills and experience keeps them fairly local.

It takes time and possibly several visits for the flat earth pilot to discover that the safe and reliable routes around the mountains are based on slope lift, valley breeze, thermodynamic lift, convergence and similar phenomenon which don't often occur in the UK. Furthermore the mass and size of the mountains and the limited number of safe landing fields have a sobering effect on all but the bravest (foolhardy?) first time visitor.

To help experienced flat land pilots get the best from mountain flying in the shortest learning period, Roger Blagi and Jacques Noel, two of France's most experienced mountain pilots, opened a mountain flying school last year at Gap Tallard called the Association Française de Vol à Voile en Montage.

Despite the poorer than average weather in 1992, courses were nearly fully booked. They continue this year from March to September 10 in Janus and Calif gliders at f4950/week inclusive with 15hrs instruction in mountain flying techniques and exploration. Not exactly cheap but a real force multiplier for your capability to achieve long and safe cross-country flights in some of the most beautiful scenery.

This year, in addition, bookings are offered to clubs who wish to bring a party and some of their aircraft for two or three weeks. All the courses are in English.

Apply to Jacques Noel, 16 rue Emile Boyoud, 04600 St Auban, Tel 010 33 92 64 28 63.
PETER HEARNE

### *THIS DEFIES COMMENT!*

Dick Stratton, BGA chief technical officer, sent us a cutting from the *Bicester Advertiser* which reads: "Villagers near the Upper Heyford airbase are to ask the Ministry of Defence to control airspace above the base when it closes in 1993. USAF aircrews will continue to fly locally for six weeks a year on exercises, but people are worried that pilots of light aircraft who get used to using the space between those occasions may stray into the paths of planes during the exercises."

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# CRITICAL CLIMBS

## How critical is the Critical Rate Of Climb?

Many many years ago, when the Arm-Chair Pilot was in his best-speed-to-fly infancy, his mentor Ken Machin (CFI of the Cambridge Club for many years) told him that the theory was all a waste of time anyway – the only thing that mattered was the achieved rate of climb. Maximise that, he said, and it really did not matter how fast one flew between thermals. But it was still fun to do the theory, just as it is was fun to pore over maps in the winter and plan heroic cross-countries.

In those far off days the theory said that the best speed to fly between thermals was determined by the average rate of climb. Then, in 1964, along came the threshold theorem (first published, of course, in that leading journal *S&G*, October issue, p364): The best speed to fly between thermals is found from the standard theory, but the "average rate of climb" is to be replaced by the chosen "critical rate of climb", where the "critical rate of climb" is simply the threshold rate below which the pilot chooses to dolphin rather than circle.

It goes without saying that the critical rate is less than the average rate, thus supporting the sceptics of the old theory, who had always said that it led to inter-thermal speeds which were too high. But what is the relation between the critical rate and the average rate? By what margin was the old theory unsatisfactory? How sensitive is cross-country speed to the choice of the critical rate?

As computers developed it was inevitable that John Pringle's delightful board game Thermal Dice (which he described in the February 1960 issue of *S&G*, p18) should be programmed, and equally inevitable that after the discovery of the threshold theorem the players in the game should be left with only having to chose their critical rates, since the computer could work out the corresponding correct speeds itself and implement them. This, of course, spoilt the fun, as well as leading to the next inevitable development – the computer adjusting the critical rate.

The Arm-Chair Pilot's program *AUTOPILOT* has been playing by itself in this way since 1980, but after the first few 100km triangles it became boring to watch it any more. It has built up quite a bit of experience, however, and we can quiz it about the questions that interest us.

Its set task is a 100km triangle. There are 13 thermals of varying strengths and widths, and indeed the strength of each varies with height, building up to a maximum at 3500ft and finally fizzling out at 5000ft. The strongest thermals are between 8 and 9kt, and of course along the route the rising air is exactly compensated by sinking air between the thermals. (Real pilots do better than this by "following the energy," and with modern flight-recording facilities we will be able to find out how much better.) Although the thermal profile is stored in the computer, *AUTOPILOT* is not allowed to make use of this information by anticipating the position and strength of the next thermal – in other words, it's a blue day. The glider is an unballasted Astir CS77.

The only choice left for the operator of the program is the critical rate. This is sometimes anachronisticly called the "MacCready value" because it is the value that is set on a variometer's MacCready ring (or its modern electronic equivalent). But Paul MacCready invented his ring in 1949 in the days of the old theory, and it is the critical rate of climb, or CROC, that must be specified under the new theory. (Or shall we call it the MATHS, the Minimum Acceptable THermal Strength?)

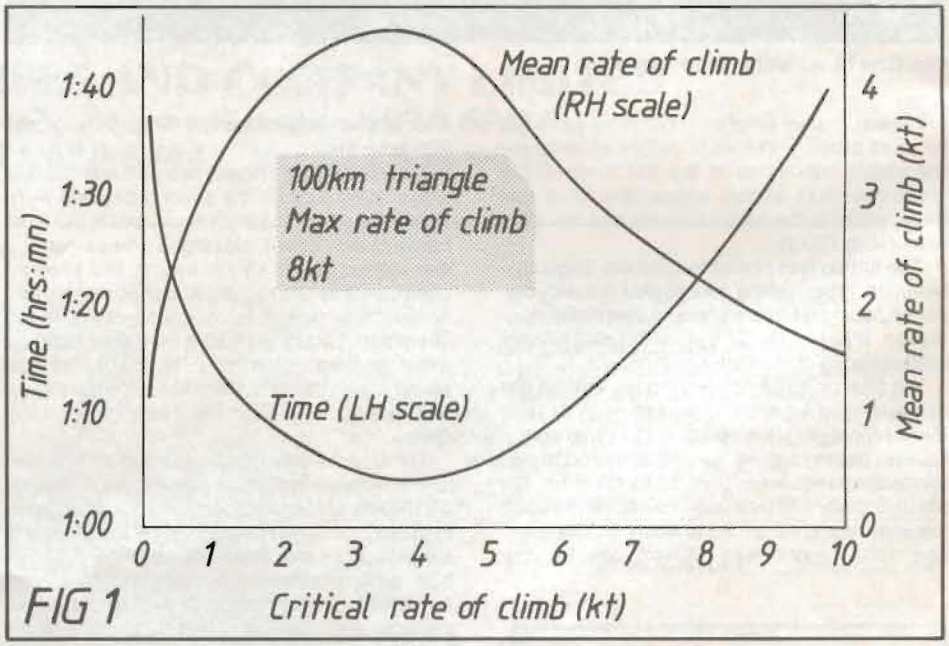


FIG 1

The Astir starts its cross-country from 3000ft and flies according to the threshold theorem with the chosen CROC. This rate is changed as the flight proceeds, according to two parameters, the height and the distance to the goal: as the Astir falls below 3500ft the CROC is gradually reduced to lessen the probability of a premature landing, whilst as it approaches the goal the CROC is gradually increased as the possibility of an outlanding recedes. All this is done automatically, so the only parameter under the control of the operator is the initial CROC.

We can now instruct *AUTOPILOT* to get on with the flying and tell us how long the 100km triangle takes for various initial CROC settings. Whilst on the job it can also record the amount of time spent circling and the mean rate of climb whilst circling. Fig 1 shows the time for the flight graphed against the CROC.

The best CROC is about 3.5kt, leading to a time of 1hr 4min 34sec. At 2.5kt the time was 1hr 7min 13sec and at 5kt it was 1hr 6min 1sec. Of course, a CROC of 0kt leads to an infinite time because the Astir then circles interminably in no sink at the top of the first thermal, but a cautious 0.1kt sent it round in 1hr 33min 27sec, about the same time as a near-suicidal 9kt setting! (10kt was suicidal, with the Astir landing half way round the triangle.) So the first thing we learn is that the CROC does matter – of course – but only to an accuracy of about ½kt.

At the winning CROC of 3.5kt the mean rate of climb in thermals was 4.5kt, and this was the maximum for any CROC, as is also shown by Fig 1. Just as Ken Machin said, one must maximise the mean rate of climb, by which is here meant "choose the CROC so as to maximise the mean rate of climb consistent with completing the task" (for a discussion of the balance between cross-country speed and the probability of landing short, see – if you can find a copy – *S&G* for February 1963 p12, "A Stochastic Cross-country or Festina Lente"). The reason that beyond the optimum CROC the mean rate of climb starts to decrease is, of course, that the Astir then keeps on getting low through flying too fast, and has to recover using weak lift.

The difference of only 1kt between the CROC and the mean rate must not deceive us into thinking that the old theory was almost satisfactory, for that would not be to compare like with like: the modern threshold theory tells us not only what speed to fly between thermals but also, unlike the old theory, when to thermal.

Finally, *AUTOPILOT* revealed a further minimum associated with the best time for the triangle: the amount of time spent circling. So the happy winner not only minimises the flight time, but the time spent circling, as well as maximising the mean rate of climb. 'Twas ever thus.

What's left to do? Well, once the Arm-Chair Pilot has got *AUTOPILOT* running on a PC in PASCAL (the original version is in BASIC) he is going to see how quickly this particular 100km triangle can be flown by a pilot who can detect the position and strength of the thermals ahead. In due course he will report what he finds.

# WHAT HAPPENED IN A WEEK – AND WHY!

**Mike set up his gliding training organisation in just 12 weeks and operated for seven months in 1992 at Hinton-in-the-Hedges. In the April issue, p88, he set out his goals and sent us a sealed bid listing his hoped-for results. Now he tells us how the results compare with his forecast**

During the first seven months we met pretty well all our targets with more first solos than any other club in the UK, despite being new in the worst weather imaginable and in the middle of a huge recession. And we are expanding this season with two airfields, rather better gliders and even more fun!

The table below shows what we actually achieved, what we expected to achieve (and budgeted for) and in the last column what we secretly hoped to achieve.

| Topic | Result | Expectation | Hope |
|---|---|---|---|
| First solos | 44 | 65 | 100 |
| Bronze legs | 33 | 10 | 20 |
| Silver legs | 22 | 15 | 25 |
| Launches | 6976 | 7000 | 10000 |
| AEI instructors | 14 | 6 | 10 |

You can see that we met all the expectations except the total number of first solos. The principal reasons for that shortfall were the weather and – more significantly – the fact that almost half our customers had already gone solo! Furthermore, two-thirds of our pupils came back for another course later in the season and this also kept the number of pre-solo pupils artificially low. This does, however, explain the higher than expected level of Bronze and Silver legs...

## *"Value for money" – and other secret weapons for 1993*

Our two big secret weapons are the introduction of a two week course, which will really get good results, and the very high level of repeat business we have experienced. Both follow on from the precept of giving good value for money. We know glider pilots tend to be skinflints and although we don't offer computerised accounts or telephones which are always manned, it does mean students' course fees can fund more time in the air – and this seems to go down pretty well!

Two-thirds of last year's pupils came back for more training before the end of the season and I take this to mean that they are satisfied with what we do. Now we want to do even better, and are endeavouring to improve on the inevitable cock-ups which took place during our first few months.

Ground school and wet weather programmes seem almost non-existent elsewhere and our Bronze badge and other lectures during the downpours went down well and whiled away some of the bad weather days. We visited the RAF Upper Heyford radar room once a week during bad weather (and enjoyed excellent relations with the USAF in all respects, despite operating within their UHMRA).

## *Where we went wrong*

Most of our big mistakes were down to lack of preparation. It took exactly 12 weeks from beginning negotiations with the farmer to running the first course, so it was quite a rush to write and print the brochures, buy and C of A the fleet and winch, clear a derelict hangar, hire the staff and hundreds of other little jobs!

We didn't feel able to run evening trial lessons until quite late in the year because all the early evenings were spent keeping the fleet and vehicles seviceable. This improved greatly with experience and when the crop was harvested so that we were able to fly off the stubble (now sown to grass for this year). Hopefully a winter's preparation in the light of last year's mistakes will mean a really good start on March 8, as soon as our Polish wave soaring expedition ends.

Our pupils took us rather by surprise; we had many more part-trained or already-solo than I had imagined and it took a little while to work out how to make best progress with them. To illuminate this remark – and perhaps help other clubs and instructors – the principal categories we encountered were as follows:-

**"Thinking-about-giving-up-gliding-because-of-the-lack-of-progress".** We had expected to attract quite a few trainees in this category but were frankly startled by the number of such pupils and the horror stories they told. No wonder they found our brochure attractive! These poor people fall into all of the categories discussed below...

**Genuine *ab-initios*.** We had very few absolutely genuine *ab-initios*; most had had several previous trial lessons and many had attended courses.The few genuine beginners were never a problem and almost all went solo within the five day course. They had no bad habits to overcome and learned quickly with one or at most two instructors to work with. The most significant problems were fatigue (unused to being outdoors on the airfield all day) and changes in weather conditions from day to day.

**Pupils who had already done a course elsewhere.** This is embarrassing. The single most difficult category were those who had already done one or more courses elsewhere.

Almost invariably they had been rushed through exercises, not just too soon but much too soon (the typical nightmare logbook showed 8-15 launches including a "go" at take-off, a "go" at aerotowing, a "go" at landing, a "go" at circuits, etc). It took us two or three days just to teach them the basics (lookout, turning, heading-holding, speed control, etc) while to their frustration the beginners tended to leapfrog them.

We just about invariably failed to get these students solo in a week, although almost all rebooked for further training and went solo after a few more days with us. It is largely for these pupils that we have developed the two week course for this year.

**Part-trained club members.** This is good news. Club members tended to be quite well-trained and were very good at airfield hygiene – ground-handling, retrieve driving, etc – but had simply not flown enough, or often enough, or with far too many instructors. The typical club member we saw had done perhaps 35 launches but flew like someone who had done 20.

Their training tended to have been rather staid, with little or no emphasis on handling difficult situations like low circuits or cable breaks, not nearly enough stall training and – usually – not much soaring experience. However what they had been taught had generally been taught well and we had little difficulty in building on this and getting good results.

The typical club member student went solo on Wednesday or Thursday and ended the week in the K-8 with at least one Bronze leg and commonly with a Silver height.

**Advanced courses.** The advanced course members tended to be looking for Bronze or Silver badges, but could not get the necessary training or encouragement back at base. A lot came from the larger clubs which highlights something the BGA coaches have been saying for years – namely that there is a big need for post-solo training within club environments.

It commonly took us at least two days to get the "advanced" pupils up to a satisfactory solo standard, the usual shortfalls being stall/spin training, the ability to turn properly and hence soar, and aerotow/navigation/field landing checks. We found that a good deal of ground school was necessary to get pupils up to the standard we wanted; in the event the weather provided us with plenty of opportunities for this!

The advanced flying programme tended to be short triangular cross-country flights in the K-21 or K-13 – typically 60 to 100km – to teach soaring and practise scratching away from a winch launch. Very few had ever had a two-seater cross-country trip so this item was high on the priority list. We usually followed this up with some motor glider time, my favourite routes being navigation trips out to either Dunstable or Husbands Bosworth; tea and sticky buns while debriefing/rebriefing at the destination and field landing training on the way home. ➡

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After this we sent most of the advanced pupils on short cross-countries, in either the K-8s or the ASW-15. They roamed the local skies without being too much of a menace, although regrettably most were cheated of more badge legs by the rotten weather. Sorry!

### The weather

Like everyone else, we lost numerous days due to unremitting rain, and many of the flyable days were simply too windy for the K-8s. It wasn't thermic enough either and we only had a few usable wave days.

We did get one lucky and slightly unexpected break – the huge high that persisted during late May for several weeks. While most of the country was enveloped in fog until mid-afternoon for days on end, Hinton airfield turned out to be smack in the middle of a very useful convergence zone, radius about 20 miles, which gave us excellent soaring and climbs to almost 6000ft.

Several Silver distance briefings during this period included a requirement to follow the receding fog edge while keeping high and it must have been amusing to arrive after 5hrs with two or three Silver legs on the barograph to find the hangar just being unpacked at the destination!

### A question of standards

Everyone must naturally wonder about the quality of the early solo pilot being produced and I am happy to report that our standards are no lower than anywhere else and, if anything, are rather higher.

Our investment in new cable at regular intervals meant relatively few genuine cable breaks (so we had to do a lot of simulated ones!) and we used both the Falke motor glider and tactical aerotowing (despite the noise and cost) to maximum effect. I flew with just about every student at least once which enabled me to calibrate the performance of the instructors as well as the trainees.

I am aware of four course pupils we couldn't quite send solo but who then went solo the very next day at their home club; and of course we must have sent at least a few who would otherwise – sooner or later – have gone solo anyway in the club environment. But who cares? All that matters is that we had fun and got results.

I am also aware that some of our alumni have encountered scepticism on return to their own club but this seems to wear off very quickly once it is seen that they can in fact fly. Club instructors are after all genuinely interested in the well-being of their pupils, even if it is hard at first to believe that last week's stumblie is this week's K-8 pilot.

Twice I have been contacted (perhaps tongue-in-cheek) to comment on cases of suspected fraudulent logbook entries by our pupils. To put the record straight we had only seven students all year who failed to reach the 35 launches we guarantee in a week (and who therefore had a pro-rata refund of their course fee); the overall average achieved was 42 launches per pupil for advanced courses and 49 for solo courses. Most club pilots seem to find these figures quite incredible, hence the suspected fraud!

The highest figures recorded were 83 launches in a week and – on a different occasion – 35 in a single day, both by early solo pilot hours' builders. I don't approve of quite that much flying and reprimanded the instructors concerned, although the pupils themselves most emphatically did not complain! This year our guarantee will remain at 35 but I expect the achieved figures will drop slightly to around the low forties since I hope we will get better weather and do more soaring.

This question of standards – and others – have already been discussed at some length through the letters column of *S&G* with the broad outcome of sceptics saying it can't or won't work and our students saying that it jolly well did work. Still undecided? Come and try for yourself!

### Young people and the "standby scheme"

The aim of this scheme was to enable young people – initially students – to take up unsold course places at cost price and so learn to glide at a price they could perhaps afford. I've been involved for some years in the on-going BGA effort to encourage more young pilots and this seemed a good way of doing something practical about it.

Around a dozen students learned to glide in this way – mostly at Easter – and it was quite entertaining. Younger people tend, of course, not to be too well organised and didn't always seem particularly grateful, which could be a bit trying at times. However the scheme will continue in 1993 – expanded so that it encompasses young people and not just students – and I hope we get more trainees (and even more fun) in this way. I should be grateful for any help in publicising this scheme.

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**The K-13 on take-off.**

### *Women, the disabled and other minorities*

Partly to meet the Sports Council and BGA goals, partly because it seemed right and partly because we had Gary Bennett driving the winch and instructing from his wheelchair, we seem to have developed an unholy expertise in helping disabled people to learn to glide. We modified three gliders to include hand-operated controls and plan to continue this initiative.

We seem also to have had some success with women, training many more female pilots than the usual club ratio of 9%. I don't have a ready explanation for this but think it might be something to do with a relaxed attitude and a minimum of wasted time. This same reasoning would also perhaps explain a good success rate with (male) "hopeless cases" from the club instructing system – who turned out, very often, simply to be frustrated or over-stressed.

### *Older people*

One conspicuously prominent group were the recently retired or in many cases prematurely retired. Naturally they tended to learn at a slower rate and often got quite tired after a day's exertion at the launch point. But they were – in the main – very patient and thorough and almost always turned into good pilots albeit after a few days' extra training. This group also were in my mind when I planned the two week courses for this year.

### *Expansion plans*

I re-learned that K-13s are much better instructing tools than K-7s – so we're re-equipping with a fleet which will be mostly K-13s. I also re-learned that you can never have too much power in the winch engine, so that's being up-graded too.

The Falke was worth it's weight in gold for all sorts of reasons and this year we'll have two, although admittedly that is partly to cope with motor glider PPL training. The Falke can't replace the gliders for training but it's good sport and exceptional for dealing with many exercises and in particular for nervous pupils.

We learned the difficulty of operating on a short dusty unprepared site and Hinton's runways have been graded, the main run extended and 160 acres of crop sown to grass which should help. More to the point, we have taken on the nearby Edgehill airfield which has the potential to be superb. We have been working on it all winter to create large unobstructed grass areas and useful hangarage.

### *The Barking Mad GC!*

Barrie Elliott and my other friends at Bicester rapidly coined this term to describe our activities at Hinton and while I am reluctant to accept its validity I concede that it – along with other terms – seems to have stuck. So it will appear as our T-shirt logo!

### *Instructor training*

We ran one BGA assistant instructor course and half-a-dozen AEI courses. They are a lot of fun and we'll be running even more this year. Some candidates came to us out of a sense of curiosity but I think our lower prices drew much of the business; also, word is getting around that we have a good time! This is true.

The rather variable instructor standards reflected in many of our pupils' skills raise the interesting question of improved instructor training, and I have been working with the BGA national coaches to prepare a series of courses for 1993 which include "Instructor refresher" and "Full rating preparation" as well as the completion course which is already a part of the normal assistant instructor training.

**Hinton-in-the-Hedges**



**Edgehill**





Photo A. Mid-morning cu at 1030hrs on a very unstable day. Each cloud is a separate feature and none rise high.



Photo B. By 1130hrs the cu formed groups aligned along the wind. Groups of cloud can grow bigger.

# SKYWATCH – A Beginners Guide to Clouds

TOM BRADBURY

## *Part 6, Cumulo-Nimbus*

Cumulo-nimbus clouds can produce some of the most violent effects of the atmosphere with thunderstorms, cloudbursts, tornadoes, downbursts and fierce squalls. These clouds vary greatly in size and destructiveness; some produce nothing more than a brisk shower of rain. This is a description of some of the smaller and less dangerous cu-nim found in unstable polar air over the UK. A description of the more ferocious storm clouds which occur in tropical air is planned for a later issue.

### *Conditions for cu-nims*

Cu-nims usually develop when the air is unstable to heights well above the freezing level. In order to produce rain the cloud top nearly always has to rise above the freezing level. At sub zero temperatures it contains both water droplets and ice crystals. The vapour pressure over ice is less than over water and when they are mixed the ice crystals grow at the expense of water droplets. This forms snow which melts into rain when it falls below the freezing level.

### *Some warm clouds can give a shower*

This mixture of ice and water is not always essential for a shower; some big cumuli produce showers even though the temperature at the top is above zero. This is thought to be due to coalescence when large, faster falling drops collide with and grow by collecting the smaller droplets in their path. This takes rather a long time and is not so efficient as the ice/water process.

### *Where the energy comes from*

The energy available depends on the amount of latent heat released by condensation. This in

**Photo E. In mid-afternoon another tower of cu tried to form but failed.**



**Photo F. Big cu in advance of a long cu-nim line. Anvils were spreading from the south (left); all clouds vanished northwards.**





**Photo C. About 1200hrs the groups had grown larger with tendrils below showing strong lift.**



**Photo D. Around 1400hrs full sized cu-nims had developed.**

**Photo G. A relatively small tropical cu-nim growing on the upwind (right) side and showering on the left.**

turn depends on the amount of water vapour held in the air. The warmer the air the more water vapour it can hold and the greater the energy released when clouds form. Fig 1 shows a simplified tephigram. Pressure lines range from 1000mb (usually near sea level) to 150mb which is about 45000ft. The temperatures are shown from 30° on the right to –80° on the left. Three types of airmass are represented; arctic air, much the coldest, appears on the left; the shaded area shows the energy released when cumuli form in this very frigid air. The amount is relatively small which is why one rarely finds thunderstorms in high latitudes.

In the middle is polar air. The shaded area shows these clouds can release quite a lot of energy when the air moves into temperate regions like the UK. On the right is tropical air which has an enormous amount of energy available. This only reaches the UK in summer.

### *The highest cu-nims grow in tropical air*

Fig 1 shows that the top of the shaded area is usually low in arctic air (about 18000ft in this di-







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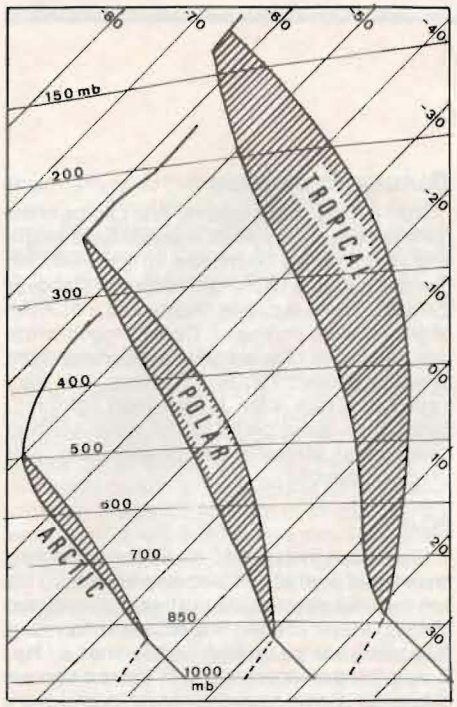



**Fig 1. How the amount of energy varies between arctic and tropical air.**

agram) and high in tropical air. In polar air the energy often reaches as high as 35 000ft. In very moist tropical air the positive energy has been found to extend above 45 000ft. In fact tropical cu-nims may rise so fast that the tops overshoot this level and go very much higher than shown here; a few radar measurements showed tops to 58 000ft. The size and ferocity of cu-nims is closely connected to the energy available, and the height to which the cloud grows.

## *Stages in the growth of a cu-nim over land*

Forecasts of cu-nims are largely based on the latest upper air soundings made at some upwind station. When these are plotted on a tephigram and modified to take into account the surface heating and the dew point one can find the condensation level (effectively the cloudbase) and the possible cloud top. The cloud is assumed to grow to the top of the shaded area; a vigorous cloud will overshoot this level and the final top may be several thousand feet higher.

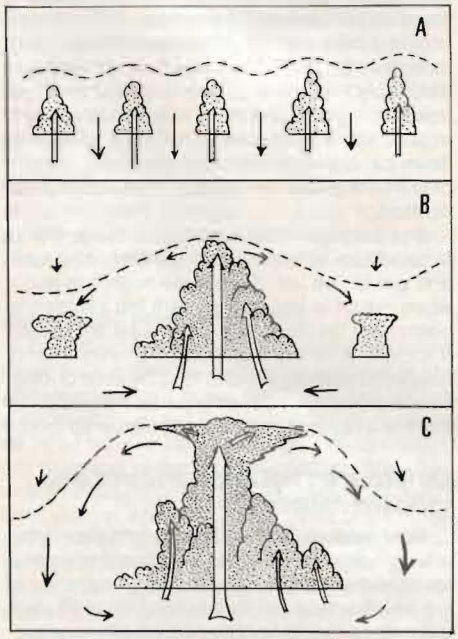



**Fig 2. Stages in the development of cu-nims.**

The first clouds rarely go shooting up to the theoretical maximum in one bound; it normally takes several hours before tops reach their full height. Fig 2 shows the process.

A. The first cumuli are both small and numerous. Each little cloud is an independent feature. As its top rises it draws in some of the surrounding air and, if this is relatively dry, the little cloud tower starts to evaporate. Evaporation cools it and the cloud soon decays. Tall thin clouds usually have a short life. The wider the base of cloud the longer it persists.

B. The next stage is for a number of cumuli to combine forming a clump. The outer clouds still suffer from erosion as they rise but the inner cells are protected by the relatively warm and moist surroundings. This group of clouds can now start to grow much higher and wider. The lifetime of the group is much longer than that of a single cell. The main mass of cloud grows taller as its base expands and the inflow of air increases.

C. The third stage is well formed cu-nim complete with anvil. Now the cloud dominates its surroundings. Subsidence all round suppresses all the lesser cumuli which were too slow in forming their own groups.

## *Pictures illustrating cu-nim development*

The first four photographs illustrate changes on a cu-nim day. There was a very unstable westerly airflow and the morning sounding showed that cu-nim could develop as soon as cloud formed. There was no lid to stop a cloud going straight up to nearly 30 000ft but it took many hours before cu-nims developed.

Photo A shows the sky at about 1030GMT (about two hours after the first puffs appeared). Most of the cu appear active but none extended high at this stage. One might set off on a cross-country with high hopes when the sky looks like this.

Photo B shows how the clouds had developed about an hour later. The sky still looks good but the clouds have begun to form groups aligned along the wind direction.

Photo C was taken about half an hour later when the cloud top was just beginning to show signs of turning into a cu-nim. The dark base had several hairy tendrils beneath, usually a reliable sign of strong lift nearby. At this stage one might begin to have doubts about completing a closed circuit flight.

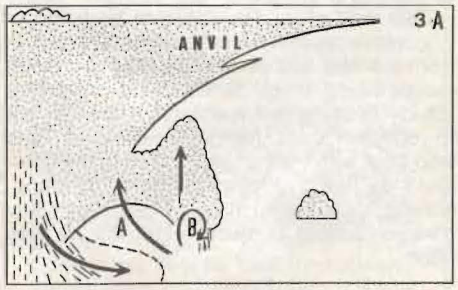
Photo D shows a fully developed cu-nim at about 1400GMT when it had the beginning of an anvil on the left and a shower falling from the central region. By this time the cu-nim had begun to dominate the sky and many of the lesser clouds had been suppressed. The shower clouds were still well spaced and one might hope to find a route round the cu-nim.

## *Small new clouds seldom grow once cu-nim are established*

At this stage it is difficult for a small cloud to grow fast enough to overcome the general inter-cloud subsidence. To succeed it needs a wide sunny area well away from the sink from adjacent cu-nims; it also helps if the outflows from distant showers collide to form a surge of lift.

Photo E shows a failed attempt. The growing cloud became overshadowed by a fully developed cu-nim which was up-sun. This delayed the rise of the first cloud tower. The delay was fatal because the lift was too weak to stop the stronger winds aloft blowing the top sideways before the tower was fully established. The cloudbase was not broad enough either; a wide base often indicates a large inflow of rising air, big enough to keep the summit rising fast. With too narrow a base the cloud ran out of energy.

## *Using the edge of cu-nims or going round them*



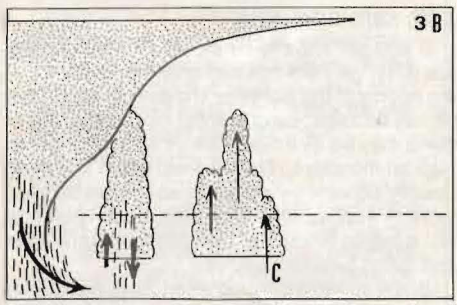




**Fig 3A. Region of smooth lift at A just ahead of cu-nim line. B marks possible turbulent zone.**
**Fig 3B. Large cu well clear of the cu-nim line. (See also picture F.)**

It is sometimes possible to fly along the leading edge of a line of cu-nim clouds using the lift which develops above a squall line. To do this one may need to tuck in under the overhanging anvil cloud. (Fig 3A.) This brings you uncomfortably close to the main shower area. This is sometimes a region where the cloudbase is higher and there are many miles of smooth strong lift (label A). The snag is that a new shower cloud can develop between you and the clear air to the right producing a zone of very rough air on the escape route (label B).

Fig 3B shows a different version when the cu-nim line has not produced a parallel squall line. Then the lift will not be continuous. Instead one may find a zone of big cu which form well ahead of the main cu-nim belt. In time these outriders (label C) grow into cu-nims themselves, but until they do one can use them to get away from the advancing storm. This is a more comfortable way of getting round the end of a cu-nim line. Photo F was taken after a climb to 14 000ft in advance ➡

of a long cu-nim line stretching from Wiltshire to the Chilterns. The cu-nim anvils were spreading over from the south (left of picture). To the north it was cloudless for some 50km.

### Isolated small cu-nims may develop lift on the upwind side

In contrast to the long line of cu-nims just described some small cu-nims may grow from the upwind end and rain out at the downwind end. Photo G shows a very small tropical cu-nim shortly after it started producing a shower from its downwind side. The wind was blowing from right to left and this cu-nim consisted of a series of cells. The youngest cu were growing at the upwind end (on the far right) and decaying as a small showering cu-nim with downdrafts on the left. With such clouds the best route is *via* the developing end.

This kind of cu-nim can also be found in England, especially where the wind comes in from the sea and cu-nim grow as the cloud moves inland. If you decide to explore such a cloud it is useful to know which is the way out to younger clouds upwind. Determined pilots who stick with their original cloud to the bitter end may find it reaches the lightning stage. Moving upwind when the climb gets rough may give you almost as much height with far less effort.

### Lift, rain and sink

If you get into the core of the lift, conditions are often very smooth and only the visibly moving needle of the altimeter shows how strong the lift has become. Even in small cu-nim the rate of climb may be well over 20kt. (It is far stronger in tropical monsters.) Near the top of the lift the air usually becomes very rough and it can be hard work to stay upright. The tops of many clouds are a region where the rising column turns over and forms turbulent eddies.

Some cu-nims develop when there is little vertical wind shear. When such clouds start to shower the rain falls straight back into the column of lift. After a short pause the heavy rain produces a downrush of chilled air. For a time up and down currents can exist close together. Presently the cooling and precipitation loading becomes so great that it kills all lift; the sink spreads through the cloud and becomes very strong. The cloud then starts to fall to bits.

Fig 4 illustrates the stages. One may be climbing up in the strong lift of a fresh developing cell only to find part of the circle takes you into rain. This sounds extremely noisy. For a few turns one may continue to climb in this half quiet half noisy environment. This is a good time to open out the turn in the quiet sector and make for a less stressful region. Staying close to the rain shaft is apt to end in a big loss of height when the rain produces widespread sink.

### Lightning

The risk of lightning is an even better reason for getting clear at this stage. Laboratory experiments show that collisions between ice particles and soft hail in the presence of super-cooled water results in charge separation. In a cu-nim the updraft brings up liquid water which is super-

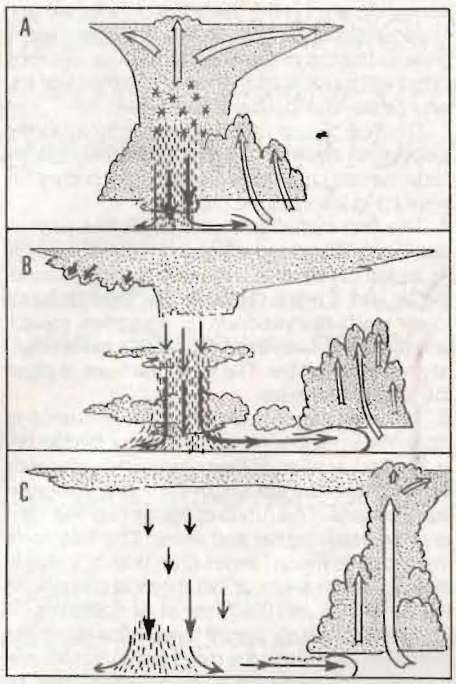



**Fig 4. Growth and decay of one cu-nim followed by triggering of a new one by the downdraft outflow.**

cooled above the freezing level. The downdraft carries ice crystals formed aloft. Turbulent mixing of ice and super-cooled water in the shear zone gives the ice particles time to grow into soft hail. (3mm particles were found in this zone during aircraft traverses.) Thus the optimum conditions for charge generation by ice particle collisions exists in this zone.

### Charge separation

The up and down currents also provide a means of separating the differently charged particles and building up a great potential difference within the cloud. Some researchers found a big negative charge built up at levels where the temperature was -10°C; the positive charge grew at the –20°C level. Although cu-nims vary widely, it seems that if you climb above the freezing level into the region where columns of lift and sink come close together you may be getting close to the source of lightning.

### Dangers of lightning

All metal aircraft keep their occupants fairly well protected from the effect of lightning strikes. Holes may be burned through the metal, particularly near sharp corners on rudders, tailplanes or wingtips, but the crew are unhurt. GRP and wooden gliders are at much greater risk. Although a number of pilots have had very painful shocks most survived the episode. Some aircraft measurements showed a gradient of 100 000 volts/m near the centres of charge. This is quite enough to give a very painful discharge in the cockpit, even if no full sized lightning flash occurs. A direct hit from lightning may be catastrophic for a wooden glider.

### Damage in cu-nims

Some thirty years ago cu-nim climbs were quite popular. Many pilots reached Gold height and some gained Diamonds. In 1960 Gordon Rondell set up a UK height record of just over 29 000ft. There was one fatality and a number of gliders were damaged. Derek Piggott wrote that one in five gliders had some damage after climbing above 15 000ft in cu-nims. This may have been due more to hail than lightning. Since then most pilots found wave soaring gives a less stressful way of achieving their Diamond climbs.

### Hail

Rain drops freeze to form soft hail when they are carried high above the freezing level. This soft hail falls down below the freezing level and picks up a layer of water. If it then gets into strong lift again it can go up high and do another lap. During this the water freezes to make a second skin of ice. Some hailstones grow many layers of ice this way before finally falling to the ground. The process works best when the lift and sink are kept separate by a wind shear which bends the column of lift.

### Wind shear and large hail

Cu-nims which grow in a strong vertical wind shear often produce the largest hail. Some very severe storms which grew in conditions of strong shear produced hailstones of 7cm diameter over England. Such huge stones are rarely formed but much smaller stones can do great damage to the leading edge of wings. Heavy metal aircraft have been badly dented by hail and a light aircraft (lucky not flying at the time) had much of the fabric stripped from its wings.

### Icing

The droplets of water in a cloud do not freeze as soon as they are cooled below zero. Many can remain liquid in temperatures of –20°C and some do not freeze till it reaches –40°C. Super-cooled droplets are not stable and if you fly into them they turn to ice and stick fast. At temperatures only just below zero only part of the drop freezes on impact, freezing releases latent heat and so some of the water remains liquid and flows back over wings and tailplanes. Here it may freeze along the hinge lines and ice up the controls.

If you are going up in strong lift there seems to be a delay between passing the freezing level and picking up ice. Severe ice seems to occur when the lift is lost and you are left blundering about near the cloud top. Cloud tops are usually turbulent and the rapid control movements needed to keep level seem to delay control icing. However, when you emerge into smooth air there is a risk that controls may freeze up then.

### Differences between ancient and modern sailplanes

Most modern GRP sailplanes with their accurately profiled wings suffer a serious drop in performance when they are iced up. A covering of ice which would hardly trouble an old Skylark will reduce the glide ratio of a Libelle to something approaching an ancient Dagling. Skylarks

would carry quite thick layers of ice on the wings without sinking rapidly. When the ice finally thawed there would be rather startling swish and crunch sounds as thin sheets of ice several feet across slid off the wings and bumped into the tailplanes.

### Sink between showers

One snag of flying on a cu-nim day is that the sink persists long after the shower cloud has departed. One can sometimes see the rain left behind by the evaporating cloud; it may show up as a bright curtain at low levels or as a rainbow under an insignificant scrap of stratus. Large areas of invisible sink left behind after the shower has gone make it hard to pick a good route to any usable cloud. Even when the sink has ended wet ground delays and sometimes prevents new thermals from forming.

Photo H was taken about ten miles behind a line of eastward moving thunderstorms. Strong sunshine had already begun to set off little puffs of lift but it took more than an hour before any thermals grew large enough to be usable. The tiny scraps of white cloud only showed where embryo thermals had been, not where they were. Any lift vanished as soon as the cloudlets appeared.

### Descent of air, downbursts and gust fronts

When sink hits the ground it spreads out sideways forming a gust front which may trigger off new cu-nims. In hot conditions, when the cloudbase is much higher than we usually meet in the UK, the sink can become extremely powerful. It is then termed a downburst or microburst. The microburst may not be visible in dry air. It has been the cause of several accidents to large passenger jets on final approach or just after takeoff. In dusty regions a microburst sets off a vortex-like swirl which expands outwards across the ground. Over the desert the process may end up as an expanding sandstorm which extends far beyond the originating cu-nim.

In the less violent conditions usually found in the UK one is not likely to encounter the 50-70kt sink of a downburst, but flying through the clear air behind a big cu-nim may take you through miles of distressingly heavy sink. This is one of the factors making cross country flights difficult on cu-nim days. One can see a way round the cu-nim but unseen regions of sink and absence of any usable lift put the next clouds out of reach.

### Snow showers in spring

The little cu-nims which bring scattered snow showers in spring are far smaller and less energetic than summer ones. Sink in and just behind a snow shower can be very strong for a short distance but it rarely extends far. If the ground is not seriously wetted by thawing snow the next soarable clouds are often close enough to reach after skirting a shower. Flying down sun a small snow shower looks dazzling white as if it were a serious obstacle but one may be able to skim round the edge without difficulty. This only seems to be true when the cloudbase is still high.

Beware of the long lines of snow showers which have a low cloudbase, especially if there is no sign of brightness beyond or if there are layers of grey cloud above. These often mark a sudden end to all thermals. Pushing through them may only take you into dead air and leave you with too little height to return.

### Cu-nims and dew points

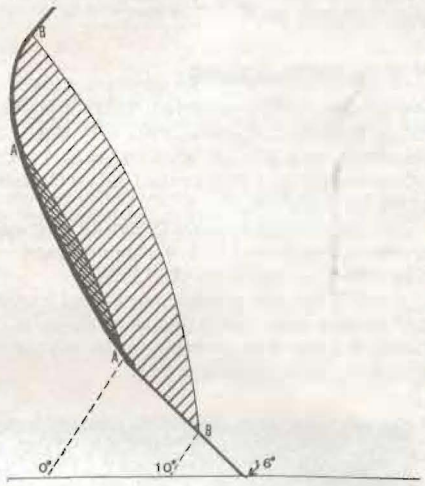



**Fig 5. How raising the dew point increases the energy.**

Fig 5 shows how a change in the dew point can make a big difference to the energy available. On this diagram a dew point of 0°C gives a cloudbase of 6400ft. The double hatched area under the curve A-A shows that very little energy would be released. If the dew point is raised to 10°C the cloudbase comes down to 2400ft, but a vast amount of energy is now available under the curve B-B.

The dew point indicates the moisture contained in the air. The higher the dew point the greater the moisture content. For example a dew point of zero Celsius means that every kilogramme of air contains only 4gm of water vapour. If the dew point rises to 25°C each Kg of air holds 20gm of water vapour. This means a great deal more energy can be released by condensation of the high dew point air.

### Dew point rise as a thunder warning

The dew points can be a useful indicator of the thunder risk during hot spells in summer. Many of our hot spells start off with dry air and dew points below 10°C. If the spell persists, and especially if a light southerly drift develops, the dew point starts to rise. (One can get the dew points from Volmet on radio or the telephone Dial-Up Fax.) Cu-nims can grow in air with a very low dew point but they dispose of more energy when the dew point is high. A dew point rising above 15°C is a warning; nothing may happen till the dew point approaches 20°C. Between 18°C and 20°C the risk of dangerous cu-nims grows very rapidly. High dew points are apt to precede severe thunderstorms.

The severe storms which arrive at the end of summer heat waves are very different from those which develop in cool unstable northwesterly flows. The next article describes these monsters.



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Latest zero resettable PZL Sensitive Variometers complete with speed to fly ring and flask. Standard size **£169**, Miniature **£199**. PZL expanded scale sensitive ASI 0-140 kts in 1½ turns or 0-200 kts in 1¾ turns **£97**. PZL TE Compensator **£25.90**, Stainless Steel Total Energy Probes **£18.60**, Reconditioned Sensitive IFR Altimeters 20,000' **£147.** 30,000' **£157.** New IFR 20,000 Altimeters **£159.90.** Surplus T/Slips, Glider Rate, with 12v Converter **£109.00.** Reconditioned 12V T/Slips **£144.** New Miniature 12V PZL Turn & Slip **£259.** Reconditioned Bendix 3¼" Artificial Horizons with new inverter **£349**. Airpath Panel Mount Compasses reconditioned **£43**, new **£48.90**. New IFR Pedestal Mount Compasses **£64.** Ex Ministry Accelerometers Standard Size **£82**, New IFR Mini Accelerometers **£169.00**.

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## RIKA LEAVES US



It is with great sadness we report that after a 38 year association with *S&G* Rika Harwood, our consultant editor, is leaving.

She has been a great friend to us and her encyclopaedic knowledge of all things connected with gliding, plus her fluency in several languages, has given us an invaluable back-up.

Rika, who came from Holland to marry Godfrey, was a Nationals pilot and held several UK women's records for some years. The last one, her 100km goal (Olympia 2B) flown in 1957, was claimed by Vivien Haley in 1986.

They both flew from Lasham and Rika first became involved with *S&G* after the World Championships at Camphill in 1954. She started to help out Anstace Gladstone in the office on an ad hoc basis. Taking over from her completely in 1958, she quickly become indispensable to the editor, Doc Slater, and in 1960 was made production manager and assistant editor. In 1967 Rika became associate editor.

Since I have been editing *S&G* she has given the same dedication and has been an exceptionally sharp and diligent proof reader.

Thankfully Rika will continue to write for us and knowing her generosity of spirit will still be on the end of the telephone when we are stumped. But we are going to miss her tremendously and can't thank her enough for her contribution to S&G.

## FURTHER CHANGES

We are also saying goodbye to Cheiron Press. In the interests of economy the BGA have decided to deal with the advertising sales and administration and your contact will be Debbie at the Leicester office.

You can reach her on 0533 531051 throughout the working day or leave a fax message during the evening on 0533 515939.

Cheiron Press was formed by Peggy Mieville and taken over by Helen Ritchie on Peggy's death. We would like to thank Helen and her assistant Lynda for all their help.



**Debbie, your contact for display and classified advertisements.**

**April-May advertising deadlines**
Display advertisements – February 20 and classified advertisements – March 4.

Obviously editorial copy is needed long before this. Our main deadline is January 27 with club news and letters accepted up to February 9.
**Gillian Bryce-Smith,** *editor*

## *AGM AND DINNER DANCE*

This is the last reminder that the BGA AGM, dinner-dance and presentation of annual trophies is on Saturday, February 27, at the Forte Post House at Crick, Northants, just off the M1 motorway.

The programme starts at 10.30am with an open session at which you can discuss future plans for the association. The AGM at 2.30pm will be followed by a presentation by Bill Scull, BGA director of operations, of parts of the new safety lecture for 1993. The evening concludes with the dinner-dance. There are special rates for accommodation at the hotel for the Saturday night.

Booking forms are available from the BGA office for the buffet lunch, dinner and accommodation and should be submitted at least ten days before the event. Attendance at the AGM is, of course, free of charge.
**Barry Rolfe,** *BGA administrator*

## *S&G* 1993 YEARBOOK

The *S&G* Yearbook will be out in early spring filled with all the necessary information for the coming season from an airspace update, records, annual statistics and club directory to competition numbers. In addition some of our most popular contributors have written special articles on a wide variety of subjects with Platypus being more wicked than ever.

It costs £3.50 and is £3.95 including p&p from the BGA, or get your club to make a bulk order. There is a generous discount which will help club funds.

## BGA 1000 CLUB LOTTERY

The results of the BGA 1000 Club Lottery draw are as follows: November:- First prize – Dr D. N. Symon (£106.25) with the runners up – Ms V. Hale, K. S. Davies, N. W. Prior, Mrs N. Snook and G. Harwood – each winning £21.25. December: First prize – B. Dawe (£113.75) with the runners up – P. L. Bisgood, J. R. Crosse, P. Molloy, P. J. Charnell and D. J. Penn-Smith – each winning £22.75.

# GLIDING CERTIFICATES

ALL THREE DIAMONDS

| *No.* | *Name* | *Club* | *1992* |
|---|---|---|---|
| 381 | Housden, S.R. | Cotswold | 28.7 |
| 382 | Dibdin, A.J. | Cambridge Univ | 28.7 |
| 383 | Williamson, M.B. | Booker | 28.7 |
| 384 | King, P.A. | Stratford on Avon | 28.7 |
| 385 | Wilson, R.C. | Deeside | 6.8 |
| 386 | Duffin, E.R. | South Wales | 25.8 |
| 387 | Warren, J.R. | Booker | 4.8 |

DIAMOND DISTANCE

| *No.* | *Name* | *Club* | *1992* |
|---|---|---|---|
| 1/569 | MacGregor, A.R. | Dorset (in France) | 22.7 |
| 1/570 | Housden, S.R. | Cotswold | 28.7 |
| 1/571 | Evans, A.D. | Booker | 28.7 |
| 1/572 | Taylor, P.A. | Shenington | 28.7 |
| 1/573 | Dibdin, A.J. | Cambridge Univ | 28.7 |
| 1/574 | Williamson, M.B. | Booker | 28.7 |
| 1/575 | May, J.I. | Bicester | 28.7 |
| 1/576 | Barrett, G.L.J. | Oxford | 28.7 |
| 1/577 | Boyce, F. | Oxford | 28.7 |
| 1/578 | King, P.A. | Stratford on Avon | 28.7 |
| 1/579 | Wilson, R.C. | Deeside | 6.8 |

DIAMOND HEIGHT

| *No.* | *Name* | *Club* | *1992* |
|---|---|---|---|
| 3/1091 | Grimley, A.P. | Avon | 24.11.91 |
| 3/1092 | Fellis, M.A. | Northumbria | 18.7 |
| 3/1093 | Peck, J.D. | Bicester | 14.6 |
| 3/1094 | Akerman, T. | Phoenix (in France) | 13.4 |
| 3/1095 | Duffin, E.R. | South Wales | 25.8 |
| 3/1096 | Sword, C.D. | Northumbria | 1.9 |
| 3/1097 | Allcoat, N.J. | SGU | 4.9 |
| 3/1098 | Warren, J.R. | Booker (in France) | 4.9 |

GOLD BADGE

| *No.* | *Name* | *Club* | *1992* |
|---|---|---|---|
| 1636 | Elliott, A. | Phoenix | 28.6 |

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| | | | |
|---|---|---|---|
| 1637 | Middleton, R.J. | SGU | 1.7 |
| 1638 | Teagle, C. | Yorkshire | 19.7 |
| 1639 | Decloux, Ariane | Cambridge Univ | 22.7 |
| 1640 | Harper, S.J. | Cranwell | 22.7 |
| 1641 | Fitzgerald, J.F. | South Wales | 27.7 |
| 1642 | Gretton, R.E. | P'boro & Spalding | 28.7 |
| 1643 | Turner, S.M. | P'boro & Spalding | 28.7 |
| 1644 | Carr, M.T. | Lasham | 22.7 |
| 1645 | Woollard, Susan | Bristol & Glos | 28.7 |
| 1646 | McWhirter, A.S. | Wolds | 1.8 |
| 1647 | Conyers, P.B. | Glyndwr | 15.9 |
| 1648 | Hanlon, J. | Oxford | 26.8 |

GOLD DISTANCE

| *Name* | *Club* | *1992* |
|---|---|---|
| Eastburn, M.P. | Aquila | 28.6 |
| Elliott, A . | Phoenix | 28.6 |
| Middleton, R.J. | SGU (in Hungary) | 1.7 |
| Decloux, Ariane | Cambridge Univ | 22.7 |
| Harper, S.J. | Cranwell | 22.7 |
| Allison, D.W.K. | Bicester | 22.7 |
| Matcham, K.S. | Lasham | 22.7 |
| Watson, A.F.W. | Cranwell | 22.7 |
| Coughlan, J.R. | Anglia | 22.7 |
| Mellor, P.G. | Booker (in France) | 25.7 |
| Fitzgerld, J.F. | South Wales | 27.7 |
| Rebbeck, H.A. | London | 28.7 |
| Villa, C. | Cambridge Univ | 28.7 |
| Gretton, R.E. | P'boro & Spalding | 28.7 |
| Turner, S.M. | P'boro & Spalding | 28.7 |
| Carr, M.T. (in France) | Lasham | 22.7 |
| Woollard, Susan | Bristol & Glos | 28.7 |
| McWhirter, A.S. | Wolds | 28.7 |

GOLD HEIGHT

| *Name* | *Club* | *1992* |
|---|---|---|
| Tanner, D.G. | Booker (in Spain) | 3.4 |
| Johnson, D.S. | Blackpool & Fylde | 5.7 |
| Cooper, A.M. | North Wales | 19.7 |
| Teagle, C. | Yorkshire | 19.7 |
| Silverstone, Elizabeth | Glyndwr | 1.9 |
| Murfitt, R. | Lakes | 1.8 |
| McGregor, J.M. | Yorkshire | 2.8 |
| Lynchehaun, J. | Glyndwr | 5.8 |
| McWhirter, A.S. | Wolds | 1.8 |
| Ley, D.R. | Phoenix (in France) | 13.4 |
| Conyers, P.B. | Glyndwr | 15.9 |
| Adams, G.A. | Devon & Somerset | 6.3 |
| Hanlon, J. | Oxford | 26.8 |
| Marsh, C.A. | Cotswold | 1.9 |
| Driver, D.S. | Northumbria | 4.9 |
| Grant, Anne | SGU | 4.9 |
| Graham, R.C. | Blackpool & Fylde | 4.9 |

# BGA ACCIDENT SUMMARY

Compiled by DAVID WRIGHT

| Ref No. | Glider Type | BGA No. | Damage | Date Time | Place | | Pilot/Crew Age | Injury | Hrs |
|---|---|---|---|---|---|---|---|---|---|
| 76 | Bocian | ? | M? | 5.6.92 1904 | Easterton | | 62 | N | 430 |
| | | | | | | P2 | 0 | N | 0 |

After a launch limited to 600ft by cloudbase, the pilot started his approach and finding he was too high, started a sideslip. The sideslip apparently continued down to roundout at about 2ft and the glider landed heavily. The pilot was out of current practice on the club two-seater and had not allowed for the poor airbrakes or the sideslip descent.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 77 | K-8B | 1953 | M | 24.5.92 1015 | Easterton | 27 | N | 2 |

While concentrating on avoiding a number of marked rabbit holes the early solo pilot failed to properly monitor the landing. A very late roundout combined with the slightly uphill slope of the strip resulted in a heavy landing. The strip was at right angles to the take-off run and approached over high ground. The club now restricts its use.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 78 | Std Libelle | 3750 | M | 20.5.92 1715 | Kirton in Lindsey | 44 | N | 220 |

Returning from a cross-country, the pilot joined the circuit behind two other gliders. One landed alongside a glider waiting to launch and a K-6 landed behind this to one side. A landing area well in front of the K-6 was chosen but the glider stalled at 6ft as the pilot saw a tug landing across wind and opened his brakes to land short.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 79 | Twin Astir | 3826 | M | 2.6.92 | Hethersett | 34 | N | 180 |
| | | | | ? | | P2 47 | N | 122 |

On a cross-country the pilot had to make a field landing so chose a set aside field that he had biked across two weeks before. The field looked light brown with green areas. Upon landing the glider's wing struck a 4ft clump of ragwort and slewed round. Wet conditions had enabled fast growth of old crops and weeds in the field.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 80 | K-13 | 2405 | W/O | 16.6.92 1600 | Booker | 31 | N | 287 |
| | | | | | | P2 43 | M | 0 |

During circuit training P1 allowed his student to become so low that a field landing was needed. With no good fields available, he chose a small sports field and S turned to lose height. In doing this he landed towards the side hedge and, unable to stop, shut the brakes and tried to bounce over it. The left wing hit a tree and the glider crashed.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 81 | K-6CR | 1341 | M | 21.6.92 1530 | Wormingford | 26 | N | 19 |

While local soaring the pilot allowed himself to drift too far downwind. His return to the airfield was through an area of sink in a blue hole and he could not reach the runway. He landed in a field of wheat which damaged the rear fuselage and tailplane.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 82 | ASW-20 | 2620 | S? | 13.6.92 1530 | Nr Abergavenny | 40 | M | 2822 |

The pilot failed to move towards an area of good landing fields when he got low and had to use a small field with a 1:10 upslope. He was low and slow after selecting half land flap and misjudged his approach to the steep field. He did not have enough speed to flare and so hit the field hard, caught a wingtip and groundlooped.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 83 | K-13 | 1608 | M | 30.5.92 1530 | North Weald | 58 | N | 569 |
| | | | | | | P2 34 | N | 8 |

P2 flew some steep turns then asked P1 to demonstrate a chandelle. After performing this P1 extended the airbrakes and heard a bang. The fabric had torn away from a 7ft by 2.5ft area on the upper surface of the wing but the glider landed safely. It is possible that snatched brakes, opened at high speed could cause the fabric to balloon and strip.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 84 | Pegasus | 3854 | M | 21.6.92 1430 | Nympsfield | 48 | N | 78 |

After a poor winch launch the pilot started her downwind checks, but did not touch the undercarriage lever as the wheel was still down. During the approach the u/c lever was mistaken for the spoilers and the pilot did not realise this until an overshoot seemed likely. The wheel was down but not locked when the glider landed. ➡

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SILVER BADGE

| No. | Name | Club | 1992 |
|---|---|---|---|
| 9005 | Guy, C. | Kent | 14.9 |
| 9006 | Seddon, T. | Midland | 27.6 |
| 9007 | Colman, R. | Burn | 5.9 |
| 9008 | Hayter, G.D. | Kent | 14.9 |
| 9009 | Birlison, F.G.T. | Cotswold | 13.6 |
| 9010 | Lloyd, J. | Avon | 5.9 |
| 9011 | Whitcombe-Smith, G. | Mendip | 18.7 |
| 9012 | Manchett, D.P. | Glyndwr | 1.9 |
| 9013 | Bishop, A. | Avon | 23.6 |
| 9014 | Cramman, I. | Wrekin | 18.8 |
| 9015 | Langton, M.H. | Cambridge Univ | 30.5 |
| 9016 | Johnson, D.S. | Blackpool & Fylde | 18.8 |
| 9017 | Dolling, P.J. | Cranfield | 29.8 |
| 9018 | Hawley, N.L. | Cranwell | 31.8 |
| 9019 | Clarke, N. | Avon | 26.6 |
| 9020 | Perrin, J.P. | North Wales | 19.7 |
| 9021 | Hales, C.S. | Avon | 22.7 |
| 9022 | Docherty, A.J. | Humber | 29.8 |
| 9023 | Marwaha, T.S. | Wyvern | 22.7 |
| 9024 | Palmer, D. | Four Counties | 13.6 |
| 9025 | Turley, R.P. | Pegasus | 28.6 |
| 9026 | Strachan, J.D. | Welland | 25.5 |
| 9027 | Densham, D.N. | Chilterns | 23.9 |
| 9028 | Brook, A. | Essex | 3.5 |
| 9029 | Lamb, J. | Ulster | 24.6 |
| 9030 | Poundsbery, A. | Southdown | 10.10 |
| 9031 | Prosser, C.J.A. | Glyndwr | 14.6 |
| 9032 | Knowles, M. | BFG | 24.7 |
| 9033 | Griffiths, G.S. | Vectis | 21.8 |
| 9034 | Miles, P. | London | 15.10 |
| 9035 | Wardle, S.C. | Lasham | 9.10 |
| 9036 | Noonan, P.G. | Enstone | 14.8 |
| 9037 | Davis, K. | Kent | 9.10 |
| 9038 | MacKenzie, B. | Wrekin | 27.6 |
| 9039 | Harding, P.J. | Devon & Somerset | 24.7 |
| 9040 | Davies, N.C. | RAE | 29.10 |
| 9041 | Gray,T.J. | London | 4.9 |
| 9042 | Oldfield, C.J. | Devon & Somerset | 30.7 |
| 9043 | Cooper, A.M. | North Wales | 1.11 |
| 9044 | Austin, G.R. | Bicester | 28.7 |
| 9045 | James, J.P. | Cornish | 20.9 |
| 9046 | Burns, K.J. | Borders | 6.8 |
| 9047 | Henderson, F.J. | Deeside | 7.11 |
| 9048 | Alcock, A.J.H. | Anglia | 18.10 |
| 9049 | Watson, S.R. | Staffordshire | 28.7 |
| 9050 | Todd, A. | Shenington | 29.8 |
| 9051 | Underhill, R.M. | Oxford | 29.8 |

UK CROSS-COUNTRY DIPLOMA

**Complete**

| Name | Club | 1992 | |
|---|---|---|---|
| Hahnefeld, M.E. | | Southdown | 20.6 |
| Sinton, J.R.R. | | Clevelands | 27.6 |
| Harland, Sarah | | Lasham | 28.7 |
| Johnston, J.A. | | Sackville | 29.8 |
| Trevethick, P.J. | | Lincolnshire | 29.8 |

**Part I**

| Name | Club | 1992 | |
|---|---|---|---|
| Brewer, T.T.H. | | Southdown | 20.6 |
| Munro, R.M. | | Aquila | 28.6 |
| Blackmore, S.R. | | Aquila | 28.6 |
| Holland, M.J. | | Oxford Univ | 21.7 |
| Bennett, D.R. | | Stratford on Avon | 24.7 |
| Harding, P.J. | | Devon & Somerset | 24.7 |
| Meeks, Maureen | | Avon | 24.7 |
| Hooson, B.J. | | Cambridge Univ | 28.7 |
| Cooper, J. | | Aquila | 28.7 |
| McLaughlin, N.M. | | P'boro & Spalding | 26.7 |
| Harland, Sarah | | Lasham | 28.7 |
| Davis, C.K. | | Cambridge Univ | 29.7 |
| Jones, M.A. | | Anglia | 15.8 |
| Thirkill, Lois | | P'boro & Spalding | 15.8 |
| Scott, J.W. | | Avon | 29.7 |
| Henderson, A. | | Borders | 7.8 |
| Wearing, G.F. | | Blackpool & Fylde | 14.8 |
| Wales, R.J. | | Booker | 29.8 |
| Balcombe, R.W. | | Kent | 29.8 |

## Corrections

*In the last issue, p342, we gave Dianne Steel's club as the Vale of Neath. In fact she flew with the Vale of White Horse GC.*

* * *

*Newton Books apologise for the misleading information in their advertisement in the last issue, p355. Both the pre-publication and the list price of David Ince's book, Combat and Competition, are incorrect. In addition the first limited edition is not a hard back – this won't be available until later in 1993. The advertisement in this issue has the corrected information.*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 85 | DG-100 | **** | N | **.5.92<br>**** | **Incident Report** | 27 | N | 41 |

As per agreed procedures, gliding was started only after notifying the local Air Traffic Control center so that commercial traffic could be re-directed clear. Some hours later, after a radio message had been broadcast to all gliders that a jet was about to transit the area, a Tristar jet passed close to a number of gliders and an airmiss was filed.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 86 | Blanik | ? | S? | 13.6.92<br>1230 | Enstone | 43<br>P2 0 | M<br>N | 1322<br>0 |

P1 arranged with the winch operator to give his student a simulated failed launch at height. However, before this point had been reached, an actual failure occurred and P2 was slow to react. P1 failed to take over quickly enough to prevent the glider stalling in from about 20ft.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 87 | LS-7 | 3490 | M | 1.7.92<br>? | Sisteron<br>France | 43 | N | 250 |

While soaring in France the pilot had to make a field landing. After a normal touchdown he found the field selected was freshly ploughed and that the soft soil contained many rocks which slightly damaged the underside of the glider as the main wheel dug in.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 88 | DG-300 Elan | **** | M | **.6.92<br>**** | **Incident Report** | 31 | N | 556 |

While on a cross-country conditions deteriorated and the pilot landed in a pasture field with a herd of cattle at one end. He learnt there was a bull amongst the cows and so was unable to safeguard the glider until the retrieve crew arrived an hour later. By this time the cattle had caused much minor damage.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 89 | K-13 | ? | S | 21.6.92<br>? | Portmoak | 48<br>P2 40 | N<br>N | 599<br>0 |

After a normal circuit and final turn the student used too much airbrake on finals and the glider became too low. P1 failed to take over in time to prevent an undershoot and the wing hit a sign post and was broken.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 90 | Skylark 3F | 950 | M | 13.6.92<br>1345 | Portmoak | 35 | N | 24 |

As there was a lot of activity on the ground the pilot decided to make a high, steep, full airbrake approach. Unfortunately, full airbrake was used right to the ground and the roundout was left too late to prevent a heavy landing.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 91 | Discus | ? | M | 17.6.92<br>1830 | Camphill | 40 | N | 327 |

The pilot was making his first flight in the BGA's Discus. He chose to land slightly across the winch cable runs to be more into wind. On finals there was a strong wind gradient which was compensated for by reducing the airbrake. A normal landing was made short of the first cable. Bumping over the second, the pilot's head broke the canopy.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 92 | Std Libelle | 1630 | S+ | 21.6.92<br>1215 | Booker | 50 | N | 172 |

The left wing dropped during the initial stages of the aerotow and was only just picked up with full stick. Bouncing into the air, the pilot felt something was wrong and released at about 50ft. He turned back to land downwind and then could not raise the lower wing before he spun in. The left aileron was not connected. (There was no positive control check.)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 93 | Pirat | 1779 | M | 14.6.92<br>1346 | Gamston | 49 | N | 21 |

The pilot had to make a landing in a 10kt crosswind. He encountered some lift in the circuit and was rather high and fast on finals. The glider touched down to the left of the runway centre line and the wingtip caught in standing crop causing a groundloop. The glider then hit a farm harrow which damaged the nose skid.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 94 | Capstan | 1106 | S | 28.6.92<br>1645 | Corby, Northants | 59 | N | 135 |

While returning from a cross-country the pilot had to make a field landing. He chose a field of uncut grass and made a normal landing. However, the field was found to be deeply rutted and, although the glider landed along the ruts, these were sufficiently deep to damage the fuselage.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95 | Astir 77 | 3811 | M | 16.5.92<br>1530 | Saltby Airfield | 49<br>P2 0 | N | 92 |

As there were gliders parked on the runway the pilot decided to land on the grass alongside it.While doing this the right wingtip caught in the long grass and the glider groundlooped.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 96 | K-7 | 1499 | M | 30.6.92<br>1400 | Hinton-in-the<br>Hedges | 59<br>P2 45 | N<br>N | 958<br>0 |

After a demonstrated launch P2 flew the second. He held the glider down and allowed the speed to build up. After briefing another launch was flown and P2 handled the launch as briefed. P1 saw the speed had fallen to 35kt but did not take over in time to stop a heavy landing. The winch driver had aborted the launch as a light aircraft flew over.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 97 | K-7 | 3344 | M | 24.6.92<br>1849 | Gamston | 30<br>P2 16 | N<br>N | 243<br>3 |

The visiting early solo pilot was being given a check flight when the glider was allowed to get too slow on final approach. The instructor failed to increase speed or reduce the full airbrake and the glider landed heavily with no flare.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 98 | Kestrel 20 | 2048 | W/O | 6.6.92<br>? | Chipping | 46 | S | 312 |

As the aerotow started the glider's left wing touched the ground. The pilot managed to level the wings, but became airborne then over corrected to avoid getting too high and hit a ridge with the mainwheel. The wings flexed and one caught on the ground rotating the glider until it flipped over and crashed partially inverted.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 99 | Pegasus 90 | 3737 | S | 26.6.92<br>1453 | Newport Pagnell | 64 | M | 115 |

While on a cross-country the pilot had to make a field landing. Rather than land at a nearby airfield he decided to land in a big "grass field". On final approach he noticed that the field in fact contained a standing crop of oats and the glider groundlooped, breaking the fuselage.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 100 | K-7 & K-23 | 2320 | M | 21.6.92<br>1450 | Dunstable | 64 | N | 6 |

The early solo pilot saw there were two parked gliders, four cars driving along the perimeter road and a tractor mowing the airfield. He aimed to land between the gliders and tractor but got too low and crashed into one of the gliders. Considerable damage was done to both gliders and the pilot of the parked glider was knocked over.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 102 | K-18 | AGA16 | M | 21.6.92 1400 | Odiham | 27 | M | 3hrs 47min |

The early solo pilot was starting to signal too fast when the winch cable broke. The nose was lowered very sharply producing negative *g*. One rudder pedal ratchet, probably not correctly seated before take-off, came undone, the ballast weight moved and the pilot's glasses came off. The glider landed downwind and groundlooped.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 103 | K-21 | AGA11 | M | 19.4.92 1515 | Odiham | 60 | N | 5000 |
| | | | | | P2 | 30 | N | 20 |

During the recovery from a demonstration loop the front canopy detached and was blown clear of the aircraft. Regaining steady flight, the pilots observed the landing position of the canopy and then landed the glider safely. It is possible that the canopy jettison lever may not have been fully secured.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 104 | K-8 | 3348 | M | 15.6.92 1915 | Keevil | 31 | N | 16 |

After a soaring flight the pilot found he could not quite make it back to the airfield and had to land in a small grass field. The final turn was too close to the field and, despite a full airbrake approach, he overshot. The glider failed to stop until it collided with the hedge at the end of the field.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 105 | SHK | 3310 | M | 27.6.92 1430 | County Kildare | 59 | N | 206 |

While on a Silver distance the pilot chose a field from 2500ft. It appeared to be cropped silage surrounded by several fields of dark green wheat. It was not until on the downwind leg that he realised it contained ripe barley. With no height to change fields he made a fully held off landing in the crop. (The pilot was wearing sunglasses.)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 106 | Vega | 2467 | M | 27.6.92 1430 | Carlton Bank | 55 | N | 899 |

On an aerotow retrieve from another gliding club the tug created a dust cloud that obscured the glider pilot's view. The pilot corrected as the left wing dropped but the glider then veered to the right and caught a wing in the long heather alongside the runway. It groundlooped which split the rear fuselage.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 107 | K-18 | 2791 | M | 27.6.92 1338 | Seighford | 39 | N | 40 |

The pilot made a high approach from a normal circuit in a light, variable wind. The landing was fully held off but 300-400 yards further into the field than was normal. This part of the new airfield was known to be rough in areas and the glider hit a deep rut damaging the underside of the fuselage.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 108 | LS-6B | 3791 | M | 28.6.92 1300 | Gransden Lodge | 55 | N | 1846 |

The pilot started the aerotow with negative flap selected and the stick back. As the speed increased he lowered the flaps for take-off. At this point the left wing dropped and the glider groundlooped into a rape field. The left flaperon was not connected and the pilot was in the habit of not doing positive control checks.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 109 | Phoebus 17c | 2761 | M | 20.6.92 1745 | Burn | 50 | N | 159 |

Seeing three other gliders approaching the runway the pilot decided to land long, rather than short as per club instructions, "to leave maximum room". After a cramped circuit and fast touchdown the glider bounced back into the air and the pilot induced a series of oscillations. Before he regained control the glider stalled and landed heavily.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 110 | Std Cirrus | 2501 | S | 25.6.92 1430 | Burn | 46 | S | 165 |

To avoid a long aerotow queue the pilot decided to take a winch launch. He was current on the winch but had not winched this type before. After a slow initial launch he lowered the nose, at which point the winch driver stopped the launch. However, the pilot pulled back again and the glider stalled. It landed very heavily, injuring the pilot's back.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 111 | K-7 | ? | S | 21.6.92 ? | Rattlesden | 31 | N | 141 |
| | | | | | P2 | 25 | N | 0 |

After a simulated cable brake P1 decided to take control as P2 tried to land straight ahead but was too high. P1 felt a resistance on the airbrakes and again asked P2 to take his hands off all controls. He apparently did this but may have obstructed the airbrake lever with his knee and P1 could not close them. The glider landed heavily.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 112 | Puchacz | 3658 | M | 28.6.92 1757 | Husbands Bosworth | 46 | N | 140 |
| | | | | | P2 | 34 | N | 22 |

After a local soaring flight P1 decided to land short to avoid a number of gliders on the main part of the airfield. He misjudged the approach and hit a gate post in the boundary fence. He could have turned in early and landed up the field after overflying the other gliders.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 113 | K-13 | 1611 | S | 17.7.92 1715 | Clwydian Hills | 44 | M | 11 |

4½ hrs into a 5hr flight the pilot was utilising ridge and weak wave. He returned to the ridge after pushing out into the valley, as he had done several times before. However, this time at 1800ft, the force of the wind blew the glider back over the ridge and into strong sink and forced it on to the ground.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 115 | Nimbus 2B | 2657 | M | 14.7.92 1600 | Sleap | 66 | N | 1103 |

The pilot returned to the airfield after 2hrs soaring and failed to notice the wind had changed direction until he was on finals. He touched down early, but fast, to avoid a glider ahead and allowed the glider to drift to the side of the runway rather than aim at the other glider. The wingtip caught in tall weeds, causing a groundloop.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 116 | K-13 | 3467 | W/O | 18.7.92 1425 | Snitterfield | 29 | M | 49 |

Ten months after his last flight the pilot successfully flew three comprehensive check flights before being sent solo. On the approach the glider ahead turned slightly into wind, across his intended landing path. He turned slightly to keep clear, flared rather late and a wing touched. The glider bounced, turned and flew into the clubhouse.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 117 | DG-300 | 3356 | M | 6.7.92 1716 | Nr Keymer | 64 | N | 117 |

While ridge soaring the pilot set off into wind to cross a poor area and had to increase speed. Arriving at the hill he was below hill top level, found no lift and had to make an immediate field landing. With no time to choose, he landed in a field of waist high wheat which groundlooped the glider damaging a wing.





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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 118 | K-8 | 1563 | M | 5.7.92<br>1515 | Easterton | 49 | N | 1 |

On his first flight in the single-seater the early solo pilot rounded out rather too high. As a result the glider stalled from about 6ft and landed tail first, damaging the fuselage.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 119 | Bocian 1E | 1804 | N | 23.7.92<br>1030 | Halesland | 60<br>P2 66 | N<br>S | 967<br>0 |

During training P2 made a slightly firm landing that caused no concern to P1 until he saw his student was in considerable pain. He was very tall and had to sit with his bottom at the very rear of the seat to get full rudder control. This left about 6in of his back unsupported. His head had flicked back on landing causing a fractured vertebrae.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 120 | K-13 | 1652 | M | 31.7.92<br>1240 | Kinneston | 39<br>P2 46 | N<br>N | 1650<br>83 |

During an AEI course the student allowed the instructor, acting as a beginner, to get too low and they could not make it back to the airfield. P1 took over and chose a field which was too short so he initiated a groundloop to stop rolling down a slope. The glider turned through 180° and rolled backwards down the slope into banking.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 121 | ASH-25 | 3909 | M | 25.7.92<br>1850 | Aboyne | 45<br>P2 0 | N<br>N | 2600<br>? |

During a type familiarisation flight the instructor failed to monitor P2's landing check actions and failed to notice that the u/c was not lowered. The glider landed on the runway damaging the fuselage.P1 was tired and it is believed that there was no gear warning fitted.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 122 | ASW-24 | 3757 | M? | 25.7.92<br>1515 | Nr Malton, Yorks | 59 | M | 735 |

In an area of standing crop the pilot found two grass fields and, as one had a horse in it, chose the other. Upon landing he found that the glider was not slowing down as normal because the field was sloping downhill and it ran into a wood and barbed wire fence. The pilot's head hit the canopy and his face was cut by barbed wire and broken canopy.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 123 | Cirrus VTC | 1822 | S | 25.7.92<br>1600 | Nr Lasham | 36 | N | 1400 |

During a competition final glide, sink was encountered and the pilot left his decision to land in a field too late. A cramped circuit resulted in the glider landing deep into an otherwise suitable field. The pilot attempted to turn into the corner to give a longer run but a wingtip caught on the ground causing a groundloop that broke the fuselage.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 124 | K-7 | **** | N | **.8.92<br>**** | **Incident Report** | 32<br>P2 50 | N<br>N | 280<br>0 |

At 150ft on the aerotow launch the tug/glider combination encountered turbulence. At first a bow developed in the rope then, as it pulled tight, detached from the glider. The glider landed ahead, without damage, in an uncut corn field. The nose hook was visually inspected two weeks previously, after problems, but no fault had been found.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 125 | Std Libelle | 1518 | M | 27.7.92<br>1400 | Nr Gransden Lodge | 52 | N | 63 |

After trying to get away for his Silver distance, the pilot decided he had to return to the airfield. In sink he delayed his decision to make a field landing and the only field available was furrowed. After a rushed circuit, he made a heavy, crosswind landing along the line of the furrows.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 126 | Junior | 3415 | M | 11.7.92<br>1200 | Challock | 17 | N | 10 |

While trying to thermal, the early solo pilot did not notice the strong wind had drifted him downwind. Realising his position, he returned to the airfield, intending to make a straight in approach. The glider's wing struck a tyre and groundlooped as the pilot turned to avoid a glider which had landed off a normal circuit. (He had no briefing.)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 127 | DG-202 | 2869 | S | 12.7.92<br>? | Nympsfield | 49 | M | 147 |

The pilot had a normal winch launch and released after lowering the nose. He then had difficulty in controlling pitch and later to turn right. The glider continued nose down and crashed in trees. The controls were correctly connected. It is possible that the radio mike jammed the stick after falling behind it or that he stalled with negative flap.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 128 | ASW-15B | 3408 | M | 1.8.92<br>1500 | Winthorpe | 62 | N | 117 |

The pilot made his approach in fairly strong crosswind conditions. After a flare that was started rather earlier than usual the glider made a slightly heavy landing. It then stopped in about 1/3 of the normal distance with a smell of burning rubber. The wheel support tubes had bent and jammed the wheel against the fuselage.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 129 | Dart 17R | 1292 | M | 31.8.92<br>1715 | Gransden Lodge | 37 | N | 97 |

The pilot joined the circuit behind another glider then found another ahead as he got to his low key point. In watching these and looking for a landing spot,he drifted too far back and tried to stretch the glide by slowing right down and then forgot to reduce the airbrake. After crossing the last obstacle he opened full brake and landed very heavily.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 130 | Olympia 2B | 512 | M | 1.8.92<br>1530 | Challock | 37 | N | 25 |

On the pilot's first winch launch on type the glider reached 600ft. The pilot then allowed the glider to drift too far back. He just made the upsloping undershoot area but stalled in from about 2ft, damaging the fuselage.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 131 | DG-400 | S/L G-BNXL | M | 31.7.92<br>1530 | Sutton Bank | 55 | N | 700 |

On a self launch take-off the ground run was extended due to the late selection of positive flap. Prior to lift-off the motor glider crossed rough ground and the uneven edge of a footpath that crossed the runway. The pilot found he could not raise the wheel so climbed, shut the engine down and landed normally. The u/c had been damaged.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 132 | K-7 | **** | N | **.5.92<br>**** | **Incident Report** | 68 | N | 12 |

On the ground run the glider turned slightly into wind and picked up a second cable with the front skid. The pilot thought it normal until he heard loud bangs from the rear. After release, the glider descended more rapidly than normal then jerked, as the cable broke and a normal landing was made. Guillotines now replace bolt cutters at the winch.

S=Serious; W/O=Write-Off; M=Minor; N=Nil.

ALISON RANDLE

# 1992 JUNIOR NATIONALS

## RAF Halton, August 22-30



The grid on Saturday, Day 4, with eager anticipation of a racing day at last. Photo: C. Hodgson.



Steve Jones, the Junior Champion, being presented with his prize by Air Marshall Sir John Willis. Photo: C. Hodgson.



Above: Before re-briefing on Day 3. Below: Waiting to fly on Day 5. Photos: R. Platt. ➡




The end of August is usually soarable but we had a variety of days with the top pilots showing they were capable of flying well in all conditions. The results show that in British conditions consistency is the key.

On the Friday evening it was sunny and thermic with several flying until quite late in the evening. Unfortunately this wasn't to be repeated for over a week. However we were adaptable enough to become pizza connoisseurs, film critics, swimming and badminton superstars and, occasionally, ten pin bowling maestros. Even more occasionally we also became pilots – showing good airmanship (and humour) in often trying conditions.

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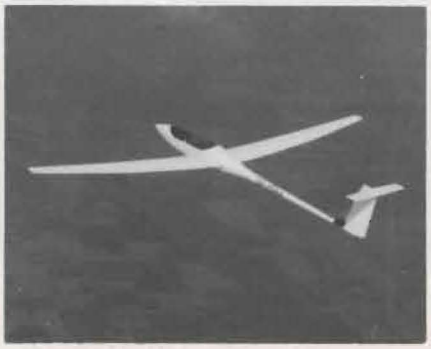


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# ANGLO-POLISH SAILPLANES

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Regionals, (their three day Comp was run alongside ours) were settled in the superb grass camping area. We were ready for a week of serious fun competition. Jed Edyvean, the director, declared the Comp open and promptly told us to come back on Sunday. Needless to say it was raining.

**Day 1, Sunday, August 23:** 134.1km triangle, Stony Stratford, St Neots for 724pts. The wind: 20kt at 270°.

The Met wasn't exactly encouraging – unstable airmass, moderate thermals initially, increasing cloud and strengthening wind culminating in an early cut-off. Unfortunately there was one of the forecasted isolated showers sitting over the first leg. Most of us who took the downwind-scuttle-in-front-of-it-option didn't make 50km. The wiser, cleverer, luckier types who went upwind and behind it braving the blue gap, fared rather better. Some did so well they defied another isolated shower at the second turn, flew through drizzle and got home.

Steve Jones (Discus) won because he took a cloud climb to 5500ft at Bedford rather than mess around in grovel mode. Surprises of the day? Simon Housden (LS-3) finished about 30min after it really started to rain but he was always persistent. And David Allison (LS-4) flew really well to be 2nd on a difficult day which was his competition debut.

Among the six who finished was another first timer, Oliver Ward (Discus) – although he was uncontrolled at the start and lost all his points! There is nothing like a typically blustery April day to sort the men from the boys! The "Dick of the Day" award went to Simon Adlard (LS-4) who didn't know the difference between his fin (where the fin No. lives) and his canopy.

We now slipped into the one day on, one day off pattern of flying which had seemed to work so nicely at most previous 1992 Comps. Monday was rest day. (It rained.)

**Day 2, Tuesday, August 25:** 135.8km triangle, Didcot, Newport Pagnell for 575pts. Wind 25kt at 260°.

It was bright with gusts of up to 30kt. We were sceptical about flying and few of us thought we would. At briefing there was an unusual quietness – rational fear connected with love of life and the aesthetically pleasing sight of whole sailplanes meant the majority of the field were not desperate to go flying. But we all did. (After a briefing on the finer points of gust induced stall/spin situations from our mentor, Chris Rollings, the BGA senior national coach.)

The tug pilots did a sterling job launching us two or three times. Most of us even went away to land in fields. Some (yes I was one) failed to battle into wind and get past X. With the exception of Toby Wright (SHK) we all made it back from the ridge to the airfield. The next gaggle of seven intrepid explorers got round Didcot to form a landing party by the Thames. Between them they had raised 10p for an inaccurate phone call. (Yes, they won the award!)

Some had enough height at Didcot to make use of the downwind component of the second leg and create a competition day by getting past Y. This handicapping system triumphed because joint winners for the day were Steve Jones and another first-timer, Lucy Withall (ASW-15B). Most spent the rest of the afternoon digging their gliders out of fields. Oliver Ward's Land-Rover was beginning to show its full potential as a tractor.

Wednesday and Thursday were grey, miserable and rather typical October days. The camp site had a rutted, brown look and the main spectator sport was watching Oliver tow cars out of the mud.

**Day 3, Friday, August 28:** 135,8km triangle, Newport Pagnell, Didcot for 398pts. Wind: 20kt at 260°.

Jed had to go to work, Chris had to be somewhere else so lucky old Graham McAndrew got the job of task setting on the most marginal day so far. We eventually fell back to a reverse attempt of Tuesday's task. We rebriefed in the rain and naturally assumed it would be to scrub. Wrong. So we were a bit slow to get the feel for the week. Graham assured us that it would improve. He was right. Most of the field launched, then landed. There were two tactics available to us.

1. Wait for a slightly less black looking piece of sky, then launch.

2. Keep trying regardless.

Anyway, we all got away – eventually. The last good cloud (*ie* useful, with lift under it) was at about 4000ft at Leighton Buzzard (it felt very high). The next almost useful looking bits of cloud were at the turn (it looked a long way away). There was nothing for it but to take a deep breath and go for it.

I certainly felt a craving to be in something with a half decent glide angle, but the trusty Astir CS got me there, in spite of my feeling of impending outlanding blues. It is amazing how comforting it is to see other people in fields. There were some who had got low going into the downwind turn. They were quite comforting to watch as well. Then there was the long hard slog into wind. At least there was lift about, even if the next front was casting its cirrus over us.

This day's results seemed a little more as one might expect, with the only non-veteran in the top six being David Allison. It was Karina Hodgson's day. She eventually landed her Discus in the drizzle at Headington. Yes, the fields were even wetter than before, and even more people needed help to get out of them. The Richard award went to Paul Shelton for a nightmare retrieve which included running out of fuel and (not connected) having to dig his car out of a ditch. It was just like a story from the pre-radio days.

**Day 4, Saturday, August 29:** a 211.7km triangle, Gaydon, Grafham Water for 1000pts. Wind: 15kt at 270°.

This was a most unusual day. The Met was, well, good with a 5000ft cloudbase, streeting expected and average thermals of 3 to 4kt. This proved to be a pessimistic forecast and with the phenomenon of a wind that was less than 20kt, 22 pilots romped round. It was just like a real British Comp day like they had had at Lasham and Nympsfield.

Richie Toon (Discus) won the day by flying like a thing possessed after the embarrassment of a relight to drop off the car keys. Steve and Dave were again well placed and Paul Croote (Kestrel 19) seemed to be putting in a late run. It was a shame it was the last day. The daily award almost went to Richie for the keys and to Simon Adlard for forgetting to put in his film, but it went to Anne Hopkins (PIK 20) for final gliding to Dunstable. Her excuses about ridges and trailers and grass airfields seemed to lack depth!

On Sunday the weather was indescribable. We had come to expect rain on the last day to ensure that tents go home wet, but not such gales that most people decided against towing.

Air Marshall Sir John Wills (president of the RAFGSA) presented the prizes. I would like to thank the organisation. Jed directed in between working nights at RAF Brize Norton and sleeping and did an excellent job. His team worked hard to make both competitions an enjoyable experience and in spite of the dreadful weather they succeeded.

**FINAL RESULTS**
Junior Nationals

| | | | Day 1.23.8 134.1km ▲ Stony Stratford, St Neots | | | Day 2.25.8 135.8km ▲ Didcot, Newport Pagnell | | | Day 3.28.92 135.8km ▲ Newport Pagnell, Didcot | | | Day 29.8.92 211.7km ▲ Gaydon, Grafham Water | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pos | Pilot | Glider | Speed (Dist) | Pos | Pts | Speed (Dist) | Pos | Pts | Speed (Dist) | Pos | Pts | Speed (Dist) | Pos | Pts | Total Pts |
| 1 | Jones, S. G. | Discus | 58.4 | 1 | 724 | (163.8) | 1 | 575 | (85.7) | 5 | 263 | 94.3 | 2 | 919 | 2481 |
| 2 | Allison, D. W. K. | LS-4 | 54.9 | 2 | 712 | (96.5) | 16 | 306 | (91.9) | 3 | 288 | 90.8 | 3 | 882 | 2188 |
| 3 | Housden, S. R. | LS-3/17 | 40.4 | 5 | 685 | (137.5) | 7 | 470 | (60.2) | 16 | 161 | 77.0 | 12 | 739 | 2035 |
| 4 | Hodgson, K. | Discus | (156.9) | 9 | 508 | (108.0) | 13 | 352 | (119.4) | 1 | 398 | 78.3 | 9 | 753 | 2011 |
| 5 | A'Court, J. W. | Discus | 54.1 | 3 | 710 | (90.2) | 20 | 281 | (59.4) | 17 | 158 | 78.3 | 9 | 753 | 1902 |
| 6 | Connolly, B. J. | ASW-15B | 53.5 | 4 | 708 | (108.5) | 12 | 354 | (59.1) | 18 | 157 | 85.0 | 18 | 616 | 1835 |
| 7 | Marsh, B. C. | ASW-24 | (161.6) | 8 | 525 | (94.1) | 19 | 296 | (38.0) | 23 | 72 | 84.4 | 6 | 816 | 1709 |
| 8 | Toon, R. J. | Discus | (31.0) | 24 | 41 | (138.0) | 6 | 472 | (54.5) | 20 | 138 | 102.1 | 1 | 1000 | 1651 |
| 9 | Croote, P. F. J. | Kestrel 19 | (79.3) | 18 | 220 | (95.5) | 17 | 302 | (87.1) | 4 | 269 | 85.2 | 5 | 824 | 1615 |
| 10 | Hallam, J. | Discus | (128.3) | 11 | 401 | (90.2) | 20 | 281 | (64.0) | 10 | 176 | 73.0 | 13 | 698 | 1556 |
| 11 | MacDonald, G. | Discus | (100.7) | 13 | 299 | (146.7) | 4 | 507 | (60.7) | 14 | 163 | 61.1 | 19 | 575 | 1544 |
| 12 | Francis, D. P. | Discus | (28.9) | 25 | 33 | (130.4) | 8 | 441 | (63.0) | 11 | 172 | 78.8 | 8 | 758 | 1404 |
| 13 | Truman, A. G. | Kestrel 19 | (129.6) | 10 | 406 | (72.7) | 27 | 211 | (0.0) | 27 | 0 | 79.8 | 7 | 769 | 1386 |
| 14 | Withall, S. L. | ASW-15B | (43.7) | 21 | 88 | (163.8) | 1 | 575 | (71.2) | 7 | 205 | (256.4) | 23 | 432 | 1300 |
| 15 | Hopkins, P. A. | PIK 20 | (90.4) | 14 | 261 | (128.2) | 9 | 433 | (62.4) | 12 | 170 | (222.9) | 27 | 371 | 1235 |
| 16 | Foster, D. | Std Cirrus | (51.7) | 20 | 118 | (86.0) | 24 | 264 | (0.0) | 27 | 0 | 87.3 | 4 | 846 | 1228 |
| 17 | Shelton, P. M. | Discus | (14.9) | =26 | 0 | (113.5) | 11 | 374 | (61.1) | 13 | 165 | 76.6 | 14 | 686 | 1225 |
| 18 | Lay, N. P. | ASW-19 | (22.7) | =26 | 0 | (98.8) | 15 | 315 | (78.4) | 6 | 234 | 70.3 | 16 | 671 | 1220 |
| 19 | Duerden, A. W. | Astir CS | (180.2) | 6 | 558 | (128.0) | 10 | 432 | (20.9) | 26 | 4 | (113.4) | 31 | 171 | 1165 |
| 20 | Grote, C. | ASW-15 | (0.0) | =26 | 0 | (153.2) | 5 | 504 | (0.0) | 27 | 0 | 68.8 | 17 | 655 | 1159 |
| 21 | Ashburn, C. J. | ASW-19 | (36.5) | 22 | 61 | (101.8) | 14 | 327 | (0.0) | 27 | 0 | 71.2 | 15 | 680 | 1068 |
| 22 | Ward, O. M. | Discus | 48.5 | =26 | 0 | (39.0) | 28 | 76 | (65.0) | 9 | 180 | 77.8 | 11 | 748 | 1004 |
| 23 | Tait, R. G. J. | Astir CS | (32.2) | =26 | 0 | (77.2) | 26 | 229 | (67.5) | 8 | 190 | 65.9 | 19 | 575 | 994 |
| 24 | Stuart-Menteth, O. | Std Cirrus | (15.8) | =26 | 0 | (156.1) | 3 | 544 | (0.0) | 27 | 0 | (256.2) | 23 | 432 | 976 |
| 25 | Gazzard, M. | DG-300 | (92.7) | 17 | 234 | (32.9) | 29 | 52 | (54.7) | 19 | 139 | 57.3 | 22 | 535 | 960 |
| 26 | Weaver, E. F. | Discus | (53.2) | 19 | 123 | (89.0) | 22 | 276 | (60.4) | 15 | 162 | (233.3) | 26 | 390 | 951 |
| 27 | France, S. | Nimbus 2 | (85.2) | 15 | 242 | (0.0) | 30 | 0 | (0.0) | 27 | 0 | 60.1 | 21 | 565 | 807 |
| 28 | Miller-Smith, M. J. | Vega | (83.4) | 16 | 235 | (86.6) | 23 | 266 | (94.7) | 2 | 299 | DNF | 32 | 0 | 800 |
| 29 | Wright, T. | SHK-1 | (106.2) | 12 | 320 | (8.4) | 30 | 0 | (0.0) | 27 | 0 | (239.5) | 25 | 401 | 721 |
| 30 | Adlard, S. A. | LS-4 | (163.0) | 7 | 530 | (0.0) | 30 | 0 | (34.8) | 24 | 59 | 75.9 | 32 | 0 | 589 |
| 31 | Partington, C. R. | Cobra | (15.0) | =26 | 0 | (81.1) | 25 | 244 | (0.0) | 27 | 0 | (173.4) | 30 | 280 | 524 |
| 32 | Randle, A. J. | Astir CS | (16.0) | =26 | 0 | (0.0) | 30 | 0 | (47.3) | 21 | 109 | (217.7) | 28 | 361 | 470 |
| 33 | Evans, I. M. | Libelle | (12.2) | =26 | 0 | (95.4) | 18 | 301 | (38.4) | 22 | 74 | 54.3 | 32 | 0 | 375 |
| 34 | Harland, S. J. | Grob 102 | (0.0) | =26 | 0 | (0.0) | 30 | 0 | (0.0) | 27 | 0 | (192.1) | 29 | 315 | 315 |
| 35 | Thorne, C. L. | SZD Junior | (36.1) | 23 | 60 | (0.0) | 30 | 0 | (29.6) | 25 | 38 | (31.8) | 32 | 0 | 98 |

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# CLUB NEWS



Dennis Currant of the Vale of White Horse GC with his instructor, John Ashcroft, after going solo.



The Cotswold GC's expedition to Glyndwr.




Above: Les Rayment, Burn GC's chairman, John Stirk and Nikki Jenkins of BBC Radio York with the cheque for BBC Children in Need. Below: Alan Walker of Borders GC being congratulated by Dennis Westgarth who sent him solo in the Bijave.



**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 0223 247725, fax 0223 413793, to arrive not later than February 9 and for the June-July issue to arrive not later than April 10.**

GILLIAN BRYCE-SMITH
*December 2*

*ANGLIA (RAF Wattisham)*
Jim Coughlan flew Gold height at Aboyne to complete his badge during our expedition. We now have a syndicate T-21.

At the AGM trophies were awarded to Matt Jones and John Hicks (best flight); Keith Sheerer (CFI trophy) and Tony Alcock (most progress).
*N.P.*

*BANNERDOWN (RAF Keevil)*
With the approaching closure of Hullavington, uncertainty about our future was resolved in October when we moved to Keevil Airfield. Though the facilities are less than we have enjoyed we hope to make the most of those left by the outgoing Bath, Wilts & North Dorset GC and perhaps, in time, to improve them.

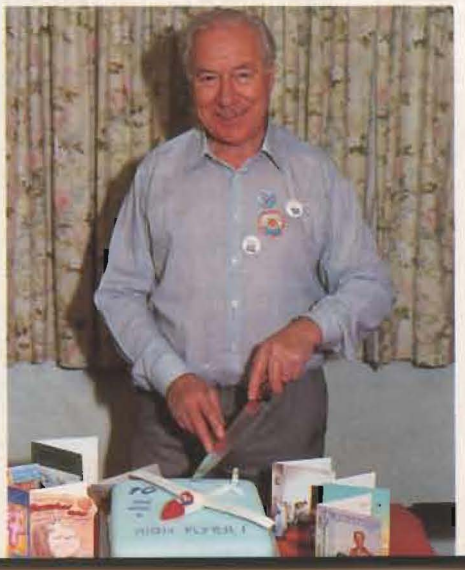
Two flyable days and 100 launches in November allowed us to find the few patches dry enough to land on before the monsoon rains arrived.
*D.C.F.*

*BATH, WILTS & NORTH DORSET (The Park)*
A combination of poor weather and Graham Calloway's zealous enthusiasm has ensured good progress on the clubhouse.

We've had cross-countries in thermals as late as October 17. Joanne Nichols, aged 17, is the first to go solo at The Park. Dave Smith, Dave Pengilly and Steve Ski have AEI ratings.

Our second winch is performing well with its reconditioned engine and the original winch is being overhauled. We have a snack bar in the

**Doug Sadler, a member of Coventry GC for many years, cutting his cake at a surprise 70th birthday party given for him by the club. Photo: Sid Gilmore.**



launch point caravan and a new club logo on a range of clothing.

We wish Bannerdown GC well at our old home, Keevil airfield; see you on the ridge in a NW wind!
*S.G.*

*BLACK MOUNTAINS (Talgarth)*
Following a successful month with many expeditions and some excellent flying, November has been disastrous. However, some members have been working on the club fleet in preparation for a hopefully busy Christmas and New Year.
*S.R.*

*BOOKER (Wycombe Air Park)*
The Aboyne wave expedition was a lot of fun for more than 40 members but only produced two Silver heights plus Gold heights for Dave Byas and John Denne. Visits to Glyndwr and Black Mountains had more satisfactory results.

The vintage group, our biggest growth area, has acquired a beautiful Hütter 17.

Winch training at Bicester led to Alan Birchmore, Glen Allison, Mike Buckley and William Parker making their first solo winch launches on the same day, and instructors enjoyed the aerobatic course run by Sam Mummery from Lasham.

As a result of the committee looking hard at costs, some course charges have been reduced and the accommodation arrangement with Bishop Abbey is being further developed.
*R.N.*

*BORDERS (Galewood)*
Good wave flying started in November with climbs in excess of 15 000ft and Alan Walker and Paul Brooks went solo. Robin Johnson is a full Cat and Andy Henderson has an AEI rating.

We recruited our most distant country member in October when Jocken Meyer, a German glider pilot, spotted some gliders. He had his first taste of wave and gained Silver height. We also had expeditions from Wyvern and Staffordshire GCs.
*R.C.*

**June Morland of Connel GC with their CFI Malcolm Shaw after her first solo.**





**Jack Stephen's photograph of Aboyne Airfield.**




**Above: Cathryn Edwards of VGS VGS was sent solo by her father on her 16th birthday and is photographed with (l to r) John Aves, Phil Melia, Karen Howard, Bryan Edwards (her father in the back seat), Paul Kirby and Don Johnstone who all gave up time midweek to make this possible. Below: South Wales GC's winch with (l to r) Nick Parker, Sid Palmer, Colin Broom, Ken Cotterell and Harold Armitage.**



*BUCKMINSTER (Saltby Airfield)*
The club K-6CR has gone to a new home at Stratford on Avon GC while the K-8 is being spruced up. The bonfire party was a roaring success with Kevin Allwood winning the annual competition.

The autumn flying was busy with the start of term for the Nottingham Trent University GC (formerly Nottingham Polytechnic GC). Members are doing various jobs around the club.
*M.E.*

*BURN (Burn Airfield)*
Matt Ellis and Rod Crampton have imported a M100 and Jack Sharples and Dave Brown have formed a syndicate with what was probably the last Olympia 463 to be built.

Guest speaker at our well attended annual dinner was Bob Pooley of **Flight Guide** fame who gave an hilarious indoor lesson in hot air ballooning.

British Gas trainees spent a week filling holes in our rather pock marked runways and we paid British Gas who passed on the cheque to the BBC Children in Need appeal. We are grateful to Les Rayment, who by chance works for BG, for making the arrangements.
*P.N.*

*CAMBRIDGE UNIVERSITY (Gransden Lodge)*
We have had the best undergraduate intake for many years with 15 joining.

Jonathan Skyrme, Chris Cheney and Mike Atkins have gone solo; Chris Sullivan is a full Cat and Don Lees and Bryan Manning have AEI ratings.
*J.L.B.*

*CHANNEL (Waldershare Park)*
Mac McGowan has "volunteered" to be a full time winch driver enabling us to continue our six day operation.

We had fine weather for our hosting of the microlight Bleriot run to France and all but one made it there and back.

We have redecorated the clubhouse and trained Guides, as part of our planned service to the community, to pass their aircraft badges – obviously with a gliding bias and the successful were given free flights.

We plan to start the new season by celebrating Ron Armitage's 18 000th winch launch.
*N.O-A.*

*CLEVELANDS (RAF Dishforth)*
We are without electricity pending rewiring and increased security has resulted in a temporary curfew: social activities have ceased and Christmas dinner is looking doubtful. However, we are still flying and expect to continue over Christmas/New Year as usual despite daily treks to and from the airfield.

We are sorry to disappoint those wanting to join us for the wave camp. We hope to welcome you when circumstances are kinder.

Fred Pommerhein and Tony Evans have resoloed and Brian Mennell has his full Cat.
*J.P.*

*CONNEL (North Connel Airfield)*
John Anderson, our retiring chairman, was thanked at the AGM for his hard work over many years. Bill Miller is his successor.

We have moved into our new, large, comfortable clubhouse. A new member, Paul Keegan, has a Jodel tug so we now have aerotow and improved reverse autotow launching.

Privately owned aircraft include a Libelle, Pirat, T-21 and Skylark 4 as well as a Shadow and a Chevvron. As with all Scottish gliding clubs, we have regular access to the Sport Council's ASH-25.
*R.W.*

*CORNISH (Perranporth)*
Our open weekend was spoiled by strong winds but we still flew plenty of visitors. Martin Wilshire and John Stuart-Smith have gone solo. The Aboyne expedition was enjoyable but didn't produce any Diamonds.

John Shaw received a tankard from the Vintage Club for his restoration work on the Grasshopper and T-21.

Our council is threatening enforcement action to severely curtail aerotowing. Letters of support would be gratefully received. If successful, the implications of this action against an established airfield are enormous. If anyone has useful information to help us in our fight, please contact us on 0872 501707.
*I.F.*

*COTSWOLD (Aston Down)*
Mike Bates, Tim Farley, Peter Hall, Tony Saunders, Nick Coe, Sam Walker, Lawrence Clegg and Mike Frost have gone solo and Doug Rimell has resoloed after a long absence. Chris Marsh gained Gold height and Peter Ward reached 22 600ft for Diamond height (both at Aboyne).

Oliver Ward and Mike Oliver flew a 200km O/R in a club K-13 and on October 31 Oliver had the last soaring flight of 1992 with a fast 200km O/R.

We had a successful expedition to Glyndwr GC in October with good ridge soaring and gave over 100 trial lessons at our September open day. The winter lectures started well with an excellent talk by Brian Spreckley on European soaring.
*M.S.*

**Obituary – Richard Furley**
Richard was a keen aviator and stalwart member of Cotswold GC where he flew most weekends during the past 20 years, usually finishing near the top of the club ladder. He was also a keen family man and we send our deepest condolences to Karen, David and the rest of his family.

As a mechanical engineer he designed mining equipment. He was also a power pilot and in unsuitable flying weather resorted to launching model gliders.

Richard had a strong sense of social justice and kept clear of club politics. However, most chairman consulted him on key strategic issues because he had a clear perspective. He sent many solo during his 16 years' instructing and was DCFI for some time.

He served us well as safety officer leaving little to chance. Once, after crawling into the cockpit with a torch and mirror, Richard found a cracked rudder pedal which probably saved two lives.
**Pat Gilmore**

*COVENTRY (Husbands Bosworth)*
Our Discus, due in March, will give us two top Standard Class club gliders. Our winter weekend courses specialise in various techniques from aerotowing, aerobatics to cloud flying. For details contact Harry at the office.

As usual we have three gliders at RAF Dishforth in the hope of catching winter wave and trips to the Lond Mynd and Denbigh.
*T.W.*

*CRANWELL (RAFGSA)*
Despite the poor weather we have had a constant stream of new members, mostly *ab-initios,* and our statistics are well up on 1991.

Our thanks to Brian Hutchinson, Mick Smith and Mick Lee, and many others, who have done an enormous amount of work on our new T-61M motor glider. A third two-seater, a K-7, is joining our club fleet which also includes a K-21, Janus C, Astir CS, Discus CS and Ventus CT.

Steve "Skippy" Harper and Angus Watson have their 300kms; Max Ivison Silver distance and Nick Hawley has a Silver badge.
*I.M.*

*CULDROSE (RNAS Culdrose, Helston)*
Our annual trip to Aboyne in September was only notable for the complete lack of suitable soaring weather and was followed by an incredibly damp October and November with precious little gliding. Many thanks to Angie Toller for organising the dinner-dance in December.
*R.A.*

*DARTMOOR (Brentor)*
As the season draws to a soggy end members have been moving away to find wave. Fiona and Tim Smart proved that Talgarth is a day trip and others have visited Aboyne. At home Colin Boyd gained his Bronze badge.

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We had a Guy Fawkes bonfire, the annual dinner-dance is soon and with the help of our flying chaplain, Gregory Stanton, and Frank May we are holding a carol service in the hangar in aid of Save the Children.

We have applied for planning permission for a briefing room and voted to keep our first glider – the beloved T-21.
*F.G.M.*

*DEESIDE (Aboyne Airfield)*
Fiona Fleming, Alain White and Ian Grosz have gone solo; Ian Henderson flew Silver distance to complete his badge and Paul Boath gained Diamond height. The wave has given heights of 28 300ft in October and 22 900 in November.

We welcome visitors with single or two-seaters to our task week from May 15 to 23. Contact our secretary, Glen Douglas, for details.

We have re-engined the Super Cub and have a spare engine again for the Pawnees.

At the annual dance the following were awarded prizes:- Roy Wilson of Deeside (for best cross-country from Deeside, Highland, Cairngorm or Angus GCs); James Davidson (best gain of height); Jack Stephen (most meritorious flight); Norman Smith (for contribution to the club) and Fiona Fleming (for advancement).

Our thanks to members who helped when Lionel Sole parachuted from his Lo 100 after control problems. Lionel was unhurt and his glider was retrieved from the hill the next day.
*G.D.*

*DERBY & LANCS (Camphill)*
The Christmas party and the Neighbours' Night, when we thank local farmers, were a tremendous success. We plan to fly over Christmas.

Brian Pullen has gone solo. We are refurbishing club aircraft and hope soon to update the two two-seater trainers and single-seater early solo gliders. Visitors are always most welcome.
*M.I.R.*

*DEVON & SOMERSET (North Hill)*
Training and air experience courses have been particularly successful. Noteworthy were solo/resolo flights of the Britton and Rix family teams (father and son) on a July course.

Alan Bromley has a Bronze badge and Peter Harding part 1 of the Cross-country diploma.

CFI Chris Miller was organised into the K-21 with Peter Craggs as "trainee" and then with TV presenter Chris Serle for an ITV "Shoot the video" programme. It resulted in a significant number of membership inquiries.

Our annual statistics "prove" that 1992 was better than 1991 with flying hours up +9%, cross-country kilometres +11% and launches -1½%. There was an improvement in solos and badge claims, except for no change in Bronze. It seems that even the K-21 is justifying its purchase.
*I.D.K.*

*DORSET (Eyres Field)*
With our move taking less time than anticipated we had a symbolic fly-out from Old Sarum and a fly-in to our new site on Saturday, October 17, with CFI Barry Thomas (Auster) towing chairman Bill Cook (club K-8). The next day we winch launched with the first flight by the CFI and Joe Linee as P2 in the K-13. Eyres Field was the home of the DGC in the early 1960s (known then as Gallows Hill) and Joe had flown the last flight from the field 28 years previously to the day!

The first soaring flight was by Colin Weyman (K-8) to cloudbase on October 31. Flying is inhibited by the field length and while areas have been seeded they won't be in use until the spring. However, from the tentative beginnings with routine flying we are sure we will grow and prosper in our new home.

Visitors are welcome and you will find us midway between Wool and Bere Regis, Dorset.
*G.G.S.*

*DUKERIES (Gamston Airfield)*
Members have resurfaced the north end of the runway to give a smoother ground run. David Upreph has gone solo.

The Portmoak expedition was thoroughly enjoyed with some excellent flying. The successful experimental Wednesday afternoon flying has been suspended until the spring.
*J.C.P.*

*EAST SUSSEX (Ringmer)*
There have been regular expeditions to Talgarth, Denbigh and Husbands Bosworth – and our thanks to these clubs for their hospitality.

Carol Head (K-6) flew 93km for Silver distance; Sue Barter, Nick Davies and Barrie Gent have Bronze badges and Tony Billin, Terry Stimson and Malcolm Williamson have gone solo.
*L.M.*

*ESSEX & SUFFOLK (Wormingford)*
Now that we have security of tenure we can plan for the future and with luck will soon be building a clubhouse and hangar.

The Essex University GC fly with us on Wednesday and go from strength to strength.

Nick White, Dave Walkerdine, Clive Bainbridge and Doug Ellis have gone solo, Doug after a break of 30 years; John Gilbert has an AEI rating; Chris Pollard and Mike Friend are assistant instructors and Vivien Haley has become a full Cat and flown 300km.

We have a new K-21 syndicate and are borrowing a YS-53 while our K-21 is being reburbished. As always, visitors are welcome.
*M.F.*

*GLYNDWR (Denbigh)*
Due to the rain we've had a quiet two months but membership is increasing and the hangar extension is complete.

Our practice annual dinner was a great success and tickets are on sale for the real thing.
*G.H.*

*GRAMPIAN (By Laurencekirk)*
Despite the wet weather Mary-Rose Smith has gone solo and Dave Smith and Dennis Canny have their 5hrs. Most members enjoyed a flight in an ASH-25.
*R.J.S.*

*HEREFORDSHIRE (Shobdon Airfield)*
John Hunt and John Warbey have retired from the committee (our thanks to them for their hard work) and Diana King, John Bastin and Les Kaye have been elected, Les as chairman. Thanks to Les, we have the use of his Twin Astir which is a valuable asset and Diana has organised ladies' weekends.

We are hoping for new members, especially *ab-initios* as we have had few pre-solo pilots for some time. Alex Chappell has gone solo and Brian Smith has his 5hrs.

We now use the tarmac rather than the broken-up runway edges, which is easier on the tug, and it is hoped the grass area will be extended to the full length of the runway.
*R.P.*

*KENT (Challock)*
Despite poor conditions for our annual task week in late August we had some flying days. Two pilots with their new ASH-25 won League 1 and, with a close result, Chris Ireland (P1) and his group won League 2 with the club K-13.

Our best of several expeditions was the autumn one at Portmoak with a number of Silver legs gained.
*A.R.V.*

*LASHAM (Lasham Airfield)*
Like all clubs we teach from *ab-initio* to would-be World Champions. But what can we teach Alan Purnell? He started in 1956 at Cambridge and has just passed 7000hrs gliding, 251 000 cross-country kilometres, 434 300kms, 68 500kms and is still as keen as even. What an example – but then he never married!

Expeditions are in vogue again and this year we sent our club and private owners here, there and everywhere. In May Terry Joint takes us to southern Germany.

Due to the major recession we are conserving, cost cutting and encouraging members to undertake duties we used to buy in. Self help is fun and so good for your pocket,

Weekly lectures, parties and social whoopees continue. Bill Giles the Met man entertained us again, Christmas lunch was served by Snow White and her eleven dwarfs and the farmers' "Thank you for letting us land in your field" wine and cheese party was a huge success. We may not have had lots of thermals but the year sure was a load of fun.
*W.K.*

*LINCOLNSHIRE (Strubby Airfield)*
Dave Armstrong and Angela Hearney have gone solo, Angela being our first female *ab-initio* for many years, and Eric Hughes has resoloed after a long break.

An excellent newspaper article has brought inquiries about membership and trial lessons. Steve Crozier's reputation for getting home deserted him when he landed his Oly in a field.
*R.G.S.*

LONDON (Dunstable)
We had successful trips this autumn to Talgarth and Aboyne, the latter resulting in Mark Gander's video of the club K-21 flying to 26 000ft.

Our new aerobatic courses are popular. The annual dinner was well attended, no doubt owing to Derek Piggott being the guest speaker.

We are operating full-time throughout the win- ➡




1.↑




2.↑



3.↑



4.↑

5.↓



6.↓

**Key to photographs on this page. 1. Euan Videon of Coventry GC after going solo shortly after his 16th birthday. 2. Fiona Fleming in the Aberdeen University Bocian after soloing at Deeside GC. 3. Dorset GC's hangar structure at Eyres Field. 4. David Upreph of Dukeries GC being congratulated by instructor Brian Fowkes after going solo. 5. Sandra Williams and Wayne Dewick of Trent Valley GC bid farewell to the K-8. 6. On October 19 Rattlesden GC celebrated the end of a two year stint of very hard work carried out entirely by members. The hangar, with a floor area of 900sq m, was officially opened by Howard Darbon, director of the Sports Council Eastern Region, and Paul Marston-Weston, assistant chief leisure services officer, St Edmundsbury Borough Council. The hangar, which cost £32000 including the concrete floor and apron, was substantially financed by grants from these two sponsors. It will house all the club gliders, two motor gliders and a tug, as well as a number of syndicate aircraft, and will contribute greatly to operational efficiency. The small hangar has been freed for use as a workshop, a facility badly needed for many years. 7. Mac McGowan, Channel GC's new winch driver. 8. Gareth Cherriman of Nene Valley GC who sent solo the day after his 16th birthday.**

ter with a selection of courses from Bronze badge to cross-country standard. Visitors are welcome to these and to soar our hill in bracing westerlies.
*S.B.M.*

*MENDIP (Halesland Airfield)*
Andy Brackwell, Gordon Dennis, Tom Fisher, Richard Haggerty, Philip Isbell, Paul Renshaw and Sarah Turner have gone solo; John Alcock has a Bronze badge; Steve Collins and George Whitcombe-Smith Silver badges; Steve Collins and Daryl Mansbridge have AEI ratings; Tony Webb an assistant instructor rating and Dave McFarlane and Graham Taylor have PPL SLMGs.

Our CFI Peter Turner gained 10 500ft from a winch launch into wave but didn't have oxygen. However, he helped a less experienced pilot, George Whitcombe-Smith, to the same height by returning to the ridge and talking him through the climb.

We have converted our Eagle winch with a 4.2 Jaguar engine to give much improved nil wind launches and our diesel winch is having a more powerful engine. Holiday courses went well – our thanks to Lyn Turner.
*G.T.*

*MIDLAND (Long Mynd)*
Two Enstone pilots visited us with motor gliders and gave a dozen members enjoyable training flights. The courses finished at the end of September and since then most flying has been during the week.

J. Haus, Juan Ollabarietta and Roy Mylchreest have soloed and Bill Duckett gained Silver height.
*A.R.E.*

*NENE VALLEY (RAF Upwood)*
Three 16 year-olds went solo within a week of each other – James Clark, Mark Williamson and Garath Cherriman, Gareth the day after his birthday.

We had a trip to the Mynd in October and Gary Johnson has an AEI rating. Our AGM was well attended.
*D.H.*

*NEWARK & NOTTS (Winthorpe)*
At the annual dinner-dance and prizegiving the main trophies went to Shirley Maddex, Dan



7.↓



8.↓



Goldsworthy, John Maddison, Dave Alvey and David Robertson.

Frank Hunt has taken over from Roland Carver as treasurer and we thank Ron for his many years' work. Dave Parker has become an instructor.

Work on the Skylark 2B and Skylark 3G is progressing well and both should soon be flying again.
*M.A.*

*NORTH WALES (Bryn Gwyn Bach)*
The autumn was fairly quiet except for John Moore, Bill Snow, Mike Marshall, Vic Pendleton and Emile Vanderwalle going solo. Emile, who keeps fit cycling about five miles to the club which includes riding up our ridge, is 72 years-old and Vic, our farmer landlord, soloed after only 22 flights.

November was good for wave – Dave Jones got to 8500ft in the club K-8 and on the same day Tony Cooper reached 14 000ft during his 5hrs to complete his Silver badge.

We have a new syndicate with a M100 and are hoping to buy a new Super Blanik.
*D.J.*

*OXFORD (Weston on the Green)*
John Hanlon and Martin Hastings gained Gold heights for their Gold badges at Sutton Bank and Tony Boyce flew Diamond height at Aboyne for all three Diamonds.

At the AGM the committee were re-elected. Chris Emson won the club ladder trophy for the second year running with other cups going to Graham Barrett (most outstanding flight – 500km in his Libelle); John Gordon (best flight in a club glider – 300km in the Astir); Martin Hastings (best height gain from Weston); Andy Barnes (best *faux pas* – a particularly muddy hill top field landing); Alex Jenkins (for instructing) and Tom Lamb and Phil Hawkins (Cotwold GC's trophy for the winner of their task week).

Congratulatory bottles were presented to Chris Emson and John Hanlon (becoming full Cats); to Martin Oldfield (newest instructor); Tony Boyce (first member for many years to gain all three Diamonds) and Chris Reynolds, Gerry O'Sullivan, Neil Turner and Chris Buck (for work on the winch engine).
*F.B.*

*PETERBOROUGH & SPALDING (Crowland Airfield)*
Several new committee members were elected at our well attended AGM. We had an expedition to North Wales at the end of November and Lois and Dick Thirkill, Les Rigby and Noel McLaughlin have AEI ratings.
*D.K.P.*

*PORTSMOUTH NAVAL (Lee on Solent)*
Tony World, Martin Heneghan, Ken Stephenson and Chris Joly flew in the Inter-Services Regionals, Chris winning the Goodhart trophy.

The courses produced many solos including Ian Sharrocks, Peter Jordan and Paul Limburn. Dave Kearns and Arthur Yardley have Bronze badges and Graham Tucker a Silver badge. A successful Aboyne expedition produced Diamond heights for Tony World, Keith Walton and Martin Heneghan. Our thanks to Odiham, Bicester and Deeside for their hospitality over the season.
*J.P.*

*RATTLESDEN (Rattlesden Airfield)*
There was an enjoyable Long Mynd expedition with very good gliding. Our new hangar is officially open, see photo.

Steve Longland gave an interesting safety lecture; a new Pirat syndicate has been formed and Richard Page has Silver distance and height.
*M.E.*

*SHALBOURNE (Rivar Hill)*
It was good to see one of our new members from Old Sarum, Tony Pattemore, elected on to the committee at the well attended AGM.

The Dave Maleham memorial cup (presented in memory of our previous chairman who was tragically killed last year) was awarded to Fergus Glen for most progress made in the first year of going solo. Other trophies went to Steve Ottner, Geoff Nicholls, Carol Pike, Alan Pettitt, Bernie Shackell and Tony Pattemore.

We had a successful October expedition to Aboyne with Bill Cook and John Day getting Gold heights and Ken Reid Diamond height in his K-6E. Ken Eggleton has gone solo.
*J.R.*

*SHROPSHIRE (Sleap)*
Apart from wave flying autumn has been disappointing. Typically on November 6, strong wave contacted locally took several of us 100km crosswind. By taking two jumps upwind Andy Chappel, Dave Triplett and Ric Prestwich got into the lee of Snowdonia, Andy reaching 18 000ft and Dave getting Gold height. Four pensioners did a retrieve in the dark that evening, Charles Webb coining the phrase "Last of the Summer Wine" which sums up our generally geriatric operation.

We are pleased to see our disabled member Peter Foster back on the field after a six month break due to ill health. His enthusiasm for flying is a tonic to us all.
*T.A.*

*SOUTHDOWN (Parham Airfield)*
Our autumn Talgarth expedition, organised by Tony Challenor and Rod Walker, gave us some exciting ridge flying. The Bronze badge lecture programme has started; the clubroom has been recarpeted and given new seating; we have a new bunk/briefing room and converted the old bunkroom into an office.

Quinton English has resoloed after 32 years and Ron King, who started gliding 50 years ago, has his 5hrs.
*W.S.*

*SOUTH WALES (Usk)*
The new winch, built over three years under the supervision of Colin Broom from a BBC outside broadcasting four wheel drive vehicle, a 250bhp 5.3 litre V12 Jaguar engine and a reconditioned Tost winch, is giving much higher launches with incredible acceleration.

It took so long because of a large number of minor tasks and the necessity to let this small, dedicated band out to fly – Colin gained Diamond goal and Nick Parker efficiently completed his Silver badge in one flight in a Skylark 4. We thank them for their dedicate, hard work.
*N.S-J.*

*TRENT VALLEY (Kirton in Lindsey)*
Tim Johnson, Horst Lange, Aubry Wattam and Chris Swallow have gone solo. To the sorrow of some members, our K-8 has been sold after 20 years' service and is now flying in Scotland.

Our annual dinner will be on February 27 at the White Heather.
*M.P.G.*

*ULSTER (Bellarena)*
With planning permission granted for our new site we are deferring the move until the autumn because our landlord has bought our hangar as it stands at an attractive price, including a rent waiver on the old site for 1993.

By then we will have erected a huge second-hand blister hangar. It is four times the area of our hangar and will house the entire club and private fleets, fully rigged and with space to spare. Members helped dismantle it on its Belfast site for the steelwork to be sandblasted, repainted and put into store ready for the move.
*R.R.R.*

*VALE OF WHITE HORSE (Swindon)*
At our AGM in November we elected Sue Foggin as chairman, Graham Huggins, Gilbert Burge and Paul Mansfield have their SLMG licences and Geoff Wirdnam his AEI rating.
*L.W.*

**Obituary – Dianne Steele**
Dianne, instantly hooked after her first air experience flight, joined our club in the spring of 1990. She was seldom away from the site during that season, such was her enthusiasm. She soloed in August and never looking back, a Bronze badge was soon hers, in 1991 a Silver and just prior to her death an AEI rating.

Dianne was a successful junior school head teacher. She worked hard in all things, not least of all in gliding and involvement in the club. She was a positive force as a committee member and chairman, always getting the job done.

Her first flight was at Sandhill and on September 5 she took her last, flying the Std Cirrus she had recently bought into. Dianne loved flying and it is with love we remember a dear friend.
**Lindy Wirdnam**

*VECTIS (Isle of Wight Airport, Sandown)*
The summer has been disappointing despite several Bronze legs and above average launches which were partly due to our DCFI John Kenny supervising many midweek flying days. We have also had a large number of air experience days.

The expedition to Thouars in France produce a number of badge flights despite poor weather, and our privately owned K-6s out-shone some French entries in a vintage rally which passed through. We had 67 launches, 106hrs and flew more than 600km with Silver badges for Matt Colebrooke, Graham Grifiths, Chris Bacon and Mike Chambers. ➡

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| 11-13 Nov<br>9-11 Dec<br>10-12 Feb | (3 days)<br>20-22 Jan<br>3-5 Mar | **Cross-Country Ground School**<br>Includes: Task setting, thermalling, speed flying, map reading etc.<br>For Bronze Badge Pilots & above | £45.00 |
| 5-6 Nov<br>17-18 Dec<br>18-19 Feb | (2 days)<br>14-15 Jan<br>25-26 Mar | **Air Experience Instructor Courses**<br>Follows BGA approved course<br>CFI Approval required | £55.00 |
| 27-29 Jan<br>24-26 Feb<br>10-12 Mar | (3 days) | **Bronze Badge Ground School**<br>All theory subjects covered.<br>Test paper at end of course<br>Post Solo, Pre Bronze | £45.00 |
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Graham Griffiths flew Gold height in October at Abyone – it would have been a Diamond if he hadn't accidentally switched off his oxygen.

Our beloved Blanik, which is kept outside, is back having suffered at the hands of overnight fabric slashers.
*J.C.B.*

*VINTAGE NEWS*
The poor season limited achievements in the air to a 150km triangle during June by Harry Chapple in his Mü 13D-2 from Bicester, but there were 14 restorations to airworthy condition, 11 in Britain and three in Europe.

There was the Gull 3 by Peter Philpot and partners – the second prototype which flew 52 years after the first. Also restored and flown:- Kite 2 by Peter Warren; Hütter 17A by John Lee; the prototype Prefect by Nev Churcher; Tutor by David Shrimpton; Tutor by Mike Birch, Graham Saw and their team; Rhönbussard with its original long span ailerons by Ted Hull; Nord N 2000 by Barry Smith and the Grasshopper and T-21B by John Shaw.

New restoration projects include a Scud 1, the second Scud 3 (BGA No. 684), a Minimoa and a Krajanek.
*C.W.*

*VOLUNTEER GLIDING SCHOOL 611 (RAF Swanton Morley)*
We are celebrating our 50th anniversary this year. The school was formed as 102 Gliding School at Hethersett and renamed in 1955. Former members who would like to take part in the celebrations contact me – Sqd Ldr D.A.Johnstone – at 611 Volunteer Gliding School, RAF Swanton Morley, Dereham, Norfolk NR20 4LJ

*WOLDS (Pocklington Airfield)*
At our annual dinner-dance awards went to Dave Bowes (club ladder and longest flight); Alan McWhirter (best progress with an AEI rating, Gold badge and sheer enthusiasm) and Derek Roddy (most meritorious flight, again in a two-seater). Our thanks to chairman, John Paskins, for the shortest speech on record!

The club fleet is in fine fettle thanks to Mike Thompson and helpers.
*N.R.A.*

*YORK (Rufforth Airfield)*
Thank goodness for autumn wave which took Tom Stoker to 13000ft and Paul Hepworth and Howard McDermott (T-21) to a very cold 7500ft.

Toby Winston has gone solo and a number of ATC cadets are working for their Duke of Edinburgh bronze awards.
*H.McD-R*

**Club News Reporters:** Thank you for keeping our very early deadline for this issue. It would be helpful if you gave your name, address and telephone number in case of queries. Also, if the copy is handwritten, please print all names.

However, a number of you still send your reports to the BGA office which wastes valuable time. Please make sure you use the Cambridge address.


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David Ince took up gliding seriously at the Long Mynd in 1948 and his writing throws an affectionate light on the people and events of that era. Competing in successive Nationals at Camphill – crewing for Philip Wills when the latter became World Champion in 1952 – and heady years of development and contest flying on the Olympia IV series – this is the stuff of gliding history.

As a member of the BGA Council he muses over the politics of change in the swinging sixties and takes us behind the scenes in the airspace battles of those far off days. Later he returns to Germany, picking up trails from the past, flies glassfibre, takes part in his last contest and tries his hand at Championship organisation.

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ISBN 1 872308 23 6. **Please NOTE:** The correct price for a **hardback** copy of "Combat and Competition" is £15.95, plus £1.20 p&p (UK only). We apologise for the misleading information contained in our advertisement that appeared on p355 of the December/January issue of *Sailplane & Gliding*. This hardback edition should be available shortly. In the meantime readers can obtain copies of the paperback edition price £13.95, plus £1 p&p, ex-stock. Should you experience any difficulty with your order please phone: **0793-641796** and we will do our best to assist. **Newton Books, PO Box 236, Swindon, Wilts SN3 6QZ**

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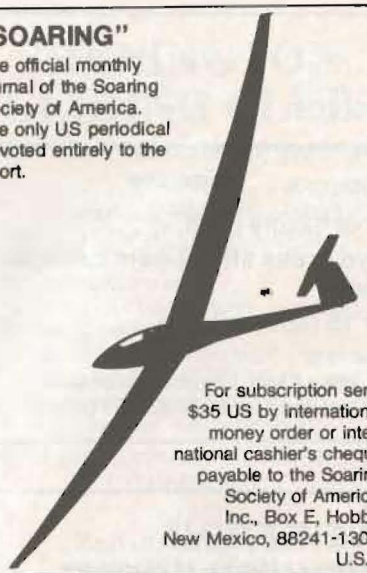
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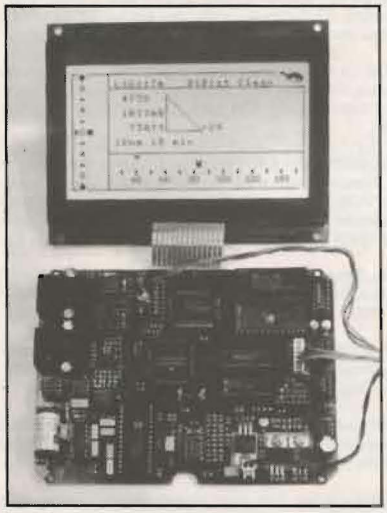
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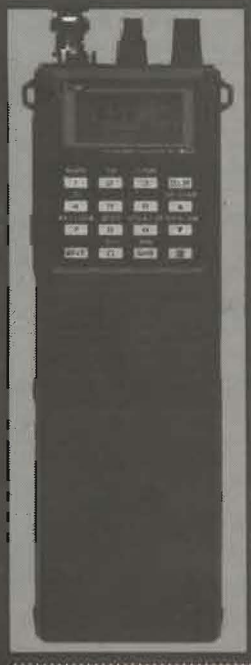
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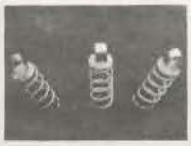
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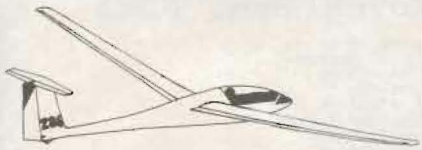
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**The December Cover. Sorry, but discount all you read about our cover in the last issue. It was nearly all wrong! It was taken by Tony Smallwood not Gavin Wills and from the back cockpit of Justin Wills's Twin Astir. But it was in New Zealand! Our thanks to Mike Garrod (Tony chose to keep a low profile) on spotting the mistake.**

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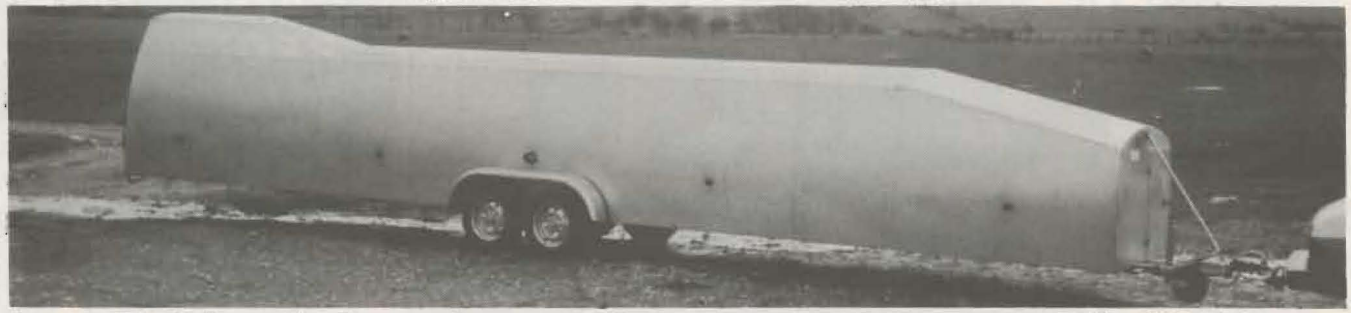
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