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June-July 1984

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# SAILPLANE & GLIDING

Magazine of the **BRITISH GLIDING ASSOCIATION**



**Editor:**

Gillian Bryce-Smith, 281 Queen Edith's Way,  
Cambridge, CB1 4NH. Tel. Cambridge 247725.

**Consultant Editors:**

Alan E. Slater  
Rika Harwood, 66 Maisemore Gardens,  
Emsworth, Hants. Tel. 024-34 4580.

**Subscriptions:**

Jenny Rolfe. Tel. Market Harborough 67084.

**Committee:**

A. W. F. Edwards (Chairman), R. Q. Barrett,  
M. Bird, F. G. Irving, B. Rolfe.

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Cover: Ancient site, modern glider. Mark Wilkinson soars his ASW-20FL above Downhill cliffs and strand in Co Londonderry from where the Ulster GC first operated more than 50 years ago. The club retains operating rights on the beach but Mark was flying from Bellarena, now its permanent base four miles south of where the cliffs turn inland and rise to join the 1200ft Binevenagh ridge. Photographed by Crispin Rodwell.



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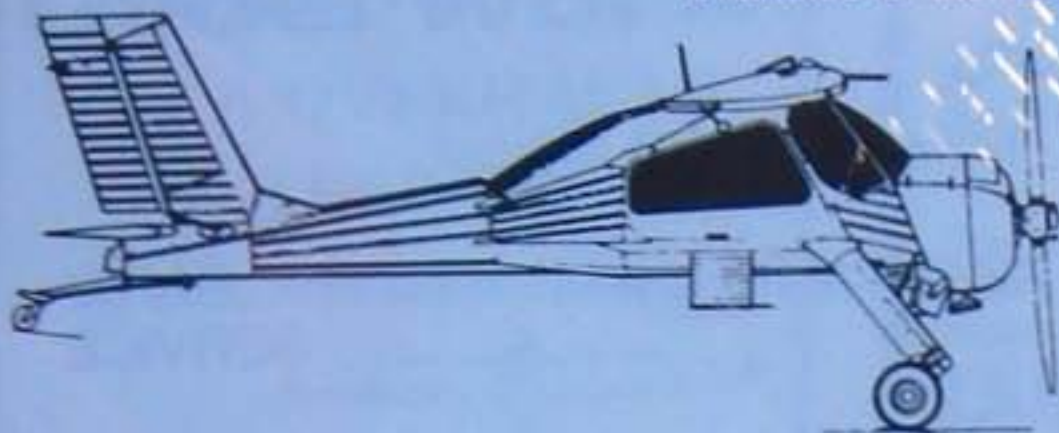
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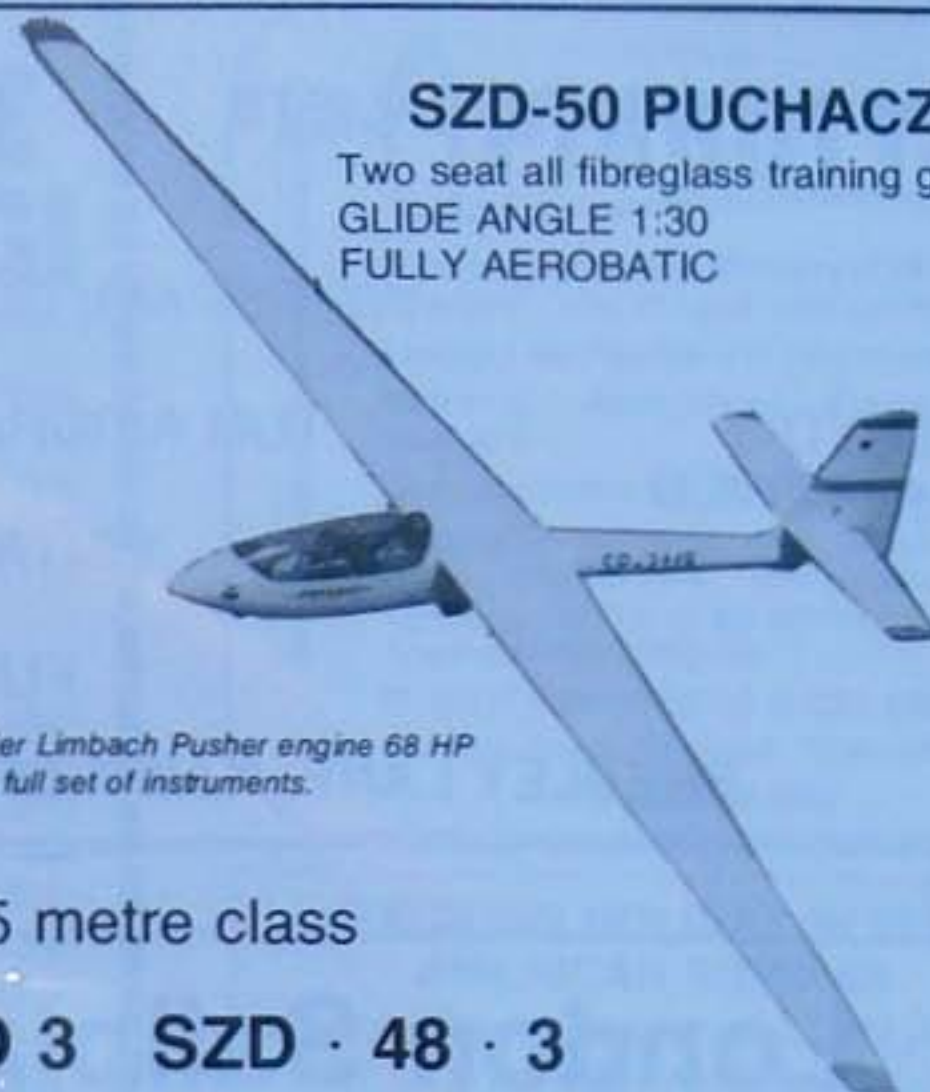
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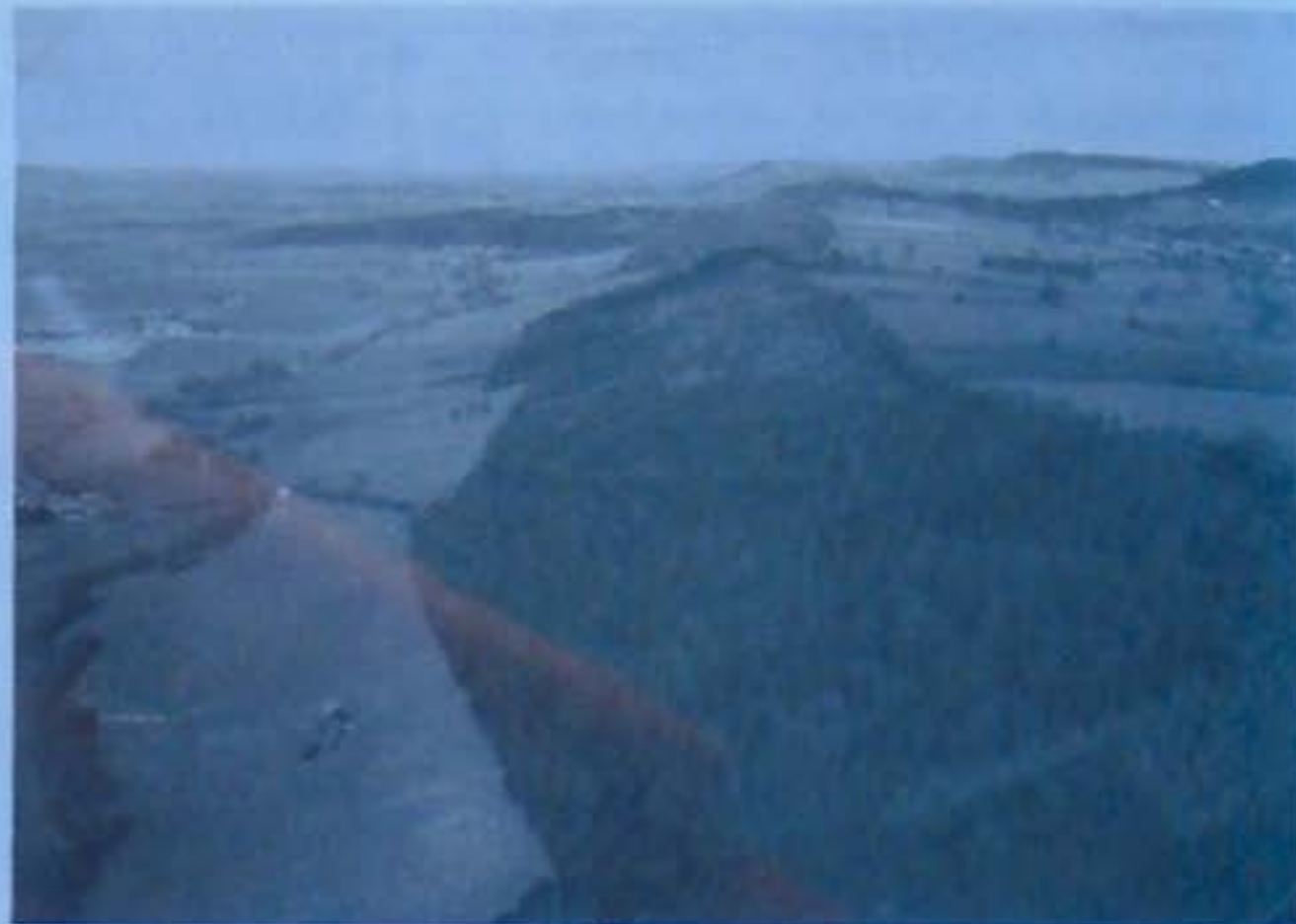
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*Bringewood Chase with the Clees behind.*



*Wenlock Edge from the southern end.*

## BY RIDGE TO IRONBRIDGE

**PHIL KING describes an unusual flight from Shobdon amongst the Shropshire hills and goes on to explain the thinking behind it.**

Wenlock Edge is a long low hill in Shropshire and is overlooked by the Long Mynd (home of the Midland Gliding Club) to the west, the Clees to the east and the spiky Wrekin to the north. Its elevation above the valley floor varies between 200 and 400ft which seems insignificant compared with its taller neighbours. But it has one feature which has intrigued me for years — it runs almost straight for more than 15 miles from Craven Arms to Ironbridge power station. Not quite up to Appalachian standards, but far enough to count as cross-country soaring in my book.

I asked around and found that it had been soared before, principally by pilots from the RAFGSA at Cosford. I had thermal soared over it, but looking down from 4000ft I could barely discern its slope, let alone use its lift. If I was to ridge soar along it I would have to get down low and risk an outlanding if I judged it wrong. So last winter I pored over large scale maps for days whilst I calculated heights and glide angles until I had built up enough confidence to attempt it at the first suitable opportunity.

So with the C of A on the Mini Nimbus finished and a brisk north-westerly blowing across the hills I took a 1500ft aerotow from Shobdon airfield onto



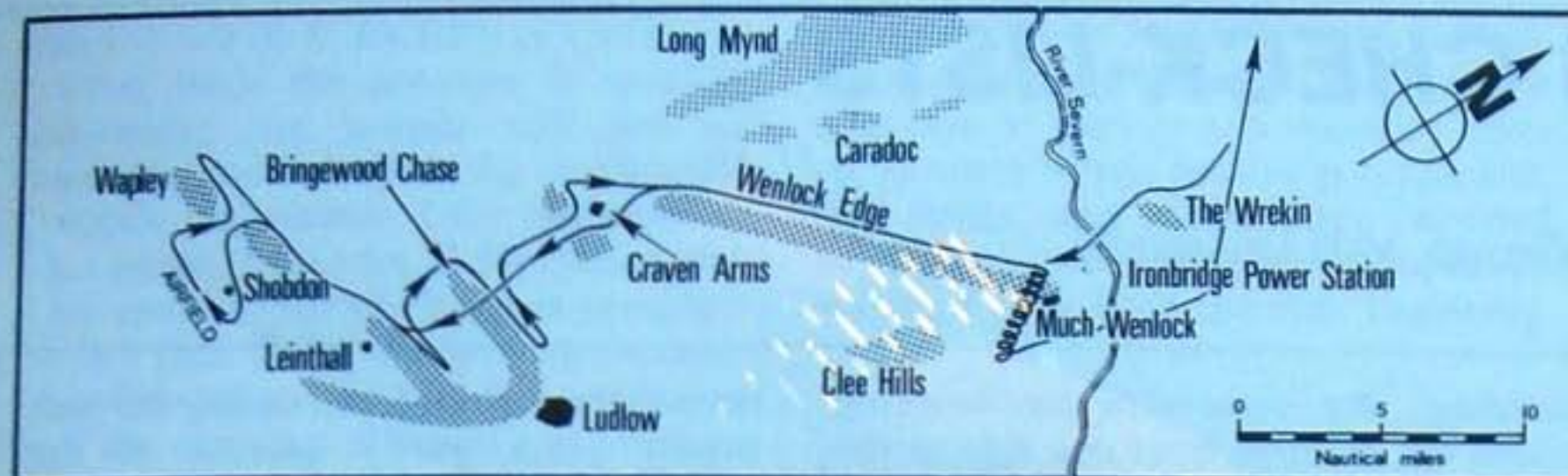
*Wenlock Edge with the Wrekin on the horizon. Photos: Phil King.*

Wapley ridge and climbed away. I crossed the small gap to Shobdon hill and flew to its east end where an early spring thermal boosted the hill lift to 2300ft asl. My next step was upwind to the hill overlooking Leintall Stakes. I had soared it a couple of years before, so I set off at 70kt with reasonable confidence and reached it without drama. Another thermal took me to 2200ft asl which was enough to make another upwind jump, this time to Bringewood Chase. This rather shallow hill is three miles long and works well in a northerly (I had previously soared it once before after a straight glide of ten miles from the top of a winch launch at the Long Mynd). As I soared up I could see various ornate Victorian buildings and

aqueducts which mark the line of the Birmingham water supply on its way from Rhayader.

So far I had been covering familiar ground, but now I had to make a four mile upwind glide to a hill just south of Craven Arms which I had not soared before. Before I reached the point of no return I reckoned I could see a landable field near the foot of the hill. If the hill failed me I would need to start the field landing from about 500ft agl so it was essential to select a field in anticipation. For a few moments it seemed depressingly likely that I would be using the field, but I reached the hill just below its top at about 1000ft asl. I came round a craggy outcrop to gain its upwind side, tucked in close to the slope and was soon





rewarded by a rapid squawking from the variometer. I soared up quickly in company with a buzzard. As Platypus might have said "Little gliders are ideal for getting into the strong lift which big gliders don't need."

From Craven Arms I had a superb view of the whole length of Wenlock Edge. At the far end I could see the smoke and steam rising from Ironbridge power station. It reassured me in two ways — it showed that the wind was right across the ridge and it showed that there was a thermal over the power station. With renewed confidence I crossed over Craven Arms and at last reached Wenlock Edge. I was over 1000ft above its crest but even so I could feel its lift. I decided to keep high and slow so that I could have a good chance of crossing any gaps without having to land. To my surprise and delight I was able to cruise the whole length of the ridge at 70kt whilst maintaining 1800ft asl. At Much Wenlock I came upon a 6kt thermal and left the ridge behind. For the first time in the flight I was more than 2000ft above the ground. It all seemed too easy.

### Overtaking cars at speed

From Much Wenlock I followed a superb street 32km upwind to Whitchurch and then turned for home. Although I could have returned high level in thermals, that seemed rather tame and it would be more useful to explore the hills again (I'd got a taste for them now). So I opened the airbrakes and dived down to the Wrekin where I did a few low passes for the ramblers' amusement (and mine). From there Wenlock Edge was an easy downwind glide and I noted the time as I crossed the river Severn. This time I got down to 1000ft asl and streaked along just upwind of the wooded crest at 100kt. The ramblers here did not see me until I had passed them, but I must have given the drivers in their cars along the crest a surprise as I overtook them at twice their speed.

It was hard work following the slight bends in the generally straight Edge and my speed made it uncomfortably rough. I was apprehensive in case I should suddenly need to land as I was only

300ft above the valley at times. However there were plenty of landable fields and my speed would convert to height to give me enough for a quick circuit provided I decided where to land instantly (I've got to make it sound safe in case my CFI/insurers/syndicate/wife read this).

At 100kt I was too busy to devote much attention to fields, but I did marvel at seeing the MGC hangar against the skyline 6km upwind and 400ft above me. It reminded me that there are other aircraft in the sky and a 100kt collision so close to the ground would probably be fatal...

I reached the southern end of the ridge in nine minutes to give an average speed of 100kt for the 24km. A quick chandelle put me ready for another beat which showed that by going a little lower I could maintain 110kt which seemed quite fast enough considering the turbulence and quite low enough considering the height of the trees. With waterballast higher speeds would be attainable assuming the wings didn't fall off.

I returned to Shobdon ridge hopping somewhat more sedately and feeling rather sick; I wondered how people manage several hours of high speed ridge running. Perhaps familiarity makes the stomach less sensitive — so I have decided to keep practising. In fact I have been poring over my maps again and planning a 500km triangle to include 75km of ridges. It has TPs south of Doncaster and west of Brecon and runs along Wenlock Edge, the Black Mountains and the Brecon Beacons. Each of these is traversed twice to give 150km of ridge running. By the time you read this I hope I will have tried it.

## Why Use Hill Lift?

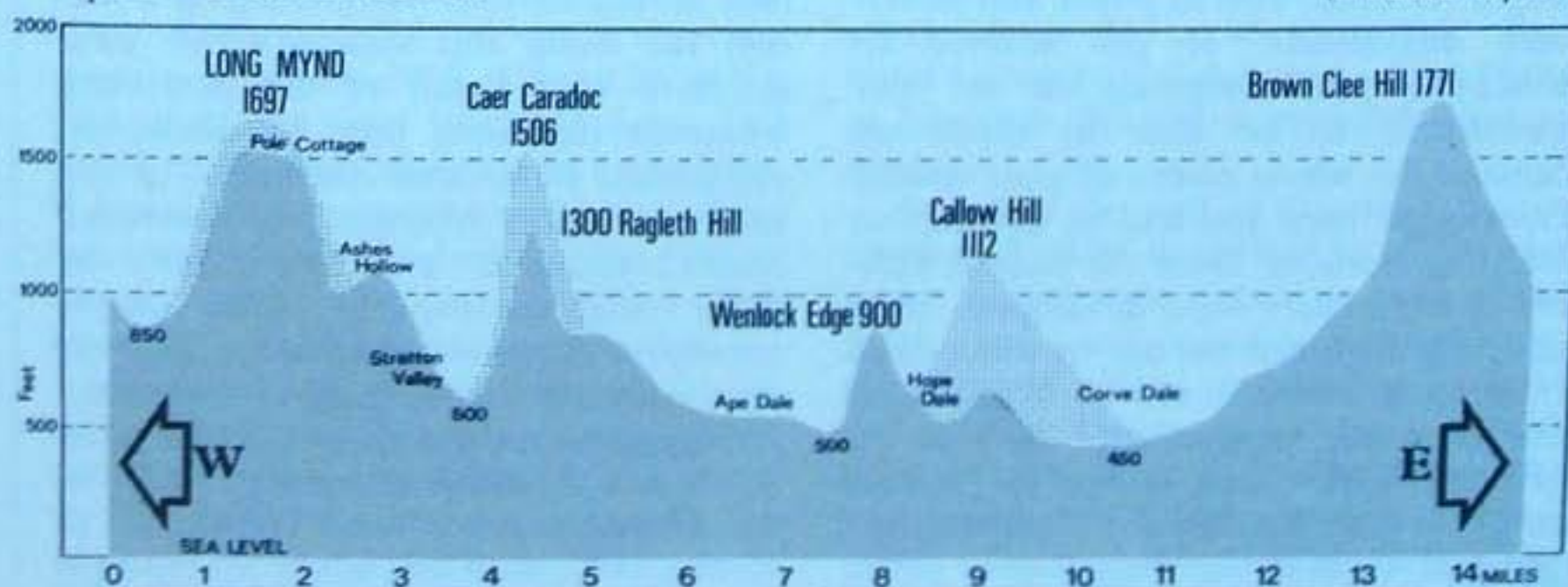
Most pilots soaring cross-country will not even think of hill soaring or, if they do, only as a last resort when they have failed to find a thermal. I suspect this is a hangover from pre-war days when hill lift was outmoded by the newly discovered thermals. It would be more rational to choose whichever sort of lift promised the best speed and likelihood of completing the task. If you accept this principle then hill lift will sometimes be the best choice.

Hill lift is generally more reliable than thermal lift. It is not reduced by stray patches of high cloud and does not die completely as the evening draws on. For a given hill the lift depends largely on the wind strength and direction. However wave activity may modify the height to which the lift extends and thermals may alter the strength of lift from minute to minute. Our weather forecasters are usually able to predict winds much more accurately than they can predict thermal or wave activity. When winds do change, such changes are usually gradual or well marked by other weather features. In practice I find that once I am familiar with a particular hill, I can predict reasonably accurately before I take off how well it will work.

### Cruise at higher speed

This predictability allows me to plan to descend to heights as low as 600ft agl which would often result in an outlanding if relying solely on thermal lift. Whilst "scraping away" from such heights I can retain full waterballast and remain within range of a single picked landing field whereas the wind would soon drift me out of range if I had to resort to a weak thermal. But if the ridge extends roughly along track I can climb without having to stop and circle. Generally I will be able to cruise at a higher speed than pure thermal lift would justify. Before I run out of hill to soar along I can choose a good thermal in which to stop and circle which will be much

(Continued on p111.)



A section through the Shropshire hills showing the highest point of Wenlock Edge compared with the surrounding hills. Their vertical scale is magnified by a factor of about 15.



# REMEMBERING CHECK-LISTS

Harold Dale, Ergonomics Research Group, Hull University.

To reiterate a point made in an earlier article on display design, the overall performance of a glider flown by a person is a function of the aeroplane, the pilot and the interface between pilot and aeroplane. Much professional attention is paid to the design of the airframe and we wouldn't dream of jumping into a new machine that had not been professionally stressed and tested. However the gliding community generally ignores the wealth of professional knowledge available regarding the man-machine interface and the performance of the pilot. There is a strong belief that pilots are themselves experts in these matters. To understand persons it is sufficient to be a person, and expertise in human aspects of flying increases as a simple function of the number of hours logged.

Being an unambitious fine-weather local soaring type, I generally find it politic to keep my thoughts to myself when listening to or reading the pontifications of self-taught aviation psychologists but the correspondence column of the June issue, p128, prompts me to break this silence. First I read Brenning James citing the Yerkes-Dodson "law" as though it is a scientifically respectable explanation, then I see Ivor Shattock making some ill-advised suggestions regarding mnemonics. Now human memory is a topic which has been studied extensively. Quite a lot is known about the design and effectiveness of mnemonic systems so it seems appropriate to write a few words about them.

## An effective memory

Mnemonic systems were developed some two thousand years ago when such simple technical aids as paper and pencil were unavailable. If you wanted to remember your shopping list or your speech, or to be able to recite on demand the whole gamut of your wordly knowledge, then you had to develop an effective memory. Over the years a variety of techniques were developed. They generally involved the use of some fixed framework which would be available at the time the performance had to be given. One favoured system for orators involved prior inspection of the banquetting hall so that the many items to be mentioned in the oration could be associated with different places in the

building. By systematically working round the building from one side to the other, the orator could establish these associations in order. When performing he would scan the different loci in turn to cue his various "points" in turn. (The notion of points in developing an argument derives from this mnemonic strategy.)

A medieval development of this technique, with the advantage of portability, involved first learning to picture some imaginary architecture. The mental image could then be carried around in the head. To hold a wealth of information these interiors needed many loci and so extremely elaborate pictures were developed, some being explicitly drawn out by the teachers in schools of memory. A favoured interior having a wealth of detail was a theatre, hence the development of memory theatres.

The idea of learning some framework to which associations could be hooked was elaborated in a variety of ways. In the nineteenth century numbers were used to order the "hooks". A simple example of this is the rhyming system: **One** is a bun, **Two** is a shoe, **Three** is a tree, etc. To use this system the list of items to be recalled has to be associated with the numbered hooks. Bizarre associations used to be recommended but recent research shows they have no special advantage. Thus if the first three items to be memorised were ink, potatoes, bread, combined images would be formed such as a bun stained with ink, a shoe carved out of a potato and a tree with loaves of bread as fruit. These could then be retrieved in any required order, since the third item can be accessed by going straight to **three** which is a **tree** which has the strange fruit. You may anticipate that when learning a second list using this system, "Ink" will interfere with recall of the first item whatever that may now be. However, experience shows that confusions of this kind cause little trouble. The numbered hooks system is used successfully by some stage mnemonists who simply command themselves to erase the old associations before a fresh performance. Although for most persons a list of 20 or 30 hooks is quite adequate, some of these systems have been elaborated to yield a structured and easily learned list of 1000 hooks.

The scientific study of memory has

been extremely vigorous during the past twenty years, partly because of the financial stimulus provided by agencies such as defence, which have a vested interest in minimising human error. Much has been learned about the relation between error rates (forgetting) and coding systems as well as the effectiveness of mnemonic aids. Hook systems have been tested out and proved to be extremely potent aids. The apparent psychological difficulty of forming the necessary associations proves to be non-existent. Initially it may take 20 or 30 seconds to form a good image, but this time diminishes markedly with a little practice. Perhaps a weakness is that there is no way of knowing when the list has been exhausted, but this can be overcome by adding **End** to the list and associating it with the next hook.

## Striking weaknesses

Acronyms as mnemonics represent reduction coding since retention of a single "word" is used to cue a list of items signalling commands. Acronyms have been rather popular in the Services for short check-lists, such as BUMFF for downwind checks, or CISTRs for pre-take-off checks in gliders. Compared with the hooks system outlined above, they have some striking weaknesses.

"CISTRs" is particularly bad as a mnemonic. It is so bad it can serve as Aunt Sally. In the first place, the very virtue of its similarity to a word with a very high frequency of usage causes difficulties. It will be encoded as "SISTERS with modifications". This use of a high frequency association renders availability high. Retrieval will be facilitated, since when searching memory for words the brain uses a strategy which explores its store in order of frequency of usage. SISTERS, for this reason, is easy to learn. However the modifications also need to be remembered to complete the act, and these present quite a burden since they are none too straightforward — the first S is substituted by a soft C, the E is omitted. So a rather complex list of modifications has to be recalled along with the basic representation. Partial recall is likely to occur so it is probable that some of the modifications will fail to be retrieved accurately. The learner may thus try to find commands associated



with C-I-S-T-R-S, SICERS or CSTERs.

Even when the acronym is recalled accurately, the learner still has to remember the links with the commands. C stands for controls, I for instruments, S for straps, T for trim, R for release and S for spoilers. No assistance is provided for this part of the memorising process. The repeated use of S invites confusion over the ordering of Straps and Spoilers checks, not that this is of much significance in this particular case. By contrast the imagery of a hook system would serve to cue recall and the uniqueness of the individual images would obviate confusions.

Apart from its inefficiencies in cueing recall, CISTRs has other weaknesses. For one thing, it fails to include a "Ballast" check. This is serious, since failure to carry the nose weight in a solo T-21 could be disastrous. Why ballast should have been omitted is hard to see since the weight of the crew always has to be considered. It may have been because of the seeming attractiveness of the similarity to SISTERS and the difficulty of formulating an approximation to a common word which included a B. This difficulty highlights a fundamental problem with acronyms — they rarely fill the bill perfectly. Procrustean adjustments to the required contents can cut their legs off.

The very curtailed list of checks encapsulated in the CISTRs mnemonic omits items which the student pilot would meet as soon as he graduated from the elementary gliders being used for basic instruction. The Swallow has a canopy, and the Blanik boasts flaps as well. This raises an important point of


principle. There is strong empirical evidence supporting the old contention that it is best to start as you mean to carry on. In other words, insofar as is possible, the skills and knowledge needed throughout a flying career should be imparted right from the very beginning.

### ***Taught the same way***

Changes in habits or techniques will inevitably lead to problems, especially at times of stress, so they should be avoided if possible. This means that where a situation met in advanced flying also arises in elementary training, it should be taught in the same way. Pre-flight checks are an instance of this, so if we want to ensure the pundits carry out a complete pre-flight check before embarking on a 500km triangle attempt they should run through a very well-learned procedure. This means that the set of commands in the pre-flight checklist should therefore be comprehensive, even though some items may be redundant on some aeroplanes. (If any pundits feel they no longer need *aides-memoire* for checks, they should scan the accident reports and ask themselves when they last made some minor slip like taking off with unlocked airbrakes.) Although it is impossible to anticipate general changes in design or equipment which may introduce additional checks (such as the changes in engine design which led to the need to fit carburettor heat), it is desirable to try to equip a trainee pilot with habits which will last him a lifetime.

These should be universal, not local club practices. There is no point in introducing additional confusions for trainees who change clubs.

Hook systems and acronyms do not exhaust mnemonic strategies, and mnemonics represent only one contribution to the range of techniques whereby judicious system design can minimise memory errors. A mnemonic strategy of considerable power links words to be remembered by weaving them into a story. So in contrast to the reduction entailed with acronyms this system facilitates memory through elaboration. A professional mnemonist studied by the Russian psychologist Luria used this technique to memorise the libretto of an Italian opera. He did not understand Italian, so he "translated" each syllable into pigeon Russian and wove his story around the resulting series of nonsense words. Some years later he was able to remember this and reconstitute the Italian text. This technique has always been used idiosyncratically and I know of no attempt to assess a ready-made story woven around keywords, but it could be worth a try.

In the cockpit of the future, with lightweight low-power micro-electronic devices, we may well find general-purpose flat-screen CRT displays offering information at the touch of a button. When they arrive, check-lists can be stored in the onboard computer. In the meantime during this age of steam (or wind?) the pilot will need to use his head for storage. He/she should be given all the help possible so why not call upon experts in these matters? 

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(Continued from p109.)


stronger than an "average" thermal because it has been boosted by the hill. So I climb up to "normal" cross-country altitudes again very quickly.

The greatest benefit comes whilst tracking across a strong wind. In thermals I rarely achieve 40kt average speed and more generally achieve 35kt. A 20kt crosswind reduces my average groundspeed to 28kt (52km/h). But if I cruise along a ridge at 70kt airspeed then my average groundspeed is 67kt (124km/h). This is more than twice as fast. The stronger the wind, the greater is the gain. If the ridge is not aligned exactly along track then I have to balance the gain in speed against the extra distance that must be travelled to follow the ridge.

Having decided to use a particular ridge it is quite difficult to determine the optimum height at which to cruise along it. The strongest lift will generally be near the crest, but could be lower down if the slope near the crest is very shallow. So I generally fly slowly until I have

climbed to near the crest and then accelerate until I am just maintaining height. It is not advisable to fly by the MacCready ring as that theory assumes that the lift strength is independent of height. Following its commands would make the glider climb out of the best lift and descend dangerously low where the lift is weak. Instead I find it better to stay level with the crest and if this gives me excessive speed then I allow the glider to climb above the crest. If on the other hand I drop below the crest whilst flying at less than 70kt, it is probably time to land.

As I near the end of the ridge, I slow down and allow the glider to climb. If a street or separate cumulus crosses the ridge, then I will probably S turn a couple of times before transferring to thermal soaring. This transition is the critical point as any delay in finding a thermal may cancel out the time saved earlier.

But I would much rather get as high as I need in the hill lift and make a straight glide to another ridge... 



# TAIL FEATHERS

by  
**PLATYPUS**



**Grampus Grampusson:** *Imagine a group of 45 year-old private owners, who do not instruct or fly in National or Regional Competitions. What are they doing?*

**Platypus:** *Drinking mostly.*

**Grampus G:** *Correct! What do they do next?*

**Plat:** *Pass.*

**Grampus G:** *Correct! You are at the 1984 BGA Conference in Norwich.*

Hats off to the Norfolk Club for a brilliantly organised do. It's made me determined to fly Norwich Cathedral and return this season and blow that neurotic stuff about sea breezes, which I'm told are no problem.



## Still not getting the young

The pen-portrait of the typical delegate, visitor, participant (if I ever see that horrible word *attendee* I throw up) is taken from the instant poll at the end of the Conference. It is not too much of a caricature. We are still not getting young, highly competition-minded people to the Conference. Maybe we should give up trying. (Write in if you disagree.) Most people who came said that the time and location were convenient. On the other hand if they found it really inconvenient they probably didn't show up to register that view. But the wives liked it, and that is the key so far as the married pilots are concerned. Now where's the nearest gliding site to Bond Street?

## Now Platypus has a dig at Comp reports

Wandering around the BGA Conference exhibition, I bought an ancient S&G, with the results of the 1950 National Champ-



Ancient S&G

ionships, flown from my favourite other site in Britain, Derby & Lincs. Philip Wills knocked off the winner's prize as easily as he penned a page of prose, and gave me to think: why are competition reports of those days — long before even I did my Silver C — so fascinating, and competition reports today so incredibly tedious? (Since I write many competition reports myself I am as much to blame as anyone — if the wretched reporters are to blame at all.) It is because competitions themselves are now becoming boring to anyone except the participants — and even to some of them, I suspect.

When Philip Wills flew in his Weihe from Camphill to Boston (Lincs not Mass) and nearly made it back, landing with his big wings and tiny airbrakes amongst the stone walls in the little fields at the bottom of the valley, out-and-returns were virtually unheard of. It was something new, not just in contest flying, but in British gliding altogether. When Nick Goodhart declared Portmoak from Lasham in 1959 and made it, using streets, cu-nims, ridges, wave, indeed every source of lift except sea breeze, we all relived it vicariously — every club pilot learnt from it and was inspired by it.

Competitions were where new parts of the country were traversed, new sources of lift explored and where we extended what was possible in the sport. Hence the Comps reports were intrinsically interesting to anyone, regardless of whether he was competitively-minded. Now *nothing* new happens in the Championships — because the task setters and the organisers



## New sources of lift explored

(people like me under my other hat) work manfully to *prevent* anything interesting from happening. If I stood up in front of the Nationals pilots and said "Today's will be a really different and unusual task ..." there would be panic and rage and a lynching-bee would be rapidly organised. Tow ropes would be put to novel uses — not to mention winch-axes. Seven triangles all going through Husbands Bosworth with 80% finishing is what they want. It's the Deadly Doctrine of Moffat, and I was delighted to see Hans-Werner Grosse demolish it, both by mockery and by his example, in his brilliant Norwich presentation.

## Come on, Poison Those Pens!

My remarks about Club News have brought a shower of abuse from correspondents — spell that properly, printers, or I'll get into even hotter water — and I'm thinking that if they wrote up



the local club scandal (forget the flying) in the same vitriolic and witty vein as their invective against me then those columns



### Shower of abuse from correspondents

would become compulsive reading. Here is a wee limerick from Scotland, or a lummeruck, which tells me where I bale out (bail out?):

*A line from the club who refuse  
Unblushing, to send in their news  
They've nothing to say  
They like it that way  
It saves tedium for those who peruse*

And a free extra verse — who said the Scots were mean!

*There was a young girl in a panic  
Who cried "Get me out of this Blanik!  
I don't like the motion  
It's worse than the Bocian  
Give me Jumbos — safe, smooth and mechanic".*

*This is worse verse than Platypu(r)s(e) (sorry!)  
but it makes a point.*

*I challenge him to write a limerick using Dallachy as his turning  
point rhyme. Note how the stresses fall — on the first and third  
syllables. (Sort of rhymes with fallacy.)*

Ruth Tait

Platypus gives up. His muse has deserted him. Please send in your inspirations.

Now there's a thought; Club News in limerick, sonnet or haiku forms would concentrate the mind, raise the cultural level of the mag and take up less space. It's the Norse Sagas that we're now getting after my ill-considered remarks that are the problem. I forgot to tell you that most of the abuse I've had is from the Editor...



Reiller

### Flashers With Calloused Bottoms

Every schoolboy (well, every schoolboy with a Gold C) knows that the only thing that really matters in covering the ground quickly is the strength of the lift you use, and that speeds between thermals are irrelevant, or as near as dammit. Yet people spend fortunes on fancy instruments to enable themselves to chase needles in lunatic dolphin flying. It's great to watch if

you're behind them — and not too close. One minute you see them in full plan view as they plummet down like a Stuka pilots' reunion party; the next minute, when you have begun to think they have forgotten the Comp and have decided to go off and strafe some dozy hamlet, they rocket back up, again in full plan view, offering a brief glimpse of the sweating pilots' faces turning alternately grey and puce with the g; then they ram the stick forward at cloudbase, so that all their maps and cameras and lollipops and pee-tubes and other junk crash against the canopy, and down they hurtle to beat up the peasantry yet again.

Their arms develop colossal muscles as stick and flap are frantically pumped at the behest of the needle — or the burp-bleep of the airmass audio, which they can barely hear because all this JU87 stuff has popped their tiny eardrums inside out. They do this mostly in Racing 15 Metre ships and especially on

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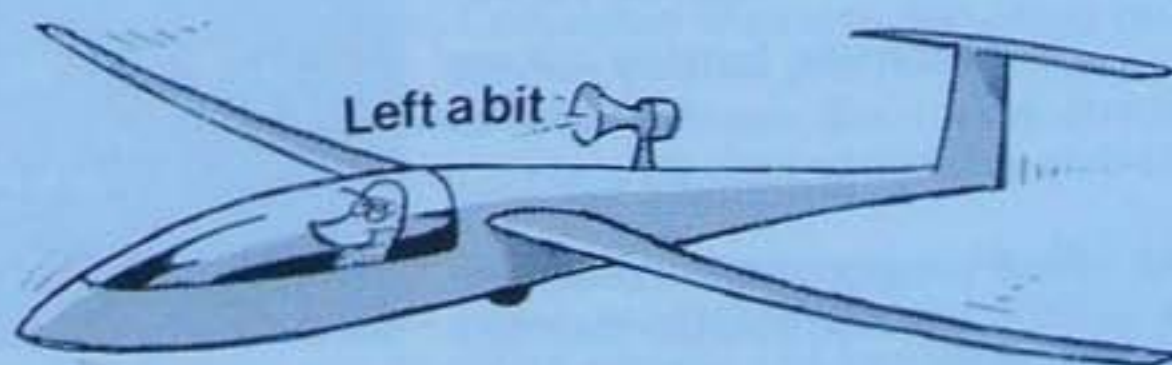


### Fortunes spent on fancy instruments

the Continent; it is very useful for the following pilots because, while someone sneaking along at a steady 70kt a mile or so ahead is often invisible, the dolphineers constantly flash in the sun like a swarm of silver crosses and give themselves away — as well as marking the lift and the sink for you.

The chief reason I don't do it much is that I have hardly ever found a perfectly-compensated total energy vario that I can trust 100%. I do like to know that lift really is lift, and not just a little bunch of tubes and transistors having a practical joke at my expense. A 500ft zoom is liable to make any vario go bananas. Moreover, if you apply 3gs to your backside at the very moment when that delicate instrument ought to be sensing the burbles and bumps on a thermal's edge, then you have got a thoroughly desensitized *derriere*. Thirdly, dolphining makes me ill. (If you're flying a two-seater, you can take turns making *each other* sick, since it is common knowledge that having no lever to pump immediately induces nausea. God knows why.) Fourthly, my suspicion of total energy varicos gives me an excuse to fly slowly between thermals, with the MacCready ring set to one knot when I'm feeling bold and to zero the other 95% of the time. Fifthly, if you're obsessed with the speed you ought to be flying at every single moment you're not paying attention to the most important thing — where's the next thermal?

What I need is a device that shouts "forget this one, you're wasting your time!" or "straighten up now, fathead!" or "three seconds more and you're in the core!" etc. Come on, Alan Purnell, you promised us something like this two years ago and the



microchips are getting cheaper and cleverer by the day. And us old pilots are getting dearer and dumber, so we need all the help we can get.



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# CLUB MANAGEMENT

**BILL SCULL, BGA director of operations, asks if you have any expertise to offer the BGA**

Recently the BGA Development Committee has turned its thoughts towards improved club management. There has been some concern about the downward trend in civilian club membership which, on an adjusted basis, is not as great as the bald reported figures suggest but there has been a continuing downward trend since 1978. This, however, appears to be concentrated in a small number of clubs and is confirmed by a detailed analysis carried out by Chris Nicholas for the BGA Executive Committee (a summary is on p116).

The aim of improved club management is difficult to achieve since almost everyone I meet is proud of their club and to suggest that it is badly managed would not get a favourable reaction. However, it is clear that many club officials are learning on the job and recognise that some guidelines might make their task easier.

One example of this has been the interchange of ideas and the stimulus regarding site purchase at which the movement seems increasingly adept. Incidentally, there is another success — Borders GC at Milfield has bought a farm adjacent to their airfield which will be unusable in 12-18 months' time. But I digress.

The concept envisaged by the Development Committee is a club management course and a handbook (of good practice). No, don't laugh! The principle of a course has been established for 20 years in Denmark and you should see their clubs! The question is — how to go about it? It is fairly obvious that all the specialist skills must exist around the movement; it's just a question of how to pool those resources. We (the BGA) have a limited contact list of specialists but the ones we know about are just the tip of the iceberg.

## Register of expertise

At present guidelines on financial management are being prepared by David Barker, treasurer of the Bristol & Gloucestershire GC and an accountant with 12 years' experience as a club treasurer. Many other ideas are being developed towards the end product of a handbook. What the Development Committee needs is a register of expertise and volunteers to make contributions in certain areas. These are:

Business efficiency/consultancy  
Operational (launching) efficiency — winches/autotow  
Aerotowing — costing  
Use of computers  
Public relations

... to name but a few. If you feel you have anything to offer in these or any other area please get in touch with the BGA.

**A Well-balanced Club.** The experience of members in any club depends, to a large extent, on the length of time the club has been established. A new club is bottom-heavy with *ab-initios* and a long-established one perhaps top-heavy with experienced pilots. What, then, constitutes a well balanced club?

Thinking in the main about pilot skills I envisage a well-balanced club in pyramid form. Up to a point (no pun intended) the club requires a solid base and a fair range of pilot experience. At the top will be the CFI and some cross-country pilots who are not instructors. In numerical terms the structure of a small club might look like this:

1	CFI
3	Full-rated instructors
5	Assistant-rated instructors
7	Silver C pilots; duty pilots and potential instructors
9	Solo to Bronze C
11	Potential solo pilots
13	Semi-committed trainees
15	Fringe members — short on commitment

64

This hypothetical 64-member club would have most of the members in the top three layers committed to an instructor rota, although individual commitment would vary from duty only to near-total of 100+ days a year assuming flying at weekends and one weekday. Clearly one could analyse the commitment on the basis of instructional launches carried out by each.

Important in the top of the pyramid is a potential replacement for the post of CFI; lots of smaller clubs are lacking in this respect. The top group would also have an influence on the prevailing attitude towards cross-country flying. If they themselves are active cross-country pilots then it should be possible for an *ab-initio* to progress to Silver C in a maximum of two seasons. Even if there are no cross-country instructors a middle rank of soaring and cross-country pilots can influence attitudes, but the more negative the instructors the stronger and more active this middle rank will have to be.

## Right balance critical

An appropriately-sized base to the pyramid is important for two reasons. Too small and the instructors will be frustrated or bored; too large and they may suffer the treadmill syndrome and give up due to overwork. Achieving the right balance is quite critical in the development phase when the club is bottom heavy with *ab-initios*. In essence a new club must be providing home-grown instructors to supplement those who were there when the club formed. Given the minimum qualifications of 75 hours P1 and a Silver C this is not always easy to achieve.

Based on these requirements it might be possible to work out what flying the club must provide to satisfy the members' needs. This, however, would be difficult since the wastage rate is a matter for speculation but it would not be too difficult to analyse some actual figures. All this is leading to a point of principle — "You must know what your club is providing for its members." Such an analysis is probably only possible in a small to medium size club; some of the criteria by which measurement of performance might be made are the average time to going solo — flying days, number of launches; wastage rate — number of people who join but give up in first year and before going solo, percentage of year's new members dropping out and the total number of two-seater launches, less the number of air experience flights, and/or holiday course flying and the number of training launches.

For the most part our club efficiency and training management leaves a lot to be desired. The following reasons given to John Holland, Development Committee chairman, for giving up gliding speak volumes:

"I am a busy person. I have only one day a week free and I wasn't prepared to waste it standing around a gliding club all day to get one launch."

"I found the gliding club a very insular place. No one except another newly joined spoke to me. Why can't gliding clubs imitate Rotary and boarding schools and introduce new members to a 'friend' who is supposed to look after him in the initial period?"

Shouldn't we try and do something about it?



# HOW MANY OF YOU ARE THERE?

*Pilots, that is, or at least members of a gliding club? As Professor Joad would have said, it all depends on what you mean by a member, writes CHRIS NICHOLAS who has taken a closer look at our reported membership during a detailed analysis of club statistics for the BGA Executive.*

Each year club secretaries study the BGA statistics questionnaire, delve into their records and send off the answers. If there is no suitable record in the club, some people estimate the figure and others leave it out. The latest returns, published in the February issue, p22, include several very round numbers and blank spaces for kilometres flown, a clear sign that the total figures should be taken with a pinch of salt, but it is not so easy to see if membership figures are realistic. In talking to officers of a few clubs about their own membership levels, however, it soon becomes apparent that the reports are not totally accurate. Whether it matters depends on whether anyone takes notice and acts on the information.

Last year the BGA was faced with a drop in reported membership of about 10% since 1978. As a first step we decided to look more closely at the facts, at least for civilian clubs — the Service clubs are subject to fluctuations due to overseas postings, the Falklands issue and subsequent effects, and possibly other variations which could really only be evaluated by the Service Associations themselves.

Before I opened the first record, I was convinced that there are more people flying in gliders now than in 1978. In my own club we have increased the number participating by over 1000 in that time, sufficient to negate the drop in reported BGA membership. I know of other clubs with similar patterns. So why are these extra pilots not reported? Because they are the temporary members on courses or air experience training flights. I believe they should be included in any submissions we make to the powers that be. Other sports include total participation figures, and the airports and airlines count you every time you step on or off a plane!

Looking first at the total reported membership in S&G from 1978 to 1983, I eliminated errors and omissions which were obvious, mainly where the principal club at a site included other clubs' members which were also shown separately. This was quite significant — an overstatement of 651 flying members in one year. On this adjusted basis, we had 8444 full members in 1978 and 7464 in 1983 in civilian clubs. I also adjusted

numbers of gliders where necessary and concluded that there has been a continuous growth from 1163 to 1427, almost entirely relating to privately owned aircraft. There are 18 more club two-seaters, eight fewer club single-seaters and 254 more privately owned gliders.

A detailed analysis of each club's figures revealed that 12 new clubs had formed and 23 others had increased in both membership and gliders. They might have their problems but they show no sign of a national declining trend.

The next group is more representative of the overall pattern. Of the 76 civilian clubs (counting one only at each site) 24 had fewer members but more gliders.

## **A maturing process**

My own club is one of these, and I spoke to officers of a few others to see if they thought it was a problem. Some did, and were introducing schemes to attract and keep a moderate increase in membership. There is, however, a growing view that in many cases this indicates a maturing process. In the early stages a club tends to have large numbers of pre-solo pilots with a high turnover. At any one time many of these would have ceased to be active but would still be included in returns until their membership had officially expired. My club had well over 100 pre-solo members in 1970, but was hard pressed to find 42 still sufficiently involved to form into training groups. I believe only about half of those stayed long enough to go solo by the end of that season. (By the way, I do not recommend the kind of group training we introduced. People tended to turn up only for half a day when a two-seater was allocated to their group of six, and were reluctant to help with airfield duties except to launch or retrieve "their" glider. The scheme did not seem to increase the numbers who completed their basic training and was soon abandoned.) Over the years a small core of solo pilots, particularly private owners, grows until it represents the largest part of the club. At some stage the need for scores of new members reduces and the total membership shows a fall. Everyone agrees that a percentage of new blood must always be taken on, but as long as

it is at least as many as the loss of "core" members it need not be at the same level as in the club's early days.

Nevertheless, there may be clubs with real problems in this group. Four have reported membership declines between 20 and 53%. If yours is one of them perhaps you should be wondering why — and what you should do about it.

If there is a serious problem it must surely be worst in the 17 clubs reporting both declining membership and fewer gliders, and seven clubs no longer included. Nine clubs have apparently declined by 27 to 60%. There may be special circumstances, there may be anomalies in earlier reports, and there may be inaccurate estimates in the latest figures, but there must be some cases where action can and should be taken. The seven no longer reported include one now acquiring a site to recommence operations and at least two are still active to some extent. Some, however, have simply closed down.

After grinding through all these statistics I wanted to return to the real world (no doubt you do too, if you are still with me at all!) so I talked to a non-random sample of a dozen clubs including some of the more flourishing and others less fortunate. The reactions were mixed but included the following views. Recruiting new members is easy, with local campaigns if necessary — keeping them is the difficult bit, and that's a club rather than a national problem. Many clubs would welcome not a national membership drive by the BGA, but a different sort of campaign to improve the image and influence of the gliding movement. In any case this would give some benefit for membership.

Surprisingly most clubs did not believe that the economic recession was a significant cause for declining numbers. Nobody mentioned the growth of private ownership as a problem — and one club which no longer had a club single-seater said how well their early solo pilots' syndicate worked with the burden of maintenance etc removed from the club.

Ideas for attracting and keeping new members include block membership for schools or universities and starting new members on a formal course (at weekends) prior to normal club membership. One club will not accept new

*(Continued on next page.)*



# A DIAMOND AND SILVER IN ONE DAY

**JOHN FORREST** describes how he gained Diamond height and his syndicate partner, Ian Donnelly, a Silver distance on March 4 in their Astir CS from the Deeside Gliding Club at Aboyne. John was launched at 1115hrs with a surface wind speed of less than 10kt, variable in direction but mainly westerly, and light orographic cloud moving rapidly from the west and north-west.

The Astir creaked and wheezed along until at 1800ft I released the tow in strong lift one mile south-west of Morven. I then spent some twenty minutes of pained anxiety as I climbed and sank and was generally rattled around the cockpit. Eventually, I found a patch of smoother lift to the north and east of the release point which gained me enough height to provide a safety cushion and permit the mapping of the lower part of the wave system. At this point the wave bars were high, remote and of variable orientation so, "seat of the pants feel" and constant examination of height limits for safe return to the field were essential.

Rapid progress was then made to 7000ft and with the benefit of the wave bar lift indication now close at hand, the next stage of mapping began. The bars were developing nicely but, unfortunately, they still had considerable gaps in them. By 9000ft my estimate of the wind strength and direction was 35kt from WNW. I checked the oxygen system and proceeded to track north and west to find the best "hot spots" in the wave. Suddenly, tracking at 85kt along the wave bar, I gained 4kt up and with oxygen on at 11 000ft a Gold height appeared within reach. Then 14 000ft came and went and immediately above a high lennie was forming, its wispy tendrils spreading out like a giant jellyfish. The edge of the wave cloud was beautifully smooth and polished, its top surface radiating the sunlight.

At this point, a new goal was set — Diamond height — and with oxygen flow doubled at 18 000ft the air temperature

was down to  $-27^{\circ}$  — respectable for any deep freeze! So thanks to the moon boots, the Snoopy flying helmet, mits and fuzzy knickers, the magnificence of the view and the exhilaration of the achievement was not spoiled in any way by discomfort. The solitude is awe-inspiring and completely different from travelling in a commercial airliner at this height. The ability to turn at random and see the view through  $360^{\circ}$  enhances the experience immeasurably. Travelling on the north-easterly heading, I noted two Hercules aircraft at least 5000ft below and about 10 000ft above was a 747.

## Had to be absolutely sure

The Diamond was now within reach — having released at 1800ft the altimeter was reading nearly 19 000ft. But to be absolutely sure, I battled on for another twenty minutes to gain 1500ft. It was now 1300hrs, one hour 35 minutes from release, giving an overall average rate of climb of approximately 300ft/min. Not many powered light aircraft can achieve that rate of climb for an 18 000ft gain.

I then decided to enjoy the flight down to let Ian make the most of the afternoon; I had adequate reward for one day. The descent was exhilarating as at 80kt from this height the whole of Deeside was within reach. I went west to Braemar enjoying the magnificent mountain scenery still covered with snow and returned to the airfield back down the Dee valley where I arrived with

8000ft still in hand. The canopy froze over which restricted vision but a short delay at 5000ft cleared it completely and I landed at 1322hrs.

Iain was on tow by 1345hrs and less than a mile west of the airfield he released at 1200ft in wave with 6 to 8kt up, making rapid progress to 8000ft. The wave system was very complex, the bars having both large gaps and orientations ranging from NS to EW.

"Black Jack" Harrison, our resident wave guru, had just returned from one of his quick trips to the west to Aviemore (180km O/R) and reported over the radio that he was in 7kt up some 4000ft above to the north-west. In view of this Iain pushed forward again in front of one of the upper system bars to find 7kt up all the way to 14 500ft where the lift suddenly levelled off. A quick "quango" convened on the VHF produced the prognosis that another Diamond height was unlikely but a Silver distance was possible.

"Chalky" White, our CFI, was raised and the distance attempt confirmed. Iain set off due north with the Scottish north-east coast coming into full view shortly. The wave bar he was following inconveniently shot off to the north-west so he headed NE and landed at Fraserburgh, a distance of 83km.

Satellite photographs at the time of the flights show clearly the wave system established over Northern Scotland but there was no evidence of any other wave over Europe. ✕

(Continued from opposite page.)

members at all unless they have completed a basic training course, to ensure that weekend resources are used for the benefit of those with a long-term interest in gliding.

Perhaps the most telling comment was that good club management has most effect on membership. Efficient launching systems, adequate training capacity, not too much waiting around and the club's whole attitude to newcomers can make all the difference between keeping and losing members.

Of the three broad groups of clubs — growing, consolidating and declining — which description fits yours? And in next year's figures, how many of you will there be? ✕



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# WAVE SOARING OVER THE BRITISH ISLES

## Some theoretical aspects and practical observations

T. A. M. Bradbury

This very comprehensive article is in two parts with "Observations of Waves" in the August-September issue.

### Part One: Theory

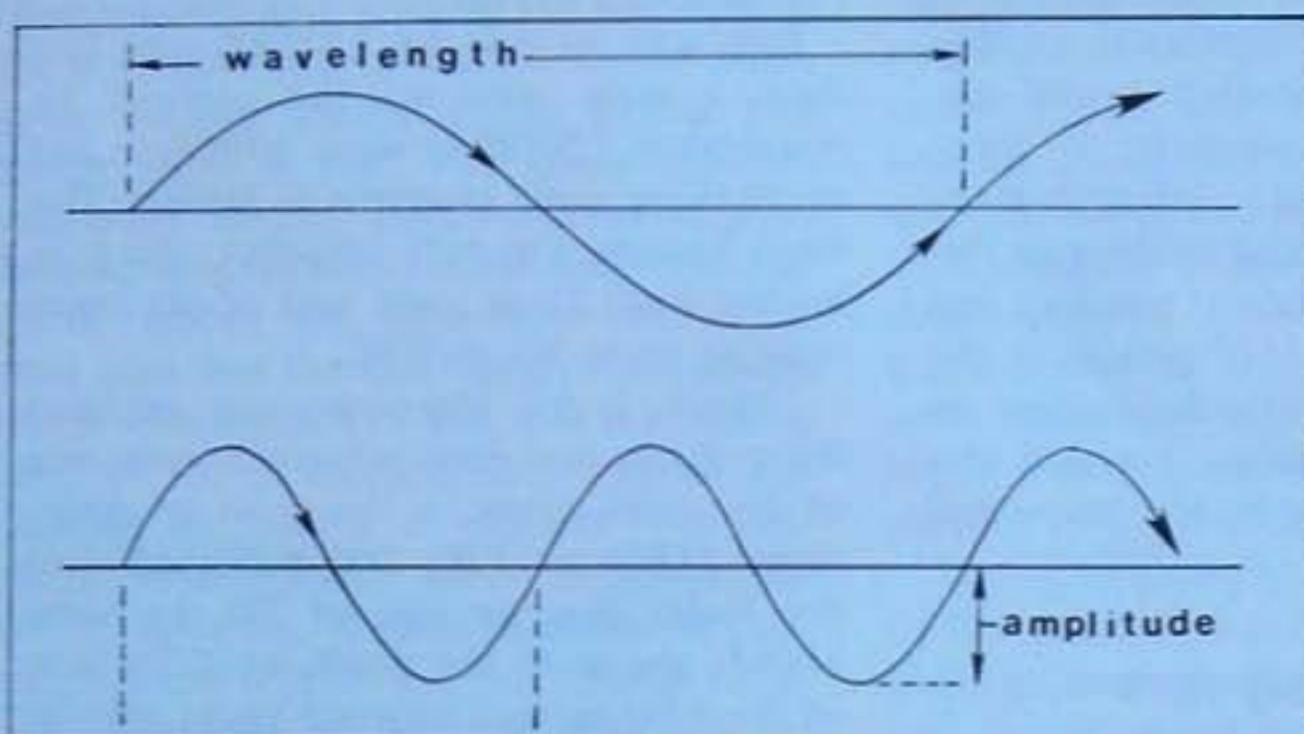


Fig 1. Wavelength and amplitude. Long waves above, short waves below.

Almost every article on atmospheric waves requires the reader to work through mathematical equations. In some papers the bulk of the text consists of lengthy equations of daunting complexity. A few of these equations can be solved on a programmable pocket calculator, but these are just the simplest ones. The realistic mathematical models devised by recent researchers can only be run on fairly powerful computers.

This article is an attempt to describe some of the features of soarable waves using words and diagrams alone. Some of the observations from satellites and reports from glider pilots show that even the most sophisticated mathematical models do not yet give a complete description of all the varieties of wave patterns.

There are three main factors controlling the development of soarable waves: these are the static stability of the air, the wind velocity and the nature of the terrain.

### Tends to oscillate before settling

**Stability.** Air which is stable resists displacement up or down. If it is forced to rise over a ridge it tends to return to its original level on the far side. Just as a softly sprung car without shock absorbers continues to bob up and down after a bump in the road so the layer of air tends to oscillate up and down for a while before settling down into level flow. The period of oscillation depends on the stability; the greater the stability of the layer of air the more rapid is the period of oscillation. The standard atmosphere assumes that the air temperature decreases  $6.5^{\circ}\text{C}$  for every 1km gain of height (up to 11km). With such a lapse rate unsaturated air would have an oscillation period of 590 seconds. If there was an inversion with a temperature rise of  $5^{\circ}\text{C}$  in 1km then this more stable air would have a shorter period of oscillation of only 280 seconds.

If the air is so moist that upward motion leads to condensation of water vapour into cloud then the stability will be reduced and calculation of the periods of oscillation becomes more elaborate. To avoid this many mathematical modellers specified a dry atmosphere.

**Wind Velocity.** Some horizontal motion is necessary to force the air over a ridge. If the horizontal wind was 10m/s (nearly 20kt) then the standard atmosphere with its oscillation period of 590 seconds would travel 5900m during the time needed to complete one full cycle. The air in the inversion layer would only need to travel 2800m to complete a full cycle. These distances can be thought of as the "natural" wavelengths of the particular layers at that wind speed. Clearly the stronger the horizon-

tal wind the longer would be these "natural" wavelengths.

The "natural" wavelength of a particular layer of air is not the lee wavelength. In the atmosphere one can select many layers each with a different stability and wind velocity and hence a different "natural" wavelength. For lee waves to develop it is generally necessary for the "natural" wavelength to be longer at high levels than at low levels. In simple cases the lee wavelength is found to lie somewhere between the longest and shortest "natural" wavelength in a deep layer of air below the stratosphere. The stratosphere complicates the calculations and used to be neglected in the simplest lee wave models. More elaborate models showed that there were a number of occasions when neglect of the stratosphere did not invalidate the predictions. Simple models are still useful provided one knows their limitations.

**Changes of wind speed with height.** If one assumes that the stability remains unchanged from the surface up to a great height then the "natural" wavelength at any level is controlled by the horizontal wind

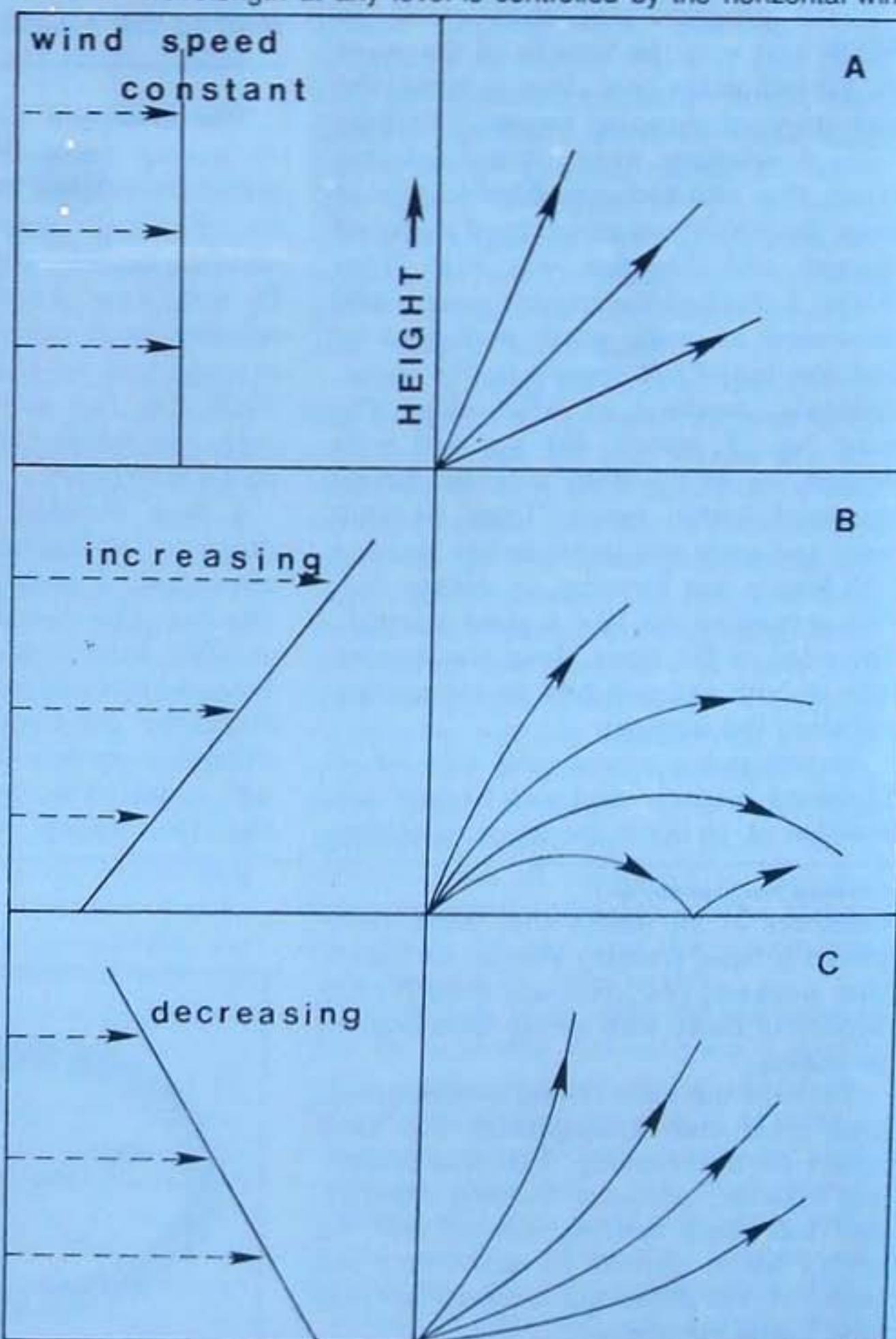
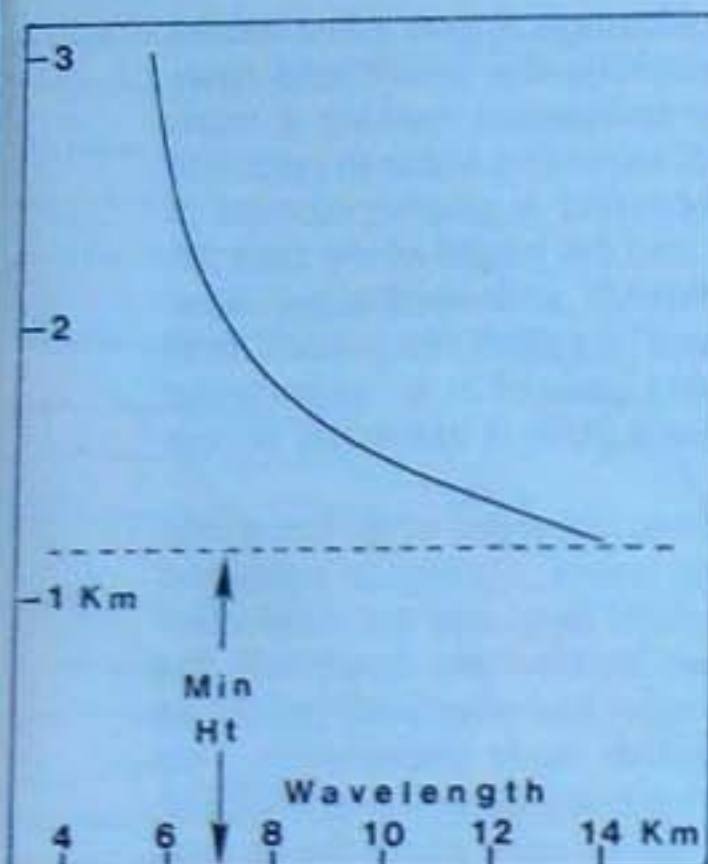


Fig 2 velocity. Fig 2 shows how the propagation of wave energy from the surface is affected by changes of wind speed with height. In each diagram the wind speed at a particular level is represented by the length of a horizontal arrow on the left hand side.





**Fig 3** In case A the wind is constant with height and so the "natural" wavelength is the same at all levels. Wave energy radiating from a point on the ground is shown as straight lines. Each line represents a different wavelength. Long waves are radiated almost vertically while short waves radiate at an angle nearer the horizontal.

In case B the wind speed is shown increasing with height; the "natural" wavelength will increase with height too. The result is that the rays of wave energy are bent over in the direction of the wind. The shorter waves are turned back first, the longer waves later. If the winds aloft were strong enough practically all the wave energy would be reflected back. This would confine the energy within a limited depth of the atmosphere and such waves are called "trapped waves". When the wave energy is trapped resonance can develop at certain wavelengths. In the simplest cases only one wavelength achieves resonance and becomes amplified to form a long train of lee waves extending far downstream from the point of origin. In more complicated cases there can be relatively short waves at low levels with a longer wavelength higher up.

### Termed the "leaky" mode

If there is insufficient increase of wind with height some energy at the longer wavelengths will not be trapped. This is sometimes termed the "leaky" mode; a lee wave train can still develop but is not likely to extend so far downstream.

Case C is just the reverse of B. Now the wind speed (and the "natural" wavelength) decrease with height. The rays of wave energy are shown bending upwards. It would be very unusual to observe a steady decrease of wind speed from the surface to high levels but it is quite common to find a rapid decrease at high levels just above the belt of strong winds known as a jet stream. It is possible for the wind direction to be reversed above a layer containing lee waves. When this happens the smooth flow can break down into violent turbulence.

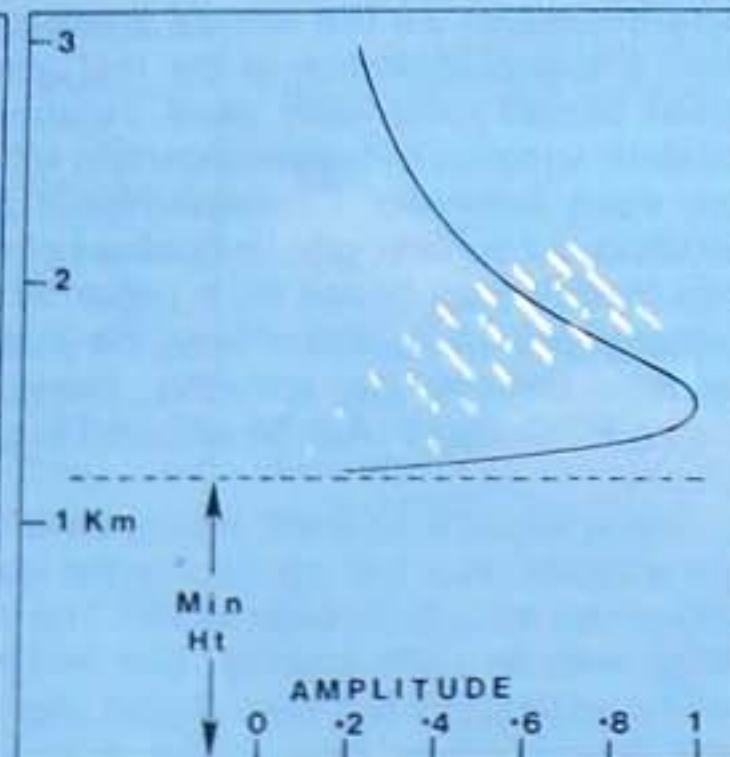
A small decrease of wind speed with height may just cause the wave to become steeper like an ocean roller steepening as it approaches the beach. The shape of the wave may be controlled by other factors and, as is illustrated later, the horizontal wind speed is itself modified by the shape of the wave.

Researchers who make mathematical models of wave flow need to take account of the way waves can alter both wind speed and air stability as they develop. Such effects are best displayed as a moving picture on a video screen.

**The simplest lee wave model.** Any mathematical model made before computers were readily available had to be very simple. The first model was produced by Scorer (1949). It only considered two dimensional flow and assumed that the air was dry and the streamlines had become steady. The atmosphere was simplified to just two layers, each with a constant "natural" wavelength, separated by an interface which could undulate up and down to follow the shape of the streamlines of lee waves.

The depth of the lower layer could be varied but the upper layer had no fixed limit. It was assumed to be deep enough for the lee waves to die away to nothing before reaching the top.

Wave flow was set off by a ridge whose shape was defined by a convenient mathematical formula which produces a bell shaped obstruction to the horizontal airflow. The height and width of the ridge could be



**Fig 4**

altered independently; this effectively altered the aspect ratio of the ridge without changing its basic curves.

**Predictions from the two layer model.** The model would not predict lee waves unless the "natural" wavelength of the upper layer was longer than in the lower layer. The depth of the lower layer had to exceed a minimum value which was always more than a quarter wavelength in that layer. To illustrate this the two wavelengths chosen are 4.4km for the lower layer and 14km for the upper layer. The minimum depth needed in the lower layer works out as 1170m.

Fig 3 shows how the lee wavelength would change as the depth of the lower layer is increased. The pecked line shows the limiting depth. The vertical scale gives the height of the lower layer while the horizontal scale shows the wavelength. Just above the minimum the lee wavelength is at its longest, almost the same as the "natural" wavelength of the upper layer. As the lower layer deepens the lee wavelength shortens so that near the 3km level the lee wavelength has been reduced to less than 6km.

Fig 4 shows the effect of increasing the depth of the lower layer on the amplitude of the lee wave. The vertical scale gives the depth of the lower layer as before but the horizontal scale now shows the wave amplitude on a scale of zero to 1.0. (The actual amplitude depends on the dimensions of the ridge as well.)

Again the pecked line shows the minimum depth. Once the lower layer exceeds this depth the amplitude of the lee wave increases rapidly to reach a peak near the 1.5km level. As the depth of the lower layer increases beyond this the wave amplitude starts to die away.

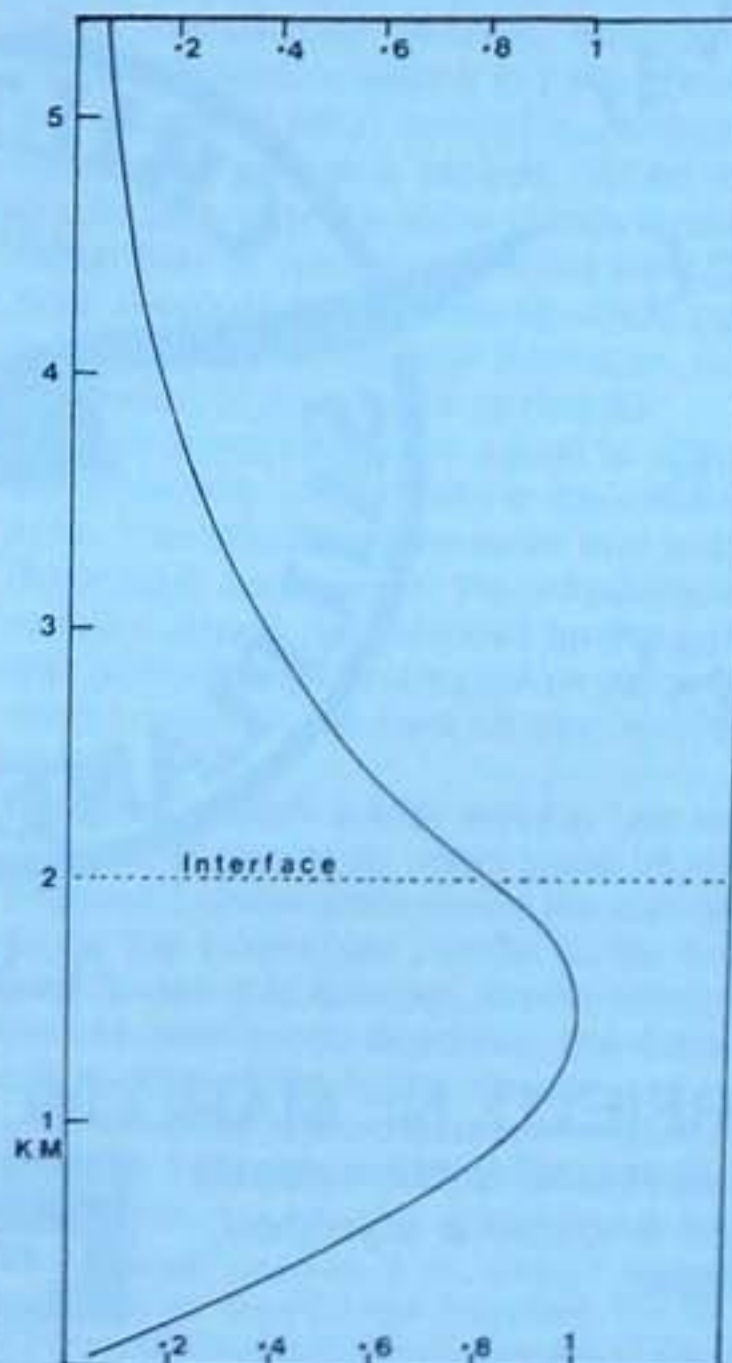
Fig 5 shows how the amplitude of the wave would vary with height if all the factors were kept constant. In this case the top of the lower layer (marked "interface") is fixed at 2km on the upstream side of the ridge. The curve shows the amplitude increasing from zero at the surface to reach its maximum near 1500m. Above this height the amplitude slowly decreases to become very small at the 5km level.

This decrease in amplitude depends on the difference between the lee wavelength and the "natural" wavelength in the upper layer. The greater the difference in wavelengths the more rapidly the amplitude should decrease with height.

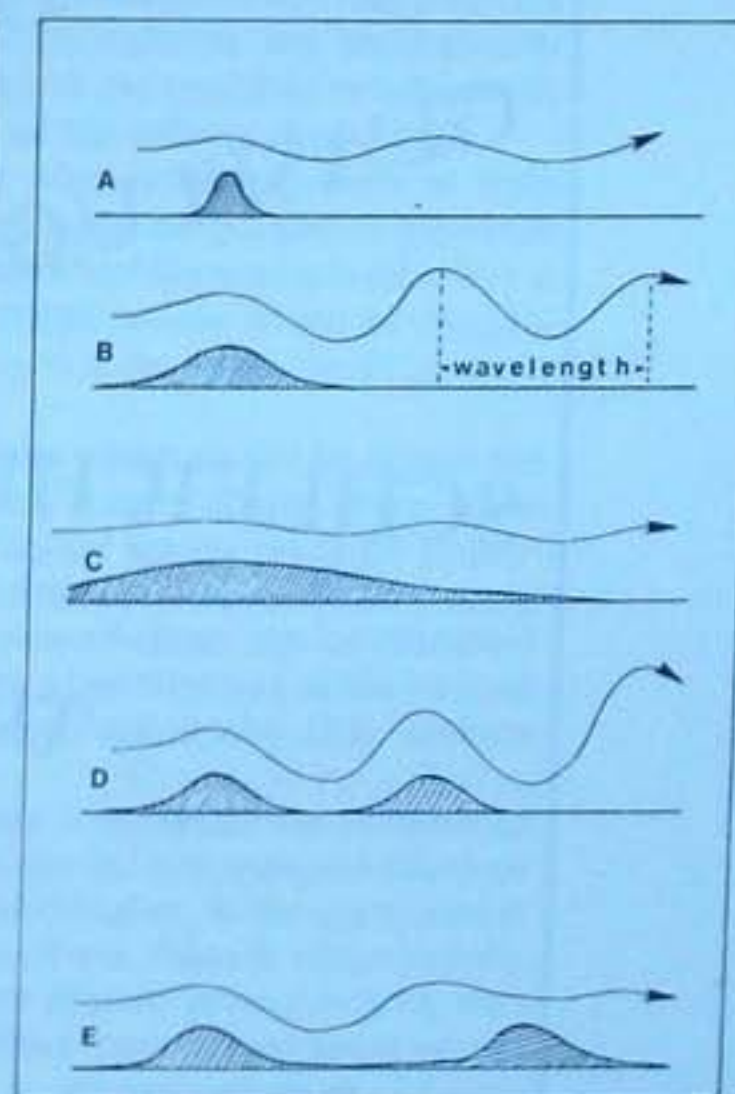
**Ridge width and wave amplitude.** Although the lee wavelength is not affected by the dimensions of the ridge the amplitude of the wave is sensitive to these factors. Fig 6 shows how the width of the ridge affects the wave amplitude. The lee wavelength is the same in all examples.

In 6A the ridge is too narrow for the wavelength and the amplitude is small.

**Fig 5**



**Fig 6**





In 6B the lee wavelength and the ridge width fit, the system is in tune and the wave will develop its maximum amplitude.

In 6C the ridge is much too wide, it is still falling away at the point where the streamline starts to rise again. This much reduces the amplitude.

In 6D a second ridge has been added one wavelength downwind. The second ridge boosts the original wave to much greater amplitude.

In 6E the spacing between ridges has been increased half a wavelength and now the descending streamline meets rising ground; this acts to cancel out the wave.

**Ridge height and wave amplitude.** Provided that the width of the ridge fits the lee wavelength, the higher the ridge the greater is the wave amplitude. However, high mountains are often wide mountains; wide mountains produce their greatest effect on the longer lee waves. Since long wavelength is closely associated with strong winds the bigger the mountain the stronger are the winds needed to produce the best waves. In contrast small ridges may set off large amplitude waves with relatively low wind speeds.

**Separation of airflow.** So far it has been assumed that the lowest streamline follows the shape of the ridge. Experience shows that this is not true with rugged or sharp edged ridges. There the airflow often breaks away leaving an eddy filling the gap left on the lee side. This eddy can act like an extension to the hill producing a smooth shape which can be followed by the wave pattern. If the lower air is very hazy one may observe the haze top undulating much more smoothly than the ground below.

**Improvements on the simple models.** Although Scorer's first model was a severe distortion of the real atmosphere the predictions have often proved remarkably good. However forecasters needed a more realistic variation of temperature and winds aloft from which to calculate lee wave behaviour. Casswell (1962) published a graphic method of working out wavelength, vertical velocity and the height of the best lift. His method was based on a paper by Foldvik who used a two layer atmosphere but instead of fixing the "natural" wavelengths in each layer allowed them to vary smoothly, increasing upward in an exponential curve which could often be adjusted to give a close fit to the real atmosphere.

There was still a defect; waves were being observed when there was an unstable layer with cumulus in the lower layers. Wallington published equations for a three layer model. The bottom layer was the convective layer with no static stability. The next two layers were essentially the same as Scorer's two layer model. Wallington had effectively jacked up the Scorer model by inserting a convective layer underneath. This immediately increased the time needed for calculation but gave much better results on the many days when the waves were above the thermal layer. The effect of the convective layer was to increase the lee wavelength and decrease its amplitude. Thus the wavelength should become longer during the morning as the ground warms up and the convection deepens, but decrease in the evening when cooling begins.

In practical tests Wallington's model seems to give more accurate values for the wavelength, but is unreliable for the amplitude because the cumulus clouds themselves may act as extensions to the ridges.

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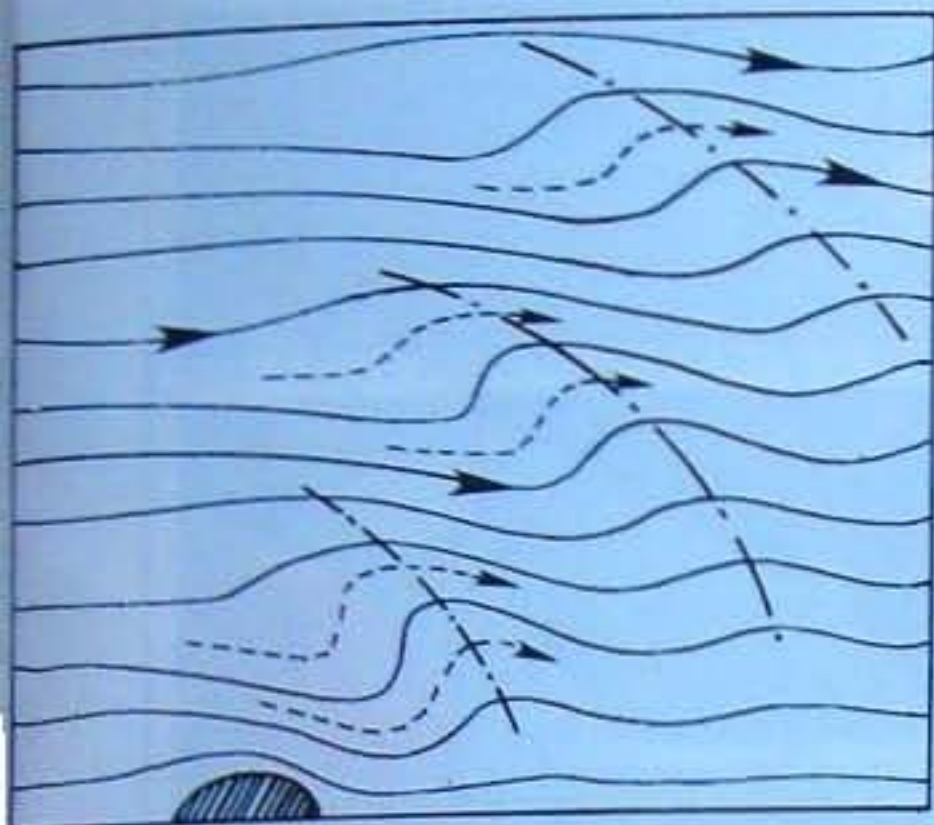


Fig 7

**Multi-layered models.** The simple models ignored the effect of the stratosphere and yet were able to produce useful results on many occasions. This was because on the successful days the upper winds were strong enough to produce a very long "natural" wavelength which reflected practically all the wave energy before it reached the stratosphere. The tiny amount of energy which escaped into the stratosphere had no significant effect on the wave train below.

Multilayered models were developed as soon as sufficient computing power became available. The vast amount of extra work involved could only be handled by a computer. With so many layers available the modellers could follow the real atmosphere very closely instead of having to apply heavy smoothing to simplify the calculations.

Inclusion of the stratosphere showed that lee waves could develop on many more occasions than predicted by the simple models. However long trains of lee waves did not develop at low levels on these days. The waves were strong near the mountains but decayed downstream.

## Extreme turbulence developed

More elaborate models were also able to study the changes in the wave pattern with time. The first models assumed the wave had reached a steady state. Now it was possible to show that even if the initial conditions in the approaching air were kept constant the development of the wave could produce startling changes in the flow over and downstream. Such changes might take several hours to develop but the end result was sometimes a flow pattern totally unlike the smooth sinusoidal pattern given in simple text books of Met. In extreme cases the air on the lee side of the mountains exhibited a vertical jump of several thousand feet and extreme turbulence developed in the lower part of the stratosphere. Such a pattern might have been disbelieved if it had not been previously observed by a number of research aircraft making a deliberate transit of the wave system.

**The shape of lee waves.** In many elementary text books the streamlines of lee wave flow show a symmetrical pattern with the wave crests on each streamline placed vertically above the one beneath. This kind of pattern seems to be broadly correct when there is a long train of lee waves well downstream of the mountain. High powered radar studies of such waves shows they are associated with a stable wavelength and steady flow pattern.

Fig 7 shows a computed pattern which is very different. In this diagram the crests of each streamline have been joined by a dot-dash line to emphasise the tilt of the wave front. The dot-dash line represents the phase line of particular waves. The waves are not symmetrical, they tilt forward at a marked angle to the vertical and in certain sections the streamlines are practically vertical ahead of the wave crest but have only a gentle slope on the downstream side. The spacing between the streamlines is a guide to the wind velocity; the closer the lines the stronger is the flow at that point.

This kind of pattern is particularly interesting to a soaring pilot because it shows that:

- (a) It is necessary to push forward during the climb to stay in lift.
- (b) The horizontal wind may drop off to nearly zero where the streamlines approach the vertical. Circling in wave lift may be possible for several thousand feet.
- (c) The apparently negligible horizontal wind found during part of the

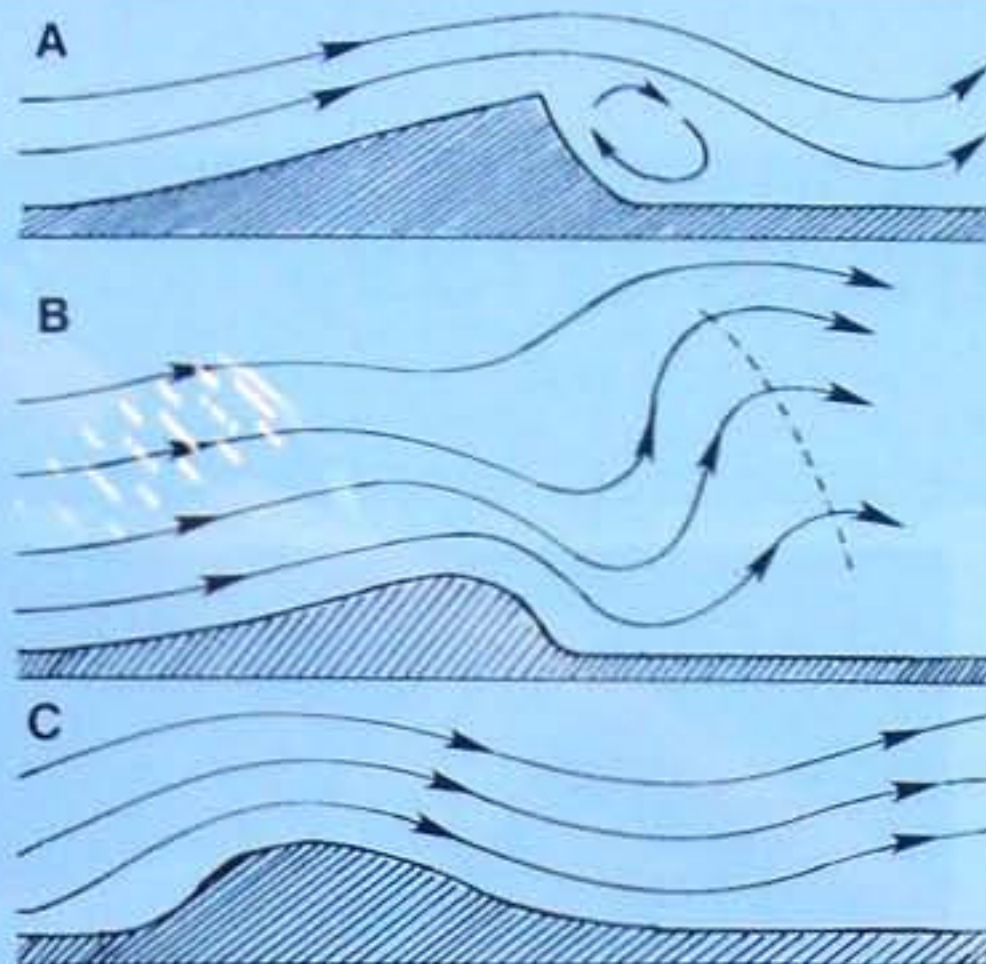


Fig 8

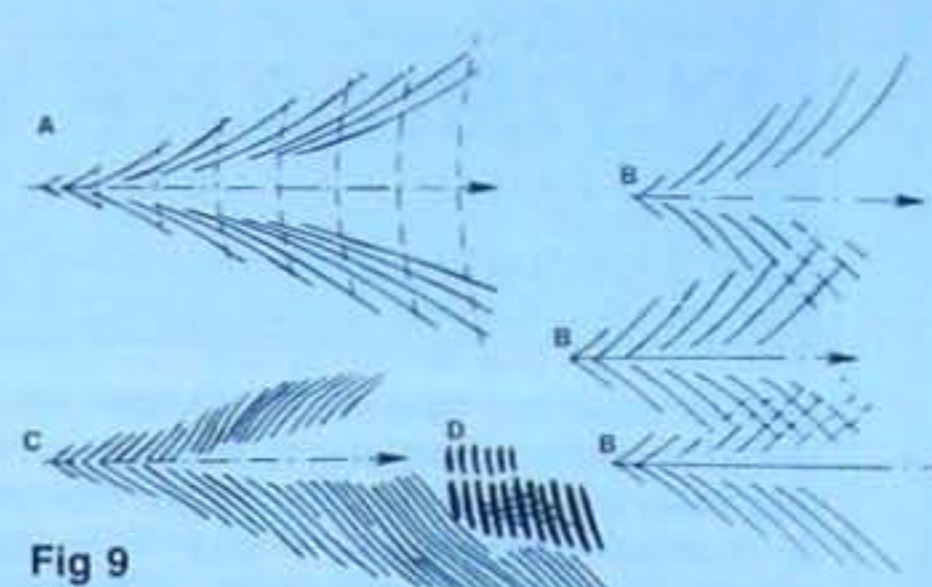


Fig 9

Waves produced by isolated peaks: a) theoretical pattern of waves like the wake of a ship) b) three peaks producing wave patterns which cross downstream; c) actual wave pattern from the Faeroes (at C) extending to the Shetlands (at D). Faeroes wake waves broken by Shetlands lee wave bars. Arrows show wind direction.

climb can change into a strong headwind during a cruise to the next upwind wave.

(d) If the climb in the primary wave seems to die away there may be better lift at that level in the downstream wave.

The shape of the streamlines are modified by the shape of the ridge. Fig 8 shows some of the variations.

A. Here the ridge drops away too sharply; separation of flow occurs leaving a lee eddy to fill the break in the flow.

B. This shows a ridge where the upslope is gentle but the downslope is steep. This produces very steep streamlines with a forward tilted wave front.

C. This shows the opposite situation to case B. The ascent is steep but the descent from the ridge crest is gradual. The result is a much flatter wave.

A practical example of this effect can be observed when a NW wind blows across the Ochils which have very steep slopes near Dollar but more gradual slopes north of Portmoak.

**Three-dimensional waves.** Studies of three dimensional waves are chiefly confined to the patterns which develop when the air flows over an isolated peak, or a very short length of ridge. These patterns are best seen on satellite pictures. They show up when there is a layer of stratocumulus under an inversion which is not far above the mountain peak. These waves resemble the wake left behind by a ship travelling across the ocean. They occur under the same conditions as those which cause the better known parallel wave bars. Both types of wave can be seen on the same satellite picture and the interaction between them can produce rather complicated patterns. Although such patterns are theoretically calculable no-one seems to have considered the possible results worth the enormous effort needed to compute all the effects. See Fig 9.

**Alignment of wave clouds.** When the wind does not blow at right angles to a ridge the wave clouds tend to be aligned parallel to the ridge rather than at right angles to the wind. The effect shows up best when a north-westerly flow across Scotland produces waves which lie roughly parallel to the Ochils near Portmoak, but turn to lie nearly north to south downwind of the Kintyre peninsula.

When wake waves are added to wave bars which do not lie across the wind one may see streaks in the cloud lying at right angles to the wave bars. The effect of transverse and longitudinal waves must be to produce great variations in the amplitude at different places. If the pattern remains steady the positions for the best rate of climb can be identified with particular landmarks but on many days slow changes of the various waves result in the best lift seeming to jump about with little obvious reason.

**Cumulus streets under waves.** Lee waves often affect the patterns of cumulus at low level; under wave troughs the cu are damped down or dispersed, under wave crests the cumuli build higher. In the commonest cases the waves are parallel to the lines of cu. Recent observations have shown that cumulus streets (which are aligned almost exactly with the low level winds direction) may have wave bars above them which are at right angles to the streets.

So far there is no theoretical model which explains the way the flow changes from convective streets to wave bars across the alignment of the streets.

**References:** Casswell, S. A., 1966, "A simplification of maximum velocities in mountain lee waves," *Met Magazine*, Vol 95 pp68-80 and Scorer, R. S., 1949, "Theory of waves in the lee of mountains," *Quarterly Journal of the Met Society*, Vol 75, pp41-56.



# FLYING THE GROB G109<sub>B</sub>

PETER SAUNDBY

Last October the latest Grob motor glider D-KGFA paid a fleeting visit to this country. It was flown over from the factory near Munich by Konrad Lewald and I was fortunate enough to have a short flight with John Adams. We have a privately owned G109 based at Bicester so this flight provided an opportunity to review the development of modern motor gliders and to examine the improvements made by Grob. With a completely redesigned wing, engine, propeller and canopy this is really a new aircraft.

The use of glass or carbon composites in sailplane construction has led to very high standards of aerodynamic smoothness and aesthetic appearance. The Grob 109B fully meets these expectations and the aircraft was immaculate in appearance. Walking around, it is typically a glider in general shape, with a span of more than twice the aircraft length, a tailplane set at the top of a swept fin, and only the neat undercarriage and closely cowled engine identify it as a powered aircraft. The simple strut for the undercarriage can cause only minimal aerodynamic drag and for low speed aircraft the complication of retractable wheels is not warranted. The wheels are cased in rather fragile looking spats but at Bicester these have been removed from the resident G109 with no obvious deterioration in performance. Spats can allow mud and grass to accumulate and eventually obstruct wheel movement.

## Gull wing doors

A more detailed examination shows a number of changes in this version of the G109. The wing has a new section and carbon fibre is now used to provide the requisite stiffness in the thinner spar. The canopy is fixed with gull wing doors instead of the forward hinge of the earlier model. With a walkway on the wing, access is both easier and safer but the penalty is a blind spot in the canopy roof. An unusual feature is the lower side windows, a feature previously only seen on helicopters and some tactical transport aircraft. The variable position Hoffmann propeller is new, although the rather cumbersome operating mechanism is unchanged. The propeller has almost parallel chord with rounded tips. The overall appearance of the aircraft is very clean and almost devoid of aerodynamic gadgetry, the only curiosity being the fixed upturned tabs on both ailerons.

The cockpit seats are reclined to an attitude more usually found in sailplanes than in aeroplanes and adjusted by stops, also the rudder pedals are adjustable. A formal ergonomic trial was not done but the cockpit would seem to accommodate a satisfactory range of human dimensions. Minor criticisms are that the seat has to be adjusted before entry so that the instructor has to remember to assess the size of his pupil. For a training air-



craft an internally operated system would be easier. Short armed pilots could have difficulty in reaching some of the further switches and a lockable inertia reel on the shoulder harness is the standard solution for this problem in many aeroplanes. The seat back is dished to allow a thin parachute and if the aircraft is to be soared in congested thermals some method of escape after collision is advisable; in safer circumstances a cushion is provided to fill the space. The general quality of the cockpit furnishings is excellent, so good that for club use I would advise a detachable and washable cover.

The view from the cockpit is excellent by light aircraft standards but does not reach the "military fighter" standards of many sailplanes. Compared with the earlier G109 the forward, sideways and downward view is improved, though unfortunately the gull wing doors have introduced a blind spot in the roof which is just where one wishes to view another sailplane sharing the same thermal. Very recently I flew the new demonstrator G-ROBI which has a clear roof panel and improved visibility. The demonstration aircraft was completely equipped with blind flying instruments and avionics; the three position master electric switch can de-energise non-essential electrics when the engine is stopped for soaring flight. Instruments and controls are generally well laid out but it was found possible in flight to confuse both the cabin hot air and carburettor hot air knobs, and to catch hold of the trim rather than the throttle. The engine instruments are conventional but situated out of direct line of sight. Psychologists have shown that pilots are not good at routine monitoring of instruments and attention getting warning lights have long been fitted in military aircraft and are now standard equipment in modern mass-produced motor cars. It would seem sensible to fit such systems to light aircraft and one would have certainly saved the cost of a replacement engine in a recent incident to a Motor Falke.

The wings are attached to the fuselage by a conventional stub spar. All locking levers are built in and operated from panels in each

wing root. Once dislocated, and an electrical plug disconnected, the wing can be pulled out on a jury strut, rotated, folded back and the tips hung from the tailplane; reducing hangar space to 7ft x 34ft. Aided by trestles to steady the wingtips, derigging could be done by one person. This is probably the best wing-folding system since those on light aircraft prior to World War II. The engine is a Grob development of the basic Volkswagen design, a four-cylinder horizontally opposed air cooled engine of some 2½l capacity. Apart from a single ignition it is of conventional aircraft engineering standards and a later version next year will provide dual ignition. For cold starting the modest sized battery of the original G109 has been replaced by a 28Ah heavy duty battery which can also be supported by external power through a standard NATO plug. The fuselage tank is most easily filled from behind the wing. Capacity is increased to 115l but the even larger tankage of 160l proposed for the Ranger version is not now thought necessary. With standard tankage the still air absolute range at 92kt is an incredible 750nm.

Strapping ourselves in, John Adams and myself checked around the cockpit and started the engine; either conventional powered checks can be used or the sailplane checks together with an engine supplement.

## New toe brakes

The cabin proved well sealed and very quiet and conversation was practicable without headsets. Taxying, despite the large span and narrow undercarriage, was easy with the new and effective toe brakes. Perhaps due to lighter wings, the aircraft had less of a tendency to waddle than earlier versions. Take-off was straightforward and the rudder could easily cope with the increased torque from the larger engine. Even at full fuel, two up and from long wet grass in a flat calm the performance was impressive. Any gliding club which has the space to aerotow light single-seaters can operate this aircraft. Climb stabilised at over 6kt which is more than sufficient for safety.



After levelling out at a safe height the handling of the aircraft was explored through the flight envelope. At low speeds the new wing section is a marked improvement, simulated thermalling flight at 50kt was entirely satisfactory and even when ill-treated the aircraft showed no vices. In gliding flight there was no tendency for the wing to drop at the stall, as is typical with modern sailplanes. With power some wing drop could be demonstrated. If in a steep turn with full power the aircraft was pulled through the buffet, engine torque became dominant, the aircraft either rolling level, or through the vertical depending upon the direction of turn. In more controlled flight, rates of roll were satisfactory and comparable with 15m sailplanes.

The airbrakes are less powerful than the exceptionally large ones of the earlier G109; this improves it for field landing training but is less safe following a real engine failure. Perhaps a compromise should be some form of spring-loaded gate which could limit the movement for training purposes. Spinning is currently not permitted because the airbrakes do not meet the requirements for aerobatic flight. The large and powerful rudder suggested that crosswind operations should present no problems.

Handling characteristics are always subjective and pilots like a familiar feel. To an experienced light aircraft pilot flying aeroplanes optimised for cruising flight, the Grob 109 had inadequate longitudinal stability, but a glider pilot would notice nothing unusual. The Grob 109a is more stable and takes about five oscillations to return to trimmed speed.

In the high speed cruise the new wing section is at a disadvantage and it is not surprising that the economical range speed is now 92kt although the maximum remains at 108kt. Using the earlier Grob 109 from Bicester to visit ridges in Wales and to penetrate against strong winds to teach wave soaring, a good high speed cruise performance is surprisingly important for a motor glider trainer. The fixed tabs on the ailerons suggest the wing section is not ideally suited to the higher speeds and perhaps a solution would be for full forward

trim to raise the rigging datum of both ailerons, alternatively we may see full span flaps becoming as usual on multi-purpose motor gliders as they already are on sailplanes. Tabs to generate negative lift cannot be a good long-term solution.

In the circuit the Grob 109a can be flown as a glider with engine stopped and propeller feathered, or as a light aircraft. Inexperienced power pilots, unused to flying low drag aeroplanes, are likely to allow the speed to build up in the circuit but throttle handling requires restraint, just like a jet aircraft. With no flaps it is essential to use airbrakes for an engine idling approach. With hydraulically operated disc brakes the landing roll can be impressively short — so short that incautious pilots might be tempted to land on strips too short for a safe take-off.

### Multi-purpose aircraft

The term motor glider is a contradiction in terms, and with the introduction of modern aerodynamically efficient two-seaters exemplified by the Grob 109, both the BGA and the CAA may have to rethink their definitions. Grob are quite correct in calling their 109a a multi-purpose aircraft. It can be used in many roles and it is worth considering what these might encompass.

The sporting element of gliding is soaring, comprising the excitement and skill of extracting free energy from the atmosphere. The ability to fly is an essential pre-requisite for the sport of soaring and this skill can be learnt on either aeroplanes or gliders. Some essential exercises, such as field landing, cannot be taught effectively in training gliders because of the time and cost of a road retrieve from a realistically selected field. More recently the improved range and speed of modern motor gliders has allowed right and wave flying skills to be imparted in mountainous areas far distant from the home site. Motor gliders have handling characteristics sufficiently similar to sailplanes that the early flying lessons can usefully be completed in a shorter time and often lower cost. For these purposes the gliding movement needs the

delegated maintenance authority and the right to operate from gliding sites using gliding instructors, albeit also qualified to fly powered aircraft. I know no evidence that these privileges granted some years ago have led to unsafe operations.

Airmanship is a transferable skill between different classes of aircraft and the Grob 109 is an ideal aircraft for introducing any potential new pilot to aviation, whatever their intended career. The good visibility, comfortable cockpit with side by side seating, and low operating cost are unmatched. Theoretically it could be used for other powered training purposes, for example the introduction of helicopter pilots to mountain flying.

Many power pilots hold the view that gliding is a cheap, and by implication undesirable, route into flying. This argument is belied by the many professional pilots who have taken up soaring as a hobby and by the successful use of gliding training by some of the world's major Air Forces. One may suspect that some opposition to the use of motor gliders arises from envy of the cheap and efficient maintenance organisation operated by the BGA, and the privilege of instructing from unlicensed airfields.

In the final analysis, the definition of a motor glider will depend more on the use made of the aircraft rather than any structural or performance considerations.

### Technical Data Grob 109B

Span (m)	17.4
Wing section E580	
Wing area (m <sup>2</sup> )	19
Aspect ratio	15.9
Max wing loading (kg/m <sup>2</sup> )	44.7
Structural weight (kgs)	620
AUW (kgs)	850
Min sink at 95km/h (m)	1.12
Glide ratio at 115km/h	30:1
Speed Min and Max (km/h)	73-210
Engine: G VW 2500 4cyl flat twin	
HP 90 at 3000rpm	
Take-off run (m)	220
Climb rate (m/sec)	2.9
Fuel consumption (l/h)	14
Range (km)	1500

## "Oh! Yes it could!"

JOHN WILLIAMSON

Relaxing as the glide home became more and more obviously safe I decided to complete the task with a low pass across the airfield. No hassle. Smoothly past the hangar; pull up to nearly 300ft; wheel down and locked; downwind checks complete. Idly I study the progress of the building site adjacent to Bicester's southern boundary. They are getting closer all the time. One day a failed aerotow will put someone in a pickle with that lot! No one else airborne but look round anyway. Turn finals — open airbrakes. Nothing. Start to sideslip. Not

much more! The ASW-19 is still slippery even in a sideslip. Thought crosses my mind that perhaps there is some interaction of airflow with airbrakes that is peculiar to the ASW-19, so glance out at the brakes. No brakes!

Of course, I had got hold of the wrong handle and retracted the wheel and was now trying to pull it up through the back of the seat in my efforts to steepen the glide! Fortunately Bicester is a big airfield and I had ample time to put things right and finish up safely in the middle. But what if it had been a small field? I would have joined the unhappy band of ASW-19 drivers who hadn't been able to put it right in time, without any excuse whatever. Many hours on type. Certainly in current practice. Thoroughly familiar with the cockpit.

It's not the only incident I have had with the ASW-19. Once I did nearly half

the approach with the undercarriage warning buzzer sounding off before I realised what it was! In fact the wheel was down and locked — it was a maladjustment of a microswitch which made the thing go off. The point was I didn't react to it.

There was a common element in both cases. I was *too* relaxed, there was no adrenaline. No urgency in either situation. I don't think this is true of those who have had ASW-19 "wrong lever" accidents. They were all new to type and it may be assumed that the adrenaline level was fairly high. But it does illustrate that complacency and familiarity can easily play a part in the build-up to an accident.

Couldn't happen to You? Oh! Yes it could!  
(Reprinted from *Accident to Gliders* — 1983.)





June Zealley presenting the De Havilland trophy to Mike Costin.



Above, some of the main speakers – from l to r Hans-Werner Grosse, Kees Musters, Alwin Guntert, Bill Scull and John Bally. Below Ruth Housden receiving the California in England cup.



# BGA CONFERENCE

March 17-18

Photographs by Naomi Christy and B. H. Bryce-Smith

Norwich certainly wasn't the most accessible place but the BGA Conference at the Norwich Hotel must go down as the most successful with a record 250 at the dinner and party on the Saturday evening.

Visitors came from as far as Exeter, Portsmouth and Guernsey with a particularly large contingent from East Anglia.

The programme organiser, Mike Bird, was delighted with the response and seasoned BGA conference goers rated it as easily the best and enjoyed the facilities of a good hotel. The hosts, the Norfolk GC, worked hard to ensure the weekend went smoothly, led by Nigel Stringer and Dave Hill, and Rika Harwood's efforts in getting Hans-Werner Grosse and Kees Musters as guest speakers were appreciated. Tours round Norwich and the opportunity of some excellent shopping satisfied the non-gliding wives who agreed it was an enjoyable break.

The programme had a good balance but it seemed a pity to have the annual general meeting so early on the Saturday morning. The discussion time after the official business is a valuable chance for members to put forward their opinions but with only 48 attending there was a less than lively response.

There were three newcomers to the Executive Committee with the election of Diana King (Midland GC), David Chaplin (Yorkshire GC) and John Deakin (Cambridge University GC).

## Gliders on show

The only other criticism of the conference was that the exhibition, after a splendid launch last year, was uninspired with fewer stands. A DG-300 and ASW-20B were rigged in the car park and created considerable interest.

On the credit side, the atmosphere was bustling and enthusiastic with a lot of new faces and a slight drop in the average age. The lectures were stimulating and varied with Hans-Werner Grosse, the breaker of more long distance records than any other pilot, as the star turn.

He described and illustrated his 1460km straight distance flight in an ASW-12 from Lübeck to Biarritz on April 25, 1972, which still stands as the International record, as well as showing dramatic slides of the Australian landscape he dares to cross in his quest for further records. At the moment he has five International records achieved in Australia, including a 1250km triangle.

John Bally, CFI of the Black Mountains advanced soaring site in Wales and author of **Mountain Flying — Talgarth**, gave a fascinating talk on how to soar in the UK throughout the year and how to put the adventure back into gliding. This was followed by ques-



# AND EXHIBITION

GILLIAN BRYCE-SMITH

tions and a discussion led by John Jefferies, CFI of the London GC.

John Tarrant, chairman of the Norfolk GC who are celebrating their 25th anniversary this year, welcomed everyone at the dinner and Mike Bird, the main speaker, was at his Platypus best.

The trophies were presented by June Zealley, wife of the BGA chairman. (For the full list, see the BGA and General News, p132).



Mike Bird, the programme organiser.

The Sunday sessions, "It can't happen to me", started grimly with Bill Scull, BGA director of operations, analysing five recent fatal accidents. The presentation was slick but the content frightening, though he expanded the talk from why it can happen to you to how to make sure it doesn't. The discussion was led by John Williamson, national coach.

Kees Musters, the World 15 Metre Champion, started his "Flying to win" session diffidently but quickly warmed to his subject — strategy and tactics in contest flying, inviting questions during any part of the talk. It was an interesting, sound lecture.

The last part of the programme "What do we want from sailplanes of tomorrow" was given by Alwin Guntert, an engineer with Glaser-Dirks, on the development of the Standard and Racing Class. He then joined the panel made-up of Hans-Werner Grosse, Kees Musters and John Williamson, chaired by Mike Bird, when the discussion moved to speculating on the feasibility of a 17m Class.

Mike Bird brought the Conference to an end by thanking the Norfolk Club, particularly Nigel and Dave, and Tom Zealley proposed a vote of thanks to Mike.

We left Norwich as we had found it, with a deeply overcast sky which was comforting to the glider pilots who had given up the possibility of a weekend's flying.

June/July 1984



John Holland, chairman of the BGA Development Committee.



Above, Chris Riddell and Alf Warminger, below Tom Docherty, winner of the Wakefield trophy.



Tom Zealley, BGA chairman, with Diana King, a newcomer to the Executive.



Above, Chris Nicholas, a BGA Executive member, and his wife Audrey, below Ben Benoist being presented with the Rex Pilcher trophy.





# In pursuit of excellence

## The Marconi Avionics National Open Class Gliding Championships

Marconi Avionics, Europe's leading producer of electronic systems for aircraft, is again the official sponsor for the UK National Gliding Championships to be organised by the Lasham Gliding Society, from Saturday 11th August to Sunday 19th August 1984.

Gliding needs a sympathetic sponsor. In seeking to encourage 'excellence in aeronautics' - the theme adopted for last year's Championships - Marconi Avionics hopes to focus interest on a nationally-important sport in a way which is consistent with the aims of aviation in general. Many leading personalities

in the aerospace industry, government establishments and other organisations were introduced to gliding in 1983 - our first year of sponsorship. Our video, Welcome to Gliding, has been shown in many gliding clubs. But most important of all, we believe a start has been made in fanning the interest of people in aerospace and related

high-technology industries whose future support and enthusiasm are important to all who make gliding their sport.

We hope you are looking forward to the 1984 Marconi Avionics National Championships as much as we are.



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## CAN WOOD DRY OUT?

Experiments at RAE Farnborough have shown that only one bad thing can ever happen to wood that can lead to its destruction, other than by fire or impact. That is the breakdown of its cellulose structure due to rapid, severe, change of its moisture content. The taking on, and losing of moisture rapidly and in great quantities, due to violent humidity changes in air, is the only thing that can cause wood to lose structural integrity.

Such air humidity changes are only likely to be encountered in some tropical countries and in desert areas, between night and day. The wood will become brittle, should its cellulose structure deteriorate, but, in no cases has structural failure been due to the wood drying out. In all cases, actual failures were due to the wood being subjected to forces for which it was never intended.

### Beware unsealed wood

To preserve the integrity of wood's cellulose, it is necessary to keep its moisture content as stable as possible. This can be done by sealing the wood, by covering every part of the internal structure with varnish. External wooden surfaces are usually sealed with dope, fabric and paint. As pre-1945 gliders usually had their interior wood varnished, the moisture content will usually have been kept fairly stable. However, there are some parts of the world that have such severe humidity changes that even varnish will not have been able to protect the wood from continually taking on and losing moisture content. Also old gliders may have had some unsealed wood put in to them during repairs.

The craftsmen of old knew what they were doing when they heavily varnished the interiors, and often the exteriors, of boats, aeroplanes and gliders. Often, an oil-based, glossy white paint is used to seal the internal

wooden structures of aeroplanes now. One guesses that the paint should be white in order not to absorb heat (to keep the wood cool), and shiny, to allow water to run off it. One can imagine that shiny paint might be heavier than varnish but that it would seal the wood very well.

Nevertheless, the Vintage Glider Club wishes to offer the following opinion.

As it is impossible to absolutely guarantee that all parts of wooden structures have not become brittle due to violent changes of moisture content during the very long lives of our aircraft, we cannot take responsibility for structural failures due to vintage gliders being overstressed while being flown too fast.

There are many among us who say that our aircraft should not receive a C of A unless the structural integrity is as it was when they were new. Placarded speeds in cockpits often bear this out (117kt Max calm air speed for a Kranich 2). We would agree that the above is an ideal but we have no idea whether it should be totally accepted as our gliders have lived very long lives. We therefore urge our pilots to err on the side of caution for their own good, and for the good of our whole movement.

**Do not risk overstressing your aircraft.  
Vintage gliders have betrayed no one yet.  
Do not betray them.** ✉

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# TRAVELLERS' TALES

An occasional series when readers write of their experiences of gliding abroad.

## Ice cold in Kenya

GERALYN MACFADYEN tells of resurrecting a defunct gliding club

An out of soaring season holiday in Kenya, where I used to live, was an excellent opportunity to soak up some winter sunshine on tropical beaches and bounce around "the bundu" looking at game — but I'm boring you! The resurrecting of a defunct gliding club and soaring an open T-21B to 14 000ft asl may be of more interest.



The winch with Vince and Tim and also Njeroge and Samuel who first helped Bim in 1975.

The old club had moved from Nakuru to Njoro and was short of members by the mid-1970s, when I first went along for an air experience flight. Most potential glider pilots are on short term contracts and Bim Molineaux and Richard Pollard were finding it impossible to get any sort of continuity in the club. A squadron of British sappers, on a six-month tour in early 1979, injected a new lease of life into the operation. They brought along Vince Mallon, a civilian gliding instructor, who managed to buy a K-13 which had been left in Nairobi by the Germans on an earlier expedition. This supplemented the club fleet, which consisted of a T-21B, a Tutor and various remains. Although a few local power pilots were sent solo, when the army left there just weren't enough experienced enthusiasts to do the routine maintenance on the gliders and give the towcar the major repair it needed. The parent body, the Nakuru Aero Club, later sold up and Richard, who had previously bought the K-13, bought the "gliding club" as a job lot. Bim had to return to England and so shipped his own two gliders, an immaculate K-6C and Hütter, back with him.

Richard met us in Nairobi before Christmas and we travelled up to Nakuru, about 80 miles north, a few days later. Tim Macfadyen, my husband, who hadn't been south of Rieti before, was dying to get a look at the K-13 to see if it was airworthy. We spent a day giving it a C of A and were amazed when Samuel and Njeroge, who used to help Bim back in 1975, materialised from the bush to offer assistance. After a little work the K-13 was fit to fly — but the old Ford Fairlane was beyond repair. An attempt to use Richard's Toyota

Hilux resulted in Tim doing a 20ft ground hop. The major problem was that Njoro airstrip is 7100ft asl and 1100yds long. Any engine loses one-third of its power at that altitude. Richard's brother-in-law, Laurie Sessions, gallantly offered to launch us with his Alfa Romeo! Tim got an 800ft launch this time but Laurie returned looking rather shaken and said the back of the car had been off the ground! But 200kg of wheat in the boot did the trick and on the third launch Tim and Richard were at 1000ft.

Obviously this was not an ideal launching system, as it was doubtful how long the Alfa Romeo would last. If a second day's flying was to be had we needed something more substantial. While Tim and I were away on safari, Vince arrived from Germany and got the old British Army winch drum re-drilled to fit on to the back wheel of Richard's six litre Toyota lorry. This was tried on our return and resulted in consistently good launches of up to 1400ft QFE. I had the only cable break — the feminine touch? There were some enjoyable soaring flights out to Molo, along the Mau escarpment and towards the lakes. Unfortunately, no one had a barograph and landing out would have taken considerable planning — more time than we could spare in our brief stay, so we weren't inclined to be too adventurous!

The other gliders were stored in an open barn on Geoff Nightingale's farm. Tim cut holes and peered inside the ailing ones. The T-21B was in remarkably good condition and after another day's work and rigging was air-worthy. We were worried that we'd damage it taking it back to Njoro on the K-13 trailer (two trips on dirt roads). We decided to drive the winch over and fly the T-21 back from Sasamua farm. Tim and Richard had two 800ft launches from the 850yds long strip, getting away to 13 000ft asl. This was ample for the short trip to Njoro!



The "club fleet" with Richard Pollard after achieving his five hours. Photos by GERALYN.

The lack of barograph prevented Tim sending Richard on a Silver distance attempt but he had just one chance to do an observed five hours on the day before we left. If he failed he'd have to wait for the next visiting official observer.

Anyone wanting more information about gliding in Kenya, please 'phone the Macfadyens (045 387) 2740.

## Gliding in Pune, India

JOHN TARRANT, chairman of Norfolk GC who has about eight years' gliding experience and a Gold C, has now added India to his logbook.

On a recent visit to India I discovered that Pune had one of the few government run gliding centres in the country. Although the weather did not look very thermic I contacted a local pilot, Dr Subhash Patki, and cadged a lift to the centre.

It is based on a large grass airfield about six miles from the centre of Pune city. Parked at the end of the strip was a bright yellow open cockpit T-21. After a few introductions and preliminaries, including the signing of what is known locally as a "death warrant"! I was airborne — unfortunately only for five minutes. There are no aerotows but the very efficient winch was good for 800ft in zero wind conditions. I gather 1400ft or higher is standard with a reasonable wind, which normally blows directly down the strip. In addition to the T-21 the centre has a K-7 and K-6 as well as an Indian KS-2 Kartik. The best season is March-June when cloudbase of 15 000ft asl is common (the field is about 1800ft asl), although thunderstorms can occur later in the day.

Cross-country flights are rare. I gather that there are only 28 complete Gold Cs in the country. There is a combination of factors which help to explain this. First, the shortage of gliders — I saw no privately owned ones and a glass-fibre glider is quite beyond local resources. Secondly the gliders that are available are of relatively poor performance, especially when it is recognised that the good early summer conditions are often associated with 20-30kt winds.

The last factor is formidable — at least to those of us used to largish British fields — the difficulties of outlandings. In many hours of driving within a 150 mile radius I saw virtually no fields that would be good enough for even a controlled crash! I am told that field landing technique involves as slow a touchdown as possible followed immediately by a firm forward thrust with the stick to bury the skid, or the nose, in the mud — as long as the wings stay on you might be all right! Perhaps that 15 000ft cloudbase is just as well.

The cross-country flights which are done tend to be downwind rather than O/Rs or triangles. One extra difficulty is that photography from the air is prohibited and so ground observers have to be arranged. Goals are set to airfields and this, coupled with the short days in the tropics, often cut shorter by storms, is a severe limitation.

Oddly the lack of cross-country flying is not



through a lack of money. Launches cost non-Indians 36 rupees (just over £2). This charge includes all membership and flying costs for as long as you can stay up (not long in my case!). Indians pay 12 rupees and children on a training course two rupees! Retrieves are by road, or sometimes rail, at the government's expense. When the day's launching is over the official jeep and trailer will come after you — it may take a couple of days to get you back!

There is a slight bureaucratic hitch — the international gliding certificates, although recognised, will not be enough to allow you to go solo. As well as the check flight you will have to apply to The Director General of Civil Aviation, R. K. Purum, New Delhi, 110011, India at least three months before you hope to fly to obtain the necessary clearances. Plan well ahead — it will be worth the trouble. I was treated with great hospitality and for much of the year the soaring conditions should be wonderful. There is great potential — when I was there there were distinct signs of wave coming from the mountains which run most of the way down the western seaboard, the Western Ghats — unfortunately reaching it proved impossible from a winch launch.

## Australian Gold Distance

*ALLISON REILLY visits one of the country's smallest clubs.*

Based for a while at Port Augusta, 300km north of Adelaide, with the Royal Flying Doctor Service (one of the few joys of being a medical student!), I felt the urge to overcome gliding withdrawal symptoms. Port Augusta Gliding Club (PAGC) is one of the smallest in Australia with fewer than ten regular flying members and two assistant Cat instructors. Despite the small membership they have two Blaniks (one shortly to be motorised), an Astir CS77, Cirrus 75 and a Piper Cub tug as well as several thousand square yards of red dust (in two strips — north-south and east-west) closely surrounded by prickly saltbush.

A 'phone call to the clubhouse left me puzzled. "We only fly on Saturdays ... Saturday afternoons. In the morning we clean the gliders." When I arrived I understood. A large percentage of the airstrip creeps in around the hangar doors overnight, settling in a pale orange film over the club's aircraft. I was immediately recognised as "The Pomme girl who'd 'phoned" and greeted with a friendliness and warmth which (together with a remarkably high density of flies!) characterised the atmosphere at PAGC.

Three check flights later, when I had become used to circuit-planning with no ground features at all, and been introduced to the low-tow position, I was able to enjoy the spectacular views from over 10 000ft in the Astir. PAGC is situated a few miles south-east of Port Augusta in the midst of unlandable scrub between the bright sparkling turquoise water of Spencer Gulf to the west, and the Southern Flinders mountains to the east. Never more than 3200ft high, these hills represent a minor obstacle to cross-country flying, the country beyond, to the east and south-east being flat farmland, relatively well-populated and ideal for outlandings. In all

other directions cross-countries are not recommended, Adelaide (and its international airport) lying to the south, uninhabited bush and desert to the west and north and mountains to the north-east.



In spite of the lack of choice for cross-country tasks, I was able to complete a 345km flight (albeit rather slowly) to Renmark, to the south-east, into a 10kt+ easterly wind so the geographical restrictions were not a problem. Several members have completed 500km triangles from the site. I must take this opportunity to thank a very enthusiastic retrieve crew (Kevin Jolley, Steve Kittel and Noel Ness) who left Port Augusta at 4pm and didn't get back until 7am the next day, after driving all night, the chief tug pilot at PAGC, Don Hennig, who couldn't have been kinder, and a friendly Renmark GC whose clubhouse and bar were a comfy resting place for their unexpected visitor. They also pushed the Astir half a mile to the pan so we could de-rig at midnight under large floodlights.

In November and December the weather wasn't consistently good, but when it boomed it was with a capital "B" and large thermals consistently over 10kt. The only problem was trying not to be sucked into cloud, as cloud flying in gliders is prohibited in Australia.

Having joined the Gliding Federation of Australia (GFA), Australian regulations allowed me to take passengers (a new experience for me) and share in their joy at seeing the stunning colour and beauty of their country from the air.

Before returning to the cold and rain of home I also visited Gawler, the Adelaide University Club at Lochiel, and spent a few days at Waikerie where I was able to take several friends for long flights in a Twin Astir and fly a Kestrel for the first time.

If you are going to Australia, allow plenty of time for gliding. The big commercial centres are very well organised but don't forget that the smaller local clubs also welcome visitors and offer excellent value for money. Whether you choose a large or small club, the Australian gliding experience is not to be missed.

## In Search of Bronze

*MIKE RICHARDSON mixes business with gliding.*

A recent spate of articles in S&G on gliding in Australia made me realise that I might be able to take advantage of a business trip there to add to my experience. My goal was not as high as those of other visitors — not Diamond, Gold or Silver — but simply to get nearer to Bronze. As such, my experiences might be as interesting to readers as those at the other end of the scale, tales of 1000km and 20kt up.

Talk of need for Bronze illustrates my

limited experience. How limited? Solo in a T-31 at the end of an Easter weekend ATC course at Booker in 1954; restarted at Falgunzeon, Dumfries in 1981 and resolved in 1982 after a gap of 28 years. The big fear then was would my 16 year-old son make it before I did? I set off to Australia in July with a total time of 21hrs, including 22 solos totalling 3hrs, all winch launched in a K-2 at Falgunzeon.

Pre-visit homework was a letter to the Gliding Federation of Australia, who sent me a list of all clubs in Victoria, New South Wales and Queensland. Jondaryan/Toowoomba, Queensland was on our route, but after two inches of rain the day before the site was unflyable, so we moved on to Kingaroy. There we were made very welcome, and my son and I were flying with instructors in their K-13 and Blanik within the hour. It was winter, and the ground wet, so although sunny there were no great Australian thermals. My family of four was given beds and hospitality for the night in a member's house, and we flew again on the Sunday morning.

I arrived at the Gliding Club of Victoria (GCV) at Benalla on the Friday evening and priorities being what they are I was immediately fixed up with a bed and a beer. The next morning showed what I had missed in the dark — a large flat field (to be the site of the 1987 World Championships), a sparkling hangar with a line of five IS-28B2s, and a larger hangar with three tugs and the club's single-seater fleet.

After four check flights on Saturday and Sunday I was allowed to go solo in the IS-28B2. Having been critical, as a winch site pilot, of the idea that an aerotow to 2000ft counted as three flights for the Bronze requirement, I suddenly became aware that my 50 solos could be achieved more quickly than I had thought. I was able to return the next weekend and all four flying days at GCV were similar, damp underfoot, with little thermal activity and varying amounts of cloud with a ceiling of 2-3000ft — perhaps not what one might have expected from other reports of Australian conditions. They nevertheless contributed much to my gliding experience and will remain a highlight of my renewed involvement in gliding.

Some might express surprise about a club allowing an early solo pilot to fly a strange plane in a strange country after only four check flights. I can only say that the GCV is one of the most safety conscious clubs I have visited. DIs were thorough; each pilot does a mini-DI before getting into the plane; all pilots have 3-monthly checks — no check, no solo and every pilot has a training card which is kept up to date as exercises are completed and endorsements gained for conversion to higher performance machines. A standard pre-solo exercise is a landing-on-tow, to cover the eventuality of both glider and tug releases failing to work at the same time; perhaps an improbable event, but a good test of flying skill.

I am grateful to all who helped to make my Australian visit a memorable one, and particularly Ian Aspland and Denis Wengert of the Kingaroy Soaring Club, Queensland, and Frank Jordan, Geoff Cox and Harry Wright of GCV, as well as to those instructors in the UK, especially at Falgunzeon, whose training provided the basis for my experience.



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The magazine can be obtained from most Gliding Clubs in Gt. Britain, alternatively send £8.75 postage included for an annual subscription to the British Gliding Association, Kimberley House, Vaughan Way, Leicester.

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

Price £4.25 (£4.74, including post and packing).

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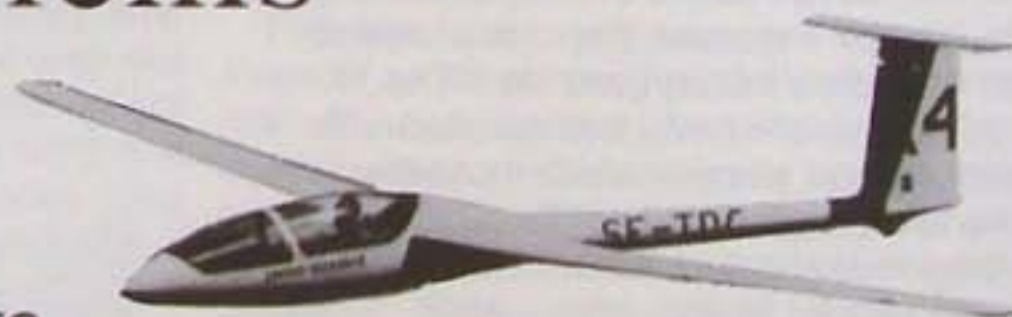
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# FLY YOUR COMPUTER!

— one person's thoughts on some gliding games

A review by PETE DISDALE

**The Final Glide** — Sinclair ZX81 (16K) — software compiled by John Williamson and available from JSW Soaring (advertisement in this issue), price £5.

As you might suppose, the idea is to get back home in the minimum time using exactly the same criteria for decision making as you would for real. If you are all thumbs when it comes to using a final glide calculator, a few hours at this should set you on the right lines.

After selecting your glider type and weather conditions you find yourself 15 miles out from base climbing slowly in weak lift. All your basic flight parameters are displayed on the screen (height, airspeed, rate of climb etc) and armed with no more than a JSW calculator and a selection of keystrokes you try to race home as fast as you can. You have control of your airspeed and MacCready ring setting, and you have to decide whether to circle or cruise — in fact do all of the things you would have to do for real (except read the map!).

If you make a successful landing at base you are graded from "Plodder" to "Pundit" according to how you fared compared to the theoretically attainable performance. Now this is the real joy of the game — you can fly the same task again and again to try and improve your performance, or opt for a totally new set of weather conditions and start all over again.

Given the limited graphics capabilities of the ZX81 the cross-sectional display is remarkably good and the game is a lot of fun, not to mention educational. A real "must" for all ZX81 owners!

**Final Glide** — Sinclair 48K Spectrum — Rickshaw, software compiled by Ken Stewart of "Iona", Oakhanger, Bordon, Hants, price £6.95.

This is essentially the same sort of game, but the display is a coloured plan-view and shows local towns and landmarks as well as your base airfield. Again you are allowed a choice of glider types, but the thermals are blue and you have no control over them (so what's new?). You can however select the wind vector if you want to, and choose to play at either "novice" or "pundit" level.

The Spectrum's rather puny sound channel becomes your audio vario (which also produces other familiar sounds when you get things wrong!) and is a useful supplement to the normal instrument read-outs displayed on the screen. You need of course your John Willy calculator for this game as well, and again the educational value is apparent. Where the programme really scores though is that each tape can be individually dedicated to a particular site, and the final glides started from a requested general direction. If you want a personalised programme this is it.

Playing at pundit level can be quite difficult — trying to work out the wind vector for your calculations purely from drift, at the same time as flying efficiently, both at maybe three or four times real time can put the pressure on.

As in the ZX81 programme there are lots of niceties to keep you on your toes, as you will find out when, for example, you explore outside your glider's flight envelope, or attempt a field landing from 100ft. All in all very playable and good for practising at twiddling your John Willy calculator.

**Glider** — Sinclair 48K Spectrum — Psion, available from most stores (W. H. Smith etc), price £9.95.

This is the only professionally produced game under review, and is from Sinclair's own software house. However, while the presentation is very professional indeed, what a pity the game and scoring system do not reflect more closely what cross-country gliding is all about! To be fair the game is very cleverly written and addictive, even though the idiosyncrasies of the keyboard commands take a fair bit of getting used to.

The cross-country area is an island, dotted with towns and ploughed fields (thermal sources). The aim is to stay airborne as long as possible and to get as far away from the site (in the centre of the island) as possible, without crashing or landing out. You can select your take-off time, though the thermal strength does vary throughout the day as one might expect for real. But you have no idea when you take off whether or not the day will overdevelop with the consequent results.

Long duration flights are possible and this is indeed the way to score highly. To really get in with the points though we found the best technique was to climb as high as possible near the coast and to fly out to sea, turning back at the last possible moment to get back ashore with just enough height to reach a thermal. Very much a game of chicken, and terrific fun to do, but anyone with no knowledge of gliding might come away with some strange ideas! Furthermore the machine gives you no credit for your actual distance flown or your average speed — only the O/R distance to your furthest away point plus your time airborne. The display takes some getting used to as well, with the "glider" stationary and the "ground" moving (or rather jumping) below. But it is very impressive the way the ground gets bigger as you sink down, and recedes when you are climbing away again.

Overall an extremely well-written and enjoyable compulsive game, but educationally worth about 1 out of 10! I'm sure a glider pilot would not have written it that way.

All three games are well-documented and presented, and I'm sure a lot of people will have a lot of fun playing them. I'm sure too that there will be many more in the future. I have

heard that there is a programme for the Apple IIe called "Skyrace", and another for the BBC "B", but I have not yet had the chance to get my sticky fingers on either! Maybe soon...

\* \* \*

## PLUS

**Cross-Country** — RD Aviation — software compiled by Dickie Feakes (advertisement in this issue), price £9.95.

Reviewed by MAX BISHOP

Most teaching programmes soon get boring, and most computer games are of very little training value. But with this programme I think Ricardo has succeeded in producing an effective and highly entertaining training aid. Available in cassette form for the BBC "B", and soon to be adapted for the Sinclair Spectrum, the programme simulates a cross-country flight in a K-6, ASW-19, Mini-Nimbus or Nimbus 3, and invites the pilot to make decisions about what speeds to fly, whether to climb or descend in lift, and when to start, leave thermals, dump water and final glide. The instrument panel includes an altimeter, an ASI, two total-energy variometers (one netto), and indications of distance-to-go (NM) and time elapsed since release.

Once the pilot elects to start, his start time is permanently displayed on the screen. He can call up a final glide calculator (heights required at various speeds) at any time. The sky ahead is displayed above the panel, showing the next three cumulus down-track, their distance (NM) and assessed lift potential (1 to 9kt). The length of task and weather conditions are pilot-selected. If you succeed in crossing the finish line (avoiding the dreaded red cow in the pea-green field), you are rewarded with a detailed analysis of your performance — speed, number of thermals taken, time spent in them, average climb rate, finish height etc — which you can then spend hours dissecting, comparing and trying to improve on.

The programme does seem accurately to simulate cross-country flying... and the random, unpredictable nature of UK weather. There are some nice light touches (eg the screen goes milky white if you continue a climb above cloudbase), and no obvious unrealistic features. As a tool for armchair soaring, and an encouragement to analytical thought about the factors contributing to high achieved speeds, no other programme I have seen compares with this one. Visitors to the BGA Weekend thought so too — it won the prize.



# BGA and General News

## GLIDING CERTIFICATES

ALL THREE DIAMOND

No. Name

108 R. I. Cow

110 A. D. Pig

DIAMOND DISTANCE

Name Club

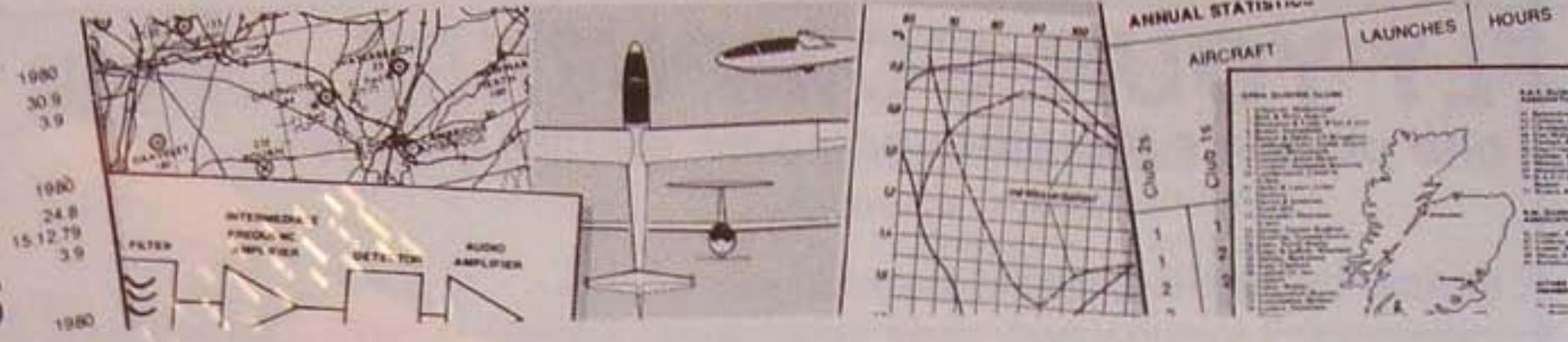
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Emborough  
(in USA)

Club

Lasham



## ANNUAL AWARDS

The annual awards are as follows: **Wakefield trophy** (longest flight originating in the UK): Tom Docherty (Scottish Gliding Union) for 666km from Lasham to Joigny, France, in a Nimbus 3 on August 3; **Seager cup** (longest distance in a two-seater): Mike Throssell and Paul Edwards (ATC) for a 293.7km from Lasham with TPs at Sutton Bingham and Nympsfield in a Janus C on July 30; **California in England** (longest distance by a female): Ruth Housden (Cotswold) for a 313km from Aston Down to Newcastle in a Std Libelle on August 14; **Frank Foster trophy** (fastest declared 500km triangle) and the **Rex Pilcher trophy** (earliest pre-declared 500km of the year by a pilot completing this task for the first time): Ben Benoist (Cleveland) for a 518km O/R from Dishford to Dunstable in an ASW-20 on April 9; **De Havilland trophy** (maximum gain of height): Mike Costin (Coventry and Hereford) for a 30 800ft gain of height at Talgarth in a Nimbus 2c on December 31; **Furlong trophy** (for largest triangle): Alan Purnell (Surrey & Hants) for a 632.3km Lasham, Knighton, Thetford in a Nimbus 3 on August 3; **Manio cup** (fastest 300km with one or two TPs): David Watt (Booker) for an O/R from Husbands Bosworth to Westbury at 114.5km/h in an ASW-22 on August 18.

**National Ladder trophies:** **L. du Garde Peach** (winner of the Club Ladder): Roy Pentecost (Surrey & Hants); **Slingsby trophy** (second on the Club Ladder): Chris Starkey (Surrey & Hants); **Enigma trophy** (winner of the Open Ladder): Chris Lovell (Surrey & Hants) and the **Firth Vickers trophy** (second on the Open Ladder): Nick Hackett (Coventry).

## COMPETITION NEWS

It was announced on going to press in the last issue that **Ben Watson** has been appointed the British team manager for the 1985 World Championships at Rieti, Italy. Ben, vice-chairman of the BGA, is an active and experienced glider pilot and has direct knowledge of managing UK representatives at international skiing events. I am sure you will join me in wishing him every success in the new rôle.

**Squad changes.** George Lee and Johnny Taylor have regretfully had to resign from the 1984 squad due to professional commitments and/or the pursuit of new careers. George now flies the right hand seat on Cathay Pacific's 747s based at Hong Kong. They have been replaced by **David Roberts** and **Ben Benoist**, the reserves established by the original ballot.

**European Competitions.** The UK representatives have been determined as follows:

— **2nd European Championships** at Vinon: Open, Ralph Jones, David Roberts and Peter

Cook; 15M, John Cardiff and Chris Garton; Standard, Ben Benoist.

— **Italian Nationals and Pre-World Comp, Rieti:** 15M, Ted Lysakowski; Standard, Martyn Wells and Justin Wills.

**Ted Lysakowski, chairman BGA Competitions Committee**

## RESEARCH FUNDS

The BGA Technical Committee have access to modest funds which could be devoted to promoting research which would advance-the-state-of-the-art of gliding in all its worthwhile aspects. Typically, it is believed that an unfulfilled requirement exists for a winch-cable load indicating system, for incorporation in new generation high-powered torque-converter winches.

Proposals to the Technical Committee will be welcomed, provided that clearly identifiable objectives are set to advance the state-of-the-art, and equally practical proposals are made to achieve such objectives, in acceptable timescales.

**R. B. Stratton, BGA chief technical officer**

## STRUCTURE OF THE BGA

The membership structure of the BGA is now made up of 81 full member clubs, three of whom have affiliated clubs as follows: Army Gliding Association with two clubs, RAF Gliding and Soaring Association with 11 clubs and the Royal Naval Gliding and Soaring Association with three clubs.

**Operations.** During the year ending September 30, 1983 (1982 figures in brackets), member clubs (civilian and combined services) flew a total of 123 347 (153 419) hours and 691 544 (793 626) kilometres cross-country from 402 488 (404 091) launches from club sites. Club owned gliders total 444 (450) and privately-owned gliders 1189 (1143).

**Certificates.** Certificates were issued as follows: A endorsements 1898 (2118), B endorsements 251 (290), Bronze C 430 (444), Silver C 223 (297), Gold C 58 (70), Diamond goal 64 (104), Diamond height 58 (40) and Diamond distance 20 (29).

A certificates were applied for by 1239 (1281) holders of the ATC proficiency certificate.

## USE OF AEROMOBILE VHF RT CHANNELS

With the increase in aviation meaning a greater volume of communication on VHF RT channels, the CAA stress the importance of interference-free communications in their circular, 3/1984 (Yellow 64)

They ask that particular care be taken to ensure the transmitter switch is in the "off" position when not in use and to confine

communications with a ground radio station for normal operations within the range and height limits applicable to the service.

There have been reports of handsets/headsets stowed in such a way the transmitter switch was permanently depressed; objects put on desk type transmitter switches making them operational and hand portables discarded while still switched on.

## U BOLT HAD BEEN REPAIRED

A landing gear attachment bolt on a Bellanca 8GCBC Scout tug failed allowing the wing and propeller to hit the runway. On investigation it was discovered that the U bolt had failed previously and been weld repaired. And while landing gear attachment bolts have a 500hr life there was no evidence that the bolts had been changed on the 520hr aircraft.

**CAA comment:** "U bolts should never be repaired; renewal is the only acceptable option."

## A DISUSED AIRFIELD TO AVOID

In previous years several gliders have landed at the Ministry of Defence, Propellants, Explosives and Rocket Motor Establishment, Westcott, Bucks. This has given rise to local concern because the runways are in a very poor condition and a large number of the buildings which surround or encroach onto the perimeter contain hazardous materials. It might be almost impossible to recover a glider from some parts of the Establishment and could be very expensive to do so.

## CODE OF CONDUCT FOR FIELD LANDINGS

If glider pilots are to continue to enjoy their sport it is vital the goodwill of farmers and landowners is retained. A great deal is owed to the many farmers who have given help and consideration to pilots who have arrived in a field as an uninvited guest.

Most cross-country flights are planned to end on an airfield, however the BGA wishes to emphasise to every pilot that should he fail to reach his destination and have to make a forced landing in a field he incurs certain responsibilities. The following code is intended to be a reminder of the conduct expected of all pilots by the National Farmers Union and the BGA.

It is essential that all pilots should be aware of this code before they are first cleared for cross-country flying and are reminded of it from time to time. All competition organisers should include a reference to it in Competition Regulations.

## The Code

1. Select a field that is not only safe to land in but one which should cause the least possible inconvenience to the farmer.



- Particular care should be taken when standing grass and cereal crops cover large areas of countryside, for a landing in these will damage the crops as well as the glider.
- Care should be taken to land as far away from livestock as possible.
- Immediately after landing and securing the glider endeavour to discourage onlookers from coming into the field. For this reason it is preferable not to land in a field adjoining a housing estate.
- Contact the farmer, or his representative and explain the circumstances of the forced landing. Pay for any telephone calls. If unable to find him at the time obtain his name and address and telephone number and contact him without fail as soon as possible.
- Keep the retrieve vehicle off the field if it is likely to do any damage, or until permission is obtained, and manhandle the glider to the vehicle.
- Ensure that no animals escape while the gate is open and that all gates opened are properly closed before leaving.
- If any damage has been done exchange names and addresses with the farmer as well as the address of the insurers covering the glider.
- In accordance with BGA Laws and Rules for Glider Pilots all gliders are required to be adequately insured against Third Party risks.

## VIDEO REVIEW

**GLIDING:** 30 minutes, VHS video made by Vision Productions, 111 Ecclesall Road South, Sheffield S11 9PH. Price £29.90 including VAT and p&p from the BGA.

1984 is spread-the-word-about-gliding year so it's appropriate that this half hour video has just been published. Every club that wants to attract new members and that cares about the image gliding has in its local community ought to buy a copy.

The video was made mostly at Camphill so there are some glimpses of the magnificent Peak District scenery viewed from a K-7. The launching shown is practically all by winch but some aerotowing sequences are also squeezed in. Here are gliding operations as you will find them in the majority of our clubs: the hi-tech glamour of Dunstable, Lasham, Booker and the Nationals is notable by its absence. Instead you see the Derby & Lancs CFI and his instructors at work. Apparently genuine holiday course and air experience members say what they think about their first flights — and with any luck their enthusiasm will be infectious.

The pilots include a number of women, the gliders are club and privately owned — ancient and modern — and by the end of the 30 minutes you feel you have visited a very friendly club that welcomes newcomers. The production is not perhaps up to BBC standard, but it is quite adequate. Be warned that the commentary includes some references to charges that may not be appropriate for all clubs: "Hiring a club glider costs 10p a minute in the air and winch launches are £1.50 so half

## FROM THE SECRETARY'S DESK

Barry Rolfe, BGA administrator

It was great to see so many people at our annual Conference in Norwich and particularly those of you who defied the organisers' cunning trap and still managed to attend the AGM held at "crack of dawn" on the opening morning. The end of the BGA year meant goodbye to Frank Irving and Vic Carr from the Executive Committee and to Alan Yates, chairman of the Technical Committee, and Mike Emmett, chairman of the Airspace Committee. Frank Irving has served the BGA for more years than I'm sure he would like me to mention in many capacities as a member of the Council, the Executive, as a vice-chairman of the Association and of course for a lengthy spell in the demanding position of Technical Committee chairman. Thanks Frank, and I see we have managed to keep you on the advisory committee for S&G!

One idea tossed upon the waters at the AGM was that the BGA might make it mandatory for all two-seaters in future to carry "second seat" insurance cover, probably with a minimum figure of £250 000. It seemed to meet with general approval, as it did when mooted at recent area club meetings, and I would ask you to give this serious consideration and let me know if you or your club have any valid objections to the principle before the Executive makes any decision later this year.

The conclusion of one successful conference only opens the way to the next year and, in truth, we would like to be making advance plans for at least the next two years. Ben Watson is co-ordinating our effort for 1985 and if you feel that your club could offer to host the annual jamboree for either 1985

an hour's gliding costs less than £5".

Congratulations to the video producers — and to Derby & Lancs — for providing us with an attractive view of gliding that can be shown to all kinds of groups and ought to encourage lots of new members.

ROGER BARRETT

## GLIDING CERTIFICATES

### ALL THREE DIAMONDS

No.	Name	Club	1983
157	R. H. Wright	Coventry	3.8
158	R. Richards	Essex & Suffolk (in Australia)	27.1.84

### DIAMOND DISTANCE

No.	Name	Club	1983
1/234	R. H. Wright	Coventry	3.8
1/235	E. Richards	Essex & Suffolk (in Australia)	27.1.84



or 1986 then please make contact with either Ben or myself so that we can discuss the possibilities.

The Executive Committee in March were delighted to confirm the sponsorship by Marconi Avionics of the Open Class Nationals to be held at Lasham in both 1984 and 1985. This follows the particularly successful sponsorship of the event last year by this company and heralds in addition a generous contribution to the British team fund in 1985 for the World Championships from Marconi Avionics.

## Donations please

Talking of funds gives me an opportunity to remind you that John Holland, chairman of our Development Committee, wrote to all clubs in April asking them to consider a donation to the Philip Wills Memorial Fund. This fund, which exists to help clubs with loans towards the purchase of sites and fixed assets, is almost totally committed at present and needs fresh injections of capital from those clubs with secure positions. The Executive have agreed to transfer £1000 from our general funds this year and hope to make regular annual payments to the Fund in future but we still need to restore the original purchasing value before the effects of inflation made themselves felt. So, donations please to Leicester payable to "Philip Wills Memorial Fund".

Finally, PR of Booker (last issue p88) has rumbled my secret ambition about appearing in the club news — but I'll bet she wishes she could have her photo in every issue!

### DIAMOND GOAL

No.	Name	Club	1983
2/1265	R. Jackson	Cleavelands	14.8

### DIAMOND HEIGHT

No.	Name	Club	1983
3/630	R. Millington	Cranwell	28.12
3/631	T. W. Eagles	Cleavelands	29.12
3/632	C. D. Armstrong	Hambletons	28.12
3/633	M. Hajdukiewicz	Cotswold	6.3.84
3/634	S. Mackintosh	Edmonton Soaring	8.10

### GOLD C COMPLETE

No.	Name	Club	1983
993	R. Millington	Cranwell	28.12
994	T. W. Eagles	Cleavelands	25.12
995	G. W. Cunningham	Kestrel	31.12
996	R. Jackson	Cleavelands	14.8
997	M. Hajdukiewicz	Cotswold	6.3.84
998	A. R. Hyett	Warren Hills	10.10
999	R. I. Gibbs	Zimbabwe Humber	6.3.84

### GOLD C DISTANCE

Name	Club	1983
R. Jackson	Cleavelands	14.8



## GOLD C HEIGHT

Name	Club	1983
R. Millington	Cranwell	28.12
T. W. Eagles	Cleavelands	29.12
G. Taylor	SGU	29.7
G. W. Cunningham	Kestrel	31.12
E. J. Clarke	Marchington	23.10
P. Molloy	Essex	30.12
C. D. Armstrong	Hambletons	28.12
J. A. Cowie	SGU	8.1.84
M. Hajdukiewicz	Cotswold	6.3.84
A. R. Hyett	Warren Hills	30.10
	Zimbabwe	
R. I. Gibbs	Humber	6.3.84
J. Kingerlee	Enstone	6.3.84

## SILVER BADGE

No.	Name	Club	1983
6597	R. S. Bolom	Derby & Lincs	4.12
6598	D. P. A. O'Hare	In Australia	8.12
6599	R. Nichol	Northumbria	6.11
6600	A. R. Hall	East Sussex	30.12

## BOOK REVIEWS

**British Soaring Yearbook 1984-85**, edited by Gordon Camp with 100 pages. Published by the BGA and available from them at £2.50 plus 25p p&p.

This book should be carried in the pocket of every pilot or in the cockpit of every glider. As No. 56 flashes past, whip out your **Yearbook** (Competition Numbers section) to find out that you have just been carved up by Simon Redman, who, you note in the National Championships Section, was Standard Class winner in 1976. Well, the LS-3 has a speed index of 110 against only 70 for your Oly, it says here in the BGA Speed Index Table, so you aren't doing so badly. Then when you land out, you can while away the hours waiting for your crew by counting the number of Oly 1s and 2s in the Register of BGA Sailplanes: easily enough for a splendid one-Class Comp, assuming they're all in flyable condition.

Just as cricketers enjoy browsing through **Wisden**, glider pilots will enjoy the **Yearbook**. What UK records are easiest to knock off next year? Not telling you: you can pay to find out. Addresses of clubs, National Ladder rules, airspace regulations, meteorological service

## BGA ACCIDENT SUMMARY — Compiled by KEITH MITCHELL, Chairman, BGA Safety Panel

Ref. No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew			SUMMARY
						Age	Injury	P/Hrs	
1	K-13	1650	W/O	2.10.83 14.50	Usk	56 20	N N	1961	Pilot misjudged crosswind component leaving his final turn too late and then having to clear trees on the final approach, the low final turn resulted in one wing hitting the trees — the resulting accident breaking the wing and fuselage.
2	K-7	2477	S	8.10.83 11.40	Currock Hill	48 15	N N	411	Instructor failed to take over in time to prevent a heavy nose down landing which caused substantial damage.
3	Bocian	2075	M	8.10.83 13.30	Mendip	43	N	583	In circuit P1 preoccupied with approaching squall and lookout for other aircraft. Failed to notice amount of drift downwind on base leg. Took control after final turn when undershoot recognised. Increased speed and attempted to pull up and over boundary hedge but hit it.
4	K-7	1622	S	16.10.83 14.51	Arbroath	47	N	130	Would appear pupil on instruction to close airbrakes a little, simultaneously put forward pressure on brake lever and control column. Nose pitched down suddenly and struck ground before instructor could take over. Fuselage buckled.
5	K-7	2643	S	22.10.83 17.59	Shalbourne	46	N	1½	Landing up slight slope. Pilot did not lower nose sufficiently to maintain approach speed with full airbrake. Landed heavily.
6	Blanik	2121	M	21.10.83 11.24	Manston	35	N	870	After normal landing undercarriage collapsed. Undercarriage fork shock absorber attachment lugs found to have broken.
7	Club Libelle	2335	W/O	22.10.83 15.18	Shobdon	50	N	65	On his first flight in this a/c the pilot had successfully corrected for dropping a wing and some longitudinal oscillations but pulled off tow at 150ft and turned to attempt a reverse direction landing. After 90° of turn the glider lost height rapidly and the starboard wingtip hit the ground causing a cartwheel.
8	Astir	2293	M	29.10.83 13.34	Dallachy	41	N	650	Pilot misjudged approach due to presence of rotor downdraught and curl-over from trees. Broke through the trees 3ft from their tops then landed. Minor damage to gel coat and port wing.
9	K-13	1436	M	30.10.83	Burn A/F	24	N	655	Canopy blew open on winch launch. It had not been fully locked during cockpit checks.
10				6.11.83 11.15	Dallachy				Winch cable broke 150yds from the parachute. By this time the glider was at 2000ft. The parachute deployed and drifted in the strong wind down onto 11kV powerlines. Resulting sparks caused minor fire in forest plantation.
11	K-6	2478	M	15.15	Eggborough Power Station	17	N	33	Radio not secured properly. Negative g caused it to crack canopy.
12	Bocian	2904	M	5.11.83 14.30	Husbands Bosworth	34 20	N N	680 N/K	After a normal approach and just before touchdown the wheel struck a large lump of rubble (believed to have fallen off a farm trailer) which bounced up and made a hole in the fuselage.
13	Astir CS	2184	M	16.9.83 17.00	Nr. Talgarth	28	N	264	After flying through rain the pilot flew away from the site onto unsuitable rising ground and landed wheel up. An earlier radio call said the undercarriage had collapsed.
14	Grob G109	G-BJZX	M	9.9.83 P.M.	Enstone	41 45	N N	2700 150	After landing the motor glider weathercocked into wind, ran off the runway into soft ground and tipped onto its nose breaking the propeller.

## BGA MAIL ORDER

In the dark about gliding facts and figures? The best way to throw some light on your problem is to look in the **BRITISH SOARING YEARBOOK**. Get the new edition of the official B.G.A. publication and you'll find all the answers. Don't stay in the gloom — order a copy of the **BRITISH SOARING YEARBOOK** now for £2.75 including postage and packing.



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15	K-13	1436	M	11.12.83 14.00	Burn A/F	31	N	270	Two instructors on a 'mutual' flight decided to make a long fast run back into the airfield to land. The glider was observed diving within 15ft of the surface of a field and then pulled up carrying away a set of 11kV powercables as it climbed. The cables smashed the canopy breaking both cables with one starboard wing. A 'normal' landing followed.
16	K-7	2306	S	18.12.83 15.45	Upper Dicker E. Sussex	45 27	11 11	350 10	Field selected at 800ft in 30kt wind and turbulent conditions downwind of hills. P1 elected to land over electricity cable crossing field and sideslipped on approach. After crossing cable glider dropped from about 30ft striking ground yawed. Approach was into lee of wood alongside field.
17	Bocian	1437	N	4.12.83 15.05	Husbands Bosworth	38 26	N N	300 1	After recovering from full spin demonstration stbd rudder ceased to function — cable found broken on inspection.
18	K-6er	2658	M	30.12.83 16.00	Ringmer	51	N	11	Pilot landed on rough part of site usually avoided and hit canopy with his head cracking canopy.
19	Pirat	1740	W/O	2.1.84 11.45	Sutton Bank	24	N	5	Change in wind direction on ridge caused reduced lift and severe turbulence which proved too much for the pilot. He stalled, went into incipient spin and crashed.
20	Pirat	1967	M	8.1.84 13.50	Snitters	36	N	82	Pilot caught above cloud while wave soaring. Flew at 42kt into 50/60kt wind. Descended through 1800ft of cloud and came out at a location 40 miles downwind of his estimated position. On approach to land he found heavy sink, curlover and wind gradient which forced him into an undershoot situation. His canopy hit and brought down a set of power cables he was trying to fly under.
21	ASW-15	1582	M	28.12.83 12.30	Dunstable	35	N	78	A strong wind gradient and a late decision to release from a winch launch resulted in a nose down approach breaking the canopy, rudder and underside of the nose.
22	Pik 200	2314	N	7.12.83 11.15	Ringmer	28	N	85	Pilot unable to achieve normal climbing attitude of winch launch. Released at 200ft over winch and turned 180° noticing that back-pressure on stick failed to tighten turn. After normal landing downwind discovered elevator not connected. Pilot says he was distracted during pre-flight inspection.
23	K-8	2839	S	11.1.84 13.00	Aston Down	—	—	—	Glider parked with four tyres on upwind wingtip and tyres beneath nose and behind tail. Wind strength increased and despite attempts to hold tail down glider weathercocked and became airborne before falling heavily to ground.
24	K-13	2845	S	28.1.84 16.45	Nr. Milfield	17	N	10½	Following a local wave flight a successful return to the airfield was abandoned when rotor and severe turbulence were encountered at low altitude. A straight in approach to a field was attempted but undershoot developed. Pilot closed brakes but touched down one field short. In trying to clear the rapidly approaching fence the aircraft rode up a 3ft deep snow bank catching the top wire. The port wing was removed by a fence post. The landing was downwind.
25	K-7	1664	W/O	29.1.84 13.29	Farnborough	20	M	1	After autotow early solo pilot circled in weak lift drifting downwind over residential area. Attempted to return to airfield stopping several times to circle. Failed to reach open ground and tried to land in cul-de-sac. Wing struck a tree and glider came to rest on house.
26	K-13	—	—	27.12.83 10.15	Kirton Lindsey	—	—	—	First launch of day with strong wind. Weak link broke at 1500ft and cable broke at winch at the same time. Parachute with cable drifted downwind and cable fell across power line, cutting off power to local area. Glider flight uneventful.
27	K-6CR	2003	S	5.2.84 14.45	Dallachy	37	N	45	Full airbrake approach in turbulent air with large wind gradient was normal until about 50ft when high rate of descent developed. Airbrakes remained fully open and aircraft hit boundary fence with tailplane part of which broke off. The aircraft then bounced to about 20-30ft and — without elevator control — descended again heavily on the main wheel.
28	K-8	2521	M	29.1.84 13.45	Aston Down	30	N	58	After satisfactory final turn glider sank rapidly on approach in gusty conditions. With poor visibility into sun through wet canopy, pilot decided he would not clear downwind boundary. Flew glider onto ground in undershoot field and put upwing wing down. Glider cartwheeled.
29	Astir	2772	M	15.1.84 15.00	Saltby	52	N	146	Just after take-off winch parachute blew over canopy. Pilot released but made heavy landing breaking undercarriage casting.
30	IS-26M2A	G-Brom	M	30.1.84 12.30	Manston P2	28 ?	N N	310 ?	During take-off roll aircraft swung violently into wind despite application of full downwind (right) rudder. Examination showed left brake cable retaining bracket had deformed and left brake pushrod had locked over centre with brake on. Rivet in pedal assembly also failed.
31	Blanik	1973	W/O	8.3.84 12.40	Manston	43	S	2	Early solo pilot on winch launch in 15kt + wind left ground immediately climbing very steeply. Cable released at about 75ft with glider remaining in climbing attitude for few seconds until nose dropped and glider dived to the ground.
32	K-18	2261		12.2.84 12.40	Tibenham	77	N	422	At start of aerotow launch wingtip dropped to ground and remained there during ground run. Immediately after becoming airborne (still with wing on ground), pilot released but glider groundlooped into an adjoining field.
33	K-18	2791	M	3.3.84 N/K	Thorncliffe Staffs	57	N	28	After drifting too far downwind pilot attempted to get back to the launch point but made a late decision to land out. Poorly organised circuit resulted in downwind landing and collision with a barbed wire fence midway into the field.
34	Cirrus	1870	S	29.1.84 15.20	North Weald	42	N	76	Pilot attempted to land short of launch point in area restricted by other gliders which had landed previously. Tailplane struck downwind boundary fence during low slow approach.

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

June/July 1984

'phone numbers — I nearly said everything was there, but no doubt somebody will think of something that ought to be in but isn't yet. Why not a few notes on how to swing a compass, recharge a battery, test a vario, centre in thermals, reverse a trailer, etc, etc? Maybe they'll produce an idiot's Yearbook for people like me in 1986. But this one will do nicely for the moment.

MICHAEL BIRD

**After All** by Gren Seibels. Available from the Soaring Society of America, PO Box 66071, Los Angeles, CA 90066, USA at US \$15.00 plus £2.50 for overseas postage.

The author of this book of essays had flying experience in the late 1930s and early 1940s, and acquired some 150hrs in light planes before "the time the Navy got around to me, in the midst of World War II." He piloted all types of US Naval power planes, and became an instructor. Then came a blank period of nearly twenty years until in 1969 he acquired a Libelle.

Many of the essays describe in poetic language the glories of soaring, mainly in competitions, until about eight years later, after about 1000hrs of gliding he ordered an ASW-20 from Schleichers. He was based mainly in Chester, South Carolina, but was at Marfa, Texas, for the 1969 National Soaring Championships. Resulting from those and other memories he wrote his first book **Pilot's Choice**, and six years later **A Gaggle of One**.

He is a subscriber to this magazine, and claims to be an admirer of Platypus. This said, the volume is not only a series of yarns about flying but also good value for those who like flying books.

GODFREY HARWOOD

**Flying for Fun — An Affair with an Aeroplane** by Jack Parham, available from J. G. Parham of Batts Farm, Nr Brewham, Bruton, Somerset at £2.50 plus 40p for p&p.

This splendid little book, worth all of its minimal cost, describes how Jack Parham, an Artillery Officer who learned to fly on autogiros in the thirties before converting onto fixed-wing aircraft, bought a 1700cc single-seater Aeronca C2 monoplane which he used as a runabout for ten months until the engine failed. The descriptions of his early flights, his landings into small fields when visiting relations and the joys of pattering along slowly at low altitude over southern England make this book worthy of a place alongside Urmston and Penrose on the bookshelves of those who love flying. And, from time to time, he gently emphasises some point of good air-manship.

As well as installing his own simple vario-meter, Parham converted the Aeronca after its engine failure into a glider (he thought it would be fun to slope soar) by building on a longer nose around a second cockpit in front of the original. After some low bungy hops and a glide from the top to the bottom of a local hill, he launched into a strong breeze and slope soared for 63 minutes, a feat that gave him the greatest satisfaction. The war was getting closer and Parham busier, so he gave G-ABHE to the Dorset Gliding Club. Does anyone remember her? It would be nice to know more.

JOHN DEAKIN



# Your Letters



## KEEP RECORDS SEPARATE

Dear Editor,

I have long been awaiting Trish Watson's article on Female Glider Pilots. ("What do women think about themselves and gliding," last issue, p62), knowing that I would write a reply — if only for the fact that having been an FGP for eleven years, I didn't receive a questionnaire! Well, Trish, very brave of you to put pen to paper, but your article is really about what you think about females and gliding. Questionnaires are always subject to personal interpretation and 72 is hardly a representative sample.

The main reason for writing is to put my view that the minority group's records really are worth keeping separate. The amount of effort involved in getting to the airfield and with two children, plus gear for a weekend, involves me in preparation the night before and in getting up an hour earlier than the rest of the family so that we can be on the road by a reasonable hour. (My husband is slowly being educated.) If I then manage to be lucky enough to choose the right day (usually a fight between me and him!), and if I then manage to select the right task and achieve my goal, I not only want my full name in the badge list but if I also achieve a record then I want my name up in lights too! The actual effort involved in a female achieving anything in gliding is at least ten times greater than men. We have years' of hardened attitudes and obstacles to overcome first. Leave the minority group records alone!

Please don't change the California in England trophy — the thought of hundreds of glider pilots changing their tasks in mid air spells disaster and blocked radio waves to me. Many FGP's problems start at the pre-solo stage when, because everyone thinks she won't get further than Silver, certain basic instructional points are omitted (by accident or design), i.e. use of radio, and cross-country techniques. Women on the radio really let us down — I here record for posterity a conversation I overheard.

FGP — Final glide — I think.  
Pause

FGP — I don't think I'm going to make it.  
Pause

FGP — I REALLY don't think I'm going to make it.

Laconic Male Voice — If you shut your mouth, there'd be a lot less drag!!

Total silence.

I was glad to see that Trish pointed out finance as the main limiting factor in anyone's gliding; but she doesn't suggest any way we can solve this. Also, how about some tips on the practical aspects of gliding and parenthood. If anyone is interested, I'll be glad to let you know how I manage gliding and: pre-menstrual tension, bladder control, motherhood, pregnancy, breastfeeding and mar-

riage! I am also attempting a personal career restructuring programme so that I can care for my children at home whilst also earning enough money to glide and to have long holidays for the same reason. On the child management side, I would like to thank all the glider pilots who have hugged a kid or rocked a pram on my behalf. I think you're all great, and I'll do the same for you any day.

Finally, Trish, take off your pink frilly blinkers — fancy talking about *driving* in the same paragraph as gliding! And your pseudo-medical jargon needs a lot more explaining — *men* have hormone imbalances too you know! In fact, the symptoms you describe for pre-menstrual tension are equally attributable to a low blood sugar level, something which all glider pilots can be subject to. As for in-flight peeing — sitting in wet knickers is a definite flight safety hazard for long periods at altitude, as the body will chill and backsides are quite a large area!!

It is a shame you only highlighted our differences instead of pointing out the similarities. Stop thinking like a woman — **think like a glider pilot!**

JACKIE HYMERS, Swindon, Wilts.

## "NO SEX PLEASE — WE ARE WOMEN!"

Dear Editor,

Trish Watson's learned dissertation on matters anatomical has very little bearing on the facts (with apologies to A. P. Herbert and Dr Marie Stopes). Girls are different and as the French would say "*Vive la difference*". Maybe they should read the advert on p98 and Platypus in the May issue.

Anne Burns, the only female former British National Gliding Champion, when beaten in the South African Championships by a former gent now lady pilot thought it terribly unfair to her sex. Maybe she even called him/her a BOUNDARY!

Really girls, do get your act together. As the BGA Council member who organised the California in England trophy for you girls — I'll give you a handicap. The owners of that holiday complex in Berkshire wanted some publicity for their nudist camp. Girls — fly naked!

Castration for men and now neutered women. And to think that in the '50s the wife of a very very illustrious glider pilot made us stick paper fig leaves on the Grecian statues in Londonderry House before the BGA Ball.

What is our sport coming to?

WALTER KAHN, Lasham.

## MORE ABOUT THAT LEVY

Dear Editor,

I learned at the recent area meeting with BGA officials that opposition to That Levy is widespread, so we are not alone in our little corner. Support for the World Championships' team has declined for several years, in fact, before 1981 with the donations of about £1280. From 1956 for St Yan up to 1974 for Australia, donations were close to £10 000 with a peak of £20 000 in 1970 for Marfa, converted into 1981 pounds.

J. D. Benoist has taken up my proposal to put a levy on competition entries (see last issue, p82). I hope he can persuade the other

members of the Competitions Committee to adopt it also. Meanwhile, I think it is absolutely essential to determine what the membership at large really wants to do. This will not be done by relying on the actions of a handful of representatives holding block votes at an EGM with no possibility of knowing what those members feel, this being the means by which That Levy was introduced.

It looks as if the identifiable levy may disappear into general funds, to be transferred as needed to the team funds. I think the 95% of us who do not fly in competitions, or certainly the large numbers of members who couldn't care less about them, ought to have more say in this matter. One can sympathise both with the club which still refuses to pay up and with the BGA who have to find the money somehow.

Please can we have an inquiry to sort this out?

JOHN GIBSON, Lytham St Annes, Lancs.

## HELP AT MANAGEMENT LEVEL

Dear Editor,

Not only as a native of Cheshire do I take great exception to John Holland's tirade in the February issue, p19, but as a much over-worked committee member of a club which by his standards must be called highly inefficient — our flights at the end of the day are only three minutes.

It isn't clear from his article whether the well organised club he refers to is his present one, but the last time I was there it was true there were only a few people standing about. In fact there was only one and he was waiting for the duty instructor to turn up. It would of course have been infinitely more efficient if nobody was there.

So what is this efficiency he is talking about? If he can define it then perhaps something can be done about it by the hard-working committees who, with little help from the BGA, try and run clubs for members who often fight shy of getting involved with something which might mean giving rather than receiving.

The management of clubs can certainly be improved but not by inciting members to demand facilities and equipment for which they are not prepared to pay. I would suggest that rather than trying to start some dubious campaign John Holland should try and give help and advice where it is needed — at management level.

The BGA does a grand job of instructor training leading to a good standard of training in the clubs and perhaps it is this side that leads to the vast list of annual statistics (February issue, p22). But they are totally useless in trying to assess a club's efficiency, especially now that flying days have been dropped. To make any sense of them you have to know the basic type of operation and local conditions.

The following statistics would be very much more interesting and useful: solo pilots trained in the year; No. of solo pilots; No. of *ab-initios*; turnover in both groups; No. of professional staff; size of main committee; No. of sub committees; professional services used; launch charges; cost of flying club aircraft; depreciation of equipment and activities outside club flying such as holiday courses and air experience evenings.



In short the BGA leaves each club to struggle by itself without attempting to make available the vast amount of experience gained the hard way in the movement as a whole.

If John Holland really thinks gliding is about flying he should chuck it and take up power flying. He will of course have to pay for the efficiency.

PETER GRESHAM, Crowborough, Sussex.

## IN PRAISE OF 12 METRES

Dear Editor,

Paul Williams makes many excellent points in his article in the last issue, p68, about gliding problems. We now have to choose from a set of cloned gliders optimised for tasks many pilots will never acquire the skill to manage because of insufficient flying (average hours/member is less than 20/annum), insufficient money to purchase a new glider, or simply being perfectly content to enjoy flying for its own sake and having no desire to dash off all over the place. Not for them the attitude "Not worth rigging, it doesn't look like a 300 day". Such gliders are not good value for money, as many clubs such as Cotswolds and Blackpool have determined in their policy for single-seaters.

These gliders now cost twice as much in salary terms as they did in 1960. It is no consolation to be told that gliders would cost even more if they were still built by 1960s methods if you can afford them even less. Our middle-aged salaries are even further off buying the top performance gliders than that. Technology has brought great advances in performance but not to everyone's advantage in this case.

Technology however does now permit the design of a 12m glider which can both cruise at 80kt with 6kt thermals and find more of the elusive blighters by circling at 35kt. It can have an extremely wide and tolerant performance range, with a stall at less than 30kt, close to Min sink of better than 145ft/min between 32 and 42kt, best L/D of 30:1 at 49kt, and so be exceptionally easy for the low time pilot to cope with while also having a very respectable cross-country capability.

Part of this equation has already been demonstrated by the BG-135 which began as the 12m Gipsy project in 1965. This was to have been built in appropriate technology, that is ply skins on a foam core, light alloy spars and GRP for the curvy bits, with an empty weight of 350lb. When Slingsby's passed up the chance of taking it on as the Swallow replacement it had to be redesigned in all-metal for its manufacturer. The weight grew under the pressure for a quick job and it ended up at 400lb empty and 13.5m span. David Ince showed its mettle by being placed well in competitions and won a race at about 80km/h, achieving speeds on other occasions close to the contemporary triangle records held by SHK, Dart etc. One BG-135 flew 1200km in one task week.

We have part-owned the only 13.5m SD3, a cleaner but much heavier BG-135, for nine years. Although rather far from the original concept of Pat Moore and ourselves, its small-size convenience, excellent handling and useful performance have fully proved the viability of the small glider. In our case, however, we have concluded that the glider we want for our old age will have over 40:1 glide

# 50 YEARS AGO

The last issues of pre-war S&G to be published under the ownership of the BGA were those of June and July 1934. The final issue of the "great quarrel" was still in doubt, and "we", the genuine soaring enthusiasts, wanted to make sure that whatever might happen to the BGA, "we" at least would still have the magazine. As the only alternative was bankruptcy, the "other" side had to give in.

The new owner was H. O. Davies, a friend of Dudley Hiscox of the London GC, and owner of an advertising agency in Victoria Street, London, who was apparently prepared to lose money on it but enjoyed showing it to his business associates as "one of the interesting little sidelines our firm does." He added a colour cover, but ordered such large print that the number of words available for articles was cut down by about 40 per cent; however, the Club News remained as before. Eventually, when the subsidy had got into the

at 46kt, 1kt sink or less at 35kt, and a stall at less than 30kt. It will need a 60ft span to do this but will be built using the same appropriate technology we devised 19 years ago. Anyone who thinks glass and carbon are the only materials for such performance has been brainwashed. There have been two 40:1 wooden gliders in the past, achieved by careful attention to finishing. The 25 year-old Fauvettes show even now the quality of profile that is needed, with their ply and foam sandwich skins.

We believe that both these types, the 12m "New Olympia" and the 18m "New Skylark", would suit many pilots and clubs far better than the current types. The problem is to get them built at a cost which is not nonsensical, and could well need a combination of kit and homebuilding. It is hard to imagine any of the current manufacturers taking such an original step while there are plenty of customers for their products.

KEITH EMSLIE and JOHN GIBSON,  
Lytham St Annes, Lancs.

## WORLD CHAMPIONSHIPS FUND

Dear Editor,

News yesterday of the first swallows. Soaring again soon for gliding folk, no doubt. How quickly the time has gone since last season, particularly for those of us in our near dotage, and how quickly time will pass and the World Championships will be with us again.

Not a very bright winter between the Swallows departing and returning, but I did get a bit of ridge flying and quite a few free flights taking up passengers. I also saved quite a bit because the weather prevented flying and the expense of aerotows, in recognition of which economies herewith a contribution to the World Championships fund. Not much, but as the old lady said ...

PHAETON

*(The World Championships fund for Rieti 1985 is now open and all donations will be welcome, payable to the BGA World Championships Fund and sent to Barry Rolfe at the BGA office.)*

A. E. SLATER

"right" hands, the magazine was enlarged by 50 per cent.

As to the subsidy, Gordon England, who had advised the Ministry of Civil Aviation against it, made strenuous efforts to obtain it all for his favourite dream of a "National Gliding School" and circulated an immense document listing all the BGA had ever done and, almost at the end of the last page, actually proposed that gliding clubs should be paid a sum of taxpayers' money for each member they sent to the school instead of training him: as this bit came near the end, most people, including myself, never noticed it. The Ministry were quite impressed with this document until "we" disabused them; it had collected quite a lot of signatures from people who could not have reached the last page.

All this may seem rather tedious; as Philip Wills said at the time: "We only want to get on with our flying, but we must have people at headquarters whom we can trust."

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# Club News



Copy and photographs for the August-September 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 June 5 and for the October/November issue to arrive not later than August 7.

April 7, 1984

GILLIAN BRYCE-SMITH

## AVON SOARING CENTRE (Bidford-on-Avon)

The March expedition to Aboyne with the Janus was a success with the best flight being 2700ft, which is only slightly higher than the wave we experience at Bidford!

We are running various courses this year from beginners through to advance training in the Janus. Once again we appear to be a popular venue for club expeditions and look forward to entertaining our many visitors throughout the year.

We are now able to offer mid-week launches on those special days.

D.S.

## BRISTOL & GLOUCESTERSHIRE (Nympsfield)

The first good thermal day of the season was on March 3 when several flights of over four hours were logged. One of the longest was by Tom Bradbury, the Met man, who always seems to bring good weather when he turns up to fly the Libelle.

This was also the day of the annual dinner-dance, which was well attended. Trophies were presented to Paul Little, Derek Thomas, Lance Peters, Phil Andrews, James Metcalfe, and Sandy Rham for flying achievements, to John Hamblin as the most promising *ab-initio*

and to Paul Little as the most deserving instructor.

At the AGM James Metcalfe took over from Owen Harris, who has resigned after five years of dedicated service as chairman, and a good many more in other posts. Four new members were elected onto the committee.

J.R.B.

## CAMBRIDGE UNIVERSITY (Cambridge and Duxford)

Richard Walker (Kestrel 19) flew more than 450km on April 3. The same week Steve Longland completed two smaller cross-countries in the club K-6 and Paul O'Donald gained a Bronze leg.

The new K-13 was collected from Germany, giving us four club two-seaters although the K-7 is for sale.

The annual dinner was at Jesus College with the trophies awarded to Penny Minnitt, Richard Baker, Peter O'Donald, Thomas Edwards, Steve Longland and Richard Walker.

A.N.

## COTSWOLD (Aston Down)

We have increased our airfield by 80% to the north, buying the plot previously owned by the Polo Club (see David Roberts' article in the August issue, 1983, p160). We managed to persuade the Polo Club that nearby land was more suitable for their purposes and then exercised our option to buy the plot. This now gives us the full length of the runway plus a landing area.

D.G.R.

## DEESIDE (Aboyne Airfield)

Early spring brought some interesting thermal flying, with March 17 especially good. Gliders were still soaring after 1800hrs GMT (this was before the clock change) even though it had become bitterly cold by then, several degrees down from the afternoon maximum. The lift seemed to be confined to the valley, and the pundits' consensus was that katabatic drainage down the hillsides forced the valley air upwards. Eagles have been seen soaring in Highland glens in similar circumstances.

On a wave day earlier in the month, Iain Donnelly faced an interesting dilemma. From a mere 1200ft launch, he was well placed, but as the lift weakened at 14 000ft he asked "Do I go for Silver distance or try Diamond height?" The unanimous advice: "Go for distance. You can do the Diamond anytime". The 1% rule beaten, he reached his destination 20 minutes

later at 11 000ft asl. That's Aboyne for you! (See p117).

K.A.H.

## DORSET (Old Sarum)

Unfortunately we had to vacate our hangar on March 31 and now have to picket our Austers down outside. We are hoping to get some temporary cover and would like to buy a plot of land for a permanent hangar.

Our thanks to the Edgely Aircraft Co for the use of a good building as a clubhouse.

Congratulations to Colin Maller and Dennis Watt on going solo, Dennis making it a few months ago. Our annual dinner-dance in April was well attended and our thanks to the organiser, Phil Moreland.

C.A.W.

## EAST SUSSEX (Ringmer)

Our successful open day for the local press, TV and radio on March 21 gave a favourable impression of gliding which resulted in some nice articles about our club and brought in many inquiries. Our thanks to Nikki Campbell, the new BGA public relations officer, who gave lots of valuable and practical advice.

Our holiday courses run from April to September, ranging in price from £70 to £120 depending on the time of year. If interested ring Ian Smith on 0323 843460.

Visitors are always welcome to our 75 acre site where we winch and aerotow. Come and soar our summer sea breezes!

D.C.

## ENSTONE EAGLES (Enstone Airfield)

February and March have been quiet with most of the flying on Sundays. Steve Nash, deputy CFI, has kept a watchful eye on the increasing number of pilots who hibernate for the winter.

Frantic fettling has been going on. Martyn's new LS-4 is now flying and Tony Cox has a magnificent one-man ground handling rig for his Foka 5.

We have space for about six beginners and are well equipped to teach to solo standard and beyond. Our fees are modest and a friendly welcome awaits anyone willing to turn up at the weekends and "muck-in."

G.D.

## ESSEX & SUFFOLK (Whatfield)

Peter Wilby, CFI, reviewing the past eventful year at the AGM, spoke of two new club gliders, new extended planning permission, new agreement for flying in Wattisham MATZ and three wave days in East Anglia. It was proposed to use the K-21 for specialist training in soaring, cross-country, aerobatic and racing techniques. With all the committee remaining in office, they look forward to buying a site. John Gilbert, treasurer, in recommending increased fees, was still able to boast of "the lowest flying charges in the country."

Awards were made to Sylvia Wilby and Liz Gilbert for outstanding work with the Jeff Cork memorial trophy (longest handicapped flight) and the Ladder trophy going to Martin Langford; the 200km President's cup to Eric Richards; the 100km trophy to Peter Smart; the Tiny Triangle trophy to David Gilder and the Members' cup to Bob Adams.

Congratulations to our president, Eric



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Richards, on claiming the first 1984 badge, his Diamond distance flown in Australia, making him our first member to have gained All Three Diamonds.

R.C.A.

#### **HAMBLETONS (RAF Dishforth)**

We have been sampling thermals since mid-February. Congratulations to Neil Armstrong on going solo.

At the AGM trophies went to Roger Burghall (best cross-country) and Roger Mann (best *ab-initio*). Thanks to Mandy Edis and Jackie Shambrook for providing the food, as they have done throughout the winter — very welcome after a cold day's flying.

J.P.

#### **HEREFORD (Shobdon Airfield)**

Our congratulations to Mike Costin on winning the De Havilland trophy for his flight to 33 100ft asl on December 31. It is a particularly fitting award as Mike was at the De Havilland Aeronautical School from 1946/55.

The flight started at 1000hrs from a 2000ft release 1½ miles upwind of Shobdon. This secondary wave was good to 9500ft with an average rate of climb of 640ft/min. Further westward and into the primary gave 20 000ft over Radnor forest, then south to Madley to 30 000ft and finally over Shobdon with a 30 800ft gain of height. With the outside air temperature at -48°C and with the worry of the frozen state of the oxygen rebreather bag, Mike landed after a magnificent three hour flight.

P.W.

#### **KENT (Challock)**

Members enjoyed an excellent meal prepared by our kitchen staff for our start of season dinner-dance.

Congratulations to Ron Meyers and Geoff Johnson on going solo; to Vic Allison, Geoff Heord and Don Puttock on completing their Bronze Cs; to Adrian Wild on his duration and to Don Puttock on gaining Silver height.

Members from other clubs are welcome to take part in our task week from August 4-12. We recently hosted and won the Inter-Club Quiz, competing against Ringmer and Parham.

J.B.

#### **KENT MOTOR GLIDING & SOARING CENTRE (Manston)**

Spring proved difficult with bad visibility and strong winds. Some members went to the Long Mynd to explore wave and Dave Wood, working for a PPL SLMG, has gone solo in the Brasov motor glider.

We have moved to a new site at Manston Airfield and have our own area at the side of the gliding field where we hope to put down permanent roots having applied for a lease to erect a clubhouse later this year.

E.S.

#### **LAKES (Walney Airfield)**

Chris Dobson has flown his syndicate Blanik solo to take him to the top of the club ladder. A second Astir CS has appeared in which syndicate member Rod Murfitt flew his 5hrs on the south ridge of Black Combe, some ten miles downwind of the site.

April 1 was no fool with east winds, thermals

and soaring for all. Gerry Shepherd gained a Bronze leg with an hour in the Capstan, Ray Jackson completed a dog leg of over 300km in thermals and wave and Peter Redshaw a 300km cat's cradle.

A few places are left on our summer courses so apply immediately.

E.K.

*(We are sad to learn that Eric Kendall "E.K." is fighting Hodgkin's Disease and wish him a speedy recovery. Ed.)*

#### **LONDON (Dunstable)**

We say goodbye to Russell Gamill, last year's hard-worked professional tug pilot, and welcome in his place Duncan MacPherson. Our thanks to both.

We are setting up more organised cross-country arrangements thanks to the enthusiasm of Steve Lynn and Warren Kay. There is a permanent "retrieve syndicate" in the persons of Dilys and Clive Bird, so no-one has an excuse not to have a go!

Earlier, jollity prevailed at the club's annual dinner, at which an innovation was musical entertainment provided by D.S.

German red tape has delayed the arrival of our new K-23s until later in the year; we will keep prospective buyers posted.

D.S.

#### **MENDIP (Weston-Super-Mare)**

Well done Terry Hooper and Ivor Caine for completing their Bronze legs. We warmly welcome our influx of new members, some joining when only the K-4 was in use which is proof that our publicity drive is having results.

Chris Crabb started the cross-country season by flying the Dart 15 to Trowbridge.

H.P.

#### **MIDLAND (Long Mynd)**

Calling all Mynd lovers! For our Golden Jubilee we are celebrating the 50th anniversary of the first flight on the Mynd on August 11 when we aim to have a dawn-to-dusk flying day with a barbecue in the evening. Everyone is welcome, particularly our former members — arrive by road or air. A bottle of champagne will be presented to the person flying the longest distance to get here. Our Jubilee dinner will be in October when again all former members will be welcome. (Details next issue.)

Congratulations to Rod Monument and Norman Brown on first solos. We have started the year as we hope to go on with some thermal soaring and cross-country flying before the end of March, as well as a sprinkling of good wave and ridge days.

The improvement of the bunkhouses by better insulation is nearly complete. Together with some work on the interior, it promises to raise the level of comfort considerably.

We enjoyed hearing Derek Piggott as the guest speaker at our annual dinner in March. The next day he gave us a much appreciated lecture on thermal soaring, followed by a fascinating film on the building and flying of the Cayley replica.

Trophies were presented at the dinner to John Stuart, Adrian Ridley, Peter Taylor, John Hocking, Jeff Rowson, Chris Alldis, Rob Rayner and Tony Spicer. Steve and Pam Allsop received the Maxam trophy for contribu-

tion to the club and David Bailey's parents were present to receive the Pat Moore trophy (for the first cross-country of the year), which David won before his tragic death last spring. D.M.K.

#### **Obituary — John Green**

It was a great shock in March when John Green died on the airfield after a two-seater flight. John had been a member for several years and owned a share in a Skylark 3.

He was a delightful person to know and as a staunch supporter of club activities he will be sadly missed. Our sympathy goes to his wife Pat and their two little girls.

Diana King

#### **NENE VALLEY (RAF Upwood)**

This soon in the season we are reaching a point where we are having to discourage members. The fleet now consists of a K-7, the rebuilt K-2 (nice one John), the loaned K-2a and the syndicate K-6 and T-21.

The excellent winter/spring weather has allowed us to clear the bank debts over the imported K-7 and prepare for the insurance demands.

Dave Jordan is preparing a series of Bronze C lectures; David Hubbard has resolved after a gap of 14yrs and we have started group flying on Saturday mornings with Scouts, schoolchildren and the ATC to encourage the younger members of the community.

We donated a day's gliding to the local Rotary Club's charity auction which resulted in some useful publicity. Although reorganisation means we can now fit five gliders into our hangar, we do need additional space and are hoping for a Sports Council or District Council grant. We are also hoping to get some aerotow experience in this summer.

D.H.

#### **OXFORD (Weston on the Green)**

Despite the rather inclement weather we have had a very enjoyable few months. John Hanlon, Carol Morgan, Stephen Newett and Ian Young have gone solo; Tony Boyce and Chris Putt now have an ASW-19 and we have a new-look newsletter. Our thanks to Yvonne Parker for co-ordinating such a professional and informative publication.

We had a series of well attended Saturday evening lectures in the clubhouse: "Flying 300km" by Richard Hall and Phil Hawkins, "Field Selection" by Richard Hall and "Aerobatics Theory" by Martin Nickolls.

P.W.

#### **ROYAL AIRCRAFT ESTABLISHMENT (Farnborough)**

No doubt many of you saw our national publicity after Andy Chadwick "dropped in" on a house short of the airfield. He was unhurt — apart from his ego — but the K-7 was less fortunate. The Miller family, occupants of the house, took up our offer of glider flights and seemed to enjoy themselves greatly. The K-7 has been replaced by an IS-28 which should help in advanced training.

Paul Holtom, Geoff Knott and Alex Truman have gone solo with Fergus Buchanan resolving and converting to the K-8. Arthur Pickles gained his Diamond height at Portmoak and



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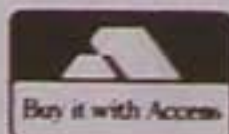
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Tony Gee his Diamond goal on April 3, flying the club's Sport Vega, after 8yrs of trying for his 300km.

C.J.F.

### SHALBOURNE SOARING GROUP (Nr Hungerford)

Our task week in May at Crux Gaston farm by courtesy of Geoff Nichols, will give us the chance to aerotow.

Our series of winter lecture evenings have been highly successful and we thank all concerned.

Congratulations to Nigel Kent and Jonathan Mills on gaining Bronze legs and to Terry Baker who flew 5hrs on our ridge.

A spate of members are entering competitions, three already with two more to follow.

J.S.

### SOUTHDOWN (Parham Airfield)

Congratulations to Bruce Barber and Bob Woodhead on going solo and to Peter Howe on his 5hrs landing just before dusk.

The recent northerlies have given lots of good ridge flying with some fast runs between Lewes and Butser Hill. Since then a Harry Harting trophy has been proposed for the fastest time from Mount Harry to Harting Hill.

A sudden change of wind on March 4 gave good wave lift to 3000ft just to the west of our site and some excellent thermal days have given us a good variety of conditions early in the year.

A new bi-monthly newsletter edited by Mike Wallace is proving very entertaining and should help with club communication.

R.W.

### SOUTH WALES (Usk)

March 3 came out of the gloom bearing thermals and wave. We got everything airborne. V. Carr and J. Hooper turned in five hours apiece and I. Shattock shot off to Swansea and back on his private wave with J. Bridges.

Gwent then disappeared under the cold NE grot. The next half-way decent day had to be April 1!

P.F.

### STAFFORDSHIRE (Morridge)

In February Andrew Davis gave us an instructive and entertaining talk on flying in the World Championships which made us feel the 50p levy was well spent.

Our 21st AGM was in March. Phil Barnshaw continues as chairman with Peter Lowe as vice-chairman and John Graham continuing as treasurer. Our finances are in a reasonable state despite a slight fall in membership and a very poor cashflow during the indifferent winter.

Weak wave has given us a number of good soaring flights including a Bronze leg for Joe Sharples.

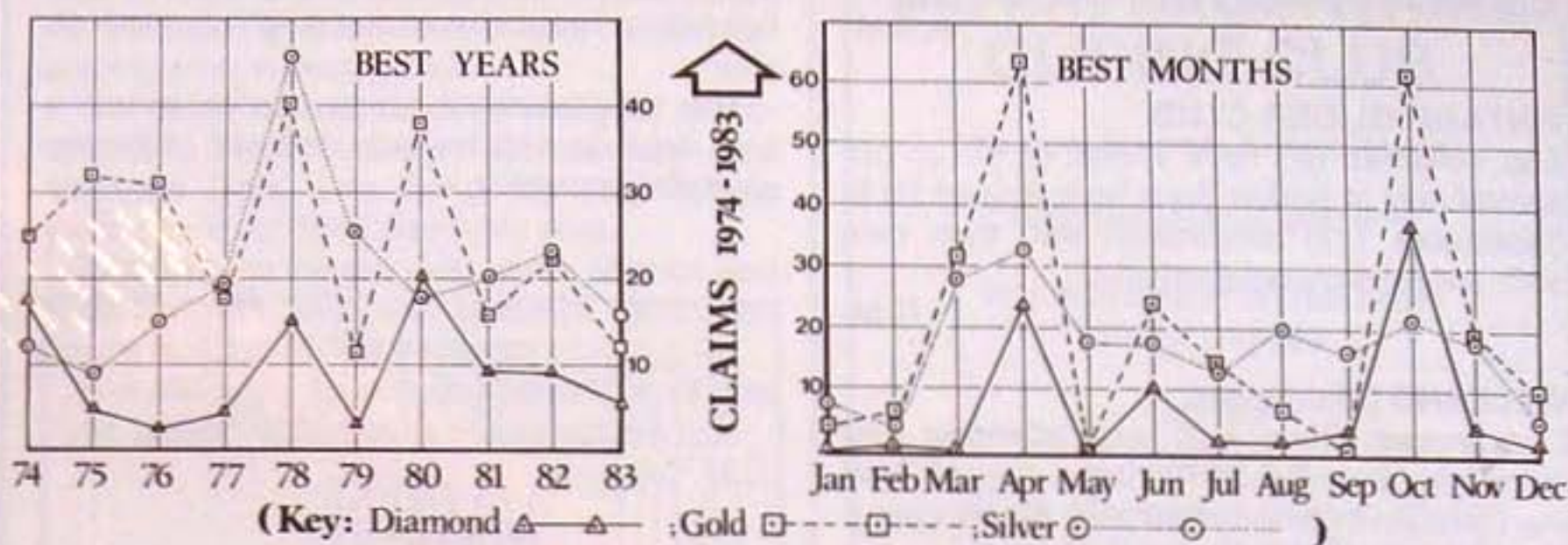
We are taking the BGA's public relations drive seriously and have the Lord Mayor of Stoke-on-Trent coming to our open day on June 8; a display for the local Sports Council field day and a two-day youth camp in July in conjunction with Project South Cannock.

B.G.

### STRATHCLYDE (Strathaven)

The cheese and wine party in February with 78 members and guests was a great success and our thanks to the organisers.

## SCOTTISH GLIDING UNION (Portmoak)



Wladyslaw Rozycki of the Scottish Gliding Union has sent us these Figs to show the best years and the best months for wave flights in excess of 4000ft at Portmoak from 1974-1984. The pattern is so consistent he says it is possible to plan visits to them when it is reasonable to expect wave. But Mr Rozycki adds that the club's activities and even its very existence as one of the best wave flying sites in the country is threatened by the imposition of an airway a few miles to the west of the airfield. This, as can be seen from the chart, has had a detrimental effect upon wave flying from Portmoak. He points out that the weather alone can't be blamed for the serious reduction in the number of wave flights and claims.

The UK absolute altitude record of 36 190ft and a gain of height record of 35 025ft were achieved at Portmoak by Dave Benton (Nimbus 2) on April 18, 1980, as well as several climbs of up to 27 000ft, most of which Mr Rozycki tells us had to be abandoned because of extreme cold and icing.

Disaster struck on January 16 when gale force winds completely tore off the old hangar roof, which was later replaced by Jim Thomson and members. Fortunately there was only minor damage to the Skylark. A start has been made on the new hangar with the foundations laid and the steelwork delivered.

Wave is rare at Strathaven but on February 16 John McCusker reached 7800ft in about 17 minutes. It is thought to have originated in a SE wind over the southern uplands.

Our open day is provisionally booked for the weekend of June 23-24.

A.G.F.

### SWINDON (South Marston)

Gordon MacDonald went solo on his 16th birthday on February 11 — making the front page of the local newspaper with a large photograph of himself in the K-13. Progress to date includes conversion to the K-18 and two Bronze legs. So . . . congratulations to Gordon (and apologies to Platypus!).

At present our Astir is restricted to local soaring due to the lack of a trailer — we would be pleased to hear from anyone who has a trailer but no Astir!

Best wishes to Mike Newbold, who is off to join the RAF as a flight engineer. Bob Lock is a welcome newcomer to our hardworking team of instructors.

P.M.

### TRENT VALLEY (Kilton in Lindsey)

The first week of April was splendid for so early in the year. Mick Wood achieved 7500ft in cloud, landing with a thick coating of ice and Andy Hobbins and myself were in 9kt at 6pm.

The proposed new fleet was discussed at the AGM and how to deal with the "sunshine boys" who arrive at ten and leave at four after five hours flying. Any ideas?

The annual dinner-dance was a great suc-

cess, thanks to the organisers, Brian Griffin and his wife. The guest speaker was Richard Blackmore, who gave a witty insight into the making of his acclaimed film, and various trophies were awarded. Special mention must be made of Ruth Flint who won the Ladies' trophy. Ruth, who is over 21, has spent many hours in the open cockpit of the T-21 in fair weather, but mainly foul, and refuses to give in.

The syndicate Skylark 3 has been resprayed and re-covered, thanks to the generous assistance of Ray Bowner of the Strubby GC. Nigel Groom has acquired a Grunau Baby and Bob Lines is renovating the club fleet, currently re-covering the K-8. Our launching equipment is being modified and both winches should soon be operational.

We are hoping to have a good contingent entering the Northern Regionals.

R.H.

### ULSTER (Bellarena)

The homebuilt Monerai has been rigged on chief builder Loudon Blair's lawn, and there is a possibility it will be ready to fly at Easter. It will further increase pressure in the trailer compound, William McNair having bought a DG-202 and yet another glass-fibre glider rumoured to be on the way. The club fleet, similarly, is growing with the acquisition of the Queen's University Skylark 3F which has been on the field for some years.

We've also a new secretary, Jacqueline Gribben, while William McNair has become treasurer.

Our two summer weekday courses last year having been a great success, we're running four this year.

The year's first cross-country flight was on March 11, the Phoebus racing a gale-driven hailstorm across Co Antrim to flop into a boggy field near Ballyclare on a failed goal flight to Newtownards. Earlier, there had been



several wave ascents to 12-15 000ft and some distinctly distant local soaring flights.  
R.R.R.

#### VINTAGE GLIDER CLUB

The Yorkshire GC have invited us to run our annual rally at Sutton Bank from August 25 to September 1 in conjunction with their own 50th anniversary celebrations.

G.M.

#### WELLAND (Middleton)

Our annual dinner was well attended and thoroughly enjoyed by all. John Crosse won the Duration cup and must also be congratulated on his Bronze C.

There was a series of well attended Bronze C lectures this winter, thanks to our CFI, Horace Bryant. The new winch is nearly complete and the Bergfalke has been re-covered. Our thanks to all who worked so hard during the winter.

R.H.S.

#### WEST WALES (Templeton)

Our soaring season started with the arrival of the new K-7/13 which has yielded Bronze legs already. Our veteran K-7 has departed, hopefully to reappear soon as a mid-wing glider.

We are hoping to see a few more trials this season of our reverse pulley system if the runway can be cleared of loose material.

S.J.P.

#### WOLDS (Pocklington Airfield)

The club fleet is in good order for the season with one of our two K-7s refurbished and we have a new tractor.

We are set up for the summer with a seven day a week operation and a full programme of holiday, advanced and schools' courses on offer.

The entertainment scene has taken on a new impetus with the appointment of Bernie as social secretary.

T.H.

## SERVICE NEWS

#### BANNERDOWN (RAF Hullavington)

Several members flew at Dishforth over the Christmas/New Year period. Congratulations to Max Kirschner on Gold height and to Dave Pratt on Silver height. More recently Andy Winton has gained a Bronze leg.

At the AGM in February trophies were awarded as follows: the Den Britton trophy for outstanding achievement, "Noddy" Williams who went from solo to Silver C within a year; Best Flight trophy, Mark Desmond for 250km on his first 300km attempt on a less than easy day; the Club Member trophy, Max Kirschner for his hard work in keeping the MT running smoothly and the Navigation trophy, John Rumble. An enjoyable party followed.

Tom Eagles and Mick Webb have recently been posted, Tom now flying at Dishforth and Mick at Wittering.

V.R.D.

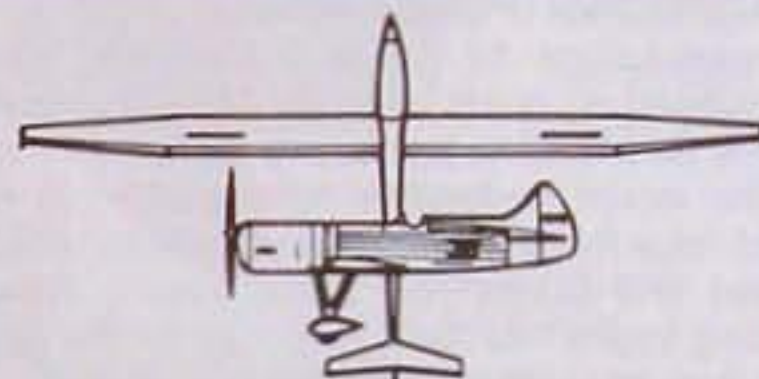
#### BICESTER (RAF GSA)

Bob Denny has been posted to Port Stanley. Solo congratulations to Diana Saundby and our American friends George Tredway, Chuck Sloan, Len Cotton and Roy Turgoose.

There is a spring expedition to Talgarth and a five week expedition to Aboyne in October. Our thanks to Ken Stephenson for all his work fitting oxygen systems to our fleet for these expeditions. The Janus has also been fitted with a nose hook and disc wheel brake.

A large thank you to the various "soup dragons" who fed us during the winter on the airfield and to Shaz Piercy's rum punch which was very welcome after a day soaring the snow showers.

S. & J.



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### FENLAND (RAF Marham)

The soaring season started with our chairman, Barry Holding, getting both Bronze legs in one day. Prior to this Andy Stenton completed his Gold C with a Gold height at Dishforth and Simon Ludlow attended a course at the French National Gliding Centre at St Auban.

We welcome "Woodstock" from Cosford and say goodbye to John Trubridge who is going to the Falklands. Also, Stu Lawrence and Paul Young are frequenting the bar at Laarbruch.

Peter Burns has handed over the running of the bar to Sam Evans after two years. Our thanks to Peter who was instrumental in building the bar.

S.L.

### HUMBER (RAF Scampton)

We had our first soaring of the year last weekend (March 30-31), despite the fact it kept snowing on us at intervals. The thermals came just in time for our successful soaring week which we hope has brought some new members.

Barry Munday has two Bronze legs and a possible Silver height, while several cross-countries have been flown and Colin Wylie also gained his second Bronze leg. The LS-4 came up from Cranwell, and many of our "pundits" savoured its delights. Our thanks to Cranwell.

We have acquired another tractor, but are still having problems with the bus winch. Work has started on a closed trailer for the K-8 to replace the one wrecked in the gales last year.

Doug Ramsey gained his Gold height at Dishforth at Christmas, and during our recent expedition to Aboyne Dick Gibbs and Bernie Shaw also gained Gold heights, Tony Smith and Bruce Davidson narrowly missing Diamond heights.

K.M.G.

### KESTREL (RAF Odiham)

We were told at the AGM that flying fees and subscriptions would remain the same as for the last two seasons, thanks to another accident-free year. The annual awards went to Dave McCarthy, Gareth Cunningham, Ian Gorton, Graham Russell, Peter Richie, Geoff Seaman, Pete Eggleton, Paul Ross-Smith and Joss Oswald. The committee was re-elected with Peter Andrews taking over as secretary from Dave Bowsher.

We have had nine new solo pilots, five of them female, since November 1. The latest batch are Angie Chance, Babs Earl, Maggie McDonald, Gillie Booth, Jed Cooper, Peter Hewstone and Andy Radforth.

Ian Booth flew a Bronze leg in snow showers on April 1 and Gareth Cunningham (Mini Nimbus) achieved Gold height to complete his Gold C at Talgarth. He has extolled Talgarth so much that the Mini Nimbus, Astir, K-21 and about three-quarters of our members have departed for Wales.

The EoN primary syndicate has obtained a supply of control and rigging cables and are threatening to fly it this year.

P.W.A.

### PHOENIX (RAF Brüggen)

Thanks to the kinder weather launches and hours are 50% up on the same period in 1983.

Our first "all glass" K-21 students, "Big Al"

Kirkly and "Woody" Woodcock, have gone solo as has Andreas Silk, almost the last pupil on the ageing Blanik, and Andy Smith, re-soloing after a long lay-off.

Our new K-21 will soon be ready for collection. Bic Smith and Lyn Norman are now assistant Cats, Lyn being the only female instructor in an RAF Germany club.

The season began with John Marriot and John Norman, both with students, getting an hour's soaring in late February.

We are sorry to see the departure of Ken Fyfe, posted to Marham on promotion.

A.F.M.D.

### PORTSMOUTH NAVAL (Lee-on-Solent)

The promise of a newer clubhouse brought a frantic movement of furniture and fittings with the lecture room and CFI's office being dismantled, only to have most of it reinstated when a change of plan delayed the move.

The fleet has been given Cs of A, our new trailer is almost complete and Paul Groves has stripped and re-covered the T-21. Our latest piece of equipment, a Massey Ferguson tractor, is proving its worth and a new winch is progressing well.

The growing number of annual awards were presented at the AGM by Patsy Dimock as follows: the Goodhart trophy for flying achievement, Ken Stephenson; the Courage cup and the Instructors' and Tug Pilots' trophy, Nigel Clark; the Humphrey Dimock trophy, Tony World and Mandy; the Peter Sharp trophy, Les Groves for his untiring efforts in keeping us airworthy and our wooden spoon, the Upper Heyford trophy, went to Clayton Rowe for having our parachutes serviced at Thruxton.

H.C.

### TWO RIVERS (RAF Laarbruch)

The season started well with three pilots gaining Bronze C badges by the end of March having soloed during the winter. The most recent crop of solos include Kelvin Henley, Ted Grolsch and our youngest pilot, Andy Collins, and new instructors are Mick Johnson and Greg Macintosh.

The winch to launch point telephone is in use, we have mains power at both ends of the launch run and our new hangar project is in the advantage planning stage.

The Twin Astir has been fully employed with cross-country training and stars in our new promotional video, and a new syndicate has been formed with the Sagitta owned by Barry Elliott and Greg Macintosh.

P.J.S.

### WYVERN (RAF Upavon)

Congratulations to Nigel Baker on going solo and to Sharon Ashcroft and Tom Muncaster on completing their Bronze Cs. Also congratulations to Pete Brennen, Dawn Bradley, Roy Gaunt, John Hawkins and Edwina Bonser who carried off the various awards at the AGM.

The beautiful K-8 has returned from its C of A with highly polished wings. Howard Jarvis and Eric Smith will be representing us at the Standard Class Nationals and Pete Cook is competing in the European Championships at Vinon.

P.A.S.

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# Overseas News



Please send news and exchange copies of journals to the Overseas Editor: A. E. Slater, 7 Highworth Avenue, Cambridge, CB4 2BQ, England.

**Reunion for Derek.** While competing in Austraglide at Benalla, Victoria, earlier this year Derek Piggott had a chance reunion with the former ATC cadet he took to 17 000ft in a T-21 more than 30 years ago to gain the British National gain of height record.

Brian Whatley, who now lives near Melbourne, recalled how they took off from Great Hucklow, Derbyshire with the expectation of doing no more than a circuit. He said his most vivid memory was the cold. When they landed at Grimsby, after contemplating crossing the channel, Brian was so frozen he had to be helped out of the cockpit.

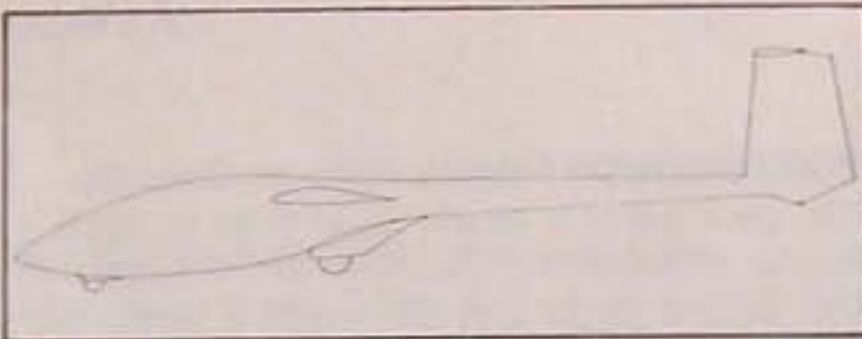


Derek flying in a K-13 with Sue Curtis of the Southern Cross Club. Photo: Terry Wahlen.

Derek came 10th in the Standard Class, flying a borrowed Std Cirrus, before going on a very successful and extensive lecture tour of Australia.

**Hire Service.** For those who want to fly in the Alps without trailing a glider all the way down through Europe, a Munich firm — Air Alpin (München-Ottobrunn) — offers a glider hire service. On offer are (fully equipped for cross-country and wave soaring): one Club Astir, two Astir CS, two Std Jantar, one DG-200, one ASW-20, one Kestrel 17, one Kestrel 19 and a Motor Janus. The firm also offers mountain gliding courses across the border in Austria at Lanzen/Turnau. Prices are said to be very reasonable; 25% of the charter price must be paid in advance to secure a firm booking, and the remainder when the glider is collected. A returnable deposit equivalent to the insurance excess is also required. Address: Air Alpin, Ludwig-Thoma Strasse 27a, 8012 Ottobrunn, W. Germany.

**Marianne.** The new French two-seater Marianne is due to fly in the summer and to enter production early in 1985. A group of students at the Ecole Supérieure de l'Aéronautique (Sup'Aero) in Toulouse, helped by Dassault engineers, have been optimising the shape of the various components using computer calculations of pressure distributions. The results have led Marc Ranjou of Centrair to make substantial changes to his design, notably to the fuselage, the new shape of which can be seen in the picture.



**Shortage of materials.** A new Standard Class Polish glider is due to appear shortly, but SZD are unable to develop other Classes of glider because of the shortage of carbon fibre and KEVLAR, which are classified as strategic materials.

**Pegasus.** The 100th Centrair Pegasus was delivered to a Swedish customer in December. The 1984 model has several new features including a boom mike, a new tailskid and new ballast bags. On the 101 fixed undercarriage version the front wheel has been dropped and replaced by a simple skid. The mainwheel has been brought forward slightly.

**The Thermalling Turn Indicator,** devised by Colin Norman, an Australian engineer, is soon to be marketed in Europe by a Swiss company (price: S Frs 1540). (See S&G, June 1983, p108). The instrument gives an audio-visual indication of which way to turn when lift is encountered. It works by comparing the amounts by which the two wings bend (sensors are attached to the main spars). Details from: FLUGIM ESTABLISHMENT, Altenbachstrasse 17, FL 9490, VADUZ, Liechtenstein.

**German Nationals.** All the World and European Champions have been invited to fly in the German Nationals. If Ingo Renner (World Open Class Champion) flies and wins, he could become German Champion since although resident in Australia for a number of years, he has retained his dual nationality.

**Fatality at Nationals.** Ian Pryde was killed during the New Zealand Nationals when his Ventus A hit the hillside. He was one of the country's leading glider pilots.

The Nationals, held at Alexandra, Central Otago from January 16-28, achieved the longest task ever set in a New Zealand contest with a 517.5km triangle for the Open/15M Class.

There were nine contest days, one of which was won by Chris Garton (ASW-17), UK, who finished in 5th position in the Open/15M Class. Justin Wills flew during the last week and is claiming the local 500km multi-seater record with a speed of 90.7km/h in a Twin Astir.



Chris Garton.

R. Lynskey won the combined Open/15 Metre Class with I. Finlayson top of the 15M pilots and P. Lyons first in the Standard Class. (Details from Ross Macintyre.)

**No startline.** After a year in which several mid-air collisions occurred during competitions, the gliding committee of the German Aero Club has decided to abolish the startline for the 1984 German National Championships in the Club Class. Pilots will be timed from the moment they come off tow.

**Gerhard Waibel,** designer of the ASW series of gliders, has proposed at the AGM of the German gliding movement, that the FAI 15m Class should be replaced by a 17m Class. He considers that the present flapped 15m gliders are too close in performance to the best Standard Class machines, especially in the lower speed ranges most commonly used in Europe. A 17m Class would be truly intermediate between Standard and Open. Waibel's ideas did not meet with universal approval, but sales of 15m gliders with optional tips are very buoyant in Germany.



The LS-6 which made its maiden flight on December 1 at Egelsbach, W. Germany.



# DEHYDRATION – CAN IT HAPPEN IN THE UK?

BILL SCULL, BGA director of operations

The answer is yes! The following pilot report is disidentified for personal reasons — not least embarrassment — in that the pilot feels he should have known better. But let the report speak for itself.

The pilot departed his base airfield at 1050hrs having had the usual rush to get it all together — declarations, films etc. The flight plan was a 500km O/R. In the south cloudbase was 4000ft QNH rising to 7200ft QNH at the northern end of the route. Lift was exceptional in the middle of the day with climbs from 2000ft to cloudbase taking 3½ minutes (timed).

At about 1300hrs heading north the pilot discarded his hat while in the shade of a cumulus to allow his head to cool. The hat fell behind the seat and was not retrievable in flight. The TP was reached at 1405 (3:15 into the flight).

Soon after the pilot entered a thermal marked by very smelly smoke with "off the clock" lift. After the climb the pilot felt queasy which he attributed to the tremendous surge and smoke. He commented in his report:

"For the first time I realised that my hat was lost for the remainder of the flight and that my water supply was exhausted. I had taken what I now know to be a pitiful supply of liquid — about a half pint of water".

Soon after the "smelly" thermal the pilot began to feel quite ill — a headache, very tired, sore eyes and quite sick.

He continues — "I had to abandon the idea of circling flight as I felt too ill and though I was desperate for fresh air I could not bear the draught of the side vent.

My first really crazy action was to undo my shoulder harness so I could sit sideways — this way I could have fresh air with no draught!"

Thirty miles further along the track the pilot was "not flying the aircraft at all — just drifting along track and hoping that he would soon recover and be able to get going again."

A radio call from a friend to check the pilot's progress produced the response "I'll call you back — I'm feeling a bit grotty just now." This exchange (in his own words) "dragged me back to sanity and the reality of my potentially lethal situation".

"I now made the first sensible decision in 20 minutes. I pulled the airbrakes to maximum extension and allowed — 'time to land'". Over the radio he explained to his friend that he was about

to land (and where) and then switched off the radio. Even the radio chatter was tiring.

At 400ft QNH there was a selection of good fields beneath. Then the pilot saw a big runway (airfield) which he knew to be a parachute base. Seeing crowds of people near the tower he gave up the idea of a field landing reasoning that to have an accident/incident would be much better with the chance of some assistance afterwards. This thought really did some good as to his level of alertness, viz:

"Was I *really* feeling that bad? Yes, I bloody well was! I felt unbelievably ill; shivery, sweaty, tired eyes, *very* sleepy and a headache but, funnily enough, I didn't feel all that thirsty — that came later.

"As I say I had jolted myself into some level of concentration — now I did up my harness very securely and tried to reason over the best place to land *ie* away from the dropping zone, into wind, etc.

"As I turned finals at about 300ft I eased the airbrakes towards the closed position (they had been held fully open some time so that I would not vacillate as to whether or not to continue the flight), and thanks to a great design I banged my knuckles on the undercarriage lever! My reaction to this? — sod it — I'll land on the grass. I really had to make a very large effort to put the wheel down and proceeded to execute a very untidy arrival with 200lb of waterballast still aboard.

"I was greeted by a deputation sent to lynch me for landing at a parachuting site. However on seeing me and with no prompting they promptly offered me a doctor (later I was told that they thought I was having a heart attack) six cups of tea and a lolly and 45 minutes after landing I felt recovered.

"I do wonder if we pay sufficient attention to *ourselves* when preparing for a flight on a summer's day. It all sounds so obvious — take plenty to drink and a good hat. Talking around it is surprising how many similar experiences have led people to taking the proper precautions — but must we all learn the hard way!"

Some of the stories are horrifying — such as the pilot admitting to trying to get five minutes shut-eye to recover. He now carries two litres of water. Evidently dehydration doesn't only happen in Australia.

(Reprinted from *Accidents to Gliders — 1983* and edited from a report submitted in confidence.)

**Footnote by Group Captain Peter Saundby, M Med Sci, MB, ChB, MFOM, MFCM, MRAeS, RAF:** In aviation, problems often multiply and the symptoms suggest overheating as well as dehydration. The irritability and illogical thought are typical of thermal stress which is less familiar in this country than elsewhere. Overheating leads to dehydration, it can be reduced by drinking and subsequent sweating. A hat will provide shade from the sun. The advice from the pilot to "take plenty to drink and a good hat" is sound. I would also add that if ill in the air from whatever cause one should make an early decision to go for a safe landing. Academic diagnoses can be made at leisure.

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## GLIDING

by CAROLE ANN WILNEFF

Here,  
the rush of air is  
silence.  
Trapped within myself,  
I would almost  
cry as soon as  
speak  
Below,  
houses are marbles  
scattered by thumb  
across the fields.  
Roads wind crazily,  
following no pattern,  
While I  
make circles in the  
air:  
a coiled spring unwinding  
from sanity  
to earth.

---

### "Weatherline" Gliding Met Forecast.

After a successful experiment in the Nordrhein-Westfalen area, glider pilots throughout Germany will soon be able to dial a number for a "Weatherline" style gliding forecast, which will be renewed three times a day.

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Angle	Distance	Average
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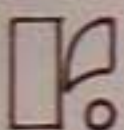
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## PUBLICATIONS

**NEW ZEALAND:** "Gliding Kiwi" official Gliding Magazine of the NZ Gliding Association. Printed October and alternate months. Write NZ Gliding Kiwi, Private Bag, Tauranga, New Zealand. £7.00 Sterling for year's subscription (inclusive of postage).

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