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Cover: Mike Shailes photographed his syndicate partner, Frank Birlison, flying their Std Cirrus at Bishop Hill, Portmoak

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YOUR LETTERS

MEDICALS FOR OLDER INSTRUCTORS

Dear Editor,

I have always thought that the BGA's attitude to medicals for glider pilots and instructors eminently sensible and reasonable and so I find the uncharacteristically punitive regime for older instructors difficult to understand.

Has there been a sudden increase in accidents to pupils attributable to the great age of their instructors? Is it just to fall into line with other country's rules? Why are we insisting on an expensive CAA medical when younger instructors may continue with medicals from their own GP?

Instructors who are in their fifties and sixties shouldn't take a too disinterested view of this - it's always later than you think.

RON LYNCH, *Melksham, Wilts*

JUST WHAT IS THE BGA DOING?

Dear Editor,

Your letters from Tricia Pearson and Dilys Hampden Yates in the December issue, p319, do indeed raise interesting matters.

Who does represent the interests of the non-competitive pilots and makes the everyday running of the gliding movement in this country possible? In the opinion of many, certainly not the BGA!

Most of us belong to clubs run and supported by non-competitive pilots where the daily work is done by people who often have little money and only aspirations to enjoy a hobby that brings immense pleasure and satisfaction.

The present trend seems to be that new members are getting older. *Ab-initios* are increasingly hard to find, largely one suspects because of the other exciting things to do - for instance hang gliding. To most ordinary club members the BGA seems to be doing little to raise the image of gliding among the young and among women and little to bring in *ab-initios* in general. Many clubs seem to be left on their own to pursue the struggle with little national guidance or cohesion.

In spite of the trend towards older pilots, when it comes to areas such as instructing, the BGA states quite clearly that older members are not welcome. The guideline is that new instructors over 50 are not likely to be much use to the gliding movement. The further development of assistant instructors over 50 seems to be even more positively discouraged. So why does the BGA discriminate against older members, especially when European legislation discourages discrimination by age? Is it because it is either unwilling or unable to move with the times or has such deeply vested interests it is unable to entertain others?

The BGA needs to recognise that in the older generation there is a reservoir of people who have money, who want to do something challenging with their time and are possessed of a plethora of skills, experience and enthusiasm invaluable to our movement.

Discouraging anybody does irreparable damage to our long term aims. One can only be amazed the BGA is allowing itself to fall into so basic a trap.

Tricia Pearson in quite rightly saying that gliding is in danger of becoming an elitist sport has understated the truth. The present policies of the BGA encourage an elitist group who are frequently the ones who do the least for clubs and take most from them. The BGA is entirely wrong in allowing this trend to continue and should be taking strong action nationally to widen the appeal of gliding. What sort of impression does elitist publicity material such as the video "Flying the Blues" create?

Many members are deeply disappointed by the lack of leadership displayed by the BGA.

As to Dick Dixon's letter in the October issue, p255, it's great to advise people to join the BGA Executive when one is already there. For the majority of people that's as far away as the gates of Heaven. Would Dick like to explain how one gets elected. I for one would be delighted to assist the BGA in developing a more practical approach.

In contrast to Germany where there are waiting lists to join clubs, UK gliding is in decline. In countering this the BGA needs to remember that our image must be projected at the general public from whom we must win members in competition with other higher profile sports. To achieve results the BGA needs to be entirely catholic in its approach.

RICHARD YERBURGH, *Warminster, Wilts*

Barry Rolfe, BGA secretary, replies: Have you heard about the rock and the hard place? It seems that some members regard the Executive Committee as being akin to Will Carling's "old farts" whilst others regard them as practising ageism! The BGA has not stated anywhere that older members are not welcome nor has it any guidelines that instructors over 50 are not much use to the movement. I suspect that the root of this complaint lies with our requirement for instructors over 70 to take a CAA medical examination before continuing.

There is no mystery to joining the Executive Committee - the members are elected by the clubs and each club secretary is asked annually to nominate any persons wishing to stand for election.

IT'S ABOUT FLYING AGAINST OTHERS

Dear Editor,

As a long-toothed club pilot I had some sympathy with the motives underlying Tricia Pearson's letter about the non-competitive needing a voice until I read her assertion that to be competitive one needs a supership plus GPS.

In the Regionals I attended last season the Sport Class contained a dozen Astirs making up the most numerous type flown (and by some of the most competitive pilots I have come across). Accompanying them were a half dozen or so two-seater Grob Twins, K-21s and one Puchacz. With handicapping to damp the effects of glider difference, to the chagrin of the single-seater pilots, four of the day wins and three of the top five final places were taken by pilots flying two-seaters. They were taking time out from teaching Tricia's "average club pilot" as was evident from a Grob owned by the host club which was back circuit bashing after it had won the day.

Not one of these machines were superships but they completed daily tasks of 250-350km, around 70-80% as long as those set for the "hot" Class (totalling over 2000km in eight days). Tasks were excellently set and at no stage did I hear whingeing about the lack of a supership.

A GPS/datalogger is useful, particularly on murky days and/or if one is feeling lazy but £10 worth of half million charts, combined with a passing interest in the terrain below, is still a good substitute.

Competitiveness it seems to me is not about having the most expensive ship/instrumentation but in flying against others from a reasonably level "playing field".

I am still wondering about "...who the BGA elects to its ranks." Based on the evidence she offers, I suggest Tricia's case remains definitely not proven.

TONY GEE, *Marlow, Bucks*

SUPPORT FOR K-8 PILOTS

Dear Editor,

Tricia Pearson's letter raised a point ("where is the support for the K-8 pilots...?") which I have long felt needed addressing. To this end, last year we at Bidford GC held our first K-8 competition which was purely a weekend event resulting in two Silver badges being competed, numerous 100km triangles and a great deal of fun. It was aimed at exactly the people who need encouragement to fly cross-country in a non serious environment.

Such was its success that this year it will be extended to include "hot ships" like the K-6 and will be run over two weekends, May 25-26 and August 15-16. We welcome all K-8, K-6CR, K-6E pilots who enjoy weekend flying with a fun and competitive element.

PETER FREEMAN, *Bidford Gliding Centre*

THE STUFF OF DREAMS

Dear Editor,

In these days of National Lottery rollovers, it was a pleasure to read in the December issue no less than three flight reports on motor gliders. Those of us who perhaps do not have the time, ability or probably inclination to aviate without an engine, appreciate your supplying a subject matter of dreams.

DAVID GOLDIN, *Canterbury, Kent*

SIDESLIPPING AND SPINNING

Dear Editor,

I found "Look Where You're Going!" in the last issue, p14, a very interesting article which could explain why some spinning accidents have occurred. But there is a small terminological error in the fourth paragraph - the "**sideslip** which is of course present".

Excessive in-turn rudder while entering or in a turn causes skid (out of the turn), not slip (into the turn). Skid at the stall may lead to a spin into the already low wing - very dangerous. Out-turn rudder gives slip. At the stall it will, without corrective action, cause the wings to roll through the level position towards a spin out of the turn. The high rolling inertia of a glider makes this a relatively slow process, with plenty of time to recover (by lowering the nose) before a full spin is entered.

During my early RAF training one exercise was to hold a steep turn with low power, pulling hard until the aircraft stalled. With its short ➡

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span, the aircraft would often flick out of or into the turn, depending (among other imbalances) on whether slip or skid were present. Simply relaxing the back pressure was always sufficient to prevent an out-turn spin due to slip, but occasionally not enough to prevent an in-turn spin with skid.

Sideslipping, either straight or in a turn, is inherently spin-safe, despite the inaccurate readings of the ASI. After all, what is standard spin recovery? Full opposite rudder first - and in most gliders that is sufficient to stop a spin. In a sideslip, were the glider to try to spin for some odd reason towards the lower wing, the first recovery action is already fully or partially applied. But I have never known this to happen; the indication that I'm flying too slowly has always been that the glider starts to roll level despite full aileron into the lower wing.

Of course, the slip must not be continued too close to the ground **and the nose must be kept well down during the recovery to balanced flight.** Over-enthusiastic use of rudder and ailerons at this stage could convert the slip into a skid; if the nose is high, stall and skid may then result in a spin.
SAM ST PIERRE, *Bedale, North Yorks*

SPEEDS-TO-FLY

Dear Editor,

In the June issue, p180, Ian Trotter used a graphical method to determine the optimum speed-to-fly during upwind wave jumps. Later in the December issue, p321, he suggested some new approximation rules as an improvement of those given by Frank Irving in **The New Soaring Pilot.**

However, such rules are only useful for a glider fitted with an airmass variometer and a MacCready ring. For other systems, one might try setting the MacCready value to between ¼ (Club Class) and ⅜ (Open Class) of the square of ⅛ of the windspeed.

Perhaps the more mathematically minded of your readers would be interested in an exact algebraic solution of the problem. The optimum speeds-to-fly between stationary lift sources are given by the formulae:-

Headwind $(V^2_{opt} - 2V_{ms}V_w + V^2_w)^{1/2} + V_w$ (1)

Tailwind $(V^2_{opt} + 2V_{ms}V_w + V^2_w)^{1/2} - V_w$ (2)

Where V_{opt} is the best speed-to-fly between thermals, V_{ms} is the speed for minimum sink, and V_w is the windspeed.

As V_{opt} varies with height as well as with any lift or sink, these formulae are only really useful if programmed into a computer variometer.
JULIAN WEST, *Munich, Germany*

BGA SHOULD USE THE INTERNET

Dear Editor,

Isn't it about time the BGA made use of the Internet to promote gliding? A few British clubs have World Wide Web sites (usually those with access to servers operated by universities), but there is a case for the BGA embracing the ➡

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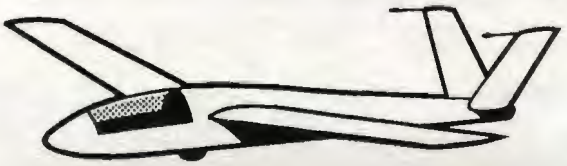

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technology to provide a point of contact for gliding in the UK as the SSA has done in the USA. General information could be provided, along with an online directory of clubs - maybe *S&G* club news could be made more available this way and links made to various sites.

No doubt this will soon be used by more clubs, but it would benefit us all if the BGA had a presence on the Internet.
JOHN KEEPIN, *Swindon*

ASSESS THE SITUATION

Dear Editor,

I read with interest the "Primacy" article by Bill Scull in the December issue, p338. I appreciate that he was trying to express the very important point that landing ahead following a cable break/launch failure is the safest thing to do and should be taught from the outset.

I found it very unfortunate then that he thought it appropriate to highlight a single club (namely Oxford GC at Weston on the Green) where some years ago an instructor decided that "going around" after a 600ft launch failure was feasible.

I think the reason for this story was the fact that Weston has a particularly large airfield (some 1500 yards long) and at 600ft on that particular airfield a land ahead was possible (it may not have been at other clubs) and perhaps should have been carried out.

To indicate the absurdness of taking instances like this out of context though, at Weston we are authorised to winch launch to 3000ft and on a windy day this is achievable. A break one third of the way into the launch is therefore at about 1000ft. It would also be possible to land ahead. Is this being advocated by Bill? I sincerely hope not!

The only message that can safely come from the article, and this response, is that following a launch failure a pupil must be taught to **assess** the situation and act accordingly. We do indeed teach that if you can land ahead do so. But this is based on an assessment of the situation - at 1000ft following a break the pupil may consider not landing ahead after all but continuing with a circuit.
CHRIS EMSON, *CFI, Oxford GC*

GETTING BACK TO THE POINT

Dear Editor,

It is with a lot of trepidation that I cross swords with such as Chris Rollings, Chris Chapman, Ken Stewart and Ian Strachan. Perhaps it's a characteristic of glider pilots to discount trepidation.

The commentators on Chris Rollings' article in the October issue, p279, seem to me to concentrate on and criticise the nuts and bolts of his solution rather than what, to me at least, is the essence of the article, an essence with which I wholeheartedly agree.

If you re-read the article at least 50% of the text concerns the pilot's difficulty in judging whether it is safe to land ahead.

I can confirm this difficulty - 99% or more of my landing approaches involve "short" landings and I therefore have vastly more experience of judging clearance at the threshold end rather than the stop end.

My **real** cable breaks often result in a turn, **not** because of convenience but because my experience indicates that a turn is a known, safe option, whereas a land ahead is potentially fraught, or at least seems to be, which perhaps is the point.

Chris Rollings suggested training exercise addresses this bias in landing expertise and its substance is the provision of a simulated "stop end" (or "boundary"), **not**, I would suggest, diving with full airbrake.

Would it not help to concentrate on the baby and disregard the bath water?
IAN TROTTER, Edinburgh

Chris Rollings comments: Hear, hear! Thank you Ian for coming back to my main point.

WE WERE THE WINNERS!

Dear Editor,

I was surprised to read in the Inter-Club League report in the last issue, p28, that Cambridge University GC had failed to field a team. In fact Essex & Suffolk GC won the East Anglian League in a closely fought contest, and as a defector from CUGC to ESGC I felt duly bound to mention it! Actually, we also didn't field a team at the final because it wasn't confirmed that we had won until it was too late.

This aside, I am writing primarily to remind readers that we organised an extremely successful winch launched competition with our excellent gas fuelled winch, with only a handful of relights over the whole weekend, and invite pilots to visit us at Wormingford any weekend to experience the joys of winch only gliding from our recently enlarged site, and to relax in our new clubhouse.
ANDY SANDERSON, *Colchester, Essex*

Shades of last summer

We had a tantalising letter from a Channel GC pilot who said he found it odd that his fellow member, Ian Keyser (see article in the last issue, p36) appears more concerned about keeping his glider covered than himself.

Good naturedly Ian revealed all!

"The weather was perfect and I dashed to the club to attempt my Silver distance without thinking of the return journey. I was wearing terribly gaudy swimming trunks and a "Keepi" type hat." It wasn't until I was over Ashford, Kent that I realised that I was going to have to return on the train and wasn't suitably attired!

"The only comment was from the girl in the buffet on Ashford station to the effect that it was a hot day...but I did go first class! Thank goodness I'm not the self-conscious type."

Incidentally Ian, who retrieved his glider the next day, achieved his Silver distance.

GLIDING AND UK AIRSPACE

Carr Withall, chairman of the BGA Airspace Committee, updates the airspace position

ICAO Airspace Classification. In November 1991 the UK adopted the new system of international airspace classification developed by the International Civil Airspace Organisation. The status of a piece of airspace is denoted by a letter which will be shown on all aeronautical charts, and it is this letter rather than the title of the airspace that will determine the rules applying to it.

Eg in the UK airways will all be Class A, but in other countries they may be Class E. In order to fly within Controlled Airspace, gliders will often require legal exemptions, and the availability and nature of these will vary from country to country.

Class A Controlled Airspace

Cotswold CTA	**Daventry CTA**
London CTR	**London TMA**
Manchester TMA	**Worthing CTA**

All **Airways** (except where they pass through a TMA, CTA or CTR of lower status).

The airspace is effectively closed to gliders, since it is subject to permanent Instrument Flight Rules, whatever the weather, and there are requirements relating to filing of flight plans, standard of equipment, pilot qualifications and adherence to ATC clearances. Gliders cannot comply with these. However, specified airways may be crossed by gliders under the provisions of Rule 21(2) which stipulates:

1. The crossing must 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 and maximum permitted crossing levels. **There have been major changes in 1995 and the new map should be studied in detail.** Scotland has no changes. A25 now has three levels; G1 is also divided into different levels and B1 east of Manchester has a maximum crossing level of FL135. Also note that there are certain areas and airways, *ie* B1 and B5 which are of particular need for certain clubs, close to them, to cross, and these clubs have exemptions. Any club which feels that they are restricted by not being on this list may apply for this exemption and will have to submit a monthly return of glider crossings, even if it is a nil return, to NATS. B5 is a new high level, FL155+, airway.

Exceptionally, gliders may fly in other Class A airspace by virtue of a Letter of Agreement (LoA) or other pre-arranged permission.

Class B Controlled Airspace. The entire airspace over the UK above FL245, comprising the **Upper Airspace CTA** and the **Hebrides Upper Control Area (UTA)**, is Class B Airspace. Gliders are permitted to fly in this airspace without restriction. Since the upper airspace contains Upper Air Routes and Military training Areas, glider pilots intending to fly at high altitude 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.

Class C Controlled Airspace. No UK airspace currently falls in this category, though it is possible some may be so redesignated in future.

Class D Controlled Airspace. Formerly Special Rules Airspace, there are effectively two types of Class D airspace for glider pilots – those areas in which they need ATC clearance to fly and those in which they may fly without ATC clearance subject to maintaining VMC. Class D airspace is subject to Rule 27 which stipulates that any pilot wishing to enter it must:

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

The above rules apply to gliders in the following Areas:

Belfast CTR	**London Gatwick**
Belfast City CTR/CTA	**CTR/CTA**
Birmingham CTR/CTA	**London Stansted**
Bristol CTR/CTA	**CTR/CTA**
Brize Norton CTR	**London City CTR**
Cardiff CTR/CTA	**Luton CTR/CTA**
Edinburgh CTR	**Manchester**
Glasgow CTR	**CTR/CTA**
Liverpool CTR	

Gliders are exempted from the provisions of Rule 27 and may fly in the following airspace without ATC clearance in VMC:

Aberdeen CTR/CTA	**Newcastle CTR/CTA**
Bournemouth CTR	**Southampton CTR/CTA**
East Midlands	**Southend CTR**
CTR/CTA	**Teesside CTR/CTA**
Leeds/Bradford	**Scottish TMA**
CTR/CTA	**Solent CTA**
Lyneham CTR/CTA	

Guidelines for the use of this airspace by gliders in VMC have been drawn up by the BGA and approved by NATS. These are set out at the end of this article.

Class E Controlled Airspace. The Belfast TMA is notified as Class E, and permits all aircraft (including gliders) to fly in this area without ATC clearance subject to maintaining VMC.

Visual Meteorological Conditions (VMC). To comply with VMC in order to cross Class A airways in accordance with Rule 21(2), or to use the exemption described above to fly in certain Class D airspace, a glider shall remain at least 1000ft vertically, and at least 1500m horizontally from cloud in a flight visibility of at least 8km. In Class E airspace, the visibility requirement becomes 5km when below FL100.

Local Agreements. A number of local agreements exist which modify the effects of some of the airspace listed above. LoAs between a gliding club and a nearby airport can make airspace either more or less restrictive than described earlier, 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 northwest 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 – The LoA concerning glider transits of Brize Norton CTR has been discontinued. HQ Strike Command have assured us that requests from glider pilots for transits of the zone will continue to be accommodated, subject to operational requirements. At weekends the chances of a glider pilot obtaining transit clearance are good, though it may not always be possible midweek.

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

Class F Airspace. An Advisory Route (ADR) is a route used by airline type traffic, but without the full protection of an airway. Although depicted only as a centreline on UK aeronautical charts, it is nominally 10nm wide. Gliders may cross Class F airspace without restriction, but caution should be exercised.

Class G Airspace. This is the term given to the "open" FIR (Flight Information Region), which is the uncontrolled airspace not subject to any of the afore-going classifications. Within Class G airspace there are various non-ICAO types of airspace, which are described as follows:-

Aerodrome Traffic Zone (ATZ). A glider pilot wishing to enter an ATZ must first call the airfield on the notified radio frequency. An ATZ is only active during the notified hours of operation of the airfield. Many military airfields are notified as permanently active though in reality this is not the case. Nonetheless the ATZs must be regarded as active at all times.

At an airfield with an Air Traffic Control (ATC) unit, that unit is able to give or refuse permission for any aircraft to enter the ATZ and to give clearances to take-off or land.

At an airfield with an Aerodrome Flight and

Controlled areas (Airways) available for crossing by gliders

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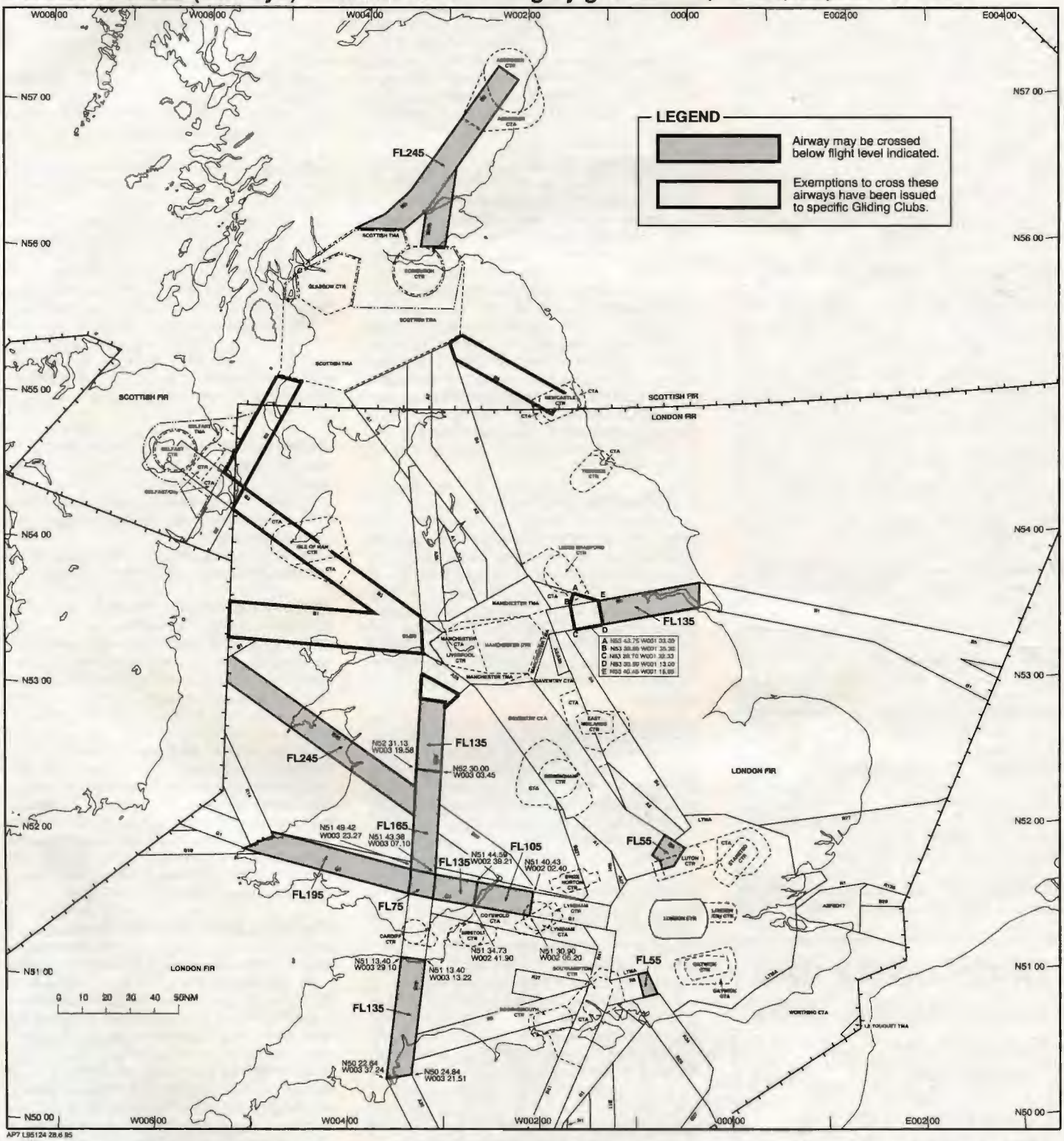


Information Service (AFIS) or Air/Ground (A/G) service, that unit is able only to pass information from which a pilot may judge whether or not it is safe to enter the ATZ or to take-off or land, *ie* the unit cannot issue clearances or withhold permission.

The following categories of airfield are protected by an ATZ: government aerodromes, and licensed aerodromes with one of the types of service listed earlier.

The ATZ comprises the airspace extending from ground level to 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.

At airfields without ATZs, including most gliding sites regardless of how busy they are, an itinerant aircraft may legally penetrate the airspace ➡

over the airfield, provided the pilot conforms to the traffic pattern or keeps clear of the circuit airspace, and observes the normal rules of good airmanship to avoid conflictions.

For landing at airfields with or without ATZs, it should be noted that many are listed in the **UK Air Pilot** as "PPR", "PPR to non-radio aircraft" or even "not available to non-radio aircraft". PPR (Prior Permission Required) means that landing permission must be obtained in advance of the flight, *eg* by telephone.

All military airfields are effectively PPR and will not permit landings by civil aircraft except where they have been pre-arranged, or in an emergency.

Military Aerodrome Traffic Zones (MATZ). The rules applicable to the penetration of a MATZ are not mandatory for civil aircraft, and the same applies to the **Lakenheath Military Control Zone.** However, radio contact is advised, and inside every MATZ there is an ATZ, the rules of which must be observed.

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).

Prohibited and Restricted Areas. A Prohibited Area (P-prefix) is prohibited to all aircraft, whereas a Restricted Area (R-prefix) permits limited access by aircraft under defined circumstances, *eg* landing at a nearby airfield. These areas include atomic energy establishments, security areas in Northern Ireland and sensitive military installations. Most Restricted Areas should be considered as prohibited to gliders, but the following are exceptions.

The Restricted Airspace established around high security prisons is applicable only to helicopters, and R105 at Highworth House, Glos, applies only to helicopters and microlights.

R313 at Scampton exists for the purpose of protecting the Red Arrows' display training – not normally more than two periods of 20-30min/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. During these times, a glider may enter the area by permission of ATC Waddington.

The Highlands Restricted Area is a large piece of airspace over NW Scotland used for military low flying and weapons training, up to 5000ft. It is outside of the area of current glider operations, and access to it is set out in the **UK Air Pilot.**

Temporary Restricted Airspace. Major air displays such as Farnborough or Fairford are often protected by temporary Restricted Airspace. 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.

Other types of temporary Restricted Airspace are effectively closed to gliders. They are established to protect Red Arrows' displays throughout the country, plus major flypast formations, over events of political significance and over the sites of major disasters. The duration and extent of the restriction can be quite short, and will be published by NOTAM.

Purple Airspace. Purple Airspace is established from time to time on a temporary basis to protect Royal Flights 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 the pilots are required to look out for and keep well clear of the royal helicopter.

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. (Call Salisbury Plain Control on 122.75Mhz.) 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 1:500 000 series CAA charts.

Particular care should be taken to avoid Weston on the Green (D129) which is extensively used for military paratroop training. Brize Radar (134.3MHz) will confirm activity status.

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 Aerial Activity. 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 manoeuvres.

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.

Radar Advisory Service Area. A RASA 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.

The Airmiss System. An airmiss may be filed by a pilot who considers his flight to have been endangered by the proximity of another aircraft. All airmisses are investigated by the Joint Airmiss Working Group (JAWG), whose deliberations are confidential so as to preserve anonymity. The purpose of a JAWG investigation is to determine what lessons can be learned, not to take punitive action.

Prompt airmiss reporting is vital if the other aircraft is to be traced. If in radio contact with an

ATC unit report to them at once, or if not possible, telephone straight after landing. Either call the nearest ATS unit or Freephone 2230 (on Monday for a weekend incident) to speak to AIS (MIL) at LATCC West Drayton, who will start trace action at once and tell the Joint Airmiss Section (JAS). Follow up with a written report on form CA1 094 to JAS within seven days. Always use GMT (UTC is the same) in reports.

JAS can be contacted in working hours on 01895 76-121, 122 or 125, or fax 01895 76124.

Code of Conduct for Glider Flights Through Class D Airspace.

1. Glider pilots should plan to route their flights through Class D airspace only when it is clear there are significant advantages from so doing, such as better soaring weather and shorter track distance.
2. Flights should be arranged so that the minimum amount of time is spent in Class D airspace. Pilots should avoid circling on or close to the runway extended centre lines, since this may interfere with aircraft carrying out instrument approaches or departures.
3. Good lookout is vital at all times, and glider pilots should be prepared to initiate avoiding action notwithstanding their right of way priority. Gliders are not always visible on radar, and other aircraft, including commercial jets, may not have been warned of a glider's presence.
4. Pilots of gliders equipped with suitable radio should listen on the appropriate frequency for information on other traffic in their vicinity.
5. Competition tasks **must not** be set through Class D airspace. Where a task leg has to be set close to but not through Class D airspace, the ATC unit should be informed. When possible, photographic control point(s) should be established, to help ensure that gliders remain outside the airspace.

Use of Radio. A glider pilot possessing a radio operator's licence (R/T Licence) is entitled to use all the available aeronautical frequencies of a 760-channel radio. This permits seeking access to the following types of airspace that may be otherwise closed to gliders: Class D airspace not subject to glider VMC exemptions.

Aerodrome Traffic Zones. Some types of permanent and temporary Restricted Airspace. Some danger Areas.

Radio cannot be used to request entry clearance into Class A or B controlled airspace (except by special arrangement) or into Purple Airspace.

Notams. The NOTAM system has changed significantly over the last few years. Essential flight planning information is obtainable from several different sources.

UK Air Pilot AIRAC Supplements are the formal method of notifying permanent changes to airspace, but can only be obtained as part of a subscription to the entire **Air Pilot.** Recently airspace changes have also been announced by way of **Aeronautical Information Circulars (AICs)**, major changes by way of a dedicated AIC and minor changes *via* six monthly summary AICs. A monthly *GASIL* summary covers minor changes also.

Temporary Navigation Warnings (TNWs) are published twice weekly, giving notice of airspace warnings such as air displays, military exercises etc, and outline details of Royal Flights and Temporary Restricted Airspace.

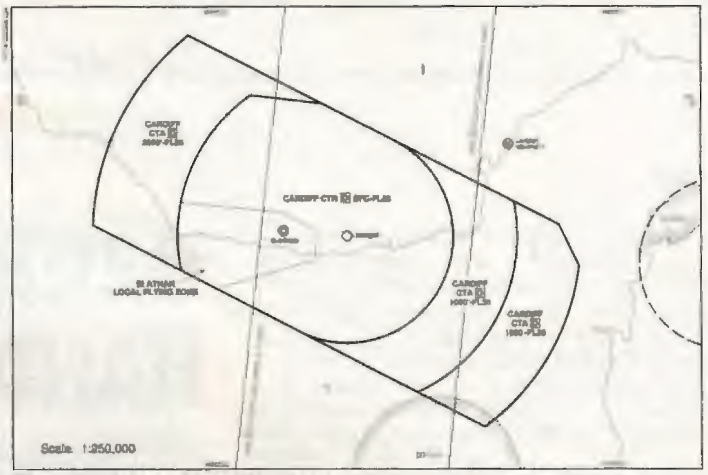


Fig 1. Revision of Cardiff Airspace.

UK Air Pilot Supplements (green pages - obtainable separately from whole **Air Pilot**) give full details of Temporary Restricted Airspace arranged well in advance for (*eg*) major air displays plus the dates but not the times of Red Arrows' displays.

Full details of Royal Flights are to be found in **Royal Flights NOTAMs.** A daily update of Royal Flights and Temporary Restricted Airspace is obtainable on the Freephone service (01500-354802).

All above are available from CAA Printing and Publication Services (01242-235151) except Royal Flight NOTAMS from AIS Heathrow (0181-745-3464).

Airspace Changes. The following changes have occurred since the publication of the article in the April 1995 issue, p72

There have been many changes in the north of England and southern Scotland area, mostly high level fillets, but a new airway B5, at high level, was established between Newcastle and the Scottish TMA near Talla. A welcome increase in the base of airway A2, south of Deans Cross, to FL95 also took effect.

Cardiff has had a large increase to its Class D area. See Fig 1.

Maps. The current editions of 1/2 million maps are; Southern England and Wales issue 21 (new edition due in early summer); Northern England issue 18 (new edition due in August) and the Scottish issue 16 (new issue due in December).

Again may I remind pilots that using the low level 1/2 million maps can very easily lead to the belief that most airspace has disappeared. **It has not** and I do not recommend their use for cross-countries.

Airspace Infringements. If a pilot is lost there is a service that he/she can call on at any time. It is **VHF Auto Triangulation Service** on 121.5, the distress frequency. This service can very quickly find an aircraft as long as it is about 3000ft or 2000ft anywhere near the London TMA. It covers from south of airway B1, Manchester to the east coast and east of airway A25, North Wales to Devon and down to the south coast. In 1994 they received 89 genuine calls and 1666 practice calls, which they welcome. If in doubt that you may be lost in controlled airspace they are there to help and can locate you almost instantly on 121.5. **We must all obey the rules or we may well lose freedoms that we presently enjoy.**

References. The information in this article is only a brief synopsis of the airspace rules as they affect glider pilots, and is believed to be accurate at the time of writing. In case of doubt, authoritative references should be consulted. These are: Air Navigation Order 1989; Rules of the Air Regulations 1991and **UK Air Pilot**, RAC section. **BGA Laws and Rules**, Edition 12, 1996 reflects the current legislation, but previous editions are now obsolete.

Abbreviations. CTA=Control Area; CTR=Control Zone; TMA=Terminal Manoeuvring Area (the lower limit of a CTA or TMA is an altitude or flight level above the surface, whereas a CTR extends to ground level).

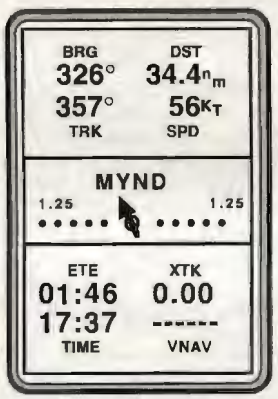
Definitely Way Off Track

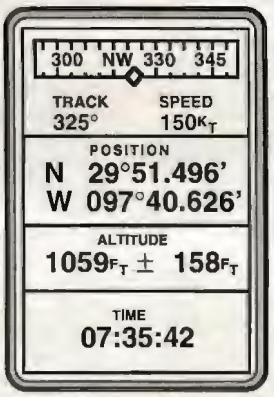
Showing commendable good sense, Penguin had temporarily vacated his normal roost for seasonally more pleasant climes when this issue was being prepared. But his views on gliding in the southern hemisphere can be expected in a forthcoming issue, should he bother to come back - Ed.

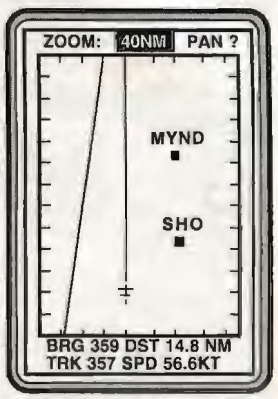
JULIAN FACK

GARMIN 90 HANDHELD GPS

A cigarette packet gives the Garmin's scale. The display shows the satellite status and battery state (empty) page.







The handheld GPS has undergone the same sort of transformation as the mobile phone, and both seem to have become indispensable to glider pilots. At first they were large, heavy in weight and power consumption, and expensive. Today they both appear to be in their third generation, operating for a whole day on one set of batteries, are truly pocket sized, yet cost a mere fraction of what they were just a few years ago.

Not only that, but they have sprouted a mind blowing range of options in the way they can be made to work, not all of which are easy to use.

The Garmin 90 I have been trying during last season is less than half the size (156x51x31, see photo) of the previous Garmin handheld models, the 55 and 95, and uses about a quarter of the power, up to 20hrs on internal batteries. It has a very clear liquid crystal screen which is exactly the same size as the previous models, but arranged in "portrait" instead of "landscape" fashion. It is also the only GPS I have tried which can be comfortably operated by and held in the same hand, due to its keyboard layout and narrow case.

It is quite different in operation to previous Garmins, having only six keys, and uses intelligent labels on the screen to inform the user of the keys' changing functions. It is much more logical than before, but some functions still take a little getting used to.

Entering a new waypoint takes rather longer, because of the need to scroll through the alphabet and the numbers, but this is largely overcome because most vendors will download a large part of the BGA TP database directly from their own computers as part of the deal. This saves a lot of time, as the Garmin 90 can store 250 of the user's own waypoints with all sorts of details about each. In addition it comes as standard with a very full Jeppensen database of airfields, NDBs, VORs and so on, as well as airspace restrictions, of which more anon.

It is all very well having a multiplicity of functions, and there are far more of those than I can cover in detail here, but how well does it work?

In a word, superbly. It has a speed limit of 999kt, unlike it's little brother the 45, which is limited to 90 (See the review in the last issue, p16). I have not tried the 45, but It's predecessor the 50 was not much use in gliding and Garmin eventually produced the faster 55. The problem is that it is easy to exceed a 90kt groundspeed, even in a fairly slow glider, when travelling downwind. Exceeding the limit will cause the 45 to temporarily lose its display and its data output, but it continues to calculate its position.The 90 has five main screens, a position page incorporating superb compass graphic, a moving map, a navigation screen, and so on. The map is fully zoomable and having selected for instance an airfield on the map, a single keystroke brings up all the details of that field from the database, such as runway lengths, surface, frequencies, and even fuel availability.

In fact the map is very interesting, showing airspace (see the line left of track on the drawing, which shows airway A25), and includes audible warnings about approaching it, but I found that for most gliding purposes the navigation screen was more useful. It tells you the name of your next TP, distance, bearing, track and speed, and displays a useful graphic showing which way to steer as well as your off track error.

As with all Garmins, but not some of their competitors, the basic kit includes almost everything you are likely to need, such as a neat holder incorporating a connection plug which can supply power as well as transfer data to a vario or logger. The same connection will also allow the unit to communicate with a computer for altering the database, or for inputting a task. It also has a small antenna which is easily removable, with an extension lead and suction cup mounting so that you can fix the antenna remote from the unit wherever you like.

I used the 90 to drive a Cambridge L-NAV vario, a Skyforce Locator and an EW barograph all at the same time, and had no problems with communication, although the L-NAV prefers to be powered up after the Garmin has got a fix. In case you think that logging flights electronically is just for competitions, I beg to differ.

Deflating to check afterwards

I used logging for all my flying in 1995, and keeping the traces to review later is both fascinating and instructive. It is easy to imagine that you climbed at 6kt and then made a heroic final glide home, and quite deflating to check afterwards that you actually averaged only 2.9kt, and took a couple of crafty but unnecessary turns which had been conveniently forgotten about.

It is even better to be able to compare traces with other pilots and find out where you lost or gained on them. It comes as quite a shock to discover that your scrappy thermal gave 1.1kt, whilst your colleague climbed at 5.9, just a couple of hundred metres away, and three minutes later. It is also very instructive to compare methods of rounding TPs by inspecting logs, and to check wind strength and direction at altitude by measuring drift in thermals.

The Garmin 90 has a form of logging built in. It is not suitable for anything more than personal interest, but will enable you to find your way back for instance to a wave "hot spot". It works by leaving a trail of dots on the moving map screen.

Almost all the functions can be set up to the user's preferences, for instance the map can display towns, airfields, VORs, NDBs, user waypoints, airspace and so on. All of these displayed at the same time would be pretty cluttered, so you can restrict it to whatever you choose. Another nice feature of the map display is Autozoom. This allows a map of say 80 miles across to be displayed during a particular leg, but it will zoom in automatically as you approach your turn, displaying more detail as you get nearer. It continues zooming in until the scale is one mile across the screen. The map can be displayed "North up" or "Track up", according to preference.

Special use airspace alarms are intelligent in that they take account of GPS height, and are configurable to some degree. They operate before you enter airspace, and even if you are flying past airspace at a distance of less than 2nm.

If this little unit is so wonderful, what are its snags? The screen text is sometimes a bit small, even though the LCD is one of the brightest I have come across, and the operation is not always intuitive, even though it is easier than some other units, particularly older Garmins. Since it can perform almost every function that might be required in flying, including vertical navigation, perhaps its designers have done as good a job as possible to make it easy to use.

It occurs to me that its best and worst features are one and the same - it is so cute and nice to hold that I am constantly aware of its likelihood of being stolen. Last summer TP cameras were taken from gliders in fields, and this is much more expensive and desirable, which brings me to the final problem.

It is not cheap compared to some units on the market, at about £470 + VAT as this is written (January 1996), but it is without doubt one of the most accomplished handheld units now available and I highly recommend it.

Its small size makes it easy to fit in any cockpit, and the wealth of information held in its huge database is very comforting. My thanks to RD Aviation for the loan of the test unit, loaded with 250 BGA TPs.

TAIL FEATHERS

It only hurts when I laugh, OR, the War of the T-shirts

Jill Burry, a heroic figure in women's gliding, very sadly (that is an understatement, let's try tragically instead) spent the last, spectacular UK soaring season flat on her back, not merely unable to fly but unable to move, because of a slipped disk. Her specialist said to her at the beginning of her four month trauma "This is only a wild guess, but you haven't been lifting the end of something heavy, have you?" and was baffled when his stricken patient went off into hoots of agonising mirth.

The last straw.

Although hundreds of rigs and derigs over 20 years could all plead guilty to a cumulative responsibility for her losing the entire 1995 season, she suspects that the last straw (all two hundred kilos of it) was an ASH-25 wing - somebody else's. I suggest that the surgeon's remark could be incorporated into a T-shirt with a cartoon of puzzled doctor and immobilised patient, so that when Jill is wearing it people will forebear from asking her to hold anything heavier than a tailplane. Of course I greatly overrate the humanity and decency of Lasham glider pilots: they wouldn't forebear for one moment:

"Come on Jill, the medics have fixed your back to last for the next 20 years. Now cop a hold of this Nimbus root and stop whining," - while others would stand and watch with hands in pockets, or take bets. "They say when Jill's back goes you can hear it in Basingstoke, so I want to be around when it happens." Yes, on mature reflection, there would be no mercy whatever.

Knackered vertebrae

A few years ago I arrived in a sunny foreign airfield, and in anticipation of great soaring in the coming week, promptly rigged my ASH-25 with the help of a single woman. (What has her marital status got to do with it? Ed. Thanks, I'll make the dumb jokes round here. Plat.) The ground was rough, muddy and rutted, which made the task much worse than usual, but we did it. Then as we were resting, a syndicate of absolutely charming grey-haired geezers swept in with their ASH-25, all of them exhausted by the burden of

They all had bad backs.

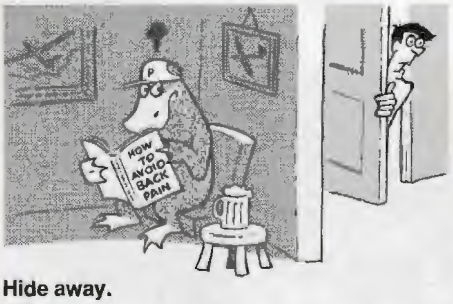
years, much travel, and lunch. Moreover they all had bad backs. Truly terrible backs, to a man. Every back with an official certificate of orthopaedic unrigworthiness. Could we help a little? Well, Marion and I could not refuse, and we found ourselves going through the same sweaty routine again, with the odd bit of hindrance from Dad's Army. Pooped is not the word. Amazingly our two backs took the strain - though will we pay for it later?

Machiavellian manoeuvres

The moral is, after having just rigged an ASH-25, don't hang around resting or chatting. Depending on the weather, rush your ship on to the aerotow queue and get airborne, or else hide away in the darkest recess of the bar. Or you can quickly don a Jill Burry T-shirt.

More ideas for 1996 to put off people who might approach you for a rig when you've just done yours, and you cannot bring yourself to say "No" bluntly:

- Attack is the best method of defence, such as a T-shirt proclaiming: "Where were you when I was rigging my bloody glider?"
- T-shirts with a price list stating pints/litres of beer charged per tonne lifted.



Hide away.

- Long-sleeved shirts and jeans printed to look as if your arm or leg or torso (that's the bit between the arm and the leg) is heavily bandaged or in plaster.
- In hot weather, artistic tattoos or transfers that look like multiple sutures and hideous discolouration after a fairly recent compound fracture.
- A well-deserved reputation for eager, good-natured clumsiness. You know, like a big stupid dog. As Mrs Plat said 20 years ago, you can get lots of peace and quiet once you have dropped the odd wing.

You are already asking "Aren't you giving ammunition to people who will refuse to help you when you need it? This looks like an own-goal policy, Plat". You are so right, but I have thought about it:

- Always have access to a two-seater, even if your main ship is a solo machine. Then you can bribe people with the promise of flights in the two-pew. Even an open air flip in an old T-21 is fun, and very popular. But keep your promise, and soon.
- Your T-shirt can say "My other sailplane is an ASH-25 (or Nimbus 4D, or T-21, or whatever)." It is a good idea if these claims are true. T-shirt credibility should be maintained. Facetious T-shirts undermine the effectiveness of this important communication medium for those of us who are shy and tongue-tied. Downright silly T-shirts on the airfield might have to be policed.
- Your T-shirt can carry your own Offer beer-per-tonne price list, which will naturally be less extravagant than the Bid beer-per-tonne price list that you wear when other people want a rig from you. What if another guy is wearing a Bid shirt?

Good-natured clumsiness.

No problem: the two of you can now negotiate a brokered deal. The agreed exchange rate will depend on whether it's a 1000km day or only marginally worth rigging at all.

Clearly you need at least two T-shirts or maybe a drawer full of them (like signal flags in the Navy) which I shall market through the BGA or RD Aviation. Bulk orders at special discounts, of course.

The meek shall inherit...

Lastly, if none of this gross, self-serving behaviour appeals to you, I suggest you turn away from it all and re-read the Bible. Memorise the Sermon on the Mount. And say thirty times before breakfast every day "Rigging is its own reward". No glider pilot has yet been canonised, at which I am not at all surprised, but there's your big chance. You could become the very first saint in our movement.

If that's your inclination, I think I have got just the T-shirt for you.

A number of contributions to S&G are still going to the BGA at Leicester and not to the editorial office - 281, Queen Edith's Way, Cambridge CB1 4NH

BILL SCULL

CONTROL CONNECTIONS

From time to time there are incidents and accidents, some fatal, because the pilot has failed to connect a control properly or, maybe, not at all. In this article Bill covers rigging, daily inspection, control checks and the policy, or philosophy, of whether to lock the control connections with some suitable device. He forces home his message with a collection of grim panels showing what can happen when absolute care isn't taken

Rigging the modern glider could hardly be simpler. In the latest designs the controls connect automatically; the slightly older gliders may have separate connections for ailerons, flaps and airbrake. Even if one has to make control connections, rigging seldom takes more than a few minutes which is in marked contrast to the old, strutted gliders.

Perhaps this simplicity results in the failure to connect the control. In essence, rigging the glider becomes the DI. It shouldn't but it does. One way to combat this lackadaisical attitude is of course to complete the rigging, walk away and then do a DI as if you had just got the glider out of the hangar. But we don't need to be that pedantic do we? But the accidents tell another story.

Accidents

The accidents show the potential problem:

The V-tailed glider had been rigged that day and already flown once. On the second winch launch, at about 800ft, the left tailplane was seen to rotate through 90° causing the glider to pitch up and enter a spin from which recovery was not possible. The locking pin was not correctly installed allowing the tailplane to move.

The technical aspect in this case was that the locking pin could be through the tailplane without engaging the mounting/drive shaft. Not exactly a fail-safe design. In this accident the pilot had no chance at all. The positive check for this design would be to try and pull each tailplane half off its mounting to establish that the pin was actually locking it in place. Since a visual check is virtually impossible the importance of the positive check is paramount.

In some cases the lapse may not have serious consequences. I've talked to some very experienced pilots who have coped with a disconnected aileron and even continued with a cross-country flight. However, the outcome can be fatal.

The glider had been rigged on the day of the accident and the appropriate pre-flight checks carried out, including a positive check. On take-off the left aileron connection in the fuselage became detached. The aileron vibrated and set up a wing oscillation. The pilot abandoned the aerotow and turned to get back to the airfield. During the turn the glider spun and crashed into trees.

It is a matter for speculation as to whether, if the pilot had not turned or turned more gently, he could have controlled the glider and landed in a field. The tragic thing about the accident is that there was definitely a positive control check. It is also evident from bench tests that if the L'Hotellier connection had been properly assembled then it would not have come off. **We know that a partial connection is possible.** Incidentally, the glider was a Std Cirrus and there weren't any locking pins. More on this point later.

If the elevator is not connected the outcome will be serious and sometimes fatal:

After a shallow winch launch the glider flew unusually fast and low along the ridge (which was working) with occasional pull-ups before diving into trees at the bottom of the ridge. The locking pin for the elevator was found on its string and had not been fitted. The elevator was not connected.

Some pilots who make the same mistake get enough height to bale out, even from a winch launch. On aerotow there is the risk of a towplane upset but usually the glider climbs steeply before the tug is airborne and either the glider pilot or the tug pilot releases. The glider's attitude when it strikes the ground is a matter of luck - usually the pilot is not injured.

So there aren't too many variations on the basic theme. While the mind may boggle at anyone making such a mistake, failure to connect the controls happens with monotonous regularity. So what's **your** policy, or even philosophy, regarding the locking of control connections?

A policy or philosophy

It is relatively easy in the context of club gliders to have a system which seems satisfactory. Most gliders are kept rigged and although the practice may include a positive control check, the situation is hypothetical if the glider was already rigged.

So do you lock the L'Hotellier connections on your glider? No? You wouldn't make such a stupid mistake, would you? Yet very experienced people do. For example:

The glider was rigged but no independent positive control checks were made as it was not to be flown. However, later in the day the pilot decided to fly and on aerotow found there was no elevator control. After considerable difficulty (having released from tow at 2500ft) the pilot jettisoned the canopy and struggled out of the cockpit to make a safe parachute descent.

This was a combination of luck (that the glider towed satisfactorily without elevator control) and presence of mind in baling out, despite the difficulties.

The message

So there are three clear lessons to be learned:

1. Walk away after rigging. Come back and do a DI.
2. Carry out a positive control check.
3. Fit locking/safety pins to all connections.

Locking L'Hotellier connectors

If there is provision for locking a connection then why not use it? It is interesting that in Germany locking L'Hotellier connections is mandatory, required by an Airworthiness Directive.

Some people will argue that it's difficult in certain gliders, like the ailerons on a Std Cirrus. I was almost convinced that it was until I talked to a syndicate at Lasham. "No problem" they said, and it isn't. All right, you do it by feel but one must surely be reassured by knowing a locking pin is in place.

The method

So what are the problems? To some extent the answer depends on the configuration - whether the control run, including the connection, is straight or involves a change of direction. For the in-line control run, the simple plastic clip shown on the opposite page is a good option.

Fig 1 shows the clip in the connect position. The ball end can be inserted in the socket.

Fig 2 shows the clip rotated through 180°. In this position it serves as an additional lock.

This is a Glaser-Dirks design and available from the agent, as are the other options.

The safety pin comes in more than one form. The simple D clip is best attached by a cord to the body of the connector, thus avoiding dropping it. See Fig 3 for the pin hanging free and Fig 4 with it in place. It's worth noting that in some older gliders there may not be a hole drilled in the locking lever or wedge of the L'Hotellier. If you are going to modify the connectors on your glider then the locking hole should be drilled with the connector assembled, *ie* the ball in the socket. If you drill the hole with it disassembled then it may not be possible to get a pin through the hole, which rather defeats the object of the exercise.

A variation on the locking arrangement is with a clip which is fastened to the body of the

Fig 1.

Fig 2.

Fig 3.

Fig 4.

Fig 5.

Fig 6.

Fig 7.

L'Hotellier as in Fig 5. This arrangement helps to locate the pin in the hole.

The final option is designed by Klaus Wedekind. The locking sleeve is spring-loaded; it has to be pushed back against the spring to engage the ball and socket (Fig 6). Once released it covers the wedge, thus immobilising it (Fig 7). The sleeve will not spring back if the ball is not properly engaged in the socket.

Other possibilities

So far only two possible "failure cases" have been considered - failing to make the connection at all or a partial connection. The DI and the positive control check guard against the former and the locking device against both.

The third case is when the connection is properly made but not locked. Apparently the connection can disengage under load. I have never been convinced about this until told about a positive control check on a K-21 elevator.

Seemingly when the control circuit is loaded the wedge will move. While it may be difficult to achieve similar loads in flight there is some evidence to suggest that a disconnection under load is possible. Yet another good reason for using one or other of the locking methods.

Finally

Are you convinced? If not then evidently you're prepared to accept the risk, however unlikely the possibility of **you** making a mistake. This psychological state is known as: "invulnerabilty". On the other hand you might decide that locking the L'Hotellier connections on your glider is a good idea.

There may be something behind the Luftfahrt Bundesamt making the requirement to lock them mandatory.

DEREK FLYING THE EA9 FROM LASHAM

Terry Joint took this photo of Derek Piggott flying the EA9, designed by John Edgley, during the Lasham Regionals last year. Derek, who came 3rd in Class B, said the glider handles like a K-18, which it resembles, but the structure is entirely different. It is almost entirely built with Fibrelam, a composite sandwich panel used primarily for commercial aircraft flooring. The aim was to get the weight down to that of a traditional wooden structure while using modern materials. John was the designer and builder of the original Optica aircraft and he sees a market for the EA9 as a mid performance sailplane for flying club use, both in its present form and developed as a two-seater. The construction method is ideally suited to both factory and kit building. John would be interested to hear from potential business partners and can be contacted at Till Cottage, Winterbourne Stoke, Salisbury, Wilts SP3 4TG, tel 01980 620324.

DEATH OF THE LOGGER

"The report of my death was an exaggeration" (cable from Mark Twain to the Associated Press, 1905)

As far as the International Gliding Commission (IGC) of FAI is concerned, the term logger is indeed dead. Unlike Mark Twain, no exaggeration. Do not panic, but read on...

I had to choose a title for this piece and as it is about IGC rules (boring, boring, get off, take 'em off, etc), I needed to stir the pot a little. I thought of asking Gillian to put the preamble on one page, forecasting the demise of GPS, and then put the boring bit on another page tucked obscurely at the back. So, here goes, you have been warned. But the logger is indeed dead, in international circles. Here is why.

Last year the BGA nominated me for one of the IGC committee jobs which comes up occasionally. These often involve a lot of work and plenty of flak, and this one is no exception. On the basis of my article in the December 1994 issue, p318, about testing a GPS logger, I was "volunteered" for the IGC committee formed last March to approve such loggers on behalf of IGC for the purpose of validating record and badge flights to **Sporting Code** rules. The five-man committee then had to elect a chairman and, as the others members sensibly ran rapidly into the distance, that left me holding the hot potato.

Using the right nomenclature in an international forum is important and it may differ from colloquial use. Because GPS is a USA system and there is a Russian equivalent called GLONASS, the proper generic title for such systems is Global Navigation Satellite Systems or GNSS. It is of interest that GLONASS is more accurate than civil GPS because the Russians do not degrade signals for civil use unlike the US DoD with its Selective Availability (SA) built-in random error of some 100 metres. Those of you who look at internet newsgroup sci. geo. satellite-nav will see what many US taxpayers think of that particular function of the DoD, expressed eloquently and often. SA may yet be turned off, decreasing errors to some 10 or 15m Because IGC is an international body, its rules have to be translated into many other languages.

Sporting Code rules, for instance. The term "logger" has caused confusion when translated, and so in IGC and FAI terms a GPS logger is now called a GNSS Flight Recorder or GNSS FR. So, unlike Mark Twain, the term logger is dead, killed by the interpreters who insisted in translating it as lumberjack or something similar, to confusion in the nation concerned.

IGC GFAC. The IGC sub-committee I chair is therefore called GFAC, which stands for GNSS FR Approval Committee. (I said it was boring, didn't I. It probably gets worse but if you own or are thinking of buying a GPS or logger, sorry, GNSS flight recorder, it might just pay you to grit your teeth and read on.) The other members of GFAC are Arnie Hartley (Australia), Kilian Grefen (Germany), Angel Casado (Spain) and Mike Strang (USA). Our job on behalf of IGC is to conduct and supervise test and evaluation of GNSS FRs to see whether they fulfil IGC criteria. These were laid down last year as part of Amendment 3 to the **Sporting Code**, which introduced rules for the first time allowing GNSS FRs for badge and record flights. Security of data and anti-cheating protection had to be part of the deal. These are not a problem in GNSS equipment bought for normal navigational use, but unfortunately IGC and FAI have to take these factors into account.

BGA Comps. But, you may say, we have been using FRs in BGA Comps for the past four years. In the UK such rules come under the BGA Competitions Committee, not IGC Comps rules and do not necessarily have to comply with the **Sporting Code**, although generally they do unless there is a good (Comps) reason why not. Winning Comps flights are often not eligible for **Sporting Code** achievements such as badges or records. Take start heights as an example. A winning speed flight in a Comp would count for nothing in IGC terms if height loss from the start-line was more than 1000 metres. It is the same principle with GNSS FRs. OK in the past for Comps but not, until last October 1 (the action date for Amendment 3), for **Sporting Code** achievements.

IGC GFAC Approvals. So what has GFAC achieved? Well, the most significant event was the issue on January 16 of the first IGC approval for a GNSS FR to be used for IGC records and badges. This approval covered the Cambridge Models 10, 20 and 25. This was as a result of extensive test and evaluation of the equipment by GFAC members and associated experts, and extensive negotiation on the terms and form of IGC approval.

IGC Approval Documents. Approval documentation consists of a description of the hardware, firmware and software standards, conditions of approval and two one-page annexes, one for pilots and the other for aero clubs (*ie* the BGA) and OOs. It is recommended that a copy of the IGC approval is kept with each FR. The annexes for pilots and OOs are designed to be helpful in reminding people what has to be done both before and after flight in order to comply with IGC procedures for FRs generally and the approved equipment in particular. My syndicate owns a FR so I have an interest in such procedures being practical. I believe they are and I intend to use them for record attempts. Use GNSS to throw away the camera and save time by turning tight.

Publicity for approval. As soon as the exact terms of an FR approval are agreed, the master copy will be signed and sent to FAI for copying and mailing to aero clubs and IGC delegates. At the same time, an ASCII version will be emailed to FAI and sent to FAI's IGC email mailing list. Also an ASCII version will be placed on the Internet newsgroup rec. aviation. soaring (r.a.s.). The hard copy signed version distributed by FAI will be definitive.

Other GNSS FRs. As this goes to press, GNSS FRs from Peschges and Filser (Germany) and Print Technik (Austria) are being tested. EW Avionics (UK) have stated that they will be submitting a unit shortly. Four potential GNSS FR manufacturers have asked for application forms and two other organisations have expressed an interest in designing a GNSS FR to IGC criteria.

Which FR to buy? It would be improper for me to make any comments on what to buy. However, the consequences of buying a system which may not be approved by IGC are obvious. You may have a navaid (the GNSS) and a flight analysis system (the FR and analysis software), but not a method of producing evidence for IGC badge or record flights. The BGA Comps Committee has the freedom to approve other systems for BGA competitions and is not necessarily tied by these IGC approvals. But for IGC record and badge purposes, the BGA must follow the IGC approval system.

GNSS FR evidence procedures. Now that the first IGC approval has been issued, the BGA is considering what procedures they will use and what evidence they wish to be submitted for claims. This will be announced separately.

GNSS FR data file formats. In BGA Comps, the so-called UK .dat ("dot dat") data file format has been used. As part of **Sporting Code** amendments in 1995, the new IGC data file format was given in the stand-alone Annex B to the **Sporting Code.** All IGC approved GNSS FRs must have an IGC-standard date file output, since this is intended to be the future world standard for IGC flight data. This IGC file has the suffix ".gps", but the IGC will decide in March whether to change it to ".igc".

A complication is that the FR manufacturer may have a proprietary file format in addition to the mandatory output in IGC format. This proprietary file may be in binary code (the IGC-standard is in ASCII) and may only be readable by the manufacturer's own software.

Analysis programme for the IGC file format. Some FR manufacturers may choose not to have a proprietary analysis programme, relying on customers to use the IGC file format with analysis programmes produced independently of the FR manufacturer. Also, to minimise the workload of BGA or FAI checking officers and committees, a standard analysis programme will be desirable so that one programme is used instead of many. Programmes using the IGC file format which are known at this time are given in the table opposite. No assessment of these programmes is made and market forces prevail.

In conclusion, the IGC system for approving GNSS FRs has finally given birth. This article is intended to describe the infant and its future prospects. Watch this space!

GNSS FR ANALYSIS PROGRAMMES WHICH USE THE IGC DATA FILE FORMAT

The analysis programmes capable of manipulating the IGC file format known as we go to press are tabulated below, and information on other programmes is invited. No FAI, IGC or BGA approval or guarantee of quality or facilities is implied. The list is published for information only and normal commercial considerations apply.

Name of programme and approx cost	Manufacturer	Tel/Fax/Email	Remarks
FlightCheck 96 (FC96), £53.	Specialist Systems Ltd, (Tim Newport-Peace), 32 Fernhill Lane, Camberley, Surrey GU17 9HA	Tel/fax 0127633706	Designed in 1993 and approved for use in BGA competitions, now being optimised for badges & records. New version February 1996.
TaskFinder FR Analysis, £60.	TaskFinder (Ken Sparkes), 12 Spitfire Close, Bicester Oxon OX6 7XU	Tel/fax 01869 325 222 eagle@taskfinder.win-uk.net	Windows based. Designed in 1995 and approved for use in BGA competitions, now being optimised for badges & records. New version in February.
CAL (Computer-unterstuetztes Auswerten und Platen von Liestungsfluegen). Price, see remarks.	Hans Trautenberg, Software Consulting, Flurstrasse 14, 92348 Berg, Germany	Tel +49 941 949 211 Fax +49 941 930 792 hans.trautenberg@physik. uni-regensburg.de	Modular programme also for flight planning with add-on map modules. Flight planning 245DM. Analysis 100DM. Developed 1995
TaskNAV v4.03, £40, outside UK, POA	D J Robertson, 20 Duffield Lane, Stoke Poges, Bucks SL2 4AB	Tel 01753 643 534 Fax 01753 645 218 100327.2014@compuserve .com	Programme in use since 1993, now being optimised for IGC file format. New version available from February.
EW View for Windows, about £55.	EW Avionics, Seymour Barn, Widmere Lane, Marlow, Bucks SL7 3DF	Tel 01628 485 921 Fax 01628 477 999 100534.1450@compuserve .com	Windows based. New in February.
Cambridge Analysis. Price to be notified.	Cambridge Aero Instruments (CAI), RR Box 109-3, Warren, Vermont 05674, USA	Tel +1 802 496 7755 Fax +1 802 496 6235 cai@cerfnet.com	Available spring 1996

REVIEW

LogStar V3.4e by John Hale and from Turnpike Technics, 73 Old Turnpike, Fareham, Hants, PO16 7HF, Tel 01329 221992 at £32 including p&p.

LogStar is a DOS based glider pilot's logbook and to avoid beating about the bush, it's excellent. The result of 18 months of continual revision and incorporation of users' own suggestions, LogStar is very user friendly and seems to do everything you'd want, automatically and without the need to learn about database design or report scripting techniques. On-line help is available, but it's intuitive enough to use within a few minutes of installation. The author, John Hale, is an experienced instructor whose ten years in software development clearly shows in LogStar's ease of use.

Data entry is simplified by selecting the glider, launch method, pilot status and airfield from automatic context sensitive pop-up lists. This avoids the major problem with databases of forgetting to use a field or miss-typing an entry and then not finding it in a search or report. *Eg*, entering P2 in a K-8, or was it Ka-8, K-8, or ASK8?! Luckily global corrections can be performed. These lists can easily be edited within LogStar to add new types and sites. Identical flights can also be entered simultaneously as, say, 30min - six flights, to produce six separate identical 5min entries. These and other refinements make data entry very rapid and foolproof, (unlike the American program SoarLog which will accept clearly erroneous combinations of data). Individual records are easily edited.

Flight data is displayed in scrollable list view, *ie* standard logbook format with additional information on the currently indicated flight below this. Running totals of solo, P2 and P1 dual to the cursored flight are displayed and continually (and instantly) updated, with a menu on the bottom line.

Many statistical reports can be generated automatically, and very quickly (even on an old 386sx with over 1000 flights entered) based on pilot status, glider type, site and the like, all sorted in various ways (*eg* number of flights, hours or kilometres). These reports are very comprehensive and summarise your flying very conveniently.

Yearly and instructor's returns can easily be collected and printed with LogStar, with user selected start dates. Graphical presentation of some of this data and customised logbook printing is also possible. A currency rating can be calculated using a method suggested by the RAFGSA. You can even create user defined reports from a very easy to follow sub-menu that covers every possible combination.

None of the similar programs on the Internet was good as this. Altogether a very useful, comprehensive and strongly recommended piece of software. See advertisement below.

JOHN WRIGHT

UK GLIDING CLUB SITES

Wolds GC taken from the south looking north with Pocklington in the background.

Above: Lincolnshire GC's Strubby Airfield with its grass extension, showing runways 14/32 and 08/26. Below: Usk, home of South Wales GC, looking east.

Above: Highland GC's site, Easterton Airfield taken from the SSE. Note the distillery roofs to the north. Photo: Martin Knight. Below: Vectis GC at Bembridge, Isle of Wight.

In the last issue, pages 30-31, we had the first of this two-part feature. Unfortunately we found it difficult to get pilots to agree on some of the orientations and a printing error gave Lasham in the opposite direction. So this time where in doubt we are just giving the name of the sites.

Above: The Midland GC's Long Mynd site looking NNE.

Peter Foster covers many kilometres in two-seaters during the season and has kindly sent us this selection of club sites. But we are playing safe and letting you work out for yourself the orientations! Top left: Shropshire Soaring Group at Sleap. Top right: North Wales GC at Bryn Gwyn Bach Farm. Bottom left: Marchington GC at Tatenhill and bottom right: Staffordshire GC at Seighford.

GPS - THE EMPEROR'S NEW POSITION?

Julian warns pilots not to be misled into thinking their GPS will give absolute accuracy

From October 1995 the IGC has agreed to accept GPS measurements for the verification of both badge and record flights. However, the GPS units used in gliders are only navigation aids with a quite remarkable but somewhat less than perfect accuracy. Only when operated with an external antenna and as differential GPS, which eliminates most sources of error, do they have the degree of accuracy required by the current **Sporting Code**. Standard GPS seems just as good only because nobody normally bothers to check its absolute accuracy. Although most of the time this accuracy is better than a hundred metres, I have seen errors of several hundred metres.

How GPS works

As most people know by now, a GPS set determines position and height by measuring the journey time, and hence distance, taken by signals broadcast from four or more GPS satellites. The orbiting satellites also regularly download an ephemeris of their own positions at any given time. Although a three dimensional position only requires three measurements, a fourth is necessary to calibrate the quartz clock in the set. It can give a horizontal position with only three satellites, but with less accuracy unless the correct height is set manually.

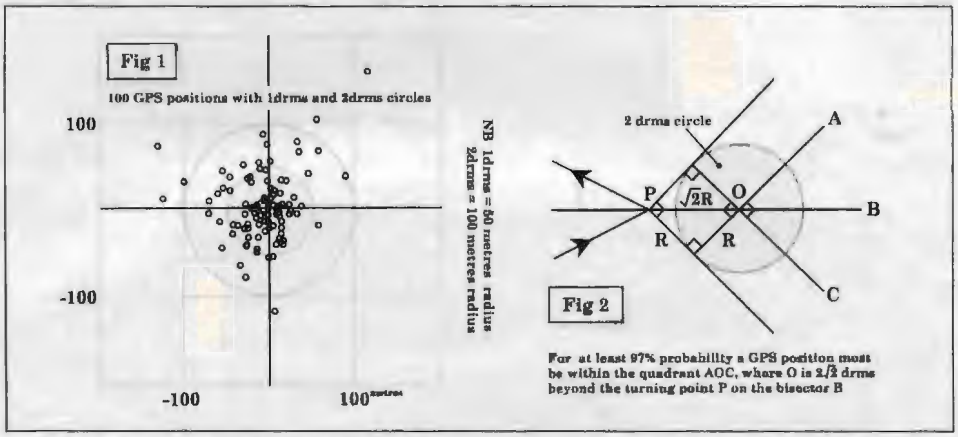
Lies, damned lies and GPS

Because of measurement errors, the co-ordinates displayed do not represent the true position. The problem is a statistical one, and an appropriate circle of confidence can be drawn around the apparent position to give the desired probability of the true position lying within it. The bigger the circle radius the higher that probability, and a radius of 1drms (distance root mean square) gives a probability of 68%, while a radius of 2drms increases this to 95%, as shown in Fig 1.

In practice, there are several error sources that combine to reduce the accuracy of the GPS position displayed. The best known is the deliberate degradation of the signal to give a random horizontal error (100m, 2drms), which is now permanent. This means that, discounting other errors, there is a 95% probability of the GPS aerial being located within a circle of a 100 metres radius centred upon the displayed position. To increase this probability to 99.9% would require a circle of 300 metres radius!

Other errors include instrument error (15m, 1drms), abnormal atmospheric refraction (up to 30m), orbital data (ephemeris) errors and satellite atomic clock drift. Taken altogether these errors lead to the oft quoted accuracy of 35 metres (1drms). However, this figure does not take account of errors due to poor satellite geometry and weak signal strength. To cope with this particular problem the Garmin 55 calculates an estimated position error, based mainly on these two factors, and ceases to give a position if it exceeds 500 metres.

The position displayed is smoothed by a filter, whose time constant can be selected either automatically or by the user, and dynamic performance is further improved by including a dead-reckoning algorithm. Thus a GPS set does not show measured GPS positions but smoothed GPS positions in combination with a dead-reckoning correction. This only improves the accuracy if the set is stationary or moving steadily in a straight line. However, if the speed and/or direction are changed rapidly significant positional errors can occur. This makes it possible to "throw" a GPS position into the TP sector by approaching it at high speed and then turning abruptly away shortly before getting there. The problem is made worse by cockpit mounted aerials that are prone to be cyclically shielded from satellites whilst circling.



Blind datum

More of a problem abroad than in Great Britain is the error due to an incorrect map datum (up to 800m). The correct datum is that of the 1:50 000 maps used to determine the co-ordinates of the TPs. When flying at home this datum is the Ordnance Survey of Great Britain 1936, but what is the correct datum when flying abroad? It should be marked on the 1:50 000 maps, which you probably haven't got, and may or may not be listed for your GPS. For example, there are two possible European datums, European 1950 and 1979. On 1:50 000 maps it simply states European datum, which means that it is the former. The difference between the worldwide WGS 84 datum and the European 50 datum is about 115 metres.

The rules of the game

According to the **Sporting Code**, a TP is not just a set of pre-declared co-ordinates but a well defined feature on the surface, which is precisely specified before take-off. Its position must be determined with sufficient precision for the task distance to be measured to at least an accuracy of 500 metres. If this rule were to be changed to allow pre-declared co-ordinates for flights recorded by GPS, this would at least enable the precise determination of task distance and eliminate the problem of an incorrect map datum. However, to attain the same accuracy for the distance actually flown around three TPs, GPS would need to be accurate to 83 metres (500/6 metres) or less.

The observation zone is a quadrant on the ground with its apex at the TP, and is rounded when the entire aircraft is proved to have been above the observation zone. This requirement of proof is the heart of the problem with GPS TP verification. Whilst a TP photograph can prove whether or not the entire aircraft was above the observation zone, a GPS measurement cannot. This is because, although it is remarkably good as a navigation aid, its absolute accuracy is always uncertain, unlike that of either a photographic or a geodetic measurement.

Rounding with confidence

If GPS positions indicated the bisector was crossed precisely at the TP, then there would be only a 25% probability that the aircraft really had been within the observation zone. Similarly, if a GPS position was on the edge of the zone well away from the TP, then this probability would still be only 50%. Thus, if standard GPS is to be used for TP verification, the observation zone needs to be penetrated by a distance sufficient for there to be almost 100% probability that the entire aircraft was within the zone.

If, as shown in Fig 2, a circle of confidence with a radius R equal to 2drms is drawn around a GPS position then, provided that the entire circle falls within the observation zone, the probability that the aircraft was within the zone is at least 97%. This is more than 95% because some positions outside the circle still fall within the zone. In practice, at least one logged GPS position needs to lie within the observation zone AOC of a pseudo TP O, which lies on the bisector B

at a distance $2\sqrt{2}$drms beyond the actual TP P. The degree of certainty should then be adequate for badge flights, but is still not good enough for records.

In view of the error sources described above, in absolutely ideal circumstances the radius R of a 2drms circle of confidence is about 140m. But for a standard GPS set with a cockpit mounted aerial, R can be much larger than this and may even exceed 1km. This means that the bisector needs to be crossed at least 1.5km beyond the TP. Alternatively, the measured distance could be reduced by 3km/TP so as to allow for the inherent uncertainty in standard GPS positions. Anyone who thinks that this is unfair should take TP photographs instead.

As a much higher standard of accuracy and proof is required for records, standard GPS positions should not be accepted for their verification. For the same reason, standard GPS sets should not be used on the ground, where their accuracy is worse than in the air, to determine TP co-ordinates officially. A 1:50 000 map and, if necessary, an aerial TP photograph always give more precise values for the co-ordinates.

GPS with a difference

With differential GPS (DGPS) the differences between standard GPS and true positions are broadcast by a ground station, thereby eliminating almost all possible sources of error. This makes DGPS more accurate than even the military version. Thus, provided that signals were received at each TP, the verification of both badges and records by DGPS might well be acceptable without restriction. It is planned to set up a chain of DGPS stations, which will be made available for a hefty annual fee, around the coasts of Britain and the Continent. So perhaps the BGA might be persuaded to place a DGPS transmitter on the roof of their Leicester office.

An economical alternative to DGPS would be to record the differential corrections at the take-off site, and then to correct the flight recorder data later during analysis. Provided the two sets of data are correctly synchronised this could be more accurate than even DGPS, as it eliminates the time delay inherent in transmitting differential data. Also, since the pilot doesn't know his exact position, he will need to round the TP correctly because at the end of the day the official observer will know within 35m (2drms) where the glider has really been.

SHOBDON "444"

Brian, who flies an ASW-24, set himself a gliding goal he feared he wouldn't make

Targets can be helpful but not always. Let me explain. Back in 1990 I had a great season when I completed my Gold badge with a height from Portmoak and a 500km from Lasham.

With all the paperwork sorted I finally achieved Diamond distance No.444 Now the easy part I thought - the height. I set myself a target of achieving the Diamond below No.444. It was quite simple I thought as I had some 200 numbers in hand.

Well you've guessed it. My trips to Scotland increased but my Scottish luck abandoned me - interesting flights but no Diamonds. As time went on my thirst for the height was replaced with a need to fly as much cross-country as possible and as holiday time was at a premium wave hunting was abandoned.

However fate sometimes interferes. Diana and Phil King joined my home club, Stratford on Avon in 1993 and persuaded me to park my glider over the winter at Shobdon (home of the Herefordshire GC).

Shobdon, though a small club, welcomes all visitors with open arms and provides excellent help and advice. Early on Phil gave us a memorable lead and follow identifying the local wave sources. This was quickly turning into a more reliable form of wave hunting and January 1994 gave me my best flight to date with 17 5000ft. (Don't you just know when you should have pulled off tow earlier!)

Time was moving on and Diamond height numbers were flashing past - perhaps I would have one last winter to try to beat my target. The winter of 1994 was wet with those miserable south-westerlies, week in week out. I had to wait until early 1995 for the first taste of wave again.

Phil 'phoned on February 11 to say that Sunday could be promising.

The day started overcast with drizzle but near Shobdon the sky broke into a large gap with around 20 miles of clear air. I was the first to arrive but with a 25kt SW wind and a large dark cloud mass overhead I was unsure whether to rig. However, as I was putting on the wings two trailers arrived from Talgarth. Their tug had gone u/s and they were tempted across as they had spotted a fantastic wave bar spreading from Talgarth to Shobdon. A 500ft tow should do it.

I was the first single-seater away but dismissed the chance of a low launch as it became apparent that cloudbase must be 4000ft and following Phil's advice towed to 4500ft. I released in 1kt but was quickly enveloped in cloud. I pressed forward into wind to climb again, but I couldn't keep ahead of it. Then a helpful comment came over the radio - "Do you know there's a 60kt wind at 4000ft?" Well that solved that problem and moving forward at 90kt gave 4kt to 10 000ft.

By this time Phil and Richard Palmer passed me and moved forward to the primary wave ten miles upwind to the lee of the Black Mountains.

"Better get here", they said, "there's an 8kt average!" They did not mention the sink though and I quickly lost 5000ft in the 65kt headwind. However as I hit the 8kt lift taking me to 20 000ft I couldn't complain. That is until I lost it. After a frustrating 5min I found a 2kt average that took me to 21 500ft for a Diamond. Still climbing I broke off as Shobdon was now closed to traffic due to a severe weather warning and gusts of 40kt. The pundits stayed and climbed to 26 500ft.

Oh and the Diamond badge number? Yes, you've guessed it - 444.

Thank you Shobdon.

TOM BRADBURY

A RECORD SUMMER

Tom recalls the build-up last season to the record breaking day of July 22 and describes just what the conditions were like in the hope that pilots will be able to recognise in good time the advance of the next classic gliding weather

Summer 1995 was a good year for soaring. The numbers of badges increased greatly and many competitions hardly lost a day's flying. During the soaring season there were some 53 new Diamond distances, many 750kms and the first 1000km flight. However, the weather did not become outstanding till well into summer.

Previous good summers

There have been some 12 really good summers over the past century. These are the good years: - 1893, 1899, 1911, 1921, 1929, 1933, 1949, 1959, 1976, 1984, 1989, and 1995. Fig 1 shows a graph of sunshine and rainfall for central England, (represented by Birmingham) for the 28 years from 1968-1995. The four peaks are labelled with the year. Underneath the sunshine graph is the summer rainfall plotted (on an inverted scale) so that dry summers are at the top and wet ones near the base.

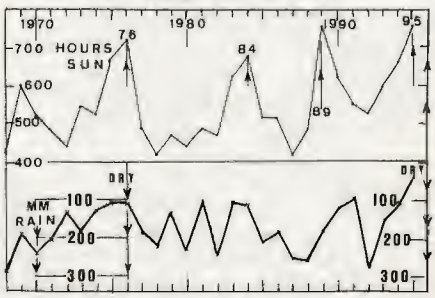


Fig 1. Summer sunshine and rainfall at Birmingham from 1968-1995. The rainfall scale is inverted to show dry spells as peaks.

Drought

Drought is good news for soaring pilots. Several of the peak years turned out to be drought years too. Since about 1970 the summer rainfall has decreased over England, particularly in the south-east. Serious drought is usually caused by rainfall deficit over successive years, not just a single year.

Over recent years the best remembered drought was in 1975-76 when the mean temperature for the whole of central England was the highest for 300 years. Between 1989 and 1991 there was another drought in the SE of England and the media showed pictures of dry river beds. The 1995 drought seemed to cause most trouble in Yorkshire.

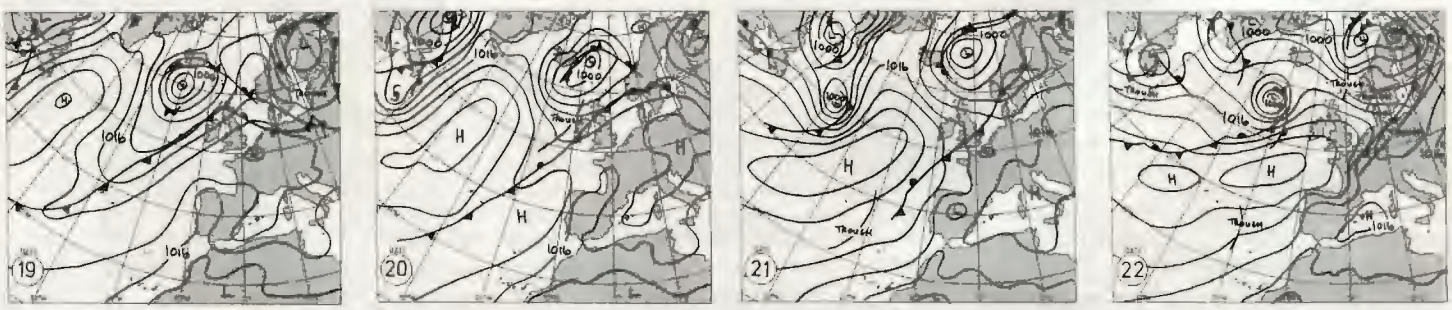
Hot spells

There have been several hot spells as well as droughts. July 1983 gave us the highest average monthly temperatures for central England for more than 300 years.

In 1990 there was a record breaking heat wave at the beginning of August with a maximum of 37.1°C (98.8°F) at Cheltenham on August 3. Hot days are greeted with delight by the BBC forecasters but they are seldom good for very long flights because convection usually starts too late. The drought of 1976 gave us a famous soaring year; an 800km O/R was flown by Chris Garton and some pilots flew 500km on successive days. There was also the first (but undeclared) 750km triangle.

Photo A from Dundee University showing the cloud cover over England and Wales at 1319GMT on July 22, 1995.

Below: Fig 2. A sequence of charts for July 19-22 from the magazine *Weather* reproduced by permission of the Royal Meteorological Society.



1995 WEATHER SUMMARY: The previous winter 1994/95

Many years ago the Long Range Forecast Unit at Bracknell noticed that hot dry summers were, more often than not, preceded by mild wet winters. Winter 1994/95 followed this pattern. Apart from some fairly short cold spells it was generally mild, wet and windy. Over the North Atlantic there were frequent and persistent low pressure systems which produced strong SW winds driving mild air across the UK, western Europe and sometimes right up into the arctic around Spitzbergen.

Spring was warmer than usual in central and western Europe but much wetter than usual in Scandinavia. The soaring season did not start particularly well.

March had a lot of north-westerly winds with wintry showers giving much snow on the northern hills and some thunderstorms but there was good sunshine too. It was the third sunniest March in England for a hundred years. (Beaten only by 1907 and 1933.)

April started off anticyclonic - very warm and sunny. From mid-month the anticyclone receded westwards and northerly winds came down from the arctic bringing showers of hail, sleet and snow. Even so most of England and Wales had the driest April for eleven years.

May was quite sunny with the first of the year's heat waves between the 4th and 7th (max 27°C at Heathrow). Parts of SE England had less than 30% of the normal rain.

Summer

June started with a fortnight of westerlies followed by northerlies which brought a cool cloudy spell. From the 21st a high gave us a spell of sunny weather but the NE winds brought low stratus in from the North Sea. Scotland was so sunny that cases of severe sunburn had to be treated at Glasgow hospitals. Worcester had a max of 34°C on the 30th.

July was the month when the good soaring conditions began. There were at least 15 cross-country days. Much of the month was hot, dry and sunny but there were unsettled spells too with humid, thundery weather. The passage of a cold front on the 21st was followed by almost ideal weather for the 1000km flight on the 22nd. The hottest days came at the end of the month (32.6°C at Heathrow).

August was a record breaking month, hot, dry and sunny with at least 25 cross-country days. The max temp reached 34.3°C at Heathrow on the 1st and even Cape Wrath in the NW of Scotland reached 27°C. Much of the country had only 15% of normal rainfall; the Midlands and SE were practically rainless.

Autumn

September. The drought broke on the night the 1st-2nd and on the 4-5th thunderstorms gave flooding in Liverpool. Repeated downpours in NE Scotland brought serious flooding which closed the Aberdeen-Inverness railway. From the 14th-18th there was flooding in parts of southern England. There were still many dry and bright days and the beleaguered Yorkshire Water Company complained that the rain was in the wrong place.

Photos B (above) and C (at the bottom of the page): Shallow cumulus marking strong thermals under the inversion over the north Cotswolds during the afternoon of July 22.

October was very wet in the NW but warm sunny weather persisted in many parts of England. Glasgow had 270% of normal rainfall while much of SE England had only 10-20%. It was a case of "To him that hath shall be given..." Yorkshire Water was one of the "have nots" and they still threatened to cut supplies.

November was the mildest for a century.

December started mild but an arctic blast reached Scotland on the 19th bringing blizzards. When these cleared temperatures fell exceptionally low. Aviemore recorded -25°C but a new record of -29 was set up in Sutherland. Areas which had just survived the summer drought now lost their water supplies due to the winter frosts.

The year as a whole turned out to be the warmest since records began in 1659.

The run-up to the 1000km day

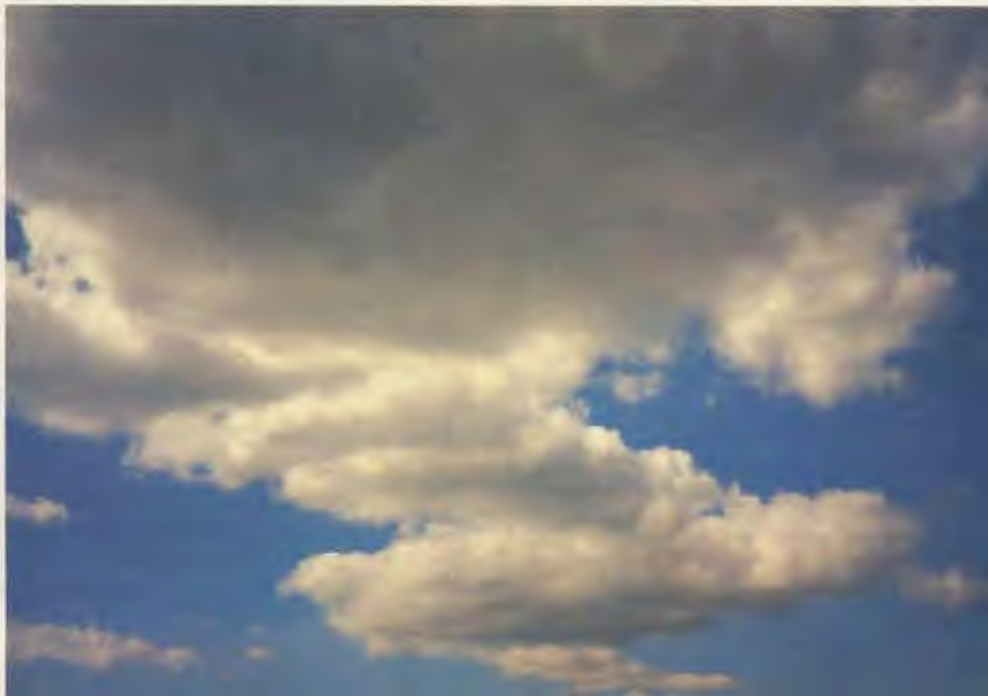
For the first half of July there were no outstanding days and from the 10th-14th a low got stuck just west of Ireland. This was pushed away by a deeper mid-Atlantic low which brought a warm, moist south-westerly over most of England from the 18th to 20th. A cold front to the west of the UK was held up by little waves running along it.

The important change took place when a new high appeared near Newfoundland on the 18th. This high moved out into the Atlantic and finally pushed the cold front through England on the 21st. Fig 2 shows a sequence of four charts from July 19-22 to illustrate the run-up to the big day.

Fig 3 covers the period from July 4-31. It shows the temperatures at 1000mbar and 850mbar over Herstmonceux. The 100mbar (the top curve) is usually close to the surface. The middle curve for 850mbar is normally just below 5000ft. The lowest curve shows the temperature difference of 1000-850mbar. This difference can be a guide to the soaring prospect. A difference of 13 or 14° indicates a dry adiabatic lapse rate. The bigger the difference the better the soaring, provided the air remains fairly dry.

Fig 3 shows that from the 18th-21st temperatures rose as the warm moist south-westerly became established. The passage of the cold front on the 21st was followed by a sharp fall in temperatures.

The 1000 and 850 temperatures fell 10 and 12°C respectively and the difference between ➡



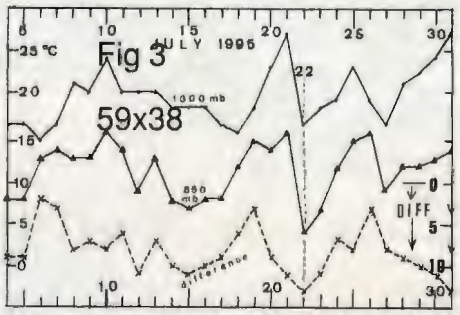


Fig 3. Daily upper air temperatures at Herstmonceux from July 4-31,1995 showing the temperature drop on 22nd. The pecked line gives the 1000-850 temperature difference plotted on an inverted scale.

these two levels increased to 13°C, producing a dry adiabatic lapse rate to above 5000ft during the afternoon.

Importance of dry air

In a poor year such temperatures would have encouraged much spreadout under the inversion. Serious spreadout did occur over Ireland, southern Scotland and the Pennines but the air over England was (in most places) too dry. The warm weather had dried the ground so there was little extra moisture for the thermals to carry aloft.

The Great Day, July 22

The night of July 21-22 was practically cloudless from Yorkshire southwards and before sunrise temperatures had fallen to 8 or 9°C inland. At Benson it fell to 6° in the screen and there was almost a ground frost. (The grass minimum was 0.4.) Low night temperatures in summer are usually a good sign. They show the air is reasonably dry.

Temperature soundings at dawn showed hardly any surface inversion so thermals started very early and cumulus soon formed. The base was 2500ft near Bicester just before 0900. Further west the cloudbase was above 3700ft asl before 0930 and it went up to 4900ft asl with 6kt thermals. The ridge over England had produced a deep stable layer between about 5500 and 11 000ft and this kept the cu shallow all day. At midday surface temperatures were up to 19°C over most of the route and they reached a maximum of 21-22°C during the afternoon.

The satellite (Photo A) showed the clouds decreasing from NW to SE until they became too small to register south of the Berkshire Downs. Ground stations in the Midlands reported the cumulus as $^{3}/_{8}$-$^{4}/_{8}$. There were some wide gaps in South Yorkshire where temperatures were a little lower. Photos B and C show the character of the flat cu over the north Cotswolds.

Pilots said the clouds became less reliable around the East Midlands and over Yorkshire to the lee of the Pennines. There were both patches of spreadout and wide gaps. The deterioration may have been due to the weak wave interference to the lee of the Pennines.

Over most of England the little clouds grew even smaller as the afternoon progressed but there were still a few flat cu until about 1900. Before thermals ended, the inversion over SE England rose to 800mbar, (about 6400ft indicated).

Temperatures aloft

At 0600 all the soundings over England showed the inversion base between 5000-6000ft with a very stable layer above. Fig 4 shows three soundings. The coldest was at Aughton (near Liverpool) at 0600. Here the wind was coming straight off the Irish Sea. The overnight cooling had only produced a very shallow stable layer which was warmed out soon after sunrise. The middle curve is for Hemsby (near Great Yarmouth) at midday. This shows how much the air had warmed up overland in the first 6hrs. The top curve is for Herstmonceux at 6pm when the air had more than 12hrs heating. This warming is more than would be expected in July. It suggests that very little of the sun's heat had been wasted evaporating moisture. The late afternoon lapse rate was very slightly greater than a superadiabat for several thousand feet. In most summers a superadiabat is only a few hundred feet deep.

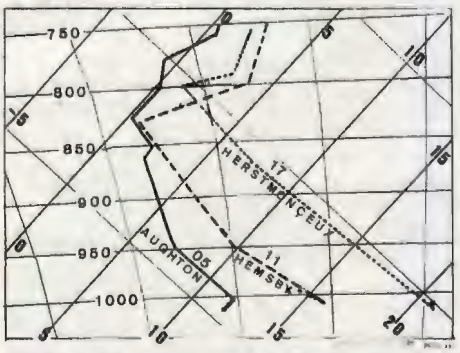


Fig 4. Temperature soundings showing how the air warmed up during the day as it moved SE from Lancashire down to SE England.

Winds

Up to 5000ft the north-westerly winds were only 12-16kt in the south and 17-20kt across the Midlands. They increased northwards and were about 30kt over Scotland. The wind and temperature profiles were favourable for waves in and above the stable layer which extended from about 6000-11 000ft. Scotland had stronger winds and here the waves showed up on the satellite picture. Any wave as far south as the Pennines was probably too weak to show up on the satellite. There was a north-westerly jet stream with speeds of just over 100kt from Stornoway down to Boulmer at midday. Further south the maximum speed near Liverpool was only about 70kt. This jet was ahead of the next Atlantic warm front and it brought cirrus over the NW of the UK during the afternoon.

Sunshine

Most of England had 14-15hrs of sunshine; Odiham came out best with 15.2hrs. North Yorkshire had only 10hrs sun and in Northern Ireland and the Scottish Uplands the spreadout reduced the sunshine to only 4-6hrs.

Summary

The charts for July 22 showed all the indications of a good day. The area lay under a strong ridge mid-way between a filling low of 1007 over Germany and the next Atlantic low of 995 about 56N 23W. The nocturnal inversion was so shallow at dawn that convection started early. Subsidence produced an inversion which kept the cu small; the dry air prevented troublesome spreadout over central and southern England. The gap between the fronts was just wide enough to give a long soaring day. The MSL pressure was about 1022mbar which has often proved a good value for summer soaring.

TO BE SAFE BE ACCURATE

Chris, the BGA senior national coach, continues his advice on launch failure accidents and stresses the importance of being in current practice

Regular readers will recall my article in the October issue, p279, which stressed the importance of not turning after a launch failure if it was possible to land straight ahead. The article then went on to suggest a way of improving judgment in making that decision.

On many occasions, however, this improved judgment will lead to the correct conclusion that is it not practicable to land straight ahead. The sequence of events should go thus;-

1. Once a launch failure is recognised, progressively lower the nose whilst **monitoring the airspeed.** Keep the nose pitching down until the speed is safely above the normal stalling speed.
2. Stabilise the glider at the approach speed for the day (*ie* around 50-55kt on a light wind day for most gliders but more in strong winds, turbulence or in heavily ballasted gliders).
3. Pull the release to get rid of any launch cable still attached.
4. Decide if it is possible to land straight ahead; if it is do so. If it is not then -
5. **Carry out the plan that was mentally (or verbally) rehearsed on the ground immediately before take-off.**

A glider flying at a normal approach speed is using up what is left of the airfield at almost 100ft/sec. This often does not leave enough time for even the quickest thinking pilots to consider all the alternatives and choose the correct one. It is not my intention to detail all the possible options following a launch failure; they depend on the size and shape of the site, the conditions for the day, the height at which the failure occurred and the type of glider being flown. Suffice it to say that turns should be left to a minimum and landing out should be one of the options considered before take-off.

With a plan (or more probably two or three different plans for different heights and distances down the field) in mind then it is simply a matter of implementing it. Most serious launch failure accidents involve the glider spinning. The spin entry is caused by some combination of low airspeed and yaw relative to the airflow (as shown by a yaw string or slip ball). Increased *g* in a steep turn will of course reduce the safety margins below those in straight flight. The spin entry may result from the speed being much too low and only a little yaw, speed around normal and a great deal of yaw (*ie* a large rudder input left on during a turn) or, most commonly, speed a bit low and a moderate amount of yaw.

This brings me to the key point of the article. To remain safe in these post-launch failure manoeuvres the glider must be flown accurately. It is **not possible to fly accurately solely by attitude**, particularly near the ground. It is essential to monitor the airspeed and yaw string/slip ball frequently when manoeuvring near the ground. Frequently this means every two to three seconds. A realistic target for accuracy is ±5kt airspeed with minimal slips or skid. A pilot who can't achieve that in normal conditions should not be flying solo. Obviously wider margins and a higher target speed apply in turbulent conditions.

Flying to that degree of accuracy is quite achievable if you are able to devote most of your attention to doing so. It is almost impossible for all but the most skilled one per cent if you are also still thinking about what you're going to do. That is why it is important to plan before take-off!

For Instructors

It is important to demonstrate these launch failures to a student first, then let him practise a pre-briefed launch failure. Only after that is it reasonable to expect him to cope with an unexpected launch failure.

If your student goes outside the accuracy limits I have outlined or starts to do something not in the plan, **take over before it is too late.** Remember also that only plenty of handling practice yourself will enable you to fly to a safe standard of accuracy when you do take over. If you have not flown at least 25hrs of handling time in the last year, including at least 1hr in the last month, then you are probably a bit out of practice. The time to start practising again is not when you take over from a student who is flying too slowly at 150ft! If you are just a little bit rusty fly with another instructor first or fly solo. Don't fly with a student in order to get back in practice.

One final point lest anyone misunderstands. Item 1 in the sequence at the beginning of the article applies to launch failures once the glider is well clear of the ground and climbing.

Failures just after take-off are another story for another day. ■

Diamond Hunting: The British led the field of pilots completing all three Diamonds last season. John Wright discovered from the FAI's Internet mailing list that this was achieved by 52 of our pilots compared with Germany (29), USA (22), Switzerland (13), Italy (11), Sweden (9). Japan (6), Holland (5), Australia (2) and New Zealand, Denmark and Canada (1). Hungary claim 95 but John thinks this may be the list since 1982 and has worked out that 12 is more likely.

Steve Longland's map of the area.

DIPLOMATIC BLUNDERS

Mike Bird describes how in the last week of June 1995 he did two 1000km flights in the skies of Nevada and California with just two days' rest between. He also explains why

Lady Bracknell might have said "To have to do one thousand kilometre flight may be a misfortune. But to have to do two seems very much like carelessness." The old battle-axe would have been right. Something very much like carelessness was to blame. Yet if I had done the first correctly I would have relaxed and not attempted the second flight so soon after, which would have been a pity.

Superficially the raw statistics of the two attempts look identical. The task was identical. Take-off and finish times were about 10min different. There was less than 2% difference in achieved speed. Maximum heights were very nearly the same. But everything else was different.

Almost cheating

It is not actually cheating to get your 1000km diploma by bringing a 60:1 sailplane to Minden and lying patiently in wait for The Great Day, but it comes pretty close. All you have to is to haul the best glider in the world to the best soaring site in the world (3000 miles by road from the port of entry in Florida), get briefed by local 1000km expert Pat Philbrick, have your maps and declaration form marked up ready with the Pat's yo-yo (Start Rawe Peak; TP1, Keeler; TP2 Basalt; TP3 Radar Station; Finish Minden: see the map) then plague the forecasters on the phone every morning. This is a game for old pilots with time on their hands. The rest of you will have to rely on exceptional luck or exceptional talent, of which I have neither.

I should explain a few basic facts about Minden. It is 4700ft asl, lying between the Sierra Nevada and the Pine Nuts, a big range and a small range running roughly NNW-SSE. Nevada means Snowy, by the way, and this really applied in 1995, when snows were especially heavy. Although the Sierras are spectacularly beautiful and are a renowned wave source, they are rarely used in thermal flights. The ranges to the east face the sun and the prevailing westerlies, and are the preferred terrain for summer distance attempts and competition tasks. They also have broad valley floors that are sort of landable. Where you can land on the west side of the Sierras the Lord alone knows.

The only fellow who ever won a contest day going down the Sierras (using their western slopes, picking his way through lakes and trees

"In that 600km I stopped to circle on four occasions, and that was twice too often." Mike took this photo while passing White Mountain peak at 14 246ft.

that cover a very high rugged plateau) instead of the ranges to the east was a foreigner who didn't know any better. For some reason the east was washed out, so he did the right thing by accident. They still talk about it, many years later.

Whereas the Sierras are a high and unbroken range, the ranges to the east are mostly lower and have gaps which require real work early in the day until - yes, wait for it - until you get to the White Mountains 200km south-south-east of Minden. They are not called White because of snow - often there is none, though there was plenty in 1995 - but for the pale-coloured rock.

This 11 000 to 14 000ft ridge is, when working, a glider pilot's paradise. Even hardened World Champions go moist around the eyes when you mention the Whites. Pat's yo-yo is designed to enable an early start and, after 200km of what may be a struggle, to make use of four runs, each of 150km, along the Whites during the best part of the day. If you are lucky, therefore, you get 600km of your 1000km diploma in breathtaking conditions. Talking about breath, reliable oxygen is mandatory, since you will be working between 10 000 and 15 000ft on a moderate day and between 13 000 and 18 000ft (the airspace limit) on a good day.

For those of you who aren't going to ferry a glider to the USA, I should mention that while some of the rental gliders might have idiosyncratic instruments, questionable total energy plumbing and the odd dent in the sun-scorched glass-fibre, they all have oxygen systems that work. When officialdom opens the wave "window", people take rented ships, following the rule that the best glider to take to great heights is somebody else's, to 35 000ft plus. Can't have the paying customers passing out at altitude, it's bad for business. So you should feel pretty confident about renting a Minden glider from that point of view. But I'd take a John Williamson diagnostic kit to check the total energy for leaks if I were you.

The idea is to launch before the valley thermals have started: this entails releasing before 11am at 7900ft over the Pine Nuts mountain range (3200ft above Minden) using a suntrap which Pat Philbrick swears will always work, where the dirt roads snake across the lowest part of the range. (Getting back to Douglas County Airport if the suntrap doesn't work would depend on there being no sink, and would cer-

tainly concentrate the mind if you were in a Standard Class glider. There are a couple of dirt strips *en route* that barely might suffice, however.)

I should explain that Minden and Douglas County Airport are one and the same. On the radio you call "Douglas County, glider Bravo Sierra downwind for runway three-four etc" but to other glider pilots you talk about Minden, which is the nearest habitation and which gives its name to one of the Douglas County gliding operations, Soar Minden, whose tug pilots launched me cheerfully on all my attempts at diplomas and records. Having released, found lift and crawled up out of the pass to a more reassuring height you then make your way north to Rawe peak a few miles south of Dayton County airport (which is fine for any 15 metre glider to land at but not for 25.5 metres, since there are rather tall runway lights roughly 20 metres apart), snap your remote start picture of a bunch of huts and aerials at the extreme north end of the Pine Nuts, and you are on your way. That means you have to soar about 16km further than the 1015km of the task itself, but because the area starts working so early it is worth the extra distance.

It was now a matter of waiting for the right day. It soon came, though to the frustration of the many and the delight of just a few. The week immediately after the Open Class Nationals at Minden, with its very mixed weather including three consecutive days scrubbed, was the possibly the best week in 1995. (It was ever thus.)

The Somewhat Inglorious 24th of June

The first attempt was made on June 24. Only later did I remember that this was exactly two years after my 758km diploma flight in England. (See "The Glorious 24th of June", October 1993, p253). The Pine Nuts were working only moderately well, and indeed on the 200km journey down to the Whites I averaged only about 90km/h, well under the 120km/h that I regarded as essential if I was to get home before 8.30pm. The long spine rising up from Topaz valley to Mount Patterson is often hard work, the steep slopes needing to be scratched and ridge-soared every inch, and the morning of June 24 was no different.

Finally I reached the fabled White Mountains, muttering to myself discontentedly about the pathetic speed achieved so far. And then it was just as Pat had prophesied. His yo-yo task is designed to give four runs along 150km of more or less continuous lift. In that 600km I stopped to circle on four occasions, and that was twice too often. I experimented first with dolphining, zooming from 110kt to 40 then plummeting back again. Each zoom added a 1000ft or more; the subsequent plummet through the sink subtracted most of that but not all. I was relieved not to have a passenger with a delicate stomach.

The dolphining was exhilarating and worked well enough, since I steadily gained height in this way, averaging 70 to 80 kt over the ground. By way of a change, in the next tour over the same terrain (what you might call Yo-2 of the Yo-yo, as opposed to Yo-1) I tried flying at a steady 100kt regardless of the vario. The GPS, however, indicated between 120 and 140kt groundspeed (230 to 260km/h) depending on the wind component and the altitude. This time I gained no height overall but just devoured the ground.

Looking south from Mt Patterson.

The first time I had flown the length of the Whites, during the Barron Hilton week in 1994 (see the February 1995, p20) I left the range with excessive optimism and insufficient height across a desert without cultivation or airstrips, and landed the LS-4 in a dry lake (well, on it rather than in it, thank heavens). This time I had a better glider but conditions were similar. I took all the height I could get and set off at a sceptical 60-70kt towards Minden. The abruptness with which the day deteriorated justified my caution. Every cauliflower cumulus ran to seed as I approached. It was the morning's struggle in reverse. I clambered over Mt Patterson's southern slopes, fell into Topaz valley and took everything that looked, smelt or felt like a thermal. Water was dumped, both of the drinkable and undrinkable variety.

But heck, it was almost the longest day of the year and it was just past 7pm and this was an ASH-25 with one pilot and no water, why was I fretting? The much needed thermals, after teasing me a while, took pity and lifted me gently into the Carson valley and to a joyous champagne reception. It was all over but for the mere routine of photographs, declarations and the other bits of paperwork. All over, did I say?

If there's a right and a wrong way to do something, Murphy's Law states...

Disaster struck. I had photographed Basalt itself (which is a ghastly mess of mine-workings so far as I can tell) and not the road junction nearby. The road junction was specified in the declaration co-ordinates, which I had written out and signed. The junction did in fact appear in the photos but at the wrong angle. This blunder was not due to simple stupidity, but to complex stupidity - a more intractable kind, and much more difficult to cure. The reason was that in the Comp the week before (and in all US Comps) the TP and the aiming point for the camera are two different places, about a kilometre apart. You pirouette directly over the TP and snap the aiming-point. So I drew all my sectors laboriously through the Basalt photographic aiming-point and not through the TP proper. "There, my lord, rests the case for the defence." "What, two years in the galleys? But I can't cook!"

Another nine hours of toil, sweat etc

Three days later, after a much-needed rest and choosing not to launch into thundery, overdeveloped skies for two days, I started again, about 10min earlier than before. I eventually finished about 20min earlier than before, so you might think that the two flights were much the same. But that is the extraordinary thing about soaring. You can't do the same flight twice.

Grousing that I had to circle

The trip from Rawe peak to the Whites was quite astonishing: 5kt at Rawe Peak at 1105, 7kt at Segal 20min later and 8 to 10kt between Sweetwater and Potato Peak before noon, with none of the familiar struggles up the spine of Patterson. Obviously I was going to do a sensational time. However the Whites did not behave like the Whites of legend: no wings-level dolphining was possible. Good thermals, but no continuous lift. By comparison with the previous attempt, this was the slow portion of the flight. There I was, grousing at the fact that I had to stop and circle in seven, eight or more knots. How spoiled can you get?

On the return from the Whites around 6pm, the whole area from Patterson to Minden looked stone dead. So I made a long, slightly worried glide to a cu-nim over Walker Lake, 90° off track and about 100kms from home. This dark and occasionally rainy cloud finally wafted me up to 17 000ft, but like a fool I fretted about making it back, in case there was headwind or sink. As I tiptoed at 55kts due west into the dusk, the shiny object in the far distance baffled me for a long time until I realised it was Lake Tahoe. Obviously if I could keep seeing the surface of Lake Tahoe, nearly 2000 ft above Minden and 30kms the other side of Minden, I had it made. The nose went down. The champagne corks popped again and this time the sectors and all the other paperwork were OK.

An hour later, when it was very dark indeed and while I was going on about having come back just in time, Tom Kreyche appeared out of the shadows from the same direction in his Discus. It seemed as if that old cu-nim was not at its last gasp at all but went on stoking itself for nearly two hours.

Then the next day the developing people, instead of heeding the injunction to leave Tom's film in a continuous strip, cut it up, so he had to do the task all over later in the season. Murphy's Law strikes again.

For the record, only three people beat 1000kms flying from Minden in 1995: Rick Walters, in the Discus; Rick's partner, Tom Kreyche (who did it twice because of his photo-foul-up) and Mike Bird flying his ASH 25 (who also did it twice because of his photo-foul-up).

ITALIAN NATIONALS

All Classes of the Italian Nationals will be at Rieti this year. The Standard Class will be from June 30 to July 7, the 15 Metre Class from August 13 to 23 and the Open Class from July 30 to August 9, the latter taking place at the same time as the International Mediterranean cup. - Translated from *Volo a Vela* by Martin Boycott-Brown.

REVIEW

The Pilot's Sky - Clouds and weather for student pilots, (40min video) by Brian Cosgrove. Priced at £14.90 including p&p, it is available from Brian at Pathfinder Cottage, The Lane, Hempton Deddington, Banbury, Oxon OX15 OQU. There is a 20% discount on orders of ten or more.

The aim of this video is to make up for the lack of cloud pictures in most Met textbooks and to help pilots to read and interpret clouds.

The video begins with a recap of basics, starting with relative humidity and going on to explain lapse rates and stability. The lapse rates are illustrated by a table of temperatures against height. Some people might prefer a graphical explanation showing the temperature/height relationship as a curve. The eye can pick out changes in the slope of a curve quicker than irregularities in a column of numbers.

Part 2 is about the classification of clouds. Here there are many excellent illustrations. There is perhaps an excessive use of Latin names. Some are rather long and complicated. "Cumulonimbus Cirrus Spissatus Genitus" is an unfamiliar name for thick cirrus from a cu-nim anvil.

Part 3 describes Clouds and Weather. There is a useful sequence of frontal cloud ranging from the first bright streaks of high cirrus down to the lowering gloom of nimbostratus. Warm sector clouds are followed by the cold front and the series ends with a sharp edged cloud sheet at the rear of a cold front. The terms Anafront and Katafront are introduced. These diagrams would be more helpful if the ascending or descending airflow was actually shown instead of just being mentioned in the commentary.

Thunderstorms are illustrated by a sequence of pictures showing first the growth of convective clouds from small cu to cu-nim. This is followed by photos of altocu castellanus or floccus indicating medium level instability. These clouds merged into a continuous layer which concealed the developing cu-nim. This was a valuable example.

Pilots are warned of the sudden wind shifts when the outflow from a storm forms a roll cloud and gust front. The areas of sink in clear air outside a cu-nim is mentioned but the dangerously powerful downbursts are not included, perhaps because they are not common in the UK.

Lee waves get a brief mention and there are some nice pictures of lenticulars. Here again a diagram or two would have helped the commentary and made it easier to understand why the cloud stands still with the wind blowing through it. There was no mention of locally severe surface winds in wave troughs or areas of dangerous turbulence such as rotors.

Visibility was illustrated with pictures of haze, mist, fog and low stratus. At the end of this section the commentator said "the time of fog formation has been discussed earlier". This was irksome to the viewer who had forgotten it. No mention was made of inversions which limit the depth of haze and also isolate calm cold foggy air from stronger winds aloft.

Summary

Although I would have welcomed more diagrams to explain the structure of clouds this video provided a lot of useful information with many fine photographs. There was a refreshing lack of those "talking heads" which are so popular with professional film makers. There were practical illustrations for almost all the commentary. I wish the TV documentaries would stick to the point as consistently as this video does.

TOM BRADBURY

It's A Small Gliding World

Ron started gliding in 1970 and flew at Booker in the late 1970s. He is now a member of the Central Indiana Soaring Society, Indianapolis and has 1900hrs, holds a number of State records and is an avid cross-country pilot, flying an LS-6. Last year he was 3rd in the US Sport Class Nationals. Ron represents the glider pilots of Region Six as their director at SSA.

The country around Phillipstown in the Great Karroo area of South Africa is open and wild. Home of the Merino sheep and with 10 or 20km between farmhouses the scene is quite inhospitable. The famed Karroo bush, a low growing shrub, is of little value to anyone other than the sheep and goats who thrive on it. For glider pilots that shrub covered landscape does not offer any easy options for landing out.

But the low rainfall and great heat of the summer, together with the frequent dust devils over this 4000ft plateau, give some of the greatest thermals in the world. In fact they have been exploited by a number of adventurous pilots who recognised the record breaking potential of this area many years ago.

In the mid 1960s the British pilots, Anne and Dennis Burns, established three world records. As sailplanes have grown in performance so have the world records and 13 were flown here during December 1992 and early 1993.

My goals were more modest in 1973 - with 100 gliding hours under my belt, having soloed some 18 months previously, one of my earliest contests was the Nationals at Oranjekrag. It is a town with a mighty dam on the Orange river that divides the country north and south.

The area wasn't well known as most flights had been down into this area from some of the bigger centres north of the site such as Kimberley, the famed centre from where Anne and Dennis had flown their world records, or Bloemfontein of lesser international fame but known to at least one British cross-country soaring pilot, Alf Warminger.

Alf had several years earlier taken advantage of the southern hemisphere's summer to extend his soaring season with noteworthy distance flights beginning in Bloemfontein and finishing in the Karroo.

I was flying a Zugvogel with high hopes but eventually had to land out. I was sure the farmer would be amazed by the arrival of a glider in that neck of the woods, but how wrong can you be?

The delightful widow and owner of the farm told me of her continuing correspondence with a British glider pilot, Alf Warminger, who had landed in the very same patch of fodder several years earlier while attempting a distance record.

It was quite a coincidence that two glider pilots from different hemispheres, both in trouble at the end of the day, would find solace in the same crop, having taken off from airfields several hundred kilometres in different directions.

Part 2

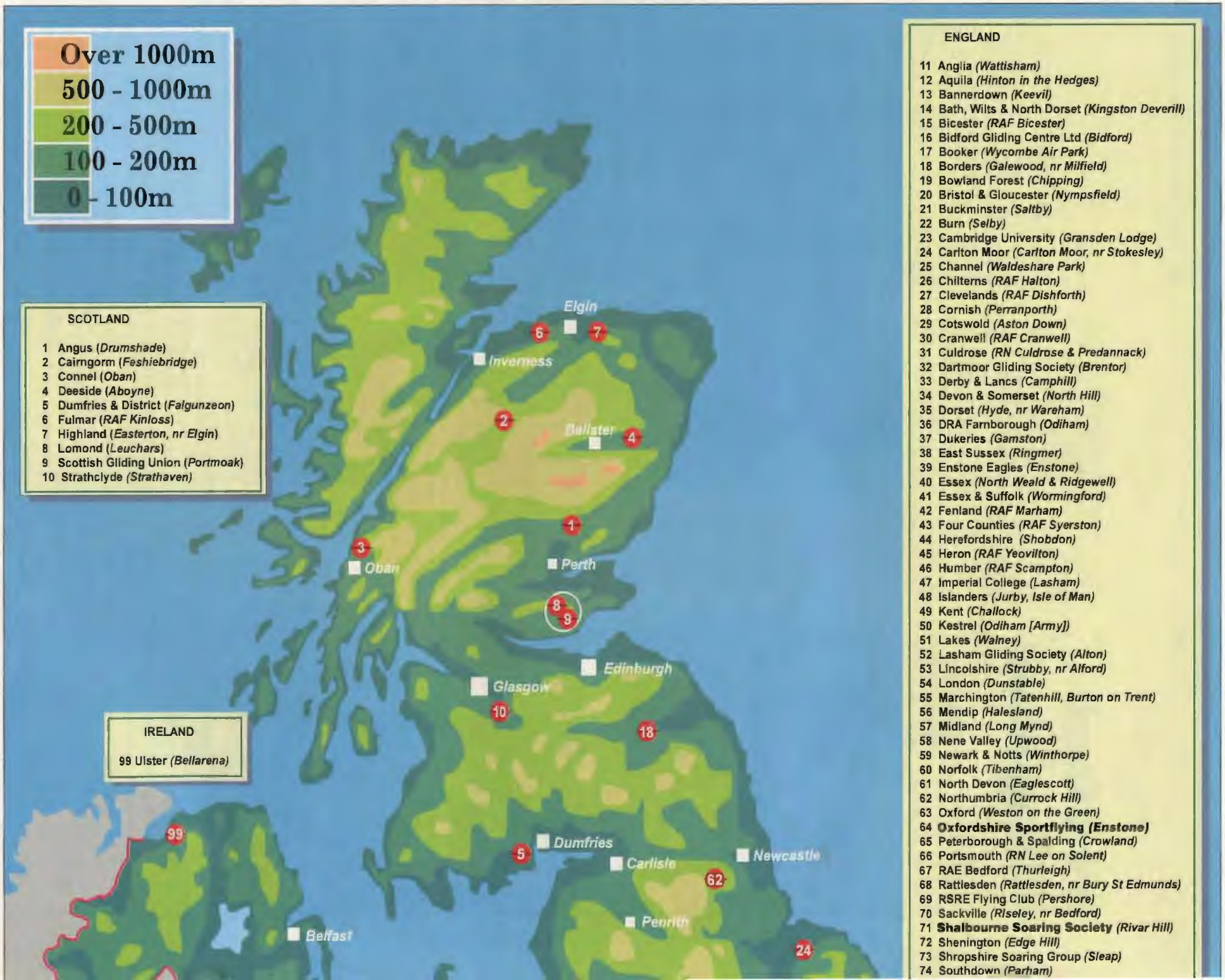
While living in England in 1979 I had the chance to fly Mike Carlton's Nimbus 2 in Euroglide at Husbands Bosworth. I was rigging one morning when the pilot helping me established I was from South Africa and said he had flown there.

"In fact, he added, "I write each Christmas to a farmer whose field I landed in at the end of a day down in the dry country - the Karroo they call it".

"We haven't met before," I said, "but I know the field. And your name is surely Alf Warminger?"

To say that Alf was amazed would be a British understatement.

It's a small (gliding) world isn't it?



SCOTLAND

1 Angus (*Drumshade*)
2 Cairngorm (*Feshiebridge*)
3 Connel (*Oban*)
4 Deeside (*Aboyne*)
5 Dumfries & District (*Falgunzeon*)
6 Fulmar (*RAF Kinloss*)
7 Highland (*Easterton, nr Elgin*)
8 Lomond (*Leuchars*)
9 Scottish Gliding Union (*Portmoak*)
10 Strathclyde (*Strathaven*)

IRELAND

99 Ulster (*Bellarena*)

ENGLAND

11 Anglia (*Wattisham*)
12 Aquila (*Hinton in the Hedges*)
13 Bannerdown (*Keevil*)
14 Bath, Wilts & North Dorset (*Kingston Deverill*)
15 Bicester (*RAF Bicester*)
16 Bidford Gliding Centre Ltd (*Bidford*)
17 Booker (*Wycombe Air Park*)
18 Borders (*Galewood, nr Milfield*)
19 Bowland Forest (*Chipping*)
20 Bristol & Gloucester (*Nympsfield*)
21 Buckminster (*Saltby*)
22 Burn (*Selby*)
23 Cambridge University (*Gransden Lodge*)
24 Carlton Moor (*Carlton Moor, nr Stokesley*)
25 Channel (*Waldeshare Park*)
26 Chilterns (*RAF Halton*)
27 Clevelands (*RAF Dishforth*)
28 Cornish (*Perranporth*)
29 Cotswold (*Aston Down*)
30 Cranwell (*RAF Cranwell*)
31 Culdrose (*RN Culdrose & Predannack*)
32 Dartmoor Gliding Society (*Brentor*)
33 Derby & Lancs (*Camphill*)
34 Devon & Somerset (*North Hill*)
35 Dorset (*Hyde, nr Wareham*)
36 DRA Farnborough (*Odiham*)
37 Dukeries (*Gamston*)
38 East Sussex (*Ringmer*)
39 Enstone Eagles (*Enstone*)
40 Essex (*North Weald & Ridgewell*)
41 Essex & Suffolk (*Wormingford*)
42 Fenland (*RAF Marham*)
43 Four Counties (*RAF Syerston*)
44 Herefordshire (*Shobdon*)
45 Heron (*RAF Yeovilton*)
46 Humber (*RAF Scampton*)
47 Imperial College (*Lasham*)
48 Islanders (*Jurby, Isle of Man*)
49 Kent (*Challock*)
50 Kestrel (*Odiham [Army]*)
51 Lakes (*Walney*)
52 Lasham Gliding Society (*Alton*)
53 Lincolshire (*Strubby, nr Alford*)
54 London (*Dunstable*)
55 Marchington (*Tatenhill, Burton on Trent*)
56 Mendip (*Halesland*)
57 Midland (*Long Mynd*)
58 Nene Valley (*Upwood*)
59 Newark & Notts (*Winthorpe*)
60 Norfolk (*Tibenham*)
61 North Devon (*Eaglescott*)
62 Northumbria (*Currock Hill*)
63 Oxford (*Weston on the Green*)
64 **Oxfordshire Sportflying (*Enstone*)**
65 Peterborough & Spalding (*Crowland*)
66 Portsmouth (*RN Lee on Solent*)
67 RAE Bedford (*Thurleigh*)
68 Rattlesden (*Rattlesden, nr Bury St Edmunds*)
69 RSRE Flying Club (*Pershore*)
70 Sackville (*Riseley, nr Bedford*)
71 **Shalbourne Soaring Society** (*Rivar Hill*)
72 Shenington (*Edge Hill*)
73 Shropshire Soaring Group (*Sleap*)
74 Southdown (*Parham*)


WALES
93 Black Mountains (Talgarth)
94 Glyndwr Soaring Centre (Denbigh)
95 North Wales (Rhualt)
96 South Wales (Usk)
97 Vale of Neath (Rhigos)
98 West Wales (Templeton)
ENGLAND - continued
74 Southdown (Parham)
75 Staffordshire (Seighford)
76 Stratford on Avon (Snitterfield)
77 Surrey Hills (Kenley)
78 Surrey & Hants (Lasham)
79 The Gliding Centre (Little Rissington)
ENGLAND - continued
80 The Motor Glider Centre (Hinton in the Hedges)
81 The Soaring Centre (Husbands Bosworth)
82 Thruxton (Andover)
83 Trent Valley (Kirton in Lindsey)
84 Upward Bound Trust (Thame)
85 Vale of White Horse (Shrivenham)
86 Vectis (Bembridge, Isle of Wight)
87 Welland (Lyvedon)
88 Wolds (Pocklington)
89 Wrekin (Cosford)
90 Wyvern (Upavon)
91 York Gliding Centre (Rufforth)
92 Yorkshire (Sutton Bank)
Statute miles
0 10 20 30 40 50 60 70 80 90 100
Thirsk
York
Lancaster
Harrogate
Leeds
Hull
Manchester
Liverpool
Sheffield
Lincoln
Dublin
Denbigh
Stoke on Trent
Nottingham
Grantham
Shrewsbury
Leicester
Norwich
Peterborough
Birmingham
Cambridge
Bury St Edmunds
Banbury
Bedford
Hereford
Brecon
Gloucester
Oxford
Cardiff
Bristol
Swindon
Reading
London
Basingstoke
Maidstone
Taunton
Salisbury
Southampton
Brighton
Exeter
Plymouth
UK Clubs Directory
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UK CLUB DIRECTORY

Compiled by Steve Longland from information supplied by the BGA

Updated February 10, 1996. * Restricted membership. Tel Nos. in italics represent club officials other than the secretary, *eg*, CFI.

	Clubhouse	Secretary
SCOTLAND		
1 Angus (Drumshade)	N/K	(01241) 871400
2 Cairngorm (Feshiebridge)	(01295) 811056	(01908) 562592
3 Connel (Oban)	(01631) 71428	(01369) 81256
4 Deeside (Aboyne)	(013398) 85339	(01358) 789761
5 Dumfries & District (Falgunzeon)	(01387) 76601	(01387) 64612
6 Fulmar (RAF Kinloss)*	(01309) 672161 Ext 7599	
7 Highland (Easterton, nr Elgin)	(01343) 86272	(01542) 887585
8 Lomond (Leuchars)*	N/K	N/K
9 Scottish Gliding Union (Portmoak)	(01592) 840355	N/K
10 Strathclyde (Strathaven)	(01357) 20235	N/K
ENGLAND		
11 Anglia (RAF Wattisham)*	N/K	*(0831) 623253*
12 Aquila (Hinton in the Hedges)	(01295) 811056	(01908) 562592
13 Bannerdown (Keevil)*	N/K	*(01249) 653928*
14 Bath, Wilts & North Dorset (The Park, Kingston, Deverill)	(01985) 844095	(01380) 830986
15 Bicester (RAF Bicester)*	(01869) 243030	*(0589) 778458*
16 Bidford (Bidford Airfield)	(01789) 772606	On site
17 Booker (Wycombe Air Park)	(01494) 442501	N/K
18 Borders (Galewood Airfield)	(0166) 86284	(01670) 790465
19 Bowland Forest (Chipping)	(01995) 61267	(01729) 824165
20 Bristol & Gloucestershire (Nympsfield)	(01453) 860342	(01666) 503196
21 Buckminster (Saltby Airfield)	(01476) 860385	(01664) 464244
22 Burn (Burn Airfield)	(01757) 270296	(01757) 703601
23 Cambridge Univ (Gransden Lodge)	(01767) 677077	(01223) 880544
24 Carlton Moor (Carlton Moor)	(01642) 778234	(01304) 363111
25 Channel (Waldershare Park)	(01304) 824888	(01304) 363111
26 Chilterns (RAF Halton)*	(01296) 623535 Ext 6198	N/K
27 Clevelands (RAF Dishforth)*	(01423) 324053	N/K
28 Cornish (Perranporth)	(01872) 572124	(01209) 216583
29 Cotswold (Aston Down)	(01285) 760415	(01285) 658499
30 Cranwell (RAF Cranwell)*	(01400) 261201 Ext 230	
(Bus/airfield)	(0585) 836669	N/K
31 Culdrose (RN Culdrose)*	N/K	N/K
32 Dartmoor (Brentor)	(01822) 810712	(01822) 832281
33 Derby & Lancs (Camphill)	(01298) 871270	On site
34 Devon & Somerset (North Hill)	(01404) 841386	N/K
35 Dorset (Hyde, Wareham)	(01929) 405599	N/K
36 DRA Farnborough (Odiham)*	(01256) 703157	(01252) 890313
37 Dukeries (Gamston)	(01909) 501032	N/K
38 East Sussex (Ringmer)	(01852) 840347	(01825) 768796
39 Enstone Eagles (Enstone)	(01608) 677535	(01865) 300518
40 Essex (North Weald & Ridgewell)	(01818) 026663	N/K
41 Essex & Suffolk (Wormingford)	(01206) 242596	(01473) 682279
42 Fenland (RAF Marham)*	(01760) 337261	N/K
43 Four Counties (RAF Syerston)*	525300	N/K
44 Herefordshire (Shobdon)	(01568) 708908	(01905) 28318
45 Heron (RN Yeovilton)*	N/K	N/K
46 Humber (RAF Scampton)*	N/K	N/K
47 Imperial College (Lasham)	(01817) 885489	
48 Islanders (Jurby, Isle of Man)	None	(01624) 816550
49 Kent (Challock)	(01233) 740274	(01795) 471865
50 Kestrel (Odiham [Army])	N/K	N/K
51 Lakes (Walney)	(01229) 471458	(01229)828120
52 Lasham (Alton)	(01256) 381322	On site
53 Lincolnshire (Strubby, Alford)	(01507) 450698	(01507) 450586
54 Lonon (Dunstable)	(01582) 663419	(01923) 267058
55 Marchington (Tatenhill)	(01283) 575578	(01283) 820108
56 Mendip (Halesland)	(01749) 870312	(01934) 512620
57 Midland (Long Mynd)	(01588) 650206	(01952) 255355
58 Nene Valley (Upwood)	(01860) 693479	N/K
59 Newark & Notts (Winthorpe)	(1636) 707151	(01636) 704293
60 Norfolk (Tibenham)	(01379) 677207	(01953) 456310
61 North Devon (Eaglescott)	(01769) 520404	N/K
62 Northumbria (Currock Hill)	(01207) 561286	(01913) 862884
63 Oxford (Weston on the Green)	(01869) 343265	(01817) 561284
64 Oxfordshire Sportflying (Enstone)	(01608) 677208	N/K
65 Peterborough & Spalding (Crowland)	(01733) 210463	(01572) 723885
66 Porthsmouth (RN Lee on Solent)*	N/K	N/K
67 RAE Bedford (Thurleigh)*	(01234) 261079	(01234) 347567
68 Rattlesden (Rattlesden Airfield)	(01449) 737789	(01787) 237241
69 RSRE Flying Club (Pershore)*	(01386) 552123	(01905) 821538
70 Sackville (Riseley, Bedford)	(01234) 708877	(01908) 821538
71 Shalbourne (Rivar Hill)	(01264) 731204	(01249) 815598
72 Shenington (Edge Hill)	(01295) 688121	(01295) 251716
73 Shropshire (Sleap)	(01939) 32045	N/K
74 Southdown (Parham)	(01903) 746706	N/K
75 Staffordshire (Seighford)	(01785) 282575	(01785) 817972
76 Stratford on Avon (Snitterfield)	(01789) 731095	(01564) 822309
77 Surrey Hills (Kenley)	(0187) 630091	On site
78 Surrey & Hants (Lasham)	(01256) 381270	(01252) 874081
79 The Gliding Centre (Little Rissington)	(01451) 822550	On site
80 The Motor Glider Centre (Hinton in the Hedges)	(01295) 812775	N/K
81 The Soaring Centre (Husbands Bosworth)	(01858) 880521	(01858) 434927
82 Thruxton (Andover)	(01264) 773274	(01962) 865503
83 Trent Valley (Kirton in Lindsey)	(01652) 648777	(01652) 648297
84 Upward Bound Trust (Thame)	N/K	(01442) 61747
85 Vale Of White Horse (Sandhill Farm)	(01793) 783685	(01793) 725265
86 Vectis (Bembridge, Isle of Wight)	N/K	(01983) 853611
87 Welland (Lyvedon)	(01832) 5237	(01536) 203178
88 Wolds (Pocklington)	(01759) 303579	(01757) 708955
89 Wrekin (Cosford)*	N/K	*(01952) 610075*
90 Wyvern (Upavon, [Army])*	N/K	N/K
91 York (Rufforth)	(01904) 738694	(01274) 583053
92 Yorkshire (Sutton Bank)	(01845) 597237	N/K
WALES		
93 Black Mountains (Talgarth)	(01874) 711463	(01558) 823250
94 Glyndwr (Denbigh)	(01745 813774)	On site
95 North Wales (Rhualt)	(01745) 582286	(01928) 575366
96 South Wales (Usk)	(01291) 690536	(01446) 711749
97 Vale Of Neath (Rhigos)	(01685) 811023	(01636) 637241
98 West Wales (Templeton)	N/K	(01834) 811350
IRELAND		
99 Ulster (Bellarena)	(01504) 750301	(01868) 723736

Service Association Contacts

Army Gliding Association:	Roy Gaunt (01985) 216924.
RN Gliding Association:	Martin Heneghan (01329) 663375.
RAFGSA:	See Bicester.

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- Am I insured with a Lloyds or DTI approved company?
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- Do I place my insurance through agents who are active and experienced glider pilots?
- Do I have to shop around or does my agent do this for me?
- Are easy payment terms available?
- Am I insured with a stable insurance company?
- If I have a problem do I have to fight my case here or somewhere off shore?
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KEITH NURCOMBE

Tests flights with Microlight Tug

A report by Keith Nurcombe

The microlight with, insert, the tow. The glider is a Super Floater which is like a primary.

Over five days last summer there were a number of glider launches at Husbands Bosworth behind a Pegasus 50/60hp weight-shift microlight equipped for tugging. This was part of a flight test programme by Pegasus Microlite Aircraft with CAA authorisation. To comply with the law, HB was temporary designated as an authorised site.

The flights were in light wind evening conditions after the thermals had died. The tug in its original configuration, with full hush gear, developed 50hp which was more than adequate to launch a Tutor with a climb rate in excess of 300ft/min, *ie* 2000ft in 6min.

Both aircraft were in radio contact and the object of the flights was to demonstrate the capability, establish parameters and test the operational limits. The Tutor happily towed at 35 or 45kt and the best rate of climb was 40kt, which was very comfortable for both aircraft.

There was considerable effort to upset the tug by flying exceptionally out of position both vertically and laterally. The tow hook on the thrust line of the aircraft appears to minimise the effect of any gymnastics going on at the back and we could see that the glider had little effect, if any, on the tug. The tug pilot reported that hang glider towing frequently results in extreme loss of position of the (admittedly lightweight) hang glider without any problems for the tug.

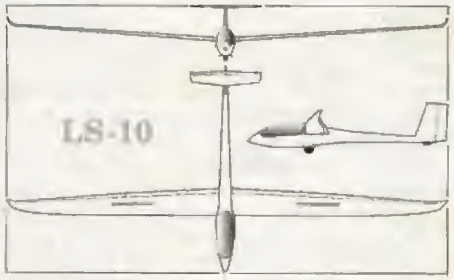
The tow rope is attached to the tug *via* its propeller spinner and kept away from it by a drogue near the midpoint of the rope. This has the advantage of speeding the tug's descent, which might be worth trying on a standard tug. This does limit the ground manoeuvring as the tug can only make wide turns, so it is usual to overfly, drop the rope and make a short circuit by which time the glider is hooked on and ready to go. But this wouldn't be necessary on a site with a long overshoot.

During the three flights by experienced glider pilots it became clear that this was an exceptionally easy and non-critical method of launching a light glider. Then club pilots of various levels of experience, including one with low hours, had tows. They were astonished and delighted at the ease and comfort of the tow in an open cockpit glider and commented favourably on the quietness of the tug. The level of silencing was far in excess of any other powered aircraft operating from the site.

The attempt to tow a Junior at 50kt was abandoned as this was clearly at the limit of the tug's capability. But after the hush gear was replaced by a standard silencer to add 10hp to the shaft output, we were able to tow the Junior successfully at 50kt with the same climb rate as achieved with the Tutor. And the noise level was still well below that of other aircraft. We had the same results with an Olympia 2.

Pegasus Aviation are a reputable and innovative manufacturer owned by Keith Duckworth (of Cosworth Engineering fame). A 80/90hp version is now flying, and the word is that the performance is extremely impressive. I am told that a one-up climb rate of 1200ft/min is being achieved using a standard silencer. This should enable Standard Class gliders to achieve a respectable launch. A soon-to-be-permitted weight increase will allow the use of a full hush kit. I look forward to again testing this tug, preferably on a day with thermal activity.

LS-10



The prototype LS-10 is being built this spring and scheduled for flight testing in the summer with production to follow immediately.

It is planned to be a no compromise 15 metre racing glider based on an optimised wing planform for the best lift distribution together with small winglets as part of the original design. The improved wing profiles have been developed from the LS-6 and LS-8 for superior performance using computer controlled milled main moulds, giving high accuracy enabling the use of intricate planform configurations.

The wing area of 10.4m² promises excellent climb and cruise characteristics particularly suited to UK conditions. The tailplane will also be improved for better flight handling.

The design weight will be kept to a minimum with no structural requirements for span extensions etc. Instead of using flaperons the flaps and aileron will only be partially interconnected to aid handling in turns.

The glider has large airbrakes for comfortable approach control and a sprung undercarriage. Waterballast will be housed in integral wing tanks similar to the LS-8-18 wing tanks. They have a large capacity giving a wing loading in excess of 50kg/m².- Details from Martyn Wells, UK agent.

Jochen Ewald sent us this photograph of the Genesis 1 prototype and news that it is to be built by the LAK glider manufacturers, Sportine Avijacia, in Lithuania, in either kit form or completed. This USA glider has been flying successfully for a year and Jochen is hoping to test fly the Europe product. As he says, if it is able to match our Standard Class gliders we will have to get used to a new silhouette in the sky and have more hangar space, thanks to the missing tail.

SCHUEMANN/SAGE VARIOMETERS

In the early 1970s an American glider pilot, Wil Schuemann, started to question the design of the two common mechanical variometers then available, the PZL and the Winter. He was confident that he could do better so he started developing a torque band vario at his home near Minden, Nevada.

The mechanical principle he employed in this variometer to drive the needle is the same principle used in a toy most of can remember playing with as children. We took a piece of string looped between the fingers of both hands and then threaded through a large button which was placed about halfway between the hands. You wound the button up several times then pulled your hands apart and the button rotated. Wil replaced the string with a twisted metal ribbon and a C frame instead of the hands.

A bellows is secured to one side of the frame and the ribbon is attached to the bellows, stretched and tied to the other side of the frame *via* an adjusting screw. The needle is stuck halfway down the torque band, hence the sunken position of the dial. The inflation and deflation of the bellows drives the needle. The ribbon is smaller than a human hair and the needle approximately half as small again, being made from a glass rod formed into a triangle and dipped in yellow film paint.

Though this sounds delicate, it is actually very strong since it is a metal ribbon supporting only itself and a very light needle. The face of the instrument is then fixed to the frame. Wil chose high impact colours for the scale and to contrast with the needle. What makes this instrument special to me is that every component is hand made from the bellows to the case. On a visit to Wil's home/workshop I was shown in great detail every aspect of the construction of these instruments and came away amazed at his attention to detail and skill in design.

Wil first marketed the SV (standard vario) with a case similar to a Winter in depth and with an 80mm face. It was twice as fast as any other mechanical vario and because of its simplicity, speed and accuracy become very popular with the world's best pilots. He then built a torque band vario with an averager (as used in the BGA Discus). The CVA (competition vario with averager) was the only mechanical vario with a separate averager scale. It had a deeper case to incorporate the two dials and the increased length of torque band, which increased both the sensitivity and speed of the instrument to 1.0sec. With the increase in the late 1980s of electronic varios with more accurate averagers, pilots asked for a competition vario without the additional expense of the averager, so Wil started selling the CV (competition vario) which is a CVA minus averager.

After 20 years of vario production and due to other projects such as developing his recoilless gun, these varios became hard to come by - you virtually had to put your child's name down for one when they were born if they were to get it for their 16th birthday! Wil's son took over for a few years and now Sage Variometers have been taken over by another glider pilot, Pete Russell. I was pleased to hear that Sage is going to add one more instrument to their range - the first one designed to suit the small panel. It is a 57mm CV based on the proven CV with a 1.3sec response time and a range up to 20kt. The 57mm CV will come with either the standard black face or a white face, both with a green (up) and red (down) scale and a yellow needle.

PETE WELLS

(For further details, contact the UK Agents, Zulu Glasstek Ltd, tel 01844 208157 or 201028)

Anxious Moment

Yes, this is a glider wing. It's a part of a Woodstock being lowered from a Hong Kong flat. John Stockwell built the glider in his lounge and has plans to fly it this summer in the UK.

South African win for British Pilot

Richard (left) with Nick after the prizegiving.

"Sport Class task for today is a 266km triangle, Boshoff, Blomhof." So said Claire Bradley, the director of this year's South African Nationals at Jan Kempdorp Airfield.

I was flying the Goldfields GC's K-21 with Nick Le Roux as P1. We hadn't met before but established an excellent relationship and a mutual desire to win. Our practice tasks were between 230 and 350km with us working up our average speed from just over 100km/h to legs flown at 125 with a best overall average of 117km/h.

My total flying time was 49hrs over 15 days of excellent soaring. For me, a weekend pilot in the UK, it was a concentrated and totally enjoyable gliding experience with the bonus of us winning our Class. Also the social life was splendid.

RICHARD CLARKE

BGA & GENERAL NEWS

BGA 1000 CLUB LOTTERY

The **January** draw results are: First prize - Ron Davidson (£55.50) with the runners up - R.J. Carter, A.J. Curtis, S. Lynn, M.J. Wilshere and C. Garton - each winning £11.10. **February.** First prize - P. Arthur (£57.50) with the runners up - E.A.Hull, C. Matthews, J. Bradford, Dr R.P. Saundby and B. Brownlow - each winning £11.60.

DEVELOPMENT NEWS

Financial help

A new booklet, "Financial Help for Gliding Clubs", is now available from the BGA office. It sets out the latest funding available to gliding clubs, whether for a major project such as site purchase or just finding help with flying fees for promising young pilots.

Intended as an updated supplement to Humfrey Chamberlain's publication, "Gliding Club Management", the booklet provides details of "self-funding" or methods of raising money from within the club. This is usually an essential step before grant funding will be made available and the formation of members' loan funds and debenture agreements are discussed, together with the sale of life memberships as a means of raising ready cash. Specimen agreements are provided in the appendix.

The principal function of the booklet is to prove an up-to-date reference to the range of funding opportunities available from outside sources. Following the introduction of the National Lottery, the Lottery Sports Fund is by far the most important single source of grant aid and the Sports Council's requirements in administering the fund are explained in relation to a specimen application form. The respective roles of the Foundation for Sport and the Arts, commercial sponsorship, Sportsmatch funding, tourist boards, local authorities, clearing banks and even breweries are discussed and detailed references provided.

This is a useful handbook for the club treasurer or committee with limited resources, faced with the problem of funding a club project. For any further help and advice, please refer to Barry Rolfe or myself.

Financial protection for GC members

What happens to members if a gliding club goes broke or if claims are made in excess of the club's insurance cover? At best, members will join another club and take their private gliders and all their equipment with them. At worst, members may be forced to sell their personal possessions, even their own homes, to meet the club's debts and to discharge its liabilities.

This can happen if the club has not arranged limited liability protection for its members. To quote Humfrey Chamberlain, once again, "In any activity like gliding, the potential liabilities associated with a catastrophic accident are so great that it is absolutely vital that a club confers the protection of limited liability on its membership". In the course of visiting gliding clubs during the past year I have come across three clubs without such protection and have been able to advise them accordingly.

The simplest and cheapest way of providing limited liability protection for all club members is to set up a Company limited by Guarantee, under the Industrial and Provident Societies Act, 1965. If you are not absolutely sure about your members', or indeed your own, protection, then consult a lawyer immediately.

It is just not worth the risk.

Roger Coote, *BGA development officer*

CHURCHILL AWARDS

We are delighted to announce the reintroduction of the Churchill Awards which is a bursary scheme to encourage young glider pilots. For 1996 there will be 25 awards available of £100 each for pilots achieving the Bronze endorsement to their gliding certificate before their 18th birthday. The cheque for the award will be payable to the gliding club of their choice and will be set against their future flying fees account at that club.

Applicants must still be under 18 years-old and should apply in writing to the BGA office giving their date of birth and nominating their gliding club.

Barry Rolfe, *BGA secretary*

PROFITS FROM PRINT DONATED

Wally Kahn has been so successful selling limited edition prints of an award winning painting of a Skylark 3 by his wife Margaret in aid of the Philip Wills Memorial Fund and Lasham Trust, the couple have donated £830 to each fund. The colour print is 475x347mm and priced at £10.

Copies may be ordered from the BGA office, your club secretary or from Wally Kahn c/o Lasham Gliding Society, Alton, Hants GU34 5SS. Please make cheques payable to W.A.H. Kahn, adding £3 for p&p in the UK.

GLIDING FOR THE YOUNG

Our young pilots aged from 14 to 27 years are again invited to join the subsidised gliding courses run by the German Aero Club at Laucha, near the Harz mountains. The offer is open to individual pilots or groups. For more details write to *S&G* enclosing a sae.

GPS ANTI-JAMMING TRIAL

The Defence Evaluation and Research Agency are to conduct trials on behalf of the MoD involving electronic interference or jamming of GPS to test a UK produced military anti-jamming system.

The tests will be held in the Aberporth military range danger area within Cardigan Bay in Wales to minimise interference. Aircraft within the radio line sight of Aberporth will be affected and it is possible that GPS and differential GPS navigation devices outside this area may have interference due to radio waves.

The trials will not take more than 8hrs over a month period starting from mid-March and warning will be given *via* NOTAMs

LORNE RESIGNS

Lorne Welch has resigned from the BGA Technical Committee after what must be a record breaking length of service - he has been a member since the post World War 2 formation of the Surrey Hills GC at RAF Kenley.

OBITUARY

GODFREY HARWOOD

After a long and eventful life, Godfrey Harwood died on February 8 aged 95½. With his wife Rika, he made a huge impression on the gliding scene - the longest serving treasurer of the Surrey Club, member of the first Lasham Gliding Society committee and the founder secretary of CISAVIA and more.

With his demure, almost Dickensian demeanour he was the perfect foil for Rika's extroverted personality. They were the ideal couple in so many ways, she the instant action and reaction girl and he the careful, double checking - let's get it right - steadying influence.

He loved flying his various gliders and especially the Motor Tutor. In his youth he raced motor cycles to great effect and was the editor of the foremost magazine in his sport. A delightful, kind, uncomplicated gentleman who will be very fondly remembered by all his friends.

WALLY KAHN

GLIDING CERTIFICATES

BGA 750KM SINGLE-SEATER DIPLOMA

No.	Name	Club	1995
8	Dale, G.G.	Bristol & Glos	21.4
9	Gorringe, J.	Booker	22.7
10	Caunt, D.	Booker	22.7
11	Purnell, A.D.	Surrey & Hants	22.7
12	MacFadyen, T.E.	Bristol & Glos	22.7
13	Starkey, C.G.	Surrey & Hants	22.7
14	Jones, P.R.	Norfolk	22.7
15	Stratten, P.	Bicester	22.7
16	Jones, R.	Lasham	22.7
17	Jones, S.G.	Lasham	22.7

ALL THREE DIAMONDS

No.	Name	Club	1995
479	Allison, D.W.K.	Booker	16.10
480	Baker, R.J.	Cambridge Univ	18.10
481	Jordy, M.J.	The Soaring Centre	18.10
482	Day, M.T.	Lasham	14.8
483	Murray, A.W.A.	Cambridge Univ	8.10
484	Limb, A.J.	Aquila	25.10
485	Ashcroft, J.P.	Vale of White Horse	16.10
486	Johnson, D.P.W.	Expat	9.7
487	Gazzard, M.L.	Bicester	16.10
488	Welford, R.J.	Cambridge Univ	18.10
489	Baker, I.C.	Cambridge Univ	18.10

DIAMOND DISTANCE

No.	Name	Club	1995
1/717	Day, M.T.	Lasham	14.8
1/718	Johnson, D.P.W.	Expat (in USA)	3.5.79
1/719	Ecourt, J.W.	Lasham	22.7

DIAMOND GOAL

No.	Name	Club	1995
2/2417	Micklewright, S.	Portsmouth Naval	22.7
2/2418	Coe, N.	Cotswold	19.8
2/2419	Williams, J.D.	London	14.8
2/2420	Wilson, M.J.	Wyvern	22.7
2/2421	Hogg, S.I.	Oxford	20.8
2/2422	Cottingham, I.M.	Bicester	22.7
2/2423	Harris, P.C.	Achmer (in France)	18.8
2/2424	Joyce, D.	Bristol & Glos (in France)	6.7
2/2425	Lumb, M.A.D.	Wyvern (in Australia)	13.1
2/2426	Rousseau, G.F.	Aston Down (in France)	11.8

DIAMOND HEIGHT

No.	Name	Club	1995
3/1270	Bittle, J.C.	Lasham	9.10
3/1271	Starling, R.A.	Newark & Notts	18.10
3/1272	Parkes, M.S.	Borders	8.10
3/1273	Allison, D.W.K.	Booker	16.10
3/1274	Baker, R.J.	Cambridge Univ	18.10
3/1275	Chant, M.	Devon & Somerset	18.10
3/1276	Croker, P.W.	Portsmouth Naval	18.10
3/1277	Noad, S.	Kent	11.10
3/1278	Merritt, K.R.	Mendip	18.10
3/1279	Evans, M.D.	Newark & Notts	18.10
3/1280	Latimer, D.	Aquila	24.10
3/1281	Griffiths, P.D.	Bannerdown	18.10
3/1282	Barnes, T.	Bicester	24.10
3/1283	Jordy, M.J.	The Soaring Centre	18.10
3/1284	Pepler, S.J.	Vale of White Horse	16.10
3/1285	Foggin, S.C.	Vale of White Horse	18.10
3/1286	Watson, M.J.	Norfolk	28.9
3/1287	Faver, T.D.	Bicester	25.10
3/1288	Street, A.W.	Yorkshire	15.10
3/1289	Murray, A.W.A.	Cambridge Univ	8.10
3/1290	Limb, A.J.	Aquila	25.10
3/1291	Cooper, J.	Aquila	25.10
3/1292	Bramwell, D.S.	Upwood Bound	24.10
3/1293	Ashcroft, J.P.	Vale of White Horse	16.10
3/1294	Johnson, D.P.W.	Expat (In USA)	9.7
3/1295	Birch, J.L.	Cambridge Univ	18.10
3/1296	Bugbee, J.L.	Devon & Somerset	11.10
3/1297	Starling, G.	Bristol & Glos	25.10
3/1298	Paddison, R.H.	London	18.10
3/1299	Gazzard, M.L.	Bicester	16.10
3/1300	Johnson, R.A.	Midland	22.10
3/1301	Matthews, R.	Devon & Somerset	19.10
3/1302	Mountain, A.R.	Bicester	16.10
3/1303	Campbell, D.	Expat (in USA)	29.10
3/1304	Holland, M.J.	Expat (in USA)	29.10
3/1305	Welford, R.J.	Cambridge Univ	18.10
3/1306	Grieve, R.D.	Four Counties	2.11
3/1307	Baker, I.C.	Cambridge Univ	18.10
3/1308	Thirkell, R.F.	Surrey & Hants	9.10
3/1309	Coughlan, J.R.	Bannerdown	18.10
3/1310	Edwards, D.J.	Devon & Somerset (in USA)	21.10

GOLD BADGE

No.	Name	Club	1995
1869	Starling, R.A.	Newark & Notts	18.10
1870	Allison, D.W.K.	Booker	16.10
1871	Blackmore, S.R.	Aquila	25.10
1872	Faver, T.D.	Bicester	25.10
1873	Armstrong, S.K.	Four Counties	2.11
1874	Murray, A.W.A.	Cambridge Univ	5.10
1875	Harris, R.M.	Booker	22.7
1876	Birch, J.T.	Cambridge Univ	18.10
1877	Gazzard, M.L.	Bicester	16.10
1878	Mountain, A.R.	Bicester	16.10
1879	Adam, R.A.	Southdown	25.10
1880	Foster, S.D.	Bannerdown	2.11

GOLD HEIGHT

Name	Club	1995
Bittle, J.C.	Lasham	9.10
Starling, R.A.	Newark & Notts	18.10
Meadows, A.T.H.	Lakes	18.10
Bennett, D.R.	Stratford	26.9
Wadham, D.F.	Portsmouth Naval	18.10
Allison, D.W.K.	Booker	16.10
Evans, M.D.	Newark & Notts	18.10
Endean, P.W.	Culdrose	28.9
Schuricht, H.A.	London	22.9
Chalmers, G.A.	Highland	20.10
Blackmore, S.R.	Aquila	25.10
Bowker, R.A.	Heron	25.10
Barnes, T.	Bicester	24.10
Tratt, P.J.	Southdown	25.10
Faver, T.D.	Bicester	25.10
Street, A.W.	Yorkshire	15.10
Armstrong, S.K.	Four Counties	2.11
Delmer, B.A.	Four Counties	2.11
Perkins, A.F.	Upward Bound	25.10
North, D.W.	Lakes	18.10
Murray, A.W.A.	Cambridge Univ	5.10
Copley, R.C.R.	Lakes	18.10
Saxton, A.C.	Northumbria	23.9
Birch, J.T.	Cambridge Univ	18.10
Birch, J.L.	Cambridge Univ	18.10
Forster, M.D.	Booker	11.10
Starling, G.	Bristol & Glos	25.10
Gazzard, M.L.	Bicester	16.10
Matthews, R.	Devon & Somerset	19.10
Mountain, A.R.	Bicester	16.10
Campbell, D.	Expat (in USA)	29.10
Lavery, J.O.	Ulster	5.11
Sinden, R.E.	Booker	26.9
Lambert, R.M.	Caimgorm	18.10
Adam, R.A.	Southdown	25.10
Thirkell, R.F.	Surrey & Hants	9.10
Foster, S.D.	Bannerdown	2.11
Green, A.S.	Bicester	25.10
Edwards, D.J.	Devon & Somerset (in USA)	21.10

GOLD DISTANCE

Name	Club	1995
Micklewright, S.	Portsmouth Naval	22.7
Hogg, S.I.	Oxford	20.8
Coe, N.	Cotswold	19.8
Williams, J.D.	London	14.8
Wilson, M.J.	Wyvern	22.7
Cottingham, I.M.	Bicester	22.7
Harris, P.C.	Achmer (In France)	18.8
Joyce, D.	Bristol & Glos (in France)	6.7
Murray, A.W.A.	Cambridge Univ	10.8
Harris, R.M.	Booker	22.7
Lumb, M.A.D.	Wyvern (in Australia)	13.1
Rousseau, G.F.	Aston Down (in France)	11.8
Foster, S.D.	Bannerdown	22.7

SILVER BADGE

No.	Name	Club	1995
9957	Goldsmith, A.	Derby & Lancs	17.6.93
9958	Storey, P.	Dukeries	28.8
9959	Young, H.F.	Vale of White Horse	23.9
9960	Abbey, J.A.	Rattlesden	22.7
9961	Clarke, A.	621VGS	16.5
9962	Irving, A.D.	Southdown	27.10
9963	Garnett, G.	Lasham	24.7
9964	Davey, C.	ESC	30.7
9965	Wight, C.H.	Angus	16.11
9966	Williams, K.	Derby & Lancs	19.11
9967	Hinks, J.	Bicester	13.8
9968	Ellis, M.	Burn	20.2
9969	Huggins, P.S.	Devon & Somerset	10.10
9970	Lumb, M.A.D.	Wyvern	15.12.93
9971	Sinden, R.E.	Booker	9.8
9972	Allen, M.S.	Southdown	16.8
9973	Perley, A.I.	Booker	13.8
9974	Jarvis, A.	Southdown	9.8
9975	Taylor, B.	Oxford	16.8
9976	Rickett, S.J.	Yorkshire	3.8

UK Cross-Country Diploma:- In the last issue Mike O'Neill's initials were given as B.N. instead of H.M. Ron Page, who flew his Diamond goal/Gold distance to completed his Gold badge No. 1858 at Le Blanc, points out that his club is Norfolk and not ESC as given in the list.

Inter-University Task Week: This year it will be hosted by Bristol University at Nympsfield from August 4. There will be Wood and Glass Classes with two-seater entries encouraged. For more details contact Sam Morecraft, Bristol University Gliding Club, AU Office, University of Bristol Union, Queens Road, Clifton, Bristol BS8 1LN, or e-mail: sm4890@bristol.ac.uk.

Deaf Pilots' Association: Joan Hartley, who is involved with the International Deaf Pilots' Association, would like to get in touch with any other deaf and hard of hearing glider pilots and asks them to contact her by tel/fax 01487 823009 or e mail 101552.3637@COMPUSERVE.COM

Deeside Regionals: Deeside GC had the wrong dates for their Regionals in the advertisement in the last issue. They are from May 25-June 2. ➡

SAFETY ADVICE

FAILED WINCH/AUTO LAUNCH

- **You should expect a failure/cable break on every** launch. Abandon the take-off if the wing drops during the ground run
- Keep your hand near the release, especially during the initial stages.
- Remember the critical speed loss in recovering from the nose high attitude. The typical time to regain a **safe** flying speed is at least 5sec. Turning or opening the airbrakes before achieving a safe speed leads to a **stall** or **spin**
- Pre-plan your circuit from various failure heights/positions. If possible always take the safest straight-ahead option rather than pushing your luck and trying to get back to the normal landing area.
- Climbing too steeply low down increases the risk of a cable break from which there is insufficient height to recover
- Soft cushions behind you will compress during acceleration and cause you to pull back on the stick and, maybe, lose rudder control.
- Failure to correct for drift in a crosswind can result in cable injury to those on the ground, damage to property and hazards from power cables.

BILL SCULL

A VINTAGE MOTOR GLIDER

Robert Lee Moore from West Richland, the State of Washington, USA, has sent us a photograph of the only remaining flying Nelson Hummingbird motor glider. Six of these metal aircraft and a partially wood prototype were built in the early 1950s. Four are in museums and Robert's, which was the late Ted Nelson's own glider, is the last still flying. When he is not flying his PIK 20E, Robert says he plans to take the Hummingbird to vintage meetings and give flights to "worthy people". He has built it a hangar and hopes to preserve it well into the next century as a flying monument to its builders - Ted Nelson and Harry Perl.

ACCIDENT PREVENTION

For over 25 years Bill Scull has sensitively dealt with accidents but having reached partial retirement he is handing over this side of the work to Chris Pullen, though he will be available to offer advice this season. Chris will be co-ordinating with Chris Rollings and Chris Heames. In this article Chris Heames explains a new system for dealing with accidents which it is hoped will make pilots more aware of the dangers and how they should be avoided

Chris is a Tornado instructor with almost 4000hrs of military fast jet flying. He began gliding in 1972, has all three Diamonds and about 2500hrs in gliders and motor gliders. Chris became a regional examiner in 1990 and a senior examiner in 1993.

As we all know, the CAA is the safety regulation authority for all types of recreational flying in the UK. All aircraft accidents in the UK are reported to and investigated by the Dept of Transport (DoT). The DoT has a specialist arm to conduct such investigations - the Air Accident Investigation Branch (AAIB). While glider accidents are reported to and investigated by the BGA, the AAIB will investigate if they are sufficiently serious and report to the CAA so that any remedial or disciplinary action can be taken.

Those of you who can decipher the accident statistics circulated annually by the BGA will see that we traditionally seriously damage one glider/3000 launches. This rate has changed little over the last ten years.

Various flight safety initiatives have failed to have any impact. So what can the BGA do to improve the safety of our sport?

A possible solution

In 1987 I was appointed air member of the RAF Germany Gliding Association. It had been a very poor year for accidents and we already had a system that required the CFI, or an independent person nominated by me, to investigate all accidents. The findings were sent to me with recommendations for preventing any recurrence of similar types of accident. I then wrote a précis of the report which was circulated to all our clubs and prominently displayed at the launch point and the clubhouse. Members were then encouraged to discuss the contents.

When I became air member of the RAFGSA in 1994 I introduced the scheme this side of the Channel. Although it is too early to state with any degree of certainty, it appears these measures have had some success. The essence of the system is that vital flight safety information is circulated in an attractive and easy to read format and targeted at the most vulnerable. And this is what the BGA and the RAFGSA plan to do from this spring.

How will it work?

Ten members of the BGA will be trained as glider investigators and will be asked by the AAIB to attend accidents involving substantial damage to an aircraft or any serious or fatal injury (as defined by the AAIB). Only three will be authorised to deal with fatal accidents. Care in the selection has been taken to cover all the UK so that we can virtually guarantee that an investigator can be at the site of an accident within three hours. If there are extenuating service reasons, then an RAFGSA accident will be the subject of a military board of inquiry. If not then any one of the panel will investigate these accidents as well.

A report identifying the cause and any recommendations to prevent a recurrence will be forwarded to the BGA. Where the legal system permits, a shortened report (written in such a way to hide the identity of the place and pilots involved) will be circulated to clubs. We trust they will be displayed somewhere prominent, such as on a special noticeboard at the launch point or in the clubhouse. The hope is this will educate all our pilots to be aware of high risk areas and how to avoid them.

How to treat an investigator

When an investigator arrives after an accident you have nothing to fear. There will be no witch hunts, just a sincere hope of uncovering the sequence of events that led to the accident and the hope of alerting others to the circumstances.

Notes for the guidance of club officials will be sent out this spring. There will be a check list to ensure the correct procedures are followed which will be vital in safeguarding the trail of evidence. It will be a great help if it has been arranged to photograph the scene of the accident.

If an investigator takes a statement, be completely honest and open in your account to avoid wasting time and delaying the identification of the cause of the accident. Unless you have been reckless or wantonly ignored rules or instructions you are highly unlikely suffer at the hands of the authorities. Trying to cover up such actions is unlikely to succeed and only serves to compound the problem and delay the eventual solution.

Summary

Gliding in the UK has a poor accident record that has not responded to many attempts at improving flight safety. Since all accidents are avoidable, the concept of the new system is accident prevention through education. The new format for accident prevention and reporting establishes a framework that should get accident prevention information to all glider pilots. The two main benefits are a reduction in accident rates with the associated lower insurance premiums and fewer funerals.

GPS JOTTINGS

Whether we like it or not, and opinions differ, the GPS is here to stay and, as you will see from this issue, is gaining ground. The BGA Competitions Committee has decreed that Nationals pilots must carry GPS recorders as the primary means of evidence of task completion. Ian Strachan reports on p82 that the IGC have approved the first GPS flight recorder which may now be used in place of a camera and barograph for evidence of completion of FAI badges and records. The Cambridge GNSS Secure Flight Recorder is the first of many such instruments and three other types are being tested by Ian Strachan's IGC GPS Approval Committee.

However, this exciting new aid still seems to have a certain mystique and is perceived by many pilots to belong a computer age they prefer to ignore.

To help readers have a deeper understanding of its technicalities we have gathered together a panel of experts who are willing to answer all kinds of questions about the GPS. Dickie Feakes, who has a profound understanding of the hardware involved, has agreed to be the moderator co-ordinator. He will be joined by Julian Fack, whose very readable articles on specific GPS equipments have featured in *S&G* including this issue, p78, and Ian Strachan whose knowledge about FAI and IGC involvement in the GPS field is beyond question.

They plan to discuss in depth a different feature of GPS related technology in each issue and would like to know the areas you would most like covered. Do write to *S&G* and let us know where you have gaps in your understanding of the technology and your letters will be passed on to the panel.

For a start, in the next issue they will be discussing the accuracy of GPS.

You will note that we are using the term GPS, yet Ian and IGC talk about GNSS. What is the difference? Ian explains all this in his article on p82.

CHAIRMAN'S REPORT

Presented by Don Spottiswood at the BGA AGM in Northampton on February 24

This is my final report to you after completing six years as chairman of the BGA. I hope that Dick Dixon, currently vice-chairman, will be elected as my successor and I take this opportunity of wishing him every success in the future.

It might be opportune at this stage to express my thanks to Keith Mansell who has been the BGA treasurer for the last 13 years - not because he is retiring but because this has been a particularly successful year for him on the financial front. Our financial position in the accounts for the year ended September 30, 1995, is particularly strong and it has been boosted by the VAT refund we received from HM Customs & Excise in respect of tax wrongly charged on sporting services supplied to members during the preceding four years. You will see that we have a formal resolution before the AGM to retain that money within the Association for the benefit of all members and we have set up a small working party to take views and then make suggestions as to the best use of this money. Happily one of the results of the current financial position is that we are planning to hold the subscriptions at their present level and do not propose any increase for 1997.

The sporting highlight of the year without a doubt was the first 1000km ever flown in the UK by Chris Pullen and Chris Rollings on July 22 from Bicester in an ASH-25. This remarkable achievement must prove that we have the right sort of people running the BGA coaching operation! I am surprised they were able to find the time for the flight as the coaching programme was extremely busy last year and we did not manage to replace Graham McAndrew as the second professional national coach. We are deeply indebted to the voluntary efforts of Chris Pullen who has been acting as an honorary national coach and is also now the chairman of the Instructors' Committee. Great performances were also the order of the day by the British team at the World Championships in New Zealand last January. In our best ever team result Justin Wills took Silver in the 15 Metre Class, Brian Spreckley took Silver in the Standard Class and was followed by Martyn Wells in 4th position and Andy Davis 6th.

Another success story last year was the gaining of a grant from the National Lottery Fund towards the purchase of a new Puchacz for the Association,, which was urgently required for the instructor course programme to replace the demonstrator aircraft which had been available to us in previous years. We are most appreciative of the assistance of the Sports Council in the gaining of this Lottery grant for our sport. It is pleasing to note that several individual clubs also were successful in achieving Lottery grants towards various projects during the year.

The Executive Committee did have to deal with some problems during the year, notably the unwarranted attentions of a local Heath & Safety enforcement officer into the operational aspects of one of our clubs. The BGA has long worked well under delegated authority from the CAA and the Air Accident Investigation Branch in matters of investigating gliding accidents. This is not an area into which persons without knowledge of aviation safety should be allowed to intrude.

We were also concerned with safety and operational standards at a site where the club concerned was not operating as a member of the association and to our operational regulations. We shall continue to endeavour to bring all gliding in this country to the required standards to meet our membership requirements.

There have been some changes instigated during the year under review, mostly in the instructional field. After long consultation we have amended the medical requirements so that instructors over the age of 70 must take a CAA medical if they wish to continue to exercise all the privileges of their instructor ratings. We have also introduced a new level of qualification known as the cross-country endorsement which fits into our scale of achievements between the Bronze and Silver badges. The Instructors' Committee had long felt that a new standard of achievement was required before pilots should be allowed to deliberately set off on a cross-country flight - the new endorsement will be effective from January 1996 and it is proposed to change the operational regulations so that possession of this new endorsement becomes essential for new pilots before flying cross-country.

European issues have also been well to the fore over the last 12 months. European harmonisation has potentially far reaching implications, not least for pilot licensing. All member states, except in the UK, have a glider pilot licence (GPL). As a result of the endeavours of our representatives, the alternative of mutual recognition has been accepted. As well as BGA liaison with the CAA the issues are also dealt with through the European Gliding Union (EGU). Our representatives are Tom Zealley, EGU first vice-president, and Bill Scull who is the co-ordinator for both pilot licensing and operational matters. The harmonisation threat has concerned touring motor gliders which the Joint Aviation Authority, through the Joint Airworthiness Requirement - Flight Crew Licensing sought to add as a rating to a Group A (aeroplane) licence. Once again our representatives have succeeded in maintaining the status quo, that is to fly TMGs on the specific national licence or with a rating on a GPL. This aspect of the BGA's work passes largely unnoticed and thanks are due to our team in maintaining the freedom we presently enjoy.

Sadly, in the last year there have been five fatal accidents, compared with an average of three a year over the last 20 years. On the face of it such accidents seem preventable, an easy judgment to make with hindsight, but we really cannot afford to relax our endeavours to improve standards through training, education and supervision. To raise standards requires more people to be active and a course will be organised for club safety officers in 1996 by the Safety Committee.

Finally, I wish to register my very warm thanks to Barry Rolfe and the staff of the BGA. Their ready and cheerful willingness has made my life as your chairman very much easier than it might have been. I owe a debt of gratitude to my colleagues on the Executive, Bill Scull, Chris Pullen, Chris Rollings, Dick Stratton and Roger Coote and to Sub Committee chairman and members. All have pulled my chestnuts out of the fire at one time or another. As long as the Association continues to be well served by individuals of this calibre, I remain very confident about the future well-being of the gliding movement in this country.

Two Devon & Somerset GC members with their annual awards. Left: Dave Edwards joins the elitist group, becoming a Wily Old Bird . Right: John Pursey with one of his many trophies.

Two solo flights. Above: Bob Invermee of Essex & Suffolk GC with instructor Jonathan Abbess on the right. Below: Muriel Fraser of Deeside GC.

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 01223 247725, fax 01223 413793, to arrive not later than April 16 and for the August-September issue to arrive not later than June 18.

GILLIAN BRYCE-SMITH *February 14*

ANGLIA (Wattisham Airfield)
Chris Webb, our hard working CFI, has been posted and has handed over to Gwn Thomas with John Hicks as DCFI.

At our well attended AGM trophies were presented to M. Jones, A Elliot and Tomo.

Our fleet has been overhauled by dedicated members.
M.A.T.J.

AQUILA (Hinton in the Hedges)
We have plenty of activities this year including Doug Edwards' famed informal lecture series, Wednesday flying from May, the Inter-Club League, a task week, a BGA cross-country course and expeditions to Long Mynd, Talgarth and Aboyne.

We plan to add another 20ft to the width of the hangar to create a workshop, machinery store and more glider storage.

New gliders include Steve Blackmore's ASW-17 and an ASW-22 from South Africa.
C.A.

BANNERDOWN (RAF Keevil)
Our AGM in January rounded off a successful year. A moderate increase in launch and flying fees was deemed necessary.

Our K-21, badly damaged at Aboyne in difficult conditions, should soon be back. Minor damage to gliders at Keevil was a reminder that soft ground and rough runways are always a potential hazard, even when towing out.

At the prizegiving, awards went to Simon Foster (two), Andrew Blake, Andy Miller, Phil Dawson and the CFI. Thanks went to Graham Davey, officer in charge, and Grp Cpt Symes, who is handing over as chairman to Chris Morris, continuing our association with RAF Lyneham.
D.C.F.

BATH, WILTS & NORTH DORSET (The Park)
We are delighted to welcome a number of members of Thruxton GC, bringing with them several instructors and tug pilots. Our new Skylaunch winch is due next month.

Several members have put in hours of hard digging to install two gas tanks for fuel for the new winch and clubhouse hot water.

Alastair Macgregor has become a tug pilot. Bronze badge courses, a cross-country course, several flying weeks and an expedition to the Long Mynd are planned.
J.L.

BICESTER (RAFGSA Centre)
Well done the first solos of 1996 and thanks to those that trained them through a very chilly winter.

Our refurbished third tug is looking like new thanks to Keith Harsant and his team. Our mini Comp is fixed for May 25-27, and the Inter-Services Regionals will be from August 6-16.

The expedition to Chile was very successful and, as usual, we had a great time at the Long Mynd.
P.S.

BOOKER (Wycombe Air Park)
Gee Dale joins us as a full-time instructor, Dave Sarney rejoins us, this time as our air service engineer, and Karina Hodgson, a member since her school days, will be a full-time tug pilot. We are also appointing a summer course instructor.

We are about to select the new cadets. The scheme is working well with Richard Garner having progressed to Silver badge last season.

Members who visited South Africa this winter generally had a good time, with the exception of Sally Wells who returned with a broken limb - the result of a football injury!

We are budgeting for another all-terrain vehicle, though possibly not as desirable as the last one which was stolen from the site. Our finances are healthy with last year showing a surplus as well as the VAT refund of over £125 000.
R.N.

BORDERS (Galewood)
Planning permission for the siting of the Gas Board pumping station has been granted, along with the planning application for our new airfield. Final negotiations are in progress with the Gas Board to complete the transfer on to the new site which should be operational by the end of the year or early 1997. In the meantime we will continue to fly from the existing site.

On the same day the new height record was reached at Aboyne, Malcolm Parkes gained a new height record at our site of over 28 000ft.

We are still waiting for the engine to be re-fitted to the Super-Cub, but continue to tow with our 160 HP Pawnee.
R.C.

BRISTOL & GLOUCESTERSHIRE (Nympsfield)
Martin Greathead and Stuart Chalmers have AEI ratings and Gill Starling gained Diamond height at Aboyne. But we've had little winter flying due to poor conditions.

The annual dinner-dance and AGM is in March.
J.F.B.

BUCKMINSTER (Saltby Airfield)
Guy Westgate and his twin brother Richard have gained two world records for tandem paraglid-

Note to club news reporters: We like your colour prints but with such a demand on space, we would be grateful if you would only send one per issue. If several pilots need recognition perhaps you would take a group shot. Also, if you want the prints returned please put your name and address on the back with the caption.

Dave Smith of Bath, Wilts & North Dorset GC took this photo on his way down from gaining Gold height at 12 500ft asl in wave over their site, The Park, which can be seen below the wingtip.

ers at Kuruman, South Africa - the open distance with 200km and a gain of height of 4390m.

Our courses, starting in mid-May, cover all standards of flying and will include winch training. Ring Clive on 01476 860385 for details.

Our annual dinner-dance will be on May 10.
N.R.C

BURN (Burn Airfield)
Stan Kochanowski and Andrew Jackson have imported an Open Cirrus from Germany. During the Std Cirrus autumn expedition to Aboyne, Peter Clayton gained Gold height.

We now hold a spare engine for the Pawnee which no doubt will ensure that the existing engine lasts a great deal longer!

Thursday, February 8, was our first thermic day this year with several long flights without having to use our "resident" power stations.
P.N.

CAMBRIDGE UNIVERSITY (Gransden Lodge)
Excellent lectures by Derek Piggott and Chris Rollings were well attended. Added to our ever increasing fleet is a K-21.

Many courses are planned for this season including two cross-country courses from May 13 and August 3. Slots are filling fast for our Regionals beginning on August 17.

Tim Goodge has gone solo and Alistair Murray has all three Diamonds.
K.M.B-S.

CLEVELANDS (RAF Dishforth)
We had a pleasant week for our wave camp albeit the wave itself only deigned to appear on Christmas Day. We much appreciated Mike Langton from Cambridge University GC doing Christmas dinner again.

At the AGM, awards went to Mark Tolson, Derek Smith, Paul Mason, Dick Cole, Harry Birch, Debbie Reynolds and the Cleggs.
J.P.

CORNISH (Perranporth)
Last year we had an 11% increase in flights and an astonishing 36% increase in tows. Financially it has allowed us to significantly upgrade our motor glider to a Super Falke SF-25ε so that we can now offer SLMG training to members and visitors, as well as extending our course range this summer.

We move from three day a week operation to seven day a week from mid May. Please drop in when you are down our way!
S.S.

Below: George Salt of Kent GC, who went solo at 80 years of age, photographed with Bob Burden, DCFI. ➡

CRUSADERS (Kingsfield, Cyprus)
On February 17, an important day for us, two RAFGSA inspectors will come to gauge the club's fitness to become full members of the RAFGSA. Crusaders has always been an independent organisation and the sole member of the Near East Gliding and Soaring Association. Definitely the end of an era but hopefully the start of a shining new future with the RAFGSA.

We are running an AEI course and sending a few members on courses to bolster our number of instructors. As ever we look forward to seeing pilots on holiday in Cyprus. Come along and fly with us.
H.L.M.

DEESIDE (Aboyne Airfield)
We are continuing to invest in facilities and have installed a new base station radio, local weather monitoring equipment, and a Metcosat system to give us an overview of what the weather will be doing. We have new parachutes for the club single-seaters.

As part of our campaign to increase the awareness of gliding we are exhibiting a glider in Aberdeen's largest shopping complex for a week.

Muriel Fraser and Emma Johnstone have gone solo and in spite of some snow we have wave soaring over the winter with us reaching 17 500ft in January.

The BBC filmed Chris Rollings together with Muriel Fraser at the site, and the feature was shown in the "How do they do that" programme broadcast on Wednesday, February 14.

There is still time to enter the Scottish Regionals, from May 25 to June 2. Phone the club for details. There are some slots still available for our autumn wave season - contact Mary-Rose Smith on 01569 730687 for availability.
G.D.

DEVON & SOMERSET (North Hill)
The most notable achievement last year was our ever youthful octogenarian, Peter Huggins, completing Silver badge with a 5hrs.

Our chairman Les Hill handed over to Joe Acreman at our AGM in December and Chris Heide was elected vice-chairman, while Peter Craggs (safety officer), Ian Anderson and Simon Leeson have joined the committee.

John Pursey almost completed a clean sweep, winning five trophies and sharing the sixth with Allan Rappaort. Other cups went to Dave Reilly (two); James Warren, Julie Minson and Dave Edwards Snr.
S.C.L.

DUKERIES (Gamston Airport)
We have bought a club Vega with a National Lottery grant from the Sports Council.

Lance Swannack has a Churchill award. Cliff Robinson and Brian Cant have gone solo and Roy Lunn has re-soloed. Craig Hobson has a Bronze badge.
J.C.P.

ENSTONE EAGLES (Enstone Airfield)
The evening talks this autumn have been well supported.

Neil Edwards climbed to 22 000ft during our expedition to Feshiebridge for Diamond height and to complete his Gold badge.

The Rolls Royce winch is now converted to run on gas although some further fine tuning is likely. Preparations are under way for the Open Class Nationals.
S.M.V.

ESSEX & SUFFOLK (Wormingford Airfield)
We have based our Twin Astir and Pilatus B-4 at Sutton Bank for wave and ridge flying this winter and continued flying at Wormingford.

We are about to start a series of lectures for pre solo, Bronze and Silver pilots. Members from other local clubs are welcome to join us; just ring for details. Visitors are warmly welcomed.

Our planning application for further and longer flying days continues slowly with the local authorities.
C.B.

FENLAND (RAF Marham)
Our new Astir is easing the transition from our wooden fleet to the Discus. John Doubleday, Mick O'Brien and Gavin Posnett have gone solo.

We have a March expedition to Lleweni Parc.
E.P.

FOUR COUNTIES (RAF Syerston)
We held a full Cat preparation course for seven instructors and Richard Lovegrove and Dave Ruttle have full ratings. Guy Hitchings (University) has soloed.

Our second winch is being extensively overhauled by our MT team. We have an *ab-initio* course for Service and Air Cadets in April.
D.M.R.

FULMAR (RAF Kinloss)
Not daunted by -20° at Christmas, some found the gliding worthwhile and on days as clear as glass there was some great soaring. The year started with soaring and heights of over 13 000ft giving Barry FitzGerald Gold height. We are thrilled with the new Discus.

We are arranging our transfer for six months to Highland GC and it is hoped that by joining forces and equipment both clubs will gain.
J.P.

GLYNDWR (Lleweni Parc)
We have changed our name to Glyndwr Soaring Centre to reflect the expansion of our courses and facilities for visitors. We are increasing our fleet and changing to a seven day week, all year round, operation. David Bullock has handed over as CFI to Mike Osborn who is also our manager.

We are extending the range of our courses. We have two more K-13s, three more Land Rovers and are extending the machinery shed.

John Farley and Steve Bauer have gone solo; Jess Pennant has a Churchill award and Mike Abbott an AEI rating.

Contact Gill (01745 813774) for a brochure and details. Expeditions and visitors are warmly welcomed.
R.B.W.

HEREFORDSHIRE (Shobdon Airfield)
During this winter of poor weather even Walter Jenkinson, at 95 one of our keenest pilots, has only managed a couple of sorties since December. However, Mike Dodd (Junior) had more than 1hr in February and on Sunday February 11, in a strong NW wind with a lot of low cloud, Diana King climbed to 16 500ft in wave at the Black Mountains. Roy Palmer followed in the Junior but didn't have oxygen and had to leave 2kts at 12 000ft over Radnor.

London GC visit us in March and the open weekend is June 15-16.
R.P.

KENT (Challock)
We continued our basic training up to Christmas with seven going solo in December.

A K-7 to keep up with AEI flying and another K-8 has increased our club fleet.

The Wednesday Eagles had an enjoyable Christmas party.
A.R.V.

KESTEL (RAF Odiham)
We thank Bob Bickers for all his hard work and support as CFI and wish him much success at Dunstable. His passion and enthusiasm for gliding was unrelenting and he will be sadly missed.
P.H.

LAKES (Walney Airfield)
The week before Christmas proved very good for wave with several experiencing oxygen for the first time in the K-21. The highest achieved was 18 300ft with many more over 15 000ft. John Martindale gained Silver height.

Dave Grove and Andreas Robert have gone solo.
A.D.

LASHAM (Lasham Airfield)
Derek Copeland and Ray Foot have all three Diamonds with flights in the UK.

Nan Worrell has retired after several most successful years as editor of the Lasham magazine "Rising Air" and Warren Palmer has taken over.

Fifty farmers and 100 members attended a party to thank farmers in whose fields Lasham gliders had landed.

The 80 spaces in our Regionals, from July 13-21, are filling up fast.

We have three 180 Robins, a Cub and a Pawnee for aerotow retrieves and a privately owned Robin Regent as a back up. They have been fitted with four bladed Hoffman propellers and efficient silencers and the tug pilots have been trained in noise abatement techniques. There have been more high tows of up to 4500ft for aerobatic training and more extended tows in level or descending flight for training purposes.

Our staff tug pilot, Alex Hartland, has worked hard over the year.
A.M.S.

LINCOLNSHIRE (Strubby Airfield)
Henry Williams, Robert Cauldwell and Ray Hearney have gone solo. The K-7 is looking sleek with its wings re-covered.
R.G.S.

LONDON (Dunstable)
Expeditions are planned to Shobdon and Saal, Germany. We are experimenting with an ex-RAF control vehicle at our launch point to

house the log-keeper in double-glazed and air-conditioned luxury. Details of our courses are now available on Internet as http:/powernet.co.uk/gliding/ and we have an e-mail address: info@gliding.powernet.co.uk. We are publishing weather forecasts on the Internet from April 1 for subscribers.

Colin Watt has been appointed workshop manager at London Sailplanes now that Terry Perkins has left to set up his own business.

Platypus recently had the misfortune to crash his car on the drive up to the clubhouse, probably sabotaged by members anxious to enjoy some soarable weather this season.
R.C.

MARCHINGTON (Tatenhill)
Much effort is being put into attracting new members, looking for a new site and ensuring the fleet is in top condition. The sale of the K-7 means our fleet is all glass with the exception of the Blanik. Visitors are very welcome on Wednesdays and at weekends.
I.N.R.

MENDIP (Halesland Airfield)
At the well supported annual dinner Peter Moorehead was announced as our new CFI and Peter Turner as temporary safety officer. Chairman Barry Hogarth reminisced on our 21 years but modestly omitted to mention his recent SLMG PPL.

Trophies went to Paul Croote (two), Tom Fisher, Dan Lodge, and Joe Acreman.

We celebrate our 21st birthday on March 2.
K.S.S.

MIDLAND (Long Mynd)
Early December saw the first snows and many took the opportunity of an airborne "sleigh" ride behind the Pawnee to admire the extensive snowscape from Wenlock Edge to Snowdonia. The ensuing sunset was most spectacular.

Rowan Griffin, John and Mike Stuart are building a trailer for the Discus. Does anyone want to buy a Cobra? Membership is now dealt with from the office, so inquiries to Janet Stuart.

Visitors from Lasham braved the elements to see the New Year in with us and help build an igloo. As I write there are cars under 6ft of snow.
P.A.S.

NENE VALLEY (RAF Upwood)
At our well attended annual dinner 23 awards (a record) were made including trophies to Graham Woodward, Ted Dickerson, Gary Johnson and John Young. Our guest of honour, Roger Coote, BGA development officer, was thanked by Roger Ems, CFI, for his work in helping us gain planning permission for our new site.
R.T.

NORFOLK (Tibenham Airfield)
An important addition to the list of Wednesday Geriatric Bronze successes in the October issue was Eugene Prentice, the grandaddy of them all, who was actually the first to obtain his. Lorraine Walker and Gordon Tilley have soloed. At our well attended Christmas party we had an interesting talk on old Norfolk airfields.

We were saddened to lose a good member in January when John Dixon died of cancer. In his short time with us he had made many friends. Our sympathy goes to wife Joy and his family.
B.W.

NORTH WALES (Bryn Gwyn Bach Farm)
We are flying again. After two months off due to winter weather we have a fully maintained fleet and expect a full season of activities including expeditions, courses and trial lesson evenings.
P.C.

NORTHUMBRIA (Currock Hill)
Early in December we became the owner of Currock Hill therefore securing our future for many more years. Also an advertisement in the local paper has gained over one hundred trial lessons for 1996.
P.S.

PORTSMOUTH NAVAL (Lee-on-Solent)
The new Astir CS is a popular addition to the club fleet. Richard Croker took it to over 24 000ft at Aboyne for Diamond height during our October expedition when David Wadham gained Gold height.

We finished the year with over 8000 launches but there is uncertainty over the future of the airfield. Nevertheless club spirit is buoyant and we intend to stick together and keep operating. Watch this space.
S.L.S. & E.K.S.

SCOTTISH GLIDING UNION (Portmoak)
Our course instructor Tony Spirling has continued training throughout the winter. Neil Mcaulay and Mike Edwards have instructor ratings.

At our annual prizegiving in the clubhouse, with a marvellous meal prepared by Steve and Irene, awards went to Kevin Hook, Richard and Neville Allcoat and Kevin Dillon. Neil Goudie received a new award for the most improved pilot in memory of Nick Wales which was presented by his grandfather, Jim.

Trips planned this year include a visit to Husbands Bosworth in May.
G.S.G.

SHALBOURNE (Rivar Hill)
It is with great sadness that we report the death of Bernie Shackell, a very popular member, who collapsed and died at the airfield in January.

Our AGM in November was well attended and we have a new safety officer, Brian Vowell. Ellen Maleham presented a flying scholarship to Matthew Brazier on behalf of the Dave Maleham memorial trust set up in memory of her husband who was tragically killed in a flying accident.

The annual dinner in January was a great success with a raffle of unwanted Christmas presents raising money for the social fund. Trophies went to Dave Owen (two), Peter Mortimer (two), Rob Sharpe, Jim Gavin and Alan Wilkinson. A new trophy in memory of Bernie Tubbs went to John Day.

Ken Porter flew Diamond height at Aboyne in October.
J.R.

Obituary - Bernie Shackell
Bernie started flying with Dorset GC in the early 1960s. For many years he fitted gliding in around being a farmer, having to milk before he set off for the field and making sure he landed in time to get back for the second lot!

He moved with the Dorset GC to their various sites, also getting into power flying for a while before returning to gliding.

Bernie was never one to be rushed into anything. He gained his A certificate in 1966 and completed his Silver in 1992 with 5hrs at the Mynd, just 26 years later! His first syndicate glider was a Weihe. In recent years Bernie was best known as one of the "Blanik Boys" with Tony Pattemore.

He was always a cheerful, friendly character, much loved by us all. He put other people before himself and infected many with his own enthusiasm which was undimmed by his long association with the sport. He constantly found fresh challenges and fun in his gliding. Since his retirement, he thoroughly enjoyed the "Rebels tours" of gliding clubs around the country and abroad.

Bernie leaves a wife and grown family and we share in their loss. But he also leaves many happy memories of good times and a universal regard. I am proud to have known him and will remember him not with grief, but with a smile.
Liz Bertoya

SHENINGTON (Shenington Airfield)
Bad weather has meant Bronze papers for many members, plus lots of maintenance work. The two Christmas parties were very successful as was the annual dinner in January when awards went to Steve Bradford, Mick Phelps, Chris Kidd and Colin Edmunds.

We have moved into spare offices and are expanding our facilities, particularly regarding access to weather and task setting information. Barographs were bought for our single-seaters with profits from the barbecues.

Our courses start in March and our task week on May 6. We welcome clubs and individual pilots. Please call for details.
T.G.W.

SOUTHDOWN (Parham Airfield)
At our Christmas dinner trophies and awards went to Paul Hampshire, Bob Adam, Peter Tratt and John Haigh.

Dave Pond has soloed, Geoff Stilgoe has a Silver badge and a PIK 20D has arrived on site.
P.J.H.

SHROPSHIRE (Sleap)
The winter has been dull and void with no south or west winds to make waves.

Laura Scott now has a Ventus, the second on site, and Dave Triplett will shortly have an ASH-26E. We look forward to showing them that new aircraft are no substitute for pure skill.
T.A.

STAFFORDSHIRE (Seighford)
Peter Lowe has taken over from Charles Wiggins after five years of dedicated service as CFI. He was rewarded for this with two awards at the annual dinner-dance. Other awards went to Peter Gill (three), Geoff Oultram (two), Simon Watson, Jon May, Glyn Yates, Amy Fisher, James Fisher, James Davies, George Glass and Charles Webb. ➡

Above: Glyndwr Soaring Centre's John Farley with his instructor Bob Vaughan (right) after going solo.

We have applied for grants from the Sports Council and the Lottery Sports Fund to buy a K-21 and the airfield. Winter projects include an overhaul on the Tost winch and the building of the new clubroom.
A.K.

THE GLIDING CENTRE
We're on the move to a bigger, better site - RAF Little Rissington - and by the time you read this we will at last have a permanent and well equipped home. Having left Shenington we are in temporary accommodation until March but can be contacted on our new phone - 01451 822550.

We have improved and expanded the fleet during the winter (now having 17 aircraft) and will be resuming our intensive course flying at the beginning of March. We will be flying seven days a week and be forming a club on site. Prospective members will be welcome.
M.F.C.

THE SOARING CENTRE (Husbands Bosworth)
At our annual dinner trophies went to Paul and Steve Crabb, Keith Nurcombe, Paul Thompson, Alan Foxon, Iain Freestone, Martin Lee, Doug Sadler and Derek Abbey. Peter Burgoyne, CFI, retires after three excellent year's service, handing over to our manager Harry Middleton.

We are planning to buy a second Discus to complement our Pegasus. We have sold our last Bocian and now have an all glass training fleet.

This year we have three competitions, the task week, a Regionals and the 15 Metre Nationals.

We have a new LS-8 on site. The caravans are moving to the bomb bay field to give more space for rigging at the east end of the field.

We lost one of our eldest and most respected members, Elsie May, at the end of the year.
T.W.

Below: Steve Ottner, chairman of Shalbourne Soaring Society, presenting John Day with a trophy at the annual dinner.

A first solo at Bannerdown GC by Andrew Blake. He is photographed with instructor Bob Brain.

Obituary - Elsie May
We are sad to record the death on December 9 of Elsie May. She joined Coventry GC at Baginton Airfield in 1958. Elsie and her husband Bill soon became competent pilots and hard working members.

When the club moved to Husbands Bosworth in 1965, Bill and Elsie were there every weekend clearing the rocks, mixing concrete, making tea and toast and encouraging the younger members. Elsie's warm approach made new members and visitors feel very welcome which helped to give the club its friendly image.

Bill later became the club manager and with Elsie's tireless support ensured the development of The Soaring Centre as it is today. After retirement in 1985 Elsie had open heart surgery, which improved her quality of life considerably. However, she recently became ill again and needed further surgery, but unfortunately did not recover.

She will be sadly missed by us all. Our sympathy goes to Bill and son Ron.
Toby Wright

TRENT VALLEY (Kirton Lindsey)
John Williams and Steve Wilkinson have full Cats. Vince Marchant and Barry Rendall had the first land out of the year on January 13. A club record!

We are converting a porta-cabin into a workshop. Our open weekend is May 5-6.
J.A.T.

THREE RIVERS (RAF Laarbruch)
Colin Henderson managed 13min for the first flight of the year. Vince Mallon gained his 100hrs and Martin and Mark Johnstone have soloed, Mark two days after his 16th birthday.

The AGM went well with trophies going to Martin and Mark Johnstone, Steve Pew and Vince Mallon. Tim Dickinson, a much respected CFI, leaves us in March.
S.S.

VALE OF WHITE HORSE (Sandhill Farm)
The airfield has survived the winter in remarkably good condition. There was more flying in January than for some years and February 3 produced soarable thermals. The tug has had its C of A.
J.K.

VECTIS (Isle of Wight, Bembridge)
Ray Ginsberg organised a very enjoyable annual dinner/prizegiving. CFI Neil Watts presented awards to Paul Bateman, Ruth Freelove, Yarka Watts and Pete Tuppen.

Interesting talks were given by John Leonard and John Kenny, DCFI, during our winter lecture series.
M.J.H.

WELLAND (Lyveden)
At our November dinner awards went to Eric Reeves, Gordon Cree, Adam Aston, Dick Short, Ken Wells and Mick Nunley.

Adam Aston has gone solo; Ken Wells and Michael Neal have AEI ratings and Steve Alegeo is a BGA inspector.

On our Aboyne expedition Dick Short went to 16 000ft for Gold height in his first wave flight.

Our retrieve tractor is having a new clutch fitted by Peter Willock.
D.S.

WOLDS (Pocklington)
Our mini courses are again over subscribed, offering aerobatics, instrument flying and field landing training. Bob Fox is running instructor and completion courses.

A few have enjoyed winter soaring in our other lift source - the power station at Drax, which is a 5min tow away from the club. Nice to be thermalling with snow on the ground!

We are again visiting Portmoak at Easter.
M.R.F.

YORK (Rufforth Airfield)
Commemorating his 75th birthday, tug pilot Jack Clark was re-united with the Auster tug G-AHHT, which he last flew and owned 30 years ago. The Auster had been to Casablanca and was flown to the club by BA Concord pilot Peter Sinclair.

The first BGA instructor course was a success and we are training six for AEI ratings. We have a second operational bus winch and a new building with a larger briefing room will soon be ready.

We offer members of other BGA clubs flying any day of the week with *no* reciprocal membership fees.
M.D.C.

YORKSHIRE (Sutton Bank)
Persistent easterlies have prevented much of our usual winter soaring.

The new Discus is arriving in March.

Trophies at our annual dinner-dance were awarded to Gail Watson, Andy Wright, Adrian Hatton, Mark Jerman, Malcolm Perkins, Mike Brook and Phil Holland.
C.L.

RECORDS

INTERNATIONAL GLIDING RECORDS (as at 10.2.96)

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 Dist	1460.8km	H-W Grosse, Germany	ASW-12	25.4.1972
Goal Dist	1254.26km	B. L. Drake, D. N. Speight, S. H. Georgeson, N Zealand	Nimbus 2	14.1.1978
Goal /Return Dist	1646.68km	T. L. Knauff, USA	Nimbus 3	25.4.1983
▲ Dist	1362.68km	T. L. Knauff (Nimbus 3), L. R. McMaster, J. C. Seymour		
		K-H. Striedieck, (USA)	ASW-20B	2.5.1986
		R. L. Robertson, Gt Britain (in USA)	Ventus A	
Free Dist*	1434.99km	K.H. Striedieck (in USA)	ASW-20B	12.5.1994
100km ▲	195.30km/h	I. Renner, Australia	Nimbus 3	14.12 1982
300km ▲	169.50km/h	J. P. Castel, France (in Namibia)	Nimbus 3	15.11.1986
500km ▲	170.06km/h	B. Bünzli, Switzerland (in Namibia)	DG-400 (std)	9.1.1988
750km ▲	158.41km/h	H-W. Grosse, Germany (in Australia)	ASW-22	8.1.1985
1000km ▲	145.33km/h	H-W. Grosse, Germany (in Australia)	ASW-17	3.1.1979
1250km ▲	133.24km/h	H-W. Grosse, 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 Dist	1383km	G. Herbaud and J-N. Herbaud, France	ASH-25	17.4.1992
Goal Dist	1383km	G. Herbaud and J-N Herbaud, France	ASH-25	17.4.1992
Goal/Return Dist	1261.36km	M. W. Walker and T. Delore, N Zealand	ASW-22	1.12.1989
▲ Dist	1379.35km	H-W. Grosse and H. Kohlmeier, Germany (in Australia)	ASH-25	10.1.1987
100km ▲	177.26km/h	E. Sommer and I. Andresen, Germany (in USA)	Janus C	26.7.1984
300km ▲	170.90km/h	H-W. Grosse & K Grosse, Germany (in Australia)	ASH-25	8.1.1988
500km ▲	163.03km/h	H-W. Grosse & K. Grosse, Germany (in Australia)	ASH-25	20.1.1988
750km ▲	161.33km/h	H-W. Grosse & K. Grosse, Germany (in Australia)	ASH-25	10.1.1988
1000km ▲	157.25km/h	H-W. Grosse & K. Grosse, Germany (in Australia)	ASH-25	11.1.1988
1250km ▲	143.46km/h	H-W. Grosse & H. Kohlmeier, Germany (in Australia)	ASH-25	10.1.1987

SINGLE-SEATERS (WOMEN)

Height Gain	10 212m	Y. Loader, N Zealand	Nimbus 2	12.1.1988
Absolute Altitude	12 637m	S. Jackintell, USA	Astir CS	14.2.1979
Straight Dis	949.7km	K. Karel, Gt Britain (in Australia)	LS-3	20.1.1980
Free Dist	877.90km	H. Zejdova, Czech	LAK-12	8.1.1995
Goal Diste	951.43km	J. Shaw, USA	Nimbus 2	2.7.1990
Goal/Return Dist	1127.68km	D. Grove, USA	Nimbus 2	28.9.1981
▲ Dist	847.27km	J. Shaw, USA	Nimbus 2	5.8.1984
100km ▲	145.49km/h	S. Beatty, S Africa	ASW-20B	24.12.1990
300km ▲	143.9km/h	S. Beatty, S Africa	ASW-20B	26.12.1990
500km ▲	133.14km/h	S. Martin, Australia	LS-3	29.1.1979
750km ▲	127.29km/h	S. Beatty, S Africa	ASW-20B	21.12.1990

MULTI-SEATERS (WOMEN)

Height Gain	8430m	A. Dankowska and M. Matelska, Poland	Bocian	17.10.1967
Absolute Altitude	10 809m	M. Nutt & H. Duncan, USA	SGS 2-32	5.3.1975
Straight Dist	864.86km	T. Pavlova & L. Filomechkina, USSR	Blanik	3.6.1967
Goal Dist	864.86km	I. Gorokhova & Z. Kozlova, USSR	Blanik	3.6.1967
Goal//Return Dist	673.5km	K. Keim, Germany & A. Orsi (in S Africa)	ASH-25	7.1.1992
▲ Dist	760.4km	K. Keim, Germany & A. Orsi (in S Africa)	ASH-25	5.1.1992
100km ▲	141.90km/h	A. Orsi, Italy & K. Keim (in S Africa)	ASH-25	10.1.1992
300km ▲	143.17km/h	K. Keim, Germany & A. Orsi (in S Africa)	ASH-25	6.1.1992
500km ▲	113.87km/h	K. Keim, Germany & A. Orsi (in S Africa)	ASH-25	3.1.1992
750km ▲	121.02km/h	K. Keim, Germany & A. Orsi (in S Africa)	ASH-25	5.1.1992

BRITISH NATIONAL RECORDS (as at 10.2.96

SINGLE-SEATERS

Height Gain	10 065m	D. Benton	Nimbus 2	18.4.1980
Absolute Altitude	11 500m	H. C. N. Goodhart (in USA)	SGS 1-23	12.5.1955
Straight Dist	949.7km	K 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 Dist	1127.68km	M. T. A. Sands (in USA)	Nimbus 3	7.5.1985
Triangular Dist	1362.68km	R. L. Robertson (in USA)	Ventus A	2.5.1986
300km Goal/Return	153.3km/h	M.T.A. Sands (in USA)	Kestrel 19	10.5.1983
500km Goal/Return	152.7km/h	M. R. Carlton (in South Africa)	ASW-17	24.12.1980
1000km Goal/Return	105.79km/h	M. T. A. Sands (in USA)	Nimbus 3	7.5.1985
100km ▲	166.38km/h	B. Cooper (in Australia)	LS-6B	4.1.1991
300km ▲	146.8km/h	E. Pearson (in S Africa)	Nimbus 2	30.11.1976
500km ▲	141.3km/h	B. J. G. Pearson (in S Africa)	ASW-20	28.12.1982
750km ▲	109.8km/h	M. R. Carlton (in S Africa)	Kestrel 19	5.1.1975
1000km ▲	112.15km/h	G. E. Lee (in Australia)	ASW-20B	25.1.1989
1250km ▲	109.01km/h	R. L. Robertson (in USA)	Ventus A	2.5.1986

MULTI-SEATERS

Height Gain	10 545m	C.C. Rollings & B. Hicks	DG-500	8.10.1995
Absolute Altitude	11 570m	C.C. Rollings & B. Hicks	DG-500	8.10.1995
Straight Dist	892.1km	R.C. May & P. Rackham (in USA)	ASH-25	6.7.1995
Goal Dist	892.1km	R.C.May & P.Rackham (in USA)	ASH-25	6.7 1995
Goal/Return Dist	709.35km	R. C. May & S. G. Jones (in Finland)	ASH-25	11.6.1988
Free Dist	1008.54km	C.P.Pullen & C.C.Rollings	ASH-25	22.7.1995
Triangular Dist	825km	B. T. Spreckley & P. Jones (in Australia)	Nimbus 3DT	7.2.1987
300km Goal/Return	145.4km/h	B.T.Spreckley & M.Woolley (in South Africa)	ASH-25	19.11.1994
500km Goal/Return	130.1km/h	R.C. May & N. Hoare (in USA	ASH-25	5.7.1995)
100km ▲	137.22km/h	M. R. Carlton & Leonie Lawson (in South Africa)	Calif A-21	27.12.1978
300km ▲	138.37km/h	B. T. Spreckley & P. Jones (in Australia)	Nimbus 3DT	6.2.1987
500km ▲	130.56km/h	M. Bird & R. Gardner (in Australia)	ASH-25	3.1.1991
750km ▲	114.18km/h	B. T. Spreckley & P. Jones (in Australia)	Nimbus 3DT	7.2.1987
▲ Dist	1015km	V. Spencer & J. West (in Spain)	ASH-25E	27.7.1994
Free Dist	1015km	V. Spencer & J. West (in Spain)	ASH-25E	27.7.1994

SINGLE-SEATERS (WOMEN)

Height Gain	9119m	A Burns (in S Africa)	Skylark 3B	13.1.1961	300km Goal/Return	134.31km/h	G. Spreckley (in S Africa)	ASH-25	26.11.1994
Absolute Altitude	10 550m	A Burns (in S Africa)	Skylark 3B	13.1.1961	500km Goal/Return	02.6km/h	K. Karel (in Rhodesia)	ASW-15B	16.10.1975
Straight Dist	949.7km	K. Karel (in Australia)	KS-3	20.1.1980	100km ▲	110.8km/h	K. Karel (in Rhodesia)	ASW-15B	2.11.1975
Goal Distance	528km	A. Welch (in Poland)	Jaskolka	20.6.1961	300km ▲	125.87km/h	K. Karel (in Australia)	LS-3	12.2.1980
Goal & Return Distance	620.31km	J. Burry (in Australia)	Mosquito B	4.1.1994	500km ▲	120.69km/h	K. Karel (in Australia)	LS-3	20.2.1980
▲ Dist	814.01km	K. Karel (in Australia)	LS-3	9.1.1980	750km ▲	110.53km/h	P. Hawkins (in Australia)	ASW-17	17.11.1984
Free Dist*	620.31km	J. Burry (in Australia)	Mosquito B	4.1.1994					

UNITED KINGDOM RECORDS (as at 10.2.96)

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 Dist	827.9km	T. J. Wills	LS-6	29.5.1986
Goal Dist	579.36km	H. C. N. Goodhart	Skylark 3	10.5.1959
Goal/Return Dist	801.3km	C. Garton	Kestrel 19	22.7.1976
▲ Dist	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	101.46km/h	M. B. Jefferyes	DG-600	17.8.1983
100km ▲	133.97km/h	P. Jeffery	LS-7WL	1.8.1995
200km ▲	114.95km/h	D. S. Watt	ASW-24	3.8.1990
300km ▲	117.14km/h	R. Jones	Nimbus 3	28.5.1985
400km ▲	114.3km/h	R. Jones	Nimbus 3	1.8.1984
500km ▲	106.9km/h	R. Jones	Nimbus 2	31.5.1975
600km ▲	88.8km/h	C. Garton	Kestrel 19	10.8.1978
750km ▲	98.46km/h	A.E.Kay	LS-6c-18w	21.4.1995
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	98.36km/h	A. H. Warminger	Ventus 16.6m	7.4.1990
500km Goal	90.7km/h	H. C. N. Goodhart	Skylark 3	10.5.1959

15m CLASS

Straight Dist	827.9km	T. J. Wills	LS-6	29.5.1986
Goal/Return Dist	617km	C. Garton	LS-6	28.8.1989
▲ Dist	609.9km/h	A. E. Kay	ASW-24	9.5.1991
500km Goal/Return	83.42km/h	M. B. Jefferyes	DG-600	25.5.1990
100km ▲	133.97km/h	P. Jeffery	LS-7WL	1.8.1995
200km ▲	114.95km/h	D. S. Watt	ASW-24	3.8.1990
300km ▲	115.85km/h	J. Gorringe	LS-7	3.8.1990
400km ▲	99.39km/h	P. Jeffrey	LS-7	13.8.1991
500km ▲	106.06km/h	D.S.Watt	ASW-24	21.4.1995
600km ▲	88.1km/h	A. E. Kay	ASW-24	9.5.1991
200km Goal	127.1km/h	A. H. Warminger	Vega	12.5.1984

STANDARD CLASS

Straight Dist	718km	T. J. Wills	Std Libelle	1.8.1976
▲ Dist	609.9km	A. E. Kay	ASW-24	9.5.1991
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 ▲	133.97km/h	P. Jeffery	LS-7WL	1.8.1995
200km ▲	114.95km/h	D. S. Watt	ASW-24	3.8.1990
300km ▲	115.85km/h	J. Gorringe	LS-7	3.8.1990
400km ▲	99.39km/h	P. Jeffrey	LS-7	13.8.1991
500km ▲	106.06km/h	D.S.Watt	ASW-24	21.4.1995
600km ▲	88.1km/h	A. E. Kay	ASW-24	9.5.1991
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	7.8.1976

MULTI-SEATERS

Height Gain	10 545m	C.C.Rollings & Bryony Hicks	DG-500	8.10.1995
Absolute Altitude	11 570m	C.C.Rollings & Bryony Hicks	DG-500	8.10.1995
Straight Dist	445.58km	J. Moore & D. Stabler	Bergfalke 2	
Free Dist	1008.54km	C. Pullen & C.C. Rollings	ASH-25	22.7.1995
Goal/Return Dist	542.91km	A. E. Kay & A. Kay	ASH-25	12.8.1990
▲ Dist	770.27km	C. C. Rollings & B. Fairston	ASH-25	3.7.1990
300km Goal/Return	112.2km/h	A. E. Kay & C. Lyttleton	ASH-25	27.5.1990
500km Goal/Return	98.20km/h	A. E. Kay & A. Kay	ASH-25	12.8.1990
100km ▲	123.99km/h	R. C. May & E. Morris	ASH-25	27.7.1989
200km ▲	119.07km/h	R. C. May & P. Townsend	ASH-25	18.7.1990
300km ▲	109.08km/h	C. C. Rollings & G. McAndrew	ASH-25	18.8.1989
400km ▲	113.70km/h	J. D. J. Glossop & I. Baker	Nimbus 3DT	30.8.1990
500km ▲	104.74km/h	C. C. Rollings & P. Brice	ASH-25	25.5.1990
600km ▲	94.94km/h	R. C. May & S. Lynn	ASH-25	19.7.1990
750km ▲	92.34km/h	C. C. Rollings & B. Fairston	ASH-25	3.7.1990
100km Goal	173.32km/h	D. Hill and J. Gorringe	ASH-25	8.4.1990
200km Goal	113.3km/h	R. Miller & B. Tapson	Janus C	11.5.1984
300km Goal	107.4km/h	P. R. & A. H. Pentecost	Janus C	7.5.1984

SINGLE-SEATERS (WOMEN)

Height Gain	7833m	A. Jordan	Astir CS	8.10.1978
Absolute Altitude	8701m	A. Jordan	Astir CS	8.10.1978
Free Dist	546.3km	R. Housden	ASW-20CL	22.7.1995
Straight Dist	454km	A. Burns	Skylark 3B	10.5.1959
Goal Dist	324.4km	J. Nash	Ventus B	15.4.1989
Goal/Return Dist	386.3km	G. Macfadyen	Sport Vega	30.6.1994
300km Goal/Return	80.60km/h	J. Nash	Ventus B	4.6.1989
100km ▲	98.64km/h	S. Harland	SZD-55	15.8.1994
200km ▲	77.06km/h	J. Randle	Nimbus 2	12.8.1990
300km ▲	76.8km/h	J. Randle	Kestrel 19	18.8.1976
400km ▲	67.83km/h	G. Macfadyen	Sport Vega	30.5.1994
500km ▲	76.1km/h	A. Burns	Nimbus 2	31.5.1975
100km Goal	135.39km/h	J. Nash	Ventus B	11.6.1989
200km Goal	85.5km/h	Anne Burns	Olympia 419	2.6.1963
300km Goal	93.16km/h	Jane Nash	Mini-Nimbus	7.4.1990

MOTOR GLIDERS

SINGLE-SEATERS

Height Gain	6710m	A. Mossman	PIK-30	20.8.1992
Absolute Altitude	8010m	A. Mossman	PIK-30	20.8.1992
100km ▲	76.5km/h	I. W. Strachan	PIK-20E	11.8.1984
200km ▲	48.2km/h	I. W. Strachan	SF-27M	23.8.1986
300km ▲	83.1km/h	I. W. Strachan	PIK-20E	19.8.1984
100km Goal	85.7km/h	I. W. Strachan	SF-27M	16.7.1981

MULTI-SEATERS

Height Gain	5882m	M. G. Throssell & P. Bartle	Janus CM	27.9.1988
Absolute Altitude	6888	M. G. Throssell & P. Bartle	Janus CM	27.9.1988
Free Dist	755.1km	C. Pullen & A. Danbury	ASH-25E	30.6.1994
500km Goal	111.83km/h	R.Jones & S.Marriott	Nimbus 3DM	13.8.994
100km Goal	76.2km/h	P. T. Ross & K. Winfield	SF-28A	22.8.1966
200km Goal	66.3km/h	P. T. Ross & P. Fletcher	SF-28A	18.7.1976
100km ▲	92.7km/h	I.W. Strachan & S. Marriott	Nimbus 3DM	16.6.1994
300km ▲	110.65km/h	I.W.Strachan & S. Marriott	Nimbus DM	10.8.1995
400km ▲	100.24km/h	I.W. Strachan & S. Marriott	Nimbus 3DM	11.8.1995
500km ▲	78.45km/h	B. T. Spreckley & O. Pugh	Janus CM	16.5.1986

BRITISH NATIONAL MOTOR GLIDERS (AS AT 10.2.1996)

SINGLE-SEATERS

Height Gain	7253.9m	J. M. West (in USA)	Ventus CM (17.6m)	5.7.1992
Absolute Attitude	9211.3m	J. M. West (in USA)	Ventus CM (17.6m)	5.7.1992
Straight Dist	652.7km	B.J.Wilson (in Australia)	PIK-20E	10.1.1993
Free Dist	753.2km	J.M.West (in Spain)	Nimbus 4T	12.8.1993
Goal Dist	415.1km	B. J. Willson (in Australia)	PIK-20E	11.1.1993
Goal/Return Dist	646.97km	J. M. West (in USA)	Ventus CM	2.7.1992
▲ Distance	753.2km/h	J. M. West (In Spain)	Nimbus 4T	12.8.1993
100km ▲	119.14km/h	J. M. West (in Spain)	Ventus CM (17.5m)	15.8.1992
300km ▲	97.96km/h	J. M.West (in Spain)	Ventus CM (17.6m)	16.8.1992
500km ▲	96.11km/h	J. M. West (in Spain)	Ventus CM (17.6m)	12.8.1992
750km ▲	112.83km/h	J.M.West (In Spain)	Nimbus 4T	12.8.1993
300km Goal/Return	113.05km/h	J. M. West (in USA)	Ventus CM (17.6m)	9.7.1992
500km Goal/Return	103.77km/h	J. M. West (In USA)	Ventus CM (17.6m)	7.7.1992

MULTI-SEATERS

Height Gain	5882m	M. G. Throsell & P. Bartle	Janus CM	27.9.1988
Absolute Altitude	6888m	M. G. Throsell & P. Bartle	Janus CM	27.9.1988
300km Goal/Return	129.9km/h	V. Spencer & J. West	ASH-25E	13.7.1994
500km Goal/Return	104.1km/h	J. West & V. Spencer	ASH-25E	16.7.1994
100km ▲	146.6km/h	J. West & V. Spencer	ASH-25E	20.7.1994
300km ▲	109.2km/h	J. West & V. Spencer	ASH-25E	12.7.1994
500km ▲	116.1km/h	V. Spencer & J. West	ASH-25E	17.7.1994
750km ▲	100.4km/h	J. West & V. Spencer	ASH-25E	22.7.1994

INTERNATIONAL MOTOR GLIDERS (as at 10.2.95)

SINGLE-SEATERS

Height Gain	9935m	M. D. Stevenson, USA	DG-400	25.10.1985
Absolute Altitude	10 408m	G. Cichon, Germany	Nimbus 2M	27.5.1979
Straight Dist	1039.67km	K. Radebar, Austria (in N Zealand)	DG-400	25.1.1993
Goal Dist	1039.87km	K. Radebar, Austria (in N Zealand)	DG-400	25.1.1993
Goal/Return Dist	1220.44km	K. Holighaus, Germany (in S Africa)	Nimbus 4M	23.12.1992
Triangular Dist	1400.19km	K. Holighaus, Germany (in S Africa)	Nimbus 4M	7.1.1993
Free Dist*	1351.16km	B. Bunzli, Switzerland (in Namibia)	DG-600M	24.12.1992
100km ▲	191.19km/h	B. Bünzli, Switzerland (in Namibia)	DG-400	29.12.1987
300km ▲	176.99km/h	B. Bünzli, Switzerland (in Namibia)	DG-400	14.11.1985
500km ▲	164.18km/h	K. Holighaus, Germany (in S Africa)	Nimbus 4M	4.1.1993
750km ▲	155.82km/h	K. Holighaus, Germany (in S Africa	Nimbus 4M	6.1.1993
1000km ▲	155,00km/h	Tilo Holighaus, Germany (in S Africa)	Nimbus 4M	2.1.1993
1250 ▲	139.96km/h	K. Holighaus, Germany (in S Africa)	Nimbus 4M	7.1.1993

MULTI-SEATERS

Height Gain	6550m	Ingrid Kohler,Germany, & S. Class (in USA)	Grob 103SL	10.6.1993
Absolute Altitude	8782m	Ingrid. Köhler, Germany, & S.Class (in USA)	Grob 103SL	10.6.1993
Straight Dist	1078.07km	H-W. Grosse & Karin Grosse, Germany	ASH 25E	6.5.1993
Goal Dist	1078.07km	H-W. Grosse & Karin Grosse, Germany	ASH 25E	6.5.1993
Goal/Return Dist	1011.45km	W. Eisele, Germany & Daniela Eisele	Nimbus 3DM	23.12.1991
▲ Dist	1256.19km	W. Binder & W.Mertel (in S Africa)	ASH-25MB	14.12.1991
Free Dist*	1196.11km	W. Binder, Germany & A. Knahm (in S Africa)	ASH 25MB	30.11.1992
100km ▲	179.53km/h	O. Wegscheider and P. Eich, Germany (in S Africa)	Nimbus 3DM	5.1.1990
300km ▲	164.88km/h	H-W. Grosse & Karin Grosse, Germany (in Australia)	ASH-25T	9.1.1991
500km ▲	171.1km/h	H-W. Grosse & J. Hacker, Germany (in Australia)	ASH-25T	31.12.1990
750km ▲	157.27km/h	H-W. Grosse & K. Grosse, Germany (in Australia)	ASH-25T	10.1.1991
1000km ▲	144.67km/h	H-W. Grosse & K. Grosse, Germany (in Australia)	ASH-25E	10.1.1992
1250km ▲	128.04km/h	W. Binder & W. Mertel, Germany (in S Africa)	ASH 25MB	14.12.1991

SINGLE-SEATERS (WOMEN)

Height Gain	8444m	I. Köhler, Germany (in USA)	DG-400	12.6.1988
Absolute Altitude	10 245m	I. Köhler, Germany (in USA)	DG-400	12.6.1988
Straight Dist	539.87km	I. Kohler, Germany (in USA)	Ventus CM	14.6.1993
Goal Distance	539.87km	Ingrid Kohler, Germany (in USA)	Ventus CM	14.6.1993
Goal & Return Distance	531.11km	Ingrid Köhler, Germany (in USA)	DG-400	1.7.1989
100km Triangle	127.49km/h	Ingrid Köhler, Germany (in USA)	DG-400	4.7.1989
300km Triangle	87.53km/h	Ingrid Köhler, Germany (in USA)	DG-400	4.7.1989
500km Triangle	84.94km/h	Margit Pantenburg-Becker, Germany	Ventus CM	31.5.1991

MULTI-SEATERS (WOMEN)

Gain of Height	6550m	Ingrid Kohler, Germany, and S. Class (in USA)	Grob 103SL	10.6.1993
Absolute Height	8782m	Ingrid Kohler, Germany, and S. Class (in USA)	Grob 103SL	10.6.1993
300km Triangle *with up to 3TPs	67.82km/h	Isabel Mittag and K. Walter, Germany	DG-500M	27.5.1990

FAI 1000km Diploma

M. Bird	(London) (in USA)		17.6.1995

BGA ACCIDENT SUMMARY

Ref No.	Glider Type	BGA No.	Damage	Date Time	Place	Age	Pilot/Crew Injury	Hrs
64	K-7	–	Minor	7.5.95	Brentor	44	None	1200
						P2 45	None	0

During the third of a series of *ab-initio* circuit planning/approach and landing flights the pupil allowed the speed to fall on the final stages of the approach. P1 prompted "speed" but P2 mistakenly opened instead of closed the brakes and P1 could not reach the brake lever in time to prevent a "very solid" landing which damaged the glider.

65	DG-100	2125	Minor	31.5.95 1400	nr Ross on Wye	47	None	209

The pilot was making a field landing on a golf course fairway when he ran into long grass which concealed a depression. The glider's undercarriage collapsed when it hit this and then slid to a halt after several yards on its belly.

66	K-21	4231	Subst	5.6.95 1215	Sutton Bank	62	None	450
						P2 60	None	0

As the aerotow took off P1, sensing P2 was rather tense, told him to "ease off on stick". P2 mistook this for release the tow. P1 took control as the glider passed the end of field ridge and instead of field landing at the bottom of the hill returned to the airfield. He just cleared the ridge but then could not avoid hitting a parked glider.

67	Nimbus 2B	4065	Minor	28.5.95 1330	Lasham	36	None	370

After landing during the ground roll, the undercarriage collapsed. The pilot considered that he may not have locked the wheel in the down position. Subsequent inspection showed that the overcentre locks were not effective and loads were transferred to the actuator system, unlocking the wheel.

68	K-2	EI131	W/O	3.6.95 1600	Binevenagh Ridge	70	None	796
						P2 66	None	170

During a "mutual" ridge soaring flight the very experienced P1 mistook the wind direction and allowed the glider to get too low. Instead of turning away from the ridge he pressed on until he had to force land on the hillside.

69	DG-300	3494	Minor	8.5.95 1730	Nympsfield	64	None	598

The pilot lowered the undercarriage at 900ft and flew a normal circuit and landing. The wheel retracted on touchdown and the glider slid to a halt. Stones embedded in the grass airfield caused minor damage to the fuselage. It is thought that the pilot, being somewhat short, may have had difficulty in locking the lever in the fully forward position.

70	Super Falke M/G	G-FHAS	Subst	15.6.95 1500	Burn	57	None	1490
						P2 55	None	100

The motor glider's engine failed at 150ft on the first take-off of the day. The pilot cycled the throttle and with some power restored attempted to turn land land on an alternative runway. Then all power was lost and the aircraft's wing struck the ground during a turn just short of the runway.

71	Pegasus	3728	Subst	18.6.95 1521	Nympsfield	27	Minor	1950

After a competition finish the pilot pulled up to complete a circuit and land. Distracted by other finishers, he made a low approach and the left wing hit an earth mound which caused the glider to cartwheel into the ground.

72	Pirat	1967	Minor	17.6.95 1421	Galewood	63	None	16

After a soaring flight the pilot flew a normal circuit but was distracted by a tug ahead of him. On long finals he decided to close the airbrakes but mistakenly opened them fully. He did not associate the high sink rate and loss of airspeed with the brakes and undershot the airfield, hitting a fence.

73	K-13	3550	Minor	13.5.95	North Hill	63	None	1290
						P2 30	None	0

The landing area was on high ground at the top of the ridge and circuits had to be planned to avoid curl-over in the lee of the slope. The final turn was too low and the wingtip hit the ground causing a groundloop. P1's untypical error of judgment may have been due to being over-tired due to earlier airfield ground work.

74	Super Cub	Tug – Subst		23.6.95	Incident Report	60	None	852pwr

After clearing a plug misfire the pilot decided to "go to full power, do a short hop" downwind towards the launch point. He found he had "overdone this airborne bit" so applied power and banked to turn around and land. Pulling too hard into the turn, the inner wing stalled and hit the ground. The undercarriage collapsed during the impact.

75	SZD Cobra 15	1752	Minor	26.5.95 1500	Pocklington	51	None	127

In calm conditions, the pilot flew a good approach to the normal landing area. Just before roundout he turned very gently to the left to keep the launch run clear. Unfortunately he did not notice how close the wingtip was to the corn crop alongside the runway and this swung the glider around in a "spectacular" groundloop.

76	K-13	2944	Subst	30.6.95 1410	Gransden Lodge	32	None	95
						P2 12	Minor	0

After a normal ground run and initial rotation P1 established the glider into the climb at a steady 50kt. At about 100ft the cable back released and, probably due to the weight being close to minimum placard, the glider was slow to accelerate even with full forward stick. One wing dropped and the glider hit the ground heavily and groundlooped.

77	K-13	1448	Minor	2.7.95	Kirton Lindsey	49	None	12

The cable appeared to back release at the top of the winch launch but, after landing, the pilot noticed damage to the tailplane. A large Tost ring, used to hold the other breaking strain weak links, had failed and hit the underside of the tailplane. It is possible the ring had failed due to damage incurred by being pulled through the winch rollers.

78 Bocian 1E 1804 Subst 8.7.95 Halesland 52 Minor 172
1515 P2 0 None 0

P1 allowed the glider to get too low while demonstrating the effect of the controls. Returning to the airfield he realised the glide was marginal, but rejected nearer fields believing he would just make it. However, the glider hit the top of a dry stone wall, substantially damaging the glider and jarring the student's back.

79 K-13 1572 Minor 8.7.95 Edgehill 38 None 115
1600 P2 25 None 0

A relatively inexperienced AEI pilot allowed himself to drift downwind while thermalling. He tried to glide back to the airfield but encountered very severe sink from the local ridge and lost more height. In trying to land in a cropped field next to the airfield he stalled and landed on the roadside before hitting the boundary hedge.

80 T-21 3297 W/O 1.7.95 Crowland 45 Serious 119
1640 P2 14 Serious 0

The pilot began to pull out of a dive at 1500ft when the elevator linkage broke at the front bearing. The dive steepened but the pilot was able to reduce the speed by using full rudder. He tried to execute a hurried forced landing but the glider stalled in from about 20-50ft. Both crew, who were not wearing parachutes, were seriously injured.

81 K-7 2678 Subst 25. 6.95 Rhigos 49 Minor 58
1800

The pilot began his winch launch rotation normally and had reached about 50ft when the cable broke. He recovered quickly and released the remaining cable but apparently did not lower the nose sufficiently to maintain speed. The glider stalled from about 6ft and landed heavily, causing substantial damage and jarring the pilot's back.

82 SZD Puchacz 3735 W/O 5.5.95 Husbands Bosworth 42 Serious ?
1330 P2 21 Fatal 0

This fatal winch launch accident occurred after the winch cable broke when the glider was between 150 and 300ft. The pilot recovered to normal gliding attitude and then turned through 180°. After a short run downwind a further turn into wind was started. During this turn the glider spun and hit the ground killing the student pilot.

83 Std Cirrus 1621 W/O 12.6.95 Talgarth 70 Fatal 600+
1330

Positive control checks were carried out on the glider. During the aerotow ground roll the left aileron L'Hotellier connection came undone, allowing the control to float free and vibrate, causing the wing to flutter. The pilot released and turned back to the field but during the turn the glider spun and crashed into trees and he was killed.

84 Carman JP15-36 3998 W/O 9.7.95 Pershore 48 Fatal 36
1520

This fatal accident occurred after a winch launch failure at about 150-200ft when the cable parachute failed. Although there was enough runway for a straight ahead landing the pilot turned back through 180° then turned again into wind. Half way around the final turn the glider spun, hitting the ground vertically. The pilot was killed instantly.

85 K-21 – Minor 8.7.95 Incident Report 35 None 2300
– P2 50 None 200

The glider had just landed at Membury after a cross-country training flight. It was decided to move it to a spot suitable for an aerotow retrieve. During this move the wheel rolled into a hollow and the fuselage grounded on a ridge damaging the outer skin near the winch hook.

86 K-13 – Subst 14.7.95 Lasham 61 None 900
2030 P2 58 None 1

P1 briefed P2 that they would practise a 400ft cablebreak into the 10kt wind. On release P2 lowered the nose and gained approach speed before P1 took over. Despite full brake and sideslip he could not get down quickly enough and, in avoiding trees, hit the retrieve truck, parked next to the winch, with the right wing just before touchdown.

87 Astir CS – Subst 8.7.95 Lasham 33 None 56
1600

Distracted by a glider landing ahead, the pilot allowed the speed to fall then, realising this, lowered the nose but did not close the airbrakes. The resulting heavy touchdown bounced the glider 10ft back into the air from which it stalled, with the brakes still open. The undercarriage collapsed on impact.

88 T-21 601 Subst 10.7.95 Kenley 48 None 300
– P2 51 None 0

During the final approach the pilot was distracted by people and a dog on the adjacent perritrack. He flared too late and hit a small rut that bounced the glider back into the air before landing normally. The initial landing caused substantial damage as the skid was pushed upwards into the fuselage structure and control runs.

89	Falke	M/G –	None	7.6.95	Incident Report	38	None	93+11pwr

The motor glider pilot saw a squall approaching and tried to fly clear but flew into heavy rain so decided to land. He landed with restricted forward view due to the rain and drifted in the crosswind. A club member, walking up the side of the strip, only heard the motor at the last minute and was hit a glancing blow by the wing.

90	Std Jantar 3	3448	Minor	16.7.95 1630	Andoversford	44	None	128

During a cross-country in poor soaring conditions the pilot finally selected a landing field at 500ft. He then found that his field had sheep in it and was unlandable so turned into a nearby small field. Under pressure, he failed to fully roundout and flew the glider on at over 70kt and the undercarriage collapsed.

91	Std Cirrus	2673	Minor	8.7.95 1515	Brimpton	37	None	155

After a successful field landing on a narrow crop bordered farm strip the pilot attempted an aerotow retrieve. The bumpy start of the strip caused the glider to bounce to one side where the wingtip caught in the crop, groundlooping the glider.

92	K-6CR	1149	Minor	8.7.95 1400	Brentor	77	Minor	96

On the winch launch the "all out" signal was given while there was still slack in the cable. The violent snatch shot the glider 50ft into the air and moved the 6.5 tonne winch causing the driver to stop the launch without a "stop stop stop" signal. The glider semi-stalled heavily on to the ground. Hard foam seating helped prevent serious injury.

93	K-13	–	Minor	20.7.95 –	Incident Report	48 P2 44	None None	– –

While climbing out of the glider P2 slipped and put his elbow through the canopy.

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