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SAILPLANE & GLIDING

Magazine of the BRITISH GLIDING ASSOCIATION

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Cover: The Discus, photographed by Adolf Wilsch, which had its maiden flight on April 21 and two days later was taken on a 600km triangle by Klaus Holighaus. See p160 for an impression of this Standard Class glider.



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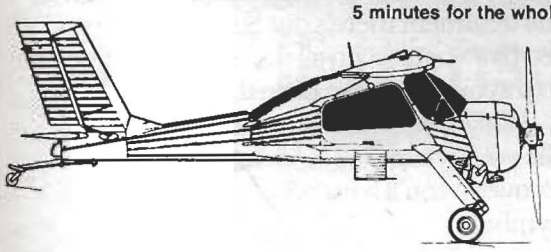
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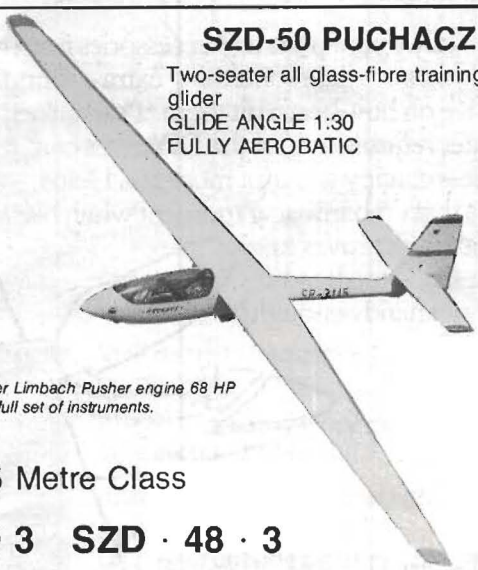
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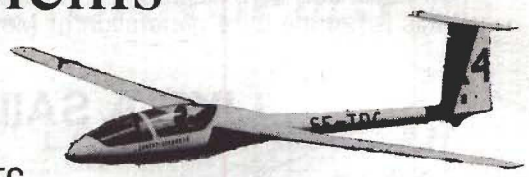
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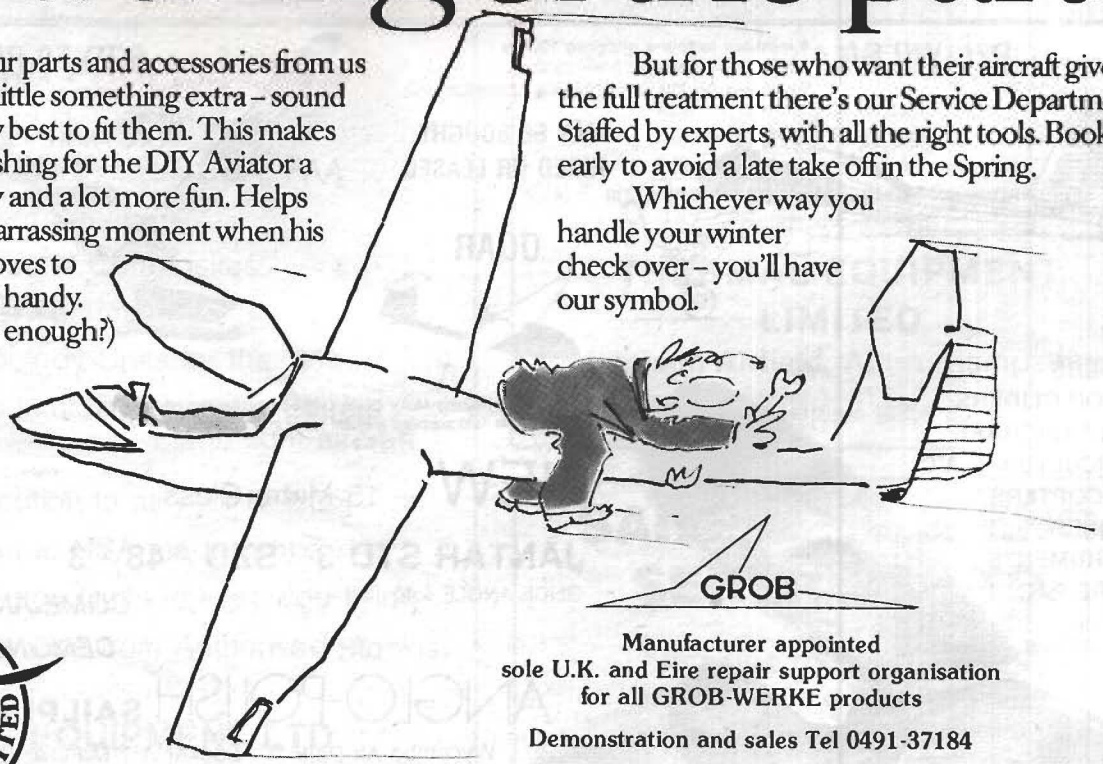
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SEE AND BE SEEN

DEREK PIGGOTT writes about the greatest hazard in gliding after a dreadful start to the season with two mid-air collisions resulting in two deaths, see BGA News.

There can be no doubt that the risk of collision is still the greatest hazard in gliding. But it is unusual to hear of any real advice being given to student pilots on how to minimise this risk. True most gliding instructors are insistent that their students look around before every turn, but this is often the limit of their instruction.

In spite of the exceptional all round view from the cockpit of most gliders, it is surprisingly easy to miss seeing nearby aircraft. Here are a few hints which may help to improve your chances of spotting other aircraft and to reduce the risks of collision.

It is difficult to spot other aircraft if you look around scanning the sky in a continuous sweeping motion. This is because it is easier to see a moving object in the distance if you hold your head still for a few seconds so that any movement shows up against the stationary background. It is also a fact that the brain does not always respond to messages from the eye unless the object seen is near the central part of the visual field. So whenever possible look around by moving your head in stages, holding it still for a few seconds and then moving round to search the next area.

You must make it move

Aircraft which are on a collision course to you are the most difficult to see because they remain in a stationary position relative to you, like a mark on the cockpit canopy. If the other machine remains in a constant position, *you* must make it move.

A further difficulty is that the eyes do not automatically focus for distance after a glance at the instruments or a nearby object. Try to look back to a distant aircraft or even the wingtip before looking for others. Once having spotted another machine, the problem becomes one of deciding whether it is likely to be a hazard. Aircraft which appear to be above your horizon are above you; those below the horizon are lower than you. So with gliders in non-soaring conditions it is the ones on your level or above you that are most important to watch. Unless you deliberately lose height quickly, anyone well below you will remain below. (Most gliders have very similar rates of sink.)

If you have ever flown radio controlled model planes you will know that sometimes you get an ambiguous view of an aircraft and cannot, for a few seconds, tell if it is coming or going, or turning one way or the other. Watch for any change in the size of the aircraft and do something immediately if it is getting bigger. **Never assume that the other pilot has seen you or that he will take avoiding action.** Pulling into a turn will probably give him the best chance of seeing you and will get you away from him, but try not to lose sight of him as you turn.

Be careful not to concentrate all your attention on the one aircraft you can see. It is always another one that is the real menace. Once you have decided that a particular machine is well clear, re-check its position from time to time but watch out for others.

Never fly above or below

Every type of aircraft has some "blind" spots and it is particularly important to recognise when the other pilot cannot see you. If you can see his face, he can certainly see you (if he looks). **Never** fly directly above or below another glider. It may pull up or dive at any moment. Following above or just behind another machine is particularly dangerous. If the pilot pulls up in front of you he will lose speed so rapidly that there may be no way to prevent a collision.

Of course, gliders in the same thermal should always circle in the same direction, but it is also best for any glider using lift nearby to circle in the same direction. Almost always you will end up together in the same part of the thermal and this is far easier if you were all going in the same direction in the first instance.

When you are thermalling keep tabs on **all** the nearby machines. If you are out-climbing them, unless they are idiots, they are bound to come and join you.

Gliders coming into your lift at about the same level or below you will generally be well below you when they arrive. You will have been climbing whereas they will usually have lost some height as they go through the adjoining sink. The ones slightly above your level are the most likely to be a problem. They will appear to sink down to your level as they arrive. This does not matter if they are joining correctly by making their first turn wide before pulling into your tighter circle. Watch out if they look as though they are going to cut across your circle or are flying at high speed and may pull up steeply. Be prepared to take avoiding action.

Always wags wings

Never cut across the circle when joining another glider or gaggle. Make sure that they have had ample chance to see you before tightening up your circle. It is a pleasant habit to wave across to any pilot joining your thermal and nice to receive a friendly wave back in acknowledgement. If I see no reply, I assume that the other pilot is not looking around enough and I keep well clear of him. Similarly, if I see another powered aircraft passing by I always wag my wings to show that I have seen him. Usually I get a reply and it is a comfort to know that they are keeping a good look out too. It's friendly and I think it helps.

There will be occasions when you are thermalling when you will lose sight of a nearby glider because it is directly behind or slightly above or below you. **Never** continue circling trusting that the other pilot can see you and will take avoiding action. Straighten up and leave the circle without delay. Then turn and check that it is clear before rejoining. In the meantime he may have gained a few hundred feet but it will be easy to get back into the lift by using him as a marker. **Never** allow another glider to thermal just above or below you. The horizontal gusts in a thermal will affect each machine differently and can result in one being lifted or dropped onto the other with no possibility of avoiding a collision. Sometimes at lower altitudes it may be possible to discover where that other glider has gone to by spotting the positions of your shadows on the ground below.

Never climb right up to cloudbase with other gliders nearby. Clouds have a

nasty habit of forming all around you and several machines may be enveloped in cloud in a few seconds. Remember, you cannot possibly avoid something you cannot see. Cruising along very close to cloudbase is also a crazy thing to do. It only takes two of you with the same idea to produce a lethal risk. Either call on 130.4 and continue climbing on instruments, or stay several hundred feet below any wisps of cloud so that you can see and be seen.

Ridge soaring is particularly hazardous unless every pilot is alert and knowledgeable. In hazy or cloudy weather, modern gliders with their very small frontal areas and thin wings are particularly difficult to spot head on. Meeting head on at or about the same level, the glider with the hill side on his left **must** give way and move out sufficiently to give the other pilot plenty of room to pass. Again, **never** pass close above or below another glider and **never** creep round those blind corners hoping that no-one is coming round the other way. There are, of course, other additional rules specific to hill soaring and which may vary from site to site. If you fly abroad, check and make quite sure that you know their rules for hill soaring. For example, in Germany an overtaking glider flies out away from the ridge to pass another machine and not between the other glider and the hillside.

As well as just seeing and noting the positions of all the traffic nearby, you really need to be anticipating their likely movements and how much they will matter to you. For example, you should be able to predict whether that nearby glider is just about to turn back towards the airfield or start his circuit and arrange to be out of his way so that neither of you has to take avoiding action. This will allow you to pay more attention to other parts of the sky or to other aircraft.

Tugs less predictable

It is useful to note every launch and to see where each glider goes. Watch out for powered aircraft and tug and glider combinations taking off as they are less predictable than gliders. Remember which direction they go and look for them as they come back. Descending tugs are particularly unpredictable and often the tug pilot has a very restricted view.

Try to anticipate circumstances which will intensify the traffic in your area. For example, a squall line or heavy shower will usually result in a large number of gliders rushing back for a landing. There is little point in staying up a few extra minutes. Get down ahead of them and before the heavy rain arrives. It may cut the visibility down to a few hundred yards besides reducing a Nimbus to the performance of a K-8.

The circuit area, base leg and approaches to any airfield are always more congested requiring special vigilance. Always assume that the other gliders and powered aircraft have not spotted your machine. Try to think ahead and avoid having other machines just in front or behind you by keeping some extra height in hand ready to join the circuit. This gives you the option of joining immediately or holding off for a while to allow the other gliders to get ahead of you.

When two gliders are rather close together opposite to the landing area it is usually best if the lowest pilot "shows his hand" by turning in early, using his airbrakes to get down quickly so that the other pilot has plenty of time and room to choose his approach and a clear landing area.

There will be very few of us who will not, at sometime, have the alarming experience of suddenly seeing another aircraft frighteningly close having failed to spot it until the very last moment. Treat it as a serious warning. Talk it over with the other pilot. Did he see you? Admit that somehow you missed seeing him and try to analyse how and why it happened. Never belittle such a near miss; take the hint — consider yourself lucky to be alive. (I do!)

REFLECTIONS . . . for a Tug Pilot

DUDLEY STEYNOR

There are a dozen gliders in the line. It is one of those frustrating days — perfect soaring weather and only one tug available. As the tug draws up the engine stops and the pilot leaps out saying, as he bolts for the clubhouse, he **must** have an immediate relief.

You are the only other tug pilot available. You cease talking to your pupils, leap into the tug, do up your straps, start the engine, take-up slack and are airborne all within a half minute or so — keen to clear the long line of gliders as quickly as possible. On the way up you realise you can't remember where the tow-release is and that you hadn't checked the fuel position. A quick search soon puts you right on the tow-release, but at the same time brings it home to you that if the glider had upended you low down there would have been nothing whatsoever you could have done about it in the time available.

Red ball not visible

The fuel position is worrying. You note you are flying on the left tank of the Super Cub and that the red ball is clearly not visible in the gauge glass. The tank is therefore full or almost empty. The righthand tank appears to be half full, but never having actually switched over during a tow you hesitate to do so now but prepare for a rapid change-over should the engine falter.

After the glider has released and on the way down you have time to reflect that accidents happen for two reasons — inexperience or complacency, and that the dangers from complacency increase as the dangers from inexperience diminish.

Sailplane & Gliding

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.

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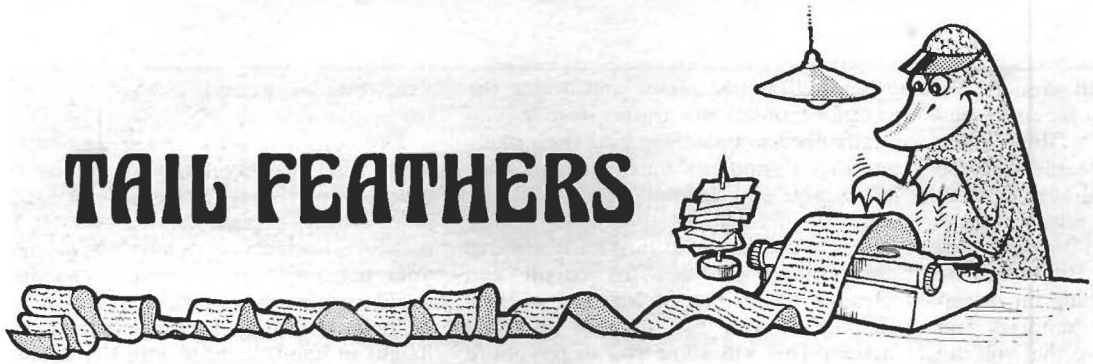
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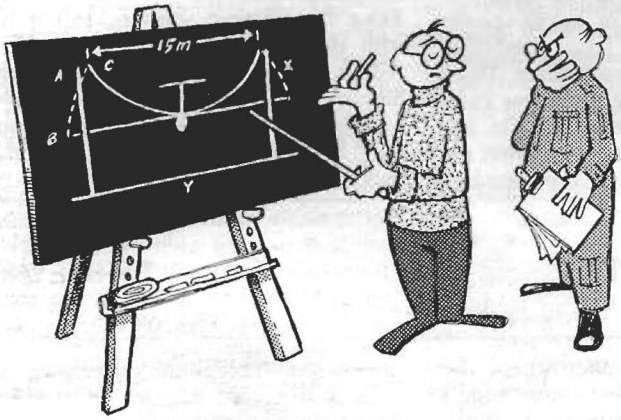


by PLATYPUS

The Judgment of Solomon

At the World Championships in South Cerney in 1965 the prime, and very simply applied, qualification for a Standard Class glider was for it to be wheeled between two poles (no, not two Poles; *they* were another story altogether) stuck in the ground 15 metres apart.

Well, this spanking new ship arrives, straight off the drawing board, and promptly gets wedged between the two, er, posts. It is manifestly too big. A brilliant legal defence of this oversized prototype ensues. "M'lud", intones the designer/builder/pilot — I can't remember precisely which — he may have been all three like Dick Schreder (tho' it wasn't Dick Schreder; he could count) "this glider is indeed exactly 15 metres in span *in its natural state, ie,* viz, namely, to wit; when it is *aviating.* Which it ain't right now, being quite evidently in the unnatural state of earthboundness." All the jurors wept at the plight of this grounded little bird just longing to get into its proper element and assume its rightful wingspan. "Thusly, its poor wings droop, denied of their inherent dihedral, which was built into the design and which it possesses in full flight. Ergo . . ." but he had no need to perorate and throw himself on the mercy of the court since this forensic display had already prompted a standing ovation amongst the spectators. Come to think of it, they were already standing, so it was just an ovation, I suppose.

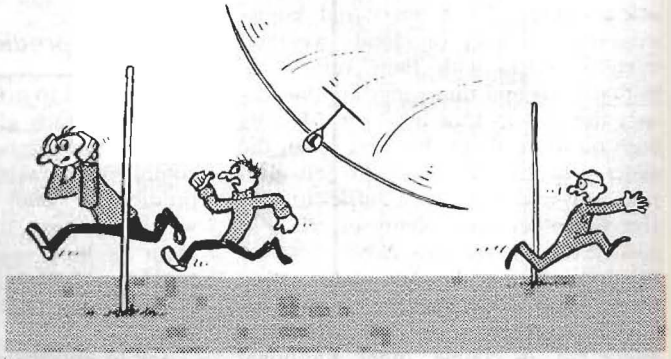


Exactly 15 metres in span

The judge was unmoved. Nay, I tell a lie; he was deeply moved, but being British he concealed this with iron self-control. For a while he balanced in his mind the eloquence of the little pleader standing before him with the obvious chaos that would follow if the argument was allowed to stand (hell, what is a *natural* airspeed — 140kt?) then delivered the judgment that is an example of true wisdom and an object lesson to law-givers. "OK, you win" he said "on one condition. I'll let you in the Standard Class when I see you fly that thing between those two posts."

Collapse of articulate pleader. Case dismissed.

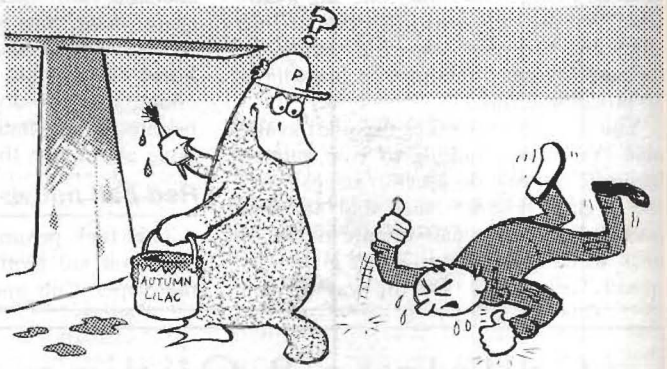
The only thing wrong with that true story (apart from the fact that I made most of it up) is that the judge may have been not a he but a she.



". . . when I see you fly between those two posts."

Syndicates made in Heaven

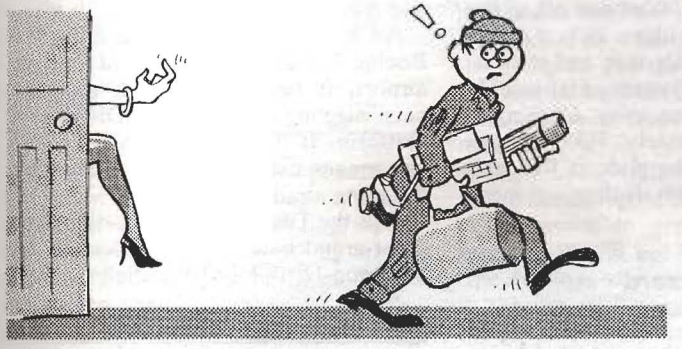
I have had shares in 14 gliders since 1958, and on average have had 2.9 partners per glider. The two could just about stand me, but the point-nine was driven wild. No, I get my sums wrong; the continual swapping of shares means that the total number of people I've been partners with must be over 60, and, amazingly, many of them shared a glider with me for a second or third time as we struggled up from Kite 1 and Cadet (singular) through Skylarks and Kestrels (plural). I shall always feel grateful for their long-suffering tolerance and good nature. Or maybe they were just desperate for someone to share the financial burden, and at least my vices are a known quantity. There *are* worse partners than me, *incredible dictu.* Better the devil you know . . . Someday, somewhere, someone will write a sociological treatise for his Ph.D at a stressed-concrete university on the nature of glider syndicates and how, like marriages, they come together — and how they come apart.



Point-nine was driven wild.

Take syndicate wives — by which I do not mean a form of polyandry or polygamy but simply the respective wives or

spouses (spice?) of the partners. One famous syndicate wife, who deserved a gold medal for devotion above and beyond the call, etc, etc, would run her finger under the leading edge and lower her lovely eyebrows fiercely *not* at the chap who was about to fly but at his *wife* for neglecting her duties. (What women's libbers still don't realise is that it's not the men who create the shackles but those women who don't believe in women's lib, having found other, time-honoured, means of getting their own way.) There are a number of techniques whereby the less dedicated wives (*ie* all other wives in the whole world) can avoid a clash in this situation, which we donate free in case it arises again. One is to stay at home. Another is to come equipped with a typewriter and reams of paper and hammer away at the keys while smoking furiously. (No one interrupts an



Other time-honoured means.

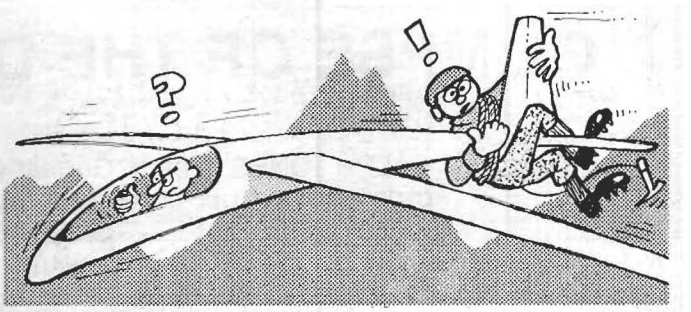
authoress at her work, for fear of being put in her next novel. You'll be in it anyway, but with luck and good behaviour you won't be too recognisable.) Another ploy is to turn up wearing stiletto heels and finger nails two inches long, obviously on the point of going to a cocktail party or a Buckingham Palace reception. Fake plaster casts, bandages, wheelchairs and white sticks are another method, though smacking of cowardice and hardly a technique that can be kept up for years at a time.

Some syndicates have contracts drawn up by lawyers, and rotas of whose-day-to-fly drawn up by drill sergeants. Some have none of these. The first is like being back in the Army. The second like a (doomed) hippy commune. If you have to choose, Army is better.



The Thin Red (Wobbly) Line

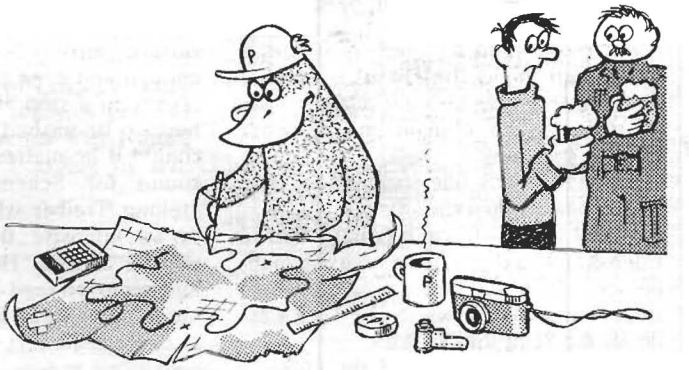
Phil King's article (last issue, p108) on using hill lift for cross-countries, together with John Bally's hair-raising talk on mountain-flying at the BGA Conference, again made me feel how inadequate our conventional idea of soaring really is and how modern competitions, instead of widening the bounds of what is possible, now restrict the potential; barely 100 days a year are suitable for thermal cross-countries, I should guess, whereas at Talgarth in Wales you can soar 365 days a year with a bonus in a Leap Year unless a lady pilot lures you away. Well,



Hair-raising talk of mountain-flying.

that's a bonus, too, unless you are a really pathological gliding fanatic.

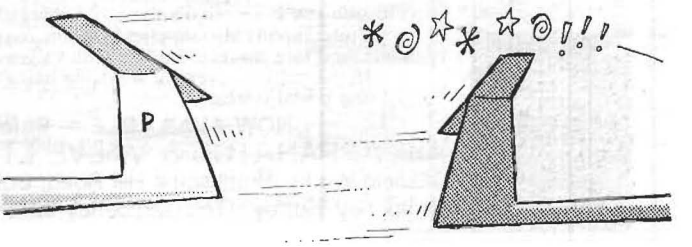
It's a long time since I used happily to soar the ridge at Dunstable at half hilltop height for long periods, *ie* all afternoon, in the hope of the weather perking up. Since then I have grown less bold (= more sane) but the experience does come in useful from time to time, even in contests. I certainly make a point of marking the wind-facing slopes before any cross-country. In fact I have more or less given up the use of rulers in preparing my maps. Mainly it's because I've mislaid the ruler anyway, but I genuinely prefer to draw a meandering line through, or near to (a) areas of high, dry ground, (b) other gliding clubs, where either the thermals will be well marked or the bar well stocked (I didn't claim this was a method for winning contests) and (c) unambiguous landmarks that will steer me towards the turning point — rivers, railways etc. Platypus's maps are easily recognis-



Platypus's maps look as though drawn while drunk.

able, therefore, appearing to have been drawn while drunk. However they are also distinguished by elegant little drawings of gliders rounding the turning points each with its wing pointing along the precise centre-line of the photographic zone (that's when I do need to find the blasted ruler) because I often find myself creeping up on the TP from some strange direction, *eg* from a nearby landmark, and have to avoid the careless habit of pressing the shutter immediately the wing goes down. That used to cost a lot of points.

Anyway, back to hill-soaring. Do have a go at it anywhere and everywhere except Dunstable. But since you know already who flies there, I'm sure the warning is superfluous.



A GLIMPSE OF THE DISCUS

RALPH JONES goes to Germany to sample the new Standard Class glider gracing our cover and finds "it feels right and is fun to fly"

As I thermal over the woods just to the west of the Hahnweide I wonder what "Hahnweide" really means. The literal translation is "rooster place", but this bird I am flying is certainly no rooster! The Discus looks like a hawk with its sweeping back leading and trailing edges. Looking out at the swept wings makes you feel that they are your own wings and this is what it feels like to be a soaring bird.

Having seen, in mid-February, the moulds being taken of one wing mould plug, with the other plug not completed, and having been told the glider would fly by the end of May (or was it June?) I must admit I had been sceptical. The white shape of the skin is only part of the work and there was obviously a lot of engineering to be done — yet here I am flying the prototype in mid-May and it has been flying since Easter!

A buzzard joins me, perhaps he too is fooled and thinks the Discus is another bird . . . However he soon decides I am no threat to his domain and descends into the tree tops.

Enough of this idle speculation, time to do some evaluation.

First a stall — 62km/h (what's that in English?) — a docile nose nodding manoeuvre which doubles for yesteryear's stall. Now we run towards the Teck Castle on the Schwabische Alps.

Funny, I have been told the glider is very quiet but there is a lot of noise. Eventually I find the source of the noise. With the undercarriage retracted (the buzzard must have wondered why the big white bird insisted on trailing a very dirty black foot through the air!) we thermal again, an easy, stable, relaxed circling with little requirement for rudder control. One feels the glider is on rails and the rudder need not be fitted. There again, birds do not have rudders!

A slow climb to 1000m and off to the nearby mountain ridge; but it's not working. We find only sink and eventually head back towards Hahnweide which looks a long way away. Cruising at 130km/h (approximately 70kt to you English ignorami) the glide is flat with very little nose down feeling — more like a flapped ship.

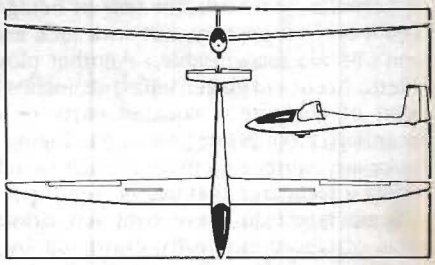
Flying with a buzzard

With more height than expected I join my buzzard friend again over the woods, but we are both out of luck. A high approach to make full use of the Schempp-Hirth "double decker" top surface airbrakes but half brake is enough and even then instead of rolling regally to a stop at the launch point we have to be pushed the last 30 yards (or should it be metres?). Sheepishly I look round for Schempp-Hirth test pilot Helmut Treiber who was in the middle of an intensive flight test programme when I arrived. He had dumped water and removed lead ballast in order to let me fly the Discus. He is not there, which is perhaps just as well as he would be convinced it was a complete waste of time on a clown who flies Klaus Holighaus' new Standard Class design on the downward side of the mountain and expects to find ridge lift!

I am not very good at evaluating gliders as I get carried away with the sheer enjoyment of flying, so sorry, I cannot give you Min sink and Max L/Ds all worked out on an altimeter and stopwatch, but if you want a totally non-technical based opinion — it feels right and is fun to fly.

An hour later, sitting in a tubby BA Boeing 737 as it bustles out of Stuttgart airport, it finally dawns on what has been niggling me about the Discus wing platform. It is the Minimoa — not by any means exactly the same shape, but the same atmosphere.

Will the Discus prove a worthy great-great-grandchild to the glider on the Schempp-Hirth logo? We shall see.



Technical Data

Span (m)	15
Wing area (m²)	10.58
Aspect ratio	21.3
Wing loading (Min/Max) (kg/m²)	29-47
Empty weight (kg)	228
AUW (kg)	500
Max cockpit load incl equipment (kg)	120
Stall speed (km/h)	68
Never exceed speed (km/h)	250
Min sink (m/sec)	0.59
Best L/D	41



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The Air Apparatus & Valve A.I.R. 24 series oxygen equipment for gliders, comprising a control head and 680-litre oxygen cylinder, is now available for self installation. With all the in-flight oxygen controls situated in the one position, this control head has been developed from the Company's highly successful Domiciliary oxygen unit to Drug Tariff Specification 01B.

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ROBERT TO THE CAMPHILLIANS

Dear Brethren: As the season of the Great West Winds drew nigh, a small band of your brothers set out for the Northlands to seek the fabulous Diamonds of Aboyne. They took with them two Arks; one from Germanica and the other from Francia, with which to help them obtain great gifts of Silver, Gold and Diamonds.

The fiery dragon

After many leagues they paused in their journeyings at the village of Burn to rest and to practise the art of grasping the tail of the fiery dragon, by which means they hoped to be borne aloft into the mighty winds of those far Northlands.

From thence they continued up the Great North Road; John, Nigel, Rodney and Ian with his betrothed Wendy.

After many adventures they arrived safely at the home of that northern tribe who dwell by the twisting water, and there they met with thy servant Robert the Elder, who had travelled alone by a different road to the west. They found shelter in a lonely cottage in the woods and, the weather being very cold, built a large fire which was kept burning until seven days and seven nights had passed.

During those seven days, they renewed their acquaintance with their northern cousins and found new friends. There they learned of the magic heights of Morven and Lochnager, Geallaig and Culardoch, above which the treasures of Silver, Gold and Diamonds could be found, and to lead them back home, the waters of Muick, Lee and Kinord.

The people of the Camphill tribe listened long to the wise men of Aboyne who had many times braved the heights around their snowy domain and especially to the high priest, Black Jacob, he of the far off voice who spoke reverently of the Elixir of Life, which must first be obtained if the highest treasure of Diamonds was to be reached. Also of great value to prove the passage, was the black scroll on which to trace the path of the going up and the coming down; and the seal to be placed upon it and later removed by a trusted member of the tribe.

Many saith, "After letting go the tail of the fiery dragon, descend a short way before going to great heights or thy black scroll will not bear witness to thy true comings and goings and the elders in the city of Leicester will not believe thy petition to lay claim to the treasures and thou wilt be bowed down with grief".

All these things and many more we did try to obey. On the sixth day the great wind blew; we assembled our arks, placed therein the black scrolls and made ready the Elixir of Life. The fiery dragon with the long tail was brought from its cave and flew towards Kinord with Ian of Camphill grasping its tail.

Golden treasure

After some time he called out with a loud voice that the great wind had borne him up even to sixteen angels and he had the Golden treasure and would bring it back to earth, for he was very cold and could not see.

Thereupon, John the Wise called upon him to use more of the Elixir of Life and rise if he could to twenty angels. Whereupon he did take heed of John, and after some time he came down with both Gold and Diamond; and there was great rejoicing.

While all these things came to pass, the great winds blew so strongly that the fiery dragon was much afraid and went back to its cave, where it sulked for many hours. After much supplication by John, Nigel and your servant Robert, the dragon roared again, and one by one bore us up. But Nigel had been improvident and lacked the Elixir. Thus he was unable to reach for a Diamond, but, by staying aloft for five hours and one half thereof, and communing with fourteen angels, returned with Silver and Golden rewards.

Glittering Diamond

John the Wise joined with twenty angels and brought back a glittering Diamond. I, Robert the Elder, who had been on many such pilgrimages, prayed with great humility and also attained to even twenty angels and was rewarded with another Diamond to join with those other two I have brought to you from far off lands to our village of Camphill.

And so brethren, I say unto you, stay not within the bosom of your own tribe for all time, but when the need arises and the time is ripe, venture forth and seek fulfilment in far lands.

ROBERT THE ELDER

(Robert, better known as Bob Frodsham, is the first member of Derby & Lancs GC, celebrating their 50th anniversary this year, to have All Three Diamonds. ED).

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THE DAY I COULDN'T GET DOWN

JOHN McCORMICK's first solo in the North Wales GC's Grunau Baby when his "scientific" circuit did not work.

During our recent dinner-dance I was presented with the Grunau trophy. I would like to think, as the CFI suggested, that it was awarded in recognition of a display of pure flying skill and superb airmanship, but unfortunately there's too many of you out there who know differently. Now that I've got my hands on the trophy, my name is inscribed thereon and it might be a bit difficult to get it back off me, perhaps I ought to tell the truth about that day which perhaps should have been subtitled "The day that I couldn't get down".

Controlled crashes

When I came off the wire at 700ft I had the technical aspects of the circuit all scientifically worked out. Forward to this little white farmhouse just to the right of the launch point — one of my "immaculate" 180° turns which is always good for losing me a couple of hundred feet — back to the high key position and there I'd be sitting at 550ft ready for the downwind leg. Now you all know how straightforward the next bit is, hand on airbrake, increase speed, look alert; actually there's a mnemonic for it, but I always forget it and console myself that it doesn't seem to matter during those controlled crashes which I nonchalantly pass off as normal landings. As I was saying, normally I'm sitting there at 550ft and that's when the trouble began, because this time the altimeter read 800ft, *ie* 100ft more than I had started off with. Now I must admit at this point I panicked, I thought the bloody instrument was sticking and in my haste to hit it I nearly stalled. Luckily I was flying open cockpit and I realised that the wind had stopped blowing. Now even I know when the wind stops blowing you've got problems, so I hastily pushed the stick forward and added 40kt to basic whilst I sat and had a think about it.

I realised I was doing something wrong; this scientific circuit had never let me down before. I've got another scientific circuit for the other end of the field — big green tree — 180° turn — high key point. I say it had never let me down, that's not quite true, I did get lost not that long ago. Autumn had come, big green tree turned brown and I missed it, but generally it had never let me down so there was nothing to do but go through the whole procedure again. So off I set — little white farmhouse — immaculate 180° turn — high key position and, hell's teeth, I'd gained another 100ft. Now that's when I began to despair of ever getting down again. I knew by now, of course, that it was this beat that was doing it — little white farmhouse, etc, but how to get out of it? "Lose height in that corner of the field," had said the CFI. He hadn't said anything about gaining it.

I didn't dare drift downwind to escape. I'd done that a couple of weeks before and got a right rollicking for it. "Treat me as though I'm not here," had said the CFI, as he'd climbed into the back, and I did, and I had, and there I'd been going backwards and forwards quite happily at 600ft when suddenly this voice from nowhere had said, "Where's the airfield, John?" "Where's the airfield?" I repeated with eyes swivelling frantically.

Not too happy either

Now I consider that an unfair question, after all I've got enough to do trying to fly the machine without attempting to navigate it. "The wind was cross," he said. The wind wasn't the only thing that was cross, I wasn't too happy either. It wasn't my fault, I hadn't moved, I can't control the wind. Besides which, as I told the CFI, I quite enjoy flying low level over towns. Another thing, I don't know about you, but from up there all those little green fields look pretty much the same. Well, they do to me in those split second glances which is all I can spare from concentrating on the ASI. So I didn't dare drift downwind and there I was going backwards and forwards and getting higher and higher.

Then I recalled that some weeks previously, again with the CFI in the back, I had suddenly started going upwards for no good reason that I could fathom and the voice in the back had said wave. Well, I was ready to try anything on this trip by now, so I tried waving. I can only think that his hands are bigger than mine and have more drag, because when I'd stopped being frightened and put one hand back on the stick I hadn't gone down at all. It had certainly worked for the CFI, he had said "Wave, I've got control" and we lost height immediately. Perhaps, I thought, it's some magic incantation known only to CFI's, so for the next couple of beats I went backwards and forwards, muttering "Wave, I've got control, wave, I've got control" like a demented parrot. I can only report it didn't work for me, I didn't lose any height at all.

By now I was getting desperate and ready to clutch at any straw, I even tried to remember Ken's preflight briefing. I knew it had gone on for a long, long time, but well, you tend not to listen, don't you? I remembered that he had said something about a variometer and little red and green balls, so I had a look around for this elusive instrument and eventually I found it, plumb in the centre of the instrument panel. Now I don't know who was responsible for placing it there, but it's right in the blind spot on the nose of your goggles. You have two alternatives — you either turn your head and squint at it through one eye, or you pull your goggles askew and run the risk of flying sideways. Anyway there was plenty of activity down there, first this little red ball leaped up a tube and then this little green ball leaped up a tube and they were obviously of some deep significance. Then it came to me, any fool knows that red is port and green is starboard, so it seemed obvious to me that first the port wing was coming up and then the starboard wing was coming up and perhaps that's what was happening, I was sort of flapping my way upwards. So for a little while I sat there cancelling it out, every time this little red ball came up I gave it a bit of left aileron and every time the green ball came up I gave it a bit of right aileron, but I didn't lose any height and after a while I began to get seasick so I had to stop.

I think I tried everything on that trip to get down. I spent ages searching the cockpit to see if the trimmer was sticking up. Never did find it. I gave the stick a

little joggle backwards and forwards to make sure the elevators were not sticking up. I even tried to remember whether there was anything in the book I was reading that might help, Wallington's **Meteorology for Glider Pilots,** but the only thing that came back to me from that was, "If you stand with your back to the wind the area of low pressure is on your left hand side". Now that would probably have helped if I had known how to apply it, but I didn't seem to be able to get the wind on my back and I didn't feel like undoing my straps to stand up.

All this time Ken had been keeping the other aircraft on the deck, presumably because he didn't trust them and me in the air at the same time. Eventually, however, his patience ran out and first he leaped into the air in the M100, closely followed by our deputy leader in the Bocian. "Oh, goody!" I thought, "they're coming up to rescue me," but they never came anywhere near me and it soon became obvious that I'd been abandoned. It was going to be one man against the mighty elements.

And so I was reduced to going backwards and forwards, backwards and forwards, little white farmhouse high key point, little white farmhouse high key point, until eventually, hallelujah, I started to get it right and began to lose height. You've got no idea how nice it was to get back to normal.

I'm still not quite sure what happened on that epic flight, but of two things I am absolutely certain.

1. Whatever it was that caused it, it ruined a "perfect" circuit.
2. The award of the trophy was fully justified, if only in compensation for the fact that the whole thing took two years off my life.

Come outside and say that . . . Part 2

JOHN HOLLAND, chairman of the BGA Development Committee, continues the theme of his first article February issue, p19 and ponders on how much flying a year is needed to make gliding a worthwhile pursuit.

I was pleased to read W. R. Clarke's letter in the April issue, p82, because, of course, the whole point of my earlier outburst was to try to provoke some discussion and thought on what could be a serious problem for the gliding movement . . . how to preserve the amateur status of British gliding clubs and yet produce the efficiency required to make it an acceptable sport in the pressure of modern society. The lack of growth and the high turnover of members would seem to indicate that we are not producing the standard required.

It could be that clubs are getting the management they deserve. Surely a wealth of talent lies dormant within the movement? Club members are preferring to lie low and do their own thing, rather than give their talents to their club or indeed the National Executive.

Flow of new people

Would it be practical to have a club rule that after 12 months, membership of the club means that you can be called up (as though for jury service) to serve the club in an official capacity? Better still if this could be tied to a rule that officials cannot serve for longer than three years. Then no one would be required to flog themselves to death for their club and everyone would benefit by the constant flow of new people with fresh ideas and energy.

Analysis of the national statistics is interesting stuff and it can take a variety of forms. I know that launch rate is a popular subject. After all it reflects on the clubs' efficiency at the launch point. However some clubs make a big thing of air experience flying (my own for one) and this distorts the statistics in other directions, for instance it shows a poor hours/launch ratio.

If gliding is about flying then surely hours/member/year must be an interesting subject? In this case the time spent on air experience flights can be counted as a credit to help compensate for the numbers of dormant members that all clubs have.

How much flying do you reckon that you need in a year to make it a worthwhile pursuit? It seems that we have 38 clubs giving members an hour a month but we also have six clubs giving members an hour/year!

Ignoring Oxford Sportsflying with their motor gliders, top of the heap is Ralph Jones's lot up at Bidford. They average 40hrs/member/year. I don't know the charges up at Avon but is it reasonable to query whether perhaps it may actually be cheaper to fly from a professional organisation? (Per hour that is.)

If you add the launch fee to the annual subscription it must be pretty expensive flying to do one hour/year.

Shropshire Gliding Group at Sleap are the next highest at 33½hrs/member, but since they do no *ab-initio* training perhaps it isn't fair to compare them with the average club. Portmoak and Aboyne get a lot of help from their wave questing visitors so perhaps we ought not to count their 33hrs and 21hrs/member/year.

One thing that does stick out, even in this day and age, is the advantage of having a ridge. All the ridge owning clubs stand out pretty well with averages in excess of 14 or so. But what about Cambridge with 19hrs/member and Husbands Bosworth with 16hrs? My own club, which is pretty certain the sun shines from the back of its reverse pulley, only managed 13hrs/member last year.

Pretty posh winches

It is common to regard winches as second best but the hourly figures show little advantage for aerotowing if Cambridge can manage 8270 launches and 3699hrs. Only two tugs can hardly account for all that and rumour has it their winches are pretty posh.

Perhaps would-be glider pilots should scan this statistic a bit more before choosing their club. It may pay to travel a bit farther. Like to Shobdon (where they are a bit short of members) where 21hrs/member/year puts them quite near the top.

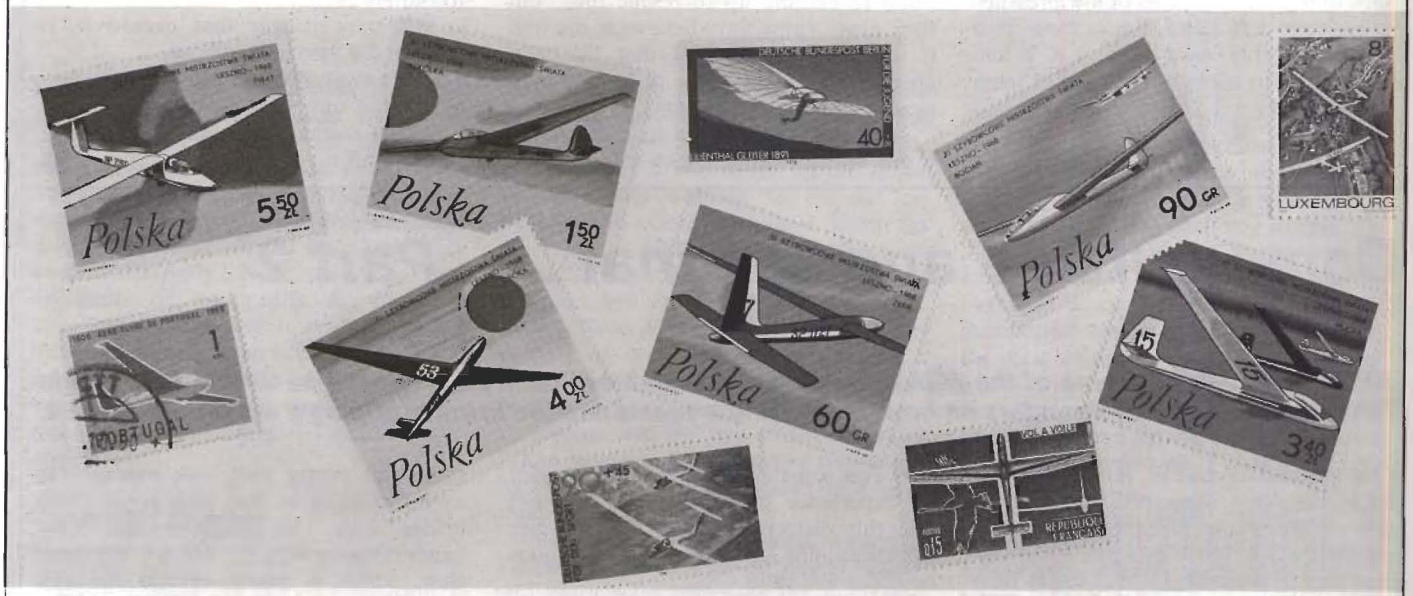
Going back to an earlier comment . . . how many hours per year do you reckon is a reasonable average for a person? Power pilots have to do a minimum of 5hrs to keep their licences.

I am jolly glad that my personal flying is a bit more than some of these statistics . . . and I am always moaning that I don't do enough!

We would be grateful if all contributions to S&G are sent to the editorial office, 281 Queen Edith's Way, Cambridge CB1 4NH and not to the BGA office. Valuable time is wasted each issue with material ending up in the wrong place.

THE HISTORY OF GLIDING STAMPS

GUY AVERILL says that aviation has always been popular with stamp designers and one Austrian gliding stamp is now valued at £55.



A collection of gliding stamps, including some from the distinctive Polish set of 1968 featuring the Bocian, Jaskolka, Mucha, Pirat, Zephyr and Foka.

Stamp designers are artists in miniature. When they produce a design it has to satisfy several criteria: it must have relevance to some event, activity or anniversary and, as philatelic income is important now to all countries, it must look good. Gliding certainly lends itself to this concept and has had a good "press" on the world's stamps.

Aircraft of all types have been popular with stamp designers since the 1930s. Airmail rates were usually at a premium for postage and most countries issued special stamps to cover these rates. Britain was however an exception, though we did experiment with special posting boxes for airmail. In some of these early issues gliders appeared among the aircraft. It is from such a source that the most expensive glider stamp appears, on the top value of the 1935 Austrian air set which shows gliders over the Attersee, and listed in Gibbons catalogue at £55. But while it is the dearest gliding stamp it is not the only one which is expensive.

The enthusiast could make a good stab at the history of gliding by collecting the stamps. Otto Lilienthal and his glider of 1891 appear on several issues (from West Berlin, Liechtenstein, Zaire, Hungary and Czechoslovakia). The Wright Brothers, more often associated with powered flight, were glider enthusiasts to start with and later returned to that interest. They appear on an endless number of stamps as does the Flyer. Other pioneer gliders are ICAR1, from Rumania, and Tanski and his glider of 1896, from Poland.

Outstandingly attractive

Gliders in flight seem to lend themselves to the miniscule art of the stamp designer, and some of the stamps are outstandingly attractive. Front runners in this respect are Yugoslavia, with a representation of a glider in flight above clouds issued in 1972 for the World Championships, and Finland for the World Championships in 1976. But the prize for stunning effect must go to Sweden who portrayed gliders in the low value of a 1978 set of stamps which promoted tourist facilities in the area of Vastergotland.

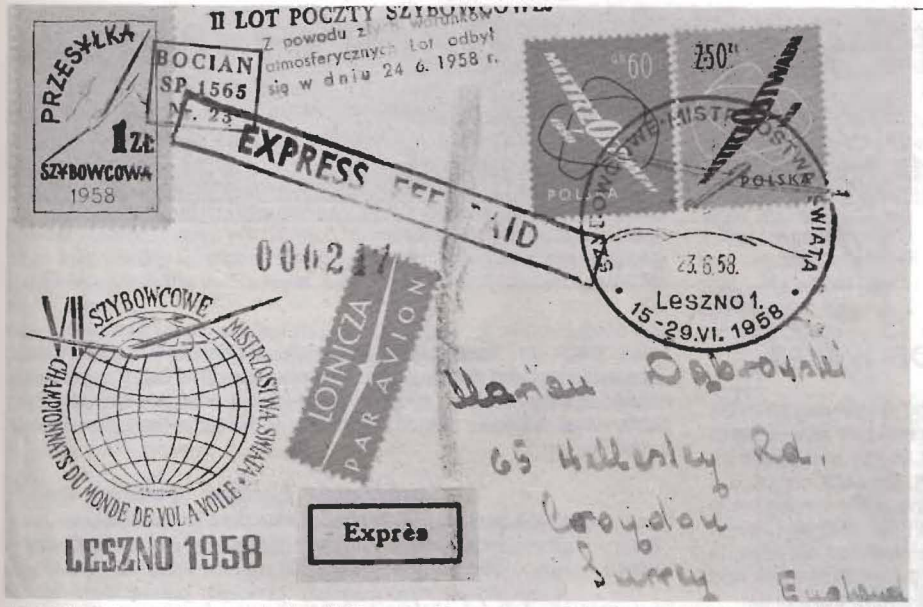
The military applications of the glider, used by both sides during the Second World War, get only a fleeting mention on stamps. Germany trained many of their Luftwaffe pilots on gliders. This was an attempt to circumvent the restrictions of the Treaty of Versailles. But the first mention of gliders on German stamps appeared only in 1935, when one of the values in a set for Hitler's Culture Fund showed a glider workshop. In 1943 gliders were featured on three stamps issued by Hungary for the Horthy Aviation Fund (Admiral Horthy was Regent of Hungary and virtual dictator). The Soviet Union hinted at the military aspect when gliders were featured on a set for the Soviet Spartakiad (military games) in 1961. North Korea was more explicit in 1975 showing gliders in a set devoted to training for defence.

Pure airmail sets featuring gliders include Austria, already mentioned, Hungary in 1954 and, if you want to stretch a point, Daedalus and Icarus on a value from a Greek air mail set. In a sense it must have been that legend which inspired so many to experiment with flight.

The sport has even produced its own error on a stamp. The Republic of Zaire anticipated reality with their stamp honouring Lilienthal as an aviation pioneer when they dated his flight 1881, ten years before it happened!

Quite a few of the sets feature model gliders, which is fair since the would-be pilot can learn a lot from them. Among the countries to have shown these are Hungary in 1954, Russia in 1951, Rumania in 1953 and Yugoslavia in 1950.

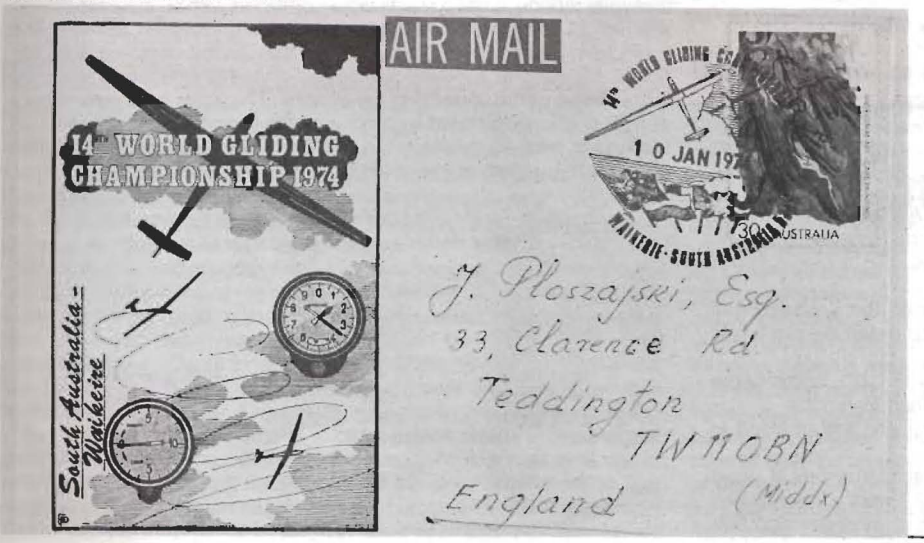
The sporting aspect has dominated



A special cover issued during the 7th World Championships at Leszno, Poland in 1958 which was posted by glider.



Above, a cover to mark the 1968 Polish Nationals, also held at Leszno, and below the 14th World Championships cover from Waikerie, South Australia.



stamps with gliders in recent years. France issued a superb stamp in 1962 as part of an issue promoting civil and sporting aviation. West Germany returned to showing gliders in 1981 in an issue raising funds for sports promotion. In the same year Luxembourg issued a nice stamp also to boost aviation as sport. Rumania's 1953 set was intended to promote aerial sports and also included parachuting. The World Championships have been featured many times, including an eye-catching set of two from Argentina in 1963.

Some of the designs are symbolic, in the sense that they show an impression of a glider, but many distinct types are portrayed. The Rumanian set issued in 1977 shows the development of that country's gliders from the ICAR up to the IS-28B. In 1967 Czechoslovakia showed the L-13 and in 1968 Poland had a set which showed the Zephyr, the Stork, the Swallow, the Fly, the Seal and the Pirat. A decade later they portrayed the SZD 45 Ogar powered glider.

Aviation days and aviation clubs have often provided the inspiration for stamps. The 50th anniversary of gliding in Italy did not occasion a stamp from that country, but San Marino issued a set to mark the occasion. Switzerland issued stamps with gliders in 1946 and 1949 to mark special air flights. They also marked the 25th anniversary of the Pro Aero Foundation with a stamp showing a glider and a jet. The golden jubilee of the Portuguese Aero Club occasioned a glider from Portugal, as did an international astronautical congress in Lisbon in 1975. Poland used a glider to mark Aviation Day in 1952.

A thematic collection like this does not, of course, have to confine itself just to gliders and their pilots. In addition to the mythological pair already mentioned, a great many of the early air designs used stylised birds. More realistic would be some stamps showing buzzards in flight, as it was the study of these with a telescopic lens by Langley, in the United States that helped to develop the aerodynamics of the wing lift. In a related vein, China, which issued a very attractive glider stamp in 1958, also released a set on kites in 1980.

Nor need the collection stop at stamps. Many special covers have been issued in connection with gliding meetings and there are also a great many postcards which illustrate the sport. Thematic stamp collecting can enhance almost any interest or hobby. The combined efforts of the world's stamp designers usually adds to the collector's knowledge, and it is something to keep in order when the weather grounds all flights.

WAVE SOARING OVER THE BRITISH ISLES

Some theoretical aspects and practical observations

T. A. M. Bradbury

The first part of this article was in the June issue, p118

PART TWO: OBSERVATIONS OF WAVES

This section summarises observations made by glider pilots whose climbs took them above the 3km level. Several hundred reports were examined in conjunction with the relevant Met charts and upper air soundings of wind speed and temperatures aloft. On each occasion a smoothed version of the sounding was used in one of the simpler wave models and on most days the model agreed in predicting lee waves. When an independent check was possible the predicted wavelength was generally close to the observed value, but the rates of climb and maximum heights reached could not be estimated from the models.

The development of lee waves depends on variations in the vertical of both temperature and wind velocity but on many days the wind is the more important factor.

Wind direction. Table 1 lists the frequency of wave days in relation to the wind direction at about 10 000ft (3km). This rather high level was chosen to reduce the various lee effects which influence the low level winds in mountain areas. Four areas were selected: Aboyne, Portmoak, the Eastern Pennines and the area over and to the east of Wales.

The table shows that Aboyne had good waves in a very wide range of wind directions. Portmoak reported the majority of waves with north-westerly winds. East of the Pennines most good wave days occurred with westerly winds while east of Wales west-north-west seemed the best direction. The alignment of major ridges upwind of the various gliding sites was usually the decisive factor; the best waves were found when the wind was within about 30° of a line at right angles to these ridges. There were some rare days of exceptionally widespread wave when the ridge alignment seemed to have little effect. On such days waves were found at almost every major gliding site, even those eastern airfields with no major hills.

Shelter from low cloud and showers. Table 1 also shows that it is important to have a mountain range sheltering the site from the spread of low cloud or showers from the sea. The waves may start very close to the coastline but it often needs a wide range of hills to dry out the air enough for slots to appear in the cloud sheet. Waves have been soared above large cumulus clouds but the arrival of showers may upset the waves and will generally restrict launching. This may explain why Portmoak reported wave days with northerly winds while Aboyne did not.

TABLE 1

FREQUENCY OF WAVE DAYS IN RELATION TO WIND DIRECTIONS

	030°	360°	330°	300°	270°	240°	210°	180°	150°	120°
ABOYNE	0	0	4.3	21.7	17.4	26.1	17.4	7.2	4.3	1.2%
PORTMOAK	3.9	15.5	25.2	36.1	7.1	6.5	3.9	0.6	1.3	0%
E. PENNINES	0	2.4	2.4	16.7	52.4	21.4	4.8	0	0	0%
E. WALES	0	0	11.4	38.6	29.5	11.4	9.1	0	0	0%

Notes: Only climbs in excess of 3km were used. Although some reports were received from sites on the western side of the Pennines the numbers were not enough to justify a frequency table.

Reports from Nympsfield, Aston Down, Bicester and Lasham were included in the section headed E. Wales. In some cases the climb was made a long way from the take-off site.

Climbs from Feshie were included in the Aboyne table. Some of the Portmoak climbs were made nearer to Aboyne than Portmoak.

The wind directions refer to the 10 000ft level and are grouped in sectors centred on the values given. (± 15°).

Changes of wind direction with height. Most mathematical wave models assume a constant wind direction at all levels. Observations showed that in the majority of cases the change of wind direction between 3000ft (the lowest level for which routine wind measurements were available) and the top of the climb was less than 30°. If there was a marked change of wind direction at any level then the smooth wave pattern was liable to break down into turbulence there, preventing further ascent.

Table 2

Percentage frequency of changes of wind direction during climb

00-05°	10-15°	20-25°	30-35°	40-45°	50-55°	60-65°	More than 65°
33.1	31.8	22.4	8.4	2.7	1.3	0.3	NIL

Variation of wind speed with height. The average values taken from all occasions showed that the wind speed nearly always increased with height. This is shown by data from four levels.

3000ft	28kt
10 000ft	37kt
18 000ft	50kt
30 000ft	69kt

The greater the altitude the wider was the range of wind speeds.

The stronger the wind at high level the greater is the chance of wave energy being trapped beneath the stratosphere and the more likely it is for a long train of lee waves to develop. From the pilots' point of view strong upper winds make high climbs difficult or impossible. Observations showed that the majority of climbs ended below the level at which the wind speed exceeded 60kt. Some of the climbs may have been cut short for lack of oxygen or time but it seems very rare for a climb to reach levels where the wind speed exceeded 100kt. When allowance is made for the difference between true and indicated airspeed at high altitudes it seemed that the Max IAS needed to hold station while heading *directly* into wind never exceeded 80kt.

There are occasions when the slope of the streamlines is unusually steep at the wave front and then the local wind may be lighter than the wind measured upwind of the mountains.

***Temperatures Aloft* (The stable layer).** The theory of lee waves suggest that a well marked stable layer in the lower levels of the atmosphere is almost essential for development of lee waves. Observations from mountain areas showed that strong wave lift could be found even if the stable layer was missing but such waves did not extend far downstream.

It seemed that the deeper the stable layer the more widespread were the wave reports; a deep stable layer combined with an increase of wind with height often produced long wave trains on satellite pictures. The wave trains often began very close to the upwind coastline and continued for several hundred kilometres showing little effect from the irregularities of the underlying topography. The wave bars were usually at right angles to the wind regardless of the line of the ridges below. On such days waves were reported at almost all major gliding sites from Usk and Nympsfield in the south up to Aboyne in the north.

Table 3

How the height of the stable layer varied

Height Range	*Base*	*Top*	
Below 1800ft	*16.0%*	—	
1800-3200ft	*13.8%*	—	
3200-4800ft	*26.8%*	*3.6%*	
4800-6400ft	*26.4%*	*10.4%*	*All heights are*
6400-8100ft	*11.9%*	*17.1%*	*above sea level*
8100-9900ft	*1.8%*	*29.6%*	
9900-11 800ft	*0.7%*	*12.9%*	
11 800-13 800ft	—	*13.6%*	
Not definable or outside these ranges	*2.6%*	*12.8%*	

This table shows the levels at which the base and top of the stable layer were encountered on the majority of wave days. It was common to find that the base of this stable layer was far enough above the ground for shallow cumulus to develop during the day but on more than 80% of these days the tops of cumulus clouds did not extend far above 6000ft. On more than half the wave days the top of the stable layer was above 8000ft.

For long cross-country flights it seems important to have a deep and well defined stable layer; this makes it much more likely that long trains of evenly spaced waves will develop. Sometimes the stable layer shows up as a very sharp inversion of no great depth. This may make relatively low level wave flying very simple, but is less likely to be favourable for high climbs.

Base of Stable layer related to tops of ridges. It seemed generally true that the best soaring conditions developed when the base of the stable layer was not far above the mountain tops. There were exceptions when waves were found above large cumulus clouds which extended high above the mountains but it seemed much harder for pilots to reach these waves.

A new problem termed "blocking"

If the base of the stable layer fell very low, and especially if a deep inversion developed overnight filling the valleys with very cold air, then a new problem termed "blocking" stopped wave development.

Blocking. When the air near the surface is very cold so that a marked inversion or very stable layer exists up to the level of the ridge top then this cold air does not flow up over the ridge but remains blocked with the ridge acting as a dam. Cold air filling up the valleys effectively eliminates the ridge. At high level the air flows across valleys and ridges without responding to the shape of the ground and no significant wave flow develops. This is more likely to happen when the ridges do not vary greatly in height. If tall peaks extend up into the strong wind level higher up they may initiate wave flow high up, and the wave troughs can then extend down the lee side of the ridge to displace the stagnant blocked air in the lee valley. Fig 10 shows two examples.

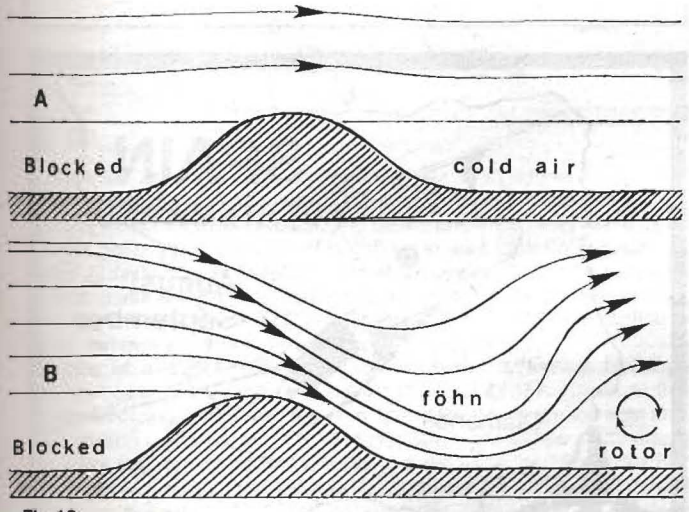


Fig 10

Waves above cumulus clouds. In the very early days of wave soaring it was thought that waves stopped when cumulus began to develop. Even now it is not uncommon for a number of pilots to do a long cross-country in thermals while a few, flying the same route, find wave and complete the task at a much higher level.

The first published reports of waves above cumulus clouds came from Germany. A pilot flying along under a cloud street pulled out to the side to avoid entering cloud. (Cloud flying was prohibited there). He pulled back to convert speed into height and found that he was still in lift outside the cloud. The lift extended far above the shallow cumulus and it was found that the wind above the cloud street was almost at right angles to the wind below. The streets were acting like mountain ridges.

Even isolated cumulus clouds could produce waves over and just downwind of them. The essential item was an increase of wind speed with height so that the air near the top of the cloud was forced to flow round and over the summit. A growing cumulus contains an almost vertical column of rising air inside it. When this column starts its ascent the horizontal speed is little different from the wind speed at low levels. This rising column does not immediately respond to the stronger wind aloft but continues its ascent with little change in its original horizontal speed.

A powerful cumulonimbus cloud can grow almost vertically through a strong wind shear, and will remain nearly vertical so long as a powerful updraught is maintained. As soon as the updraught is cut off, or if it is checked by reaching an inversion, the cloud is taken by the strong upper winds and spreads out downstream.

Thus a growing cloud which rises up into a stronger horizontal wind field can act like a temporary mountain deflecting the high level flow and producing waves. Fig 11 (a) shows the kind of air flow which can lead to waves over cumulus streets. Fig 11 (b) shows waves over isolated cumulus clouds.

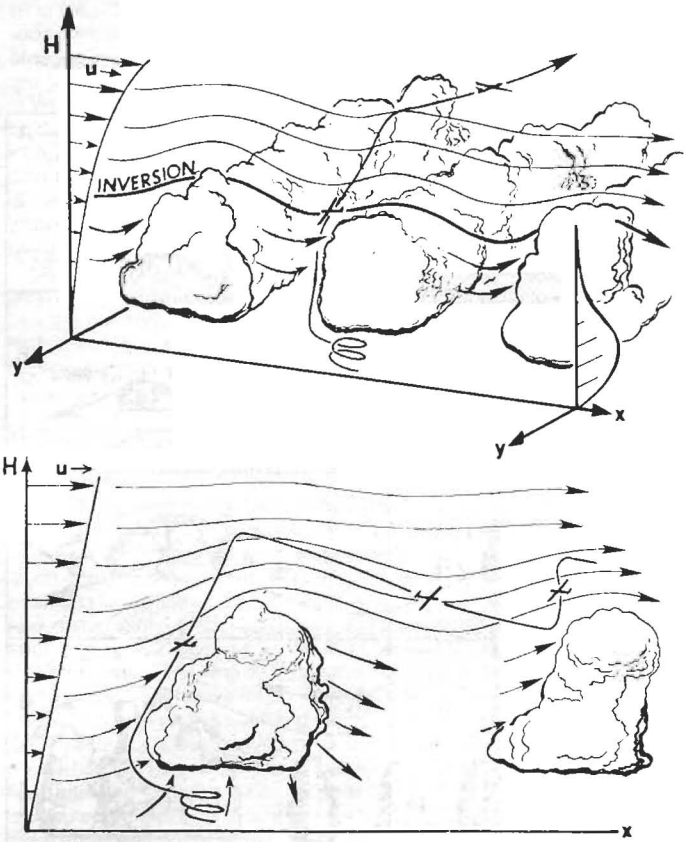


Fig 11a and 11b

Some studies made in America showed that thunderstorm cumulonimbus which extended up to the base of the stratosphere could produce wave effects detectable hundreds of kilometres away, though not as soarable waves.

Unfamiliar feel to the thermals

Convection and mountain waves. Hundreds of observations have now made it clear that wave soaring can continue throughout the day even if there are active cumulus clouds extending far above the level of the mountain tops. If the wave flow is strong and the cumuli are not large the cloud pattern is dominated by the wave flow aloft. Wave troughs produce cloud free bands while the areas below wave crests are marked by enhanced cumulus growth. This effect is usually easy to see when looking down from aloft but can be harder to recognise when flying just below the base of the cumuli. Sometimes the only indication is an unfamiliar feel to the thermals; lift may disappear after one or two circles or some thermals may be far stronger than normal.

There does not seem to be an upper limit to the size of cumuli which have waves above them, but the deeper the convection the harder it is to become established in wave lift. Only about 8% of the wave days were days of deep convection and this is not enough to deduce any firm rules of behaviour but several of the features are listed below:

1. Until cumulus clouds started to form there was next to no cloud apart from some cirrus. High tows in search of wave were unsuccessful and

the only lift to be found was close to windward slopes of hills.
2. Cumuli first formed over the mountains and persisted there with only a few decaying fragments drifting out across the low ground.
3. When the cumuli grew larger over the ridges a proportion were big enough to drift across the intervening low ground to the next ridge. Pilots soaring the ridge could then move upwind and soar the windward slopes of the oncoming cumuli. Lenticular caps formed, (sometimes only briefly) over the larger cumuli.
4. Pilots who had started their climbs during this period were often able to climb well above the largest cumulus clouds and, provided they kept high, could make long cross-country flights in wave.
5. Later the sky became so full of large cumuli that the wave layer was almost impossible to contact from low level. Pilots who were high up continued to find good wave lift, but the areas of lift were not long-lasting or obviously associated with any ground feature.
6. The best heights were achieved during the period of maximum convection. When the cumulus died out towards evening the waves became weak and were only soarable lower down. See Fig 12.

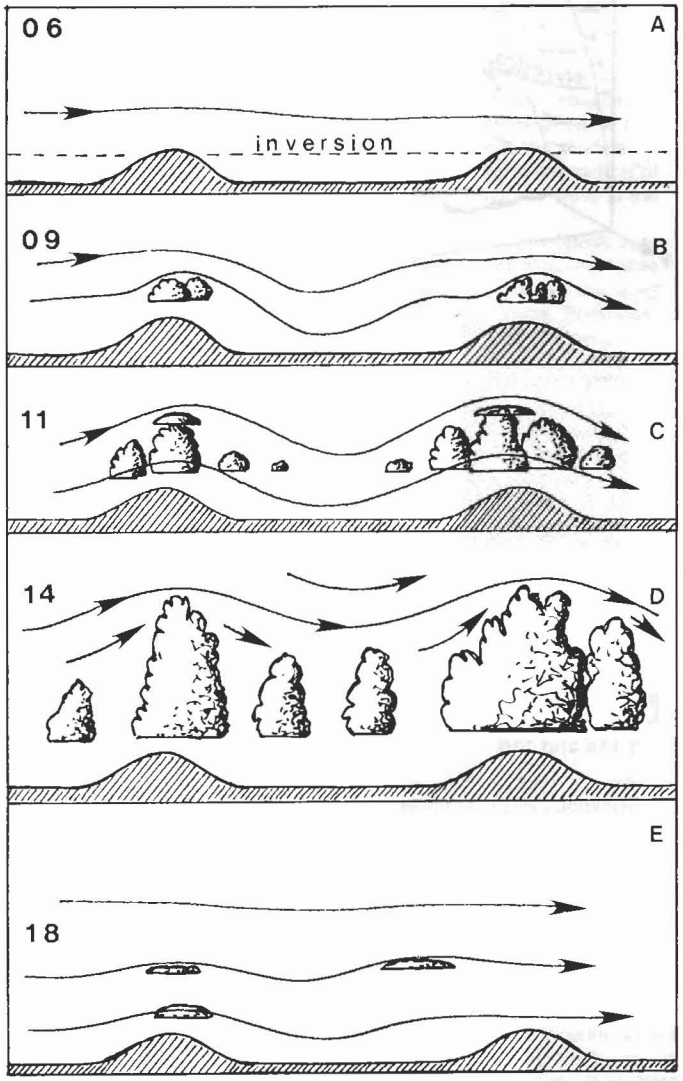


Fig 12

7. The best waves seemed to be in the areas away from showers but a few pilots reported soaring above the tops of cumulonimbus clouds and a number saw such clouds in the distance.
8. The passage of a big shower seemed to bring low level conditions back to the early morning state. Soon after the shower had cleared wave flow extended down to low levels. This may be because the air at low levels had been cooled by the rain and surface convection checked by the wet ground.

On days when showers started very early in the morning (before breakfast), soarable waves did not appear until the final shower had

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moved away but then pilots reported lift from below hill top height up to 5km or more.

Waves at right angles to cumulus streets. When flying at high levels it is not uncommon to see bands of cumulus cloud lying parallel to the waves. These cumulus bands often reveal the positions of the waves aloft when the upper air is too dry to produce wave cloud. There were a few reports of wave lift being encountered lying in bars at right angles to the low level cumulus streets but it was not until high resolution satellite pictures became available that the extent of such patterns could be studied.

Cumulus streets are found when vigorous convection is checked by a marked stable layer which keeps all the cloud tops at the same level and when there is a moderate to strong wind increasing with height in the convective layer. If the wind increases further at high levels then conditions will also be suitable for lee waves.

Suitable conditions exist when there is a north-westerly flow over the British Isles but cloud tops are held down by an inversion. Streets of cumulus may be observed lying parallel to the wind as soon as the air reaches land. When the streets reach the mountains wave bars form at right angles to the wind. Downwind of the mountains wave bars decay and the cumulus streets become more prominent. Fig 13.

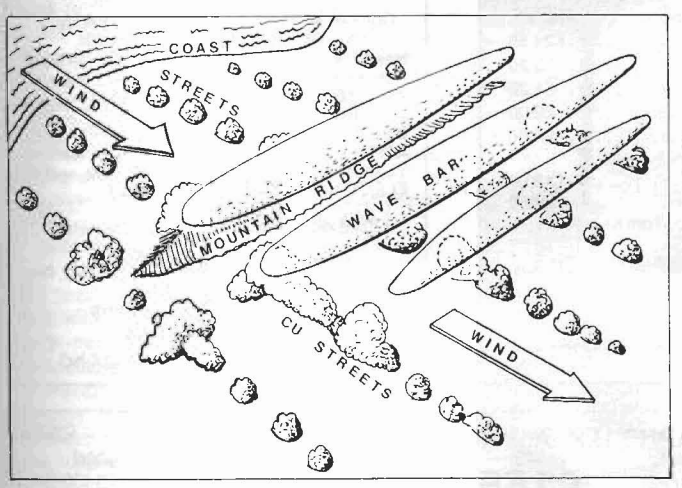


Fig 13

Transition from the cumulus streets to wave lift seems to be best attempted at the upwind end of the street. An individual street may become wider or narrower depending on the presence of wave crests or troughs higher up but this effect is difficult to spot from underneath.

Using surface charts to locate lee wave areas. Certain features of surface charts are useful as guides to the areas where lee waves may develop. The little forecast charts published in the *Daily Telegraph* and *Times* can be used when there is nothing else available.

Position of anticyclones. Anticyclones practically always have an inversion or stable layer in the lower atmosphere. This is one of the factors favouring lee waves. Near the centre the winds are too light and the inversion apt to be very low. The possible wave region starts about 300 miles out from the centre and may extend as far as 1000 miles out with a very large high. Provided that the isobars show anticyclonic curvature there is a good chance of an adequate stable layer. A gradient between west and north-west suits the majority of gliding sites in Scotland, England and Wales. Such wind directions occur with high pressure close to the south-west of Ireland. Good positions for a high range from sea areas Rockall through Shannon, Fastnet, Biscay and into central France. (All these areas are quoted in the BBC shipping forecasts four times a day.)

Depressions. It is very rare to find soarable waves within 300 miles of the centre of a low, partly because the development of a low tends to lift and destroy inversions and partly because the winds above a low often change direction with altitude.

Waves and the high/low line. It has been suggested (West 1981) that good wave climbs are likely in the region between the centres of highs and lows, downstream of the line joining the centres. Testing this against all the Diamond height climbs reported to me gave the following results.

Downstream of the high/low line 36.1%
Close to the high/low line 28.6%
} combined value 64.7%
Upstream of the high/low line 11.3%
Unclassified occasions 24.1%

It is often difficult to draw a line from high to low because the systems are too large and flabby or rather complex with several possible centres; this is why 24.1% are unclassified.

Fronts and lee waves. The boundaries between warm and cold air masses are known as fronts. The boundaries slope upwards from the surface with the warm air lying over the cold air; the slope is about 1:100 so that at a distance of 100 miles on the cold side of the front one would find the change starting at just over 5000ft. This frontal surface is a layer of very stable air several thousand feet thick.

There is also a marked shear of wind across the frontal surface. The vertical wind shear is due to the contrast in temperature between the warm and cold air; it can be represented as a vector which is often nearly parallel to the alignment of the front with the cold air to the left of the vector and the warm air to the right. This is also called the "thermal" wind (Not to be confused with the thermals one can soar in).

The winds aloft consist of the low level winds (shown by the isobars) plus the thermal wind; the two components are added vectorially. If they are both in the same direction one may add the two speeds directly.

Where the front lies nearly parallel to the surface isobars and the colder air lies in the low pressure direction, then the wind speed increases with height while remaining constant in direction and there is also a marked stable layer. Conditions in this region are very good for lee waves and satellite pictures almost invariably show such waves. The waves are found from about 100 miles on the warm side to 200 miles or more on the cold side of the front.

On the windward side of the country frontal cloud is often too thick to permit wave climbs but on the lee side of a wide mountain range the air can dry out enough for wave slots to form. When the front runs near a high pressure area or through a ridge the cloud mass is likely to break up leaving only the wave clouds.

Much more powerful wave system

Although ideal conditions occur where the front lies along the isobars good waves have been found when the front lay at about 45° to the isobars. As a front crosses a hilly area the changing height of the stable layer and the alterations in the wind speeds aloft can lead to a period of much enhanced lee waves. For a few hours the lee wave length and the mountain topography come into tune and produces a much more powerful wave system. A number of high climbs were made just ahead of an approaching cold front, or as the front passed through.

Conclusions. Pilots who fly from sites close to the larger mountains are likely to find some wave lift on most days when the low level winds are 15kt or more regardless of the presence of a stable layer or inversion in the lower levels. Deep convection does not necessarily prevent waves in these mountain areas but it becomes increasingly difficult to reach wave flow after the cumulus have become large. Waves may return to low level after the passage of a heavy shower. Waves formed over big cu do not extend far downstream.

The best waves occur when there is an inversion or stable layer just above the mountain tops and the wind speed increases with height while remaining almost constant in direction. Lee waves formed in these conditions are likely to produce long wave trains extending far downwind. Cross-country flying is best when there are such long wave trains; the waves themselves remain steady for longer than in convective conditions.

Provided there is a well marked stable layer above the cumulus tops lee waves can continue throughout the day. The wavelength tends to be longer when the cu layer is deepest during the day, and may decrease as the cu decay towards evening.

When the stable layer is very deep the lee waves seem less affected by the alignment of the ridges at the surface and wave flow can cover almost the entire country.

Mathematical models, even the simplest ones, can produce fairly good predictions of lee wavelength but are not reliable for calculating the wave amplitude. Three dimensional influences with wave patterns bending and crossing, ridges in and out of phase, and interactions with cumulus underneath make the calculation of wave lift inaccurate.

Acknowledgements: I am grateful to the many people who provided me with data on wave flights. In some cases this involved going back through scores of entries in personal logbooks. Every climb in excess of 3km was examined in relation to the synoptic charts and the nearest upper air soundings to see if theoretical models agreed in predicting lee waves.

Reference: *West, J., 1981, "Diamond Days", S&G, April issue, pp70-71.*

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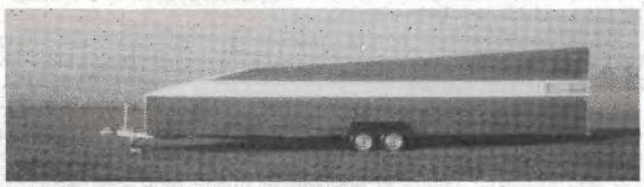


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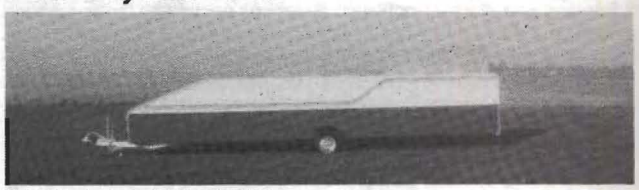
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1984 STANDARD CLASS NATIONALS

Nympsfield – June 2-10

BERNARD SMYTH who also took the majority of the photographs

It was the Andy Davis Standard Nationals at Nympsfield. He led the field from the start in an LS-4 and, although he came 15th on his worst day, he won five out of the magnificent eight and never looked like losing.

Andy was first across the line time after time and his lead over runner-up Justin Wills (LS-4) was nearly 600pts by the end. Pegasus pilots Al Kay and Chris Rollings were 3rd and 4th.

Just before take-off on one day, Andy even managed to give a good "plus" for gliding in a television interview that went out in a four-minute item on a BBC news programme.

His "reward" for all this, four days before his 28th birthday, was the Standard Nationals trophy and a folding bicycle, handed over at the closing ceremony by Group Captain Peter Saundby, vice-chairman of the RAFGSA.

Both Andy and Group Captain Saundby paid tribute to the Bristol & Gloucestershire GC helpers and the crews, who had worked hard with only one rest day. Andy said there were more people helping out than many competitors realised.

Director Ron Sandford thanked Whitbread Flowers brewery, Hill Samuels Investment Services and club members for their generous support.

Single day of respite

The ground organisation was "thrown in at the deep end" with a contest day on the first Saturday. But after months of planning and the experience of many Regionals and Euroglide, the teams did sterling work. Jane Jones and her startline crew, perched precariously on a swaying tower, found the rush of starters a headache because of poor ground-to-air visibility. By the Tuesday, which was scrubbed, everyone was glad of a rest. Little did they know they were to get no more respite . . .

On the first two days, showers on the marquee at each briefing seemed to be a good omen. The rain fell on Day 1 just after Tom Bradbury had forecast showery weather with scattered thunderstorms and 20kt winds.

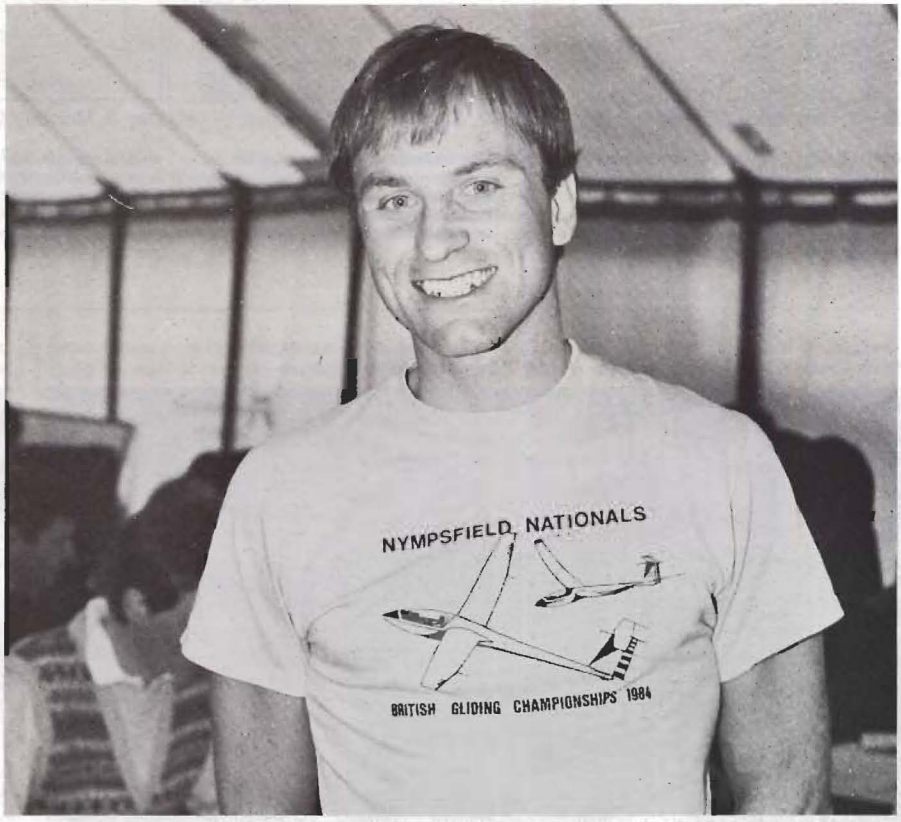
Nonetheless, task setter Graham Morris sent the pack on a 210km task to Chipping Camden, Ludlow and home.

First back was Andy, with Justin Wills less than four minutes slower and Chris Rollings about 11min behind to make 3rd place.

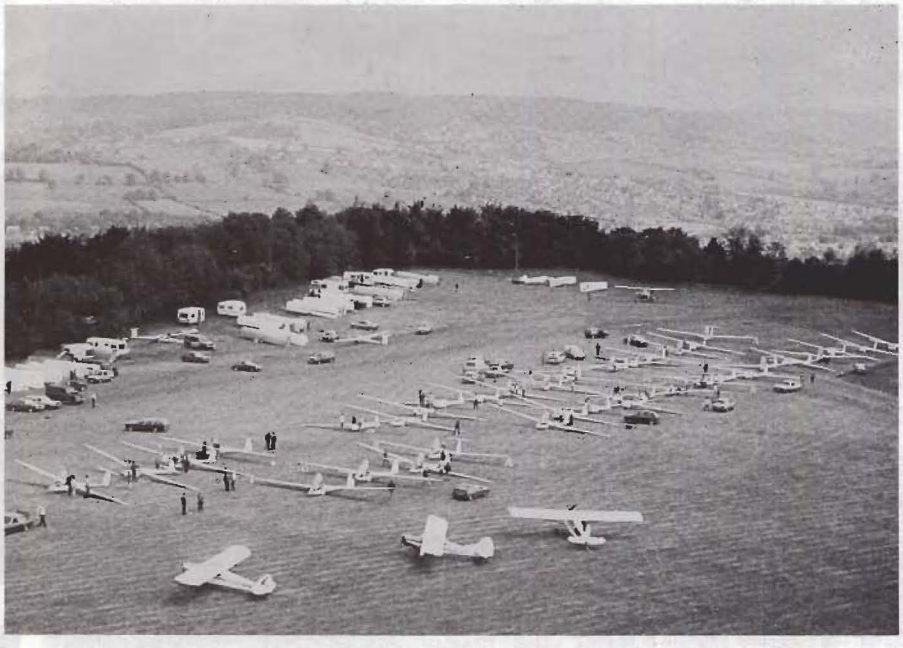
Peter Sheard had a marginal final glide in his LS-4 and just made the field after a dive over the western end.

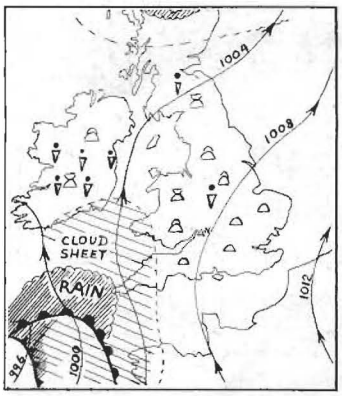
Brian Forrest did well in his Libelle 201B to achieve 72.29km/h to come 5th. The Libelles continued to do well later in the week, with Tim Macfadyen also coming 5th on Day 5 and Stuart North coming 9th. Bob Sharman,

(Continued on p175.)



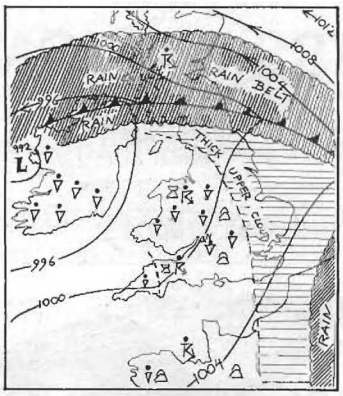
Above, Andy Davis shows off the T-shirt he "plugged" after his "how I done it" speech. Below, a view of the grid.





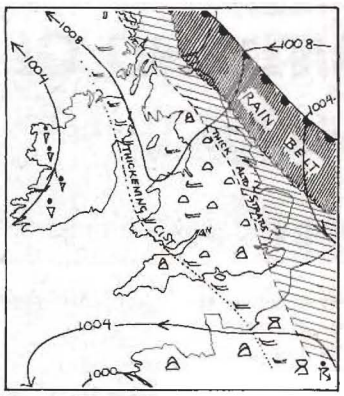
Day 1, Saturday, June 2

Some showers until noon, conditions poor at first, then cu subsided as small ridge developed between yesterday's low to the north and the next low coming from the south. Cloudbase to 4000ft plus. Max temp 15°C, dew point 5°C.



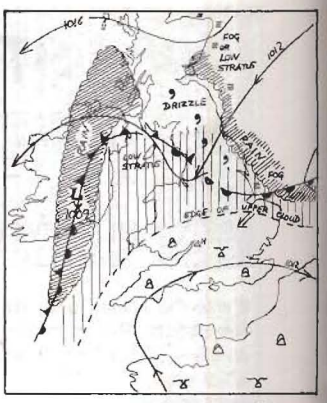
Day 2, Sunday, June 3

Heavy overnight rain cleared by breakfast but air still moist with deep instability. SW 20kt wind, showers and in the afternoon scattered thunderstorms. Cloudbase lowered markedly in the south. Max temp 14°C, dew point 7°C.



Day 3, Monday, June 4

Weak ridge separating the depressions on three sides of the UK. Air still unstable but drier, light winds, cu bases to 5000ft plus and a thickening sheet of cirro stratus failed to damp thermals until late afternoon. Max temp 18°C, dew point 4° to 6°C.



Day 4, Wednesday, June 6

Area of rain preceded by thick upper cloud, leaving only the south clear. Cu started forming early and then spread out under the stable layer which lowered to 6000ft. By afternoon wide gaps between thermals. Max temp 18°C, dew point 7°C.

Peter Sheard (LS-4) finishes on Day 1. Photo: Steve Tromans.



Justin Wills collects his bottle of champagne after winning Day 6. Photo: Godfrey Hawkins.



The start/finish line crew — Jane Jones (left), Pat Armes and Rosem





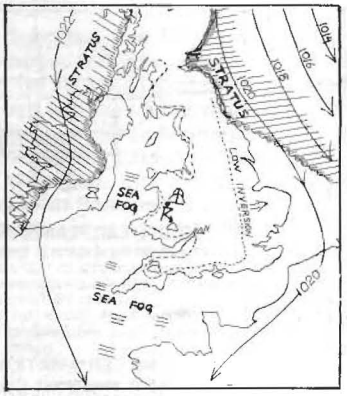
Day 5, Thursday, June 7

Warm front rain cleared early but low stratus slow to disperse. Then cloud turned into cumulus with showers and isolated thunderstorms in the afternoon. Wind northerly and air hazy. Max temp 21°C, dew point 13°C.



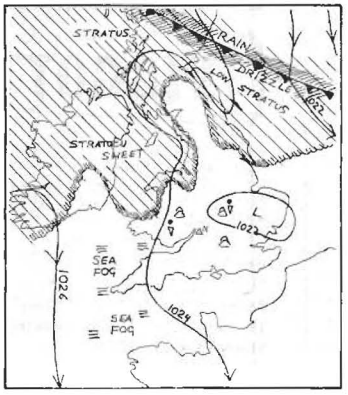
Day 6, Friday, June 8

Air aloft much drier but low level inversion at 1500ft didn't break until after 1400hrs. Thermals died out along the second leg, apparently because inversion had become re-established. Light winds. Max temp 23°C, dew point 9°C.



Day 7, Saturday, June 9

The cooler damper air over Severn valley severely restricted thermals but over higher ground on either side thermals were moderate to good with small amounts of cu. Winds light and variable. Max temp 23°C, dew point 10°C.



Day 8, Sunday, June 10

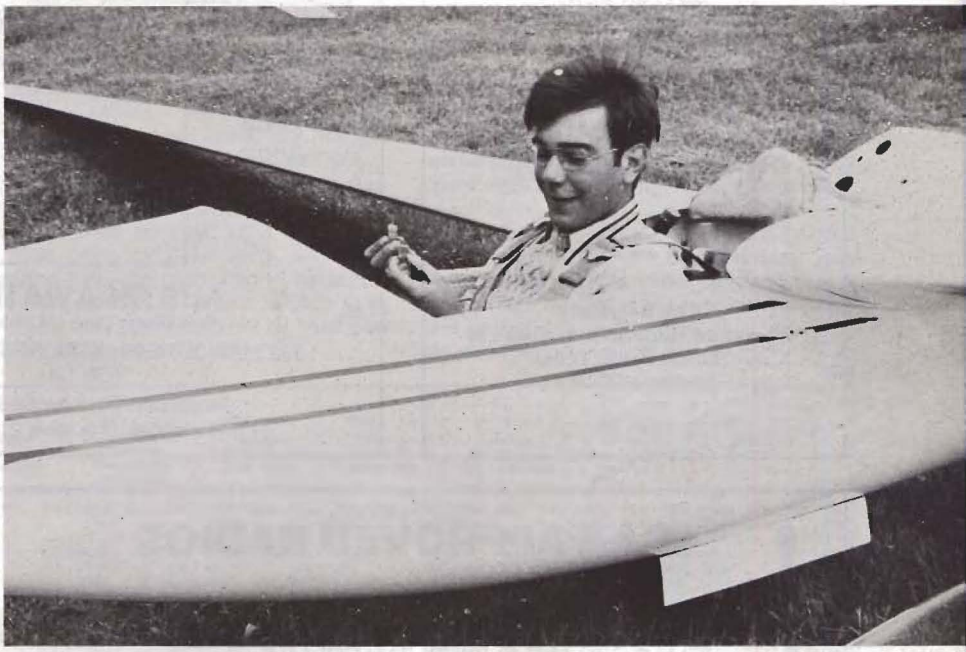
Fog delayed the rise of temperature but cu developed in two separate regions when it cleared. Inland cloudbases rose to 5000ft with good cumulus most of the day, heavy cu bringing scattered inland showers late in the afternoon. Light NW winds. Max temp 22°C, dew point 11°C.

The Met was by Tom Bradbury.

ir Traffic liaison man Peter Bray, hand on heart, tells pilots about the DZ nd places to avoid en route.



Brian Forrest (Libelle 201B) shows his "secret weapons" — jelly babies — after doing well on Day 1 to come 5th against the more modern gliders.



nary Sandford (right).



A general view of briefing.



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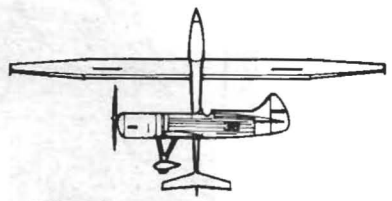
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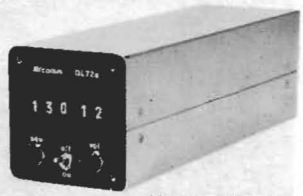
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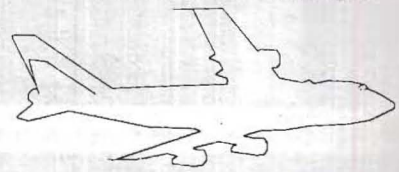
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(Continued from p171.)

also in a Libelle, was lying overall 16th on that day, too.

(Andy told the Day 2 briefing that things went smoothly for him on the first day. "It was all very mundane," he said of his 94.20km/h flight. His prize, a bottle of champagne, was the first of many bottles given by Hill Samuel.

On Day 2 rain fell on the tent as Tom gave hope of brighter spots later. Breaks were showing in the weather coming from Cornwall, he said.

Local knowledge important

Once more, Andy was first back, while most of the others landed out all over the task area. Second was Robin May, at 43.18km/h and 3rd Mike Throssell at 40.28. Andy said his local knowledge of Nympsfield and Keevil had been important in staying up on this "quite interesting day". Take-off time had been important too, he said.

Day 3 saw Martyn Wells' turn to lead the field, at 89.2km/h. He beat Andy into 2nd place at 86.69 and Justin Wills was 3rd jointly with Ben Benoist, at 83.92. So it was LS-4s in first four places. Steve Nash, who had been called into the contest on the day before it began after John Williamson had had to drop out, did well on this day to get back after a marathon flight in his Cobra of nearly 6hrs. He was given a special prize of Chinese Imperial Government Bonds "which might help him to buy a new glider," joked Ron Sandford at the briefing.

Dave Eade was the only one to land out, after 205.8km of the task.

Peter Sheard was given a 100pt penalty for "hazardous flying" as he swooped round the finish line tower, but the steward later withdrew the penalty after a lengthy meeting. They took the view that Sheard's flying was no more hazardous than others' at the finish. His flying was not considered dangerous, although the margin for error had been insufficient.

Director Ron Sandford was struck a double blow during the competition, but carried on. He suffered a bad cold part way through and then a fire destroyed his caravan awning and many belongings. Luckily the caravan was only slightly damaged, but the fire meant extra work for Ron and his wife, Rosemary, who was doing the timekeeping on the start line.

The director warned pilots the next day, too, that some photographs were poor, leading to quite a few penalties.

Day 4's task was altered after briefing to allow pilots a better chance to deal with a Purple Airway near London Airport. The task of 333km was to Didcot, Devizes, Alton, Didcot and back. Only Andy Davis managed to finish, at 63.02km/h, reinforcing his lead over Martyn Wells, who came 6th after landing out at 284.3km. It was a 1000pt day and Andy was now 307pts in the lead.

Day 5 saw no finishers from the task in poor conditions to Llangorse, Hay-on-Wye and back — 160km. Chris Rollings did best, with 140.2km, with Justin 2nd at 128.7km and Chris Starkey 3rd by a whisker at 127.5km.

On this day, Martyn Wells had to withdraw after landing 40ft up in trees near Talgarth. He was rescued from the LS-4 after some nifty rope tricks by John Bally, the Black Mountains CFI. The glider had to be lashed to the trees, though, to await a solution to its recovery. It was later pulled out by helicopter — hardly damaged.

The day was hardly worth all the hassle, though, for it was a 77pt one. Martyn's achievement of 66km got him into second place, but he missed the final days.

Chris Rollings told how he became increasingly airsick and disorientated during the flight and it all got too much for him in the last cloud climb and he landed near Gloucester.

On Day 6, the conditions proved a puzzle for the task setter, who started out with a 354km Task A, gradually reducing it to the Task D to Hay-on-Wye, Church Stretton and back. The winner: Justin Wills.

Saturday dawned bright and sunny, but it was to prove a 1000pt day in spite of a lack of cumulus to mark the way. Andy won his 4th day, saying it was an easy first leg to Chipping Camden.

Trouble came at Evesham, though, where Andy said it looked as if there was going to be a copy of Arnhem, with dozens of gliders circling low in two thermals about 100 yards apart. But they got away and most managed to make Nympsfield in poor conditions. Chris Alldis, the last home, had to resort to a big bonfire in the Forest of Dean to keep going.

Libelles did well

Thirteen competitors were unlucky and landed out. Andy's winning time was 62.94km/h. Once more the Libelle pilots showed up well and all made it home. If only there were handicapping, some Libelle lovers were saying . . .

Fog greeted everyone on the final day, but the sun soon burned it off. At briefing Tom Bradbury forecast a good day with cu. A 190km task was set to get everyone home for the prizegiving. Andy was first again at 81.4km/h to put the seal on his victory.

FINAL RESULTS

Scorer: K. R. Brown

Fin. pos.	Pilot	Comp. No.	Glider	DAY 1 2.6 208km ▲ Chipping Campden, Ludlow			DAY 2 3.6 184km ▲ Grove, Standerwick			DAY 3 4.6 227km butterfly Sherborne, Standerwick, Gillingham			DAY 4 6.6 333km Didcot, Devizes Alton, Didcot			DAY 5 7.6 160km ▲ Llangorse, Hay-on-Wye			DAY 6 8.6 225km ▲ Hay-on-Wye, Church Stretton			DAY 7 9.6 185km ▲ Chipping Campden, Leominster			DAY 8 10.6 189km Southam, Enstone			Tot. Pts.
				Speed (Dist.)	Pos.	Pts.	Dist. (Speed)	Pos.	Pts.	Speed (Dist.)	Pos.	Pts.	Dist. (Speed)	Pos.	Pts.	Dist. (Speed)	Pos.	Pts.	Dist. (Speed)	Pos.	Pts.	Speed (Dist.)	Pos.	Pts.	Speed (Dist.)	Pos.	Pts.	
1	Davis, A. J.	490	LS-4	94.29	1	882	(58.54)	1	577	86.69	2	962	(63.02)	1	1000	36.2	15	10	121.7	=5	374	62.94	1	1000	81.4	1	928	5733
2	Wills, T. J.	1	LS-4	82.72	2	776	102.9	13	264	83.92	=3	920	281.5	7	821	128.7	2	70	149.7	1	477	61.07	2	970	75.36	2	838	5136
3	Kay, A. E.	941	Pegasus	67.22	=9	635	96.1	=15	242	83.26	5	910	292.3	=4	855	66	=9	29	120.7	=8	370	56.96	9	905	69.12	8	745	4691
4	Rollings, C. C.	316	Pegasus	80.81	3	759	(45.94)	5	467	80.33	11	866	210.2	=11	597	140.2	1	77	93.4	=23	270	58.07	7	923	62.9	18	652	4611
5	Hood, L.	152	LS-4	71.2	6	671	120.6	=6	320	75.74	29	*746	210.2	=11	597	0	=20	0	127.2	3	394	58.16	6	924	73.89	3	816	4468
6	White, S. A.	94	Pegasus 104	60.34	19	*528	75.1	24	175	82.25	7	895	210.2	=11	597	24.7	=18	3	143.4	2	454	58.39	5	928	70.66	6	768	4348
7	Forrest, B. R.	194	Libelle 201B	72.29	5	681	72.9	=25	168	78.52	14	838	236.2	8	679	0	=20	0	122.9	4	378	55.9	12	888	65.08	13	685	4317
8	Starkey, C. G.	96	ASW-19	64.77	13	613	120.6	=6	320	78.6	13	840	189.9	28	533	127.5	3	69	100.2	=20	295	53.64	17	852	70.56	7	766	4288
9	May, R. C.	49	DG-300	67.18	=9	635	(43.18)	2	549	84.32	8	876	105.9	32	270	0	=20	0	120.7	=8	370	52.39	20	832	66.2	10	701	4233
10	Smith, D. A.	254	LS-4	68.52	8	647	120.6	=6	320	78.01	16	831	315.8	2	929	29	17	6	121.7	16	*326	(180.2)	30	*465	65.42	12	690	4214
11	Hill, D. J. M.	446	LS-4	55.14	23	*481	94.9	=18	238	78.4	15	837	213.2	10	606	0	=20	0	93.4	=23	270	57.75	8	918	72.67	4	798	4148
12	Sharman, R.	466	Libelle 201B	(154.8)	37	*280	94.9	=18	238	77.74	17	827	292.3	=4	855	24.7	18	3	120.7	=8	370	54.52	15	866	60.69	21	619	4058
13	Aspland, W.	580	ASW-19B	(147.3)	35	306	90.6	=20	224	76.37	19	806	303.5	3	890	0	=20	0	74.7	30	201	55.67	13	884	67.24	9	717	4028
14	Lysakowski, E. R.	860	Std Jantar 3	45.89	=26	452	106.1	=11	274	80.43	10	867	203.6	24	576	90.5	=5	45	103.7	=17	308	52.98	18	842	58.09	27	580	3944
15	Metcalf, G. C.	104	ASW-19	62.37	16	591	70.1	=27	159	71.67	30	735	210.2	=11	597	0	=20	0	83.9	27	235	56.88	10	904	59.99	23	609	3830
16	North, S.	146	Libelle	65.3	11	=618	70.1	=27	159	61.68	35	583	204.1	23	578	71.2	8	33	100.2	=20	295	52.76	19	838	61.63	20	633	3737
17	Gorringe, J. P.	246	LS-4	70.16	11*	=618	124.9	9	305	83.96	9	*871	228.2	9	654	0	=20	0	54.3	35	126	(173.2)	=31	464	63.03	17	654	3692
18	Throssell, M. G.	661	ASW-19	49.3	25	472	(40.28)	3	543	71.64	31	734	210.2	=11	597	40	14	13	99.7	22	293	(183.7)	=27	496	54.24	31	523	3671
19	Gaisford, P. A.	353	Astir CS	(204.6)	30	444	99.4	14	252	75.77	=21	797	210.2	=11	597	0	=20	0	79.4	28	218	51.38	23	816	54.62	30	529	3653
20	Keogh, B.	264	LS-4	41.88	=26	452	38.9	39	60	73.28	28	759	210.2	=11	597	0	=20	0	78.9	29	217	60.4	4	960	53.27	32	508	3553
21	Bromwich, R. C.	855	Std Cirrus	55.71	18	530	109.6	10	285	63.29	34	608	198.6	25	561	0	=20	0	39.1	39	70	53.71	16	853	60.23	22	612	3519
22	Marczynski, Z.	304	LS-4	(207.3)	=32	*407	40.6	37	65	75.87	20	798	136.4	33	265	0	=20	0	121.7	=5	374	56.45	11	897	61.89	19	637	3500
23	Hayes, D.	674	ASW-19B	52.7	36	283	54.4	=31	109	75.76	=21	797	210.2	=11	597	77.7	7	37	43.8	38	88	55.14	14	876	58.98	26	594	3381
24	Benoist, J. D.	232	LS-4	(206.6)	29	449	96.1	=15	242	83.92	=3	920	85.4	36	205	103	4	53	121.7	=5	374	52.3	21	831	(177.8)	35	300	3374
25	Russell, G. J.	412	LS-4	(74.3)	39	*111	90.6	=20	224	75.16	24	788	210.2	29	*527	0	=20	0	116.9	13	356	(183.7)	=27	496	71.89	5	786	3288
26	Wells, M. D.	321	LS-4	79.36	4	746	(37.15)	4	538	89.2	1	1000	284.3	6	830	66	=9	29	DNF			DNF			DNF			3143
27	Kiely, K.	166	ASW-19	64.61	16	*591	96.1	=15	242	76.83	18	813	113.2	34	*243	0	=20	0	45.8	37	95	(170.5)	34	456	64.9	14	682	3122
28	Camp, G. W. G.	208	DG-100	51.12	22	488	61.1	30	131	74.89	25	783	210.2	=11	597	0	=20	0	56.3	34	134	(175.2)	29	470	52.99	34	504	3107
29	Macfadyen, T. E.	801	Libelle	(49.4)	40	71	72.9	=25	168	76.78	27	*762	80.9	37	191	90.5	=5	45	120.7	=8	370	51.77	22	823	63.52	15	661	3091
30	Alldis, C. J.	909	Std Cirrus	52.86	20	504	50.1	=34	96	75.5	23	793	210.2	=11	597	41.2	13	14	103.7	=17	308	41.25	26	655	(84.6)	37	123	3090
31	Kay, W.	175	DG-300	63.27	15	599	106.1	=11	274	67.27	32	668	210.2	=26	*547	0	=20	0	120.2	12	369	(44.6)	39	75	55.28	28	538	3070
32	Sheard, P. G.	268	LS-4	68.97	7	651	52.4	33	103	83.02	6	906	210.2	=11	597	0	=20	0	93.4	=23	270	(179.2)	33	*462	(34.3)	39	27	3036
33	Mitchell, T.	R18	ASW-19B	(197.3)	31	427	39.9	38	63	65.62	33	643	82.4	38	*176	32.7	16	8	103.7	=17	308	49	25	779	59.61	24	603	3007
34	Smith, E.	R19	ASW-19B	63.57	14	602	25.6	40	18	(0)	=39	0	210.2	=11	597	0	=20	0	116.9	15	*332	49.41	24	785	63.2	16	657	2991
35	Stewart, K.	135	Cirrus 75	(196.3)	34	*380	54.4	=31	109	73.7	26	765	DNF			0	=20	0	51.6	36	116	60.92	3	968	59.31	25	599	2937
36	Smith, G. N.	732	Std Jantar	57.1	21	*499	77.9	23	184	81.26	12	*860	34.8	39	46	0	=20	0	76.9	31	*185	(173.2)	=31	464	65.99	11	698	2936
37	Eade, D. J.	406	LS-4	49.54	24	474	43.9	36	76	(205.8)	38	292	210.2	26	547	46.2	12	17	61.8	33	154	(51.1)	38	94	53.15	33	507	2161
38	Nash, S.	544	Cobra	(154.8)	38	*211	63.4	29	138	39.54	37	325	112.2	31	289	0	=20	0	114.9	14	349	(164.2)	35	437	(171.3)	36	288	2037
39	Watson, A. J.	11	ASW-19B	(206.8)	28	450	78.1	22	185	(0)	=39	0	198.6	30	*461	(0)	=20	0	64.6	32	164	(85.9)	36	200	54.72	29	530	1990
40	Parker, T.	464	ASW-19	(189.1)	32	407	50.1	=34	96	64.37	36	*574	85.9	35	207	47.7	11	18	99.7	26	*269	(60.1)	37	122	(82.3)	38	118	1811

Penalties: * = photo; ' = barograph; DNF = did not fly

RULES FOR LEAVING THERMALS

GARRY SPEIGHT

In a letter to S&G (October 1982, p230) I criticised a paper about MacCready theory by *Litt and Sander that had been summarised by Frank Irving (see "How Glider Pilots Get There Faster", S&G, June 1982, p120). I said that Litt and Sander's model was so unrealistic as to be quite unhelpful. I have had to revise that opinion, which was expressed in the heat of enthusiasm about applying probability theory to cross-country soaring.

The assumption in the Litt and Sander analysis that bothered me most was that all the thermal strengths and inter-thermal distances were known to the pilot in advance. I now take Frank Irving's point that this assumption is acceptable if its use can lead to insight for real cross-country situations.

A more valid criticism of Litt and Sander's paper is that the analysis was not carried through to worthwhile conclusions.

Rules for known thermals

I will discuss the third of their four cases; the case in which the flight is confined between upper and lower altitude limits (as on a flight over a plain and under a sharp inversion) and each thermal has a known strength that is constant at all heights.

Litt and Sander conclude that the MacCready speed to fly between the thermals and the height to climb in each thermal should be chosen according to a set of seven rules. These rules embody a number of alternative procedures depending on the relative strengths of the current thermal and the next thermal and the distance between the thermals. Most pilots would find it difficult to memorise these rules and quite impossible, while flying, to recognise which rule is appropriate to the situation.

In a letter published in the October 1982 issue of S&G next to my own, Jan de Jong pointed out that the rules derived from the model can be reduced to four only. Jan de Jong's reformulation of the rules not only satisfies his stated aim of making them easier to remember but are also well-structured, so that it is easy to follow their logic and to single out the controlling factors.

For convenience, I repeat Jan de Jong's reformulated rules here:

A. In any thermal, climb only high enough to reach a stronger thermal at Min altitude by flying with a MacCready ring setting equal to the present climb rate.

B. If there is no stronger thermal that can be reached following Rule A, climb to Max altitude and proceed with the highest feasible MacCready ring setting with which, at or above the Min altitude a thermal can be reached with a climb rate equal to or larger than that MacCready ring setting.

A1. In the last thermal climb only high enough to reach the finish at the Min safety altitude by flying with a MacCready ring setting equal to the climb rate in the last thermal.

B1. If the finish cannot be reached following Rule A1, climb to Max altitude and proceed with the highest feasible MacCready ring setting with which the finish at the Min safety altitude can be reached.

One can see that the rules refer to two kinds of distinction: whether there is a stronger thermal ahead, and whether one is aiming to reach a thermal or to reach the finish line.

On the question of the presence of a stronger thermal ahead, de Jong gives alternative rules that do not at first seem to be closely related to each other.

Following Rule A, if there is a stronger thermal ahead the present rate of climb is the key. It controls both the inter-thermal speed and the height to leave the present thermal. One can see, however, that the inter-thermal distance is also involved, because the glide angle that is determined by the inter-thermal speed relates the height to the inter-thermal distance.

By Rule B, it seems that the present climb rate is irrelevant when there is no stronger thermal ahead. Instead one takes the thermal right to the top. Then one sets the ring on the strength of the next thermal or, if to do that would yield too steep a glide angle, one sets it on a lesser value that will give just enough range.

The two rules actually have a lot in common. The ring setting is equal to or less than the strength of both thermals in each case. Also one acts to ensure that the glide intersects the next thermal at or above the Min altitude.

The two rules can, in fact, be combined in a single rule by making a slight change to the original Litt and Sander model: one that does not materially alter the assumptions but merely specifies what happens at the top of a thermal. I propose that the glider's rate-of-climb at the very top of each thermal should diminish from its otherwise constant value to become the still air sink rate over a small but finite time period.*

The effect of this change to the model is that, even in the case that there is no thermal ahead that is stronger than the present thermal, if one climbs to the very top there is *always* a stronger thermal ahead. As the thermal strength falls through low values of lift, more and more thermals qualify as "stronger". (In the limit, even the ground of an outlanding field is rising faster than the glider is when the thermal lift has fallen below zero sink!)

By this means the situations specified in Rules A and B are no longer distinguished. The rules may be replaced by a single equivalent rule:

When thermalling, as soon as it becomes possible to reach a stronger thermal by cruising towards it with a ring setting equal to the present rate-of-climb, leave the thermal and cruise at that ring setting.

This rule is a re-wording of Rule A. It is equivalent to Rule B because:

1. one should climb to Max altitude, since only then will the weak thermal ahead be stronger than the current rate-of-climb;
2. the meaning of the phrase "highest feasible ring setting" is specified by two conditions:

(a) not higher than the strength of the next thermal;

(b) not so high as to drop short of the next thermal.

These are both covered in the new rule, Condition (a) by the word "stronger" relating the next thermal to the current rate of climb (which specifies the ring setting), Condition (b) by the words "possible to reach".

The very good sense that can be brought out by developing the results of Litt and Sander's paper is evident in the rule given above. Cross-country speed depends directly on the strength of the thermals used for climbing. Clearly one should move on as soon as a stronger thermal comes within range at MacCready speed, and not before.

It is clear from the rule that the ring setting depends not only on the thermal strengths, but also on the inter-thermal distance. It is not surprising that this point comes up, for it is a consequence of the altitude constraints that Litt and Sander were studying.

Final glides

It remains to examine the significance of Jan de Jong's Rule A1 and B1, that refer to final glides. He rightly emphasises the formal similarity between these rules and the rules applying to the rest of the flight. The only significant change is that the words "the finish" replace the words "a stronger thermal" or other words referring to the strength of the thermal ahead. Rules A and B and the equivalent rule above specify how to increase one's cross-country speed by moving on to a stronger thermal as soon as it comes within range. One should continue to do this until there is no stronger thermal between the glider and the goal of the flight. It is clearly not possible to increase one's speed by making use of a thermal that is beyond the goal. The object then is simply to maximise the speed to the goal using the current thermal and the following glide. Even if there is a thermal right at the finish line, its strength is irrelevant and does not appear in the rules.

Rules A1 and B1 then also come down to a single rule: the well-known final glide rule. This rule may easily be incorporated in the other rule given above.

Combined rule

It is possible in this way to condense the advice arising from studying Litt and Sander's

* *Litt, F. X., and Sander, G., "Optimal Flight Strategy in a Given Space-Distribution of Lifts with Maximum and Minimum Altitude Constraints", OSTLV Publ. XV, (Chateauroux 1978).*

* *For sink to occur, there must be a violation of Litt and Sander's stated assumption that the thermal characteristics do not change with time. However, I wish to eliminate the option of loitering on top of a thermal in zero sink, so I am postulating that if you try to do that the thermal will go away, and you will sink.*

model into just *one* rule:

When thermalling, as soon as it becomes possible to reach either a stronger thermal or the finish line by cruising towards it with a ring setting equal to the present rate of climb, leave the thermal and cruise at that ring setting.

In a race on any day when the strength, location and height of every thermal is known, the pilots who follow this rule will dead heat for first place, at a speed which can be stated before the race begins. Each pilot could have calculated, as part of his flight plan, the height at which he should leave each thermal and the ring setting that he should adopt.

How the ring setting varies

The ring settings in Litt and Sander's examples are different for every inter-thermal glide. It is important to know what these settings relate to. First, they increase with thermal strength. The setting is always equal to, or less than, the strength of the weaker of the two thermals — the present thermal and the next to be used. Second, they decrease with increasing thermal spacing: whenever the thermals are too widely spaced to be reached at a ring setting equal to the rate of climb, a lower setting must be used. Third, the ring settings increase with the altitude at which the thermal is left. Both of the other two effects contribute to this. The stronger the thermals, the higher the ring setting. The higher the ring setting the steeper the glide angle and the higher the altitude required to get to the next thermal. Similarly, if a ring setting lower than the strength of either thermal is needed to get from the top of one thermal to the bottom of the next, the higher the top of the thermal is the steeper the glide angle and the higher the ring setting can be.

Thus, the ring setting varies directly with thermal strength and with altitude, and inversely with inter-thermal distance. We can be fairly sure that these relationships hold in real life as well as in Litt and Sander's model.

The variation of ring setting with altitude is particularly important. While one can perhaps get away with assuming that the thermals are all the same strength or the same distance apart, it is clearly ridiculous to assume that one flies at a constant altitude.

Critical rate-of-climb

On a cross-country flight, the pilot does not know where the thermals are, or what their strength is. Instead of setting the MacCready ring according to a known thermal strength and distance he must select the Max thermal strength that he considers he is very likely to meet before running out of height. Whereas in conditions of known thermals the use of the MacCready ring simply serves to maximise the speed, in real life it has another function of far greater importance: it distinguishes useful thermals from useless ones. As soon as one meets a thermal exceeding the MacCready setting, and not before, one should break off the cruise and circle. This is Anthony Edwards' Critical Rate-of-Climb principle, stated in S&G, October 1964, p364, as: set the ring to the rate-of-climb above which one would elect to circle. He has recently ("Proof of the Threshold Theorem", August issue, p159) given a geometric proof that, once a ring setting has been selected, the cross-country speed will be increased by circling in lift that is greater than the ring setting and decreased by circling in lift that is less than the ring setting.

For real conditions the clause "cruise at that ring setting" (until you get to the next thermal) should be replaced by "fly to that ring setting". This means not only cruise at the optimum speed, but also to circle if, and only if, one meets a thermal greater than the ring setting.

A practical rule

We now have the material for a realistic rule for leaving a thermal (and, incidentally, for commencing to climb in the next one):

When thermalling, as soon as it becomes almost certain that one can reach a stronger thermal or the finish line by cruising towards it with a ring setting equal to the present rate of climb, leave the thermal and fly to that ring setting.

Acceptable risk

In this rule the phrase "almost certain" is not precisely specified, and should be varied in the light of experience. At least in Australian summer weather, I am inclined to suggest "odds 200 to 1 on" that one can reach a stronger thermal. One must be rather careful not to over-estimate the chance of finding a thermal within range for if it is not there one will be out of the race — *aux vaches.* "Two hundred to one on" sounds very safe, but it must be realised that this chance applies to every glide, and there may be more than twenty glides between acceptable thermals in one flight. This brings the liklihood of outlanding up to one in ten. It is up to the pilot to decide whether such a risk is acceptable or not. Any pilot who considers that the odds of Russian roulette (5:1) are good enough for each of twenty inter-thermal glides has only *one chance in forty* of getting home.

Implications

This rule for leaving a thermal is, I believe, correct. It gives valuable advice about this particular decision. It also expresses the things that a cross-country pilot needs to think about, in using energy from the sky to drive his sailplane:

* the need to find a better thermal
* the probability of finding such a thermal
* the dependence of thermal search range on MacCready ring setting
* the way the ring setting determines the acceptability of thermals
* the equivalence of the rule for thermal search and the rule for final glide.



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TRAVELLERS' TALES

Charlie Uniform and the Eagle

DEREK FINDLAY tangles with the birds over Italy.

It all began with an idea put by our CFI, Pat Rowney, that Bannerdown should be a little more adventurous and seek gliding pastures new. Having tasted the delights of Alpine flying ten years previously with Two Rivers he proposed that we should visit Aosta in the spring, when the wave works well. There was no lack of response and though some fell by the wayside 18 members and two wives finally set out south. The months leading up to the trek saw much fettling of dilapidated trailers and the successful completion of the daunting task of building a trailer for the K-21. Oxygen equipment was built-in to the four gliders, which in addition to the two-seater included the club's Ventus and Astir and a syndicate K-6E. Some experience of ridge and wave flying was acquired at Talgarth and Dishforth, in the process of which a Gold height was gained.

We set off on March 26 and on the first day at Aosta all solo pilots had check flights in the Blanik or Twin Astir and our appetites were whetted for flying the so-called ridge, a 7000ft mountain face only a mile from the airstrip. The sad fact was that the next day turned out to be the best wave day of our stay and the Oerlinghausen pilots bagged no less than 15 Diamonds while we were still feeling our way.

Varied conditions

Sunday was a non-flying day so it was off to the nearby ski slopes of Pila where (under the guidance of our resident ski instructor, Willie McIver) a few bronze legs were obtained, many aching ones, but none broken. The following week provided a wide variety of conditions and interesting gliding, but a series of mock depressions put paid to our chances of wave flying.

On Monday of the second week I was launched first in Charlie Uniform, managing to remain aloft by dint of rather close inspection of the fir trees and rocks on the lower slopes of Mt Fallere. After regular transits of the front door of one snow-bound hill farm, gaining on one beat and losing on the return, height was gradually gained as conditions improved and the hairs on the back of my neck returned to their normal position. Tantalising flocks of birds were to be seen in tight thermals upslope so when I spotted two large birds soaring at my level I wasn't going to turn down the opportunity of acquiring a bit of local expertise. They were not very welcoming though — each time I joined them they cranked back their wings and plummeted away.

Trying once again over a rocky bluff in rough lift I suddenly felt a heavy thump at the back end. My immediate panic reaction was that I had made contact with another glider or even a tree top, but quick glances around in the turn hardly confirmed this. However, I wasn't left in doubt for long, with a sudden darkening of the sky and an almighty thump on the fairing behind my head a bird struck, slithered forward over the canopy as a somewhat untidy bundle of feathers and hung long enough on my right hand side for me to take in the magnificence of an eagle in highly indignant mood; tail and pinions fully spread, talons forward, and a golden patch that must have contained a baleful eye. My adversary was soon gone but only moments later another clatter announced his return, this time unseen to me.

An unwelcome stranger

Though I would dearly have liked to put this close encounter on record with the camera on my lap, my attention was still taken-up with maintaining a reasonable altitude so close to the hillside. The message was clear enough — I was an unwelcome stranger — perhaps competition for his mate — and anyway not showing much skill at this flying job. A soaring hat is not much protection against aquila hairstylists intent on giving out nice straight partings so off I departed for a clump of cu that was now building out into the valley and soon gained enough height to venture further up-valley towards Mont Blanc.

As this foray took me into heavy sink I retraced my route, encountering my feathered friends at the same place. This time my ancient Ikonta was at the ready and I clicked off two or three frames without getting too closely acquainted again. Subsequent inspection of the transparencies led me to the disappointing conclusion that my aim had been unsteadied by the proceedings but luckily I had a sneaking thought about one complete sky-shot, and before relegating it to the wastebin I took the precaution of removing the film from its mount, and behold right on the edge of the frame there was a small but sharp image showing all the necessary features of a golden eagle — according to my birdy friends. Not only were they sure of the species but the white underwing patches and the lighter banded tail I had noted at close range indicated an immature bird, fitting my impression of a large rather than immense assailant. Other eagles were seen during our stay but why CCU was singled-out for this treatment is a mystery — unless Italian eagles don't go for *cappuccino* (our livery being coffee and cream!). Surprisingly no damage was found other than two pressure dents in the fabic near a wing root.

For the club records two Gold heights were achieved, virtually in thermals, a long awaited 5hrs and over 200hrs flown in spite of many days not being soarable until after mid-day. But records apart we feel privileged to have flown amongst Europe's highest mountains at a time of year when they and the Valle d'Aosta look their most beautiful, with thick snow still above 5000ft and spring arriving in the valleys. A few logged the Matterhorn as a TP in the more adventurous latter days, but for the less experienced most flying was done within relatively short distance and with plenty of height above the airfield, with occasional heart-thumping sorties into heavy sink in the deep glaciated valleys of Valpeline or Gran St Bernardo.

In spite of my fractious encounter in the skies above Aosta there is room enough for the local birds and their many plastic replicas, and a warm welcome for visiting glider pilots at Corrado Gex airfield. Radio calls of "Britishers — I komm — ver are you" will ring in our ears for a while and no doubt we will bore our colleagues with memories for a few months, but a big effort like this once in a while must be a good thing for any club.

The Ongoing Retrieve

There is a certain place in Australia PAUL LITTLE never wants to visit again.

Having decided to avoid the English winter of 1983/84, I spent the season working with the Narromine Soaring Centre in New South Wales. Narromine is a large commercial gliding operation with some 20 sailplanes from an Astir to a Nimbus 2. Everything is laid on for the customers including retrieves which are aerotow when possible. During my time at the Centre there were a number of memorable flights and events and I have put pen to paper to recall just one which I still laugh about, though don't remember doing so at the time!

The day started much the same as any other with me towing or instructing. By 1230hrs all 20 gliders had been launched, most on 300km attempts with one 500km declaration by Len. By 1900hrs everyone except Len had returned, three completing their tasks and the rest retrieved.

Shortly after 2030hrs the phone rang — Len had landed out 100km away. The field was suitable for aerotowing but it was almost dark so that wasn't on and the only two cars with towbars were still out on retrieve. The best we could do was for Mark and myself to drive out, pick up Len and tie the glider down for the night.

After a two hour drive, mostly along dirt roads, we arrived at Curban and found Len standing by the roadside. Curban is a very small place, a Post Office, a handful of tin-roofed houses and not even a pub. Len had spent the last three hours providing dinner for the local mosquito population. So having failed his 500km and not been able to have a beer, he was not a happy man. All we had to do was return to the glider, tie it down just in case the wind got up and then return to the airfield where the bar should be open.

We drove down the lanes towards the field, but Len wasn't quite sure which one it was. It was completely dark by now with no moon.

Len thought the glider was located two fields from the road and as he had been eaten by enough mosquitoes he stayed in the car. Mark and I set off across the field. Twenty minutes or so past and we still hadn't reached the other side — those Australian fields are big! Eventually we reached the other side, crossed the fence and split up to search for the glider.

A short while later we lost each other, still couldn't find the glider and it became apparent that I was fast losing myself. So I gave up looking for Mark or the glider and returned, not without difficulty, to the car. Mark had soon come to the same conclusion and arrived shortly afterwards. We arrived back at the airfield long after the bar had closed and retired exhausted, well eaten by mosquitoes. *(The next day Paul and another member set off in the Cessna 80 to collect the glider and found it in a good field.)*

The return flight was uneventful and having delivered Len his glider for another day's flying, I went for a coffee. At this point I realised my wallet with all the money I had in Australia was missing. By a process of elimination there was only one place it could be, in the field in Curban. It probably fell out of my pocket while pushing the glider to the end of the field.

For the third time in 24 hours I headed up to Curban and found the field. After two hours of pacing up and down in 40°C I found my wallet — and I never want to see that field again!

My thanks to John Rowe and Mick Doyle for a very enjoyable season at Narromine.

Flying with the LSV Kreis Pinneberg

HOWARD MILLS tells of his experiences of learning to glide with a German club and gaining a German PPL/C

LSV (LuftSport Verein) Kreis Pinneberg translates as the "Pinneberg Area Flying Club" — many German gliding clubs are called "LSV area . . .".

I have been commuting to Hamburg since 1977, and a German colleague, an aeromodeller like myself, introduced me to gliding. I had a passenger flight in the back seat of a K-13 and we were up for 35min. "Was it always like this?", I wondered. Of course not, but a few more rides made me decide that I'd like to try to learn in the UK. Things didn't work out as planned.

Heavier commuting to Hamburg brought me in 1981 to spending my weekends in Germany watching gliders. The club members were friendly, let me join in and one of the instructors suggested I joined the club, even if only for the two-week summer fly-in. The first requirement before being allowed in the front seat of a glider was a flying medical certificate. The medical must be repeated every two years by a registered flying doctor (he usually holds a PPL). Clutching this certificate (that cost DM80). I was issued with an *Ausbildungsnachweis* (progress card).

Before going any further I must tell you a little about my club. LSV membership is around 190 of whom about 100 are active in gliding with between 50 and 60 very active. The number of active women is low. For most of 1983 we had to stop accepting new members due to too many wanting to join and insufficient facilities to teach them. We fly at Uetersen, west of Hamburg on the north bank of the River Elbe. The area is flat and thermal strengths are typically the order of 1 to 2m/sec. Finding suitable fields for landing out is no problem. The airfield, just over a kilometre long, half as wide and billiard table flat, was constructed just before the last war. There is enough space for the power runway, a neutral strip, our landing area and then the launch area. Two glider clubs share the site. The landing area is wide enough for several gliders to land simultaneously. Hamburg airport CVFR zone extends over our field at 1700ft but a special zone permits us to climb to 2500ft which can be raised up to 4000ft according to traffic conditions. The CVFR zone ends a few kilometres to the west.

Licences for everything!

It would seem that licences are required for everything in Germany. The glider licence, PPL/C, can be attained at 17yrs of age and pupils may start training, including going solo, at 14. Aerobatics, cloud flying and winch driving all require additional licences. Aerial photography (including TPs) requires permission from the Federal State authorities.

The fleet currently consists of eight gliders, two motor gliders and a tug. There are two K-13s, two K-8s, one K-6CR, a Club Astir, an Astir CS and an ASW-19B. There are 29 private gliders including K-6s, a Cirrus, ASW-15s, and ASW-20 and a K-10. The K-10 is one of about ten built as an improvement over the K-6CR and a forerunner of the K-6E. Normal launching is *via* a twin-drum winch with a 1000m cable giving a strong launch to at least 1300ft in the two-seater in calm weather. All planes are fitted with radio for which an operator's licence is required as soon as one leaves the local area. Radios are either full 720 channel or have several crystals installed. One difference from the UK is that when launching the pilot gives no signals — he concentrates on being launched and can always release. The wingman gives the launch signals which are relayed to the winch *via* telephone.

Costs — joining fee is DM500 and monthly membership is DM20; the fee for students is half of that. Each winch launch costs DM3 (under a pound) which seems reasonable when compared with some I have seen in the UK. An aerotow (by our Morane tug) costs DM15, about £4, for six minutes which reaches around 2300ft. Flying any glider costs DM24/hr (reckoned/min). Once a member has achieved 5hrs flying in a year the flying rate halves to DM12/hr. Achievement flights (such as for FAI qualifications) costs a reduced rate of DM10 in order to encourage pilots. The motor glider costs DM48/hr with landing fees of DM2.50 on our field and around DM8 at other airfields.

From April to October instructors are on duty Saturday afternoons and all day Sunday and holidays, but winter flying is not worth while as it is so cold. The *Schulungsleiter* (CFI) is responsible for training pilots to the PPL/C but is not in charge of general flying. Pupils are only allowed to fly solo under observation of an instructor; they must receive a briefing before each flight and report back afterwards. Flying away from the field requires written orders and numerous requirements to be fulfilled beforehand. We can only operate when the field control tower is occupied and must have a responsible person at the launch site in contact with the local tower. Gliding does seem to be more accepted as a "normal" sport in Germany than in the UK, and the public generally appears to be interested, but there are many more formal regulations.

Learning proceeded fast — I think numerous passenger rides plus the knowledge of flying from aeromodelling helped. Certainly it was lots of fun. I had worried about the language — nobody appeared to speak any English but all had the patience to listen to my jabberings and explained things as often as required. In the air the difference between *links* and *rechts* was soon learnt. The language complications seem to be formidable. Consider the simple English words "rudder, ailerons and elevator". In German they are all rudder — *Seitenrudder, querrudder and höhenrudder.* A moment's confusion when the instructor tells you to operate one can result in some strange flying situations. However many Germans do speak good English — when my brother (who flies in the UK) visited me has was taken up in a K-13 and the instructor decided to try his English out — unfortunately he got pull and push the wrong way round during the winch launch!! My brother reckoned had he stuck to German it would have been safer.

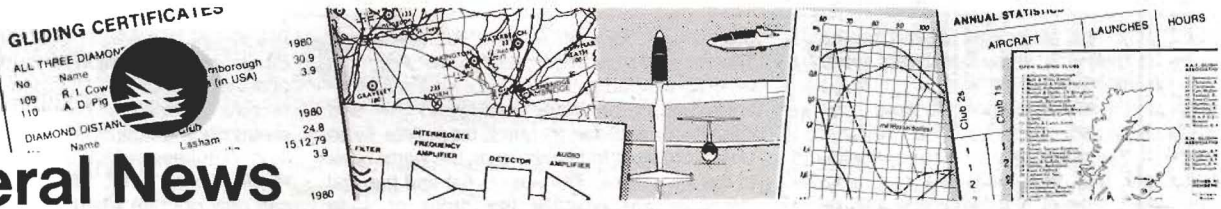
The beer currency

My first solo, after 40 dual flights, cost a crate of beer (consumed by all the members after flying ceased for the day) and I subsequently gained the A (three solo flights with spot landings), the B (steep circles and three spot landings with side slip) and the C badges (a 30min declared soaring flight), each costing more crates of beer. Generally some achievement, badge flight or landing out costs a crate. Beer is also regarded as a penalty — especially dangerous for this is flying with the tail dolly attached. Any pilot getting into his plane with the dolly still attached is seen as a source of the evening's lubrication — "cable on" produces shouts of jubilation and a glum look on the pilot's face as he feels the rear of his fuselage lifted up — another crate. In fine weather most evenings end with a barbecue.

I was reluctant to return to the UK after this and arranged my work so that I could spend a considerable proportion of the following summer in Hamburg. Lots more flying and I attended the radio licence course given by one of the Hamburg airport controllers which cost almost another DM350. For VFR flights there are two licences: BZF I (German and English) and BZF II being German only — I did BZF I. The ridiculous stage in the exam came when I had to read a passage in English from the AIP and then translate into German to show it was understood.

(Continued on p186.)

BGA and General News



FROM THE SECRETARY's DESK

Barry Rolfe, BGA administrator



One of the clubs suggested recently that we might reduce the rate of annual subscription for young flying members as an encouragement to attract younger people into our sport. This was discussed briefly at the last AGM without attracting any strong views and debated at the May Executive meeting where it got a mixed reception — and, as the treasurer pointed out, if we reduce some subscriptions then we shall have to increase elsewhere in order to balance the budget! However, it was finally decided to put it formally to you at the next AGM in the shape of a proposal to charge only 50% of the current subscription per head in respect of identified flying members of a club who, for age-related reasons, were being charged 50% or less of the normal annual subs by that club. It will be your decision to adopt or reject this proposal.

Competition levy

Non-competition pilots will no doubt be pleased to hear that the Executive have approved a suggestion to raise additional funds for the British team in future by making a small levy on competition pilots for the issue or renewal of their competition licences. From January 1 next year competition licences will need to be renewed annually for a fee of £5 and from that extra revenue it is expected that the World Champs Fund will benefit to the tune of between £1200 and £1300 every year. Now wait for the competition pilots to tell us what an oppressed minority they are.

We welcome two new sub-committee chairmen this year in Chris Nicholas of the Airspace Committee and Doug Jones of the Technical Committee. Both gentlemen have a busy task ahead — one to keep gliders airworthy and the other to make sure there is somewhere left to fly them once they get into the air.

The Churchill Award for 1984, which takes the form of a cheque for £100, is to be made to Julian Ross, a Bronze badge pilot from Southdown GC and a second year engineering student at Southampton University. The award comes from a small fund set up by an anonymous donor to assist with projects organised and carried out by glider pilots. Julian's project is the design, construction and evaluation of a winch for fitting to a tug in order to facilitate in-flight rewinding of the aerotow cable.

At the June meeting of the Executive consideration was given to a club request that the BGA should advertise gliding in the national media. With regret it was recognised that we have insufficient funds to undertake a national advertising campaign of a worthwhile nature and that our resources are better spent in helping clubs with their local press contacts. Nikki Campbell, our publicity officer, is available to advise and help individual clubs in this respect and you can contact her by telephone on High Wycombe (0494) 881166. And don't forget our new illustrated leaflet **Introducing Gliding,** available to clubs at cost price of 15p each, which can be used to attract new members into our sport and your club.

FATAL ACCIDENTS

On Saturday, May 12, there was a collision between a Rockwell Commander and a Std Cirrus flown by Matthew (Tom) Smith three miles SW of Defford. The glider took off from Bidford and was on a 300km attempt.

The two aircraft were on approximately the same heading at 3000ft; the closing speed was in the order of 65kt. The aeroplane's nose struck the glider's port wing root and there was propeller damage to the glider's fuselage underside, control circuits, seat back and the pilot's left shoulder harness.

The glider pilot separated from his damaged aircraft but did not deploy his parachute — possibly due to some incapacitation. The aeroplane pilot made a successful forced landing. AIB undertook the investigation and will publish a bulletin in due course.

On Sunday, May 13, there was a collision between an IS-28B2 (flown solo) and a Pilatus B-4 while the gliders were ridge soaring at Walney Island. Shortly after the collision the Pilatus spun in. The pilot, John Taylor, was killed on impact. The pilot of the IS-28 was able to return to the airfield.

These two accidents bring home the fact that "collision is the greatest hazard in flying". Derek Piggott writes about some of the problems of keeping a good lookout on p156.

W. G. Scull, *Director of Operations*

NAOMI CHRISTY TO RETIRE



Naomi Christy will be retiring from her position on the staff of the BGA office at the end of September. Because of her responsibility for processing gliding certificates and badges there must be few in the British gliding movement who do not know her name. Referred to affectionately, in the office as "the Colonel" (derived from a distinguished career in the army), Naomi has processed no less than 6000 Silver C legs and 2500 Gold legs. Her wide experience and advice coupled with her careful administration have made her an invaluable assistant to the BGA secretary and she will be missed.

Naomi joined the BGA staff originally as Development Officer in 1969. This post was created then to help new and developing clubs with their organisation, planning and financing arrangements, including liaison with the Sports Council. In this role she helped many clubs and made many friends.

Naomi started her gliding career in Germany, going solo in 1960 and getting her Silver C in 1962. Now, more than 20yrs later, she is the chairwoman of the British Women Pilots Association. We wish her all the very best for the future.

Tom Zealley, *BGA chairman*

GORDON TO TAKE OVER



Gordon Camp will be the new FAI certificates' officer from October 1 and pays tribute to Naomi's dedicated and meticulous work over the many years.

In 25yrs since soloing with the Air Cadets, Gordon has amassed 3000hrs of gliding, motor gliding and tugging, including competing in the Nationals most years since 1964, has All Three Diamonds and is a past chairman of the BGA Competitions' Committee.

After retiring from the RAF Engineer Branch as a Squadron Leader four years ago, Gordon founded the Oxfordshire Sportflying Club, the first full-time UK motor glider operation, and created the **British Soaring Yearbook.** He runs his own versatile business at Enstone Airfield and will work one day a week as the certificates' officer on a consultancy basis.

Gordon, who is 42 years-old, lives near Enstone with his wife Rosalind and their children.

MISSING COPY ON WAY TO THE PRINTERS

Platypus swears he has nothing to do with this, but a registered envelope containing the club news, plus letters to the editor, book reviews and other items, has been lost in the post. There just wasn't time to contact the club news contributors for fresh reports. All we can say is how sorry we are and hope that those of you who have been disappointed, including several of you who have written obituaries and letters, will be able to re-submit the copy to meet the next deadline of August 7.

The missing club news reflected a lively start to the season with a classic easterly phase at Lasham when Roy and Alix Pentecost broke the UK two-seater 300km goal record, held since 1958 by Wally Kahn and John Williamson (Eagle), with a 2hr 51min flight in the Janus at 108.7km/h on Easter Bank Holiday Monday. Eight others from Surrey & Hants GC also made the flight in early May.

Coventry GC also had some exceptional cross-countries in May including 310km flights to Plymouth by Lou Franks and Norman James (T-21) and Alan Kangurs (Oly 463).

LADDER OFF TO A GOOD START

Mike Randle, National Ladder steward, says the year so far seems to be a good one and lists several remarkable flights — Mike Costin's 30 800ft gain of height from Shoddon, Roy and Alix Pentecost's 305km goal flight to Perranporth and Lou Frank and Norman James' 300km goal flight to Plymouth in their syndicate T-21 which earned them 3300pts.

Open Ladder

Leading pilot	*Club*	*Pts*	*Flts*
1. L. E. Beer	Booker	6016	4
2. M. Costin	Coventry	5405	3
3. N. G. Hackett	Coventry	5087	4
4. L. Frank	Coventry	3799	3
5. R. Pentecost	Surrey & Hants	3758	2

Club Ladder

Leading pilot	*Club*	*Pts*	*Flts*
1. D. Campbell	Hambletons & Clevelands	2090	2
2. B. Benoist	Hambletons & Clevelands	1250	1
3. A. Lucas	Surrey & Hants	1158	1
4. G. Willis	Coventry	1095	1
5. R. Goodman	Coventry	1031	2

BGA AWARDS AND TROPHIES 1984

To stimulate the general level of interest in the annual performance awards and to make these achievable to a wider group of pilots, the 1984 distance and speed awards will be decided on a **handicapped** base, *ie* the flight results will be adjusted by the application of the published nil wind speed indexes for a given glider. This amendment came into effect in January 1984 as already advised through the BGA News.

The affected trophies are: distance — Wakefield, Seager, California in England, Furlong and Volk; speed — Manio and Frank Foster. Please submit your substantiated claims in the usual way.

Ted Lysakowski, *chairman, BGA Competitions and Awards Committee.*

INTER-CLUB LEAGUE

The final will be at Dunstable during the weekend of August 25-27.

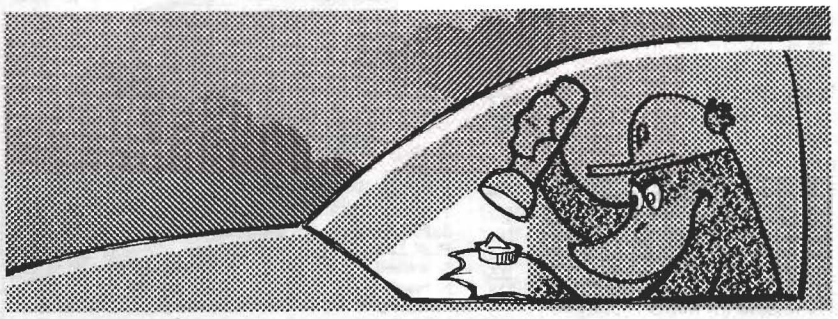
DANGERS FROM GLIDER TOW LINES

A few years ago a serious incident occurred following an aerotow by a civil aircraft at a RAFGSA airfield. A coach windscreen was shattered by a tow cable and a coach passenger received injuries from glass splinters.

More recently there has been a similar incident at another military airfield when a landing tug trailed a tow cable low across the front of a coach at about windscreen height. The coach was on the nearside lane of a dual carriageway travelling north when the tow cable passed about 10ft ahead, then struck

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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the central reservation and was subsequently dragged across both lanes of the southbound carriageway.

Fortunately, no-one was hurt, and no damage was caused to vehicles although at the time a large volume of traffic was passing in both directions.

These incidents serve to remind tug pilots of the need to maintain a safe clearance above obstacles, vehicles and persons when landing with tow attached, making due allowance for the length of cable trailing below the aircraft, and recognising that the vertical length of the cable will increase as the approach speed is reduced.

Gliding site operators should ensure that tug aircraft approach paths/angles and related target landing thresholds assure adequate clearance between aircraft/tow rope combinations and any persons, vehicles, structures or other fixed obstacles within the runway approach funnels and undershoot areas. Regular surveys should be made so as to detect, and make due allowance for, any subsequent developments (or changes) in the runway/approach obstacle environment.

To further reduce the risk of such incidents, where take-off distances available are adequate and without prejudicing safety during the take-off, it is suggested the launch point be positioned so as to minimise the temptation to land short to reduce turn round times.

DISPLAY TECHNICAL NEWS-SHEETS

Please ensure that club technical officers make available to owners/operators of gliders, motor gliders and tugs the airworthiness information in the BGA (bi-monthly) Technical News-sheets.

Defects reported on each specific type should be checked as soon as possible and not necessarily left to the next C of A renewal! Why not display a copy on the club noticeboard?

Dick Stratton, *BGA chief technical officer*

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	Name	Club	1984
159	R. D. Frodsham	Derby & Lancs	13.4

DIAMOND DISTANCE

No.	Name	Club	1984
1/236	P. H. Little	Bristol & Glos (in Australia)	18.12.83
1/237	P. H. Steiner	Bicester	12.4
1/238	G. S. Foster	Cranwell	12.4
1/239	N. Spencer	Burn	12.5

DIAMOND GOAL

No.	Name	Club	1984
2/1266	J. Bridge	Essex	12.4
2/1267	A. E. Gee	RAE	3.4
2/1268	J. Nunneley	Booker	22.1
2/1269	M. C. Boik	Bicester	9.5
2/1270	N. J. Sanders	RAE	12.4
2/1271	W. R. Davidson	Angus	7.5
2/1272	M. J. Davis	Wrekin	12.4
2/1273	A. P. Hatton	Yorkshire	12.5
2/1274	J. L. Collins	Derby & Lancs	13.5

DIAMOND HEIGHT

No.	Name	Club	1984
3/635	J. Forrest	Deeside	4.3
3/636	S. P. Bohlmann	Deeside	13.4
3/637	R. D. Frodsham	Derby & Lancs	13.4
3/638	A. P. Walsh	Norfolk	13.4
3/639	T. B. Sargent	Norfolk	13.4
3/640	I. Thompson	Derby & Lancs	13.4
3/641	D. J. McKenzie	Derby & Lancs	13.4
3/642	J. A. Stephen	Deeside	13.4
3/643	A. Munro	London	5.4



Humphry Dimock, of the Portsmouth Naval GC, is one of the entrants in the 1984 Legal and General Golden Years Award, a scheme designed to encourage people to remain active in retirement. Humphry, aged 77 years, claims to be the oldest gliding instructor in the country. He also built and flew his own hang glider which he sold two years ago.

GOLD C COMPLETE

No.	Name	Club	1984
1000	J. Bridge	Essex	12.4
1001	A. C. Garside	Kent	13.5
1002	R. M. Johnson	Borders	20.4
1003	C. K. Hutley	Yorkshire	13.4
1004	W. R. Davidson	Angus	7.5
1005	M. J. Davis	Wrekin	12.4
1006	S. P. Bohlmann	Deeside	12.5
1007	A. J. Rees	Lasham	12.5
1008	G. R. Dixon	Enstone	30.12
1009	A. P. Hatton	Yorkshire	12.5

GOLD C DISTANCE

Name	Club	1984
J. Bridge	Essex	12.4
A. E. Gee	RAE	13.4
M. C. Boik	Bicester	9.5
N. J. Sanders	RAE	12.4
A. C. Garside	Kent	13.5
W. R. Davidson	Angus	7.5
M. J. Davis	Wrekin	12.4
S. P. Bohlmann	Deeside	12.5
A. J. Rees	Lasham	12.5
Hilary Stewart	Lasham	7.5
A. P. Hatton	Yorkshire	12.5
J. L. Collins	Derby & Lancs	13.5
C. C. Smith	Essex & Suffolk	12.5

GOLD C HEIGHT

Name	Club	1984
S. R. Hall	Booker	10.10.83
J. Forrest	Deeside	4.3
B. Shaw	Humber	6.3
S. P. Bohlmann	Deeside	13.4
P. W. Turner	Essex	29.12.83
R. Maskell	Cambridge Univ	30.12.83
N. Howes	Derby & Lancs	13.4
T. B. Sargent	Norfolk	13.4
I. Thompson	Derby & Lancs	13.4
D. J. McKenzie	Derby & Lancs	13.4
C. C. Watt	Devon & Somerset	13.4
A. V. J. Challoner	East Sussex	24.4
A. V. Lacey	Wyvern	14.4
D. Clempson	SGU	21.4
R. M. Johnson	Borders	20.4
C. K. Hutley	Yorkshire	13.4
G. R. Dixon	Enstone	30.12.83

SILVER BADGE

No.	Name	Club	1984
6601	I. M. Donnelly	Deeside	4.3
6602	J. James	Strubby	1.4
6603	A. P. Scott	Northumbria	1.4
6604	P. Crawley	Four Counties	14.4
6605	C. C. Pike	Shalbourne	15.4
6606	S. Mulholland	Surrey & Hants	3.4
6607	D. T. Bruce	SGU	15.4
6608	T. P. Brown	Angus	12.4
6609	A. Johnson	East Sussex	3.4
6610	W. Stark	SGU	16.4
6611	J. Kingerlee	Enstone	13.4
6612	S. P. Bohlmann	Deeside	16.4
6613	D. B. Meeks	Booker	14.4
6614	E. W. Moore	Northumbria	15.4
6615	D. J. Phillips	Lasham	5.4
6616	C. J. Cole	Bicester	17.4
6617	N. S. P. Quirke	Cranwell	20.4
6618	M. J. Page	Two Rivers	20.4
6619	C. N. T. Bickers	Kestrel	15.4
6620	K. Fairness	Borders	20.4
6621	V. M. Howard	Wyvern	12.4
6622	G. Carr	Borders	15.4
6623	D. W. Crinson	Bristol & Glos	12.4
6624	S. M. Bogdiukiewicz	Cotswold	29.4
6625	C. C. Watt	Devon & Somerset	13.4
6626	F. Walton	Connel	8.4
6627	A. S. Napier	SGU	22.4
6628	A. V. J. Challoner	East Sussex	24.4
6629	R. Mackey	Newark & Notts	28.4
6630	A. N. Dickinson	Phoenix	21.4
6631	G. Moxham	Cranwell	4.4
6632	A. Weaver	Humber	13.5
6633	P. Davis	Surrey & Hants	7.5
6634	P. G. Steggles	Rattlesden	12.5
6635	D. M. Cornish	Rattlesden	12.5
6636	F. Goodhall	Stratford on Avon	12.5
6637	E. O. Williams	Mendip	13.5
6638	M. Bowman	Hambletons	15.4
6639	M. P. Logan	Humber	12.5
6640	M. J. Grundman	Derby & Lancs	7.5
6641	R. A. Voyce	South Wales	13.5
6642	R. Marsden	Wrekin	12.5
6643	D. F. Wadham	Portsmouth	12.5
6644	G. Jones	Wolds	12.5
6645	A. B. G. Johns	West Wales	12.5
6646	B. E. Sword	Borders	12.5
6647	R. M. Gittins	Two Rivers	28.4
6648	A. R. Meakin	Midland	12.5
6649	A. Palmer	Shalbourne	11.5
6650	D. D. Copeland	Surrey & Hants	13.5
6651	M. K. Gill	Burn	12.5
6652	M. Phillips	Trent Valley	13.5
6653	V. Card	South Wales	19.5
6654	N. B. Wills	Burn	13.5
6655	J. A. Plummer	Four Counties	11.5
6656	G. Gilkes	Surrey & Hants	12.5
6657	J. N. Clarke	Derby & Lancs	15.4
6658	W. I. Baldwin	Blackpool & Fylde	12.5
6659	H. Ritta	Surrey & Hants	9.5

BOOK REVIEWS

Going Higher, The Story of Man and Altitude by Charles S. Houston, MD, published by Cordee, Leicester at £8.95.

Although not written for the soaring fraternity, this book contains much of interest to the aviator who seeks better understanding of the acute and chronic effects of hypoxia. Beginning with reminders of how relatively recent our knowledge of oxygen really is, the author moves into remarkably detailed description of respiratory, circulatory and even cellular physiology with particular reference to mountaineering.

Skilfully simplified as it is, some of this material and that on the various clinical syndromes may prove rather hard going for those without a good grounding in the biological sciences. For those whose acquaintance with the basic physics and physiology was more than a few years ago, the bibliography and piquant biographical notes should prove to be fertile sources of reawakening interest and delight.

DAVID EVANS

Vom Hangwind zur Thermik (From Slope Lift to the Thermals). **Eriebte Rhöngeschichte 1927-1932** (Experienced Rhön History 1927-1932) by Peter Riedel. Published by Motorbuch Verlag, Stuttgart at **DM48**, it can also be obtained from Beaumont Aviation Literature of 656 Holloway Road, London N19 3RD.

This is Peter Riedel's second volume of **Experienced Rhön History.** His first, **Start in den Wind,** (Start into Wind), covered the period at the Wasserkuppe from 1911-1926. A third volume, **Über Sonnige Weiten** (Beyond the Sunlit Horizons) is to follow soon and will cover 1933-1939.

Vom Hangwind zur Thermik is magnificently produced with fine quality photographs, drawings and original accounts. We hope there will soon be an English edition so that more can appreciate the fine quality of writing of Groenhoff and others. This book rivals the magnificence of his previous book which he produced with the late Jochen von Kalkreuth, the superb alpine glider pilot, book writer and photographer. Besides the Wasserkuppe, the reader is taken on brief excursions to Grunau, Rossitten, the Jungfrau and America. The book describes these with such brilliance that the reader will feel that he is there.

Peter came to the Wasserkuppe when 14 years old with his second glider (a replica he built and has flown at some of the VGC Rallies) for the 1920 Rhön Contest, where he learnt to fly it. Since then he has been gliding for over half a century over many continents, often setting up records. He won the 14th Rhön Contest in 1933; was the most successful member, as regards distance flying, of the German 1934 South American expedition; won the Hindenburg prize and from 1936 took part in American gliding with many sensational flights in the Sperber Senior over New York and in a Kranich 2.

In 1976, at the age of 70, he flew from the Wasserkuppe to the centre of France to gain his third (500km) Diamond in a K-6. The glass-fibre gliders that also started from the Wasserkuppe on that day did not get as far.

Not only can he fly gliders but he can also repair them. A photograph in **Vom Hangwind zur Thermik** of the crashed Fafnir (after Groenhoff's fatal accident) reveals just how badly it was broken before Peter managed to repair it to fly it again at the Rhön and in South America.

Of particular interest to British readers may be the photographs of the late Beverley Shenstone and his wife Helen on the Wasserkuppe in 1930 with Lippisch, Hans Jacobs and Groenhoff etc. Bev, after working for Junkers and Supermarine (on the Spitfire), became Chief Engineer of BEA and then British Airways.

I feel that this book will be an agreeable sensation to everyone who sees it and of great interest to all who are interested in gliding history.

CHRIS WILLS

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

Ref. No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew Age	Injury	Pl/Hrs	SUMMARY
35	Plk 20o	?	M	25.2.84 14.15	Culdrose	50	N	275	On normal landing undercarriage collapsed although operating lever in cockpit had been locked in "undercarriage down" position.
36	Blanik	1880	M	24.3.84	Perranporth P2	60 30	N N	932 100	Winch launch failed gradually after glider became airborne and cable back-released at about 20ft. Airspeed was insufficient and glider landed heavily.
37	Kestrel 20	2048	W/O	7.1.84 15.00	Haybluffe nr Hay-on-Wye	49	N	977	Breaking cloud at 1200ft agl met strong wind gradient resulting in landing in undershoot field in which glider hit a concealed tree trunk.
38	K-2	2587	M	18.3.84 13.30	Strathaven A/F	61	N	66	Pilot attempting side-slip approach to spot landing. Failed to fully recover from side slip and ground looped into rough ground.
39	K-8	2298	M	4.4.84 14.00	Husbands Bosworth	23	N	38	At 800ft on aerotow centre fairing flew off causing minor damage at base of tail fin. Pilot landed safely.
40	LS-3	2581	N	11.3.84 13.15	Lasham	45	N	?	Pilot unable to release from aerotow with rope under tension induced some slack in rope and released successfully. Apparently wrong end of rope attached to glider and Ottfur rings on this end were incompatible with hook in glider.
41	Pirat	1551	S	15.4.84	Culdrose	38	M	6	Third flight on type in strong gusting wind. Pilot encountered difficulty in pitch control on approach at 70kt. Opened and closed airbrakes twice, ballooned and pushed stick forwards. Glider struck ground hard on nose skid.
42	Capstan	1196	M	15.4.84 16.43	Lee-on-Solent	37	N	9	Pilot ballooned on approach in strong wind, opened airbrakes fully, bounced and closed airbrakes. After several oscillations and touchdowns pilot held glider on ground with full airbrakes. Main skid broken.
43	Capstan	1196	N	20.4.84 15.00	Lee-on-Solent	22	N	½	Early solo pilot turned finals high and rounded out very high at about 100ft. Speed decayed and glider landed heavily.
44	Pilatus B4	—	M	16.4.84 18.30	Portmoak	39	N	36	Canopy shattered — probably due to thermal stress when icing was encountered at cloudbase. Aircraft still climbing with airbrakes fully open. Side slipped to lose height. Landed safely with no further problems.
45	Std Jantar	2937	M	28.4.84 14.06	Long Marston	43	N	29	Wingtip caught obstruction (Farmer's fertiliser bags) at side of runway causing glider to groundloop.
46	Astir CS77	2525	S	25.4.84 11.40	Parham	52	N	23	Pilot on approach did not notice cable retrieve tractor in landing area until rounding out. Tried to avoid tractor but wingtip struck it.
47	Mosquito	2382	S	15.4.84 14.45	North Weald	31	N	233	After touchdown in 90° crosswind close to upwind side boundary pilot unable to prevent glider weather cocking and colliding with boundary. Third flight on type.
48	K-2B	2909	M	18.4.84 13.00	Oakington Cambridge	37	N	543	On DI cracks were found in the underside ply around the airbrake box and small cracks in paint and filler on upper surface. Glider had done aerobatics the previous day.
49	Bocian 1E	2325	S	24.4.84 17.08	Nr. Marston Trussell	33	N	½	After releasing from tow on second solo flight pilot "lost" the airfield and decided to make a field landing. Unfortunately landing was downhill and glider ran into boundary hedge and trees.

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

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1984 Meeting of the International Gliding Commission

Brief extracts from a report by Tom Zealley, BGA delegate, who attended the Commission International de Vol a Voile (CIVV) meeting held on March 29 in Paris.

There was a full attendance with some 25 countries represented including mainland China and Egypt. The president, Bill Ivans (USA), said that the review of the rules for the three glider Classes, which was on the agenda, was too important for a decision to be taken that day and he planned to hold a special Bureau meeting to which some manufacturers would be invited for preliminary discussions so that specific proposals could be decided on at the next CIVV meeting in 1985.

Club Class. Per Oberg (Sweden) reported that West Germany had developed a new concept for the Club Class with a limited handicap range. Yugoslavia had adopted this scheme for their European Club Class competitions. He added that there was strong support in the USA and Australia for the Club Class as a means of catering for gliders that fell out of World Championships standards.

Hobbs. Hal Lattimore (USA) giving a report on the 1983 World Championships, claimed that the competitors had flown the longest distances at the fastest speeds with less injury than at any other World Championships. The average speed of all finishers in all Classes was 174km/h.

Rieti 1985. During his extensive report on the planned arrangements for the next World Championships, Piero Morelli (Italy) warned that the demand for places might mean having a limit of three pilots per country, as there would be a limit of 90 gliders on the site. There was some discussion on the proposed photographic TP rules and about the startline arrangements. Italy and most CIVV delegates were in favour of using a ground clock, though others felt that diving under a specific start height combined with banking to photograph the clock was a hazardous manoeuvre. However the majority view was in favour of a start height limitation combined with a ground clock.

Rules revisions. As usual Tor Johannessen (Norway) led the discussions and changes agreed were: Under records para 4.3.1 of the Sporting Code for Gliders, single place records may be claimed in a two-seater flown with only the pilot on board. Under paras 2.2.1, 5.2.3 and 5.2.5 changes were agreed to allow flexibility on TPs when flying distance tasks. A new rule, 7.3.2 will allow organisers (with the agreement of CIVV) to set a weight limit for operational reasons at World Championships.

There was some contention over a proposal to require registration of Max permissible certificated weight of each glider 12 months prior to World Championships. It was voted that Max weight registration should be required three months prior to the Championships followed by circulation of the figures to all competitors.

Guidelines for weighing gliders at World Championships were agreed. Entry regulations under annex 4.4 are to be amended so that a National Aero Club with the previous World Champion may send him to the next World Championships as well as their full quota of normal entries. The scoring system — annex C — is also to be amended so that the scoring system used at the 1982 European Championships at Rieti would replace scoring system B in the annex. Para 6.4 relating to motor glider record flights is being amended so that the motor glider has to launch itself on the flight concerned.

Baron Hilton Cup. Helmut Reichman (West Germany) was enthusiastic about the success of the competition and described the special soaring camp arranged in America for the winners. A wide range of top performance gliders would be available and top world pilots had been invited. It was expected the cup would be awarded for the next three years with regulations unchanged apart from the glider handicap list being updated annually.

FAI and International Olympics. The FAI general Council had asked all commissions to review again whether the FAI should seek to join the International Olympic Committee and have any of its different aviation sports participate in the Olympic Games.

There were a number of problems including the question of amateur versus professional status and the fact that the FAI was open to the aero clubs of all nations whereas the Olympics are not. It was suggested that gliding was not very keen on the idea but that it might not wish to stand in the way of other aviation sports such as parachuting which was said to be interested in taking part. The president suggested this should be discussed in National Aero Clubs and delegates should come back with their views next year.

Correction: Mike Costin's gain of height, which won him the De Havilland trophy, was from Shobdon and not Talgarth as stated in the last issue, p132.

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THE STATE OF THE CLUBS

This is an extract from a report given to the BGA Development Committee by BILL SCULL, BGA director of operations, and DICK STRATTON, BGA chief technical officer, after their field work concerning those clubs where there have been interesting or worrying developments, with some good news of site successes.

Albatross GC
This club is not flying at present having vacated its last site at Davidstowe Moor Airfield which was inconveniently located for most of its members, insecure and with local problems from Dartmoor commoners and microlight fliers.

Recent efforts have been directed to establishing a site near Plympton which has a well-disposed landowner but which is, unfortunately, within 3½ miles of Plymouth Roborough airport. Despite the CAA view that coexistence was possible, the airport management is doing all in their power to stop the planning application. Strong representations have been made by the BGA in support of the development which is seen as the last opportunity for the club to survive.

Altair GC
The strip from which this club operated (Coldharbour Farm) was sold earlier this year with the club being unable to retain possession. They have now managed to re-establish themselves at Edgehill — just to the west of Banbury.

Yorkshire
Over several years three clubs, all at the time without site security, considered joining forces if a suitable site could be found. As things turned out each in turn found or secured a site; Wolds GC bought parts of Pocklington airfield, Ouse GC parts of Rufforth and Doncaster GC leased Burn airfield. The County must now provide the securest gliding in the country!

Bassetlaw & District GC
This is a club without a site although the use of Gamston (3 miles south of East Retford) was promised by the landowner. Unfortunately there was already a "sitting tenant" in the form of Northair, a Cessna agent with headquarters at Leeds/Bradford airport. Despite minimal activity by Northair — 36 movements in a sample month — they cannot conceive how their operation would fit in with gliding — or *vice versa*. The matter is now being pursued by proposing a joint-operation plan which will hopefully receive independent (CAA) ratification. This may persuade the landowner that joint operation is possible and allow gliding to start.

Brackley GC
This is not a BGA club. The site is at Turweston airfield (disused) and the operation has been developed by Albert Tarnow (CFI and a former member of the London GC) as an essentially commercial operation. Albert owns most (or all) of the equipment. Approaches were made to bring the club within the BGA and this now depends on the "CFI" completing his full rating. The club operates T-21s and is winch launch only. There are however several private gliders and activity has increased to 5000 launches a year and membership is in the order of 100.

Borders GC (Milfield)
This club is the latest to buy a site. Unusually this is not the airfield from which it operates but an adjacent farm. It will take a little time to develop the site but it will be ready before Milfield becomes unusable (due to gravel extraction).

Vectis GC (Isle of Wight)
This club has reformed with a membership of 20 and a Blanik. The all-aerotow operation relies on private tugs for the time being and flying is from Sandown airfield. At present there is only one instructor, an ex-Lasham professional who is CFI (Ian Creighton). The club "took off" at Easter with 67 aerotows in four days. Any full-rated instructor wanting to lend a hand would be welcome.

To make sure of getting your copy of S&G take out a subscription. For details see the advertisement on p157.

GLIDING SPONSORSHIP

It is the sheer excellence of gliding, from the basic training, the club operation, the ground crews, to the piloting of high-performance machines which has attracted the generous sponsorship of Marconi Avionics.

Sponsorship is new to them and we were fortunate they chose gliding to be their first venture when they backed the Open Class Nationals at Lasham last year. Now we have the good news that we will have the Marconi Avionics Open Class Nationals again this year (at Lasham from August 11-19) and in 1985. In addition, they have contributed to the British team fund for the World Championships, donated prizes for the Nationals and made a video on gliding, which may be loaned free of charge from them for club use.

The video is a good introduction to gliding and ideal for open evenings to recruit new members. If any club is interested in showing it, then contact Peter Simmons, the press officer of Marconi Avionics, Tel 0634 44400 Ext 628.

Malcolm Moulton, company information executive, explained that while his firm was heavily steeped in supplying the world's civil and military aircraft with advanced avionic systems and produces allied high-technology electronics, they admired the gliding concept as typical of excellence in aeronautics, and found it an ideal aviation medium to choose for sponsorship.

Certainly last year, during these Nationals, they were able to introduce a vast proportion of their 500 guests to gliding — an amazing 400 were given air experience flights during the ten days, as well as 40 journalists. The reaction was one of great enthusiasm and, at the prizegiving, Sir Austin Pearce, chairman of British Aerospace, said he thought gliding had been the perfect choice for the sponsorship. In fact, the company's decision to continue sponsorship resulted from an excellent response from competitors last year and from the many leading aerospace personalities who were invited to the Nationals. They included the senior executives and officers from aircraft manufacturers and operators, government establishments, the Services and many other organisations related to the aerospace industry, with their families, many of whom were new to the sport.

Aircraft to airships

"Really our sponsorship of gliding isn't so foreign to us as we are deeply involved in every other aspect of aviation, from supersonic aircraft to airships," Malcolm added.

Marconi Avionics' advanced flight control systems, for example, are major components of high-performance combat aircraft and airliners, such as Concorde, the Tornado, the Harrier, the Lightning and the BAC 1-11, to mention a few, as well as the Airship A600.

In addition, the firm operates Rochester Airport, which celebrated its 50th anniversary last year. They use a fleet of aircraft for their sales and technical staff to cover a 1000 mile radius of Europe and last year the airport recorded 40 000 air movements.

The firm also boasts two directors who are active glider pilots — Peter Hearne, a gold C pilot, flies his DG-400 at Lasham and Ron Howard, with an ASW-20 syndicate, is a member of the Kent GC.

Another valuable spin-off was the weight of publicity generated at their last Nationals, to be repeated again next month. More than 300 journalists were contacted, press packs, which included a very sound introduction to gliding, clearing up all the usual queries from the uninitiated, were issued and there was an efficient day-to-day scoring system with results circulated to the media.

The combination of an interested and involved sponsor, who understands aviation and gliding, with a keen, hard-working gliding club resulted in an outstanding success both for the Championships and for the image of gliding as a whole, throughout the aeronautical world in the UK, and even overseas. It is encouraging that Marconi Avionics thought likewise and that they are staying with us for the three years.

G.B-S

Photographs destined for the Club News section



Robin Miller (in the cockpit of the ATC Janus C based at RAF Syerston) and Bruce Tapson after their record breaking flight on May 11. They are claiming the UK multi-seater 200km goal record, set by B. J. Willson and H. Daniels in a Blanik in 1970 at 77.8km/h, with their 232km flight from Syerston to Weston-Super-Mare at 113.7km/h.



Simon France of South Wales GC photographed having gone solo after school on his 16th birthday.

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(Continued from p179.)

In the autumn of 1982 I moved to Hamburg which meant I could attend the required 60hrs of theory and do the two navigational exercises in the motor glider. Three flights are also required from a different airfield — some I had done in the UK were acceptable. Attendance at a first aid course is also required. Examination day was in June, 1983 with several hours of theory (luckily in multiple choice format) requiring an 85% pass mark from each of five sections. Then came the practical test, three flights with the examiner and a 50km cross-country in a K-8.

Now there was no need to find an instructor for permission to fly and I went straight into passenger flying — here the pilot is in the front seat with the guest in the back. At this stage I had about 65hrs solo and since then have graduated to the ASW-19.

My experience of German gliding has been excellent and I hope I can stay a little longer to capitalise on the last few years by attempting some cross-country flights and trying for the motor glider licence PPL/B. I am sure that any visitor to our club would be most welcome, provided that the whole UK gliding scene does not descend on us on the same day!

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NEW BAROGRAPH — THE AEROGRAF

ANDREW DAVIS

A new type of barograph will soon be appearing in increasing numbers in the UK, the electronic Aerograf. The following description is intended to familiarise Official Observers with its features, in particular its self-sealing capability.

It is enclosed in a small tough black plastic case with a window in the lid to observe the recording of the trace. There is a protective recess on the side for the on/off switch and a DIN socket for connection to external functions. The barograph number is engraved on the back of the case with the chart speed.

Directly onto the paper

The lid is hinged open to reveal the Peravia style waxed paper recording tape which is transferred from a storage roll on the right to a spool on the left by a quartz controlled toothed drive acting directly on the paper. The paper is removed by lifting out the storage roll and unwinding the used paper from the left hand spool. This reveals the stylus, which is driven in its vertical track by a servo motor controlled by a piezo electric pressure transducer, and the altitude range switch 6000/12000m.

Loading the recording paper is as easy as loading a camera. The paper roll goes into the right hand side and a length is pulled out and wound onto the left hand spool. Closing the lid forces the paper down onto the transportation teeth and stylus and it is then ready for use.

When switched on, it initially records a 1000m mark for 30-40sec before returning to the ambient pressure altitude (Fig 1 point A). The 1000m mark identifies the selected altitude range. To record the aerodrome altitude prior to flight, it should be switched on 2-3min before take-off. If the Aerograf is switched on again it will record another 1000m mark, hence it is impossible to switch off and on again without the evidence being recorded. Obviously if it is below 1000m when switched on the result is A, and if above 1000m the result is B.

1000m mark recorded

The lid is electromagnetically sealed and if opened while running a 1000m mark is immediately recorded. While open the tape drive still runs but if the recording paper is pulled clear of the stylus no markings are made. This is represented by the dotted line at point C in Fig 1. When the lid is reclosed, the 1000m marking will continue for another 30-40sec before the trace returns to the ambient pressure altitude.

Its self-sealing capability negates the need for pre-flight witnessing and external sealing by an OO as any interference with the recording is immediately apparent. You only have to hand it *switched on and still running* to an

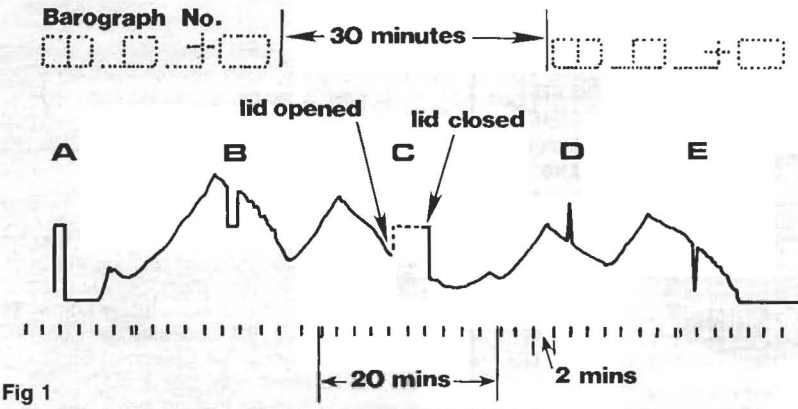


Fig 1

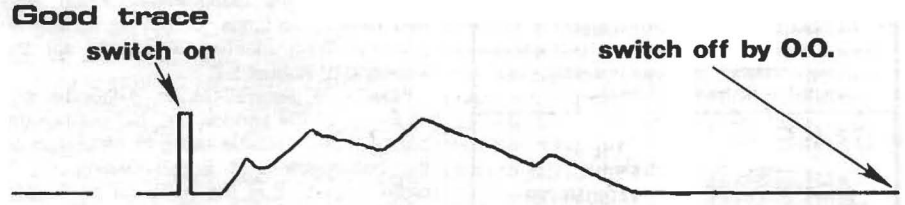


Fig 2 — good trace

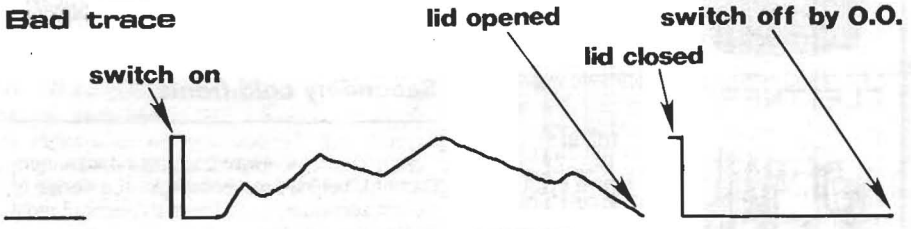


Fig 3 — bad trace

OO after flight who checks it is still running, switches it off, opens the lid, withdraws the trace and inspects it for flight continuity with no interruption by 1000m marks. The trace may be certified and the normal details added in water-based felt pen such as teachers use. Fig 2 shows a trace which would be acceptable, but Fig 3 shows a trace with evidence of barograph interference and possible falsification.

Its other functions of interest to the OO are:

1. The paper recording tape is transferred at an accurate quartz controlled speed of 1.5 or 3.0mm/min (fixed at manufacture). The bottom of the trace is punched every 2min and double punched every 20min by the transportation teeth at 1.5mm/min (1min and 10min at 3.0mm/min). Evidence of flight duration is thereby provided with great accuracy. See Fig 1.
2. The barograph number is punched into the top of the trace every 30min, see Fig 1.
3. It may be connected into time recording cameras such as foto-time by means of the DIN socket. Every photograph then records a photo mark (Fig 1 D) on the trace. This offers possibilities for control of start height and timing of record attempts, speed triangles etc.
4. A button may be wired into the DIN socket to record personal marks (Fig 1 E) for moments of personal interest.
5. It can be expanded to record motor glider engine running time by the connection of a magneto sensor through the DIN socket.
6. It self monitors connections through the DIN plug and socket, and immediately records the 1000m mark if the connection is broken.

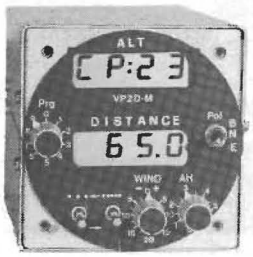
Any queries arising from OO's experience with Aerograf should be addressed to the BGA Flying Committee or the sole UK Agent, Andrew Davis, tel 0625 23564.

Can you help? *The Spastics Society are setting up a camera library for the disabled and wonder whether any readers have items of photographic equipment they no longer need. If so, would you please contact Alan Conroy, industrial liaison officer, The Spastics Society, Greater London Region, 1st Floor, 32/38 Osnaburgh Street, London NW1 3ND, Tel 01-387 5505.*

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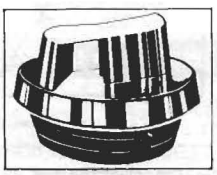
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50 YEARS AGO

A. E. SLATER

August and September 1934 were notable for distance records, national and international. The first had an odd origin. Sutton Bank in Yorkshire had at last been bought from its previous owners, the Ecclesiastical Commissioners who control the Church of England's funds, and would only hire it out to gliding people on condition that no flying was done on Sundays and Good Friday. Philip Wills had raised the funds for buying it, and an opening flying meeting was fixed for the weekend of August 5-6.

Now J. R. Ashwell-Cooke, a founder and chairman of the London GC, did not like the prospect of Dunstable losing its reputation as the headquarters of British Gliding, so in order to keep it in the news he persuaded Eric Collins to try for a British distance record on the Sunday. Collins succeeded with 98½ miles to Holkham Bay on the Norfolk coast in his Rhönadler, reaching a maximum of 5000ft in his last thermal.

Secondary cold fronts

I could not get away from my hospital near Dartford, but had the spectacle of a series of violent secondary cold fronts throughout most of the day. In the evening came the news over the radio: the broadcaster must have been a special Sunday duty man, for he started with "Why are gliding records always set up on Sundays?" The reason did not occur to him any more than it did to the parson in Northern Ireland who complained in the press that Ulster GC always did their flying on Sundays, as if on purpose to annoy him.

To visit the 1934 German Championships, three of us — Jack Dewsbery, Dudley Hiscox and myself, hired a three-seater Leopard Moth for a weekend, Dewsbery piloting. We climbed up through a thick layer of strato - on over the Channel without bothering whether anyone else was doing it too, and crossed Germany with a helpful west wind, passing over a local gliding club on a hill near the Rhine, and arrived at the Wasserkuppe amid the strange sight of sailplanes all around us, apparently motionless. We found Wolf Hirth complaining that whenever he put up a world record someone would beat it next day. On July 26 he had made 352km eastward to Gorlitz, only to be beaten next day by Heini Dittmar with 375km. Oskar Ursinus, founder of German gliding, was astonished to hear that we paid only £5 for the hire of the Leopard Moth, and said so in his magazine *Flugsport*. The return journey was against a very strong wind and we never seemed to reach St Inglebert, so put down in a field only to hear that the airfield was half a kilometre further on. We walked it, letting Dewsbery fly on into the gathering dusk.

Another event: on August 19 Philip Wills flew his Scud 2 to a few miles north of Ware and found he was in the next field to the one in which Vincent Lunardi landed after making the first balloon flight in England on September 15, 1781. The owner showed Philip a commemorative plaque which he had taken indoors for safety.

A big event of 1934 was the National Contest meeting at Sutton Bank in September, but an account of it must wait till the next issue. I might just quote a remark made in the refreshment tent as a noisy aeroplane roared past: "There goes a real one".

CHANNEL CROSSING REMINISCENCE

When the **Daily Mail** offered £1000 for the first crossing of the English Channel by glider, in 1931, someone was foolish enough to fix an opening date, July 1, with the result that the **Daily Express** sponsored a crossing the day before, June 30, by a Mr Lissant Beardmore, who was aerotowed for an undisclosed proportion of the distance in a Professor. He was stated to be a professional tenor and the husband of Barbara Cartland, then already a well known romantic novelist. Mr Beardmore died shortly afterwards, but Barbara is still going strong at 83, and has just been elected a Fellow of the Royal Society of Arts.

A. E. SLATER

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Your Letters



GLIDERS ON TIES?

Dear Editor,

Once upon a time the BGA sold a tie which had a motif of small sailplanes. This frequently led to interest from casual acquaintances and many chats about our favourite subject. In my case, at least one new member resulted from wearing the tie.

The present tie seems to evoke no interest at all — except on one or two occasions when it was thought that the wearer was a pigeon-fancier.

Do other readers agree that our tie should carry a small motif which clearly represents a sailplane?

RON RILEY, **Tenderden, Kent.**

SUBSIDISED BY NATIONALS PILOTS

Dear Editor,

I would like to take issue with some of the points raised by Paul Williams in the April edition of S&G, p68. In summary, his argument would appear to be that a homebuilt 12m glider would fulfil the need for a cheap soaring machine to enable expansion of the gliding movement to include the young and impecunious. Historically, every few years a similar article is published in S&G to be followed by a flurry of letters in support of the concept and yet, somehow, nothing happens.

The reason for this apparent inactivity is clear; yesterday's gliders are becoming relatively more affordable. A second or third-hand glider will offer a higher level of performance than can be achieved if the same money were to be spent on a homebuilt project. I doubt if a homebuilt 12m glider (presumably of wooden construction) would have a performance any better than a Skylark 2. A homebuilt 12m glider would cost at least £6000 if one includes the cost of instruments, trailer, parachute and barograph. What incentive would there be to build if a complete Skylark outfit can be purchased for under £1500?

Pilots want performance in order to enjoy the maximum of available soaring. Glass ships stay up longer, fly further in stronger winds and get back home more often. A lower performance glider will cost more in terms of extra launches and expensive retrieves. Paul Williams claims that glass-fibre gliders will always be too expensive for the less well-off members of our movement. In real terms this is becoming less true. A Libelle in 1977 was advertised for £7500, recently one has been advertised for £5300.

Our gliding movement is being heavily subsidised by wealthy Nationals pilots who provide a constant supply of well equipped and very expensive gliders that are to be outclassed by newer designs within a few years. These gliders depreciate rapidly and provide cheap flying for the rest of the gliding community. I would suggest that the most potent means of keeping costs down is not to provide a low performance 12m Class, rather to maintain non-handicapped National Competitions.

JON WAND, **Ipswich, Suffolk.**

FORMULA I RACING SHIPS

Dear Editor,

The recent comments of Messrs Emslie, Gibson (last issue p137) and Williams (April issue p68) have been most interesting (*ie* they agree with mine). I also feel that the Germans are producing formula 1 racing ships but the majority of UK pilots require equipment for "yer average gliding weekend."

In the August 1981 issue of S&G, p156, all sorts of wonderful new machines, which appeared to meet the basic requirements of a kit and homebuild, were discussed — unfortunately no hardware appeared so we're still discussing!!

The bits for Tornado appear to fit even though they have been made in Italy, Germany and the UK, so a distributed glider design shouldn't be impossible. So, with drawing board and computer at the ready I await further developments.

M. SANSOM, **Seaton, Devon.**

PS. On the public relations front — when was the last time gliding had a mention in either *Air Pictorial* or *Air International*? If we can't communicate with the aviation enthusiasts do we stand any chance with Joe Public?

THE LEVY AND THE BROCHURE

Dear Editor,

What a contrast there was between the warm, generous and witty gesture of Phaeton (June issue, p137) in donating money nationally saved during winter bad weather to the World Championship fund and the mean-spirited (or simply mean?) carping of John Gibson on the preceeding page about That Levy. After his second or third blast on the subject, one wonders whether he is genuinely hard up, or simply hard up for a new topic to gripe about.

On another topic entirely: the thanks of all club publicists, promoters and recruiters are due to everyone involved in producing the **Introducing Gliding** brochure, a highly professional piece of work. We have needed something this good for years.

BOB RODWELL, **Belfast**

A MATTER OF PRINCIPLE

Dear Editor,

I refer to John Holland's interesting article on p19 in the February issue. I am the last to decry the need of our movement to arrange its affairs so as to afford the greatest advantage to all its adherents. There is, however, a matter of principle involved.

If one assumes that gliding is just an exciting experience like riding the Big Dipper then a case can be made for the delivery of that experience to the paying customer for as long and as often as he is willing to pay. If on the other hand one believes, as I do, that gliding is a sport like cricket then it must be accepted that there is a lot more to gliding than flying — just as there is more to cricket than batting. The glider pilot must be prepared to spend long hours in the "outfield" which he should find, if not enjoyable, then at least satisfying as part and parcel of his sport.

As someone who served through the last World War may I correct a point made by John. It is true that of those young men who joined the RAF all wanted to be pilots. It was the Navy which could take its pick and kept long waiting lists. Probably, I suspect, because the "fore and aft" uniform was a certain lady-killer.

J. G. SMITH, **Knaresborough, Yorks.**

THE FUTURE OF GLIDING

Dear Editor,

Operating Economics: Club Fleets and Encouraging "New Blood" (after Scull & Holland).

We have over the last couple of years seen various articles in S&G on the future of gliding whose increasing frequency is an indication of concern in "high quarters".

Our ever-vigilant director of operations, Bill Scull sounded a note of alarm in the April 1982 issue, "Where is Gliding Going?", p68, about the growth of gliding (or lack of it) when he pointed out the huge increase in private ownership (250% over a decade) whilst average club membership and club fleets had stagnated.

In the December issue, p267, a study-paper (by Austin, Dicks and Smithers), highlighted decreased club single-seater fleets leading to reversion to an older membership as part of an "alarming trend".

In the February issue, p19, John Holland stated that the aim of every gliding club should be to provide the best *value* for money (my italics).

Finally, in the April issue, p66, Mr Holland advocates his own club's policy of exclusive use of K-7 and K-8 gliders for club fleets (on the grounds solely of absolute cheapness) and quelling "... ambitions towards exotic aircraft ..." He goes on to observe the "move to private ownership" by new members within a couple of seasons.

Since glider capital (purchase) costs can indeed be different by large factors, I presume Mr Holland is restricting this comment to a comparison of capital costs. If running costs were also proportional to purchase price/capital value his point would be made; however total operating costs are nothing like

as clear cut and the reasons for this are very apparent.

Capital Cost (loan repayment, interest etc) constitutes just one of a number of major annual operating costs; it is the only one which is proportional to purchase price. *Insurance* obviously increases with purchase price but is often a very large percentage of the hull value for a cheaper, older glider (since third party risks and many categories of small and medium frequently occurring repairs are as expensive to effect as on newer, more expensive machines). *Maintenance* is often more expensive for an older machine and even C of A inspections done "free" by members often require down-time significant as a fraction of a year's operation (which of course should be costed for comparison). *Hangarage* may ostensibly be "free" for the club fleet but if a private machine is hangared the true cost will be quickly manifest.

By properly costing such items Mr Holland is likely to find that the annual operating costs of an older machine show it to be only marginally cheaper (if at all). If he now offers glider performance into the comparison he may well find that the membership is willing to pay the overall marginal difference in order to get one or two machines in the club's fleet which are less "basic". He may also find that many club pilots are then in a position to outfly him (no such chance at present).

So what sort of picture does this provide of the current state of the sport and of Mr Holland's views and guidance for the future as chairman of our National Development Committee? We see that (with a number of exceptions) club fleets are stagnating/contracting and those who can afford it are obviously keen to get clear of them. Whilst this is happening, the guidance we receive from the said chairman (based on possibly blinkered economic analysis) is that we should operate club fleets of old two-seaters and very elementary single-seaters which will perforce frustrate a keen new member in about 18 months flat!

Need we look further for a cause of the present membership crisis? I suggest that a loss of new blood is occurring amongst the frustrated, often younger members of our movement who are unable to commit a significant sum to a not too readily realisable asset like a share in a glider. However such a club pilot may not necessarily be already spending his last pennies on flying and may not wish to be patronisingly told by Mr Holland and his like to fly a K-8 for evermore. Indeed, by not mortgaging himself to the usual K-6/Pirat/Skylark first purchase he may be able to afford to fly a club fleet which includes a Club Class glass machine and aspire to 300km tasks and the first foray into competition flying.

To give Mr Holland time for reflection on this and to enable him to practise what he preaches, I suggest that he should set an example to us all by forgoing a season of private ownership to fly only his own club fleet. When he has acquired sufficient experience of "pressing on" in a K-8 he should seriously attempt a 300km triangle in this machine and then record his season's experiences and (possibly modified?) views for the benefit of us all.

If Mr Holland's club did take a wider economic view and decide to move up to a modest glass ship its total capital investment (site £106 000, plus present fleet of five K-7/K-8, say £17 000) would have to be increased by a very modest 5%.

With guidance like Mr Holland's who needs a faulty compass?

TONY GEE, **Godalming, Surrey.**

THE ONE MILLION TV ADVERT

Dear Editor,

Recently you may have seen flying sequences of a Blanik in a TV commercial for the Audi Quatro and you may have wondered where it came from.

In fact that Blanik is based at Campolara in Spain. The flying took place last December from a small airfield somewhere in the mountains near Cortino Grande (Almeria) in south-west Spain.

Thirty-five flights, fifteen flying hours over five days and a British film crew of twenty people were necessary for the odd minute on the screen. The lead girl was "doubled" for some driving sequences and the producer was so impressed by an accidental tail slide that he wanted a repeat!

The fee? One million . . . pesetas!

FRANCIS HUMBLET, **Egham, Surrey.**

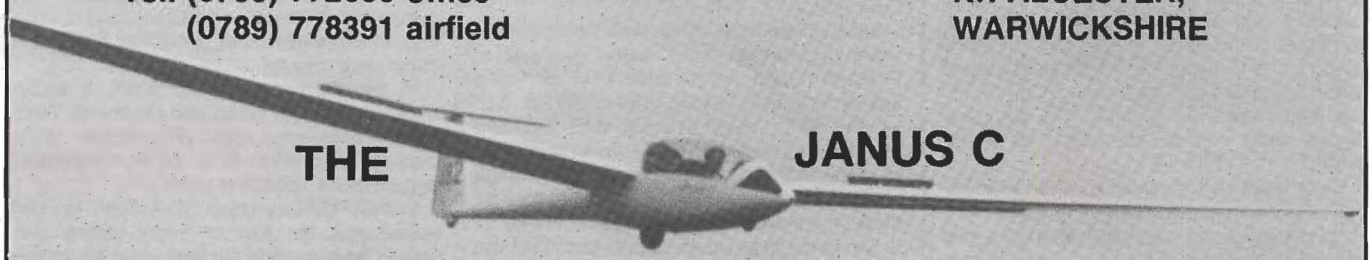
GLIDER RACING

Dear Editor,

Now that competitions are nearly all based on speed around a closed circuit, why don't we try reducing the size of the circuit and

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race several laps around a course of say 50km? This would have some spectator appeal and may even attract some business support.

Look at the crowds and sponsorship in motor sport. People don't go to a motor cycle or car race to watch the competitors start and then have to wait for four or five hours for the leader to reappear; they prefer to see events of several laps where the positions and performance of the competitors can be monitored.

Perhaps some of the pundits in the gliding fraternity would like to give the idea a try. But count me out, I'm just a pleb who enjoys doing a bit of instructing and an occasional cross-country. I'll come and watch though, it might be fun.

M. J. WELLS, **Farnborough, Hants.**

FEMALE GLIDER PILOTS

Dear Editor,

Having read, with interest Trish Watson's article on Female Glider Pilots, April issue, p62, I felt sure there would be some interesting replies in the June issue; and so there were, p136. But surely I cannot be the only Female Glider Pilot who:

a. Isn't married.
b. Doesn't have any children.
c. Doesn't suffer from pre-menstrual tension.
d. Can quite competently compete with Male Glider Pilots of similar experience.
e. Hasn't yet come across the problem of wet knickers and nappies.

From one Female Glider Pilot who can hold her own in more ways than one!!!

JULIE WILLIAMS, **London.**

MORE ABOUT CLUB REPORTS

Dear Editor,

To a member of a civilian gliding club, the club reports must be very boring. A long list of achievements obtained by a series of faceless names can hardly be very interesting reading, when every club report seems the same as another. But this is not so to the Service club member. Any member of a Service club who has been gliding even just a few years will know a large number of the people mentioned in Service News.

A tour of duty in the RAF is about three years, and in the RAFGSA Club I have belonged to for four years, only five were members when I first joined — the rest are now flying with other Service clubs. In a recent report it was mentioned that a certain member landed out. To someone who has never met this gentleman, this must have seemed very mediocre news indeed, but as a very large proportion of Service club members have been instructed by him and know his aversion for getting back by trailer, this item of news was not boring to them, but interesting and probably amusing.

The club reports are Service club members' best way of keeping in touch, so if there is any plan to discontinue them, at least keep Service News going, please.

SIMON LUDLOW, **Fenland GC.**

(We have no plans to discontinue the club news section. It is far too popular. Ed.)

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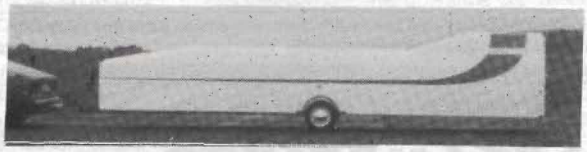
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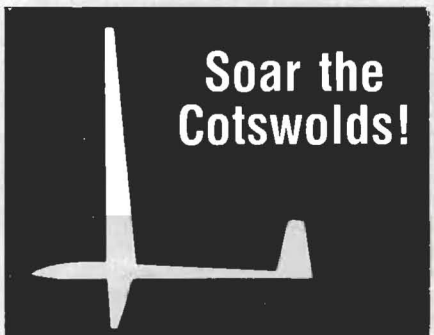
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Overseas News

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

A first for Canada. Two pilots who started their gliding careers in England achieved the first 1000+km flights in Canada on June 2, operating as a team.

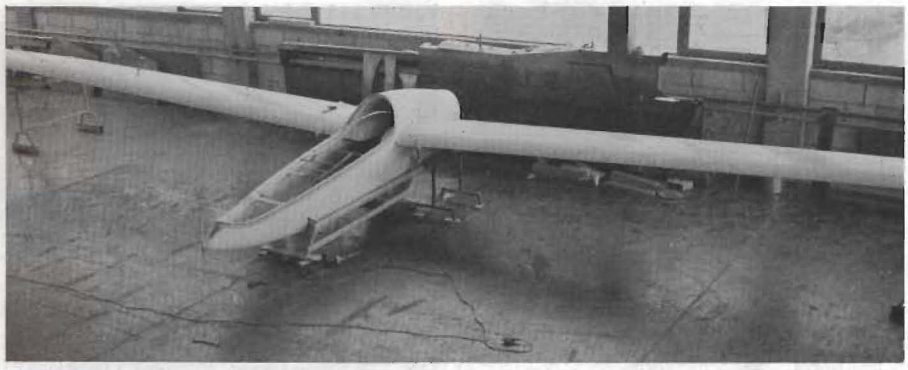
Michael Apps (ASW-20FP) and David Marsden (DG-202) took off from Edmonton Soaring Club, Alberta, and flew south-easterly for 707km to Indian Head, 75km east of Regina, Saskatchewan, claiming the Canadian goal distance record, then continued easterly to land at the Winnipeg GC, Manitoba.

The total distance was 1121km but due to height penalties only 1096km will be claimed. The flight took advantage of a 12 000ft cloudbase and a 20-30kt tailwind and was completed in 8hrs without waterballast.

They had very few soaring problems but because they wanted to share a joint record they had to keep in contact with each other and one radio was giving trouble. At times they were able to dolphin fly for 60 to 80km without stopping to thermal.

David said that in retrospect the weather conditions were suitable for an attempt on the world straight distance record of 1460.8km held by Hans-Werner Grosse, W. Germany, since 1972. This would have meant continuing south-easterly from their goal into the USA as landable terrain runs out east of Winnipeg.

The German firm G. Follmann Flugzeugbau is offering a modification kit for sale designed to increase the span of the H 201 Std Libelle from 15 to 17 metres and to fit lower surface flaps designed to improve the performance of the normal airbrakes thus improving the short field landing capability. About ten Libelles have already been modified in Germany. The glide angle is said to be improved by 4pts and there is no change in the VNE.



Development work on the DG-500. The wings assembled to a fuselage part for moulding the wing fuselage fairings.

Glaser-Dirks has announced that its first two-seater will start production in 1985 — the DG-500. The basic model has an 18 metre wingspan but later a high performance version, the DG-500L is planned which will have flaps and tip extensions increasing the span to 22 metres. A motor-glider version, the DG-500M, with a retractable engine is also planned.

The SZD 48 Std Jantar 3 is the latest offering of the Polish glider manufacturers. Externally it differs from the preceding versions only by virtue of the one-piece canopy hinged at the front. But the airframe has been re-inforced making it the heaviest of modern Standard Class gliders with an empty weight of 274kgs. The Max permitted all-up weight is 540kgs.

Moroccan Gliding Centre. Inspired by Colonel Kabbaj, a 747 captain in the Moroccan airline Royal Air Maroc, a new gliding centre has been established at Beni-Mellal at the foot of the Atlas Mountains north-east of Marrakesh. The centre is equipped with two Bijaves, a Super-Javelot, Fauconnet, Squale, Edelweiss, Astir and a Roumanian motor glider — an IS-28BM. There is an ambitious project in hand to construct a hangar, workshop, administrative building, restaurant and sleeping accommodation — all in the Moorish style but with all modern conveniences.

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The soaring is said to be spectacular and there are many former French military airfields available for the occasional field landing. The Moroccan authorities say that foreign visitors are welcome with or without their own gliders.

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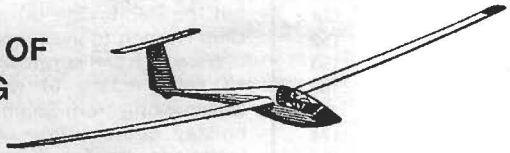
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