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SAILPLANE & GLIDING

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Penguin



Cover: Peter Selinger photographed the Nimbus 4b on its maiden flight in May with Klaus Holighaus, its designer, at the controls. The launch was from Hahnweide airfield in W. Germany. Klaus went on to come 2nd in the European Championships' Open Class at Leszno, Poland in June. We have a report in the next issue on the maiden flight and the Championships with the leading results of the Competition on p220.



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ALEXANDER SCHLEICHER'S ASW24

To the competitively inclined competition results make compulsive reading. So we've taken a recent 'comp' as an example.

EUROPEAN CHAMPIONSHIPS 1990, LESZNO, POLAND
STANDARD CLASS. Leading results

1st Place ASW 24

2nd Place ASW 24

3rd Place ASW 24

4th Place ASW 24

Please don't write and tell us the pilots' names and scores are missing. We too know that gliders don't win competitions – pilots do. But that doesn't mean the gliders aren't vitally important, for even top rank competitive pilots need the best gliders if they're to be 'in with a shout'. No doubt why they choose **ALEXANDER SCHLEICHER'S ASW 24** for the 'Europeans':

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YOUR LETTERS

WHY HAVE WOMEN'S COMPETITIONS?

Dear Editor,

This is a letter I meant to write years ago when women's gliding competitions first appeared and was prompted to do so on reading in the last issue, p143, that Coventry GC are to host the 1991 European Female Championships. Can there really be any women in this country who would demean themselves by entering this "event". (Competition is definitely the wrong word here.)

If the standard of such an event were deemed to be of a lower standard than the real European Championships then what would any self-respecting woman want to enter it for? What worth would the winner's trophy be anyway? If on the other hand the standard were deemed to be higher, what would be the point of it in the first place. Surely to beat all-comers would give much more satisfaction.

Presumably now that women have their own event which in itself states that they feel unable to compete on equal terms, we will no longer see them at National Championships in future. A shame since I and most men do not share their self-image.

How disappointing it is to see the brave and determined efforts of reformers past wasted in this way. Here we have the epitome of a sport that is suitable for competition on equal terms being specifically rejected in the continuation of this sexist event, now being brought to the UK.

I hope that the trophy for the "Shrinking Violet Championships" is a small one and thus easy to conceal.

DAVE WATT, Pytton, Oxon
(See also p220.)

DOUBLE-DIAMOND BADGE

Dear Editor,

Now that super new gliders and the greenhouse effect are making badge flights so easy I feel we need a new challenge - something that will be as difficult to get as a Diamond badge was in 1965.

I therefore propose the introduction of the Double-Diamond badge; the requirements are exactly double those of the single (or "half") Diamond:-

- 600km goal
- 1000km distance
- 10000m height gain

But I don't think it's necessary to ask for a 10hr endurance trial.

Doing any of the qualifying legs outside the UK would be acceptable but not quite gentlemanly.

MIKE CUMING, London

TEMPORARY MEMBERSHIP

Dear Editor,

While still a student pilot I was given the useful advice "fly at as many different sites as possible to broaden your experience."

Very recently I was staying near Booker so decided to try a flight there. On arrival I was

informed rather apologetically that the temporary visitor fee was £10. Considering that the actual flight might not cost much more than this I decided not to fly.

Most other clubs charge less than half this amount and one even waived it when I visited them. Surely it is in everybody's best interest that a visiting pilot should be able to fly at a site without this sort of discouragement?

I would like to know how a charge of £10 can be justified. I suggest that all clubs charge a flat rate decided by the BGA.

DAVID LEVIEN, Cambridge University GC

Basil Fairston, Manager of Booker GC,

replies: All clubs, consciously or unconsciously, choose their prices and level of service they will give. Booker, with 22 gliders and five tugs between 450 members and a rented site near London, has chosen to be one of the more expensive clubs. In return, our members spend less time waiting to fly than at most other clubs. Having set an annual membership fee of £225 we then have to set a temporary member fee that prevents people from joining a small country club for say £50 and then flying every weekend at Booker as a temporary member. Our duty is to serve our full members.

AIRFIELDS COULD BE INCREASED

Dear Editor,

In the April issue, p61, Charles Baker makes the bland statement that there could be substantial cuts in the UK defence budget in the future which would lead to military airfields being closed or mothballed. May I suggest that the first airfields to be closed or mothballed will be in Germany and that there may well be an increase in military airfields in use in the UK to house the squadrons that are pulled out of Germany.

REX PARKINSON, Hook, Hants

WATCH OUT FOR CORN CIRCLES

Dear Editor,

I would be grateful if your members in light aircraft and gliders would keep an eye open this summer for corn circles and let me know of any sightings with either a map reference or a distance and bearing from a reference point - eg a village.

You may have seen some of the publicity that crop circles have received in the media and press. Although most have occurred in Wessex where Busty Taylor, a flying photographer, has found some 300 since the early 1980s, a ringed circle with three equispaced satellites appeared between Oadby and Stoughton in 1988 and a 16m diameter anticlockwise-laid circle occurred 1km north of Husbands Bosworth in August 1989.

A third was reported, though not confirmed, this May by a commercial pilot going south some 3nm west of the M1. He was said to have passed directly over a ringed circle some 1.5min before overflying the M6/M1 junction but it hasn't been found.

We don't know how the circles are formed

although investigating groups consider hoaxers can be ruled out except for a few fairly obvious copycat examples. They date back to 1678 and increased from single figures in the late 1970s to 260 odd in 1989.

Your assistance on gathering further data on this intriguing mystery and apparent scientific anomaly would be much appreciated and acknowledged.

ROBIN WINGFIELD

The Spring House, Grimston, Nr Melton, Leics
LE14 3BZ

MORE ON RUDDER LOCK

Dear Editor,

In the April issue, p61, Brenning James refers to rudder lock which, as he says, is associated with fin stall.

Brenning and other readers might like to know that the phenomenon is covered in airworthiness flight testing. OSTIVAS states that in a side-slip any control force reversal must not be such as to make control difficult; JAR 22 has different wording which, however, amounts to the same thing. The test is to apply rudder, at the same time feeding on enough opposite aileron to keep the flight path straight.

I have done the test on many types, though unfortunately on nothing very modern, and retain documentary results on 16. I can summarise them thus:

No locking	Kite 1, Scud 3, Mu 23, Rhönbussard.
Marginal	Sky, Jaskolka, K-7.
Definite	T-21c, Capstan, K-6, K 13, K-8, ASW-15, Dart 17, AV 36, Short Nimbus.

On gliders classed "marginal" the rudder just locked on as full travel was reached, and there was no buffeting. Those classed "definite" did buffet. When locking occurred the force required to push the rudder off was small in all cases except for the Short Nimbus (hardly a typical glider), and if the wings were levelled the rudder always unlocked itself, though sometimes only slowly. Results were the same whether airbrakes were in or out.

My conclusion is that it is safe to make side slip approaches when necessary, so long as one uses ailerons appropriately when straightening up, and, of course, not leaving it too late to do so.

Why does fin stall occur? The designer has to choose the total fin and rudder area to provide enough directional stability and for spin recovery, and the rudder must be large enough to supplement the latter, and to fight the former in crosswind take-offs and landings. The larger rudder can thus induce large side-slip angles and these are what stall the fin, or actually the vertical tail, as a whole.

CEDRIC VERNON, Guildford, Surrey

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

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EVEN MORE ON SUNGLASSES

Dear Editor,

Following your excellent article by John Wright on sunglasses (June 1989 issue, p124), I went armed with my copy of S&G to my optician, as I needed a new second pair of glasses to comply with airlaw requirements and thought it would be an easy matter to have a prescription made up to Cloudmaster specifications.

My optician thought the article was excellent and anticipated no problems in meeting my requirements. Three months later after going around in circles, he discovered Zeiss, who he had started with, now did their Umbra range of coatings on prescription. One of these coatings very closely matched the Cloudmaster characteristics, which he recommended in conjunction with a special higher quality glass normally used for people needing very thick lenses, and very soon after I had my new specs.

I must say I am very pleased with the results. If anyone is experiencing difficulties in getting suitable coatings on a prescription I'll be only too happy to pass on my optician's 'phone number, who now has all the details, and the S&G article, in his specialist file. BOB CASSIDY, 7 Cheldon Close, Whitley Bay, Tyne & Wear, NE25 9XS

THE TRUTH ABOUT RIDGEWELL

Dear Editor,

I would like to put the record straight about the Ridgewell gliding site in Essex (certain persons seem to be spreading misinformation).

The facts are:

1. I own this site, plus adjacent land.
2. I have met Bill Scull and he has seen the site. He will support me that there is plenty of potential for the right people.
3. Unrestricted planning exists for gliding with light aircraft support.
4. The site is being used by several glider pilots on a non-fee paying basis for the time being, but no conclusive deals have been struck.
5. Yes, I am fighting an appeal to be able to operate light aircraft unassociated with gliders, but this does not mean that my intentions are "die-hard anti-glider", - why

should they be? Most of my fixed wing operation is based at Andrewsfield and an arrangement could easily be made with a permanent club based at Ridgewell, allowing gliding priority at weekends, but reverting to fixed wing if the gliders were grounded due to weather. In the winter months not much gliding takes place, while the flying school continues unabated. With a bit of goodwill, both fixed wing and gliders could co-exist quite happily at Ridgewell.

6. I also have a planning application in for a clubhouse and hangar.

If anyone wishes to talk to me about gliding at Ridgewell, I can be contacted on 037186 744. FRANK HOLMES managing director of Andrewsfield Flying Club, Saling Airfield, Stebbing, Gt Dunmow, Essex

NEW SITE FOR USA CLUB

Dear Editor,

As one whose work causes me to travel quite a lot and glide a little, I read Trevor Foxen's Traveller's Tale in the June 1989 issue, p141, with great interest. But I must tell any other travellers that the "Gliders of Calistoga" have been forced to move because of the sale of their site and are now at Sonoma Valley Soaring, Sonoma Skypark, 21870 Eighth Street East, Sonoma, CA 95476. This has the

advantage that while San Francisco remains the nearest major airport Sonoma is only about two thirds of the previous journey from San Francisco.

The equipment all came from Calistoga and the system operated appears very similar to that described by Trevor. Commercial it may be but the welcome I received was very warm and I was able to enjoy some gliding at very short notice.

ROGER GRIMES, Halton, nr Aylesbury, Bucks

GLIDING CLUB BOOK

Dear Editor,

I am working on a book describing all the gliding clubs in the UK, as well as military clubs overseas. By now most GC secretaries are aware of my efforts, or at least the questionnaire I have sent to them. Many of you have already answered, to which I extend my deepest thanks, and I hope to get the book out soon.

To the rest of you. If you have already received a questionnaire it really shouldn't take more than a half hour to answer. And think of the free advertising. Now I grovel, almost as much as I do for a chance at 5hrs in the K-8. Please complete and return the questionnaire. Thanks.

And lastly, to what are hopefully a very few. Sorry, I didn't get your address, and don't know of your existence. I suppose you have your reasons (ie new club) that the BGA didn't have your address as of February this year. No problem, drop me a card and I'll send you a copy of the questionnaire.

ROBERT B. RIDDLE
Box No. 3724, RAF Mildenhall, Suffolk., IP28 8NG

STROBE LIGHT KITS

Dear Editor,

After reading Mr Johnson's article (April issue, p79) on strobe lights, with interest, I tore off a sheet of the proverbial and did a quick calculation.

Now what visual range is required? You need time to spot the light, decide what to do and then do it. Let us assume that you, as a highly skilled pilot, are proceeding carefully at a modest 90kt under a good cloud street and

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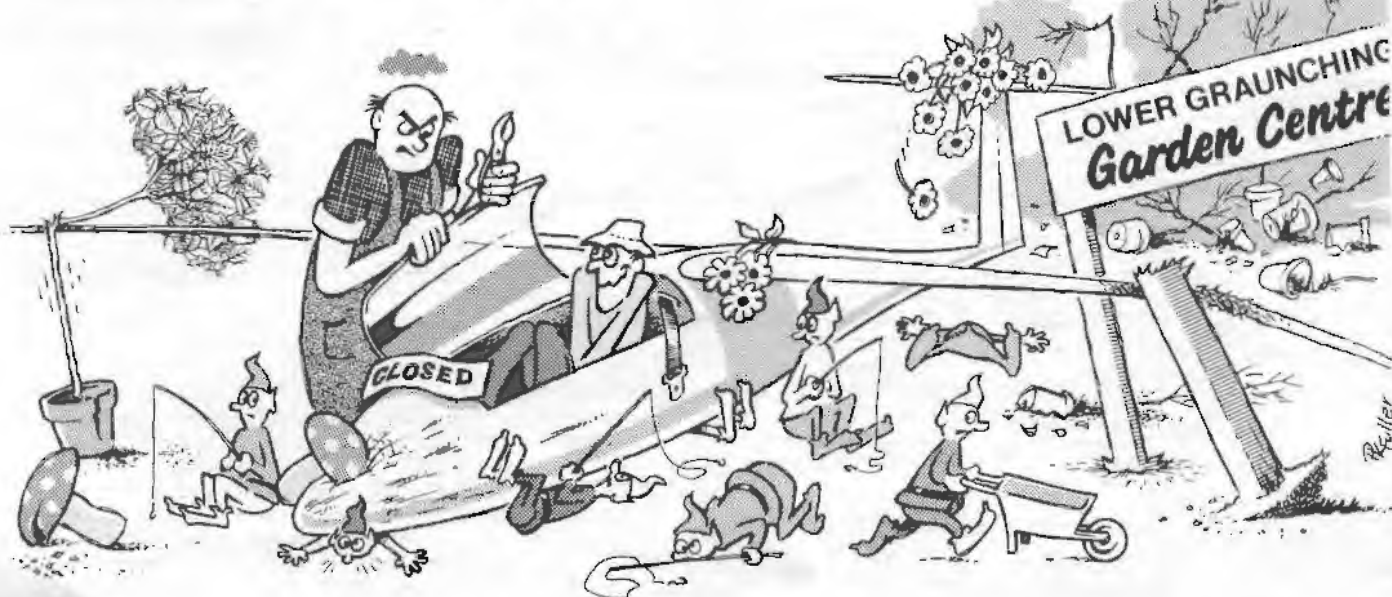


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that there is none of the usual haze present. Some idiot is hareing along the street at 90kt, in the opposite direction and at the same height, but he has remembered to switch on the strobe light that his partner fitted. You need at least three seconds to judge the situation and to push or pull on the stick. With a two second flash rate, this makes a total of five seconds. The calculated range is 1500ft and this is the rock bottom minimum - it won't allow you enough time to turn away.

Comparing this range with the "bright overcast" range of 700ft, for the strobe lights in clear conditions suggests that they are hopelessly underpowered for daylight use in gliders, by at least a factor of four. Any haze would considerably reduce the effective range. The "whirr-pop" sound produced on the radio may be music to Mr Johnson's ears, but it sounds more like objectionable radio interference to me and it is probably due to inadequate suppression and inadequate screening. It could seriously limit the performance of your radio near its maximum range. The 1.1 amp required would be a heavy additional drain on your battery. The kits may have had "good value and quality" printed on the wrapper - but can you believe everything that you read? C. J. CHAPMAN, *Petworth, Sussex*

Dick Johnson replies: I quite agree with Mr Chapman that the strobe lights are of very limited benefit under bright and semi-bright conditions. However, as conditions darken their usefulness increases rapidly.

His hypothetical case of the two 90kt sailplanes approaching head-on is real, of course, but not at the top of the collision hazard list because both pilots have a full view of each other. At least in the USA about 85% of our aircraft mid-air occur while one aircraft is overtaking another. There only one pilot generally has an opportunity of sighting the other, but the closure rates are considerably lower.

NO WAY TO TREAT THE YOUNG

Dear Editor,

I became hooked on gliding in 1986 as a 16 year-old civilian member of a service club and value my membership greatly. My flying has improved as rapidly as a student's budget will allow but I have had difficulty proving myself against older, more established members of the club.

However, I have never experienced such hostility and jealousy as I did on the weekend I converted to the LS-4. These feelings were not shown by the pundits or beginners and early solo pilots, but those who had been flying for seven or more years and had stagnated at the 300km level.

Having been told by one member that it would be years before I could fly the LS-4, my CFI converted me. But distressing comments like "Don't crash it!" made me scared, nervous and unsure of what was to follow. Not the best emotional state to fly a new aircraft.

I did buy celebratory drinks, but would have thought twice had I known the backstabbing that was to follow. "He shouldn't fly that, he's

only a whipper-snapper" was one comment overhead.

The following morning I faced a barrage (five people) of self-appointed critics tearing every aspect of my flight apart. This turned a relaxing and enjoyable weekend into a miserable experience.

It isn't only my club who are to blame. I have spoken to young pilots from other sites who have experienced the same prejudice. It does seem strange that a movement complaining of the recruiting problems shows such attitudes to the very young people it wants to attract.

My message to anyone who feels a tinge of jealousy to a young pilot is please don't take it out on him or her. Make yourself better - they aren't going to stop or stagnate just because they are under thirty.

A DISMAYED STUDENT

ANOTHER YOUTHFUL COMPLAINT

Dear Editor,

A 5min flight from a 1600ft aerotow. And that's not all. When we landed, the instructor ordered me to take over the flying list (for the next few hours). Why? What did he have against me? Was it because I was a 15 year-old boy with an ambition to fly solo at the age of 16?

I had paid £13.75 for the aerotow like everyone else had. The instructor had stolen £11.50 (1000ft) from me. The conditions couldn't have been that bad since the adults who flew before and after me (with the same instructor) had flights averaging 15min.

This club (whose name I will not mention) is not the only one where younger people are maltreated this way. Many people wonder why the average age of glider pilots has been rising over the years. It is not surprising. With treatment like this, how could younger people be attracted to this wonderful sport?

I now glide at Lasham, where they not only treat young people very kindly and equally, they have a cadet membership (taught by excellent, experienced instructors) and I know I will be able to go solo on my 16th birthday. There are doubtless hundreds of other 15 year-olds like me with the same dream but do not have a club like Lasham.

AMIR-REZA AMIRI, London

HOW TO KEEP MEMBERS

Dear Editor,

In reply to the article in the April issue, *Twitterings*, p70, about *ab-initios* leaving gliding, I make a few humble suggestions.

Treat all newcomers (not just the pretty ones) like human beings. Be patient and take time to explain the important things. Be friendly - it costs nothing and it works. Use plenty of humour, but in such a way as not to detract from anything vital. Don't form cliques that freeze out newcomers.

We are told that if we don't get the attitude right we're not flying the aircraft properly. The same is true on the ground. It's no good saying that sort of thing would never happen at

my club - it does. I left my local club because it didn't make new members feel welcome and now fly at a small but very friendly club in Staffordshire.

If you don't like what you have just read it could be that you have the disease if not the symptoms. At your next flying day open your eyes a little bit wider and take a good hard look.

EMU

BOOK REVIEW

Gliding in 8 Days by Adrian Morgan.

Published by Osprey Publishing Ltd and available from the BGA shop at £8.95 plus 50p p&p.

In general terms I liked it.

I wish that when I started gliding I could have read a book like this which gives a realistic introduction as opposed to newspaper articles which have "the instructor pressing on the brake pedals to bring us to a smooth landing" and the (forgive me Derek) slightly dry text book approach of our gurus Piggott, Welch *et al*.

I was chatting to a pupil the other day who told me that he was almost put off before his first flight by being given **New Soaring Pilot** for Christmas. Excellent to me though it is the title gives the wrong impression as it is far too advanced to be relevant to an absolute beginner.

Adrian Morgan is a professional writer and his style is easy to read. He also adds a nice touch of glamour which is just what the average *ab-initio* needs to keep them going during the long cold hours at the launch point.

I do have some criticisms in that at a number of places I found myself reaching for a pencil to write exclamation marks against sections which, if fully absorbed by a beginner, are likely to make my job in the back seat more difficult than it needs to be.

It is also unfortunate that Adrian's experience was limited to courses at Booker and Lasham. This could give the impression that a smooth and professional introduction can always be expected. We all know, of course, that the Much Binding on the Drum GC is a very different story and to round off the picture I would have liked to have seen a chapter on life at an "average club" for two reasons; first to not build expectations too high and secondly to initiate the reader into the darker rituals of logkeeping, tractor driving and ground handling. I say this on the basis that an average eight hours at a club is likely to have at least half of the time spent doing these necessary but uninspiring activities.

An exhortation that "they will talk to you only if you make the effort to talk to them" is a small but unfortunately vital omission to any introduction to our sport.

Carping aside, this book very successfully bridges a significant gap and should be recommended reading for anyone considering or in the early stages of taking up gliding.

PETER WHITMORE

Cumulo-nimbus (Cb) clouds are exciting but potentially the most dangerous features of the atmosphere. They may be associated with thunderstorms, tornadoes, downbursts and squall lines. They can occur in lines along fronts, in large clusters and also in the circulation of hurricanes. Vertical currents may sometimes exceed speeds of 100kt, enough to break up strong aeroplanes. They sometimes drop a mass of damaging hailstones whose size and fall speed may occasionally be lethal.

If you enter one of the less ferocious ones in its early stages it can take you up to Diamond height in a few minutes. Before you try it spare a minute to glance at the section on "Going into Cb" at the end of this article.

Steps in the life of Cb

For Cb to grow to full size the air must become unstable to a great height. However, even if the

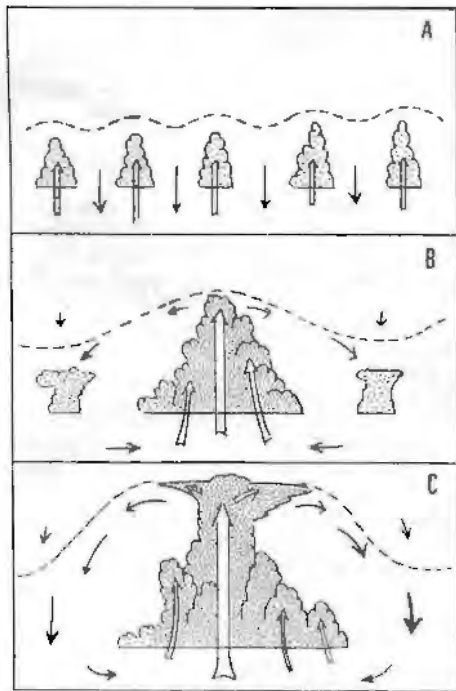


Fig 1

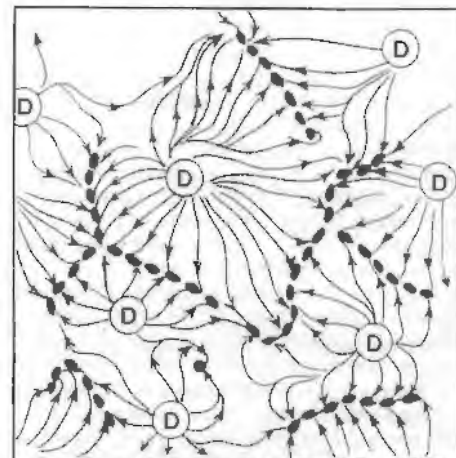


Fig 2

CUMULO-NIMBUS

These clouds may offer the quickest way to a Diamond height but Tom Bradbury advises caution, likening them to "a combination of a very high voltage generator and an ice factory"

local upper air sounding shows this instability the first clouds rarely shoot up to become Cb straight away. The process may take several hours.

Early stages

The embryo Cb goes through the following stages:

(a) When the surface is warm enough thermals rise up and many small clouds start to grow above the condensation level. As these clouds grow the turbulent circulation pulls some of the surrounding air into the clouds.

(b) Since the surrounding air is usually both cooler and drier than the young cumulus the mixing cools the thermals and initiates evaporation. This produces holes which grow larger as the sink increases so the first clouds seldom live long enough to grow big.

(c) The problem of evaporative cooling is often solved by a group of cu combining together instead of acting individually. When a cluster of cumulus grow together the inner members of the group are shielded from the cooling and evaporation which erodes solitary clouds. The group then grows larger and taller until one or more cells reach their full height.

(d) As the group expands it produces a broad region of sink all round. This starts to squash all the little clouds who have so far failed to form their own protective groups. Finally all that is left is a few big clouds spaced far enough apart not to hinder each other.

The process is illustrated in Fig 1. (A) shows the field of little cu, (B) shows how group protection allows a bigger cu to form, (C) shows the final Cb stage when all the little clouds have been suppressed.

Interaction between clouds

A study of the early stages shows that cumulus clouds rarely develop independently: there is usually interaction between neighbouring clouds. This comes about by airflow spreading out from zones of sink. The outflows meet to form small low-level convergence lines. Fig 2 shows streamlines of low level flow in calm weather. Regions of sink are marked "D". From these the air spreads out horizontally. The arrows show how the downdraft air then converges along definite lines (marked by strings of blobs). This convergence triggers off fresh thermals which merge to form the protective clusters needed for

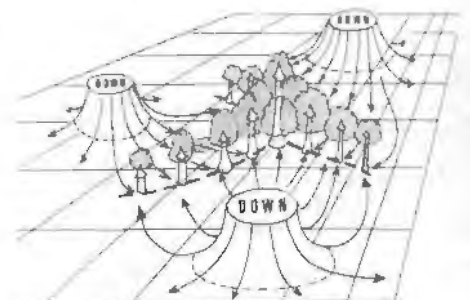


Fig 3

greater growth. Fig 3 is a 3-D picture showing how a cluster of cu may form where there is a junction of convergence lines.

In the early stages such lines are so weak they are seldom noticed. Later, when the cu grow into Cb, the outflow from downdrafts becomes a major factor in the extension of storm clouds.

Availability of Energy

Warming from the surface starts the convection but surface heating alone is seldom enough to form a Cb. Most of the energy within a Cb comes from the release of latent heat when con-

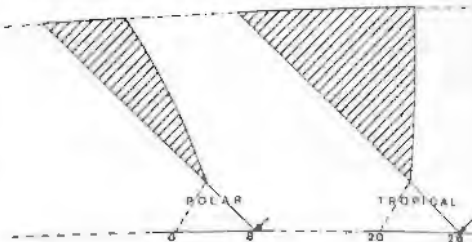


Fig 4

densation occurs in the rising air. Fig 4 shows the extra energy released when a thermal rises far enough for the moisture to condense into cloud droplets. The straight lines represent how a cloudless thermal cools as it ascends. The slightly curved lines to their right show how air cools when saturated. The shaded area between these lines represents the energy released by condensation.

The left hand diagram shows a polar air mass where the surface temperature is 8°C and the dew point 0. The right hand diagram shows tropi-

cal air where the surface temperature is 28°C and the dew point 20°C. Both have condensation levels about 3200ft but the tropical air releases more energy. This is because warm air holds more moisture than cold so the energy released by condensation is much greater. As a result Cb formed in tropical air can become larger and more ferocious than those in cold polar air.

Height of cu-nim

Cumulus growth depends on the depth of unstable air. The ultimate limit is usually the tropopause, the surface dividing the lower atmosphere (troposphere) from the stratosphere. Temperature falls with height in the troposphere but is almost constant in the lower stratosphere. Any Cb which reaches the stratosphere tends to spread out in an anvil shape. The momentum of the up current may take the cloud several thousand feet higher, producing a temporary bulge in the tropopause, but most of the anvil has a level top which grows wider as more air is carried up from below. The tropopause is nearly always much lower in polar air than in tropical air; the difference can amount to 20000ft or more. Thus Cb in polar air are apt to be smaller and less energetic than tropical Cb. They can still generate hail and thunderstorms and icing starts much lower down.

Why the dew point is important

The dew point (the temperature at which dew forms on a cooled surface) is also an indicator of how much moisture the air is holding. If, for example, the dew point was reported as 4°C it would indicate 5gm of water vapour in each kg of dry air. If the dew point was 20°C the moisture content would be 15gm/kg or three times as much.

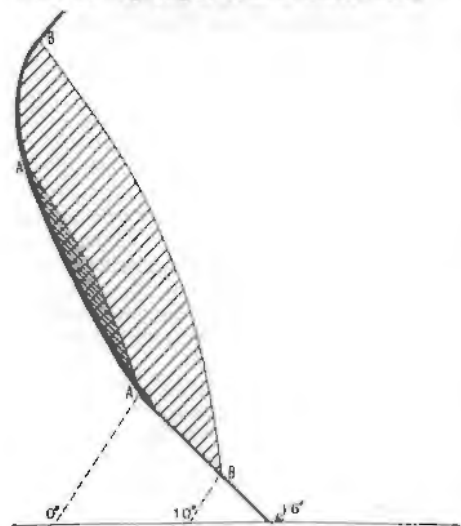


Fig 5

Fig 5 shows how a higher dew point can produce much more energy. The broad curving line is the measured temperature, starting with a surface value of 16°C. If the air was dry, with a dew point of 0°C, the cloudbase would be about 6400ft and only a small amount of energy would be released by condensation. The amount is shown by double shading between the points A.A. However, if the dew point went up to 10°C

the cloudbase would lower to 2400ft and the amount of energy (shown by single shading below the line B.B) would be far greater. In the dry case one would have well scattered big cu but in the moist case the sky would probably fill up with heavy Cb.

Showers, windshear and downdrafts

Once Cb have formed new ones can shoot up very quickly. In as little as twenty minutes a small

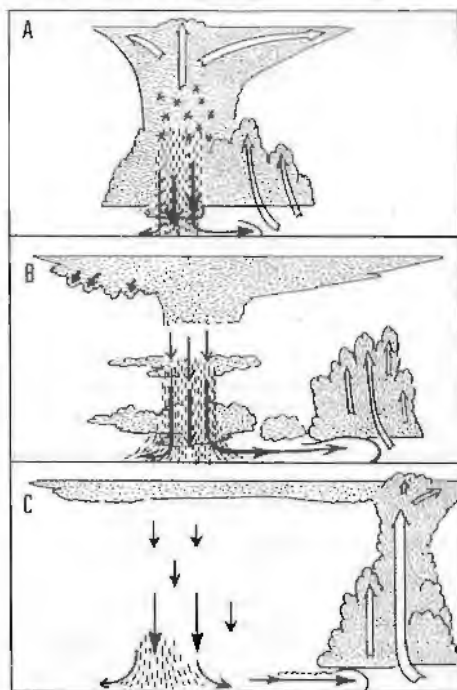


Fig 6

cumulus can grow into a big Cb with an anvil top spreading out at 30000ft and a heavy shower reaching the ground. In the next ten minutes the updraft may be swamped by the descending shower and the cloud starts to expire. The development depends on whether the wind velocity is fairly constant with height or if there is a shear of wind through the depth of the cloud.

With little or no wind shear the weight of precipitation tends to fall straight back through the column of lift and soon reverses it. As lift turns to sink throughout the cloud the Cb falls to bits. The anvil at the top often lasts longest while the middle and lower sections of the cloud disappear. In small Cb the process can be so rapid that the entire cloud vanishes in a few minutes leaving just the bottom half of the shower apparently falling out of a clear sky. This is particularly common when the showers fall as snow which takes a long time to reach the ground.

Even when the shower ends the air usually continues sinking for some time; this is a good reason to avoid flying through the region just behind a shower cloud. When strong sink reaches the ground it spreads out to form a gust front which may trigger off new Cb. Three stages of this process are illustrated in Fig 6. (A) shows the shower already well developed with a downdraft outflow pushing off to the right. (B) shows the original cloud collapsing and a new

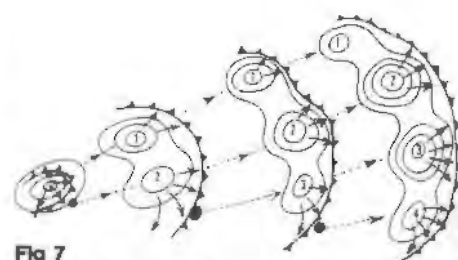


Fig 7

one growing above the nose of the outflow. (C) shows the fully formed new Cb. Although the original cloud has died a series of new ones grow up all round and these may combine to form a much bigger multicelled storm. Most Cb over the UK are of this multicell variety.

Development and movement of a multicell storm

Fig 7 shows a plan view of how a single cell can grow into a multicell storm extending over a wide arc. At the left is the original cell; the curved line with spikes represents the outflow which acts rather like a miniature cold front. The general wind direction is from WSW to ENE. The original cell, marked (1), follows this track. New cells are triggered, often on the SE corner of the outflow. These are marked by black blobs which grow into cells 2, 3 and 4. Thus the storm centre can move across the wind as old cells die out on one side and new cells grow on the other. It is more common for these new cells to form in the right flank of the storm.

Cumulo-nimbus growing in a vertical wind shear

Many of the biggest and most damaging Cb are those which develop through a vertical wind shear. Wind shear initially acts to filter out the weaker clouds. Only the strong ones can push their way up through the changing wind structure. The shear then has two main effects:

- (a) It pulls out a long streamer of cirrus cloud from the top of the cu-nim and
- (b) Twists the updraft so that when the shower begins it does not fall straight back into the column of lift.

With the lift kept separate from the descending shower the Cb can continue to grow into a real monster called a "supercell".

The supercell

Until the development of pulsed Doppler radar it was difficult to study the workings of such clouds, but now researchers have drawn three-dimensional cross sections which show the flow is surprisingly complicated. Fig 8 shows one highly simplified version drawn in 3-D. Since the supercell is able to keep the updraft separate from the shower downdraft it can maintain itself for long periods. A fully grown supercell draws in warm moist air from one side; this forms the updraft which starts off with a shallow slope but grows steeper with height. Finally the air is pulled out into a longer anvil by the strong winds aloft. Thus the supercell contains a fairly steady circulation, unlike the multicell storm which pulsates with many surges of lift.

At middle and upper levels the slowly moving supercell deflects the faster moving air round the

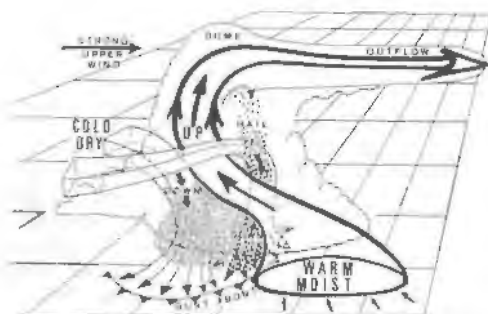


Fig 8

updraft. The medium level air is usually relatively dry and when it is sucked into the supercell it starts evaporating part of the cloud mass. Evaporation cools this section so much that a powerful downdraft develops. The downdraft can persist very close to the updraft without disturbing it. It usually combines with the falling precipitation to produce a downrush of hail and rain. The descent can be fierce enough to blow down trees and damage structures on the ground. It is then called a "downdraft" or, if it only covers a small area, a "microburst".

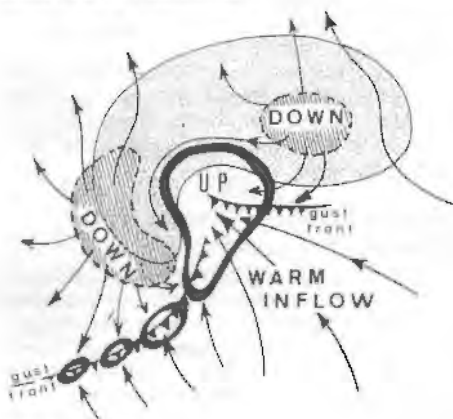


Fig 9

Fig 9 shows a plan view of a supercell. The heavy black line outlines the updraft. This is fed by the warm moist inflow shown entering from the SE. The main area of precipitation at ground level is shown stippled. Two downdrafts are shaded in and the outward flow indicated by curving arrows. The gust fronts are shown by spiked lines. Notice that in the SW quadrant there is a line of new and much smaller updrafts. These are feeder cells which move in to join the main updraft later.

Gust fronts

When it hits the ground the descending air spreads out horizontally to produce a gust front 1000-2000ft deep. This sets off a wide arc of rising air at the gust head. The downdraft squall may occasionally reach speeds of 100kt and the lift at the gust head is correspondingly strong. Occasionally two such squall lines from separate storms collide. One pair produced a fountain of lift giving an average of 30kt up to 10000ft or more. The area of Cb can extend surprisingly fast when gust fronts collide or meet some obstruction such as a range of hills. Pilots trying to weave

their way through gaps between Cb have been shocked to find the rift closing up both in front and behind.

Tornadoes

The wind shear sometimes twists the entire cloud. At low levels there is also a twist to the inflow; this is initially a slow spin imparted to the converging air currents. When the updraft is given a sudden boost, perhaps by the action of a gust front, the convergence concentrates the rotation so much that a cone of air starts spinning fast enough to produce a pressure drop. Cloud

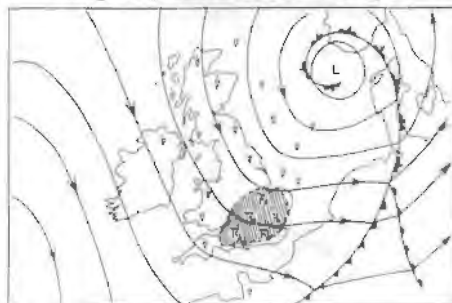


Fig 10

forms where the pressure falls and the beginning of a tornado becomes visible. As the tornado cone spins faster it extends down to the ground. Stretching this vortex results in the broad cone becoming long and narrow. Over the sea the same process causes waterspouts.

Met charts on thundery days

(A) Cold air Cb

Fig 10 shows a common situation for thunderstorms. This is a classic example of post-frontal thunderstorms. There is a cold north or north-westerly flow following the passage of the depression and its cold front. As the front moves away the unstable air grows deep enough for ordinary cu to grow into Cb. In winter and spring the sea is often warm enough to set off Cb over the ocean. As the sun becomes higher the heating overland makes the Cb more active and in summer and autumn these storms are chiefly confined to land areas.

Any minor trough in the isobars helps concentrate these Cb. Showers are more common where the isobars have cyclonic curvature and a definite trough helps the cu to combine into a line of Cb.

(B) Warm air Cb

Text books warn pilots of Cb and thunderstorms developing along cold fronts but they do not always describe the storms which can

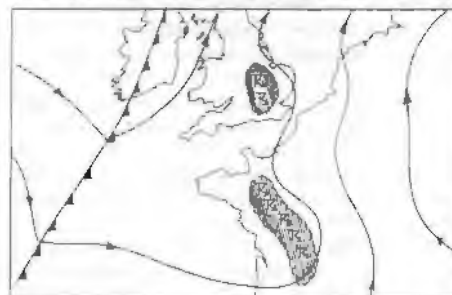


Fig 11

form in the very warm air well to the east of a front. Fig 11 shows one example of thunderstorms in what could be described as the "warm sector". These are some of the stages leading up to such storms.

1. A southerly flow brings progressively warmer air up from low latitudes. Passage over a warm sea adds more moisture to an originally dry air mass so that it becomes both hot and humid. The observer on the ground finds temperatures rising day by day and the air often becomes hazy. Despite the rise of temperature the thermals remain blue and are severely restricted by a low inversion.

2. At middle levels the winds veer bringing cooler and relatively dry air from the SW over the rather shallow layer of hot humid southerly air. This makes the air "potentially unstable" but at first the temperature soundings show that even high surface temperatures cannot break the inversion and release this potential. The inversion is important because it prevents thermals from tapping the energy aloft until a really huge amount has built up.

"This can be the final straw which breaks the inversion."

3. The trigger may be a small band of strong upper winds called a "jet streak". The jet streak is a more active section of a long band of strong winds at high levels. It is important because the acceleration of air into the jet streak can produce ascent of air from much lower down. This can be the final straw which breaks the inversion.

4. At first the process only shows up on computer charts. The ground observer may not be alerted until little puffs of "alto-cumulus castellanus" appear. Castellanus means turreted cloud. These clouds often look like small cumulus except that they form at levels of 10000-15000ft and are not caused by thermals from the ground. Some text books also use the term "Floccus", likening the collection of woolly puffs to a flock of sheep. They look innocent too, but such clouds are one of the most reliable signs of thunderstorms to follow, usually within 24 hours. What they show is that the whole mass of air is being lifted slowly upwards and so becoming destabilised.

5. Events may develop rapidly after this. The widespread ascent accompanied by very high temperatures near the ground weakens the inversion and when it does break the stored energy is suddenly released. Cb form rapidly and grow into real monsters.

POINTS TO WATCH FOR:

- An increase of temperature over several days accompanied by hazy conditions and a low inversion spoiling soaring.
- A slow fall of pressure which often goes on for two or three days before the storms develop. Heat lows may appear overland on the surface charts before storms break out.
- A rise in dew points reported in VOLMET broadcasts. The hot spell often starts with dry air

and dew points below 10°C. If you hear reports of 16°C or more the Cb risk is becoming significant. By the time dew points are 18 to 20°C the atmosphere is set to go bang in a big way.

(d) If it has been a cloudless but very hazy afternoon and the haze begins to look unusually dark up sun, it may be because a distant Cb has cast its shadow over the haze.

When the storm is in sight

Once Cb have formed the inflow into the storm may be marked by little bits of scud or a complete shelf of cloud. Fig 12 shows three stages. First

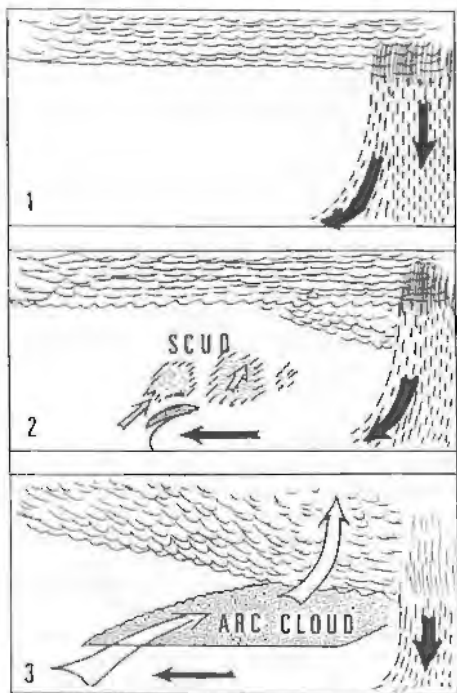


Fig 12

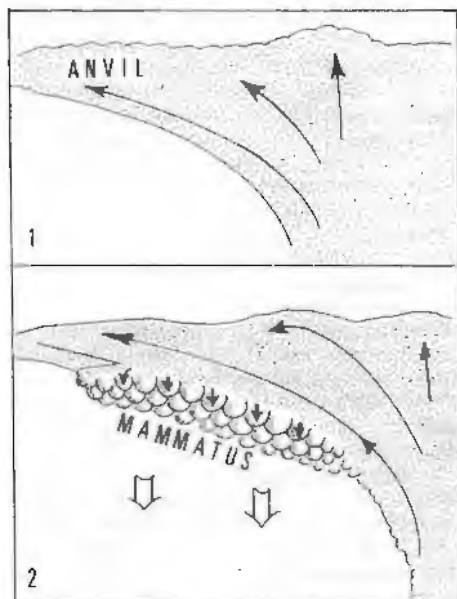


Fig 13

there is the downrush accompanying a heavy shower. If you see the rain shaft curving outwards near the ground it may mean that a horizontal outflow is developing.

The next stage shows little bits of fuzzy cloud, scud, appearing well below the main cloudbase. There may even be strange bits of lenticular cloud too. If a new updraft is developing you may see the bits of scud being sucked upwards and growing in all directions.

The third stage is rare in the UK but has been seen with big storms in the USA. A smooth shelf of cloud develops where the sloping inflow of warm moist air rises into the core of a supercell. The cloud may form an arc and is often called an "arc cloud". The top is similar to the leading edge of a lee wave cloud and marks the upper boundary of the inflow. It usually merges with the main body of the Cb before the arrival of the rain or hail shaft.

The powerful updraft often takes a mass of moist air well above its equilibrium level where it spreads out into an anvil. Then some of it sinks down looking rather like smooth inverted cumulus. These bulges are called "mammatus cloud". Fig 13 shows the development of mammatus below the anvil of a Cb. Mammatus forms quite quickly and its shape changes rapidly. The storm is generally past before this formation appears. It is often an indication of widespread sink which goes on after the main storm has moved away.

Later stages

Warm sector storms sometimes grow into a line several hundred kilometres long and give the impression of a very active cold front.

And what happens to the original cold front far to the west? Quite literally its thunder has been stolen by the warm sector storms and it often arrives next day with little or no rain and just a change of fresher air and better visibility.

Going Inside Cb

Flying inside a Cb can range from very stimulating to totally terrifying depending on one's good luck and skill. Going in should be a deliberate choice, not a spur of the moment inspiration. Big storms develop very powerful inflows. Modern sailplanes can fly fast enough to avoid being sucked into a Cb. Unfortunately slower craft such as hang gliders cannot always fly away if they come too close to a growing Cb. This has already led to fatalities in Europe.

Here are some of the problems that may be encountered inside.

(1) **Icing.** Practically all Cb extend far above the freezing level. During a fast climb there may not be a big build up of icing but during the exit one can easily collect a lot of ice. This is apt to reduce the performance of a modern GRP glider to worse than a Dagling. Pilots have opened their airbrakes and found it impossible to close them again until the ice melted. Apart from ruining the glide angle the ice may freeze controls surfaces solid. This is interesting if it happens when you have emerged into smooth clear air; it is highly unpleasant if you are still in cloud.

(2) **Anoxia.** One is quite busy enough keeping in the core of lift without the extra fuss of putting on an oxygen mask at the same time. The rate of climb can increase as you pass through 10000ft

and 15000 may appear on the altimeter less than two minutes afterwards. If you are not already on oxygen it is high time to be heading out for clear air. Even in a small Cb you may still gain another thousand or two before coming out.

(3) **Turbulence.** The lift can be almost as smooth as a strong lee wave until you near the top of the lift, or slip out of the core. Then it becomes extremely rough. Nearly all big cu are rough near the top but Cb, which contain powerful downdrafts close to the lift, are far worse.

(4) **Lightning.** A strong metal aircraft usually gives good protection to its occupants but one may become distinctly unhappy in GRP. The main centres of electrical charge seem to occur between temperatures of -10°C and -20°C. Even without an actual lightning flash one may fly through a very highly charged region. Vertical fields of 50-100kV/m have been measured in Cb. In clean dry air at sea-level it needs about 30kV/cm to produce a spark. In the central regions of a Cb an electric field only one tenth of this (3 to 4 kV/cm) is enough to start a positive corona streamer which triggers the onset of lightning.

Before any flash of lightning occurs flying may become painful because of frequent shocks from metal objects in the cockpit.

(5) **Hail.** Flying through rain is noisy enough. Hail, even the tiny variety, makes even more racket. When there is hail there is liable to be lightning too. Quite often the size of hail encountered in the UK is small enough not to cause severe damage, but there are photographs of airliners whose metal nose cones have been battered in by hail. Just occasionally a Cb will drop really big hail which does serious damage. Hailstones with a diameter of 7-8cm have fallen over SE England. Larger ones have been found over Europe where hail storms are more frequent.

If you still feel inclined to go in, pick the upwind end of a feeder line of lesser cumulus and remember which was the quickest way out. This is entry by the side door. The front door is best avoided; it is the quickest way into a combination of a very high voltage generator and an ice factory.

"SOARING"

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Bryn Gwyn Bach lies about a 1000 yards behind the face of the Clwydian ridge and this accounts for the fact that in some wind strengths and directions the field encounters a fair degree of turbulence. July 7 was just such a day.

"Look" I said to my syndicate partner who was pressing to get me into the Oly, "I'm not feeling too good, I've got a headache and I'm definitely not flying today. In any case, it's far too turbulent to be enjoyable". This with one eye on the 419 bouncing through the air over the trees as it came into land. The moment the retrieve crew had the aircraft secured the pilot jumped out and immediately started leaping and dancing around. "There you are", I said, "look how pleased he is to get down in one piece. That confirms it, I'm very definitely not flying today".

There was an article in S&G a little while ago, written I think by some psychoanalyst or other, who suggested that one should rationalise one's fears in order to overcome them. (See August 1986, p165 and October 1986, p210.) I took this to heart, rationalised mine, and have come to terms with the result. I'm a confirmed coward.

Meanwhile, our fellow came racing up the field obviously yelling something at the top of his voice. "Good lord", I said to my partner, "The strain has obvious got to him and sent the poor chap completely loopy". It was just at that moment that I heard clearly what he was calling. "There's wave in the valley" he cried, "I've just been to 9000ft over St Asaph". So that was how I came to be sitting in the aircraft all ready to go, with no conscious effort on my part and little recollection of actually climbing into the cockpit. "What about your headache?", said my partner from his position on the ground, to whence, judging by the large muddy footprint on his chest, he had been trampled. "Gone", I said, in the same breath as, "Is the barograph ticking? Up slack and all out".

With 1300ft off the wire and straight out through the Rhualt gap there was not enough height to reach St Asaph with that wind so it was along the ridge to see if I could pick up a bit more before heading out into the valley. The wind was gusting 20-25kt and the ridge should have been working but it looked as though the wave was depressing the hill lift and I was already down to 700ft with all bridges burned and a valley landing inevitable if I didn't find something soon. "Cwm is popping off thermals," I'd been told so that was where I was heading. "Be careful", he had cautioned. "They are pretty violent". Yes! in retrospect, I think "pretty violent" was a reasonable if somewhat understated description.

As I rounded the knoll I was hit by 6 up and immediately threw the Oly into a tight turn only to be spat straight out into 4 down. In again and out again and again and again 8 up and umpteen down with the poor old Oly creaking and groaning in every wooden sinew as she protested at her treatment. Funny thermals these I thought, you get these thoughts when you are a pundit you know (see October 1988, p242), along with other thoughts like, "Oh God I hope Elliott's knew how to make mainspars as well as they made furniture", and "What the hell am I doing up here anyway?" Even I was beginning to realise that I was probably trying to thermal the rotor as it interfered with the hill lift, so eventually having gained a little more height and frightened myself silly I

NORTH WALES WAVE

Doesn't it take a long time to get down? John McCormick relives his Gold height flight on July 7, 1988

decided to head out into that valley and see what transpired.

Another narrow band of lift picked me up and dropped me again as I tracked towards St Asaph, 2 down, 3 down, 2 down. "Hell's teeth" I said to myself, "it's getting dicey for height again", and at that precise moment like magic it happened. I suddenly broke out from the overcast into another world, a world of bright sunshine and a strange stillness. Zero sink, zero sink, 1 up and soon passing through a thousand feet the planned circuit for a field landing already forgotten. Two up, 3 up, 4 up, and now I was hovering practically stationary at 42kt over St Asaph with the audio vario screaming in ecstasy and with me sitting rigidly to attention gripping the stick far too tightly, afraid to move in case somehow I upset this delicate equilibrium.

"Relax, relax", I told myself and made a conscious effort to comply staring with the muscles in my legs and moving upwards until I almost prised my fingers off the stick.

"All that daydream planning had gone out of the window"

One thing was certain. I was not moving from this spot until I could see where it was going. None of this searching the system to find out where the best lift was. I know the theory and I'm sure it's good. I've read and digested all the best authors on the subject and sat and listened whilst Vic Carr has lectured and shown and lined up his clouds, nevertheless this was the first time I'd been in the wave and there was no way that I was going to risk losing what I've already got to go putting theory into practice. All that daydream planning had gone out of the window.

Plenty of height now and completely relaxed I decided to call base and let them know what was happening. "711 to North Wales base", "North Wales base 711 go", they responded, "North Wales base 711 over St Asaph passing 8000ft at a constant 4 up". The effect I was told later was electric with pilots falling over themselves to get barographs signed and aircraft dragged on to the line. The air was crystal clear and the vista superb. To my right, the North Wales coast, with Prestatyn, Rhyl, Llandudno and Conway as it curved away to meet Bangor in the dis-

tance. In front of me Snowdonia opened its mouth to display its sharp craggy teeth, Snowdon, Foel Fras, Carnedd Llewelyn, Gilder Fawr and Drosfyl. On my left the rounded moors of Denbigh, Ruthin and Llandegla with lakes Brenig, Alwen and Aled glistening and shimmering in the sunlight. An ancient land proud of its natural beauty and the poetry of its language.

The fields below were now a patchwork mosaic of browns and greens but curiously I got no sensation of height as the aircraft continued to ascend at a steady 4 up. Nine, ten, eleven thousand feet. Blast, I'm going to have to break off at 12000ft, no oxygen aboard. That was not strictly true. I'd actually got a full bottle but hadn't got round to piping it up to the regulator so it was worse than useless.

The rate of climb was slowing now and finally petered out to zero sink at an indicated 11950ft. That was my fault of course for tempting providence and deciding that it was going to be me who was going to be doing the breaking off. I swear that there was some character out there somewhere, sitting on a cloud, muttering to himself, "Who the heck does he think he is, deciding how high he is going to go?" and then petulantly holding out his hand palm down, thus stopping the wave from going any higher. Fertile imaginations, these glider pilots (see December 1987, p294). Anyway I was incensed by his action and took it as a personal challenge so off I went looking for my missing 50ft. Up the coast, down the Conway valley, over to the lakes and every combination in between. I tried pulling the speed off, putting it on, I even tried zooming it but all to no avail. I gained a bit more here and lost it there but no way could I make that missing 50ft. Finally, I admitted defeat and decided to give my partner a chance to get amongst the medals.

Airbrakes full out and I was on my way. Meanwhile 737 had got himself established in the wave and was on his way up. "711 to 737 what is your position?" "737 to 711, 4300ft just north of St Asaph at 3 up". "711 to 737, I too am just north of St Asaph on my way down, please keep a good look out". I sat and pondered this for a little while and then my natural inbuilt caution took over. Yes, I am aware that that is a euphemism.

Anyway I didn't like the idea of him coming up where I was going down, so decided to vacate the area and turned downwind. I was at 7000ft when I hit what I can only consider as rotor at the back of the wave. Ye Gods and little fishes, what a shaking up that lot gave me. I knew I had some play in the tailplane holding brackets but now I

Bryn Gwyn Bach is still the home of the North Wales GC but a number of ex North Wallans, myself included, plus ex Avro club members who recently lost their site, have joined together and are now developing another new gliding site, The Glyndwr Soaring Club, at Llewenni Parc near Denbigh (OS sheet 116, map ref 075 691). The site is an 80 acre field with 1000 yard run and 200 yards of undershoot in the truly magnificent countryside of the Vale of Clwyd.

The landowner is a glider pilot whose dream it has been for some years to establish a club in this location and consequently he has allowed us a 21 year lease.

The Clwydian ridge running for 15 miles NS lies 1½ miles to the east of us and the wave system I referred to earlier lies right over our heads. Early indications are that we will be able to winch straight into it.

I firmly believe that Llewenni Parc is destined to become one of the soaring sites par excellence of the UK gliding world.

could not only hear it but actually felt it gedunking up and down. Being the brave little chap that I am I immediately made some semblance of a 180° turn and headed back the way I'd come. I'd rather take my chance with 737 than that little lot.

It was about now that I noticed that I wasn't going down anymore, despite full airbrake and 50kt on the clock. "Hells teeth", this was getting more difficult by the minute, goodness only knows what rate the wave was going up at in this area. I increased speed and headed for the centre of the valley and thankfully after a short while the going down bit went back to normal and McCormick was fully in command once more. The cloud cover had increased since I went up and I was coming down to large fluffy clouds packed fairly close together and concentrating on picking myself a gap between them. This proved to be more difficult than it sounds, what with trying to judge height and sink rate at the same time as attempting to hit a moving target and keep forward of that blasted ridge. I'd had quite enough of turbulence for one day, thank you. Having said that I suddenly realised that I'd still got to face the landing and instinctively tightened my straps. Out into the valley again then so that I would be nicely positioned when I got under the cloud-base. Airbrakes closed as I sat there nose into wind waiting for a break to come along. When it came, airbrakes full out as I turned downwind to follow the cloud and screw downwards through the gap and QED, I was sitting right above the White House pub perfectly positioned to go back through the gap to the field. But I was still 2000ft too high. Right then, over towards Prestatyn and back again, still on full airbrakes. It was a funny feeling throwing away height like that.

The wind had increased whilst I had been airborne and I swear that the windsock was not only straight out but pointing upwards. I do not intend

MERRI'S PROGRESS

What a Flap!



A lot of you may know by now that we own a third of a Janus C (No. 710). I'm afraid that I rather bored quite a few people with my somewhat energetic anticipation. This purchase has led to a whole new sort of progress. This new learning curve follows two paths: the first is simply learning to fly something with 20 metres, and the second revolves around the flap settings. It's a steep curve, but I love it!

The Janus seems to require a whole new flying technique. Our local pundits warned me that I might find it tiring after a few hours, and they were right: I've decided to start a weight lifting programme. When we first took possession, and after being sent solo in it (a day-long exercise in its own right which embodied cable breaks and spins - and, no, I don't ever want to spin it accidentally), I took it for about four and a half hours. In the end, I had to land because my right arm was aching so badly from trying to adjust to the changing shape of the thermals. This was lesson number one: a more judicious use of the rudder in a 20 metre machine would have saved me money on "Deep Heat" to rub on my cramped arm! It's obvious that a Janus can't be flown like

to dwell on my subsequent circuit and landing except to say that I handled it with all of my usual skill and aplomb. Suffice to say I was greeted by the club secretary with the somewhat cutting comment. "Nice height John, bloody horrible landing". He obviously didn't see it from my vantage point.

Post mortem

1. The chap on the cloud didn't take into account instrument error and with a calibrated barograph I had achieved 12250ft.
2. Neither had I, nor had I remembered that Bryn Gwyn Bach is 600ft asl so if it was to be oxygen at 12000ft I was actually closer to 13000ft asl. I slapped my own wrist for that one.
3. That day we got three Gold and two Silver heights. Great morale boosters after a difficult two years' developing a new site. It was also the first time that we had managed to get forward into the wave system proper.
4. Doesn't it take a long time to get down? ☹

an Astir, but the temptation to revert to what you know when scratching is a strong one.

The next lesson was learned during the task week at Bicester. It had nothing to do with gliding techniques, more than a little to do with survival - don't drink with Marhamites! On a 300km attempt at the beginning of the week (first TP Nympsfield), I got off to a roaring start. I roared straight into the ground at Aston Down. It had got claggy over Cirencester, and it was here that I learned lesson number two: when the going gets tough, the tough stay high and tiptoe along at 55 or so knots. The Janus, lovely though it is, is not a magic carpet! I waited on the ground till conditions improved, took a launch (my first reverse-pulley autotow), and waffled back to Bicester. Many thanks to Aston Down for their help to a reluctant autotowist.

As the week progressed, so did my confidence in flying 710. I actually started to stick the wing in when surrounded by what seemed like millions of Astirs ducking and diving in my thermal. I had been quite intimidated by this at the start, but by the end of the week had begun to feel better. Lesson number three is one I'm still learning: it's amazing what a Positive Mental Attitude will do for one's flying.

How do you use the flaps?

I think that the next issue is the most controversial. How do you use the flaps? It seems that once the various speed bands for each setting are learned and understood, and you get beyond this level, every pilot has a different technique for employing flaps. The circumstance which seems to excite the greatest amount of debate is when you encounter lift, and decide to bounce it. Some people don't alter the flap setting until they finish their pull-up, some people bring the flaps back as they pull up (which works fine as long as you get the loadings right). I'm in the process of experimenting and would welcome any input! It has been said that when I get around a 300, I'll know that I mastered the flaps to an adequate degree of subtlety. I agree with this, and after 25 hours on type can see how much more I've got to learn. It may sound funny, but it reminds me of when I was learning to fly the K-18: the Janus is quite a different glider, of course, but the learning curve is just as taxing and even more acute. ☹

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As some readers may know, I was not born an Englishman but became a naturalised one some years ago. I came to England in 1947 to a transit camp near Market Harborough, Leicestershire. Strangely, I now live only three miles from the site of that same camp.

Having spent much of the intervening time explaining to the geographically illiterate Brits where exactly they might expect to find Lithuania, I now find that those same Brits are suddenly telling me where Lithuania is.

Back in the 1940s, as a boy, my main purpose in life was to design, build and fly gliders, which I did with a certain degree of panache, if not of safety. Now, having flown some of the best gliders the world has to offer, in approximately 30 Nationals and assorted European Championships (to the general despair of the Guild of Photo-assessors), I can, with a great deal of pride, add the 1989 Lithuanian Open Class Nationals to my list. It was an experience which I shall never forget, and one for which I shall always be grateful. What began as a sortie to a previously forbidden land, turned out to be one of the most memorable months of my entire life. The hospitality was unbelievable and no expense or effort was spared in making my trip a success.

The visit

My invitation arose from correspondence between some Lithuanian aviators and me over several years. Out of the blue, an official communication from the Lithuanian Aero Klub arrived, inviting me to fly as guest pilot: glider to be provided but no further details.

I had just ten days to prepare but goaded on by my family, I set about besieging the Soviet Embassy, British Airways, Aeroflot, travel agents, banks etc. Eventually, having cracked the Catch 22 poser of "to get your flight you need a visa, and to get a visa you need a flight", I left Heathrow at the crack of dawn aboard a BA flight, via Norway, Sweden and Leningrad. Thence to Vilnius, aboard Aeroflot. What a strange sensation, returning after all those eventful years away. The last leg of the journey was especially poignant, being aboard an aeroplane full of Lithuanian speakers.

It was 1.00am when I arrived in Vilnius, exceedingly relieved to find that my friends had stayed up to wait for my flight. They greeted me warmly, with kisses and roses – a uniquely non-British greeting to which I was due to become accustomed. After two hours' of talking, which taxed my rusty Lithuanian language (an English accent, they said!) I was deposited at an airport hotel to spend my first night "back home". Some sleep would have been welcome, after a journey which began at 3.00am in Leicestershire and ended 24 hours later in Vilnius, but I just cat-napped until breakfast.

In the morning, I was driven the 60 miles to Pociunai, near Kaunas, the gliding site hosting the Nationals. The entrance is dramatically "guarded" by one full-size glider and one full-size aerobatic plane, mounted on 10ft plinths on either side of the drive-way. On the side of the airfield road is a row of neat little houses, and behind were deep forests of pine trees (which gladdened the heart of a timber man!). Another welcoming committee awaited me; more roses, more questions.

LITHUANIAN NATIONALS 1989

Frank Pożerskis goes "home" for a new flying experience in a country currently in the headlines and ends up as the European agent for a glider fresh to the UK



Early production model of the LAK 15.

Introductions and formalities completed, the priority was to get me airborne as the competition began the next day and I had yet to become acquainted with my glider. A Blanik check flight came first, towed by the ubiquitous Wilga on the shortest rope ever. In England little yellow vans with AA on the side have longer ropes for towing. My instructor, Jonas Zukackas, pointed out various landmarks including the beautiful, but deceptively curvaceous, river Nemunas. This is a major feature, being the principal river in the country and fortunately the founder of the Pociunai gliding site had sensibly chosen the only straight half-mile of its entire length beside which to start his club. A man with tremendous foresight I thought each time I lined up for my final glides.

When we landed I was introduced to my very own LAK 12, especially designated with a "P" on the tail. This was to stand for Pożerskis and not, as my dear wife suggested, "Provisional" as in the Australian driving test system. I very soon felt comfortable in the LAK 12 and was impressed. It has the looks and performance of a close cousin to the ASW-17 (with which I am somewhat familiar). Comfortable and with good visibility, it has well co-ordinated handling. The undercarriage suspension system is hydraulic, which makes for comfortable ground runs and the wing-spar is carbon-fibre.

I soared locally for a few hours to acclimatise to both the countryside and the glider. Typically, conditions were superb with an amazing 7000ft cloudbase. Remember, the competition began the next day. The weather in Lithuania plays tricks on glider pilots just as it does in the UK.

I will not detail the socialising, drinking and general merriment that went on into the early hours of every day. Suffice it to say that it was a

miracle that I ever flew at all. If it had not been for the power aerobatic team doing engine run-ups at 5.45am every day, I might just have overslept sometimes.

I had left home with no idea of accommodation arrangements, but was delighted to find that I had been allocated a little house, complete with bedroom, living room, bathroom and kitchen (the last three rooms I shared with a fellow pilot). No slumming about in caravans here – all pilots have either a shared house, or a log cabin, situated deeper into the pine forest. Meals are taken in the canteen of the Sportine Aviacione factory, where a most splendid breakfast cost just 1 rouble (£1). The house was cleaned each day while I was flying and like all the competitive pilots I was paid 20 roubles per week to cover out-of-pocket expenses. Organisation at Lasham please note ...

The competition

The first day of the competition was marked by a complete change in the weather. Very poor visibility made navigation difficult even for the locals – after a while one lake and forest looks very similar to the next, and the next. Thank goodness for that straight stretch of river. Tasks varied between 200-300km, and TPs were generally churches or railway-related features. Railways were nearly my downfall on one particular day, when I consulted my map (in Russian, which I do not read) and found that the railway clearing snaking along beneath me was not on the map. My first navigational problem – I tried to convince myself that I must be somewhere else, but always came back to the same conclusion: here I was over a railway which did not exist. Back at base, during the bar-talk, my problem caused great mirth. Apparently railways are often a temporary feature of the Lithuanian landscape, built for two years or so to facilitate the digging of peat, and

then dismantled. These are never put on to navigational maps and so have little relevance in gliding navigation. We live and learn.

Briefing each day followed much the same pattern as that in England, although I struggled to follow the Russian. Translations were quickly forthcoming, however. It was a strange experience to fly in a competition in which all the gliders were identical - LAK 12s every one. The winner of one day achieved a speed of 128km/h, although my own speeds were not spectacular. Gradually, however, my performance improved. Other pilots commented that "English" was doing better towards the end. And not a photographic penalty in sight.

Outlandings were quite a different experience to those (few!) I have encountered elsewhere. Fields in and around the collective farms are large, but other areas presented problems: seemingly verdant areas around some lakes were occasionally little more than deep bogs. These parts were clearly marked on my map for me, as they are completely invisible and very dangerous. Further evils lurked close to forests in the form of tree stumps, which merge into the surrounding undergrowth and wait to entrap unwary glider pilots.

By and large, outlandings were fairly simple affairs, although those who know my style will appreciate that only I could fly in my own home country, with a map written in a foreign alphabet, and land out close to the single solitary house to find an occupant who could neither read maps nor appeared to know where she lived.

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The airfield entrance with the pilots' houses in the background.

I came to have a tremendous respect for the pilots of the many Wilgas which hauled us regularly into the skies. They flew with a style and safety which left me truly impressed. No retrieves required the old-fashioned car and trailer remedy. Nine Wilgas were on call constantly and an outlanded pilot had only to radio to the patrolling airborne Wilga and assistance was immediately on its way. On one occasion I tried to wave the Wilga away as the field was small and awkwardly shaped, but after one fly-round the pilot spot-landed, insisted that I hitch on and whirled me out of a field which could only be described as unfit to fly models from.

As with all good things, the competition came to an end far too soon and the final ceremony was held with a good deal of speech making and pomp. The Nationals were held in tandem with the Ladies' Baltic Championships, and this explained the presence of several National flags and the use of Russian as a common language. The whole ceremony was a very moving affair.

The result

When the competition was over I was invited to the Sportline Aviacije factory for a return visit. I had already had a guided tour and found the testing and development facilities the most advanced I have ever seen. Employing some 450 people they are currently designing, developing and testing a new generation of sailplanes. During my second visit, I was questioned closely about all aspects of my LAK 12. As 160 identical gliders had already rolled off the production line, I felt that most of the wrinkles should have been ironed out, but commented on some minor points, including a cramped under-carriage retract system and odd instrument layout. I praised the handling and performance, but wondered why they lost the impact of the glider with poor cockpit finish.

The managing director, Mr Alexandre Jonusas, then discussed the market for such a glider in the west. All the production so far had been taken by Eastern Europe, but official permission for export

Frank in a field full of LAK 12s.

to the west had just been obtained and they were asking me to become their European Agent. At the time, the whole project seemed unlikely in the extreme, and it was not until I reflected on the idea in the calm atmosphere of home that the full potential of the venture really struck me. We have been steadily negotiating prices, transport, improvements and logistics ever since, until now we have taken delivery of our first "baby" - the demonstrator.

I visited Lithuania again this March to finalise details and sign contracts. The gliders are to come, fully instrumented with a competition panel, in a fitted trailer. During the course of discussions, I made plain that after-sales service would be, if anything, more important than the prompt arrival of the glider. With this in mind, Baltic Sailplanes Ltd, which is the company I have formed to market the gliders, will maintain a small package of essential spares and delivery of others will be made available within days of ordering. The spares department at the factory is the best-stocked that anyone is ever likely to see.

Future developments are even more exciting. For my own personal taste, the "flagship" will be the LAK 15. This is a 25.6 metre glider, with a four-part wing. So far, three experimental ones have been made. Already, 1:59 has been achieved; a thoroughbred in the making. During my last visit I was impressed by the technology which was strapped to every part of the glider, giving readings of performance at every stage of flight.

The other glider under development is the LAK 17 - a 15 metre racer, which is already proving to be a most interesting proposition. Using a newly-acquired wing section from the USA, results already outstrip expectations.

Both these new gliders will be available in mid-1991 and details should be available soon. In the meantime, the vital statistics of the LAK 12 are as follows: 20.5m, two-part wing, glide angle 48:1, waterballast capacity, 42 gallons, construction, glass-fibre/carbon fibre. Turbulators.

In closing, may I commend flying in the Lithuanian Nationals to anyone who ever has the chance - lessons in the language by arrangement with the author at Market Harborough! ✕



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Pitch stability is the natural tendency of an aircraft to remain trimmed at some angle of attack, and to return to this after being disturbed. The resistance to disturbance, like the force exerted by a spring when held compressed, is the static part of stability. The dynamic part describes the motion which results when it is allowed to return. The importance of static stability is that dynamic stability cannot exist without it, and that it is the primary factor in determining the ease with which most aircraft can be controlled in pitch.

Static stability for the non-academic is described in popular aviation books, pilot training manuals, and so on. Much of this is fallacious, as can be found in the answers given to six questions.

1. Does wing lift act at the centre of pressure (CP)?
2. Does the movement of the CP with changing lift affect stability?
3. Is the aft C of G limit primarily caused by reduction in the tail arm?
4. Is a tail download necessary for stability?
5. Does the tail setting angle ("longitudinal dihedral") affect stability?
6. Does a tailless aircraft need a reflexed wing section for stability?

The power of mythology in aviation – hence the title – is so great that in general this literature would have you believe all the answers to be "Yes", despite the fact that it has been known for over 60 years that the correct answer to each is "No".

Dynamic stability theory was well developed by 1911, when Bryan* gave the six linear simultaneous differential equations of motion of aircraft. They are tedious to solve by hand and few designers bothered before the advent of computers. No theory existed for static stability and many early aircraft were statically unstable. Today's fallacies were born of attempts to understand what the pioneers observed of aircraft behaviour.

Static stability theory only became possible in the 1920s when the forces on a wing could be described mathematically, but the facts never caught up with popular fallacy. In its basic form it can be understood using only common sense and a knowledge of aerodynamics up to Bronze badge standard. Chapter 9 of the *American Soaring Handbook* gives a good description, and an excellent reference for the more adventurous is Frank Irving's book *Stability and Control of Low Speed Aircraft* (Pergamon).

Centre of Lift

The major forces measured at any point on a wing consist of a lift and a pitching moment. In early wind tunnel tests this point was usually the leading edge, and the general characteristics shown in Fig 1 were found. Here the lift is measured from the zero lift line of each section, rather than the chord line which is just a geometrical convenience.

The lift curves are essentially straight up to the angle of attack where flow separations begin the stall process, and of a similar slope. This means that the lift generated by an unstalled wing at any *G. H. Bryan, professor of pure and applied mathematics in the University College of North Wales and formerly a fellow of Peterhouse, Cambridge.

THE 'MYTHTERIES' OF STATIC STABILITY

John Gibson says that the power of mythology in aviation is so great many facts have never caught up with popular fallacy, but he thinks it is time to say goodbye to the old faithfuls

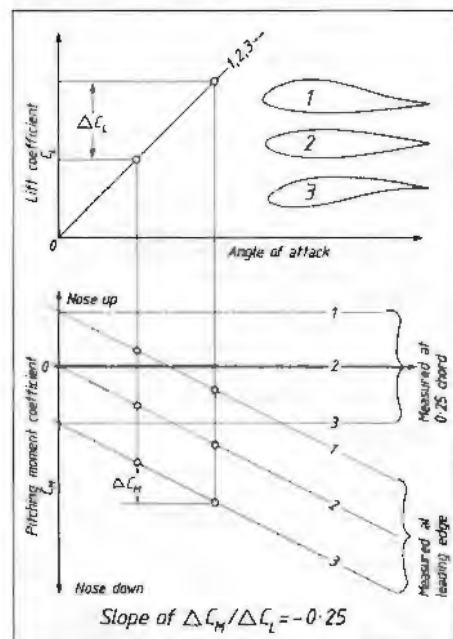


Fig 1. Basic section lift and pitching moment.

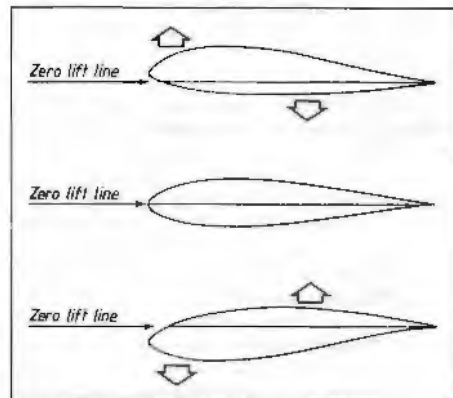


Fig 2. Pitching moment at zero lift.

particular angle of attack of the zero lift line is independent of the section shape.

The moment curves are also essentially straight, with values at zero lift which are negative

(nose down) for normal camber, zero for symmetrical sections, and positive (nose up) for reflexed sections. This "zero lift pitching moment" arises from suction under the leading and above the trailing edge, or the other way about for reflexed sections, as shown in Fig 2. The moment curves also have similar slopes for any section. This means that the change in moment generated by a change in angle of attack is independent of the section shape.

Lift must act at a fixed distance from the measurement reference point

Lift which increases linearly with angle of attack and produces a change in moment proportional to a change of angle of attack must act at a fixed distance from the measurement reference point. The moment change for all sections was found to be about 0.25 nose down for a lift increase of 1.0, from which it follows that the lift acts at 0.25 of the chord. When the development of wing theory in the 1920s was able to show that this centre of lift or aerodynamic centre (AC) was a property of all such "lifting surfaces", the quarter chord became the standard reference point, giving the dotted moment curves in Fig 1.

The CP is not the centre of lift. It is the point where a force equal to the lift would have to be applied to generate the observed pitching moment. For example, if the zero lift pitching moment coefficient at the AC is -0.1 (nose down), then for lift coefficients of 1.0, 0.1, 0.01 and 0.0, the CP is at 0.1, 1.0, 10.0 and countless billions of wing chord lengths behind the AC. For negative lift the CP is similarly forward of the AC. For symmetrical sections the CP is clearly always at the AC. For reflexed sections the CP is forward of the AC at positive lift and behind it at negative lift.

Common sense says that lift which is generated by pressures on the surface of a wing cannot be centred so far away from it, nor produce a torque from somewhere beyond the Milky Way when it doesn't exist. In fact the single force at the CP was just a convenient fiction for the early pioneers to handle the apparently complex behaviour of the wing forces measured in their tests, when aircraft had such a limited angle of

attack range that the CP stayed firmly attached to the wing. The use of the CP for stability and control purposes died out decades ago, surviving mainly among pilots and their examiners, aeromodellers and the like.

Balance

The fuselage and wing can be lumped together into a single "wing plus body" unit whose lift and zero lift pitching moment act at an AC typically around 20% of the mean wing chord on most gliders, slightly forward of the wing-alone AC. The tail is treated as a separate unit, producing lift at its own quarter chord AC. Gravity and inertial forces act on the mass of the glider at the C of G.

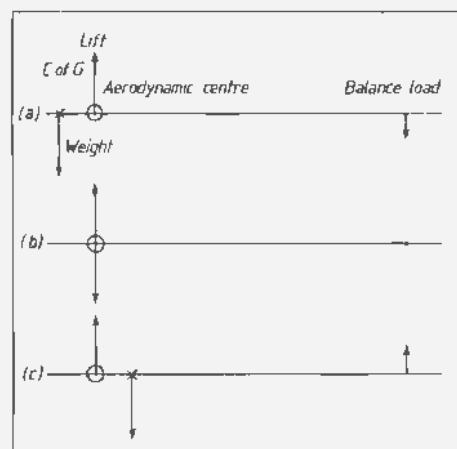


Fig 3. Basic balance conditions.

Ignoring the effect of camber, the balance of lift and gravity forces is shown in Fig 3. Three cases exist with the C of G (a) ahead of the AC, (b) at the AC and (c) aft of the AC. In (a) the tail load is downward, in (b) it is zero and in (c) it is upward. In level 1g flight, the total wing plus tail lift equals the weight, and the forces do not change with speed. In manoeuvres, the forces increase with the normal acceleration, so the tail load increases downwards, remains zero and increases upward in cases (a), (b) and (c) respectively.

Normal camber produces a pitching moment at the AC whose coefficient is constant and inde-

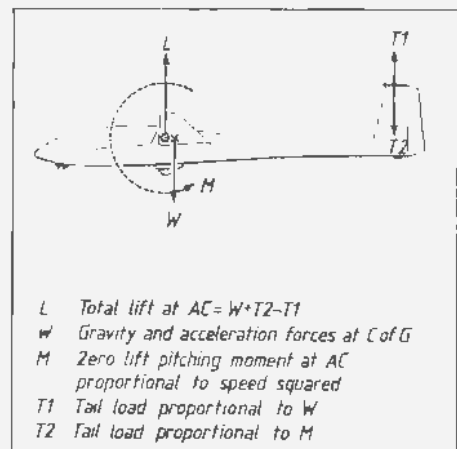


Fig 4. Static balance of lift and pitching moment.

pendent of the angle of attack. At a fixed speed this moment can be balanced by a constant tail download increment. As speed increases, the moment increases with the square of the speed (ie with dynamic pressure) and the required tail balance download increases similarly. These requirements are met by a fixed adjustment, typically about 2 or 3°, of the tail setting relative to the zero lift angle of the wing. The incremental elevator angle variations with speed, angle of attack, etc. start from this different datum but are otherwise not altered by the presence of camber.

The main balance forces are indicated in Fig 4. In the majority of aircraft and probably all gliders, the normal C of G range lies aft of the aerodynamic centre as in 3(c). With a cambered wing there is usually a C of G in this range where the tail load is zero at some angle of attack. This is the most efficient condition, a large tail upload being just as undesirable as a download.

Stability

Fig 4 shows the static condition in which the sum of all the aerodynamic moments about the C of G is zero. For this to be stable, any disturbance to this condition, excluding deliberate control inputs, must result in a moment about the C of G tending to restore the original condition. This arises only from the increments in wing and tail lift resulting from the disturbance, multiplied by the distance from their AC's to the C of G. The zero lift moment due to camber and its balancing tail load are constant, and have no effect during the disturbance or after its removal. As the CP simply reflects the amount of camber, its movement also has no effect.

In Fig 3 case (a), the wing and tail lift act behind the C of G and both produce a restoring moment. In case (b) the wing lift acting at the C of G has no effect and only the tail provides the restoring moment. In case (c) the wing lift acts ahead of the C of G and produces a destabilising moment in the direction to increase the angle of attack still further. When the C of G is far enough behind the AC, the wing destabilising moment equals the tail stabilising moment, giving a zero net restoring moment. Clearly the stability is neutral at this C of G position, called the neutral point or NP. At any C of G aft of this, the net incremental moment is destabilising and the aircraft is statically unstable.

Putting this together with the earlier discussion on balance, the well known result is that at forward C of G the stability is very high and large elevator angles are required to trim changes in angle of attack. Cases 3(a) and 3(b) are usually impossible to trim to high lift using a fixed tail with an elevator, because the increasing angle of attack on the tail must be compensated by enough up elevator to maintain the downward or zero balance load required. Since the elevator is much less effective than the tail, the control angles needed are too extreme.

At aft C of G the stability is low and only small elevator angles are required to trim high lift. When the C of G is at the NP with self-balancing wing and tail increments moments, no additional elevator angle is required to trim any angle of attack. With the C of G aft of the NP and the wing overpowering the tail, the tail must be assisted in its balancing task by adding down elevator at

increasing angles of attack. From this arises the fact that a stable aircraft in level flight requires an increasingly aft movement of the stick as speed is reduced with increasing angle of attack.

A distinction must be drawn between angle of attack changes associated with speed in level flight (which is directly represented by wind tunnel tests) and those in free flight at essentially constant speed associated with manoeuvres. In the latter the change of lift produces a curvature of the flight path. The airflow past the glider effectively curves upwards towards the tail, which increases still further its local angle of attack. The tail restoring moment and the elevator control needed to offset this are both greater than in the static case, and the C of G for neutral manoeuvre stability lies aft of the NP at a position known as the manoeuvre point. This is the reason why it is harder to stall a glider in a tight low speed turn than in level flight.

Unless special measures are taken to balance the forces created on the elevator by changing angle of attack, as distinct from control deflection, the elevator if left free will try to trail with the airflow. Since this tends to raise the elevator as angle of attack increases, "stick free" stability as felt by the pilot on the stick tends to be less than "stick fixed" stability apparent from movement of the stick. While zero stick fixed static stability is acceptable, positive stick free stability is usually considered to be necessary, ie push to hold an increase in speed even if there is no change in stick position.

A trick used in modern gliders to increase stick free static stability is to curve the elevator trailing edge downwards in conjunction with a spring trimmer. As speed increases, the elevator is increasingly forced upwards and requires an increased push force on the stick. An incompletely mass balanced elevator increases the stick forces and hence the manoeuvre stability, and the static stability increases because the elevator hangs down further into the airflow as the speed decreases, requiring more pull on the stick.

Farewell to Fallacy

After 60 years, it really is time to say goodbye to the old faithfuls. The first two questions in this article have been answered above. The others are answered below.

3. Calculation of the aft C of G limit is not much in error if the distance from C of G to tail is assumed constant. In contrast, because the wing AC is very close to the C of G, the change in the wing contribution to stability due to quite a small C of G movement ranges from being stable or near zero to so destabilising that it can overpower the tail.

4 and 5. Any aircraft which is stable by reason of its C of G position and is trimmed for positive lift has a negative tail setting relative to the wing zero lift angle, or positive "longitudinal dihedral", in addition to the camber balance adjustment. This can be shown by assuming a disturbance pitching the aircraft nose down until the wing is at zero lift. Since the aircraft is stable, the tail must provide a nose up moment to begin restoration of the trimmed angle of attack. When released to take up its trim condition, the angle of attack of both wing and tail increase, and the final lift of the tail will be up or down according to the balance dis-

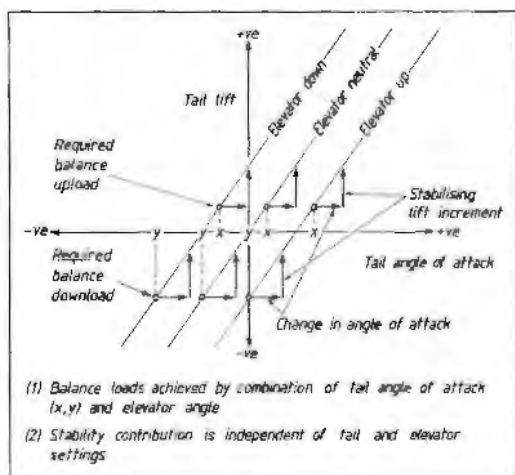


Fig 5. Tail balance and stability contribution.

cussed on the previous page.

However far aft the C of G is located, stability can be provided by making the tail large enough. Tail size has no effect on the required balance load, and positive stability with a tail upload is normal and commonplace. Any combination of tail setting on the fuselage and elevator setting on the tail whose net sum satisfies the balance will do. The tail stability contribution in a disturbance depends only on the product of its lift increment and the tail arm. Fig 5 shows that for any given disturbance expressed as an angle of attack increment at the tail, the lift increment is completely independent of the initial load or tail settings, which have no effect on stability.

6. A tailless aircraft must rely on the wing for stabilising moments. These occur only for C of G positions forward of the AC. The required aft download balance force in Fig 3(c) is provided by raising the trailing edge of the wing. This can be part of the basic section design or could be raised flaps on a symmetrical or normal cambered section. The wing CP is at the C of G and will move in an apparently stable manner when disturbed. Sometimes such sections are misleadingly called "stable", but they are in fact simply self-trimming in this C of G condition.

Safety

Safety aspects associated with the aft C of G limit are well enough emphasised in every manual. These are avoidance of poor spin behaviour and light or sensitive pitch control. Any pilot flying off of this becomes a test pilot and may receive a nasty surprise. Some gliders have a substantial margin which can be abused. Others do not.

Carelessness about weighing is widespread and may be due to ignorance about static instability. Many pilots will not even recognise it, as Derek Piggott found with the T-21c prototype, because the much larger manoeuvre stability can maintain apparently normal manoeuvre response while speed control is unpleasant or unsatisfactory. Any glider with these symptoms should be weighed immediately.

It may help pilots to treat the C of G limit with respect by imagining two big crosses marked on the wing centreline. One is at the neutral point, which will be just aft of the specified aft C of G

WINDY LANDINGS

The Arm-Chair Pilot goes for a walk in the wind-gradient

Daughter: Must one always fly faster on the approach when it's windy, Daddy?

Daddy: (Looking up from his newspaper): Oh, yes, always.

Daughter: And the windier it is, the faster one flies?

Daddy: Yep.

Daughter: Right down to the ground?

Daddy: Yep.

Daughter: But surely it's less windy down there, and you said the less wind there was, the slower one could fly.

Daddy: (putting down his newspaper): No I didn't. I said the windier it is, the faster one must fly.

Daughter: Same thing.

Daddy: Well, it depends on the wind-gradient.

Daughter: What's that?

Daddy: The wind sort of slopes downwards.

Daughter: Like I said. So one can slow down as one gets lower because there's less wind close to the ground.

Daddy: Let's take a walk. Upwind.

Daddy: (five minutes later): As we walk, the wind at head-height is more than at knee-height. Let's not ask why, or give the fact a technical name; let's just think through the consequences. (Stoops to pick up stone, which he holds level with his head as he walks.) This stone has a ground speed of 3 kt and an airspeed of 10kt. Right? (Drops stone) And just before it hit the ground it had a ground speed of 3kt and an airspeed of 3kt as well, because there's no wind down there.

Daughter: Looks as though it hit the ground at more than 3kt to me.

Daddy: You're just like your mother. When will you women learn to hold your extraneous variables steady?

Daughter: I beg your pardon.

Daddy: We are talking about horizontal winds, and the stone dropped vertically, so...

Daughter: (interrupting): No it didn't, you were moving at 3kt when you dropped it.

Daddy: (scarcely concealing his irritation): Well, vertically relative to me.

Daughter: Aren't you an extraneous variable though? (They walk on in silence for some time, and then Daddy repeats the experiment with

another stone.)

Daddy: Let's try again. Up here, groundspeed 3kt, airspeed 10kt; down there, horizontal groundspeed and horizontal airspeed both 3kt.

Daughter: (under her breath): Ah, horizontal. Intraneous variable, I suppose.

Daddy: Now, this stone has a stalling speed of 5kt. (Pauses to let this remarkable fact sink in.) So on the way down it was unstalled until it passed my kneecap, and below that it was stalled. Crash!

Daughter: (after quite a long silence): What should it have done?

Daddy: Increased its ground speed from 3kt to more than 5kt.

Daughter: How?

Daddy: Well, of course, it can't. But a glider can, by diving more steeply and turning height into speed. And unlike a stone, a glider can stall, too, and hurt people.

Daughter: Still seems paradoxical to me.

Daddy: Not really. If you were flying your glider at 50kt airspeed into a gusty wind of 30kt which suddenly fell to nothing momentarily, what would your airspeed become?

Daughter: 20kt.

Daddy: Quite so; you've just stalled at the back end of a gust - what the newspapers call an "air pocket". A wind-gradient has the same effect, except the fall-off in the wind is caused by the glider descending into a layer of lower wind speed.

Daughter: I am beginning to see, but it still seems a little odd.

Daddy: Come now, it's just the theory of relativity.

Daughter: Let's turn for home and then we'll be walking downwind.

(After a while Daddy picks up a stone and drops it, as before, but without saying anything.)

Daughter: (tentatively): Wouldn't landing downwind solve all these problems?

Daddy: And create a whole lot of new ones!

Daughter: I think I see now. When flying down through a wind-gradient one wants to keep a constant airspeed. Each layer of air is moving more slowly over the ground than the one above it, but the speed of the glider relative to the ground is unchanged on passing into it, so the airspeed falls. In order to counter this, the pilot must lower the nose. This means that when approaching through a wind-gradient, for any chosen airspeed the nose has to be lower than it would be to hold that airspeed in still air.

Daddy: What a very interesting observation you've just made! And it's nothing to do with the gliding angle relative to the ground - the phenomenon would hold even if the ground weren't there! It's simply that in order to keep a safe airspeed the nose must be lower than is normal for that speed.

Daughter: Or we can look at it another way. Passing through a wind-gradient the glider has to accelerate forwards relative to the ground, and the only way it can do this is by diving more steeply than its airspeed would seem to require. Fly by speed, not by altitude!

Daddy: My word, your A-level physics is showing! Let me buy you a drink in the bar after that long final glide. Good job the wind was behind you, or you might have stalled on the approach.

position, and the other is at the actual C of G. In normal flight a big lift arrow supports the glider at the C of G. During any disturbance the extra lift appears as a small arrow at the NP. The C of G had better be in front of the NP, in fact rather than in the fiction sometimes found on the placard.

TAIL FEATHERS

Seven Deadly Sins continued: Gluttony

This should be a nice short one, since glider pilots are about as interested in gluttony as they are in lust, which is to say not a lot.

For years I used never to eat or drink while flying. On one nine hour flight in 1975 I lost eight pounds without benefit of pee-bags. Then I learnt that getting dehydrated was bad for you, so I started taking pure Dunstable Downs water, straight from the chalk, in a plastic bottle, but no food.

Then I was corrupted.

It was the two-seater that started the rot. When you are on your own, the urge to eat or drink is minimal. But company changes everything. One of my passengers insists on taking vacuum flasks ("What d'you want? Hot coffee or hot tea?") and a variety of freshly cut sandwiches. At first I tried to ignore this, believing that a serious pilot had higher things to worry about.



The aroma.

But the aroma of bacon butties¹ -

before we go any further I ought to explain the plethora² of footnotes in this piece. Our researchers tell me that we have vast numbers of readers from foreign parts who understand only the purest English. Slang, jargon, argot, figures of speech and obscure references to Shakespeare, cricket or television situation comedies cause confusion and doubt. Having lots of footnotes in also puts the printers on their mettle.³

- in a confined space is hard to resist: has someone been wiring up a waffle⁴ iron⁵ to those massive batteries behind the back seat? No won-

¹ Butty - Northern English dialect for a square sandwich of very coarse proportions, with any kind of filling. The Queen does not eat butties.

² Opposite to a dearth.

³ Not sure what one's mettle is, frankly, but if you are put on it you are being tested.

⁴ An American delicacy, full of cholesterol; no resemblance to a butty, except for being square and bad for you.

⁵ Can be used for making hot butties.

der the artificial horizon⁶ has been toppling lately; if we spin in at least the condemned men will have had a hearty breakfast⁷. Others specialise in Kit-Kat⁸, Twix bars and other sticky confections. In warm weather chocolate melts horribly and dribbles all over the maps, not to mention the luxurious upholstery. One considerate co-pilot of mine used to wait till we were at 5000ft, then unwrap the KitKat very carefully in the cool draught from the ventilator; only when it was reasonably solidified was it fit to be passed to the Pilot-in-Charge. The co-pilot's reward for all this trouble was to get to fly the beast for a while. After a minute or so a loud belch⁹ from the front seat would signal that the senior pilot was ready to take over once more.

Hunger is not the only reason for the compulsion to stuff one's face. A 17 stone Billy Bunter¹⁰ish character that I flew down to Cornwall in a K-7 ate bulls' eyes¹¹ constantly, in between observing gloomily that we always seemed to be getting lower. Nonsense, I said, the ground is just getting higher, as we slid over Dartmoor¹² and watched



The ground getting higher.

the ground drop away again. I think it was worry that made him eat, and my flying simply accelerated an innate tendency towards pessimism.

Years ago (1963, when the Beatles¹³ first came to power, and satire became the new craze) I invented for the entertainment pages of this organ¹⁴ a ruthless glider pilot called James Bend, whose adventures were so popular that I was asked to give the readers more in 1964. Sorry, I said, but this whole 007 James Bond nonsense will be played out by then, and satires on yesterday's cult always fall quite flat. How wrong I was!¹⁵

But I remember that our hero Bend celebrated

⁶ A gadget frequently in use in British gliders, owing to the frequent absence of a real horizon. Banned in most other countries.

⁷ An anachronistic reference to the good old days when we used to hang people by mistake, whereas now we jail them by mistake.

⁸ A delicious chocolate covered wafer, not to be confused with Kit-e-Kat, a petfood for felines.

⁹ A semi-involuntary sound originating from the stomach, indicating appreciation of having dined well; mandatory etiquette amongst royalty in some countries. The Queen, however, does not belch.

¹⁰ A fat and famous fictional schoolboy from a public school (ie a private school) called Greyfriars, who was known as the Owl of the Remove. (What's a remove? Well, it's a - Oh, forget it.)

¹¹ Not the actual eyes of bulls (this would now be banned because of Raging Bull disease) but a stripy, round pellet of hard-boiled sugar; revolting to any person of refined tastes. No, the Queen does not eat bulls' eyes either, not in public anyway.

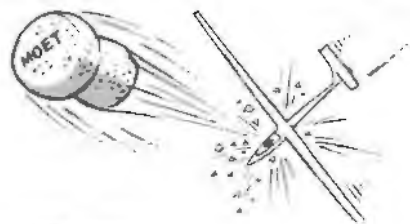
¹² Britain's most famous jail, not to be confused with the Tower of London, which is where they send people who make fun of the Queen.

¹³ A long-forgotten troupe of strolling musicians.

¹⁴ A pompous word for an official journal: always gets a laugh for some reason.

¹⁵ (First time he's ever admitted being wrong. Is it a trap? Eo).

a height record with Bollinger and a Havana while airborne: then I asked the readers to turn to a far distant page, in the infuriating way that American magazine have. The page number in question did not exist, of course, "What happened?" a thousand eager subscribers clamoured to know. Well, one of them clamoured to know, if we are precise. The rest just assumed the printer had lost part of the copy as usual. I had no idea what hap-



Magnum force.

pened to Mr Bend. But it now occurs to me that at 40000ft or so a champagne cork, bottled at 400ft, would come out with magnum force and destroy the instrument panel, and lighting up a cigar in the presence of pure oxygen would be even more dangerous. So the story might well have ended with our somewhat scorched adventurer swinging down on his parachute, pondering whether it wasn't better to stick to lust after all...

The Eighth Deadly Sin: British journalism

The sheer cretinous ignorance of the average British newspaper journalist¹⁶ in aviation matters has been a matter of utter disbelief since the Montgolfier brothers converted hot air into flight -



Disintegrated with fatigue.

an operation which our national press manages to reverse whenever it gets the chance. The old adage still holds, namely that if anything you personally know about is written up in the papers you can immediately see that the report is 50% garbage¹⁷. Then the penny drops and you realise that all the rest of the news stories that you don't know about, and which you thought to be true, must be 50% garbage too. And that's the top people's press, forget the rest.

¹⁶ Leaving aside one or two aviation specialists.

¹⁷ The Editor, a hardened scribbler years before taking the helm at S&G, vehemently disagrees. "Nearer 100% garbage" she insists.

Thus if a plane flies straight and level into a mountain side in cloud, the age of the plane becomes a great issue, though its probably as relevant as the age of the mountain.

If a plane flies into another plane that is supposed to be relevant, too. So when there is a collision the fact that one of the aircraft is 50 years old is dragged into the story. As though it disintegrated with fatigue and fell on the other plane. The only possibly relevant issue is that biplanes don't give the pilot an ideal all-round view, but that is leaning over backwards to give the hack an excuse, which probably had never occurred to him or her, for hauling in an otherwise pointless observation; there just happened to have a lot of chat about the age of aeroplanes involves in previous news stories. Journalists are dreadfully prone to irrelevant topicality: if some wreckage lands on a dairy farm the urge to drag in Mad Cow Disease (an ailment almost exclusively afflicting Fleet Street hacks) will be irresistible. Of a recent tragic mid-air collision one witness was quoted as saying:

"They flew straight at each other ... There weren't any acrobatics ... One plane hit the other at 45 degrees ..."

Admittedly this is a hunk of reported speech, based on what was supposedly said by a person who had seen something that was quite horrific and likely to scar the mind for life, and who therefore deserves sympathy, not textual criticism. Nevertheless it is an interesting professional question for our hacks whether one should report verbatim, and without comment or correction, the innocent mistakes of one's witnesses, such as the fact that planes do not do acrobatics (though they very occasionally do aerobatics) and that 45% contradicts *straight*. That last one could be important in court. The fact that this minor travesty of reportage appeared in our best national newspaper leaves one feeling even more glum.

There is worse than technical incompetence, and that is moral blindness and lack of plain commonsense. The popular press, with its cringe-making, sentimental imitation of a heart, will unfailingly commend the selfless heroism of a pilot who chooses not to fly his stricken craft into a block of flats. As though the poor blighter is saying in his last seconds "Well, clobbering a high building would look rather good on my CV; it is only my strong puritan upbringing and concern for others that prevents me from steering straight for it ...". So he piles into a wood or a field instead, to be buried in a heap of brainless headlines. Everyone in newspaperland has to be a hero or a bum; there's no room for the halfway house, where real people, even reporters, live.



INDIA

Dave Wilkinson of Bristol & Gloucestershire GC went to India in May and solved the mystery of the Ardhra glider referred to in the February issue, p21, when Max Bishop asked whether anyone knew what they look like.

The Ardhra was designed in India by the Research and Development (Civil Aviation) Department at the Delhi Technical Centre and two prototypes were built. Production was handed over to Hindustan Aeronautics Ltd (HAL) and 100 were built for the Indian National Cadet Corps.



Dave's photograph of the Ardhra.

It is a wooden 16.5 m span two-seater, weighing 328kg empty with a 508kg AUW. The stalling speed is 33kt, VNE 109kt and min sink at 1.5kt is 39kt.

The photograph is one of the prototypes. After the end of development testing it was given to the Delhi GC. In India all gliders have to be registered in the same way as powered aircraft.

India's 15 gliding clubs are open to the general

public but civilians can't fly at any of the 50 National Cadet Corps clubs. Foreigners may join the civilian clubs and need a pilot's licence to fly solo. There is no aerotowing in India with winch launching at all the sites.

The Delhi GC operates from the grass at the south side of the runway at the old airport at Safdarjung, south of the city. It has five two-seaters, a K-13, T-21a, Romini (an Indian built version of the T-21), an Ardhra and a Bocian which is being given to a newly formed club. The one single-seater is an ITG 3 (intermediate Trainer Glider 3), an Indian built version of the Grunau Baby.

The staff are all professionals from the instructors and winch driver to the maintenance personnel. The CFI is Capt R. K. Wason who on April 30 had logged 102906 launches in 6700hrs. No, that is not a misprint or a leg-pull! I had the privilege of seeing his logbook (latest volume). Surely that must be a world record?

When I visited the club the Ardhra was awaiting a replacement canopy but I had two flights in the K-13 with Capt Wason. Due to traffic restrictions at Safdarjung gliding is limited to the circuit, but we were able to stay up long enough to pick out prominent landmarks and enjoy seeing some very large birds (I think they were buzzards) in

close formation on the inside of our turns.

Although operations are restricted, the staff and members are as enthusiastic as gliding people anywhere and flying a glider a few hundred feet above the outskirts of Delhi is a memorable event.

If you do visit try to take with you any gliding photographs and literature to show the young P2s, particularly S&G which is well known to Capt Wason. The address is Delhi Gliding Club, Safdarjung Airport, New Delhi, 110003, India.

What It's All About!



Bernard Smyth said that when Tony Hutchings took his FUN (alias ASW-19) to Nympsfield to have a new gadget fitted by Andy Smith he couldn't resist taking this photograph.

S & G
CLASSIC

CHOSEN BY FRANK IRVING

After the success of the S&G Classic series chosen by the Arm-Chair Pilot, we are delighted that Frank Irving, another of our regular contributors over many years, has agreed to select the next six, ending with one of his own articles.

Lawrence Wright was a splendid character who greatly enriched the gliding scene before, during and after the war. He is mainly remembered for a gliding cartoon film, an excellent book (*The Wooden Sword*) and a filmed simulation of the Normandy beach-head for the benefit of the army glider pilots on D-day.

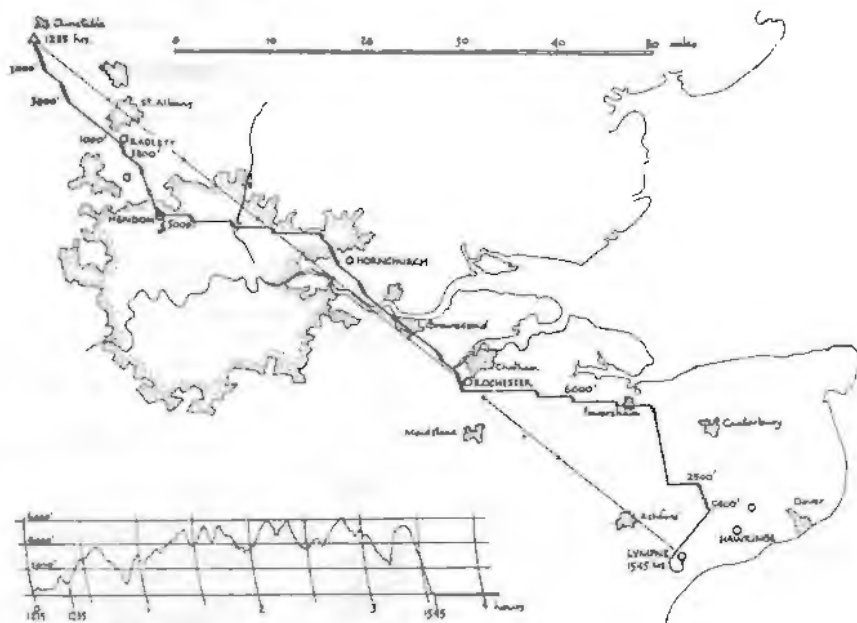
This account of a cross-country flight was published in *Gliding* No. 1 issue, 1950. It neatly displays almost all the changes in gliding over the last 40 years: in particular, the modern reader will be aghast at the idea of cloud flying over Hendon and using the Welsh Harp as a navigational fix. Remember also, gentle reader of 1990, that the glider had rather less performance than a K-8, that Total Energy had not yet been applied to glider variometers (hence the remark about "... confusing the variometer by letting the ASI wander") and it was absolutely vital to get to the next thermal at a reasonable height (hence "Rattray's advice").

The innocent joy of the times, unspoilt by airspace limitations and electronics, could hardly be better conveyed.

On April 10, 1949, Minimoa being at Redhill wrapped in red tape, I had bagged the club Gull 4. The wind was light north-west, and the sky spawning infant cumulus. As I strapped in, a later arrival remarked that conditions looked so flat that I might soon prefer to land, and give him the machine for not more than half an hour. He did not smile as he said this.

Wheatcroft offered Hawkinge or Lympe as a goal. I chose Lympe for the ignoble reason that more people know how far away it is. Kit Nicholson had made the same flight to win the Manio Cup in the 1938 competitions. My maps were in Mini, except for one filthy sheet among the rubbish in the car, which proved to be the right one. I was not serious enough to study it or draw a track on it, as I ought to have done. I was winch launched at 1215hrs.

I made for the power-line slope, a sure source of thermals when there is any north in the wind. There was not much hill lift. After ten minutes on this short beat, content to be lower than the others for the time being, I had wriggled up to cir-

A GOAL FLIGHT
TO LYMPNE

cling height and thence in the first real thermal to 1400ft. Back at the hill at 1000ft, I immediately got another at 5ft/sec. I noticed the blue Gull circling above me.

In about ten minutes I was at 3000ft, but trying all I could, I could not outclimb Geoff Arnold in the blue Gull. Things looked better downwind, so I passed under him, going south-east. At 3800ft the lift petered out, but the sky was so promising ahead that I pressed on at once. I had lost about 1000ft when I saw Geoff turn back (he eventually went round the west side of London and landed near Tunbridge Wells). This left me feeling lonely and rather rash. The red ball came well up, and I flew at 60 towards some distant clouds, which seemed to be going downwind faster than I was: they were still well ahead when I spotted Radlett aerodrome. (Not having yet opened my map, I vaguely thought of it as Hatfield.) I entered the circuit at 1000ft in dead air, working out a depressing plan for a towed retrieve.

I never omit to pray on these occasions, and the dear Lord (assisted perhaps by the fact that I was downwind of a warm runway) answered me with a flicker of lift on which I expended all my efforts. After some hard work, resisting the temptation to try to improve my position until I was above 1500ft again, I got back to 3000ft. I seemed now to have even less drift: Radlett was still alongside, and what little wind there was seemed to have more north than west in it. If all went well, I would soon have to work eastward to avoid London. Cloudbase looked unusually high, which was a fine thing. Also the day was young

(1315hrs BST) and the sky pattern ahead most promising.

A series of careful searches and modest climbs, interspersed with short dashes across the open for a few miles, brought me progressively nearer to cloudbase. The lift increased with height up to 3000ft, but above it always gradually decreased. During all this circling I had drifted slowly south of my required track (which was still only a vague mental one) and was somewhere near Elstree. Above London the clouds were building up well, but over the semi-country immediately north of London the sky was comparatively uninviting, and I decided to sample the active air above the chimney pots before working eastward. The Welsh Harp showed up well through the haze, and I began to use the map.

Map reading when comfortably tucked into a circle

The straight flying needed more attention than the circling (to avoid blundering through an unobserved thermal at speed, or confusing the variometer by letting the ASI wander) so I found it better to do the map reading when comfortably tucked into a circle. The Gull 4, though not as good as Mini in this respect, needs little attention once she is going round tidily.

A big - but not apparently very thick cloud right

*All heights above take-off

over Hendon airfield received me gently and rather reluctantly at just 5000ft. None of the clouds this day reached down to snatch one inside: most of them just refused, by fifty feet or so, to be entered. Last season, all my clouds had been nearer 3000ft, and this extra 2000ft was a welcome luxury. I did a little Married Man's Blind Flying straight through the undulations of cloud-base, where there was little to be gained by lingering. Meanwhile I started working eastward, always with at least one airfield in mind and in reach. (It is a comforting thought, that from 5000ft one has some 1200 square miles of ground to choose from.)

Somebody has laid down that on any given day there is a height below which one must not allow oneself to sink. It is a good rule. I decided that today's minimum should be 3000ft, and that if I sank near that level I must concentrate solely on regaining height before pressing on. To those that have, it shall be given and for about two hours I was able to keep to my rule.

I crossed the Lea near the reservoirs at Tottenham. The lift was seldom more than 5ft/sec but reliably distributed: clouds about half a mile across, with a few clear miles between, which I would cross at 55-60. The last few hundred feet of height was not really worth waiting for: it was better to fly slowly on one's way until the red ball came up. The Thames was emerging from a grey haze, and as the time was only 1415hrs, Lypne began to seem a proposition. I determined not to hurry, but within reason to follow Rattray's advice - never to leave lift until you have got the last drop out of it. Time is of course the essence of a long flight, but 87 miles is not, alas, a long flight by today's standards. So I dawdled in the gentle lift between 4000 and 5500ft, not ashamed to circle in 2ft/sec, spending a little height now and then in a dash from cloud to cloud, with the comfortable feeling of living within my income. I circled until I was giddy with watching the world reeling past the pitot head. The patches of sink were almost welcome, offering a few minutes' straight flying, but all too soon I would be dizzily revolving again. I found it more restful to gaze down the inner wing, and fortified myself with my cheese roll and my Mars Bar.

It came as a sobering thought, that within every hour of a soaring flight, one has to gain a total of some ten thousand feet of height.

I crossed the Thames (at nearly 6000ft) at Gravesend, conscious that I was adding at least

an hour to each trailer journey. Beyond the Isle of Dogs, London disappeared in the grey. The river looked magnificent in the stormy light and smoke. But for my declared goal, and for having forgotten my Leica. I could have taken half an hour off for a safe circuit of St Paul's. Resisting such frivolity, I concentrated again on the Object of the Exercise, until I was diverted again at Chatham by jolly little rows of cruisers and submarines in a tiny dock, all beautifully to scale.

Kent looked featureless and hazy, its nearer forms camouflaged by cloud shadows: it seemed time to navigate. An obstinate fold in the map denied me a bearing on Lypne, until I opened it completely, when it filled the cockpit. Finding that the little control required could be applied through the bulge in the map which represented the stick. I kept it there.



Lawrence in the Gull 4.

I could now comfortably locate, fill and light my pipe, and take the green ball for granted. Somewhere, I felt, I had known this situation before - and I recalled Wilbur Sparrow, lounging in his Mickimoo.

The course for Lypne proved to be south-east, but in that direction lay miles of sunlit ground without a cloud shadow. I could not see the Maidstone-Ashford road, which pointed the way, but along the Canterbury road (visible but running too easterly) a good cloud street was arranged. I drove along this road-and-street as far as Faversham, getting the best height of the day on the way at just over 6000ft. (Re-reading Kit's account since, I noticed that he made the

same detour.) Past Faversham, I was at about 5000ft, but twelve miles north of track, and it seemed time to brave the gap. I turned south-south-east and at once picked up the opposite coastline some eighteen miles away. It agreed comfortably in shape with the map, and a straight glide to Lypne seemed possible. But I like to reckon my range, in a light wind, by first deducting 1000ft for safety margin and approach, then allowing four miles per thousand. By this formula, I would be cutting it fine.

It felt like a hilltop descent on a wet afternoon

For a *mauvais quart d'heure* I flew through steady sink, relieved only by a few nearly fruitless circles. As the altimeter visibly unwound, the high spirits of the previous hour evaporated. The air, which had been fizzing merrily all day, changed from schweppervescence to ditchwater, and in horrid silence I slid down and down. It felt like a hilltop descent on a wet afternoon in November. I had still not located Lypne, though the coastline gave its rough position, and I was vague as to how far off the coast really lay. The only decent cloud within possible reach was miles away to the east. If I turned aside to it now, and it did not work, I could not make Lypne. If I pressed on, I ought to see the airfield in time to get in - I might not. I turned east towards the cloud.

I was down to 2500ft when I arrived upwind of it, and it looked very small and very high up. For the second time I resorted to prayer. The green ball promptly shot up to the top of the tube and stayed there. I circled with all the *g* I could take which is not perhaps very much and although I broke a fingernail tapping the Cosim, nothing would shift the green ball. I think it had indeed stuck: the barogram shows only a climb from 2500 to 5000ft in five minutes, of which even so I would not complain. In gentler lift above I finally found my ceiling at 5400ft, with Hawkinge alongside and Lypne obvious, and life on the whole worth living.

I nursed my ridiculous reserve of height whilst I checked and counter-checked with the map: the coastline, the canal fork, the racecourse, the castle. Finally I banked well over and read the word LYPNE in beautiful capital letters just a mile underneath.



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Since both these gliders are red-hot racing machines it seemed only natural that the Booker Test Group should perform the UK C of A acceptance testing – and in any event there are already several of each on site.

Why flight test gliders at all?

Given that we all work to JAR-22 nowadays, and that the manufacturers' testing of new types is pretty thorough, it may almost seem superfluous to conduct specific UK certification testing. However, the odd problem does slip through the country of origin and so our UK testing is worthwhile. This was demonstrated most recently with the Mini Nimbus, and currently the DG-600, both of which first arrived in this country with unacceptable defects which surprisingly had not been picked up in the original LBA (German licensing authority) testing.

Both the LS-7 and the ASW-24 had been flying over here, including in competitions, for more than a year before we conducted the testing. This was due to lamentable lateness in their German paperwork coming through – especially in the case of Schleicher's. Eventually we got sight of the papers and after that the testing took only a couple of days (and half a dozen launches).

Meanwhile, the owners of these gliders already in the country were operating on temporary permits to fly, which Dick Stratton, BGA chief technical officer, patiently kept on extending while we waited for the flight manuals, etc.

The testing

Both gliders were found to be quite acceptable and UK Cs of A were approved without any modifications required. We did have some reservations about the level of skill needed to fly them safely (this is the primary reason the BGA ordered a Discus to replace its ASW-19) and there were a few minor niggles. But all the formal requirements were met.

Both types – as one would expect at that price – were very well made but there were some curious shortcomings here and there. For example, a series of essential modifications to the ASW-24 undercarriage system were in the process of being made while we did the testing, following a spate of collapses.

They were a delight to rig – lightweight and self-connecting – and both capable of holding ludicrous amounts of water. The LS-7 seemed fiddlier to get the water in (and out), either because it was new and unknown or because it is rather more complex: it has a small tail tank and we spent quite a while working out how to get the C of G where we wanted it. The ASW-24 carries its water further aft in the wing and this doesn't affect the C of G position so a tail tank isn't necessary.

The gliders are very small – even for Standard Class – and there was much speculation when they first appeared about the maximum pilot size they could accommodate. In fact, there is no problem with pilot size (or shape) and I have seen some quite tall and some quite fat pilots happily flying these types. Both cockpits are, however, fairly tight.

The LS-7 (which has the same fuselage as the LS-6) gives the impression of being particularly narrow but in fact it's quite comfortable once you are in. We test flew it on a cold day and it took me

FLIGHT TESTING THE LS-7 AND ASW-24

Mike Cuming, a member of the Booker Test Group, gives his impressions of two gliders with many similarities

a little while rummaging around in the cockpit looking for the straps, maps etc with my coat getting in the way.

The ASW-24 – which gives the initial impression of being even smaller – is I suspect rather broader, although the very high cockpit edge made it a pain to clamber in and out; but then cockpit strength and crashworthiness in general is very topical right now. I didn't find the ASW-24 undercarriage lever handy or easy to use, but no one else seems to mind.

When on the ground, and indeed on approach – which is pretty much the same attitude in these machines – the forward view is relatively poor and perhaps it is just as well that neither glider could be fully held off on landing! In fact, both types had to be "flown on" at around 40kt; any attempt to hold off fully just hit the tailwheel first and had the effect of slamming the glider down on to the main wheel.

“... lifting the tail is possible but runs the risk of grounding the belly...”

Take-off was rather similar with the glider leaping into the air from the two-point attitude, lifting the tail is possible but runs the risk of grounding the belly owing to the smallish ground clearance. The ASW-24, in particular, looked vulnerable to this owing to its rather PIK-like cockpit pod. Much simpler just to leave the stick in the middle and let the glider do the rest. Roll rate especially was very very fast and the surprisingly small ailerons generate quite modest stick forces which is pleasant.

We didn't do any significant performance checks but a useful measure here is the very quiet airflow noise – especially on the ASW-24 – and the fact that you could accelerate to 100kt in no time at all without even noticing it. Also, both gliders took ages to come down.

Handling generally was superb and this is what contributes most to the excellent soaring performance of both machines. I don't believe that either machine is significantly better than the previous generation in achievable climb rate but the workload is lower – but these gliders were designed for soaring and they are terrific at it.

Where the performance really sparkles is

cruising at high speeds – especially with water aboard. This was particularly noticeable on a couple of days during last year's Standard Class Nationals when strong winds just didn't seem to trouble these fast ships. The LS-7 seems to carry its water rather better than the 24 (both are pretty much missiles when full) and it is perhaps fortunate that the 24 doesn't normally fly full since the water takes forever to drain out.

The LS-7 is somewhat less stable (for the same C of G location) than the 24 and this gives it a very slight edge in handling: this doesn't mean the 24 is slow to respond though – far from it! Both gliders were very willing to spin, especially the rather nippier LS-7, and this tendency was of course exaggerated with the undercarriage down (owing to the substantial side area of the doors and wheel forward of the C of G) to the extent that I would caution prospective LS-7 and ASW-24 pilots on this point.

There is ample pre-stall warning, though, and recovery was always crisp and straightforward. On balance, this abnormally high approach attitude probably serves as a safety feature here since I am sure most pilots will end up approaching too fast, not too slow. In that event the extremely powerful airbrakes will soon sort the situation out, although – like the K-7 – they are so powerful they almost pose a problem in themselves.

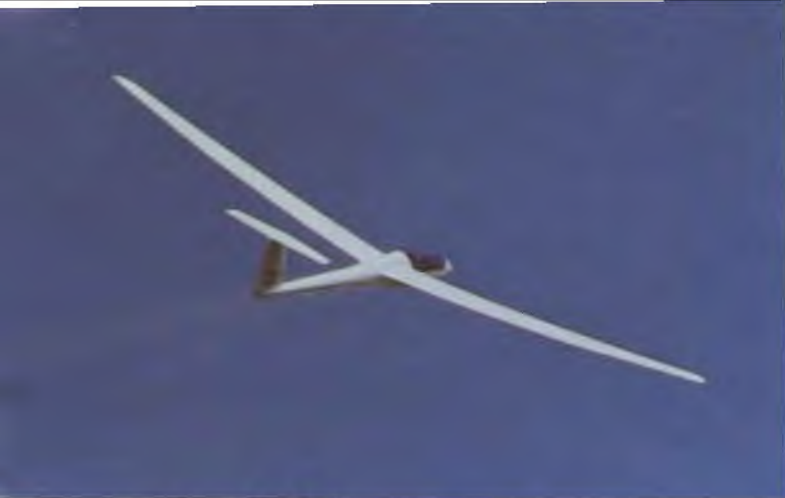
The ASW-24 brakes are slightly further outboard I think and there is honestly no vibration when you extend them – just a feeling like going down in a lift.

Back to spinning, with a quick reminder that both machines accelerate very fast – handy for leaving thermals or for aerobatics but not so good for low level spin recoveries. I don't want to overplay the spinning but the price of all that superb high speed performance has got to be paid at the other end of the scale.

Conclusion

Both gliders are absolutely first class and I am sure they will enjoy huge success. I wouldn't care to nominate either as better than the other since they are very equally matched in almost all aspects. They are quite durable and will no doubt last well in club fleets but they will require a touch more supervision (or experience) than the current generation of ASW-19/Pegasus/LS-4 types.

The UK LS-7 agent is Martyn Wells of Wells Design Ltd and the ASW-24 agent John Jeffries of JJ Associates. (see advertisements in this issue.)



Martyn Wells in his LS-7.



Alister Kay flying his ASW-24. Both photos by Mike Cuming.

OLD PILOTS GO TO SLEEP

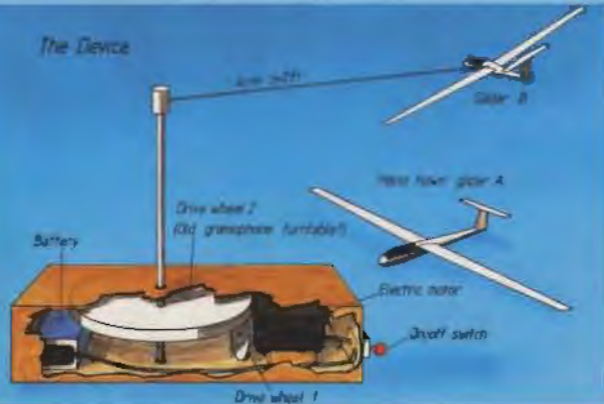


This photograph, taken at Sleep on May 6, shows 300 years of aviation - Ron Rutherford is at the back with, from l to r, Vic Carr, Ric Prestwich, Tony Adams, David Carrow, Charles Webb and David Ince. All are still active pilots, whilst the Chipmunk is our main tug at Sleep and currently enjoying her 39th summer. David Ince and David Carrow started flying for His Majesty in 1939 and 1942 respectively, Charles Webb started gliding with the ATC in 1943, Ron Rutherford with the Army GC in 1947, Tony Adams and Ric Prestwich with the Cambridge University GC in 1947 and in 1949, whilst Vic Carr started with the London GC in 1947. Messrs Ince and Carrow fly at Lasham, whilst the rest are private owners at Shropshire Soaring Group, Sleep. *Caption by Ric Prestwich.*

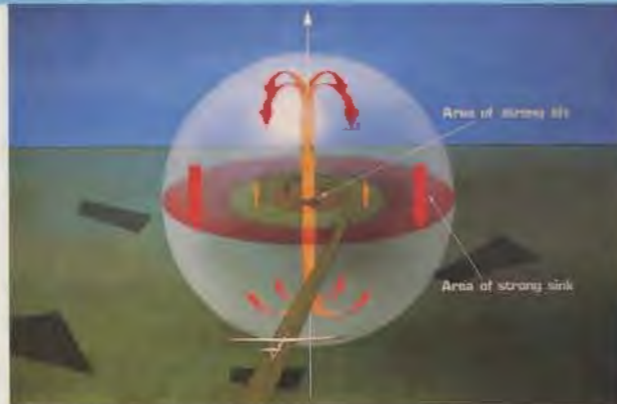
SUMMER SAIL - NEW BGA POSTCARD

This beautiful painting of a Janus by Charles Thompson has been on show in the Aviation Paintings of the Year Exhibition at the RAeS Gallery, 4 Hamilton Place, London W1 (it ends on July 29) and is reproduced on greetings cards being stocked by the BGA. They are available in sets of five, with envelopes, for £3.30 including p&p, or individually at 60p. The painting, called "Summer Sail", was the result of one of the Guild's "Painting and Flying" days when they visited Lasham.

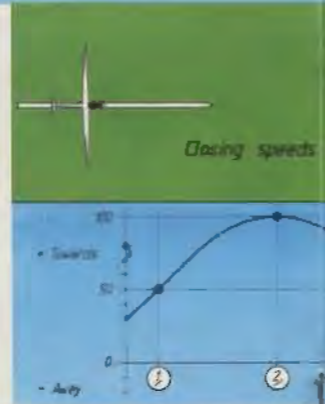




1. The Device.



2. An idealised thermal.



5. Looking down on the same

Most of the techniques for joining other gliders in thermals are straightforward and require little more than the exercise of imagination, forethought and good manners. Imagination and forethought are needed for assessing the likely results of courses of action (or inaction), and the good manners in their simplest form embody the virtue of that good old Christian suggestion, "do unto others as you would be done by".

The technique required can be demonstrated by making almost any variation of The Device in picture 1. The idea is not new; numerous toys used to be, and probably still are, based upon it.

To make The Device you need an electric motor (preferably geared), a switch, a few bits of hardwood, some stiff piano wire and ordinary flex, two balsa wood gliders (a wingspan of about 8in is best if you intend using it for "public" demonstrations) and batteries! The glider fixed to the rotating arm must circle **slowly** – something in the order of one revolution every 20-30 seconds is about right. This may seem excessively tortoiselike, but it will save you having to run round the apparatus like a demented moth round a flame as you hand "fly" the other glider into the correct positions in the "thermal". The Device should also have some provision for the other glider to be attached to a suitable arm and be circled "in formation" with the first glider to illustrate the various merits and demerits of being close behind and below, above, on the

opposite side etc. The Device will probably need clamping on to the edge of a small table or stool to prevent it detracting from any safety points you might be trying to make by ostentatiously falling over!

The most likely place for you to join other gliders in a thermal is not in a competitive gnat swarm out in the back of beyond, but local soaring at your base. This means that a fairly large proportion of the pilots attempting to get in or out of thermals will be inexperienced. I suspect that many of them will find the experience of entering and leaving occupied thermals more anxious than uplifting. Those who have no such namby-pamby feelings are distinguished by the deep anxieties they induce in everyone else! I have seen a cluster of gliders explode out of a thermal like a hand-grenade going off when a notoriously incautious early solo pilot plunged boldly into their midst.

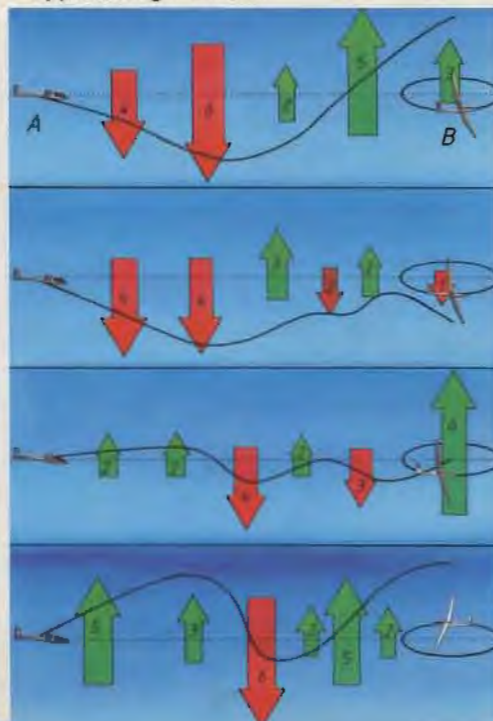
If you were the **only** glider pilot in the country then there would be no problem. But you are not alone, of course, and to deny yourselves the company of others is probably to sentence yourself to a lot of time on the ground.

The first and most obvious thing about thermals is that they alter your flight path! In picture 2 you see an idealised thermal – completely circular and utterly predictable. Should we be so lucky! In picture 3 you see a similarly idealised, yet modest pilot, making one small and very minor fumble as he searches for and finds the

3. The modest pilot.



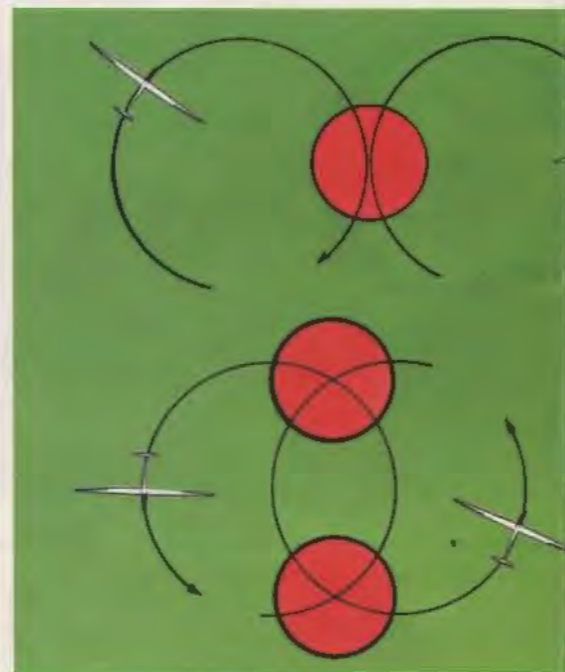
4. Approaching a thermal.



STEVE LONGLAND

CIRCLES IN THE

In the last of his three articles on sa
about thermalling without conflict

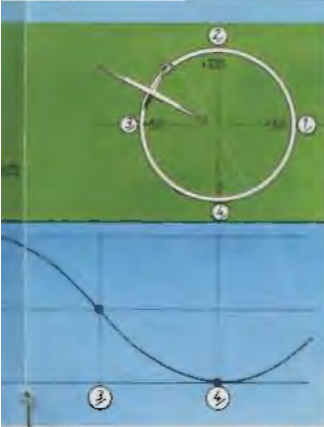


8. Have a common centre.

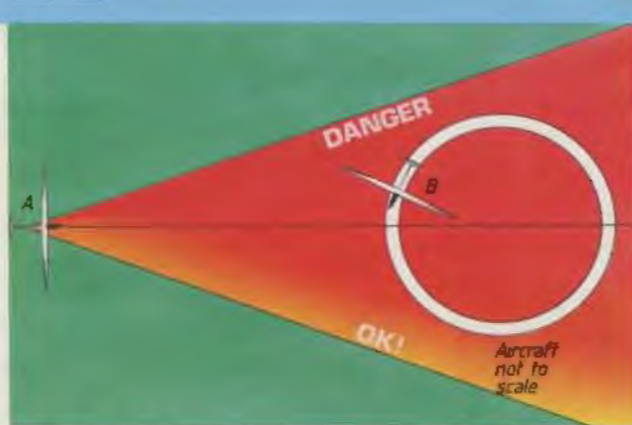
thermal core before climbing rapidly to cloud-base. (You can stop laughing now!)

Since the airflow pattern that comprises any thermal sends everyone bobbing up and down in a rather unpredictable manner relative to each other, the way in which an occupied thermal is approached is crucial. In picture 4 we see several views of a glider, A, approaching a thermal containing a circling glider, B. It is not possible to tell from position A whether glider B is in the best lift or not. B may appear to be going up very quickly. On the other hand, a quick glance at the vario could show you to be going down equally fast; ie the other glider might not be climbing at all.

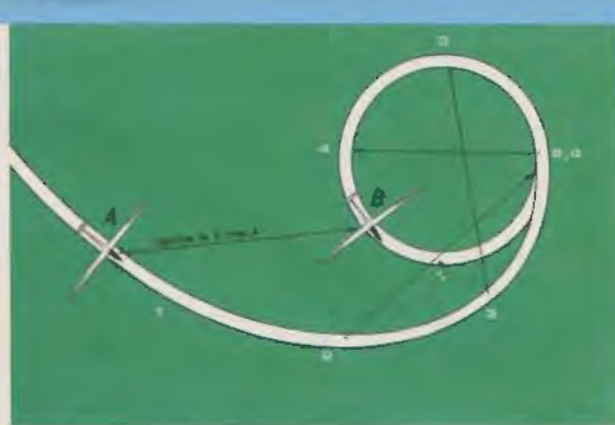
Always assuming that this is not the case, glider B may be in poor lift at the edge of a thermal or badly centred. At **whatever** height you effectively begin your approach to an occupied ther-



the gliders.



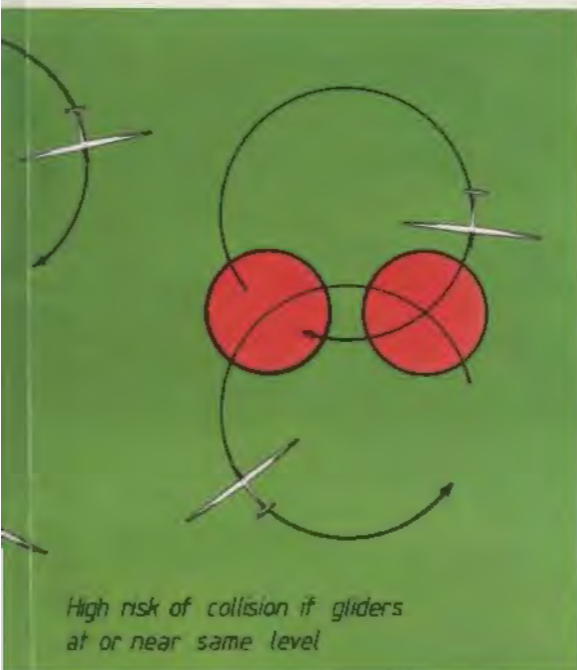
6. The right side.



7. Allow for unpredictability.

AIR

safety Steve Longland writes



High risk of collision if gliders at or near same level

mal there is **no** guarantee that you will arrive, vertically speaking, where you expect to arrive. You may end up well above or even below the other glider. Whatever techniques you use have to take account of this vertical uncertainty. It's not so difficult in fact, since if the techniques take into account the relative horizontal velocities of the gliders involved, their up and down motion becomes largely irrelevant.

It is not normal to want to collide directly with other people, except possibly in the heat of overwhelming passion, so part of the technique includes minimising the risk of collision. In picture 5 we are looking down on the same gliders. For the sake of argument we'll assume that they are, and remain at the same height and fly at the same speed of 50kts. In the bottom half of the picture the graph represents the relative speed be-

tween the two gliders. At point 1/ their relative speed is +50 (=towards each other); at 2/ it is +100; at 3/ +50 and at 4/ 0. All these changes take place smoothly in the course of one complete circle by glider B.

Given the fact that A and B are constantly accelerating and decelerating in relation to each other, it would seem sensible for A to, at the least, go for the side of the circle where B is going **away** from him (picture 6). Relative speeds will be lowest and both gliders will be going in the same direction. The inevitable rider is that the pilot of B may have his eyes glued to the vario, and could abruptly straighten up. From some positions this could mean a collision.

To make allowance for this additional spice of unpredictability and also to allow for the fact that it is highly unlikely that you, as A, will arrive and slot immediately into the right position, you should aim to fly a course wide of the correct side, and then gradually spiral in to take up position on the opposite side of the circle to B (picture 7). This **does** take a bit of practice but is worth the effort. Spiralling into position means that you can have the other glider in sight **at all times**, and as an incremental and not s**t or bust approach it rates high on the "I'd like to be an old pilot" scale.

It also pays to have a common centre to your respective circles as you can see from the bad examples in picture 8. You should also turn in the same direction as the other gliders in a thermal. This is occasionally made difficult by pilots having different notions of where the centre is, and even which way to circle. Luckily only two directions are involved here!

As you will have seen from all the above, joining a circling glider by flying directly over the top of it with inadequate vertical separation is not a good idea. First, the lower glider will be in your blind spot most of the time, and any sudden increase in its rate of climb or a diminishing of yours could bring you into contact. Secondly, if the vertical separation is small (ie equal or less than half your combined wing spans) it would not be too difficult to touch in a less than friendly manner.

One final item. **How not** to leave a thermal. Simply straightening out and flying away in a controlled and restrained manner is by far the simplest and least fraught method of escape, though remember to **look out** before you straighten up. Absolutely the worst possible way to leave a thermal, apart from falling out of it in bits or spinning, is to dive abruptly and steeply away. This sometimes occurs when pilots are aware of a glider very close behind them which they cannot see. The nose goes down positively and vigorously, and occasionally out come the brakes by way of demonstrating disapproval.

The first thing that happens when the nose is vigorously lowered is not an instant increase in

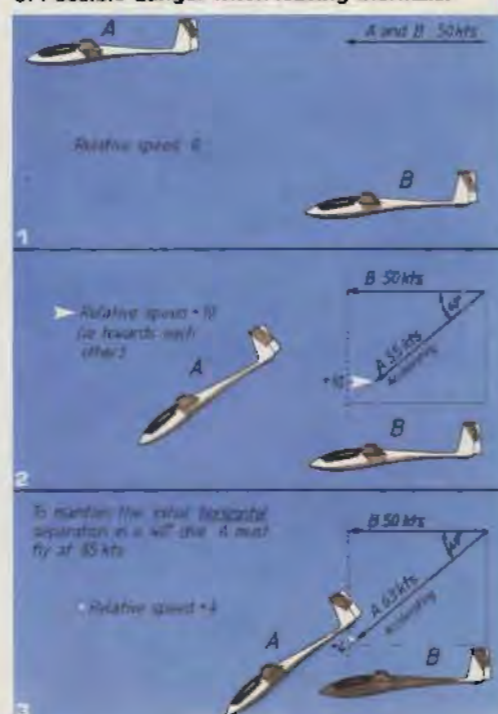
forward speed but a decrease of your speed relative to the glider behind. You come **backwards** in relation to them. If they are foolishly close and slightly below, you will almost certainly hit them. Picture 9 shows you why. This swift nose down and scoot away is also practised by pilots who have read all about soaring, energy management, low loss flying and how you need to get the speed on **before** you reach the sink. Fair enough, jolly good idea. The books do not tell you to endanger anyone else during this manoeuvre.

You may occasionally be surprised by the whizz bang compo boys zooming up from beneath you at Mach 1.3 to enter your thermal. It can be a bit alarming but there's not a lot you can do about it except not lose control! Mostly these manoeuvres are done well; occasionally they are not. The intrusive pilot, so to speak, forgets that zooming up has the same effect relative to somebody behind and above him as leaving a thermal in the peevy dive previously described.

And that's it. These three articles will in no way have covered everything, but over the years S&G has had many extremely worthwhile articles on safety and such like. Browsing through old copies is an excellent way of arming yourself against the Grim Reaper... no point in snuffing it earlier than intended. Safety is about you and your relationship to the world of energy and motion. If there are problems in this relationship I imagine that it is not the world that will change.

Look after yourselves.

9. Possible danger when leaving thermals.



Drawings also by Steve

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Saturday, August, 23, 1986 and it looked as if the second part of Lou's adventures was going to take place. There was a brisk northerly wind and the sky was looking definitely buoyant. The T-21 was prepared for its next great epic flight from Husbands Bosworth to Sandown, Isle of Wight. Unfortunately there were ten tons of tarmac to be laid on the entrance road to the airfield which had to be done first. Work went on at a feverish pace with Lou looking anxiously at the sky and his watch. At 11.30 the tarmacking was completed and we were ready, but what was this? The sky had become decidedly overcast. We abandoned the task and hoped for better the next day - typical of gliding in England.

Sunday, August, 24, 1986 and Lou and I arrived early at the clubhouse. There was still a northerly wind of about 10kt and it had that feel of being definitely cool, crisp, unstable air. Lou said "Have you brought the survival suits Norman?" "They're in the van", I replied, "along with the rest of the gear". "Well, let's get on the line" Lou said with more than just a hint of enthusiasm in his voice.

The T-21 was DI'd, loaded with cameras, tape recorder and radios and towed to the launch point. A road retrieve or aerotow had to be arranged. The trusty van was full of fuel and Phil Spencer and Dick Walker "volunteered" to stand by in the event of an early land out and Jim Jesty beat the rest of the tug pilots in volunteering to fetch us back from Sandown in Bob Boles' Chipmunk in the event of a successful mission.

The scene was set. The cumulus were forming into streets although with low bases, a Boccan was soaring and the tug pilot reported good lift. "Let's go" said Lou. "OK," said I, picking up the survival suits, boots, gloves, helmet and goggles and preparing for the launch. "11.05 Husbands Bosworth to Sandown, IOW in a T-21" Lou was dictating into his tape recorder, the rope went tight and we were away! Sixty knots on aerotow in a T-21 is not the most enjoyable experience as those of you who have tried it will agree, so at 1000ft agl Lou pulled the bung. "We can go up quicker without him" said Lou, and low and behold we were going up at 10 on the green ball, assisted of course by the odd karate chop on the dashboard to free off the balls. At 2000ft agl we entered cloud, climbed to 3000ft agl and set off south. It was interesting to note that flying in cloud in an open cockpit T-21 was quite eerie and quiet, ie we both stopped talking.

Set off towards very active looking clouds

We broke cloud over Husbands Bosworth airfield and set off towards very active looking clouds on track. At this point I should point out the choice of the next lift was very critical since with possibly a realistic glide angle of about 14:1 and a survivable speed range of 30-45kt, if it doesn't work you are soon sifting in a field. We were lucky the clouds were close together and the lift was strong.

Flying was shared as always. Lou did the right hand thermals and I did the left and if there was any doubt the T-21 did it itself! Northampton

ISLE OF WIGHT IN A T-21

Norman James continues his account of the adventures he shared with Lou Frank in their syndicate T-21



Over Portsmouth harbour. Photo: Lou Frank.

soon appeared underneath. We were going well, the visibility was superb and the cloudbase was going up. We were keeping to the left of track to allow for the slight easterly component in the wind, but it was soon apparent that this was not necessary and we were forced to fly due west for a time at Aylesbury to get back on track and avoid the London TMA.

Back on track, cloudbase had gone up and with cloud climbs to give us the required range we were reaching 4500ft and more and making good progress. Reading came up beneath us. "Half way" said Lou, and reported the fact into his machine. We progressed on to Basingstoke and then to Lasham, where we meet up with our first gliders on the trip and joined them in a thermal. At 4500ft and clear of cloud we set off again and had the first sighting of the coast in the distance.

Cloudbase was still rising and we were soon in sight of the Isle of Wight with that formidable (well for a T-21) stretch of water before us. We kept close to Petersfield to avoid the Southampton traffic and the airway and suddenly noticed we were joined by a hang glider at 4000ft. "I bet he's cold" I said to Lou. He agreed but was more intent on looking at our goal which was now clearly in sight. Portsmouth harbour and the last reachable cloud - we were climbing but not very quickly.

"How far to go?" asked Lou, banging hard on the instrument panel to get more lift. "About 15 miles" I replied "3500ft doesn't give us much margin if we hit sink" said Lou and we don't want to land in a field at this stage". "We should be

OK" I said confidently, but I must admit secretly that it still looked a long way. "In that case you fly it across" said Lou. "OK I will" said I, thinking to myself why didn't I keep my big mouth shut.

We set off, 38kt, string in the middle, eyes on the goal. Lou was doing a commentary into the tape machine - "We are now crossing the English coast, the time is 3.20pm, the Isle of Wight is now clearly visible and we can see Bembridge airfield, the view is magnificent".

At this stage, I felt a tremble from the T-21. It felt like lift, I looked at the Cosim and the red ball was descending. I felt the surge and instinctively pushed the wing down into the thermal. Lou was still dictating into the tape machine.

"Norman is flying and we are now in the middle of the Solent and we are climbing!!" Lou's voice rose half an octave and took on the sound of a race-horse commentator at the end of a close race. "We are thermalling over the middle of the Solent and the cheeky devil's turning left; we are going to thermal our way to the Isle of Wight. I can see Portsmouth and the Navy bay and the Isle of Wight looks like a map before us. The view is magnificent". Lou then calmed down and proceeded to take photographs.

I climbed to 3500ft and set off over the IOW now having plenty of height to reach Sandown. In fact we reached another thermal over the island and joined a Blanik from the Vectis Gliding Club which operate from Sandown and local soared for half an hour before landing at Sandown, much to the surprise of the local members who had difficulty in believing that we had come all the way from Husbands Bosworth in a T-21.

NATIONAL LADDERS

There have been some exceptional scores for the time of year with several very good days. The Spring Bank Holiday week took that Coventry based Tutor, this time flown by Keith Nurcombe, on an O/R from Husbands Bosworth to Evesham. At Aston Down, where there were several 500kms, Jane Randle flew well over 400km to set the pace for the California in England trophy for the longest flight by a female.

Open Ladder

Leading pilot	Club	Flts	Pts
1. R. Payne	Bristol & Glos	4	8431
2. T. E. Macfadyen	Cotswold	4	8055
3. E. Johnston	Cotswold	4	8008
4. G. Bishop	Bristol & Glos	4	7268
5. GERALYN Macfadyen	Cotswold	4	6147

Weekend Ladder

Leading pilot	Club	Flts	Pts
1. K. Nurcombe	Coventry	4	10312
2. M. Guard	Coventry	4	5676
3. N. G. Hackett	Coventry	3	5459
4. R. Palmer	Avon	3	5337
5. E. Specht	Coventry	4	4748

1000KM FOR BRITISH PILOT

Julian West, formerly at Lasham GC and now living in Germany, flew a 1009km quadrilateral in a Nimbus 3 on Saturday, May 26 from Burg Feuerstein, north Bavaria, with TPs at Linz, Austria, and Bamberg and Passau in W. Germany. The flight took under 11hrs.

The following day he flew an 835km triangle. Eighteen other pilots achieved 1000kms on these two days, one flying the distance three times in that week.

PITOT/STATIC SYSTEMS

The BGA Technical Committee wish to draw your attention to the very likely possibility that the pitot/static systems installed in many modern gliders will provide erroneous indications when flown in wet conditions. Such malfunctions may occur in rain, cloud and in icing conditions.

The very small bore (standard) pitot head is unprotected against the ingress of moisture. Static systems are equally prone to the ingress of moisture.

Whereas an acceptable standard of alternative (cockpit) static can be installed, with a change over valve, the only solution to the pitot system is one of the "pot" type installed in the nose (where practical). Such pitot systems are fitted to the past generation of UK built gliders and may be offered as options by some of today's foreign manufacturers.

Where an aircraft is certificated in accordance with JAR Part 22 (Sailplanes and Powered Sailplanes) the limitations in the Flight Manual, (which forms part of its certification) shall be observed. And, whereas, JAR22.1325 "Static Pressure Systems" states that "positive drainage of moisture is required", it may not always drain fast enough or effectively!

Dick Stratton, BGA chief technical officer

SLINGSBY WEEK



David Chaplin with Fluff at last summer's Slingsby week.

After the success of the Slingsby Week last summer, the Yorkshire GC intend to make it an annual event to commemorate the name and work of Fred Slingsby who founded the glider works at Kirkbymoorside, just a few miles away from Sutton Bank.

The club's chairman, David Chaplin, said that the enormous contribution made to the gliding movement by Fred, and his wife Fluff, and their work-force can't be exaggerated.

"The fact that after decades the same gliders continue to give pleasure is in itself a fitting tribute to the craftsmanship and attention to detail that went into their design and manufacture," David added.

The intention of the Slingsby Week, from August 25 to September 2, is for like minded fun-flying pilots to get together without the pressures of competition to enjoy a happy gliding holiday and in doing so keep the name of Slingsby alive.

Last year Fluff, who is 94, said her visit to the Week was one of the happiest days of her life and she hopes to be with them again at Sutton Bank.

David said visitors, whether Slingsby owners or not, are welcome to join them.

ACCIDENTS

A Condor towing a glider from Tibenham had an engine failure on take-off at about 150ft and the pilot, John Paris, was killed. The accident occurred on April 28 and the glider landed safely. One aspect of the accident was that the tug pilot gave the "wave-off" signal to the glider. This signal should not be used in a genuine emergency, especially at low level as the risks involved are too great.

The accident is being investigated by the AAIB.

There was a mid-air collision between a Robin (G-BFWW) and a Grob (G-BKNJ) near Moreton in the Marsh on May 3. The pilot of the Grob, Ted Ayling, and his student were

killed. The aircraft were at 3300ft in a flight visibility of 8km or less in hazy conditions. The Grob was in radio contact with Upper Heyford and was returning to Enstone, the Oxfordshire Sport Flying base. The Robin was heading for Sywell but not receiving any service.

The aircraft were on a converging course at an angle of 20° with the Robin on the right slightly below the Grob. The Robin's propeller hit the Grob's undercarriage with the next critical contact being between the Robin's fin and the Grob's wing which failed. The Robin pilot was able to land his aircraft.

This accident is also being investigated by the AAIB.

W. G. SCULL, BGA director of operations

AGM AND DINNER-DANCE 1991

A reminder that the BGA's AGM next year will be held on Saturday, February 23, at the Northampton/Rugby Post House just off the M1 motorway at Crick. BGA officials want to make sure that every club has a chance to attend this meeting and to discuss any points about BGA policies, budget etc that are causing concern. Any formal proposals which clubs wish to put forward for the AGM agenda should reach the secretary by Christmas, so that they can be widely circulated in advance of the meeting in order to give plenty of time for full consideration.

Plans for the annual dinner-dance and prizegiving are under discussion with the Norfolk Gliding Club who have offered to act as hosts. At this stage the date is tentatively scheduled for the weekend of March 23/24 at the Airport Ambassador Hotel, Norwich. There will be further details in the next issue.

We do hope that you will give full support to both the AGM and the dinner-dance. Barry Rolfe, BGA administrator

BRITISH OVERSEAS NATIONALS

Disappointing weather for the first British Overseas Nationals at Roanne, France from May 31-June 8 gave only four contest days, the third devalued to 60pts.

The results were 1. John Delafield (ASH-25E), 2440pts; 2. "Nobby" Clarke (Discus), 2372pts and 3. Warren Kay (ASH-24), 2232pts. A full report will be in the next issue.

HISTORIC SAILPLANE GROUP

More than 20 vintage gliders are owned by members of the London GC and a hard core of enthusiasts, wanting a focal point for this interest, have formed the Historic Sailplane Group.

It is not separate from the London GC or in competition with the Vintage Glider Club. Its aims are simple:

To ensure the history of the London GC is recognised now and in the future, and To ensure that pre-war design sailplanes continue to operate there.

To see how gliding enthusiasts throughout the country feel, there will be a weekend meet-

ing at Dunstable in September when most of the glass machines are at Aboyne.

If you own a pre-war design glider you are likely to receive an invitation. If you don't, but wish to join, contact Geoff Moore c/o London Gliding Club, Tring Road, Dunstable Downs, Bedfordshire.

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	Name	Club	1990
298	Dall, R. N.	Lasham	11.4
299	Harvey, R. F.	Coventry	15.1

DIAMOND DISTANCE

No.	Name	Club	1990
1/437	Rice, J. W.	Trent Valley	8.4

DIAMOND GOAL

No.	Name	Club	1990
2/1808	Hall, S. A.	Four Counties	26.8
2/1809	Driver, M. J.	Surrey Hills (in South Africa)	28.12.89
2/1810	Slater, S. W.	Trent Valley	8.4
2/1811	Wilson, F. P.	Wolds	8.4
2/1812	Sowu, J. R.	Booker	3.9
2/1813	Dunthorne, P. A.	Bristol & Glos	4.4
2/1814	Spirling, A. A.	Wolds	8.4

DIAMOND HEIGHT

No.	Name	Club	1990
3/943	Hamblin, P. R.	Lasham	27.3
3/944	Carver, S. J.	Derby & Lancs	3.3
3/945	Jennings, G.	Lasham	14.3
3/946	Thomas, C. R. V.	Surrey & Hants	22.3
3/947	Snape, K. R.	Pibaro & Spalding	11.4
3/948	Burry, Jill	Lasham	30.3
3/949	Cheetham, H. A.	Buckminster	4.3
3/950	Mills, J. N.	Shalbourne	26.10
3/951	Wood, A. B.	Deeside	9.4
3/952	Smith, R. G.	Fenland	22.3
3/953	Parker, A. R. L.	Cotswold	25.4
3/954	Dall, R. N.	Lasham	11.4
3/955	Harvey, R. F.	Coventry	15.1

(Ten flights were from Aboyne and two from Sutton Bank.)

GOLD BADGE

No.	Name	Club	1990
1427	Hall, S. A.	Four Counties	28.8.89
1428	Driver, M. J.	Surrey Hills	28.12.89
1429	Thomas, C. R. V.	Surrey & Hants	22.3

1430	Marsh, B. C.	Stratford on Avon	9.4
1431	Slater, S. W.	Trent Valley	8.4
1432	Thorp, W. A. D.	Bum	11.4
1433	Roberts, M.	Southdown	17.4
1434	Snook, Brenda	Lasham	27.3
1435	Wilson, F. P.	Wolds	8.4
1436	Dolphin, M. G.	Pegasus	25.3
1437	Brown, K. R.	Bristol & Glos	9.4
1438	Sowu, J. R.	Booker	20.10
1439	Spirling, A. A.	Wolds	8.4
1440	Dall, R. N.	Lasham	11.4
1441	Harvey, R. F.	Coventry	15.1

GOLD DISTANCE

Name	Club	1990
Hall, S. A.	Four Counties	28.8.89
Driver, M. J.	Surrey Hills (in South Africa)	28.12.89
Slater, S. W.	Trent Valley	8.4
Wilson, F. P.	Wolds	8.4
Sowu, J. R.	Booker	3.9.89
Spirling, A. A.	Wolds	8.4
Jobar, R. S.	Lasham	5.5

GOLD HEIGHT

Name	Club	1990
Hall, S. A.	Four Counties	19.3
Lynch, Catharine	Yorkshire	14.3
Holland, D. A.	Yorkshire	15.3
Jeffries, D. J.	South Wales	4.3
Hamblin, P. R.	Lasham	27.3
Jennings, G.	Lasham	14.3
Dale, M. P.	Yorkshire	20.3
Thomas, C. R. V.	Surrey & Hants	22.3
Ross, G. H.	Lasham	22.3
North, J. W.	Esso	27.3
Webb, C. V.	Shropshire	8.3
Mann, G. F.	Deeside	22.12.89
Marsh, B. C.	Stratford on Avon	9.4
Partington, R. H.	Strubby	11.4
Wilson, B. F.	Bum	9.4
Clark, G.	Yorkshire	14.3
Curwen, R. W.	Avon	11.4
Thorp, W. A. D.	Bum	11.4
Evans, D. A.	Blackpool & Fylde	26.10.89
Hearley, Kathleen	Lasham	29.3
Slater, N. J.	Phoenix	25.3
Roberts, M.	Southdown	17.4
Snook, Brenda	Lasham	27.3
Golling, M.	Pegasus	26.3
Dolphin, M. G.	Pegasus	25.3
Red, G. R. M.	Pegasus	25.3
Brown, K. R.	Bristol & Glos	9.4
Sowu, J. R.	Booker	20.10.89
Huttlers, R. I.	Avon	14.10.89
Parker, A. R. L.	Cotswold	25.4
Dall, R. N.	Lasham	11.4
Familion, J.	Borders	17.3
Harvey, R. F.	Coventry	15.1

SILVER BADGE

No.	Name	Club	1990
8290	Lynch, Catharine	Yorkshire	14.3
8291	Birch, J. F.	Yorkshire	4.4
8292	Triplett, D. A.	Shropshire	8.4
8293	Hudson, R.	Yorkshire	4.4
8294	Partington, C. R.	Strubby	8.4
8295	Farrer, M. F.	Cambridge Univ	20.5.88
8296	Mennell, G. R.	Cleavelands	8.4
8297	Edwards, S.	London	15.4
8298	Myers, Alison	Blackpool & Fylde	13.4
8299	Carver, Elaine	Derby & Lancs	18.4
8300	West, G.	Strubby	8.4
8301	Carlisle, R.	Derby & Lancs	18.4
8302	Wright, M.	Rattlesden	8.4
8303	Dalgetty, A.	Bum	8.4
8304	Rowson, Alison	Midland	24.4
8305	Jenkinson, T. P.	Booker	25.4
8306	Wilson, Wilhelmina	Lasham	4.4
8307	Slater, N. J.	Phoenix	28.3
8308	Baker, J. B.	Midland	11.4
8309	Dart, R. C.	Lasham	26.4
8310	MacGregor, A.	Dorset	25.4
8311	Pemberton, D.	Bioesley	27.4
8312	Sinnott, K. M.	Bristol & Glos	2.5
8313	Machin, N.	Oxford	8.4
8314	Davison, I. A.	Devon & Somerset	26.4
8315	Ward, R.	Devon & Somerset	25.4
8316	Webster, F.	Angus	6.5
8317	Sowu, J. R.	Booker	3.9.89
8318	Soulsby, M.	Borders	7.4
8319	Marston, R.	Pegasus	22.4
8320	Lomas, Kerry	Booker	7.5
8321	Lomas, R. A.	Phoenix	6.5
8322	Duerden, A.	Pegasus	6.5
8323	Ellis, P. R.	Kestrel	8.4
8324	Swoffer, Lorraine	Lasham	5.5
8325	Kirkham, K. R.	Kont	23.4
8326	Joyce, T. D.	South Wales	7.5
8327	Deans, I.	Lasham	8.5
8328	Calton, J.	Lasham	7.5
8329	Nash, P.	Lasham	27.4
8330	Suttle, V.	Cleavelands	8.4
8331	Scholey, Deborah	Lasham	7.5
8332	Taylor, R. C.	Devon & Somerset	4.4
8333	Thomas, G. N.	Anglia	8.5
8334	Stanton, N.	Avon	17.5
8335	Aram, N.	Chilterns	8.4
8336	Rolls, S. F.	Avon	27.4
8337	Raisey, C. B.	Lasham	20.5
8338	Souter, A. J. M.	Phoenix	20.5
8339	Narain, H. B.	Bannerdown	20.5

UK CROSS-COUNTRY DIPLOMA

Part 1	Name	Club	1990
	McNell, B. R.	Cleavelands	8.4
	Wright, M.	Rattlesden	7.5
	Staff, D. T.	Booker	5.4

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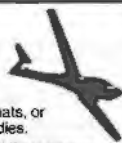
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BGA ACCIDENT SUMMARY - SAFETY CHAIRMAN'S COMMENT

Accidents reported in this issue highlight:

1. The general problems associated with type conversions and the necessity to be clear and systematic with briefings.
2. The penalties for deviating from the BGA's cockpit check procedure. Accident No. 12 illustrates the value of a cockpit check.
3. The penalties for deviating from the BGA's recommended field landing practice. Being tempted to soar(?) away from your circuit leads to accidents both in field landings situations and at home airfields.
4. The problems for instructors aiming to develop P2s' judgment by demonstrating too close to the margins.
5. The need to use safety pins with Hotellier ball and socket joints. A hole for this purpose is provided in the locking wedge. It is really a necessity to use this locking feature! Control disconnections are repeatedly occurring in flight. Care in rigging and positive control checks are essential.
6. The problems of flying gliders in strong winds, or having gliders on the field in strong winds, (particularly in unstable conditions). Two blow overs is two too many!

Safety is perpetual good practice! Yesterday's safety made today's flying possible! How about tomorrow's.

Ref No.	Glider Type	BGA No.	Damage	Data Time	Place	Pilot/Crew		
						Age	Injury	Hrs
1	K-7	3421	M	1.11.89 1423	Ringmer	38 15	N N	107 0
Demonstrating recovery from a ballooned landing after a fast approach P1 pulled the nose up and returned control to P2. He failed to lower the nose and close the airbrakes quickly enough and the glider started to sink rapidly. P1 delayed taking control too long to prevent a heavy landing.								
2	Blank	2080	W/O	15.10.89 1420	Walden Park	24	F	?
This fatal accident occurred after an apparently normal winch launch. After release the winch driver saw nothing unusual until just after the cable had been wound in. At this stage he noticed the glider in a near vertical dive. The glider impacted before a pull out was completed and the pilot was killed. Investigation showed no definite cause.								
3	SF-27	-	M	1.10.89 1545	Burn	40	N	138
At the start of an aerotow the tug took up slack, then jerked the glider which over-ran the rope. Hearing a grating noise, the pilot tried to release but the rope was wrapped around the wheel. As the tug applied full power the glider pilot groundlooped the glider to break the rope. Without a forward signaliser the tug pilot had to rely on his mirror.								
4	K-8	2205	M	4.10.89	North Hill	59	N	15
In a 30+ 15kt crosswind the glider turned in too early. Flying fast and with full brakes the pilot made a late roundout, bounced to 10ft, then landed gently but with drift. This damaged the glider.								
5	Bodian 1E	2013	M	15.10.89 1423	Husbands Bosworth	28 45	N N	455 -
After letting the glider drift away from the airfield P1 headed back, commenting to P2 that they were "at our limit". Descending into the wind gradient the situation got worse and they touched down 150ft before the fence. P1 decided to carry on "and hop over the fence, rather than groundloop". They hit the fence.								
6	SZD Junior	3237	S	19.10.89 1140	Nr Aboyns	38	N	48
While wave soaring above cloud the gaps started closing. The pilot spiralled with full airbrake and started to follow a higher performance glider back to the airfield. With descending cloud he decided he would not make it. After a hurried circuit, hitting a tree on approach with a wingtip, he landed in a field.								
7	SHK-1	1581	S	14.10.89 1510	Sackville GC	27	N	54
On his first flight on type the pilot allowed his approach speed to get too low and this, combined with a lack of height to recover, led to a heavy landing. Pilot's concern about the ineffectiveness of the airbrakes led him to approach somewhat slower than required by the wind gradient.								
8	ASW-20C	3513	M	2.10.89	Dunstable	43	N	201
The pilot flew the ridge for over an hour with no problems then started his circuit. During the final turn he selected landing flap. A loud crack was heard, the glider yawed and he could not exit the turn normally and a heavy sideslipping landing was made. D1 and pre-flight checks OK but safety pins were not fitted to the flaps.								
9	K-23	Alpha 5	M	14.10.89 1500	Odiham	28	N	9
The pilot made his first take-off on type. He was briefed to keep the glider's nose wheel on the ground during the initial stages, then to run on the mainwheel up to lift off. He held the nose down until after the tug lifted off, then over-controlled before releasing and landing heavily.								
10	Dart 17r	-	W/O	3.11.89 1430	Talgarth	30	N	108
The pilot started his circuit, put the wheel down, then finding lift, decided to soar the mountain 1km from the airfield. He just reached this and started to soar about 30ft above the ground with 20° of bank in a slight bowl. Finding sink he could not avoid the hill. He escaped injury.								
11	K-13	2169	W/O	4.11.89 1440	Booker	32 26	S S	800 0
P1 demonstrating a "low circuit" during crosswind conditions allowed the glider to get too far downwind. After increasing speed he found that he could not make it so turned to land alongside trees. During this turn the glider entered the lee of the trees, lost speed and height and cartwheeled into the ground.								
12	Pegasus 101A	3107	N	5.11.89 1400	Parham	35	N	145
During pre-flight checks the pilot moved the stick back whereupon there was a noise and the trim lever became loose. The trim spring had fractured near the stick fitting.								
13	SF-27	2752	M	14.10.89 1450	Husbands Bosworth	25	N	125
After landing near the launch point the glider was pushed into line. The pilot undid his straps, then decided to fly again. He checked the brakes and trim, but not canopy lock, and launched. After soaring and flying at speeds up to 80kt he did HASSELL checks, including pushing the canopy lock, then spun the glider. During recovery the canopy flew off.								

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

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BGA & GENERAL NEWS

Ref No.	Glider Type	GGA No.	Damage	Date Time	Place	Pilot/Crew		
						Age	Injury	Hrs
14	K-8e	2205	S	29.11.89	North Hill	59	N	122
The pilot, flying after a lay off, positioned the glider behind a K-13 in the circuit. In paying too much attention to the K-13 he flew a wide downwind leg. After a long base leg/final approach he just cleared the boundary hedge, but clipped a small tree and spun to the ground.								
15	K-4	2949	W/O	5.11.89 1500	Dunstable	0	-	-
The high wind was varying in direction by up to 90°. The pilot was about to be repositioned when it lifted over on to its back.								
16	Olympia 463	1334	W/O	2.12.89 1435	Nr Denbigh, Chwyd	62	N	1571
After a winch launch the pilot found that he could not see the ground as the canopy had misted up on the outside. With limited view he decided to land in a field over power cables. Sideslipping he collided with the high tension cables. Upon the cables touching, the explosion dislodged the glider from the cables and set fire to the wing. The glider fell to the ground, the pilot uninjured. Canopy misting and poor visibility made the field landing a difficult proposition.								
17	ASW-19	2727	M	23.11.89 1430	Nymphfield	51	N	86
On his second flight on type the pilot selected gear down prior to joining the circuit. After starting the approach at 53kt the pilot found that the speed was increasing inspite of more brake being used. He overshot the airfield to land in a valley field (gear up). Another example of control confusion due to not checking the control selected.								
18	Blanik	3354	M	12.11.89 1504	Eaglescott	64	N	261
After an aerotow to 2000ft the pilot appeared to have lost sight of the airfield and then misjudged the strength of the wind. Finding he could not make it back to the airfield he decided to land in a field. The landing was badly positioned and the wing was damaged.								
19	Falke	M/G G-BARZ	M	14.1.90 1340	Nr Ripon	36 P2 32	N N	750 360
During a practice field landing at 30ft on the approach full power was applied. A combination of drizzle and the upslope of the field caused the aircraft to touch down on the soft surface. This slowed it down so the pilot aborted the take-off. He then had to groundloop to avoid hitting the far fence.								
20	K-8e	2336	S	20.1.90 1323	Weston on the Green	33	N	29
After taking up slack the pilot signalled "all out" then, as the glider started to move the wingtip holder let go, the cable went slack. The pilot was jerked back from the release as tension was restored. The glider's left wing dropped to the ground and the glider groundlooped releasing the cable.								
21	K-8	3370	M	3.3.90 1211	Gemston	54	N	52
The pilot made a slow approach with no airbrakes and then drifted to the side of the runway in the crosswind. The glider was seen to balloon before touching down again hitting the wingtip on a large stone in the adjacent grass. This caused the glider to groundloop damaging the wing.								
22	Bocian	1951	M	11.3.90 1800	Crowland	51 P2 49	N N	341 -
After changing the chosen landing runway, due to a glider obstructing the main runway, P2 made a 270° downwind turn to approach the runway. During the final approach P1 prompted P2 that the speed was falling and P2 responded correctly. However the speed continued to fall so P1 took over. Speed was regained but the glider undershot the runway and hit a dyke.								
24	Pittua B-4	1836	M	3.3.90 1420	Dunstable	33	N	550
After checking that the undercarriage was down and locked the pilot made a normal touchdown during which the wheel retracted. Apart from some mud in the wheelbox, no obvious reason for it retracting was found.								
25	K-23	2996	N	1.4.90 1150	Dunstable	38	N	20
After a normal ground run the pilot slowly rotated the glider into the climb at about 50-100ft. Meanwhile, the winch driver thought the glider was not climbing and had released so he cut the power. The pilot released the cable, lowered the nose and landed ahead. During the landing the glider caught the cable over the starboard wing.								
26	K-8CR	3504	S	24.2.90 1810	Saltby	40	N	62
In a strong, gusty wind the pilot joined the circuit while a two-seater was being wheeled down the runway. He decided to overfly the glider then, as this had been moved off to one side, decided to land along the other edge of the runway. While watching the two-seater he bounced, closed the brakes, ballooned then landed heavily.								
27	K-8e	2465	W/O	17.3.90	Snitterfield	27	N	2
As the all out signal was given the wingtip runner let go the wing early. As the glider was moving slowly the wing dropped and so the ground crew called "Stop!" The glider continued to accelerate and rotated very quickly into a wing down climb before the power was cut. The pilot rounded out from the recovery but landed hard after ballooning over the boundary fence.								
28	Veritas CT	3549	M	20.1.90 1300	Challock	56	N	472
During his first flight on type the pilot tried a number of manoeuvres before opening the airbrakes. The glider pitched forward and, under negative g his head punched a hole in the canopy. The straps, which he had trouble adjusting before the flight, allowed him to rise from the seat as he moved forward for the air-brake lever.								
29	Libelle 201a	-	S	10.3.90 1525	Pocklington	39	N	146
Following a short wave flight the circuit was flown in gusty (rotor) conditions. After a turbulent, but otherwise normal, approach the glider descended rapidly from about 20ft in spite of closing the brakes. The glider landed heavily on the mainwheel then bounced into the air before landing normally.								
30	K-23	AGAS	M	1.4.90 1843	Upavon	28	N	14
Seeing that the main landing area was blocked, the pilot decided to land in the undershoot area, as was normal practice. During the approach he allowed the speed to decay, failed to close the brakes sufficiently and undershot his intended landing area. The glider's tail hit a 8ft mound which pitched it forward on to the nosewheel.								
31	SZD Junior	3541	S	8.4.90 1415	Bishop Hill	42	N	11
Ridge soaring in weakening conditions, the pilot had to abandon his beat and cross a wood towards another part of the ridge. This was not working either so he decided to land in a large, into wind, but downhill, field. Finding he could not clear trees on the boundary he turned and landed in an adjacent field, groundlooping to avoid the walls.								
32	K-13	2285	W/O	14.4.90 1800	Whitfield	0	N	-
Three people were pushing the glider into wind, towards the hangar, when a strong gust hit it. The nose lifted into the air and the glider rotated, flew over the man holding the tail and fell on to its back.								
33	Carman JP15 36AR	2593	M	18.4.90 1600	Southam	38	M	719
After flying for just over 5hrs the canopy lifted at the front and came off, striking the pilot on the head before hitting the tailplane. Reducing speed and assessing the situation the pilot deduced that he had full control, so despite blood pouring from a head wound made a good field landing.								

Fail No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew		
						Age	Injury	Hrs
34	Puchaz	-	M	4.4.90 1915	Connel	27	N	25
After aborting a slow launch at about 400ft the pilot decided to turn and land downwind, rather than do a short circuit as he thought he was too low. The wind was stronger than he realised and he ran off the runway into the boundary fence.								
35	Bocian	1843	S	22.4.90 1553	Abcyme	30 0	N N	300 0
After a trial lesson P1 followed another two-seater into the circuit but failed to check the windsock. During his circuit the wind had changed and despite an extended base leg and S turn followed by full airbrake the glider did not touch down until at the far end of the runway. P1 had to groundloop the glider to avoid dropping down an earth bank.								
36	Cobra 15	-	S	29.4.90 1615	Pocklington	47	N	130
After selecting a field from 1500ft, the pilot attempted to thermal away. He failed but had drifted away from his chosen field so, at 800ft, picked another which was uphill but downwind. He overshoot that field and landed on rough ground and had to groundloop the glider to avoid a fence. This broke the rear fuselage.								
37	Bocian 1E	1950	M	18.3.90	Dallachy	29 43	N N	1040 0
After a turbulent approach the glider entered a rollover from trees and buildings. P2 handled this well but the glider landed tail first then bounced. Out of the rollover a side gust caused the glider to land with drift which broke the tail skid. P1 then had to groundloop the glider to avoid the fence.								
38	Venus II	3549	N	11.4.90 1300	Challock	56	N	472
After failing to check that the airbrakes were closed the pilot took off with them open. Although briefed on this possibility the tug pilot thought there was something amiss with the tug so did not signal "airbrakes open" with the rudder. At about 1500ft the glider pilot put his wheel up, heard the "brakes out with w/c up" warning and realised his error.								
39	ASW 20	7586	S	31.3.90 1130	Camphill	53	N	500
After several briefings the pilot made his second flight in a glass ship. He flew a normal circuit but then forgot to set landing flap. He then opened the brakes and lowered the nose, as he had done in wooden gliders. The speed built up rapidly and he landed heavily, substantially damaging the glider.								

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

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Copy and photographs for the October-November issue of *S&G* should be sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, tel 0223 247725, to arrive not later than August 7 and for the December-January issue to arrive not later than October 9. The fax number is also 0223 247725.

GILLIAN BRYCE-SMITH
June 6

AQUILA (Hinton in the Hedges Airfield)

Our open day on the second May Bank Holiday was a great success with three tugs and three two-seaters in full flight. We anticipate some of the visitors becoming full members.

A mini expedition to the Long Mynd by some vintage members (!) was much enjoyed.

We need to encourage more use of the Astir if its future is to be assured - any budding Astir pilots out there?

J.R.

BANNERDOWN (RAF Hullavington)

Our three spring courses were successful with Neal Ritchie soloing after the Army apprentices' week. Harry Narain completed his Silver badge and Paul Remfrey gained his duration and Silver height. Liam McErlan took off from Bicester, overshot Frome and landed near Honiton.

Congratulations to Colin Masters and Peter Woodman on becoming full Cats. After three Inter-Club League meetings we are just ahead. D.C.F.

BATH & WILTS (Keevil Airfield)

The Inter-Club League meetings have been a great success with Phil Gascoigne and Bob Bromwich coming 1st in their Classes. The final result hinges on our meeting at Keevil.

Cross-countries are becoming popular with Stuart North and Malcolm Smith leading the way. Congratulations to John Freckleton on going solo.

The runways are being excavated in readiness for new surfaces but we are still able to operate. Thanks to Dave Strange, Graham Calloway and Tony McBride our new winch is very successful.

B.H.

Obituary - Tom Stead

It is with regret we announce the premature death of Tom Stead on April 17 at the airfield from a heart attack. Tom was a quiet man and made many friends within the club. Although he had only been a member for one year he was determined to succeed at flying. His willingness to help and never complain was recognised by us all.

Tom, who took an early retirement three years ago, was also a keen gardener and family man. He leaves a wife, Jean, and son and daughter. Bob Hitchin



Dunkeries GC chairman, Tim Bowles, third from left, with the cup winners (from l to r) Dennis Barratt, Bob Cartledge and Brian Fowkes. Photo: Barrie Codling.

BICESTER (RAF GSA)

The highlight of what has been a brilliant start to the season has to be Graham Davey's 750 attempt of which he completed 738km. Had he not needed a reflight to photograph the task board he's certain to have got round.

"Noddy" Williams' barograph went on strike during his 500km so he flew it again two days later with three barographs as insurance.

Well done also to Vic Dawson, Bobby Spiller, Bob Sharman and Max Kirshner (500kms); Pete Moorehead, Ron Pepper and Derrin Francis (300kms), Derrin on his first attempt; Bob Northover, Toby Harris and Alison Randle (Silver badges); Robin Barnes (Bronze badge and 5hrs) and, most important of all, Steve Hymers on resoloing.

M.H.

BRISTOL & GLOUCESTERSHIRE (Nympsfield)

Membership is growing steadily and courses and competitions have been greatly enhanced by our new clubhouse with its bar dedicated to Sir Peter Scott, our vice-president for many years.

We have had many long cross-countries with the season's first task week producing 15000km and wave on numerous days giving a view of the countryside from a couple of miles high.

J.S.W.

BURN (Burn Airfield)

New aircraft on site, including a M200 and a Phoebus, exploited the good soaring in May. A 6700ft cloudbase by midday was most unlike this country.

Derek Wilson, Colin Bracewell and Dave Peters have their AEI ratings. Mowing has become popular now that we have a "ride on" grass cutter.

J.A.S.

CAMBRIDGE UNIVERSITY (Duxford)

Sandy Torrance refurbished one of the club K-8s in a splendid multiple blue colour scheme. New arrivals in the private fleet include a Nimbus 30T,

LS-7 (in which Phil Jeffrey has already flown two 500kms), Discus, two Pegasus and a Kestrel.

We won the first round of the Inter-Club League but after the Tibenham meeting are 2nd overall.

Our thanks to Steve Longland, CFI, for the very informative Impromptu cross-country/aerobatics course in May.

Congratulations to Steve Foster and Mike Smith (full Cats); Terry Slipper (Gold distance); Bryan Hooson (UK Cross-country diploma); Brian Davies and Alistair Murray (Silver distance); Ariane Dexcloux (re-soloing) and Alex de Crespigny, David Kirkham, Douglas Lincoln, Alan Head, Patrick Peglar, Stephen Meadows and Tim Mornin (going solo).

After more than 30 years as secretary, Sigfrid Neumann has handed over to Chris Sullivan. J.L.B.

CLEVELANDS (RAF Dishforth)

In a record two months for achievements we congratulate Jackie Clegg (going solo); Cedric Selby (Bronze legs and Silver height); Derek Smith (Bronze badge and Silver height and distance); Jim McLean (5hrs); Steve Harper (5hrs and distance to complete his Silver badge); Bob Little (50km to complete his Silver badge); Neil Cloughton and Graham Pitchfork (300kms to complete Gold badges) and there have been numerous unclaimed distances from 100 to 300km.

Poor Robin Sinton arrived from an easy 50km from Burn with masses of height to find he had been towed to the wrong place/height and so fell foul of the 1% rule.

Brian Mennell has started instructing and Jill Poval has her full Cat.

We welcome back tug CX looking very smart, also our new tea bus on which the dragon rota is producing new and excellent menus. The club is going from strength to strength! Tug VF and the old bus have good new homes. J.P.

CORNISH (Perranporth)

An exceptional 6000ft cloudbase for this area on April 8 gave five Silver heights. The previous day four gliders flew in from Lasham and one from Odiham.



Richard Hall and Dave Weeks took this photograph from Oxford GC's K-13 of Cirrus 579, flown by Glenn Bailes, and Speed Astir 424, piloted by Tom Lamb, during a club expedition to Talgarth.

John James has taken delivery of a Carman and Pete Arthur and Phil Hawkey a Libelle. The club K-6E has been sold to a syndicate within the club, though was unfortunately damaged on its first outing. Our K-13 fuselage has been refurbished by John Shaw and helpers in time for the courses.

Congratulations to Den Harris on going solo and to Pete Bone who flew Silver distance in Australia.
G.A.H.

COTSWOLD (Aston Down)

We are operating seven days a week until September and have added a K-13 to the club fleet. New solo pilots are John Keen, Chris Ashworth, Paul Whatley, Oliver Ward and Russell Clarke who went solo on his 16th birthday and now has both Bronze legs and Silver height. Congratulations to Steve Cooke and Dave Reynolds on completing their Silver badges and to Trevor Wilson and Tony Parker on Diamond heights at Aboyne.
G.M.

COVENTRY (Husbands Bosworth)

At the AGM in April Barney Toulson took over as CFI and Martin Dawes and Jeanette Burgoyne joined the committee.

After a successful expedition to France by three members in May, when Carl Buzzard gained Silver height, another has been planned for the European Soaring Club Championships at Le Blanc.

The task week at the end of May was very competitive with 34 000km flown in five days. As well

as various badge claims this included a remarkable 726km flown in five flights by Keith Nurcombe in his Tutor - a continuation of the Norman James' Tutor successes last year. We welcomed pilots from Portmoak, Galewood and Lyveden and visiting tug pilots, Graham and Chris. The winners were: Class A, Malc Guard (Libelle); Class B, Liz and Dave Farmilo (K-6CR); Two-seater Class, Alan Foxton/Jonathan Walker and team (Bocian) and Blunt Nails Class, Keith Nurcombe (Tutor).
D.L.S.

CRANWELL (RAFGSA)

The turbo Ventus has proved very popular and already flown over 80hrs. Unfortunately one of

our Astirs was written off in a late field landing while away from the site.

Congratulations to Mike Frost on resoloing and gaining both Bronze legs and a Silver height. Also to Richard Browne on his Gold distance/Diamond goal from Bicester and Meryl Moxham on her UK Cross-Country diploma.

John Lawson is now an instructor and we have gained two new tug pilots.
B.S.

CRUSADERS (Cyprus)

We welcome Simon Wilkinson, now treasurer and engineering member, and his wife Patricia, our new secretary. Brian Ainely has taken over the bar.

The arrival of our "new" 31 year-old K-8 was brilliantly celebrated on June 5 by Bob Tipper (73 years-old) gaining our first duration for four years as well as Silver height.
I.P.

Tony Knight's photograph of the south-west corner of Glyndwr GC's site.



Make sure of getting your copy of S&G by taking out a subscription. Details on p212.



Ancient and modern. A primary with a DG-400 in the background photographed during the Vintage Glider Rally at the York Gliding Centre.

DARTMOOR (Brentor)

We are already 400 launches ahead of last year's total thanks mainly to our all year round lease. The strong easterlies have created wave over the western edge of Dartmoor giving much longer flights.

Joe Ackerman popped down on the wave from North Hill while John Bolt returned the visit, being our first member to do so this season.

F.J.M.

DEESIDE (Aboyne Airfield)

Our enjoyable mid May task week had 300km multi TP tasks for the pundits. With low cloud on the Wednesday, Pete Coward caught 13lb of brown trout for the evening barbecue. We also welcomed SGU members who visited us as part of their May task week.

Membership is increasing with six newcomers in the last two months. John Dransfield is our new CFI and congratulations to Kevin Kingsland and Steve Kentish (AEI ratings) and Kevin Adams (instructors' rating).

The Profits Hotel are now doing our catering with many culinary delights.

G.D.

DERBYSHIRE & LANCASHIRE (Camphill)

Congratulations on going solo to J. Thorpe, K. Davies, G. McConglath, M. Tierney, N. Dixon, C. Westbrook, A. Dunn, A. Milner and P. O'Connor.

Peter Roberts organised an enjoyable task and women's week. Unfortunately the weather didn't match his enthusiasm and the field hasn't looked the same since Mary Meagher removed her washing from the trees!

The cross-country season came on Spring Bank Holiday weekend with several notable flights culminating in Clive Wilby being the first to finish a 500km back at Camphill.

We are hosts to the Vintage GC for their annual

dinner and autumn flying weekend in September. Visitors are always welcome.

G.W.

DEVON & SOMERSET (North Hill)

Attendance on Wednesdays increased through the winter and the summer sees extra courses, block bookings and competition weeks. Four days a week in winter and seven for most of the summer fully justifies our hefty capital outlay on land and new equipment in the past five years.

Congratulations to Rex Taylor on his 5hrs and to Sarah Baldwin on going solo.

Annual pot winners were Malcolm Chant, Tim Towers, Tim Gardner, Dave Reilly (two), Don

Below, from l to r, Graham Thomas, Paul Crabb, Martin Dawes and Dave Farmilo of Coventry GC (better known by everyone, including visitors, as the Bash Street Kids) in search of badge height claims on an outing to Dishforth.



Jones, Dave Puttock and Ron Jones. The Progress shield went to Rod Ward while Chris Banting was declared the "Wily Old Bird".

G.P.

DUNKERIES (Gamston Airfield)

Steve Richardson and Tom Newton have gone solo; Bob Cartledge has both Bronze legs and Alan Marshall a Bronze badge and 5hrs. Alan directed us in building the hangar and at the AGM Tim Bowles, chairman, thanked the helpers. Terry Grimbleby is maintaining our trailers.

Our open days and flying evenings are well supported and an important source of revenue. Glen and Dennis Barratt are now instructors and Tony Smurthwaite and Brian Fowkes have bought the club Swallow. Our eldest member, John Walker, still does the work of two and sets a shining example to younger members.

N.W.

EAST SUSSEX (Ringmer)

Another successful expedition to Talgarth yielded both Silver heights and durations for Kevin Kirkham, Steve Smithers and Kevin Mockford on three consecutive days. Congratulations also to Roger Warren (AEI); Gareth Reason, Rob



Bob Tipper of Crusaders after gaining his 5hrs and Silver height.

Broad, Trentham De Leliva and Alan Castle (Bronze badge) and Bernard Berger and David Wells (going solo).

We welcome back Colin Jacques and Mike Pierpoint as instructors (although Mike has fallen off his bicycle and is temporarily u/s with a broken shoulder blade).

L.M.

GLYNDRW (Denbigh)

With our successful planning application and a 21-year lease agreed with our landowner member, our inaugural flight as Glyndrw GC was by Rod Witter and Tony Knight (K-7) on Easter Saturday. During the holiday we had 152 launches with an average flight time of 11.5min.

As we had hoped, the Avro GC have joined us with their gliders and equipment.

Within 5hrs of the announcement of a ridge run trophy consisting of a 38 mile flight around two TPs, it was claimed by Robert Vaughan (Oly 419) only to lose it 10min later to Rodney Witter (Kestrel).

Our membership is growing rapidly and after just three weeks we are concerned about limiting recruitment until we have a second winch to give us four cables. We have a large number of country members taking advantage of our generous first year package, the improved NW road systems making us easy to reach.

T.K.

GRAMPIAN (Laurencekirk)

We are now a soaring site with our CFI getting 4000ft with a member and there has been a solo by a former glider pilot. Also two visiting pilots landed in the same day.

We have had so many inquiries about the club we are holding another public meeting later in the year.

R.S.

LAKES (Walney Airfield)

We have added a K-6 to the club fleet and replaced our mobile radio shack/snack bar with a splendid single decker bus - thanks to the negotiating skills of Peter Craven and the ferrying skills of Chris Dobson, who was loudly abused by would-be passengers at bus stops en route for not stopping.

Dave North's distance flight completed his Silver badge and he is now an instructor. Keith Butterfield (Astir) collected a framed picture from Blackpool & Fylde GC, after a warm welcome, which they may retrieve in like manner. About the same time Pete Redshaw (Nimbus 3) circled the Chipping field and flew back to Walney.

Our AEI pilots are busy on Sundays, our usual flying day, and courses are in strong demand. Visitors are always welcome.

G.J.

LONDON (Dunstable)

The excellent May weather produced a good crop of Silvers, Golds and Diamonds including six 500kms in one day.

John Spencer and Warren Kay flew in Roanne and Robin May went to Minden for the Pre-Worlds.

We have invested in a new drainage system for

when the British weather returns to normal. There are plans to buy another single-seater and we want to extend the hangar and improve facilities.

The BGA instructors' course and soaring course at Dunstable gave members a sample of the Janus and Discus and we are now preparing for the Junior Nationals.

Another ASH-25 has arrived with another due next year and a Nimbus 3 this winter.

B.E.V.A.

MENDIP (Halesland Airfield)

The year so far has been very successful with several badge flights and cross-countries. Congratulations to Barry Hooper (going solo); Bob England and Bob Cook (5hrs) and Andy Sweet and Tim Hogarth (Silver badges).

The refurbishment of the clubhouse is progressing more quickly under Lou Anderson and the new Bocian should arrive in July - the K-7 is going in part exchange.

Our AGM was quite productive. We have several summer courses and a visit from Dartmoor GC.

T.A.D.H.

MIDLAND (Long Mynd)

The Vintage GC only had two westerly days out of the eight they were here. John Stuart has taken a flock to Sisteron for mountain flying courses. Our brand new K-21 is already working hard.

Recent solos include John Hall, Ann Edwards and Bill Duckett with Bronze legs for Terry Oakes, Rob Murray and Alan Mayhew - Alan completing his Bronze badge. Martin McCurdie and Paul Stanley have Silver distance; John Baker, Alison Rowson, Bryan Smith and Jan Outhwaite Silver height and Paul Walker his 5hrs.

Bob Rice and Neil Francis flew their first 300km triangles on May 27 and despite the poor start to the year by June 1 we had almost caught up with 1989 statistics.

R.D.

NENE VALLEY (RAF Upwood)

We had some great flying in May with Jon Huggins going solo and Eric Yeardley Jim Rignall and Julian Poole gaining Silver heights on the same day. Congratulations to them all.

The two K-7s are back after 300hrs' work - see last issue - and the annual expedition to Bassingbourn is in August.

R.E.

NEWCASTLE & TEESIDE (Carlton in Cleveland)

Although the early season gales damaged the hangar roof and scattered debris from asbestos roofing sheets all over the floor, the aircraft were unscathed.

Cs of A on the club fleet, K-13, K-8 and Motor Falke, were again completed by the working party in comfort thanks to Bill Abbott giving us space in his factory unit.

Our site on top of the North Yorkshire moors, at 1200ft amsl, has suffered badly from erosion, so we have bought a dumper truck and filled in many of the erosion ditches and improved the runway surfaces.

We are a small club and visitors are welcome.

We fly at weekends, public holidays and on Wednesdays evening from May to September.

R.J.D.

NORFOLK (Tibbenham Airfield)

On April 7 our 70 year-old president, Alf Warminster, flew his Ventus from Seething, Norfolk, to Eaglescott, Devon in 4hrs 10min to claim the UK 400km record to add to his 200 and 300km records.

Our spring task week was terrific fun with Eric Arthur and Roy Woodhouse setting Enterprise type tasks. In variable weather we flew 3932km, Norman Clowes (Pirat) winning with Alf Warminster (Ventus) 2nd and Peter Ryland (PIK 20) 3rd.

Congratulations to Terry Jeffery, Ron Melhuish, Billy Middleton and Steve Roderick (going solo, and to Billy and Steve on both Bronze legs); Malcolm Spingall (Silver badge); John Kinley and Jeremy Clark (Silver height); Norman Clowes and Terry Cooper (300kms) and to Jeremy Moore and Ray Hart on their assistant Cat ratings.

Our deepest sympathy is extended to all family and friends of John Pans who was killed in a tragic tug accident on April 28.

R.J.H.

OXFORD (Weston on the Green)

The ground equipment team led by Gerry O'Sullivan and Chns Reynolds have done a splendid job refurbishing and modifying our winch. The incorporated hydraulic motor enables more rapid acceleration giving higher launches.

John Giddins (DG-202-17c) flew his first 500km in May with his barograph accidentally turned off. The following day he did another and the day after that Phil Hawkins (ASW-19a) flew his first 500km - the first from our site in a Standard Class glider.

John Gordon (K-6E) completed a 300km and Norman Machin (Pirat) flew Silver distance.

F.B.

PORTSMOUTH NAVAL (Lee-on-Solent)*

An unusual amount of soaring weather has encouraged cross-countries. We plan to replace the Skylark 4 with a SZD Junior and have an expedition to Saumur in France.

Congratulations to Chris and Ken Adams, Michael Moore and Tony World (AEI ratings); Chns Jolly and Martin Heneghan (assistant instructors) and Brian Cornes, John Hales and Nigel Clark on becoming full Cats.

H.C.

SCOTTISH GLIDING UNION (Portmoak)

Val Peddie and George Elliot joined the Board at the AGM, replacing Joe Giacomazzi and John Galloway to whom many thanks for their service.

We have had some excellent local wave and thermal soaring and a few of our pundits have made regular tours of Scotland with relative ease. A small expedition is going to La Roche-sur-Yon in June.

A group enjoyed an informal cross-country course organised by David Bruce, but ended up forsaking Portmoak sea breeze for some superb thermals at Aboyne where we were made most



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welcome. Congratulations to Derek Higson, Hugh Clark and John Ferguson on going solo. M.J.R.

SOUTHDOWN (Parham Airfield)

Our May task week was a great success thanks to the organiser, Mark Darby.

A winch course early on Sunday mornings is popular and enjoyable amongst *ab-initios* and those who like winching!

Congratulations to Richard Hawkins and Martin Roberts (500km flights and to Martin on completing his Gold badge); Graham Noble (Silver badge); Bill Sisson (Bronze badge) and Brian Wakeley and Daryl O'Flanagan (going solo).

All will be welcome at our 60th anniversary celebrations at Parham during the week starting on September 10. C.R.

SURREY & HANTS (Lasham Airfield)

At the AGM in May our chairman Ray Partridge retired after ten years and we thank him for his hard work and devotion. Our thanks also to long-standing committee members, Martin Kent and Derek Collingwood, who have also retired.

The new team is Mike Jarrett (chairman), Peter Hamblyn (secretary), Tim Lipscombe (treasurer), Peter Webber (technical officer), John Ellner (insurance) and Jeff Smithers (safety officer).

May was exceptional with several 300kms for Gold distance and Diamond goal. Special congratulations to Peter Reading and Peter Webber on their Diamond distances. T.L.

THRUXTON (Thruxton Airfield)

A very good May has given us a number of Bronze legs and badges. Congratulations to Mike Thome (Bronze badge) and Gordon Birkett (Bronze badge and 5hrs).

We recently hosted "Take a Break" magazine and are hoping for some good publicity.

We have weekend vacancies for categorised instructors. J.B.L.

WOLDS (Pocklington Airfield)

Our now famous Two-seater Comp is from August 19-25.

We are running seven days a week and thanks to the hard and competent work of our manager, Les Cooper, Terry Manuel and others our restaurant has been extended and the new kitchen is running at full efficiency. The club fleet is in excellent fettle thanks to Simon Parker and helpers. Badge flights and first solos are too numerous to mention.

Visitors are always welcome. We have a good bunkhouse, summer courses and club expeditions are welcome. N.R.A.

WREKIN (RAF Cosford)

We have had a lot of successful cross-countries lately and hard work by Al Marshall, Rob Ruscoe and Dave Judd put us in 2nd place in the Inter-League. All three have since flown 300kms for Diamond goals.

Graham Bell, Pete Evans and Simon Pascoe have Part 1 of the UK Cross-Country diploma and Simon passed our first AEI course. Brian Wilkinson has flown 50km; Bob Henderson has Silver height and 5hrs and Martin Naylor has gone solo. Thirteen years after her only solo flight, Jay Boyden resoloed and then got a Bronze leg in the K-B. R.J.

WYVERN (RAF Upavon)

Congratulations to John Bywater, Steve Todd and Nick Crawshaw on going solo and to Allison Barnett on becoming an Army helicopter pilot. Good luck to Dawn Bradley on her RAF training and to Bob Brett on his helicopter training with the Army Air Corps. K.A.M.

YORK GLIDING CENTRE (Rufforth Airfield)

We have had excellent soaring in 10kt thermals to 7000ft with several flights of over 4hrs and a 260km triangle. Alan Kilbride, Andy Dougall and Stefan Ruff gained Silver heights and in one day

we did 48hrs flying and covered 1000km.

Our Bronze badge courses (four days of intensive flying and theory sessions) have been successful and *ab-initio* courses are almost fully booked, despite there being twice as many as last year. The SLMG PPL training is progressing well, four gaining their licences recently.

We hosted the Vintage Glider Rally on the outstanding weekend of May 5-7 with 13 gliders.

Our additional 100 acres makes launching possible in any wind direction, increasing flying time considerably. A.W.

YORKSHIRE (Sutton Bank)

The good soaring weather brought Silver distances for R. Hudson, John Birch, Jamie Quatermain, Mark Dale, Andy Jowett and Martin Newberry, Martin also gaining a Silver height.

Congratulations also to Paul Leadley, Mike Metcalf, John Brown and David Ashby on going solo.

Stratford on Avon enjoyed a week with us in May, claiming two Silver heights and two 5hrs.

The May task week started with several flights over 300km. Congratulations on winning to Mike Brook and to Mark Dale who flew 302km in his Oly 463.

At the AGM Collin Almack (clubhouse director) and Evan Spink (flying director) retired from the Board. We thank them for their hard work. C.L.

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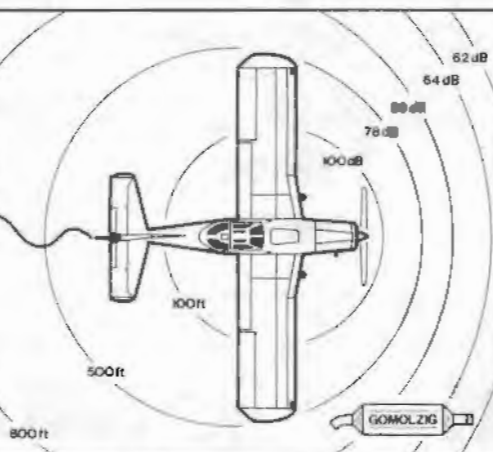
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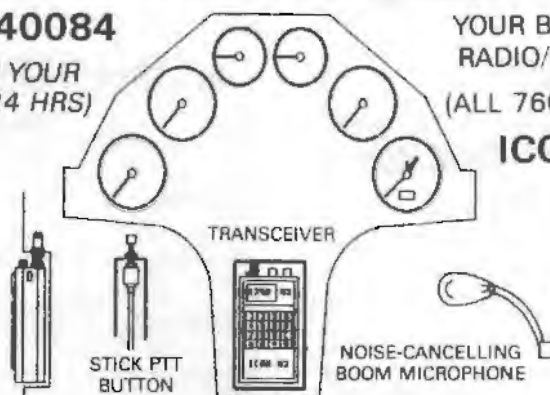
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The resources of the BGA are finite, both in terms of the professionals and the volunteers, and often the demands stretch these resources to the limit. Occasionally one hears criticism of the BGA's service, or lack of it! As one of the employees I guess I have to take it. It is the volunteers I feel sorry for and I must leap to their and the Association's defence.

The "volunteers" never cease to amaze me. If their efforts were costed on the basis of a professional service then we simply could not afford them; commitment beyond any reasonable call of duty and considerable intellect are the two main attributes. Often they deal with issues that the staff simply cannot find the time for, a process of "delegating upwards". In the areas of my involvement, Airspace, Development, Instructing, Government Liaison, Political and Safety we have been particularly well served. Without the work by the chairmen and other members of these committees the professionals simply could not cope.

All right I can hear you saying "justify these claims"; OK, I'll try.

Airspace

The cynical view would suggest that the airspace battle is a rearguard action - we simply slow the rate at which the restrictions get worse. It is suggested that the BGA should go on the attack to get airspace reduced. Clubs may feel duly aggrieved when the new airspace imposes more restriction but, without exception, they will have been consulted.

Without a good understanding of the aviation regulations and the hierarchical structure it is not appropriate to go into detail. But, and it's a big but, the CAA (of which NATS is a part) is a QUANGO and, in effect, there is no appeal against their actions; unless, that is, you count the Board of the CAA, but whether they will hear an appeal is decided by the chairman of the CAA. If you can get to the minister he will probably say "I have been advised by my experts that ...". Incidentally, did you know that the CAA cannot be taken to the Ombudsman? They are not a listed organisation.

Some of the issues dealt with never come to the notice of clubs or pilots. Last year, for example, a proposal for the protection of instrument approaches would have meant yet another restriction in the Flight Information Region if it had been approved. On occasion we have had a suc-

THE BGA AND PROTECTION MONEY!

"Life is like a sewer, you get out of it what you put into it."

Tom Lehrer

In 1976 (June issue, p124) Barry Rolfe, then the BGA secretary, wrote a piece called "Value for money or all for 82½p" That was the *per capita* fee club members paid to the BGA. Now the figure is £8.95 and this article by Bill Scull, BGA director of operations, is to give you some idea of what you get for your money.

cess or two. Getting the proposed airway in Scotland moved clear of Portmoak is one example, but even this was a case of "losing less". In resource terms it took the best part of 18 months full-time work, much of it lobbying. Just get the view of our Parliamentary spokesman, Bill Walker, MP, who has been dedicated to our/your cause for the last ten years. We brief him regularly on critical issues; in turn he briefs other MPs and gets us access to ministers if we need it.

Incidentally, the BGA, through its successive Airspace Committee chairmen has a very good credibility with NATS and gets a reasonable degree of sympathy for our case. Such a position is hard won and harder to maintain. It is largely attributable to the reasonable behaviour of glider pilots observing the rules in the past and, hopefully, in the future.

Development

There are really only two things that matter for gliding, airspace in which to fly and sites to fly from. Airfields in general are under threat to developers and gliding sites are no exception.

Clubs currently looking for new sites include Avro, Essex, Marchington and Staffordshire; Cambridge University GC and Essex and Suffolk GC will lose their existing sites before long and are involved in planning applications, with BGA support. Once a possible site has been found (only the club can do this) then the next phase starts. The first consideration is dealing with the local opposition before making a planning application. This really has to be right at the first attempt and desirably be a permission for winching and aerotowing. Submission to the planners also have to be right. You might be cross-examined by a QC at a subsequent Secretary of State appeal or inquiry. A winch launch application is easy, an aerotow-only permission may well be refused. Making the case to planners plus various meetings can take considerable time.

Other clubs have been threatened. The Wolds GC at Pocklington were faced with an industrial development up to the edge of their (club-owned) runways. The battle with planners was fraught

because they seemed minded to grant an approval. Once again, with considerable BGA involvement, a deal was struck which gained the club an extra 37 acres (for £30 000!) in exchange for agreeing development to within 100ft of the runways. The club management team were terrific but the BGA involvement was crucial according to club officials.

Such issues are dealt with to the best of our ability and, often, at the very limit of professional resources. Sometimes the issue has to be dealt with by the volunteers. Humfrey Chamberlain's assistance with the relocation of the Welland GC to Lyveden was, in my view, an outstanding example of professional advice from our volunteer resource.

Government Liaison

Most of the work under this heading is involved with the CAA. Gliding in the UK is relatively free from government and CAA interference - the word is used advisedly. But the freedom is sometimes hard won. The CAA do not have experts in the sporting disciplines and quite a lot of time is spent explaining our requirements and convincing them that we are running our show satisfactorily. The CAA have had a General Aviation Department for three years now. Set up in the wake of a bad year for general aviation accidents (1987 with 27 fatalities compared with an average of 15 for the previous six years) they have since maintained a close watching brief on accidents and standards.

More ominously the European Community proposals have caused concern. What would your reaction be if we were required to have licences to fly gliders? Current CAA charges for issuing a PPL are £124, to add a flying instructor's rating £58, for the medical £30, authorisation to examine for the licence £125, authorisation to examine instructors £185, and so it goes on.

A proposed EC directive on the "harmonisation" of pilots' licences sought to establish an interchangeability for professional pilots so that they could be employed on their national licence in any EC country. However, as drafted, the direc-

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tive included private licences and, moreover, would have required licences where none had previously been issued. Like to fly gliders in the UK! The existing standardisation requirements, ICAO Annex 1 on licensing would no longer be optional but obligatory.

Fortunately the volunteers include people such as Chris Simpson a retired solicitor, ex-chairman of the BGA and now chairman of the RAeC. How convenient that his brother is an MEP and can get us access to the Transport Policy Directorate in Brussels. Also that by pressing our case together with other sporting disciplines we have been able to get the directive revised after a visit to Brussels and meetings with the CAA and DTP.

Instructing

There is a basic principle regarding standards and that is they should be subject to a continual process of improvement. Not everyone might

agree with this but in a developing sport only maintaining standards constitutes a decline. Having started with the BGA as National Coach in 1969 and having seen the system develop over many years I have a vested interest. We have had significant contributions to coaching from Brian Spreckley, John Williamson and Ken Stewart. Now Chris Rollings is in the hot seat; very much so since he is the only coach.

Continues within the limits of resources

The coaching programme now relies on volunteer help to a great extent to provide instructor training, this under the supervision of the national coach. This change from courses run solely by coaches was a conscious policy decision to provide a coaching infrastructure. The soaring course programme continues within the limits of resources. Chris manages the allocation programme for the BGA's aircraft (Super Falke, Janus C and Discus) better than ever before. But, the complaints abound. "We never see the coach at our club!" Of course not. He is in the business of using the limited resources to best advantage, not "teaching the population of China to fly". You may never see him or the BGA's gliders. Why? Because if you ration the aircraft on a *per capita* basis you have a 1/10000th share in each of them! Moreover, there have been dismal failures in supervision of the BGA aircraft in clubs' use ("What does this lever do?" as the pilot retracts the undercarriage on the ground) or in failing to take control in time, which gives a slightly jaundiced view. It's difficult to arrange a programme with unserviceable aircraft.

Political

Bill Walker MP has already been mentioned in the context of airspace. As a one-time Air Cadet instructor with 20 000 launches in his logbook he stands high in the list of gliding supporters. There have been debates in the House of Commons,

written questions, meetings and lunches with ministers and other MPs. In ten years Bill has only once been late for a meeting, his plane from Hong Kong was delayed; otherwise he is there on time or early. Ask John Holland who has done much to establish and maintain this contact.

Safety



Accidents will happen and they often attract disproportionate attention. The logic of preventing all accidents is the occasional and irrational approach of regulators. Regulations are not the solution. The BGA has a remarkable freedom to investigate gliding accidents but not tugs or motor gliders. The AAIB believe we are competent to investigate most fatal accidents although they will usually investigate structural failures and help us if we ask.

Occasionally, when there are accidents that warrant comment the AAIB will make recommendations to the CAA. Sometimes the outcome is of real benefit, for example the **Guide to Tug Operating Procedures**.

In the case of a fatal accident which the AAIB leave to us we sometimes have a resource problem. The club at which the accident has occurred maybe has people with the ability to deal with it. But the trauma of the accident warrants BGA help, if we can get there. Certainly it is the intent to give the necessary support. We have learnt this from experience.

In Summary

The BGA has limited resources, so you can only expect so much from them. There is an increasing trend towards what I term the "national health syndrome", a tendency to expect things to be done for you. But what do you put in? For the last year I have been giving a talk along the lines of this article to BGA instructors' courses, as well as talking about airspace and safety. The alternative title for the airspace talk is "What the bloody hell is the BGA doing about it?" The answer is "All that they can!"

David Goodison

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In 1989 I felt I had to try something completely different and I enjoyed 20 minutes in a storm cloud to find out if gliding and I were compatible, giving myself a crick in the neck trying to hear/lip-read the instructor behind me.

Thus forewarned a rainy September morning greeted me at North Weald for a five day course run by the Essex GC for six people.

Since in most two-seater gliders the seats are in tandem I knew I wouldn't be able to lip-read the instructor, I also was aware of the high level of background noise that exists in flight from my introduction. Hence the inevitable communication problem reared its head, so I brought with me a loop system, of which I had high hopes. This is a mike attached to a volume control, in turn connected to my over the ear hearing aid. Its advantages are increased volume and clarity of the person speaking, through the cutting out of background noise. The problem of many deaf people who rely on hearing aids is not one of hearing sounds, but to differentiate the wanted sound from all other noises, which have equal priority processed through the hearing aid.

I gently informed the instructor that I was deaf, and that problems of communications were going to be solved by the use of my high tech loop system. But after much experimenting I still had the background noise problem and clearly I had to find an alternative means of communication.

The remedy was found that evening during a meal and proudly presented to the instructor the next morning for inspection. The solution? A Chinese chopstick. I worked out a code for flight instructions which corresponded with the various parts of my body that could be reached and prodded, with an intensity directly related to the urgency of command. At the same time I

A PROBLEM OVERCOME

Or what to do if one can't hear the instructor screaming. Matthew Brown, who is deaf, found an unusual solution



Matthew, a 28 year-old building surveyor, aims to join a local gliding club and go on other courses.

would bore him stiff with a running commentary to show him that I didn't have a clue as to what I was supposed to be doing. Then we would hold a post mortem safely back on the ground followed by a pep talk about how the next flight was to be tackled (in theory).

By the end of the week I was able to cope with the launch, do reasonable turns, approach planning and most of the landing unaided. The course was very enjoyable, and credit for making this so must go to the instructor, Alan Vincent, for his patience and instruction, and to my fellow pupils. I hope to maintain progress toward the aim of going solo, and beyond.

I have tried to illustrate that deafness is not a disability in itself, but just another challenge to the deaf person, the instructor and others. It is important to make sure that essential facts are grasped by the pupil on the ground, since many deaf people are too polite to mention that they haven't heard properly - usually by getting them to repeat and clarify what has been stated, and to aid the learning process with drawings and demonstrations if necessary. Practical tests in the air will ensure whether all the ideas have been made clear.

Apart from cases where aural communications are possible in gliders like the K-13, with the aid of loop systems, etc, the only other means of communication is via lip-reading by the deaf person in a side-by-side glider. However, it will be found inadvisable to offer advice during parts of the flight, in particular during the approach and landing. This is because the deaf person will instinctively turn round to lip-read - not to be encouraged on the final approach or landing.

Of course there is the third method - a chopstick!

OVERSEAS NEWS

Please send news and exchange copies of journals to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, England

Translated by Max Bishop from *Segelflygsport* and *Der Adler*.

1993 WORLD CHAMPIONSHIPS

Preparations are already well advanced for the 1993 World Championships at Borlange in Sweden. Enough sponsors have been found to provide financial security for the organisers, and serious discussions have already taken place on the possibility of making a professional video feature on the Championships.

HOLIGHAUS IN CHILE

In a truly awe-inspiring article in *Der Adler*, Klaus Holighaus tells of a recent gliding holiday in Chile, most of which seems to have been spent above 12000ft in the High Andes. Nearly all his flights exceeded 9hrs in duration, and he systematically explored the best cross-country routes in the Andes to the north and south of Santiago. Much of his time was spent over totally uninhabited and inaccessible territory.

On the last day, he completed a 1030km O/R, entirely in blue thermals. That was one of the shorter flights - only just over 7hrs! His mean

altitude en route was over 15000ft, but he did have one low point of 13000ft. Thermal activity continued for at least 1½hrs after he had landed. Only three or four thermalling turns were needed during the entire return leg. A bit like Britain in May in fact.

VENTUS WINGLETS

Peter Masak of Canada has developed a spectacularly successful set of winglets for the Ventus. In Dick Johnson's tests, they produced a best glide angle of 48:1 - similar to that achieved with wing extensions. The Ventus with winglets outperformed the Nimbus 2 across the entire speed range. Dick was so impressed, he ordered a pair for himself! Discussions are taking place with Schempp-Hirth about possible series production in Canada.

WARREN HILLS (ZIMBABWE)

After 26 years operating out of Warren Hills, the lease expired and was not renewed by the government. A new site has been found at Concession, about a 45 minute drive north from Harare. The smaller of two hangars has already been transferred and erected, while the larger one is to be used to make individual T shaped hangars for private gliders.

The strip is about 900m long, and there are plans to extend it by a further 200-300m. The farmers in the area have been very helpful, a local country club having been made available until the gliding club can erect its own facilities.

The area is rural, well away from dense population which was proving to be a considerable problem at Warren Hills. It is 1000ft lower than the previous site, but has hills in the vicinity rising some 500ft higher. On April 29 (date letter was received from Mike McGeorge) no flights had taken place, but were likely to happen within a week.

M. P. Garrod

PETER RIEDEL

The renowned Wasserkuppe veteran, now resident in America, has offered a prize of DM1000 to the first vintage glider pilot to emulate his record-breaking Berlin to Hamburg flight of July 1, 1935. This is one of many exciting opportunities thrown open by the cataclysmic political changes in Eastern Europe.

DISCUS

The Czech firm Orlican has been granted a licence by Schempp-Hirth to produce the Discus. Although production will continue in Germany, the Czech version will cost DM3000 less.

WOLFGANG HÜTTER

Wolfgang Hütter, whose career as a designer stretched from the H17 in 1934 to the Libelle, which he co-designed with Eugen Hänle, died on April 3 having celebrated his 80th birthday last October - the same year as the Libelle's 25th anniversary.

WAY OFF TRACK



Make way for the ladies

Having had the misfortune of a single-sex education (though devoid of any sex education whatsoever) and never having been grabbed by golf, rugby or the local Masonic lodge, I have held for years that there is no male gathering of any sort which is not immeasurably and instantly improved by the addition of women.

I rejoice in having followed an occupation in which women have, generally, suffered rather less discrimination and made greater inroads than almost any other. The presence of so many very competent and talented female colleagues has been a constant delight.

I am, in short, the least sexist man I know. (I am also, ladies, the sexiest man I know but modesty forbids me spelling it out in any larger type than this.)

So loud cheers rang out at Penguin Place for the outstanding success in the Whitbread round-the-world yacht race of *Maiden*, skipper Tracy Edwards and her 11 other *matelottes* – which, in terms of press and public impact, probably did more for women on the sporting front at large than any single achievement had done before.

It was, too, a richly deserved jackstaff up the hawsepipe for the 300-odd British companies which, with that purblindness for which British management is justly famed, had to a man declined to sponsor the all-women crew – leaving them feeling, as one paper commented, like the dim impresario who first turned the fledgling Beatles down.

Strange that *Maiden's* eventual sponsorship should come from Alia, Royal Jordanian Airlines, out of the Islamic Middle East, so often perceived in British boardrooms as a region of veils, purdah and virtual female slavery.

Gliding, of course, had shown *Maiden* and yacht racing the way with an all-comers National Champion in Anne Burns almost 30 years earlier and several other distinguished lady competitors since then.

I was too late with the suggestion to *The Times* earlier this year that it should feature Sally Wells

and Pam Hawkins in a sports pages series then running called *Winning Women*. *The Times* itself has not been notably wedded to female emancipation, equality of opportunity or the destruction of sexist stereotypes. But it is slowly inching along the way and its sports editor said that, although the *Winning Women* series was closed, he would welcome a stand-alone feature on women's achievements in our enviably non-sexist (I must be joking) sport.

All strength to Diana King, her drive and guidelines to get more women into soaring – and, specifically, into cross-country cockpits and out from behind the counter in the launch point butterfly-bus.

"Hey, luv, before I seal your barograph, how about knocking up some sandwiches and a pot of tea?"

Put a twanger in your tank

The sound of a light aircraft puttering across a summer sky, or climbing out of a field, is peculiarly evocative of pre-war Britain. Maybe it is the antiquity of the engine technology employed but even though my memories of the 1930s are very scant – being scarcely formed before I was an infant evacuee – a Spamcan or Chipmunk passing overhead calls up a rosy vision of endlessly sunny home-counties England, Joan Hunter Dunn bounding about the tennis club, spoke-wheeled open tourers parked outside and wholesome Chelsea buns for tea.

So it is inconceivable to me that latter-day Hunter Duns, and their blazered males, should object unanimously and so vociferously to any suggestion that a lightplane strip or gliding site should open up nearby. No planning application produces a fiercer and more automatic NIMBY reaction from local residents except, perhaps, the hint that a nuclear power station or a council rubbish tip is on the way.

(Many such protesters are, of course, perfectly happy that they or their offspring should murder sleep nightly with Golf GTIs, doctored Kawasakis or merely drunken yobbishness.)

I put part of the blame for this sad situation on the fact that the pleasant word "aerodrome" has been allowed to become *passé*. Any airstrip is either a commercial-sounding "airport" or an aggressively threatening "airfield" now, suggesting nothing more neighbourly than laden 747s wallowing aloft or bomb-toting Tornados with reheated banging on and off.

The upshot of the hostility which even light aviation now engenders – the high-pitch micro-lighters have something to answer for – and the development pressure on open land, is that the UK now has fewer active aerodromes than it had more than 50 years ago. This is despite the enormous growth in all aviation activities, greater affluence and the construction of over 700 airfields during the Second World War.

How we overcome this situation only the Lord – and certainly not Penguin – knows. People rate highest in a list of about 80 aural hates the sound of endlessly yapping dogs and the late-night slamming of car doors. Research shows that it is not simply the decibel level that determines the irritation factor but constant repetition and the feeling that the noise is one over which the

irritated listener has absolutely no control.

Repetitious aerotows might easily fall into this category even though the noise of a tug is not particularly loud or objectionable – unless it is a Rallye Minerva with supersonic prop tips. But if we're hoping to bring more gliding sites into use without the kind of restrictions which, say, limit Talgarth's operating hours, we ought to be taking a new look for the 1990s at hilltop safari sites and the reliable old bungy rope.

You'd have to be neurotic indeed to object strongly to an occasional and very muted *twang!* And no one has yet proved conclusively that 280 strands of knicker elastic bound together and simultaneously letting go blows holes in the ozone layer or otherwise adds to the greenhouse effect.

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22bs) 6266; 7. J. D. Baily, GB (Nimbus 3) 5594; 11. R.
Jones (Nimbus 3) 5214pts; 15 Metre Class: 1.
G. Chenevoy, France (LS-6a) 5623; 2. G. Gerbaud,
France (LS-6e) 5383; 3. A. Silvanovitch, USSR (LS-6)
5175; 21. E. R. Lysakowski, GB (Ventus) 4289; 26. P. G.
Sheard, GB (Ventus) 3957pts; Standard Class: 1. J.
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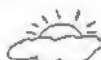


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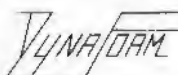
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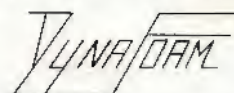


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