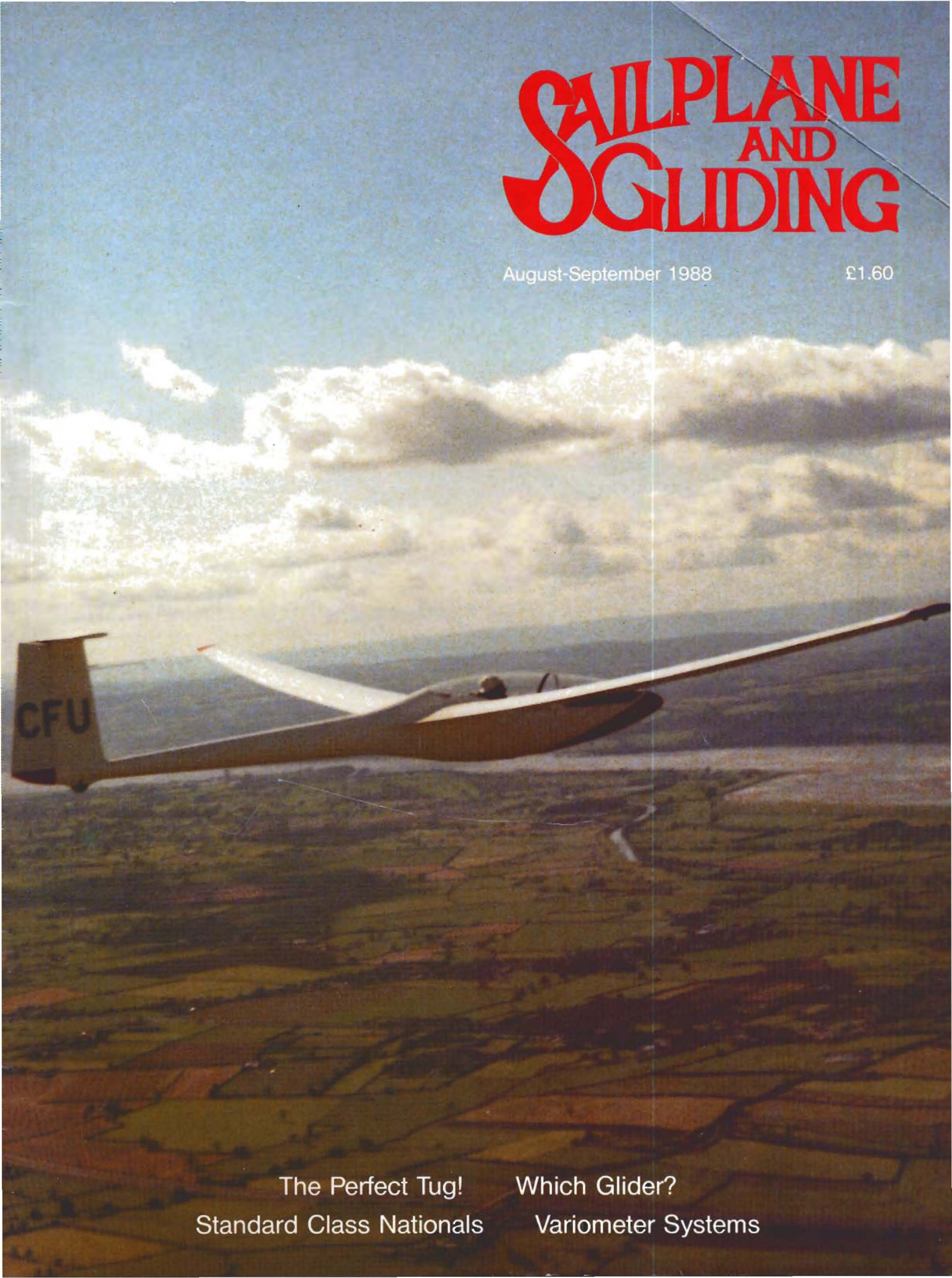
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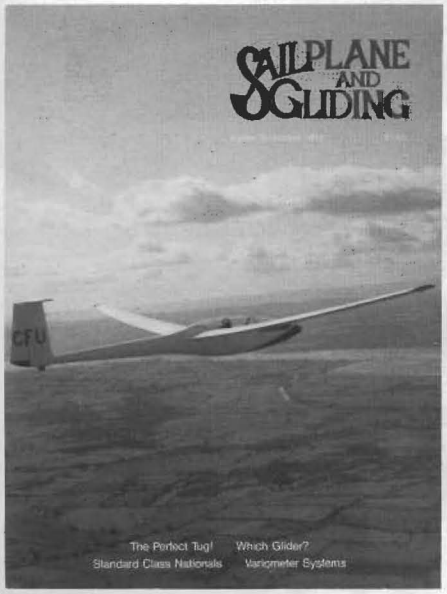
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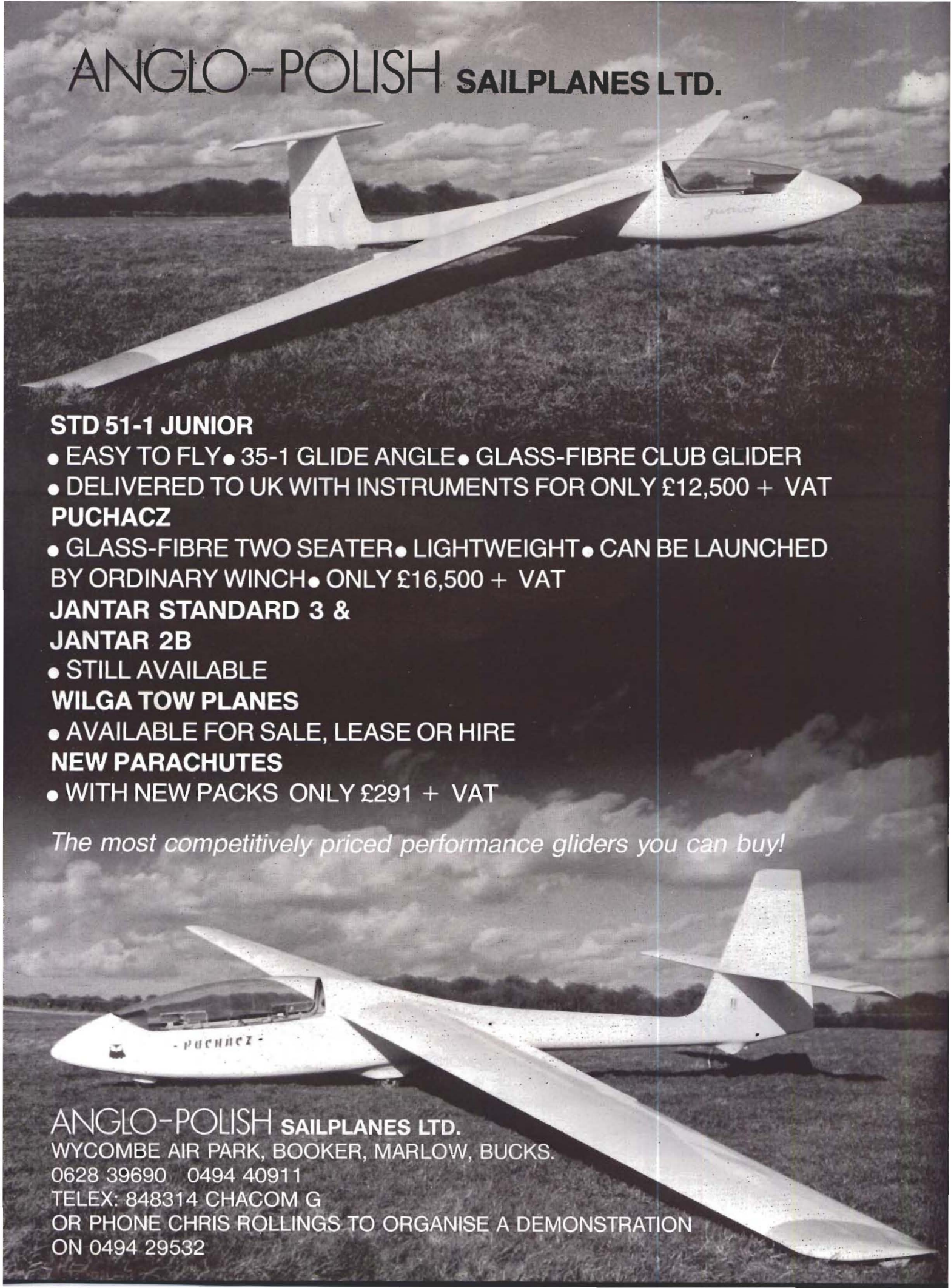
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Cover: Paul Little photographed this Kestrel 19, flown by James Metcalfe. The camera was mounted on his Libelle wing and the photograph taken looking west from Nympsfield.

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SERIOUS FUN

It's supposed to be bad form to listen in to other peoples conversations but at times you just can't help it, especially when you're inconveniently trapped in a place of convenience such as I was. It's also considered to be bad form to announce your presence in such circumstances, and besides, by keeping quiet you could learn something to your advantage. I certainly did. I soon found myself identifying with the still wildly enthusiastic but slightly over-the-hill character whose enthusiasm and persistence was not quite matched by his ability and who seemed to be the target for an ear bending. Anyway verbatim the conversation, if you can call it that, went like this.

"Did you do anything yesterday Pete?"

"Yes. Landed out for the thirteenth time this season. Either ***I'm*** *getting worse or the weather is getting worse. I always seem to come to a grinding halt in some indifferent bit which I never seen to quite get across."*

"Where was it yesterday then?"

"Severn Valley. I take some comfort from the fact that nobody else seems to have done a lot better."

"You know 'QT' did a 500k triangle with Chrissy in the **ASH 25** don't you?"

*"Oh yea. But I don't count that. I'm not in that league unfortunately. I think I'll stick to something sensible in my kind of price bracket. In fact I'm seriously thinking of upgrading. I'm just trying to decide which really is the best new Standard Class machine."***

"You know yesterday's was the sixth 500k the **'25's** done this season? In fact it hasn't done a single flight under 300k this year."

"For goodness sake Dick. You don't have to rub it in. You sound like a foot-in-the-door salesman and it doesn't become you. Next I suppose you'll be telling me you're going to buy one yourself?"

"Well. Funny you should mention it – but – I am seriously thinking of forming a syndicate. Fancy a share by any chance?"

"You've got to be joking. Look Old Boy, the ***25's*** *max glide is* ***only*** *about 40% better than a good Standard Class ship and its min. sink is* ***only*** *about 30% less. So what's the point of shelling out about 75% more money for an outfit when I can still do the occasional cross-country with what I've got?"*

"And occasionally get back? Do you realise Q.T.'s **25** has flown cross-country literally every time it's flown this year and it hasn't landed out once? So that's about four times as many cross-countries as we've done put together and it's clocked up about twenty five times the mileage in the process."

Dick was getting really wound up now. If I hadn't known it was all true I might have suspected him of statistical embelishment in the heat of the moment. As the discourse continued I could tell it was beginning to have some impact on Pete who rapidly became uncharacteristically quiet. You could almost hear his brainbox whirring. Unfortunately, following the ritual washing of hands, the discussion moved to more salubrious surroundings, out of earshot. But it left me wondering whether perhaps the economics of operating a 25 wasn't in fact a damn sight better than operating my 15 Metre Class ship. I went home and did some sums.

Well all that was eighteen months ago and needless to say I didn't have the 'bread' to buy a 25. But life is stranger than fiction and, would you believe, I am just coming to the end of my first season of ASH 25 ownership with Pete and Dick as partners. We sold our small span ships of course and actually finished up with a large amount of small change as well.

The extraordinary thing is that although none of us are what you would call real pundits, we have all more than quadrupled our flying time, have increased our cross-country mileage over tenfold (sometimes with the helping hand and advice of a genuine pundit in the back, I have to admit) and gone places and done flights which would have been pure fantasy a year or two ago. Needless to say our costs per hour/cross-country kilometer have gone down substantially too. Even on non-soarable days – and it has to be pretty grotty for that – we jolly our friends and family around and generally go through the motions of justifying the ownership of a glider.

And another funny thing. All this stuff that we got from the gloom and doom merchants about "... big machine, needs an army to rig it ..." is a load of codswallop. We can manage it easily with two, and as we are always two, where's the problem? As for flying it, if you've been flying a flapped 15 Metre Class machine like me – no problem. And if you haven't, still no problem; you just take an instructor with you until you feel up to it, and that won't take long. Ask Pete.

I think Pete summed it all up succinctly after his flight yesterday (a 400k triangle incidentally) when he remarked that "... Flying the ASH 25 was the best serious fun you can have in gliding ..." I concur.

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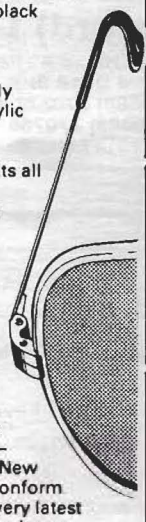
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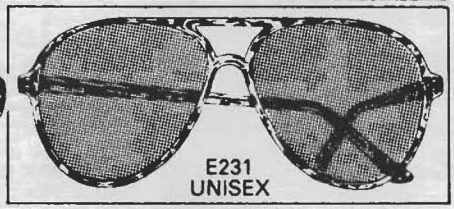
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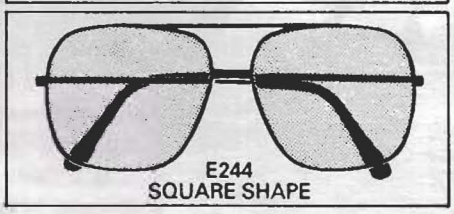


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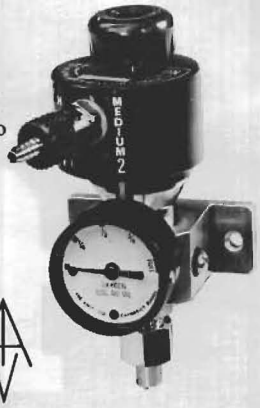
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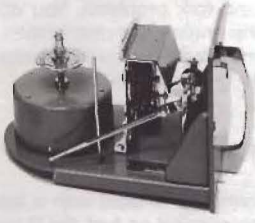
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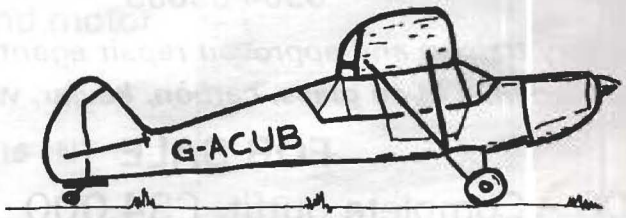
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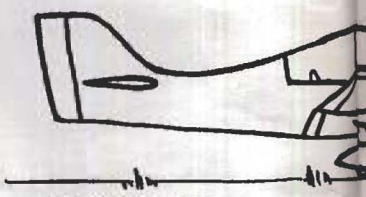
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Robin DR400-180R.

David gave a splendid lecture at the BGA Conference, using his experience as tugmaster at Lasham for 12 years. His advice warrants a wider audience and will be invaluable to any club about to change or buy an aircraft

Most of us can't afford exactly what we would like, so the idea is to make the money we have go as far as it can - and to be sure we don't waste any.

We own five tugs at Lasham, two Rallyes, two Super Cubs and one Robin and have some use of a Cessna 180 and the Nash Petrel. Sadly our Wilga has gone. We have had the Cubs since 1966 and 1971, the Rallyes we bought new in 1978, and last year we sold our Pawnee to buy the Robin.

In the interests of economy we sold a £9000 Pawnee to buy a £23000 Robin. Are we crazy? This is a hard question to answer and I will start by listing the fors and againsts of the most popular types of tug, hoping to show that a lot of things which seem to be purely subjective can be quantified and justifiable management decisions made.

SUPER CUB

The famous Super Cub is a direct descendant of the pre-war Cub and 10000 were made from about 1949 to 1969, so you aren't going to get a new one. They have had corrosion problems on the fuselage tubes and struts and although they are repairable they require a lot of man hours to maintain them.

For

The 150 is underpowered on hot days but the 180 is excellent for performance and economy. It is a good tail-dragger trainer, has two seats and a good short field performance.

Against

High maintenance costs. Poor visibility in turns. Ineffective ailerons - it is interesting to note that this was the only part of the aircraft Christen choose to completely change when they produced their new 180 Cub look-alike, the Husky. Many Cubs are more than 30 years old and do have strut and fork problems. You do need to have a 180hp engine and disc brakes. There is some evidence that the cowling design doesn't promote a long engine life.

ROBIN DR400-180R

For

The performance is ideal with a fast up and down. It's economical on fuel, the R version has excellent all round visibility and hush kits are available.

Against

High capital cost and hence high insurance. High insurance and low utilisation don't go together - maybe this is a larger club aeroplane. It's not good for slow gliders or novice glider pilots - the Vintage Club won't be buying one. It drops a wing if the approach is too slow, has poor propeller clearance and you can't use Mogas as it has an engine pump.

PAWNEE

This is a personal favourite and one I was sorry to see go, but we had decided a while back on an all 180 tug fleet.

For

Good acceleration, cheap to buy and has a low insurance. It is the best crosswind tail-dragger ever, good for fields, has a rugged airframe and is macho fun. If we had long hot summers the 235hp engine and the good cockpit ventilation of the B and C versions would be welcome.

Against

It has an expensive engine, high fuel consumption, a single-seat, poor view from the cockpit, may be hard to sell and is noisy.

If you are thinking of buying one I would stick to a 235hp engine as I believe there are a number of four bladed quiet props available for this version.

RALLYE 180T (not the Commodore)

For

Safe handling, good visibility apart from the wide nose, it's a good trainer with four seats, hasn't any fabric, all parts are available (with delays) and hush kits are made for it.

Against

There is a risk of corrosion, although ours are OK. Complex flaps, slats and undercarriage adds to the maintenance costs and the majority of our bills for parts fall into this area. The small wheels mean it isn't good for fields and it shares its hatred of Mogas with other 180s that have an engine driven pump. Expect problems on days when the temperature is above 20°C or 70°F if you are using Mogas.

OTHER TYPES WORTH CONSIDERING

Chipmunk/Supermunk

Super handling but avoid Gypsys as there are problems with the spares.

Citabria 150hp or 180hp Scout

Comfortable but poor visibility and again problems with spares.

Auster/Beagle

They are both for enthusiasts, have a poor performance and spares problems.

Wilga

It may not be the most technical recommendation, but I like it. It gobbles fuel and oil. Has a complex engine, a difficulty with spares and in the opinion of the Poles, it should be thrown away after 2400hrs because this is what they do in Poland.

Tiger Moth

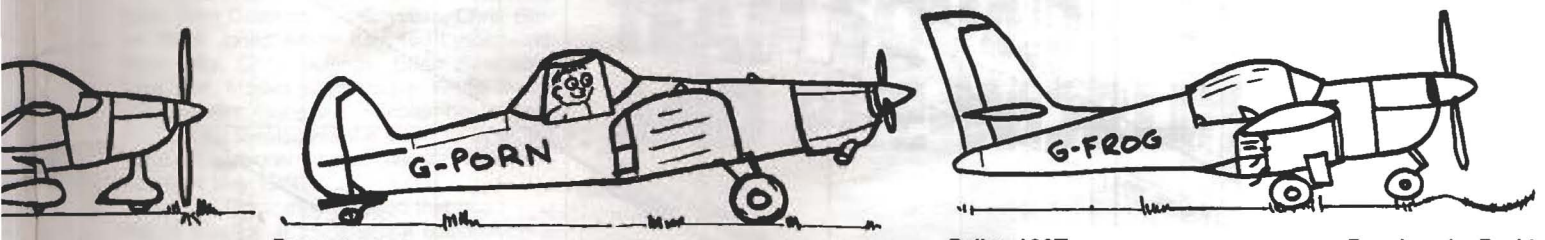
It might appreciate in value provided you don't fly it! Gypsy engine, no performance, no brakes and high insurance.

Performance. Now let's look at performance in more detail. Over the years I have sat in tugs noting down times to various heights with various gliders on the back. I have found that Robins climb best, 180 Cubs and Pawnees aren't far behind and it will come as no surprise that 150 Cubs don't keep up with 180 Cubs.

Before I bought a stopwatch my subjective perception of different aeroplane performance was to say a 180 Cub climbs twice as fast or a Kestrel takes twice as long as a K-8. In fact all the differences are smaller than I believed - under a minute to 2000ft.

While collecting figures in the Pawnee I recorded 2.59min to 2000ft for a K-8, 3.5min for a K-21 - climbs of between 570 and 660ft/min. Other aircraft also have a significant scatter which makes it hard to detect whether tugs decline with age. Where aircraft differ in what can be an important way is at the very start of the flight.

What we are talking about here is safety for the glider pilot which comes from two things - acceleration and the initial climb clearing a



Pawnee. Rallye 180T. Drawings by David.

50ft obstacle.

Good acceleration prevents groundloops on take-off. A Nimbus 3 owner told me we should have kept the Pawnee and charged more for it. He would gladly pay what it cost for peace of mind for the first few seconds - that period when your helper has let the wing go but there is not enough speed for full aileron control.

It's a good point. Is it worth risking very expensive gliders by saving say £1 a launch? Here the Pawnee is a clear winner, the 180 Cub a good second and, in fairness, most 180s are reasonable in giving adequate acceleration. But for a narrow strip and frequent crosswinds a Pawnee may be the only safe answer.

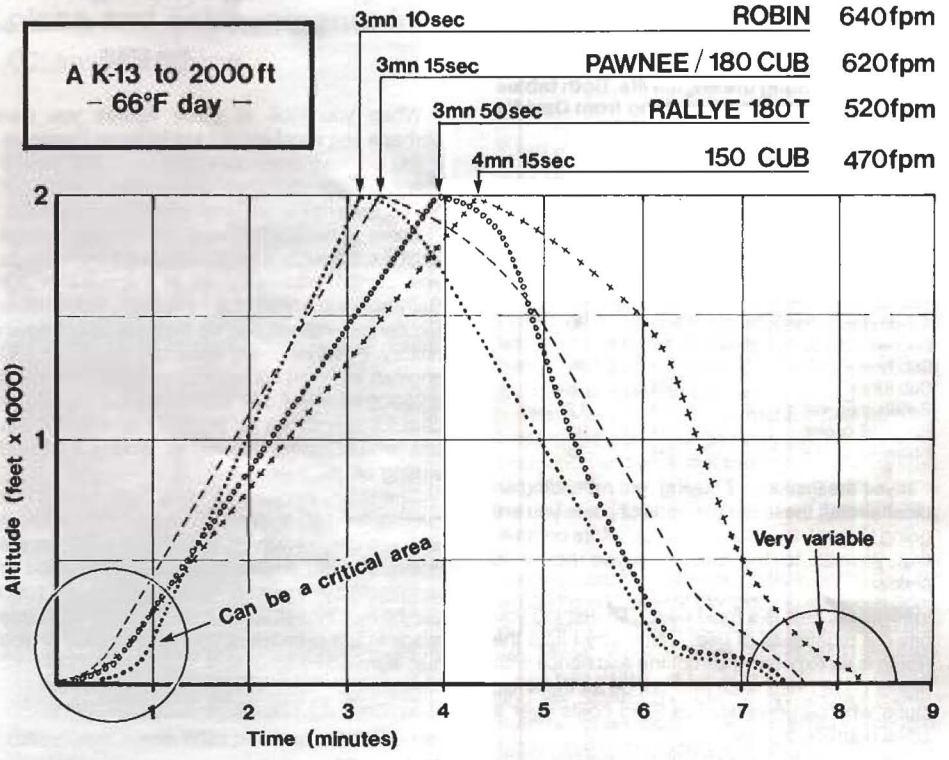
We all know the Robin has a really good climb once it is up to speed, but it does have a long ground run which detracts from its ability to clear trees at the end of a strip. Again, to avoid being low over trees, buy a Pawnee or 180 Cub.

OK so we are off the ground climbing well - now which is the best tug. Not the Pawnee this time - noisy, long nose, poor trimmer and, surprisingly, poor visibility and not the best climber.

For sheer climb performance the Robin wins. It is also good to see out of with a narrow nose, low wing and when it comes to the descent, which is mostly flown at rough air speed, it is a clear winner. But when you get back on the ground you want much more airfield than either of the other two contenders - the Rallye or the Cub.

For rough weather, crosswinds, rain and short landing runs you can't beat a Rallye - good visibility in the circuit and safe, predictable handling gives it some high marks in my book. Also of all the tugs the Rallye is the least pulled around by the glider - it is less tiring and safer.

We may have a winner so far, but is it the whole story? Definitely not. Let's again use real Lasham figures to look at other factors we have to consider in our quest for the perfect tug.



A table showing the performance of the four tugs.

Economy

Still want to buy a Pawnee?

The table shows the fuel usage of our tugs. Our average tow height is close to 2000ft. In preparing these figures the only assumption one has to use is that each 6min of non tow flying uses one gallon of fuel. This seems to be saying that tugs use ten gallons an hour which they don't. It is more a reflection on the honesty of some people who under-record the time they fly to save themselves money.

The 150 Cub figures show the consumption went up in 1986 and 1987 and if you averaged just these last two years would jump to 1.19. This shows what can happen when you change engines - this Cub had a new engine in September 1985 and since then has cost more to run.

Is the difference significant? In 1987 the Cub did 3410 tows and was using .3gal more than the 180 Cub or the Robin. If they had done these tows we would have used £2000 less fuel. Certainly a very significant figure.

But there are more factors to consider.

FUEL CONSUMPTION (AND MONEY!)
Gallons/2000ft tow

	150 Cub	180 Cub	Rallye 1	Rallye 2	Pawnee	Robin
1984	1.02	1.00	1.06	1.05	1.33	-
1985	0.95	0.87	1.05	1.03	1.28	-
1986	1.14	0.93	1.10	1.09	1.45	-
1987	1.23	0.91	1.07	1.19	-	0.92
Av	1.03	0.93	1.07	1.09	1.35	0.92

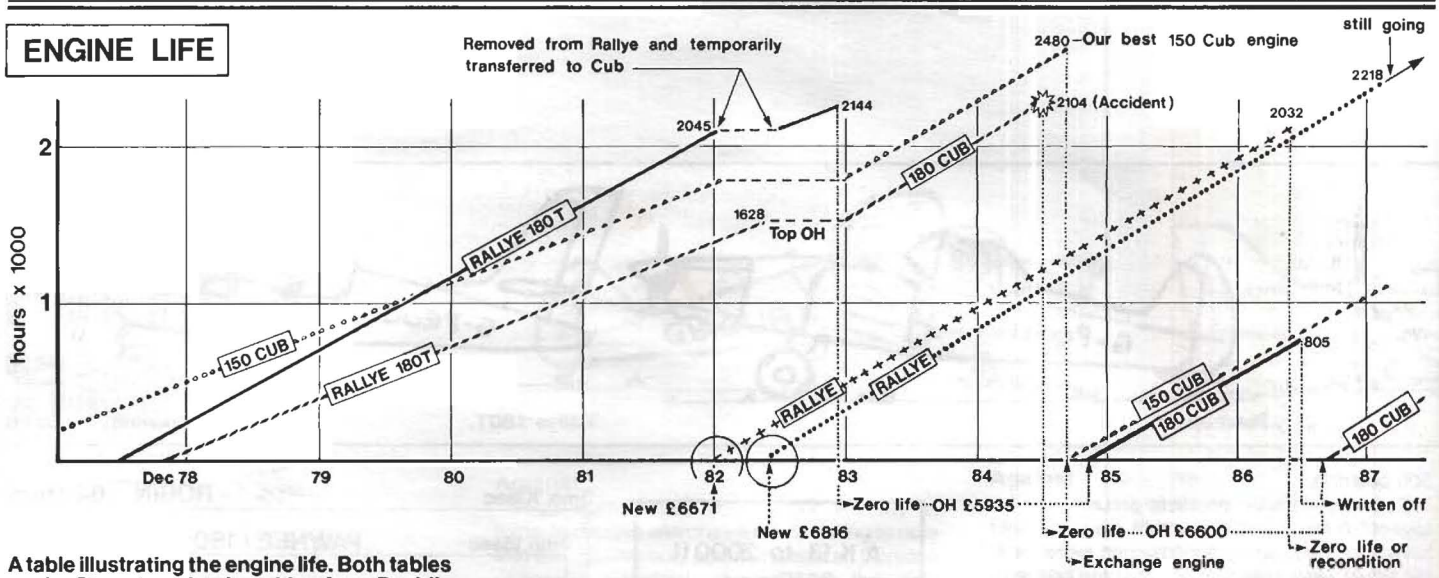
In 1986 Rallye 2 did 4062 tows - 4062 × 1.09 = 4428gall. What would other tugs have used?

	Tows	gall/tow	gall used	compared with 4428	£
Robin	4062	0.92	3737	691 less	1380 saved
Pawnee	4062	1.35	5484	1056 more	2110 more

Fuel. Buy a tug that is economical if you are thinking of doing more than 50hrs towing a year. Mogas is cheaper than Avgas but needs an aircraft with an engine that doesn't have a built in fuel pump - the Cub or B or C series of Pawnees.

Oil. Don't waste it. Get competitive quotes.

Spares. The table below says it all. For instance, the starter is similar to car ones costing £60 and this theme is repeated throughout the list.



A table illustrating the engine life. Both tables are by Steve Longland working from David's original drawings.

Cost of Parts

	£ (Tug)	£ (Car)
Spark plugs	9	2.50
Cub Silencer	351	35
Cub dynamo	272	20
180 starter	247	60
4 Cub strut forks	256	30
Pawnee prop bolt	21	2
Cub tyres	52	15
Cub tubes	24	8
Bendix mag key switch	68	12
Rallye oil cooler	254	25
Hoses for above	404	15

If you are thinking of buying and rebuilding an older aircraft these are the sorts of costs you are going to meet. Do your sums first before committing yourself to big bills - maybe newer is cheaper.

Insurance. This is a fixed cost - something you pay out regardless of use. That's why I said the Robin is an expensive aeroplane and hence with higher priced insurance may not be for the small clubs who can only spread fixed costs over a small number of tows.

Remember, know your costs to control them. You don't have to be an accountant to collect prices and analyse them - common sense and the normal skills used in making your wages go far enough to let you fly is all that is needed.

The Pawnee comes back a bit here. Having lost out by £2000 in the fuel stakes, here it saves you money as Pawnees usually have a fairly low capital cost and your insurance premium is partly a percentage of the aircraft's value and partly a per seat payment. No passenger seats keeps the Pawnee insurance costs lower than any other tug of the same value.

Engines. Here are some of the engine prices quoted from CSE Oxford earlier this year. It includes 5% discount with the £1=$1.70

	235hp £	180hp £
Brand new	16780	11650
Core deposit on all the following	3925	3025
Exchange old for brand new	12855	9235
Remanufactured exchange (all new moving parts)	9735	7050
Factory overhaul exchange (parts within limits retained)	6470	5030
If the exchange rate moves to £1=$1.20) a new Pawnee engine would cost	24950	

When you look at these figures you can perhaps see why I am not too keen on Pawnees. If you do have crankcase problems that means you don't get your core deposit back and your exchange engine will cost you an extra £3000.

Some time ago I was against exchange engines. I thought it better to rebuild the engines you owned, especially, as in the case of our Rallyes, you had the engines from new. Exchange engines can be third life of unknown history. However, early last year one of our 180 engines, with just 700hrs into its second life since a £6000 overhaul, self destructed in a big way. A cam follower broke up and the crank hurled the bits around inside the engine, writing it off and writing off my theory.

Currently we are finding you can buy overhauled 180 engines for about £7500 without any exchange involved, and this is what we are doing. The old engine often has some good or repairable cylinders so the extra £500 to £1000 can be money well spent if you get an irrepairable crack in the cylinder of your new engine or you just want some spares.

It is silly not to keep track of engines

Having spent all that money, how long is an engine going to last? Keeping track of engines isn't always easy but they are such expensive items it seems silly not to do so. I would be most interested in how other clubs get on in terms of engine life - a BGA database would be useful.

Of the two new Rallyes we bought in 1978, the engines went well up to 1000hrs then both started using a bit of oil and were getting marginal on the 50hr compression check. One got worse and had to have a new cylinder, later it had to have more cylinder work and by the time it was removed at 1628hrs it had cost us £3760 more than the same engine in the same tug type flown by the same people at the same time!

The other engine was using oil so was removed at 2040hrs and used to build our 180 Cub. We then flew it for 100hrs before its high oil usage made it uneconomical -W100 is £15 a gallon.

With two new engines in two new tugs having such different histories it is hard to make predictions about what particular engines will cost to operate. As a guide reckon on a top overhaul at around half life of about £1500. I think poor pilots could shorten your engine life and good ones improve it. At Lasham we try to drum into all our pilots that careful engine handling in the initial descent is vital.

My last point on engines concerns buying second-hand aircraft. If you buy an older aircraft with a reconditioned engine the engine could be into its third life. Quite often these give problems when you exchange them and you don't get your core deposit back. This means a 180 exchange could cost you £8000 as they seem to last about 2000hrs. Each hour is worth £4 and the difference between an aircraft with a 500hr engine and a 1500hr engine is about £4000 - 50% of the value of an older Super Cub.

Running through the rest of the costs I would like to mention the following:

Ropes. We use 1500lb rope with a single large Ottfur ring on a Mitty weak link at the tug end and Tost rings at the glider end. This keeps us legal - are you?

The whole rope, rings and weak link costs us £34. They are hard to keep tabs on but as they are so expensive, at least encourage people to look after them.

Despite this trying to cover all the costs we can think of in some detail it will probably come as no surprise we have still not arrived at one perfect tug. However, I hope I have showed that you can list and balance the compromises. You can ask other operators about their experiences and you really do have control over the costs. With some understanding of these costs you can drive them down quite a way.

Noise. We are trying to defuse the problem of noise by going for quieter four bladed propellers, by publishing approved routes and banning tugs from certain areas. Once the engine has cooled a bit it may be possible to throttle back further than we do now specifically to reduce noise a little more. We assume it is the full power climbs that cause the problems but this may not be so for all complainers.

As this becomes more of a problem for clubs this too - the ability to quieten the aircraft - is yet another factor to bring in to the search for the perfect tug.

When you've found it, let the rest of us know!

TEAM SQUAD AND PRE-WORLDS

Ben, British team manager, brings us up to date with UK plans and achievements in the run up to the next World Championships

The British team squad is John Cardiff, Andy Davis, John Delafield, Jed Edyvean, Chris Garton, Ralph Jones, Alister Kay, Ted Lysakowski, Robin May, Chris Rollings, Brian Spreckley, Dave Watt, Martyn Wells, Steve White, Justin Wills and Mike Young and in September they will elect among themselves the pilots to fly in the World Championships at Wiener Neustadt, Austria, in May 1989.

The BGA Committee decided that pilots who wish to practice at the Austrian Nationals (the pre-Worlds) in May 1988, should be in order of priority from the Nationals Priority List. The selection for the European Championships would be from the 1987 Nationals taken Class by Class. No pilot could go to both.

The outcome was that practising at Wiener Neustadt was Brian Spreckley (who gets a guaranteed "extra" place in 1989 as current World Champion), Justin Wills, Martyn Wells and John Bally. John Delafield had hoped to go but his ASH-25 was not ready in time. Dave Watt and Andy Davis will be practising over the contest area later in the summer because they could not get leave in May. Chris Garton got his practice at the Wiener Neustadt 1987 Comp.

In June Ralph Jones and Robin May (Open), Jed Edyvean and Peter Sheard (15 Metre) and Ted Lysakowski (Standard Class) went to Räyskälä, Finland, for the Europeans. (There will be a report in a future issue.) Chris Rollings should have been the other Standard Class pilot but he could not raise the money - £2000+ even after a Sports Council grant of £1000.

A risk choosing May

The 1988 Austrian Nationals (pre-Worlds) were interesting. Thirty three pilots from 15 other nations were competing alongside 53 Austrians whose selection for 1989 depends on the results. Notable absentees were the Germans whose Nationals coincided. The Austrian organisers had taken a risk by choosing the month of May for a few outstanding days to counterbalance the probable grot. Statistics show 7-11 competition days out of 14. Their 1987 Comp achieved 11. This year Day 1 was great but was followed by three days grot, two days flyable grot and four more days total grot.

The good news was that Justin Wills had won the first three days and was leading the 15m Class by 100pts. However, Brian Spreckley had trouble with his undercarriage and missed Day 1 so was out of contention; as was John Bally who flew very well but scored 0 on two days with photo failures. Martyn Wells said he was learning for next year.

In the end the weather improved with four flyable days each better than its predecessor and one 517km O/R for the 15M on the last day. Justin continued his confident run in terrific style winning Days 5, 6 and 7, the latter at 108.7km/h, to take the title. Marco Gavazzi of Italy won the Open in his ASH-25 (one of six two-seaters out of 15 ships in the Open) and Brigliadori won the Standard Class. Next year looks like being as nail biting as ever.

The Austrian organisation which was inexperienced and variable in quality had to suffer some heavy criticisms which hopefully will bear fruit next year. In spite of having a grass airfield of some four square kilometres they restricted the landing area and finish lines to about one tenth of this in order to pay less rent to the military authorities. And in spite of this the entry fee of £380 did not include the maps, TP photo books and camera film which had to be separately purchased. Some new rules and imaginative new types of tasks were introduced to discourage "gaggling" and "leaching" *eg* a "mixed" speed and distance tasks with pilot selected TPs, a bonus 7½% for landing home and a time limit (1900hrs) after which the average speed of the last leg is used to calculate the distance flown before 1900hrs. Whether CIVV will approve this for 1989 remains to be seen.

The Met man, Dr Hermann Trimmel, was brilliant and got it spot-on every day. He has three Diamonds and was effectively task setter as well. On his own he is enough to guarantee us a marvellous Championship next year if the weather gives him half a chance.

Leading results: 15 Metre Class, 1. T. J. Wills (LS-6) 6237pts; H. Just (ASW-20c), Austria, 5918pts; 3. P. Cerny (Ventus B), Czechoslovakia, 5787pts; 18. M. D. Wells (LS-6A), 4202pts. The Open Class was won by H. Lackner (Nimbus 3), Austria and the Standard Class by G. Stögner (LS-4), Austria. Brian Spreckley (Pegasus), Standard Class, and John Bally (Nimbus 3), Open Class, competed on some of the days.



Gillian and Justin Wills photographed by Ben Watson.

!! Magpie is pressing on down-under !!

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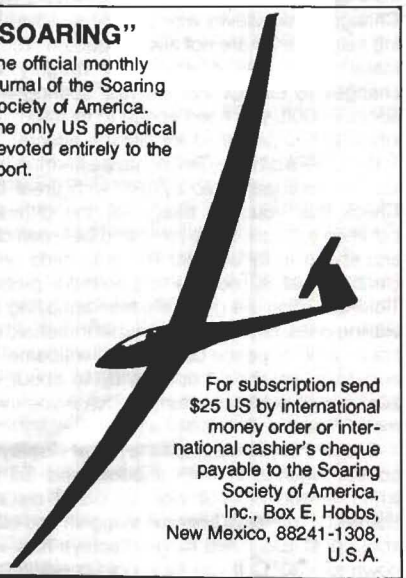
Bonanza news flash: three 1000km Diplomas and numerous 750, 500, 300s in December/January 1988. Book your holiday early! We shall be busy next summer!

Write for full details to:
John Williamson, Gliding Club of Victoria, PO Box 46, BENALLA, Victoria 3672, Australia. Tel: STD from England: 010-61-57-621058 (but don't forget the time warp! We are 10 hours ahead of you.)

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VARIOMETER SYSTEMS

We are constantly being asked for information on variometers which is the reason for another comprehensive article on the subject this year. In a two part feature Chris Chapman, a physicist who flies at HusBos, gives further advice and information on the systems currently available.

Choosing your system. Varios come and varios go, but pilot complaints go on for ever! The perfect vario has yet to be made, so I have listed a number of things for you to consider when choosing a system, with my opinions.

Do you want a main or a backup system? What panel space do you have? Do you want a mechanical or an electrical vario? How about an audio output? What electric power do you have? Do you want a Netto display, and averager, speed to fly or a final glide calculator? How good is your static system? Do you have a TE Probe? Will you want to expand the system in the future?

Some manufacturers are very economical with information on their data sheets. Don't be afraid to **look** and **ask** before you **buy!** You need the instrument to make measurements and it is entirely reasonable to ask how well it does it. Check the data sheets for zero stability, response time, calibration accuracy, change of sensitivity with height and temperature, operating temperature and altitude ranges, as well as unit sizes, weights and power requirements.

A good zero stability is needed over a wide range of temperatures and for large changes in temperature Look for an overall zero stability of +/− 0.25kt from +50 to −20°C and of +/− 0.5kt for 30 C degree environmental temperature changes. You need to know that **up** really is **up!** Vacuum flasks are satisfactory, but light plastic flasks will **not** give you this sort of stability. Changes in battery, voltage (11-14v for lead acid batteries) should not affect either the zero or the calibration.

"For thermal soaring much above 5000ft, you need speed to fly information which is compensated for altitude effects."

The calibration should be accurate to +/− 10% or better over a wide temperature range. Changes in sensitivity with altitude and the working height range are not always quoted. You can make allowances if you know roughly what changes to expect. For thermal soaring much above 5000ft, you need speed to fly information which is compensated for altitude effects.

If you are a bit tone deaf or have a hearing problem, choose the audio system with great care. Check that you can easily tell the difference between different climb rates and between climb and speed to fly signals. Trying to glide on the climb signal is not an uncommon problem! Ticking audios are generally less annoying than wailing ones. I like to have variable threshold controls - a bit of peace can be very welcome! The audio system should operate up to about +/− 20kt and should **not** change pitch if you switch meter ranges.

Check that you can read the meter display and control legends in both shadow and full sun, when viewed at your **normal** panel distance. Some LCD displays become sluggish and faint at about 0°C. Extended range displays may work down to −30°C. If you fly in cold conditions, try operating the vario while wearing gloves.

Check that the stray magnetic field from meters and loudspeakers will not significantly effect your compass. You can compensate for errors of up to about 30° in level flight, but large errors are difficult to compensate accurately. If your compass is panel mounted, look for errors of less than 10° at 8in.

You need a high immunity to radio interference, both from your own transmitter and from any passing broadcast station. It is quite annoying if the vario goes beserk every time you press the transmit button. Some systems are properly protected with metal cases and supply line filters.

The output should stabilise reasonably quickly after switch on. Some pressure transducer varios take half a minute to settle down initially. If the vario is not protected from damage due to **reversed** battery connections, fit a Schottky diode in its supply line!

Being able to switch the response speeds and display ranges can be quite a help in turbulent or weak conditions. You can't use an eddy which is smaller than the glider and there is a definite disadvantage in having information presented to you faster than you can use it. It takes about a second to take a reading, make a simple decision and start to act on it. A **true** 1 to 2sec response rate is about right for normal use and up to 7sec for turbulent conditions. The response quoted on a data sheet may apply to just the instrument and not to the working system (see Fig 1).

The TE compensation is adjustable on some electrical varios, which use pitot and static sources. This can be done satisfactorily if the static error versus speed graph is very nearly a straight line and the errors are not too large. Do ask if the vario will work with your glider if you are not sure.

With a speed to fly system, will you want to have the switching to glide done remotely by the flap lever? You may need settings for different weights and for buggy wings. The adjustable dial type can be set for a range of conditions. It is better if the main display reads Netto during the glide and the speed to fly display is separate. Super Netto reads airmass less the typical sink value for a climbing turn. Since you want to know what the **air** is doing while you are gliding and the sink in a turn can be anywhere from 1 and 5kt, depending on your water load and angle of bank, SN doesn't seem to me to be of much advantage. A moveable "climb" sub-scale on the Netto meter might be more useful.

A computer system only has knowledge of past conditions and your manual inputs. Only you can recognise a terrain or weather change, spot the next good looking cloud or decide that you are passing Bradford, not Leeds. The systems provide height independent information, calculate and monitor final glides, help with navigation and may also analyse your performance. Consider carefully what in-flight or other information you actually use or need. Find someone who actually uses the system and discuss it with them.

Choose a system with your glider, experience and type of flying in mind. Mechanical varios with vacuum flask capacities will read TRUE climb rates to over 30 000ft and need no electric power. Thermistor systems lose sensitivity with height rather rapidly, but will perform well for thermal soaring in British conditions. Most pressure transducer systems are compensated for climbs up to about 20 000ft and will perform well under Continental conditions. If you have an L/D of 60:1 and go in for 40km final glides, a final glide computer will reduce your workload, as well as your bank balance!

"Adding a Netto capillary and pneumatic switch is a considerable improvement for the limited height range of British thermals."

A mechanical vario with a speed ring provides the cheapest speed to fly system. They can be calibrated to be accurate at **any** height. If there are large ASI static errors, have the speed ring calibrated to compensate for them. The corrections can be quite large. Adding a Netto capillary and pneumatic switch is a considerable improvement for the limited height range of British thermals. It allows you to read airmass movement during the glide and the needle points directly at the speed to fly, but it will tell you to fly quite a lot

too fast above its compensated height range. If you carry water, you need two capillary systems on the same vario. The calibration of a Netto speed ring is different from the ordinary ring. Adding an audio unit, which is basically a thermistor variometer with an audio output, puts up the cost considerably. The slowish response times may be a disadvantage when you are sampling thermals, looking for a good one.

"Speed to fly rings are not normally used, since the systems are affected by altitude and temperature changes."

Thermistor based systems are much faster and since the output is electrical, adding an audio unit is not so expensive. The ranges and response rates may be switchable and 30sec average rates of climb may be displayed. Netto capillaries can also be used. Speed to fly rings are not normally used, since the systems are affected by altitude and temperature changes. The operating height range of a thermistor speed to fly system is limited and it is likely to tell you to fly too fast above this height.

Pressure transducer systems are very fast and inherently more accurate than thermistor systems. Some of the early ones were a bit crude, but most current models are fully temperature and altitude compensated, within limits. The ranges and response rates may be switchable. To get a Netto display and an averager, you need to buy a speed to fly vario. Speed to fly readings are compensated for altitude effects. Some systems are marketed as separate units, so that you can start out with a simple vario and expand the capabilities later.

The plumbing and leaks. If your plumbing system is leaky, your variometers will not work properly. I strongly advise you to check for leaks at least at the beginning of the season. Read John Williamson's articles on varios and leak testing in S&G April, 1985, p70, and June, 1985, p120, and buy one of his leak test kits. John said that about a third of the gliders coming on the cross-country courses had defective plumbing. A leak may not stop you flying, but can **you** afford a handicap?

Common sources of leaks are moulding ridges on hose connectors, O-rings on multi-way connectors, water traps, instrument glasses and flask stoppers. If you use a thermistor based speed to fly vario or a JSW Netto conversion, remember to clamp the pitot tube connection to the vario before testing for leaks. Both systems use a fine "leak" tube to sense the airspeed. TE probes are quite sensitive to leaks, so please don't try to "seal" them with tape! Push 2in of silicone rubber tube over the junction, using a little soap as a lubricant. On systems where the probe plugs straight into the fin, a sealing ring of Plasticine or Blutack can be used, or it can be sealed in place with silicone rubber sealant.

Clear PVC tube is not very good for connecting instruments. It is difficult to remove, kinks easily and hardens with age and when cold. The sharp ridges on hose connectors make permanent grooves inside the tube, which can be a source of leaks. The extra soft, kink resistant variety is **well** worth the small extra expense. Replace the tubing when it starts to harden with age.

When plumbing a panel, design a compact rigid layout using short connecting tubes. If your audio sounds like a demented cricket after touchdown, support or tie down any sections that can move. Tubes which can flex under changing *g* loads can give errors on a fast variometer.

All air inlets need water traps, but not all TE lines have one. Water in a line causes erratic operation of the instruments. Plug the earpiece of a radio into one end of the tube and listen at the other end. A water block will stop the sound. It isn't easy to dry out a long tube. Try draining it first. Then pull a doubled up length of ribbon through the tube using a curtain spring or use a vacuum cleaner to suck hot air from a hair dryer through it. Check your water traps regularly. If you have aft fuselage statics and fuselage water vents, discharging water while descending rapidly can completely fill the static line!

Long tubes. The small resistance to air flow offered by a long tube can affect a vario, particularly if the ASI uses the same static. A gust will expand the ASI capsule and push a puff of air into the static line. The puff will see a short tube leading to the vario and a long tube leading to the fuselage static. Flowmeter type varios offer very little flow resistance and an appreciable fraction of the puff can find its way into the flask, upsetting the vario. The static line will recover in a fraction of a second, but the vario takes much longer. If there are static errors, a gust will also produce a pulse on the static line. A gust filter greatly increases the flow resistance and reduces the errors, but has only a small effect on the slower vario response rate.

With a TE probe in the tail, there is a short delay while air flows through the long tube. On a speed to fly system, the signal from a nose pitot can effect the vario first, giving an error.

"If you park your glider in the sun for any appreciable period, put a cover over the canopy or use a sunshade."

Heat and sunlight. Strong sunlight supplies about 1kw of heat per square meter. Black paint will absorb most of it and the temperature of an enclosed black surface can rise to near 100°C. Heat is lost by radiation and by air cooling. Temperatures over 80°C can damage some electronic components and may evaporate lubricating oil in instrument bearings. If you park your glider in the sun for any appreciable period, put a cover over the canopy or use a sunshade. The mushroom style instrument pedestals are not usually well ventilated. I measured an actual instrument temperature of 74°C in one. The radio had stopped working and the electric vario was off-scale. If you take off with hot instruments, the ventilation will suddenly improve and the rapid cooling is likely to cause drift problems. You can also get fair sized temperature changes with off scale climbs and when descending in wave troughs. If the sun can shine directly on to an unmodified plastic vario flask, expect +/− 2kt heating and cooling errors.

Calibration, bench and flight testing. The main problem for the pilot is that without doing some testing he has no real way of knowing what the **** vario **should** be reading! Instruments calibrations do change with age and can be affected by hard landings and long bumpy trailer rides.

Now, how important is an accurate vario calibration? Let's put some figures in for +/− 10%. With a 15m glass glider, 5kt thermals and 5kt indicated sink, +/− 10% represents glide speeds of 80 to 85kt. If you add a +/− 10% uncertainty in the climb rate, the error band goes up to nearly +/− 5kt. This seems to be OK, but I wouldn't want it to be much worse.

"The drift and calibration sensitivity at low temperatures can be tested by putting the instrument in a deep freeze."

A simple variometer calibration rig was described by me in S&G, 1983, p66, together with instructions. You can get a better than 5% calibration accuracy quite easily to over 5000ft and can also test capsule and electronic TE systems at ground level. The drift and calibration sensitivity at low temperatures can be tested by putting the instrument in a deep freeze. Put the whole system in a plastic bag before you take it out, to prevent condensation problems while it warms up.

While you can check a variometer **up** calibration in smooth wave lift, it is nearly impossible to do it using thermals. However, you **can** check the **down** calibration! Find a bit of quiet sky, fly in a circle and trim the speed. Hold the sink rate on a chosen value with the airbrakes. If you choose 4kt, measure the time (~60sec) for a 400ft change on the altimeter. Repeat the process for other sink rates and intervals, but watch out for Mother Earth! Remember to thump the panel with your knee to eliminate any sticking in the altimeter. Your readings should be accurate to 10%. Write the timings down and do the calculations back in the bar! The up and down calibrations of mechanical varios can be different, but the electrical types are usually pretty symmetrical.

The fine capillaries used in some Netto systems are easily blocked by dust and shoud be provided with a filter. Cut a ¼in × ¼in diameter cylinder of **low** density polyurethane foam and insert it into the 5mm connecting tube. This will remove dust, but should not affect the flow. Replace it annually. Miniature fuel filters can also be used, but the system should be calibrated with them in place.

If you have a vario which uses a flask, check

that the flask has metal mesh or other filling and fit a gust filter which is matched to your vario response. The filling improves the response rate and the gust filter reduces unwanted signals due to turbulence. Choose the gust filter "response time" to be about half response rate of a mechanical vario and about the same as the response rate of a thermistor vario. Both "mods" produce noticeable improvements.

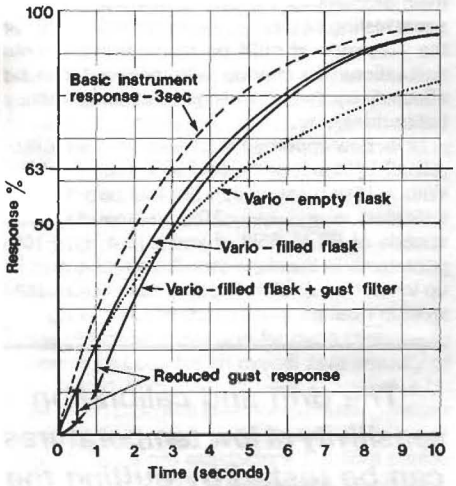


Fig 1 Calculated responses of a 3sec mechanical vario.

While I do not advocate it, you can connect a thermistor vario in series with a PZL or a Winter, but both varios should be calibrated for the **same** capacity. A mechanical vario has a large internal volume and the thermistor vario should be connected between it and the flask. I looked for interaction problems between two varios, using a Cambridge and a PZL. They were small and unlikely to be serious in practice (contrary to a previous report). The gust filter should be chosen to suit the thermistor vario.

Check how sensitive your system is to rudder position and to yaw. Both the rudder and the elevator can influence the pressure at probes mounted on the tail. Fly straight and level at 50kt and momentarily put on full rudder while watching the ASI and the vario. Remembering that a 2½kt variation in airspeed at 50kt corresponds to a 10% change in pressure, there should be very little change in the readings. If there are significant changes, you may have to mount the probes further out from the tail. Then fly towards some landmark, yaw the glider and watch the ASI and the vario. Note the angle at which you start to get problems and also the position of the yaw string. If you mark out the yaw string angles with tabs of tape, you can measure and mark the angle at which you start to get problems.

To test the TE system in flight, find a patch of sky which is reasonably free of lift, sink and other gliders. Fly to and fro through it and note the sink rate in steady flight at 50, 60 and 70kt, to the nearest ½kt. With your free hand, use a suitably attached piece of string to measure the stick position in a steady 70kt dive. Then trim out at about 40kt and push the stick steadily foreward to the 70kt position, without greatly reducing the *g* loading. Note the vario readings as you accelerate through the 10kt increments until you are in a steady 70kt dive and then recover. If the readings are OK, try higher speed dives.

With a suction probe system, you should see a steadily increasing sink rate and the readings should be similar to the steady flight values. If the probe is over compensating, the readings will be much less and the vario may even show lift initially. If it is under compensating you will see increased sink. A slow vario will show a lag in the indication, but there should be **no** over or under shoot.

With capsule and electronic TE systems the picture is more complicated. As well as the compensation errors, the pitot and static signals may not effect the system at the same rate. In a capsule system, the lag in the flask response gives a rapid initial reduction in the sink rate, followed by a slower increase. If the compensation is not perfect, or there are static errors, the timing error will be combined with them.

The signal from the pitot can be delayed

The response times can be balanced by fitting matched restrictions in the capsule and static lines. This will greatly improve the TE performance with a good static system. With electronic systems, the compensation should be adjusted to give the least overall TE error. It may not be possible to get perfect compensation over the whole speed range due to static errors. Timing problems are most likely to arise with pressure transducer systems. The signal from the pitot can be delayed using a small capacity and a restriction.

To test the response of a speed to fly system, find a patch of quiet sky and set the MacCready dial so that you have a glide speed of 70kt. Note the dial and sink readings. Slowly increase the speed until the error on the meter is about ¾ full scale. Then pull the speed back to 70kt. The meter reading should change smoothly with no under or over shoot. If it doesn't, you may need to adjust the TE compensation or the pitot signal timing. The MacCready setting and the measured speed and sink rate, after correction for altitude effects and ASI errors, should agree with the value derived from the polar. The max L/D speed should be indicated if the MacCready setting is zero and there is no air sink.

AIR LINES

He came limping along the peri-track in that faded blue anorak he always wears, waving a strip of silver a few inches long and drilled in several places.

"It's me plate," he said. "They removed it at the hospital the other week." He rubbed a thumb professionally over the plate. "Nice bit of metal. I could polish it up at work and engrave me name on it."

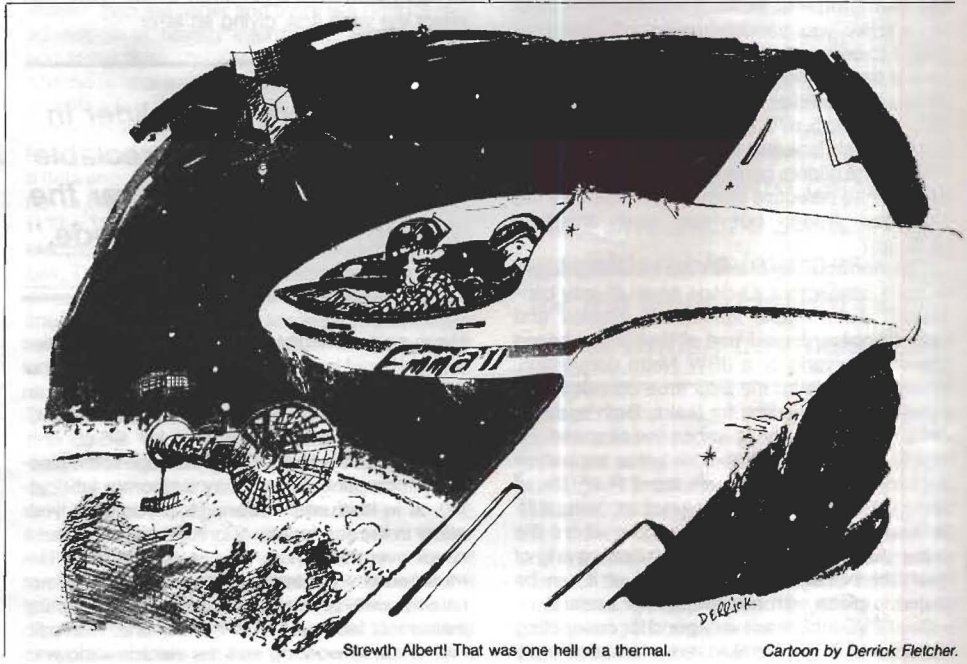
He was showing it to everyone as they arrived at the launch point as if it was some sort of medal he had won.

"Do you want to fly?" he asked me.

"Can you?" I had visions of his leg breaking again.

"Saw me doctor this morning," he said. "And asked him. He told me the leg is healing up nicely and to keep it raised as high off the ground as possible." It wasn't often that he made jokes and I could see he was enjoying this one. "So I thought we'd take a tow to 3000ft. That ought to be high enough to guarantee a permanent cure."

TERRY HURLEY



Strewth Albert! That was one hell of a thermal. *Cartoon by Derrick Fletcher.*

WHISPERING WINGS

Two extracts from the yet to be published book "Whispering Wings" written by David

During our years at Tebay we had many thousands of flights without anything untoward happening. Nevertheless, regardless of the fact that one tries to see and cut down on any possible mishap, accidents will happen.

So one Sunday evening at the end of the day's flying, Matthew, one of the few founder members, took off with his pupil in the faithful old Venture to have a final 15min out at the Point.

Shortly after I took off in the Olympia with the same intention but a wall of orographic cloud suddenly appeared, coming between me and the Point. It reached up from the ground to several hundred feet above my launch height. On landing I said that it seemed to be a very dangerous situation for Matthew but no one attached much importance to it. After all they were busy packing everything away for the day.

"The cars came back but there was no sign of the missing Venture

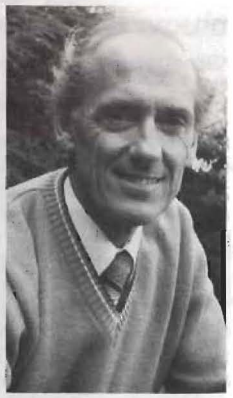
Now there was only the Venture remaining to be bedded down and the gravity of the situation was being realised. Suddenly people were leaping into cars which bounced off down the track making for the foothills around the Point. Others drove along the narrow roads, up winding tracks, many leading to a dead end or some remote farm. Even though it was almost dark, they were searching the hills, crags and gullies for a sign of the glider. One by one the cars came back but no one had seen any sign of the missing Venture.

Of course the police had been contacted and it was a glum group which sat in the clubhouse unable to take further action before daybreak. It was not pleasant to think of the two men out there alone in the dark hills and not knowing their condition. Then shortly after midnight the phone rang.

"It's him, it's Matthew," shouted Derek. "Are you all right? Yes Matthew, I've got that, but did you say it is the first farm you get to? Yes. I'll ring Dr Gill."

We met Dr Gill and then followed Matthew's instructions which brought us to an isolated hill farm. We discovered Matthew lying on the settee where he had been made as comfortable as possible by the farmer's wife. But far from being "all right" he had a badly damaged ankle which was to take longer to mend than the three cracked vertebrae.

Once again, on instructions from Matthew, we sent out a party on foot walking over the hills and down the valleys guided by a single light from a storm lantern held by a farm boy standing alone on a peak. We came across the doomed glider and still in amongst the wreckage was Andy Clough.



David learnt to glide with the Lakes GC in 1958 at Tebay and was CFI for five years after their move to Walney. He was a full time instructor with the West Wales GC in 1965 and before retiring in 1979 had worked at the Derby & Lancs GC, the Worcester GC, where he was CFI, and the Bristol & Gloucestershire GC. He has more than 3600 gliding hours, numerous power hours, a Diamond goal and still does occasional spells of instructing, last year at Rufforth.

It was evident that the survival of the two occupants had been miraculous. The heavy high wing had ripped off its mounting and now laid across the top of the cockpit. The nose was in pieces and compressed into the hillside.

Andy lay there unable to move, his back broken. Dr Gill gave a pain killing injection and all we could do was wait for daybreak and the arrival of an RAF helicopter.

But what of Matthew who was already in hospital? By some incredible determination he had reached a distant farm, struggling over terrible terrain, only to find they hadn't a telephone. Nevertheless he organised that the boy should go up to the high peak and stay with his lantern, even if it meant remaining there the whole night. He then borrowed a tractor to reach a farm with a telephone – all this with a badly damaged ankle and three cracked vertebrae.

Later we learnt from Matthew that the Venture had reached the Point and almost immediately been enveloped in cloud. With no giro instrument and no compass, he tried to fly straight and level in a direction he hoped would be south-west. This would have brought him over lower ground away from the high hills and orographic cloud they were causing. Matthew said that he suddenly saw the ground and pulled back the stick, but it was too late.

After the stable door had been closed, we made sure every glider in the club had a compass.

* * *

From time to time as one journeys through life things happen for which there seems to be no explanation. Of course there must always be a reason for everything but it is not always possible for one person to know why. How did my dog Sussie, a border collie with just a touch of labrador in her, for example know when the glider I was flying was in the circuit?

Time and time again over the years people have told me that when my glider joined the circuit Sussie, who was usually stationed near the launching area, would stop what she was doing. She may have been just generally sniffing in the grass or even taking a quiet snooze, but when the glider I was flying appeared she followed its flight around the circuit. Certainly as we rolled down the runway it would be my glider only that Sussie came running alongside. There was always a welcome.

How the dog knew I cannot imagine for her action was the same regardless of whether I just flew for a few minutes over the site or if I had been far away for an hour or more. On joining the circuit her eyes followed the glider and certainly she would be there alongside while we were still rolling. This behaviour was reserved for my glider only, which made it all the more remarkable and bewildering. Yes Sussie was some dog!

Sailplane & Gliding

The magazine can be obtained from most Gliding Clubs in Gt. Britain, alternatively send £11.40 postage included for an annual subscription to the British Gliding Association, Kimberley House, Vaughan Way, Leicester.

Red leather-cloth binders specially designed to take copies of the magazine and gold-blocked with the title on the spine are only available from the BGA.

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OVERSEAS AGENTS

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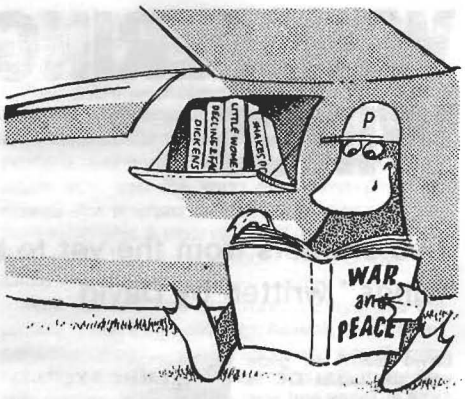
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TAIL FEATHERS

Two's company



Killing retrieve time.

Delighted as I was to hear that Justin Wills had won the Standard Class at the Pre-Worlds at Wiener Neustadt in Austria (see p174). I was even more happy to hear that a two-seater has won the Open Class. Perhaps the day will come when nearly all Open Class gliders are built as two-seaters, with the occasional eccentric, not to mention rich, loner opting for a single-pew version. After all, how many light aeroplanes have only one seat? The reasons for such a trend are threefold:

First, the workload on big tasks, whether races or record attempts, is pretty heavy, and a really expert P2 – by which I don't necessarily mean another champion pilot – can perform a great



A great number of functions.

number of functions that lighten the burden on the P1, of which navigation is the most obvious, but there are others: feeding and watering the boss; continuously recalculating the average rate of climb necessary to beat another competitor by a desired number of points or to beat the existing record by the required margin[1]; monitoring radio traffic for news of weather conditions or other pilots etc etc. (Perhaps P2 should have earphones and allow P1 to concentrate, free from the din of idle chatter that crowds the airwaves nowadays.)

Secondly, it is obvious that the economics of two seats in terms of cross-country kilometres per pound are nearly twice as good as a single seat – I say *nearly* because (a) you pay the manufacturer about 8% more for the extra seat, and (b) occasionally it will be flown solo for badge attempts or in very weak conditions. A syndicate of five or six people, ideally with a mix of weekday pilots, could get vast utilisation from a top-class two-seater; they would each discover that their cost per seat-mile, as the airlines call it, is better than they would get from a third share of a single-seater which they might buy with the same money, since the latter would have much poorer performance.

Thirdly, it is to my mind, being fairly gregarious, a lot more *fun* and you learn a huge amount. Obviously you learn from the experts – I had never sampled the wave in the Black Mountains of Wales until I flew there from Dunstable, taking as navigator and adviser a pundit who knew the region from an expedition to Talgarth. But I even learn from people who are less good pilots than I am – if I search diligently enough I can find one or two – because their observations and their questions as to why I am doing what I am doing make me think about my flying more analytically. Then, of course, you can fly friends who do not glide (you do have the odd friend outside gliding, don't you?) and give them a real flavour of what soaring flight really means; you see the sport fresh, through the eyes of someone quite unfamiliar with it, who regards staying up without an engine as a branch of black magic – which is exactly what it is.



Less good pilots.

If you are not careful you could be carless

A fellow member at our club has just had his car stolen from a fairly remote launch point, not all that accessible to the general public. Naturally the keys had been left in the ignition; we all do that in case we land out or in case, on our small and congested site, it is in the way and needs to be moved. I'm now inclined to leave a note in the window saying that the keys are with someone who is permanently on the site (that person being briefed only to give the keys to known members). No, I won't whinge on about what a naughty world we live in; that is something we might as well take for granted, and arrange our lives accordingly.



Unmarketable impedimenta.

> ***"... the boot and rear seats are crammed with even more stuff of the same sort."***

Perhaps our friend paid the penalty of having a car that was too tidy, since the typical glider pilot's car is so full of junk, much of it heavy, bulky and utterly unmarketable impedimenta, that anyone wanting to steal the vehicle would be appalled by the problem of how to get rid of it without drawing attention to himself. Where do you hide, or how do you explain to the gendarmes the possession of (not to mention the *purpose* of), a seven foot long tubular steel towing device, a tail dolly, the front end of a bicycle, eighty feet of wing covers and an angle-iron rigging tripod? And I'm only talking about what is on the front passenger seat: the boot and rear seats are crammed with even more stuff of the same

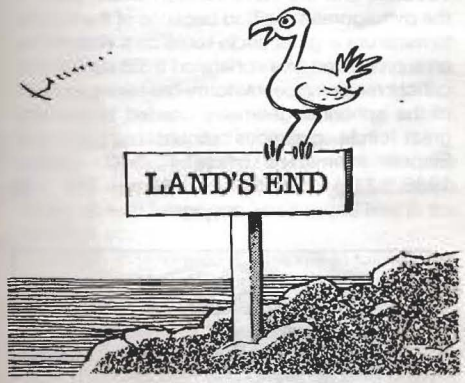
[1] *While sitting in a field on the Marlborough Downs waiting for a retrieve in May this year I spent five hours programming my pocket computer to do all those clever things; when it came to derig the beast I forgot to remove the blasted computer from my breast pocket and crunched it. Such devices are not designed for resting wingtips on, I fear, and the fruits of all that laborious thinking have gone to the great data bank in the sky. In future I will take the novels of Jane Austen in paperback, or a pad on which to scribble down my ideas for this column, as a way of killing retrieve time.*

sort. The reason most people driving to the launch point don't offer you a lift when they see you heading there on foot is not that they have no manners, but that by the time they had made space for you to sit down you could have walked there anyway. The reason someone doesn't offer you a lift on the way *back from* the launch point may be that he is stealing one of those rare, tidy cars ...



The lostness of the long-distance pilot

I have a very old friend (well, ancient, really) who would have been National Champion umpteen times if he had not got one small flaw. He can't navigate. He just presses on, getting more and more lost, through rain and hail and clamp and the occasional ½kt thermal under a 1200ft cloudbase until he reaches the sea - say, the Irish Sea or the English Channel or the German Ocean - then he turns round and comes back. He flies the way Alan Purnell would fly if he had amnesia.



He can't navigate.

How he ever gets back, considering he doesn't know where he's been in the first place, is one of life's mysteries. I suppose some places nearer to home, like Oxford or Cambridge or Upper Heyford, trigger off some vague recall in his brain, since he has been over them a thousand times before. Not always, through. Some of his biggest so-called "flattened triangles" are the result of having overshot the club on the way back from one coast and he doesn't realise till he ricochets off the opposite coast and eventually rolls, like a snooker ball, into the right pocket more or less by chance.

If it were not for his photographs one would suspect that he had made up the whole thing

If it were not for his photographs of what turn out to be the Menai Bridge, the Portland Bill lighthouse or Sir Walter Scott's Memorial one would suspect that he had made up the whole thing, or at least had hazily imagined an Odyssey that can't possibly have happened.



His photographs.

Even with a navcomputer which should tell him pretty accurately how far he has gone since his last fix, he manages to come out with grandiose, vague statements like "Over the Trent" or "Over the M1", which cover a margin of error of about 100km each way. If you ask him for his position he utters a tense, teeth-clenched "Hang on..." as if you have crassly interrupted his concentration when he is barely staying airborne at 500ft. He is in fact at 5000ft, happy as a sandboy (whatever that is) but utterly lost - again.

The Australia Fund to develop the ES65 Platypus glider to production stage has been closed and the final donation forwarded to Edmund Schneider Ltd.

FINAL GLIDE

The flight described was in 1984 and completed all three Diamonds, No. 165.

Final glide. At least 80km to go and an absolutely dead sky ahead. I've never been much of a competition pilot; more of a cautious "loneliness of the long distance cross-country type", to quote Playtpus. Hence I like to start final gliding 20 miles or so out and with at least 500ft in hand. But not this time.

I've only had a share in the 20m Kestrel for a few weeks. It's certainly different to the aged Skylark 4 I flew on a temporary arrangement last season, but as yet I've too little time in the big glass ship to assess just how well it will perform.

And now I've time to muse over the incompetent decisions earlier in the flight which may well cost me my third Diamond. Car launched at 10.15am with a 510km O/R declared and under a burgeoning sky, I made just about every mistake in the book. Flew much too conservatively for the conditions, wasted time with an unnecessary low point and deviated many miles upwind for "better conditions" when (as I afterwards learned) it was just as good on track.

At 14.30hrs I reach my Yorkshire TP and realise with dismay that I've taken an hour too long to get there and have turned a 255km first leg into around 315km. As I finished the photographs I get a radio call from a Lasham pundit flying the same task and who has turned a good hour before me. I tell him I'm round the turn but add: "I've made a dog's breakfast of it." Always a cheerful type, he answers: "Not to worry - press on!"

Press on. Easier said than done. As I near Leicester with some 170km to go it is clear that the day is dying early, and I hear radio messages from gliders in a Regionals who are landing out in the very area which I'll soon have to cross. Remembering the old Skylarking days when the rule was "get high and stay high", I tip-toe along conserving altitude as best I can.

Usually I manage to reserve flight analysis and self-criticism until I'm back on the ground, but this time I'm really angry with myself for flying so badly during the first four hours. However, the tip-toeing works and I arrive west of Northampton with 100km or so to go. I then get the discouraging news -relayed by radio from Lasham - that a sea breeze front went through there some time ago and it has not been soarable since. More gloom.

Up ahead there's an untidy looking mass of cloud which doesn't look too hopeful, but there's nothing else to go for. I arrive under it with a bit better than 2000ft and find lift of 1 to 2kt. After what seems an age, I arrive near base at about 3500ft, desultorily switch on the turn and slip (not bothering with the horizon) and enter the murk. We climb at a paltry but steady 2kt to around 5000ft and eventually repeated attempts to find a better core work and we get 4 to 6 up for a bit. We top out at 8000ft and I feel a bit better. At least it should be a shortish retrieve. The problem is that the wind has backed southerly and I estimate will give me a headwind component of 12 to 15kt from here on in.

We set sail at 60kt and quite soon see an almost identical mass of rather formless cloud about 30° off course to the west. The same story. A slow climb inside but this time we top out at 9000ft and I realise that I'm very lucky. As we emerge I pinpoint our position as almost exactly 80km from Lasham and with 8600ft of altitude remaining. Out with the John Willy computer, feed in the headwind, and it says "maybe". Ahead there's a completely clear sky and I glide out at 60kt again with never a ripple in the air.

The glide seems to go on forever like some dream sequence

Curious, just to sit there, not moving the controls half an inch - simply waiting. The glide seems to go on forever like some dream sequence, but I notice that I'm getting reduced sink in the lee of some large wooded areas. The Kestrel seems magnificent - clearly in charge of the proceedings and not needing any asinine interference from me. So I sit and wait.

Final glide. Some 40km out I calculate that we might be just above glide path and permit myself a small gleam of hope. But I'm resigned to whatever the Fates decree. After all, flying a Comp in a Dart 17R nearly 20 years ago and in very similar conditions, I hit a cataract of sink between Basingstoke and Lasham, lost 2200 ft in less than four miles, and failed to make the finish.

Whatever the Fates decree ... but this time they relent and as I reach the M3 with 1200ft in hand and five miles to go I realise that barring some incredible catastrophe, we've made it. And so it proves. I'm able to shove the speed up to 80kt over the last couple of miles to cross the clubhouse at 300ft and enter the pattern. I glance at my watch. The final glide took nearly an hour, but it seemed a lifetime.

As I line up for the approach my call sign comes up on the radio. It's Lasham base and the afore-mentioned pundit who landed back long ago. He sounds as if he doesn't expect an answer, and seems surprised to get one. "Where *are* you?" he demands. When I say I'm back and on the approach, he answers "Well done!" But after landing, having averaged a pathetic 70km/h over 570km, I have to admit that only luck got me home and that it was one of my worst flights for some time.

MIKE RICHARDSON

PYTHAGORAS REVISITED

Planning cross-country tasks involves measuring distances accurately. This is not easy if the map is well used, folded and reluctant to stay flat to allow accurate measurement, or if the task extends over more than one sheet. Computer programmes can be used to calculate distances, but not all pilots have access to a computer. A simple and accurate method is to use the UK Ordnance Survey National Grid reference to calculate the distance between two points. The grid is metric and superimposed on Ordnance Survey maps of all scales and on the 1:250000 Aeronautical Charts, with an origin in the sea to the SW of Land's End. The grid is 1km square on 1:50000 maps and 10km square on 1:250000 maps.

Any location can be identified in terms of its distance east (easting) and north (northing) of the grid origin. Measurements accurate to 0.5mm on the map correspond to an accuracy on the ground of 25m at 1:50000 and 125m at 1:250000. The full grid reference is given at each corner of the Ordnance Survey maps, but only at the SW corner of the 1:250000 Aeronautical Chart.

The north/south and east/west lines of the grid form the basis for a right angled triangle with the track between the two locations as the third side, which older pilots might remember as the hypoteneuse. The lengths of the two sides at right angles are the differences in km between the eastings and northings of the two locations. The square on the hypoteneuse is equal to the sum of the squares on the other two sides, so the distance between the two locations is the square root of that sum. Fig 1 shows an example of how the distances for a typical triangle are calculated. Dallachy is 163.2km N of Portmoak and 18.5km E, so the distance between them is:

$$\sqrt{163.2^2 + 18.5^2} = 164.25\text{km}$$

Distances calculated in this way differ little from those using latitude and longitude coordinates and the "plane sailing" method as described in Reed's **Nautical Almanack,** and the calculation is quicker and simpler. When the two methods were compared for calculating the distances between a cat's cradle of TPs near Land's End, Felixstowe, Benbecula, John O'Groats and Muckle Flugga the maximum difference was ±0.2% (0.6km in 300km), with an average of 0.07%. An "error" as small as that should be unimportant when planning a cross-country task, since one would normally plan for a spare kilometre or two. Reed's **Almanack** makes the point that the "plane sailing" method should not be used for distances greater than about 1000km, and the same caution would apply to the pythagorean method because of the inability to measure a great circle route as a straight line on a projection of a sphere on a flat surface. For critical measurements, formulae taking account of the spherical geometry needed to calculate great circle distances should be used (see Elspeth Morrison's article in *S&G*, October 1986, p216).

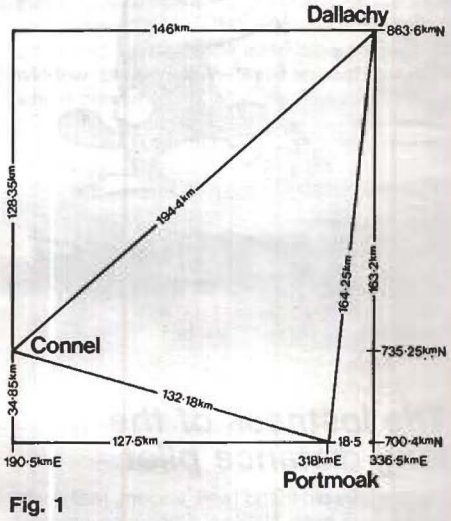


Fig. 1

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STANDARD CLASS NATIONALS

Nympsfield from June 11-19

For the first time since Ann Burns' success in 1966 a woman pilot has won a Nationals. Bernard reports on the start of the competition season.

Sally King of Booker, flying a Discus, won the Standard Class Nationals at Nympsfield in an exciting last day task.

She scorched round the 263km task at 92.41km/h, only 0.11km/h faster than Andy Davis, of the host Bristol & Gloucestershire Club, also in a Discus.

Sally, an air traffic controller, of Lacey Green, near High Wycombe, who has been gliding since she was 18, had lain in 2nd place all week after flying the farthest of the outlanders on Day 1, when Andy Smith (LS-4), of the host club, was the only one to complete the 208km task.

Andy Smith, who had kept his lead during the previous five contest days, managed only 83.21km/h on the last day so was knocked into 2nd place.

Sally ended up with 5300pts, Andy Smith with 5218 and Andy Davis with 5026.

Andy Davis, who was 32 during the Nationals, reckons he lost his chance of victory when he landed out just a field or so short of Nympsfield on Day 3. He needed an extra 100ft or so to get in but landed in a field with Justin Wills (LS-4) and managed only 740pts against Sally's winning 939.

The weather for the nine day contest was not good, except for sunbathing crews, but task setter Graham Morris, the local CFI, scraped six contest days out of it. Most of them were barely more than the minimum task for a possible 1000pt day until the final day, which had strong thermals and only a light 7kt ENE wind.

Ended up with a broken collar bone and a damaged LS-4

The only pilot mishap was on Day 5 when Graham Smith of London, hit a telephone pole as he went into a field near Wotton-under-Edge, five miles from Nympsfield, and ended up with a broken collar bone and a damaged LS-4.

Martyn Wells had landed his LS-4A in the same field and was able to help out when Graham ended up with telephone wires round him in the smashed cockpit.

Graham was treated at hospital in Gloucester and sent back to Nympsfield shaken, with his arm in a sling and sticking plaster on his head.

Saturday, June 11, was so murky that the O/R to Ludlow Castle was scrubbed, but it gave Sir Peter Scott, the club vice-president who opened the event, a chance to look round the gliders and meet some competitors.

He spent some time with Andy Davis, a member of the host club, Bristol & Gloucestershire, and one of the British team in the Worlds last year. Sir Peter showed great interest in modern flying techniques and the machinery, and delighted those around him by pulling out his old logbooks to show some of the entries when he won competitions.

Sunday proved to be much more acceptable to the competitors, with "interesting" launches in marginal conditions. Director Phil Andrews congratulated the tug pilots next day for managing to get the field into the air.



Sir Peter Scott presenting one of the three trophies that go with the Championship title to Sally, watched by Phil Andrews, competition director.

The 209km task to Hay on Wye, Droitwich and back proved too much in rough 3-4kt thermals in a 35kt wind giving wave in the lee of hills.

Only pilot to make it round was Andy Smith, in an LS-4, who used his local knowledge to get back when everyone else was dropping to earth. He is in his second year at Nympsfield, after joining from the Bath and West club, and knew he would not stay up along the Cotswold edge and so went across the Severn to soar along the hills facing the north-easterly. Andy was quickly surrounded when he landed and one of the first to quiz him was Met man Tom Bradbury.

Second was Sally King, in a Discus, who landed just 39km short of "home", at Upton on Severn. Justin Wills (LS-4), was 3rd, having landed just short of the second TP.

Fourteen pilots landed together at Stoke Lacey, near Great Malvern - close to a cider factory!

All the Standard Class Nationals photographs were taken by Steve Tromans.

Andy Davis landed in a field and while he was away telephoning some heifers came through a hole in the hedge. They tramped on and butted the wings and licked and scratched the canopy. Roger Targett worked until the early hours on the rippled wings but Andy said it flew like a brick with about a 10% loss in performance.

Andy Smith, almost drowned out by a US aerial tanker, told the briefing next day how he spent the winter working on a computer vario - "and it works," he said. He started the tasks as early as he could and got as low as about 1000ft agl.



Above: Sir Peter Scott shows his logbook to the Bristol & Gloucestershire GC chairman, Barry Walker, centre, and Andy Davis.

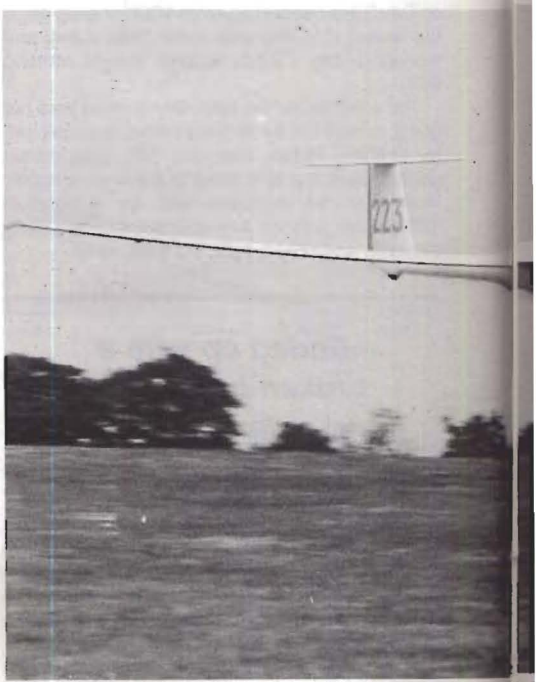


Above: Sally King finishing on Day 6 in her Discus. Below: All set. The line-up on the grid.



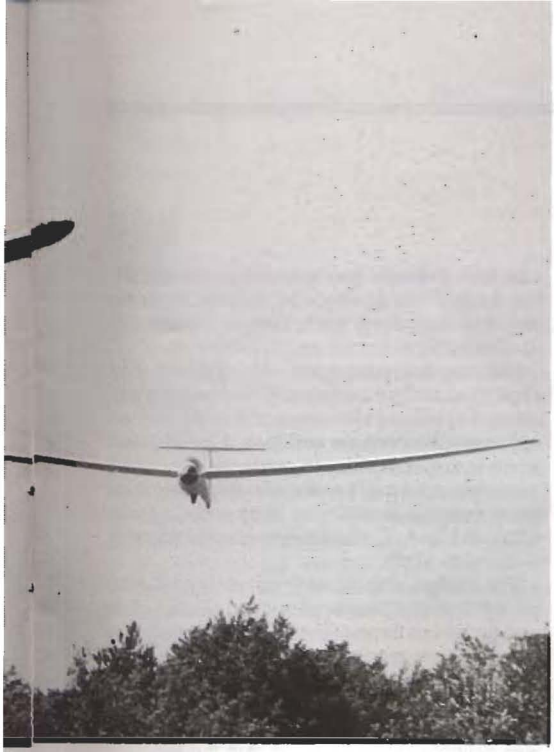


Above: The Nympsfield Pawnee pulls off a compet



Above: Coming in low and fast - Brian Forrest (Pegasu). day but Sally was faster.



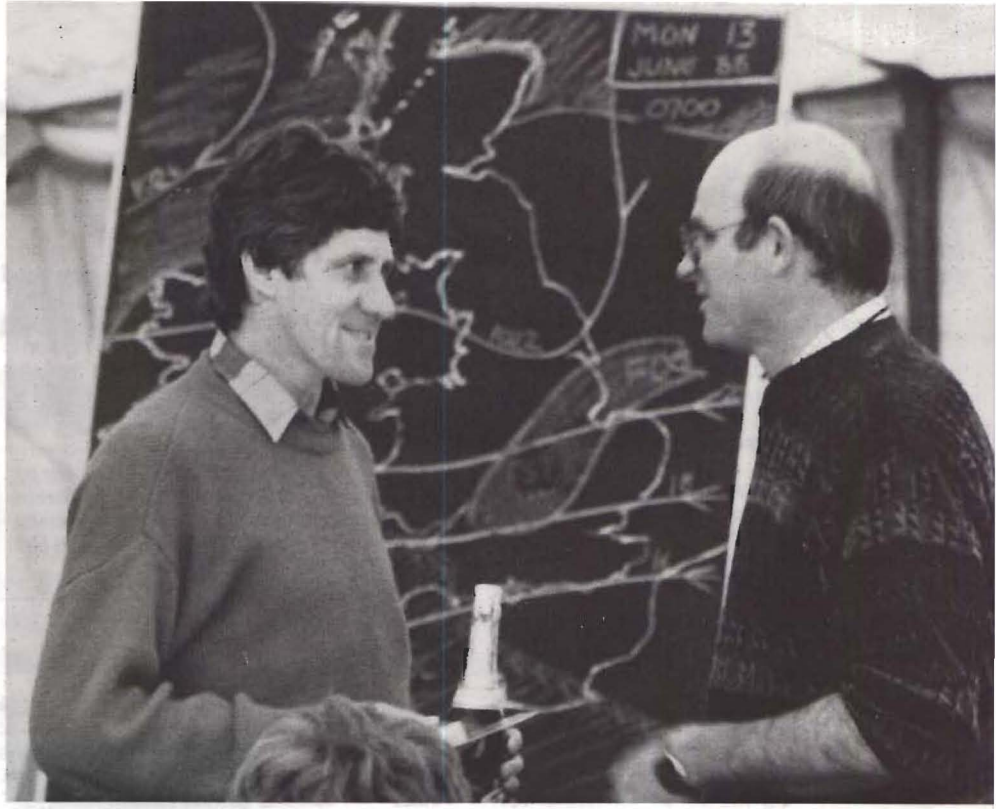


itor



sus). Below: Andy Davis (Discus) was first back on the last





Above: Andy Smith is congratulated by director Phil Andrews for being the only competitor to get home on Day 1. Below: Lady Scott tries out the Discus cockpit while Sir Peter asks Andy Davis about the instruments. Barry Walker is looking on.



Birthday boys Andy Davis and John Smith were congratulated on Day 2, which looked promising but turned blue earlier than expected and then clouded over. After some delay, the fall-back task of 232km to Long Mynd, Broadway and back was chosen instead of the A task - Mynd, Membury and back (302km).

Andy Davis had an anxious Tuesday, Day 3, with his TP photo of Broadway on Monday threatening to cost him 50 penalty points. But his second camera proved he had rounded the TP and he won the day.

Second was Mike Young (Pegasus) and 3rd Eric Smith (Discus). But Andy Smith stayed in top overall position.

Tuesday was forecast to be a late start day, and it was. It was mid-afternoon before the thermals began in a blue sky with cirrus.

The day proved so poor that a third task had to be set, out to Ludlow, the M5/M50 junction and back - 169km. "Crud" coming off the North Sea caused the A and B tasks (Ledbury, Southam cement works and back for 201km and an O/R Southam, 175km) to be scrubbed.

Eleven got back with some close finishers. Justin Wills and Andy Davis led the outlanders by landing together in a field just down the slope from the airfield. Sally King kept her form and won the day by a whisker, keeping her overall position as No. 2.

Day 4, Wednesday, was another late start and all but nine managed to complete the 158km to Bath racecourse and Broadway. Andy Davis got back into his stride despite his cow damaged Discus flying like a brick.

Simon Hutchinson (Discus) came 2nd and Sally King 3rd, 0.02km/h behind him to hold on to her overall 2nd position again.

Financial help for the Nationals was given by Cass-Stephens Insurances Ltd and Serendipity Aircraft Sales Ltd. Prizes were given by Deacons of Swindon, Hinton Hill Aviation Ltd, Bulmers Cider and the host club.

Thursday was scrubbed because of murk, so on Friday everyone was anxious for a contest day. But after most of the field had launched and landed back there was a long wait to see how those who dared to go had fared.

After a nail-biting time, 12 landed out, three of them perilously close to Y - and only one was needed past Y to make it a contest day while the bulk of the entrants were sat on the ground.

In the end it turned out that the three in the field together at the farthest point along track were only 600 metres short of Y. So it was all a waste of effort by Justin, Andy Smith and Simon Hutchinson, the three in that field.

Saturday was promising, but it became overcast and distinctly non-soarable at Nympsfield. But Andy Davis showed his style by being the only one to make it back from Sherborne and Shaftesbury.

Met man Tom was again seen quizzing Andy about how he had managed it. He had gone way off track to follow the energy and found a 1kt thermal over Chippenham and took it for all it was worth to get 5000ft asl to get home.

Everything hung on the last day, with Andy Smith leading on 4355pts, Sally King 2nd with 4300 and Andy Davis clawing his way upwards to 3rd with 4028.

The 263km dog leg O/R task to the M5/M50 *via* Banbury A422 was enough to test the pilots and get all but three of them home in time for the presentations by Sir Peter Scott, who popped back to find out how the Comp was going.

He had kept in touch by phone from the nearby Slimbridge Wildfowl Trust each day and said he was delighted to find his old club thriving.

Andy Davis had paid dearly for coming 10th on the first day. Andy Smith was able to hang on to the lead he gained on Day 1 for the next five contest days, despite the efforts of Sally and Andy Davis to topple him.

But in the end Sally managed the extra zip needed to grasp the title of the first woman Standard Class Champion.

Sally, who won the EoN trophy, a Hinton Hill tankard and the Deacons trophy, thanked the host club and director Phil Andrews for a good, relaxed Comp.

FINAL RESULTS
Standard Class

			Day 1.12.6 208km ▲ Hay on Wye, Droitwich			Day 2.13.6 232km ▲ Long Mynd, Broadway			Day 3.14.6 171km ▲ Ludlow Castle, M5/M50			Day 4.15.6 158km ▲ Bath, Broadway			Day 5.18.6 166km ▲ Sherbourne, Shaftsbury			Day 6.19.6 263km dog leg O/R M5/M50 *via* Banbury			
Pos	Pilot	Glider	Dist (Speed)	Pos	Pts	Speed (Dist)	Pos	Pts	(Speed) Dist	Pos	Pts	Speed (Dist)	Pos	Pts	(Speed) Dist	Pos	Pts	Speed (Dist)	Pos	Pts	Total Points
1	King, Sally	Discus	167.0	2	735	55.95	9	949	(53.53)	1	939	64.78	2	936	168.2	=22	741	92.41	1	1000	5300
2	Smith, D. A.	LS-4	(47.43)	1	960	51.75	15	897	(53.43)	=2	938	57.7	16	815	169.2	=17	746	83.21	8	862	5218
3	Davis, A. J.	Discus	116.6	10	483	60.03	1	1000	167.9	=16	740	66.08	1	958	(60.38)	1	847	92.3	2	998	5026
4	Wells, M. D.	LS-6A	108.4	26	442	56.16	8	952	(53.33)	=2	938	60.12	9	856	174.2	=10	771	86.43	=5	910	4869
5	Galsford, P.	Discus	112.1	=11	461	54.99	11	937	(52.6)	=6	933	58.81	20	*787	170.7	16	754	87.14	4	921	4793
6	Young, M. J.	Pegasus	108.6	=14	443	58.42	2	980	(52.87)	5	934	62.37	4	895	137.2	37	586	79.57	15	807	4645
7	Wills, T. J.	LS-4	140.4	3	602	57.99	4	975	167.9	=16	740	51.06	28	701	151.4	31	657	89.74	3	960	4635
8	Hackett, N. G.	LS-4	108.6	=14	443	56.98	13	*912	163.9	=18	720	60.16	8	857	177.9	=3	790	86.41	=5	910	4632
9	Garton, C.	Discus	137.4	4	587	(198.5)	23	526	(53.31)	4	937	63.01	3	906	176.9	=7	785	76.74	22	764	4505
10	Hutchinson, S. N.	Discus	131.6	5	558	45.68	20	821	(48.77)	10	906	60.5	6	863	138.9	39	*553	78.67	18	793	4494
11	Cuming, M. F.	Pegasus	108.6	=14	443	55.82	10	947	168.4	=14	742	58.85	13	834	175.7	9	779	69.45	35	655	4400
12	Durham, M. W.	Discus	112.1	=11	461	52.37	14	904	141.6	27	608	59.64	10	848	168.4	=20	742	79.04	=16	799	4362
13	Smith, E. R.	Discus B	108.6	=14	443	58.29	3	978	101.2	36	406	56.7	19	798	176.9	=7	785	78.04	19	784	4194
14	Hood, L. S.	LS-4	117.6	9	488	57.8	5	972	(50.85)	9	921	(54.5)	=38	98	173.9	12	770	82.55	9	852	4101
15	Webb, M. J.	Discus B	105.4	=29	427	(118.4)	38	290	(51.58)	8	926	55.13	23	771	173.2	=13	766	79.04	=16	799	3979
16	Forrest, B. R.	Pegasus	108.6	=14	443	(193.5)	=24	511	162.4	=20	712	53.65	25	745	169.2	=17	746	80.1	13	815	3972
17	Clarke, A. J.	DG-300	101.6	=34	408	(128.9)	=35	321	(52.7)	11	*886	57.2	18	806	168.2	=22	741	79.71	14	809	3971
18	Gorringe, J. P.	LS-4	108.6	=14	443	57.29	6	968	(52.89)	=6	933	(34.2)	=41	40	156.2	=28	681	83.96	7	873	3938
19	McAndrew, G.	Pegasus	106.6	28	433	53.47	12	918	124.7	34	524	48.01	30	649	147.9	34	640	75.79	27	750	3914
20	Bonoist, J. D.	Discus	117.9	8	490	56.68	7	958	62.4	41	212	50.85	29	698	181.4	2	807	73.93	32	722	3887
21	Wells, P.	LS-4A	108.6	=14	443	(154.9)	32	397	160.9	22	705	57.32	17	808	169.2	=17	746	76.51	24	761	3860
22	Harding, R. W.	Discus	102.9	33	415	(204.7)	22	544	150.9	=24	655	52.67	27	729	158.2	27	691	76.06	26	754	3788
23	Marczynski, Z.	LS-4	108.6	=14	443	48.72	17	859	145.4	26	627	59.00	12	837	82.6	41	313	75.23	29	742	3774
24	Dall, R.	Discus	69.8	=39	249	(140.1)	=33	*354	169.6	=12	748	55.6	21	779	168.2	=22	741	81.62	=11	838	3709
25	Kingerlee, J.	Discus	111.1	13	456	81.4	42	180	135.9	=29	560	59.28	11	842	173.2	=13	766	82.43	10	650	3674
26	Smith, G. N. D.	LS-4	108.6	=14	443	49.47	16	868	150.9	=24	655	60.33	7	860	174.2	=10	771	DNF			3597
27	Langrick, D. J.	Std Cirrus	89.8	=39	249	47.35	18	842	72.6	40	263	58.07	15	821	149.2	33	646	76.85	21	766	3587
28	Aldis, C. J.	LS-4	122.1	6	511	(128.9)	=35	321	163.9	=18	720	(128.9)	=35	310	177.9	=3	790	81.67	=11	838	3490
29	Cox, T. W.	DG-100G	101.6	=34	408	(193.5)	=24	511	98.00	37	390	53.97	24	751	156.2	35	*639	75.67	28	748	3454
30	Dawson, M. R.	Std Cirrus	108.6	=14	443	(128.9)	=35	321	162.4	=20	712	47.79	31	645	137.4	36	587	75.18	=30	741	3449
31	Cook, P.	LS-4	106.6	=14	443	(98.3)	=40	231	132.2	33	561	58.53	14	829	150.7	32	654	72.98	33	708	3426
32	Miller, A.	LS-4	105.4	=29	427	(187.0)	28	492	135.1	=31	576	46.15	32	617	156.2	=28	681	64.77	37	584	3377
33	Throssell, M. G.	LS-4	120.4	7	502	(178.1)	31	466	137.9	28	590	(128.9)	=35	310	177.2	6	786	70.07	34	664	3318
34	Metcalfe, J.	ASW-19	89.4	38	347	(186.1)	29	489	169.6	=12	748	(128.9)	=35	310	168.4	=20	742	68.43	36	639	3275
35	Bromwich, R. C.	LS-4A	97.1	=36	388	(179.4)	30	469	168.4	=14	742	(38.3)	40	52	177.9	=3	790	77.26	20	772	3211
36	Stuart, T.	DG-300	106.9	27	435	(193.5)	=24	511	135.9	=29	560	61.49	5	860	171.4	15	757	(42.2)	41	28	3191
37	Pozerskis, A.	ASW-19B	108.6	=14	443	(98.3)	=40	231	135.1	=31	576	56.03	26	*739	86.9	40	335	76.62	23	762	3088
38	Darby, M.	Std Jantar 3	97.1	=36	386	(111.4)	39	269	90.00	38	350	(135.2)	34	328	159.7	26	699	76.31	25	758	2790
39	Norman, L.	ASW-19	105.4	=29	427	(193.5)	=24	938	61.4	42	207	56.68	22	*777	133.2	38	566	(199.9)	39	228	2714
40	Brice, P. F.	ASW-19B	26.6	42	33	46.00	19	825	127.00	35	*488	47.93	33	*601	154.7	30	674	(45.4)	40	32	2653
41	Jeffery, P.	Pegasus D	103.9	32	420	(140.1)	=33	*354	79.5	39	298	(34.2)	=41	40	163.7	25	719	75.22	=30	741	2572
42	Smith, J. L. J.	Pegasus	35.3	41	77	44.68	21	808	162.4	23	*665	(54.5)	=38	98	18.4	42	0	55.2	38	440	2088

*Provisional results. *=penalty; DNF=did not fly*

AOSTA DIAMOND

A party of Parham pilots, under the auspices of Gloster Gliding and Nigel Palmer, had an enjoyable expedition to Aosta, Italy this March when Dick Dixon, Southdown GC's CFI, gained Diamond height.

We listened to the north-westerly wind stirring busily outside, whimpering and moaning in little crescendos that could only speak of wave. The next morning produced the sight we had all been waiting for. The NW wind crossing the Mont Blanc range was stacking up wave clouds right across the sky. Vast lenticulars glowed pink in the morning sun, contrasting brightly with the mountain snows. Our excitement and enthusiasm was soon to be tempered. The flying club president had ordered no flying for the day as a mark of respect for a German pilot killed after gaining Diamond height the day before.

Every glider pilot knows the pain of viewing a perfect soaring sky through the office window. To see such a sky from an airfield to which we had travelled so far and yet were not allowed to fly, was pure agony.

"Steadily I tracked up the side of the mountain with Nigel's briefing ringing in my ears."

The wave was still there the next day and that afternoon, after I was checked out in the Twin Astir by Nigel to fly the Junior, I had my first solo flight in the mountains. Low down against the mountain face the lift was good. Steadily I tracked up the side of the mountain with Nigel's briefing ringing in my ears: "Push her along at no less than 60kt against the mountain face and never let your lower wing point towards the mountain for too long." What good advice that was.

As we clawed our way towards the ice-capped summit of the Blavy ridge the turbulence increased markedly. The Junior, sweetly controllable in gentler air, took on the handling characteristics of a toffee paper as the turbulent air currents around the mountain peaks flung me in and out of lift with increasing, yet quite unpredictable, violence. When my emergency outlanding kit, stowed behind the seat, flew up and hit me on the back of the head I decided to call it a day.

The next morning it was Dick's turn to fly. That flight which was the epic of our expedition is best recorded in Dick's words:

At the morning briefing the CFI said that a 5000m height gain was possible. With a feeling of suppressed excitement I started to prepare the Junior for my first solo flight amongst the high Alps.

The tug waved me off at just under 3000ft and I soon wound into the core of the thermals with solid 8kt all round. At 8000ft QFE the lift reduced and I pushed upwind towards a ragged standing cloud. I lost 1000ft before finding another thermal and climbing to 9000ft.

I was now level with the nearby mountain peaks and at 10000ft the glider started, almost imperceptibly, to climb and at 11000ft I went on to oxygen. At 14000ft my climb stopped. Some two miles ahead and upwind was a jagged range of mountains. I decided to fly at the slopes with the idea of locating a primary wave and pushed the speed up to 60kt, then 70kt as sink increased dramatically. With 10kt down and the icy summits closing in, I chickened out and returned to my previous wave. This time I spotted a very large chunk of lenticular cloud about five miles to the north.

I realised I wasn't going to get my Diamond in my present position and the oxygen was half gone. So I turned resolutely north and angled across the down wind towards a great cloud, calculating I would arrive near its base at about 11000ft.

The transition from sink to lift was quite sudden. The Junior entered an area of cobblestone turbulence as I swung along the front of the cloud. Then with the starboard wing practically into the great grey mass of vapour, the variometer swung to 6kt and the air, for the first time on the flight, assumed the utter smoothness so characteristic of the magic wave.

A feeling of confidence gripped me as I rode the Junior up the vertical face of that vast cloud. To the south and west range upon range of brilliantly beautiful mountains unfolded.

I decided to try for a gain of 20000ft - 23000ft on the altimeter. At 22000ft the rate of climb started to reduce and was down to 1kt at 23000ft. Oxygen now ¾ gone with about 15min left at full flow, I held on for a few minutes enjoying the view of a lifetime. At 23000ft QFE I was just over 25000ft asl.

We celebrated Dick's Diamond that night and the tension mounted yet again as I realised that tomorrow was to be my big chance. But the wave had gone and I only flew once again. A thermal climb to cloudbase at 8500ft which produced my most worthwhile souvenir of Aosta in photographs that I shall treasure for years to come.

So was it all worth it? Going home without a Diamond or even a Gold, the answer was definitely yes. We saw some of the most incredible scenery from dazzling vantage points and flew under conditions we shall never meet within the UK.

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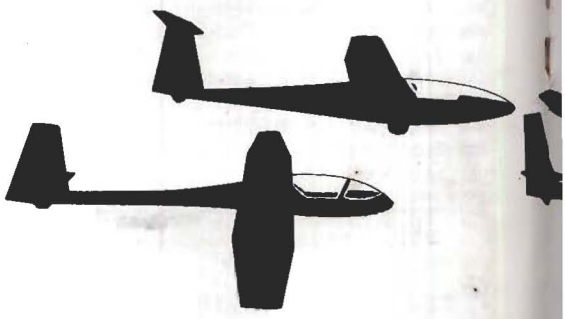
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Jantar Std. Photo: B. F. R. Smyth.



ASW-19. Photo: R. D. Bryce-Smith.



DEREK PIGGOTT

WHICH GLIDER?

Part 3

This final article considers the top co They are all suitable for low time pilo have flown several types of other sol glass-fibre glider.

These gliders are all characterised by their very light elevator control. This makes it only too easy to over-control and set up a pitching motion, particularly just after take-off. The other controls are also very light but light and powerful ailerons seldom cause any problem. In fact if anything they make the flying easier. However, because of the forward wheel position and the rather low wingtip clearance on most of this class of glider, low time pilots will have to be careful to keep straight and prevent the wingtips touching the ground in a light crosswind. Remember, keep that left hand down near the release until the tail is up and you are sure that you have everything under complete control.

Forgetting to raise the wheel after release

The retractable undercarriage should not cause any difficulty. Experience shows that the most likely cause of landing wheel up is forgetting to raise the wheel after release and then when making the move intending to lower the wheel, to raise it instead.

Since quite serious and expensive damage can occur on a wheel up landing, it seems sensible to fit a warning device.

Jantar Std

The latest Jantar Std 3 is a direct descendent of the original model which went into production back in the 1970s.

Much has been learned about glass-fibre construction and finishing since the early days. Some of the early machines are liable to have some surface finish deterioration and a very careful inspection of the finish is particularly important or you may buy a heap of trouble. (This is true of any of the older types of glass-fibre gliders and of any machine which is more than about five years old or has been left out in all weathers.)

The Jantar is a thoroughly practical glider with a best L/D of about 38:1 and very good high speed performance. Flying against the Std Jantars in Australia, I found them markedly superior to the Std Cirrus in the straight glides at about 80kt.

The general handling is straightforward, the stall similar to most glass two-seaters and the airbrakes are powerful enough to give confidence in early field landings.

Although not quite as good as the very latest in Standard Class machines, the Jantar Std makes a very good interim machine for the pilot aspiring to enter competitions seriously.

ASW-19

This design superseded the ASW-15 and made use of carbon-fibres for the main spar booms saving weight and enabling a thinner aerofoil to be used. It is a truly great design and very suitable as a first glass machine for any well trained solo pilot.

Personally, I prefer to have a more positive feel to the ailerons. Like the ASW-15 and Club Libelle, the ailerons on this machine are so light that I

Below: Discus. Photo: B. F. R. Smyth.



Below: Centrair Pegasus. Photo: B. H. Bryce-Smith.







DG-300. D. Taylor.



competition machines of the Standard Class which I have flown. pilots of about Bronze C standard with the proviso that the pilots solo machines and have some experience in a modern two-seater

always have the suspicion for a moment on take-off that they may be disconnected. In very rough weather they feel on the verge of snatching. I am sure after one or two flights this feeling would disappear but don't be surprised if you get the same impression as you make your first flight in it.

Like the ASW-15 and all the Waibel/Schleicher designs, the ASW-19 has the rather expensive to repair, double moulded skins sandwich construction. But it is a beautiful design and the one chosen by the BGA for instructor cross-country training.

Centrair Pegasus

This is another super glider, very similar in handling and performance to the ASW-19 but perhaps with a more progressive feel to the ailerons.

The latest model has tail waterballasting but this is of no importance to the inexperienced pilot who will want to fly it with the C of G well forward at first.

For the inexperienced glider pilot, the question of buying French or German revolves mainly around the possible delivery dates and the exchange rates.

For a number of years Centrair, the designers and constructors of the Pegasus, built components for the ASW-20 before branching out on their own. So although the Pegasus was their first production glider, the constructors were already quite experienced glider builders.

LS-4

When first produced the LS-4 offered the highest performance of all the Standard Class machines. Again it has superb handling and stalling characteristics and very, very powerful airbrakes.

One clever feature is the positioning of the undercarriage and airbrake level on the left hand side of the cockpit which is so arranged that the pilot cannot mistake the fact that he has left the wheel up.

Compared with some of the others the clearance between the bottom of the fuselage and the ground is rather small and the aircraft sits on the ground at a very shallow angle. This might be a problem flying from a very small or rough site.

Discus

Another classic design. At the time of writing the Discus is still the favoured competition machine although it is suitable for any well trained solo pilot.

I had the pleasure of flying one at the Lasham Regionals and found it a real joy. The multi-stage swept leading edge to the wing, which seems to be the latest style to be adopted, was originally introduced by the American Wilf Schuman. Within a very short time the German Akaflieg had checked the principle and the Discus was the first production machine to use it. The idea is to induce an outward flow in the boundary layer of the top surface of the wing to reduce the normal inflow caused by the flow around the wingtips. By doing this, the induced drag can theoretically be reduced because it weakens the vortices. Whether this is in fact the reason for the success of the Discus is open to argument, but it certainly

Below: LS-4. Photo: R. D. Bryce-Smith.





performs well and is a joy to fly.

When the idea was first muted I thought it might cause tip stalling like other forms of moderate sweepback. But the stall is very docile and it is only if you attempt to make it spin fully that it behaves a little more positively than most of the other designs.

If really provoked it will spin fully but the recovery is excellent. Incidentally, a recent option is the fully aerobatic version of this popular machine.

A good feature which I hope will become standard practice, if not a requirement for all future designs, is that all the controls are automatically connected when rigging the wings and tail.

DG-300 Club

When this machine was first produced several years ago it was in the top of the Standard Class competition machines. But developments were rapid and the design has now been relegated to the Club Class to enable production costs to be kept to a minimum.

The competition version had a "blown" wing with air blown out through hundreds of tiny holes on the underside of the wing to prevent a laminar separation bubble and higher drag.

The Club version has the same wing but unblown and the options of a fixed main wheel and waterballast tanks. The representative at the BGA Conference this spring mentioned that it was their intention to have the aircraft certified as fully aerobatic as the airframe was quite strong enough to meet the requirements. By widening the market in this way, DG will be able to keep the price lower and they hope it will become a popular club machine which will continue in series production for many years. Performance addicts should be able to add serrated tape turbulators to obtain most of the advantage of the original blown wing.

Obviously the DG-300 is a very strong machine and it certainly has very nice handling characteristics and powerful airbrakes.

So which of these lovely machines would you choose? There is not much between them for handling and general gliding. They all have about 40:1 or better best gliding angles.

Experience shows that you cannot hope to be really competitive until you have been flying gliders for three or four years. Up to that time it is unlikely that you would find much advantage in carrying waterballast. But three years is a long time, so probably you will buy what you can have without a long delay. Remember also that the glider is only part of the outfit. To make the most of it you need a minimum of good reliable and simple instruments with near perfect total energy compensation, and if you land out, a sound trailer.

I envy you if you can buy any of these ships. For the time being I will have to stick to my good old Astir and hope to beat you by cunning.

NB. There are other very nice gliders in this category, but so far I haven't had the luck to try them.

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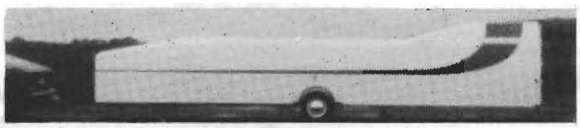
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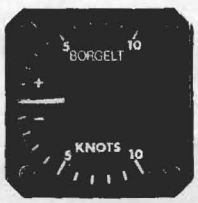
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ANOTHER DAY ANOTHER DOLLAR

Gliding in the United States is divided between member clubs and commercial operations so Americans are used to paying flying fees to "Gliding Inc" or "Soaring Inc" at their gliderports and soaring ranches. But even they were taken by surprise at this latest commercial venture investigated for us by David.

Glider Rides of America is an organisation giving flights to the general public. My interest was aroused when their advertisements started appearing in the *Tampa Tribune*, one of Florida's top newspapers, offering rides in the remarkable three-seater Schweizer 2-32 sailplane from 12 locations.

On offer were the Outer Space Ride to 3200ft at $39.95; The Fantastic Journey to 4000ft at $59.95 and the Mile High Ride at $79.95, the two passengers being in the rear cockpit.

One of the locations is in Florida, where I escape the Canadian winter, so I went to Topp of Tampa, a general aviation airfield 20 miles NE of Tampa, to investigate.

I arrived on a beautifully clear, but untypically cool day in March, to see two brightly painted 17m Schweizer 2-32s parked on the grass adjacent to the 3700ft paved runway near to a Piper Pawnee tug.

Two tugs
Three pilots

The Glider Rides of America office was in one corner of the hangar and I found Virginia Reidy busy taking bookings. She said the season was January 1 to March 31, which is Florida's high season. They had two tugs and two 2-32s with three pilots doubling on tugs and gliders.

While talking to Virginia a couple arrived and gave me the opportunity to see a typical flight. On the walk to the glider Rick, the tug pilot for this trip, explained that the control column, by law, had to be removed from the rear cockpit, and they also prudently disconnected the tow rope release.



The advertisement offering the rides.



Mary and Tim Essenwein ready for the ride of their life. Photo: David Brett.

Mary Essenwein had bought two $79.95 certificates as a Christmas present for her husband Tim and now, cameras at the ready, they were eager for their Mile High Ride. With Steve at the controls the combination rose gracefully and the rate of climb was quite impressive despite the 2-32's all up weight of well over 1400lbs.

Back in the office Virginia was welcoming another young couple and she managed to sell them a "thrill" extra for $10 each. Virginia whispered she was not allowed to say aerobatics - it is just a few steep dives and wingovers.

Weekdays were usually quiet but she said weekends were hectic with the record so far being 34 flights in one day. She reckoned there were no passenger stereotypes. The only consistency she had noticed was that wives invariably asked for car keys and wallets from husbands about to take a flight.

After flying, Rick and Steve explained it was a franchise and the owner of this particular one was John Homrock who had the day off. The whole idea was the brainchild of Richard Zisa and Robert Forrest who had started in a small way in New England and were now going national.

The philosophy is the use of the three-seater near high population areas and using blanket advertising. With 2-32s changing hands at $35 000, three times what they cost new, the project could well be self-limiting, expecially as there are probably only a 100 or so of these gliders in existence.

It was close to six o'clock and I had one last question. "What happens when you hit a 6kt thermal while descending from the Mile High Ride with passengers?" They both laughed and Rick answered: "Obviously if we have passengers waiting we can't take too long, but if there is not one waiting I'll always give it a go." Steve nodded agreement.

I left feeling somewhat envious of two people doing what they enjoyed and getting paid for it - an ambition realised by very few of us.

(The rate of exchange in March was $1.80 to the UK pound.)

NB. We have just heard from David that a couple were recently married from the back seat of the 2-32. The groom was Lou Szarka who flew at Bicester during the 1970s while working for the USAF at Upper Heyford.

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S & G CLASSIC

CHOSEN BY THE ARM-CHAIR PILOT

THE BONNIE BANKS OF LOCH LEVEN

No flight so caught the imagination of the Arm-Chair pilot in his high-chair days as Nick Goodhart's trip from Lasham to Portmoak in the 1959 Nationals. His article is a matter-of-fact account of a flight so far from matter-of-fact that it is still the UK goal record (579.36km) and the 500km goal speed record. Thermal, cloud, hill, wave, it's all there.

Some of the units read a little oddly now, but are easily converted. Note the task which led to the flight, the glorious task of free distance (will we be reprinting today's best competition flights in thirty years time?). What the article does not say is (I think I heard this from the author himself) that for the third launch at 1303 he *forgot* to change his declaration to something more achievable.

"My crew'll tak' the low road and I'll tak' the high road, And I'll be in Scotland afore them . . ."

— with apologies to ANON.

The opening day of the National Championships seemed very promising at briefing when a forecast was given which indicated the possibility of a day of thermal soaring with a strong tail wind, and a chance of thunderstorms in the evening which might add a considerable extra distance. The task for the day of "free distance" meant that one had no problem except to decide on the earliest time at which it would be safe to get started. The forecast had indicated that thermals of a sufficient size might develop by 1030 or so, so I was not worried when I found myself ready for first take-off at 1045, despite the failure of any cumulus clouds to appear.

My estimate of the possibility of a very long flight had led me to make a goal declaration of Portmoak, the fine new site of the Scottish Gliding Union on the south-east corner of Loch Leven. This somewhat optimistic declaration had no significance as far as the competition went, since, in a free distance task, there are no bonus points for declaring one's goal. I had therefore chosen Portmoak as being the ultimate possibility, rather than with any thought of there being a reasonable likelihood of getting there.

As soon as I was airborne it became apparent that I had considerably over-estimated conditions, and in fact within half an hour I was forced to land back at Lasham. As I landed I saw Deane-Drummond slowly creeping up in a weak thermal and setting off, so immediately after landing I got a new take-off time and was towed off again. Half an hour later I was back on the ground again, with my morale at an extremely low level, as I was convinced that several others who had already left would be far ahead of me.

Finally at 1303 I got my third and last tow (only three tows are permitted on one competition day). But this time the picture was entirely different, good streets of cumulus had formed all over the sky and it was immediately apparent that the clouds had good thermals underneath them. I released a mile south-east of the airfield in 300 or 400fpm and was carried straight up to near cloudbase at 3000ft asl. There was a south-east wind of15-18kt and a good street of cumulus led straight away on a track of about 330°. Under this street, lift was so plentiful that it was virtually unnecessary to circle, with the result that 40 minutes later I found myself slightly west of Kidlington at the end of my cloud street, having averaged close to 70mph. From here on, cloud streets were less well defined and it became necessary to step from cloud to cloud. However, cloudbase was steadily rising and reached 5000ft during the next phase of the flight, which involved flying through the Birmingham Control Zone and Amber 1. In these areas the cumulus had built up to quite considerable heights and it was tantalising indeed to have to break off the climb under several promising clouds. However, there were no serious low points and I was able to keep going, albeit at a much slower speed since I was now trying to make ground towards the east in order to ensure that I went up the east side of the Pennines.

"Coming out of this cloud I was immediately presented with a good growing cu-nim . . ."

By 1600 I was just by Chesterfield and came to my first chance to enter cloud, getting a rather slow climb to 7500ft. Coming out of this cloud I was immediately presented with a good growing cu-nim, but was above the base and had to enter it from the side; below me David Ince's red and white Oly 419 stood out clearly as he headed for the same cloud. Despite my entering from the side, I was soon able to find a core of lift which quickly built up to over 2000ft a minute. This was quite the roughest cloud I have ever been in; the turbulence was such that I was convinced that I must be on the edge of the main lift area, but no amount of searching would show smooth lift but only succeeded in producing temporary interruptions in the climb.

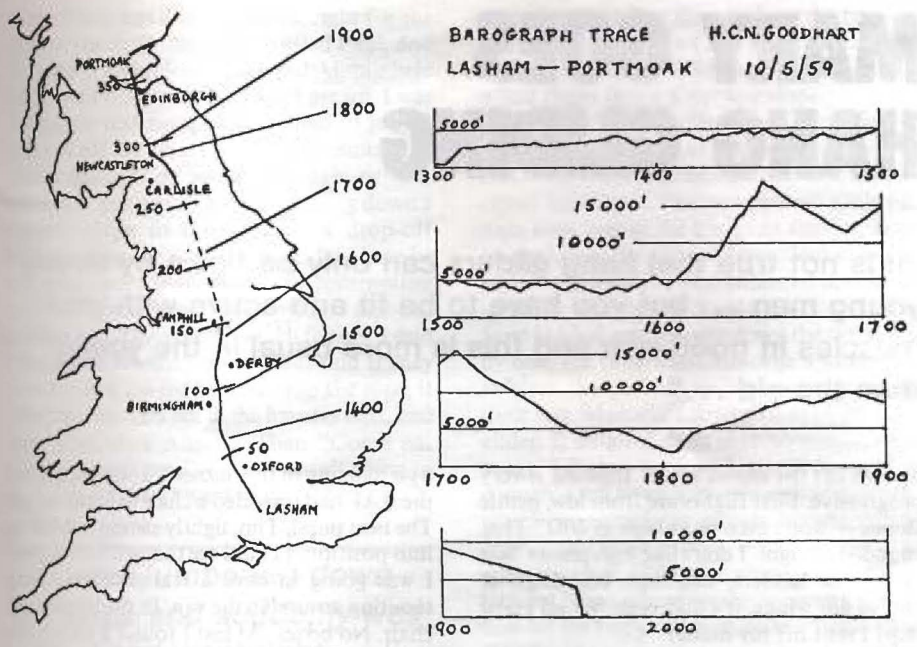
Soon after passing 10000ft I realised that the climb might go quite high, so fished out my oxygen mask and turned on the oxygen. Fortunately the mask is easy to put on, so even in the extreme turbulence I was soon sorted out and giving full attention to the climb; but after a quarter of an hour and at 18000ft I could find no more lift, so straightened up on a northerly heading to come out of the cloud.

". . . a huge anvil spreading out over my head made everything seem very dark and uncheerful."

It was at this point that I received a very severe shock through both feet where they were resting against the rudder cables, although in fact I had not seen much lightning. Soon I came out of the side of the cloud and was in clear air. However, the ground was quite invisible through the murk below, and a huge anvil spreading out over my head made everything seem very dark and uncheerful.

When I finally got enough of the canopy clear of ice to be able to see out properly, I could see that there was a very considerable load of wing icing of a most interesting but incredibly unaerodynamic shape, and if my instruments were right I was only getting a still air gliding ratio of something like 1:14. One wonders under such circumstance what on earth is the best speed to fly.

Now that I could see a little bit, I realised that there was another band of cumulus 20 miles or so ahead, and I was able to enter this at just over 10000ft and get carried back to 15500. On coming out of this cloud it was apparent that there



The map and barograph trace from the original article.

was nothing further in the way of clouds out in front.

The ground was still hidden in a layer of misty haze and the question arose as to which way to steer. I had not bothered to get any high altitude wind forecasts for this area, and it was over an hour since I had last seen the ground. For want of a better course I headed due north, and slowly as I got lower I began to be able to see something through the haze.

At first I got the somewhat discouraging impression that I was over the sea, but luckily this was not so, and by the time I was down to 8000ft. I could make out that I was over moorland; and at about this height I was glad to say goodbye to the ice, which was so seriously affecting my performance. About 20ft of this ice came off the port wing in one piece and I saw it sailing away behind me. A 20ft ice spear may have come as rather a surprise to some enthusiastic moor walker.

At 4500ft I succeeded in identifying my position over a railway line 20 miles east of Carlisle, and at this point was surprised to find very weak lift at about 50fpm.

This lift was clearly of wave type, and by heading just south of east I was able to keep in it and gain about 500ft. However, try as I could, I could gain no more and so was forced to set off again on what was clearly a final glide. Purely by chance, and trying to stretch my final glide to the limit, I happened into the valley which carries the Carlisle to Edinburgh railway just north of a place called Newcastleton. The ground wind was obviously very strong from a point just south of east, and I was busily engaged in selecting myself a safe landing field when suddenly I found good lift on a windward facing slope, the characteristic smoothness of which clearly indicated that it was of wave type.

Quickly forgetting all thought of landing, I started working this wave lift and for a while was actually getting 1000ft/min out of it. By continuous trial and error I kept in the area of maximum lift, and to my intense surprise in some three-quarters of an hour I managed to reach 10000ft. Barring unforeseen circumstance, this was clearly enough to reach Portmoak, so I set off heading considerably east of north, and by taking advantage of a few minor waves I found myself crossing Edinburgh at 6000ft.

Portmoak was obviously in the bag, but there was one major problem. I had never been there before and the site was not marked on my map. I had a reasonably strong conviction that it lay at the south-east corner of Loch Leven, but what it looked like I had no idea. I was therefore extremely glad of my excess altitude, knowing that I would have time to explore a little to find it. In the event, this problem was easily solved as the field was very obvious indeed, due to the cable retrieving tracks running the length of it and the hangar in the corner.

"... the low stratus already covering the hilltops made me unenthusiastic about pressing on into the Scottish hinterland ..."

With 4000ft to go, I could of course have gone on and scored more miles towards the competition. However, a quick look at the low stratus already covering the hilltops made me unenthusiastic about pressing on into the Scottish hinterland, and anyway I was miserably cold and tired, so without a second thought I pulled the dive brakes and rushed down to land. The ground wind at Portmoak was strong and a touch north of east, so I might not have got so very much farther anyway. After landing I did not dare get out on account of the strong wind until help came, but of course I was soon surrounded by a cheerful crowd of Scottish Gliding Unionists, into whose wonderfully hospitable hands I was delighted to fall.

So much then for my story, but that is not the whole tale by a long chalk. There should be another complete chapter covering the marathon 36hr retrieve by Bill Swift and Sammy Sansom, but if you want that story you will have to ask one of them for it.

Statistics:

Air Distance	360 miles
Average speed	56.4 mph
Total road distance	960 miles
Petrol used	69 gallons
Water used	15 buckets

(we were having a little radiator cap trouble)

Records: British distance, British goal, UK distance, UK goal and UK 500km speed record.

A REAL GLIDER PILOT:

- Never believes Ian McCaskill's weather forecasts.
- Is unable to sleep before a good day.
- Forgets to tell the boss he's taking a day off.
- Only flies in Comps if certain of finishing in the bottom third.
- Always oversets task.
- Never arranges a crew.
- Uses lighthouses as TPs.
- Spends previous evening drawing lines on maps.
- Redraws them five minutes before launch on following day.
- Throws maps through DV panel half-way round task.
- Always remembers drinks, sandwiches, pub guide and lucky hat.
- Occasionally forgets spar pin.
- Doesn't wear funny coloured sunglasses.
- Listens to 130.1 and knows who "JJ" is.
- Runs out of pee-bags with 300km to go, but Presses On Regardless.
- Puts his faith in a PZL and the Mark I bum.
- Gets away from 250ft in 8kt thermal.
- Eyeballs final glide.
- Lands in field within sight of base.
- Knows the best ways to crash.
- Owns a ten year-old wreck with a marginal MOT as a retrieve car.
- Drops unconscious at 9.00pm after one pint of Old Crudgington's.
- Takes trailer to Aboyne during the autumn and plays golf.
- Keeps his hand in during the winter by worrying sheep at Talgarth.
- Soars wave listening to Jean-Michel Jarre on the Walkman.
- Hasn't claimed the UK 100km badge.
- Never thinks he won't get back.
- Is a complete and utter optimist.

CAPTAIN KIRK

MARY GOES HANG GLIDING

"It is not true that hang gliders can only be flown by strong young men . . . but you have to be fit and active with your muscles in good trim and this is more usual in the young than the old . . ."

So what was I doing, at the age of 53, up on the top of this precipice, floundering into the harness of a hang glider? Well, despite occasional ruffling of feathers, it is our sister sport, this hang gliding. It is something I have always wanted to try. And not getting any younger, it's now or never! (They told me later about the FODS factor.)

School chum of one of my kids, a red-haired cheerful lad named Nick Lamond, had offered to take me for a ride (on/in/under) his hang glider. This Nick Lamond is the one who soaring down a nursery slope, looked up from the pleasant view of daisies and buttercups to see a cow, broadside on, right in front of him. He yelled at the cow but it didn't move, so he flared up and stalled into the cow which was, Nick said, like stalling into a wall of beef. When he staggered to his feet (the cow also survived), a ripple of laughter and applause resounded from the onlookers on the ridge. All he could do was take a bow.

"How can your hang glider possibly carry two of us?" I asked Nick. "Easy" he assured me, "you can even have three or four, all clipped into the hangpoint". Just like a bunch of grapes. I had my doubts. But I did really want to try it.

"Can you imagine what would happen if you have a heavy landing?" "I'd rather have something substantial between me and the ground." "I tried it but I broke my leg." "You must be out of your mind!" This sums up the opinion of the other glider pilots at Booker.

"It looked fantastic. It looked so easy. It looked terrifying."

And yet . . . I went to Rossilli Bay in West Wales last summer and there on the top of the hill people were strapping wings on their backs, stepping off into space and **soaring!** Over the ridge, on the strong smooth wind from the sea, five or six hundred feet above us, staying up and eventually turning to land with a few steps back on top. It looked fantastic. It looked so easy. It looked terrifying! (The FODS factor again.)

I introduced myself as a glider pilot. Felt downright apologetic to admit I had the Silver C. The same height, distance and endurance qualifications are required for the BHGA Delta Silver C, and believe me it ain't easy to do it strapped under one of those umbrellas. The glide ratio in the best of them is about 1:8. If you've done it in a proper glider it's just too easy.

The British Hang Gliding Association leaflets are very reassuring. "First and foremost" they promised "you are not just thrown off the top of a hill. Training is very progressive. First flights are from low, gentle slopes — won't even be as high as 20ft." That sounded all right. I don't like high places. Not cliffs, not ladders, not high buildings. If you've got wings, it's different. We all know that. I sent off my money . . .

* * * *

Arrived at the Wiltshire Hang Gliding Centre forty minutes late, got stuck in the traffic. Just in time to see them leaving without me. The gal in the office kindly gave me directions to Martinsell Hill — turn right at the garage, Milton Lilbourne turn right again, and you can't miss it.

There they were, up on the brow of the hill, on the grassy slope, four **fit young men,** assembling what turned out to be a Polaris. Shaped battens, airfoil wing, nice modern hang glider. It was blowing a **hoolie!** We took the glider apart and put it back together again. We made sure all the bits were properly done up and in good condition. The mnemonic for hang gliding is:

Swank. Sails, Wires, Airframe, Nuts & Bolts, Kingpost. And before you jump off the cliff—

Show. Straps (attached to glider, attached to pilot?)

Helmet — secure

Obstructions — nothing in the way

Wind — toss up a bit of grass to check the wind.

Right. "You must be Mary" the instructor greeted me. Very very young, he was. Named Paul. He concealed his reservations very well, but I knew I had not made a good first impression, being fat, female, over forty and **late!** Paul rigged up a triangular scaffolding of pipes, with a hook dangling down, and announced "This is the simulator". Terry stepped into the apron and straps, climbed nimbly up into the framework, and hung up his caribiner, and Paul showed him how to shift his body weight to steer. I had done that once, at an airshow. The RAF had a hang glider "simulator" set up and all the kids had a go hanging in the harness, and so did I, but the RAF had provided a chair to climb up on. The next pupil, Tim, lightly swung himself up into position. I could see that without a chair I was going to have a real problem. Went scouting around in the van. In the bushes. No chair. No boxes. At last I found a stump not far away, and when it was my turn, I apologised for my weakness and they condescendingly moved the triangle of pipes into position over the stump and I climbed up and hung in there. So far so good.

"Now we are ready," Paul announced, "for dynamic tethered flights." He produced four lengths of rope and tied the longest one on the back, one on each wingtip and a loop on the front.

"You've done this before, haven't you, Terry? You go first". So sandy-haired big strong muscular Terry clambered into the harness, attached himself to the glider, hung suspended to test the attachment, and then stood up, taking the weight of the glider on his shoulders. About 70lbs, the glider weighs. Tim took the long brake rope, Alistair one of the wingtip tethers, I the other, and Paul assumed position in front. I figured we would just sort of stand there and hold him down, while Terry hung in the middle and flew like a kite. No. It was blowing a good 20kt up over the hill, but it wasn't *that* strong. Up until this point I hadn't been worried, not so much. Ignorance is bliss.

"I couldn't get up. I was absolutely and completely turned to jelly."

"When you are ready to fly", instructed Paul, "you must say **Release!** And only then will I let go of the front wires". "Release", said Terry. **"Run!!!"** said Paul. And we all began to run down the grassy slope, five of us together. Leaping over the lumpy grass hummocks and tussocks and rabbit holes and

sheep droppings like lemmings, right for the edge of the cliff! **"Brake!!!"** yelled Paul, and Tim dug in his heels and Paul and Alistair held back and I fell down. I couldn't get up. I was absolutely and completely turned to jelly. I was too old for this. I was not fit enough or young enough or strong enough or fast enough or brave enough to go pelting down a slippery slope to the edge of a drop-off holding on to the end of a rope, let alone be strapped under that cumbrous contraption and run for the brink. The time had come to chicken out. This was too much for me. I said I thought I couldn't do it. Paul said if they went too fast for me I could drop the rope, it didn't matter. Tim got in the harness next, had three goes, then Alistair. Then "Come on, Mary, it's your turn". I said I wasn't going to do it. I said I didn't want to do it. They made me do it.

"I went lumbering down the slope and suddenly was lifted and went light . . ."

And do you know, with the wings strapped on your back, it wasn't so terrifying running down the bank! Paul ran backwards in front of me, telling me what to do. Svengali-like, he fixed me with his glittering blue eyes, and I obeyed. I went lumbering down the slope, and suddenly was lifted, and went light, and flew, and **"Brake!!!"** hollered Paul, and down I came and folded up. I am very good at folding up. I just go limp.

"Very good, Mary". I turned round in the harness, and we all walked back up together. Twice more, and I began to get used to it. After lunch in the van (young Alistair's mum had packed him a big lunch and he kindly gave me a sandwich as I had forgotten to bring provisions), we went back to the slope and each of us did twelve more tethered hops. Learning to shift the weight to control the glider. Push out to flare, pull in to go faster. Move your body toward the wingtip that goes down to turn. By the end of the day I was getting used to the brink.

The following morning Paul said he would take us to Milk Hill, it would be easier as there was no drop-off. By this time I had confessed that I was a glider pilot, and Paul thawed out a bit. "I wish more glider pilots would go on the course" he commented. "We have a lot in common, and it would lead to more understanding". We carried the glider up Milk Hill, and I was happy to see that the top was gently rounded, sloping gently, all the way down. We didn't *go* all the way down, though. The programme was the same as before, tethered hops, but this time no wingmen required, so we had a bit of leisure, time to sit and roost and enjoy the view. Another chap turned up who had already done the first day of the course, so after lunch Paul took us to Draycott Hill nearby for our first attempt at a free flight down a nursery slope.

Draycott Hill is built like a Greek theatre, a perfect bowl, open to the south-west winds. But wind there was none, none at all. "Just right" said Paul , "no turbulence". Only one rope now, tied to the kingpost that sticks up on the top of the glider. The student stood up, picked up the glider and balanced it, nobody in front this time! **"Run!!!"** hollered Paul from behind, and leaping down the slope, one by one, the others got airborne and made it safely to the bottom, arriving more or less on their feet. My turn. I struggled to balance the glider. It weighed a ton with no wind to pick it up. I began to run. I couldn't run fast enough. I fell down and went rolling down the slope, on the training wheels, lippety lippety lippety, just like a go-cart, down over the grass with my feet dragging along behind and harness apron providing the necessary protection for my body. "The problem is," said Paul, "you've got to run fast enough to get up flying speed. Come on, Mary. Try again. We'll all give you a push".

So they all got behind me and gave a mighty shove, and I ran like mad as fast as I could, and suddenly went light and I was flying and I had control, and Paul behind me dropped the rope, and I flew like **Superman!!!** Fantastic! Beautiful. Twenty feet up! Relax! Over a bit, shift the weight. That's perfect! Now, the landing. Coming down. Flare now! Push out

"Just as well the third day was scrubbed because I had trouble walking."

Slowly, gently, a couple of steps and safely down. That was it for the day. Next day the weather was grot so we sat in a lecture and watched a video of people soaring the Alps and Rosselli Bay and I'm supposed to go back again for one more day. Just as well the third day was scrubbed because I had trouble walking. Couldn't move. Muscles all seized up.

Sewed the BHGA badge to my sleeve and flaunted it at Booker. "You've never been hang gliding?!" They couldn't believe it. I'm going to go again, too. I'm in training. Every night I'm going for a run, and lost eight pounds already. Realistically, I know I'm over the hill for buying a hang glider and dragging it up the slope all by myself, not possible. But it is a tremendous thrill and it is not that dangerous the way they teach you. (These hang glider instructors are Real Men! Imagine running backwards toward a precipice pell mell pursued by a gaggle of wallies?) And some day I *will* step off the edge at Rosselli! The FODS factor? Fly OR Die, Sucker! ■

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NATIONAL LADDERS

There were a healthy number of entries on the ladders for June and some very good scores for this early in the season.

Open Ladder

Leading pilot	*Club*	*Flts*	*Pts*
1. A Davis	Bristol & Glos	3	7092
2. T. Stuart	London	4	5582
3. T. E. Macfadyen	Cotswold	4	4618
4. R. Pentecost	Surrey & Hants	3	4313
5. D. Macpherson	London	4	4012
6. P. A. King	Midland	4	3576

Club Ladder

Leading pilot	*Club*	*Flts*	*Pts*
1. C. S. Starkey	Surrey & Hants	2	2438
2. M. Gribble	Cotswold	4	1869
3. L. Royds	Midland	2	970
4. M. Wells	RAE	1	812
5. J. Stuart	Midland	2	790
6. D. Langdon	Midland	1	687

MANDATORY INSURANCE COVER

The BGA Executive have recently looked at the minimum amounts of mandatory cover for third party and second seat insurance which are currently £250000.

Insurance brokers have advised that the mandatory level should be raised to £500000 in the light of possible damages that could be awarded in the event of severe disability to a third party. It is recognised that many gliders are already covered for £500000 but insurers suggest that publication by the BGA of a minimum mandatory limit of £250000 causes many members to think that this is all that is needed.

After discussion the Executive agreed to recommend most strongly that all gliders should have £500000 cover for third party and second seat insurance although this will not yet be made mandatory. If you have any comments please let us have them and the subject may then be an item for discussion at the AGM next year. In the meantime we note that the insurance market is particularly competitive at present and that currently the additional premium required to buy the extra cover is available at a moderate price.

★ ★ ★

AREA MEETINGS

Following the success of Area Meetings held during the winter season the Executive have already made plans for repeating the exercise during the 1988/89 winter. Please note that meetings have already been arranged for Sunday, November 6 at Portmoak, Sunday, November 20 at the Long Mynd and Sunday, February 5 at Tibenham. Full details will be circulated in due course together with news of any other dates and venues.

Barry Rolfe, *BGA administrator*

300KM ATTEMPT FATALITY

John Wills from Booker was killed on Sunday, May 29, while flying his ASW-15 on a 300km attempt in strong convection and strongish winds.

The glider crashed near Hinckley, Leicestershire and the pilot died in hospital later that evening. The accident is under investigation.

A MEDAL FOR BARRY



Barry Rolfe, BGA administrator and secretary, is photographed receiving the Royal Aero Club Bronze Medal from Lord Brabazon, the Minister for Aviation, at the Royal Aero Club annual awards presentation in London on May 5. The award was to mark 17 years service to the BGA and for 12 years as secretary of the Royal Aero Club.

BGA ACCIDENT SUMMARY – Compiled by JOHN SHIPLEY, Chairman, BGA Safety Panel

Ref No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew Age	Pilot/Crew Injury	Pilot/Crew Pl/Hrs	Summary
21	Bocian	2995	N	7.1.88 1200	Dallachy P2	43 37	N N	753 7	The instructor was demonstrating the effect of full nose down trim while "hands off" when, at 60kt, the stick moved rapidly backwards and forwards. The glider was gently eased out of the dive and was found to be controllable at 40kt but at 45kt the stick was very difficult to hold steady. P1 took over and landed safely in spite of pronounced oscillations. The wire connecting the trim tab to the trim control had broken.
22	K-6CR	1098	M	31.1.88 1330	Keevil A/F	43	N	-	After an autotow and an unsuccessful search for lift a circuit was started. On increasing speed to 55kt the canopy opened violently. Hinge damage prevented the pilot closing the canopy, so he landed without airbrakes, holding the canopy. **Club Comment:** The canopy appears to be non standard and this is being investigated.
23	K-8	2543	S	31.1.88 1230	Templeton A/F	40	N	36	As the K-8 approached the runway there was a T-21 on the left-hand side and a stationary retrieve vehicle on the right. The pilot **decided to land short** for an easy retrieve. The glider's ground run took it between the T-21 and the vehicle which it hit with the right wing. There was a slight crosswind from the left. The glider was substantially damaged.
24 (Late 1987 report.)	SHK	2222	S	19.8.87 1400	Edgeworth	25	N	98	On a 5hr attempt the pilot decided to land in a field that he had previously selected. This was **some three miles upwind** of his position and the pilot had not appreciated that the wind had strengthened. With no alternative the pilot flew a normal downwind leg although rather low. **The final turn was around a wood** and during this the glider's wing caught in crop and rotated into the ground.
25 (Late 1987 report.)	K-7	-	M	7.7.87 1554	Aston Down	55	N	0.75	This early solo pilot was in the circuit behind another glider. In attempting to avoid this he appears to have neglected speed control. This, combined with too much airbrake, led to an undershoot. The glider just cleared a hedge on the approach but hit a 3ft high post at the edge of the crop.
26	Olympia 460	1355	M	24.2.88 1500	Bignor	62	N	117	While ridge soaring the pilot crossed a gap as the **wind changed in strength and direction.** The average height above landable fields at this point was about 800ft so the pilot made a hurried field selection. He failed to recognise that **the field sloped downhill** and the glider had to be ground-looped to avoid hitting the far fence. **Club action:** Improved briefing for solo pilots prior to ridge flying.

27	K-13	2554	M	7.2.88	Nympsfield P2	32 19	N N	763 60	A K-8 was launched with a K-13 at 600ft on a high final turn. The K-8 released at 500ft and the cable fell across the wing of the K-13 at 100ft on finals. The K-13 landed safely. The launch crew had not thought that the K-13 was going to land from its unusually high position.
28	Bocian 1E	1234	M	6.3.88 1200	Keevil P2	52 29	N N	94 0	On a turbulent day with strong winds an air experience instructor underestimated the strength of the wind. He allowed himself to drift away from the airfield while on his base leg. In spite of increasing speed he could not clear trees so chose a field before these. Unhappy with the proposed ground run he banked at 4ft catching a wingtip.
29	Falke	M/G G-AYZW	S	2.2.88 1730	Portmoak P2	64 0	N N	653 +426pwr 0	The motor glider stopped 75m short of the winch to allow a launch to take place. The glider launched normally except for some drift to the right and as the cable was wound in it fell over the wing of the Falke. The cable cut off the outer section of the wing. The accident demonstrated the radius of danger around active winches. Should the winch driver stop the cable as it reaches the ground?
30	K-13	2406	M	27.3.88 1222	Parham P2	37 43	N N	301 13	After landing in gusty, crosswind conditions P2 kicked off nearly all of the drift just before touchdown. Shortly after this a gust was felt and the glider rotated sharply on the main wheel, removing the nose skid in the process. The instructor had not been able to prevent the groundloop.
31	PA25 Pawnee	TUG G-AVXA	M	3.4.88 1215	Usk	33	M	165pwr	The Pawnee pilot taxied to the launch point ready for the next launch. The engine was left running while a pilot change was made. The new pilot caught his leg on the throttle and the tug moved off under half full power. With one leg in the cockpit the pilot managed to hang on until it swung, lifted its tail then nosed on to the propeller.
32	K-13	1481	M	31.3.88 1300	North Hill P2	46 17	N N	401 4.5	P2 flew a normal flight in choppy conditions until the flare when for no apparent reason he pushed the stick forward. Although P1 was guarding the stick he could not prevent the glider striking the ground heavily damaging the wings.
33	Blanik	2061	S	23.3.88 1340	Talgarth P2	57 23	N N	1261 0	At 400ft the tug pilot waved the glider off. P1 was originally going to turn back and land downwind but the strong wind made this impractical. He then set up a rather wide circuit which left him too low. In the final turn he failed to compensate for the strong wind and hit a tree. The glider swung around and struck nose and wing down.
34	Std Libelle	1671	M	27.3.88 1145	Nympsfield	43	N	350	After a ridge soaring flight a normal approach was made until the roundout. The pilot did not allow for curlover and there was no flare. The hard, nose first landing damaged the fuselage and bent the mainpins. A crosswind at 200ft became a 5 to 10kt tailwind at touchdown.

STRUCTURE OF THE BGA

The membership structure of the BGA is now made up of 86 full members, three of whom have affiliated clubs as follows: Army Gliding Association - two clubs, RAF Gliding and Soaring Association - 11 clubs and the Royal Naval Gliding and Soaring Association - three clubs.

Operations. During the year ending September 30, 1987 (1986 figures in brackets), member clubs (civilian and combined services) flew 151308 (144672) hours and 919231 (723179) kilometres cross-country from 449468 (433134) launches from club sites. Club owned gliders total 523 (478) and privately owned gliders 1303 (1300).

Certificates were issued as follows:
A endorsements 1706 (1522), B endorsements 223 (234), Bronze C 433 (384), Silver C 222 (240), Gold C 59 (54), Diamond goal 45 (43), Diamond height 62 (55) and Diamond distance 16 (21).

A certificates were applied for by 726 (772) holders of the ATC proficiency certificate.

PILOTS' SUNGLASSES

Pilots' sunglasses are frequently advertised in *S&G* and while we had an article endorsing the fine qualities of Suntigers (*August 1986, p184*) we felt it time to test two other versions which looked promising - Cloudmasters (RD Aviation) and IFR 400 Sunglasses (Sunsail).

A number of pilots flew with both types and were enthusiastic about their ability to mark clouds, cut out glare, penetrate haze and rest the eyes. They are plastic with attractive frames including a clip-on version.

RD Aviation's glasses are being given a spectroscopic test by an Oxford Polytechnic professor of biological and molecular sciences. His advanced report show that Cloudmasters



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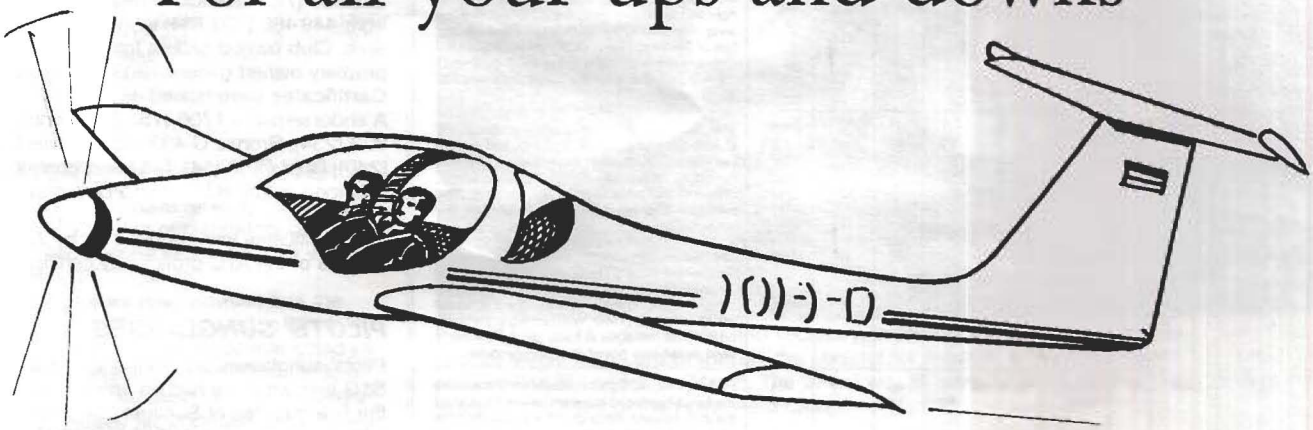
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When it comes down to deciding which to buy, it is a very personal choice of whether you like the darker lenses of the Cloudmasters or the light brown tinted lenses of the IFR. They are similar in price – Cloudmasters are £20.25 and IFR £19.95 (both including p&p) – and quality.

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	Name	Club	1988
243	Benton, D. A.	Lasham	6.1
244	Marren, C. A.	in Australia	17.2
245	Swoffer, P. A.	Lasham	22.3

DIAMOND DISTANCE

No.	Name	Club	1988
1/361	Duncan, Rachel	Bicester (in Australia)	4.11.87
1/362	Benton, D. A.	Lasham (in Australia)	6.1
1/363	Marren, C. A.	in Australia	17.2
1/364	Swann, A. C.	Cotswold (in Australia)	1.11.87
1/365	Roddick, C. B.	Bristol & Glos (in Australia)	16.2
1/366	Dale, G.	Bristol & Glos	20.5

DIAMOND GOAL

No.	Name	Club	1988
2/1563	Knight, G. C.	South Wales (in Australia)	61.
2/1564	Pettman, I. M.	Two Rivers (in Australia)	26.1
2/1565	Williams, P. R.	Bicester	13.4
2/1566	Woodruffe, P. R.	Bicester	24.4
2/1567	Boyle, C. A.	Ouse & Hambletons	24.4
2/1568	Pearce, W. R.	Bicester	20.5
2/1569	Arnold, J. G.	Wrekin	20.5
2/1570	Ellwood-Wade, R. D.	Chilterns	20.5

DIAMOND HEIGHT

No.	Name	Club	1988
3/835	Housden, A. L.	Cotswold	19.3
3/836	Dixon, R. H.	Southdown (in Italy)	14.3
3/837	Raffan, A. S.	Fenland	24.3
3/838	Allcoat, R. W.	SGU	10.4
3/839	France, P.	South Wales	27.3
3/840	Swoffer, P. A.	Lasham (in Italy)	22.3

(Two Diamond heights were flown from Aboyne with one each from Poatmoak and Usk.)

GOLD BADGE

No.	Name	Club	1988
1246	Duncan, Rachel	Bicester	26.9.87
1247	Ranson, J. B.	London	3.4
1248	Witter, R. B.	Wrekin	30.12.87
1249	Knight, G. C.	South Wales	7.1
1250	Swoffer, P. A.	Lasham	22.3
1251	Pettman, I. M.	Two Rivers	26.1
1252	Boyle, C. A.	Ouse & Hambletons	24.4
1253	Terry, R. N.	Booker	25.2
1254	Nash, I. R.	Lasham	9.4
1255	Arnold, J. G.	Wrekin	20.5
1256	Minson, S. D.	Devon & Somerset	4.4
1257	Ellwood-Wade, R. D.	Chilterns	20.5

GOLD HEIGHT

Name	Club	1988
Bennett, J. R.	Bristol & Glos	12.3
—Adam, K. J.	Deeside	20.3
Pratt, D. J.	Four Counties	20.3
Morgan, Sharon	Four Counties	20.3
Evans, R. M.	Fenland	25.3
Crooks, M. D.	Lasham	26.3
Duncan, Rachel	Bicester (in Australia)	26.9.87
Chamberlain, G. H.	Rattlesden (in Australia)	13.11.87
Knight, G. C.	South Wales (in Australia)	7.1
Swoffer, P. A.	Lasham (in Italy)	22.3
Broom, C. E.	South Wales	27.3
Terry, R. N.	Booker (in Australia)	25.2
Whittingham, M. F.	Shalbourne (in Australia)	29.1
Nash, I. R.	Lasham (in Italy)	9.4
Beckers, R.	Two Rivers (in France)	13.4
Nicholson, H. V.	Booker	5.10.87
Gregory, P. R.	Booker	9.10.87
Minson, S. D.	Devon & Somerset	4.4
Pryce, J. M.	SGU	15.4

GOLD DISTANCE

Name	Club	1988
Ranson, J. B.	London	3.4
Cheetham, R. A.	Buckminster	3.4
Witter, R. B.	Wrekin (in Australia)	30.12.87
Knight, G. C.	South Wales (in Australia)	6.1
Pettman, I. M.	Two Rivers (in Australia)	26.1
Williams, P. R.	Bicester	13.4
Woodruffe, P. R.	Bicester	24.4
Boyle, C. A.	Ouse & Hambletons	24.4
Pearce, W. R.	Bicester	20.5
Arnold, J. G.	Wrekin	20.5
Ellwood-Wade, R. D.	Chilterns	20.5

SILVER BADGE

No.	Name	Club	1988
7625	Dell, R.	Trent Valley	20.3
7626	Bairstow, J. A.	Wolds	9.4
7627	Wheeler, M.	London	27.3
7628	Williams, D.	Cotswold	3.4
7629	Carolan, M.	Bristol & Glos	12.3
7630	Ruxton, J. A.	Deeside	9.3
7631	Harris, G. C.	Bristol & Glos	12.3
7632	Whitfield, J. W.	SGU	26.3
7633	Davies, R.	Pegasus	3.4
7634	Chadwick, A.	Clevelands	9.4
7635	Kitchen, P.	Bannerdown	13.4
7636	Davies, P. M.	Angus	9.4
7637	Fleming, W. S.	Borders	9.4
7638	Mitchison, R. A.	Northumbria	9.4
7639	Chapman, H. K.	London	11.4
7640	Waterhouse, P. W.	London	11.4
7641	Hands, D. S.	Booker	27.3
7642	Head, M. E.	Bicester	24.4
7643	Crooks, M. D.	Lasham	3.4
7644	Goulding, N. B.	Clevelands	24.4
7645	Morton, C. A.	Phoenix	2.5
7646	Dickson, M. W.	Cranwell	20.4
7647	Stringfellow, G. C.	Surrey & Hants	6.5
7648	Tuck, M. A.	Wrekin	6.5
7649	Smith, R. G.	Fenland	3.4
7650	Tyler, J. F. C.	Surrey & Hants	26.4
7651	Adam, K. J.	Deeside	15.5
7652	Anderson, N. M.	Highland	14.5
7653	Attwood, S. W.	Essex	21.5
7654	Porter, A. M.	Shalbourne	21.5
7655	Brain, D.	London	21.5
7656	Ruttle, D. M.	Staffordshire	21.5
7657	Fritche, P. C.	Southdown	21.5
7658	Durrance, T. D.	Surrey & Hants	21.5
7659	Jeffries, D. J.	South Wales	21.5
7660	King, W. S.	Essex & Suffolk	22.5
7661	Bennett, L. R.	South Wales	21.5
7662	Neeves, P.	Rattlesden	22.5
7663	Bourne, P. R.	Wolds	22.5
7664	O'Callagham, G.	Welland	21.5
7665	Stark, M. S.	Ouse	20.5
7666	Binnie, G. J.	Swindon	21.5
7667	Browning, G. R.	Wyvern	21.5
7668	Raper, A. M.	Rattlesden	28.3
7669	Lake, C.	Pegasus	23.5

UK CROSS-COUNTRY DIPLOMA

No.	Name	Club	Part 1 1988	Part 2 1988
1	Forrest, A. G.	Deside	1.1.	1.1.
2	Tanner, L. E. N.	Deeside	1.1.	1.1.
3	Stemerdink, J.	Deeside	20.3	-
4	Dobson, J. B.	Clevelands	9.4	9.4
5	Morris, B. C.	Booker	3.4	3.4
6	Lawson, J. R.	Cranwell	24.4.	-
7	Sharp, D. J.	Four Counties	24.4	-
8	King, P. A.	Midland	24.4	24.4
9	Sword, C. D.	Borders	21.5	21.5

35	L-Spatz	2498	M	21.3.88 1815	Portmoak	43	N	40	After a 3hr soaring flight the pilot attempted to land short but misjudged his height and hit the top of a tree. He was unable to flare the glider properly before landing heavily and groundlooping. He had neglected the correct aiming point technique and has since been given further training.
36	K-8	2332	M	23.4.88 1300	Ringmer	33	N	5	After a DI the glider was taken to the launch point. After an hour it was lined up and a positive control check was made. During this the rudder pedals were depressed but the rudder did not move. The rudder capable reinforcement plate and some surrounding ply had detached from the rudder.
37	Kestrel 19	-	M	13.3.88 1650	Aston Down	25	N	540	The pilot was not going to fly but rigged his glider for a C of A check on control deflection and free play. He was later "talked into" flying. After a 10min flight he landed normally then seemed to lose aileron control. At the end of the ground run one wing touched the ground and the other fell off. **The main pin was in a box, not the glider.**
38	Sport Vega	2716	N	24.4.88 1425	Nr Guildford	27	N	-	The glider was thermalling, banked at about 45° at 3000ft asl when a light aircraft appeared from behind his left wing. He was on a northerly heading while the light aircraft was heading south and turning hard to avoid the glider. Estimated separation was 100m vertically and 30m horizontally. The glider pilot is submitting an **airmiss report.**
39	K-7/13	-	M	2.4.88 1530	Camphill P2	33 0	N N	340 0	P2 was rather slow on pulling back during the first 150ft of the slightly slow winch launch. The winch driver, seeing the nose low attitude of the glider, reduced power thinking it was too fast. The chute inflated and back released over the glider's wing. P1 landed ahead with the cable on the inner wing.

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

YOUR LETTERS

KNOW NOTHING ABOUT GLIDING!

Dear Editor,
SOLVED - THE ENIGMA OF THE GNOMES OF KINGSWAY

When our scruffy looking "permission to winch launch" arrived, covered in crossings out and bearing what appeared to be an arabic signature, it was almost filed in the waste paper basket. I actually read it in a recent moment of weakness and I was amazed to discover that we are not permitted to launch from any of our four paved runways!

Permission **has** been granted to carry out 2000ft launches from an anonymous point on the airfield which is barely 800ft from the pad of a busy heliport serving North Sea oil rigs. Needless to say, no notice has been taken of this directive and I look to the BGA to demand the immediate withdrawal of the condition.

I am disturbed by the Machiavellian cunning in the imposition of a restriction which sets up a ghastly accident, which is then used as the justification for the existence of the restriction.

Here is the clearest possible evidence that the CAA's non-aviators know nothing about gliding and care even less about general aviation safety. It does not need a Holmesian deduction to see that, because of their fearful ignorance, gliding poses a threat to their existence. Thus the motive is established for continuing attacks upon gliding from all quarters and I believe the Establishment will not rest until our sport has been closed down for good.

Or will firmer, more positive action from the BGA save the sport?

JOHN G. STORRY, *Chairman, Strubby Gliding Club*

Bill Scull, BGA director of operations, replies: The winch launching permission is somewhat controversial being regarded by many as overkill under the banner of improved flight safety. The deletions on the actual permission are inevitable given its general purpose. John's anonymous point is probably the reference point of the original airfield and the permission relates to Strubby airfield and those parts of it still in use. So far as the helicopter operation is concerned I presume that some liaison takes place. Changes in regulation such as this frequently seem to have a Catch 22 but I doubt "Machiavellian cunning". The aim was a known environment but based on a perceived risk. The CAA staff issuing the permissions are pilots, some with current gliding experience. So far as the "more positive action from the BGA" is concerned this sort of thing is an increasing part of our workload but when changes are made without consultation what can we do?

THE APRIL ISSUE OF S&G

Dear Editor,

The April issue of S&G was one of the best ever. Congratulations! And how lovely to read Derek Piggott's "Which Glider?" (p80). In particular I loved Derek's comments on the Club Libelle. I own one, a late model fitted with Hornet wings. Derek's comment on the wing drop at the stall is very true - I know as I nearly spun out of a thermal recently while trying to spot a K-13 that persistently hid just behind and bélow me. The cure is to fit new turned down wingtips.

Lemmy Tanner's "A Full Circle" (p78) missed one point. Most pilots who become private owners do so not only to escape the restrictions of club flying but also the tyranny of instructors who for the most part only have a Silver badge and can't abide solo pilots getting on. After all how can a Silver badge instructor properly brief a Gold badge pilot who has probably done thousands of cross-country kilometres.

Don Austin's article on trailer stability (p69) brought back memories of some horrors that I've towed, my present club's Astir trailer being the worst ever. I nearly collected a police motor cyclist with a wilder than usual swing. Incidentally the wing roots are at the rear! Now my German build Club Libelle trailer is open with both wings on one side with the roots at the front and five feet of tips sticking out at the rear. Importantly though it tows like a dream both empty and loaded - just don't ask me to explain why or how.

John Gibson's article on aerotowing and the many letters on the pros and cons of high or low towing made me think of my own training. I was taught high tow in the UK and low tow in Australia. What is important is concentration and good training. Also (tongue in cheek) when in Rome etc!

RON BAKER, *(ex Portsmouth Naval GC) Gympie Soaring Club, Queensland, Australia*

MOUNTAIN FLYING

Dear Editor,

I write to express my concern regarding John Bridge's article "A Guide to Mountain Climbing" in the last issue, p122.

Far from being a "guide", John seems to draw the wrong conclusions about flying in the southern Alps and appears to be saying merely . . . "I have done it!" Instead of offering a well-reasoned guide for fellow countrymen to join in the fun, Mr Bridge gives the impression that flying in the Alps is a free for all.

Whilst I do not have the experience and knowledge of the native Alpine pilots, I have flown 900hrs in the Alps and hold full instructor ratings in both France and the UK.

I will take some of the points made and try to explain my views on the matter:

1. The check flight.

Of course you do not need a check flight to operate your own glider (providing that you have aerotow experience).

Sisteron is an easy site with no approach problems and is no different from most in the UK. However, should the need arise to fly local gliders, then one or more check flights may be required as well as an understanding of French for radio contact.

2. Local flying.

Once again, Sisteron is an easy site from which to start mountain flying. Provided that you fly within your *core de finesse* based on an L/D of 20:1 for glass gliders, you can have a go at the surrounding mountains in the knowledge that you can always get back to the site. The same rule can apply when you begin to fly further north or south within range of Gap or St Auban.

3. Weather conditions.

If cumulus is present, it is possible to fly cross-country using the high cloudbase and ignoring the mountain lift. Again, this is no different from flying in the UK. The added bonuses, however, are that there is an airfield within range at all times - and, of course, the scenery is more impressive.

The problem that ensues, however, is that having achieved a good flight one day, a pilot may try to emulate it another time in totally different wind and thermal conditions. This is where he could find himself in difficulties and perhaps wish he was at home watching TV!

4. Marking the landing fields.

John seems to treat this as an unnecessary chore.

Many clubs insist that their pilots visit these fields by road before flying cross-country in order to recognise the hazards associated with surface and obstructions on the approach. Usually this serves as an incentive - not to want to end up in one of those fields later!

5. Position reports.

Yes, it may sound silly that French pilots have to report regularly "position, altitude and vario". Even if you are 100km away an instructor in the local two-seater may be able to recognise a potentially dangerous situation and advise on a suitable course of action.

6. Self-preservation etc.

This is not included in the French training syllabus.

Pilots learning to fly in this area will probably have experienced one or more Gold flights prior to going solo in the mountains. Silver distance from Vinon is normally flown to Sisteron. Potential candidates will be shown the route in the Robin ATL. During the flight the potential landing fields and approach problems will be demonstrated as well as the mountain difficulties. This flight will be repeated in a Janus or Twin Astir.

All this may sound unnecessary when a 2000m cloudbase is present, but it is all part of the mountain training. Before the pilot progresses further, a similar approach will be taken for the *parcour des combattants,"* aptly described by Bill Malpas in the April issue, p66. Similarly, for the run to Les Ecrins, Briançon and later to Mont Blanc and Aosta.

Maps will be carried, often showing minimum arriving and leaving altitudes at specific mountains.

Some pilots who have ignored this basic procedure may not be around to tell their stories, whilst others may still show signs of the body contact with rocks.

7. What the lesson should have said.

Sisteron is a good site from which to start mountain flying.

Training is required to achieve a reasonable standard of flying in the mountains. This can be obtained at St Auban, Vinon, Sisteron, Fayence and Gap.

As Platypus says: "There is no substitute for professionalism . . ." The main danger in the southern Alps in the summer is the number of foreign pilots relying on the "bottle factor" and concentrating on the mountains instead of looking out for the 400 odd gliders flying in the area.

Finally, I would just like to say that my views echo some of the criticism raised in France on the content's of John's article. I am sure that Yves Blonde, the new CFI at Sisteron, will agree with the contents of this letter.

F. HUMBLET, *Redhill, Surrey*

VARIOMETER THAT DOESN'T NEED A BOTTLE

Dear Editor,

I was most interested to read Alan Dibdin's article on variometers in the April issue, p70. Some years ago I spent some time experimenting with electronic variometers and also ended up using transducers. However, by using two transducers, one measuring static pressure and one pitot pressure, it is possible to build a variometer which dispenses with the need for a bottle.

This is accomplished using a differentiator circuit. With this circuit the need for long term DC stability is eliminated leaving low frequency electronic noise as the biggest problem. A complete variometer, including audio, based on a two transducer system can be contained in a box approximately 3inX3inX6½in.

If anyone is interested I would be pleased to enter into correspondence on this subject.

ANDREW JOHNSTON, *58 Sherbourne Close, Cambridge CB4 1RT*

BOOKER'S REPLY

Dear Editor,

In his thinly disguised advertising letter in the last issue, p147, Simon Roberts asks about the mysteriously rounded Booker statistics. The answer is simple – our flights are always rounded down to the nearest 300km.

The observant Mr Roberts will no doubt also have spotted the printing error regarding our total hours – which should of course have read 16000 not 1600.

MIKE CUMING, *Booker GC*

Please send all contributions to S&G to the editorial office, 281 Queen Ediths Way, Cambridge CB1 4NH

BOOK REVIEWS

Sails in the Sky by George T. Collins. Printed by Hartnoll Ltd, Bodmin, Cornwall at £9.95 and obtainable from 1 Somerville Road, Perranporth, Cornwall, TR6 0HD.

I spent some most enjoyable hours reading this book from beginning to end in one go. George has certainly succeeded to keep my attention, for he must have kept a very detailed diary in order to relate so many incidents.

George is, of course, a man of many parts. Whether sitting in front of a piano keyboard, on which he performs brilliantly, or standing with baton upraised before a full orchestra, or giving flying instruction, or taking an examinee through his paces, or tending his bees, all these give evidence of a man who does try for perfection in whatever he does.

Much of this book relates to the "wooden" glider era, but he has kept up to date and has travelled all over the world and flown from many gliding sites.

In the company of the late Major Ted Berry George devoted an enormous effort to create and establish the Cornish Gliding (and Flying) Club. One thing I can vouch for personally is the great genuine welcome I received when I landed at Perranporth for my Gold C goal/distance. No doubt this was and is extended to all visitors.

Some of the photographs could well have done with enlarging, and some lack definition. Outstanding is the jacket cover in colour, by P. J. Packenas of Redruth, showing a Pirat on tow near St Michael's Mount.

The rather unusual thing about this book is that it has no contents page nor any page numbers! However, none of these things matter much and I understand there had been a number of difficulties in getting the book printed. It shows indeed the author's tenacity of purpose that we can now share his experiences.

RIKA HARWOOD

Instant Wind Forecasting by Alan Watts and published by Adlard Coles Ltd 1988 at £5.95.

This book was originally published in 1975 and is now reissued in paperback. It follows his book **Instant Weather Forecasting** and is almost entirely for people who sail. The style reminds me of certain expert programmes for computers; these present the user with a series of questions which, if answered properly, enable the machine to diagnose the problem and suggest a solution. As a result a fairly inexperienced person can draw on the much greater knowledge of an expert.

Without the aid of a computer to do the sorting and selection the reader has to do a good deal of hard work to arrive at his wind forecast. This is not helped by the layout which separates the untitled pictures from their caption by as much as four pages in some cases. Two diagrams are even further from their text. They are printed on pp47 and 49 but refer the reader to text on pp108 and 110 respectively. Perhaps this is due to the printers and binders, the Wing King Tong Co Ltd of Hong Kong.

However, there is a very great deal of interesting information which will not be found anywhere else. The wind shifts associated with sea and land breezes are described in great detail together with probable times of onset; the influence of large lakes and the effect of mountains on narrow stretches of water are given in fascinating detail. At first reading the complexities seem daunting, there seem to be so many items to consider. The author certainly realises this and writes: ". . . do not give up if it does not seem to work very well at first. It is designed to help you even if you have to learn to live with it."

For anyone who races dinghies or keel boats at sea or on inland waters this book has a vast store of valuable information. It is not a book to pick up if you want a rapid answer to the question "what do I do now?" You need to have been through the book many times and learnt where to go for the essential bits of information and how to use it. There is no index or table of contents for quick reference. It is good value for anyone interested in this aspect of the weather but until you become familiar with large sections of it is not really an "instant" guide.

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CLUB NEWS

Copy and photographs for the October-November issue of *S&G* should be sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, tel 0223 247725, to arrive not later than August 9 and for the December-January issue to arrive not later than October 11.

GILLIAN BRYCE-SMITH
June 8

AQUILA (Hinton in the Hedges Airfield)

At our well attended annual dinner the new Jim Wright trophy for outstanding effort was awarded to Keith Chichester; the Best Flight trophy to Martin Lewin; the Most Improved Pilot trophy to Martin Bell and Pete Coomber won the Best Height trophy.

Our open day on May 30 was well attended, despite the unsympathetic weather, and we are hoping it will result in new members.
J.R.

AVON SOARING CENTRE (Bidford)

We now own our own land with great plans for the development of the club. The arrival of the Capstan enhances the two-seater fleet.

Our thanks to Pat and Peter Light for their outstanding efforts with the Inter-Club League and to Dave Oddy for his sterling work as well as belated congratulations on his two Diamonds.
D.T.W.

BANNERDOWN (RAF Hullavington)

We had much activity and success in early summer, particularly in midweek flying. Four *abinitio* courses in good weather resulted in Shari Hankey, Steve Hoskins. Alex Mandl, Andy Venman. Steve Bertuzzi and John Vincent going solo. There were a crop of Bronze and Silver legs for Harry, Martin, "Cookie", Neil, Allison and Chris with Silver badges completed by Tony Johnson and Phil Kitchen.

John Arnold (Astir) flew Diamond goal in the Bicester Comp training week while Andy Smart (Discus) landed 30km short of 500km.

April was our best month ever with 1500 launches. Our Inter-Club League entrants made the most of only 1½ task days out of seven to make the final.
D.C.F.

BATH & WILTS (Keevil)

The cross-country mileage is accumulating with many club ladder entries. Additions to the private fleet include an immaculate K-8 from Finland, a Fauvette and a Capstan.

There was a successful instructors' course at Easter run by Ken Stewart. Congratulations to Gabriel Barton and Glenn Greed on going solo, Glenn just after his 16th birthday.

Obituary - Eric Hales

Sadly we report the death of Eric Hales at his retirement home in the Dordogne. After a career in the RAF when he was a much valued member of the RAFGSA, he joined us in 1964 and as our technical officer devoted countless hours maintaining the club fleet in prime condition.

In his ex Peter Scott Oly 419 his cross-country kilometres were a constant source of inspiration and his never-ending willingness to assist, advise and encourage will always be appreciated. We will remember him with gratitude and affection and our sympathies go to his daughter and family.
M.G.

BICESTER (RAFGSA)

Our congratulations to Phil Woodruff, Bob Pearce and Mike Hayes (300km); to Anne Laylee (Silver height); Simon Hammersmidt (Bronze badge); Richard Busak, Martin Lister and Paul McAuley (both Bronze legs); Ron Pepper (Bronze leg) and to Ken Miniet and Duane Kincaid on going solo. We have had a good start to the season with well over 3000km logged.
M.H.

BOOKER (Wycombe Air Park)

We thank Mary Meagher for her generosity in donating a Pegasus to the club - with the expressed proviso that it should be used (free!) by promising young pilots. This follows on from Mary's free loan of the glider last year to a number of deserving younger pilots.
M.F.C.

BRISTOL & GLOUCESTERSHIRE (Nympsfield)



Georgina Harris, 19, is congratulated by CFI Graham Morris on her AEI rating. She is the first member of the Bristol University Air Squadron to gain this qualification. Photo: Bernard Smyth.

BUCKMINSTER (Saltby Airfield)

The year started with numerous Bronze and Silver legs and Diamond goals. Another incentive is the new 100km milk run trophy kindly donated by CFI Rob Cook, the rules allowing low performance machines to compete on more than favourable terms.

Pete Goodwin and Jim Airey have acquired a K-6CR from Germany to replace our old faithful Skylark. We are open seven days a week with summer courses and visitors are welcome.
R.A.C.



Neil Forman, Cambridge University GC, photographed by his mother Gillian before going solo on his 16th birthday.

BURN (Burn Airfield)

Our thanks to Bill Scull for his talk on safety and to Frankie Thompson and all the tea bus ladies for their sterling work in providing funds to buy a weather station for our clubhouse.

We hired the BGA's ASW-19 for a week in May and many flew glass for the first time.

Congratulations to Pete Shaw, Stuart Moss, Simon Martin, Margaret Timperley (on going solo); to Bob Peaks-Woods (Bronze badge); Tony Flannery and Paul Morris (5hrs) and Alan Smith (300km).

We had a treasure hunt in May and our midweek flying courses until late August are well booked. Visitors are always welcome.
M.T.

CAIRNGORM (Feshiebridge)

The excellent weather in April and May was an encouraging start to the season. Andy Carter and Alistair Morrison have AEI ratings and Brian Gillies went solo on his 16th birthday.

We are operating seven days a week and launches are available for visitors throughout the summer.
S.M.

CAMBRIDGE (Duxford Airfield)

A midweek flying day was organised to send Neil Forman solo on his 16th birthday with his father driving the winch and his mother and sister as ground crew. Congratulations also to Brian Husson on going solo and to Malcolm Farrell and Brian Manning on their 5hrs.

The Inter-Club League at Duxford was a write-off, the best thing about the weekend being the social committee's turkey and ham supper. But we had better weather at Tibenham and won, thanks to Steve Mynott, Steve Reynolds and Robert Amand.

Bluebell, the club's T-21, is having its wings restored thanks to Sandy Torrance.
L.A.W.

CHILTERNS (RAF Halton)

Our membership has increased, Matthew Barnes, Dave McLeod and Karen Everett have gone solo and Dave Aram and Nicola Jones have resoloed.

Roger Ellwood-Wade flew 310km to complete his Gold badge and Les Fellows won Day 4 during the Comp training week at Bicester.
K.J.E.

CLEVELANDS (RAF Dishforth)

Arthur Chadwick and Neil Goulding completed their Silver badges, Neil following this with a 100km triangle joined by Neil Claughton. Congratulations to Brian Wallace, Steve Harper and Chris Ballard on going solo.

Sadly conditions weren't so good when we welcomed the Vintage Glider Club to our May Day rally. Our thanks to the cheerful participants; we hope they will return in better weather.
J.P.

CONNEL (Connel Airfield)

At the AGM in March the chairman reported an accident free 1987 and thanked retiring secretary, Mike Gregory, for his hard work. We have many new members, a steady flow of visitors and good spring wave. But as it is difficult to bridge the gap from hill lift to wave with old aircraft, we are considering updating our fleet with a motor glider.

We are planning a half price trial instruction day for the general public and at a special social event Bob Rothnie, our founder, will officially open the new hangar, which has made flying operations much easier.

Visitors are always welcome, especially someone with a tug, and we are looking for a T-21 tailplane.
R.W.

CORNISH (Perranporth)

Dave Wren started our cross-country season by landing near St Austell. Peter Endean, after years in Saudi Arabia, has formed a DG-400 syndicate with Bill Lewis and Arnie Lambe.

Dartmoor GC members flew with us occasionally during their enforced winter closure, thanks to Tony Turner who was always there to organise and drive the winch.

Fred Sloggett and Gordon Hunter (club K-6ε) and Bill Lewis (Mini Nimbus) had an enjoyable visit to North Hill.
G.A.H.

COVENTRY (Husbands Bosworth)

We had a good start to the season with notable tasks achieved. On April 10 we had a rare occurrence - gains of over 10000ft in wave. Mick North flew his first 300km in May and Jerry Landrick did three 300kms on consecutive days.

Our first advanced soaring course gave many hours' flying. Heydon McEvaddy had five field landings in four days and after a 100km triangle a club Bocian then landed one thermal short of Dunstable.

Congratulations to Mike Jordy who won the HusBos Regionals and to our newly qualified instructors, Peter Burgoyne and Alan Foxon.
D.L.S.

CRUSADERS (Cyprus)

Tim Dickinson, CFI, leaves in August and we thank him for 2½yrs' work. We welcome Ossie Constable from Chilterns as his replacement.

Avo brought in a tug for the AGM weekend which was well utilised. Congratulations to Bob on his Silver height; Bob, Shuggy, George, Stu and Lisa on gaining Bronze legs and to Pete for going solo in the Falke. Membership has risen dramatically recently.
H.Q.D.

DARTMOOR (Brentor)

Roger Matthews, our new chairman, broke the height record with 7600ft over our field while Al Huxham, retiring chairman who has resoloed after 25yrs, helped with our display at a local summer show.

We were delighted that Peter Williams, last year's CFI who was seriously injured in an icy road accident, has returned to the fold.

Our publicity is reaching out to the holiday centres and to Plymouth and our thanks to syndicate members who spare their gliders for display at local horse shows and fetes to generate interest in gliding.
F.J.M.

DEVON & SOMERSET (North Hill)

The season began well for the club ladder with Rob Johns flying 161km to Lasham and Dave Reilly a 114km O/R. Our courses, with Les Hill and Tim Gardner as instructors, started very successfully in May.

We thank Dave Brummitt for running the bar for 2yrs and Simon Minson for taking over.
D.A.R.

EAST SUSSEX (Ringmer)

With three two-seaters we are concentrating on training and early solo development - to this end new members only pay £5 entry fee which is a significant reduction. David Martin, Christine Vandenburghe and Barry Skilton passed our first home-ground assistant instructors' course.

After reading an article in our newsletter on soaring the South Downs westwards, Tim Williams (Pilatus) did just that for his Silver distance.

We welcome visitors throughout the season on Wednesdays and weekends - please contact Barry Laker, 0444 455868 (evenings) - and have evening flying for groups at least once a week.
F.H.

ENSTONE EAGLES (Enstone Airfield)

Our first open weekend started with a heavy snowstorm on April 9, which didn't encourage visitors, but we have a useful number of bookings for our trial instruction evenings.

Peter Fall, Greg Burton and Peter Bailey have claimed Silver heights; David Bell has two Bronze legs and Ian Cook, Tony Cox, Chris Richards and Robin Boby have AEI ratings which is a slight recompense for the loss of three instructors. If anyone can help fill the gap we will be most pleased.

We are aerotowing seven days a week - come and join us!
R.J.P.B.



Jamie Westwood of Coventry GC about to go solo on his 16th birthday. Captions please for what the anxious looking instructor Ron Davidson is thinking.

ESSEX & SUFFOLK (Hadleigh)

We had a good start to the season with Robbie Hatwell's flight of 226km in an attempt to fly to North Wales. This was followed one Saturday in May by five Diamond goal attempts and congratulations on succeeding to Peter Joslin (Libelle) and Paul Robinson (Mosquito). The next day Paul Rice, Peter Codd, Mike Haynes and Allan Hall completed the club 100km triangle.

Congratulations to Wally King on completing his Silver badge with a 5hrs at Portmoak. Mike Farr, Peter Joslin and Richard Kimberley have AEI ratings and Meryvn Gooch is an assistant instructor.

The Inter-Club League had its usual poor start with no tasks set at Duxford and one competition day at Tibenham when Mike Farr and Robbie Hatwell gained 1st and 2nd position overall.
V.H.

FENLAND (RAF Marham)

Good weather and an outbreak of enthusiasm has made a fine start to the season.

Our new twin drum winch should be more efficient. Well done Rhod Evans and Jed McKnight on their 300kms; Ron Smith 11 and Len Bircham on completing their Silver badges and to Karen Pepper on going solo.
N.J.T.

FOUR COUNTIES (RAF Syerston)

We started the year with the airfield waterlogged but since then Steve Lawes and Nigel Gough have completed their Silver badges, Nigel with his 5hrs and distance on the same day. Congratulations also to our new solo pilots. The new 100km diploma is an added incentive for our post Silver badge pilots with three or four legs already claimed.

We are always pleased to see visitors but we

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L.S.D.

Obituary - Sharon Morgan

It is with the greatest regret that we report the death of Sharon Morgan on April 9 while flying the club's Ventus. (See the last issue, p140.) Sharon, a Senior Aircraftwoman serving in the radar trade at RAF Coningsby, was a dedicated glider pilot who lived for the sport. Always a willing helper, she was cheerful, respected and ready to impart her knowledge to the younger, less experienced members.

It is still hard for her friends to comprehend her loss. She will be sadly missed at Four Counties and within the RAFGSA.
Stephen Lawes

HUMBER (RAF Scampton)

The April 23-24 weekend was a cracker. Chris Gilbert, Dave Jones and Mick Nadin gained their second Bronze legs and Sara Wilson her first; Chris Gilbert had a valiant 5hr attempt and Clive Brealey flew a 100km triangle for the 100km diploma part I - Tony Smith and Chris Gildea went along for the ride.

A month later Dave Ruttle (K-8) flew Silver distance to complete his Silver badge; Mick Nadin and Dave Jones have Silver heights; Joe Hutton soloed and Sara has her second Bronze leg. Chris Gildea and Kev Atkinson are in the Inter-Services Regionals.
K.M.G.

KENT (Challock)

After Inter-Club League meetings at Parham and Challock we are in the lead with two more to go. We hope the refurbished clubhouse with improved facilities will attract more visitors and new members.

The purchase of a second tug met with mixed feelings and the economics remain to be proved. During our best soaring week there were a number of Silver badge claims and we congratulate them all.
A.R.V.

KESTREL (Odiham Airfield)

With every weekend flyable this year, the instructors have been working extremely hard. Congratulations to Caroline Barnard, Chris Carnegie, Dave Summers and Alison Parkinson on going solo. Andy Carnegie gained both Bronze legs and Silver height during his first few solo flights.

Tugs are needed for the Inter-Club League final during the August Bank Holiday. If you can help please contact Steve Nash on 0252 716452.
J.N.

LAKES (Walney Airfield, Barrow-in-Furness)

Congratulations to Ian Hechle on going solo and to David Hannah for his Silver height.

Linda Dawson (who writes an excellent club newsletter) organised a successful barbecue and plans to have more.
M.S.



Tim Hogarth, Mendip GC, is sent solo on his 16th birthday by his brother Phil.

MENDIP (Weston-Super-Mare)

Our future at Weston looks very bleak. The airfield has been sold for development and we have to leave by the end of June. We are desperately looking for a site with several irons in the fire but no definite offers yet.

Congratulations to Tim Hogarth on going solo on his 16th birthday and to Graham Taylor on his AEI rating.

Ray Snelling and Ken Wiseman have recovered our K-7 and rebuilt our K-8 with Roger Palmer proving to be a whizz kid with the spray gun.
C.B.H.

NEWARK & NOTTS (Winthorpe)

Congratulations on going solo to Tom Kerry, Mike Heppenstall (after a long break from gliding), Robert Moorehouse (soon after his 16th birthday) and his father Steve a few weeks later; to John Sargant and John Maddison on gaining Bronze legs; Keith Dykes on his Bronze C followed quickly by Silver distance and to Jim Mills on his instructor rating.
N.A.C.

NEWCASTLE & TEESSIDE (Carlton in Cleveland)

We have had an excellent spring with only a few weekends lost due to low cloud and strong winds. Don Smith (Swallow) flew Silver distance but had a faulty barograph trace.

We have some new members, though could do with more. Our social nights at local inns have gone down well.
J.S.

NORFOLK (Tibenham)

Members are refurbishing and rewiring the clubhouse and a new briefing/lecture room will free it for its proper use. Approval for 15 caravans together with ample playing space makes Tibenham an excellent holiday centre for flying families. The 20 acres of grass sown since our site purchase will soften landings and perhaps encourage some vintage machines.

Nigel Riley's tug team and the two Incredible Condors have made 900 launches in four months. Alf Warminger (Ventus) surprised the North Wales GC by arriving at Holywell (330km) whilst on the same May Sunday Dennis Cooper (Mosquito) flew to his son's house in Chester *via* Worcester. Norman Morgan downed his electrician's tools to trundle his ageing Skylark 70km across the Fens and Dave Stabler (Dart) flew Silver distance.

We hosted the Inter-Club League during the Spring Bank Holiday weekend with one competition day on the Saturday when 17 out of 20 gliders completed 240, 150 and 105km tasks.
G.H.H.

NORTHUMBRIA (Currock Hill)

Our new Pawnee tug is proving its worth with improving aerotows. Roy Mitcheson completed his Silver badge with a flight to Sutton Bank in the Skylark. His syndicate partner Kevin Clements attempted the return journey and landed short but also completed his Silver badge.

Norman Crawford has a Cirrus making the second glass-fibre machine on site. Course bookings are coming along well as is the demand for trial lessons.
R.D.

NORTH WALES (Bryn-Gwyn-Bach, Nr St Asaph)

People may not be aware that we have moved from Pen-y-Parc two miles west to Bryn-Gwyn-Bach. We are able to reach the Clwydian range from the site, giving us potentially 16 miles of ridge to soar. In conjunction with the Rod Witter's Supercat winch, our chances for much better flying has been greatly enhanced.

A visitor from Booker, Tony Crowden (Mosquito), contacted wave and disappeared to

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17000ft which the rest of us are trying to emulate.

Our expedition to Aston Down went extremely well with Carol Hughes going solo and a total of two Silver heights, a Silver distance, two 100km triangles and six Bronze legs. Our thanks to the Cotswold GC members who made us so welcome.
C.A.H.

OXFORD (Weston-on-the Green)

Our annual May expedition to Talgarth was disappointing due to rain. However, in our absence the club moved into the new clubhouse and we have a "warming" party in July.

Chris Reynolds and Gerry O'Sullivan achieved Silver distances and Bob Perry and Dave Weekes have gone solo. Mick Broad gained the first 5hrs from Weston this year to qualify for the Dennis Farmer trophy of a beautiful glass Libelle created by former CFI, Peter Brooks.
C.S.O.

PETERBOROUGH & SPALDING (Crowland Airfield)

We have had a great deal of cross-country activity with Graham Kench, Steve Turner, Neil Scanlon and Ray Hall flying Silver distances.

Newcomers include a Phoebus, a K-2 and a PIK 20E. Trial instruction evenings are proving popular again. Congratulations to Bob Darby on completing his instructor's course.
M.J.

PHOENIX (RAF Brüggen)

We provided a significant contingent for the RAFGSA expedition to Systeron, France, with some great flying giving 168hrs, 2232km, four durations, a Silver height and a distance flight, a Diamond height to 20400ft for Derek Jones and a complete Silver badge for Mick Black. Jason Haiseldon completed his Silver with a 5hrs. Unfortunately our Astir was badly damaged in a field landing on the last day but luckily the pilot was unhurt.

Tornado pilot Chris Heames sent Niall Irving,

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Southdown GC's M3 approved tug with, l to r, Roger, Angus, John and Bob.

his squadron commander, solo in a club K-21 in February - earlier the same day Niall's wife Meryl soloed. Congratulations also on going solo to Simon Gery, Andy McCann and Andy Elliott; to Graham Weir on resoloing; to Tony Cleeworth and Pete Joll on their Bronze badges ad Colin Shaw, Frank Lindopp and Clive Morton on their Silver badges.

During a public holiday weekend from May 21-23 we achieved 1000 cross-country kilometres in three single-seaters and our CFI, Stew Mullholland, achieved 450 of a 500km task in the Mini Nimbus.

UK visitors are always welcome but please let us know beforehand so that we can avoid problems with access following the IRA's latest unpleasantness.
P.J.H.

PORTSMOUTH NAVAL (Lee-on-Solent)

We ran two very successful courses over the Easter leave with 18 soloing out of 25. We had almost 2000 launches but soaring was limited by almost constant sea breezes.

Our evening flying started well but we have curtailed it to reduce disturbance to local residents, though the arrival of a civilian rescue helicopter has tended to take the heat off the club.

Soaring has been patchy and cross-countries limited by strong winds. Unfortunately we haven't found the K-8 canopy lost in flight.

Congratulations to Jim Wilson on his Silver height and duration gained during an adventure training course at Bicester. He hopes to try for his distance soon when he gets his Bronze badge.
H.C.

SCOTTISH GLIDING UNION (Portmoak)

Our first task weekend in April was a great success. On the Saturday, after overnight snow and a poor forecast, six out of nine completed the 107km triangle. Brian Scougall (K-6E) won the day having soared over the startline with an eagle, and David Hatton discovered the peculiarity that a 50km leg done as the middle leg of a successful triangle is subject to the 1% rule and doesn't qualify for Silver distance (which he later gained during the BGA cross-country course). The next day Richard Allcoat got Diamond height from a winch launch.

Before the BGA cross-country course use was made of a neighbouring farmer's land for some real field landing practice which was a good exercise in co-operation and confidence building. The course was great fun and well worthwhie - our thanks to Ken Stewart for his enthusiasm and hard work and to Graham Smith, David McEwan and Jim Forrest for tugging and retrieving.

Alan Bauld and Jim Cowie are now instructors and congratulations also to Alan Russell (Bronze badge); to John Smith, Dave Moreland, Hany Bassil, Julian Gibson and Brian Lyell (going solo) and to Paul Forrest (resoloing).

Bill Scull's flight safety seminar was entertaining and thought provoking. At the AGM in May the Board was re-elected and joined by John Galloway and Andrew Duncan.
M.J.R.

SOUTHDOWN (Parham Airfield)

We have just completed our first M3 approved tug due to untiring work by Angus, John, Roger and Bob. Many thanks also to Les Merritt for sorting out the paperwork and to Dick Stratton for his support and encouragement. Work is now well underway on our second tug.

The home leg of the Inter-Club League was a success with our pundit Ian Ashdown coming our of retirement to lead us to a win.

Congratulations to Martin Roberts (Bronze C); to Peter Horn, Barry Bartlett and Brian Lewer (5hrs on the cold winter ridge) and to Paul Fritche and Henrik Soberstrom (Silver badges), Henrik completing his in one flight.
P.C.F.

STAFFORDSHIRE (Morridge)

The good soaring weather continues. Dave Vasey flew Silver distance, overcoming Morridge's handicap of being 1400ft amsl by scraping away from a low launch and landing on a hill! Unfortunately, Dave Thorpe, on the other hand, landed at Winthorpe and was defeated by the 1% rule.

Andy Chappell, an instructor, has completed his Gold badge with a 300km goal in his syndicate ASW-20 based at Sleap. The weather defeated the attempt to get Andy Thomas solo on his 16th birthday but the next day his third flight was a cable break he handled with calmness and skill.

Some pre-solo pilots have formed a training syndicate under the guidance of Andy Oultram. By helping each other, rapid progress is being made with the first beneficiary being Mike Laver.

We are glad to see Ted Hobby back after his illness and wish John Timms a speedy recover from his illness.
M.J.P.

STRUBBY (Strubby Airfield)

Congratulations to Mike Fairbairn, Gordon West and Simon Dickens on going solo; to Dick Skerry and John Bachelor on their Bronze badges and to John Kitchen and Phil Trevethick on Silver distance. Phil has also acquired a glass ship, the first at Strubby.
C.C.

SURREY & HANTS (Lasham Airfield)

At the AGM the Duckinfield Jones trophy was awarded to Pete Webber for the fastest 300km by a pilot without Gold distance at the start of the year. Congratulations also to Ray Partridge on collecting four of the national pots at the BGA annual dinner.

A few good days have relieved an otherwise quiet start to the season. On April 13 Alan Purnell flew his 300th 300km (see the last issue, p140). On May 6 amongst many good flights including two over 500km, Mark Thompson (Nimbus 3T) flew a 605km O/R to York, finally going into turbo temptation at Reading just 25km from home.

On May 20 Chris Garton flew 570km and described his return at 7.30 (long after showers had apparently killed the day), as "tricky".

The following day was the best of the lot with four flights over 500km, including Diamond distance for Pete Reading in the club Ventus (Long Mynd, Melton Mowbray) and a near miss for John Bell who landed just short at Newbury racecourse.
C.G.S.

THRUXTON (Thruxton Airfield)

A warm welcome to Les Dawson who recently rejoined the club as DCFI. His experience and professionalism is much valued as instructor, tug pilot and part-time course instructor.

We have a modest improvement in launches, an influx of new members and catering and bar facilities on the airfield. An encouraging sign was the number waiting to be checked out for cross-country flying on the Grob 109 we hired recently.
J.B.L.

TRENT VALLEY (Kirton-in-Lindsey)

Good early spring days produced notable achievements, some in easterly winds which



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usually don't make for good soaring - Silver height by Sue Crooks and Paul Gardner; Silver distance by Len Leonard and Pete Turner; a 309km triangle by John Williams and a 122km O/R to Sheffield by John and Sandra Williams (K-13).

We won the first round of the Inter-Club League, held during the Spring Bank Holiday, by 3pts. Vin Marchant, Roy Dell and Paul Newby now have AEI ratings, giving us ten. Congratulations to Steve Johnson on going solo.
LW.

TWO RIVERS (RAF Laarbruch)

Congratulations to Mike Forman on Diamond height and Bob Beckers on Gold height at Sisteron, France, during a club expedition; also to Kev Sharpe (all three Silver legs); Kev White, Chris Johnson and Derek Taylor (Silver heights and durations); Kev Baxter (Silver height); Simon Harris (duration) and Alf Atkins (on going solo).

Back at Laarbruch Mike Forman (again!) flew 512km for a Diamond and Gold distance; Gurt Moers Silver height and duration; Phil Sturley and Nigel Hobbs Silver height and Nick Heard and Neil Owen went solo.

We say farewell to Dick Hunt, Mike Law and Kev Cooper and welcome Phil and Molly Jones with a Ventus, in which he flew 300km at over 100km/h in May, and Neil Nixon from Cyprus. We have a new Twin Astir.
I.P.

VECTIS (Sandown Airport, Isle of Wight)

Who said you can't soar on the Isle of Wight? Pete Tuppen achieved 5hrs over the cliffs at Shanklin which we believe is the first Silver endurance on the island - if it was 12km longer we could fly distances locally! Roy Tiley completed his Bronze badge with a second leg.

Half the club and fleet are going on an expedition to France in June and the open day is now planned for July.
J.E.P.

WELLAND (Middleton)

Thanks to a Sports Council grant we now have a second, ex-Finnish, K-7 to augment our fleet. New paying-on rollers on our twin drum winch have improved the launch rate.

Congratulations to Barry Chadwick and Keith Scott (on becoming full Cats); Dick Short (AEI rating); Gerard O'Callaghan (completing his Silver badge with a 5hrs and distance); Bernard Underwood (Silver height); Peter Strong, Gordon Scally, Scott Tidd and Norman Martin (both Bronze legs); George Taffs (first Bronze leg) and to Alex Strachan, Dave Lloyd and Chris Shepperd (on going solo). Barry Chadwick also achieved 263km on a 300km attempt.

Our Bank Holiday barbecue was a success.
R.H.S.

WYVERN (RAF Upavon)

Tom Muncaster, Alison Barnet and Sarah Deck passed the assistant Cat instructors' course at Bicester. John Powell and Bob Campbell went solo on the first of two *ab-initio* courses.

Our chairman, Graham Browning, completed his Silver badge in one flight. Rick Malam also has his Silver badge, Terry Jackson and Pete Bradley their 5hrs on Huish ridge and Pip Appleyard went solo. Congratulations to them all.
D.B.

YORKSHIRE (Sutton Bank)

Members and visitors enjoyed a task week at the end of May with almost every day soarable. May 20 and 21 produced six flights of over 300km.

Congratulations to Derek Taylor on his Diamond goal and to Steve Eyles and Kevin Clements on their Silver distances. Our new DG-300 is proving very popular.

We welcome visitors and there are a few places on the courses with catering seven days a week throughout the summer.
C.L.

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HITACHI MASTERS



Brian Spreckley (LS-6) flying over Winter Haven.

Brian Spreckley, the 15 Metre World Champion, was just 110pts off winning the third Hitachi Masters of Soaring competition, held at Winter Haven, Florida from May 2-7. Gabriel Chenevoy, France, (ASW-20C), was 1st with 5550pts; Bruno Gantenbrink, Germany, 2nd, (Ventus A), with 5501pts and Brian (LS-6) 3rd with 5410pts. George Lee (ASW-20C) was 15th with 4754pts.

This is an invitation competition where nine international class foreign pilots competed against eight of the top Americans. All pilots fly 15m gliders and waterballast is limited so that everyone has the same wing loading.

The conditions in Florida were more like Europe (central France, not Booker Regionals) with 4-6kt thermals and 5000ft cloudbases. However from September through to the end of May (the winter months!) the soaring is good by European standards.

The longest task was a 356km and the Kees Musters prize for the fastest time went to Marc Schroeder, France (ASW-20) for his last day win at 75.03mph on a 221km task. - Details from Basil Fairston.

THE FIRST LOOP

The sailplane nods its nose upon the climb
And faintly moans, until, with just a clack,
The air-speed shows the towing cable's lack.
The dive is now begun and swift in time
Acceleration builds its gusty rhyme,
So when, with gentle pull, the stick comes back,
The little bus, the house, the farmyard track
Depart, and weight and clouds impress their prime.
Above the leading edge are shocking seen,
In wild obscenity of fear, the land
And lost horizon, as had never been
Before this flight, so that the shaky hand
Tugs hard and Earth reels down through clear windscreen;
The first of loops' the worst, you understand.
Michael Erdman

(This is one of a collection of Michael's gliding sonnets which were broadcast by BBC Radio Sussex in July and are reproduced by permission of *Punch*.)

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