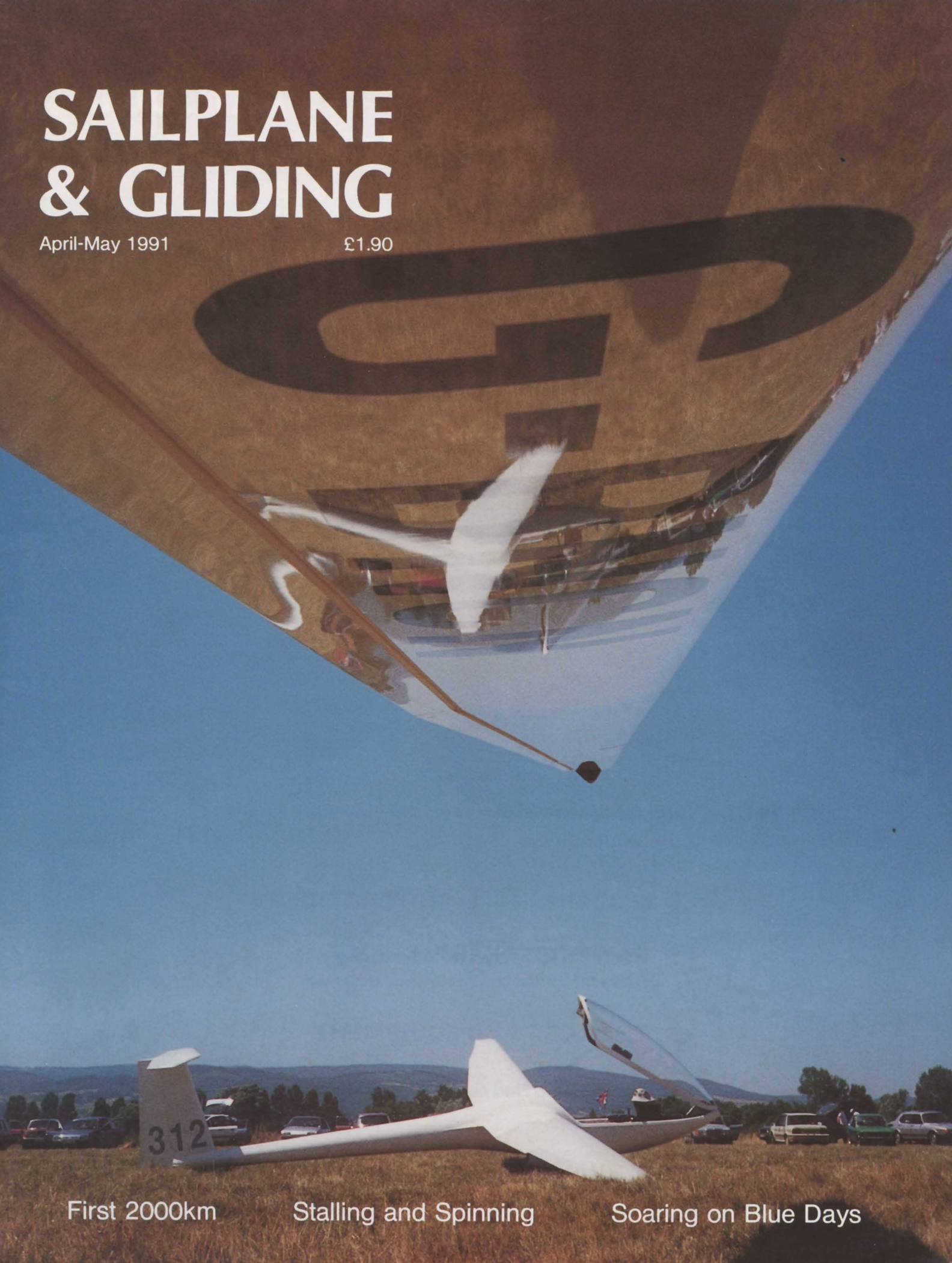


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British Gliding Association
Kimberley House, Vaughan Way
Leicester, LE1 4SG
Tel Leicester 0533 531051

April-May 1991
Volume XLII No. 2

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ADVERTISING COPY DATES

To make it easier for our advertisers we are listing the advertising copy dates. Editorial material is needed considerably earlier.

Issue	Display	Classified
June/July	Apr 19	May 2
Aug/Sept	June 20	July 3
Oct/Nov	Aug 21	Sept 3
Dec/Jan	Oct 21	Nov 1

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PUBLISHER

British Gliding Association
(Barry Rolfe, BGA Administrator)



Cover: Lee Johnson of the Coventry GC took this intriguing photograph at the 1988 Inter-Services Regionals at Roanne, France. It is of the RAFGSA's DG-300, flown by "Porky" Conyers, which is reflected in the wing of Mike Costin's DG-400.

SAILPLANE & GLIDING

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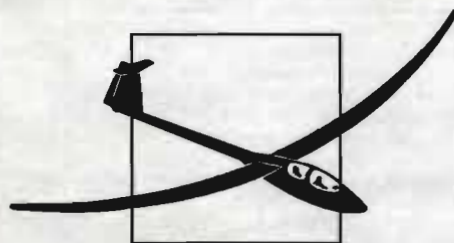
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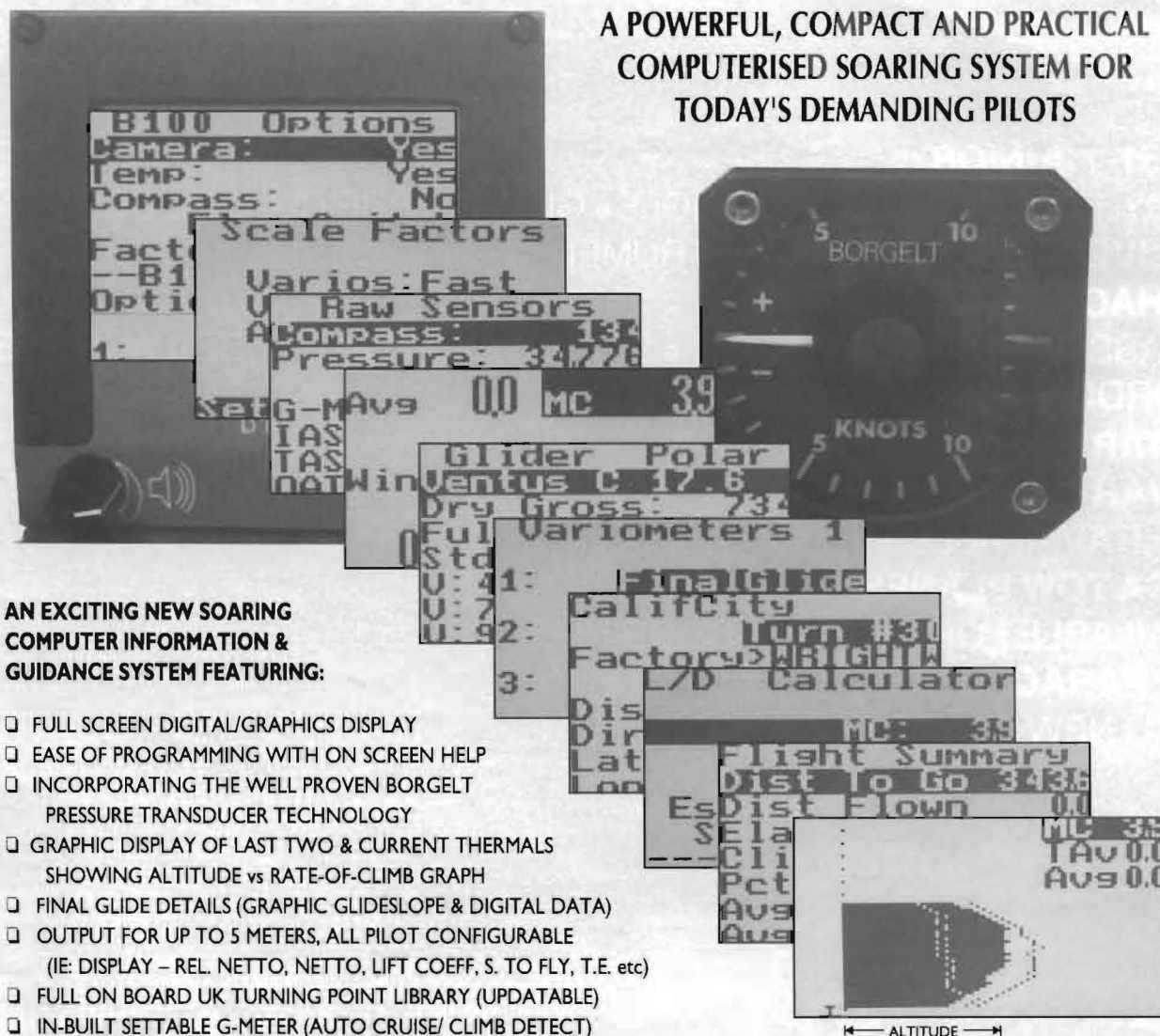
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YOUR LETTERS

BGA NEWSLETTER

Dear Editor,

Having recently received the latest issue of the BGA Newsletter, the following (blasphemous?) thoughts occurred to me yet again; so I feel compelled to write:

- a) There is nothing reported in this uninspiring publication that could not be dealt with just as effectively in S&G.
- b) There are presently 1719 Official Observers (the stated recipients of the Newsletter). With 17p for postage and (say) 3p for photocopying and envelopes, the annual cost of 12 monthly issues is over £4000.
- c) There must be more effective ways of spending this money.

KEITH SCOTT, *Welland GC*

Mike Cuming, Newsletter editor and a member of the BGA Executive Committee, replies: The Newsletter was re-introduced a couple of years ago (on a trial basis) because the Executive Committee were concerned that club members were not well enough informed. The cost was indeed a source of some concern but the feedback has almost entirely been encouraging and so I was asked to continue. This will, of course, be reviewed periodically like everything else and I will be interested to hear any significant comments (either for or against).

Incidentally the number of OOs has risen by about 50% since the Newsletter started and I presume this is some sort of vote of confidence. The BGA would prefer to restrict the circulation and hence the cost but there is overwhelming evidence that using club officers to promulgate information is a very patchy means of circulation. Nevertheless, large quantities of bumf are constantly being despatched to clubs in the perhaps naive hope that some of it gets through.

A glance at the Newsletter will reveal that it is produced very quickly and so we can sometimes use it to include urgent - or late - information which is commonly repeated to S&G. Not everyone gets S&G of course, so the "repeat" isn't always a waste of space.

The intention is to get useful information across and I would welcome input from clubs (or individuals) which may have announcements to make. I will not normally print any-

thing that looks as if it should really be a paid advertisement in S&G unless it is of real interest.

BE PREPARED TO BALE OUT

Dear Editor,

The Cyprus parachutist's observations, given in John Storry's letter in the October issue, p233, have foundations in fact because the initial fall of a first jump can be traumatic beyond belief. The plunging pilot or passenger may totally freeze and be unable to move the right arm to pull the ripcord handle.

If the following instructions were printed on a card it would be something to recall during the ghastly seconds following a mishap:

1. Practise releasing the buckle of the airframe harness (outer) and quickly place your right hand across your chest to hold firmly, but not pull, the ripcord handle. And keep it there during and after the evacuation.
2. Easy to say, but try to keep your eyes open during the initial descent to ensure you are clear of any entanglement with any part of the abandoned glider before operating the ripcord handle.

I also suggest that canopy jettison procedure should be included within the Bronze badge pre-flight checks.

TERRY POLE, *Welwyn Garden City, Herts.*

WOULD I JUMP?

Dear Editor,

As perhaps the only glider "captain" to have experienced mutiny in the air perhaps I could comment on the question of parachute training.

Like most pilots I had often wondered whether I would jump in an emergency and even went to a parachute club with my wife who wanted to jump, as opposed to me who saw it as training. Unfortunately (?) one of the trainees' parachutes failed to open which changed my wife's mind and got me off the hook.

This left me with the same opinion as Keith Nurcombe (see the last issue, p5) that - to jump from an airworthy aircraft to find an unairworthy parachute or injure oneself would make me feel rather silly. It didn't, however,

answer my question "Would I jump?"

The answer, and the mutiny, came a few years later when my two-seater started to derig itself on aerotow and gave every indication of becoming rapidly unairworthy. With no hesitation or apprehension I told Tom we were jumping, unstrapped, unlatched the canopy and was ready to throw it open and dive out, when Tom (to the subsequent delight of Mowbray Vale) said "No" in a rather aggressive way, I thought, slammed the canopy shut and kept a firm hold on it.

This left me with rather a problem. Have a discussion with Tom while the aircraft continued to oscillate dramatically, or reach a compromise and try and fly the thing to a much softer landing that I thought possible. This I did.

What I learnt from this was that provided one had rehearsed evacuation and knew how to use the parachute in theory, then in a real emergency leaping over the side is the easy option and requires little thought. Staying with it was much worse.

Tom, on the other hand, had come along for the ride, could not feel how the controls were flailing around but could see that we were only 750ft up. His perception was therefore quite different - let Ian sort this out, 750ft is a bit low, I'd rather stay inside than risk a jump.

Looking back Tom made the correct decision as 750ft was a bit low, and I had a start on him, but I still feel my initial decision was correct as 750ft is rather high should the wing have come off, which it was trying to do after he shut the canopy.

In other words, you don't need to have a practice jump, just plan what you would do in advance, make a habit of getting out of the aircraft without undoing your parachute and don't assume an emergency will not get worse - 750ft is a better height to jump from than 350ft. IAN DUNKLEY, *Tideswell, Nr Buxton, Derbyshire*

SHOULD BE TAUGHT IMMEDIATELY.

Dear Editor,

Harold Dale's letter in the December issue, p285, and the reply by Bernie Morris interested me very much. I agree absolutely with Bernie that the aim should be to demonstrate to a pupil that (s)he could easily learn to fly.



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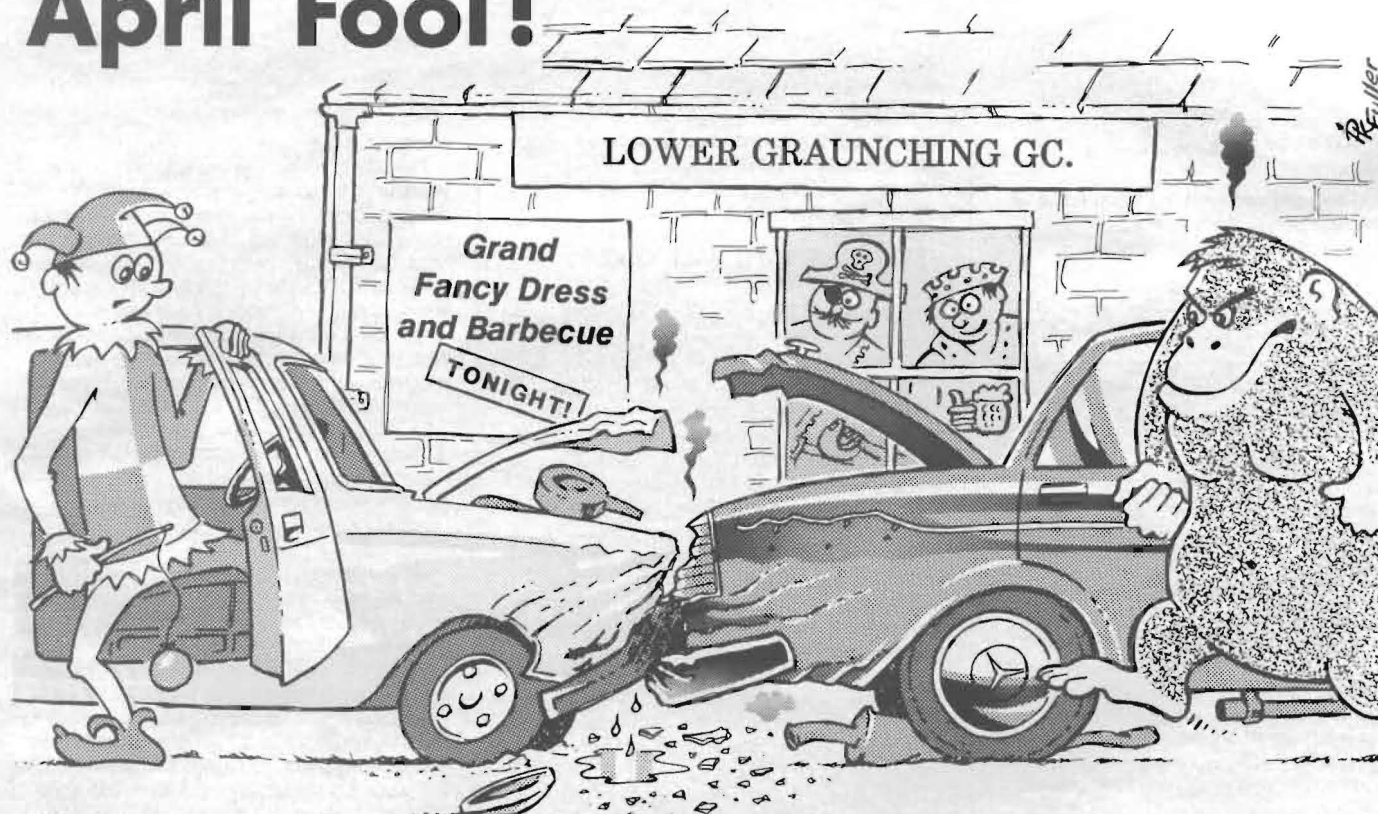
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April Fool!



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do think, however, that aileron/rudder co-ordination should be taught from the start. How otherwise is the pupil to enjoy the experience of having full control? Also, if turns are gentle, aileron drag is not a noticeable factor and need be dealt with on the initial flight only if the pupil progresses sufficiently to require it.

There is no doubt that the average 15min flight allows time to demonstrate the effects of controls and allows practice. Most people are well able to accomplish gentle turns and, with prompting, to maintain attitude reasonably. Quite often, in say a quarter of introductory flights, pupils fly the aircraft down to the high key point and the instructor can then demonstrate the preparations for landing.

ROY PALMER, *Malvern, Worcs*

A THANK YOU FROM WOLDS GC

Dear Editor,

Many of your readers gave us heartening support in our recent struggle to survive a hostile planning application for industry and highway construction on land adjacent to our main runway at Pocklington. The strength of feeling in their letters of objection and their geographical spread must have surprised the local planning authority, and I have no doubt of their influence in the successful outcome.

Negotiations over the last two years have now led to us withdrawing our objections to a revised development proposal. In return, the area for industry is to be reduced; the highway proposals modified; a very substantial acreage of land has been made available to us by the landowner which we have now bought to add to our existing freehold; a significant financial contribution towards our new Supercat winch has been promised by the developer and valuable grants and an interest free loan have been obtained from two local authorities and the Sports Council respectively.

As anyone who has been involved in this sort of process will know, it helps to identify the key actors on the stage early on, and then apply pressure at the right time. In doing this we now know better than most how helpful the BGA can be, and I should like to place on record the extraordinary help we received from Bill Scull, especially in the form of his parliamentary contacts, his presence at vital

meetings – often at considerable personal inconvenience – and his weight of shot in replying to consultations by the local planning authority. Looking back at his article about protection money (August issue, p217), I am left with the feeling he ought not to be quite so defensive!

So, through your columns may I thank all our supporters, many of whom we look forward to seeing once again at our two-seater competition in August, and offer our experience and assistance to any other club threatened by similar bad neighbour development.

ALAN HUNTER, *chairman of Wolds GC*

THE KITE 2A

Dear Editor,

In reply to Peter Warren's letter in the last issue, p7, full details of this, and all other Slingsby gliders, were given in my book *British Gliders & Sailplanes 1922-1970*, which has been out of print for 20 years!

The Kite 2 was one of a rush of immediate post-war sailplanes which all hoped to capture the market. It had to compete against the Olympia and I believe the first one had some nasty habits. All the others had altered wash-out at the wingtips, so that gives a clue to the problem and its cure.

Only the first three were built by Slingsby's and 11 by Martin Hearn Ltd under sub-contract.

NORMAN H. ELLISON, *Bellevue, Washington State, USA*

EVEN MORE HANDICAPPING!

Dear Editor,

While reading Peter Stratten's letter in the December issue, p285, I realised how he had just scratched the surface.

Shouldn't the site be handicapped, eg site A has twice as many badge claims as site B, therefore as it must be easier from site A their pilots should have to do twice the distance.

In fact, shouldn't the day be handicapped as well with pilots with 9000ft cloudbases expected to go three times as far as those flying on 3000ft cloudbase days?

Or perhaps we should just invent thousands

more badges for thousands more classes to keep the silverware and badge collectors happy.

JOHN ARMSTRONG, *Falklands Islands*

HANDICAPPING FOR BADGE FLIGHTS

Dear Editor,

It seems rather strange that competition organisers go to great lengths to judge as fairly as possible the ability of a pilot regardless of the glider flown. Yet for a badge flight a K-6 pilot has to fly the same distance as a Nimbus 3. It doesn't make sense!

A handicapping system would make a 300 or 500km more of a challenge for glass pilots yet put it more in reach of wood pilots.

JULIAN F. DAY, *Wakefield, W. Yorks*

GLIDING HERITAGE CENTRE

Dear Editor,

I read with pleasure Mike Beach's article in the last issue, p28. I feel that the London Gliding Club at Dunstable is eminently suitable to include a Gliding Heritage Centre and the Vintage Gliding Club should wholeheartedly support its members' projects providing they are concerned with the gliding scene of the old days. Some may ask, why at Dunstable?

I feel there is enough of gliding's heritage to go round and that other clubs should also consider founding historical sections and archives.

I am very glad that one of our members has had the initiative to try to bring this off and has a chance of succeeding.

CHRISTOPHER WILLS, *president of the Vintage GC*

AN EARLY CROSS-COUNTRY!

Dear Editor,

A road accident having disabled me from gliding for some months, I've had to make do with reading about it. This description of a very early cross-country says it all. From the initial psyching up to starting out with the aid of a convenient stubble fire, only to be followed by desperate sink; a thermal is located in the nick of time, but then over fen country it's not so good!



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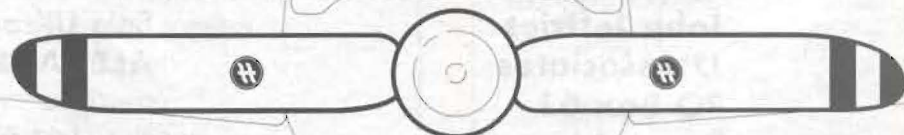


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... and look'd awhile

Pondering his Voyage; for no narrow frith
He had to cross ... At last his Sail-broad
Vannes

He spreads for flight, and in the surging
smoak

Uplifted spurns the ground, thence many a
League

As in a cloudy Chair ascending rides
Audacious, but that seat soon failing, meets
A vast vacuitie: all unawares

Fluttering his pennons vain plumb down he
drops

Ten thousand fathom deep, and to this hour
Down had been falling, had not by ill chance
The strong rebuff of som tumultuous cloud
Instinct with Fire and Nitre hurried him
As many miles aloft: that furie stay'd,
Quencht in a Boggie Syrtis, neither Sea.
nor good dry Land, nigh foundered on
he fares ...

Granted that vannes=wings, does "pennons" indicate an unavailing resort to flaps? The pilot is, of course, Satan. Did he make his goal? For the rest of this exciting story, see **Paradise Lost** (Book 2).

DENYS JAMESON, Warborough, Oxon

WE WEREN'T CLOSED!

Dear Editor,

With reference to Alan Purnell's article in the last issue, p10, where it was intimated that Aboyné was shut on Sunday, October 7, due to strong crosswinds, we would like to put the record straight. We launched 70 gliders that day when three Gold heights were achieved.

GLEN DOUGLAS, secretary of Deeside GC

REVIEW

COMPUTER SOFTWARE

Taskmaster v 2.13 is a task setting program by Bruce Hodge, marketed by Pro-Glide of 5 Hollies Walk, Wootton, Bedford MK43 9LB. It is available in IBM compatible and Sinclair QL versions at £49.95. Pro-Glide have the total package, including the Sinclair QL CPU, monitor and full software at £299.95 (printer not included). Also available is Taskfinder, a simplified version of Taskmaster but with fewer features, which again runs on the Sinclair QL

and IBM compatibles and the software costs £24.95.

This task setting program was used for the first time during the 1990 Enstone Regionals. The original version, which has taken over a year to develop, is designed to run on a Sinclair QL home computer. The program is based on 180 recognised BGA TPs distributed over a large area of the country.

Pro-Glide are marketing a version of Taskmaster which has a dedicated start and finish based upon any gliding club site in the country, or alternatively a version is available with both remote and dedicated start and finish facilities.

The program is menu driven and extremely user friendly. Anyone with basic keyboard skills can quickly explore its capabilities and potential. It takes approximately two minutes to load and initially presents the user with a screen listing of all the available TPs.

Up to four TPs may be selected for a single task with the distances calculated and displayed instantly as each TP is selected. By using the function commands the TP menu is replaced on the screen by a map of the UK with all the TPs and relevant controlled air-

space displayed. Any selected task is then superimposed over the map and it is possible to see immediately if any of the track lines pass through controlled airspace.

An outstanding feature is its ability to find tasks within given parameters. After selecting the first TP you are given a choice of your next direction, ie N, S, E or W, to complete the triangle.

Having made your choice you are then able to select a minimum and maximum task length, say for example between 300 and 320km. The program will then search the database for the TPs within these distances and list them with all the task distances.

It will also highlight the triangles that meet the current requirements for the UK/World record attempts. Taskmaster will automatically calculate the distance and true heading of each task leg together with the total distance of each task.

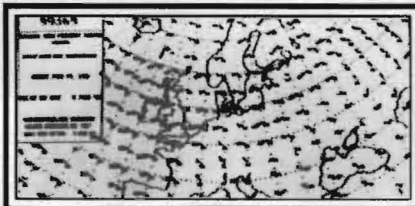
Another good feature is the ability to set triangles using the cursor keys which allows tracks to be drawn across the map at random in any direction, thus avoiding controlled airspace. Having completed the tracks, database finds the closest of the listed TPs to the track lines and produces the task with the relevant distances and headings.

When the computer is linked to a printer full details of the task can be produced as hard copy. For competition organisers the facility exists for full information to be included in the printout, such as time of first and last launch, startline quadrants, direction of turning over site, camera mountings and both X and Y distances.

Having used the system throughout a full competition it proved to be an invaluable aid to fast and accurate task setting and is undoubtedly superior to any other program I have evaluated. The current versions are suited to both clubs and individuals who want to produce cross-country tasks quickly and efficiently and is strongly recommended.

KEN SPARKES

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On December 8 a moist north-westerly flow gave heavy rain on the west coast and hot dryöhn conditions to the east of the ranges. The heat wave lasted five days and on Thursday the wind backed further to the west, there was less disturbance from fronts and an active cold front wasn't due until later on Friday. It looked a possibility for a 2000km attempt. At 4.30 on the Friday morning the wind was about 10-15kt, NW at Woodbourne Airforce base with first light showing 2/8 stratocumulus in the tops and some scruffy roll cloud in the Waihopai valley, but no high cloud or lenticulars. Ray thought it was worth a go, was launched at 0600 and took an hour to "get established" in wave. His TPs were Five Rivers Garage and Willow Flat Bridge.

The wave clouds were aligned more to the west than north-west and did not parallel the upwind ridges. I flew south just west of the Awatere, descending to 10000ft before climbing to FL150 over the Acheron river. Continuing on, I hoped that conditions would be stronger to the south, allowing a higher average speed.

My track took me east of Hanmer and out over the Culverden basin, remaining between FL120 and FL170, but it was not possible to cruise fast in steady lift very long. It was necessary to stop and climb frequently.

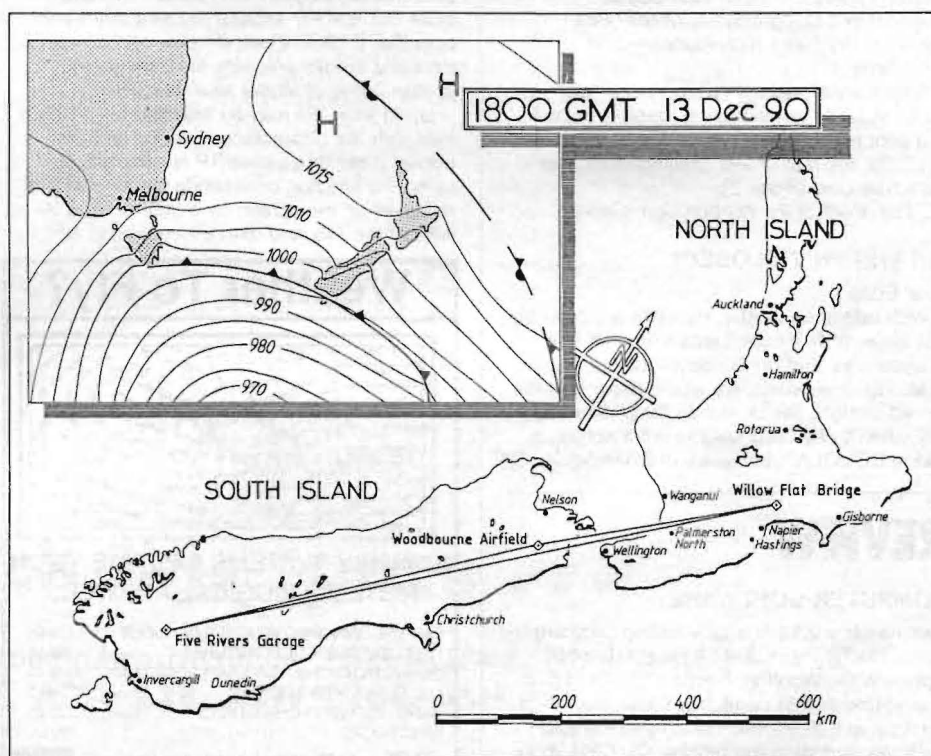
Entering Lees valley climbing slowly through FL165 and above all the cloud except some cirrus, I suddenly flew into violent clear air turbulence. This unnerving, very unpleasant air took me by surprise and for a few minutes the cockpit was a mess with all sorts of things flying around. I immediately slowed down but it was impossible to hold any set speed - it was fluctuating between about 40 and 90kt. This "rolling" turbulence made it difficult to descend, and in fact I was climbing. I guessed that it was the shear between two different wind velocities or interference between a higher and a lower wave system. Whatever it was, I just wanted to get the hell out of it! Back down at FL150 it was smooth again.

I followed small wisps in the lee of Torlesse and Hutt, and climbed in quite strong lift to FL210 at Mt Somers. This bit was good and it looked like an easy glide to an obviously active roll cloud in the north Fairlie basin. I misjudged this and ended up using weak lift at 11 000ft behind the Ben McLeod range to avoid getting stuck. This slow climb was frustrating, but I needed it, and so soon as possible left it for the growing roll cloud further south. It looked great, and as I sped off towards it I expected to pull up into at least 10kt. But no! Nothing. Another small wisp was just forming further upwind.

Ah, there it is! Off again, flat out. This time! Reducing speed in anticipation as I flew just over the top of the developing cloud; again nothing except less sink. Yet another wisp was forming upwind, and other small clouds were drifting in a line off the top of the Two Thumbs. I was baffled and not tempted to continue upwind, so tracked south at about FL130, trying to pick out the wave by carefully observing the scattered wisps. Eventually I stumbled into a reasonably good climb

2000KM BARRIER BROKEN

Ray Lynskey reports on his epic 2026km flight in New Zealand on December 14. Flying a Nimbus 2B from the South Island, he took 15hrs at an average speed of 135km/h on a triangle with a TP on the North Island



A map of the task incorporating the weather chart. Drawn by Steve Longland.

near Burke's pass, which took me to FL170. From here I headed straight for a flattish cloud in the middle of the McKenzie, which was weak but allowed me to maintain height past Simons pass.

It looked pretty broken and mixed up ahead, so the best option, something I would have preferred to avoid, was to take the gamble that the scruffy looking Ben Ohau wave was working.

If the sink was any indication, it should be booming. I was down to 7500 west of Twizel, the cloud looked very rough but there was a short straight shadow on the ground from the cloud's leading edge. It took a few minutes in very turbulent air to climb in the strong gusts to cloud-base and then settle down in a steady 8-9kt. About time too! It had reduced to about 3kt at FL180, so I headed to the next well-marked wave

west of Omarama where another good climb allowed me to fly over the top of the extensive cloud upwind to Merivale, and on to FL200 in the excellent Pisa wave.

A Queenstown weather report passed on by Christchurch Control earlier said that the rain had stopped and the sky was clearing. Luckily for me it was not completely clouded in further south. It looked even better from FL250 in the Nevis.

As usual, the wind velocity in the south was markedly higher, and it took 10 000ft to penetrate the sink to cross the next lot of cloud to an edge west of Kingston. Lift here was much weaker, not quite strong enough to maintain height at the air-speeds necessary to make any progress.

Five Rivers Garage was under cloud but I pushed on further south-west until it was visible through a gap and took the photos. I did not want to descend and risk spending time trying to climb up again. It was 1200 and 6hrs and 650km so far. I expected a faster trip north.

Once northbound, I reduced speed to 70kt,

making good progress with the tailwind component and climbing slowly. Near Kingston lift improved to 5kt and I climbed back to FL160 before diving downwind over the cloudmass to the Nevis wave. This took me to FL180. From there it was simple to run along the leading edge, go downwind into the Pisa wave, climb to FL200 and on to the cloud west of Omarama. This was still working, but not as well as earlier. I lost a lot of height getting back into the wave at the southern end of the Ben Ohaus.

Further north the cloudmass and rain had spread out across the McKenzie, so I stopped and climbed to FL170 before heading for a flat looking line of cloud at Tekapo. It marked a weak wave leading over the Tekapo ski field, but I really wanted stronger lift to fly faster. It looked poor ahead, so I flew east to what was now a good wave in the lee of the Two Thumbs. FL160 here allowed me to continue north-east following wisps to the Mt Hutt wave. To the north the waves were clearly marked, but not strong enough to climb high. At least it was warm and pleasant cruising along between FL120 and 150.

Conditions were deteriorating further on, and the sky appeared to be just a jumbled mass of wind-blown cumulus. Wave became difficult to find and I kept going, thinking that the more defined clouds in the Clarence valley would work. I was down to 8000 before finding worthwhile lift, but once above the clouds again the lift went up to 8kt. I stayed in this lift until reaching FL200, then flew slowly on, maintaining height.

At this stage in the flight, approaching Lake Grassmere, I was trying to ascertain what conditions were like in the North Island.

It was 1500 and it had taken 3hrs to return to the Blenheim area with a little less than 6.5hrs of daylight left, over 700km and two Cook Strait crossings to go.

It was difficult to gauge conditions because of the haze. Most of the North Island appeared to be covered by an extensive cloud mass, the only clear areas being the southern coast and a gap in the eastern Wairarapa, which with a large dose of

The south TP - Five Rivers Garage on a clear day.



The northern TP - Willow Flats Bridge.

optimism took on the appearance of a roll cloud. A pilot report relayed by Wellington Control said that Napier was clear.

To me it looked terrible, but the flight was not impossible to complete at that stage. I still had time, enough oxygen, was not cold, and generally it had been going quite well up to now. There were no high lenticulars in the Wairarapa, normally a necessity to cross back to the South Island, so unless something developed the chances of finishing were remote. It certainly did not look inviting, but having completed the southern leg I decided to continue regardless, even if it meant gliding across Cook Strait and landing at Masterton. There was still a chance.

I advised Wellington Control that I intended to carry on and set off for the Wairarapa. As I approached the coast it became clear just how much cloud there was; it spread right across the divide and out toward the east coast. Fortunately the gap over Martinborough was quite wide and looked more like wave cloud now. I crossed the coast at FL120 and soon found enough weak lift, to maintain height at 60-70kt. Approaching Masterton I decided that it would be better to penetrate upwind to where a more developed cloud seemed to be working. This wave, the primary,

was good for FL140, so I continued cautiously northward, towards what looked like total overcast, the plan being to turn back to Masterton when I became obvious that it was not sensible to continue.

It was interesting that in places gently undulating stratus had formed above the bubbly-looking cloud below, and this did mark weak but reliable lift. At the bottoms of the layer the cloud was quite thin and actually did have some small gaps, the main problem being that the ground was under heavy shadow and was quite dark, making it difficult to locate features. In the lee of the Manawatu gorge there was an area with no gaps, and before turning back for Masterton I decided to keep going another couple of miles to a more lenticular-shape cloud. It worked, up to 3-4kt. Stopping for a while to climb to FL150, I could soon see that there were better gaps further on, within easy gliding range. In fact it looked much better, about 7/8 cover. Out to the east it was clear. I continued on between FL130 and 160, finding lift up to 4-5kt. This was encouraging, and I hoped that the cloud would tend to clear rather than fill in completely.

Soon Hastings and Napier came into view to the east and cloud cover reduced to 4/8. Lift was 3-4kt at best, but reasonably steady and well marked. Wind speed was now much lower, still with some tailwind component going north. The sun was getting lower and the cloud shadow spread further east.

I had never seen the Willow Flat Bridge TP before and hoped I could find it. Lake Waikaremoana came into view in the distance, and I was sure that I was flying over the Mohaka river, so I usually followed the winding river valley until I spotted the bridge. It stood out clearly in the sun. Great!

I turned downwind and took the photos from FL130 at 1720. Four hours daylight remained - it was actually still possible.

I lost 2000ft pushing back to the wave used earlier, and followed a similar track southbound. The cloud was definitely increasing. It became very slow going, although the lift was still there. When I reached the Norsewood area it was obviously totally closed in to the south, but I was in 4-5kt lift - the best for some time. There were two wide wave clouds with small gaps between them to the east, and beyond that it was clear.

It was most intriguing that even further east a long thin high lenticular-shaped cloud had developed. Earlier it had appeared to be only a thin cirrus line, however now it took on the right

shape. I contemplated this cloud for a few minutes, but the choices were clear – return north to land at Hastings or take the chance on the lenticular, and if it didn't work Waipukurau was not far away.

I turned south-east, stopped briefly in the two waves to top up to FL160, and kept going. The lennie was right over the east coast, and the closer I got the better it looked. Sure enough – just like magic. Smooth and lovely, 6-8kt up. I could barely believe it. Maintaining a south-westerly heading at 55kt, I climbed in front of the best looking part to FL285. Further south it was not so well defined, but I was descending only very slowly at 80kt. The only part of the North island that I could see was the east coast. The rest was covered by a great glaring white mass of cloud. It took time to progress south and I was very uneasy about the lower cloud spreading further east. My intentions were to follow the lennie all the way south, and then push upwind to Lake Wairarapa to see if there was any possibility of making a return Strait crossing, but really wanted to know if Masterton was clear enough to reach safely.

Nothing changed for some time apart from getting very cold, but passing Castle Point I was reassured to see that the south Wairarapa had only 4/8 cover, and Masterton was no problem. With a safe diversion, all concentration was focussed on how to "cross the ditch."

Over Lake Onoke there was a vague roll cloud/lenticular – it appeared to be "blurred" around the edges. I would head for that. There weren't many other options. Before leaving the lenticular I climbed slowly back to FL280. I could not yet see the South Island, apart from the Seaward Kaikouras way off in the distance, due to the haze and low sun. It was almost 2000hrs.

After the push into wind I flew just south of the wave cloud and at FL190 found lift, 3-4kt initially, where I stayed until it was less than 1kt at FL215. I was now becoming a little optimistic because the upper wind was not too strong, although it was around to the west, and I did not anticipate the heavy sink associated with an upper wave

system. There were also clouds out in Cook Strait which could possibly help.

I have made double crossings previously and thought that FL215 should be enough to get home, but without my normal safety margin. To allow the abandon decision to be left until much later I requested that I be able to use Wellington as an alternate rather than returning to the Wairarapa. Within a few seconds this was approved and I was on the way.

"It appeared to be caused by some convergence effect, but would it help?"

I could see Lake Grassmere shining in the sun, and part of Arapawa Island, but still could not pick out the southern coastline. The glide went well for a while but soon the sink was on the stops down. I passed about three miles south of Karori Rock at FL150, watching the altimeter unwind at an alarming rate, and heading for the south side of a line of cloud slightly lower than I was and aligned west-east. It appeared to be caused by some convergence effect rather than wave, but would it help?

Yes! Remarkably, heavy sink turned to zero sink and I could even climb a little at 65kt. This continued for some miles and did make the glide look better. I was reasonably happy with how it looked at mid-straits, even with the headwind and more sink expected. But the fact remained that I **had** to reach one coast or other, and Wellington was getting further away. Very soon I would be committed to continuing on to the South Island.

The whole southern coast was now quite clear, and the surface of the sea showed a moderate northerly at low level.

A final glide to the south coast remained a reasonable prospect and I made the decision.

Tracking directly for the White Bluffs I could see several scruffy westerly roll clouds straight

ahead and they worked as advertised: quite strong sink and rough but usable lift. I stayed between 5-6000 until there were only three miles to go then flew at 130kt towards the northern faces of the Bluffs. Reaching them at 3000ft I could then slow down to maintain height before pushing into wind and on to the Wither hills just south of Blenheim.

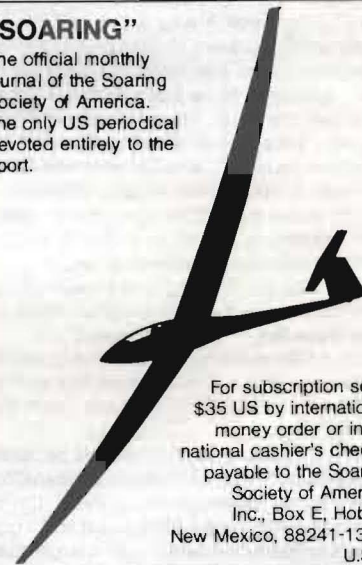
I continued until Woodbourne was a very short, very comfortable final glide. In a couple of minutes I had made a finish and landed. It was 2100hrs with 20 minutes of daylight left. Done!

John Sinclair (the tug pilot) and Jamie Halstead (who helped me launch) were waiting; and quite a number of Marlborough GC people arrived within minutes, knocking the tops off bottles. The party was about to begin.

With the completion of this flight, I would like to thank all those who helped during this and previous attempts, and a special thanks to the Wellington and Christchurch air traffic controllers.

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CHOSEN BY FRANK IRVING

If any of the gentle readers who went to the World Champs in Yugoslavia in 1972 thought that conditions were sometimes a little primitive, they should have tried it in 1955, when Imperial College GC took a Skylark 2 to Vrsac. Undeterred by that expedition, or perhaps in the pursuit of more character-building experiences, a further trip to that country took place in the following year, only slightly under ICGC auspices, mainly to look into rumours of sea-gliders at Rijeka.

It turned out that they did indeed exist and this is the story of how they were operated. It is, I suspect, the only account of such flying to be written in English and therefore represents a unique bit of history. Also, the Jadran must have been the only sea-glider ever in regular use. Before the war, Hans Jacobs had designed the "See Adler", test flown by Hanna Reitsch (see her book, *The Sky my Kingdom*). But this was a very one-off experiment, whose operations were made very difficult by launching from the water.

The Jadran seems to have faded away very quickly: none were to be found a year or two later and, to the best of my knowledge, the idea has never been revived. We need a very rich sponsor who is interested in looking into the possibilities of soaring in the lee of certain Greek Islands...

During the summer of 1956 seven Lashamites went to Rijeka in Yugoslavia, and would like to recommend it as the ideal gliding holiday. The attractions in this region are numerous: Opatija, a few miles away, is a first-class resort, food and wine are good and cheap, the weather is fine, the sea warm, and there is a gliding club with two water-gliders. (Some of the visitors feel that the virile instructors should be added to this list!) To make the picture complete there is the courtesy, friendliness, and hospitality which seems to be a natural attribute of the people.

The five of us who were touring thought we might drop in and stay the night on our way to Vrsac. Arriving unannounced in the middle of a thunderstorm caused a little confusion, but the three women were soon established in a room with the only girl in the club. The men's bunkhouse was of the Mark I Lasham variety, as was the sanitation, so we felt quite at home.

One difference was the presence of the Military guarding the airfield, who were greatly amused by our presence. They did cause us some concern on one occasion by staging a most realistic manoeuvre on the hill behind which we used for our "morning constitutional". Luckily, everyone survived.

RIJEKA 1956



The Yugoslav water sailplane, which the pilot has to paddle to the shore, after "landing".

The next morning was bright, and we found the pupils on the field, parachutes at the ready, leaping with gay abandon from the Pfizier, a high-powered Tiger. Among them was Marta, whose room the women had invaded the previous night. Although only 16, she spoke good English as well as a couple of other languages. Even those who didn't speak English were almost psychic when it came to understanding, so it only took the women a day to produce a basic vocabulary – unfortunately this was so basic that it contained little of use on the flying field.

"Shortly after lunch an incredibly ancient Ford staggered on to the airfield"

Jumping ceased when the wind rose and we waited for the CFI, due to arrive at 10. Shortly after lunch an incredibly ancient Ford staggered on to the field; Aco, a small grey-haired man with sparkling eyes, jumped out and the place was galvanised into action. He was very pleased to see us and we learned that we were the first visitors to fly at Rijeka. From that moment everything was organised for us, and later for the Hamptons, who found out that Aco's well-deserved nickname is "Alexander the Great."

The following days were spent sunbathing, swimming and flying in glorious weather and the best of company. David's check in the Kranich caused some amusement when he landed, to discover that the excessive stick forces were due to the reverse method of connecting the trimmer. We flew the Cavka, Jastrebo, and finally, the Jadran, which is named after the Adriatic. This water glider is very similar to an Olympia with a hard chine, step, and floats which are operated

pneumatically by furious pumping in the cockpit. Unfortunately the retraction, extension, and locking mechanism for the floats is not completely reliable, but the effect of an asymmetric float arrangement in flight is not serious.

After a briefing which stretched our dozen words of German to the limit, Aco said he would demonstrate a landing. We rushed off to the bay and saw the tug and glider arrive, and then our first water landing. Then, to our amazement, the canopy was unshipped, out came the paddle from its storage on the starboard, and Aco paddled himself ashore like the last of the Vikings.

Next day Dave and I were deposited in a similar manner, to be followed some time later by Peter Hampton and Hazel Kitcat. The landing was a long hold-off with the wings level, a dash of spray and then the slapping of the waves on the bottom.

Even then, the day's entertainment had only started, as the Pfizier appeared a third time with the parachute instructor, who jumped, landing a hundred yards from the shore, to show that gliders haven't a monopoly of airborne water sport.

By the time we had retrieved the gliders and returned to the sea, a fish barbecue was in progress with the local equivalent of the "Two Bills" providing the music. The entertainment finished in time to see the landing of the night's catch of sardines on the beach – an unforgettable sight, and a grand finale to our visit.

There is no doubt that until you have been to a Yugoslav gliding site, you don't know what hospitality is!

FIRST CZECH DISCUS

The first Discus to be built by Orlican in Czechoslovakia was delivered to three times World Champion Helmut Reichmann last August.

Course direction

1. It will frequently not be possible to set the ideal task length because of constraints such as airspace restrictions and finding good turning points. The former are the more critical because new TPs can, with due care, be "invented" on the day if necessary. Such TPs must be clear and unambiguous on either the half-or quarter-million maps. Course direction will often be governed by local airspace features such as other airfields, airways, SRZs and control zones, and temporary restrictions such as air displays, etc. You have a responsibility to the BGA to set routes which, in the event of an airspace incident or complaint, will be seen to have been prudent in the circumstances. Nevertheless there are some general guides which should be applied:

2. **Do not set the first or last legs of a task into wind**, unless unavoidable due to airspace factors. If the thermal strength does not brew up you may be left with a perfectly soarable no-contest day because pilots just cannot penetrate upwind (this has happened!) Also, at the end of the day when thermals are dying you want to allow pilots to get home, not slowly drift further away.

3. **Give the first leg of a task a downwind component wherever possible.** A 45° downwind angle is suitable if you have the airspace to accommodate it. This allows pilots to clear the base airfield and progress down the task route when thermals are still strengthening.

4. **Allow for safety at the finish line** -with more than one task group finishing at the same airfield, ensure that their finish line directions are not too different, in order to reduce the risk of collision. Preferably, make them use the same finish line.

5. Never deliberately set towards deteriorating weather. If the deterioration (such as a front) arrives earlier than expected, you can lose an otherwise feasible contest day. The other risk is unfair scoring, particularly to lower performance gliders or late starters.

Turning points

6. **Pick easy-to-find TP features, not obscure ones.** A gliding competition is to measure soaring and is not an exercise in nit-picking navigation to obscure features. Turning points should be clearly shown on either the half-million or quarter-million maps; it is not helpful to pilots in the air if your TP is only marked on, say, the 1:500,000 map. The only exceptions are where, in order to designate an exact point of turn for an airfield or a village, you nominate a feature such as the control tower, a particular hangar, the village church or railway station.

7. **Possible landings near TPs.** Competition TPs should be close to country which is landable since pilots often get low near TPs. Mid-Wales, for instance, is not the type of country over which competition tasks should be set. Of course in general flying outside competitions, pilots make their own risk assessment both before and during a flight, and this consideration does not apply.

8. **Alternative TPs.** Where conditions are poor, or spreading out or cu-nims are forecast, use alternative TPs so that if one TP is clagged out, pilots can go to another. Alternative TPs can be used in triangles, O/Rs and dog-legs. Course

TASK SETTING FOR THERMAL SOARING

Part 2

The first part of this article in the last issue gave a methodology for calculating the distance to be set in different conditions of wind, glider performance and forecast rate of climb. This final part considers applying the selected distance to the map and also covers launch decisions

distances via the Alternatives should be approximately the same. The Alternatives should not be too far apart so that pilots have a similar chance to make their TP decisions; if they are widely separated the TP decisions become more random and less dependent on judgment of thermal conditions.

Fallback tasks

9. You should have a fallback task for each task group for use if conditions do not brew up as early as expected, or if the forecast changes for the worse. The primary task is normally briefed as Task A and the fallback as Task B. This makes your decisions easier at the launch point later, all you then have to do is tell pilots before launch whether task A or task B is to be flown. With several task groups, task B for a high performance group can be task A for a lower performance Class, to minimise complexity at briefing. Very occasionally, conditions brew up significantly better than expected and an increase in task length from that set at briefing may be in order; this is rare and I have only done it once or twice. Normally the problem is simply a late start, the predicted thermal strength and wind being the same as calculated before. A reduction in task length can be made by using the same speeds as

before but reducing task time by the delay in starting. This should be calculated using the methodology shown earlier, in order to avoid panic decisions at the launch point when surrounded by a group of competition pilots thirsty for the task setter's blood. There is no harm in having a task C as well. For other circumstances such as a significant weather change, if there is time, recalculate from scratch, but try and avoid too many changes so that pilots are not unnecessarily confused; you could, for instance, convert a triangle into an O/R, change a quadrilateral to a triangle, or add an alternative TP to an already briefed one.

Large task distances

10. What the calculation in the first part showed was that even on a good day (for the UK) with a typical startline crossing at 12 o'clock, the 110% machines only cover about 435km by 7pm, assuming an average true rate of climb of 2.5kt over 7hrs, a dolphin factor of 5% and a 15kt wind.

500km contest task _____ only successful twice _____

Therefore, if you are going to make allowance for 110% gliders under these conditions, you cannot set over this distance and, for instance, a 500km task set for the benefit of the hot ships would not be fair on the others. Indeed, there have only been two occasions in the UK where a 500km contest task has been a success (Husbands Bosworth 1975 and Bicester 1990). 500km has often been set but has generally involved close to 100% out landings, often far from base. The general problem has been that somewhere on the route an unforecast problem arises which either slows pilots up or causes them to land. However, 400km is clearly regularly possible as a task for gliders over 110% in Speed Index. If you only had gliders of Speed Index 130%, or could guarantee nil wind, or an average rate of climb of over 3kt, then 500-550km would be viable tasks. For instance, for a 4kt average climb and 10kt of



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wind, instead of the 3kt climb and 15kt wind used in the example, the figures become 525km for the 130% first finishers, and 539km for the 110% gliders landing at 7pm using a reduced average climb of 3.5kt. If conditions were very regular with no slow bits, you could scale these up by increased dolphin factors and increase task to 550km or over. And, you may say, pilots regularly achieve over 500km in the UK in non-competition flying, so why not regularly set tasks over 500km in contests? However, in addition to making allowance for the lower performance gliders in a task group, you have to allow for the extra safety needed in launching lots of gliders at once into a "held startline" situation, and the time taken for the competition launch and to work-up for the startline. This loses you between 1 and 2hrs of soaring time in terms of time on task compared to non-contest flying, and more if cloudbase and visibility are limiting safety factors for startlines. Just because it is soarable does *not* necessarily mean it is safe to launch!

Launch decisions

11. If you have more than one task group, each day you should vary which group is launched first so that all pilots have the maximum opportunity for soaring, subject to the following considerations:

a. Poor visibility. If the visibility is forecast to be poor for the task route (less than 5nm, such as in anticyclonic conditions), launch the task groups in order of glider performance. In the example this would be Group 1 first followed by Group 2. This is to avoid the hot ships overtaking the others and increasing the risk of collision.

b. Stream launching. Do not automatically stream a task group straight after the previous one, unless you are quite sure that the depth of convection and visibility make it safe to do so. Also, all your tugs may not be available because they are still airborne from towing the last gliders of the previous group. A short pause for the earlier group to start crossing the startline is normally desirable; this often takes some self-discipline, but remember the risk of collision in the pre-start melee; lives can be in your hands if you just throw everybody into the air.

c. Visibility and cloudbase - pre-start safety. Collisions are one of the biggest risks in gliding and can lead to loss of gliders and of life. It is the task setter's duty to minimise the risk where possible. Held startlines in conditions of poor visibility or low cloudbase are potentially dangerous, and the following minimum criteria are suggested before it should be considered safe to launch a task group of any size; it should also, of course, be soarable! If conditions are clearly improving, wait a short time rather than launching; only use these minimum criteria if it appears to be the only way to obtain a task. Visibilities tabulated below are air-to-ground because these are easier to measure than the air-to-air variety. Other factors to consider include the number of gliders in the task group, the decrease in visibility near cloudbase and poorer visibility when looking into sun.

Cloudbase agl	Visibility (Air-to-ground, in the direction of first leg)	Decision (if no improvement is imminent)
Below 2000ft	Below 2nm	No launch - not safe, even if soarable.
2200	5nm and above	Launch with care
2500	4	Launch with care
3000	3	Launch with care
3500	2.5	Launch with care

d. Size of task groups. It is an advantage to have task groups of different sizes, because you can launch the smaller group in conditions that would not be desirable or safe for the larger one. If the day is slow to brew up, or conditions short of the startline are not ideal, you can launch the small group first, holding the larger one until conditions improve or the earlier group has started. As the scrub time approaches (normally 3pm, see e below), you can hang on to the small group for longer because they will take less time to launch and the last glider launched will still stand a chance on the task. If the smaller group happens to be the hot ships, this may help in marginal soaring conditions because they are more likely to stay airborne compared to lower performance machines.

e. Late launching. On tricky days, the last task group on the grid will normally be the one that is cancelled first if conditions do not brew. If you have not launched by 3pm, competition is unlikely to be fair unless the task is very short, the task group is small, or thermals are confidently predicted to go on into the late evening, and the task should be cancelled. 4pm should be an absolute cut-off even for small task groups in Regional competitions; 3pm is generally used in Nationals. After cancellation, gliders may then be able to soar locally and there may be some moaning from the pilots, but remember your responsibility for ensuring fair competition for all pilots including those launched last.

Conclusion

12. At the end of the day you should analyse how the tasks went. You can backplot gliders' actual speeds on the groundspeed tables to find the effective average rate of climb extracted by various pilots. This may be of use on later days if the conditions are relatively static. If more than half landed out, something went wrong; this may just have been unforeseen poor weather and out of your control, but if it was a good soaring day then it may have been over-ambitious task setting or the use of a TP too close to a bad soaring area such as sea air near the coast. Conversely if the first gliders returned too early then you did not fully exploit the conditions, although scoring fairness will not be compromised and you could say that the pilots should have delayed their starts. A successful task is where not too many pilots landed out (say, less than 25%), competition was fair with no scoring anomalies, there were no air-space or other incidents, and at least some pilots buy you a beer and say that they enjoyed it! You can then start planning for the next day ...

DAILY INSPECTIONS AND ALL THAT

After a recent inquest into an accident where the pilot had evidently failed to connect the elevator I wonder whether we'll ever get the message across. The following review of standard practices in aeroplane flying and gliding looks at ways in which we all could make flying safer

Is there a difference between aeroplanes and gliders as far as daily inspections (Dis) are concerned? In theory the answer is "no", but custom and practice suggests otherwise. Why? The answer appears to lie in the different nature of their use, at least so far as club aircraft are concerned.

In a power flying club the training aircraft is used by a succession of students or pilots, with or without an instructor. Each flying detail lasts, typically, from 40 to 50min and each session is preceded by a walk-round inspection which is the equivalent of the glider DI. I'll return to this walk-round inspection later.

A glider, as we all know, is used rather differently. In general the operation is fairly intensive - a succession of short flights. You can imagine the chaos if each student carried out a DI before his three winch launches! The same might not be true at an all aerotow operation but the custom and practice is a DI before starting flying then nothing thereafter.

The common ground is that a walk-round inspection of an aeroplane is, or should be, the equivalent of a DI on a glider. Without going into too much detail this is a comprehensive check that all the parts are there and functioning correctly. Glider pilots in any doubt have an *aide-mémoire* in the front of the DI book; aeroplane pilots may well have a check list specific to the type of aircraft. There are a few fundamentals; be systematic, avoid being distracted and understand what it is you are looking at.

When a student is first shown how to do a DI (or a walk-round inspection) he absorbs what he's told and, eventually, is allowed to do it on his own. At first he is slow and painstaking, taking 20 or

even 30min to complete the inspection. With practice and familiarity he gets quicker, like 5 or 10min – a simple case of familiarity breeds contempt, more specifically complacency. Anyone who does it this quickly is simply not paying attention to the detail. Indeed, a first inspection of an unfamiliar type or example should take 30 to 40min.

The problems of the pre-flight inspection are borne out by a "competition" run by the CAA at the Popular Flying Association Rally, held at Cranfield. Licensed pilots, engineers and instructors are invited to find ten faults on a Robin D400/180 with the following results:

The Faults	Missed by
1. Fuselage tank labelled JET A-1	10%
2. Rag in aileron cable fairing	69%
3. Dzus fastener on mainwheel spat undone	44%
4. Bird's nest on top of engine	53%
5. Engine cowling fasteners back to front	50%
6. Locking wire on underbelly fuel drain broken	34%
7. Missing split pin in lower flap linkage	25%
8. Loose bolts on one stabilator anti-balance tab	46%
9. Loose cover on fuselage strobe light	40%
10. Fire extinguisher missing	43%

The highest figures are the failure to spot the rag and the bird's nest but overall the figures are very discouraging. There's worse; apocryphal stories such as the syndicate member who removed the rudder to do some work on it and his partner failed to spot this on the walk-round inspection! This is not a digression, it's not really much different to not connecting the elevator. But, evidently there are problems in doing a thorough glider DI. The risk is looking without seeing.

Glider

Here we have to differentiate between the club glider which is kept rigged and the private glider which is rigged each flying day. For the latter the DI book entry should read "rig and DI", or better still two separate entries. These really should be two separate tasks. Having put it together, pause, take a break and come back to the second task, the DI. I can almost hear you saying "This is too much, after all I know my glider, I DI it as I put it together".

If this is your case then there is enough evidence to suggest that sometimes pilots of considerable experience fail to connect one or other control, an airbrake, an aileron or the elevator. The latter may mean death unless you are lucky. So how do we establish a fail-safe practice – remembering there are several occurrences (of failure to connect) each year?

There are several options.

Fail-safe DIs

Supposing you accept that rig and DI should be separate events then I've either got through to you or you already have this approach. It would be interesting to bring a group of students to private owner level in a disciplined environment in which the two tasks were separate, even carried out by different people. If this were the norm then I suspect they would continue in this way. However, if you don't accept this principle read on.

For a long time it has been suggested that the fail-safe way of checking a control is connected is to have someone hold the control surface while the control is moved so the resistance (and therefore the connection) can be felt. **This should be a discipline invoked from the outset of training**, notwithstanding that the club gliders are kept rigged and such practice is probably not necessary. But the habit, discipline or drill is again fundamental.

The potential problem is most critical in T tail gliders for the simple reason the elevator sits on top of the push-pull rod and, on the ground, moves up and down **whether it is connected or not**. The check with a helper holding the control surface obviates this risk. So, why don't we all do it? Complacency! It can't happen to us!

There is a further aspect of this fail-safe approach. Consider the club glider again. You are about to fly it for the first time today. Walk round the glider, not straight to the cockpit. Look at a few key points; the elevator is connected, there is no external damage to primary surfaces. Looking too closely may often result in missing fundamental points. I remember my first flying test as an aeroplane instructor. I was the third of three candidates to be tested and we are making running changeovers, *ie*, not stopping the engine. I walked the long way round to the cockpit and the examiner asked "why", a rhetorical question.

The quick walk-round inspection, even if the glider has been DI'd, makes it fail-safe. Can you equate the 30sec it takes with a life? I think not. It's interesting to note that this walk-round is standard practice in Australia and they haven't had an accident through a control being disconnected for ten years. Need one say more!

The final point which warrants consideration is the matter of hotelier connections which have widespread use in the modern glider. The spring-loaded wedge which provides the detent is known to be reliable so far as spring failure is concerned, so much so that some pilots do not fit the safety pin for which there is provision. Their reason is that the device is reliable and fitting the safety pin is fiddly. Others think that fitting the pin

should be mandatory and it is impossible to reach agreement between the protagonists. For something as fundamental as an elevator connection I am convinced. Fit it! For other controls in less accessible places there may be grounds for not doing so.

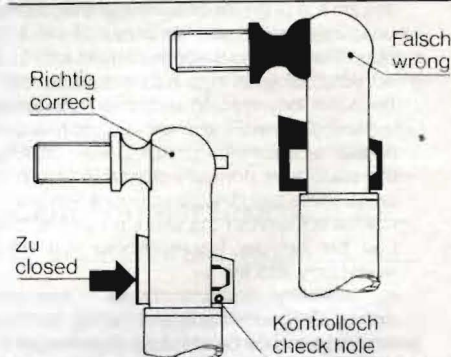
But think on it! If a double check and an additional safeguard may make the difference between living and dying then the question "should we do it?" is rhetorical.

In summary

The present custom and practice regarding DIs and walk-round inspections could be improved by:

1. Checking all controls (even on club gliders which are kept rigged) by having the control surface held and "feeling" the connection by moving the stick or control lever.
2. In the case of rig and DI make these separate tasks and entries. Rig it, walk away and then come back and DI it.
3. If the glider has already flown (but it's your first flight) then a brief walk-round inspection doesn't take long and instils an attitude and discipline which may stand you in good stead.
4. If there is provision for a locking pin in an hotelier connection then why not fit it.
5. Since most clubs will insist on a pilot rigging and de-rigging a glider before he flies cross-country then there should not be a problem of including rigging and DI'ing as a part of the Bronze badge test.

Regarding point (4) the lay jury at a recent inquest thought both this and a double/independent check was a good idea. They wanted to add a rider to their verdict of accidental death but the coroner's rules did not allow them to do so.



These hotelier connection stickers are being sold by RD Aviation and it makes sense to put one by the connection so that you have a regular reminder.

Sailplane & Gliding

The magazine can be obtained from most Gliding Clubs in Gt. Britain, alternatively send £13.50 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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Think back, when did you last feel passionate about your gliding? Or even a small glow of satisfaction after a good landing? If you are trying hard to remember, it could be you've got stuck in the doldrums and are losing your lust for the sport.

In your first honeymoon weeks of beginning gliding a new high came along with programmed regularity. Your first landing. Your first take-off. Stalls and spins. Planning all the flight. The elation of your first solo! No wonder you didn't mind the tedious uncomfortable hours of waiting.

But then what? It is nice to have the status of a solo pilot, of course, and the flying is still great, but do you feel stuck in a rut doing circuits and fumbling around with thermals not really knowing what to do next?

Most clubs have an excellent training programme and a set route to solo. Some even have fairly well structured rails to the Bronze badge, but let's face it, that's where you are usually pushed firmly out of the nest to fend for yourself. Now the gaps between those highs extend longer and longer. It only needs a bad flight where you frighten yourself followed by being told off rudely for some minor negligence by the club Hitler to find yourself wondering why you are investing so much time and money into such a rotten sport.

You are approaching your first batch of the doldrums. It's at times like this that many members drift away from gliding. What a waste! There is so much more to come... the fantastic sense of achievement after your first 50km, the euphoria of popping out of cloud at 8000ft, the buzz of aerobatics and the discovery that every cross-country is an adventure!

The problem comes when, as an early solo pilot, you perceive an enormous gulf between your skills and those required to reach the next set of dizzy heights. You don't know how to get there and no one tells you how. Some instructors are pretty stingy with their information anyhow and you're left with the feeling that the mysteries of cross-country flight are given away to a favoured few on a "need to know" basis. I don't believe that this is done intentionally, but more because instructors are either too busy doing their own soaring or plugging away at the *ab-initio* list.

So is there an answer? Here's one idea. To give yourself a sense of purpose, pinch a tip from modern management and coaching styles and try **goal setting**.

GETTING STUCK IN THE DOLDRUMS

If your enthusiasm for gliding is fading and you wonder why you are spending so much time and money, then Liz Veysey suggests goal setting

Liz was recently appointed manager of the London GC and has over 1200 gliding hours, a Gold badge and one Diamond. She flies an ASW-15 when not instructing.



First, write a list of all the things **you** would like to achieve from gliding. Anything from conquering your fear of cable breaks to winning the Nationals; if it's what you want, put it down. A typical list may look like this:

Pass Bronze badge flying test and ground exam.
Get Silver badge.
Be an instructor.
Enter competitions.
Overcome fear of field landings.

Having completed your own personal list, go and find your instructor. A pint in the bar usually enlists co-operation. What you need to do now is sort your list into some sort of reasonable time-scale. For instance, our imaginary list above could be divided into

Two month goals (to be achieved by, say, March 31)
Get through Bronze flying test.
Sit Bronze exam.
Overcome fear of field landings.

Six month goals (to be achieved by July 31)
First cross-country.
Silver height.
Complete a 5hr flight.

Long term goals (next year or year after)
AEI rating.
Instructor rating.
Enter competitions.

Now you need to take a closer look at your short term aims (getting through the Bronze badge and overcoming the fear of field landings) and break it down into much smaller areas on which you need to work. Our example could look like this:

**Aim
Bronze
flight
test**

What to do

Arrange a dual flight with an instructor to find out where my flying needs polish.
Fly at least one hour/week to remain current.
Learn to sideslip.
Practise cross-wind landings in two-seater.
Practise unusual circuits in two-seater.

**Pass
Bronze
exam**

Put aside two evenings a week to study.
Ask instructor(s) for help on ground subjects.

**Overcome
fear of
landing
out**

Fly in a two-seater motor glider and practise field landings.
Ask for a dual cross-country.
Practise spot landings.

The aim is to achieve at least one item on your short term list each week (or whatever time scale you choose). The time limits you set should be realistic and your instructor can help by knowing your abilities and discussing the amount of time you will need. It is important to have an actual date to complete each goal and stick to it. If you reassess your master plan every couple of months you can see what achievement you are making and bring new items down into your "short term" list.

Don't forget that setting goals is to help make your flying fun and give you something to go for, so don't let it rule your life, nor get anxious if you fail to achieve a goal by a certain date - just put it forward to next month's (year's) plan. Soon, hopefully, you'll have something to look forward to and before long you'll experience one of those magic moments of which gliding is full, and you'll know why you invest so much time into this wonderful sport.

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ROCKY



Almost the last word in Varios

There are new models of variometers coming out every year, each claiming to be the ultimate. Unfortunately they can only tell you what to do when you have found the thermal. Rocky can pick out thermals from at least ten miles. How does it work? Rocky is a 3½ year-old African Grey Parrot. He has been suitably modified, which means he cannot fly – but still has the urge to do so! (Luckily parrots don't bear grudges.)

The idea came to me four years ago. What is needed in a glider is complete head up display that will give you height, speed to fly, spot on navigation, the positions of the strongest thermals, companionship, plus the ability to discuss the flight at the end of the day.

The training programme started in February 1989. Rocky was taught a few simple commands, ie right a bit, left a bit, slower, faster ... He then started to teach me as his vocabulary grew. When I got it right – "That's the way to do it" echoed through the cockpit! It was difficult initially to make him realise what was required of him. I used an Ilec vario for a basis (very accurate and pretty sounds).

Once he realised what was necessary, Rocky made his own gurgles and beeps. It got quite confusing until I realised that all the instruments had to go ... I was getting too much information. So a new panel was fitted. **Now** we made rapid progress. Rocky will look over the side and give

me a spot height, type of crop etc and warn me of approaching aircraft (he has built in SunTigers). And we both have a wonderful time without ever having to charge a battery!

Rocky is a great family pet and wonderful company, and has altered the gliding side of my life completely, I will explain further ...

My gliding weekend begins on a Wednesday evening. Rocky and I discuss the possible weather patterns. If Saturday looks like being a good day, the following morning my wife Bridget takes him up to the local pigeon fancier for the day. I collect him after work, and by this time he has got the low-down from his mates on the info on the forthcoming Met, plus the operating height. Then we sit down and discuss the proposed task – usually Longleat, Cotswold Wild Life Park, and Woburn. (We are trying to find a 500km triangle from Aston Down using zoos and birdlands for TPs.) He gets great satisfaction from looking down on other parrots!

"He can spot blue holes long before I can, but then we go into blue thermal mode ..."

Saturday morning it's up to the club, fill up his seed and water dishes for the trip. Rocky sits on my shoulder. By this time he is pretty excited, so we have a small litter tray for him! There is no doubt when to start ... Rocky knows exactly when to take-off and where the first thermal is. So up we go; as soon as operating height is achieved the commands start coming through. Soon you are following the energy – it is fantastic – we seem to float along, wings level for miles, the instructions coming through ... left a bit ... right a bit ... and so on. He can spot blue holes long before I can, but then we go into blue thermal mode, it is uncanny!

Once we have reached the TPs, I have to pick out a definite landmark that he can get his bear-

ing on, then he is away. In practice, we do very little thermalling. The general flying consists of gliding along at cloudbase (we **never** go in – he hates it!) throwing an occasional turn if the lift is strong. I don't carry a radio anymore – there is so much drivel spoken these days, it completely spoils the flight, and Rocky gets completely anti and starts screeching. He gets upset whenever we meet a Discus (something about the wings).

We have not done a final glide as such for ages. The whole flight seems to be one long final glide! There are some small minor disadvantages, such as should the weather change and we could possibly land out. Rocky would naturally prefer to land in **woods or cornfields!** He refuses to go into cloud (he gets lost), does not like wave flying



Rocky briefing Howard before take-off. Both photos by S. Mantelow.

(too cold). He would really love to go to Spain. Unfortunately we cannot enter competitions with him (something about unfair advantage), otherwise ...?!

We are training him for racing at the moment; prior to leaving we place a whole corn on the cob in the hangar. Once airborne we tell him the jackdaw will get it! The times are getting quite good.

Parrots are expensive. The modifications are a bit messy, but the results are fantastic. You can throw out £3000 instruments, and for the cost of a couple of seed trays and a trained parrot – £45 you're in business. **Plus** you have a family pet. A parrot can achieve a vocabulary of 4/5000 words (more than some pilots I know), costs very little to feed, doesn't require recharging, lives for three score and ten years and is a wonderful conversationalist at breakfast time, usually with the wife (added bonus). If there is a disadvantage I have yet to find one.

Why is he called Rocky? Since he was modified, he has had to walk ... everyone has seen a parrot walking. So if ever you meet 585 around, give him a friendly wave and tag on behind for the best soaring you have ever had. ✕



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Stalling

The more we pull back on the stick, the more work we are asking the wings to do, and there comes a point at which we are asking the wings for more than they can deliver – the stall. In fact, pulling on the stick increases the angle at which the air meets the wings (the “angle of attack”) and the stalled condition occurs when the angle of attack (AoA) of the glider exceeds a certain value. The airflow will then break away from one wing or the other or both.

Because of this, the wings’ reduced lift-producing capacity will no longer fully support the weight of the glider, which must therefore begin to descend faster. The nose of the glider may or may not drop during the stall (depending largely on how vigorously the stall was approached) and also a wing may – or may not – drop.

Sometimes the pilot simply does not “see” the stall symptoms

Stalling is in itself a benign flight condition but it seems often to be a major contributory factor in flying accidents. Such accidents appear generally to involve lack of perception of the stall, rather than lack of knowledge of the correct recovery. Sometimes the pilot’s attention is diverted at a critical moment, on other occasions the pilot simply does not “see” the stall symptoms, or ignores them for reasons of his own. It seems plain that the traditional stall/spin training does not cause enough alarm bells to go off in the pilot’s head as a stall is approached.

Theoretical aspects of the stall

The slower we fly, the higher the AoA required to support the glider, so stalling is often associated with flying too slowly. However, it is quite possible to stall at almost any speed – for example by demanding too much lift from the wings (ie by pulling *g*) or even by being caught by a violent gust. The moment the AoA reaches the stalling angle, the glider has begun to stall; and the more the AoA exceeds the stalling angle, the greater the extent to which the stall spreads.

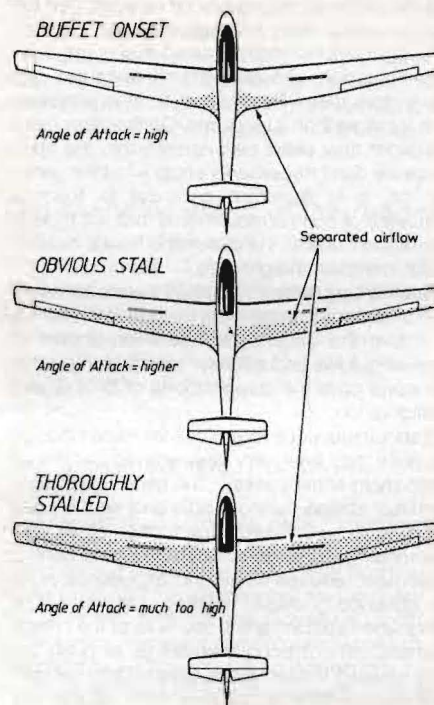
When an area of stalled flow occurs, the lift of that area drops markedly (sometimes dramatically) and the drag rises sharply. In general also there will be a pitching moment change but – for a whole aircraft – the sense of this will depend upon the aircraft configuration. Good design practice is to arrange matters as a whole such that a glider will pitch nose down as the wings stall.

Note that it is rare for the whole wing (or wings) to become stalled. On a typical glider wing – designed to stall in a smooth and progressive manner – the stalled or “separated” flow first begins on the upper surface at the trailing edge near the wing root, and then spreads forwards

DON'T PULL THE STICK-PUSH IT!

It is evident from Mike Cuming’s literary style that he is some sort of boffin (he describes himself as a part-time aerodynamicist). Instructors will find his article on stalling and spinning has much in common with the forthcoming *BGA Instructor’s Handbook* chapter on the same subject but it is in fact intended as a rattling good yarn for anyone to enjoy . . .

and outwards as AoA increases further. The picture below illustrates this.



In its most minor form, a small area of stalled airflow is merely inefficient, owing to the higher local drag. There is of course also that irritating buffeting and possibly a distracting flickering on the ASI or vario if the stalled air streams past the static pressure holes. But handling and performance are scarcely affected by a little bit of buffet, so a wing such as this is in fact a good choice for a trainer – offering plenty of natural stall warnings and with no sudden or severe penalties.

Ignoring the warning and allowing the AoA to increase still further will enable the stalled area to spread; the buffeting will worsen and soon there will be a perceptible loss of performance (just

look at the vario!). Eventually, the stalled area will include the wingtip and aileron control will be diminished or even lost altogether.

The foregoing description applies to a “safe” design, using a predictable aerofoil section and plenty of washout (ie wing twist such that the tip is at a lower AoA than the root). Unfortunately such a wing will never win the Nationals and wings which are designed for performance above all else will inevitably have to give up some docility. The designer is guided in his choice of characteristics by the airworthiness requirements, which prescribe minimum acceptable handling conditions and – in particular – lay down minimum allowable degrees of stall warning.

For example, a thinner wing will have less drag than a thick one – but its sharper front may just give rise to a widespread stall originating suddenly from the leading edge. This would have the same sort of effect as activating a spoiler! Alternatively, washout could be abandoned in order to improve the glide angle at higher speeds – but this may lead to the stall first appearing at the tip, with little warning and possibly with immediate loss of aileron control.

The fitting of flaps will have a profound effect on stall characteristics and in very broad terms, lowering the flaps will worsen the stall/spin handling while negative (cruising) flap settings will improve handling. The stall speeds will of course also be affected (lower flaps, lower stall speed).

Other factors which also have a big impact include wing condition. Dirt, rain or bugs will all tend to promote early stalling, increase stall speeds (often by 5-10kt), worsen handling and disguise natural stall warnings. Then there’s elevator power; a small elevator, or one with a restricted deflection, will possibly not be powerful enough to hold the glider in a sustained stall. Conversely, a large powerful elevator – or possibly one with damaged stops, and a consequent abnormally large deflection – will offer all sorts of exciting possibilities.

Centre of gravity (C of G) location is extremely important in determining stall characteristics. As ➡

well as having a huge effect on the elevator effectiveness, it will also markedly affect the glider's willingness to drop the nose – or a wing, aft C of G (= low cockpit weights, or high placard minimum figure) gives sprightly stalls.

Wing sealing, and also the dreaded Reynolds Number, have a lot to do with stalls at very low speeds (*ie* walking speed, which is just when you get a wing drop during the take-off or landing ground run) and this is because a low-grade sealing job – or a low Reynolds Number – will reduce the stalling angle. So you stall sooner.

There are thus lots of theoretical aspects to stalling, which is one of the reasons why stall awareness is so complex to teach and to learn. There is, however, only one important point regarding stall avoidance/recovery: **reduce the AoA=stop pulling the stick!**

Spinning

This condition occurs when the aircraft is partially (or wholly) stalled and a rotation develops. Any stall – whether in level flight, turning or during aerobatics – is potentially a spin and indeed the term “incipient” spin has been used for years to describe that period of time while the glider decides whether just to stall or to develop into a full-blooded spin.

In fact the incipient spin concept is not particularly helpful, suggesting as it does the existence of three separate phases of spin entry (stall, incipient and full) and therefore possibly three sorts of exit. In truth there are only two ways out of a spin: either moving the stick forward (the normal stall recovery) which always works for stalls and so-called incipient spins, and almost always works even in well-developed spins; or the “classic” spin recovery, which we teach because some gliders won't come out of a spin very quickly without it.

Theoretical aspects of the spin

In a straight stall, both wings begin to stall evenly and progressively but what if one wing is a little dirtier, or has some surface damage? What if just a little rudder – or aileron – is being applied so that the “straight” stall is in fact slightly asymmetric?

In this case one wing will tend to drop sooner than the other; the dropping wing will undergo a further increase in AoA owing to the very fact of dropping – and this will stall it further and cause it to stall even more. A viscous circle. Pun! Meanwhile, the upgoing wing will have enjoyed a slightly reduced AoA which may even be just enough to unstall it and restore some of its lift. Thus – for one wing at least and possibly for both – the very fact of a wing-drop will tend to induce a further wing drop. The paddle action of the wings as the glider rotates will stop the roll from accelerating indefinitely, however, and soon a steady continuous roll rate will develop.

Meanwhile the down going wing – being excessively stalled – is producing excessive quantities of drag while the other wing is producing much less, and this causes a marked yaw towards the down going wing; a yaw which continues so long as the wing goes on dropping. Admittedly the weathercock stability afforded by the fin/rudder will tend to keep this in check. Thus the drag produces yaw which causes roll, and the roll produces more roll and also more yaw. The

system continues to “drive” itself – at the expense of height, which is lost rapidly as the glider descends vertically.

Once the glider has begun its vertical spin, several other forces come into play. Already we know that there are aerodynamic “damping” contributions from the wings and tail side area as they effectively flail round like paddles. Also there is the bob-weight effect of the weight of the various components, which variously helps or hinders – depending on the glider design and C of G position.

If matters are left unchecked, a semi-stable condition may develop in which all the aerodynamic, gravitational and bob-weight forces cancel out and the spin becomes “steady.” Commonly the glider will make slow up and down pitching motions (at least during the first few turns) and this of course – like the famous ice-skaters' trick of spreading the arms in and out – will quickly affect the speed of rotation, and hence all the other forces.

Learn a sequence of control movements

If the glider pitches down far enough, or if the rotation slows down enough, then the recovery will begin automatically; indeed this is the case with all modern gliders. Certainly there are very few gliders that will remain even in a provoked spin for more than a few turns. On the other hand the glider may settle permanently into the spin! Since we don't necessarily know what the glider will do, it is therefore essential to learn a sequence of control movements that will reduce the rotation, unstall the glider and hence recover – with minimum height loss.

Such a sequence must plainly work for every type of glider and indeed it is a requirement for Cs of A that the glider type has been shown to recover quickly and reliably, even from spins in the worst possible combinations of C of G and configuration.

It should never be forgotten that – even though the nose may be a very long way down (almost vertically in some cases) – the glider is still very definitely stalled during a spin and so the nose will have to be lowered even further, albeit only momentarily, to recover. Such a callous control movement requires nerve and experience or, in the absence of these, **training**. Lots of it. The pilots who “spin in” are those who, at the critical moment, cannot bring themselves to push the stick forward. Indeed, since most gliders will spin only with the stick on the back stop, we can say with some certainty that such pilots could not even bring themselves to stop pulling! Hence my title.

C of G position has a lot to do with spin characteristics since it effectively changes the moment arm of several of the forces involved. The further aft the C of G the less “laterally” stable the glider will be (*ie* keener to drop a wing or spin, and more reluctant to recover). By “lateral” stability I mean the glider's response to the coupled effects of yaw and roll. Further, an aft C of G location will effectively increase the power of the elevator (this time reducing the “longitudinal” stability *ie* the stability in pitch) and thus the pilot's ability to hold

a sustained spin.

Conversely (and this is often the case with, say, K-13s) the combination of a plump student and a fat instructor may move the C of G forward to the point where the elevator lacks the power to hold the AoA up, the nose drops after only half a turn – even with full back stick – and the spin recovers all by itself. This does not mean that the glider won't spin!

Air density and temperature (and, between them, our old friend Reynolds Number) affect stability too. As we go higher the tail becomes smaller in aerodynamic terms, and a glider that won't spin readily at sea level will often spin nicely on a wave flight at 20000ft. The Pegasus is a good example of this and so is the K-21.

Undercarriage, flap and airbrake settings all affect spin characteristics too. A large undercarriage with big doors will have a marked effect on the weathercock stability (just try sideslipping, gear-up and gear-down) and if the wheel is forward of the C of G (*ie* the glider sits on a tailwheel or skid when on the ground) then this will aggravate any spinning tendency. Airbrakes usually have a stabilising effect, and may well cause pitching motions – sometimes good, sometimes bad.

Flaps merit a whole chapter on their own in this respect! Each glider type has such unique flap effects that it is difficult to generalise without drivelling, but in general lowering the flaps (thermic or landing) will substantially encourage wing drops and spins and raising the flaps (cruising setting) will tend to avert them. The best example is the ASW-20 which will not normally spin at all with neutral or negative flap, spins very nicely indeed with thermic flap, and spins like a top with gear down and landing flap. The ASW-20 is a lovely glider but many owners who have never spun their machines in the final turn configuration will be willing to bet money that their glider will not spin, Suckers.

Designers err on the side of caution

Notice that we haven't even talked about the primary control effects yet. All the foregoing remarks apply to gliders which are spinning with stick and rudder neutral – at least in principle. In practice, glider designers err on the side of caution; and it is commonly necessary to provoke and sustain a spin by the use (deliberate or otherwise) of full pro-spin rudder and full up elevator. Although we normally fly “safe” gliders like this, and we all know that they will recover in a flash as soon as the pro-spin control inputs are even reduced, there are still some gliders – especially older types, and often Open Class machines of large span – which genuinely do require the “classic” recovery in order to get out of a spin quickly, or indeed (very infrequently) to recover at all.

With this fact in mind we teach the “classic” recovery as well: the theory is simple. Full opposite rudder tends to reduce the rotation, and hence reduce the difference between the inner and outer wing in terms of both lift and drag; and moving the stick forward will eventually unstall the glider.

What about the ailerons? Much depends here on the nature of the wing design and hence its stall characteristics. If the tip is stalled and the aileron isn't working then trying to use the aileron will generate **less** lift (and **more** drag) – not more lift like it is supposed to! On the other hand the aileron may still be working after a fashion and this control might quite possibly be useful in a spin. All we can teach is that the effect of the ailerons is unpredictable during a spin; therefore leave them central and use the controls which are working.

Most pilots – and many instructors – will never have thought about all these factors; nor will they have made genuinely sustained spins, even though they may make brave claims in the bar. And it is a certainty that hardly anyone has even noticed the aileron position while spinning, let alone deliberately experimented with it, for this is the province of the test pilot, is it not? Do consider steeling yourself for a "serious" look at spinning. Any glider with a C of A is guaranteed to recover from a five-turn spin within one turn, even at aft C of G and in the worst possible configuration; it says so in JAR-22. A word of advice, though – don't **begin** your experimenting with a five-turn spin at aft C of G; work up to it!

The only remaining major factor that you **will** (either consciously or unconsciously) have encountered as a matter of course while spinning is what are known as the "rates" – pitch rate, roll rate, yaw rate. In short, the more briskly (faster rate) you pull into a spin, the deeper into the spin you will get. This will magnify the aerodynamic forces especially and the ensuing manoeuvre will be sharper. This is most often demonstrated when trying to spin off a turn; merely inching the stick towards the back stop is often not quick enough to prevent a nose drop and auto-recovery. As a pilot you will intuitively find that a sharp backward movement is needed. This gives you the pitch rate you require for your manoeuvre.

The really good pilots are those who have learned – through experience, intuition or (more usually) training – which stick positions and which stick rates are needed to get the results they want.

Stall reinforcement exercises

Most of the points I have made are well illustrated by the so-called "stall reinforcement exercises" which have been part of the standard BGA

instructing patter for several years. This seems a good opportunity to remind everyone that these marvellous exercises exist, and indeed seem to be a first-class way of learning the very skills and experience to which I have alluded.

The purpose of these teaching points is to explore some of the more advanced aspects of stalling, to ensure that the pilot can recognise and react to a stall even in complex circumstances, and to explode any myths that he or she may have picked up – possibly from other instructors!

In particular, the exercises teach the pilot to move the stick forwards under all loss of control circumstances, and to pull up with care when pull-ups are needed. They also accustom the pilot to unusual bodily sensations and aircraft attitudes, and disassociate weightlessness (or reduced *g*) with stalling.

Here are the exercises, in a nutshell –

The "Spot the difference" or "hump-back-bridge" stall exercise

This is a stall with a marked nose drop followed immediately by a pushover from the same attitude and is designed to show that weightlessness proves nothing. Instructors fake the exercise by diving first. In real life you may unexpectedly encounter reduced – or even negative – *g* at any time. But in what circumstances? Gusts, aerobatics, pullup/pushover manoeuvres, cable breaks, bumping the stick while map folding or peeing and, of course – sometimes – stalls!

The changing effect of the rudder

The purpose of this exercise is for the student to see how the effect of the rudder changes from producing yaw to producing primarily roll instead as the stall is approached. More importantly, he will learn the habit of moving the stick forwards if a wing drops. Experienced pilots will have done this hundreds of times while thermalling, of course!

The changing effect of the ailerons

All sorts of vague expressions like "the ailerons become sloppy" spring to mind here, but all that is sloppy is the exercise itself. There is no point trying to teach "the ailerons become less effective" if in fact they do not! Virtually all training gliders enjoy excellent aileron control not just at the stall but well beyond it, so it is usually nonsense to prattle on about effectiveness. Stick forces – and displacements – do of course vary as the stall is approached, while on the other hand the ailerons usually become very heavy as speed increases.

The changing effect of the elevator

Every pilot should know what happens to the effectiveness of the elevator at the stall. The correct answer is of course that "up" elevator ceases to function. "Down" elevator remains reliable and is indeed the recovery action. The whole point of this exercise is to reinforce the student's memory of this simple but vital point, which remains valid

even if the nose is apparently a long way down.

Stall in accelerated flight or stall off a stall recovery

This exercise proves that we can stall at almost any speed, and also that – while we need to recover from inadvertent stalls with minimum height loss – it is still possible to stall again even during a stall recovery, through pulling back too hard on the stick.

Stall in a turn

This exercise demonstrates that stalling speed is not a universal constant and does in fact increase during turns or other manoeuvres.

Picking up the wing with rudder, or spin left off a wing drop to the right

Although the rudder will pick up the wing, we can very easily make matters worse rather than better in this way – and of course it doesn't address the primary problem, namely that the glider is stalled because the stick is too far back.

Spin off a tight or thermal turn

The glider can enter a spin quite abruptly if you abuse the controls enough even at an incredible 55kt – which just shows that the way you handle the controls is more important than the speed you are flying at. Or in other words, speed alone is no insurance against a stall or spin.

Spin off a shallow over-ruddered turn


The nose doesn't have to be above the horizon at all (and hardly above the normal attitude) but if you over-rudder the turn and then try to hold the bank constant with aileron you will soon get a stall with a wing drop – leading possibly to a spin.

Spiral dive

There is a manoeuvre which looks rather like a spin but is quite different; that is the spiral dive. In a spin we are stalled and the airspeed is low, also we do not often get pressed into the seat very hard by *g* force. In a spiral dive we are not stalled; the speed is rising and we usually can feel the *g* since we are turning tightly. The recovery from a spiral dive is simply to level the wings gently – but probably quite firmly – with aileron and then pull up from the dive.

Epilogue

What if your home club can only offer winch launches to 1000ft? Well, apart from asking the BGA for advice on better winches, cables or weak links, you **can** in fact do all these exercises without using up much height and 1000ft will just about suffice for any of them . . .

Any instructor trained during the last few years will definitely know all these exercises, and hopefully most of the longer-established instructors will have been brought up-to-date by their CFI's (who are updated regularly with masses of bumph from the BGA Instructors' Committee). I hope you have fun. 

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We are all aware of the sensation of a lift as it starts to descend or a car going over a humpback bridge. On the ground it only lasts a fraction of a second but it can last longer and be more severe when we are flying.

Since we live under the influence of normal gravity, ie at 1g for virtually all our lives, this feeling of anything less is unusual and if unexpected it can be alarming. Many associate the feeling of reduced gravity or low g with nightmare dreams of falling.

The majority of us acclimatise to these sensations after a few flights but those who are particularly sensitive often develop a total abhorrence of stalling and pitching manoeuvres. Many give up flying but others perhaps persuade their instructors to avoid pitching manoeuvres and may become a danger to themselves and others if they fail to overcome their inhibitions.

Early flights

It is a help if the instructor mentions the sensation of reduced g on a first flight and links it with the pitching movement so the student realises it is quite normal. At first almost every beginner is unsure what is happening when they get unexpected sensations. They are worried about the reduced g sensation and the feeling of slipping as the aircraft is banked over into an under-ruddered turn.

Almost everyone dislikes these sensations which normally remain for a few flights and then gradually disappear. They occur because the beginner is unable to interpret what is happening in time to connect it with his sensations or his control movements.

After a little more experience he learns to recognise what is happening to the aircraft and an alarm signal is no longer sent to the brain. For example, after a short time, as the stick is moved forward, he sees the glider's nose moving down and his brain expects the sensation and understands what is happening.

These unpleasant sensations often come as a complete surprise to the layman. It helps if they are warned that this is quite normal on early flights, particularly when starting to use the controls. But it is a great mistake to introduce stalling or any pronounced nose down pitching movements in the very early stages as this may make them more sensitive.

Turbulence

If there is reduced g because of flying through turbulence, there is often no change of attitude and therefore no visual sign of what is causing the sensation. This is more alarming for the beginner who just gets a horrible sinking feeling and the impression the aircraft is falling out of control. So it helps to make the first flights in smooth weather with a clear horizon and avoid unnecessary pitching movements.

Because of the connection between sensations and vision, the sensations are greatly amplified if the visibility is poor or if looking in the cockpit so there is no visual reference to help recognise the exact movements of the aircraft.

Even experienced pilots get very disturbing sensations if taken into cloud without the help of instruments. Try being blindfolded for a few minutes in a two-seater while the other pilot makes a few well banked circles and then

STALLING OR LOW G

That, Derek Piggott contends, is the confusion. He was inspired to write this article after hearing of some low g accidents in Japan

straightens up. Besides a vivid impression of a turn in the other direction, you will feel the effects of reduced g as you stop turning – something you are quite unaware of in normal flight. Even in clear air this slight reduction of loading is noticed by the absolute beginner.

To minimise these unpleasant feelings it is best to start any flying training by emphasising looking ahead and to avoid drawing attention to the instruments. Later on instructors should make a particular point to emphasise the need to watch ahead during nose down pitching manoeuvres, such as stall recoveries and recovering from a cable break during a winch launch.

Low g sensitivity

Some people are more affected by sub-gravity sensations than others. They will tend to put their hands out and throw their head back at the slightest reduction in g.

I have noticed this response on first flights when they are trying out the elevator. As they move the stick forward a small amount causing only the slightest reduction in g, their response is almost always to move even further forward, making the sensation worse. This is totally irrational – the normal reaction would be to stop doing it or to move the control back in the other direction.

This response to a sensation of falling is a very natural and fundamental protective instinct. If we are falling our hands go out automatically to stop us hitting our face.

Our experience in gliders has made us aware of many aspects of low g sensitivity unnoticed in other types of aircraft. With the much lower stick forces and higher rates of pitching possible, this

instinctive movement of the hands can result in a sudden steep dive which can be disastrous near the ground. Accidents and incidents where a glider suddenly and inexplicably dives into the ground are still occurring all over the world indicating that some people are flying solo quite unaware of their vulnerability.

It seems there are two distinct causes of these accidents:

1. Mistaking the low g sensation for a stall.
2. Reacting instinctively to reduced g by moving the stick forward and being overcome by the increased sensation of the even lower g caused by moving the stick further forward.

Stall versus reduced g

One survivor from a "dive-in" accident confirmed he knew it was useless to try to pull out of the dive while he could "feel" the glider was still stalled. This gave us the clue that some students were learning to think of the feeling of low g as an indication the glider was stalled. If they do this, they may respond wrongly to any pitching or sharp descent. In making a normal stall recovery when the aircraft is not stalled, any movement forward will increase the pitching and produce a more vivid sensation making these pilots think the aircraft isn't recovering or is more stalled. This is a sure recipe for panic and is fatal unless there is plenty of height.

I once had a student who responded with a stall recovery when the glider hit some turbulence on the final approach. The glider dived almost vertically and I was just in time to pull back on the stick so that we hit the ground in a level attitude, miraculously without damage.

Certainly several fatalities seem to have been caused in similar incidents, although this cannot be proven.

Since then instruction on stalls and recoveries has been modified to emphasise from the start that **there is no sensation of stalling, only symptoms**. It is also prudent to teach the student to "ease forward" or "to relax the backward pressure" to unstall the aircraft, rather than use the terms "stick forward", "push forward", or "stick hard forward" which can result in a violent and uncontrolled movement of the hand if a stall occurs unexpectedly.

During the early flights, any feeling of low g or even turbulence needs explaining. Also when trying out the controls and lowering the nose the instructor should draw attention to the sensation and explain it is caused whenever the nose is lowered.

After the first gentle straight stalls we should

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demonstrate that even a small movement forward results in the reduced *g* feeling. We should take good care to emphasise that this sensation, which sometimes occurs during a stall recovery, **is not a symptom of stalling** and can occur when flying normally and, in some cases, when flying through turbulence. Only a very slight amount of reduced *g* occurs during normal stalls and it only lasts a brief moment and wouldn't be felt by anyone other than a beginner or the over-sensitive. Any large amount of reduced *g* sensation is caused by making far too much movement forward during the recovery.

Sensitivity and instinctive reactions

A common sign of still being rather sensitive to reduced *g* is for the pilot to repeatedly overdo the forward movement during stall recovery, in spite of being reminded to ease forward gently. At a later stage he will often insist on thermalling with excess speed and repeatedly poke the stick forward a little at the slightest gust.

Apprehension about stalling is always a sign of under-training and usually a lack of understanding about the causes of stalling and spinning and of the behaviour of the aircraft. The cure is better ground instruction and very careful stall practice on every flight. Even if the rest of your flying is perfect, it isn't safe to fly solo if you are still disturbed by stalls or low *g*.

Pilots who dislike stalling will seldom explore any new solo aircraft they are flying. Then if an unintentional stall occurs their responses and recovery action will be impaired and may lead to an accident.

Those most at risk

It is often the young, above average student who is most at risk. They learn very quickly and often make perfect stall recoveries from the very beginning so they don't experience any significant reduction in *g*.

Pleased with their progress, the instructor is liable to move on quickly to incipient and full spins which don't normally involve low *g* sensations. As a result they have far less training and experience than the average beginner. They may have learnt to associate stalling with the slight amount of reduced *g* they experience on recovery without this being obvious to the instructor.

Suddenly experiencing low *g* because of flying into turbulence on the base leg of a circuit, their response will be a stall recovery; but since the glider is flying normally any forward stick movement will reduce the *g* still further. This will make them think the aircraft isn't responding normally and they will move still further forward on the stick with disastrous results.

It is remarkably easy for someone affected by low *g* to slip through to solo without this fact being noticed. Some will manage to avoid stalling exercises by diverting the instructor's attention to other aspects of their flying and occasionally they have been known to make sure they get a poor winch launch when they have been briefed to do more stalling.

A persistent fear of stalling must be the result of being misinformed and of not understanding what an aircraft will and won't do if stalled. An intensive dislike of the sensation can only be

overcome by a proper understanding of its cause, ie pitching not stalling, and by gradual acclimatisation and training. However, it is difficult for the instructor to persist with stalling exercises when they are upsetting the student so much.

Super sensitive people

Perhaps most interesting and most dangerous are the small minority who are chronically affected. Fortunately most of them dislike it so much they avoid flying again, but to a few overcoming their fear of flying becomes a challenge. In some forty years of full time gliding instruction I have come across about a dozen students severely affected.

They look as though they are having an epileptic fit with the slightest lowering of the glider's nose or the most gentle stall. They become quite unconscious of what they are doing for a few seconds, and yet many may still insist they want to learn to fly. If not spotted early in their training they become a menace to themselves and their instructors.

These are the students who really do freeze on the controls, and with the stick pushed and held firmly forward, the instructor has to be quick and strong to prevent an accident. With very gradual familiarisation training spread over many months some have been completely cured.

Negative *g*

It is very unusual to experience negative *g* in gliders except by flying upside-down or by pitching violently nose down at high speeds. Even zero *g* where the dust leaves the cockpit floor is unusual except when making a violent nose down recovery from a very steep attitude on a fast winch launch. Zero *g* is particularly unpleasant for almost every pilot and very alarming if it occurs for the first time when a pilot is solo. For this reason it should be demonstrated at least once towards the end of pre-solo training.

Prolonged and pronounced low *g* is a sure sign that the aircraft is not stalled. At very low speeds and when the aircraft is sinking, the accelerations are very small and do not continue for more than a few seconds. It is also important to realise that low *g* in any steep diving attitude indicates the aircraft is unstalled and can normally be levelled out of the dive by easing back.

There are other situations involving reduced *g* which can be incapacitating. Reports about light aircraft landing accidents often say the aircraft bounced or ballooned, pitched nose down and then flew into the runway in a series of worsening crashes, smashing the nose gear and engine. Certainly a low *g* sensitive person is liable to become completely incapable of further thought once the aircraft pitches nose down the first time and invariably show the basic response of pushing forward on the stick and keeping it there.

The same kind of accident used to be common with gliders and the pilots could never remember anything after the first bounce. They have become less common since fully held-off landings have been taught. With these it is likely a student will experience ballooning a number of times in training and will have learned how to avoid automatically moving forward on the stick. Those scared of ballooning will nearly always fly

the aircraft on to the ground instead of making properly held off landings.

Testing the student pilot

Gliding instructors must be aware of the problems and watch for them in their students. We should test every student before solo to make quite sure they are not seriously affected by reduced *g*. This doesn't mean always pitching violently to get weightlessness or negative *g* but introducing small amounts of reduced *g*.

The student can be asked to pitch nose down gently from level flight and from diving and climbing attitudes. Those who are still sensitive are incapable of doing this exercise and their reactions are obvious. They should have more training until there are no bad reactions.

Then it is sensible to give them some experience in recovering from unusual attitudes to see if they remain unaffected. This must be done at a safe height, first explaining what will happen. A slow, steep, slipping turn; a very nose high wing down position so that a full stall is unavoidable; a steep diving position and an incipient spin after a low *g* position are possible situations to try. They also have a confidence raising effect because the student finds he can make safe recoveries from attitudes far steeper than he is likely to get into by error.

Perhaps this kind of test should be used for every pilot regardless of the aircraft they are learning on!

Summary

If you dislike stalling and the sensations of low *g* persist with your training. Make sure your CFI understands your problem and get him to explain it.

Instructors should:

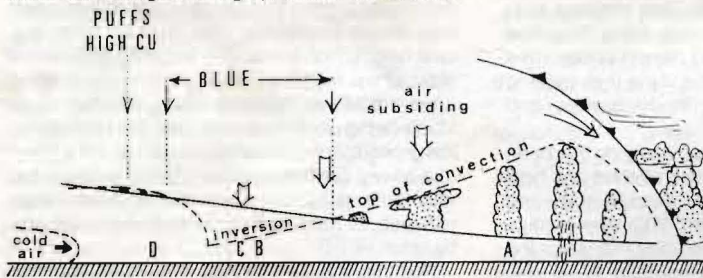
1. Explain to beginners the sensations involved in flying.
2. Avoid any pronounced pitching manoeuvres and particularly stalling on early flights while the student is still sensitive to these movements.
3. Emphasise visual clues on early flights. Introduce the ASI later.
4. Explain low *g* on the same flight as stalling is introduced, emphasising that **the low *g* sensation is not a symptom of a stall**.
5. Avoid the terms "stick forward" etc for recoveries from cable breaks and stalls. Teach them to lower the nose to a certain attitude instead.
6. Practise a few recoveries from unusual positions with every student.
7. If you have a student who is upset badly by low *g* or stalling, make sure he understands his problem and that your other instructors know about it too.

Chris Rollings, national coach, comments: All of the above is very good. However, anyone reading it casually might be misled into thinking that if he experiences reduced *g* then he cannot be stalled, which is of course not the case. The hump-back-bridge sensation is familiar to all of us in a steep stall. What Derek is saying is that the reduced *g* sensation does not necessarily mean we are stalled. It can and does frequently have other causes. Anyone who doubts this should go and compare stalls and unstalled reduced *g* situations in a glider with an accelerometer.

In some years, especially when spring and early summer have been very dry, there are many days when the skies remain blue. The lack of cumulus clouds often disheartens the early cross-country pilot. Most people like some cloud to show where there may be lift. What follows is an explanation of why some days remain cloudless and where one may find lift out in the blue.

The evolution of blue days

Fig 1 shows a cross section of weather following the passage of a cold front (shown moving off to the right). There is often a rather narrow clear zone just behind the cold front caused by air subsiding and drying out the cloud. Then the deep cold air moves in and cumuli build up to give showers. If a region of high pressure follows, the



air aloft starts subsiding. As it sinks it warms and forms an inversion which limits the top of convection. At the same time the arrival of drier air raises the condensation level so that the base of cumulus becomes higher.

There may be a stage, before the air has dried out sufficiently, when the cumulus spreads out under the inversion to form an almost total cover of cloud. If the high pressure last long enough the subsidence inversion descends below the condensation level. Then thermals are prevented from rising high enough to form cloud and blue days arrive.

If the subsidence continues strongly the inversion may sink so low that the convective layer becomes too shallow for proper thermals to develop. I recall a hot blue day at one of the first Nympsfield competitions when John Williamson was the only pilot to set off. He headed out across Gloucester and then went to Cheltenham and finally landed on Cheltenham racecourse, some 28km away. In all that distance he found no lift, even over the towns.

When the inversion sinks very low the sunshine has only a shallow layer to warm up. One day of strong sunshine almost destroys the inversion so that next day very little extra heat is needed to break it. This is shown in the diagram by the top of the convective layer shooting up several thousand feet.

At the extreme left hand of the diagram there is a little intrusion of cold air. An example of this occurred on August 4, 1990 when north-westerly winds brought undercutting cold air. This ruined the day for the Open Class competitors; none got through beneath the newly formed very low inversion.

Changes in the temperatures aloft

Fig 2 shows how the temperature profiles change as a high moves in. The letters along the

BLUE DAYS IN SUMMER

For many seasons we have tried to get more information on blue thermal days and how they may be exploited. Now Tom Bradbury tackles the subject to help you capitalise on these illusive conditions

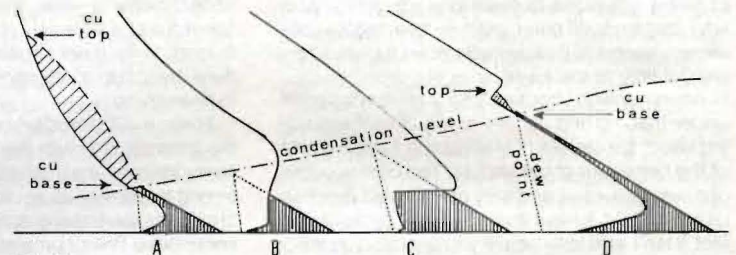


Fig 2

base of Fig 1 are repeated in Fig 2 to show the approximate positions of the soundings.

"A" shows the traditional cumulus sounding at dawn. The vertical hatching shows how the heating warms up the lower air. The straight line is a dry adiabat (the rate at which a blue thermal cools as it rises). The diagonal hatching represents the energy supplied by the condensation within a cumulus cloud whose base and top are marked. The almost vertical dotted line is the dew point. Where dew point meets dry adiabat is the condensation level.

"B" shows the first blue day when the subsidence has warmed up the air so much that thermals no longer rise to the condensation level.

"C" shows a variant where the inversion is particularly strong. This tends to inhibit thermals severely, especially when the lid is only about 2000ft. Notice that the shaded area representing the heating almost reaches the top of this inversion by late afternoon. Next day far less heating is needed to break the inversion and let thermals rise much higher.

The sudden breakthrough

"D" shows how the lowest layer is easily warmed out during the following morning so that by about midday the inversion has been broken and thermals can shoot up. Sometimes thermals go so high that puffs of cu appear. (These are apt to disappear again soon.) Such puffs are most deceptive to a ground observer. Even experienced pilots can be fooled into thinking they are only scraps of low cumulus. One day last May several Nympsfield cross-country pilots were sitting about watching these feeble-looking puffs and saying it was too early to launch. Then someone spotted a K-13 from Aston Down fly overhead; it was a mere speck in the sky and must have been at great height. After the subsequent scramble for a launch the first off repor-

ted the cloudbase was 6400ft above the site. A similar puff appeared over Lasham in August while the competition director was debating when to launch his huge fleet of sailplanes. At that moment Alfa Lima called "Six knots with cloudbase 8000ft near Hungerford".

The feature of such days is that once the temperatures have passed the critical value the conditions change from totally unsoarable to absolutely booming in a very short time. This is in contrast to most days when lift slowly improves and only becomes good two or three hours after thermals have started.

Finding lift in the blue

It used to be conventional wisdom that you were bound to find a thermal if you flew straight on track, just as you were sure to bump into a tree walking blind through a wood. Fig 3A illustrates this theory; the "trees" are tidily set out as in an orchard, but clearly there is a good chance of bumping into one or two as you fly along the dotted line. Unfortunately the faith and blind hope principle can let you down on many days.

Streeting

Fig 3B shows how thermals may be distributed when there is a moderate breeze and the lift has formed into invisible streets. Now if you fly in the same direction as "A" there will either be an almost constant line of thermals, some bigger than others, or a permanent line of sink. If the sink goes on for a long time the track is probably almost parallel to one of the sink lines. Pundits are quick to recognise this but lesser mortals may press on through the sink believing that they must be nearing a good thermal. One pilot told me he left a thermal at 6000ft and found sink all the way down till he landed.

It is worth noting that true thermal streets do not originate from specific hot spots like towns;

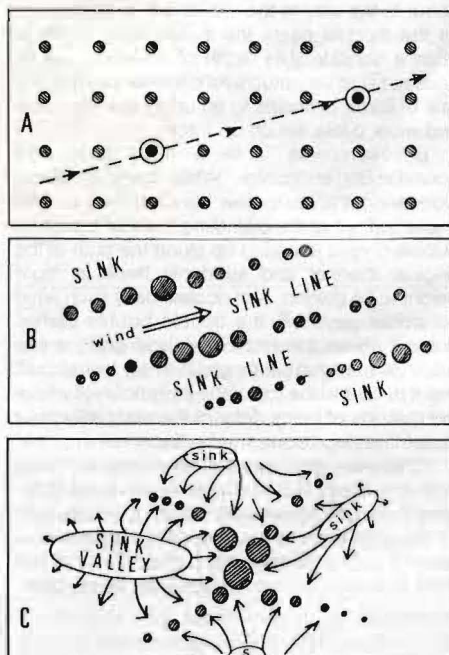


Fig 3

they are a feature of the atmosphere that can equally well develop over the oceans. Towns do send off a train of thermals which move away downwind. These behave like a short lived street but the effect seldom extends very far.

Thermal clumps

Fig 3C shows another type of distribution which can develop on an almost calm day after thermals have been going for a couple of hours or more. This is the "thermal clump", an irregular area where many thermals seem to have gathered together. When you reach a thermal clump only a proportion of the thermals will be active at any one time. Approaching it one finds the air getting more lively with the vario giving encouraging squeaks well before one reaches the strong thermals. Leaving such a clump one keeps on running through quite acceptable thermals. Bouncing through these one can maintain height for some distance before the air goes dead.

Sink valleys

Thermal clumps seem to occur not far from valleys of sink. Unlike the better known streets of sink these sink valleys are not aligned along any particular direction. They seem to be part of a larger circulation with outflows from areas of sink converging to boost thermals where they meet. On the ground one experiences light variable winds which unexpectedly start to blow briskly from the sink valley towards the unseen clump of thermals. Bonfires and chimney smoke occasionally reveal this low level convergence but in hot summers bonfires are rare and all the factory boilers seem to be out. It is extremely distressing to fly through a sink valley on a blue day. There is often nothing to show where it is or how it is aligned. Sink valleys seem to extend for several miles. Variometers indicate long periods of 6 to

8kt down and flight directors scream "**Faster... Faster...!**" as you approach VNE.

Variations of surface

Thermals seem to be more common where there is a strong contrast in the surface so that one area quickly becomes hot while an adjacent region is slow to warm up. For example during the heat of the day wide areas of ripe corn with cooler woods nearby seem to be a fruitful source of thermals. Although woods are slower to warm up they do retain their warmth at the end of the day. Then, towards evening, one may find weak lift coming up from wooded areas. This lift may in part be due to the extra moisture. Trees transpire a surprising amount of water vapour during a sunny day and the addition of water vapour slightly reduces the density of air, making thermals possible when temperatures are a little lower.

Lift over towns and airfields

Towns and large concrete covered airfields are the most obvious places to look for lift. They become hotter than the surrounding countryside and so provide a steady source of thermals. However, they are not 100% reliable. One might suppose that the larger the town the better the chance of finding a thermal; oddly enough this doesn't seem to be true. Some small to middling towns appear to work better than the really big ones. One can waste a long time searching over a big town such as Swindon (one of the usual topping up places for cross-countries from many clubs). Although Swindon rarely fails completely the best thermals are sometimes right at the edge, or in one distant corner. Gloucester is another town whose lack of thermals has worried me. In contrast Cheltenham always seems helpful. You can make your own list.

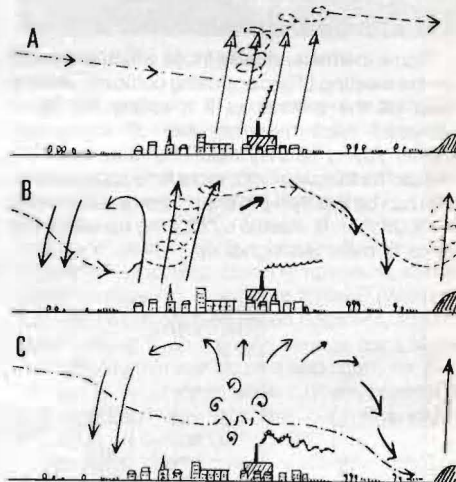


Fig 4

Fig 4A shows the text book example of a nice thermal right over the middle of the town. Fig 4B shows a more common variation. One first flies through heavy sink, then the expected thermal is encountered and all seems well. After heading off on track a better thermal comes up from the high ground.

Fig 4C is the nightmare situation. The usual sink starts as you approach the town but, alas, you are just too late. The only thermal left a couple

of minutes earlier and the next one is not due for ten minutes. All that is left is the wake turbulence. Spending too long in this leaves insufficient height to reach the hills beyond which still have good lift.

Power-stations

Large power generating stations with their collection of cooling towers, mountains of black coal and surrounding buildings are always worth a try. On sunny weekends one can almost always meet one or more sailplanes topping up over Didcot; the largest number I know of was eleven at one time, but I suspect this was a lead and follow school. However, not even Didcot is infallible; in heat waves it occasionally seems to take a mid-afternoon siesta.

I will lift up mine eyes unto the hills from whence cometh my help

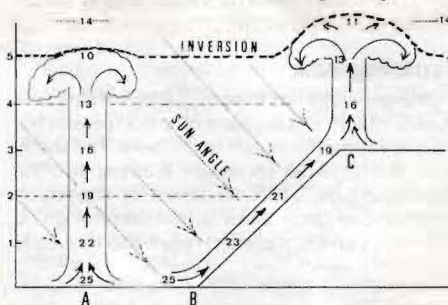


Fig 5

The author of Psalm 121 spoke these words centuries ago, but they certainly seem true for soaring pilots today. Hills are usually good thermal sources for two reasons. First they are usually drier than the valleys and so less of the sun's heat is wasted evaporating moisture; secondly those parts which slope towards the sun get more intense heating. In middle and high latitudes a sunny slope may get at least 30% more energy from the sun than level ground. Fig 5 shows some of the advantages of a hill. The left-hand thermal rises from the plains, cooling at $3^{\circ}\text{C}/1000\text{ft}$ and coming to a halt at 5000ft where it meets an inversion. The air on the right rises up a sunny slope and gathers extra heat from the hill side as it goes. It doesn't start cooling at the 3° rate till it breaks away at the hill top. Over a modest English hill this only adds a little extra power to the thermal but among the Welsh or Scottish mountains it can be a significant extra boost. Among high mountains such as the Alps thermals are almost entirely controlled by the alignment of slopes and ridges.

A thermal off a flat plain takes a limited amount of heat up and then activity ceases until that patch of ground warms up again. Over a sunny slope the thermal draws in air from several sides to produce much longer lasting lift. Even when there is a really solid inversion thermals over the hills tend to push up through to give extra height. If the inversion is weak the hills may send thermals thousands of feet higher than over the plains. In really bad years, when excessive rain has turned the low ground into a chain of water-meadows, thermals are largely confined to the hills; soggy valleys are just traps for small span gliders.

Even quite small and isolated hills which barely reach 800ft above the plain seem to attract warm air from the surroundings and channel it upwards as frequent surges of lift. Fig 6 shows an attempt at a 3D sketch of a pair of hills with thermals coming off the sunny sides and sink going down over the shaded slopes.

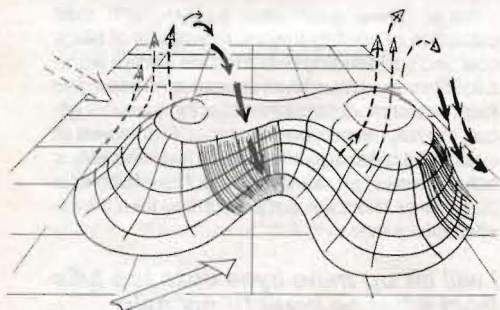


Fig 6

Avoiding sink

One generally has to accept areas of sink as a normal hazard like bunkers on a golf course but there are some obvious areas to avoid. The shady side of a large hill, especially if this is also the downwind side, is likely to have sink. The region downwind of large lakes is (not surprisingly) a poor area for thermals and may become a zone

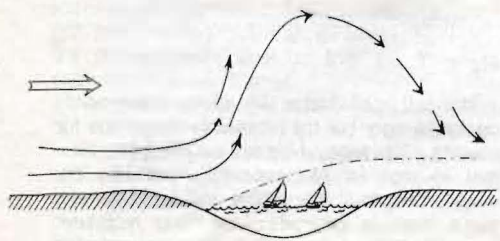


Fig 7

of steady sink. Fig 7 shows the wind blowing across a lake with either no thermals or a region of sink for some distance to leeward. Rather surprisingly one may find thermals breaking away very close to the upwind side of a large lake. This is an example of a thermal developing where there is a big contrast of surfaces. Both effects may occur near the Cotswold Water Park south of Cirencester.

Wave effects

There is often a vertical wind shear at and above the inversion. If the winds increase with height above the inversion there may be waves which interfere with thermals below. On one competition day an easterly wind was blowing across the Cotswolds. One non-competing pilot reported wave to about 6000ft over the Cotswolds. Competitors flying near the western slopes of the Cotswolds found that thermals were absent or unworkable just to lee of the Cotswold edge but a few miles westward over the Severn valley was a line of regular thermals more or less parallel to the hills. Similar effects can occur to lee of any line of hills. This effect can be baffling if one expects lines of sink to be due to streeting along the wind direction. Waves tend to produce lines of thermals and sink across the wind.

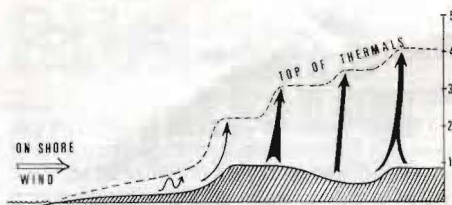


Fig 8

Windward coasts

It is well known that when there is a steady wind off a cool sea the air has to travel many miles across the hot land before the sun's heat sets off any thermals. Fig 8 illustrates how the top of thermals rises as the air moves inland. The example is taken from the southern Cotswolds when there is a WSW wind coming in off the Bristol Channel. It is also true of the south coast of England. For example southerly winds at Lasham can severely limit thermal tops but by Newbury conditions become much better.

The diagram shows no usable thermals until the air reaches the western edge of the Cotswolds. There the slopes set off quite strong but sadly short-lived thermals which die out, sometimes before reaching 1500ft asl. A few miles further inland the thermals may extend another thousand feet higher. With such winds there is an enormous difference between Nympsfield and Aston Down. At Nympsfield it may be hard to stay up directly over the airfield but going downwind takes one into far better thermals within 10km. The barograph trace of a pilot returning to Nympsfield from the east looked rather like a flight of stairs. The top of each successive climb was stepped down several hundred feet and the last was barely high enough for the final glide.

Lift in blue thermals

Some thermals, usually those which are set off by the meeting of two opposing outflows, seem to leap off the ground as if a spring had been released. Most thermals start off slowly and gather speed as they rise. This is an excellent reason for keeping high; more time and perspiration can be lost trying to improve on a 1/2kt thermal at 500ft than is wasted by topping up with a few turns in mere 3kt higher up.

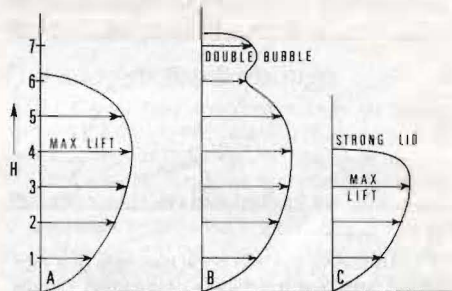


Fig 9

On average the higher the thermal goes the stronger is the lift. Fig 9 illustrates the distribution of lift in a blue thermal. (The omission of actual figures for lift is deliberate.) "A" shows a thermal rising into a stable layer with no marked inversion aloft. The lift builds up to a peak which may be

about 2/3 the way to the top, and then decreases as the thermal nears the stable layer. There is often a considerable depth of air where the lift does not alter very much. As one nears the top the rate of climb dwindles to an unacceptable value and most pilots set off on track.

"B" represents what a timid pilot may occasionally encounter. While hanging about wondering if an extra few hundred feet may be squeezed out of the dwindling thermal a second bubble comes shooting up along the path of the original thermal and suddenly there is more height to be gained. Just occasionally such timid behaviour pays off; the double bubble carries one up above the haze layer and gives a few miles of totally smooth glide. Then the aircraft sinks back into the top of the thermic layer where the remains of many defunct thermals still churn about creating useless turbulence.

"C" shows what happens when there is a really solid inversion. The lift suddenly shuts off dropping from 4kt to nothing within a single turn. There is no point in hanging about hoping for a second bubble to take one higher. Second and third bubbles come to a halt at the same level.

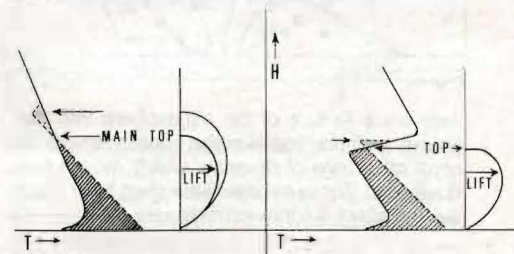


Fig 10

Fig 10 shows the kind of temperature profiles which produce the difference. In the left-hand diagram there is just a slightly stable layer aloft and the thermal slows down gradually; some stop where the dry adiabat meets the temperature profile while others, especially the "double bubble" type, can push some way into the stable layer before dying out. A rough indication of the lift is shown alongside. The right hand diagram shows a very strong inversion with the temperature rising several degrees over 100ft. Thermals may bump into such an inversion with lots of momentum but they come to a halt very quickly. All thermals, weak or strong, tend to stop at much the same level.

Working the double bubble thermals

Fig 11 shows what one may find when there is a slight shear of wind. The thermal starting from "A" rises almost vertically (in spite of the wind) until it loses lift. Then it begins to tilt over with the wind. One does not always notice this since it is not necessary to shift circles to keep in the lift. However, at level "B" the lift is clearly fading away and even the hesitant pilot will be impelled to abandon it at "C". Pilots who hang on beyond "C" are just wasting time.

The thermal starting at "D" behaves like its predecessor. At "E" it weakens and starts to tilt and by "F" practically all pilots would have left. However, the ultra-timid widens the circles more in hope than expectation and runs into the second bubble (G-H). This has come up along

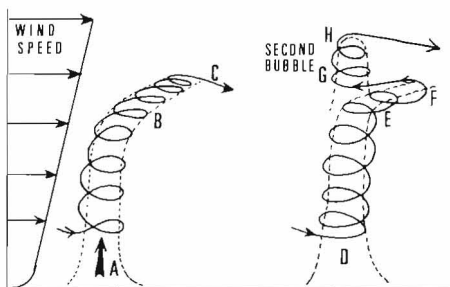


Fig 11

the path of the original but is still strong enough to resist wind tilt. Very cautious pilots usually make snail like progress, or so I always thought. However, there seem to be some pundits with the ability to feel that the old thermal is not quite done for. They are much quicker to spot the effect of wind shear, know where to find the next bubble and use the extra height to whizz round triangles without losing any time.

Reading the haze

Although one sometimes finds exceptional visibility the majority of blue days are also hazy. Flying from hazy into very clear visibility may also mean flying from strong thermals into weak ones. A little haze can be useful. If you use polaroid or similar type of spectacles the start of blue thermals may be seen from the ground. The sky becomes faintly mottled where thermals have concentrated pollution under the inversion.

Seen from the air the tops of thermals often produce haze caps; these are valuable guides to lift, especially when the thermals are part of a clump. If the lift under one cap has ended there is still a good chance of finding a new thermal nearby. These little domes of haze show up best when flying into sun. Particularly strong thermals such as the "double bubble" can put a haze cap several hundred feet above the normal haze top; from along side you can see blue sky between this high cap and the main haze layer.

Very strong inversions are often marked by a sharply defined haze top. Stable layers without marked inversions also have haze tops but the boundary between clear air aloft and haze below is not so well defined. If you use a powered aircraft to make an early morning temperature sounding you may find the haze thins out gradually and appears to consist of several layers. Occasionally yesterday's hot hazy air is undercut by today's much cooler air. This not only produces a new and much lower inversion but also raises the old haze layer well above the ground. Then the low level visibility becomes good but the blue sky still looks hazy. The soaring is apt to be poor because there is not enough room for decent thermals beneath the new inversion.

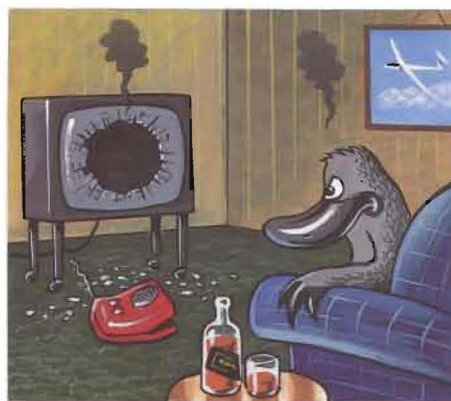
AUSTRALIAN NATIONALS

The Australian Nationals at Sportavia Soaring Centre, Tocumwal, from January 15 to 26 had seven contest days resulting in an Open Class win for John Buchanan with Ingo Renner the Standard Class Champion and David Jansen the 15 Metre Class winner. Tanya Tracy Tabert won the Open Class (League 2) and Arnie Hartley the 15 Metre Class (League 2).

TAIL FEATHERS

Pathetic is the word

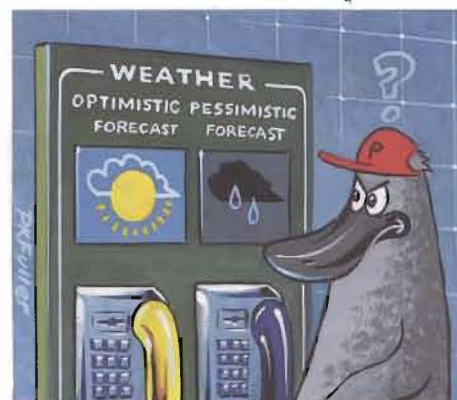
I've already poured scorn on those outrageously expensive telephone forecasts which spin out the duration, and therefore the cost, of a call by giving your pointless advice about what you might do with a sunny/wet/foggy/windy day, as if you hadn't already got a pretty good idea what you want to do, which is why you phoned in the first place. This time my spleen generously expands to cover radio and TV forecasters too.



Radio and TV forecasters.

I'd like to get one of these fatuous boneheads and crack his skull hard against a wall and say "Will you please (it's only etiquette to say please while banging someone's head against a hard surface) stop saying stupid things like 'The temperature will struggle to reach 15° Celsius this afternoon' Just - bang - stop - thump - it - please!" Poor ickle diddums tempwature, stwuggling manfully - or is weather female? (Watch it. Ed) - to weach dat nice fifteen degwees, and not quite making it; oh it weally bwings tears to the eyes Twying to make life nice and comfy for all of us, and so fwustwated when it doesn't succeed; but you can't say that the poor fing didn't struggle on our behalf.

Daft twits. The tempwature - sorry, temperature - doesn't give a twopenny damn whether we boil or freeze. Besides, there are people who are very keen to see the temperature drop below zero: Ice skaters on the Norfolk Broads; farmers who want a cold snap to kill off harmful bugs; punters who have a bet on a white Christmas; homesick Eskimos and expatriate Russians, lots of people. Ah well, we could have special telephone forecasts for them: so if the thermometer is expected to fluctuate between zero and twelve Celsius in the next 24 hours we can tell one lot of customers that the temperature is trying hard to



Number to dial.

get up to twelve degrees and another lot that it's doing its level best to produce icicles. You'd simply have to know which number to dial, according to your bias.

However, it would be over-pessimistic to conclude that these forecasters are incorrigible. I'm glad to say that after a great deal of well-merited abuse during 1990 most of the TV forecasters seemed to have dropped their traditional definition of "nice weather", namely a fortnight of totally blue, cloudless sky without a breath of wind. I suspect it was the wrath of country folk, desperate for a cold front - or a warm front, or any kind of change - that made the forecasters realise that the population does not spend its whole life, and does not wish to spend its life, lying naked on a beach collecting skin cancer.

The idea that the weather has moods, or that its behaviour reflects human concerns, is known as the *pathetic fallacy*. It's all right for poets - Shakespeare plays are full of it - but professional Met men should know better. Indeed they *do* know better. It's being on the box that makes some of them feel they have to be coloured by doing violence to commonsense and the English language. You never hear Tom Bradbury giving us that kind of stuff at the Nationals. But then a gliding Met man gets to realise very early on that if the weather is interested in human desires, and if



Dunces.

it is trying to do anything at all, then all its endeavours are directed at proving that the task setter and his advisers are dunces. They are the ones that weally are stwuggling.

MY KIND OF WALES

Vic Carr knows Wales as well as any glider pilot and has exploited its wave on countless occasions. In this article he points out some of its possibilities

Gliding at its best is an exhilarating sport. One way is to engage in competition. Another way is to explore difficult territory using skill and knowledge to expose yourself to tasks others might consider foolish but, with pre-planning and step by step approach, can be exciting and safe. This was an alternative that chose me when I moved to Wrexham in 1972, buying a new Kestrel 19 in partnership in 1974.

My Scottish experience in the late 1960s, using a Dart 17, gave me the grounding. It was a year or two, however, before I was able, flying from Shropshire, to venture west of Alpha 25 at all, let alone with confidence.

The low lying areas downwind create a minor föhn effect

The ingredients which make Welsh wave are both geographical and meteorological, giving a relatively unique situation for much of the year. Wales is fairly low in latitude and to the south-west is unprotected from the Atlantic and the Gulf Stream. The result is a warm and wet airmass leading to much moisture over the mountains themselves. But with the low plain of Shropshire, and in some circumstances the north coast of Wales, the low lying areas downwind create a minor föhn effect.

The second characteristic most noticeable all over the area is that although broad waves several miles wide occur, there are many more minor wave systems which are often no wider than 800 yards, even though the wave length may vary from two or three miles up to ten or 12 miles, with the best around six to eight miles. This narrow front wave is not easily dealt with unless you expect it and adopt the Phillip Wills' knitting technique, ie work strictly up and downwind, circling if necessary to maintain precisely the same position in the system.

With the minor föhn effect on the Shropshire plain reducing cloud amounts such that it is possible to get above the main cloud sheet, an airfield like Sleaf, 275ft asl and 30km from the

line of high ground, has proved to be an excellent place to start from and even more to the point, to finish at.

To yo-yo without going further than 30km from the airfield, it is often possible to climb above 20 000ft. However, the yo-yo soon bores. With all those mountains to the west, the Conway valley and the Ruthin-Denbigh valley are particularly attractive and powerful. With the airway based at 6500ft, and hill soaring available by Ruthin, the most effective way to progress is the low route via Chirk and Llangollen into the Clwyd valley. The Berwyns, south of Llangollen, whilst going up to 280ft in a rugged fashion, seem most times to produce a lot of wave muddle.

The airway is a limiting factor, intimidating for those unfamiliar with the nature and roughness of the terrain below. Once a few miles west of a line from Wrexham to Welshpool, the fields available for landing a decent glider are few and far between. There is a real need to know the ground from the ground. I am serious when I say that until you get to the coast where there is the odd airfield and the odd estuary at low tide, there is almost nowhere to have even a respectable crash. The problems are sharply undulating ground, with those half a dozen planned fields often full of sheep.

That's the ground. You have no doubt heard that few people going to Wales actually see the peak of Snowdon. The bad news is that few other peaks are visible either with precious few identifiable places in between. Nevertheless it is possible to enjoy high wave soaring in the north of the principality if you can position yourself by the views that are open. These are often the Lancashire coast, the Mersey and Dee estuaries, Anglesey, the coast of Ireland and the southern part of Wales to the south-west.

Since I started flying wave west of the airway I have had to land there only once. That was last year in the Twin Astir 258.

The Shropshire plain, which is downwind of the activity most of the time, produces the most benign environment.

In the beginning visual navigation into Wales was the sole method. Later, with a VDF facility at Sleaf, recovery to the airfield by the more experienced pilots was routine. Now Deccas, VORs and Area Navs make everything possible. Of course Sleaf is unique in that the ground is



Peter Foster photographed Vic and Frank Humphrie Horseshoe pass is in the immediate foreground with stretching all the way to Rhyl and the north coast of

low and flat for 40km around, and much further in a due easterly direction. So wave soaring west of the airway with close to 100% cloud cover is exciting, but unlikely to be terminal. The west coast of Wales is at most only 100km to the west.

Peter Foster, describing how he took the photograph from a Cessna 150 flown by Alan Fowles, said there was a high pressure system building up to the west. "After setting course for Ellesmere, Alan handed it to me and when we reached Bangor-on-Dee we saw a wave slot overhead and noticed the climb indicator was showing ten up.

"I immediately eased the column back and the Cessna shot up through the hole and we levelled out over Llangollen under the airway.

"We saw Vic in the distance and warned him by radio of our position. As they were hanging in wave I was able to take some photographs, this one as we drew alongside."

AUSTRIA

Ernst Specht writes about his visit with Frank Stevens to Trieben in Austria last May where they flew their Vega

The field lies in a valley flanked on both sides by mountains of over 2000m. there is an 800m runway with grass on both sides. Navigation is easy and there are a number of outlanding fields nearby.

I took the Vega and had a good scout around - 3hrs 15min. The mountain tops glistened with snow. Thermals were strong, 5-8kt, and cloud-base rose to 7000ft.

During the next flight I explored a little more. Conditions were superb with strong thermals and a touch of wave which took me to 12000ft asl. I sat bathed in brilliant sunshine and savoured the view.

The next day, May 5, began with clouds over the home mountain. The club pilots appeared

Ernst took the photograph below of the mountains with the valley behind him.

early and 750 and 500km flights were declared. I decided I would follow them and see what the day would bring.

I was in the air by 11am. The lift was a bit scratchy and it took ages to get to 6000ft over the field, but once there things improved. I followed two DG-300s to Turnau. More than once I considered turning back when they crept over mountain passes with very little air between them and the hard rock surface, but they knew the area well.

From there I went on to Niederoblarn, was at 8000ft at Grimming, 8900 to Stoderzinken and was then above 8000ft all the way to Zell am See. Visibility was good again and navigation no problem. In six hours I covered 538km. This was the highlight of the trip but days which didn't seem promising developed to give good soaring for hours.

On the last day I was advised to land because of an approaching thunderstorm and arrived at the field at 4000ft - and then the fun started. I hit lift and I opened the brakes, which are powerful on the Vega, but I still had 6kt. Out came the undercarriage, But I was still rising. I was 10km from the field before there was any sink. This flight was a reminder that mountains must be treated with respect. They are all beautiful but also dangerous at times.

(Aerotows to 500m were £12 and to 1000m, £19. There is a 50p landing fee for the glider and for £2.50 a day you can leave it rigged in the hangar. They flew a total of 56hrs in 12 days, with time off for sightseeing.)

FLYING IN CZECHOSLOVAKIA

Glider and motor glider pilots are invited to the Czech Aero Club's courses at Vrchlabi airfield, site of many of their Nationals in the Giant Mountains 130km NE of Prague. For more information of the courses contact the company who are running them in co-operation with the Aero Club - Ing. J. S. D., Strážné 129, 543 52 Vrchlabi 5, Czechoslovakia. Tel 0438 34103, fax 0438 34104.

in the Sleep Twin Astir over Llangollen in wave. The the Clwyd valley containing both Ruthin and Denbigh Wales.

Other traffic there is in Wales. During the week you can often count up to six Hawks skating about above the main cloud cover. At the weekend, except on Valley air days, the only traffic is likely to be gliders from Sleep.

Well, that's my sort of Wales. How grateful I am to have had the opportunity to explore it from Llandudno to Brecon in these last 16 years. Of course now that the Rodney Witter site has opened at Denbigh (see the December issue, p339), it will give many the opportunity to enjoy what I have enjoyed, starting right close to the centre of the action and away from that Alpha 25. I wish all who sail from there every good fortune. The UK height record will be taken from there one day.

What about those who went before? Bill Crease and Jacques Cochme flew in wave in North Wales back in 1947, from a bungy launch (see October issue of *Picture Post*). Ric Prestwich began exploring in the late sixties, but he gave up until 1988. Now he has started again with us at Sleep. Perhaps the chap who really saw the potential was Black Jack Harrison, who wrote in S&G about wave in Wales in the 1960s and said that opportunities would be enormous. He was right!





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To my mind the best place in Europe, or perhaps even the world, for a gliding holiday is Fuentemilanos near Segovia! Central Spain consists of two elevated wheat plains separated by the Guadarrama and Gredos mountain ranges, which run $60^\circ/250^\circ$. The airfield (3284ft amsl) is near the foot of the 90km long Guadarrama ridge, and tasks exceeding 500km are usually of the folded quadrilateral (yo-yo) type to take full advantage of the stronger mountain thermals. In fact, before 1990 all the 1000km flights in Spain were yo-yos.

The few large (max 880km) FAI triangles that had been completed involved flying over the northern plain, but CFI, Ingo Renner, considered that a 1000km triangle was possible using the southern plain. This would involve flying around the Madrid TMA, which is of vast dimension. As the optimum direction is clockwise, the vertical rock wall of the Gredos, some 6000ft high, has to be surmounted after crossing the 50km wide citrus-planted plain between the Toledo and Gredos mountains.

After arriving on Sunday, July 15, I learnt that Ingo had attempted a 1000km triangle around the Madrid TMA with a pupil in an ASH-25. However, a thunderstorm near Avila blocked their route and they landed out after 960km. Clearly a 1000km triangle was feasible for Ingo, even if not for the rest of us.

On the Tuesday Ingo recommended the Open Class to attempt a 1000km yo-yo, and I flew the 1003km quadrilateral, Rio Frio dam, Ateca church, El Barco castle, Monteagudo dam at 103km/h. Then on the Wednesday a mistakenly claimed 1000km flight by an LS-6 pilot caused the entire 15m fleet to be gripped by 1000km fever.

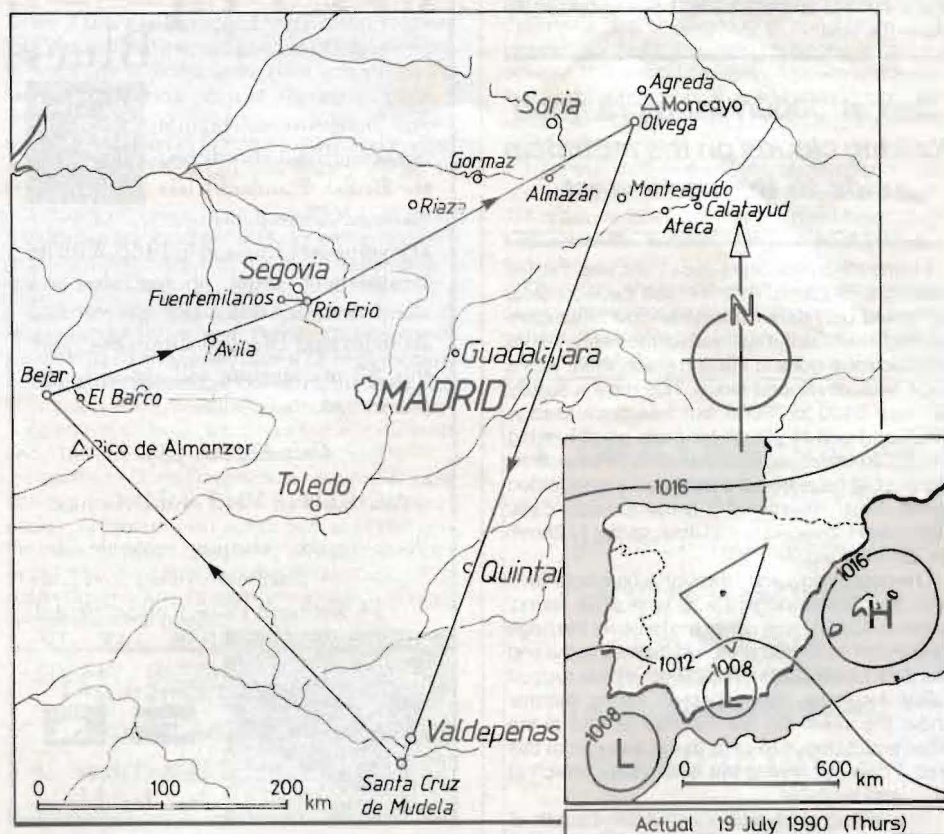
1000km fever caused some late drawn pilots to launch rather earlier than recommended

On the Thursday Ingo suggested another 1000km yo-yo and an earliest take-off time of 1100hrs. After a ballot for priority, each pilot selects a take-off slot from those left available. However, 1000km fever caused some late drawn pilots to launch rather earlier than recommended. Having been drawn last, I was forced to take pole position at 1040hrs. As there was little point in flying yet another yo-yo, I asked Ingo for advice. He suggested trying a 1005km FAI triangle using his TPs, Olvega, Santa Cruz de Mudela, Bejar.

After a remote start at 1114hrs from Rio Frio dam, some 15km from Fuentemilanos, I set off at 8800ft north-east along the main Guadarrama ridge. A cloud street extended north away from the mountains and this took me to the edge of the dark green triangular Almazan forest. From there until Soria, where there were a few small clouds, it was blue. The clouds worked, but only gave 4kt climbs, so I worked up to 8500ft and headed east through the blue to Olvega. The town is just behind a row of small hills, which hold back the stable air leaking from the Ebro valley. The fields form a bright patchwork of long narrow strips, each with a different hue of brown or yellow.

A VOYAGE AROUND MADRID

Julian is making a habit of flying 1000kms. He described his first in Germany in the December issue, p298, and now writes about his successes in Spain with his Nimbus 3



As Julian said, would anyone expect to fly 1000km with a weather chart like that. Graphics by Steve Longland.

Olvega station was rounded at 1324, giving 94km/h for the first leg.

I then skirted the eastern edge of a large blue hole to the south and west. South of the river Jalón, over a ravine scarred forest region, there were shallow cumulus giving 6 to 7kts to 10000ft. The clouds stopped just before two huge lakes with bright turquoise coloured water. Ahead over the southern plain, as far as the eye could see, the sky was completely blue. Flying towards a line of ridges extending NS, I noticed a few wispy cumulus clouds above them. However, I was unable to get much above 7500ft.

Ahead it again looked blue, but after a while a small cloud appeared on the horizon. It wasn't really blue at all, it was only possible to see the next cloud from the last. One of the landmarks is a 10km long aqueduct aligned EW, which is not on the map. The southern plain is flatter than the northern and covered by huge wheat fields. As I flew past Quintanar the clouds increased in size. Two good climbs, 6000ft at 6kt and 4000ft at 6½kt, kept up the speed on this long leg. Navigation was no problem. A few well spaced towns are connected by a simple network of roads. As there was a cloud near each town, I just flew along the road from one to the next. Santa Cruz church was turned at 1645hrs, giving 111km/h for the second leg.

The ground was a buff patchwork of small fields, each evenly dotted with about half a dozen

trees. Following the dinner-plate cumulus took me south of Ciudad Real. Ahead over the Toledo mountains, an escarpmented area liberally sprinkled with trees, there were three parallel cloud streets aligned exactly on course. They were so closely spaced they almost touched and the nearest enabled good progress on this into wind leg. Cloudbase was now 11 500ft and the thermals were yielding 6 to 7kt.

As it was blue ahead, I climbed to cloudbase at the end of the street. Over the dark green plain between the Toledo and Gredos mountains it was completely stable. Nearing Almanzor (8500ft amsl), I turned west about 10km short, and when it looked possible to cross I headed for the ridge. Just before a pass was the only cloud on the southern side of the whole Gredos range. After pulling up under it, I pressed on and crossed with about 100ft to spare. It hadn't been necessary to climb the wall.

Quit at 9000ft for more good looking clouds on the mountain side to the north-west

On the other side of the pass there was a valley leading to El Barco. At first I tried the west side, but could only reach decaying cloud that gave nothing at all. On the east side of the valley, where I should have gone in the first place, there was a large, well developed cloud. This gave a steady 5kt from 5400 to 7800ft, but then decreased to 3½kt, so I quit at 9000ft for more good looking clouds on the mountain to the north-west. Built along a cliff edge near the bottom of a steep sided valley, Bejar resembled a linear fortress. Bejar station was rounded at 1913hrs, giving 112km/h for the third leg.

The course now went through a blue hole filled with sink to the ridge 15km east of El Barco. Down to 4500ft I was rather too low over the ridge for comfort but found a 4 to 5kt thermal at the end of a dark cloud street leading over a wide rugged valley. However, the expected strong thermal under the street did not materialise, and at the other end it began to rain. To get away from this area, I diverted NW to the Avila valley, which at least was landable.

After hitting more rain over the ridge south of the valley, I headed for Avila, a mediaeval fortified town, where the clouds looked better. Just south of the town, a good looking cloud gave over 4kt to 9500ft for the final glide to Rio Frio dam. This was reached at 2030hrs, giving 117km/h for the last leg and 108km/h overall. With only 2000ft in hand for the glide back to Fuentemilanos, it was necessary to slow down and forget about a fast finish at the airfield. An hour later, while picketing the aircraft, I heard a rumble of thunder coming from the direction of Avila.

The success of this flight is attributable to the perfect match between the weather and the task. In addition, due to a high cloudbase and consistent thermal strengths, a low cockpit workload led to fewer mistakes than usual. Indeed, I have never before encountered a less stressful or more enjoyable flight.

*All flights QFE unless qualified.



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THE BIG ONE

The day didn't seem promising but Phil Hawkins had his sights set on Diamond distance

Phil started gliding in 1974, has Silver and Gold badges and twice won the Enstone Regionals Sport Class. He now flies a Mini Nimbus so it may be some time before he can try a 750km in a Standard Class glider.



The queue of gliders on Keevil runway at 1.45pm on May 27, 1990, was not an encouraging sight from 1400ft, I have to say. Presumably Keevil pilots are as adept as any, and it would have been nice to see them dotted around the sky rather than in line astern at 0ft. I had just rounded Westbury chimney in ghastly sink and had become stuck in a patch of zero right above their heads.

The chimney was the first TP of a 500km task from Weston on the Green. I liked flying the ASW-19, but I didn't think I had much chance of doing my Diamond distance on this particular day. Well, how would you feel if:

- 1) You had missed the previous two days which had both been 500km-able.
- 2) Your first leg had been in the blue, and all the cumulus seemed to be at the other end of the country.
- 3) You hadn't started until 1230.

I had rather burnt my boats heading for Keevil in the hope that their local soarers would help me out, but there weren't any! Luckily by flying into wind I found a better thermal bubble in the wake of the first, and this got me back to the high ground and better thermals.

The second leg up to Bedford was in gradually improving conditions. Clouds were visible in the far distance from around Membury, but I didn't reach them until Milton Keynes. TP2 was at Bromham about two miles west of Bedford,

where the A428 trunk road crosses the river Ouse. Heading west after that the sun was in my eyes and the visibility was poor, but for the moment I was enjoying myself.

Olney, Chipping Warden and Stratford passed by very quickly. These long high glides were a good opportunity to relax and have a drink. I was hungry but hadn't yet eaten my sandwich: I had promised it to myself if I reached Ludlow. However, conditions were changing again and I began to feel concerned about the amount of cloud development. The visibility had deteriorated so badly that at times the whole sky seemed to be filled with solid cloud and the ground was noticeably darker. It was reaching the stage where I knew from experience that some pilots would have given up, but maybe I have the advantage of persistence.

A long way off track to the left, towards Worcester, I saw a large ragged black cloud. I turned for it, hoping that it would give me plenty of height to find Ludlow. Fortunately there was strong lift here to the highest point of the day - 7000ft. I estimated that Ludlow was 20nm away on a 300° course and set off at 60kt for a 20min glide. The ground from this height was barely visible in the haze.

Virtually on cue a large town appeared dimly ahead, but the road and railway patterns didn't look right and there was no castle to be seen. I didn't take long to realise that this was Leominster and I was about 9 miles south of where I should have been. Perhaps the compass needs adjusting! The sky was a bit brighter here but generally speaking it looked rather dead. The only cloud mass visible (you wouldn't have described it as a single cloud) was to the north-west and I headed for that to top up my height.

I spoke to Chris Reynolds on the radio, local soaring at Oxford in his Skylark 4. I told him I hadn't yet been round Ludlow, but I didn't tell him the reason, which was faulty navigation. I also heard from Jane Randle flying her Nimbus out of Aston Down, who told me that conditions at Worcester were still good.

The hanging edge was frothy and rimmed with rising tendrils

Following a curving path more and more northwards towards Ludlow I wandered underneath the blackest parts of the cloud but could not immediately find any lift. Then I noticed that the hanging edge of the cloud to my left was frothy and rimmed with rising tendrils, dark against the sun-bright haze in the background. I made an abrupt 90° left turn and within a few seconds there was 8kt of lift. This took me to just over 6000ft once more and I knew that I just had to follow the cloud north-eastwards until Ludlow came into view. The last ramparts of this enormous floating structure in the sky coincided with the end of the hill as it sloped down to Ludlow ahead. The correlation was not lost on me.

The cloud was like a fertile island in an endless grey ocean. I took advantage of the last dark edge to climb to 6800ft before venturing out in the calm air beyond. The sandy brown castle at

Ludlow was clearly visible now* and I took my pictures.

At last I could eat my sandwich! Cruising homewards I munched it gratefully as if savouring a hard-won trophy. The sky ahead was quite grey for a while but gradually some weak looking lumps of cumulus came into view. All climbs were slow on the way home and I was staying high. The little gremlin on my shoulder whispered in my ear about landing at Bidford but I didn't need his advice. Eventually I had a comfortable final glide from 6200ft near Evesham.

As the miles drifted by I was nervously measuring and remeasuring the remaining distance, but I need not have worried. As is usually the case I had lots of excess height which I burnt off in the last few miles after passing Enstone. Nearing home I detoured slightly to avoid over-flying the hangars, and then made a pretty good finish over the heads of a small group of spectators at the launch point. At the risk of understating the obvious I can report that this was quite a nice feeling! My task time was 6hrs 46min for a handicap speed of 83.25km/h. The flight was worth over 3000 ladder points.

I believe that every flight should teach you something and this one taught me two things:

- 1) It is a complete myth that you need thermals by 10am and fair-weather cumulus all day long in order to complete a task of this size.
- 2) On a day which does start early and provides more uniform distribution of clouds in the classic pattern, 750km is possible in a Standard Class glider. I shall do it.

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S&G YEARBOOK

The 1991 *S&G Yearbook*, which is a cross between a gliding reference book and a 7th, but much larger, issue of *S&G*, will be available from the BGA towards the end of April at £3.50 with free postage for *S&G* subscribers. Alternatively, clubs may order it in bulk at the same generous discount rates offered by the BGA shop.

It will be vital reading to get you ready for the season with the annual records, statistics and an airspace update as well as having a good mix of articles from some of our top writers.

Make sure of getting your copy now, either through your club or the BGA.

PHILIP WILLS MEMORIAL FUND

Several recent loans to gliding clubs having temporarily reduced the fund, the Trustees were particularly delighted at a recent gesture from the Cotswold GC.

Cotswold members were grateful to receive financial assistance from the fund in 1981 when they were buying the freehold of Aston Down and the original loan has now been fully repaid by the club. Members have now decided to acknowledge their gratitude by making a donation of £1.00 each to the fund for the next five years based on the number of members in the club on September 30 each year.

This gesture is much appreciated by the Trustees of the fund who hope that other clubs who have benefited from loans may feel that this is a suitable action to follow.

Barry Rolfe, BGA administrator

BGA LIST OF TPs AND CLUB SITES

The Competitions and Badges Committee has produced a consolidated list of Turning Points, formed by amalgamating several lists from individual clubs. The list gives grid references, lat/long, and a description of each point, and also includes BGA club sites. This is being sent by the BGA office to all member clubs, and the list will be revised and circulated each March.

Use of TPs on the list is entirely voluntary and pilots and clubs retain absolute freedom to use other points, subject to the rules on airspace and taking other air activities into account.

One advantage will be that the BGA list will be used for on a number of computer programmes which calculate distances and leg percentages (generally using grid references and Pythagoras for distance in kilometres). The BGA badge and record checkers will use such a programme in order to speed the processing of claims using TPs and sites on the list. Such programmes may also be on general sale to interested clubs and pilots.

In addition, copies of the list will be available in Word Perfect 5.0/5.1, ASCII and maybe other systems, to clubs and individuals who can provide the BGA with a 3.5in floppy disc and the postage for return. The list can then be adjusted locally to contain the TPs and sites required for particular activities such as competitions or club tasks.

As the system develops, it may be possible to produce photocopies of A3 or A4 size TP briefing sheets for pilots, with current photographs of the TP. In any case, a standard list will make it easier to share such information between clubs to avoid duplication of work.

It is hoped that the list, which will contain about 500 TPs and sites in England, Scotland and Wales, will be a help to cross-country pilots, clubs and competition organisers.

Ian Strachan, chairman of BGA Competitions and Badges Committee

WOMEN IN GLIDING

Because they feel that some women find the idea of gliding daunting, and this may be exacerbated by male chauvinism, the recently formed Women In Gliding Working Group are experimenting with some special courses for women. They are from May 13-17 at Dartmoor GC (contact Karon Corley on 0752 848278); June 3-7 and July 22-26 at Coventry GC (contact Harry Middleton on 0858 880429); August 5-9 and September 2-6 at London GC (contact Liz Veysey on 0582 663419); August 11-17 at Derby & Lincs GC (contact John McKenzie on 0298 871270) and August 27-30 at the Midland GC (contact the course secretary on 058 861 206).

Some clubs may be able to offer child mind-ing facilities.

We are sending a questionnaire to as many women pilots or ex-pilots as we can track down to find out their training requirements and what help they need to make better progress. If you don't get a copy, please speak to your club secretary.

Diana King, chairman of the Working Group

IMPROVING AIRMISS REPORTING

An airmiss report should be made whenever a pilot considers his aircraft has been endangered by the proximity of another, to the extent of risking a collision.

The primary reason for investigating airmiss reports is to determine the cause of an incident, leading to action to reduce the possibility of a recurrence, or worse, a collision. The conclusions reached by the Joint Airmiss Working Group have no legal significance and anonymity is preserved throughout the investigation. When completed the pilots involved, or their clubs, are advised of the findings and any remedial action taken.

Prompt airmiss reporting is vital if the other

aircraft is to be traced. If in radio contact with an air traffic unit report to them at once or, if not possible, telephone straight after landing. Either call the nearest ATS unit or Freephone 2230 (on Monday for a weekend incident) to speak to AIS (MIL) at LATCC West Drayton who will start trace action at once and tell the Joint Airmiss Section (JAS). Follow up with a written report on form CA1094 to JAS within seven days. In all reports use GMT (UTC is the same) as an hour adrift fouled up tracing several times in 1990.

The address for JAS is on the CA1094 but if you haven't a form or have any other queries, ring them in working hours on 0895 76-121, 122 or 125 or use their fax on 0895 76124 and leave a message.

John Maitland, chairman of the Joint Airmiss Working Group

LAUNCH SIGNALS

Max Bacon recently suggested at the BGA Executive that the preferred method of signalling to winch or towcar drivers or tug pilots should be by land line or radio as appropriate. Whilst most aspects of gliding operations have been improved by modern technology, in the UK the use of bats and flashing lights for signalling from the launch point remain unaltered from the 1930s.

Although these methods are inherently simple, confusions can arise in some light conditions and accidents have occurred when the winch driver may not have appreciated a signal has been changed to "Stop".

Some countries in Europe insist on voice launch signals and R/T is used widely in the USA, so perhaps it is time to revise our ideas in Britain.

If you have views of the subject, please write to the editorial office at Cambridge, marking the envelope "Launch signals" and we will send them on to Max.

INTER-UNIVERSITY TASK WEEK

Following last year's very successful event, Bristol University GC are again hosting the task week at Nympsfield from July 21-27.

This is a friendly, low key competition with the emphasis on meeting other student glider pilots and having lots of fun. Any students at UK universities, polytechnics and colleges of higher education are eligible and two-seater entries are actively encouraged with non-

BGA ANNUAL STATISTICS

	1983	1984	1985	1986	1987	1988	1989	1990
Clubs	95	96	99	99	99	96	99	101
Flying Members	9550	9669	9999	9845	10121	9892	10296	10586
Club two-seaters	239	229	264	267	274	275	278	280
Club single-seaters	205	206	223	211	249	228	242	242
Privately owned gliders	1189	1180	1277	1300	1303	1375	1434	1508
Launches (in thousands)	402	457	407	433	449	420	487	452
Hours flown (in thousands)	123	146	153	145	151	144	192	170
Gliding certificates issued	1898	1859	1625	1522	1706	1373	1719	1368
Bronze badges issued	430	446	419	384	433	423	519	471
Silver badges issued	223	296	261	240	222	204	418	282
Gold badges issued	58	76	75	54	59	53	82	116

student Pls to give cross-country training and experience.

For further details contact Chris White, Captain, Bristol University Gliding Club, Athletic Union, University of Bristol Union, Queens Road, Clifton, Bristol BS8 1LN.

EUROPEAN WOMEN'S CHAMPIONSHIPS

The European Women's Gliding Championships are to be held at Husbands Bosworth from August 3-18 with the week before as the practise period.

A number of countries may need to hire a Standard or 15 Metre glider and if anyone is prepared to loan their glider would they please contact John Cadman on 021 455 7433.

AN INVITATION FROM POLAND

Std Jantar pilots are invited to the Polish Aero Club's One Design Soaring Competition at Leszno Soaring Centre, western Poland, from June 2-15.

They are asking for 500hrs and offer a two-week package which includes a loan of the aircraft, aerotows, retrieving, food and accommodation on the airfield. The competition aims to be fun and friendly. For further details apply to the Leszno Soaring Centre.

COMPETITION BARTERING

Any private owner interested in competing in the booming prairie-like conditions of the great Hungarian plain this summer might like to respond to an appeal from the recently formed Hungarian Gliding Federation, which has now taken over from the former government-linked body which ran the sport in Communist days.

The Federation is anxious to enter as many as four pilots in the European Women's Championship at Husbands' Bosworth, for which the practice week begins on August 3 and which runs to August 17. But it is strapped for hard currency so is making barter offers to obtain

BGA ACCIDENT SUMMARY -

Edited by JOHN SHIPLEY,
Chairman, BGA Safety Panel
Compiled by David Wright

Ref No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew	Age	Injury	Hrs
111	Bocian	-	N	29.7.90 1400	Keovil	P2	39 0	N N	- -
P2 flew a normal winch launch until release when the glider started to oscillate wildly with pre-stall buffet. P1 took control and started a gentle turn while holding full forward stick to keep flying speed. After a loud bang from the tail, normal control was resumed. A second cable had hung up on the tail skid lug. The guillotine failed to cut the cable.									
112	Fauvette	2617	W/O	11.8.90 1405	Lyveden		42	F	95
This was a fatal accident. The pilot signalled take-up slack and suddenly found himself being launched. The glider was seen to rotate into the climb then the cable went slack and back released at about 50ft. The glider's nose was not lowered for several seconds and it then stalled into the ground. Signal confusion had led to an early "all out".									
113	Blank	2263	W/O	11.8.90 1630	Culdrose	P2	62 36	M S	285 0
P1 flew upwind of the airfield, possibly to show P2 her house, and became too low to return to the airfield. A field was chosen and during the approach to the field the glider entered a spin and crashed from about 50ft.									
114	Puchacz	2854	W/O	4.8.90 1205	Usk	P2	34 46	F S	1545 495
This fatal accident occurred during an instructor training flight. The glider was seen in a continuous spin from 1400ft agl until impact. From about 700ft it was seen to oscillate in pitch and yaw. This normally occurs just prior to spin stopping. However, in this case it continued to the ground.									
115	K-13	-	M	12.8.90 1548	Wormingford	P2	45 26	N N	- -
Following a normal landing P1 was discussing turning techniques while moving the stick when he noticed that full movement was not available. Inspection revealed a broken fuselage longeron just forward of the tail skid. The tube was 3/4 rusted through and this was not seen during the DI due to the fabric covering.									
116	T-21a	1000	M	14.7.90 1400	Garnston	P2	52 43	N N	470 0
In a crosswind the cable broke at about 15kt during a winch launch. The glider ran on its nose skid at an angle despite P1 using full rudder. Just before coming to rest the skid hit a raised section of runway concrete and broke the front mount bracket. This bracket was found to have been previously repaired.									
117	Bergfalke 4	2993	M	7.8.90 2100	Rivar Hill	P2	37 0	N N	115 0
In failing light, about 20min after sunset, the P1 decided that this flight was to be the last and chose to land near the hangar. As the glider slowed down it struck a grey open trailer which the pilot had not seen until too late.									
118	L-Spatz	3407	W/O	2.7.90 1700	Andover Down		44	N	14
During Competition Enterprise, his first Silver distance attempt, the pilot had to make his first field landing and chose a meadow surrounded by trees. He made a sideslip approach, normal on this type, but flew base leg too close in. Speed was also allowed to build up and so he found he could not land. He then pulled up, tried to turn but hit a tree and crashed.									
119	K-2b	3569	W/O	12.8.90 1105	Edge Hill		59	S	21
When turning on to base leg the pilot found he was too high to land short of a glider that had just had a failed winch launch and so did an S turn to lose height. He then encountered turbulence which made him lose full control. He crashed into a steeply sloping field and was seriously injured.									
120	Pegasus	3599	M	1.8.90 1430	Husbands Bosworth		34	N	105
This was to be the pilot's first flight on type and, after a briefing, took an aerotow launch. Shortly after becoming airborne the glider drifted to one side and high. Correcting this the glider touched the ground and bounced higher. After hitting hard and bouncing again the cable back released and the glider landed in an adjacent field.									

Rough winds have shaken the Darling Buds of May (and April!) sufficient to arouse even the most intemperate ancient aviators. They rush to the BGA Shop for all the latest gliding books and accessories to make the most of another glorious summers day - or something like that.



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the use of up to four competitive 15m or Standard Class machines. Leading pilot will be Ilona "Ica" Benke, who has all three Diamonds, over 3500hrs in gliders and has previously flown in three European championships – at home, in Yugoslavia and in the USSR.

The Hungarians will not require crewing or vehicular support for any gliders loaned. In return, owners making aircraft available can choose one of two options. The Federation is offering the free use of a Jantar 2B or Std Jantar for two weeks at the big Ócsény competition in southern Hungary, from August 9. (In this event last year no fewer than 28 750km tasks and 75 of 500km were competed in only two days, which may qualify for a Guinness mention. A car and crew will also be provided – all the obliging British pilot needs do is fly over with toothbrush and all else will be arranged.

Alternatively, he or she may opt to take their own glider to Hungary to fly in the Pre-European Champs (which will also incorporate the Hungarian Nationals) at the huge airfield of Szeged, also in southern Hungary, from July 19 to August 3. In this case, all entry fees and aerotow charges will be waived and free accommodation with all meals provided for the participating pilot and a partner.

Offers can be made direct to Ilona at: 1016 Budapest, Aladár utca 18, III/5, Hungary, by post, or by fax on (36) 1 1663 430. Further details from Bob Rodwell on 0232 790666 (fax: 0232 792996), who was asked to relay this appeal while on a wave expedition to Hungary in January.

COVENTRY GC'S EXPEDITION

As mentioned in the last issue, p56, Coventry GC are hosting an Alpine task week at Kempton, Bavaria from May 5-18 in the handicapped Classes for mountain novices and pundits. There are still a few places left and anyone interested should contact Nick Hackett, tel 0509 890469.

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Ref No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew		
						Age	Injury	Hrs
121	Nimbus 2	2243	S?	31.7.90 1600	Basingstoke	48	N	3233
After a cross-country flight the pilot had to make a field landing. The landing, in a grass field was normal until the right wing suddenly dropped and caused a violent groundloop , damaging the glider. The pilot found that although all waterballast had gone from the left wing, the right still contained water.								
122	ASW-20L	2551	W/O	7.8.90 1800	Nr Long Mynd	50	F	641
This was a fatal accident due to the elevator not being connected . After a shallow winch launch the glider flew unusually low and fast along the ridge with occasional pull ups before diving into trees. The locking pin was found on its string and there was no sign of it being fitted on this flight. (Do we have independent rigging and positive control checks?)								
123	K-13	1650	M	18.8.90 1230	Usk	28 P2 25	N N	330 124
P1 pulled a simulated cable break at 250ft and P2 started an S turn up wind. P1 took control as he realised that he had to land in the overshoot field. This was done successfully until, at the roundabout a sheep ran in front of the glider and hit the tailplane.								
124	Falke	M/G G-AYYK	S?	31.7.90 1530	Perranporth	63 P2 40	N N	1150 0
After a normal landing the motor glider was backtracking to the threshold when the pilot heard a scraping noise from the mainwheel. Before he could stop the mainwheel locked and the aircraft tipped on to its nose, shattering the propeller. The two halves of the wheel had separated, due to wear in the circlip retaining groove and bearing collapse.								
125	Std Cirrus	1915	M	11.8.90 1430	Doddington	41	N	170
After attempting to ridge soar the pilot had to make a field landing and chose a large stubble field. He decided to land "with the cut" although this was at 45° to the wind and this would not normally present problems. However, as he landed the glider's tail lifted and groundlooped. (Wheel brake applied in the crosswind?)								
126	Skylark 3b	870	N	29.7.90 1813	Parham	50	N	30
The pilot joined the circuit after seeing another Skylark join ahead. Flying a fast, wide circuit he caught it up from below and behind. At 100ft on finals, in looking in towards the field, he had failed to see the traffic. The other pilot took avoiding action to the left, closed the brakes, turned away from trees and landed to the right of the glider.								
127	DG-202-17c	2910	S	17.8.90 1726	Ledwell, Oxon	41	N	510
After flying into light rain the pilot had to land in a field. Concerned about the effect of wet wings the pilot appears not to have used land flap and kept his speed up. He found that an undershoot was developing so increased speed but as the pilot pulled up to clear the hedge a high speed stall developed and he hit it and crashed inverted.								
128	Pegasus and LS-7	2936	M	14.7.90 1800	Newbury	35	N	832
This mid-air collision took place at 1200ft during a competition. There were four aircraft sharing a weak thermal when one pilot lost sight of the glider below him. This appeared rising in front of him and his left wing hit the other glider's rudder. The other pilot was told by radio of the extent of the damage.								
129	K-8e	2435	M	8.8.90 1615	North Weald	54	N	1.5
After a normal landing the glider hit a manhole cover and damaged the nose skid mountings. The manhole had been recently installed and had been left with soft ground around it with the cover proud of grass level. This had since been rectified.								
130	Bijave	3404	M	26.7.90 1459	Galewood	55 P2 16	N N	983 0
After ensuring the canopy locks were secure the pilot commenced the aerotow. At about 100ft there was a bang as the canopy frame appears to have failed. The tug had to release because of the increased drag and the glider landed safely in a field. The canopy frame had been made of rather flimsy glass-fibre and this had now been replaced by metal frame.								
131	Skylark 4	1095	M	7.8.90 1530	Nr Chepstow	27	N	58
After a normal approach and circuit the glider was landed normally in the cut corn field. However, the left wing dropped as the ground speed fell and struck a stone that had been hidden by the straw. This damaged the wing D box.								
132	Neukorn Elite-32	3374	S?	10.8.90 1738	Morridge	44	N	59
The winch driver was briefed on the characteristics of the glider prior to the launch. The launch started slow and as the pilot "held the nose down" to indicate this the lightly loaded winch ran at high rpm but the glider still did not climb. The pilot pulled off at about 150ft and landed on rough ground next to the landing strip causing serious damage.								
133	IS-29b	2030	M	12.8.90 1600	Lyveden	44	N	550
The pilot decided that the winch launch was too slow so pulled off at about 50ft. A firm landing was made with zero flap and during this the undercarriage collapsed. The over centre stop bar had failed at a weld.								
134	K-13	-	S	23.8.90 1805	Parham	63 P2 63	N N	1779 93
P1 pulled a simulated cable break at 70ft on the winch launch and P2 lowered the nose to land straight ahead. At the same time he also opened the airbrakes and the glider descended rapidly in a semi-stalled condition. P1 had difficulty closing the airbrakes quickly enough to prevent a heavy landing.								
135	K-21	2871	M	25.8.90 1030	Dunstable	34 P2 0	N N	- -
The glider was being towed to the launch point by a tractor. As it was being manually pulled up a slight slope into line the left wingtip hit and damaged another glider's rudder.								
136	K-13	3493	S?	31.7.90 1840	Dunstable	51 P2 23	N N	275 0
P1 flew the approach at about 45kt using airbrakes until he began to round out at about 40kt. The calm conditions and upsloping landing area combined with low airspeed resulted in the glider dropping heavily on to the ground. The undercarriage collapsed and the fuselage structure was also damaged.								
137	K-21	2612	M	25.7.90 0915	Dunstable	0	N	-
The holiday course member was asked by his instructor to reverse the tractor up to the glider's tail ready to tow it to the launch point. Going down a slope the driver put his foot on the brakes but could not stop the tractor, or turn away, before hitting the rudder.								
138	K-23	2997	M	29.7.90	Dunstable	26	N	13
After a normal approach in turbulent conditions, when there were restrictions on early solo flying, the pilot touched down hard and bounced. The brakes were closed to prevent a stall and the glider hit the ground, nose down, several times before coming to rest.								

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GLIDING FOR THE YOUNG

Young British pilots are again invited to join the subsidised gliding courses run by the German Aero Club's youth organisation for 16 to 25 year-olds at Hirzenhain, near Marburg. If you would like more details, write to S&G enclosing a sae.

CAPTAIN TED STARK

It is with great sadness we report the death of Ted Stark after a long illness. I first came across Ted when we were serving together in an Army unit in Shropshire. Our mutual interest in gliding became clear when we met on a very wind swept bungy point at the Long Mynd.

I had done a bit of gliding, but Ted was then working his way up through the Tutor stage. He was clearly destined for high office, as he managed to land the Tutor on the only tree on the Mynd! Joining the Blue Skylark 2 syndicate with Colonel Geoffrey Benson and Charles Green, he quickly established himself in the competition field.

During the 1950s and 60s, when the Army Gliding Association took part in strength in those glorious Easter rallies from the Mynd, Ted was always there helping, encouraging and organising. His skill in public relations, became evident during the time that he, together with others, were marooned in the Mynd clubhouse in December - even *The Times* ran a report on this episode.

Ted flew for many years in the Nationals as a member of the Army team. He was a dedicated pilot and meticulous in everything he did - he was always "fettling" his aircraft. As the AGA developed with the setting up of Army gliding clubs at Watchfield and Netheravon, Ted was always energetic and resourceful in ensuring that these projects were carried out efficiently.

Ted was a well known character throughout the gliding movement and we have lost a friend and an officer to whom the AGA owes a great deal.

TED SHEPHERD

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	Name	Club	1990
339	Richie, Edwina	Lasham	7.8
340	Smart, A. M. B.	Bannerdown	7.8
341	Phillips, D. J.	Lasham	7.8
342	St Pierre, A. H. G.	Yorkshire	18.8
343	Le Coyte, J. W.	Vale of WH	2.9
344	Arthur, E. A.	Norfolk	17.9
345	Hawkins, R. W.	Southdown	17.9
346	Reading, P. T.	Lasham	28.9
347	Rice, J. W.	Trent Valley	28.9
348	Bradney, F. G.	Surrey & Hants	28.9
349	Aveling, A. R.	Lasham	28.9
350	Gardner, D. H.	Colswold	4.10

DIAMOND DISTANCE

No.	Name	Club	1990
1/510	Winning, E. J.	Vale of WH	6.8
1/511	Richie, Edwina	Lasham	7.8

Ref No.	Glider Type	BGA No.	Damage	Date Time	Place	Age	Pilot/Crew Injury	Hrs
139	Olympia 419x	1051	M	31.7.90	Lleweli Parc	42	N	89
During the winch launch the pilot found that the rudder was jammed. A circuit was flown, at a higher speed than normal, and during the approach the pilot was told by radio that his tail skid had fallen off. The glider was landed safely. The fairing had jammed the rudder.								
140	Vega Sport	2792	S	5.8.90 1410	Lleweli Parc	43	M	325
The pilot drifted too far downwind in broken lift. He then realised that it was not working so headed back. Encountering sink he could not make the airfield and the nearest fields were small and surrounded by trees. He was seen to fly straight for the airfield at high speed. He landed short of the airfield and went through a fence.								
141	Olympia 2a	508	S	2.9.90 1435	Waldershare Park	54	N	110?
After an apparently normal approach the pilot hit sink and attempted to stretch the glide to clear parked aircraft. As a result the glider stalled at about 3ft and landed heavily tail first, breaking the rear fuselage and damaging the cockpit area.								
142	ASW-15a	3363	S?	5.7.90 1530	Duxford	44	N	150
The previous winch launch had been aborted due to yaw but the glider ran into standing crop and rough ground. After an inspection the glider was launched again. The undercarriage collapsed after a fairly heavy landing. The forward bulkhead to which the undercarriage was attached had split and was detached.								
143	Jantar Std 2	3282	M	27.8.90 1500	Westbury	50	N	137
The pilot selected a large flat stubble field and made a normal approach and gentle landing on the mainwheel. The undercarriage collapsed and the glider came to a halt on its belly. A number of small pieces of rock and half a brick were found in the wheel track. This was the second time the undercarriage has collapsed recently.								
144	Olympia 2a	1059	M	21.8.90 1511	Long Mynd	53	N	300
After getting low in weakening ridge lift the pilot turned to cross the ridge to the airfield. He found sink during the turn and had to force land on rough ground. He could have turned away from the field and made a landing in the valley.								
145	Vega	2729	M?	2.9.90	Long Mynd	65	N	435
While soaring the pilot's leg started to ache. After losing the lift he joined the circuit but realised when he turned on to base leg that the wind had strengthened and he was too far downwind. He put on speed but encountered sink and landed short in bracken, groundlooped and cracked the fuselage.								
146	Pegasus	3561	M	20.8.90	Nr Long Mynd	37	N	86
While attempting a field landing the pilot crossed a hedge low and the left wingtip touched a tree. This distracted the pilot who then made a heavy landing which damaged the fuselage.								
147	K-8	-	M	29.7.90 1830	Bum	50	N	27
In deteriorating weather an inexperienced pilot was asked to make a hangar flight, landing on the crosswind runway. After a normal flight the glider was hit by a gust at about 300ft on the approach. He found that he could not get back on track so made a 45° turn to land downwind on the main runway. The glider landed heavily and groundlooped.								
148	Skylark 3g	1016	W/O	13.9.90 1100	Feshiebridge	44	N	234
The aerotow rope was hooked on before the canopy was closed or the brakes locked while the pilot waited for a radio. When the tow commenced the airbrakes opened and the combination flew towards the hill. Off tow, sinking rapidly, he decided to make a downwind landing but could not make the field and stalled into trees, still with the brakes open.								
149	K-7	-	S	1.9.90 1615	Feshiebridge	46	N	4
While making figure 8 turns in weak hill lift the pilot found that he was rapidly being blown into a gully behind the hill. He tried to turn out of it but could not, so had to make a forced landing on the hillside. The right wing dropped, stalled, touched the ground and swung the glider around breaking the fuselage.								
150	Kestrel	1854	S	13.9.90 1430	Portmoak	59	N	425
The pilot flew a curved approach on to the finals and then, with landing flap and about half airbrake, encountered heavy sink. He did not close the airbrakes or reduce flap and undershot into a fence. The right wing was broken off.								
151	K-10	-	S?	16.9.90 1520	Gwernesny	40	N	46
At the end of a 5hr flight and close to the airfield the pilot found he had to make a field landing. He overflew a good field and chose to land in a small one. After a cramped circuit he found he was too high so opened fully airbrakes. The glider lost speed and the pilot was unable to avoid a heavy landing. The glider then groundlooped.								

F = Fatal; S = Serious; W/O = Write-off; M = Minor; N = Nil.

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1/512	Smart, A. M. B.	Bannerdown	7.5
1/513	Beer, C. N.	Kent	7.8
1/514	Phillips, D. J.	Lasham	7.8
1/515	Webber, P. G.	Surrey & Hants	26.5
1/516	Howes, N. J.	Derby & Lincs (in Spain)	17.7
1/517	St Pierre, A. H. G.	Yorkshire	18.8
1/518	Le Coyte, J. W.	Vale of WH (in Spain)	2.9
1/519	Toon, R. J.	Wrekin	7.8

DIAMOND GOAL

No.	Name	Club	1990
2/1905	Large, R. J.	Welland	5.8
2/1906	Pratt, D. J.	Four Counties	6.8
2/1907	Harris, T. D.	Bicester	6.8
2/1908	Thomson, I. R.	Derby & Lincs	6.8
2/1909	Pike, M. I.	Fenland	7.8
2/1910	Noad, S.	Kent	7.8
2/1911	Richie, Edwina	Lasham	7.8
2/1912	World, T. M.	Portsmouth Naval (in France)	10.7
2/1913	Owen, B. H.	Booker	7.8
2/1914	Hibberd, Kiera (in France)	Portsmouth Naval	8.8
2/1915	Williams, D.	Cotswold (in France)	8.8
2/1916	Smith, R. G.	Fenland	11.8
2/1917	Webb, C.	Anglia	12.8
2/1918	Mitchell, T. J.	Booker	12.8
2/1919	Fendt, R. S. M.	Lasham	12.8
2/1920	Marriott, R. J.	Cranfield	12.8
2/1921	Chamberlain, G. H. N.	Rattlesden	12.8
2/1922	Farmilo, Elizabeth (in France)	Coventry	17.8
2/1923	Burgoyne, P.	Coventry (in France)	17.8
2/1924	Boyd, R.	Yorkshire	18.8
2/1925	Wilson, F.	Cotswold (in France)	17.8
2/1926	Pilgrim, C.	Bicester	30.8

2/1927	Bailey, J. C.	Kent	7.8
2/1928	Blundel, S. G. P.	Herefordshire	30.8
2/1929	Birch, M. J.	London	1.8
2/1930	Brennan, P. M.	Avon	8.9
2/1931	Mann, Judy	IBM (Lasham)	8.9
2/1932	Keates, G. H.	Deeside	17.9
2/1933	Housden, S. R.	Cotswold	9.9
2/1934	Burgoyne, R. S.	Cotswold (in France)	17.8
2/1935	Baker, A. A.	Lasham	5.8
2/1936	Heys, P. J.	Phoenix	6.5

DIAMOND HEIGHT

No.	Name	Club	1990
3/965	Richie, Edwina	Lasham	28.9
3/966	McWilliam, J.	Ulster	1.11.89
3/967	Phillips, D. J.	Lasham	2.9
3/968	Angell, Julie	Booker	8.10
3/969	Benson, M. J.	Lasham	21.9
3/970	Bradley, B. P.	Cambridge Univ	2.9
3/971	Brain, D. G.	London	14.9
3/972	Towson, D. S.	Hereford	14.9
3/973	Arthur, G. A.	Norfolk	17.9
3/974	Atkinson, Jill	Lasham	17.9
3/975	Danbury, A. J.	London	17.9
3/976	Johns, R. S.	Devon & Somerset	14.9
3/977	Horsman, N.	Lasham	14.9
3/978	Gatfield, J.E.	London	18.9
3/979	Mummary, R. C.	Lasham	21.9
3/980	Turner, Jane	Southdown	21.9
3/981	Kent, M. P.	Lasham	21.9
3/982	Pridal, Brenda	Lasham	21.9
3/983	Hinder, Sue	Lasham	21.9
3/984	Pringle, N. C. B.	Lasham	21.9
3/985	Stoward, R. R.	London	21.9
3/986	Walker, R. A.	Southdown	21.9
3/987	Hawkins, R. W.	Southdown	17.9
3/988	Smith, G. C.	Lasham	28.9
3/989	McCullagh, J. S.	Lasham	28.9
3/990	Cooper, R. J.	Southdown	28.9
3/991	Wren, D. J.	Culdrose	28.9

3/992	Reading, P. T.	Lasham	28.9
3/993	Rice, J. W.	Trent Valley	28.9
3/994	Tierney, M. J.	Trent Valley	28.9
3/995	Williams, D.	Essex	28.9
3/996	Bradney, F. G.	Surrey & Hants	28.9
3/997	Rollason, J. A.	Essex	28.9
3/998	Aveling, A. R.	Lasham	28.9
3/999	Baker, A. A.	Lasham	28.9
3/1000	Williamson, M. B.	Booker	4.10
3/1001	Gardner, D. H.	Cotswold	4.10
3/1002	Hindmarsh, G. J.	Lasham	7.10

(All but one of the heights were flown at Aboyne, the last being at Portmoak.)

GOLD BADGE

No.	Name	Club	1990
1490	Pratt, D. J.	Four Counties	6.8
1491	Thompson, I. R.	Derby & Lincs	6.8
1492	Pike, M. I.	Fenland	7.8
1493	Noad, S.	Kent	7.8
1494	Richie, Edwina	Lasham	28.9
1495	Owen, B. H.	Booker	7.8
1496	Williams, D.	Cotswold	8.8
1497	Smith, R. G.	Fenland	11.8
1498	Mitchell, T. J.	Booker	12.8
1499	Fendt, R. S. M.	Lasham	12.8
1500	Marriott, R. J.	Cranfield	12.8
1501	Chamberlain, G. H. N.	Rattlesden	12.8
1502	Falcke, G.	Cambridge Univ	7.5
1503	Phillips, D. J.	Lasham	2.9
1504	Wilson, F.	Cotswold	17.8
1505	Chalmers-Brown, D.	Booker	20.8
1506	Pilgrim, C.	Bicester	30.8
1507	Angell, Julie	Booker	8.10
1508	Roff-Jarrett, M. A.	Surrey & Hants	14.9
1509	Johns, R. S.	Devon & Somerset	14.9

GOLD DISTANCE

Name	Club	1990
Gordon, J. S.	Oxford	28.5
Large, R. J.	Welland	5.8

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Pratt, D. J.	Four Counties	6.8
Harris, T. D.	Bicester	6.8
Thompson, I. R.	Derby & Lancs	6.8
Pike, M. I.	Fenland	7.8
Noad, S.	Kent	7.8
Owen, B. H.	Booker	7.8
Hibberd, Kiera	Portsmouth Naval	8.8
	(in France)	
Williams, D.	Cotswold	8.8
	(in France)	
Smith, R. G.	Fenland	11.8
White, M. D.	Burn	31.7
Webb, C.	Anglia	12.8
Mitchell, T. J.	Booker	12.8
Fendt, R. S. M.	Lasham	12.8
Marriott, R. J.	Cranfield	12.8
Chamberlain, G. H. N.	Rattlesden	12.8
Falcke, G.	Cambridge Univ	7.5
Farmilo, Elizabeth	Coventry	17.8
	(in France)	
Burgoyne, P.	Coventry	17.8
	(in France)	
Wilson, F.	Cotswold	17.8
	(in France)	
Pilgrim, C.	Bicester	30.8
Bailey, J. C.	Kent	7.8
Blundell, S. G. P.	Herefordshire	30.8
Birch, M. J.	London	1.8
Brennan, P. M.	Avon	8.9
Mann, Judy	(IBM (Lasham)	8.9
	(in France)	
Keates, G. H.	Deeside	17.9
Housden, S. R.	Cotswold	9.9
Burgoyne, R. S.	Cotswold	17.8
	(in France)	
Baker, A. A.	Lasham	5.8
Heys, P. J.	Phoenix	6.5
GOLD HEIGHT		
<i>Name</i>	<i>Club</i>	<i>1990</i>
Heriz-Smith, N.	Midland	5.8
Richie, Edwina	Lasham	28.9
Minary, M. W.	Cleavelands	12.8
Little, R. A.	Cleavelands	12.8
McWilliam, J.	Ulster	1.11
Phillips, D. J.	Lasham	2.9
Chalmers-Brown, D.	Booker	20.8
Currie, D. S.	Booker	8.10
Meddens, L.	Booker	4.10
Angell, Julie	Booker	8.10
Atkin, P.	Cambridge Univ	7.8
	(in France)	
Jones, R. S.	SGU	9.9
Roff-Jarrett, M. A.	Surrey & Hants	14.9
Johns, R. S.	Devon & Somerset	14.9
Davis, R.	Northumbria	17.9
Arthur, E. A.	Norfolk	17.9
Turrell, R.	Cotswold	17.9
Horsman, N.	Lasham	14.9
Gatfield, J. E.	London	18.9
Mummary, R. C.	Lasham	21.9

Paddison, R. H.	London	21.9
Kefford, A. G.	London	21.9
Benson, M. J.	Lasham	21.9
Smith, G. C.	Lasham	28.9
Laylee, Ann	Lasham	28.9
Worrell, Nan	Lasham	21.9
Hayden, R. B.	Essex	28.9
Tierney, M. J.	Trent Valley	28.9
Williams, D.	Essex	28.9
Limb, R. J.	Booker	1.10
Matthews, L. R.	East Sussex	2.10
Aveling, A. R.	Lasham	28.9
Baker, A. A.	Lasham	28.9
Turner, S. M.	P'boro & Spalding	3.10
Cockburn, Jane	Essex	3.10
Lealand, M. N.	Booker	3.10
Wright, J. S.	Booker	4.10
Cotter, S. D.	Essex	4.10
Darby, R. L. F.	P'boro & Spalding	4.10
Chaplin, G.	Lasham	7.10
Barrie-Smith, N. J.	Lasham	7.10
Sinclair, D. A.	Lasham	7.10
Hindmarsh, Sheila	Lasham	7.10
Hindmarsh, G. J.	Lasham	7.10
Glennie, P. F.	SGU	7.10
Brown, S.	Lasham	7.10

SILVER BADGE

<i>No.</i>	<i>Name</i>	<i>Club</i>	<i>1990</i>
8546	Martin, A. B.	Pegasus	15.5
8547	Vivian, D. J.	Norfolk	24.7
8548	Goodband, R. P.	Welland	5.8
8549	Brown, L. J. R.	Coventry	7.8
8550	Bennett, D. R.	Stratford on Avon	10.9
8551	Minary, M. W.	Cleavelands	18.8
8552	Kahn, D. L.	London	12.8
8553	Pryce, J. M.	SGU	17.7
8554	Howell, P.	London	21.9
8555	Thompson, M. C.	London	28.7
8556	Benson, M. J.	Lasham	1.9
8557	Walker, E. R.	Cotswold	8.9
8558	Burton, M.	Bristol & Glos	9.9
8559	Noble, G.	Southdown	2.9
8560	Hanks, R.	Bristol & Glos	18.11
8561	Minogue, Claire	London	9.9
8562	Bell, G. C.	London	7.9
8563	Oswald, D. G. H.	SGU	18.7
8564	Moore, K. C.	Midland	27.9
8565	Crisp, L. D.	Avon	23.7.89
8566	Burgoyne, R. S.	Cotswold	17.8
8567	Kirton, G. W.	Buckminster	8.9

UK CROSS-COUNTRY DIPLOMA**Complete**

<i>Name</i>	<i>Club</i>	<i>1990</i>
Jones, R. A.	Wrekin	8.9
Bourne, D. R.	Nene Valley	9.9

Part 1

<i>Name</i>	<i>Club</i>	<i>1990</i>
Pryce, J. M.	SGU	19.7
Evans, M.	Bicester	20.7
White, C. J.	Bristol & Glos	20.7
Edwards, S.	London	18.7
Fellender, G. S.	Cotswold	7.8
Stone, R. C.	London	7.8
Entwistle, M. G.	Buckminster	12.8
Bell, G. C.	London	7.9
Noble, G.	Southdown	9.9
Barrat, G. M.	Dukeries	16.9

USING THE VARCOM AS A BAROGRAPH**Notes for Official Observers and Competition Organisers**

The Varcom vario system has within it a height/time recording facility (ie a barograph). The Varcom has now been approved for use in competitions (subject to the director's agreement) and for badge, diploma and UK record claims.

These notes are intended to help competition organisers and official observers use the system to give the evidence required.

The Principles

The Varcom's barograph data is very hard to tamper with. It is self-sealing, so long as the O/O actually watches the trace coming from a

printer attached directly to the instrument.

The requirements for badge and record claims are very simple. Those for competitions require some preparation, so that the trace need not be observed every day. Handing in one observed trace is enough to ensure that every trace came from the instrument installed in the glider.

Procedure for using the Varcom in competitions

1. The organisers must inspect the instrument before the first day's flying and ascertain the following:

- The software version is acceptable (252 or above).
- The difference between the Varcom's date and time, and official date and time.
- The owner's ID on the instrument.
- A trace to give a hard copy record of the above.

Either (b) or (c) may be changed at the organiser's request.

2. Before each flight, the barograph must be cleared by the pilot (a) special function is available).

3. After the flight, the pilot prints out the barograph trace and hands it into control. It does not have to be observed, but for an O/O to sign it they must watch it being produced.

4. Control must verify that the trace contains:

- The correct owner's ID.
- Flight and print dates and times corresponding to the day's flight.

In addition, control may verify the following:

- The barograph was cleared before the flight.
- Any occurrence of **invalid** in history records is explained by agreed changes in owner ID or the clock.

(e) That the history ties up with previous traces.

Of the above, (a) and (b) are essential. The others are added information which can later be referred to.

If **void** appears on the trace, it means that the clock or the owner's ID have been changed. This may require explanation and/or penalties.

5. The organisation may ask for an observed, repeat trace at any time until the end of next briefing. If it can not be produced, a suitable penalty may be awarded. To be "observed", an O/O must watch the trace being produced.

For badge and record claims


The official observer need take no action before the flight.

The pilot should clear the barograph by the Varcom's function.

After the flight, the O/O must:

- Witness a trace being produced from the Varcom.
- Ensure that the software version is 252 or above.
- Compare the time with the Varcom's clock.
- Accounting for discrepancies, verify the start and finish times on the trace with those claimed and that there are no landings in between.

5. If the above is in order, the trace may be signed and used like a Winter trace thereafter. ED JOHNSTON, *National Ladder Steward*




David Goodison

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CLUB NEWS

Copy and photographs for the June-July 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 April 16 and for the August-September issue to arrive not later than June 11. The fax number is also 0223 247725.

GILLIAN BRYCE-SMITH
February 12

ANGLIA (RAF Wattisham)

We have a thriving membership, good facilities and a club fleet of a Discus, Astir, K-8, two K-13s and three winches. We operate at weekends and welcome visitors. Our CFI is John Hicks. J.R.C.

ANGUS (Arbroath)

Once again we were visited by New Year wave with soaring flights on the first day of the year. An engraved decanter was presented to Mike Davidson, who has resigned as chairman, as a token of his good work over the years, and to Bill Buchan, our tireless technical wizard without whom we would never get airborne. Our new chairman is George Nelson who in 1990 celebrated 40 years of flying T-21s.

Congratulations to Bob Welch on his Bronze badge; Gordon Clark on going solo and Malcolm Watson, Martin Clark, Steve Ingram, Jim Forbes and Alex McInnes on Bronze legs, Malcolm and Martin having recently gone solo. D.P.

AVON (Bidford)

Despite the snow and gales we had good winter's soaring, operating on a six day week basis instead of our usual seven. With the improved drainage, the field stayed in good condition.

The new hangar was commissioned with space for an extra 12 gliders and tugs and a new extension to the clubhouse, to take the pool table, was opened.

Congratulations to the winter solo pilots including Andy Scafe and David Lloyd.

There are still a few vacancies for the cross-country course on May 13-17 and we are taking bookings for the annual expedition to Chauvigny from June 7-22. The Feshiebridge trip is in danger of being oversubscribed. R.Y.

BATH & WILTS (Keevil Airfield)

We are negotiating a move to a splendid 1400 yard hill top site with ridges on two sides. Hopefully the planners will be kind to us.

The Gulf was hasn't affected us directly as a MoD site but Bannerdown have dropped out of the South West Inter-Club League. However, we welcome Vale of White Horse GC.

The Bronze and pre-solo courses have continued through the winter despite the weather, with unwavering enthusiasm and solos by James King and Dave Gibson, Dave in a minimum number of flights to set a club record. Well done. B.H.



Eric Shore (left) being presented with a decanter and glasses from Leslie Hill, chairman of the Devon & Somerset GC (see report).



Gary Livings of Two Rivers GC after going solo on his 16th birthday.



Above: Lee Gorley of Four Counties GC who went solo three days after his 16th birthday with his instructor, Bob Rae, at the front. Lee's father, Trevor, is standing on the right next to his grandfather, Malcolm, and they both soloed on their 16th birthdays. Below: Doug Sadler of Coventry GC with the control wagon he helped to build.



BLACK MOUNTAINS (Talgarth)

We are under a foot of snow but looking forward to the season with many expeditions booked.

Congratulations to Tony Burton on reaching 24500ft in SW wave over Brecon and Bill Morgan on his Gold height.
J.P.G.

BORDERS (Galewood)

Our wave weeks in November produced three Diamond climbs and generated so much interest we hope to have two weeks in October and two in November. Congratulations to Andy Henderson who gained a Gold height.

We have delayed buying a club two-seater in case the Gulf situation affected interest rates and fuel availability - one benefit though has been the lack of low flying military aircraft!

Bad weather curtailed flying during December and early January but although we only had ten flights on one Saturday 24hrs were flown. The following Sunday gave wave up to 11 000ft.
A.J.B.

BRISTOL & GLOUCESTERSHIRE (Nympsfield)

We are hosting the Western Regionals and University task week. We have out of season soaring on our ridges with frequent flights of 200km.

Our new accommodation is revamped for the season - fully central heated and with more dou-

Below: Reflections. A fascinating photograph by Bill Barwell of Lasham GC which would have made our cover had it been the right shape.



Our photograph is of Stratford on Avon GC's ex Air Cadet syndicate owned T-21 with the beautiful 1/6th scale model by Neil Campbell.

ble bedrooms, we believe, than any other British club!
H.E.

BRITISH FORCES GERMANY (RAF Brüggen)

Now that running courses for the army adventurous training scheme has taken precedence over weekend activities, our name has been changed from Eagle GC to the British Forces Germany Gliding Centre.

In 1990 six courses at Achmer airfield near Osnabrück resulted in 37 solos, Liz Schwarzer, Neill Cockburn, Pete Cant and Adrian Scarborough completing Bronze legs.

Brian Trotter, a new instructor, has been seconded to Achmer as a permanent member

which should be a great help. More than half the members are at the Gulf but a small group operates at weekends and a full summer course programme is planned. All helpers are welcome.
E.P.

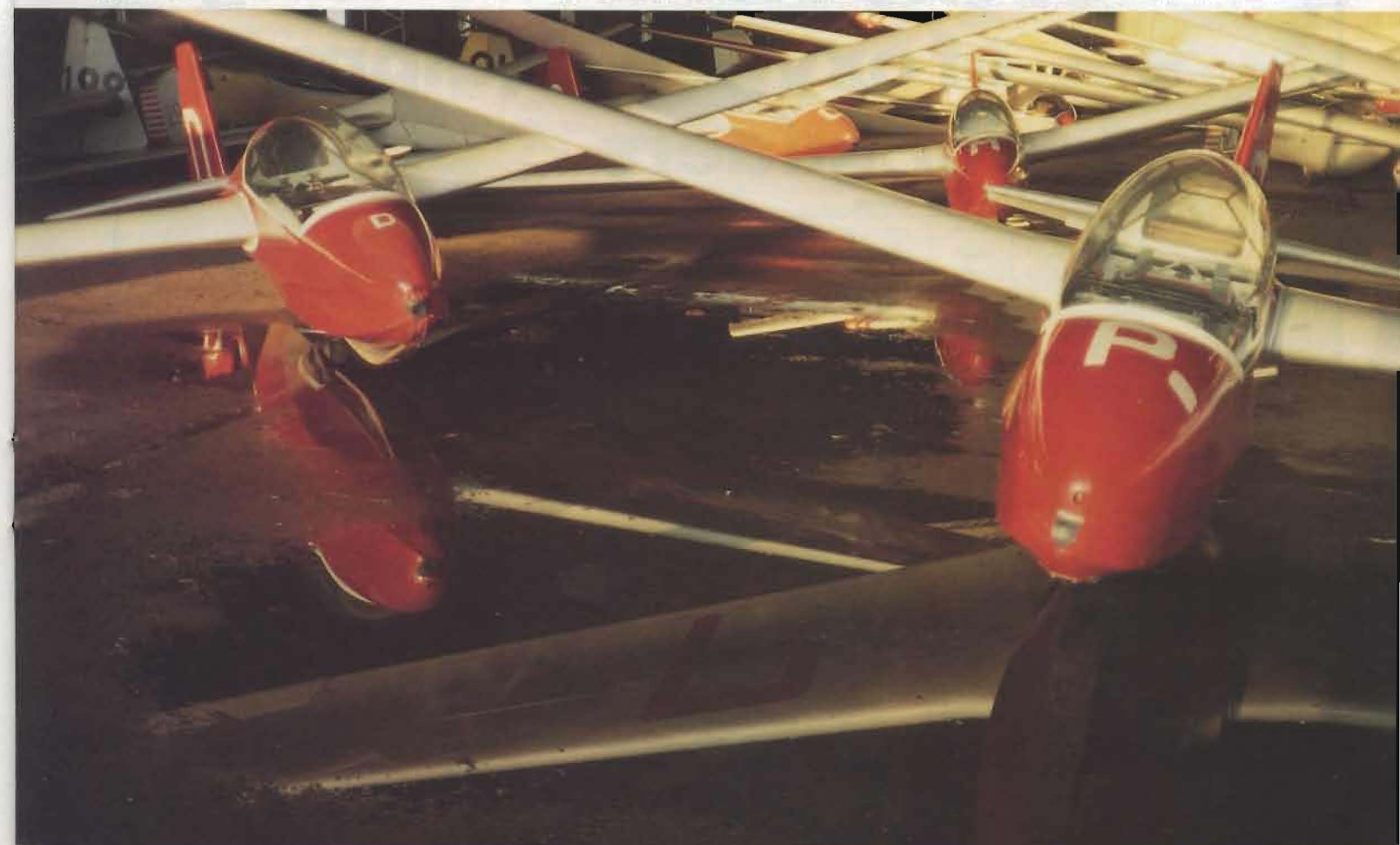
BUCKMINSTER (Saltby Airfield)

Congratulations to Russell Cheetham (all three Diamonds); Mike Entwistle (Part 1 of the 100km diploma) and Martin Looms (going solo).

The Rallye has had its annual, thanks to Phil Walsh and Dave Upton, and the K-13 is back after its little accident.

Wednesday flying this winter has been very successful and we will operate seven days a week in May with the start of summer courses.

Nottingham University, part of our club for many years, has now joined Syerston - we wish them well. Nottingham Polytechnic continues to ➡



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fly with us and we thank them for their support.
D.H.

Obituary - Richard Tomlinson

It is with deep regret that we record the death of Richard Tomlinson, son of Ray, one of our instructors, and Dorothy.

Richard, a 21 year-old solo pilot who was full of promise, died as a result of a motor accident. Our deepest sympathy goes to Dorothy and Ray.

Buckminster GC

BURN (Burn Airfield)

Our recently acquired K-21 is popular and our two winches have been restored and given a major overhaul.

The Christmas dinner was a great success with a record attendance enjoying the pantomime, "Robin Hood".

D.G.K.

CAMBRIDGE UNIVERSITY (Duxford)

We now have planning permission for all our buildings, and the hangar and Romney huts have been dismantled ready for erection at Gransden Lodge, which now looks like an airfield with the grass runways becoming established. However, our move is unlikely before late summer.

Congratulations on going solo to John Watson, Michael McIntyre and Julian Bayford.

J.L.B.

CLEVELANDS (RAF Dishforth)

Not a good winter; Christmas was all wind with little wave and we are now snowed in and reduced to tobogganing on old glider skids! At least some have done their Bronze papers.

Congratulations to our chairman, Gp Capt Peter Gooding, on his rapid solo and also (belatedly) to Dennis Renton.

J.P.

COTSWOLD (Aston Down)

Geoff Lloyd is our new chairman with Mike Barney as the new secretary, Fraser Wilson as tech member air and Bill Dalimer, 7th member. We thank the retiring committee members for their hard work. Ex-chairman Chris Clarke was presented with a pair of binoculars in recognition of his outstanding efforts.

Two members have BGA awards - Ed Johnston the Weekend Ladder trophy and Geraldyn Macfadyen the California in England trophy for the longest flight by a woman in the UK in 1990.

G.M.

COVENTRY (Husbands Bosworth)

Prizes were awarded at our annual dinner to Keith Nurcombe, Paul Crabb, Mal Guard, Ron Davidson, Carl Buzzard, Di Spalding, Les Crawford, Colin Bigwood, Alan Kangurs, Nick Hackett, Andrew Spalding, Doug Sadler and Liz and Dave Farmillo.

Our task week will be from May 25 to June 2 and visitors are very welcome.

We have a new Junior and a Puchacz in our fleet and a new sight on the airfield is "Doug's Diner", our new control wagon built by Doug Sadler and others.

Saturday nights are being enlivened with regular quizzes. Our AGM will be on April 20 in the clubhouse. We thank Di Spalding for the many years she has compiled our club news - she retires from the job this month.

T.C.W.

CRUSADERS (Cyprus)

Our refurbished Falke has a red, white and blue scheme. Ian Foster has gone solo, we welcome Mark Minary from Cleveland and John Morris is back.

The Christmas party was well attended and very enjoyable.

A.D.S.

DARTMOOR (Brentor)

At the annual dinner Paul Rowell was awarded the trophy for most improvement and Dick Toop for the biggest contribution - he planned and supervised the clearing of rough moorland, laid drains and tons of concrete foundations for the hangar. Don Puttock, who sadly is leaving Devon, was given a tankard in thanks for his tireless work as an instructor. And we thank the tiny band, like Dick, whose skill and hard work in all weathers make it possible for the other 90% to fly.

Andy Coles and Alan Wright have gone solo and we have another club glider on the way.

F.G.M.

DEESIDE (Aboyne Airfield)

We are now on Telefax with the fax No. the same as the workshop - 03398 85236.

Congratulations to Marcel Zeestaten on going solo and Ian Robertson on finally completing his Bronze some 25 years after going solo - he did have a break of 20 years!

To encourage junior members we have introduced free glider time for 15 to 17 year-olds. Our famous blue Capstan has been sold and is going south while an Aboyne syndicate has bought our Open Cirrus. Mike Law is our resident instructor after a sabbatical in Australia.

We finally have permission for signposting at our entrance and half a mile each side of the site.

G.D.

DEVON & SOMERSET (North Hill)

We had interesting and enjoyable flying in January with good ridge and thermal soaring.

At our December AGM eloquent tribute was paid to our president, Eric Shore, on his retirement after more than 25 years as treasurer. He is also a tug pilot. We are grateful for his tireless and capable tending of our finances and his astute guidance. The presentation (see photo on p98) was a small token of our appreciation.

Prizes were awarded to Sarah Baldwin (best progress); Dave Reilly (best cross-country/Comp placing/Club Ladder); Rex Grayling (best wood cross-country); Ian Mitchell (best 300km attempt, an O/R to Lasham); Peter Craggs and Rod Ward (winning the task week); Tom Towers and Tim Gardner (Two-seater trophy) and Brian Weare was the "Wily Old Bird".

Our first home-grown all three Diamonds pilot, Mike Fairclough, received a special award and to make up for the cancelled Enterprise prizegiving,

John Bally received the Enterprise Challenge plate as joint winner with Dave Reilly.

Another immaculate DG-300 has arrived and more K-6s brings their total to seven. The task week is from August 12-17. Come and join us.
I.D.K.

EAST SUSSEX (Ringmer)

We had a quiet winter with just the ticking over of training. Congratulations to David Shepherd, Ross Clifton and John Dove who have gone solo as a result.

L.M.

ESSEX & SUFFOLK (Wormingford)

In anticipation of our revised operations, we have hired a winch. Our Tost winch should be completed for this season and the Condor is being refurbished before being sold.

Peter Codd now has a Kestrel 19 and Mervyn Gooch and Martin Field are awaiting their LAK-12. Congratulations to Brian Maclain and Doug Gray on going solo.

As a result of our restrictions, we have flown on various Sundays at Ridgewell. Membership continues to grow despite the site problems and poor weather.

C.J.P.

FENLAND (RAF GSA)

We had a very successful year meeting our launch target and having five first solos. Notable achievements included Ron Smith's 300km to complete his Gold badge, followed by Diamond height, and Rhod Evan's 500km and Diamond height to be the first name on our Diamond bell for all three Diamond pilots.

Paraplegic Gary Bennett now has a specially modified K-6E in which he gained his Silver badge, UK Cross-Country diploma and we've got our K-13 back! Gary's exploits were in the newspaper and resulted in Ms A. Musk forsaking her wheelchair for a glider and we warmly welcome her.

Mick Owen is now the aircraft member and Ken Sharp the MT member. We have two double drum winches and a single drum winch. We sold a retired winch and a tractor to buy a Land-Rover for towing.

We hope to move very soon from RAF Marham to RAF Swanton Morley, north of East Dereham. To our members in the Gulf, we wish luck and a safe return.

M.I.P.

FOUR COUNTIES (RAF SYERSTON)

We had a good year with many badge claims. Our CFI, Ben Beniston, is a senior regional examiner and Alan Garrity (now in the Gulf) is representing the UK at the Junior Europeans.

We have many first solos and special congratulations to Lee Gorley who went solo three days after his 16th birthday - both his father and his grandfather soloed on their 16th birthdays.

We welcome Nottingham University GC on their move to Syerston. We held an instructors' course over Christmas/New Year and presented the annual awards on New Year's eve. Congratulations to them all.

L.S.D.



Muscle men rig Trent Valley GC's K-7.

GLYNDWR (Denbigh)

The winter gales damaged some gliders in their trailers but during the lesser windy periods we have had some excellent ridge soaring. After our first year the site's potential is proven.

Robert Vaughan has his AEI rating.
T.K.

GRAMPIAN (By Laurence Kirk)

We had the happy experience of our first solo flight at Grampian, by Dave Smith. Congratulations also to Al Eddy, CFI, on gaining all three Diamonds.

We have a money making scheme planned and know the glider we will buy. The Capstan continues to give sterling service.
R.J.S.



Chris Edkins of Stratford on Avon GC photographed by his mother before his first solo in the K-13.

HEREFORDSHIRE (Shobdon)

We had a number of good height gains recently with Mike Dodd and Les Kaye going to 16 000ft on what, from the ground, seemed a very unpromising day. In December John Warbey got to 17 000ft. We have a wave week in March with the London GC visiting.

We have spare launch capacity, especially at this time of year, and visitors are always welcome.
R.P.

Obituary - Brian Sedgwick

Brian died at the end of January after a short illness. In addition to being our treasurer he was an enthusiastic tug pilot and a popular instructor. His gentle personality may have belied the

passion he felt for flying, but his unselfish, helpful spirit was obvious to all.

The suddenness of his death has been a great shock to everyone at Shobdon and we extend our sympathy to Shirley, his wife, and to his family.

Roy Palmer

KENT (Challock)

A series of Bronze badge lectures have been well attended. We have a task week in August, neighbouring clubs being welcome.

Another turbo Ventus and an Astir from a Service club in Germany have increased our syndicate fleet.

A.R.V.

LAKES (Walney Airfield)

We were delighted to welcome our new president, Noel Davies, chief executive of Vickers Shipbuilding & Engineering, our friendly landlords, at our very successful annual dinner. He succeeds the late Sir Len Renshaw. Among the cup winners was our hard-working secretary/treasurer, Dick Redhead, who collected two.

Jason Fleming and Philip Gilbert have gone solo. We had some interesting February wave flights with Neil Braithwaite reaching 10 500ft in the club K-6. We are hopeful the summer courses will again be well supported.

G.J.

LASHAM (Lasham Airfield)

We have had an excellent year of progress. Membership has increased and we have upgraded our training fleet with a K-21 and another K-13. Our chairman, Tony Mattin, is retiring after seven years' dedicated, hard work. He has never missed a committee meeting and we have appreciated his valuable direction and service.

M.T.C.

MARCHINGTON (Marchington Airfield)

Following the sale of our site last year we are moving to a temporary site at Tatenhill. It has been necessary to buy a hangar and clubroom and a K-23 and a DG-500 are to be added to the fleet, the DG delivery scheduled for May when it will be the first in the UK. Meanwhile we continue to search for a permanent site.

An influx of new members has increased activities - congratulations to Dave Evett on going solo.

Obituary - Alf Newman

It is with great sadness that we learnt of the sudden death of Alf Newman on December 8.

Alf's cheerful and helpful presence will be greatly missed on the airfield. A former member of Stratford GC, Alf joined Marchington four years ago and was one of the faithful, always ready to DI at the start of the day and help pack the hangar at the end. Our sympathies go to his wife.

A. Roberts

MENDIP (Halesland Airfield)

Congratulations on going solo to Sally Carter, Mel Smith, Pete Dunlop, George Whitcombe-Smith, Rob Ware and Roy Millward and to Mike Ponting on his Bronze badge.

Our Christmas dinner was well attended and very successful.

In January Dave Townend (the elder) reached 13 000 launches, achieved in ATC and club gliding. He is now our safety officer.

We have installed a generator for a permanent power supply and are looking into the feasibility of sinking a borehole to give us our own water supply.

A syndicate Falke will be available for club use and field landing training and Peter Turner, CFI, has his SLMGPPL. Our second Bocian should be here in mid February.

Our new ploughed and re-seeded strip should be operational by Easter, which should ease the strain on both aircraft and instructors' backs.

T.A.D.H.



Open cockpit in February? Mary Meagher and Paul Gibbs risk frostbite in the Shenington GC's T-21.

MIDLAND (Long Mynd)

We celebrated Christmas with a fine lunch for about 60 members and members from Imperial College, Surrey & Hants and Booker helped us see in the New year. One intrepid hang glider pilot soared in the New Year in brilliant moonlight and a gentle westerly.

We have continued weekend flying throughout the winter, with the exception of two. Simon Adlard and Jonathan Ballard took a K-21 to 10 000ft in wave on December 23. Soloes were achieved by Jonathan Blackhurt, Richard Hinley, Lucy Underwood, Jim Wotton-Davies, John Warren, Sid Glazzard, Guy Hartland, Richard Swift and Simon Jackson.

A.R.E.

NENE VALLEY (RAF Upwood)

The Christmas dinner was most enjoyable. Chairman, Roger Emms, has planned a club visit to RAF Cranwell in March and CFI, Horace Bryant, is running Bronze badge classes.

Congratulations to Gary Evans, Graig Gorowsky and Mel Bain on going solo.

R.E.

NEWARK & NOTTS (Winthorpe)

The annual shutdown for refurbishing all equipment is thankfully over. The parachute storage cupboard built by Andy Summerfield and Dave Kassube is a work of art and Dan Goldsworthy has improved the kitchen electrics.

Congratulations to Roger Starling on his full Cat. We are hoping to get a second K-8.
M.A.

NORFOLK (Tibenhams)

Great efforts have been made on the runways and general environs. There is a great clubhouse improvement with Terry Jeffery taking over the catering and caretaking.

Our bonfire and Christmas parties were winter highlights. We are hosting the Eastern Regionals from May 18-26 and there are still some spaces.

R.J.H.

NORTHUMBRIA (Currock Hill)

We have a suspended ceiling in the clubhouse thanks to Rob Thompson, Alan Scott and helpers. Work also continues on painting, installing new lighting and improving workshop facilities.

Generally poor flying weather has been relieved by some good wave days. On December 23 the club two-seaters, the Pirat and several privately owned aircraft were at 10-11 000ft in superb wave which stretched for many miles. A fortnight later Martin Fellis and Kevin Clements achieved 13 000ft in the K-7.

Our new Puchacz two-seater is being fitted with instruments.

R.D.

OXFORD (Weston on the Green)

Members are fettling a second-hand motor caravan to replace our launch point caravan and a replacement Land-Rover for on-field duties.

We congratulate Gary Smith and Andrew Barnes on going solo. We have a Mini Nimbus syndicate on site.

F.B.

PETERBOROUGH & SPALDING (Crowland)

Cs of A on the club fleet are proceeding apace and the blue Bocian has recovered from its mishap! Tony Fidler has bought a pretty K-6E.

M.J.

PORTSMOUTH NAVAL (Lee-on-Solent)

Congratulations on going solo to Michael Rendall and Caroline and Nigel Gilkes, our fifth husband and wife team to show that gliding can be a family sport.

December saw a successful Christmas dinner-dance, and the opening of our new clubhouse after much effort by members, led by Martin Heneghan. Our thanks also to John Hale who prepared a computer system for club flying statistics which now produces a competitive soaring ladder, annual summaries for individual pilots and much else.

Y.C.

SCOTTISH GLIDING UNION (Portmouk)

Roy Dalling has settled in as our professional CFI. Many thanks to Brian Scougall for filling the

gap. We welcome Graham Niven as our course assistant/tug pilot for the season and the new winch will soon be operational. Book your autumn wave expedition now!

M.J.R.

SHALBOURNE (Rivar Hill)

Geoff Nicholls retired as chairman at the AGM - our thanks to him for all the time and effort he put into the club. The annual dinner was a great success and our thanks to the organiser, Gillian Brind.

We have expeditions, a task week, the Inter-Club League, AEI training and an *ab-initio* course planned for this season.

S.C.O.

SHENINGTON (Edge Hill Airfield)

After a troubled end to flying in early 1990, a new club was formed by some members of the old club. Flying started again last April, initially with a club K-2 and syndicate gliders launched by a tug from Avon.

Now, after hard work, we have a club K-7 and T-21, a tug and an excellent twin drum winch built by Graham Colledge. He modified a tractor unit of an articulated lorry and Dick Stratton, BGA chief technical officer, considers it the best home built winch he has seen.

Two successful Saturday morning *ab-initio* courses resulted in new members. Peter Roberts, Alan Seeds and Adrian Ludlow have gone solo. Membership has increased substantially and facilities are constantly improving with another two-seater planned.

Our thanks to several people for their help and hard work in forming the club and making 1990 very successful after a difficult beginning.

G.C.

STAFFORDSHIRE (Morridge)

Charles Wiggins has succeeded Colin Ratcliffe as CFI. Congratulations to Charles and many thanks to Colin for his services - good luck in France.

Part of our workshop is being converted to a clubroom and bunkroom. We are grateful for the efforts of the building crew.

Well done to Ted Hobby on his Silver height and to Chris Harris on his instructor's rating.

Additional midweek flying on Friday nights has been arranged from April to September and club expeditions are being considered.

K.A.

STRATFORD ON AVON (Snitterfield Airfield)

We saw 1990 out with a special flying day to get 16 year-old Chris Edkins solo on his birthday. He has now converted to the K-8 and is flying the syndicate T-21. Chris was also featured on our local radio highlighting youth enterprise. Well done also to David Johnson on going solo.

The club K-21 is a real winner. The K-7 has been sold to Dartmoor GC.

H.G.W.

TRENT VALLEY (Kirtton in Lindsey)

Malcolm Carpenter, whose photograph was in the June issue, p152, died in December after a

long illness. He spent many hours watching at Kirtton before joining us in 1979.

In his wheelchair or invalid car our legless pilot became the regular signalman. His frustrations were countered in 1987 when John Cook adapted the rudder controls of the K-13. Malcolm then demonstrated his undoubted skill by gaining a Bronze leg on his second solo flight.

This year is our 25th and we invite all our friends and old members to fly with us. We plan to have some special events.

M.P.G.

TWO RIVERS (RAF Laarbruch)

Congratulations to Nigel Hobbs and Chris Gilbert on becoming instructors. We wish all the best to Barney, Gary Livings and John Hill who are in the Gulf. Gary's son Richard went solo on his 16th birthday on Christmas Day.

The Laarbruch mini Comp is May 18-20 and all entries are welcome. Contact Ian Smith on Laarbruch Mil 5712 or 01049 2837 9472.

Our new K-13 arrives in March and two members have an ASW-22.

L.F.

ULSTER (Bellarena)

A high point was the weekend with Derek Piggott who capped 8hrs of lectures and discussion with an enormously entertaining speech at the annual dinner. We were also visited by a large group from the Dublin GC who plan to come to our Easter week. Mainland pilots who fancy an early holiday near a very nice ridge would also be made very welcome.

We are giving the Capstan its C of A and the tug has gone away for its annual.

B.T.

UPWARD BOUND TRUST (Aylesbury/Thame Airfield)

This is our 30th year at Haddenham and 50 years since the Glider Pilot Regiment started flying here with Kirby Kites and Tiger Moths. We are celebrating both occasions on April 27 by inviting everyone who had anything to do with the Trust to the airfield. For more information contact Peter Chamberlain, 32 Fyne Drive, Linslade, Leighton Buzzard, Beds LU7 7YQ, tel 0525 378901.

P.C.

VINTAGE NEWS

The 18th International Vintage Rally will be at Schaffhausen, Switzerland from July 13-20 and the Rendez Vous Rally at Wächtersberg, near Calw in the Black Forest, from July 7-12.

As it is getting difficult to find large enough sites for the International Rally, this year the number of gliders will be restricted, preference being given to the oldest ones.

C.W.

WELLAND (Lyveden)

The clubhouse has new floors, a re-tiled roof and is being re-wired. Our thanks to the helpers under the direction of Norman Martin. Erection of the hangar has been delayed awaiting calculations for strengthened steelwork.

We have bought a K-8 from Switzerland to replace the L-Spatz, and two SF-27s have been



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added to the private owner fleet. Congratulations
to Paul Warburton and Richard Large on their AEI
ratings.
R.H.S.

WEST WALES (Templeton Airfield)

We are recovering from a pretty traumatic year
when we were without a CFI and with an adminis-
tration of early solo pilots getting to grips with the
world of gliding. We are now fortunate to have
Neal East as CFI and Frank Dassens as DCFI - all
happening within a month.

We fly a K-7 conversion (K-10), a K-8 and T-21
at our site near Tenby - Clark Gable flew Thun-
derbolts from here! Our thanks to everyone who
has helped.
J.B.R.

YORK GLIDING CENTRE (Rufforth Airfield)

Ken Deane and Kevin Millar have gone solo,
Kevin on his 16th birthday. We have had a series
of useful talks on a wide range of subjects in con-
junction with visits to the Leeds Weather Centre
and Leeds Bradford Airport air traffic control.
A.W.

YORKSHIRE (Sutton Bank)

We have replaced our 150 Super Cub with a
second Pawnee and our 180 Super Cub is being
overhauled and re-covered, giving us three tugs.
The Falke has a new engine and our DG-200 is
being replaced by a new DG-300.

Our task week is from May 25 to June 2.
C.L.

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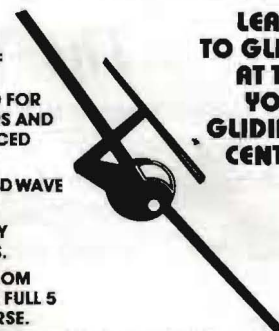
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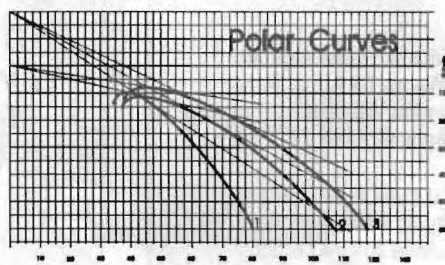
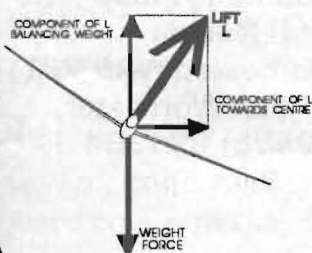
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This was the first error as the lift proved difficult and I struggled to 2500ft, thinking if this was the best I could do the 300km was off.

However, it was my last day in France and thus my last chance, so I went off on track to a slightly promising cu. It was better than the last but hardly heroic stuff at 2kt. I decided to go for broke and set off again on track determined to go or land in a field.

Ten miles down track I found a good thermal which quickly took me to 3500ft. Ever mindful of the time that had already evaporated I pressed on and I was soon at 4500ft with my first TP, Poitiers, visible ten miles away. On arriving I wasted a couple of minutes trying to spot the major airfield to the west until it suddenly leapt into view from a cloud shadow.

Now into wind for the long leg to St Florent. Navigation was no problem in the excellent

visibility; not so progress into wind. It was 2hrs before I passed Le Blanc - 100km in 2hrs with a further 1000km to go into wind!

No streets, lift well spaced but at least the cloudbase was now above 5500ft. I really remember very little detail of this slow leg. I finally arrived at TP2, photographed it and took a high climb in what was beginning to look like a dying sky.

At this point I was amazed to see several towns beyond the TP. I couldn't identify any as the TP was on the edge of the map and represented to me the edge of the known world!

The return leg, although assisted by a tailwind, looked distinctly unhealthy. The closest cloud was a good 15 miles away but *en route* I spotted a good stubble fire some five miles off track. It cost me a lot of height to get there but at least it was still going strongly and took me to 6000ft on a parallel track.

With 25 miles to go a promising cloud appeared just ahead. I milked it dry and calculated I had a sporting chance of gliding out the remaining 25 miles. Ten miles further on I turned three times in a blue thermal just to be sure and then called "FGT final glide."

I arrived at 1200ft and 100kt and landed tired but happy - 5hrs 15min is hardly impressive for 300km and I resolved to aim for 4hrs as my next target - but first some beer!

OVERSEAS NEWS

ERNST GERNOT PETER

"Pit" Peter, the well-known German competition pilot, was tragically killed on December 5 in a gliding accident in New Zealand. A member of the German team at the 1987 World Championships in Benalla (8th in the Open Class), "Pit" devoted much time and energy to promoting the activities of the Akaflieg student gliding group in his home town of Freiburg. - *Der Adler*.

TURBO CHARGE

German manufacturers are working on the basis that 70-80% of all new gliders will be delivered in future with some form of engine.

Overseas news here and elsewhere in S&G was collected and translated from foreign magazines by Max Bishop.

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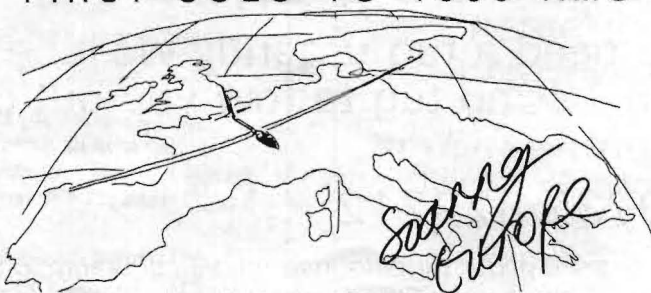
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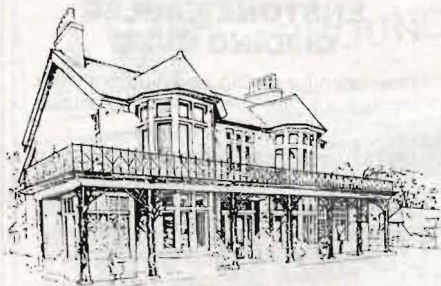


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