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Magazine of the
British Gliding Association

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April-May 1990
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SAILPLANE & GLIDING

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Cover: Keith Proctor and his daughter Emma over Rufforth in a T-21. Emma, aged 11 when Ken took the photograph with a mounted camera, has been gliding since she was five, but only flies if she can do aerobatics.

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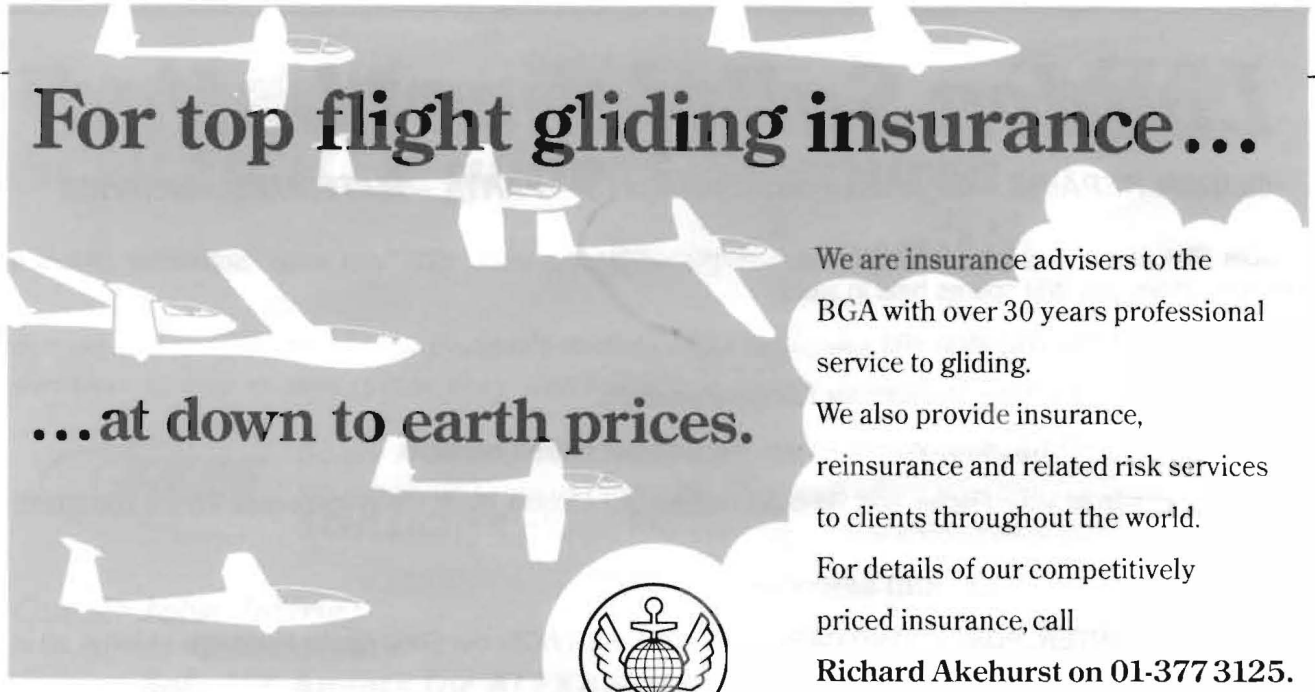
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(Comments by Dick Johnson reported in PILOT, Feb. 1989)

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YOUR LETTERS

AIRFIELDS GALORE

Dear Editor,

The events in Eastern Europe are likely to lead to a substantial cut in the UK defence budget over the next few years. Many military airfields will be closed or mothballed. Already the virtual closure of Greenham Common has been announced. This gives the gliding movement both problems and opportunities not seen for a generation.

Clubs at airfields likely to be closed will need to think of their future. Weston on the Green is an obvious example. Could they buy if fund raising started now? Would the local authority welcome a joint proposal for a leisure centre and industrial or residential development? As my own village has found, developers can be very generous if they think that social facilities will help with planning consent. Clubs in that position need to start talking long before the developer even thinks about the outline of his scheme.

What about new clubs? There is a desperate need for another large club to the south-west of London. Odiham is almost ideally placed. Willingly or by defection, Lasham will supply a core of instructors, but it can't be expected either to fund raise or to sponsor a new club. There will be other locations ripe for new clubs. Even Greenham Common!

To make use of this once in a generation opportunity will require some patient work over several years. Club officials come and go and, quite rightly, give their efforts to their own club. The task of creating brand new clubs must fall to the Association's paid staff. Are the BGA officials thinking along these lines?

CHARLES BAKER, *Winchester, Hants*

Bill Scull, BGA director of operations replies: Charles Baker raises a number of speculative points regarding future site availability. Whether clubs can afford to purchase a site depends not only on them having the money but the way in which the land might be divided for sale. The BGA's Development Committee is closely involved in site acquisition, planning approval for new sites and giving advice on the purchase of established ones when and wherever possible. The mind boggles at the prospect of trying to establishing "brand new clubs", conjuring them out of thin air as it were. Experience has shown that this is only possible if a nucleus of gliding people take the initiative.

FIGHT FOR YOUR AIRSPACE

Dear Editor,

Happy New Year, nay, decade. Here is a New Decade Resolution! Glider pilots fight for your airspace; free yourselves from oppressive NATS!

Throughout history oppressed people faced with restrictive, illogical and ill-thought-out laws rebel. On the grand scale we have just witnessed this in Eastern Europe. On a tiny scale we too could break out - into the wide empty air indicated on maps as SRA and air corridors.

That we are heedlessly restricted needs to be stated, as so many younger pilots have grown up in this restricted atmosphere they believe it to be rational, normal and necessary. Many years ago there were far more aircraft and active airfields than now. Airspace restrictions were thought necessary around Heathrow, Birmingham and Manchester only.

For many years restrictions have multiplied, not usually for logical safety reasons, but as a response to ill-informed fears and as the outcome of competing pressure groups. A few ignorant words in Parliament, often on accidents or "air misses", are headlined by an hysterical press or by TV. In response out come GATCO (the ATC union), CAA, airlines' representatives, operators, RAF, Army and Naval Airforces, USA Airforce and of course the package travel industry. They get attacked by the public for a perceived risk and blame each other, and respond by defending their jobs, their pensions and their money. From this melee come new laws, more restrictions.

Every loss of free airspace increases that danger to gliders, much of general aviation and all the other airsports.

Should we grovel and be terrified lest it cause greater oppression? For years the people of Eastern Europe did just that. Let us break out of our Berlin walls, joining other oppressed aviators and fly up into those vast, virtually empty regions. Remember the bottom of airways are empty and that no lid really exists in the Daventry CTA. It is not brave to fly up there; it's virtually empty and very safe.

Apart from exhortations I can suggest one practical method of revolt. Ban the carrying of barographs in gliders except for badge collectors!

Before going to sleep I read what I have written and am frightened. Have I broken the law of incitement? My words are read by an MP; quoted out of context in Parliament; Headlined in the press "Mad Glider Pilot Threat to British Tourists", "RAF alerted", "Sidewinder Misses Radar-Transparent Target and Downs Airbus", "Holidaying public flock back to Blackpool and Margate", "Balance of Payments goes into the Black", "Glider Pilot in Honours List".

I wake up feeling quite proud . . .

TONY WATSON, *Romsey, Hants*

Chris Garton, chairman of the BGA Airspace Committee, replies: Many glider pilots share Tony's frustration at being banned from airspace that is apparently empty. Whilst there are undeniably some such areas that are little used at any time and others that are used only under certain circumstances, it would be a dangerous step to assume that all regulated airspace is so devoid of traffic.

The Daventry CTA is a case in point. Last summer two glider pilots had airmisses filed against them by a commercial aircraft having presumably entered the CTA inadvertently. I believe that it is in the longer term interest of the gliding movement that the BGA is seen to be a responsible organisation which can't encourage or condone law breaking in any form.

THE DANGER OF RUDDER LOCK

Dear Editor,

In the old days of the Grunau Baby it was usual to get rid of excess height by a side slipped approach. With current dive brakes this is unnecessary because they are very efficient, but occasionally the pilot may find himself so high that he tries to side slip as well but encounters difficulty in taking off slip because the rudder has locked hard over.

If you fly a Nimbus 3 straight and level at about 50kt and gently but firmly apply full rudder, the aircraft will continue to fly straight and level with a quite alarming amount of yaw. In addition there is a lot of buffeting as the fuselage is stalled and the rudder is locked hard over because the fin is stalled and the rudder is sucked into its wake.

If you leave things as they are the aircraft does a skidding turn and eventually flies in the direction in which it is pointing. Alternatively if you apply a firm pressure to the rudder pedals to centre then the yaw rights itself immediately.

Although I have described this effect for a Nimbus 3 I suspect it happens in many modern ships. It is desirable that pilots should test this out for themselves flying at a safe height before they start discovering rudder lock when side slipping on final approach into a small field.

BRENNIG JAMES, *Marlow Common, Bucks*

FINAL WORDS ON STALL RECOVERY

Dear Editor,

John Presland's and Dudley Steynor's suggestions that the **RAF Instructors' Handbook** on stall recovery when the wing has dropped is the correct teaching for glider pilots are very worrying. (See the December issue, p279 and the February issue, p7.)

RAF pilots undergo a rigorous selection procedure and are then professionally trained and tested with almost unlimited resources and equipment. The training is geared towards possible combat flying and precision aerobatic manouvres are a part of this training. The RAF stall with a wing drop recovery technique is therefore correct within that context and if applied with precision will save a few feet or split seconds in recovery.

The stall recovery action recommended by the BGA Instructors' Committee is intended to avoid serious and fatal injury. It recognises the lack of pre-selection of pilots, the amount of initial and recurrent training and testing and, most importantly, the state of mind of the person required to make the recovery.

The glider pilot who needs to take the recovery action to avoid personal injury has not deliberately set up the situation or expected it. His stall avoidance training has failed him and he has missed the symptoms of the approaching stall already. The stall is totally inadvertent and results from some ineptitude which is often associated with a high work load. The pilot is therefore not in a frame of mind to carry out a skilful rudder application which if misjudged can make the whole situation considerably worse.

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I am not aware of any gliding accident where the height loss saved by the precision application of the rudder as opposed to just unstalling the glider alone would have been or was critical. I know of a number where inappropriate rudder usage before the glider was fully unstalled were disastrous.

Teach stall/spin avoidance, recognition and recovery in the context of **our** operations.

BERNIE MORRIS, *BGA Instructors' Committee chairman*

(This correspondence has run for so long, it is now closed for the time being. Ed.)

TWO OUTSTANDING MEN

Dear Editor,

I have been a long time reader of *S&G* (and its predecessors), and I noted with sadness the obituaries of Sir Peter Scott and Basil Meads in the December issue, p307. They both were outstanding men and I was fortunate in having some contacts with them.

A number of years ago when Peter made a visit to the Cornell University in Ithaca NY to receive the Allen award for ornithology, he visited the Schweizer soaring school in nearby Elmira. After a checkout he was launched in a 1-23 for ostensibly a local soaring flight. He soon disappeared from the area and when the school was getting ready to close for the day they wondered what had happened to Scott.

A while later he appeared coming from the north and upon landing he wanted to know the name of the city that was at the end of Lake Seneca? It was Geneva, about 60 miles to the north. In those days, with the lesser performance sailplanes of that time, you didn't venture too far from home port unless you had made arrangements for a possible retrieve. Needless to say, we all were quite impressed with Sir Peter's confidence.

I remember Basil from the 1954 World Championships at Camphill. With a full week of rain followed by marginal weather for getting a start from a winch launch, it was a trying time for Basil and his club members. Great efforts were made to keep the teams happy on the many non-flying days. I remember well Doc Slater and his musical talents. Fortunately for Basil and his club members there was just enough flying to make it an official contest.

From this far away point it appears that they both contributed much to the British gliding movement, each in his own way.

PAUL A. SCHWEIZER, *Elmira, New York*

BRAIN CELLS INTACT!

Drear Editr,

Tony Watson arsks if elder plots remmember Croby of Furnse and Stele Wroks fame. (See letter in the December issue, p277.) I do becoss I ws a wrtime evacui tere - vrey yng if I mite say so.

Frying grilders afterwoods in the smok wos nise as I cd see the howse I used to in live az a yung lid.

It nevr died me eny hrma.

JOHN ELLIS, *Natal, S. Africa*

COMMENT ON OUR LAST COVER

Dear Editor,

Perhaps I'm growing old, but I'm just a little bit concerned about a pilot who "fixes" a camera button on a glider brake lever, which he then appears only to reach with difficulty. He's obviously slid down, and thus has moved his trunk forward (possibly obstructing full rearward stick) and to one side (is he *properly* strapped in if he can do this?).

Also as an approved inspector (A/I) I don't think I'd let that seatback fly again: if it failed, and it is about 30% "gone" already (46mm out of 155mm measured across the photograph), where would his *shoulders* go, with the *g* coming on in the pull out? He'd probably inadvertently pull back sharply* - so would 1700ft at this point (possibly only 1195ft above HB - unless that is QFE set) be sufficient for the recovery, *composure,* circuit and landing?

May be it's a good thing I cannot see the camera mount; was it "approved", as attached to the aircraft structure? No, ma'am, not for ➡

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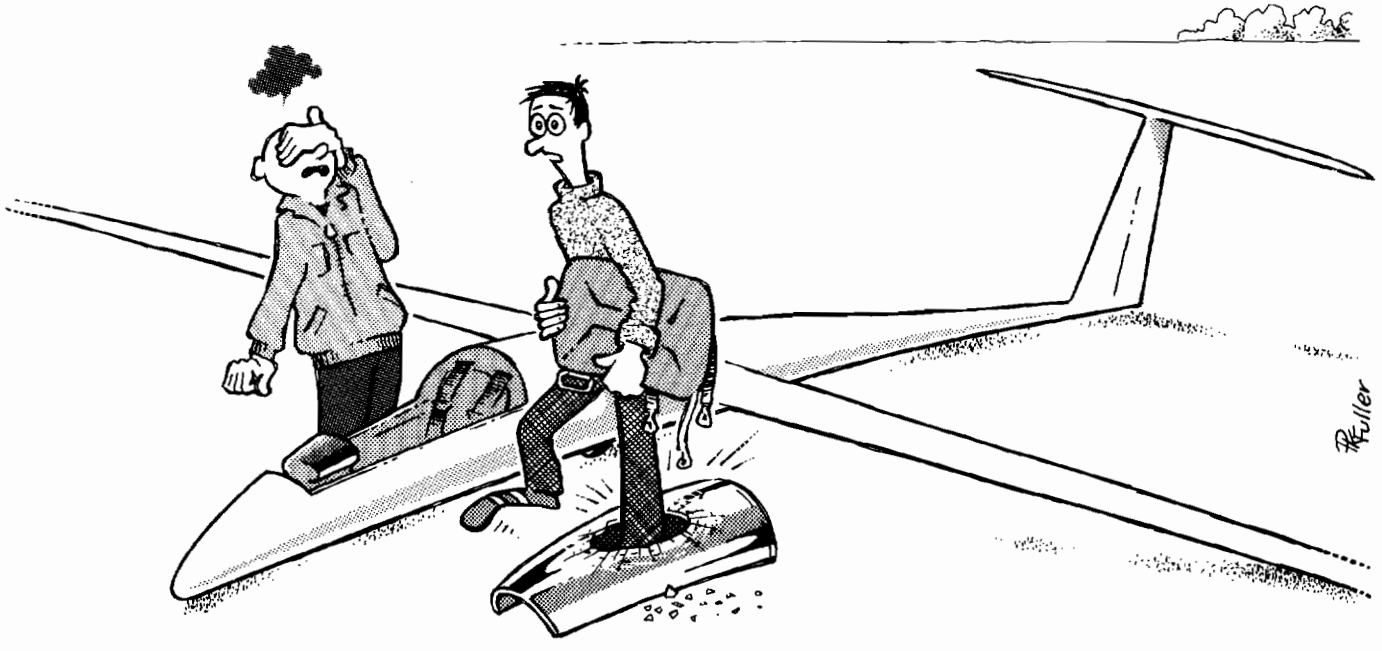
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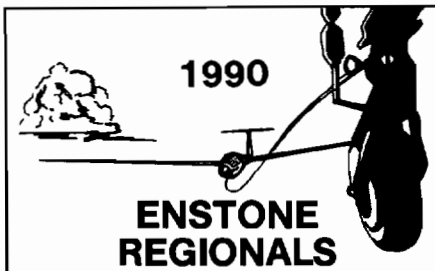
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me: I'd rather be gliding! Fifty-six accident reports in one issue is quite sufficient.
THE WATCHFUL EYE!
**Ouch!!*

Gordon Murray, who took the cover photograph, replies:
1. My trunk was slightly down and over to the left with legs etc well clear of any stick movements! It was further to the left than essential (since reaching for the airbrake is a normal flight activity) but quite cosy and secure. The exclamation mark in the caption was an alternative to the word "joke" in brackets.
2. The seatback had passed the previous C of A, the normal daily inspection plus my own extra pre-aerobatic extra inspection; just like Ron always taught me to do.
3. It is QFE set.
4. The camera mount was a 2in by 1in screwed wooden frame mounted by multiple *g*-clamps, each double-checked before take off. It was approved by a university lecturer in engineering materials with a CEng amongst other more academic qualifications (me).

Sorry if I upset "The Watchful Eye". With hindsight I would agree with him that the photo and caption might have some potential for giving newcomers to the sport the wrong impression.

Can I make some amends by stating now my firmly held belief that all the things we do in gliding need to be well thought out in advance to minimise the risks that we all accept when we take up gliding rather than carpet bowls as our hobby. However, I also believe that once we have got safety planning to the best level that we reasonably can then we ought to go ahead and enjoy our flying with a big grin on our faces.

BROWNIE POINTS

Dear Editor,

I have read Pam Rollason's article, in the last issue, p26, but I have to tell you that although my wife now has two Open University degrees and I have bought her two different makes of personal computer, she still insists on flying my Nimbus.
MICHAEL RANDLE, *Oxford*

BOOK REVIEW

Wood, Wire and Calico, a chronology of Australian designed gliders, sailplanes and human powered aircraft by David A. Craddock and available from the author - 78 Kent St, Epping, New South Wales 2121, Australia, at £11 (airmail) or £10 (surface).

Most students of aviation and gliding history will be familiar with the activities of Lawrence Hargrave (1850-1915) in Australia who amongst his many achievements invented the box kite. Very much less familiar will be the extensive information on more than 30 Australian pioneers and their 54 creations compiled by David Craddock during several years of research.

This work of more than 70 A4 size pages contains, within its soft cover, a host of excellent three-view drawings and sketches together with 26 photographs. From the sources of information quoted and the bibliography it is unlikely that much, if any, new data on this period will be uncovered. It is without doubt a valuable contribution to our knowledge of the pioneers of gliding in Australia, a number of whom were later involved in the early gliding movement from 1929 on that continent.
IAN TUNSTALL

A number of contributors to S&G are still wasting valuable time and missing deadlines by sending copy to the BGA instead of the editorial office at Cambridge.

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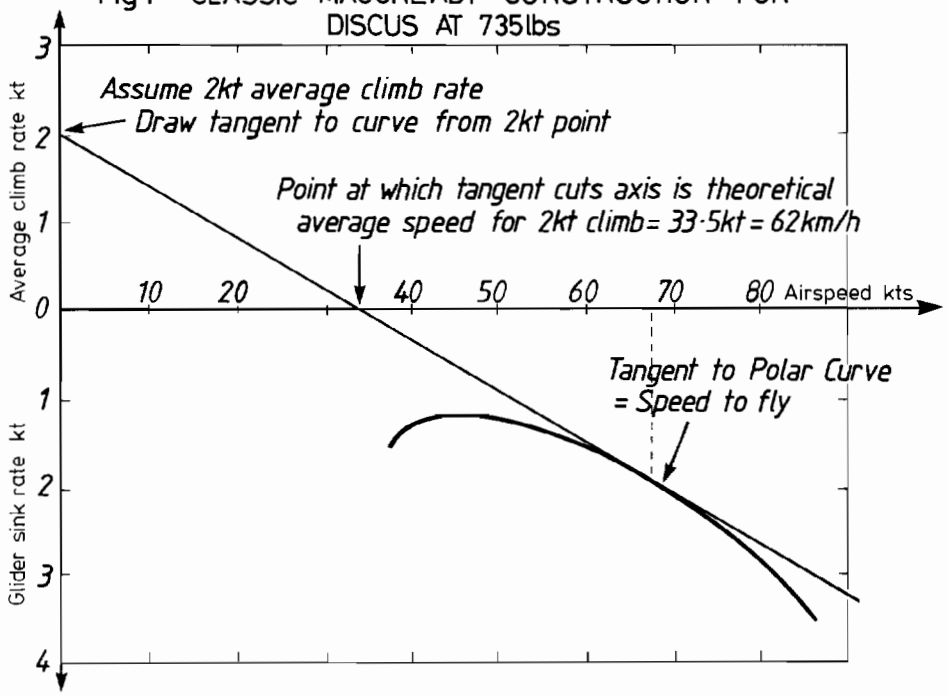
IMPROVE YOUR CROSS-COUNTRY PEFORMANCE

An article to help early cross-country pilots make the best use of the soaring season by Andy Davis, who has distinguished himself in five World Championships

We all hope that 1990 will entertain us with more of last year's excellent soaring weather. However, I felt that despite the large crop of badge claims only a few pilots fully exploited the cross-country potential. With good weather occurring both on weekdays and weekends there was little excuse for not making the best of it.

There is no magic formula for success at cross-country flying, but given the basic skills of thermal soaring and navigation virtually all aspiring cross-country pilots can radically improve their performance through planning, discipline, flexibility, determination and honest self-criticism.

Fig 1 - CLASSIC MACCREADY CONSTRUCTION FOR DISCUS AT 735lbs



PLANNING

1. Performance. It is essential to know the performance potential of your sailplane for the conditions on any given day. The best way to do this is to draw out its polar curve on a large sheet of graph paper remembering to extend the axes back to zero. Then use the classic MacCready construction (Fig 1) to find the theoretical cross-country speed for a range of typical UK average climb rates, say 1 to 5kt. Reduce the theoretical speed by say 20% to allow for detours, buggy wings, wind effects, incompetence etc to obtain the likely average cross-country speed on any given day. (The reduction factor you use depends to some extent on your own experience level. A really good cross-country pilot will often go faster than theoretically possible by using streets of lift in the cruise.) Make up a table showing an average climb rate against likely average cross-country speed in km/hr (Fig 2). If your sailplane has no speed director use the same graph to calibrate a speed ring for your vario (for instruction on how to do this refer to **New Soaring Pilot** by Welch and Irving).

On a typical UK soaring day achieved climb rates average about 2.5kt throughout the day as a whole. Fig 2 shows that we might expect an average cross-country speed of 56km/h. On a good day with 4kt climbs the average speed might be 70km/h, but on a very weak day as slow as 35km/h. The average soaring day in the UK offers about four hours of reasonable soaring from about 1300 to 1700 BST. Really good days with unstable polar air (north wind) offer more, say about six hours from 1100 to 1700 and lift strengths to match (4kt plus). Blue days tend to offer a shorter useful soaring period, perhaps three hours from 1400 to 1700, but lift might be good once it starts.

Fig 2 - AVERAGE LIKELY CROSS-COUNTRY SPEED VS AVERAGE CLIMB RATE —— DISCUS AT 735lbs

Average climb rate kt	*Likely av XC speed km/h*
1	35
2	50
3	62
4	70
5	75

By matching up climb rate and resulting average speed with expected soarable period (or the length of time your syndicate allows you!!) it is possible to calculate the cross-country task distance it is reasonable to declare for any given set of conditions. Using our example of a 20% fumble factor pilot flying a Discus on an average UK soaring day, a 2.5kt climb rate gives an average speed of 56km/h for four hours so 224km would be a challenging cross-country. For the same pilot and glider 100km would be appropriate on a weak blue day and 420km on a good day.

Now that you know how far you can go in your sailplane it's time to haul out your maps and start planning your cross-country routes. Aim to make up a file to which you can refer on the day to avoid hasty flight planning decisions. Make any relevent notes in the file such as leg lengths, airspace restrictions and whether it meets FAI badge requirements. The aim is to compile a file of cross-country routes from short to as long as is realistic so that on each soaring day you can tailor your flight to the anticipated conditions and soaring time available. All cross-country route planning involves a degree of compromise and some of the factors you should consider are discussed below.

2. Routes. The most efficient way to arrange your cross-country route is downwind on the first leg while conditions are weak, into wind during the peak of the day and downwind again on the last leg when conditions are dying. If you fly a glass glider with waterballast facility, try to arrange the into wind leg to lie *directly* into the wind to make use of cloud streets. Most good soaring in the UK is associated with wind directions from west clockwise round to north-east, so try to plan a selection of routes at each distance to take best account of these wind directions.

Consider areas which might offer poor soaring such as wide damp valleys or coastal areas and try to avoid them at the relevant time of day. When operating out of Nympsfield, for example, it would be stupid to try to cross the Severn valley into Wales early in the day in a south-westerly wind because the damp cool air trapped in the valley delays the development of usable thermals. However, it would be perfectly reasonable to cross the Severn valley from Wales back to

Nympsfield in the evening in the same south-westerly wind. In the evening avoid areas which might be subject to penetration of sea air. A north-easterly wind, for example, often brings in unsoarable air from the Wash to Daventry during the afternoon and sometimes this reaches as far as the Cotswolds. Generally an extensive range of hills will stop further incursion of sea air. **Meteorology and Flight** by Tom Bradbury contains detailed information on this subject.

Learn about the restrictions applicable to the airspace you are likely to encounter. Remember that having to maintain VMC, in particular the requirement to stay 1000ft below cloud, can severely restrict your freedom to operate if cloudbase is low or clouds are widely spaced. Plan to avoid by a good margin airspace from which gliders are prohibited. Quadrilateral shaped tasks are very good for avoiding these difficult areas.

Select TPs for ease of navigation and identification. Two crossing line features are ideal for this purpose, *eg* motorway/road or rail/road. Ideally you should have 1:250000 map coverage of your intended TPs to aid identification and orientation, but if you don't the **OS Routemaster** road atlas is a good alternative.

3. Equipment. If you are really serious about cross-country flying, then your equipment must be in first class condition. This doesn't necessarily mean new or expensive, just well maintained and reliable.

Inspect your sailplane with a critical eye.

Does the wheelbrake work? You will need it in a field landing.

Is the wing leading edge good? A tatty glass Standard Class glider costing £12000 performs worse than a well maintained K-6E costing £8000. Fill all chips with filler or gel coat and reprofile to 600 grade finish or better. Then keep it clean and polished and always wash the bugs off after flight so that you are ready to go on the next good day.

Is the cockpit draughty? Seal all the air leaks which can be jolly uncomfortable on a long flight in polar air.

Is there a serviceable pee tube? If not you had better fit one for those long cross-countries when a bursting bladder can be very distracting (or not so long cross-countries if you haven't fixed the aforementioned draught!).

Do your instruments really work? Dispose of any that are unreliable. In particular you need a good compass (I prefer the Schanz or Bohli) and a good total energy variometer, *ie* one that says up when the air is taking you up and down when the air is taking you down, with a speed director with audio output (LX 1000) and Winter mechanical vario with speed ring for back up. If you cannot afford electric the John Willy dolphin and mechanical speed ring is a good cheap system. Expensive vario/nav computers are fine for the experts, but in my opinion the workload is much too high and distracting for relative newcomers to cross-country flying who just need to concentrate on getting the basics right. Quite frankly, the extra money would be better spent on aerotows and cross-country flying practice.

Do you have a John Willy final glide calculator? Is it the correct one for your sailplane? You don't want to find out that it isn't when two miles out on a marginal final glide! Do you know how to use it? If not ask somebody who does and practice using it until it becomes second nature. Make sure that it has a proper stowage so that you can find it in flight - a strip of velcro stuck on the back of the calculator and on the side of the cockpit makes a good simple stowage.

Are your maps up to date? You should always have a current 1:500000 for the task area. Flying on old maps is simply sloppy and foolhardy and brings the whole gliding movement into disrepute. Try to get 1:250000 coverage of your task area. It helps with TP identification and is useful for pinpointing outlanding positions. The **OS Routemaster** road atlas is a useful cheaper alternative.

Even the very best pilots get it wrong occasionally and land out. You should have a roadworthy trailer for your glider. Usually an afternoon's work with grease gun, footpump and spare bulbs is all that is required to make the trailer roadworthy for the rest of the summer. Try to organise a reciprocal retrieving arrangement with another club member - preferably one who doesn't fly cross-country on the same day!

- ***Watch the weather***
- ***Assess each day as it develops***
- ***Declare the largest practical task for the day***
- ***Then make a determined effort to complete it as declared***

DISCIPLINE

The only way to improve your cross-country soaring technique is to fly meaningful cross-countries at every opportunity. Cross-country means out of gliding range of your home site. Meaningful means on a route chosen prior to departure. Any fool can follow a chance patch of good weather 50km from home and return without ever being out of gliding range of base, but it takes great skill to fly to a pre-declared TP 30km away in difficult weather with a low cloudbase. The disciplined approach requires that you watch the weather, assess each day as it develops, declare the largest practical task for the day and then make a determined effort to complete the task as declared.

1. Weather. Try to watch a good weather forecast daily. By meticulous observation you will learn how approaching weather patterns affect the soaring weather over a period of several days. With practice it should be possible to spot a good day coming at least three days ahead.

The evening before your flying day the BBC forecast should give a fairly accurate picture of the soaring weather that might be expected. In particular take note of the forecast wind direction, cloud amount and max and min temperatures. The "Bradbury Rule" that the afternoon cumulus cloudbase will be approximately 400ft for every 1°C difference between max and min temperatures is a good guide to both cloudbase and lift strength.

On the day Francis Wilson usually provides a good forecast at 0755 on BBC1 (unfortunately weekdays only) with updated information and satellite photographs. This should enable you to revise accurately your mental picture of the coming day's weather. Unless you are lucky enough to have a tame forecaster interested in gliding this is the best forecast you will get.

Before you start planning the day's task, don't forget to look out of the window. Does the day appear to be developing as expected? If not, why not and by how much? Will it be significantly different from the expected, entailing completely revised plans, or will it only be different by a small degree in which case you can adjust your plans accordingly? Danger signs are rapidly thickening cirrus, a strengthening wind or very early development of towering cumulus.

2. Declaration. You should now have a mental picture of the expected soaring weather including likely climb rates and duration of useful soaring. Allow yourself a safety margin of about an hour at the end of the day and select your task. Remember that every day is a potential cross-country day so even in the most difficult conditions it should be possible to squeeze something out of it.

You must be able to get airborne and soar early enough to have a reasonable chance of completing your task by the intended time. If this isn't possible, revise your declared task to one that is more realistic.

FLEXIBILITY

At any given time of the day you should have a good idea how far around your task you must have flown to have a reasonable chance of completion. For example, if you planned to start at 1pm and finish at 5pm you should be half-way round at 3pm. Be aware of your required schedule.

Throughout the flight compare your progress with that required by your schedule. Early in the day it is not particularly important if you are behind. The day might turn out to be better than expected and you will regain the schedule. However, once well into the flight if it becomes apparent that you are substantially behind, it would clearly be folly to continue with the task as an unnecessary field landing must inevitably follow.

The best course of action would be to abandon the task and fly home direct. If only slightly behind schedule and no further soaring problems are anticipated it would be reasonable to continue - there should be sufficient soaring left after the planned finish time to complete the task.

If the day should turn out to be significantly better than expected, try two laps of your declared task, or alternatively keep a 100km triangle permanently marked on your map as an additional task for early finishes. If there is insufficient soaring time left to fly another cross-country, use the time productively to improve your thermalling or field selection. Fields chosen from the air should if possible be visited on the ground later - this is a good confidence building exercise for the field landings you will sooner or later make as a cross-country pilot.

Whilst on task try to remain watchful for the early signs of major weather deterioration. In par- ➡

ticular watch for the early signs of shower development usually indicated by the tops of larger cumulus becoming fibrous in appearance. Isolated showers are no problem but widespread shower activity can signal an early end to the flight - if this seems likely return home before the situation becomes impossible.

The rapid arrival of large amounts of cirrus cloud can also signal a major deterioration in the weather. Look upwind for breaks in the cirrus sheet which will confirm an isolated patch, or if no breaks a major weather change.

A common problem experienced in the UK is the spreading out of cumulus into large strato cumulus sheets. As soon as spread-out is suspected the first priority is to get as high as possible and remain high. If necessary detour from track to an area of brightness and sunshine.

Once the first objective to get high is achieved try to assess the extent of the spread-out. If isolated bright patches are visible with sunshine on the ground, you may continue by stepping from bright patch to bright patch. Although you may need to make large detours from track, the cross-country speed will often be reasonable as climb rates in the sunny areas should be good. If there are no visible sunny patches, the spread-out is likely to be sufficiently extensive to prevent reliable cross-country flying.

If so abandon your task, above all else remain airborne by any means available, stay as high as possible and then use this height to glide towards any bright patches which appear in the direction of your home airfield, the final objective being to return home using the lift in conveniently placed bright patches.

A flexible approach to cross-country flying requires that you don't abandon your task because of a few difficulties, but you continually assess your progress and go on unless the situation is hopeless. Equally there is no point in continuing a hopeless battle against impossible odds which will result in a field landing, when an early decision to quit would return you home with the satisfaction of having flown many kilometres in difficult conditions.

DETERMINATION

"When the going gets tough, the tough get going," - it's corny stuff but nothing has ever been written that is so applicable to cross-country soaring. Arguably the biggest single difference between an adequate and a good cross-country pilot is determination. When soaring conditions become impossibly difficult this manifests itself as an uncanny ability to remain airborne on the slightest whiff of lift, avoiding field landing at any cost.

Once you give up the fight to remain airborne and commit yourself to a field landing, the only option left is to land. The flight is over. If you can just remain airborne, there is always hope, and the higher you remain the more options are available. Eventually you will have the opportunity to continue with your task, abandon it and return home or land in a field. In the latter case there is no shame; at least you tried to the best of your ability.

From an air safety viewpoint of course there always comes a point where you must abandon the fight to remain airborne and land safely so that you can fly again another day. There is no magic height at which this change to field selection should occur. To some extent the functions overlap and it depends on the pilot's experience, the terrain and the sailplane type.

As soon as you realise conditions are becoming difficult and you switch to survival mode, you are trying to avoid field landing at any cost. Large detours are justified and if necessary back track to an area of known lift that you passed earlier. Look around and study the map for a ridge facing the prevailing wind and stay within gliding range of this ridge unless you can glide to an area of obvious thermal activity. Remain in any lift that will sustain the sailplane, but keep an eye open for signs of better lift nearby - newly formed cumulus, circling birds or rapidly rising smoke. Don't hesitate to leave a dying thermal for a new one forming nearby.

SELF-CRITICISM

After each cross-country try to look back on the flight with a critical eye. If you made an error try to avoid falling into the same trap next time. Even the very best pilots make mistakes so don't be too hard on yourself.

Did the day turn out as you expected? If not, why not? Compare your achieved cross-country speed with the average climb rate experienced throughout the flight. As you get faster revise the factor used in compiling Fig 2 so that you are always able to estimate your cross-country speed.

If you were unfortunate enough to experience a field landing, ask yourself why. Should you have abandoned and turned for home sooner? Or were you justified in continuing, the task, just failing to finish because the day died earlier than expected? Was the field acceptable? If not some more field selection practice might be in order.

If you have a high resolution barograph (such as Aerograf), look at the trace. Did you get centred quickly enough? Did you leave thermals quickly enough as they died at the top? Did you take any unnecessary weak climbs? Good cross-country pilots have barograph traces which are sharp edged like a dinosaur's back. Rounded traces shows indecision and time wasting.

Approach your cross-country flying with a positive attitude. Stick at it, don't let the mistakes disappoint you and enjoy the successes you will earn. Good luck.

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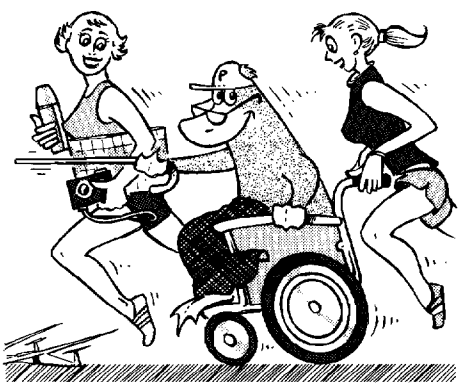
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TAIL FEATHERS

Platypus is visiting his natural habitat but so we don't forget him he has sent us this rude song.

When I'm sixty four

(To be sung to the Beatles' tune)



This aviator's no navigator,
always getting lost
Cannot tell the difference 'tween the Humber and the Thames
Needs a Decca, whatever the cost
Hitch up the trailer, sit by the phone,
waiting is a bore.
Will you believe me, will you retrieve me
When I'm sixty four?

Band: *Will you believe him, will you retrieve him*
When he's sixty four?

High in the mountains, when you get old,
dying for a p***,
fumbling for your willy when it's shrunken and cold;
peebags, funnels - I always miss.
Plastic contraptions, long rubber tubes,
tried 'em all before.
Do not deceive me, what will relieve me
When I'm sixty four?

Band: *Do not deceive him, what will relieve him*
When he's sixty four?

Stiff in the elbows, weak at the knees,
lifting is a pain.
Want a little hangar to call my own,
with my glider rigged - and a tow plane.
Strapping young crewgirls, willing and keen,
doing every chore,
Don't need no loving, just pushing and shoving,
When I'm sixty four!

Band: *Don't need no loving, just pushing and shoving,*
When he's sixty four!

S & G CLASSIC

CHOSEN BY THE ARM-CHAIR PILOT

GOAL TYSZOWEE

Ann Welch has contributed more than most to *Sailplane & Gliding* over the years, and her advice in successive editions of "IT'S ALL YOURS - For and About Instructors" can still be read with profit. Thus in December 1961 we find her reporting two cases of gliders taking off with their ailerons disconnected. She stressed the importance of making the jobs of rigging and inspection separate activities. Then it was Skylarks and ailerons, now it is T-tails and elevators. *Plus ça change.*

But instructional advice does not lend itself to classical writing unless it is cunningly concealed. In the same issue of *S&G*, pp345-8, we find Ann describing her 525km goal flight in Poland in a Jaskolka, and you can hear the born teacher filtering through her account.

On June 20 I was lucky enough to have the opportunity of a 500km flight. But I very nearly did not take it because, having spent the previous three days missing out on meals and sleep as a result of the last trip, I did not feel enthusiastic about eight hours of concentration with a probable landing in yet another remote place. However, I was driven into the air at 0950 in a Jaskolka, unknown to me until three minutes before take-off, clutching a mile of map and a bottle of cold tea. Eight hours and five minutes later it was at my pre-declared goal of Tyszowee (pronounced Tisofshe) 525km distant, and eight miles short of the Russian border.

I propose to describe the flight in terms of what I learnt from it, because, owing to the lack of instruction in soaring, it seems only possible to learn from mistakes and experience. The pundits are those who learn quickly and effectively and I am certainly no pundit, having taken 25 years to get this far.

The best preparation I had for this flight was, in fact, the thing which nearly caused me not to start at all - the flight of three days before. This was on the last task of the Polish Nationals, the 500km race to Hrubieszow. At 11am the competitors started to take off, clearing away fairly quickly, and at 1215 I left in a Jaskolka to attempt the same flight. Nearly all of us landed between 6.30 and 6.45. Twenty pilots flew over 500km and 50 over 350km. I went 380km. This meant that at the speed I was flying, even if I had taken off first and had the extra hour in the air, I would still have made only about 450km. Others had flown fast enough to succeed; why had I been so slow?

When considering 500km flights it has to be accepted that the weather is excellent. It is not simply a matter of being lucky or clever. If the weather is not good enough the flight is impossible, even for pundits, and that is all there is to it. If, however, the forecast gives indications of 500km possibilities and an attempt is to be made, the pilot must devote all his energies to using the weather to the limit and forget in general, about mundane things like having to land prematurely.

It did not require much thought to realise that on the 380km flight I had wasted time (1) dithering about at the moment of going away, (2) not finding the strongest part of the thermals quickly enough, (3) hanging on to some thermals too long in weaker lift at the top, (4) failing to discard feeble thermals quickly enough and (5) flying too slowly between thermals. I do not reckon that I wasted any time navigationally and remained in the air as late as anyone else, but it was obvious that unless I could very quickly learn to fly much faster, I was not capable of doing 500km, even if the weather was good enough. It was a depressing thought.

Then came June 20 and I found myself airborne with opportunity but doubtful ability.

At that time, 10am, there was about 2/8 cumulus at 800m, rather ragged and short-lived. The thermals were very weak but with strong cores, which were narrow and hard to discover. The wind was light NW (track ESE). By midday the wind had increased to 25km/h at 1000m. Almost at once I found myself committing fault 1 again. I dithered about, finding scraps of lift, losing them, drifting away from Leszno, getting worried about the forest a few miles downwind which, if I glided across failing to find lift, would probably result in my landing and being too late for a second go. Determined to finish the flight there and then, rather than at 490km, I turned downwind at 700m and went.

The sky developed a more organised appearance with a cloudbase to 1000m

There were some ragged clouds ahead, with weak lift, but under one I located a narrow, stronger core and reached cloudbase at 850m where the lift died away. Again I turned straight on course making for some more and better cumulus. Steadily the sky developed a more organised appearance and an hour after starting I was grateful for a cloudbase which had hoisted itself to 1000m. I was extremely depressed about my prospects, however, when I crossed the 100km mark, because it had taken me 2¼hrs and a simple multiplication sum indicated that I would still need to be soaring after dark! It was difficult to decide in this weaker lift of the early day where I could save time without unnecessarily increasing the risk of premature landing. In spite of my resolutions about cutting away from thermals when the lift deteriorated, it was difficult to be brave enough to do this when the strongest part of the lift was only 1m/sec and began to weaken at less than 1000m.

Influenced in the selection of the next cloud by the shape of its shadow

By about 1215 the sky was full of cumulus, and a study of the shadows on the ground showed that nowhere was there any sign of overconvection and the distribution had a pleasantly ordered look about it. Throughout the flight, from now on, spending much of the time at cloudbase, I was influenced in my selection of the next cloud to a large extent by the shape of its shadow sometimes more than by the cloud itself, which through the grey fringe of my own could not, of course, be clearly seen

The second 100km was done in 1½hrs, and the third in 1¼hrs; cloudbase rose steadily to 1600m and thermal cores were now giving me good bits up to 3m/sec.

The problem of staying in the air, unless one made a very stupid mistake, now did not seriously exist, although occasionally an excellent-looking cloud somehow simply lacked any sort of lift; and since I was, in general, using clouds about five miles apart, I hoped I would not run into a sequence of such useless things. In such cases, or where the lift did not seem up to standard, I did not waste time doing more than the one exploratory circle, but went straight on at whatever speed the MacCready ring on my variometer demanded - at this stage of the flight about 100km/h although later I was travelling between thermals at up to 115km/h, which is the fastest speed indicated for the Jaskolka.

So far I had managed to keep within 5km of my map line, working mostly on the downwind side of it, and not worrying about this until I spotted a really good cumulus ahead and upwind of the line when, provided the sky further ahead still looked reasonable, I would make up my leeway.

Navigation was no real problem, as the air was ➡

clear and the maps good; but, nevertheless, so that I would not be fiddling about with navigational problems when there were other more important things to do, I divided out the work into a clear-cut order. The three essentials when flying cross-country are (a) finding a good thermal, (b) centring in it, and (c) flying in the right direction. All these three demand (from me anyway) full concentration, and to try to do two at once would have increased enormously the risk of a wrong decision.

Obviously, the first essential was to find the next thermal and to make as certain as possible, in advance, that it would be the right one. This takes time, as it is a matter of studying the development of the sky ahead – not only the nearer cumulus, but far ahead as well, as, in the case of an alternative choice of next clouds, it is the further sky which may well dictate the selection.

Having got properly centred in the current thermal, I transferred my entire attention, other than if needing drastically to re-centre, to deciding which cloud I was going to use next and, on nearing cloudbase, noting some mark on the ground which would remain in view unless I let myself get fully enveloped in cloud. As the ground faded I straightened up precisely on this mark, increasing speed really hard so as to follow the cloudbase. On clearing the lift area I transferred (after slowing down) to my best cross-country speed and went to the next cloud.

Since the decision as to which this was to be had already been taken, I could use the straight glide spells to concentrate on the navigation, average speeds and any drift problems. Since the visibility was good I found that I made little use of the compass (I had no Cook), and worked almost entirely on map-reading. The visibility was 15-20 miles, and I was therefore able to determine features that I ought to cross or go between equivalent to two thermals ahead, and select ground features from which I could obtain the appropriate angle to fly. As the next cloud was approached I had my navigational progress planned, and could be single-minded about locating, and centring in, the best part of the thermal. This I found most difficult of all, particularly if the lift did not come up to expectations. The temptation to waste time trying to work the lift up into something better when one clearly ought to ruthlessly cut one's losses and go on was considerable. Having, however, got properly into the thermal, then the whole cycle would begin again (now including a re-positioning of myself on the most excruciatingly uncomfortable seat I have ever sat on).

I make no apologies for going into this rather arbitrary separation of work at some length, as I am sure that many wrong decisions and, therefore, premature landings are made because the flight develops into a series of minor crises in avoiding getting lost or dithering over a choice of clouds because insufficient time has been devoted to the particular problem in time. All this comes naturally to real pundits and there are, of course, occasions on a flight when all one's attention has to be devoted to something desperate like just staying airborne. In general, however, I am sure it pays to separate out the work to be done, so that full concentration can be devoted to each important decision.

At exactly 3pm I reached the 300km line. Cloudbase was now nearly 2000m and the thermals strong. This was the time to really push as, unless I was very stupid, there was a spell of weather ahead out of which it would be difficult to drop. For some time I had been discarding all lift under 2m/sec, provided that I was about 1000m, which I regarded as my tactic-changing height. Now I stepped this up to 3m/sec, which meant that I rarely circled at all, merely slowing up in lift and speeding up again as soon as it faded. It was with pleasure that I crossed the 400km line at 4pm, 100km in the hour. I now knew that I could reach my goal, 125km further on, provided that I did not make a silly mistake.

Shortly afterwards I crossed the Vistula at 1500m and entered that part of Poland which has a reputation for being poor soaring country. I did not see any apparent reason for believing this, but decided to go carefully and to make every allowance for the declining day. Quite arbitrarily, although the lift was still strong, I decided to accept anything over 1m/sec unless there was anything else close by which looked much better. I realised this would reduce my average speed appreciably, but I was not now unduly pushed for time unless I got low and lost a lot of time having to scramble about in really feeble lift.

The country below was a mixture of large, dark forests and green, low lying and very empty plains. Villages and towns were remote. By 5pm the clouds had lost their crispness and had that faded, yellow and sagging look, but I was still managing to keep above 3000ft, although with impatience at my reduced ground speed. I probably slowed down a bit earlier than was necessarily, but was determined to make as sure as I could of the elusive last few kilometres.

To my delight I realised that he was obviously going for the same goal

At 5.30 I saw another Jaskolka circling a little distance away. We joined each other as first one found a better core, and then the other, and to my delight I realised that he was obviously going for the same goal. This was a relief, as I had no further details about my destination except that it was a "a landing field to the east of the village". Slowly we worked our way along until, suddenly, the other Jaskolka peeled off and nose-down went for the goal. I did a few more circles in no sink, watching him to check that his intentions were the same as mine, and then went after him, but flying slowly in order to get there with enough height to properly locate the field.

In due course I saw the sun glint on his wings as he turned into the field, and then saw a coloured blob of parked gliders. Crumpling the mile of map under my left elbow I dived after him and went into the place where he had landed and was being pushed out of the way by hundreds of children. At five to six I arrived on the "field", which consisted of about 150 yards of very hard grass-covered mole hills and sloped firmly downhill into a duck pond, which I missed by six feet.

TWITTERINGS

We have another bird writing for us on random topics from time to time, but this one isn't flightless. Just an enthusiastic newcomer who says he isn't very efficient at using wings.

Where Are They Now?

There have been investigations at clubs and questions in the gliding press on the matter of these souls keen enough to part with hard earned cash in membership and flying fees only to fade away without trace before reaching solo stage.

Unless the missing souls can be persuaded to come forward and explain why they voted with their feet, we may never know.

One view put forward is that in our climate the sport requires the attributes of marine commandos and the early elimination of the fainthearted is no bad thing.

It is true that with most clubs in this country being organised on a self-help basis, those unwilling to pull their weight should be encouraged to seek their pleasures elsewhere. This may account for a proportion of the fallers by the wayside but it is surely not the only reason.

In addition to learning to fly, there are new do's and don'ts to learn, new jargon to assimilate and, at times, factors to put up with that may well seem user-hostile.

Are the newcomers fully integrated so as to know where they fit it? Are they fully briefed for what they are trying to achieve next week and next month as well as in their next flight? Are they kept informed of their overall progress?

If the answers are no, it is small wonder in today's "instant" society if folk shuffle off never to be seen again. It might temporarily swell club coffers but must be preventing the full growth of the sport.

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WOMEN IN GLIDING

Over the years various reasons have been suggested for the dearth of females in gliding. Now Diana King has given it more thought and written a report for the BGA Executive

As part of my job I recently attended a conference about Women in Sport and this started me thinking over questions about women in gliding. Obviously there were fewer women than men in the sport. Why was this? Was it important? Should we be trying to do something about it?

I felt it was important and that there ought to be some way of making it possible for women to join us if they want to do so. Having been gliding for over 20 years, I have had my share of "It's a man's game" (when I complained to someone who had pushed me out of a thermal) and "Women don't drive tractors on my airfield" (a senior instructor), but I felt that there was more to it than male chauvinism, which is mercifully becoming less fashionable.

I suggested to the BGA Executive Committee that we should look at the question and was of course volunteered to come up with some proposals. The remainder of this article is the report which I wrote. I am pleased to say that the Committee approved it and gave their blessing to start work on some of the more tangible ideas.

Following my initial rather hasty suggestion that we should be trying to involve more women in gliding, I have given the idea a good deal of thought and have read a number of reports from the Sports Council and other authorities. I have not made time to discuss the question with other glider pilots, except in a very cursory manner, and so the thoughts set out here are my own personal views.

The Facts

Women constitute 52% of the population. Of the regular 10000 or so glider pilots, 9.3% are women. The percentage varies widely from club to club, from 22.2% to 2.5%. These figures are not untypical in outdoor sports, although women's participation in indoor sports is growing fast.

I have not carried out any detailed investigation on the achievements of women pilots, compared with men, but observation at clubs where I fly regularly and within the context of competition flying leads me to think that the proportion of women achieving success as instructors, competitive pilots or with badge flights is even lower than the total proportion of women taking part. *S&G* records for 1988 show that women make 4.8% of badge claims and that they comprise 2% of the entry in rated competitions.

The question is - Does it matter? . . . and if it does . . . What can we do about it?

Why encourage women?

1. We have in the BGA Forward Plan said that we intend to increase the numbers in gliding and have specifically mentioned women as a priority group. Women, a large sector of the population, remains at present almost untapped as a source of recruitment. We may find that approaching a new audience could be a good way of achieving or even exceeding our growth target.
2. There is evidence that new members are frequently recruited by existing members. We should encourage members to recruit female members of their family as flying members. This could result in a more "family" sport and result in lower drop-out rates among existing male members.
3. In our enjoyment of our sport, should we perhaps make a greater effort to make gliding accessible to a wider range of people?

Why don't more women fly?

1. The amount of time involved and selfishness required. Women typically have more continuous home and family commitments, often in addition to a paid job. (Changing the nappies twice as often on Friday doesn't create a day off on Saturday!) They are commonly less willing to "waste time" hanging around airfields waiting to fly.
2. The majority of women have lower disposable incomes than their male equivalents.
3. Most gliding clubs are some distance from major centres of population and many women have limited or no use of a car. Other means of transport are usually impractical.
4. Many women lack self-confidence, probably due to social conditioning, particularly in what is often seen as a difficult and technical activity, requiring high levels of courage.
5. Many clubs have unattractive or non-existent amenities such as toilets or canteens. My impression is that this lack bothers the average woman more than the average man (we are not all brave enough to squat behind a bush or under a wing!)
6. Male chauvinism, in more or less subtle forms, is still with us. One form it takes is that male instructors can fail to appreciate that a woman pupil (particularly on a holiday course) genuinely wants to learn to fly and they consequently give her less or lower quality tuition than other course members.

Some of these are problems of society in general and I doubt whether we or any other small section of the community can expect to change the way the country runs, or at least not in a short time. We should aim instead to:

1. Recognise the limitations and work within them.
2. Identify the areas where we can have some influence. Seek methods of overcoming difficulties.



Diana, a member of the Midland GC since childhood, has a Gold badge and one Diamond. An ex-instructor, she now flies purely for fun and is buying an LS-7 with her husband Phil. She has just left the BGA Executive Committee after six years and is chief executive of the English Ski Council (a similar organisation to the BGA).

Proposals

1. A working group of existing glider pilots (predominantly women) should be recruited from all parts of the country to help to generate ideas and to put them into practice. The group would not necessarily meet in any formal way (except perhaps at the start of the project) but would work loosely together to achieve common goals in as many clubs as possible.
2. Clubs should be encouraged to exercise some positive discrimination where technically possible, bringing more women into leadership roles such as instructing, tugging, committee positions etc. These women will then provide role models for others.
3. Women only courses for beginners should be advocated. Many women lack the technical education which is helpful in learning/understanding flying. If they are in a minority in a group of men, there is a tendency for the less confident to be discouraged by the apparent greater ability of their fellow course members. Single sex courses could help to overcome this and would also reduce the likeihood of poor tuition as mentioned above.
4. Women themselves should be encouraged to organise child-minding and playgroup arrangements within the club, so that they each have opportunities for some free time. The men should be permitted to assist!
5. We should investigate the possibility of Sports Council grants for upgrading toilet and other facilities. Increasing the number of women in sport is a current Sports Council priority.
6. Positive approaches should be made to all-women groups such as WI, Inner Wheel etc with presentations of gliding, appropriately slanted to that audience, and follow-up trial lessons and short courses.

Since writing this report, I have approached a selection of clubs who I hope will assist in starting a project jointly with the National Federation of Women's Institutes with whom we have formed a link. I have deliberately selected clubs who already have a reasonable proportion of women members, so that prospective new members will not be coming into a completely alien world! I would also be pleased to hear from any club which has not been approached but would like to take part.

If, having read this, you would like to become involved with some of these proposals or perhaps have other ideas to put forward, please get in touch. I would ideally like to find about ten people (particularly women, whether pilots or not) who would be interested in forming a working group to start these ideas running at as many clubs as possible.

COGITO ERGO SOMETHING OR OTHER

Bill Scull, BGA director of operations, was so impressed with the safety presentation prepared by Steve Longland, CFI of the Cambridge University GC, he felt it should have a wider audience. It is written in three parts, the second about the eye and lookout and the third on thermalling without conflict

The day is bright with a gusting wind straight down the run. The pilot is preparing for his first flight, a winch launch, on a new type. His preparations are few. He doesn't believe in a walk-round and so fails to notice the unusual set of the wings to the fuselage, suggesting a different flying attitude from gliders he has flown before (they were also glass and had T tails!). Nor does **he** sit in the cockpit for five minutes prior to launching to familiarise himself with the panel layout; also different.

The duty instructor, who is not feeling very well, has briefed the pilot once already, but he didn't really listen. Knowing the pilot is resistant to advice, the instructor feels he ought to give another briefing, but because of the pilot's usually bumptious manner he really doesn't feel like facing him again. Gliding's supposed to be fun. No point in unnecessary grief.

This pilot has effectively been at the scene of the accident you know is about to happen for years, and he is just about to bring the aircraft with him. The winch is not very reliable. Everybody knows that. The pilot also knows that at the end of today's rather short run there is a large wood, so a low break or winch failure requires quick reactions. But as he is more concerned with making an impression, these "known" things don't quite register.

He straps himself in, finding that he's deeper in the cockpit than he's used to, and not very comfortable either. Never mind, no problem. All clear; upslack; all out.

In fact the glider is not in normal flying attitude but slightly nose up."

At 400ft the cable breaks. This is a surprise to the pilot who takes a few seconds to realise what has happened. He remembers to check the speed, but the ASI is in a different position on the panel and his brief glance shows him the vario. The needle is well up, in about the same position it would be if it were the ASI in any of the other aircraft he's flown. The speed seems OK! In fact, the glider is not in normal flying attitude but slightly nose up.

There is **still** time to do something, but the pilot is getting further and further **behind** events. The release is not in quite the usual position. Precious seconds go by as he fumbles for it. He is now a lot lower and suddenly realises the wood is almost beneath him. Nowhere to land. Must turn back. The glider sags round the turn. The down-going wing feels very tired and the nose starts to yaw and drop. The pilot looks at the vario, realises it isn't the ASI but hasn't time to look for the real one. Having never really come to grips with spins, and with his brain escaping to some far corner of the universe, he instinctively hauls back on the stick and does a proper spin straight into the ground. The aircraft is destroyed and he is seriously injured.

* * *

The overwhelming majority of gliding accidents are caused by pilot error of one sort or another. Some of you may find that rather depressing. I don't believe it need be. Rather the opposite, in fact, since it means that you are not **obliged** to have accidents! The above compilation accident was a definite case of pilot error but as you may have gathered one with a long, involved and largely unspoken history.

Before I get down to the main subject of this article, a few words about Luck. Reliance on luck can take many forms, most of them extremely dangerous.

Some pilots seem to regard luck as their birth (or is it divine?) right, so that when the accident that ought to have occurred as a result of their negligence/overconfidence and/or ignorance does not do so - due to the random intervention of a new factor such as the sudden arrival of a spaceship from Aldeberan, for example - they regard the whole affair as being entirely to **their** credit and a mark of their considerable skill. This is quite clearly not a realistic attitude to take, and it pays us to remember that "luck" is not Mummy and Daddy coming to help us but a cloud of uncertainty that could just as well do exactly the opposite. Reliance on luck really is asking for trouble. What we **can** do with luck, however, is increase our utilisation of the good and avoid the bad by becoming more skilful pilots and much more aware of what's going on around us. Our chosen sport is supposed to be interesting, challenging and fun. It's much more fun (and the rest) if we don't practise it in a daze!

The best way to get you to turn immediately to Platypus is to talk psychology. This isn't very surprising. Psychology is almost always unflattering (depends on the brand name) and seen as an implied if not actual criticism of personal, and thus sacred, behaviour.

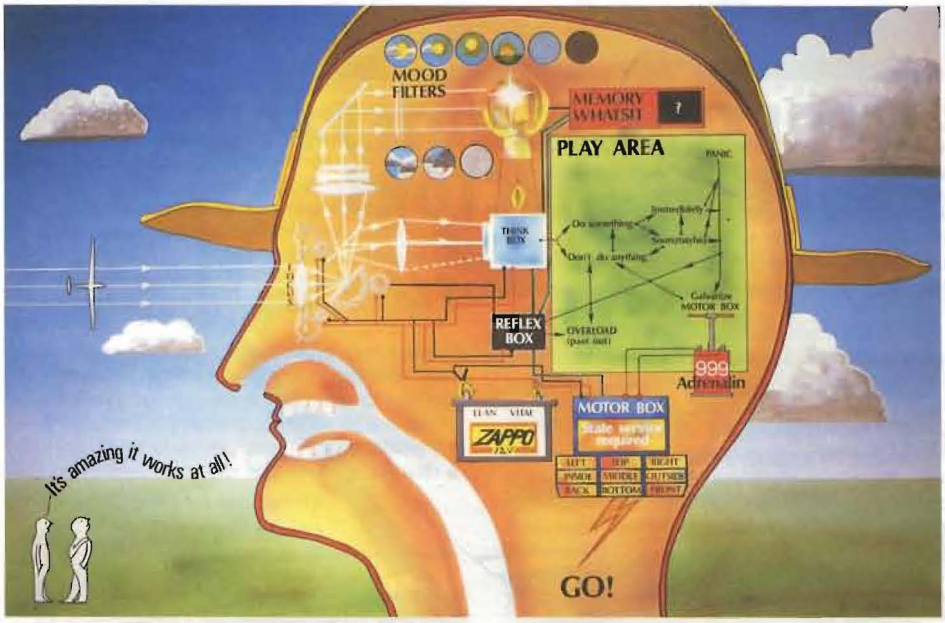
Nevertheless, in its broadest, most philosophical sense, psychology should offer you a view of yourself that is both objective and at the same time from **your** point of view! You are the only one to experience your world and you really ought to know it extremely well. The fact is none of us know ourselves well. We feel that we are what we are; that our programming is **our** programming. *Ipso facto* it must be OK. But for all any of us know there may be internal programs (virtually running without our consent) that have "self-destruct" written all over them. I don't mean that we are likely to commit suicide - in the usual sense of that word - but that there may be attitudes and ideas embedded in our mental processes that can have exactly the same effect.

Since most accidents are caused by pilot error, perhaps we should start by asking who or what is in charge! Is there anybody there, is there an "I"? Perhaps that's a non-question. There are philosophers who write book after book about the non-existence of this "I" - and yet still have their names on the cover! We, - you and I -believe that there **is** somebody here! We also believe that give or take the odd moment of incoherent rage we are rational human beings. This view has no more to support it other than our saying it is so! This does not mean that we are swept hither and thither by dark and unsavoury conflicts or lurid gales of tabloid emotion, but we are certainly not as in charge of what's going on as we like to think. See picture 1 for the true complexity of it all!

Let's take an example. Probably best for you to choose you for this. That way you can only offend yourself.

To outsiders, *ie* everybody else in the whole world, you exhibit certain characteristics which are recognisably yours. You may also recognise some of them yourself. 5/10 if you do! You also recognise that you are conscious, and this seems a perfectly reasonable thing to assume; you know that you are because if you weren't you wouldn't know it! Consciousness seems supreme. Yet by far the largest part of the corporate structure that you and everyone else regards as you, is completely automatic. Your glands secrete; your nerves telegraph; your lungs heave; your heart squeezes ... and your bowels go about their nefarious business.

Without wishing to be rude, I'll bet that until you read this sentence you probably weren't even aware of your bowels going about their nefarious business, or even noticed that you were breathing, for that matter! And why should you, when there is a very good reason for the automatic "you"? It is amazingly complicated, and were you to suddenly become conscious of everything that went on within it, and **then** have to consciously monitor and direct it all, you would probably be dead shortly afterwards. Most of "you" runs itself perfectly well without any help from "I", so why



Picture 1 shows the true complexity of it all.

bother with something that seems to spend most of its time suffering and demanding attention?

The scarlet pimple

We seek it here, we seek it there, we seek it everywhere. In picture 2 the fish represents you, complete and whole; **Everything** about you. The "I" is the little pimple. You'll notice that just to please the paranoid I have added a shark's fin to the brute!

Do not despair, this "I" does appear to have some function. For better or worse it can direct the greater part of "you" to do something that left to its own devices it probably wouldn't have done. For example, if the "you", the body, malfunctions, the "I" takes it to the doctor. The point appears to be that if the "you" "asks" for something to be done the "I" doesn't necessarily **have** to comply. So one function of "I" is just to put a spanner in the works. It's not a very big spanner, so its scope for action is rather limited.

Most of what goes on in the physical "you" is automatic. Regrettably the same goes for the majority of our thought processes. Here the function of "I" is that of Resident Conscious Reprogrammer. This is a powerful but slightly unreliable function.

If you are still not convinced of the generally second fiddle role of the "I", think about panic. When the "you" is really frightened it can totally swamp the "I". You may not have the faintest idea what you are doing. Afterwards you probably won't remember what you did.

It is most important that your "I" does not either take or get sent on holiday at crucial moments. You simply can't rely on raw instinct in some situations - take spin recovery, for example. Instinct is millions of years old. The programming is antique and extraordinarily powerful. Don't forget, that the "you" machine has not been up in the air for long and when all the higher, human functions like intelligence have been blown to smithereens by overstressing, it may react with something more appropriate to the depths of a primitive forest than to command of a piece of twentieth century technology. If it becomes paralysed in order to blend motionless into a long forgotten background and your head bit has gone missing at the same moment, then tough on you both if the "enemy" happens to be an equally paralysed fellow pilot!

On the other hand, if **you** (never mind the poor old instructor!) have spent time training the "you" to fly as well, sensibly and as sensitively as possible, in other words making the appropriate reactions second nature, then the "you" can react quicker than "I" can think! Even so, you will still need to be conscious of these reactions.

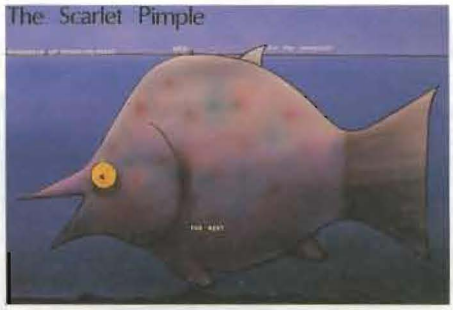
I think most pilots probably have some mild degree of anxiety about flying and usually all it produces is a temporary heightening of general awareness. It has a positive effect. Nothing actually stops working or goes out of control. Fear is a different matter altogether. It is usually destructive and the scale of the result depends on who is being frightened, by what and by how much.

It is not always the pilot's fear (ranging from the ulp! of imminent death, or being tracked down by the CFI, to a simple fear of just looking a complete banana) that causes problems. There is another fear that in the long run is much more dangerous. This is the fear of those who have been put in charge of the pilot's conduct (for want of a better word). This fear is not for the pilot, but for themselves, the job etc, etc. This is the fear that creates bad rules.

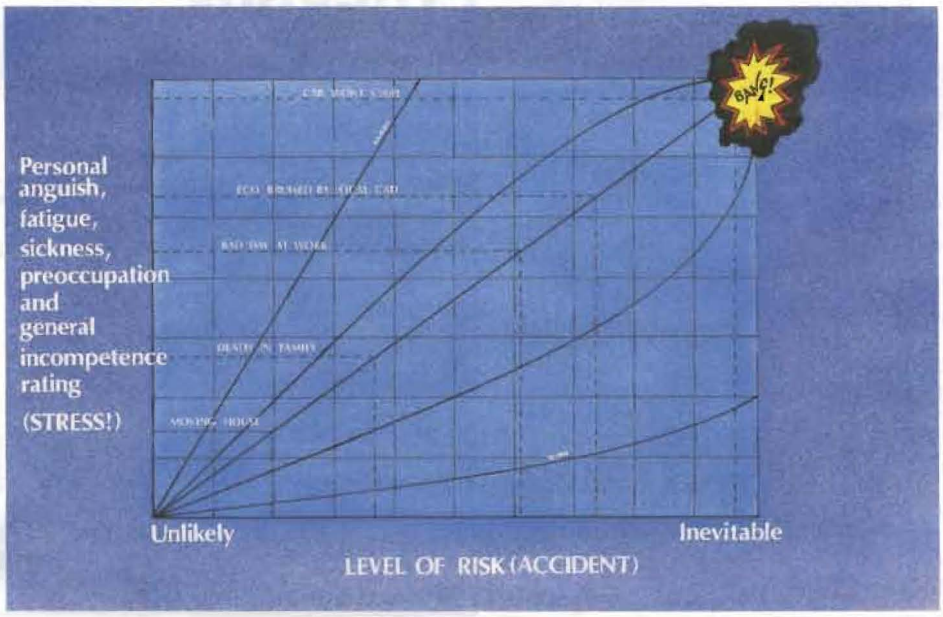
The law of rules

It is often thought that the easy way to make everything **safer** is to create more and more rules and regulations. If that is what Flight Safety is aiming at, then it is heading straight for complete failure.

Rules and regulations are thoroughly inces-

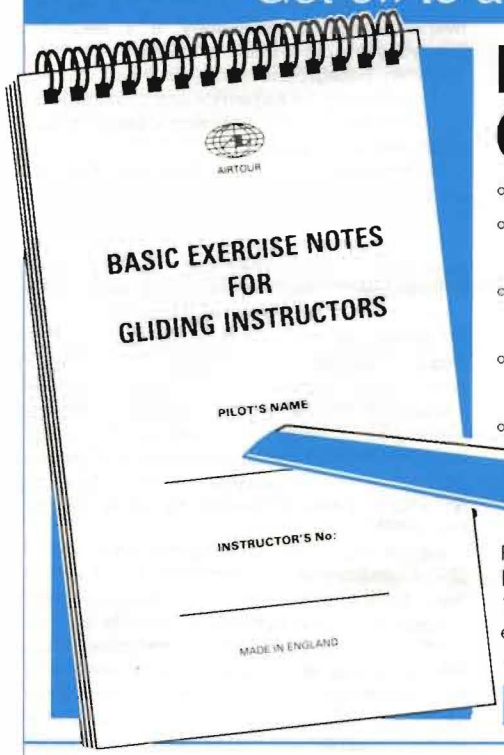


Above, picture 2. The fish represents you, complete and whole. Below, picture 3, a Personal Manoeuvring Envelope. Drawings by Steve.



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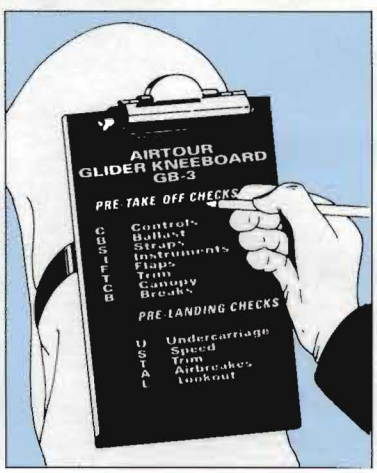
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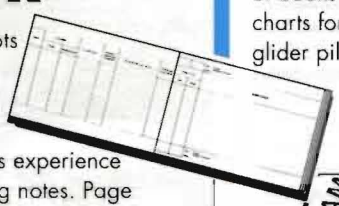
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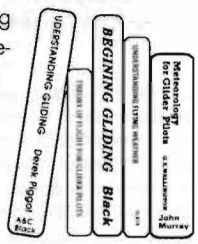


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tuous, breed amongst themselves, and become more and more complicated. This seems inevitable. The people asked to formulate rules must be seen to be doing their job (otherwise why employ them). Eventually we, who are asked to abide by their decisions upon pain of punishment, find it impossible to remember them all, even to recall the simple fact that rule 2/V9 only applies to situation 3Qrt/B5. (What else!). Is there a rule to cover **every** situation? If not, and we are relying on the rule in order to be safe, we've had it if we find ourselves in a non-ruled situation. In an emergency you don't usually have time to refer to the book.

A fundamental point about being alive, I would have thought, is that life is not completely safe and does not come with a guarantee of survival and, personally, I have good deal of sympathy with the view that states, "protect people from the results of their own folly and you end up with a world full of fools".

The seeds of future disasters

As a result of fear, regulations are often quickly and thoughtlessly created that hold within them the seeds of future disasters. This does not mean that all regulations are stupid. At their best they form a code of agreed behaviour. In this country we have "agreed" to drive on the left whichever direction we happen to be going. I'll recreate the "drive on the left rule" and make it a bad one. "Drivers going north shall drive on the right, and those coming south shall drive on the left". Drivers struggling to obey this rule soon find out that left and right are not absolute terms.

At their worst, rules are made to protect everybody except the person who ends up having the accident. In addition, laws and rules don't **make** people **good** anymore than wagging a dog's tail makes it happy.

This is where you come in. If **you** can't take responsibility for yourself, then somebody else will, and that will make you even less capable of being responsible for yourself. You will then be more of a hazard than you were before and yet another rule will come into being.

The aim of flying instruction is, or should be, to help you gain safely sufficient skills to be able to look after **yourself**. Anything which goes beyond that would seem to be counter-productive. In addition, to be truly able to protect yourself you **must** know something about what makes you tick (unless you're a digital watch). You don't have to like all of what you see, and some of it won't be flattering. But do at least have a peek!

Stress

The level of risk to which you can expose yourself varies. There will be times in your life when you are much more at risk. Stress can kill, and so can the preoccupation that often goes with it. A certain amount of stress may be essential for you to keep your psychological tone. Too much can do you in.

Picture 3 is a sort of Personal Manoeuvring Envelope. Various stressful events in life pile up and lead up to a **bang**! – even if you only keel over with a heart attack. You could as easily have an accident in your car. The extreme right edge of the area represents **deadly danger**, brain stopped working, life functions critical etc. The top most edge simply represents a Very High level of stress. Rambo **never** meets his personal Max Permissible Stress level. Life can't stand the strain and does him in before he does any more damage. Wimp cracks up as soon as he runs out of teabags. You, hopefully, are neither extreme ...

If you are under stress and preoccupied at the same time, you may find that when a further emergency occurs (and all the items on the diagram are emergencies of a sort), there won't be enough of your brain left free to cope with what in other circumstances might be pretty trivial. The final straw could be the removal men dropping the piano on the cat. The kids are screaming and everything's awful. You escape to the airfield to fly. Because you're so busy fighting off overwhelming feelings of anger and depression (wishing you were elsewhere, never been born, want to kill somebody etc) you don't pay attention to what's going on and you have an accident; possibly fatal. All your problems are solved!? Right! Preoccupation did you in. You committed a sort of suicide.

Regardless of the richly chromatic scale of life's disasters your personal reactions to what is called stress will differ from everyone elses. You may not be very good at coping with stress. In itself that doesn't matter. What **does** matter is whether **you** realise that you aren't good at coping with it. In any event, you ought to be aware of when it's all just about to become too much and be able to make a tactical, hopefully gracious, getaway.

It is most important for your own safety, not to mention other people's, that you are able to assess yourself, and have a realistic appreciation of your relative strengths and weaknesses. Any idiot can bowl merrily straight into the jaws of danger, supremely confident in their ability to pick its teeth, but the person who can see what's coming, assess its true implications and then back down without severe damage to the ego is far less likely to come to grief. If you find that a chip off you old ego is more awful than a broken back then you probably could do with a new ego. Whatever else, you'll certainly be dangerous. If you do find that this is a problem (and real egotists are most unlikely to think that ego's a problem) then in that very instant you're less of a problem/danger than you were before.

Don't allow yourself, whatever the reason, to get into a sitution from which you cannot extricate yourself. It is much less heartrending to think, "I **could** have done it" rather than lie there in the wreckage wishing you hadn't. This shouldn't stop you from taking calculated risks, but they must be calculated using as many of the relevant factors as possible, particularly the less obvious ones already outlined.

Be spontaneous!

The big snag in all this is that the most useful weapon against premature self-destruction is constant, **relaxed** attention, which probably isn't a realistic possibility in a world geared to creating maximum unconsciousness with minimum effort. The world's most benign religions have long advertised the general life enhancing qualities of relaxed attention, of awareness. The evidence seems to be that we still aren't taking any notice!

A **realistic** (that means warts and all) appreciation of some, if not all, of your inner make-up seems to me to be absolutely essential. I don't mean the kind of neurotic agonisings we are apt to pass off as self-knowledge. The key point is that **nobody is immune** from the risk of accident.

Summary

Arranged in approximately descending order of importance, the following is a league table of things to do if you desperately want to have an accident. You may perm any combination of them to produce the most depressing result you can think of.

1) Think that it can't happen to you.
2) Either don't know or take no notice of your own or your glider's limitations.
3) Think about everything except the matter in hand.
4) Don't keep a good lookout.
5) Put right a mistake by plastering an even bigger one over the top of it.
6) Believe that you are always right, or if not that exactly, then don't **ever** admit to being wrong (ever).
7) Fly when you are ill, tired, emotionally upset or otherwise partially or totally unravelled.
8) Always be in a hurry ...
9) And don't bother with a DI because you flew the thing yesterday (or whenever).
10) Don't improve your flying skills, either by flying infrequently or by just aimlessly wandering about when you do.

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ENCOUNTERS WITH THERMALS

Part 2, More Complex Patterns

Tom Bradbury continues from the February issue, getting you ready for the soaring days ahead

Only the smallest short-lived clouds are the result of a single thermal. Most are the work of a series of thermals. The individual turrets of large cumulus clouds show that there must have been several closely spaced thermals. Cloud streets show that thermals may be organised in a regular fashion which has little to do with hot spots on the surface. There are other influences too such as the interaction between downdrafts or the result of outflows.

Multiple thermals

Thermals are not necessarily isolated columns of lift. Several can exist close together as shown in Fig 1. Such a group may be unsuspected when

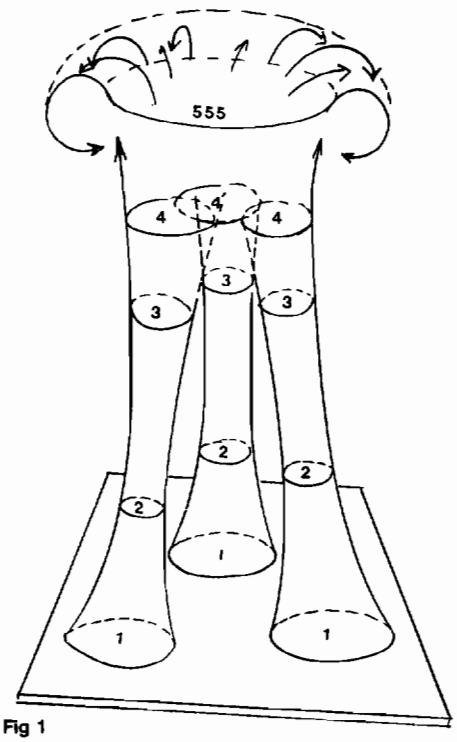


Fig 1

flying alone. One usually discovers these near a busy gliding site where a number of pilots are marking lift in different places. Quite often rates of climb seem to be similar in each column. At level 2 the circles are far enough apart to allow each group to climb safely. By level 3 turns are becoming uncomfortably close and at level 4 the overlap means someone must shift circles. At level 5 the columns have merged to form one of those comfortably wide thermals which occur well after midday and especially late in a summer afternoon.

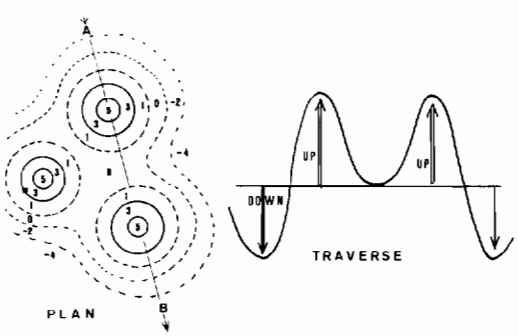


Fig 2

Fig 2 shows a plan view of the lift distribution between levels 3 and 4. Beside it is a cross-section of the lift encountered by an aircraft hurrying straight through along a line A-B. Some clusters of thermals have far more cores with less sink in between. When lift is distributed like this it is difficult to know whether one should tighten up the turn in a surge of lift or take off bank. If you are the only one in such a thermal and in no hurry to press on, the pattern of lift can be explored for quite a long time. However it is hard to build up a mental picture of it. The only certainty is that a cross-section of lift is not circular.

Streets of lift - horizontal vortices

The upper part of Fig 3 shows a familiar pattern of clouds in long regularly spaced streets aligned parallel to the wind at their level. Such streets occur when the tops of cumuli are restricted by an inversion or stable layer so that all reach approximately the same level. If there is also a moderate to strong wind a convective circulation develops in the form of long lines of parallel contra-rotating vortices. These produce lines of lift under the clouds with lines of sink in the clear air in between. By tracking constant pressure balloons researchers have found that the air is following a helical path. The cross-section in the lower half of the diagram illustrates a two-dimensional circulation.

Such streets do not depend on any hot spots on the surface; they form spectacularly well over the ocean where strong winds bring cold air spreading out from polar regions. The circulation of these cloud street vortex rolls extends from the surface up to the base of the inversion. The spacing depends very largely on the depth of unstable air, the deeper the layer the wider the gap between streets. If the depth of unstable air increases, the widening of the cloud free lines is achieved by destruction of some of the intermediate streets, not by a fanning out of all streets. Streeting breaks down when the air becomes too unstable and tops are no longer at a uniform level.

Cloudless streets

Streets can also exist under cloudless skies. The circulation pattern precedes the appearance

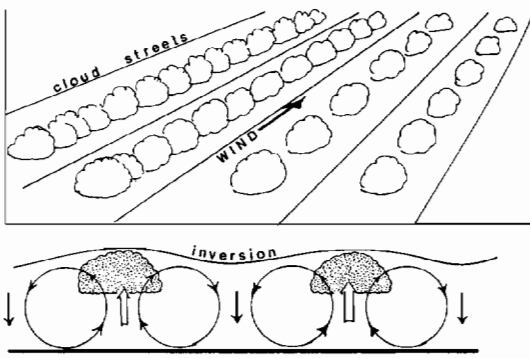


Fig 3

of clouds. When cumuli do appear the clouds may actually extend upwind of a fixed spot on the ground as well as moving downstream

Lift is not as regular as one might suppose from the diagram; the vortex pattern stimulates ordinary thermals under the streets and inhibits them in between so that the initial gain of height can be made by regular circling in a region of stronger lift. Then one can dolphin along the street at high speed maintaining or even gaining height. On a cloudless day one may remain ignorant of the pattern of streeting for a long time. One should anticipate streeting over fairly uniform ground whenever there is a wind of 15kt or more, and particularly if the wind becomes much stronger. Unusually frequent encounters with thermals or alternately an alarmingly long period of sink may mean that streeting has occurred.

Chimney vortices

Old fashioned steam locomotives sometimes emit a series of perfect smoke rings if the puffs leave the chimney with just the right force. These are true vortex rings initially but they usually break up after a short time. The gases from a factory chimney never come out with such vigour. They tend to dribble out in a sluggish series of puffs or, if there is a breeze over the top, form a small pair of contra-rotating vortices. Looked at from downwind (see the left hand side of Fig 4) they appear like a two-dimensional cross-section of an ideal thermal bubble. Instead of a complete ring rising almost vertically there are two horizontal rolls trailing downwind. These rolls have an updraft in the centre and downdraft at the out-

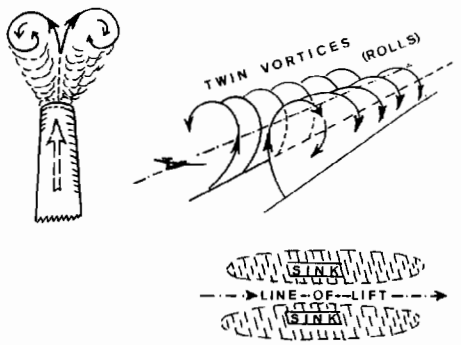


Fig 4

side. The rolls occasionally spread apart leaving a clear gap in between where clean air from outside has been pulled into the circulation. This is a two-dimensional example of the kind of circulation which produces a doughnut shaped hole in a 3-D thermal bubble.

Knife-edge "thermals"

On rare occasions one may encounter an extremely narrow line of lift which gives the impression one is flying along a knife edge of rising air. I believe this is a much larger version of the chimney vortex pattern illustrated in Fig 4. The suggested circulation has been drawn on the right hand side of the figure. Its size probably lies between a full sized street and the tiny chimney vortices. These vortex rolls produce a very narrow line of lift. One may encounter the effect after leaving a thermal. This lift is usually weak, often barely 1kt, but it can extend for a mile or more. The line is much too narrow for circling, unlike a cloud street where one can stop and circle for extra height. Circling between these vortex rolls invariably takes one into sink whether the turn is to left or right. Straighten up on to the original course after turning 360° and the lift returns.

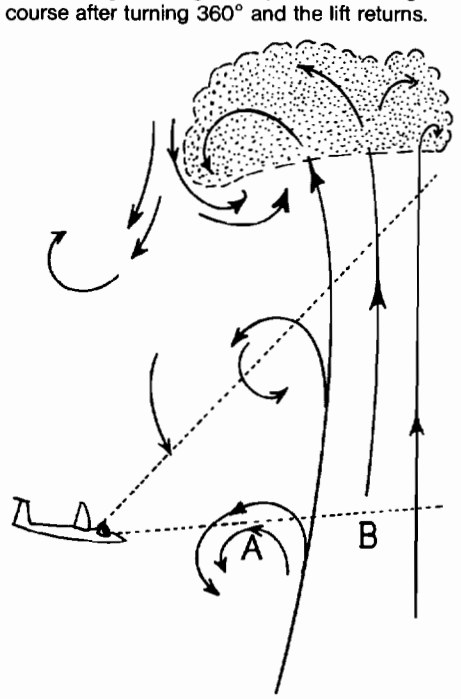


Fig 5

Misleading indications

It is a common fault for pilots accustomed to the narrow thermals found over the British Isles to turn too soon on finding lift. This is more likely to happen when one has been flying fast between thermals and is now approaching a height where another climb is needed. First one runs through the strong sink so often found on the edge of a good thermal. Then the sink stops quite suddenly, so suddenly that it gives the impression one has run into a surge of lift. At the same time the vario gives a frantic burst of squeaks. A turn takes the pilot straight back into sink for a complete circle. Straightening up and continuing on the original course one eventually finds the real thermal is actually quite a long way further on.

Fig 5 is an attempt to show how this deception occurs. The airflow in and around a cumulus cloud is apt to be much more complicated than the model of a thermal bubble suggests. Some of the complexities were discovered by sending up a barrage balloon which supported a chain of anemometers attached to the cable at different levels. When all the readings were combined streamlines of flow were drawn. These were not at all what one might expect. The flow went up, down and horizontally in a surprising manner.

The little glider on the left (not properly to scale) has a pair of dotted lines from the cockpit to represent the sector being scanned by the pilot. At this position one has the impression of being just under the cloud although really still a little way outside. (Pilots seldom look vertically upwards unless they are in a gaggle.) When point "A" is reached the glider flies through one of the side eddies and the cessation of sink is followed by a sudden increase in airspeed due to the horizontal gust. The total energy system interprets this as lift. Perhaps the sudden increase in *g* enhances the effect.

Three factors, the belief you are already well under the cloud and have reached point "B", the seat of the pants feel of a surge of lift, and the burst of excitement from the vario, all combine to fool simple pilots into starting a turn. It catches me out regularly, particularly after rounding a turning point and beginning an into wind leg. I used to keep quiet about such lapses but was cheered recently to hear that competent pilots have been fooled the same way. The problem doesn't arise when you still have lots of height; then you just pull up and climb straight ahead, increasing speed again if it turns out to be a false indication. It doesn't matter if there really was a little thermal there or not because it was not needed.

Influence of waves aloft

Whenever there is a stable layer above the level of any mountains and the wind speed increases with height (while remaining fairly constant in direction) there is a possibility of waves. In the early morning or late evening one may see some indications in the shape of clouds. Often the air aloft is too dry for any lenticulars and during the heat of a summer day the lower levels are too churned up by convection currents for waves to exist low down.

It is not unusual to complete a flight using thermals and be quite unaware of wave lift above. Far away from the hills any changes in the thermals may be put down to normal variations. As your flight comes nearer the hills it may become apparent that some thermals are remarkably strong, the sink in between has got worse and some of the gaps are much wider than before. This is particularly distressing when heading into wind, for example when flying from the east towards Wales. If nothing odd had been noticed earlier one's first suspicions are likely to be aroused on approaching the line from the Forest of Dean to the Malverns, Kidderminster and Bridgnorth. Further north it is the lee side of the Pennines where thermals are most likely to be affected by wave. Over Scotland one automatically looks for wave.

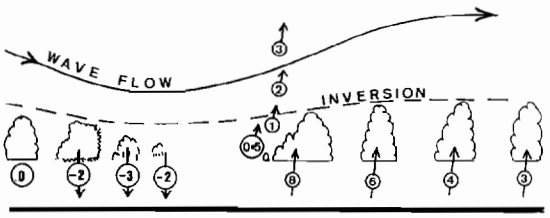


Fig 6

Waves aloft tend to boost the thermals which occur under wave lift and suppress those trying to rise into wave sink. Wave troughs coincide with blue holes. Fig 6 illustrates the sequence. Be warned that the gaps between the cumulus are normally larger than shown here. At first conditions seem to be improving as you fly from east to west (right to left on this diagram). Thermals become much stronger and some may be twice the average found further east. Then there is a gap where the post-thermal sink is unpleasantly strong and goes on far too long. Relief at reaching cumuli on the far side turns to frustration when it seems that none of them are working. Going downwind across such a gap is far easier. The tail wind reduces the time spent in the blue and the very first clouds on the far side work well.

It may be possible to get into the wave from the last strong thermal before the gap. It may not be necessary to make a cloud climb first though one should take the climb right up to cloudbase if possible. While climbing in the last thermal it may be necessary to straighten up each time the circle brings you into wind. This is because the normally circular pattern of the lift is distorted into an oval or race-track shape by the wave. If one makes perfect circles the lift will apparently decrease as height is gained. By constantly shifting upwind one can keep in the best lift. (The same technique is useful when using thermals coming off a ridge.) In both cases a long lasting thermal "plume" is being triggered off from a particular place. If you are climbing in a single bubble where the central core is ascending more rapidly than the entire bubble the effect of the wind may not matter. In a plume whose base seems to be anchored to a ground feature one tends to be drifted out of the best lift.

One indication of wave is the continuation of lift (usually very weak) upwind of the last cloud. If the lift persists when you make a crosswind tack it probably is due to wave. Patient working of this lift, which is usually very feeble to start with, may eventually get you up to a level where there is a respectable rate of climb. If you are racing round ➡

a triangle the time wasted becoming established in wave will seldom be regained, however if the blue gap upwind proves too wide there may be no option but to turn tail and try for the wave.

Triggers for thermals

Cloud streets and upper waves are examples of methods of setting off a series of thermals. If one excludes the very first thermals of the day, it is likely that many new thermals are dislodged from the surface by the sink from air displaced by older thermals coming right down to the ground and then spreading out horizontally.

Over flat ground a shallow layer of air can be warmed to a temperature well above what is theoretically necessary to set off a thermal. The lapse rate is then called "super-adiabatic" because it is much greater than the dry adiabatic lapse rate found between ground and the base of cumuli. Despite the excess of temperature the over-heated air seems reluctant to produce a thermal. It waits for some trigger like the downflow from a previous thermal to stimulate activity. The downflow acts like a wedge detaching new plumes from the surface.

The arrival of these wedges can often be felt as a gust of wind. Sunbathers on a typical English day may notice that such chilly gusts often coincide with the arrival of the cloud shadow from a passing cumulus. A number of thermals seem to be triggered off when the shadow from an advancing cloud comes across. One can observe this while waiting to escape from ridge soaring. If many minutes of continuous sunshine have failed to set off a thermal the arrival of a cloud shadow may do the trick. Presumably the activity is initiated by the down-flow from the approaching cloud.

Lesser convergence lines

There are many days when the air is too stable for cu-nims but some feature of the wind flow produces an almost continuous line of cumulus. These are often called convergence lines and forecasters can seldom tell when or where they will develop. With sufficient observations one may find that the low level winds do really converge along a well defined line. Large scale charts may show a kink in the pattern of isobars but this usually appears after the event.

Sea breeze fronts are one type of convergence line and satellite pictures have shown a line of cloud starting over the Cornish Peninsula where two sea breezes meet and then growing to extend all the way to London. Such convergence often makes cumulus grow far larger than one would expect from looking at the temperature trace of the latest upper air sounding. John Findlater reported an occasion when sea breeze fronts coming from different directions met over East Anglia and thunderstorms developed at the crossing points.

Thunderstorm outflows and convergence lines

The down-flow from a moderate sized cumulus is negligible compared to that from a full grown cu-nim. When big cumulus reach the shower stage the mass of falling water, perhaps weighted down by hail too, can combine with evaporational cooling to produce powerful downdrafts that reach down to the ground and spread out horizontally for many miles. In the extreme case the downdraft may be termed a microburst with storm force squalls. (The strongest gusts so far recorded from a microburst in the USA was 130kt.) More often the outflow only forms a vigorous gust front which spreads out to trigger off new shower clouds. American meteorologists have observed that thunderstorms are often initiated at convergence lines and where two such lines collide the result may be a very severe storm. The collision of two gust fronts can set off a great fountain of rapidly rising air. Sometimes one gust front spreads out to undercut an existing storm, greatly adding to its vigour and possibly setting off tornadoes. At other times the arrival of the gust front at a range of hills is enough to set off new storms.

Developments like this are best watched from the ground or from a powered aircraft which can turn tail and get well away when conditions begin to look dangerous. Even in England, where the majority of thunderstorms are babies compared to the American monsters, the collision of two gust fronts can be followed by extremely rapid extension of the storm area.

Thermal detectors

I have not yet heard of any successful way of detecting thermals instrumentally. Very many years ago it was hoped that sensitive thermistors in each wingtip could be made to show which way to turn on encountering a thermal. In recent years some hang glider pilots have used an instrument to detect temperature gradients in the air they fly through. The device is said to distinguish between the turbulent fluctuations which always exist in thermic conditions and true thermals. There seems to be some doubt if the detector really works at high levels but at the very low levels where hang gliders begin thermalling the instrument may be helpful.

Cold thermals

The problem with any temperature sensing scheme is that thermals are only warmer than their surroundings at low levels. The original temperature difference usually disappears when the thermal rises well above the ground. Towards the top the rising air is usually cooler than its environment. This is illustrated in Fig 7. In this figure the actual temperature has been converted to "potential temperature"; this is the temperature which dry air would have if it descended to the surface, (it is usually calculated for the 1000mbar level). The advantage of the potential temperature is that you can compare the air temperature at different levels to a single standard. If the temperature follows a dry adiabatic lapse rate its appearance on this diagram is a vertical line.

In Fig 7 the solid line represents the thermal rising from the ground while the pecked line is the environment temperature. The stippled area at the bottom shows the thermal starting off much warmer than the environment. This part has a super-adiabatic lapse rate. By the time it has reached about 500ft (sometimes sooner) the thermal will have cooled to about the same temperature as its environment. The two lines overlap with only small wiggles. Near the top where the environment becomes stable its potential temperature rises with height. (The pecked line curves off to the right.) There is then a widening gap between the temperature inside the core of the thermal and the air outside. The shaded section shows this change. Eventually this cooling stops the thermal rising any further, but it may go up quite a long way before stopping.

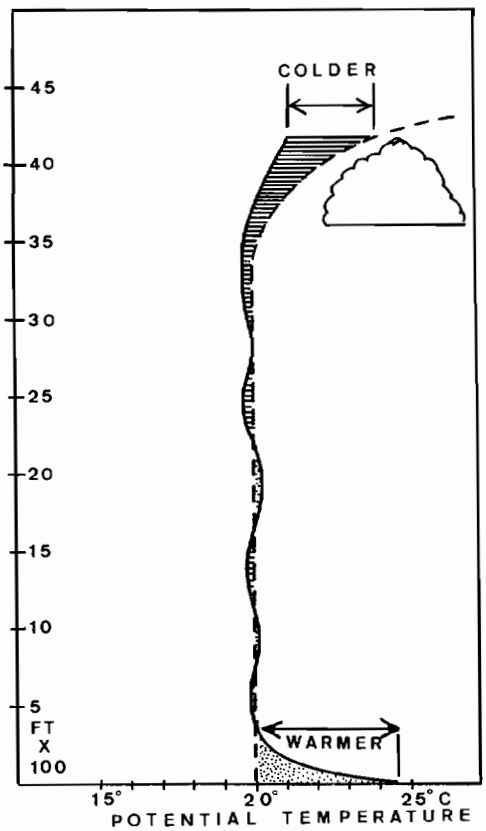


Fig 7

How moisture helps

Thermals usually carry up moisture from low levels and this acts to reduce the density of the air inside the thermal. Water vapour is lighter than dry air so humid air is less dense than dry air at the same temperature. Meteorologists find it simplifies many calculations to use the "virtual temperature" of the air instead of the actual temperature.

Virtual temperature

The virtual temperature is higher than the measured temperature by an amount which exactly balances this change of density. For example if the pressure was 800mbar (6394ft on the altimeter) the temperature 14°C and the humidity just over 90% the virtual temperature would be two degrees higher than the actual temperature of dry air. Put another way the air in the thermal could be nearly two degrees colder than the dry surroundings and still have a tiny amount of buoyancy. In real life the surrounding air also contains some moisture so the difference is rarely so great but the effect is still important.

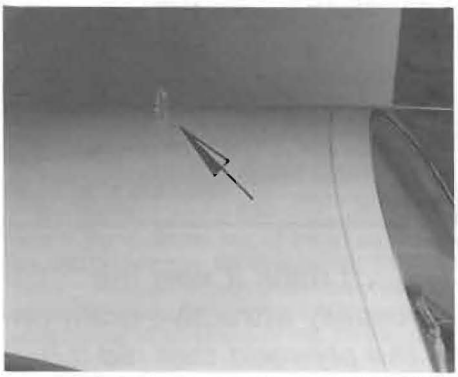
The extra buoyancy due to added moisture and the momentum of the rising air combine to help strong thermals penetrate some distance into a temperature inversion.

STROBE LIGHTS

An evaluation on battery powered sailplane strobe lights

Two small. lightweight, battery powered, strobe light units are now available in kit form at a modest price,and appear to be suitable for some use with sailplanes. The smaller unit was designed for use in light aircraft that do not have an electrical system, and it operates from a standard 9v alkaline transistor radio battery. It uses the same small but bright xenon strobe that is used in the more powerful unit that was designed for light aircraft having 6 or 12v electrical systems.

The kits are manufactured by Great Plains Aircraft, PO Box 304, St Charles, IL 60174, USA, and they are not difficult to assemble. The only problem I experienced with either kit was the determination of the correct polarity for installing the 160mfd electrolytic capacitor in the larger unit (the vertical marking stripe on its cylindrical container designates its negative terminal). My familiarity with electronic circuits is relatively limited; however, the kit instructions do not require an expert talent to follow adequately.



The strobe light mounted on top of the Ventus A fuselage. Photo: Dick Johnson.

After assembling both strobe light kits, I installed the more powerful 6/12v unit in my Ventus A sailplane for both ground and flight testing. Three small .040in (1.0mm) diameter holes were drilled through the fuselage centerline shell about 6in (15cm) aft of the canopy. Through those holes were inserted the xenon flash tube's three electrodes.

That location for the strobe light gave essentially 360° upper hemisphere viewing and near maximum light distribution for a single strobe. A second strobe mounted on the fuselage bottom would have added the viewing coverage that the top one lacked, but it was not really needed for the planned effectiveness evaluation.

Ground visibility tests were made to determine the maximum ranges at which the strobe lights could be seen when the sailplane was sitting on the runway. Those distances are shown in Table 1. In bright summer sunlight the strobe is not very useful, but as the ambient light conditions darken, the strobe's usefulness increases rapidly. Sailplanes seldom operate at night or under dark overcast conditions, and I have yet to make measurements under those conditions.

When the sailplane's radio squelch is turned to high sensitivity, the strobe's charging electronics emit a pleasant whirr-pop RF noise as it cycles through its charge-discharge routine; thus one can be certain when it is operating. Because our sailplane flights rarely involved closer than 500ft operation, the strobe was seldom visible to other pilots under the bright ambient conditions of our tests. It would have been considerably better under heavy cloud, but those conditions were not encountered during our limited testing.

The low power 9v unit is probably not strong enough to be of use for sailplane flight conditions. However, it is fun to assemble and economical to use for other night time purposes such as emergency beacon, camp marker, marine use and bicycle lighting. The brochure claims that a single 9v battery will operate it for 8 to 10hrs.

The higher powered 6/12v unit is considerably stronger in its light emissions, but it requires one ampere or so of current to operate. That is quite satisfactory for sailplane operations where a moderately large battery is carried. For small battery usage the strobe operation could be limited to only the darker ambient conditions; or used in its 6v mode of operation where the same flash brilliance is achieved with about half of the wattage of the 12v mode's operation. With 12v operation the voltage is inefficiently dropped to about 6v by running the 12v through a 7.5ohm power resistor, and that produces nothing but heat plus the desired 6v needed by the charging electronics.

The same small xenon flash tube is used for both the 9v and the 6/12v units, but the flash intensity is considerably higher with the 6/12v unit. The U shaped flash tube's physical size is relatively small, measuring 1.2in (30mm) high and .22in (5.5mm) wide. When mounted with its narrow end forward, its aerodynamic drag is small and likely less than that of a total energy venturi. For permanent installations some type of clear plastic housing should be devised to both lower its aero drag even further and protect it from ground handling loads.

In summary, these strobe light kits are of good value and quality. They can have practical safety related usage, especially in out-of-sunlight and less bright flight conditions.



Dick started gliding in 1938 and now has about 18000 flying hours of which roughly 12000 are in gliders of various types. He has an ATPL (Airline and Transport Pilot Licence) with four engine land and sea ratings, a commercial glider rating and all three Diamonds. He has an aeronautical engineering degree, won the US Nationals 11 times and was in World Championships nine times, coming 4th in 1963. He started the flight test calculation series on sailplanes for *Soaring* in 1974 and is currently head aerodynamicist at Texas Instruments, Dallas.

Radar patterns of thermals

The extra moisture in a thermal makes them detectable with very powerful radar sets. Horizontal scanning shows thermals as a series of cells and vertical scanning shows how high they have risen. Unfortunately the size of radar dish is far too big for an aircraft.

Lidar

Pulsed laser beams have been found useful to trace air movements provided that there is enough dust carried up by a thermal. Lidar gives good results when pointing up from the ground. It has also been used (scanning horizontally) from an aircraft to measure changes in the boundary of an adjacent cloud. Horizontal scanning does not show up vertical currents so an airborne Lidar might not pick out thermals.

Battery Operated Strobe Light Summary

Strobe Unit		Low Power 9 volt	High Power 6 volt	12 volt
Average Test Current		.06A	1.0A	1.1A
Test Battery Voltage		8.9v	6.3v	12.0v
Average Input Power		.53W	6.3W	13.2W
Visible Range	Bright Sunlight	235ft	480ft	480ft
Against Low	Bright Overcast	450ft	700ft	700ft
Contrast	Dark Overcast	?	?	?
Background	Night	≈1 MI	>2 MI	>2 MI
Flash Rate		≈40/Min	≈30/Min	≈30/Min
Circuit Board Size		1.9×1.5in	3.5×2.5in	
Kit Price		$28.95	$36.95	

A TRANSPORT OF DELIGHT

The story of how a pilot who has flown 1127.68km in his Nimbus 3 to gain a clutch of records restored a Grunau Baby and his reactions to flying a vintage glider

How on earth did I, an admitted Open Class enthusiast, come to be flying a small, open (cockpit, not span) wooden glider of a design that went out with the ark - and with about the same glide angle as an ark, come to that?

After all, those mildly eccentric gentlemen who fly vintage gliders are in the main flying the very ones in which the rest of us flew so many launches (and so few hours) with the single-minded idea of escaping for ever into a high performance world of Skylarks and K-6s.

The idea

Still, the meetings did sound like fun, so a few years ago a couple of like-minded friends and myself made several attempts to acquire an old machine. We were looking for something a little out of the ordinary, something ... well, more interesting than the worthy but dull machines we had tried so hard to master in our youth, and our searches were to no avail. Thoughts of a cheap Minimoa or the like began to fade.

After a while I even inquired of friends in southern Germany while on holiday there; had they heard of any old gliders looking for a good home? Well, yes, they had, but surely I wouldn't be interested in anything so mundane as a Grunau Baby. I didn't think the others would with a glide angle of 17:1 (and that's probably the brochure figure, too) but I decided to have a look at it anyway.

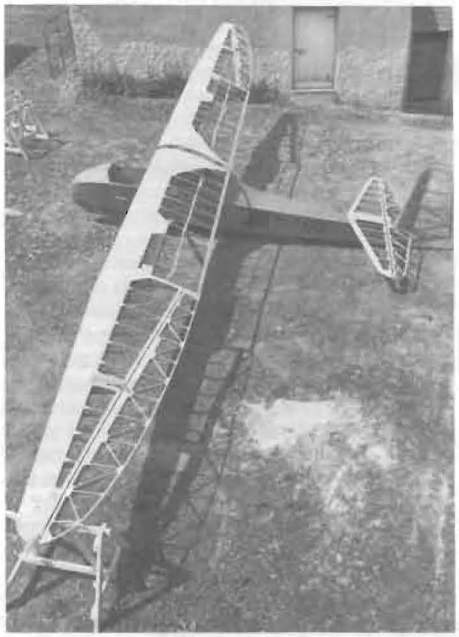
With no ladder to hand, fifteen feet was as near as I could get to the aircraft, which was up in the roofspace of a garage. Obvious immediately were lots of holes in the plywood. Less obvious was the state of the glue (or even its type). The owner, an expert aero-modeller who had hoped to restore it himself, remarked that the slashes in the fabric had been made by an inspector who had decided that the glue wasn't too bad ... just good enough for the glider to be spared the terrible fate of its comrades on a bonfire, anyhow.

Moreover, it looked lonely up there laid out on the roofing joists, and in need of some tender loving care. (This was probably the moment where sanity began to slip.) I decided to give it a go. After all, if you're going to buy a glider of very little performance, why not go the whole hog and buy one with absolutely no performance at all!

A modest price was agreed and I arranged to return during the winter when ferry prices would be cheaper. When the time came the Grunau escaped further damage while being lowered from its roof, and didn't suffer even a drop of rain during the journey back to Ireland.

Once back home, I could stand back and look at my acquisition for the first time. The ailerons showed a truly amazing amount of washout, which combined with the sharply undercambered Göttingen wing section should guarantee a performance well down to expectations! Furthermore, the fuselage looked different to those I had seen in photos, having a distinctively different nose shape, a wheel, and an unusual nose skid that curved up into the fuselage between two rollers. The tail skid was the undoubted technical *tour de force* of the whole machine, having a pivot and a bungy cord to provide shock absorption rather than the usual strip of spring steel.

A puzzled letter to Chris Wills produced the answer; this was a Grunau Baby 3, the last version produced in Germany, dating from the early 1950s. Both fuselage and wings had only ever been painted with one undercoat and one topcoat, which tended to support what the previous owner had said, that the glider must have had a short service life, and hadn't flown in fifteen or twenty years. I reckoned that they'd thrown it into a corner as soon as they could get their hands on a K-6 and began to wonder if they had been right, too.



Alan photographed the "assembled" Grunau after he had placed the pieces together in his garden to make sure they were all there before starting the restoration.

The reality

All the fittings and control circuits were intact. There were no pins, tow-hooks or straps, and no instrument panel, but the essentials were there. Only the panel, seat pan and an open "dog-collar" type canopy would have to be designed from scratch.

The glue turned out to be Casein - the variety made from milk protein which fails if damp penetrates it; (maybe I hadn't brought the aircraft to the right country). Clearly, every surviving joint must be sealed. Although the wing D-boxes seemed sound apart from various holes, the glue along the trailing edges was not and much of the fuselage was falling to pieces. Water had at some stage been dripping into the cockpit area and here even the pine frames were rotten in places.

I decided to begin with the fuselage. The work had to be planned and carried out with equal care, as all the plywood forward of the main bulkhead had to be replaced without allowing the frames to become distorted. Where an area had double skins, as with bulkheads or cockpit sides, I couldn't remove both skins at once or their internal frames would have broken apart. Some parts originally made from one sheet of ply had to be made in two with a scarf to join them where space would not allow a single sheet to be manoeuvred into the structure.

"I think it was the unusually attractive grain on the plywood that did it."

Around the time I got the new sides glued into place inside the cockpit, another insidious influence began to slow the whole project down. I think it was the unusually attractive grain on the plywood that did it. It seemed a shame to spray over this with nondescript grey cellulose, and I decided that honey-coloured varnish would be more attractive. Naturally the rest of the cockpit would have to be finished the same way, requiring every frame to be stripped to the bare wood. Great care would have to be used with the new glue joints, too. I couldn't use Aerolite (a clear glue) as the acid hardener would destroy the existing Casein: the only alternative was the chocolate coloured Aerodux, so drips and smears would be out of the question.

Gradually, the "perfection syndrome" spread to the rest of the aircraft (for instance, the whole fuselage is finished inside like the cockpit, although no one will ever see it). Thus what was to be a get-it-into-the-air-quickly rebuild became an endless restoration project.

Come the winter of 1987 the fuselage was finished, painted with acrylic enamel in a pale beige colour to complement the varnished cockpit and the (planned) clear fabric. Also ready were new pins, the new dog-collar canopy, a comfortable seat (GRP, I'm ashamed to say) and a new instrument panel. This has a 90kt ASI (VNE is a breathaking 80kt), altimeter, vario and also a Turn & Slip: I reckoned that in the British Isles you might never get to the next thermal flying a Baby

without a cloud climb in the thermal you're leaving!

The wings, however, took a lot longer to complete, and the first flight did not take place the next summer as hoped. Indeed, it wasn't until two weeks before the Vintage Glider Club's rally was due to start in Budapest last July that all the parts were finally covered and ready to go.

Due to an unchangable Apex booking for the ferry, assembly of the various parts had to be done on the run, as it were, half way across Germany, and even the wing leading edges were sprayed there, rather than arrive with them in primer. The weight came out a little lighter than the design 375lbs.

On arrival at Farkashegy airfield near Budapest, the control deflections were set with the help of two friendly Cumulus pilots (another vintage type which has Grunau wings on its tadpole shaped metal-tube fuselage) and everything was ready for the first flight, with the possible exception of the pilot.

Anticlimax . . .?

The moment of truth. I had some hope that subsequent experience would enable me to fly the Grunau to better effect than in the far-off days of early solos in the club EoN Baby (based on a Grunau but different in every detail). But would she really be fun to fly or, after all the glass ships, merely a bit of a bore?

The first flight was a little tense; after all, the glue in the structural part of the wings is 99% original. Furthermore, the aerotow was decidedly tricky - what the French would call *nerveuse,* especially toward the upper limit of the permitted speed range (49kt). On top of that, the dog-collar (made to the original shape) comes over your shoulders and nearly up to eye level: visibility is a mite restricted, and with a parachute on (just for the collision risk, you understand) it was hard to look out and to see the instruments at the same time. The glide angle took a little getting used to, as well: I forced myself to do the circuit really close in and to turn on to base leg ridiculously early, and even then scarcely made it back to the short grass.

Before the next flight I tried sealing the 1½in wide gaps between the wings and ailerons with tape; they all said that would help on tow. But the next tow was worse. She rolled uncontrollably to the right and I had to pull off.

Watching some of the other gliders showed that I wasn't alone. Most of the towplanes were PZL 101 Gawrons (the predecessor to the Wilga) which had a huge wing and a 260hp radial engine. It seemed that an equally huge slipstream was causing the problem: a solution came with longer tow ropes. They certainly could fly slowly, though; I later had a tow at 30kt all the way!

. . . Or dream come true?

On the third day came her first thermals, to 5000ft, and over 1¾hrs in the air. I tried going up to 60kt and pulling on a fair amount of *g* in a tight turn. The strut-end fittings tightened audibly, but nothing moved and not a creak could be heard from the wooden structure. I began to relax and enjoy the flying.

Two days later, I had a 4hr flight up to 6500ft. What an experience to be in a thermal with two Minimoas and a T-31; to fly with Goevier, Moswey, Petrel, and with a beautiful replica Gö 1 Wolf (to name but a few of the many graceful vintage gliders there). After this I plucked up courage and took some winch launches, which proved the structural integrity beyond doubt.

All in all it was an excellent rally, our Hungarian hosts even inviting many of us to fly some of their own treasured vintage designs. Among others there were replicas of the open two-seat Cimbora and primary Vöcsök (great fun); and the 1944 prototype Futár, sole survivor of its type. To cap it all, the Grunau even won the *concours* prize as the best restored glider, which was undeniably gratifying. Indeed, people kept asking for confirmation that she was new.

Only one thing was missing, I hadn't taken her cross-country. So on the way home I paused at Le Blanc, in France, where Brian and Gill Spreckley were most helpful in providing launch, hangarage and near-perfect weather for a Baby! I set out with the hope of going at least 50km. In the event it was possible to do a 116km O/R over about four hours. As she did a Silver height on the way, and the total flight time was 5½hrs, I felt she had acquitted herself honourably. I wonder if she could do a downwind 300km?

The 30kt glider

Finally, how does she fly? One member of the BGA Instructors' Panel says she has the most perfectly co-ordinated controls of any aircraft he has flown; and they are also light and positive. There is no trimmer, but with an elevator this light there is little need for one. With all the washout she is naturally very docile near the stall (under 25 kt) and can be thermalled tightly at 30kt, leaving all the glass stuff flailing around far outside your circle. Perhaps because of the compact circle, even off-the-clock stubble fires don't throw you around as much as a wing loading of less than 3½lbs/sq ft would suggest.

In fact, she likes to fly at 30kt nearly all the time. It's a pleasant cruising speed between thermals: you are well shielded by the screen, whereas at 35kt you are beginning to feel the airflow, and to come down noticeably faster as well. Speed to fly ring . . .? Forget it. You'd have to be in strong sink to benefit from flying faster than 40kt. On calm days even the circuit and landing can happily be flown at 30kt. She sideslips wonderfully and can be put down on a sixpence. The ground run need be no more than a few feet and the balance is near perfect, the fuselage settling on to either nose or tail skid, whichever you wish.

This means that landing out need not be too much of a worry and you can thermal down to the sort of heights that competition pilots use if you want to. If there is a whisper of lift within reach, she'll climb away in it. When you are near the ground you feel much more involved with your surroundings in an open cockpit. The senses seem enhanced: you can hear the airflow change as you approach the turbulence of a thermal; sometimes you can hear people talking, rather as from a balloon. You can smell the hay (and that stuff they spread on the fields). Of course, it's warmer down there, too.

I learnt early on that even on a good thermal day you don't leave a thermal in the hope of finding something better nearby, as you would do without a second thought in a glass glider. Best to stick with the one you've got, right to the top, especially if the thermals are blue. Warm clothing is a must up here, and the dog-collar blanks out ever more of the ground as you climb. At 6000ft you have to be well banked even to see where you are.

During the years of her restoration the span of the Open Class I normally enjoy flying has been getting ever longer, so how does she compare with a Nimbus 3? I had wondered if it would be a case of going from the sublime to the ridiculous, but in the event it's just a totally different experience. The performance gap is so vast it's not worth worrying about: after all, the Grunau is much closer to a hang glider than to a Nimbus. ➡

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The enormous difference in cruising speed means that entering a thermal has to be re-thought, though. Because you are approaching at perhaps one third the speed in the Grunau you have to wait half an age before turning in, or you'll never reach the centre at all. When you are ready to circle, she'll turn on a dime in a delightful way that modern gliders can't begin to emulate, even the 15m ones.

Perhaps because her handling is so near perfect I find the Grunau, in her own way, just as much fun, just as much of a challenge, just as great to fly. I am glad now that I trusted her designer, and didn't give in to the temptation to try and "improve" her with a trimmer and less washout and 17m wingtips!

Was she worth the time and trouble, and the long wait? You've probably guessed by now.



Alan's photograph of the Grunau Baby in the launch queue at the Vintage Glider Club Oldtimer Rally in Hungary.



The first day cover issued at the Rally on July 20, the day the Grunau had her first flight after the restoration.

THE LAMBCHOP AWARD

Visitors to Peterborough & Spalding GC are often curious about the lamb motif worn by some pilots on the right-hand pocket of their flying suits and William Rice-Johnson reveals all

During the summer of 1988 a number of us neophyte soaring pilots were given our Bronze badge cross-country briefing from one of the grizzled old-timers (his name can be supplied upon request) who is usually lounging about the clubhouse talking about the good old days when field landings were common.



Graham Kench with his lambs - but not sewn on his right pocket. He has allowed himself a touch of originality!

He said if you intended to fly cross-countries you must be committed to a potential field landing and several of us promptly landed in stubble fields.

Later, one of our number returned from the Continent and told us that in France a field landing was something to be scorned. When you did this, a little sheep or cow was painted on the side of your glider.

Thus the Lambchop Award was born. The committee of Mary Wilson-Richardson and Graham Kench decide when a lamb is to be awarded and I am responsible for maintaining a supply of motifs from departmental stores or sewing centres.

The rules are simple - you are awarded a lamb if you land somewhere you didn't plan to land, whether it's a stubble field or the perimeter track at Wittering. Under mutual flying, both pilots qualify but for an instructional flight just the instructor gets the award.

You must sew the lamb on your flying suit within one week of the award and if you don't own a flying suit, you have to buy one.

The lambs are either cream or baby blue but when you receive your fifth you become an Ace and are presented with a pink one.

Each March at our annual club dinner Lambchop himself, a 14in version with a brass tag round his neck giving the names of previous winners, is presented to whoever has made the most spectacular field landing. Should he be awarded to the same pilot for three years he is won outright.

All this is great fun and if we are committed to a possible field landing every time we take off this should make us safer pilots.







Above: a series of photographs from the Midland G

MARY MEAGHER

MARY AT THE LONG MYND

Where she sampled the delights of the bungy launch

I met Roy Dalling back in 1985. We were both "ducklings" on Brian Spreckley's cross-country lead and follow course. Roy had just been appointed manager at the Long Mynd. "You've got to come and see it, Mary" he insisted. "It's a beautiful place." "I will some day" I promised. "Is it true that you launch with a bungy?" "If you visit the Mynd and the wind is right, we'll give you a bungy launch, I guarantee it!"

A couple of years later I took up his offer. I didn't take a glider, just drove up from Oxford following the quarter mil map. Led to a little confusion at times. But the elevations were correct and I found myself rattling over the grid at the bottom of the hill at Asterton. Let me tell you, the most terrifying part of flying at the Mynd is the drive up the hill! For us flat world people, a single lane road, 1 in 4, crumbling at the edges, with an occasional perch overlooking eternity for a passing place, with geriatric Sunday drivers who are incapable of reversing their vehicles coming down the other way, is not an approach for the fainthearted.

Once you're on top, it's okay. I rolled in the gate, and scarcely had a chance to draw breath when Trevor Guy kindly strapped me into the front of his ruby red K-13 and six husky young course members tailed on to the bungy rope. Showed up at the right moment! Some people have to wait around for hours, days, weeks. I was just lucky.

The wind was whooping up over the face of the hill. Ideal conditions. Somebody held on to our tail. At Trevor's signal, the six young chaps marched over the crest of the hill and disappeared. The flaccid bungy rope snaked along after them, straightened itself, stretched, quivered, and Trevor waggled the rudder. The man on the tail let go, and ever so gently we trundled down the hill towards the brink. Talk about minimum acceleration? It's got to be the complete opposite of a Van Gelder launch at Dunstable.

We waddled along persuaded by gravity mostly, while those holding the ends of the rubber band sat down to avoid falling off the hill, and we fell off the hill to be met by that incredible rush of air and were away, borne up and along the slope. We soared for an hour, back and forth, and out a bit. Trevor demonstrated for me another astonishing speciality of the Long Mynd. You *can* do touch and goes in a glider! Just put the brakes away and fall off the hill again!

He slightly miscalculated and landed in a very very small potato patch

Conditions softened a bit the next day. We all went down the back way (there is a back way up and down that makes it slightly less traumatic to visit the Mynd with a trailer) to retrieve Jeff Rowson who had slightly miscalculated and landed in a very very small potato patch at the bottom. We manhandled (and womanhandled) the wings and



fuselage across the field to the trailer while John Stuart swooped overhead offering advice on the RT. He was only doing it to show off, of course. "Not a chance he's going to land out, dammit" mutterd Jeff. "I'd have the last laugh if he did." He didn't.

It's held them back, actually, that wonderful hill at the Mynd. From going cross-country, that is. You can see the problem; you've got your altimeter set to ground at the Mynd and out over the valley and at cloudbase it reads 1500ft and you get a bit low and scurry back because you don't want to land in the valley and drag your trailer up and down that frightful road. But I had to go back again! I couldn't resist the memory of the beautiful Shropshire hills, the purple heather, the





GC files showing a K-21 on a bungy launch.



An aerial photograph of the Long Mynd by Tony Evans.

morning mists, the sweeping westerlies, and Billie and Jennie's wonderful cooking. I signed up for a week's course. Exploring the Welsh wave at the Mynd with John Stuart. **Nobody knows it better!** (How to connect with the wave from the Mynd, that is.) I took Pegasus 987, and went the longway round up the hill and it wasn't too bad.

And the very first day the wave was working. All clouded over except for strategic gaps here and there and exceedingly unstable westerly. The ridge didn't work, so no bungy. We took a wire launch in the K-21. They've got a very good system for wire launching at the Mynd. Not one winch but two. The big winch is parked on a knoll about a mile away. One does not worry about the sheep grazing along the track of the wire; they display remarkable acuity and as soon as the wire begins to move they scatter. (Unlike hill walkers, who wonder what that wire is doing there and go to pick it up!)

The small winch holds a coil of thinner wire, and a metal triangle connects the retrieve wire to the main cable and to the glider's hose covered length of wire. The retrieve winch driver radios to the big winch when the glider is ready, up they go, and when it releases, the retrieve winch is started up and pulls back the main cable ready for the next one. They can do a launch every two and a half minutes with this system, and nobody has to drive up and down the field dragging cables. The main winch driver is professional; the retrieve winch drivers are well-trained club members.

We climbed off the winch into good lift, tracked out over the valley and found a thermal that had to be wave assisted because it was 8 up. Followed that one right up through the cloud and sure enough it was the real thing! We climbed to 6000ft but I wouldn't have dared to do it alone because the clues for our whereabouts were very scanty indeed. John Stuart knew where he was all right and we got back okay.

987 had never been launched by the belly hook before and she didn't like it

Later in the day the sky opened up a bit. After two more check rides on the winch - my early training was all aerotow and a winch launch is done at such a hair-raising angle and it all happens so *fast* - they told me I was ready for a launch by myself in Pegasus 987. I was ready but it wasn't. 987 had never been launched by the belly hook before, and she didn't like it. We rose to 10ft and **sproing!!!** I found myself sliding along on the grass. "I'm not going to try that again" I announced, climbing out of the cockpit. "It wasn't me that let go, it was the glider."

They fixed it that night, Roy Dalling, Trevor Sagerman and Simon Adlard. No shortage of experts at the Mynd. Next day John Stuart agreed to test fly 987 and he test flew it up to 11 500ft in the wave, while I went up in the 21 with young Simon Adlard, who knows his way around pretty well, to 8500 above the Mynd. We had a lovely time, the three of us, sporting on the wave, until conscious troubled us with the thoughts of those below waiting their turns.

Okay, okay, I didn't get my Gold height that week. To do that sort of thing you go to Aboyne, where the tug pulls you to the right spot and up you go. It is a challenge, and a great satisfaction, to whip up on a bit of wire and tickle the bottoms of the bounding cu until you find the one that's got something special. And from Oxford to the Mynd is less than a four hour drive!

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THE NEW GRAMPIAN GC

John MacGregor, a Scottish farmer, became hooked on gliding after an *ab-initio* course two years ago. So much so he earmarked a piece of his land about ten miles NE of Montrose in the Garvock hills (N56 51 WO2 21) as a potential gliding club and gained BGA approval.

At a public meeting in January half of the 100 attending were in favour of starting the club. It might have been a problem having Aboyne 30km away and Aberdeen the nearest large population from which both clubs will take members. But their CFI, Al Eddie, thinks each club will be feeding a slightly different market and can see no conflict of interests.

In fact support from other clubs has been overwhelming with offers of aircraft hire, a winch and the loan of instructors.

Al told us on going to press that February 17 was the target date for the first flight. They have a two-seater in the pipeline and are building a Rover based winch. So as not to be inundated this year, membership will be limited but they are forecasting 2000-2500 launches.

The CFI is convinced the potentially annoying closeness to the sea will be more than compensated by the site's proximity to the Grampian hills from which the club takes its name. Situated at the NE end of the Strathmore valley, it will be an ideal starting point for long cross-country flights to the SW and N.

They hope to have introductory and *ab-initio* courses with at least one soaring course by the end of the season. Obviously there is a lot of work ahead but Al says there is an astonishing amount of "raw enthusiasm" from everyone involved. *(See also the comments by Penguin in this issue.)*

BADGES FOR DISABLED

Interest has been shown in the idea of a series of badges for pilots who due to a disability have to fly with a safety pilot.

They could be in a form similar to the A, B and C certificates going on to the Bronze badge, the pilot doing all the flying including the take-off and landing to the same standard as any other solo pilot. Another way might be a cross-country badge where a safety pilot may have to assist with the take-off and landing but the disabled pilot does all the flying from the start to finish line.

I would be pleased to have ideas from anybody in this situation and an indication of how many pilots this could affect.

Tony Moulang, *BGA Competitions and Awards Committee, Galleon, 28 The Landway, Bearsted, Nr Maidstone, Kent ME14 4BD or tel 0622 35063 (evenings).*

PROPOSED MOTOR GLIDER RALLY

It is hoped to organise a motor glider rally on June 16 in aid of the RAF Benevolent Fund, this year being the 50th anniversary of the Battle of Britain. A maximum of 25 aircraft will take part with some light aircraft and it will start and finish at BAe Warton, Lancashire and include fuel and time planning and navigation exercises.

For more information contact Darren Evans, British Aerospace, Warton Aerodrome, W319, Warton, Lancs PR4 1AX, tel 0772-633333 ext 54600 or 52167 (daytime).

LONDON GC'S DIAMOND JUBILEE

The London GC is celebrating its Diamond Jubilee with two days of festivities on Saturday, June 30 and Sunday, July 1.

Members hope that as many friends and past members as possible will join them and relive the atmosphere and flying that generations have enjoyed at Dunstable Downs since 1930. There will be a special party at the club on the Saturday night.

A full programme of events will be available from the London GC, Dunstable LU6 2JP.

COMPETITION DIARY

May 27-June 9:	Europeans, Leszno, Poland.
May 31-June 8:	Overseas Handicapped Nationals, Roanne, France.
June 16-24:	15 Metre Class Nationals, Nympsfield.
June 30-July 9:	Competition Enterprise, North Hill.
June 30-July 9:	Pre-World Championships, Minden, Nevada, USA.
June 30-July 13:	1st World Motor Glider Championships, Issoudun, France.
July 14-22:	Standard Class Nationals, Booker.
July 28-August 5:	Open Class Nationals and Regionals, Lasham.
July 28-August 5:	Northern Regionals, Sutton Bank.
July 31-August 9:	Inter-Services Regionals, Bicester.
August 11-19:	Junior Nationals, Dunstable.
August 11-19:	Enstone Regionals, Enstone.
August 19-25:	Two-Seater Competition, Pocklington.

TECHNICAL NEWS

ASW-15. The service life has been extended from 6000 to 12000hrs subject to detailed inspection at 6000hrs.

Centrair 101 (Pegasus). There have been several cases of fracture to the trim spring without any prior evidence of corrosion or distress. The spring should be replaced where doubt exists as to its integrity.

Super Cubs. The wing lift struts must now be tested annually.

Pawnee. Wing lift struts must also be inspected annually (previously every five years).

Foreign registrations. It is illegal to fly a UK registered aircraft with foreign numbers or registration letters visible.

DTI wireless telegraphy checks have been made in the Oxford area, not only for licences but also frequency checks for spurious omissions! You have been warned.

Club technical officers (and BGA inspectors) are asked to circulate the airworthiness advice in the BGA Technical Newsheets to club members.

Extract from the BGA Technical Newsheet compiled by Dick Stratton, BGA chief technical officer.

INTER-UNIVERSITY TASK WEEK

This year it is being hosted by the Bristol University GC at Nympsfield from July 15-21 and is open to all students at British universities and polytechnics.

The task week is an ideal opportunity to meet other student glider pilots at a friendly, low key competition. Two-seater entries are encouraged with non-student PIs to give pre-Bronze students an introduction to cross-country flying. For further details contact Chris White, Bristol University Gliding Club, University of Bristol Athletic Union, Students' Union Building, Queens Road, Bristol BS8 1LN.

AIR LEAGUE SCHOLARSHIPS

Each year The Air League gives a great opportunity to youngsters wanting to try powered flying. Their Educational Trust Flying Scholarships give up to 15 hours flying during the summer of 1991 and winners, who must be over 18 and under 22 on May 31, 1991, are selected on the basis of interviews, aptitude and medical tests.

For an application form (which must be returned before July 31) write to the Secretary, The Air League Educational Trust, Grey Tiles. Kingston Hill, Kingston upon Thames, Surrey KT2 7LW.

TECHNICAL COURSES

The Mid-Warwickshire Centre for Further Education are running two courses in the autumn which may well be of interest to the technically minded reader.

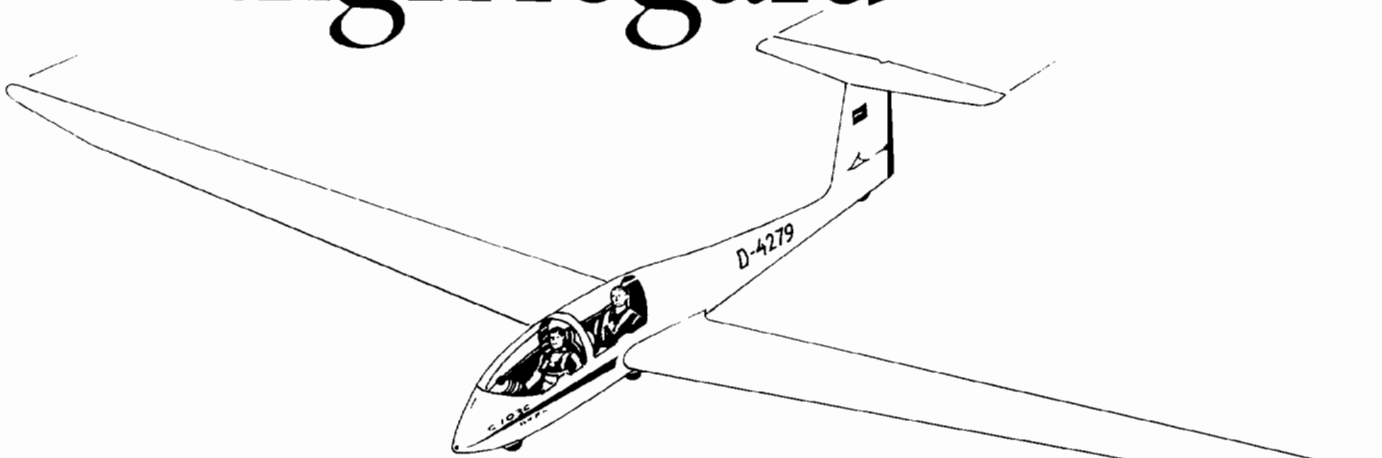
There is a two day course covering wood and fabric repair and restoration and general inspection techniques on October 6-7, costing £50 per day or £90 for the weekend. Then on November 3 there is a one day motor glider inspection course, costing £50.

Places will be limited and you are asked to apply to Richard Adams, MWCFE, Warwick New Road, Leamington Spa, Tel 0926 881108.

YUGOSLAVIAN GLIDERS

Yugoslavia Commerce, a trade firm, want to know if there is any UK interest in the five glider types produced by the Jastreb factory at Vrsâc. If you would like to become an agent or distributor for these gliders, then write for further details to the BGA or direct to Yugoslavia Commerce, 11001 Beograd, Kneza Milosa 60, Yugoslavia. ➡

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FRENCH JUNIOR CHAMPIONSHIPS

British pilots born after January 1 1965 are invited to compete in the French Junior Gliding Championships at La Roche sur Yon from August 5-14. There will be three Classes and the International Junior cup will be awarded for the first time.

There is free camping on the airfield for the crew. The entry fee is 1000fr and tows are 100fr.

For more details contact M. Dubreuil, Aerodrome Rene Couzinet, BP 98, 85003 La Roche sur Yon, France, tel (33) 51.05.01.91.

WEIGHTY PROBLEMS!

ML Douglas Equipment announce a range of high precision electric scales for aircraft. The smallest models will weigh up to 500kg and 1000kg respectively and would be ideal for gliders, motor gliders and tugs. They are not cheap, but they are very light and portable and accurate to 0.1%. For further details of Handy Scale AC contact Paul Brown, ML Douglas Equipment, White Waltham Aerodrome, Maidenhead, Berks SL6 3JG, tel 062882 3361.

GLIDING FOR THE YOUNG

Young British pilots may well find the subsidised gliding courses run by the German Aero Club's youth organisation for 16 to 26 year-olds of interest. They are held at Hirzenhain near Marburg. If you would like more details, write to *S&G* enclosing a sae.

TWO NEW PARACHUTES

GQ Parachutes have two new parachutes designed specifically for use in gliders.

The Shadow (a lightweight back type assembly) has a slim profile, close contour pack with split-saddle and a lumbar bladder to give back support. All surfaces in contact with the wearer are covered with velour. This supersedes the GQ 850 aerobatic assembly.

The Silhouette is a lightweight back/seat successor to the GQ 350 and combines a slim profile pack with a velour padded seat cushion and pump up lumbar bladder for extra comfort, together with a two point harness.

Both systems use the fast opening, steerable, SAC parachute which gives a gentle descent and has been cleared by the FAA and CAA for operation up to 12000ft for pilots weighing up to 254lb. There is also a 5.5m version for heavier pilots.

The parachutes are available from RD Aviation.

BOOK'S SUCCESS

Derek Piggott's book, **Gliding,** is now in its sixth edition. Published by Adam & Charles at £12.50, and from the BGA at £13.50 including p&p, it first came out in 1958 and with its extensive coverage of all aspects of the sport, it was soon established as a classic.

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	Pilot/Crew Injury	Pilot/Crew Pl/Hrs	Summary
116	LS-7	3437	M	22.7.89 1500	Dishforth	45	N	3800	After lowering the undercarriage the pilot made a normal touch down. The undercarriage lever moved to the unlocked position and the glider settled down on to the fuselage. The pilot had noted that the lever was particularly stiff to lock in the down position. The underside of the fuselage was damaged.
117	K-13	1611	M	30.5.89 1600	Perranporth P2	64 40	N N	2290 2	After a normal approach this early solo pilot made an inadvertent backward movement on the airbrakes as he flared. The instructor was unable to prevent a heavy, tail first landing which damaged the fuselage.
118	DG-400	M/G G-HAJJ	S	25.6.89 1230	Perranporth	68	N	650+ 160	After selecting take-off flap the **motor glider** pilot closed the air (wheel) brakes and opened the throttle and made a normal lift-off. The climb seemed sluggish and the pilot discovered the **airbrakes were open.** At this point the aircraft nosed back on to the ground, collapsing the undercarriage.
119	K-21	AGA15	M	9.8.89 1900	Thorney Island P2	57 ?	N N	800 0	During an autotow launch the glider's wing began to drop so P1 prompted "wings level". However, the wing dropped further and **hit some debris** at the side of the runway causing a groundloop during which the P1 released.
120	K-13	AGA15	M	21.7.89 1845	Odiham P2	40 27	N N	400 0	During a normal approach P1 took care to avoid people and vehicles but failed to notice a landing light which being painted green, blended in with the grass. The glider ran over the light causing damage to the glider. P1 had not flown in that direction for at least a year.
121	Capstan	1106	M	11.8.89 1150	Aboyne P2	33 46	N N	295 2	After an approach made in gusty conditions the student (solo several years ago) flared too high. P1 prompted him but he responded by opening the airbrakes further. The instructor did not take over in time to prevent a heavy landing which pushed the wheel box up.
122	K-6E	1479	W/O	16.8.89 1400	Halesand	74	N	450	The pilot's **final turn was too low,** even ignoring considering the 20kt wind and strong gradient. He allowed the speed to drop in the turn and the glider hit the ground nose first.
123	K-8		N	14.5.89 1015	Old Sarum	68	N	28	At 100ft on the winch launch the centre section fairing fell off. The aircraft landed safely and the panel was recovered undamaged. Thie pilot had been interrupted during the DI and had **left off the wing nuts** which secured the panel.
124	Swallow	1017	N	19.8.89	Old Sarum	51	N	17	During the winch launch the pilot failed to notice the airbrakes had opened. Surprised to get only 600ft he made an abbreviated circuit, thinking that the elevator was faulty, and landed heavily. The pilot **noticed the open airbrakes** when he got out to inspect the elevator.

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

STRUCTURE OF THE BGA

The membership structure of the BGA is now made up of 83 full members, three of whom have affiliated clubs as follows: Army Gliding Association - two clubs, RAF Gliding and Soaring Association - 12 clubs and the Royal Naval Gliding and Soaring Association - three clubs.

Operations. During the year ending September 30, 1989 (1988 figures in brackets), member clubs (civilian and combined services) flew 192424 (144259) hours and 1719234 (770358) kilometres cross-country from 487193 (419602) launches from club sites. Club owned gliders total 520 (503) and privately owned gliders 1434 (1375).

Certificates were issued as follows: A endorsements 1719 (1373), B endorsements 244 (187), Bronze badge 519 (423), Silver badge 445 (204), Gold badge 97 (53), Diamond goal 195 (48), Diamond height 64 (36) and Diamond distance 60 (17).

A certificates were applied for by 788 (620) holders of the ATC proficiency certificate.

GLIDING CERTIFICATES

ALL THREE DIAMONDS

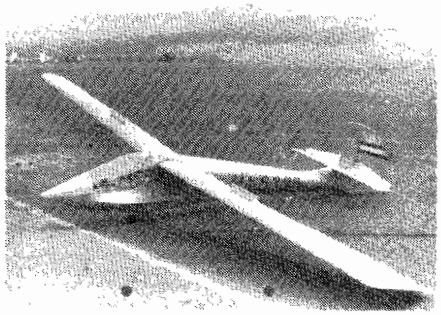
No.	*Name*	*Club*	*1989*
290	Davis, C. M.	Heron	3.9
291	Murray, W. J.	Lasham	3.9
292	Strachan, I. W.	Lasham	3.9
293	Webb, M. J.	Bicester	6.10
294	Robinson, C.	Lasham	6.10
295	Arnall, R.	Pegasus	2.8
296	Upton, W. G.	Culdrose	8.10
297	Buchanan, A. J.	Southdown	26.1

DIAMOND DISTANCE

No.	*Name*	*Club*	*1989*
1/425	Davis, C. M.	Heron	3.9
1/426	Hurst, P. W.	Southdown	3.9
1/427	Clarke, M.	Lasham	3.9
1/428	Darby, R. M.	Southdown	3.9
1/429	Murray, W. J.	Lasham	3.9
1/430	Scott, J. M.	Cambridge Univ (in Spain)	26.8
1/431	Chalmers-Brown, D.	Booker	3.9
1/432	Strachan, I. W.	Lasham	3.9
1/433	Arnall, R.	Pegasus (in France)	2.8

➡

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Sailplane & Gliding

The magazine can be obtained from most Gliding Clubs in Gt. Britain, alternatively send £12.40 postage included for an annual subscription to the British Gliding Association, Kimberley House, Vaughan Way, Leicester.

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

Price £5.50 including post and packing.

OVERSEAS AGENTS

CANADA
T. R. Beasley, Soaring Supplies, PO Box 169, L'Orignal, Ontario, K0B 1K0.

SOUTH AFRICA
Peter Eich, PO Box 82707, Southdale 2135, Johannesburg, Transvaal.

USA and all other Countries
Payable in either Sterling £12.40 or US $20.00 (or $30.00 by Air Mail) but International Money Orders preferred, direct to the British Gliding Association.



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DIAMOND GOAL

No.	Name	Club	1989
2/1781	Fritche, P. C.	Southdown	3.9
2/1782	France, S.	South Wales	3.9
2/1783	Nicholson, H. V.	Booker	3.9
2/1784	Nelson, J. R. A.	Bicester	3.9
2/1785	Gelsthorpe, P. A.	Bristol & Glos	23.7
2/1786	Basak, R. M.	Bicester	3.9
2/1787	Howes, N. J.	Derby & Lancs	6.8
2/1788	Wilson, K. M. N.	Booker	3.9
2/1789	Mills, A. M.	Wyvern	3.9
2/1790	Buick, R. G.	Lasham	3.9
2/1791	Martin, P. J. R.	Coventry	3.9
2/1792	Bryce-Smith, R. D.	Cambridge Univ	3.9
2/1793	Farrelly, P. E.	Wyvern	18.7
2/1794	Shelton, P. M.	Marchington	3.9
2/1795	Foxon, A.	Coventry	28.8
2/1796	Brain, D. G.	London	3.9
2/1797	Rae, R. J.	Four Counties	3.9
2/1798	Ashburn, C. J.	Bristol & Glos	3.9
2/1799	McKenzie, D. J.	Bristol & Glos	2.9
2/1800	Brightman, P. P.	London	28.8
2/1801	Hamilton, C. J.	SGU	14.10

DIAMOND HEIGHT

No.	Name	Club	1989
3/895	Dowding, M.	Lasham	6.9
3/896	Judge, D. A.	Surrey & Hants	6.9
3/897	Saunders, M. D.	Surrey & Hants	6.9
3/898	Rushbrooke, P. C.	Lasham	6.9
3/899	Wells, M. J.	Farnborough	6.9
3/900	Duthie, J. L.	Lasham	6.9
3/901	Willett, M. J.	Lasham	6.9
3/902	Ellner, J. P.	Surrey & Hants	16.9
3/903	Stammell, P.	London	17.9
3/904	Fendt, R. S. M.	London	16.9
3/905	Bonner, M. J.	London	16.9
3/906	Green, G. R.	London	17.9
3/907	McGee, T. N.	London	17.9
3/908	Robinson, P.	Essex & Suffolk	1.4
3/909	Brightman, P. P.	London	17.9
3/910	Godwin, R. B.	Thruxton	6.10
3/911	Forrest, B. R.	Booker	6.10
3/912	Attwood, S. W.	Essex	6.10
3/913	Allen, J. G.	Bicester	6.10
3/914	Pilgrim, C.	Bicester	6.10
3/915	Webb, M. J.	Bicester	6.10
3/916	Wyer, B.	Deeside	6.10
3/917	Paterson, I. W.	SGU	10.10
3/918	Piper, G. A.	Lasham	10.10
3/919	Hirst, A. T.	Booker	8.10
3/920	Warbey, H. J.	Herefordshire	7.9
3/921	Wright, S. D.	Heron	11.10
3/922	Dalling, R.	Midland	26.10
3/923	Raesbeck, P.	Booker	6.10
3/924	Robinson, C.	Lasham	6.10
3/925	Marlow, A.	Booker	23.10
3/926	Upton, W. G.	Culdrose	8.10
3/927	Leaton, N. J.	Kent	10.10
3/928	Kingston, M. E.	Cranfield	10.10
3/929	Cuming, C. E.	Booker	14.10
3/930	McCallum, R. E.	Portsmouth Naval	23.10
3/931	Buchanan, A. J.	Southdown	23.10
3/932	Lloyd, G. F.	Cotswold	23.10
3/933	Buchanan, C. M.	Southdown	26.10
3/934	O'Fee, P. E.	Bannerdown	26.10
3/935	Woodman, P. J.	Bannerdown	26.10
3/936	Masters, C. J.	Bannerdown	1.11

GOLD BADGE

No.	Name	Club	1989
1383	Larkin, G. A.	Yorkshire	25.7
1384	Nicholson, H. V.	Booker	3.9
1385	Nelson, J. R. A.	Bicester	20.10
1386	Gelsthorpe, P. A.	Bristol & Glos	23.7
1387	Howes, N. J.	Derby & Lancs	6.8
1388	Mills, A. M.	Wyvern	3.9
1389	Bryce-Smith, R. D.	Cambridge Univ	3.9
1390	Willett, M. J.	Lasham	6.9
1391	Coote, R. B.	Southdown	16.9
1392	Webber, P. G.	Lasham	16.9
1393	Kite, P. J.	Surrey & Hants	16.9
1394	Palmer, R.	Avon	24.9
1395	Brain, D. G.	London	16.9
1396	Robinson, P.	Essex & Suffolk	1.4
1397	Allen, J. G.	Bicester	6.10
1398	Hutchinson, P. P. J.	Lomond	17.10
1399	Crawford, J.	Bicester	20.10
1400	Oswald, P. D. H.	SGU	14.10
1401	Hawley, R. S.	Midland	14.10
1402	Pugh, S.	Booker	20.10
1403	McKenzie, D. J.	Derby & Lancs	2.9
1404	Brightman, P. P.	London	28.8
1405	Eyles, S. J.	Booker	20.10
1406	Saakwa-Mante, J.	Booker	6.10
1407	Cowley, C. I.	Booker	13.10
1408	Williamson, M. B.	Booker	6.10
1409	McNair, W. R.	Ulster	20.10
1410	Smith, D. M.	Booker	22.10
1411	Gardiner, J.	Essex	28.9
1412	Leaton, N. J.	Kent	14.10
1413	Hamilton, C. J.	SGU	14.10
1414	Woodruffe, P. R.	Bicester	20.10
1415	Buchanan, A. J.	Southdown	23.10
1416	LLoyd, G. F.	Cotswold	23.10
1417	Snow, A. R.	Lasham	25.10
1418	Buchanan, C. M.	Southdown	26.10
1419	Woodman, P. J.	Bannerdown	26.10

GOLD DISTANCE

Name	Club	1989
Larkin, G. A.	Yorkshire (in USA)	25.7
Warren, R. F.	East Sussex	3.9
Fritche, P. C.	Southdown	3.9
France, S.	South Wales	3.9
Nicholson, H. V.	Booker	3.9
Nelson, J. R. A.	Bicester	3.9
Gelsthorpe, P. A.	Bristol & Glos	23.7
Basak, R. M.	Bicester	3.9
Howes, N. H.	Derby & Lancs	6.8
Wilson, K. M. H.	Booker	3.9
Mills, A. M.	Wyvern	3.9
Buick, R. G.	Lasham	3.9
Martin, P. J. R.	Coventry	3.9
Bryce-Smith, R. D.	Cambridge Univ	3.9
Shelton, P. M.	Marchington	3.9
Foxon, A.	Coventry	28.8
Brain, D. G.	London	3.9
Rae, R. J.	Four Counties	3.9
Ashburn, C. J.	Bristol & Glos	3.9
McKenzie, D. J.	Derby & Lancs	2.9
Brightman, P. P.	London	28.8
Hands, D. S.	Booker	3.9
Thomas, C. R. V.	Surrey & Hants	18.7
Leaton, N. J.	Kent	14.10
Hamilton, C. J.	SGU	14.10

DIAMOND HEIGHT

Name	Club	1989
Nelson, J. R. A.	Bicester	20.10
Dowding, M.	Lasham	6.9
Judge, D. A.	Surrey & Hants	6.9
Saunders, M. D.	Surrey & Hants	6.9
Miles, A. J.	Lasham	6.9
Leach, A. G.	Lasham	6.9
Rushbrooke, P. C.	Lasham	6.9
Duthie, J. L.	Lasham	6.9
Willett, M. J.	Lasham	6.9
Lipscombe, T. M.	Lasham	6.9
Coote, R. B.	Southdown	16.9
Cooper, R. J.	Southdown	16.9
Webber, P. G.	Lasham	16.9
Sanderson, W. A. M.	Cambridge Univ	16.9
Kite, P. J.	Surrey & Hants	16.9
Gibson, S. H.	Cambridge Univ	16.9
Danbury, A. J.	London	17.9
Keath, S. A.	London	17.9
Porter, K. M.	Shalborne	19.9
Dann, R. J. G.	Shalborne	19.9
Palmer, R.	Avon	24.9
Houghton, J.	London	16.9
Brain, D. G.	London	16.9
Robinson, P.	Essex & Suffolk (in USA)	1.4
McKirdy, G. V.	Booker	9.9
Lewis, S. I.	London	16.9
Green, A. C.	London	16.9
Allen, J. G.	Bicester	6.10
Hutchison, P. P. J.	Lomond	17.10
Crawford, J.	Bicester	20.10
Pilgrim, C.	Bicester	6.10
Steynor, C. L.	Booker	10.10
Piper, G. A.	Lasham	10.10
Purvis, C. A.	London	10.10
Waller, W. G. S.	Booker	13.10
Oswald, A. D. H.	SGU	14.10
Markham, K. A.	Midland	14.10
Salter, I. C.	Lasham	14.10
Hawley, R. S.	Midland	14.10
Pugh, S.	Booker	20.10
Abbott, C. J.	Midland	14.10
Pickering, J. A.	Booker	6.10
Eyles, S. J.	Booker	20.10
Saakwa-Mante, J.	Booker	6.10
Cowley, C. I.	Booker	13.10
Williamson, M. B.	Booker	6.10
McNair, W. R.	Ulster	20.10
Veysey, E. M.	London	17.9
Wilkins, R.	Booker	17.10
Smith, D. M.	Booker	22.10
Gardiner, J.	Essex	28.9
Jacobs, A.	IBM	6.10
Bishop, M. N.,	Kent	8.10
Leaton, N. J.	Kent	10.10
Kingston, M. E.	Cranfield	10.10
Dillon, K.	SGU	14.10
Reed, B. M.	Avon	14.10
Ridley, A.	Midland	14.10
Marriot, R. J.	Cranfield	14.10
Noad, S.	Kent	14.10
Cuming, C. E.	Booker	14.10
Hadley, C. J.	Avon	6.10
Johnson, D. L.	Cotswold	17.10
Jones, R. A.	Wrekin	17.10
Dalrymple-Smith, T. A.	Booker	17.10
Owen, B. H.	Booker	17.10
Woodruffe, P. R.	Bicester	20.10
Naegeli, P. C.	Lasham	22.10
McCallum, R. E.	Portsmouth Naval	23.10
Buchanan, A. J.	Southdown	23.10
Lloyd, G. F.	Cotswold	23.10
Dale, T.	Wolds	20.10
Snow, A. R.	Lasham	25.10
Bonser, S. T.	Upward Bound	26.10
Fack, R. J. H.	Midland	26.10
Lee, R. S.	Cotswold	26.10
Middleton, R. J.	SGU	26.10
Snape, K. R.	P'boro & Spalding	26.10
Langdon, D. W.	Midland	26.10
Thorpe, D.	Staffordshire	26.10
Buchanan, C. M.	Southdown	26.10
Wood, J. M.	Blackpool & Fylde	26.10
Gretton, R. E.	P'boro & Spalding	26.10
O'Fee, P. E.	Bannerdown	26.10
Woodham, P. J.	Bannerdown	26.10
Griffiths, P. D.	Bannerdown	26.10
Moorehead, P. A.	Bicester	17.10
Boyle, E. A. H.	Ulster	3.11
Kerr, G. J.	Midland	3.11
Brett, R. C.	Wyvern	16.11

SILVER BADGE

No.	Name	Club	1989
8262	Tapsell, A.	617 VGS	2.9
8263	Bartley, J.	Southdown	2.9
8264	Francis, D. P.	Bicester	3.9
8265	Emerson, M. A.	Cambridge Univ	6.9
8266	Stubbs, G.	Cranwell	24.9
8267	Poole, C.	Rattlesden	6.1
8268	Headon, B. W. J.	Bath & Wilts	3.9
8269	McKirdy, G. V.	Booker	16.7
8270	Forbes, M.	Stratford on Avon	15.4
8271	Keath, S. A.	London	17.9
8272	Warburton, P.	Welland	3.9
8273	Dann, R. J. G.	Shalbourne	18.8
8274	Welford, R. J.	Cambridge Univ	8.8
8275	Carter, G. D.	Booker	5.8
8276	Leaton, N. J.	Kent	14.10
8277	Sabine, M. E.	Two Rivers	29.10
8278	Wilkins, R.	Booker	17.10
8279	Massey, J.	Essex & Suffolk	19.7

UK CROSS-COUNTY DIPLOMA

Complete

Name	Club	1989
Lewis, J. P.	Imperial College	3.9
Cleaver, A. G.	Bannerdown	28.8
Giles, E. E. F.	Enstone	3.9
Bailey, P. A.	Enstone	3.9
Jeynes, F. B.	Stratford on Avon	3.9
Brightman, P. P.	London	23.7

Part 1

Name	Club	1989
Johnson, S. D.	Derby & Lancs	2.9
Brennan, P. M.	Altair	2.9
Ascroft, D.	Bristol & Glos	18.8
Dunlop, M. P.	South Wales	3.9
Forbes, M.	Stratford on Avon	15.4
Watson, A. F. W.	Cranwell	2.9
Garside, J.	Kent	2.9
Davies, M. J.	Coventry	2.9
Cuming, C. E.	Booker	3.9
Wright, J. P.	Booker	5.9
Carter, G. D.	Booker	6.9
Harris, R. M.	Booker	7.9
Phillips, M. G.	Bristol & Glos	24.6
Cannon, P. C.	Lasham	5.8
Littler, B. M.	Southdown	2.9
Mee, M. P.	Booker	24.9

ANNUAL RECORDS

INTERNATIONAL GLIDING RECORDS (as at 7.2.90)

SINGLE-SEATERS

Height Gain	12 894m	P. F. Bikle, USA	SGS 1-23E	25.2.1961
Absolute Altitude	14 938m	R. R. Harris, USA	Grob-102	17.2.1986
Straight Distance	1460.8km	H-W Grosse, W. Germany	ASW-12	25.4.1972
Goal Distance	1254.26km	B. L. Drake, D. N. Speight, S. H. Georgeson, New Zealand	Nimbus 2	14.1.1978
Goal & Return Distance	1646.68km	T. L. Knauff, USA	Nimbus 3	25.4.1983
Triangular Distance	1362.68km	T. L. Knauff (Nimbus 3), L. R. McMaster, J. C. Seymour K-H. Striedieck, (USA) (ASW-20B); R. L. Robertson, Gt Britain (in USA)	Ventus A	2.5.1986
100km Triangle	195.30km/h	I. Renner, Australia	Nimbus 3	14.12.1982
300km Triangle	176.99km/h	B. Bünzli, Switzerland (in Namibia)	DG-400 (sealed)	14.11.1985
500km Triangle	170.06km/h	B. Bünzli, Switzerland	DG-400 (sealed)	9.1.1988
750km Triangle	158.40km/h	H-W. Grosse, W. Germany (in Australia)	ASW-22	8.1.1985
1000km Triangle	145.32km/h	H-W. Grosse, W. Germany (in Australia)	ASW-17	3.1.1979
1250km Triangle	133.24km/h	H-W. Grosse, W. Germany (in Australia)	ASW-17	9.12.1980

MULTI-SEATERS

Height Gain	11 680m	S. Josefczak and J. Tarczon, Poland	Bocian	5.11.1966
Absolute Altitude	13 489m	L. Edgar and H. Klieforth, USA	Pratt Read	19.3.1952
Straight Distance	993.76km	S. H. Georgeson and Helen Georgeson, New Zealand	Janus C	31.10.1982
Goal Distance	993.76km	S. H. Georgeson and Helen Georgeson, New Zealand	Janus C	31.10.1982
Goal & Return Distance	1101.54km	M. W. Walker and G. Taylor, New Zealand	Twin Astir	27.10.1988
Triangular Distance	1379.35km	H-W. Grosse and H. Kohimeyer, W. Germany (in Australia)	ASH-25	10.1.1987
100km Triangle	177.26km/h	E. Sommer and I. Andersen, W. Germany (in USA)	Janus C	26.7.1984
300km Triangle	158.47km/h	H-W. Grosse and Karin Grosse, W. Germany (in Australia)	ASH-25	21.1.1987
500km Triangle	155.14km/h	H-W. Grosse and H. Kohimeyer, W. Germany (in Australia)	ASH-25	9.1.1987
750km Triangle	147.98km/h	K. Holighaus and R. van Tonder, W. Germany (in South Africa)	Nimbus 3D(T)	8.1.1988
1000km Triangle	138.07km/h	K. Holighaus and R. van Tonder, W. Germany (in South Africa)	Nimbus 3D(T)	10.1.1988
1250km Triangle	143.46km/h	H-W. Grosse and H. Kohlimeyer, W. Germany (in Australia)	ASH-25	10.1.1987

SINGLE-SEATERS (WOMEN)

Height Gain	10 212m	Yvonne Loader, New Zealand	Nimbus 2	12.1.1988
Absolute Altitude	12 637m	Sabrina Jackintell, USA	Astir CS	14.2.1979
Straight Distance	949.7km	Karla Karel, Gt Britain (in Australia)	LS-3	20.1.1980
Goal Distance	748.37km	Joann Shaw, USA	Nimbus 2	17.8.1983
Goal & Return Distance	1126.68km	Doris Grove, USA	Nimbus 2	28.9.1981
Triangular Distance	847.27km	Joann Shaw, USA	Nimbus 2	5.8.1984
100km Triangle	139.45km/h	Susan Martin, Australia	LS-3	2.2.1979
300km Triangle	138.71km/h	Inge Müller, W. Germany (in SW Africa)	Ventus B	8.12.1984
500km Triangle	133.14km/h	Susan Martin, Australia	LS-3	29.1.1979
750km Triangle	110.53km/h	Pamela Hawkins, Gt Britain (in Australia)	ASW-17	17.11.1984

MULTI-SEATERS (WOMEN)

Height Gain	8430m	Adela Dankowska and M. Mateliska, Poland	Bocian	17.10.1967
Absolute Altitude	10 809m	Mary Nurr and H. Duncan, USA	SGS 2-32	5.3.1975
Straight Distance	864.85km	Tatiana Pavlova and L. Filomechkina, USSR	Blanik	3.6.1967
Goal Distance	864.86km	Isabella Gorokhova and Z. Koslova, USSR	Blanik	3.6.1967
Goal & Return Distance	649.63km	Tamara Sviridova and V. Toporova, USSR	LAK 12DP	24.5.1986
100km Triangle	126.28km/h	Adela Dankowska and E. Grzelak, Poland	Halny	1.8.1978
300km Triangle	123.33km/h	Inge Müller and C Müller, W. Germany (in SW Africa)	Janus C	7.12.1984
500km Triangle	95.72km/h	Daina Vilne and V. Toporova, USSR	LAK 12DP	16.5.1986

BRITISH NATIONAL RECORDS (as at 7.2.90)

SINGLE-SEATERS

Height Gain	10 965m	D. Benton	Nimbus 2	18.4.1980
Absolute Altitude	11 500m	H. C. N. Goodhart (in USA)	SGS 1-23	12.5.1955
Straight Distance	949.7km	Karla Karel (in Australia)	LS-3	20.1.1980
Goal Distance	859.20km	M. T. A. Sands (in USA)	Nimbus 3	23.4.1986
Goal & Return Distance	1127.68km	M. T. A. Sands (in USA)	Nimbus 3	7.5.1985
Triangular Distance	1362.68km	R. L. Robertson (in USA)	Ventus A	2.5.1986
300km Goal and Return	153.3km/h	M. T. A. Sands (in USA)	Kestrel 19	10.5.1983
500km Goal and Return	152.7km/h	M. R. Carlton (in South Africa)	ASW-17	24.12.1980
1000km Goal and Return	105.79km/h	M. T. A. Sands (in USA)	Nimbus 3	7.5.1985
100km Triangle	143.3km/h	E. P. Hodge (in Rhodesia)	Std Cirrus	30.10.1976
300km Triangle	146.8km/h	E. Pearson (in South Africa)	Nimbus 2	30.11.1976
500km Triangle	141.3km/h	B. J. G. Pearson (in South Africa)	ASW-20	28.12.1982
750km Triangle	109.8km/h	M. R. Carlton (in South Africa)	Kestrel 19	5.1.1975
1000km Triangle	112.15km/h	G. E. Lee (in Australia)	ASW-20B	25.1.1989
1250km Triangle	109.01km/h	R. L. Robertson (in USA)	Ventus A	2.5.1986

MULTI-SEATERS

Height Gain	9836m	T. J. Wills and B. Iggulden (in New Zealand)	Twin Astir	13.1.1982
Absolute Height	10 607m	T. J. Wills and B. Iggulden (in New Zealand)	Twin Astir	13.1.1982
Straight Distance	472.43km	M. R. Carlton and M. French (in South Africa)	Calif A-21	18.12.1979
Goal Distance	472.43km	M. R. Carlton and M. French (in South Africa)	Calif A-21	18.12.1979
Goal and Return Distance	709.35km	R. C. May and S. G. Jones (in Finland)	ASH-25	11.6.1988
Triangular Distance	825km	B. T. Spreckley and P. Jones (in Australia)	Nimbus 3DT	7.2.1987
300km Goal and Return	118.75km/h	B. T. Spreckley and Gillian Spreckley (in Australia)	Nimbus 3DT	5.2.1987
500km Goal and Return	113.08km/h	M. R. Carlton and C. Greaves (in South Africa)	Calif A-21	23.12.1978
100km Triangle	137.22km/h	M. R. Carlton and Leonie Lawson (in South Africa)	Calif A-21	27.12.1978
300km Triangle	138.37km/h	B. T. Spreckley and P. Jones (in Australia)	Nimbus 3DT	6.2.1987
500km Triangle	108km/h	M. R. Carlton and C. Greaves (in South Africa)	Calif A-21	21.12.1978
750km Triangle	114.18km/h	B. T. Spreckley and P. Jones (in Australia)	Nimbus 3DT	7.2.1987

SINGLE-SEATERS (WOMEN)

Height Gain	9119m	Anne Burns (in South Africa)	Skylark 3B	13.1.1961
Absolute Altitude	10 550m	Anne Burns (in South Africa)	Skylark 3B	13.1.1961
Straight Distance	949.7km	Karla Karel (in Australia)	LS-3	20.1.1980
Goal Distance	528km	Ann Welch (in Poland)	Jaskolka	20.6.1961
Goal & Return Distance	545km	Anne Burns (in South Africa)	Std Austria	6.1.1966
Triangular Distance	814.01km	Karla Karel (in Austraila)	LS-3	9.1.1980
300km Goal and Return	107.5km/h	Karla Karel (in South Africa)	ASW-15B	1.1.1975
500km Goal and Return	102.6km/h	Karla Karel (in Rhodesia)	ASW-15B	16.10.1975
100km Triangle	110.8km/h	Karla Karel (in Rhodesia)	ASW-15B	2.11.1975
300km Triangle	125.87km/h	Karla Karel (in Australia)	LS-3	12.2.1980
500km Triangle	120.69km/h	Karla Karel (in Australia)	LS-3	20.2.1980
750km Triangle	110.53km/h	Pamela Hawkins (in Australia)	ASW-17	17.11.1984

UNITED KINGDOM RECORDS (as at 7.2.90)

SINGLE-SEATERS

Height Gain	10 065m	D. Benton	Nimbus 2	18.4.1980
Absolute Altitude	11 031m	D. Benton	Nimbus 2	18.4.1980
Straight Distance	827.9km/h	T. J. Wills	LS-6	29.5.1986
Goal Distance	579.36km	H. C. N. Goodhart	Skylark 3	10.5.1959
Goal & Return Distance	801.3km	C. Garton	Kestrel 19	22.7.1976
Triangular Distance	770.5km	C. C. Rollings	Jantar 2A	28.5.1985
300km Goal & Return	114.5km/h	D. S. Watt	ASW-22	18.8.1983
500km Goal & Return	93km/h	M. B. Jefferyes	DG-202	12.5.1984
100km Triangle	123.2km/h	R. Jones	Nimbus 3	13.8.1983
200km Triangle	108.6km/h	R. Jones	Nimbus 3	14.8.1983
300km Triangle	117.14km/h	R. Jones	Nimbus 3	28.5.1985
400km Triangle	114.3km/h	R. Jones	Nimbus 3	1.8.1984
500km Triangle	106.9km/h	R. Jones	Nimbus 3	31.5.1975
600km Triangle	88.8km/h	C. Garton	Kestrel 19	10.6.1976
750km Triangle	77.98km/h	C. C. Rollings	Jantar 2A	28.5.1985
100km Goal	150km/h	T. J. Wills	LS-4	12.5.1984
200km Goal	127.1km/h	A. H. Warminger	Vega	12.5.1984
300km Goal	132.8km/h	A. H. Warminger	Kestrel 19	24.4.1976
400km Goal	73.8km/h	T. J. Wills	Std Libelle	7.6.1976
500km Goal	90.7km/h	H. C. N. Goodhart	Skylark 3	10.5.1959

15m CLASS

Straight Distance	827.9km/h	T. J. Wills	LS-6	29.5.1986
Goal & Return Distance	617km	C. Garton	LS-6	28.8.1989
500km Goal & Return	79.1km/h	J. D. Benoist	ASW-20	9.4.1983
100km Triangle	119.7km/h	T. H. Wills	LS-4	18.4.1981
200km Triangle	104.34km/h	T. J. Wills	LS-6	31.8.1986
300km Triangle	105.99km/h	A. J. Davis	Discus	5.8.1987
400km Triangle	95.88km/h	D. S. Watt	ASW-20FL	29.5.1985
500km Triangle	90.18km/h	D. S. Watt	ASW-20B	16.5.1986
200km Goal	127.1km/h	A. H. Warminger	Vega	12.5.1984

STANDARD CLASS

Straight Distance	718km	T. J. Wills	Std Libelle	1.8.1976
300km Goal & Return	104.09km/h	A. Kay	ASW-24	28.4.1989
500km Goal & Return	75.66km/h	P. Jeffery	Pegasus	3.9.1989
100km Triangle	119.7km/h	T. J. Wills	LS-4	18.4.1981
200km Triangle	104.87km/h	D. R. Campbell	Discus B	9.9.1986
300km Triangle	105.99km/h	A. J. Davis	Discus	5.8.1987
400km Triangle	91.7km/h	S. J. Redman	Std Cirrus	31.5.1975
500km Triangle	89.90km/h	A. J. Davis	Discus	4.7.1989
100km Goal	150km/h	T. J. Wills	LS-4	12.5.1984
300km Goal	131.1km/h	T. J. Wills	Std Libelle	24.4.1976
400km Goal	73.8km/h	T. J. Wills	Std Libelle	7.6.1976

UK 750km DIPLOMA

1. Goal & Return	801.3km	C. Garton	Kestrel 19	22.7.1976
2. Distance	761km	D. S. Watt	ASW-20L	9.5.1980
3. Triangular Distance	770.5km	C. C. Rollings	Jantar 2A	28.5.1985
4. Distance	827.9km	T. J. Wills	LS-6	29.5.86

MULTI-SEATERS

Height Gain	8349m	G. McAndrew and M. Waller	K-21	10.10.1989
Absolute Altitude	9009m	M. B. Jefferyes and L. Sommersell	Silene	30.9.1987
Straight Distance	421.5km	J. S. Fielden and Valerie Fielden	Bergfalke 3	14.8.1970
Goal Distance	421.5km	J. S. Fielden and Valerie Fielden	Bergfalke 3	14.8.1970
Goal & Return Distance	519.91km	R. C. May and P. Stammell	ASH-25	22.5.1988
300km Goal & Return	91.15km/h	K. J. Hartley and A. Hillary	Nimbus 3DT	15.4.1989
500km Goal & Return	74.49km/h	R. C. May and P. Stammell	ASH-25	22.5.1988
100km Triangle	123.99km/h	R. C. May and E. Morris	ASH-25	27.7.1989
200km Triangle	96.5km/h	R. Jones and M. Hackett	Janus C	10.8.1984
300km Triangle	109.08km/h	C. C. Rollings and G. McAndrew	ASH-25	18.8.1989
400km Triangle	91.11km/h	B. Elliott and R. Braithwaite	Nimbus 3DT	2.9.1989
500km Triangle	88.4km/h	J. R. Jeffries and Gillian Case	Calif A-21	31.5.1975
100km Goal	132.36km/h	R. C. May and D. Brook	ASH-25	4.9.1988
200km Goal	113.3km/h	R. Miller and B. Tapson	Janus C	11.5.1984
300km Goal	107.4km/h	P. R. Pentecost and A. H. Pentecost	Janus C	7.5.1984

SINGLE-SEATERS (WOMEN)

Height Gain	7833m	Alison Jordan	Astir CS	8.10.1978
Absolute Altitude	8701m	Alison Jordan	Astir CS	8.10.1978
Straight Distance	454km	Anne Burns	Skylark 3B	10.5.1959
Goal Distance	324.4km	Jane Nash	Ventus B	15.4.1989
Goal & Return Distance	334.2km	Ruth Housden	Libelle	29.5.1982
300km Goal & Return	80.60km/h	Jane Nash	Ventus B	4.6.1989
100km Triangle	80km/h	Anne Burns	Cirrus	14.6.1970
200km Triangle	69.3km/h	Anne Burns	Std Austria	22.8.1964
300km Triangle	76.8km/h	Jane Randle	Kestrel 19	18.8.1976
400km Triangle	60.6km/h	Anne Burns	SHK	5.8.1967
500km Triangle	76.1km/h	Anne Burns	Nimbus 2	31.5.1975
100km Goal	135.39km/h	Jane Nash	Ventus B	11.6.1989
200km Goal	85.5km/h	Anne Burns	Olympia 419	2.6.1963
300km Goal	63.9km/h	Anne Burns	Skylark 3B	12.4.1958

MOTOR GLIDERS (+Also British National Record; †British National Record only)

SINGLE-SEATERS

Straight Distance†	652.7km	B. J. Wilson (in Australia)	PIK-20E	10.1.1983
Goal Distance†	415.1km	B. J. Wilson (in Australia)	PIK-20E	11.1.1983
Goal & Return Distance†	510.45km	T. J. Wills (in Norway)	DG-400	6.7.1986
100km Triangle+	76.5km/h	I. W. Strachan	PIK-20E	11.8.1984
200km Triangle	48.2km/h	I. W. Strachan	SF-27M	23.8.1976
300km Triangle+	83.1km/h	I. W. Strachan	PIK-20E	19.8.1984
500km Triangle†	71.75km/h	B. J. Wilson (in Finland)	PIK-20E	22.5.1980
100km Goal	85.7km/h	I. W. Strachan	SF-27M	16.7.1971
500km Goal & Return	93.09km/h	T. J. Wills (in Norway)	DG-400	6.7.1986

MULTI-SEATERS (†Also BRITISH NATIONAL RECORD)

Height Gain†	5882m	M. G. Throssell and P. Bartle	Janus CM	27.9.1988
Absolute Altitude†	6888m	M. G. Throssell and P. Bartle	Janus CM	27.9.1988
100km Triangle†	35.6km/h	P. T. Ross and H. Daniels	SF-28A	27.6.1976
100km Goal	76.2km/h	P. T. Ross and K. Winfield	SF-28A	22.8.1976
200km Goal	66.3km/h	P. T. Ross and P. Fletcher	SF-28A	18.7.1976
500km Triangle	78.45km	B. T. Spreckley and O. Pugh	Janus CM	16.5.1986

INTERNATIONAL MOTOR GLIDERS (as at 7.2.90)

SINGLE-SEATERS

Height Gain	9935m	M. D. Stevenson, USA	DG-400	25.10.1985
Absolute Altitude	10 408m	G. Cichon, W. Germany	Nimbus 2M	27.5.1979
Straight Distance	826.66km	P. Elkmann, W. Germany	ASW-22M	15.4.1989
Goal Distance	655.07km	F. F. Ott, W. Germany (in USA)	PIK-20E	8.5.1987
Goal and Return Distance	1084.94km	O. Schauble, W. Germany (in South Africa)	ASW-22	9.1.1988
Triangular Distance	1089.98km	F. Rueb, W. Germany (in South Africa)	Nimbus 3MR	16.1.1987
100km Triangle	150.95km/h	B. Bünzli and M. Bachmann, Switzerland	ASH-22M	29.11.1989
300km Triangle	165.51km/h	B. Bünzli, Switzerland (in South Africa)	DG-400	22.12.1984
500km Triangle	170.05km/h	B. Bünzli, Switzerland (in S. W. Africa)	DG-400	9.1.1988
750km Triangle	150.81km/h	B. Bünzli, Switzerland (in S. W. Africa)	DG-400	17.12.1987
1000km Triangle	139.96km/h	B. Bünzli, Switzerland (in South Africa)	DG-400	28.12.1984

MULTI-SEATERS

Height Gain	5650m	H. Köhler, W. Germany and J-C Batault (in USA)	Taifun 17E	28.4.1986
Absolute Altitude	8000m	H. Köhler, W. Germany and J-C Batault (in USA)	Taifun 17E	28.4.1986
Straight Distance	969.75km	J. W. Wenger and D. W. Aitken, USA	Nimbus 3DM	7.7.1989
Goal Distance	777.81km	J. W. Wenger and D. W. Aitken, USA	Nimbus 3DM	?.?.1989
Goal & Return Distance	1017.17km	O. Wegscheider and O. Schröder, W. Germany (in South Africa)	ASH-25	9.1.1988
Triangular Distance	1095.69km	E. Müller and W. Binder, W. Germany (in Australia)	ASH-25M	27.12.1986
100km Triangle	150.95km/h	B. Bünzli and M. Bachmann, Switzerland	ASH-25M	29.11.1988
300km Triangle	152.53km/h	W. Binder and K. Senne, W. Germany (in Australia)	ASH-25MB	2.1.1987
500km Triangle	156.93km/h	O. Wegscheider and W. Schöfer, W. Germany (in South Africa)	ASH-25	2.1.1988
750km Triangle	127.57km/h	O. Wegscheider and Passenger, W. Germany (in South Africa)	ASH-25	25.11.1987
1000km Triangle	129.98km/h	E. Müller and W. Binder, W. Germany (in Australia)	ASH-25MB	27.12.1986

SINGLE-SEATERS (WOMEN)

Height Gain	8844m	Ingrid Köhler, W. Germany (in USA)	DG-400	12.6.1988
Absolute Altitude	10 245m	Ingrid Köhler, W. Germany (in USA)	DG-400	12.6.1988
Goal & Return Distance	531.10km	Ingrid Köhler, W. Germany (in USA)	DG-400	1.7.1989
100km Triangle	127.49km/h	Ingrid Köhler, W. Germany (in USA)	DG-400	4.7.1989
300km Triangle	89.67km/h	Ingrid Köhler, W. Germany (in USA)	DG-400	7.7.1989

New records have to exceed the old ones by: Distance 10km. Heights 3%. Closed circuit speeds 2km/h. Goal speeds 5km/h.
For records, no side of a triangle may have a length less than 28% of the total distance of the course, except that for triangles of 750km or more for International and British Records, or of 500km or more for UK Local Records, no side may have a length less than 25% or greater than 45% of the total distance.
Conversion Factors: Multiply km or km/h by 0.621 to get statute miles or mph. Multiply km by 0.54 to get nautical miles or kts. Multiply metres by 3.28 to get feet.

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 10 and for the August-September issue to arrive not later than June 5.

GILLIAN BRYCE-SMITH
February 7

ANGUS (Arbroath)
We have been without our customary Christmas wave. Allan Black has taken over as CFI from his father, Alex (Cy), the latter continuing as an instructor and committee member. We wish Gordon Neill, an instructor who has given us outstanding support, a speedy recovery from illness.

At the December AGM Mike Davidson was re-elected chairman with slight changes to the committee. There are plans to bring the club fleet up to strength.
M.G.D.

BATH & WILTS (Keevil Airfield)
The storm of January 25 damaged one privately owned glider and trailer.

Our flying fees must be the cheapest in the country - £9 to 2000ft. Come and try it.

Tony McBride has retired as one of our vehicle maintenance engineers and we thank him for all his help.
B.H.

BOOKER (Wycombe Air Park)
The end of season dinner for the Tuesday Evening Group (known by some as Dudley's Flying Circus) was a special occasion as the "chief instructor" of our club-within-a-club, Dudley Steynor, celebrated his 80th birthday the previous day. He was presented with a caricature, an engraved plaque referring - somewhat cheekily - to his views on the rudder (see recent letters to *S&G*) and a fabulous cake.

The celebration followed the previous week's expedition by many group members to Aboyne when Dudley's daughter, Linden, gained her Gold height (17000ft) and Bill Waller (fresh AEI) took his first passenger (CFI Graham McAndrew) above 30000ft in the K-21.

Basil Fairston has taken over as manager from Mike Cuming.
C.M.

BORDERS (Galewood)
We have had some good wave flying and congratulations to John Romanes (Silver height) and Bill Steven (Gold height) - Bill reached 16500ft on January 21 and Ken Fairness 18100ft, just missing Diamond height. Peter Johnson (who has his Diamond) reached 23000ft. Two-seater flying was stopped because of low level turbulence after the Bocian had gone from take-off to 6000ft and back in 18min! The climb was timed at 1300ft/min.

On another day virtually all flights reached a minimum of 10000ft, lack of oxygen equipment preventing higher climbs.

With the Bijave fuselage being re-covered we only have the Bocian, so are trying to find a third two-seater.
A.B.

BRISTOL & GLOUCESTERSHIRE (Nympsfield)
Dave Wilkinson gave the ASW-19 its maiden field landing on its first flight as a club glider.

The Christmas expedition to Talgarth was a wash-out with only one good wave day but the first week of January gave good wave for many in a south-westerly at home.

Doug Jones has his preparations well advanced for the 15 Metre Nationals sponsored by Laings at Nympsfield from June 16-24. Paul Little will set the tasks and Kevin Neave will fly the sponsors' many guests.
S.R.



Richard Purser found another use for tyres while his father Harry was duty instructor at Aquila GC. Photo: Bob Murray.

BURN (Burn Airfield)
The pantomine and the Christmas dinner were a huge success. Our thanks to Kath and Andy for the latter, and we had a wonderful party night on New Year's Eve.

January flying was more successful than November and December with their fog and low cloudbases. The equipment is ready and in April we start weekday evening courses.
M.T.

CLEVELANDS (RAF Dishforth)
In December we hosted the 40th anniversary of the RAFGSA. Unfortunately it was an unflyable weekend but a pleasant social occasion. Our old Primary was rigged for photographs, looking sad without its fabric but still a potent reminder of years gone by. Its picture last appeared on the cover of *S&G* in October 1979, resplendent in full flying condition.

The weather was also disappointing over Christmas, but many visitors have left their gliders here (happily unscathed in the January storm) and one has since managed 500km in wave.

Congratulations to Martin Moore on going solo.
J.P.

CORNISH (Perranporth)
We have replaced the Blanik, now for sale, with a K-7. The K-13 is being refurbished by John Shaw, our new technical officer, and helpers and the Motor Falke has had its C of A.

Bill Scull's visit in January was well attended and his talk to us and visitors from Culdrose was certainly appreciated.
G.A.H.

COTSWOLD (Aston Down)
At our annual dinner-dance trophies were awarded to Ed Johnston; Doug Gardiner; Gary Fryer; Simon Housden; Steve Manktelow and Geralyn Macfadyen.

Geoff Lloyd received the Ron Hurcombe Over 50s trophy. He won't mind my revealing he's nearer 70 and, after many years lay-off from gliding, achieved Gold C and two Diamonds last season. Ken Lloyd won the award for the most expensive bent prop (ASH-25, twice).

Congratulations to Dave Williams and Simon Housden on becoming assistant Cat instructors and to Mike Barney and Mike Smith on going solo.
G.M.

COVENTRY (Husbands Bosworth)
At the annual dinner in December Norman James was loaned a wheelbarrow to help carry away his prizes for his efforts in the Tutor. Ron Davidson achieved 500 and 750km flights during his trip to Australia and New Zealand. His next is a club expedition to Le Blanc in August inspired by Brian Spreckley's speech at the dinner. Brian also gave an excellent presentation in January on gliding in France.

A caravan aerobatic competition was held in January during the strong winds - luckily a local horsedealer offered to buy the remains!

Our task week is from May 26-June 2 and visitors are welcome. Members are making regular visits to Dishforth, but so far there have been no badge claims.
D.L.S.

DARTMOOR (Brentor)
Our club dinner was the only casualty of the gales but the local golf club served a good cold meal in candlelight and Graham, our secretary, Anne Hobb and Mark Hughes entertained with folk music. We ended the evening in overcoats!

Tom Richards and Gill Jenkins were awarded the trophy for contributing most to the club; Phil Jarman the best pilot award and Tom Richards the giant wooden spoon for causing chaos by landing out at the end of a long tiring day.

Tom and Gill and Colin and Ruth Sanders had a good welcome by Crusaders GC in Cyprus and wonderful flying.
F.G.M.

DEESIDE (Aboyne Airfield)
We have laid a tow down track from one end of the airfield to the other to avoid that "sinking feeling" in the mud.

We are buying a new club two-seater and cross-country training will be a major function. The first of our spring visitors are with us.
M.R.



Graham Taylor, flying a Dart 17R, photographed the Mendip GC's site at Halesland.

Obituaries

A. J. (John) Milne

John was a founder member of the Aberdeen GC in the early 1950s. An ex-RAF technician, he was a mainstay of the club for many years as instructor, inspector, tug pilot and sage.

His wife Grace, who died two years ago, was also a glider pilot - they met at the club, starting a tradition which continues today, something John was proud of in his capacity as "Honorary Club Villain." All clubs should have a villain.

A car restorer and senior PFA inspector, his pawky comments will long be remembered by pilots throughout northern Scotland.

Dave Stewart

One of our young pilots, Dave died suddenly at the turn of the year. Unknown to most of us he had been ill for some time. That so few of us knew was typical of Dave.

He contributed much to the club, instructing, serving on the committee and flying his DG-200. He was also involved in the University GC where he met Lisa to whom he was devoted. Our sympathies go to her and the rest of the family. We shall miss that quiet smile.

Mark Recht

DERBY & LANCASHIRE (Camphill)

Eric Boyle has stepped in as president following the death last year of Basil Meads; Dave Martin has taken over from Ken Blake as CFI and Clive Wilby returns as treasurer.

After last year's success, we will have a seven day operation from April to September; until then we fly from Thursday to Sunday. Visiting pilots are very welcome.

Dave Martin is organising a Women's Week" from May 13-19 (see the last issue, p33). Phone Dave, tel 0742-352215, or Camphill, 0298-871270, for details.

G.F.

DEVON & SOMERSET (North Hill)

The recent gales reduced one caravan to matchsticks, tore the clubhouse roof apart but happily only caused minor damage to one glider and left all members intact.

Congratulations to Dave Brummett and Peter Craggs on becoming assistant instructors and to Derek Palmer on going solo.

The clubhouse overflowed for the AGM and for Bill Scull's thought-provoking talk on accident prevention.

Our finances and future are looking rosy with a steady flow of new members and applications for summer courses.

G.P.

DORSET (Old Sarum)

Our clubhouse took on a new appearance when



John Gilbert of Essex & Suffolk GC after his 16th birthday solo with his father, John Gilbert Snr, and Pete Wilby, his instructor, behind.



John Gilbert started gliding as a five year-old and was photographed in the K-7 with Pete Wilby, in 1981.



Richard Hall of Stratford on Avon GC with his instructor Jim Tyler after going solo four weeks after his 16th birthday. Photo: John Hall. ➡



Storm damage at Weston on the Green.

following the magnificent work of numerous members in redesigning the interior for a licence application, the elements lent a hand and deposited the roof in the grounds of a nearby hospital. Fortunately our plastic hangar stood up to the task of protecting the fleet yet again.

Congratulations to Sue Batten on going solo. We have a course of lectures to prepare for the Bronze badge paper.
D.N.

EAST SUSSEX (Ringmer)
After the expansion of the club fleet we have had a flurry of new syndicate machines – Jantar, Mosquito, Skylark 4, the return of a wayward Diamant and the reappearance of the rebuilt Oly 2B.

The recent storm blew down the toilet block again but most gliders survived.

Congratulations to Chris Wimbury, Clive Hawkes and Kevin Mockford (Bronze badges) and Tim Grayer (going solo).
L.M.

ESSEX & SUFFOLK (Whatfield, Hadleigh)
Congratulations to Chris Robinson, Mike Friend and John Gilbert on going solo. John started his training in 1979, aged five, with Colin Smith instructing and Pete Wilby took over in 1981, sending him solo on his 16th birthday.

Due to overwhelming local support we have planning permission to fly all year round with an extra half hour in the evening to 8.30.

We have a new LS-4 joining the fleet this summer.
J.B.

FENLANDS (RAF Marham)
1989 was definitely a year to remember. The cross-country kilometre record was broken by the end of May and the hours' record by mid-October.

Mick Toon, Ray Brake, Kev Sharp, Mitch Middleton and Martyn Pike have their Silver badges, Martyn eight months after going solo. Jo Smith, aged 16, went solo and gained both Bronze legs in the same weekend. Ron Smith, Chris Marsden and Martyn Pike achieved Gold heights during our annual expedition to Portmoak.

Our thanks to Rhod Evans and Chris Marsden for their splendid paint scheme for the K-8.
M.I.P.

GLYNDWR (Denbigh)
We are a new club at Lleweni Parc, two miles NE of Denbigh on the A543. Our 80 acre grass field has 1200 yards for winch launching in an EW direction and is wide enough to land across at the W end. There are perimeter tracks along the S and N boundaries.

The main face of the Clwydian hills is 2½ miles away and extends for 16 miles offering extensive slope soaring. Our friends at Sleap and several north western motor glider pilots confirm that we are ideally situated to contact the Snowdonian wave systems.

We flew here for the last four months of 1989 as a satellite of the North Wales GC when 12 gliders, launched by our Supacat, used slope lift and wave. Although the weather wasn't ideal with a few east wind days, we contacted the primary wave system several times in addition to strong wave in westerly winds at launch height above the field.

Our membership will probably consist of a large proportion of the orphaned Avro club and some from North Wales GC. We feel the site has tremendous potential although a shortage of working capital will restrict us in the short term. To build a sound base for future development five executive officers have agreed to serve for two years – John McCormick, chairman (tel 0352 4741), Mark Roberts, secretary, Bill Winstanley, treasurer, Tony Knight, CFI (tel 0928 88088) and Rod Witter, landowner.
A.K.

HUMBER (RAF Scampton)
At the AGM in December Grp Capt Howard, chairman and station commander, presented awards to Steve Skidmore; Chris Day; Kevin Atkinson; Dave Jones; John Dobson; Chris Terry; Chris Gildea; Jeff Smithson and Paul Armstrong.

There was a vote of thanks to Harry Orme and Roger Hanson for their sterling work behind the scenes.

The winch rebuild has been running and hopefully will be in service soon – our thanks to Dave Jones and his helpers.

Tony Smith had the first thermal flight of the year with 54min in January. We welcome many new members.
D.M.R.



Mike Walker of York Gliding Centre who went solo in December.

KENT (Challock)
Our Saturday evening lectures cover all aspects of gliding including cross-country techniques. The Saturday and Sunday courses for *ab-initios* are proving very popular with both days fully booked.

We only suffered minor damage in the January storms, being better prepared than in 1987.

Our new winch is operational and with the two tugs allowed in the air at the same time, this will greatly improve our launch rate.
A.R.V.



Alan White of Yorkshire GC (on the right) with Wilhelm Dirks after taking delivery of the first DG-500M in the country. He is sharing it with David Chaplin, Jim Hill. Cliff Banks, Lindsey McLane, Tony Walker and Tom Warburton.

LASHAM (Lasham Airfield)
We survived the storm on January 25 with five gliders damaged, two seriously, and ten trailers damaged, some written off. Two powered aircraft, unassociated with the gliding operation, were damaged. We are now ensuring a much higher level of security for parked trailers.

We are geared up for an ambitious 1990 advanced training programme organised by our specialist instructor, G. Dale. We have only advertised 50% of our capacity, so get in touch if you want some help and you shouldn't be disappointed.
M.T.C.

LONDON (Dunstable)
Things are looking good, mainly due to an outstanding 1989. The K-13, bought last year, is well utilised, the K-6E has been sold and we are expecting a K-21 later in the season. Double Oscar, our 150hp Cup, re-engined to 180hp and refurbished, is looking resplendent in Cub yellow.

At the annual dinner trophies were presented to Andy Beatty; Tony Hutchings (two); Peter Hurd; Steve Bennett; Mike Bird; Trevor Stuart; Susy Mooring and Andy French. Steve Bennett, Rupert Puritz and Chris Colingham have their full Cats. Well done to them all.

Due to last season we have a lot of new members and new gliders including several ASW-20CLs (bringing their total to 12), an ASW-15, Ventus T, Nimbus 2C, two LS-7s, a Twin Astir, K-7 and a K-1, the latter bought by Mike Beach and believed to be one of the only two in the world. We are also expecting another ASH-25.

One of many highlights was the Christmas Revue (see Platypus in the last issue, p12).

We welcome tug pilot Joe Rise and last year's instructors back for more. We plan to have short introductory courses, aerobatic courses and JJ has been tempted out of semi-retirement to give two of his famous lead and follow cross-country courses. We are also hosting the Junior Nationals. Book early to avoid disappointment.
B.E.V.A.

MENDIP (Halesland)
We start the year with the healthy expansion of club facilities. The clubhouse is being refurbished and we have bought a Bocian with the aid of a Sports Council grant. Our K-4 has gone to a club syndicate.

Our Christmas offer of a six lesson course was over-subscribed in only a fortnight. Many thanks to Joan Hogarth and Sheena Taylor for answering all the telephone inquiries.

After many months of negotiation with the landowner, we have a 28 year lease on the airfield including the use of the hangar.
T.A.D.H.

MIDLAND (Long Mynd)
The disgusting winter weather added a meagre 300 launches and 90 hrs to our totals. We had reasonable wave flights on a few days with Andrew Ray gaining 7000ft in mid January and in late January we were treated to ridge flying over a marvellous snowscape with a little more wave soaring in early February. John Dean has a Bronze leg.

The course bookings are encouraging with great interest in our Bronze/Silver advanced courses.

The Christmas lunch and New Year party were well attended.
R.D.

NENE VALLEY (RAF Upwood)
Horace Bryant, CFI, awarded the Pilot of the Year trophy to Gus Pinkerton at the annual dinner in December. Both Gus and Roger Emms gained their Silver badges in 1989 with Bronze badges for Eric Yeardley (new secretary), Len Dunster, Jim Rignall and John Taylor.

Dick Meayers, winch driver and aircraft repair man for as long as we can remember, started to learn to fly gliders in 1989 when launches were up by 12% and flying time by 30%.

We have bought another Volvo F86 and should have another winch for this season.
R.E.

NEWARK & NOTTS (Winthorpe)
The club has acquired a Bergfalke 4 to encourage more cross-countries with a pundit giving help and encouragement.

Congratulations to Barry Patterson on going solo. "Cocker" Marshall has a superb 17m SF.

Our first flying week is from May 28 to June 1 and visitors will be most welcome.
M.A.

NORFOLK (Tibenham Airfield)
Our Christmas party featured an amazing cabaret act hosted by CFI "Woody" Woodhouse (we laughed until we cried) and our annual dinner-dance was very well attended in February. Trophies were awarded to R. Hart; P. Ryland (gaining two cups); B. Wade; R. Woodhouse; B. Sargeant; J. Ayers; J. Edwards; A. Warminger; M. Bean; K. Roper; D. Cooper; R. Harding; E. Springall; G. Howarth; Gwen Edwards and Joan Stabler.

We are looking for a third two-seater for the club fleet.

Our very best wishes to Doc Souper who is going to live in Derbyshire to be closer to her daughters.
R.J.H.

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OXFORD (Weston on the Green)
The storms of January 25 overturned caravans and lifted one trailer, complete with glider inside, on top of two others. This was recovered, thanks to skilful crane driving by Colin Shepherd, and the glider had only superficial damage. No other gliders were damaged.

We congratulate Peter Awcock and Martin Cooper on going solo

We now have a DG-101 syndicate.
F.B.

PETERBOROUGH & SPALDING (Crowland Airfield)
The Puchacz and SZD Junior demonstrators gave many members their first taste of glass; work continues on the fleet upgrade project. Congratulations to Tadeusz (Ted) Melnyczuk, Tony Mann and Peter Woodward on going solo.
M.J.

PORTSMOUTH NAVAL (Lee-on-Solent)
The severe weather has limited operations with our grass areas completely waterlogged.

Our Christmas dinner was a huge success with a considerable sum raised at it for the Ethiopian Famine Appeal by Alan Clarke and John Hale selling copies of the wartime exploits of the CFI and DCFI.

Sadly our treasurer Edna Clark, who has kept our books straight for many years, has resigned. Her great efforts have been much appreciated. Ben Bennet has taken over.

The latest addition to our PO fleet is Tony World's immaculate Jantar 3.
H.C.

RATTLESDEN (Rattlesden Airfield)
The abysmal weather has restricted our operations and reduced our launch rate dramatically – highly undesirable considering our commitments. The only section to make money has been the kitchen. Because of our turnover we are VAT registered which has meant increasing winch launches to £3 and subscriptions to £100.

We are planning to build a much larger hangar to take club and syndicate gliders and convert the old hangar into a workshop and winch shed. We now have the regular use of a tug.

Roger Davis stood down as CFI after several years due to the pressure of work and Brian Griffiths has taken over.

Congratulations to Simon Goodchild (going solo) and to Tony Fuller and Kay Lee (AEI ratings).

We have planned a full social calendar, expeditions to North Hill and Feshiebridge, three task weeks, courses and Friday evening flying.
R.W.

SCOTTISH GLIDING UNION (Portmoak)
A dismal winter so far with a lot of rain and wind. Congratulations, though, to Sally Pearce on her Bronze badge.

We welcome Keith Buchan as our regular tug pilot. There is a severe shortage of instructors to ➡

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For Course details write to
The Course Secretary
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Tel. (0223) 67589

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help with our courses but Hamish and Roy will be to the fore as usual.

There is talk of a Scottish Inter-Club League, with the final at Portmoak in September - we hope it is well supported.
M.J.R.

SHALBOURNE (Rivar Hill)
We have approval to increase our winch launch ceiling to 3000ft which is just as well because with the extra land (an increase from 20 to 70 acres) we reguarly go over 2000ft in the club K-8.

There were a number of changes at our AGM. Our thanks to Dave Maleham, Jonathan Mills, Andrew Brind and Dennis Maynard for their hard work on the committee and a welcome to the new committee members. CFI Peter Harborne handed over to Chris Rowland - our many thanks to Peter who came for a year and stayed for three.

Ken Porter and Richard Dann gained Gold heights during our autumn expedition to Portmoak. Commiserations to Rod Harris who missed out due to a faulty radio.

Congratulations to John Day and Rod Harris (AEI ratings); to Les Young (Bronze badge) and Alan Brind, Russell Barlow and John Hogbin (going solo).
S.C.O.

SOUTHDOWN (Parham Airfield)
Our Christmas party was well attended and we were particularly pleased to welcome Bill Scull.

Repairs and maintenance continue apace and we were fortunate to escape the worst of the storms with minimal damage. Our thanks to Dave Connaway for giving the winch a new engine - it is providing much improved launches. Reactions to our new Grob Acro have been highly favourable.

Steve Way gained Gold height and Diamond goal in South Africa over Christmas.

Plans are well advanced for our Diamond Jubilee celebration week in September. Expeditions are planned to Gap, Aboyne, Portmoak and Talgarth.
C.M.R.

STRATFORD ON AVON (Snitterfield Airfield)
A K-13 has been added to the club fleet, plus a beautifully restored grey Ferguson tractor rebuilt by Colin Bushell, and we have a new syndicate with a Skylark 4.

Congratulations to Paul Williams (5hrs in the Oly); Brian March (AEI rating) and to Bob Berry on going solo. Bad weather prevented Richard Hall's solo on his 16th birthday - he eventually achieved the distinction of being the youngest Stratford student on New Year's Eve.

The S/SW ridge has been working extraordinarily well with numerous flights in excess of 30min.
H.G.W.

STRATHCLYDE (Strathaven Airfield)
1989 was excellent with much good soaring, particularly with our Skylark 3F. The two-seater fleet still consists of a K-2 and K-2B, though we hope to replace at least one this year. Our Terrier G-ASO1 continues to give good aerotows.

A summer expedition to Le Blanc resulted in CFI Des Tait achieving 300km and Tim Barnard completing his Silver badge. Congratulations to both. Also to Colin Hegarty and Mark Paul on going solo on aerotows later in the year.
D.I.H.J.

SURREY & HANTS (Lasham Airfield)
Poor winter weather has limited flying but the Cs of A have progressed. Our thanks to everyone who helped, especially John Ellner for organising new parachutes and bags and Peter Hamblin for his work on the club trailers.

Badge claims during the Aboyne expedition in September included Diamond heights for Max Dowding, John Ellner, Peter Rushbrooke and Mervyn Saunders and Gold heights for Duncan Erskine, Martin Kent, Graham Leach, Tim Lipscombe, Pete Webber and Mike Wilson.

Unfortunately the storm of January 25 rolled a Discus and its trailer out of the airfield, across a road and into the next field. The trailer was written off with several thousand pounds worth of damage to the glider.
T.L.

SURREY HILLS (Kenley Airfield)
Despite having two Blaniks written off yet again, this time in the January 25 storms (does anyone want to sell us a pair of Blanik wings?), we are still flying with our Swallow, the Ogar motor glider and a re-furbished IS-28 for instructional flights.

Visitors are always welcome and as we operate Monday to Friday there is plenty of opportunity to fly, especially using the Ogar. Let us know you are coming.
R.G.

TRENT VALLEY (Kirton in Lindsey)
Our Christmas party was a great success. Thanks to the enthusiasm of Richard Jones, Wednesday flying has continued and the tug is paying its way with several members taking long tows when attempting, with slight success, to contact wave.
M.P.G.

ULSTER (Bellarena)
The season finished with the club fleet hauled off to John Lavery's workshop and a four week break in flying. The decade ended with chairman Harry Boyle's 14500ft Gold height at Aboyne.

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At the annual dinner awards went to Owen Anderson; Tom McFarland; Harry Hanna; Hugh Gowdy; Alan McKillen and Jim Lamb. The most deserved award went to Maire McKillen for services to the club.

The Royal Mail surprised everyone with their award for the Schools' Coaching Scheme introduced by Ron Lapsley. The three year programme for 14 to 18 year-olds was submitted to them by the Sports Council whose financial backing will be matched, pound for pound, by the Royal Mail.
B.T.

WREKIN (RAF Cosford)
Richie Toon is now an assistant Cat and Al Marshall a full Cat. Bob Henderson and Rowly Fielder have their Bronze badges and Mick Boydon was presented with the Kinghurst gold trophy for a 513km flight at 104km/h.

On February 4 Mick Davies flew the first hour off the winch, having got away in wave during a strong breeze.

Our thanks to our soup dragons, Caroline Ruscoe and Sue Gordon, for their never ending hard work and especially for the Christmas dinner.
R.J.

WYVERN (RAF Upavon)
Congratulations to Bob Brett who has started helicopter flying training at Middle Wallop. Mike Salter has taken over from him as treasurer and Ken Moules from Graham Browning as chairman.

Our CFI Eric Smith was awarded the BEM in the New Year's honours list.
D.B.

YORK GLIDING CENTRE (Rufforth Airfield)
Father Christmas (alias our treasurer, Paul Helpworth) arrived by T-21 with gifts for a party of mentally handicapped youngsters, gaining radio and TV coverage. We had more TV attention when a 92 year-old had a trial instruction lesson, this being her first time in the air.

We are hosting the Vintage Glider Rally from May 4-7.

With the club Motor Falke back and a new syndicate machine, trial lessons and SLMGPPL training are taking up so much time we could use more aircraft and instructors. We would be pleased to hear from anyone with a SLMG rating.

Power pilots - please remember that Rufforth is PPR with circuits to the east at 1200ft for runway 18/36 to avoid annoyance to the nearby village.
A.P.

YORKSHIRE (Sutton Bank)
We are strengthening our club fleet with a new K-21, due in June, and another DG-300 is on order. We are building a winch and hope to complete it in less time than the ten years it took to build the last one.

Our task week is from May 26 to June 2 and the annual Slingsby week from August 25 to September 1.

Congratulations to Adrian Hatton on his full Cat instructor's rating.
C.L.

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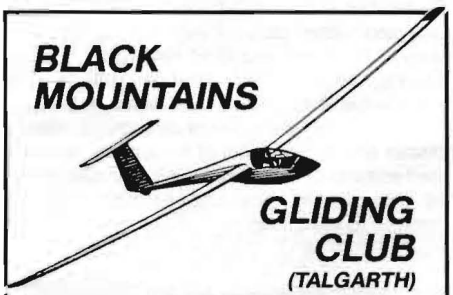
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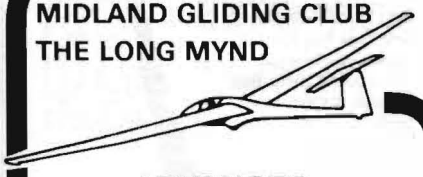
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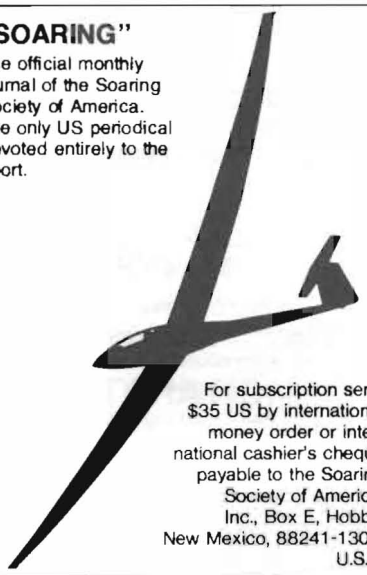
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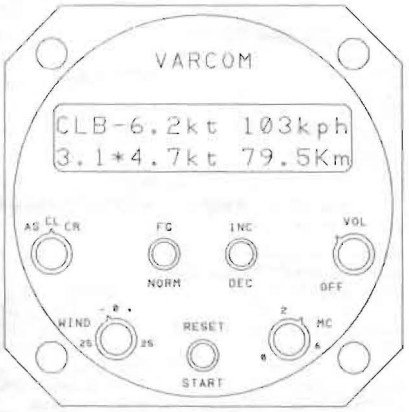
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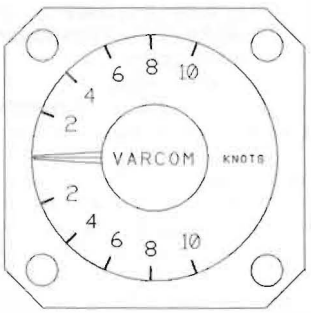
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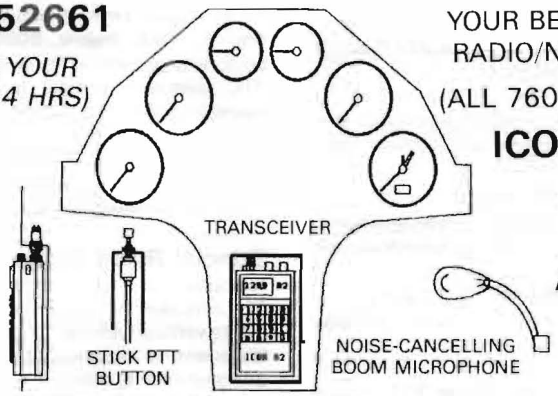
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GLIDING AND UK AIRSPACE

At the request of many readers and the BGA Executive we have reprinted this article by Chris Garton, chairman of the BGA Airspace Committee, from last April with some minor updates.

Aerodrome Traffic Zone (ATZ). The following categories of airfield are protected by an ATZ: government aerodromes, licensed aerodromes with two-way air/ground radio, and aerodromes with an Air Traffic Control (ATC) unit or Aerodrome Flight Information Service (AFIS) unit. An ATZ is only active during the notified hours of operation of the airfield.

An ATZ comprises the airspace extending from the surface to a height of 2000ft above the level of the aerodrome and within a radius of 2 or 2½nm of the centre of the aerodrome, depending on the length of the main runway. An aircraft is not permitted to take off, fly or land in an ATZ without the permission of the controlling authority. This should be obtained on the notified radio frequency from the airfield's ATC or AFIS unit or, for non-radio gliders, by an advance phone call.

It should be noted that some civil airfields are listed in the **UK Air Pilot** as "PPR to non-radio aircraft" or even "not available to non-radio aircraft." All military airfields are effectively PPR (Prior Permission Required) and will not permit other than pre-arranged landings by civil aircraft, except in an emergency.

At airfields without ATZs, including most gliding sites regardless of how busy they are, an itinerant aircraft may legally penetrate the airspace near and over the airfield, providing the pilot conforms to the traffic pattern or keeps clear of the circuit airspace, and observes the normal rules of good airmanship to avoid collisions.

Military Aerodrome Traffic Zones (MATZ). A standard MATZ comprises the airspace within a 5nm radius of the centre of the airfield extending from the surface to 3000ft above airfield elevation. In addition, projecting stubs 5nm long and 4nm wide extending from 1000ft to 3000ft above airfield elevation are aligned with the approach to the main runway at one or both ends. Some MATZ may lack stubs, or form part of a combined MATZ (CMATZ).

The rules applicable to the penetration of a MATZ are not compulsory for civil aircraft and the same applies to the **Honington Military Control Zone.** However, inside every MATZ there is an ATZ, the rules of which must be observed. (see above)

Controlled Airspace (Rule 21). Where Controlled Airspace is notified as subject to Rule 21 of the Rules of the Air and Air Traffic Control Regulations, then that airspace is subject to Instrument Flight Rules, whatever the weather may be. In order to fly IFR in controlled airspace a flight plan must be filed, the aircraft must be flown strictly in accordance with ATC clearances on a specified route or under radar control, and there is a specified standard of radio and navigational equipment fit. Since gliders cannot comply with these requirements, a glider pilot is not entitled to request entry clearance from ATC to any Rule 21 airspace (unless, exceptionally, the flight is the subject of pre-arranged permission or a Letter of Agreement).

Rule 21 airspace comprises:

Daventry CTA
London TMA
Manchester CTR
Worthing CTA
London Heathrow CTR
Airways

The dispensation permitting gliders to cross all airways in VMC was withdrawn in December 1987, and replaced by a new Rule 21A, which permits gliders to cross specified airways below certain flight levels, and specifies the manner of crossing, as follows:

1. The crossing is to be carried out in the most expeditious manner and, as far as is practicable, at right angles to the airway centreline.
2. The crossing must be carried out in VMC, by day.

The **UK Air Pilot** contains a map showing the crossable airways, with maximum permitted crossing levels. In summary, these areas are: Crossable below FL245: A25, B2, B3 (NW of Manchester), B226, G1, R1, R14, R39. Crossable below FL95: A1, A2 Crossable below FL55: B3 (NW of Luton), R8 (west of Midhurst)

Other Controlled Airspace. The **Manchester TMA, Scottish TMA/CTR and Belfast TMA below 6000ft** permit aircraft (including gliders) to fly in these areas without ATC clearance subject to maintaining VMC. Some Special Rules Zones are also designated as Control Zones, the two designations applying to the same volumes of sky. In such cases it is the "special rules" that affect glider transits, and these are considered below.

Special Rules Airspace. Special Rules Airspace is of a less restrictive nature than Rule 21 Controlled Airspace, being accessible, subject to various weather limitations, to any aircraft fitted with a radio capable of contacting the designated ATC unit.

The "Special Rule" of interest to glider pilots is Rule 36, which requires a pilot wishing to enter the nominated airspace to:

1. Contact the ATC unit and pass details of the flight.
2. Obtain entry clearance
3. Remain on the frequency whilst in that airspace.
4. Comply with ATC instructions.

While all Special Rules Airspace, in theory, is available to glider pilots who are able to follow the above procedures – some SRAs and SRZs are notified as allowing an exemption to these provisions to gliders, provided that they maintain VMC.

Special Rules Airspace which gliders may penetrate in VMC without ATC clearance:

Aberdeen SRZ & SRA
Bournemouth/Southampton SRZ & SRA
East Midlands CTR/SRZ & SRA
Leeds/Bradford SRZ & SRA
Lyneham SRZ & SRA
Newcastle SRZ & SRA
Southend SRZ
Teesside SRZ & SRA
Scottish TMA/SRA above 6000ft (Rule 40)
Cross-Channel SRA (Rule 38)

(Note: Rules 38 and 40 are similar in their effects on gliders to Rule 36.)

Special Rules Airspace in which gliders need ATC clearance at all times

Belfast CTR/SRZ
Birmingham CTR/SRZ and SRA
Blackpool SRZ
Brize Norton SRZ
Cardiff CTR/SRZ and SRA
Liverpool SRZ
Bristol SRZ & SRA
Edinburgh SRZ
Glasgow SRZ
London City SRZ
London (Gatwick) CTR/SRZ and SRA
Luton CTR/SRZ and SRA
Prestwick SRZ
London/Stansted CTR/SRZ and CTA/SRA
Manston Cross-Channel SRZ

Visual Meteorological conditions (VMC). To comply with VMC in order to cross an airway in accordance with Rule 21A, or for the purposes of using the exemption described above to fly in certain Special Rules Airspace, a glider shall remain at least 1000ft vertically and at least 1nm horizontally from cloud in a flight visibility of at least 5nm.

Local Agreements. A number of local agreements exist which modify the effects of some of the airspace listed above. Letters of Agreement (LoAs) between a gliding club and a nearby airport can make airspace either more or less restrictive than described above, depending on circumstances. These arrangements are too numerous to list in full, but the principal ones are:

Luton – A large segment of airspace in the north-west of the Luton SRZ is delegated to London GC, up to 3500ft in summer and on request in winter, to permit gliding operations at Dunstable. London GC should be contacted for full details. (See *S&G*, June 1987, p141.)

Brize Norton – Glider transits of the Brize Norton SRZ are the subject of a LoA between Brize Norton ATC and the BGA. See *S&G*, April 1988, p89, for details.

Airway Bravo 2 – At weekends, the section of this airway between Glasgow and Aberdeen may be de-regulated on request from the Scottish Gliding Union to permit wave soaring from Portmoak to proceed unrestricted within the confines of the airway.

Advisory Airspace: A Radar Advisory Service Area is airspace in which a pilot may, if he so chooses, avail himself of the services of a radar unit. There is no requirement to do so, and a

glider pilot should not assume that other aircraft are being separated from him, nor even that the radar unit is aware of the glider's presence.

An **Advisory Route (ADR)** is a route used by airline type traffic, but without the full protection of an airway. Gliders may cross an ADR without restriction, but care should be exercised.

Airspace above FL245. Above FL245, most of the country is covered by the Upper Airspace Special Rules Area (Rule 39), which is not applicable to gliders. The same is true of the Hebrides UTA, which covers western Scotland. The upper airspace contains Upper Air Routes and Military Training Areas. Glider pilots intending to fly at high altitudes would be well advised to acquaint themselves with these areas, since jet aircraft speeds are much greater than at lower altitudes, and their pilots may not be aware of the presence of gliders.

Upper Heyford Mandatory Radio Area (UHMRA). On weekdays gliders may only penetrate the UHMRA after establishing radio contact on 128.55Mhz, must listen out during transit and must call again on leaving or before landing within its confines. Gliders should not be issued with ATC instructions while within the UHMRA, unless they appear likely to enter the Upper Heyford ATZ.

At weekends and on UK and USA public holidays there is no requirement to contact Upper Heyford. Gliders based within the UHMRA are covered by special procedures defined in LoAs with the clubs concerned.

Purple Airspace. Purple Airspace is established from time to time on a temporary basis to protect Royal Fights in fixed wing aircraft. Full details are promulgated by special NOTAM. It is important that gliding clubs receive and publish this information, because gliders are not permitted to fly within Purple Airspace, even by contacting ATC. Royal Flight NOTAMs also cover royal helicopter flights. These are not protected by Purple Airspace, but all pilots are required to look out for and keep well clear of the royal helicopter.

Prohibited and Restricted Areas. Apart from certain security areas in Northern Ireland, **Prohibited (P)** and **Restricted (R) Areas** are established around atomic energy establishments and some similarly sensitive military installations. A Prohibited Area is prohibited to all aircraft, whereas a Restricted Area permits limited access by aircraft under certain circumstances, such as landing at a nearby airfield. Some Prohibited Areas have been redesignated Restricted Areas for this reason, but for gliding purposes they must be considered as "prohibited". It is most inadvisable to place oneself in the position of having to land in these areas.

The only Restricted Airspace established on a permanent basis that can be entered by a glider with ATC permission is **R313 Scampton**. The controlling authority is ATC Waddington, and the restriction is solely for the purpose of protecting the Red Arrows display training - normally not more than two periods of 20-30 min/day. The area is a circle of 5nm radius extending to 9500ft amsl and active only during Scampton's normal operating hours, which are weekdays and as notified by NOTAM.

Other Restricted Airspace is often established on a temporary basis, for example for the duration of major air displays, such as Farnborough. Local gliding clubs usually negotiate limited access routes to and from their sites to enable non-radio gliders to continue operating, but a glider equipped with suitable radio may fly in the area if it contacts the ATC unit designated by the NOTAM as the controlling authority.

Danger Areas. The UK is covered with Danger Areas of many types, shapes and sizes. They are active part-time, permanently or when notified by NOTAM. Full details will be found in the **UK Air Pilot,** RAC Section. The chart of UK Airspace Restrictions is also useful.

The **UK Air Pilot** lists only the type of activity most likely to be encountered, but in practice various hazards may be encountered in one area simultaneously. Furthermore high performance military aircraft may be encountered manoeuvring outside of the confines of the Danger Area, especially, if it is a Weapons Range Danger Area.

Many Danger Areas contain areas over which flight is prohibited at times within the period of activity of the Danger Area by reason of bye-laws made under the Military Lands Act 1892 and associated legislation. It is also worth noting that the **UK Air Pilot** does not list Danger Areas with upper limits 500ft or less above the local surface, to which prohibiting bye-laws may also apply.

With these exceptions, flight through a Danger Area is not prohibited, but may be foolhardy.

For Certain Danger Areas, a **Danger Area Crossing Service** is available, most notably for Salisbury Plain. A **Danger Area Activity Service** is available in other cases: this should be viewed as a means of establishing the state of activity of a Danger Area at a particular time, not as a clearance to cross it. A convenient summary of these two services and the ATC units to contact is printed at the foot of the 1:500000 series CAA charts.

Other Hazardous Areas. Other types of hazard include **free fall parachute sites.** The airspace is contained in a circle radius 1½ or 2nm from the centre of the drop zone up to a maximum of FL150. It may not be apparent to a glider pilot, observing the drop zone in flight, whether or not there is parachuting in progress; parachutists normally free-fall down to 2000ft agl and are extremely difficult to see. Beware!

High Intensity Radio transmission Areas contain powerful radio emissions which may cause interference with glider radios and electronic variometers. In particular, Fylingdales is so powerful that prolonged exposure may be injurious to health.

Areas of Intense Air Activity (AIAA) An AIAA is airspace which is not otherwise protected by regulated airspace, but where the activity of civil and/or military flying is exceptionally high, or within which aircraft regularly participate in unusual maneouvres.

Gliders may penetrate these areas, but in view of the hazards, a sharp lookout is essential.

Military Low Flying System. Low flying by high performance military aircraft takes place in most parts of the UK up to 2000ft agl, with the greatest concentration between 250ft and 500ft. A chart is available denoting the system **(UK Air Pilot,** RAC Section).

All gliding sites are notified to MoD, which affords them the status of a Military Avoidance Zone, radius 1½nm.

The Low Level Civil Aviation Notification Procedure (CANP) enables civilian aircraft operators to give advance warning to MoD of any activities that could conflict with low flying military aircraft. In the case of winch launching permission this is done automatically, but clubs planning to make use of a temporary aerotow or motor glider site, especially midweek, may wish to take advantage of CANP.

The Airmiss System. Glider pilots are accustomed to flying in close proximity to each other and may not appreciate that it can be quite alarming for the pilot of powered aircraft to suddenly encounter a glider at close quarters. An airmiss may be filed by any pilot who considers his flight has been endangered by the proximity of another aircraft. All airmisses are investigated by the Joint Airmiss Working Group (JAWG), whose deliberations are confidential, except where a commercial airliner is involved, when the details are released to the press under new arrangements announced in 1988.

A glider pilot wishing to file an airmiss should initiate action as soon as possible after the incident, reporting it to the nearest ATC unit by radio, or by telephone after landing. The more accurate the detail and the sooner the report is made, the greater are the chances that the other aircraft will be traced.

A pilot who finds himself on the receiving end of an inquiry from JAWG should not be unduly concerned (assuming he has not committed some transgression), since the purpose of the investigation is to determine what lessons can be learnt, not to take punitive action. JAWG is well aware that random conflicts occur between aircraft in unregulated airspace as a matter of course.

References. The airspace situation is complicated and changing all the time. The following publications collectively provide a thorough and up to date information on UK Airspace.

Laws and Rules for Glider Pilots (BGA)
UK Air Pilot, RAC Section
NOTAMS
General Aviation Flight Guide
Air Navigation Order 1985 } Available as CAP 393 from Her Majesty's Stationery Office
Rules of the Air and Air traffic Control Regulations 1985 } Available as CAP 393 from Her Majesty's Stationery Office

Aeronautical Information Circulars, available FREE from Aeronautical Information Service (AIS 2c), Tolcarne Drive, Pinner, Middx. HA5 2DU.

Chart of UK Airspace Restrictions } both FREE from: CAA Chart Room, Room T1120, CAA House, 45-49 Kingsway, London WC2 B 6TE
Chart of UK AIAA's and Military Low Flying System } both FREE from: CAA Chart Room, Room T1120, CAA House, 45-49 Kingsway, London WC2 B 6TE

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JOHN KENNY

FOOTLOOSE AND FANCY FREE

John tells of a few days gliding and wandering on the mainland

There were the three of us, the Austin Metro, K-6E and me; we had the August Bank Holiday week off and were on the ferry from the IOW to the mainland in hope of a 300km triangle - yet again. The other members of the syndicate had cried off at the last moment, perhaps knowing how bad weather follows me, so here I was, no one to help me rig or retrieve, and me the club's mechanical idiot.

Because I'm shy and would need to ask for help, I decided to visit small all aerotowing clubs. They seem to be more friendly and hassle free. Last time I visited an all winching site I was almost beheaded by a retrieve cable and got shouted at; last time I visited a big club I didn't have the correct coloured card to hold a wingtip and nearly got shouted at.

". . . was going to conquer the world in a Kirby Kite."

Saturday. Arrived at Thruxton at 4.30am, go to sleep in the car and am woken up by Frank Brown looking in the window, Good Lord, he's twenty years older. Last time I saw him he crewed for me when I was on a similar jaunt and was going to conquer the world in a Kirby Kite.

Everyone very kind and helpful. Weather fine - for scratching about over a bonfire at no great height. Wined, dined and put up for the night by Frank.

Sunday. Foggy till 3pm then very soarable, enjoyed a 50km O/R in the haze. Drove over night to Shobdon.

Bank Holiday Monday, arrive early unannounced, everyone very kind and helpful. Not flyable till late afternoon, local soaring till late in the evening, beautiful warm colours and gentle lift off wooded hills.

Tuesday. Mist and rain so trailed over the border and the Metro puffed up the hill to Talgarth. Everyone charming, hills hidden in cloud, gatecrashed a good barbecue.

Wednesday. Not flyable. Browsed round Hay-on-Wye, a very civilised place.

Thursday. The wind too strong for a triangle in a wooden glider but the hills were working.

The day was rough and exhilarating, *ie* frightening. After a while I went in search of wave, lost it and got stuck for ages on a short beat on a hill named Mynydd Troed.

As I didn't have the courage to fly through the rough air in the Cwmdu Valley to the main ridge I ran away back to land at Talgarth. It was fun though - most of it. Had a good dinner with two pleasant characters from Oxford, Jim and John.

Friday. Same wind as yesterday. Meet 475, a friendly K-6CR. We help each other to rig and fly together, waltzing in the thermals to the end of the hill at Tretower. He leads me out over the Usk valley, looking for wave; we don't find any and part company back on the hill.

It's not so rough today and the scenery and soaring are blissful with thermals popping out of the sun facing bowls.

Up and down the Cwmdu Vale,
In and out the Dareen Bowl,
Pop go my eardrums.

Mynydd Troed attracts me like a magnet; and I get stuck to it again for a long hour before getting away under a thermal street. I make my way into wind across Llangorse lake and on to Brecon before being driven back by a shower.

Over the lake again, I'm frightened to death by a pair of Tornadoes and then the air becomes rough and rotorish and I think I've found wave.

It now occurs to me that my mechanical aptitude has not extended as far as switching on the barograph so return to Talgarth to attend to this detail.

At 700ft on base leg, the vario' jumps to 4kt. Climb. I can't resist it and S turn up to 1500ft before remembering the object of the exercise and landing.

I switched on the offending instrument and took another launch; wished I'd switched myself on though because I was back on the ground in a few minutes. I wasn't too upset though because no one else connected properly that day.

I enjoyed that trip more than I can describe, even though it was kid's stuff by local standards.

The sensations of soaring the Black Mountains are particularly intense and larger than life and I was on a high for days afterwards. Perhaps the locals develop a tolerance to it, but to me it's bliss. Damn badges, I love just gliding.

Thank you Thruxton, Shobdon and Talgarth; you can't be lonely with gliding people.

PAUL JESSOP

SOMETHING SPECIAL

Paul Jessop is an electrical engineer with British Telecom but still flies with Oxford University GC at Bicester. He has a Silver badge and a share in a Mini-Nimbus C.

There comes a point in a pilot's development when he feels he is no longer an *ab-initio* but a learning pilot with individual discretion and, within limits, freedom of action. This occurred for me on a special day at Talgarth in 1987.

Norman Smith was then their resident tug pilot and would tell us of the delights of the Welsh mountains during wet weekends at Bicester. Finally I could stand it no longer and agreed that I would try to see him there one day the following week. As I was a carefree student in those days, it was the following morning that I pointed the car down the M4 and headed into worsening gloom.

I found the site easily enough from the painted signs announcing "Gliding" and met Norman at his caravan. His (ever optimistic) view was that the rain would stop and the cloud would lift before long. In the meantime we retired to his caravan for coffee and briefing. The good fields were pointed out on a fading map and the bad ones too.

Eventually the rain stopped and I DI'd the Blanik while Norman whistled up a tug pilot who turned out to be CFI John Bally. We buried the Blanik's tail in the hedge for maximum take-off run and had a very smooth tow behind the Pawnee to 1000ft on the main ridge. Soon we were established in the lift from the strongish westerly wind and headed north.

"I shouldn't get too near the orographic," came some advice from the back. I turned left, away from the ridge. "Not like that." The controls were wrested from me, the nose pointed down and we slid under the wispy cloud which had moved somewhere else by the time we got back. Norman pointed out the landmarks as we passed them: Y Grib, Y Dâs, Rhos Fawr common where a landing could be made in an emergency, Lord Hereford's Knob, and the stark escarpment of Hay Bluff, standing guard over the Wye valley.

We returned as we had come, keeping a look out for rapidly forming cloud and revelling in the spectacle of the scenery. "Where now?" asked Norman as we reached the south end of the main ridge.

"Does that hill work?" I inquired, pointing at the squat triangular end of Mynydd Troedd.

"Let's find out." We arrived about half way up the hill and contacted the smooth ridge lift. I flew as close to the face as I dared, but not close enough for Norman. "Turn round and do that

again". We lingered for several minutes, practising figure of eight turns which brought me safely close to the face, but did not leave me pointing at it, which seemed bad for the health. I did not wait to be asked where to go next but pushed on to the next hill at Llangorse. Then we did the whole beat again, but rather faster, and found you did not need to turn, except at the ends!

The landing, after 30min airborne, was not as dramatic as I had feared and rounding out uphill seemed very natural, though rolling over the crest and down the other side gave me a nasty moment before it became clear we were slowing down.

"I shan't send you off solo until the orographic has lifted a bit." So Norman would let me fly solo here? That had not been on my list of hopes for the day. By the time we had taken another look at the maps, John Bally had disappeared so Norman towed me himself. For 1½hrs I had the most wonderful time. I flew fast and low, then slow and high. I entertained myself by working out how much ground I was covering and regretting that it did not count for Silver distance.

Eventually, I landed, grinning in the ridiculous way that pilots do when they have been having fun. The grin lasted until well after I was back over the Severn bridge.

I have been back since as often as I have been able to manage. Norman Smith is no longer the resident tug pilot and John Bally is no longer the CFI but the welcome remains the warmest of any gliding club and the flying the most enjoyable. ■

If you have had a special flight and would like to tell us about it in not more than 750 words, please send it with a head and shoulders photograph and a few details about your gliding experience.



David Goodison

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WAY OFF TRACK



Give 'em a welcoming wave

With North Weald soon to be lost to gliding and historic Duxford under threat in the congested south-east, it's good to know that gliding is developing new opportunities in those peripheral regions of the kingdom so often reviled or, at best, patronised by metropolitan smart-arses but where the most discerning people live.

So a warm welcome to the Grampian GC, established on three fields taken out of agriculture under the government's "set aside" scheme near Laurencekirk, a village on the A94 about 30 miles south of Aberdeen.

The 1200 yard strip is only about four miles downwind, in any westerly, from the huge Grampian massif. All of highland Scotland lies directly upwind and the wave should be terrific.

Grampian's launch, initially as a winching operation, was imminent when Penguin dropped in unexpectedly at Aboyne on January 28 to take off at 1601hrs in an Open Cirrus, rocket to 10 000ft and land, all in the last 35 minutes of daylight, to restore his faith in Pictish wave.

Congratulations and the thanks of all are due to John McGregor, the flying farmer who has decided to grow a gliding club where he hitherto grew grain; regional examiner Terry Slater, who advanced the scheme with the BGA; and CFI designate Al Eddie.

They have a lesson for those who moan that it is impossible to publicise gliding in the general press. Using the region's newspapers, radio and TV intelligently they called a public meeting to propose the club's formation - and packed 100 people into the school hall of a village where the population is only 1500. What's more important, they persuaded about 40 of them to pledge foundation cash.

Though Grampian GC's catchment area overlaps those of Aboyne and Portmoak these two established centres have nothing to fear. With the severe capacity limitations of Aboyne's runway, Portmoak's airspace problems and the size of the Scottish wave safari market, there is room for all.

If you want to head the ladder hat your head

An interesting thesis for a PhD in one of the less immediately useful ologies - not so favoured in these positively rigorous times as in the years before MT - would be a study of the decline of hats and the whole evolution of functional clothing for such leisure pursuits as ours.

The thought occurs after seeing William Malpas's fascinating Edwardian Gliding Scrapbook in the June 1989 issue, p134. It was not just Britain's cloth-capped *hoi-polloi* or bowlered middle classes who wouldn't have been, seen dead outdoors without a titfer in the opening years of this century. It was other countries, too.

Maybe the First World War had something to do with it for the decline of hats seems to have begun sometime later. In the exceptionally complete pictorial history of aviation which *Flight International*'s photo library represents, there is scarcely an uncovered head to be seen, whatever the event or action, before the late 1920s. It is well into the 1930s before any evidence appears of specifically leisure clothing and even then it is encumbered by the excessive drag of Oxford bags while collars and ties are fighting a staunch rearguard action.

In Bill's picture spread did you note that, even when gliding experiments were being made on a French beach in 1904, it was *infra-dig* to wear anything but a dark three-piece suit, stiff collar - and a hat? Porte and Pirie, when getting tenuously airborne at Portsmouth in 1909, felt constrained to put up with the parasitic drag of two huge hats, as did a hopeful M. Legasse aspiring - and perspiring - unavailingly to pedal himself into the air at Toulouse the same year.

And if wearing a bowler now manages to make a man look a buffoon - even in the early 1960s, when I was working in Amsterdam and they were still occasionally sported by visiting English gents, they were known locally as idiot domes - how much more buffoonish would you look if riding a wing-equipped bicycle while wearing a formal suit, stiff collar and a bowler to boot - or even two boots - as Malpas showed one bold experimenter doing in 1912 at the Parc des Princes in Paris?

Come to think of it, even functional clothing like soaring hats designed to prevent cranial overheating doesn't exactly contribute to an air of sober sanity at most gliding sites.

Reverse trends, of course, apply in female fashion where yesterday's purely functional workclothes inevitably become tomorrow's outrageously expensive *haute couture*. Some years back I was working alone late one night in a BBC newsroom when a young woman I didn't know came in, clad in crisp, well-pressed denim dungarees.

As I had phoned down an hour earlier to report

the gents' was suffering an overflow I naturally assumed, in this era of equal access to nasty work, that she was a plumber come to fix it. She wasn't in the slightest bit amused when I ushered her towards the men's room and asked why she hadn't got her tools.

She was a visiting producer from London, clad in "designer" clothes beyond our simple provincial ken.

Sell this space

Another interesting vignette from William Malpas was the shot showing the Montgomery glider flying after an airborne launch from beneath a balloon in 1905. The aircraft carried its name, *The Santa Clara,* very boldly beneath the wings.

I bet Montgomery was picking up sponsorship from the Californian town of that name – if nothing more than donations of constructional material from the Chamber of Commerce. No other picture, from Britain, France, Germany or South Africa, shows a sign of such marketing nous among the early aeronautical pioneers.

In the UK, I think, we have never woken up to the real potential of commercial sponsorship for gliding and have an unyielding resistance to turning our aircraft and trailers into moving billboards – a resistance not shared by such near-neighbours as the Dutch.

Me? Do it yourself, dammit!

Considering the range of skills encompassed within the average gliding club – and most can produce anything from an accountant to an undertaker when required – it's amazing how few homebuilt sailplanes there are. In this regard we compare badly with the power flying mob, for the regular PFA rallies boast an ever growing array of DIY aeroplanes.

Even this is nothing compared with French and US activity, as any visitor to the gallic RSA rallies and the mammoth EAA Oshkosh fly-ins (over 11 000 aircraft on the field the year I went) can testify. Technological innovation on show at either is staggering and puts the old hat spam can makers of Wichita to shame.

Perhaps the dearth of DIY sailplanes stems from this fact. The commercial glider manufacturers, driven by the demands of competition in which such a small minority of us ever take part, are right up on technology's cutting edge. The commercial lightplane makers, on the other hand – excepting those who have grown out of gliding, like Grob – are still wedded to 40 year-old structural techniques, stone age aerodynamics and powerplants that first ran more than 50 years ago.

The upshot is that any bright-eyed homebuilder, with patience, Styrofoam, a hot-wire shaper, handtools and an engine with a power-to-weight ratio more akin to the times, can better their performance, economics and general appeal. At Oshkosh in 1979 a Rutan Quickie canard was built, as a demonstration, in only 2½ days – and was capable of 140mph on installed power of only 18hp.

This is not the situation, I fear, in sailplanes. Whatever can be produced from a domestic garage by amateurs stands little chance of matching what can be bought from Poppenhausen, Kirchheim/Teck or even from the small ads in *S&G.* So can the sacrifice of years to build a relative lead sled be justified?

There is also the fact that soaring pilots' skills and leisure time are necessarily devoted to fettling their factory-built machines and keeping the clubhouse weatherproof. The well-heeled car dealers, bookmakers and publicans who make up the majority in most flying clubs have only to flash their credit cards to hire professionally serviced aeroplanes – or have their private machines maintained.

My own efforts in this field – homebuilding, not fat-cattery – have been limited to the reconstruction of a wrecked K-6 I bought in Germany. A Bavarian pilot broke it resoundingly landing in a forest clearing to avoid her only other option – to cross the then Iron Curtain and land safely in Czechoslovakia.

For my part I wish she had risked imprisonment and even starting World War III. The task took almost as long as the British and French together – with Crécy, Agincourt, Trafalgar and Mrs Thatcher's Brussels rebate to stoke up nine centuries of heart-felt mutual antipathy – needed to design, develop and produce Concorde. As the goodwill of those whose garage I had commandeered for so long was nearing expiry, I sold it somewhat short of completion.

I have since had the pleasure of flying it several times. And a good job I made of it too. The reconstruction, I mean. On the flying, I modestly leave it to others to deliver this judgment, which would be wholly justified . . .

A cold and clammy feeling

Be warned, if you *are* enticed by any homebuilt aircraft ad that claims it can be completed in only X hundred hours. It is likely to be actionable under the Misrepresentation Act and you can confidently multiply that figure by a factor of four. Or 40.

Even the procurement of materials and components can take a staggeringly long time, but there are other pitfalls too.

Two clubmates built a Monerai. It's a tiny and superficially simple design, claimed to take only 800hrs. But it involves metal bonding.

The latter, as a constructional technique, may make good sense in the dry, warm American west where the Monerai was designed. But producing the precisely controlled warmth and low humidity needed, in an ordinary private garage in our cool, wet, corner of the kingdom cost them months of delay and pots of money.

Still, its lengthy gestation – despite its builders' infinitely superior engineering skills – made me feel a helluva lot better about taking so long to rebuild the K-6.

I'm Flightless Not Legless

Get me a libel lawyer. *RNZAF News* records that one of its C-130 Hercules – emblazoned, of course, with that other flightless bird, the kiwi, in the centre of the national roundel – was making an ice survey flight in Antarctica and overflew a colony of penguins.

Transfixed by its approach they then craned to watch it pass low overhead – and promptly toppled backwards like so many dominoes.

Anyone who suggests that this penguin keels over any time before the tenth gin has gone down the hatch would probably be better off reading Platypus.

By their coats ye shall know them

The strange garb which soaring pilots affect can cause severe misunderstandings off the site – and I don't just mean soaring hats.

One instance concerned a recent past chairman of the BGA, on a wet and frustrating day for autumn wave hunters foregathered at Aboyne.

Together with several others our erstwhile leader made an excursion to see whatever it is the Queen shows her subjects at Balmoral, a few miles up the Dee.

He was wearing an extremely fluorescent heavy waterproof of a kind that would not have been out of place had he been supervising roadworks on the nation's busiest motorway.

Given the heavy rain it was a sensible garment to wear in the circumstances – even though its sheer visual obtrusiveness might have been calculated to frighten the Duke's prize 14 pointers into running over the hills and seeking refuge several glens away. Not to mention what its reflection in the Dee might have done to Charlie's fish.

"Are you the parking attendant?" inquired a crushed-looking little man, coming forward from a battered proletarian motor car with a 50p piece clutched in his timorous hand.

"Good Lord, no," boomed our man, anxious to defend his *amour propre,* drawing himself up to his not inconsiderable height and adopting suitably magisterial tones. "You look much more like a parking attendant than I."

Close encounters . . .

One of the few penalties of living where I do – and the compensations are numerous – is forever being asked about "the troubles" when I am gliding somewhere else. It happened again last summer so let me say that almost the diciest moment that has happened to me in the past 20 years on the security front was brought about by gliding. But also solved thereby.

It was in the early 1970s, before rechargeable gel batteries replaced the packs of three 4½v bell batteries wired together in series with which instruments were usually powered then. I always carried a made-up spare pack in the car together

with a small bottle of paraffin for smoking barographs.

I was stuck in traffic near the centre of Belfast when a car bomb exploded two streets away. Quick as a flash the security forces had road blocks in place around a wide area, surmising that they might have prevented the bombers' getaway and have them trapped inside.

The soldiers were edgy but meticulous when my car came to be searched. But I was an old hand at this. It was no sweat. I stood easily beside the car, hands on roof, legs apart, and allowed myself to be frisked. Other soldiers probed the boot and beneath the bonnet, looked at the underside and then inside the car itself.

As a young squaddie straightened up with a triumphant grin and my battery pack my heart sank. It plunged even further as he gingerly unscrewed the bottle cap and smelled the paraffin. Instantly the temperature dropped to a sub-zero chill. The soldiers guarding the checkpoint turned to look inward, their rifles trained unwaveringly at me.

The corporal was rabbitting urgently into a radio. How on earth would I explain this lot away, with the soldiers obviously thinking they had caught an arch terrorist with incriminating kit? With his London accent he could even be a *godfather!* Over from Kilburn perhaps. I foresaw many uncomfortable hours ahead with sharp-end experience of some novel interrogation techniques.

Three minutes later, at the double, their company sergeant major arrived. In a nervous gibber I started to explain, without any hope of comprehension. But almost immediately understanding and fellow feeling dawned in what had been a steely military eye.

"What club do you glide with?" he asked, taking in the battery pack even before I started on its purpose. "I fly with the Eagle Club at Detmold myself."

The sergeant major crisply told the squaddies it was OK and waved me on. As I slipped the car into gear and moved away I saw the corporal directing a somewhat suspicious look at *him.*

. . . with an emergency

Some years earlier, during the first uneasy weeks after the outbreak of the troubles in August 1969 I trailed a glider through the centre of Belfast. Temporarily, I waited on double yellow lines in Royal Avenue – the equivalent in outrage of a Lashamite or Booker boy racer halting a retrieve to shop in Piccadilly or Oxford Street. Hen Penguin was in a department store. For not too long, I hoped.

Predictably, the law hove to in the unappealing shape of a traffic warden – "meter maid" would be absurdly flattering and overlook the depredations of about 40 years. "You can't stay with that trailer here" she said, fumbling for notebook and pen and studying my number plate with care.

"It's not a trailer. It's a barricade" I ventured, without much confidence in my line of argument.

"Oh, that's different. Nothing to do with me," replied the dragon, stuffing pad and pen away and sauntering off in search of other victims further along the street.

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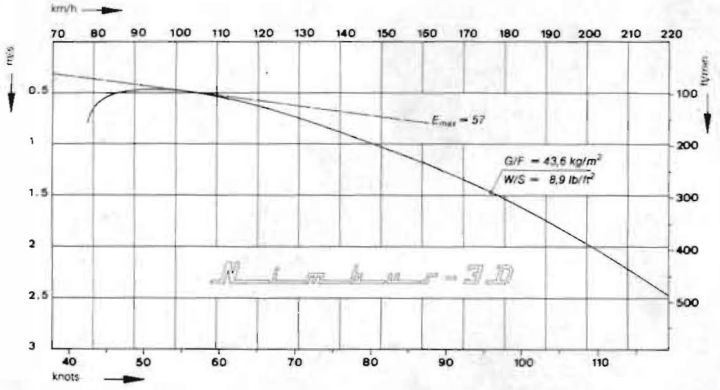
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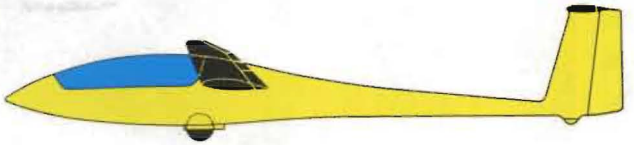
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