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JUNE-JULY 1978

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SAILPLANE & GLIDING

Magazine of the BRITISH GLIDING ASSOCIATION

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LET'S SHOOT THE TASK SETTER

GEOFFREY STEPHENSON



This background information is purely for the sake of newcomers to the sport. Geoffrey started gliding in 1936 and three years later became the first glider pilot to soar across the Channel. He was British Champion in 1953 and 1959 and flew in the World Champs in 1952, 1954 and 1956. Geoffrey, whose Gold C No. is 14, has acted as task setter at the London GC almost continuously for the last 11 years.

This article proposes a scheme which is similar in some respects to that of Fred Weinholtz (S&G April, p57, "Some Thoughts on New Contest Philosophy in Gliding") but in some important respects it differs. It takes part of his basic philosophy to its ultimate conclusion.

It is generally considered that racing round a prescribed circuit is the highest form of the art of soaring and, for this reason, it is almost the only task used in competitions today. Compared with the kinds of tasks that used to be set this situation is probably justified. Nevertheless, it is certainly true that many pilots have a great deal of experience that remains untested in present-day contests and it may be time to consider ways of allowing them to use it in exercising more control over their destiny.

If you think champions should be like highly trained greyhounds with very little to occupy their minds until the trap opens, or if you are enamoured with the present scoring system, which aims to strip away the last shred of chance, then you may not take to the following scheme.

If, on the other hand, you are rather tired of gregarious gaggle flying and you would like to recapture the skill needed for the pilot-chosen goal flight, without the penalty of a retrieve, and yet retain the thrill of racing, then you are probably already converted and are just waiting for the chance to shoot the task setter.

Before you do this, however, let me hasten to point out that an essential requirement for DIY task setting is a catalogue of triangles and out-and-returns related to the site of the contest and that one of your cast-off task setters is probably just the chap to compile this. The catalogue, a set of turning point maps and a statement of the rules would be presented to the competitors well before the start of the contest.

It may be of interest, in this connection, to know that a catalogue of triangles and out-and-returns has been compiled from Dunstable. There are 23 turning points and, in spite of the excessive amount of restricted airspace, there are 70 usable triangles, of lengths that are fairly uniformly spaced between 100 and 500km.

The scoring formula should be very simple to understand and memorise. Any formula is, of necessity, rather like the recipe for a cake. It is devised by someone because they like it and think it will please those using it. There are no absolute standards of value enabling the achievements of speed, distance and returning to base to be weighed and rewarded in a universally acceptable manner. Therefore, without further justification, I present my favourite recipe in the hope that you too will like it.

The basis of the scheme is that the contest be run by allowing the competitors to choose their own closed-circuit courses from the catalogue provided. It is suggested that the courses be limited to triangles and out-and-returns, in order to limit the number of turning point photographs to be taken. The competitors will choose the longest courses they expect to be able to complete at a "reasonable" speed.

The reward for distance covered will be one point per kilometre, less 25. The 25 fulfils the function of the present X: *ie* it prevents deliberate final glides from the startline.

The reward for completing the course will be a bonus of one per cent for each kilometre per hour of speed. And this is all the pilots need to remember in connection with scoring.

Stating this algebraically: the points gained by a pilot who fails to complete the course are

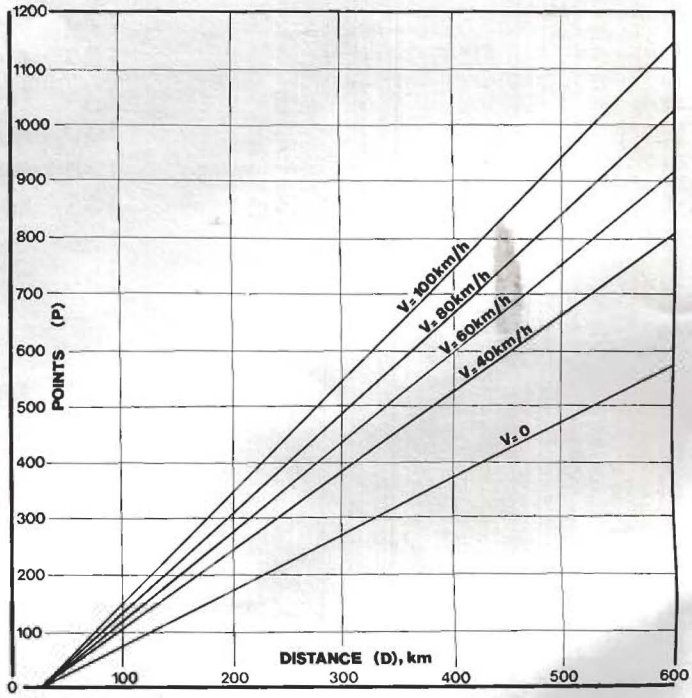
$$P = D - 25$$

where D is the distance covered in km (measured in the currently accepted way).

The points gained when the pilot completes the course are

$$P = (D - 25) \cdot (1 + 0.01V)$$

where V is his speed in kilometres per hour. This formula is expressed graphically below. If handicapping is used D and V become the handicapping distance and speed respectively.



It is not essential to the scheme that pilots declare their courses before take-off, but it seems much better that they usually be required to do so. Otherwise they would be likely to choose courses having several possible final turning

points, more or less in a straight line, so that they could peel-off and come home when the thermals began to die. This might lead to pilots settling down to a daily routine which minimised the need to predict their performance. Furthermore, if the declarations had to be sealed, pilots could not rely on playing follow-my-leader.

Starting the task can be done in the usual way, with launching commencing as soon as the organisers decide it is safe to do so and the startline being opened ten minutes after the last offered launch. Alternatively the old system of pilot chosen take-off time could be used, but this method seems very clumsy in comparison. The startline must face in a direction that avoids the need for U-turns immediately after starting and there is a similar problem with the finish line. (Being next to the London TMA has one advantage after all!)

While there are sure to be a few points, such as this, to be thought about, it seems that the scheme is, in the main, quite workable. The most important point to decide is whether it encourages the most enjoyable and skilful competition flying.

Gordon Camp, Chairman of the BGA Competitions Committee, comments: The sport of cross-country gliding can only benefit from constructive proposals such as this development of the Weinholtz philosophy by o notable pioneer and past National Champion. The Competitions Committee has already authorised Regionals to experiment with Weinholtz tasks (see BGA News, p130). We shall confine the trial to this extent for this season, at the end of which the Committee will avidly study the outcome, together with Geoffrey's and any other proposals, before deciding how (if) to formalise such tasks for the future.

Vickers-Slingsby held an open day in March when Vega, the first British glider to go into production for several years, was on show and looking impressive. George Burton, Managing Director, said they will be in full production by early summer when a Vega will be completed every four days. Derek Piggott flew the glider for a photographic session which gave us our cover picture and we are grateful to FLIGHT International for allowing us to reprint Derek's article from the April 15 issue.

Flying the Vega

My lightning visit to Slingsby to see and fly Vega scarcely allowed time for more than a quick look round before we put the glider together. The airbrake, flap and aileron connections couple as the wings are pulled the final inch or two together using a convenient lever, and just one large-diameter pin holds the whole wing together. Similarly, dropping the tailplane into place couples up the elevator, so there is no chance of taking-off with a control disconnected.

Vega's undercarriage is noticeably longer than that of most other similar machines, giving additional wingtip and fuselage ground clearance. This is welcome in my opinion, for most sailplanes have far too little wingtip clearance, which together with poor aileron response at low speed results in many ground loops and damaged gliders. The only unconventional feature in the cockpit is the combined airbrake and flap lever. A direct pull operates the airbrake conventionally, but rotation of the wrist moves the cruise flaps, changing the camber of the wing and raising and lowering the ailerons in harmony with the flap position.

For my first take-off there is a very light 90° crosswind, which should give a fair test of the aileron response. I set the flaps to the full negative position, which raises the ailerons, making them most effective. The take-off is uneventful, there being ample aileron control. Lift the tail, rotate the flap handle to lower the flap a little and the Vega hops off the ground. During the tow to 3000ft I amuse myself by getting used to the flap system. A slight grip of the control handle releases the lock, allowing the handle to be rotated downwards for down deflections and up against the cockpit side to set negative flap for high speeds. The forces are extremely light, and the flaps are locked at any position by relaxing the hand grip.

The tow hook retracts with the wheel. Its lever is conveniently positioned and the undercarriage comes up easily, locking with a reassuringly positive clunk.

I trim out, raise the flaps and accelerate forward to position myself alongside the Super Cub for the cameraman. The unconventional flap lever still needs a few seconds thought and I inadvertently pull the handle, opening the airbrakes for a moment instead of lowering the flaps.

We circle together, hoping to get some shots against the snow-capped mountains. Within a few minutes I have forgotten any anxieties I had about not knowing the aircraft. The handling is crisp and absolutely straightforward, and soon I see the cameraman smiling and signalling that he has finished his film. I have 1500ft left to explore the handling and, raising the flaps, I run up to 120kt in a shallow dive, feeling out the controls for any sign of twitchiness. Then back to low speed again to explore the stall, which is a non-event. I am struck by the thought that the Vega would be useless for teaching pilots about stalling. With the stick hard back, there is just a distinctive buffeting and not even a really high rate of descent. There is no tendency to fall off on a wing during a turn at lower and lower speed, and I begin to believe reports that Vega will not spin fully. Sideslipping shows an improvement over that of most newer designs. Although light and effective, there is no tendency for the rudder loads to reverse or lock over.

I join the circuit, drop flaps for low-speed cruising and lower the undercarriage. Since the approach is over water and a formidable looking cliff edge, I give myself plenty of height to try a full airbrake approach at about 50kt. The airbrakes have the usual geometric, overcentre lock to keep them closed but a pleasant neutral feel, enabling them to be adjusted easily with no tendency to snatch open at high speeds. Although not quite as effective as those on the

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Between flights we discuss the handling. The pitch control seems excellent but the rate of roll is a little disappointing, about 4-4½sec from 45° one way to 45° the other, compared with about three seconds on a few of the other new machines. Designer Roy Saunders agrees and explains that rate of roll has been sacrificed for performance and that it is well up to the average for the larger span machines. The Vega aileron and flap chords have been kept to the percentages for which the aerofoil was designed, rather than increasing them and perhaps ruining the critical laminar flow and efficiency.

The second flight is again for photographs and we venture confidently out over the mountains. On the way back I try the rudder. The loads are extremely light and there is ample control at all speeds. Vega proves an easy glider to fly accurately and circles as if on rails, a feature which will be popular with both beginner and expert.

The air is smooth so I run up to the VNE of 135kt, pull up into a vast climbing zoom, then lower the cruise flap to circle at a mere 40kt or so at the top, having gained 600-700ft. I try a spin using a straight stall, full rudder, full opposite aileron and the stick hard back. The Vega refuses to drop a wing and wallows about indecisively until I give up and unstall it. I try full in-spin aileron. This time it rolls over half a turn and dives out, gaining speed rapidly. I am flying with the CG near the middle of the permissible range, but perhaps on the aft limit it may just be possible to get a turn or so of a spin.

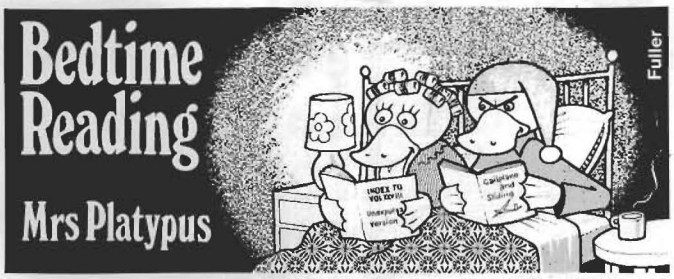
Excellent feel and harmony

I try to get a qualitative idea of stability by crudely measuring the stick position from the instrument panel at higher and higher speeds. The distances get marginally shorter and the forces increase slightly, so that all seems satisfactory. The general feel and harmony seem excellent, combining light elevator forces with a complete lack of twitchiness.

This time I plan a more normal approach using about half the airbrake until the final few seconds, when I apply full airbrake quickly. The landing is simplicity itself.

Roy would like one more test done and he loads in a pile of lead sheet to bring cockpit weight up to the maximum. Unlike other designs, Vega is strong enough to fly at VNE with the cruise flaps and ailerons fully drooped. What Roy wants is proof that the locking device will withstand the loads trying to push the flaps back up. Since maximum flap-operating speeds are notoriously easy to exceed, the Vega's limit is particularly handy for the pilot who peels off into a steep dive without first raising the flap. After some reassurance that it has all been done before, I take off on my third and last flight. By now the wind is almost nil and I try the take-off with neutral flap, thus reducing aileron power. Still no problem: I am satisfied that the average pilot will manage, with little excuse for ground loops on take-off.

I have flown almost all the latest 15m machines except the LS-3. They all have superb handling, good airbrakes and high performance, but they are all cursed with some design faults or inconveniences. Vega seems to embody the best features of each, as well as some new ideas. Let's hope that its performance is well over the magic 40:1 gliding angle, and that once again Britain is producing a really competitive sailplane.



Platypus was reading S&G in bed. Ever thoughtful of my comfort and well-being, he handed me something with which to occupy myself until he had digested S&G down to the last small ad. In this case, what he handed me was the Index to Volume XXVIII 1977, compiled by our old friend Rika Harwood. The Index had fallen out of S&G when Platypus picked it up.

"a quite amazing document"

Now you might not think that the Index to Volume XXVIII is the most riveting bedtime reading around. However, as clearly nothing more interesting was going to present itself before Platypus had read every last syllable of S&G, I decided to fritter away an idle hour with it. And I have to report that the Index to Volume XXVIII is a quite **amazing** document.

For instance, did **you** notice a letter in S&G in 1977 entitled "The Aim is for Maximum Enjoyment"? Or a feature by A. D. Purnell entitled "Try the Tiny Triangle"? (As the actress said to the bishop, presumably.) A. Wills apparently asked "How Could You Fail?", whereas M. L. Beach confidently maintained "We Can Do It" and G. Seibels noticed a "Disconcerting Phenomenon".

Was it just, I wondered, my overheated imagination? Or were all the Indexes (Indices?) as full of delightful double entendres as dear XXVIII? I rustled up XXVII, Index to Volume, 1976, to check. I was not disappointed.

There was J. Wills, declaring "Behold the Dreamer Cometh". Ann Welch wrote about "Too Much or Too Little" and Ruth Tait complained "Only 270 Minutes More". Under Record Breakers, The, we were advised "See Also Bigger and Better".

Among the more bizarre entries was "Rodwell, R. R. Amid the Vultures and the Kites, 164; The Press can be Very Helpful (letter)".

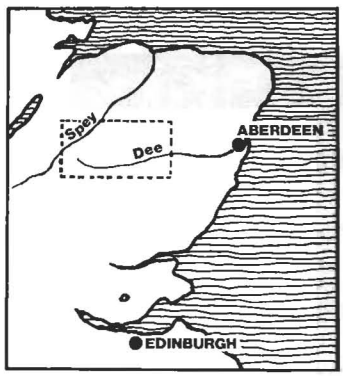
The entry "A Task Week for the Over 65s" reminded me of a story about the Family Planning Journal, which announced that in the next issue they would be publishing an article on "Sex and Contraception in the Seventies". They were besieged by anxious correspondents who wanted to know if contraception were really necessary at that age?

Back to XXVIII, however, I felt that "Angela's Antics" might not be out of place in Penthouse, while bondage fetishists were catered for with "And a Lot of Rope", Mr Harris gave it as his opinion that there is "No Substitute for Experience".

"What are you doing?" Platypus demanded, as I giggled to myself over some of the choicer items.

"Reading about 'A Plea for Regional Activity,' " I quoted to him. "I know all about the Avoidance of Arrival Accidents."

But Platypus was fast asleep.

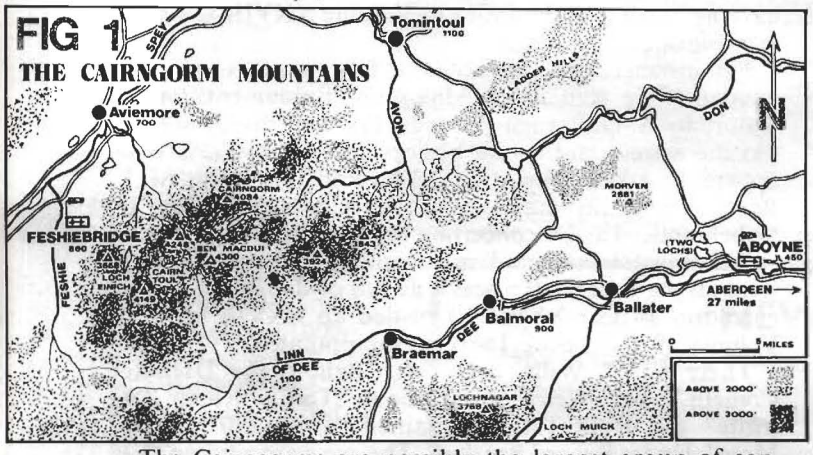


THERMAL FLYING IN THE CAIRNGORMS

PETER WHITEHEAD

There must be countless pilots who have experienced flights over the Cairngorms in their wave season visits to Aboyne. Did they, whilst looking down through the gaps in the lenticulars, worry themselves with thoughts of thermal flying amongst, and just above, those inhospitable granite peaks?

I am tempted to answer yes, but that the thoughts were quickly dismissed. I feel it is my duty to reveal that this area is a veritable playground (adults only!) which is, as yet, barely discovered. What has caused it to remain so is, I think, due to several misconceptions about the area. I shall try to correct these and leave only the psychological barriers to prevent a pilot venturing into the mountains. (How one's *confidence* in a sailplane's performance can shrivel when confronted by granite cliffs and no view of landable country.)



The Cairngorms are possibly the largest group of consistently high mountains in the UK. They are definitely *mountains,* not hills; they have steep sides and plateau summits which both have a good exposure of bare granite. Most of the area is essentially unlandable except for the airfields at Aboyne and Feshiebridge and the major valleys – much of the Spey valley, the Dee valley up to the Linn of Dee, the Avon valley up to Tomintoul and the middle and lower reaches of the Don. From this and Fig 1 it can be seen that the furthest a pilot could be away from a landable field is approximately ten miles (this is comforting, but difficult to believe when at this point).

Allowing a very conservative four miles per 1000ft (I still use this over mountains), this means a height loss of 2500ft (maximum), and a comfortable glide from a height level with the peaks to a landing field at 1100ft. When cloudbase is 100ft above the highest peak there is only a short time of gliding before thoughts should turn to moving towards a landable area *via,* of course, suitable thermal sources. Most of the flight will be out of sight of potential landing fields and *precise* navigation is necessary for determing the time to head for them.

Scotland is associated with a paucity of thermals, those that do occur being poor cousins of southern ones. I believe this to be a myth, supported by the natural inclination of pilots to fly along the valleys. I still feel a certain reluctance to leave the security of the Bowl of Tarland to the north of Aboyne. After overcoming this I have found the thermals over the mountains to be just as good as those encountered in the South of England, with the added advantage that well defined ground features enable one to locate thermal sources more reliably. What Scotland loses in latitude it may gain in slope – the net effect of a slope facing the sun is a greater rate of heat input per unit area than would occur on flat ground in the South of England. Experience of likely "hot-spots" can be put to good effect. Perhaps I should mention that the sink is also "good" and cannot always be so skilfully predicted!

"But, of course, your cloudbase is usually low up there," people say. Well, in general, over low ground it is, compared with southern conditions. But here's a secret (at least kept a secret from me until I discovered it for myself, though no doubt the phenomenon is documented somewhere), cloudbase here often rises with rising ground, as in Fig 2. One of my first thermal flights from Aboyne showed me that the cloudbase over Morven was in the order of 500ft higher than that near the site. As I flew across the southern slope of Morven, the day began to feel different – the thermals felt fresher, they had life.

The story repeated itself as I edged westwards to Ben Macdui, the cloudbase reaching 6000ft in one patch. It was clear that from there I could easily make Feshiebridge with no more lift. But a belting thermal off Cairn Toul, and then another as I crossed Feshie's ridge, got me over the gliding field at 5000ft. I decided that although I had enjoyed the proximity of the peaks, I wanted some relief from having mountains underneath and surrounding me. I would return over lower country, *via* Tomintoul. A mistake. Lower cloudbase, down to 3000ft, scrappy lift, a field picked at

WINTER BAROGRAPHS

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Tomintoul, followed by a scrape back to Aboyne. I had noticed when over Feshie that cloudbase over the Spey valley further north was much lower than me, but paid little attention to it. That was in 1974. Three years later I made Feshiebridge in half the time and again gave in to the desire to return *via* Tomintoul and lower ground. Again a difficult flight and a close thing at Tomintoul. This year I shall stick to the high ground!

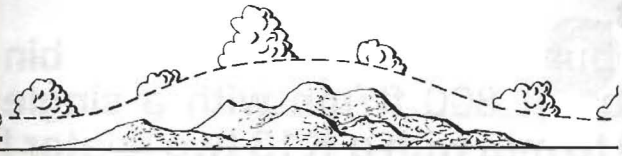


FIG 2

The appearance of the high ground/high cloudbase phenomenon is shown in Fig 2. My attempt at an explanation, which I'm sure may be bettered, is as follows:

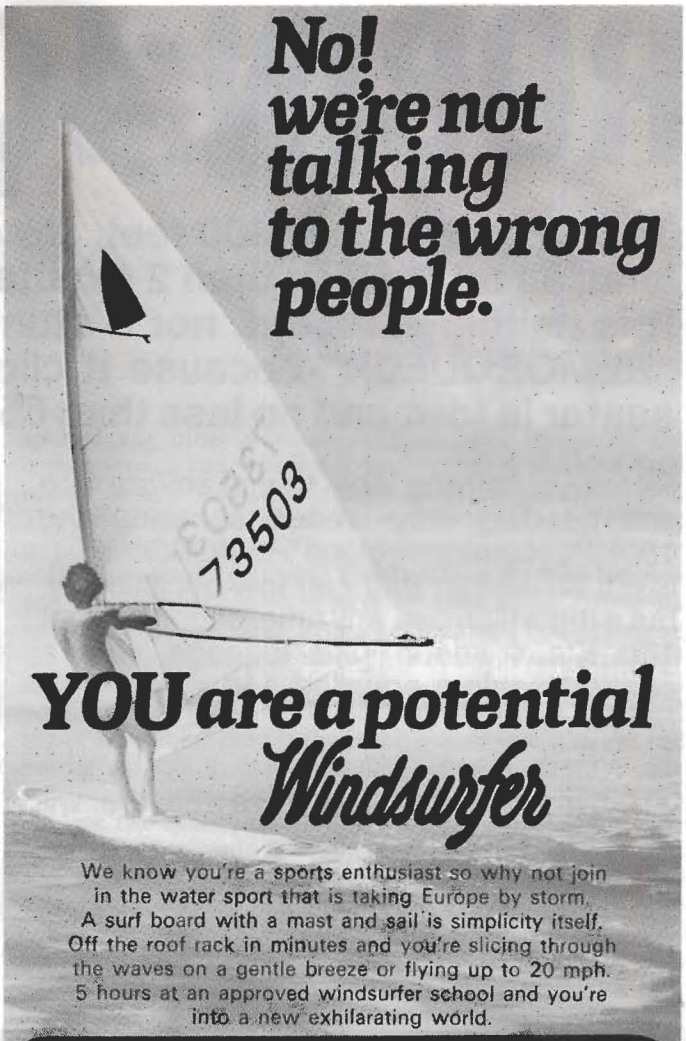
A thermal over low ground cools approximately adiabatically (*ie* no heat input after it leaves the ground nor any heat exchange with the surrounding airmass) and condenses to form cloud soon after it cools to dewpoint. A thermal which starts on a sun-facing slope can rise and remain attached to the heated ground at the same time by moving up the slope. This allows further input of energy as it rises. Once it "takes-off" it should, of course, cool approximately adiabatically, but its elevated starting temperature will allow it to rise further before cooling to the dewpoint.

Deceptive temperatures

The effect of the sun on a Scottish slope, especially if there is plenty of rock there, should not be underestimated. One November day the temperature on Morven's summit was below 0°C. On the walk down, just 1000ft lower, it was warm enough for me to strip down to my T-shirt. On the way up I had told my companion very confidently that "there will be a thermal cloud above this slope by the time we come down", thinking that if there wasn't one she would have by then forgotten about my prophecy, and if there was one I could point it out and accept the praise due to such wisdom! There was a cloud, very tatty, which was just as well because I have since learned she has a very good memory!

Although this is the boldest topography this country can offer, it is admittedly no match for, say, the French Alps. However, scale when applied to thermal soaring is usually inversely proportional to its excitement value. The Cairngorms do have their advantages, then, others being cheapness and lack of language difficulties (debatable?). Similarly, whilst lacking some of the attractions of the Cote d'Azur, the area has plenty to offer the non-pilots and those grounded. One consolation – even in summer – if the thermals are absent, is that wave occasionally takes their place. That wave only appears in the "wave season" is another myth, but that is another story . . .

Pilots interested in cross-country flying in the Cairngorms should have substantial cross-country experience and probably have become tired of frantic triangles over countryside which has become almost irrelevant. Because the chance of landing out is ever present, pilots should be proficient and experienced in field-landings before attempting such flights. Further information on operations at Aboyne, now operating two tugs through the summer, may be obtained from Alan Middleton, Deeside GC, Aboyne, Aberdeenshire.



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ACCIDENT PREVENTION



BILL SCULL,
Senior National Coach,
puts the question –

WHO HAS CONTROL?

On the face of it who has control at any time in a glider or an aeroplane is clear cut; the instructor says to his student "you have control" when he wants the student to fly the glider. When the instructor wants to take control from his student he says "I have control" which will, if the student has been properly trained, evoke the response "you have control". Sometimes, however, the situation may not be as clear cut as that, especially when the student hasn't been disciplined or encouraged to give the response when the instructor takes control from him or, on occasion, when the work load is high. It is in the latter situation that problems can arise.

One of the first instances in which most instructors will learn about this confusion is the simple case of a wing dropping on take-off. The student doesn't recognise this and the instructor "helps" him by exerting a pressure on the stick to raise the wing. What occasionally happens, probably because the student doesn't recognise the source of this force, is that he resists it, whereupon the instructor exerts a greater force which meets with an equal and opposite reaction from the student. The consequences are not usually serious if the wing cannot be raised because the instructor can always pull the release and abandon the take-off. This example should raise some doubts in your mind as to the desirability of helping students with the controls; if it does no more than to stimulate thought regarding other possible situations and consequences then it will have done its job.

"freezing on the controls"

It is not difficult to imagine other and worse circumstances. Assisting a student with the elevator has possibly dire consequences which, taken to extremes, result in the student "freezing on the controls". Freezing on the controls seems to happen to instructors in the early stages of their experience – the first year or two – and may arise because the student is subject to too high a workload or put into too stressful a situation. To either of these the remaining ingredient would seem to be helping the student with the controls made worse by the confusion of "who has control". Prevention being better than cure I suggest that the first requirement is increased emphasis on the "I have control"/"you have control" exchange. What happens when the instructor takes control is that the student may continue to "follow through" (jargon for "rest your hands and feet lightly on the controls and don't resist any movements that I make"). This follow through is perfectly acceptable except when the high work load or high-stress situation arises and here the student may start to resist the instructor's control inputs. If the student's control inputs are resisting the start of a turn, the recovery from a stall or spin or any other unusual attitude, then obviously the consequences can be disastrous; recent serious or fatal accidents have had more than a suspicion of this factor. The risk is reduced when the instructor takes control by insisting that the student takes his hands and feet off.

If subsequently you want him to follow through because you think he may learn something, then invite him to do so. Should you be faced with a genuine case of freezing on the controls realise that strength alone will not provide a solution – especially if you are a seven stone weakling and your student is the 14 stone anchorman for the local tug-of-war team; even if the reverse were true it might still not be possible to overcome the student. In fact the only solution might be a sharp rap on the knuckles (difficult in a tandem two-seater) or a clip on the ear – you can always apologise afterwards. I would stress that the need for this sort of attack is rare, if only to discourage unprovoked assaults on students in general.

For the instructor under training these considerations are ones which we are at pains to point out. "Freezing" is difficult to simulate during instructor training – that is with any degree of realism. One of my particularly interesting gliding moments occurred in just this sort of exercise; the student instructor in question couldn't have weighed more than 110lb and was rather slim and lovely (a girl if you haven't guessed already) for whom I wanted to highlight the risks of "freezing on the controls". In the circuit at 800ft or so I clutched the stick to my stomach, said "I've frozen on the controls – what are you going to do about it?" and waited to see what would happen. I successfully resisted her attempts to prise my hands off the stick but defended myself when she set about boxing my ears. Later she told her CFI what she would have done had that not worked, but I'll let you speculate about that!

To summarise then the risks may be minimised by:

1. Keeping the student's work load to a moderate level until he is competent at and confident in what he is doing – all to do with rate of progress.
2. Try to avoid "helping" the student with the controls when the consequences of fighting each other for control are serious (any time the glider is airborne).
3. Try to encourage a positive exchange of control with the command/response "I have control"/"you have control".
4. Do not ask the student to "follow through" unless there are definite benefits from doing so, *ie* an element of demonstration such as rounding out, kicking off drift, etc.
5. Be aware that trying to progress the student too quickly is stress inducing as are awkward-height launch failures for the first few attempts and stalling and spinning for all time (possibly); that stress, fright or fear may all produce the response of "freezing on the controls".

THE *Human Side of Gliding*

KEITH NICHOLS examines what flying actually does to us.

It was not my intention to appear complaining, but as things have turned out my article starts off with a complaint. It's just that my ten years in gliding have led me to the conclusion that gliding people do a terrible job of communicating about the experience of gliding. We do well with the events, techniques and machines – the chatter at the clubs and the volumes of S&G bear witness to that. Yet it is rarely that words are exchanged, or an article appears which really catch what, to me, is the most essential quality of gliding. Namely, that it is an extraordinarily powerful experience which generates a great deal of feeling across the spectrum of the emotions. Most of us must share in this experience, yet somehow we manage to achieve a collusive silence about it. I can't help comparing the evocative celebration of flying in Bach's book *A gift of Wings* and feeling that we miss out badly by our silence.

Why should this be so? I could bore you with some personal theories, but it is probably the wrong time and place for that. I would though, like to register my belief that there is room for more on the *expermental* side of gliding in our journal. And that the movement might well be enriched if occasionally we got away from diaries of competition or wave flights, comparative performance statistics and so on and exchanged a little on what the flying actually does to us. I have to say that, because it is just exactly what I hope to persuade the editor to allow me to do in the following paragraphs.

I fly an Olympia 463 at North Hill in Devon. It's a sweet little aircraft, the type of glider one can get very attached to; neat, small and robust. After his first flight in it, one of my syndicate described it as like a naughty pony. He hit on something that I had never formulated in words before, but I knew exactly what he meant. On the wire, or behind the tug, the Olympia jumps off the ground and has to be positively held down. In lively air it frisks and fidgets and notices everything the wings encounter, and in turns it loves to race around at an undisciplined 55kts. I often think of the naughty pony analogy when I'm flying, it catches the feeling of being in the Olympia. But the heavy hand of discipline on the trim soon resolves the problem of authority – rather reminiscent of those tiresome dressage competitions. You would be amazed if you knew how fond of the Olympia I am, I could readily hug it. But Devonians tend not to care for that sort of thing too much and since I'm surrounded by them at the club, it's necessary to be careful. It is a small constraint, and it does not detract from the memory of some good flights. Nothing extravagant. I've long since adjusted to the reality that with my present level of application, I'll probably never be much good – in S&G terms anyway. But if it is a soaring day it usually turns out that we can get ourselves up, and stay up.

In the recent seasons I have often occupied myself musing about the gliding experience, and have become aware of three of my reactions in particular. One of these is best described in a brief flight anecdote.

Last May we had a day at North Hill which looked full of promise yet by noon nobody had got away. I was launched by winch and followed the plan of the earlier flights by others that day searching over the fields behind our west ridge. It looked like a wipe out, but finally at 600ft there was zero sink. Then began a 15 minute struggle. The Bergfalke and Swallow came up and milled around nearby, with a similar fate I was relieved to observe. On the whole I'm not noted as a tenacious low level soarer, so it was fortuitous that as my resolve was failing I made a bad tempered 50 yard shift to the east, and was suddenly sat in a narrow, but beautiful, "four knotter".

"a growing feeling of triumph"

You must all know the thrill of suddenly running into a good thermal and ascending in ten minutes to 4000ft. On a clear day the sensation of being lifted up in a column of air that bubbles with energy and life under you is an unrivalled experience. For me, as the land below unfolds to view, there is a growing feeling of triumph. But on this day it was tinged with something else to make it one of my favourite gliding emotions. Both the Bergfalke and the Swallow had run into sink and fallen down. Another single-seater launched and also fell down.

There I was at 4000ft with everybody else on the ground, and my reasonable feeling of triumph turned into an appalling, villainous gloating. It's so uncharitable and quite inexcusable, but I do love those moments when I'm up and all the others are down. It had the same effect as, on another occasion, when I floated around at cloudbase of 5000ft above a huge traffic jam on the M5. One is briefly in a different league of humans, symbolised by the solitary ownership of a developing cumulus.

However, it is only *one* of my favourite feelings, and really, I'm not that unsociable. For I equally love the moments of sharing a thermal and climbing up with an identified friend. It is a time of great companionship, despite the actual physical separation. Or the several occasions when I've had the privilege of climbing alongside one of the buzzards that live in the woods nearby. Moments of being an apprentice trailing behind the master with an admiring respect.

But despite this my relationship with gliding has not always been an easy one. For the second set of reactions I want to talk of is negative feeling. In particular the bothersome and intrusive response of tense anxiety. There have been times when my confidence has failed to the point when I have had to drag myself into the glider – and hated every minute of it. How many of my club members have days like this I wonder? It's difficult to tell, little is said. Some casual

observations of pre-flight tension suggests that I'm not alone.

The particularly destructive feeling is one of being in a very unsafe place, a tense insecurity. Mostly it is on violent, sometimes grey, windy days. The Olympia loses its hospitable appeal, pitching, bucking, and making alarming creaks as it lurches down in off the clock sink, or is tipped over by a vicious bump. The awareness of the forces involved, and the frailty of a wooden glider becomes very sharp. It feels very unsafe. I cannot help being nervously preoccupied with the landing to come, as well. On such days, with the wind in the west, it is necessary to smash through the severe turbulence that is created over our approach. One has to cope with a wind gradient that strips you of your 60kts to leave you vulnerable at 40kt, still fighting grimly with turbulence that calls for the opposition of full aileron.

My own experience is that this raised sense of exposure to risk can be very disabling. It provokes a regression to earlier, less co-ordinate flying habits. At worst, a hesitancy to bank steeply, a foot trembling on the rudder, and a final panicky turn out of sink with a hand gripping the control column in a neurotic tetany. But when down again there is the dispirited feeling of defeat, and the anger at having been dominated by primitive insecurities which should have been mastered

"predatory feelings gaining ground on me."

year's ago. For in reality, the only real hazard is that the pilot has allowed himself to be influenced by unrealistic estimates of risk. Is it just me? I don't know, but I've seen some pretty grim faces and rather rigid looking bodies launched in the last few years on difficult days. To be honest, I suppose such reactions are almost history for me now, but they are never that far away, and if it has not been possible to fly for a few weeks I can feel these predatory feelings gaining ground on me.

The third reaction interests me most. It is to do with the extent that gliding has invaded my life to establish a now very powerful grip on my thinking and behaviour. (I suppose this is the moment to confess that my preoccupation with reactions and feelings is because I'm a psychologist – but please try not to hold it against me.) The World Health Organisation describes an addiction as an excess of consumption with definite feelings of dependency and distress at withdrawal. Well – I think I have an addiction problem. I can't stop thinking about gliding. Intrusive fantasies clutter my consciousness; the vario at 6kt, the white edges and grey bases of a cloud street, the sounds and feel of turning hard into a thermal. Like other addictions it creates social difficulties. People in my life are so bored with my endless

"barely bring myself to talk to people."

gazing out of the window at the sky. (Some acid comments were made at a staff meeting the other day.)

Not long ago I had to work on a day that I had set aside for a trip to the club and the pursuit of five hours. My bad tempered acting out as a result is an embarrassment to recall. The significant thing was that only six days before I had flown for over 3½ hours and come down quite satiated with flying. It had been a marvellous flight. Very buoyant but with a lowish cloudbase and some big gaps. I remember a nice moment when I was flying in formation with the K-6 and Bergfalke over Cullompton and a Canberra, just up from Exeter, flew close to us and dipped his wings. It was a tiring day though, nothing but endless turning with a few scattered breaks. After over three hours, I felt terribly tired and increasingly light headed, and so reluctantly fell back on the obvious front heading our way as an excuse to abandon the five hour target. Yet within that short time of six days a need to be back in good thermic air again had built up to a level that quite distorted my interpersonal behaviour! I was running a course for two days, a course that I had planned to get out of, but failed. My hope was that it would rain on the now abandoned day for a second go at five hours. It didn't. It was marvellous. And I became so angry and gripped by such a distracting need for my glider that I could barely bring myself to talk to people. Which, since it was a course on effective interpersonal relations, was most unfortunate.

Now, rather like the alcoholic who keeps a secret bottle of spirits in the cistern, I'm beginning to sneak off for secret visits to the club, and if these are blocked by unexpected visitors, events or commitments, I just do not function at all well. It's a restless nagging feeling of longing that can be very disturbing. With this problem I know I'm not on my own. Stolid Devonians or not, I've seen some pretty impressive tantrums at North Hill in the last year or two when a similar need in others has been obstructed.

Should it be, by the way, that somebody decides to set up a caring body called Thermalers Anonymous, don't bother inviting me – for though I might appear to be ending with a complaint, in actual fact, it's a boast.

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Know the dangers of waterballast tank systems

RICHARD H. JOHNSON

The carriage of waterballast in glider wing tanks is now a common and popular practice with modern sailplanes, especially during the summer months when the thermals are large and strong. During recent years the size of these tanks has become increasingly larger, with 15 metre and Open Class sailplanes now carrying about 300 and 450lbs of water, respectively. Stalling speeds naturally increase considerably when carrying such ballast loads, and it is important that the tug pilot be informed so that he can plan a safe take-off and tow procedure for both the towplane and glider.

The waterballast tanks are almost universally located in the wing leading edges ahead of the main spar. This is the normal longitudinal location for the glider's design centre of gravity so that the addition of the waterballast has little effect on the sailplane's CG.

There are two types of ballast tanks in common use, the integral type and the flexible bag type systems. Both can cause dangerous flight problems and pilots should be aware of these hazards.

The modern integral tank is usually trouble free, except for annoying small leaks occasionally. These tanks use the wing upper and lower wing surface skins for the tank proper, and a plug type dump valve is usually provided on the lower inboard wing surface for jettisoning the water. The Schweizer 1-35 and modern Schempp-Hirth sailplanes are provided with this integral wing tank ballast system.

Can cause a lateral unbalance

The common problem here is for the dump valve not to seal completely, allowing a slow leak. These valve leaks can be easily sealed by application of a waterproof grease to the valve seat surfaces before the tanks are filled. Boat trailer wheel bearing grease or lip balm are excellent for this purpose. Large leakages can cause a lateral unbalance problem, but this is seldom significant unless a landing is made without dumping the remaining water.

The majority of the gliders use the wing mounted flexible bag waterballast systems, and this type is much more capable of endangering the pilot and sailplane. A serious danger, experienced by at least three US pilots last summer, is that of a fragile bag's massive rupture while in flight. The types involved were an ASW-19, ASW-20 and IS-3, all with factory installed waterballast systems. There the large volume of water from the ruptured tanks ran through the wingroot rib access holes and rapidly filled up the well sealed cockpit area. This in turn caused the glider to become so nose heavy that control was quite marginal. Had the majority of the water run into the aft portion of the fuselage, the tail heaviness could have caused a truly disasterous situation with a complete loss of control.

The key to safety here is to use well made tanks fabricated from materials and methods not subject to massive in-flight rupturing. An alternative would be to seal the wingroot rib sufficiently so that in the event of a rupture, the water would not rush into the fuselage but would be contained within the wing.

A second type of problem can happen with the flexible bag tanks. This occurs when the water bag shifts inboard during flight in turbulent air causing the bag outlet to become blocked by a fold in the tank material. The problem appears when the ballast jettison valve is opened and only one wing tank can empty. This happened to me last summer after completing the last day's task at Hobbs with my PIK20. Fortunately, I had the big runway to land upon, and upon which to helplessly drag the heavy wing during the final half of the landing roll. I could have really been in trouble had I been making an off-field landing into a limited area. Because of the good lateral control systems of most modern 15 metre sailplanes, it is not very easy to recognise the fact that one has a lateral unbalance while in flight. During a take-off or a landing the unbalance becomes quite obvious. Even though full aileron control is promptly applied the heavy wing will quickly fall to the ground at airspeeds below about 30kt or so, the speed depending on the magnitude of the unbalance and aileron effectiveness.

A fix for the bag shift problem, that I plan to try, is to bond a small pulley or eye fitting to the wingspar inside the wing D tube at a point outboard of the end of the ballast bag. By attaching a light cord to the outboard end of the bag and running it around the pulley then back out the root rib access hole, one can both pull the bags into place when installing them and secure them in a fully extended position by tying the cord well at the root rib. The factory PIK 20B bags should work well in this manner as they are strong bags, fabricated of fairly heavy material and are already equipped with a large brass gromet at the end of each bag. This hopefully will simplfy the bag installations and prevent future blockages of the outlets.

One additional point of caution is that one should be very careful not to seal off the integral type tank air vents, especially if the tanks are either empty or only partly full. The danger is that an air pressure differential will build up in the tanks while climbing. This pressure differential can easily reach a sufficient magnitude to structurally damage the tank and/or wing. Normal atmospheric air pressures change roughly $\frac{1}{2}$psi for each 1000ft of altitude change. This load may not seem large, but when considering that a tank planform area exposed to these pressure differentials usually contains several thousand square inches of surface, enormous air pressure loadings can easily be reached. This pressure loading could cause the wing skins or shear web to separate from the spar caps, and this in turn could cause the wing to be greatly weakened.

Air pressure loadings can be avoided with unvented flexible bag type tanks if care is taken to suck out excess air in the bags, either before or after filling. To take-off with a large air volume trapped in unvented bags could lead to their rupture and/or the above described wing damaging loadings.

It should be obvious that very destructive pressure loadings will be reached if the tank contents are allowed to freeze. Remember that flights with waterballast do expose the pilot to a number of new problems. For this reason pilots with low experience levels should not load their gliders with ballast until they have sufficient ability to cope with the added weight and potential hazards.

DEREK PIGGOTT, who was a guest at the Soaring Society of America National Convention in February, gives his impressions of this superbly organised event.

The Soaring Convention in Washington

Imagine a hall like a miniature Earls Court with a collection of the latest sailplanes, all bright and shiny: ASW-20, the PIK, Mosquito, LS-3, Mini Nimbus, Twin Astir, Schweizer 2-33 and 1-35; HP-18; IS-28, IS-29 and the IS-28M, plus several new home-built gliders, motorised gliders and hang gliders, all in one place and with no barriers to stop you putting your sticky fingers on the canopies! That was just one aspect of the Convention. The human side, 900 soaring enthusiasts and pundits all joining in with the discussions and talks on almost every aspect of soaring, all day and every day for four whole days!

On top of all this, imagine American hospitality, generosity and friendliness, the like of which I had never seen before – and now people keep asking me whether I enjoyed myself.

Out of the blue I received a letter from Tom Knauff of the American Instructors' Panel inviting me to attend and talk about instructing and Lasham. How could I refuse when I had always hoped to have the chance to go to the States and explain why it is not a good idea to let students fly into the ground instead of holding off properly, as well as many other things? Before long I was committed to giving three sessions on various topics and the 3000 mile journey was being taken for granted.

A major problem during the actual Convention was that there were usually two talks going on at the same time and inevitably they were both by real experts and couldn't be missed. I went to one and my tape-recorder went to the other. How could one afford to miss Wolf Lemke the designer of the LS-3 discussing future developments, Karl Striedieck talking about his 1000 mile ridge flights (see S&G August 1977, p153, "Never Say Die – Another 1616km") or Dick Johnson on improving his PIK? All fantastic characters who I would have liked to talk to for hours but who in the rush and hurly-burly I scarcely met.

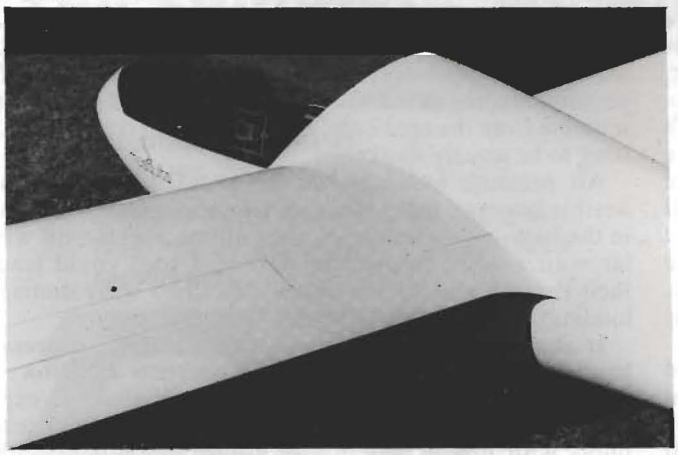
Incidentally, it is only when you meet and listen to Dick Johnson that you realise the debt of gratitude we all owe to him for his independent testing of the performance of so many of our modern machines. After listening to him I couldn't fail to get up and thank him on behalf of British gliding.

The actual organisation was incredible. Everything started on time, nothing broke down and it seemed difficult to tell how it was being organised or who was behind it all. The only minor fumble occurred when literally hundreds of people all tried to attend one of my talks and the room, although large, was far too small. Miraculously, within minutes, a bigger lecture theatre had been commandeered and we were in business with everyone comfortably seated.

Even spending every evening talking and meeting people, there still wasn't enough time to discuss everything. Old Lashamites such as John Hearn and Val Brain seemed in the thick of the organisation but I suspect the real genii were Jimmy Haynes and Burt Soloman. There were glum

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looks the day before the Convention when we heard the forecast for heavy snowfalls and realised that only one glider had arrived. Would the others get through, would anyone travel in such conditions? They would and they did, some driving or flying thousands of miles.

After the Convention we were again the guest of Burt and Ruth Soloman since we just had to spend another two days in the Smithsonian Air and Space Museum. They were wonderful hosts and kindly put us up in their house, fed us and showed us the highlights of Washington. Bert has an LS-1 and is a keen pilot with the Mid Atlantic Soaring Association, the organising body for the Convention. MASA is not a commercial gliding school but a gliding club as we know them.

Saw the famous ridge

Our next move was to Ridge Soaring Inc which is run by Tom Knauff and Doris. Not only did they put us up and feed us but kindly lent us a car in Washington to save us time and expense in travelling the 200 miles or so to their home in State College, Pennsylvania. The snow was deep, making it out of the question to fly, but we called in at Karl Streidieck's house and saw the famous ridge which Tom and Karl use for their long, high speed ridge runs. Incidentally, the ridge itself is only about 600ft high, is heavily wooded and screened by another hill only a mile or so upwind. Ridge Soaring Inc is an all aerotowing airstrip parallel to and at the foot of the hill, so you just need a low launch and off you go for a quick 500km out-and-return, that is if the wind and weather allow.

On the Sunday I showed a film to the soaring enthusiasts who gathered from miles around and we chatted about Lasham and the usual topics. I also met Bill Brown – famous for being the designer of the first really good model aero engine, the Braen Junior. Now a soaring pilot, he still makes motors and he showed us some baby CO_2 engines.

Tom Knauff, who owns and runs the school there, is a really go-ahead instructor and holds three Diamonds, all achieved in a 1-26 (about Oly 2_B performance). Doris is also a keen pilot with records and Diamonds to her credit. Incidentally, all the commercial operators I met were obviously keen soaring pilots and instructors and did not have a totally commercial outlook on gliding. I guess that gliding instruction, even in the USA, is not an easy way to make a fortune. As in the UK, so much depends on the weather and the sites where flying is only possible in the summer have a hard time. The instructors need full commercial and instructor ratings and have to take quite involved examinations set by the FAA.

With the excuse that they needed some glider spares, Tom and Doris drove us several hundred miles to Elmira, the Schweizer plant, where we were immediately welcomed by Paul Schweizer who was to look after us over the next few days. Within minutes I was invited in to an important board meeting (or so it seemed) with heads of departments, Paul, Bill and Ernie Schweizer and their staff.

We discussed glider types, motor gliders and brakes and flaps, beginners' gliders and many other topics before going home to meet Paul's wife and ex-champion glider pilot, Ginny.

Next day was a rest with a meeting in the afternoon with Bernie Carris and his flying instructors. Later that evening we drove up to Harris Hill, the famous soaring site, where I gave another chat and film show to the club members, many of whom I had met ten years ago when I flew the T-53 in their Nationals Championships.

Once again we felt the urge to move on and with Toronto only 250 miles away and friends there, it was a surprise and great pleasure to be able to visit them. This was made possible by Jim Short (sales executive for Schweizer Sailplanes) who insisted on lending us his own car. (I suspect at some considerable inconvenience to himself.)

Toronto had changed since 1943 but still the same incredible hospitality was pressed on us. Then once again the long drive back to Elmira and a late night chatting to Paul and Ginny about soaring past and present.

Next morning we left for New York with Jim and his wife. Can you imagine anyone offering to drive you from London to Edinburgh to catch a plane? This is what American hospitality means.

In retrospect it is impossible to thank all those people who made this trip possible. It was a wonderful Convention, super organisation and such hospitality. What about ideas for organising the first European Soaring Convention in London?

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GLIDER INSURANCE – an Underwriter's Viewpoint

MICHAEL LEON

Very many glider owners and club Treasurers must be concerned and worried at the steep increase in their insurance premiums over the least year or so. They must be wondering why it has happened after a period of stability. To answer this one must go back about five years. At that time it was rare to be asked to insure a glider over £7500 in value and there were very few glass-fibre machines around. Repair costs were lower with labour in the region of £3.00 an hour. Nowadays over 60% are glass-fibre, they are very sophisticated and therefore complicated to repair, and labour costs have risen to £5.00 per hour. For instance, the average cost to repair a glider after a heavy landing has gone up from £700 in 1972 to £1200 in 1978 and the cost of replacing a damaged canopy has gone up from £400 to £700 in five years. Most gliders are imported from abroad, mainly from Germany, some from Switzerland and others from the Eastern European countries. As a result the cost of spares has rocketed with the devaluation of the £ Sterling. In 1972 the rate of exchange was DM8 to the pound. Now you are lucky if you get DM4 to the pound. All these facts are, of course, known, but I feel it is just as well to put them down in writing so that one can see what insurers are up against when it comes to computing insurance premiums.

During the past few years Underwriters have lost money on their glider accounts because of the difficulty of estimating inflation factors which may affect claims sometime in the future. Even with the latest increases Underwriters cannot be sure that they have got their sums right. New aircraft present fewer problems than the older models. With the latter the sum assured may well remain constant over some years but, as shown above, a typical claim may increase in cost by 75% over five years. On top of that we were fortunate to have the two excellent summers of 1975 and 1976 when pilots spent a far greater proportion of their time in the air than in previous years. In insurance jargon this meant that the utilisation or usage was pushed up to far higher levels. Not that we are complaining. Gliders are there to be used, but it meant that there were more accidents than one would have expected in an average season. The premiums that gliding generates are very small when compared with the total received from the airlines, manufacturers etc, but it is my view that each class should stand on its own feet. Therefore, the gliding community has got to pay for its own claims, whether there be damage to the glider, or third party or passenger legal liability claims.

The many pay for the few

It has been a grouse of owners, who have not had claims over the years, that they seem to be paying just as much premium as the owners who have been unfortunate. One must remember that the whole basis of insurance is that the many pay for the few, and we as insurers are administering the fund on behalf of the community. We are looking for the normal profit of any business venture after the payment of claims and expenses. Insurers do look carefully at insureds, who have had claims, and if there is evidence of several claims over a number of years, will load the premium as a penalty. Most insurance policies do have a "no claims bonus" which can be described as the reward for going the year without any claims, provided the policy is renewed.

The more experienced pilots enter for Regionals and National Championships, and to compete effectively must have the most modern equipment they can afford. Even with this modern glider and equipment, insurers find that there is a far greater incidence of accidents happening than in normal weekend flying. It is my view that the few pilots who wish to compete with each other over a period of a week or more of intensive flying should not only pay an additional premium, but the flight and launching deductible should be double the normal. Why should the weekend pilot subsidise

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the Championship pilot, especially as the glass-fibre glider will cost far more to repair when compared with a wood and fabric glider? I gather from our surveyors that after a glass-fibre glider has been repaired after suffering a major accident, it is likely that its weight will be increased to an extent which may make it unacceptable to the Championship pilot. He may then not accept the glider because it is not being returned to him in the state it was before the accident. When this happens a constructive total loss would have to be paid, and the glider sold as salvage, even though the actual cost of the repair is below the sum insured.

One thing I believe is misunderstood is the lay-up return which, may I venture to suggest, most policies carried in the past. This is a portion of the premium on a stated scale which is returned to the insured in the event of his glider being laid up or not used for a period excess of 30 days. Most owners lay-up their gliders in the winter, usually from November to March. Since gliding, therefore, is a seasonal sport, why should we, the insurers, give such a return as of right? A parallel conclusion can be drawn from the sailing fraternity where their policies state that the boat is laid-up over a given period and a premium paid with no returns. The only argument for a lay-up return is if the glider is not being used due to some circumstance apart from the weather. In that case, the Underwriters should be approached by the insured's broker so the matter can be considered.

Far more goes into a claim than meets the eye. After a claim is notified an aviation surveyor is instructed to take over the settling of the claim. This may mean one or two visits to the glider, and negotiations with the repairer, so that the glider can be handed back to its owner in its original state. This is a further hidden expense to consider when working out a rating structure. Whilst on the subject of claims, can we consider third party and passenger legal liability claims? Serious liability claims are few and far between. They need to be, since the premium charged for the liability section is very small when you consider the indemnity given. On the other hand the insurers need to build up a fund of premiums which will be available as and when the need arises.

So often insurers have the greatest difficulty in rating a gliding risk due to the lack of information given. This is probably not the fault of the proposer but to the inexperience of the broker who is not used to dealing with an aviation risk. Often brokers do not like to worry their clients and so the quotation which is eventually given by the broker to his client may shock him. All this is because the Underwriter has had little information to go on. The answer, I feel, is for the owner or proposer, as we call him, to fill up a proposal form. This is designed to extract all the information the Underwriter needs, and the more information supplied the easier it is to arrive at a fair and equitable premium. If the proposer is not asked to fill in a form as a guide, insurers need the following information in order to be able to quote:

1. Name and address of the proposer.
2. Type of glider, year of manufacture, BGA number and value.
3. Details of any extras equipment *ie* parachute, baragraph, trailer, radio etc.
4. Names of the pilots going to fly, their ages and flying experience. If an open pilot warranty is wanted *ie* any pilot able to fly, please advise the number of pilots likely to take advantage of this, how many flights and flying hours they are likely to make and their experience.
5. Brief details of the accidents which have occurred over the last five years.



6. Whether the glider will be going outside the county of residence.
7. The number of Championships the proposer will be entering.

Finally, if an owner has been insured through the same broker, with the same insurers over a number of years, he will have built-up a considerable amount of goodwill. Underwriters certainly take this continuity into account when dealing with claims and looking at the renewal, and will bend over backwards to help the insured and retain the business. It certainly pays in the long run to stay with your existing insurers.

I hope this article has helped to clear up some misunderstandings. Underwriters are not all sitting in some ivory towers – we are very much aware of what it going on. We are in touch with the BGA who tell us of any worries the gliding fraternity may have. We read the gliding press and, above all, we are trying to keep your costs down.

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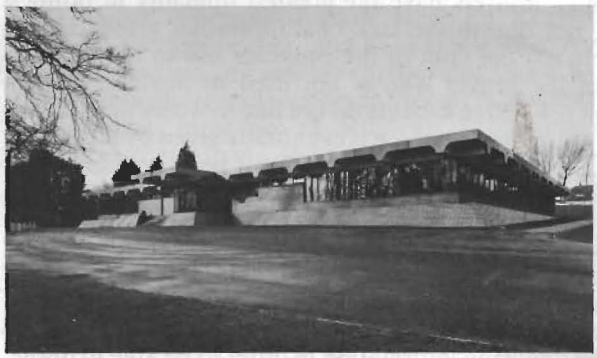
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MUCH ADO ABOUT NOTHING

RICHARD LOWNDES describes an experience many pilots are hoping for in the season ahead—the first cross-country

The greatest difficulties were before take-off. First a reluctant duty instructor had to be surmounted, than a crew bribed and finally a BGA inspector cajoled into certifying our spare Swallow as flyable. This latter task involved a test flight lasting hours from which the pundit returned to inform me that the vario was jammed on ten up. He fettled, I fidgetted and the hours trickled away. At last he pronounced himself satisfied and I was in and off.

The tug obligingly dropped me in the mother of thermals and I roared up to cloudbase so fast I could scarcely believe my ill fortune—the vario was jammed on ten down. The temptation was to set off without it, but the next thermal thought otherwise and I was returned to *terra firma* for a quick re-fettle.

Thermaling with sink indicated!

Off again, spirits sagging, I checked the vario on tow. It worked but backwards, thermaling was a bit strange with sink indicated, but nothing would deter me now. However, this time, no obliging thermals and I inextricably descended until in desperation, I joined the K-13. Sharing a thermal halves my ability at the best of times but sharing one, knowing that nearby was an instructor, probably the CFI, with nothing to do but watch me setting off on my first cross-country, perhaps with a late veto in mind, reduced me to a pitiable performance. I humiliatingly watched some *ab-initio* out-climb me and then set off for pastures new with a contemptuous flick of his rudder.

An inauspicious start, but by now I was high enough to leave the womb and actually see those landmarks I had visualised during countless hours of armchair soaring. I pointed downwind, picked a convenient cloud and crossed the lake where previously I had always turned back. A long way short of my chosen cloud I was picking fields. Here was I, so soon, facing ignominity just one straight glide from home. At the penultimate moment, fate smiled or rather belched hot air and I shot upwards with a sigh of relief.

My instructors had always told me that thermaling away from the airfield would be more difficult and only now did I believe them. There was so much to do and no time. I had this overriding impression that I was working harder than I had ever worked before. Sweat streamed from my brow and I had to keep digging for my hankie, wiping the perspex, polishing my glasses, opening the window and sticking out my hand to deflect cold air. In between times I looked at the map, the ground and the clouds and when I did anything but concentrate on flying, I skidded, slipped, lost the core and got all steamed up again.

Somewhere about this time, I realised that the map and the ground didn't match. Earnestly I scanned the horizon for my next landmark, a large town with river but it wasn't there. I was lost and there was a forbidden Control Zone nearby. Help! I had better land. Look down to pick a field and there right under me was the mislaid landmark.

Knowing where I was made things easier for a while, the thermals suddenly seemed larger and wide, my neck ceased to ache and I unclamped my jaw. I stumbled onto a great thermal over this disused airfield and began to enjoy myself. Suddenly I was brought to earth with a jolt. A Std Libelle appeared from nowhere and joined my wheeling. Guiltily I realised that my look out had been woefully neglected. The Libelle must have sensed my incompetence and moved off a few hundred yards to circle in safety.

Knowing where I was gave me a sense of security. This proved to be my undoing. There was this broad straight highway pointing the way to my goal and I was seduced by it. I gave up my winning formula of flight from cloud to cloud and tucked my nose down to that road ticking off the milestones and junctions on the map as I passed. Too late I realised all my height was gone and that I didn't know from where my next fix would come. Luck again stepped in and gave me a teasing little bubble full of petrol fumes from Popham Service Station. The sweat was on again, so was the slip and skid and I felt infinitely weary. A great effort, a few feet gained and my goal was in sight, so was a stubble fire off course to the right.

Thinking back, I could have made it from where I was but like a fool I was tempted by the easy riches of the fire. Getting there, I found not a raging straw fire but fitfully burning stubble and now my goal was out of reach. Where should I land?

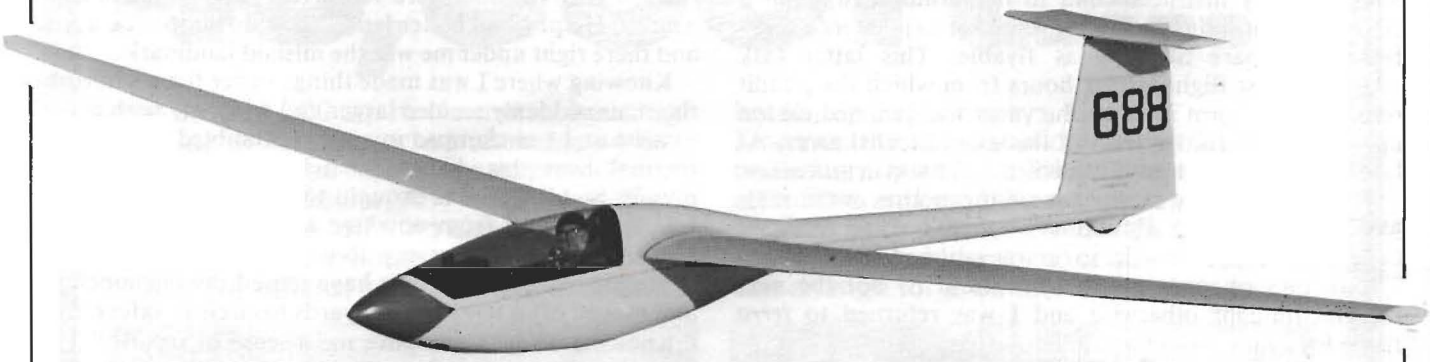
I was too low to have much option, so the burning stubble field would have to do. The fire gave me my wind direction and the field was big, but big. It wasn't flat but you can't have everything and at least it had this flat bit in the middle and a house at one end where maybe I could get a drink and a phone. The decisive factor was that I would approach through any lift that the fire might produce and even at the eleventh hour I might redeem myself. There was much wrong with my field choice but my luck held and I was not blinded by smoke or tempted by lift on the approach. I heard the satisfying rumble of the wheel on chalk flints, silence and then the clatter of an evening aerotow, passing low overhead.

People are good, really good. A few times in life you realise this and for me this was one of those moments. I was out, flat, exhausted, dry and I was showered in good Samaritans. Never was I so grateful. The nearby house took me in, fed and watered me, put me in a deckchair in their garden with a phone. Two club members gave up their evening at the bar and stood in for my departed crew. All I had to do was sip martinis and tell sad stories of the death of kings.

JOHN HULME

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The Energy Loss in Pitching Manoeuvres

FRANK IRVING

Success in soaring depends on the efficient extraction of energy from the atmosphere and on its efficient utilisation. The first part of this process involves seeking regions of ascending air and avoiding regions where it is descending; the second part superimposes the requirement to follow some sort of optimised flight path, such as that indicated by the MacCready construction.

Now the MacCready analysis, even in its more sophisticated Calculus-of-Variations form, implicitly assumes that the load factor on the sailplane (*ie* lift/weight) is substantially unity (Refs 1 and 2). If these are vertical motions in the air traversed by the sailplane, then the pilot will have to adjust his speed accordingly, but the underlying assumption is that the drag at any instant is the same as the steady-state value at the instantaneous speed and hence it is possible to derive the usual relation between optimum speed and variometer readings by a calculation based on the steady-flight performance curve. In practice, if the speed adjustments are neither too sudden nor too great, this assumption is very reasonable and, in any case the changes of load factor will mostly be self-cancelling. However, a pilot wishing to pursue low-loss flying will want to know how to deal with large adjustments of speed, as when getting out of or into a thermal. Since even the more sophisticated analysis only recognises load factors of unity and zero, it offers only rather impracticable advice: to indulge in vertical dives or climbs. Trying to introduce the load factor as another variable under the control of the pilot is not very rewarding and it is clear that no analytical solution will emerge. It is also likely that the optimum manoeuvre in any particular circumstances would require even greater-than-usual powers of prophecy by the pilot and would, in any case, be too difficult to apply in real life. Attempts (Refs 3 and 4) have been made to analyse dolphin-flying by computer calculations but, whilst they have been successful, it is rather difficult to disentangle the effects due to the manoeuvres of the sailplane from those due to the atmospheric motions.

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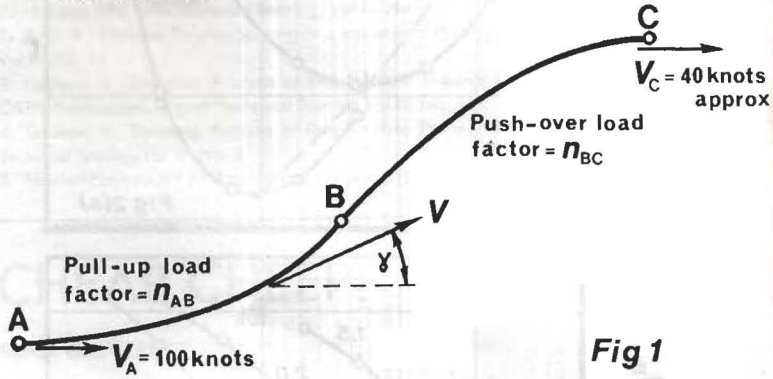


Fig 1. Diagram of the pull-up/push-over manoeuvre showing the notation used in subsequent graphs.

It therefore seemed sensible to analyse in detail a single pull-up/push-over manoeuvre in an attempt to establish some technique for minimising the energy loss in such a manoeuvre. To simplify the calculations, the pull-up was assumed to take place at a constant load factor, starting from level flight at 100kt. When the sailplane had slowed down to a certain speed, a push-over was initiated - again at a constant load factor - until the sailplane regained level flight at about 40kt. (See Fig 1). The machine was assumed to have typical Standard Class performance: a maximum lift/drag ratio of 35 at 50kt.

The equations of motion in these circumstances are such that there is no simple analytical solution relating, say, speed and flight path slope for a given load factor. However, they can be reduced to a first-order non-linear differential equation which can be solved numerically by a step-by-step process. It is clear that when the speed has fallen to the chosen value at the end of the pull-up (the "intermediate speed"), there is only one possible push-over load factor which will take the machine from that particular combination of speed and flight path slope to the desired final conditions (40kt in level flight). It is therefore necessary to find, by a trial-and-error process, the load factor appropriate to each such push-over. Fortunately, a suitable value can be obtained from quite approximate calculations, since great accuracy in the final speed is not necessary.

For a given initial load factor, several speeds can be chosen at which to terminate the pull-up, each leading to its individual push-over. For each complete manoeuvre, since the load factor and speed are known at all points, it is possible to calculate the rate of loss of energy height at each instant and hence to find the total loss of energy height. The energy height represents the sum of the potential and kinetic energies per unit weight of the sailplane and is defined by

$$h_e = h + V^2/2g.$$

(In fact, the calculations did not involve time explicitly but used flight path slope as the independent variable).

It will be inferred that there was no gradiation of load factor at the ends of the manoeuvre, nor at the point of inflexion. Clearly, going instantaneously from a load factor of, say, 2.0 to a value of 0.2 is unrealistic but inserting a smooth gradation has a negligible effect on the overall energy situation.

One would not expect much variation of total energy loss as the initial load factors and intermediate speeds of the manoeuvres are changed because there are two swings-and-roundabouts situations prevailing:

1) To some extent, the increase in induced drag during the pull-up will be cancelled by the decrease in the push-over.
2) A large initial load factor will produce an appropriately large increase in the induced drag but, for a given intermediate speed, the larger the load factor, the shorter the time.

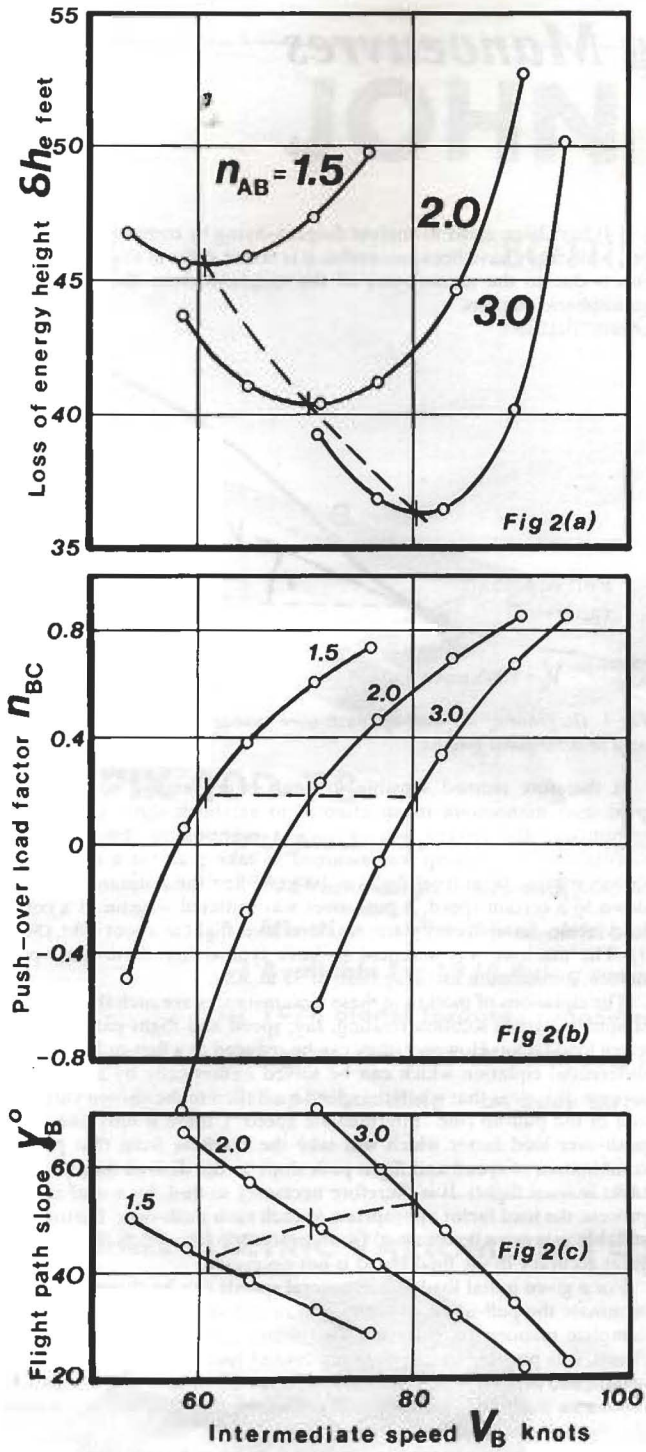


Fig 2. (a) Loss of energy height, (b) push-over load factor and (c) flight path slope at point B, all plotted as functions of the speed at point B for various pull-up load factors.

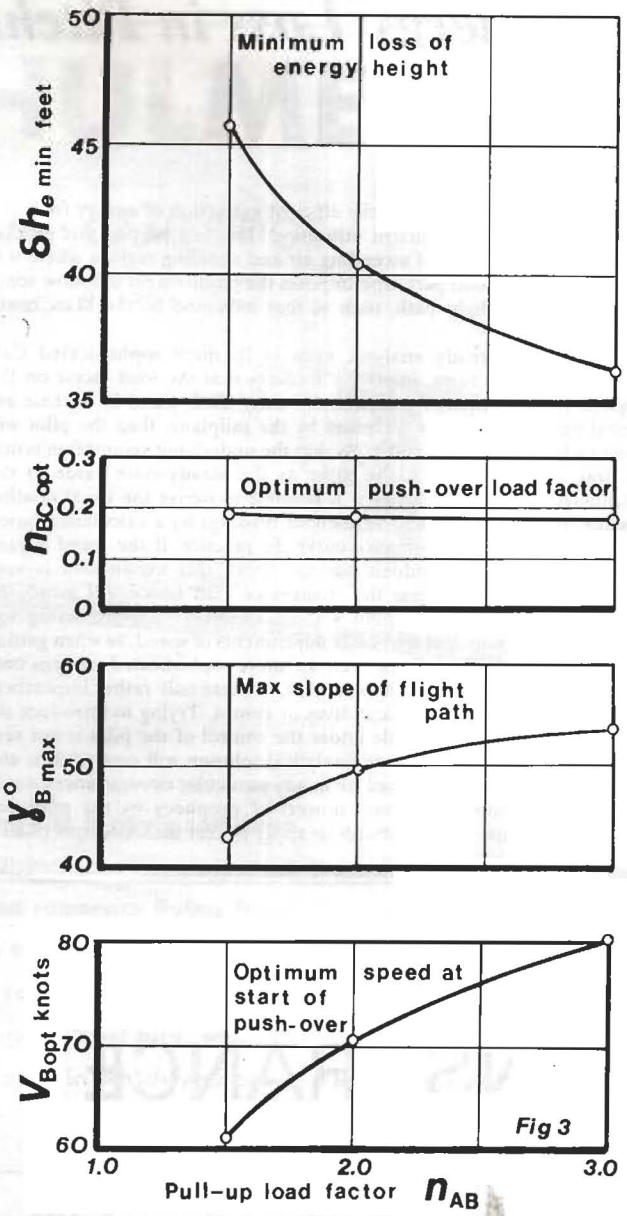


Fig 3. Optimum conditions, corresponding to the minima of Fig 2(a), plotted as functions of the pull-up load factor.

Fig 2(a) shows that, for a given initial load factor, there is an intermediate speed which minimises the total energy loss for the whole manoeuvre. For example, with an initial load factor of 2.0, the optimum intermediate speed is about 70kt. As it happens, this is just about the mean of the initial and final speeds but it is clear from the other curves that this is not generally true: the higher the initial load factor, the higher should be the intermediate speed.

Fig 2(b) shows the push-over load factor corresponding to various intermediate speeds for each pull-up load factor and Fig 2(c) shows the corresponding flight path slopes. Fig 3 summarises the conditions corresponding to the mimima of Fig 2(a).

It is clear that the *minimum* loss of energy height decreases as the initial load factor increases - at any rate, up to any value likely to be employed in real life. Evidently, in situation (2) above, the brevity of the pull-up wins. More generally, the optimum manoeuvres involves applying a large load factor for a short time when the speed is high, so that the induced drag is a small proportion of the total drag anyway. Much of the manoeuvre occurs at a low load factor, thus keeping the induced drag small even at low speeds. One can infer that the optimum speed-increasing manoeuvre would consist of a push-over at a low load factor until quite a high speed had been attained, followed by a sharp, short pull-out.

A surprising feature of the results is that the optimum push-over load factor is almost constant, at about 0.18, for all pull-ups. There seems to be no analytical reason why this should be so: it simply emerges from the computations. In these examples, only one set of end-conditions has been considered and the above figure, and the various other features of Figs 2 and 3 are obviously appropriate to these particular values. However, we can reasonably infer that the principles stated in the previous paragraph are generally true: any high load factors should involve short, sharp

applications at high speeds, with low load factors at the low-speed end of the manoeuvre.

From the piloting point of view, it is clear that if Fig 3 is taken at its face value a real flight, with frequent speed adjustments, will be a vigorous - indeed possibly emetic - experience. It is also clear from Fig 2(a) that a poorly executed manoeuvre with a high initial load factor may be less efficient than a well-executed one at a lower initial load factor. The actual differences in minimum energy height loss are quite small: increasing the initial load factor from 1.5 to 3.0 saves about 9ft in this case. In a more typical manoeuvre during a cross-country flight, the figure might well be 2 or 3 ft. Admittedly, if such manoeuvres occurred frequently in the course of a flight, the overall saving might become significant, perhaps saving a turn or two in the last thermal. But these calculations take no account of the drag increments due to control deflections and to the curvature of the flight path (*ie* the fact that, relative to the aircraft, the free-stream streamlines are curved. This is quite a separate effect from the changes of load factor). Again, there are counter-balancing effects due to the lift-coefficient/Reynolds number relationships being different from that prevailing in steady flight. All things considered, it seems very likely that the advantages of high initial load factors will be less than Fig 3 suggests, so the final message seems to be: suit yourself - there may be a slight advantage in vigorous manoeuvres but is it worth the discomfort?

This analysis is formally limited to manoeuvres contained in a vertical plane. In practice one often wants to do something else, such as a climbing turn into a thermal. Here it would seem advantageous to indulge in a sharp pull-up and to initiate the turn whilst pushing-over. It is, of course, more important to get quickly into the best part of the thermal than to fuss about the elegance of the entry manoeuvre. A further consideration is the structural strength: one needs to avoid superimposing a large manoeuvring load factor on a gust load. On the other hand, sailplanes *are* quite strong, maximum speeds in rough air are now quite high and, at lower speeds it is quite difficult to cause damage.

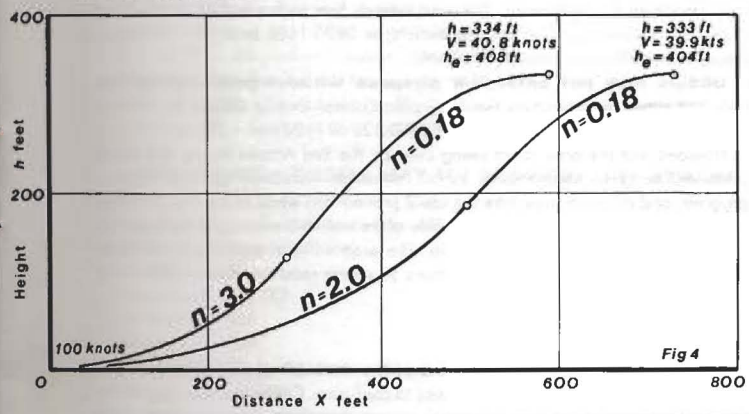


Fig 4. The geometry of optimum manoeuvres starting with pull-ups at load factors of 2.0 and 3.0. The difference between the final energy heights is only about four feet. The initial energy height, corresponding to 100 knots at zero height, is 443.5ft.

Fig 4 shows height/distance plots of typical manoeuvres. The loss of energy height is of the order of 10% of the initial value, taking the initial true height to be zero. It is worth noting that if the sailplane simply ascended vertically from an initial 100kt to a final 40kt, the loss of energy height would be only about 12ft. All of the calculations relate to conditions near sea level. The solutions of the equation of motion were performed on a Hewlett-Packard HP-25 programmable calculator by the method of Ref 5. Suitable programs were also devised to find the changes of energy height and the shape of the flight paths.

Summary of Conclusions

(a) For the simple pull-up/push-over manoeuvres considered and for a given initial load factor, there existed a value of the intermediate speed (with a corresponding flight path slope and push-over load factor) which minimised the total loss of energy height.

(b) The minimum loss of energy height diminished as the initial load factor increased.

(c) The optimum push-over load factor was substantially independent of the pull-up load factor.

(d) It may be inferred that, in any pitching manoeuvre, it will pay to keep the load factor low at low speeds and to apply a high load factor for a short time at high speeds.

(e) A poorly-executed manoeuvre involving a high load factor may dissipate more energy than a well-executed manoeuvre with a lower load factor.

(f) If the drag increments due to control deflections a flight path curvature are introduced, the advantage of high load factor manoeuvres may largely vanish. In any case, the differences in loss of energy height are small.

References

1. Irving, F. G. "Cloud Street Flying" Motorless Flight Research 1972, NASA CR 2315, page 274, (and Technical Soaring, Vol III, No. 1).
2. Arho, R. "Optimal Dolphin Soaring as a Variational Problem". Technical Soaring, Vol III, No. 1).
3. Gedeon, J. "Dynamic Analysis of Dolphin-style Thermal Cross-country Flight" OSTIV Publications XII (and Technical Soaring Vol III, No. 1).
4. Gedeon, J. "Dynamic Analysis of Dolphin-style Thermal Cross-country Flight". Technical Soaring Vol III, No. 3.
5. Hewlett-Packard HP-25 Applications Programs (p83).

CHEAP CHEEP!

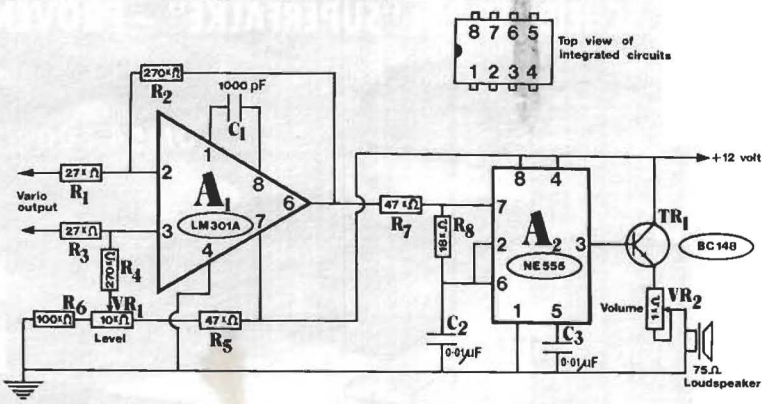
ALAN CALVERD

This circuit functions as a very adequate audio monitor for an electric variometer, has very few components (it's therefore difficult to wire wrongly), and costs about the same as an aerotow. It can be built in one rainy day and with a little care can be installed inside the vario case - apart from the controls and loudspeaker.

Components are in no way critical. Any operational amplifier like a 709, 741 or 301 (used in the prototype) can be used in the A_1 position. This device amplifies the vario output, with gain set by R_2/R_1, and adds a voltage derived from VR_1. The values given for R_1-R_4 are suitable for a maximum vario output of 50 mV: most devices will have a larger output, necessitating an increase in R_1 and R_3. If in doubt, suck-and-see! C_1 may not be required with 741-type amplifiers.

The output from A_1 charges C_2 through R_7 and R_8. When C_2 is charged to about 8 V, A_2 triggers and discharges it through R_8 until the voltage falls to around 4 V, and the cycle repeats. As the input voltage rises, whether due to lift or a wiring error, so the frequency of the charge-discharge cycle increases.

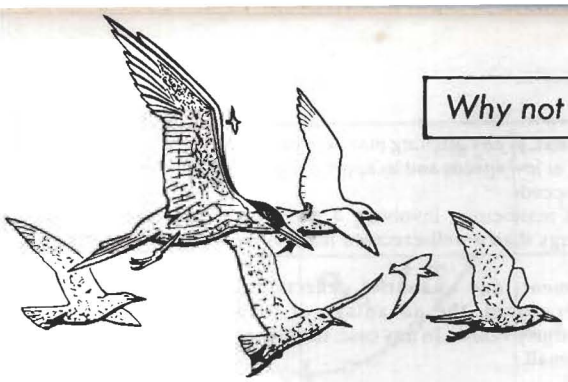
The output from A_2 is coupled to the speaker through an emitter-follower transistor (any NPN device with 300mW rating). The prototype used a telephone earpiece with some extra holes drilled in the cover plate. If the raucous squawk from the speaker is offensive it can be transformed into a mellifluous ululation by putting 0.1 vF in parallel with the speaker.



The prototype was built on veroboard and earned its keep in the first weak, crowded thermal it encountered. A new version, employing the circuit values shown here, has been mounted inside the case of our large, old vario.

As shown, the device will only respond to positive input voltage at R_3, *ie* it is an "up" indicator only. If the season demands an audible warning of "six down" an appropriate mod will be devised.

Happy scratching!



Why not remove this article and keep it with your maps?

AIRSPACE 1978

REX PILCHER (Chairman of the BGA Airspace Committee)

For those of you new to cross-country flying this article is designed to give an insight into the way airspace changes occur and a summary of the present airspace structure. The information applies to the UK mainland and does not necessarily apply to powered aircraft.

Airspace changes are proposed by National Air Traffic Service (NATS) or member representatives thraugh a committee called National Air Traffic Management Advisory Committee (NATMAC) which comprises all UK airspace users. Each organisation can study the effects of these future changes and submit their views and thereafter a compromise solution can hopefully be found. Obviously we do not always come away hoppy but, by working with the authority, restrictions can be kept to a minimum with all parties aware of individual problems. Our airspace structure is certainly unique and somewhat complicated, so the following summary may help to unscramble it.

Air Traffic Zones (ATZ)

All aerodromes, including gliding sites, have an Air Traffic Zone. They extend 1½nm from the boundary and 2000ft above aerodrome level. Aircraft may enter this Zone without permission, for the purpose of landing, unless the airfield is notified as Prior Permission Only (PPO). You must refer to the AGA section of the **UK Air Pilot** to establish the PPO state of an airfield. (All military airfields are PPO effectively and should generally be avoided). Gliders flying on the approach side of an ATZ should exercise caution as aircraft may not be contained within it.

Military Air Traffic Zones (MATZ)

A MATZ has an area 5nm radius from the centre of an airfield and extends to 3000ft above the surface, usually accompanied by a stub 5nm long and 4nm wide, on the extended centre line of the main runway. MATZ rules do not apply to civil aircraft, but each MATZ contains an ATZ and care should be taken olong the extended approach centre line.

Prohibited Areas

Excluding Northern Ireland these are all Atomic Energy Establishments at:

Winfrith Heath	Capenhurst
Harwell	Springfields
Aldermaston	Calder/Windscale

They have a radius of 2nm with upper limits in the 2000-4000ft range and must be avoided. Short term areas may be established at any time with details available in NOTAMS.

Danger Areas

There are numerous Danger Areas within the UK, many constituting possible hazard to the unwory glider pilot. Their hours of operation all vary and details must be found in the **Air Pilot** (RAC Section).

Restricted Areas

Until recently these have generally been reserved for bird sanctuaries, military training areas etc and as such none were prohibited. Details can be found in the **UK Air Pilot**. However, there has now been a Restricted Area introduced at RAF Kemble (see AIC 6/78) as from Februory 1, 1978 to protect the Red Arrows aerobatic teom during training. The area extends 5nm radius and up to 6000ft agl during the notified hours of Kemble Airfield, ie 0830-1600 local time Monday to Friday or when promulgoted by NOTAM.

Gliders may not enter this airspace without prior permission, obtained either by contacting the Air Traffic Control Unit at Kemble by radio on 130.1 MHz or by telephone on KEMBLE (STD 028 577) 261.

Provided that the area is not being used by the Red Arrows during that period pilots will be given clearance to tronsit, although there may be other flying in progress, and all pilots must take the usual precoutions while in the vicinity. Glider pilots must give as much notice as possible of an intended crossing in the event that the restrictions will preclude a crossing. The area will not normally be active on weekends unless NOTAMED. Please ensure you have read the relevant NOTAM or AIC.

Controlled Airspace

Controlled Airspace sometimes occupies the some bit of sky as Speciol Rules Airspoce (peculior to the UK) and can lead to confusion. Controlled Airspace is either



notified for Rule 21 of the Air Traffic Control Regulation or it is not. Rule 21 subjects airspace to permanent Instrument Flight Rules regardless of weather conditions, and requires flight plans, instrument rated pilots and minimum navigation fits etc. If it isn't notified under Rule 21, VMC flights are permitted and gliders may fly in VMC. What is VMC?

Visual Meteorological Conditions (VMC)

Above 3000ft, outside regulated airspace or inside either Contralled or Special Rules airspace a pilot must, "Remain at least 1000ft vertically and at least 1nm horizontally from cloud and in a flight visiability of at least 5nm" as interpreted by the pilot. Remember though that modern commercial traffic may be descending at 5000ft/min and at speeds in excess of 350kt.

Airways

Airways are Rule 21 but an exemption is made for gliders. The **UK Air Pilot** states that, "Gliders may cross an airway, except a purple airway, in VMC, by day without compliance with any of the requirements . . ."

Some Control Areas may be treated as if they were Airways: Worthing, Daventry, Halifax and West Scottish.

Control Zones: Control Areas and Special Rules Airspace

These are variously known as CTR's, CTA's, TCA's, TMA's, SRZ's and SRA's. The rules surrounding these areas are complicated so simplified tables are shown below.

1. **AREAS IN WHICH GLIDERS MAY NOT FLY REGARDLESS OF THE WEATHER**

London Control Zone	Gatwick Control Zone/SRZ/SRA
London TMA	Birmingham Control Zone/SRZ
Manchester Control Zone (except for a small portion up to 1250ft agl)	
Manchester TMA	Rhoose Control Zone/SRZ/SRA
Blackpool SRZ	Glasgow SRZ
Prestwick SRZ	Liverpool SRZ
Manston SRZ	Lydd SRZ

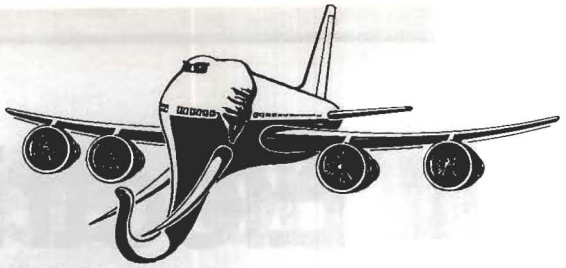
Stansted SRA – the portion between Stansted and Luton from 3500ft to FL65
Luton SRZ/SRA – See Table 3 for exceptions
Brize Norton SRZ – See Table 3 for exceptions
Edinburgh SRZ – See Table 3 for exceptions

2. **AREAS IN WHICH GLIDERS MAY FLY PROVIDED THEY REMAIN VMC**

Airways and some Control Areas (see under heading Airways)

Birmingham SRA (coming soon)	Leeds Bradford SRZ/SRA
Cross Channel SRA	Scottish CTA/CTR
Bournemouth SRA/SRZ	East Midlands SRZ/SRA
Lyneham SRZ/SRA	Aberdeen SRZ/SRA
Southend SRZ/SRA	Newcostle SRZ/SRA

Stansted SRZ/SRA (except that portion in Table 1)



3. **AREAS IN WHICH GLIDERS MAY FLY PROVIDED CERTAIN RULES ARE FOLLOWED**

Luton SRA

Ports of this may be used for the purpose of taking off or landing at Dunstable (London GC) site. These rules are complicated and should be studied before attempting to fly into the area (**UK Air Pilot** RAC Section).

Edinburgh SRZ/SRA

Transits available to gliders contacting Edinburgh on 130.4 MHz. It will be neccesary to activate the frequency by telephone before departure.

Brize Norton SRZ

Gliders may penetrate the SRZ for the purpose of record attempts at weekends in full VMC provided that:

a) Transits are made for cross-country record attempts on triongular routes which cannot be arronged to avoid the SRZ.
b) On the day of the proposed flight the pilot must contact the ATC Watch supervisor on CATERTON 842551 and poss an approximate Zone boundary ETA. At this time, but not later, ATC may refuse permission for operationol or safety reasons.
c) The pilot must call Brize Norton on 130.4 MHz before penetration. In the absence of any reply the pilot may continue with the flight assuming responsibility for lookaut and separation within the ATZ, and continue to listen out on 130.4 MHz.

4. **UPPER AIRSPACE ABOVE FLIGHT LEVEL 245**

The entire country is controlled above FL 245 but none of the Rules are applicable to gliders.

The Airmiss System

Glider pilots are used to flying in close proximity to other gliders and are often unaware that their sudden appearance to other pilots, who perhaps spend less time looking out, causes varying degrees of alarm. These sightings often result in an airmiss report being filed, but glider pilots seem more reluctant to use the system and this often leads to only one side of the story being represented. If you do feel that you may have been involved, please get in touch with the BGA as soon as possible. Full details of the airmiss procedure can be found in the **UK Air Pilot** (RAC Section).

Information

The UK airspace is complicated and this article can do no more than give the briefest of summaries. It is essential that all pilots are aware of their rights, and that all the information available is current, and this means at the very least, access to an up to date **UK Air Pilot** (RAC Section) and Notams. Other sources of information are **Laws and Rules for Glider Pilots; Rules of the Air and Air Traffic Control Regulations, Air Navigation Order** and **Information circulars** (AICs).

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Ball Electric Variometers



*** MODEL 401/3 VARIOMETER**

Operates on 3V at 1 ma.

*** MODEL 401/6 VARIOMETER**

Operates on 5-20V at 4 ma. Diaphragm-capillary leak type. Self-contained total energy is derived from pitot and static pressures.



• MODEL 600 VARIOMETER

New altitude-derivative type. Operates on 10-20V at 6 ma. Very small in 2.25 case size. Model 600A for airplanes, 600B for balloons, and 600G for gliders.



*** MODEL 400/3 VARIOMETER**

Operates on 3V at 1 ma.

*** MODEL 400/6 VARIOMETER**

Operates on 5-20V at 4 ma. Diaphragm-capillary leak type. Uses a venturi for total energy.



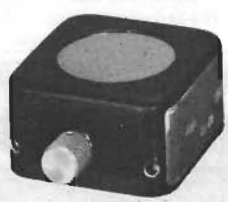
MODEL 405 AUDIO
(Most commonly used model)

Steady tone below zero and interrupted tone above zero with pitch increasing with increase in climb. The tone level and threshold is adjustable.



• MODEL 500 VARIOMETER

New altitude-derivative type. Operates on 10-20V at 6 ma. Lightweight in 3.12 case size. Model 500A for airplanes, 500B for balloons, and 500G for gliders.



MODEL 404 AUDIO
(Designed for use in holding zero)

Pitch increases both up and down away from zero. The up side is interrupted. A zone of quiet may be adjusted on either side of zero or both sides.



• MODEL 500H VARIO/AUDIO

Especially designed for hang gliders. Lightweight in 3.12 case size with built in audio and 9V battery.



MODEL 406 AVERAGER

Connects to the audio line and consumes less than .5 ma current. Three selectable averages are stored at all times with typically: 20 sec, 2 minute and 5 minute time constants. Has a reset button.

and Accessories for 1978



NETTO

FOR MODELS 400
AND 401 VARIO

Consists of a calibrated capillary leak and On-Off valve.



CRUISE CONTROL

FOR MODELS 400
AND 401 VARIO



Consists of a calibrated capillary leak, an On-Off valve, and a dial to set thermal strength.



VARIABLE DAMPING

FOR ALL MODELS

Selector switch sets variometer time constant from approx. 1 to 4 seconds in 4 steps.



GAIN SWITCHING

FOR ALL MODELS



For example, sets the full scale meter reading to 10 or 20 knots for 2-gain or 5/10/20 knots for 3-gain. Can be any desired values.

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Ball model 400 and 401 electric variometers may be used with 3 volts at 1 ma (400/3 and 401/3) or 5 to 20 volts at 4 ma (400/6 and 401/6) The 3 volt models operate for long periods on two "D" cells, and are recommended for school or club sailplanes. The 5 to 20 volt models are preferred for use with accessories such as audio and cruise control, and may be operated on a standard 12 or 14 volt radio battery. If no radio is installed, a 6 volt lantern battery will provide power for many months.

Price list

Variometers for use with venturi or Braunschweig tube total-energy compensation:

Models 400/3 or 400/6	$235.00

Variometers with self-contained total-energy compensation:

Models 401/3 or 401/6	265.00

Accessories for 400/6 and 401/6 variometers:

Model 404 Audio	95.00
Model 405 Audio	95.00
Model 406 Averager	175.00
Netto, with on-off valve*	35.00
Cruise Control, with thermal-strength selector and on-off valve*	95.00

*Please specify sailplane or polar.

Altitude derivative variometers:

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Models 500H, with built-in audio	275.00
Models 600A, B, or G (2¼")	235.00

Accessories for all Ball variometers:

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3-gain switching**	25.00
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PROVISIONAL ENTRIES

WORLD CHAMPIONSHIPS, CHATEAUROUX, FRANCE, JULY 15-30, 1978

Pilot	Country & Team Captain	CLASSES			PREVIOUS PLACINGS						
		Open	15m	Standard	1976	1974	1972	1970	1968	1965	1963
Riera, J.	ARGENTINA				24-S						
Rizzi, R.					36-S	34-S	27-S	17-O			
Reinoso, N.											
Jinks, M.	AUSTRALIA	Nimbus 2			15-O		14IO	16-O	32-O	29-S	
Tabart, A.		Nimbus 2				13-O	22-O				
Renner, I.			LS-3		1-S	2-S	6-S				
Buchanan, J.			LS-3								
Schubert, A.	AUSTRIA	Nimbus 2			13-O	14-O	9-O	18-O	4-O		
Farohfellner, O.	C. Fuchs	Nimbus 2			12-O			18-S			
Hämmerle, A.			Mini Nimbus		13-S	9-O					
Stögner, G.				ASW-19							
Zegels, B.	BELGIUM	Nimbus 2			6-O	2-O	18-O	13-S	10-O		
de Dorlodot, L.	E. de Dorlodot	ASW-17					28-O	19-O			
Stouffs, H.			LS-3		10-S		38-S	37-S	5-S	11-O	27-S
Bluekens, M.			ASW-20		25-S	27-S					
Javornik, E.	BOLIVIA		ASW-20								
?	BRAZIL										
?											
?											
?											
Webb, D.	CANADA		Mosquito		31-O	18-S	10-S	28-O	13-O	28-O	9-O
Werneburg, H.			Mini Nimbus		40-S						
Firth, J.				Std Cirrus	31-S	38-S	25-O	30-O			
Carpenter, J.				Std Cirrus	28-O	21-O					
?	CHILE										
?											
Matousek, F.	CZECHOSLOVAKIA	Nimbus 2			10-O		13-O		28-S		
Brunecky, M.		Nimbus 2									
Necid, F.		Kestrel 19									
Vavra, J.				Pik 20B			45-S		11-S		
Seistrup, N.	DENMARK		Pik 20D			29-S		18-S	10-S	4-S	17-S
Sørensen, O.	K. Host		Mosquito		22-S						
Lund, K.				Std Cirrus							
Hansen, M.				Std Cirrus							
Kuittinen, M.	FINLAND		Pik 20D		32-S						
Horma, J.	E. Gronlund		Pik 20D		27-O		20-S		12-O	24-S	3-S, ('58/4-S)
Pankka, A.			Pik 20D								
Wiitanen, M.					34-O	11-O	2-O	10-O	24-S	13-S	14-S
Henry, F.	FRANCE	Nimbus 2								1-S	6-O
Rantet, J.	C. Labar	Nimbus 2			14-S						
Recule, M.				Std Cirrus							
Mercier, M.				Std Cirrus		6-S	11-O	3-O	35-O		
Lee, G.	GREAT BRITAIN	ASW-17			1-O						
Fitchett, B.	R. Feakes	ASW-17			18-O	4-S	32-S				
White, S.			ASW-20								
Delofield, J.				ASW-19		10-O		7-O			
Paré, D.	HOLLAND		Mini Nimbus		23-S	14-S	20-O				
Teunisse, P.	N. van Geuns		LS-3			20-S					
Musters, C.			LS-3		34-S		17-O				
Selen, B.				Std Cirrus							
Hahner, I.	HUNGARY		Pik 20D		21-O						
Petroczy, G.				Std Jantar	6-S		22-S	9-S	17-S	17-O	
Kossai, B.				Std Jantar							
Keselyak, M.				Std Jantar							
Bryson, J.	IRELAND					30-O					
?											
?											
Gavazzi, M.	ITALY	Nimbus 2			22-O						
Vergani, W.	P. Morelli	Nimbus 2			32-O			22-O	23-O	16-O	24-S
Brigliadori, L.				Std Cirrus	7-S					16-S	4-S, ('60/21-S)
Monti, R.				Std Cirrus	28-S						
Zonitzer, R.	LUXEMBOURG			Std Jantor							
Evans, I.	NEW ZEALAND							27-O			
Finlayson, I.	N. Jones										
Gordon, R.			LS-3			5-S					
Fowler, B.			ASW-20								
Rønnestad, E.	NORWAY		LS-3		35-S		48-S				
Bulukin, B.	P. Bjerke			Pik 20B		35-S	33-S				
Maelum, H.				LS-1F							
Ziobro, J.	POLAND				2-O						
Kluk, S.	T. Rejniak					18-O	3-O				
Kepko, F.		Jantar 2		Std Jantar	18-S	3-S	3-S	3-S		3-S	
Witek, S.		Jantar 2		Std Jantar							
Hodge, P.	RHODESIA										
Pearson, E.	A. Thompson										
Harrold, J.										33-O	32-S, ('60/10-S)
Moore, W.											
?	ROUMANIA										
?											
?											
?											

Pilot	Country & Team Captain	CLASSES Open	15m	Standard	1976	1974	1972		1968	1965	1963
							PREVIOUS PLACINGS				
Goudrican, K.	SOUTH AFRICA	ASW-17			25-O						
Mouat-Biggs, E.	B. Stevens	Nimbus 2			19-O			35IS			
Clifford, R.			LS-3		39-S			11-S		26-S	
Falkenbridge, C.				Std Cirrus							
Ax, G.	SWEDEN		ASW-20		9-O	7-O	1-O	15-O	2-O		
Karlsson, G.	P. Ljunggren		Mini Nimbus		2-S						
Pettersson, A.				ASW-19	26-O	12-O	29-O	13-O			
Andersson, G.				Std Jantar	19-S	11-S					
Oswald, M.	SWITZERLAND	?									
Schulthess, A.			?								
Baumgartner, K.			?								
Nietlispach, H.				?		24-S	40-S	12-S	9-S	20-O	19-O, ('56/8Ss; '54/4Ts)
Butler, R.	UNITED STATES	Kestrel 604			5-O						
Johnson, R.	E. Butts	Jantar 2B			7-O	8-O	5-O		8-O	18-O	4-O, ('60/15-O, '52/24Ss)
Striedieck, K.			ASW-20								
Moser, H.				ASW-19							
Vasjkov, L.	USSR	?									
Pasechniko, O.		?									
Sabatzkis, V.				?							
Parkhomtzev, L.				?							
Müller, E.	WEST GERMANY	ASW-17									
Gantenbrink, B.	F. Weinholtz	Nimbus 2									
Peter, E-G.			ASW-20		17-S						
Reichmann, H.			LS-3		8-S	1-S	24-S	1-S			

O = Open Class; S = Standard Class; Ss = Single-seaters; Ts = Two-seaters.

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BGA & general news

BGA WEEKEND AT OXFORD

The BGA AGM and traditional dinner-dance was worked into a new format in 1977 with the introduction of the BGA Weekend. The theme continued this year with more than 200 pilots and friends meeting at Keble College for a weekend in March.

Organised by Dee Reeves, with Marjorie Hobby giving additional help, 103 stayed in the college and others put up at local hotels.

The AGM was on the Saturday, March 18, when Roger Barrett was re-elected as Chairman and Lionel Alexander, Ian Strachan and Paul Thompson were returned to the Executive Committee with Vic Carr and John Delafield as newcomers to the Committee. The meeting stood in silence as a tribute to Philip Wills, BGA President, who died in January.

After tea there was an absorbing "Soaring Meteorology" lecture by Tom Bradbury on helping pilots to spot the right day followed by a gliding film.

The dinner was in the college hall with John Blake, the leading international aviation aerobatic judge and a familiar voice at Farnborough and other airshows, the guest of honour. He said he was convinced the enormous dedication of everyone involved in gliding was the movement's great strength.

"You have kept your freedom in the face of bureaucracy and you are still doing what you want in the sky, which is terribly important," he added.

The annual trophies and BGA Diplomas were presented by Jane Simpson, wife of Chris, a Vice-President of the BGA. The party then continued into the early hours.

Bill Scull, Senior National Coach, started off the Sunday morning programme with a talk on coaching, past, present and future. This was followed by a competition and cross-country brains trust.

The weekend was again a splendid chance for pilots to get together and talk about gliding before the start of the season.

NEWS OF COMPETITIONS AND AWARDS

15m Class Records. An additional UK Local Record category is introduced for 15m Class gliders to supplement the existing General and Standard categories. As with the latter, the new category excludes height records. Individual records (for which Standard Class gliders are eligible) may be activated only by flights better than 75% of the UK General single-seater records as at January 1, 1978. Retrospective claims exceeding the normal 14 days limit are permitted for flights in the period January 1, 1978, to June 30, 1978.

Diploma and Awards. Although the annual "best flight" trophies and the UK 750km Diploma are basically subject to FAI Sporting Code "badge rules", as a dispensation uncompleted triangles where the pilot lands over 10km from the line of the last leg, which would not qualify under the current Sporting Code, may be measured by the traditional "radius rule" used in competitions, *ie* the distance counted for the uncompleted leg is the full length of the leg less the distance of the landing point from the departure/finish point of the triangle. This dispensation applies only to BGA annual trophies and the 750km Diploma.

Weinholtz Tasks. To test the practicability of Fred Weinholtz's proposals for competition tasks, described in the February issue of S&G, p57, Directors of the 1978 Regional contests may set Weinholtz-style tasks on up to one day in every four contest days. The only variations from the Weinholtz proposals are that pilots may select their turning points in flight, and that the same criteria apply to determining maximum daily points as for the normal scoring system. Handicapped distances and speeds should be used in the calculation of points.

1979 Nationals Entry List. To guarantee a set number of places in National level Championships to pilots from the Regionals, the 1979 Nationals Entry List will be circulated at each competition this season and published in a future issue of S&G.

Gordon Camp
Chairman, BGA Competitions Committee

NATIONAL LADDERS

Due to a considerable number of height gains and a few soaring days in April, the lists are expanding rapidly compared with last year.

Open Ladder

Leading pilot	Club	Pts	Flts
1 L. Beer	Thames Valley	2967	4
2 A. Kay	Thames Valley	2950	2
3 R. Aldous	Airways	2743	2
4 M. B. Jefferyes	Essex	2640	2

Club Ladder

Leading pilot	Club	Pts	Flts
1 C. Cockett	Thames Valley	2688	4
2 A. B. Crease	Imperial College	2170	2
3 R. Christey	London	1699	3
4 J. Raland	Airways	1380	2

AN EARLY START

As so often happens a good soaring weekend came after the deadline for the club news contribution. During the weekend of April 15-16, Chris Garton, Alan Purnell and Hugh Hilditch flew 500km triangles, while at Cambridge Sigfrid Neumann completed a 500km triangle and John Glossop a triangle in excess of 400km. No doubt we will read of further achievements during this weekend in the next issue.

But Lasham had an earlier start to the soaring season with Chris Lovell (Astir CS) flying 300km triangles on March 30 and April 11. Now there is news of a record, see below.

FIRST UK RECORD FOR TWIN ASTIR

Chris Rollings and Doug Freeman took the Twin Astir round a 103km triangle on Tuesday, April 11, at an average speed of 92.83km/h.

The startline was crossed at 13.15 and with cloudbase at 4700 rising to 6000ft asl they only needed four climbs, the best at 8kt, to complete the Bicester, Didcot, Booker triangle (subject to homologation).

AB-INITIO KILLED

There was a fatal accident at the Midland GC's Long Mynd site on March 19 when a K-13 was on an instructional flight in a 20kt SW wind with stratus at 900ft agl. The winch launch was too fast and the cable was released, the glider spinning in during a turn and hitting the ground almost vertically.

The student pilot, David Willett, died from his injuries on the way to hospital and the instructor, Howard Bradley, had severe bruising on the ankles and legs.

DICK'S VISIT

Dick Johnson is visiting the London GC on Saturday, June 24, when he will give a semi-technical flight testing talk in the evening on comparison studies, including a paper he presented at the SSA Convention on "Improved PIK 20B Flight Polar Measurements and Tuft Studies". Dinner must be booked and tickets are from the club Steward.

Philip Wills
MEMORIAL FUND



The BGA has established an appeal fund to honour the late Philip Wills.

The fund will be used to promote sporting and recreational flying in gliders. It is the primary intention of the Trustees to use the fund to assist BGA member clubs to acquire sites and buildings and to provide short term financial help. These objectives were very close to Philip's heart and were his intentions when he set up the Wills Reserve Fund.

The Memorial Fund has the full approval of Philip's family and the Trustees of the British Light Aviation and Gliding Foundation have already agreed to donate £1000.

It is hoped that contributions from the British gliding movement will exceed £10000 which is only £1.00 from each pilot.

Contributions should be sent to:

Christopher R. Simpson, Chairman of the Philip Wills Memorial Appeal
c/o the BGA Office. *(Cheques payable to Philip Wills Memorial Fund.)*

THE BGA EXECUTIVE COMMITTEE

After the AGM in March a new Executive Committee was elected. The members are: Lionel Alexander, Roger Barrett (Chairman, Executive Committee), Vic Carr (Chairman, Instructors Committee), Joan Cloke (Treasurer), John Delafield, Frank Irving, Keith Mansell (Vice-chairman, Executive Committee and Chairman, Development Committee), Barry Rolfe (General Secretary), Ian Strachan (BGA delegate to FAI, CIVV), Paul Thompson (Chairman, Magazine Committee), Eric Wilks and Tom Zealley. Other chairmen of BGA committees are: Rex Pilcher (Airspace), Gordon Camp (Competitions and Badges), John Williamson (Radio), Arthur Doughty (Safety) and Roy Tetlow (Technical). Dee Reeves is the BGA Publicity Officer.

Although the minutes of all Executive Committee meetings are sent to clubs it is not surprising that there is still widespread ignorance amongst pilots about just what the BGA Exec does. Whilst our terms of reference include deciding the policy and objectives of the Association and representing the interests of clubs and their members at national level, it might help to put some flesh on these bones if occasionally we report on just what we have been up to lately. Here, therefore, are some notes on some of the items discussed at our April 1978 meeting, the first one to be held since the AGM.

MATTERS ARISING FROM THE BGA WEEKEND

Funding future British Teams. There was a general feeling at Oxford that it was time to change the BGA's policy towards funding British teams and that in future general BGA subscription income should be used for this purpose if it was necessary. The Exec decided that this topic should be discussed more fully before any decision was taken and Tom Zealley is going to prepare a paper we can consider. (The next World Championships, after this year's, will be held in 1981 so it was felt there was time for the Exec to put up a formal motion at a future general meeting proposing any change.)

Membership growth. The discussion at Oxford convinced the Exec that it would not be in the best interests of clubs for any funds to be spent nationally on publicising gliding with a view to getting more members.

BGA Weekend in 1979. Dee Reeves was congratulated on the successful Weekend at Oxford. It was decided to hold another similar occasion next year: possibilities for venues include York University and the Leicester area (a suggestion that next year's Weekend should involve a "package tour" to Amsterdam or Paris was turned down with some reluctance as we reckoned our Constitution did not allow us to hold our AGM outside Britain!).

50TH ANNIVERSARY DINNER

John Delafield is chairing a working party to organise a Grand Dinner in December 1979 to celebrate the 50th anniversary of the BGA.

PHILIP WILLS

We were very pleased to hear that Kitty Wills had agreed to be one of the trustees of the Philip Wills Memorial Fund. The Chairman reported that arrangements were being made to display the numerous trophies and memorabilia associated with Philip at the RAF Museum, Hendon. We also discussed how best to perpetuate Philip's name with special reference to enterprising flights but no conclusion was reached.

LONG TERM PLANNING

The time was now felt to be right for some long term policy decisions to be taken regarding sites and the Development Committee was asked for a paper on the subject.

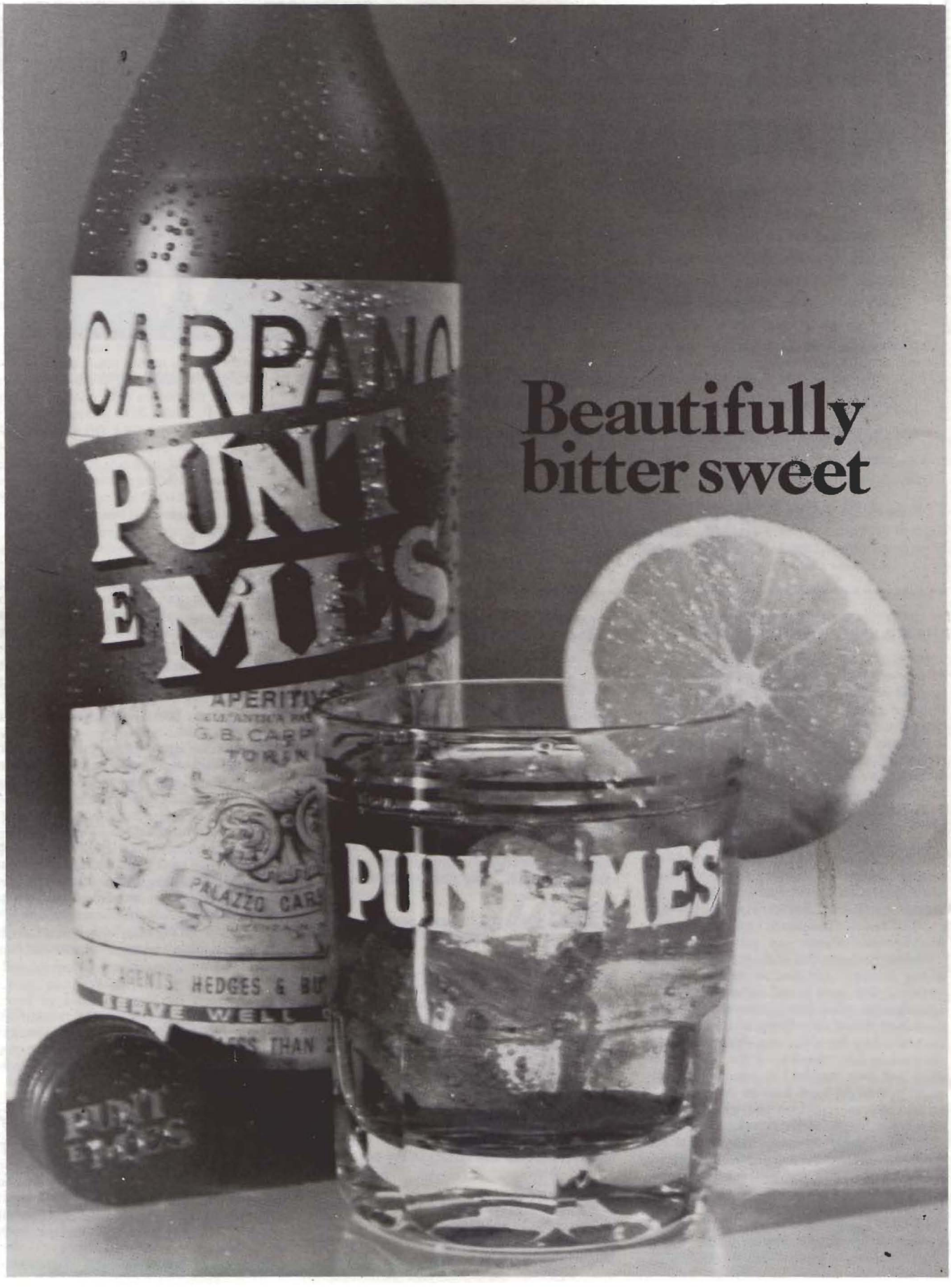
GLIDER DESIGN COMPETITION

Some provisional ideas from the Technical Committee had been circulated and these were discussed at some length. Opinions were divided as to whether there was a genuine "groundswell" opinion in clubs that there would be a big market for a DIY glider with a C of A. No decision was taken and more opinions are being canvassed.

CIVV

Ian Strachan reported on the recent CIVV meeting in Paris. We agreed that the BGA would have to be involved in selecting pilots who wished to enter the new European Gliding Championships (Club Class) being held in Sweden.

The Exec decided in principle that the BGA should bid to hold a World or European Championship in Britain in the 1980s. The Competitions Committee was asked to set up a working party to investigate the possibilities and report back, taking note of the financial difficulties that were likely to be encountered if a world event was held with South African pilots taking part.


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CLUB VISITS

Members of the Exec will visit as many clubs as possible in the next 12 months to discuss any general problems and to enable club members to "sound off" about any aspect of the BGA's work.

The formal part of the meeting ended at around 9.00pm and most members then adjourned to the Exec's current favourite Kebab House in South Kensington where gliding talk continued until a late hour.

If you want to bend the ear of a member of the Exec later this year please tell your club Chairman who will know whether and when a visit to your site is being planned. We shall be delighted to get feed-back from members as that is the best way for us to ensure our priorities are right and that we are doing what the majority wants.

Roger Barrett
BGA Chairman



Members of the British Team attended a reception, held in the cellars of Hedges & Butler, to announce that Punt e Mes were sponsoring the Nationals at Lasham from May 20-29. Our photograph is of (left to right) Roger Barret, BGA Chairman, John Delafield, Bernard Fitchett and Richard Joyce of Evans, Marshall & Co, who distribute Punt e Mes in the UK.

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	Name	Club	1978
86	J. Mitchell	Eagle	16.2

DIAMOND GOAL

No.	Name	Club	1977
2/867	A. K. Lincoln	Imperial College	10.8

DIAMOND HEIGHT

No.	Name	Club	1978
3/334	W. L. C. O Neill	Aquila	5.10.77
3/335	A. C. Eade	Deeside	12.3
3/336	J. Mitchell	Eagle	16.2
3/337	M. T. A. Sands	Ulster	21.3
3/338	R. W. Warren	Surrey & Hants	30.3

GOLD C COMPLETE

No.	Name	Club	1978
648	S. C. Dennis	Clevelands	26.3
649	R. W. Warren	Surrey & Hants	26.3

GOLD C HEIGHT

Name	Club	1978
S. J. Bean	Imperial College	29.12.77
P. Johnson	Borders	4.12.77
D. C. Walker	SGU	28.12.77
W. L. C. O'Neill	Aquila	5.10.77
K. G. Earnden	Chilterns	1.1
G. H. White	South Wales	31.12.77
E. Fitzgerald	South Wales	31.12.77
I. F. Barnes	Essex	13.10.77
A. C. Eade	Deeside	8.3
P. G. Browne	Thames Valley	21.10.77
D. H. Gardner	East Sussex	4.3
J. G. Wilson	Aberdeen Univ	8.1
D. J. Minson	Devon & Somerset	21.3
S. C. Dennis	Clevelands	26.3
R. C. Farthing	Clevelands	6.11.77
M. J. Lincoln	Clevelands	26.3
R. W. Warren	Surrey & Hants	26.3
C. Miller	Devon & Somerset	21.3
S. Barber	Devon & Somerset	21.3
A. R. Vermot	Derby & Lancs	21.3
E. K. Stephenson	Bicester	30.3
T. P. Grant	Bath & Wilts	30.3
E. M. Roberts	Hambletons	26.3

GOLD C DISTANCE

Name	Club	1977
M. C. S. Alken	Cornish	18.10
A. K. Lincoln	Imperial College	10.8

SILVER C

No.	Name	Club	1977
4975	J. A. Hartill	Airways	11.8
4976	W. R. Williams	Kestrel	30.7
4977	M. C. S. Alken	Narrowmine (Australia)	19.10
4978	A. K. Lincoln	Imperial College	10.8
4979	A. C. Eade	Deeside	13.3.78
4980	M. R. Baker	East Sussex	1.3
4981	P. S. Crossley	Thames Valley	18.3
4982	R. B. Christey	London	30.3

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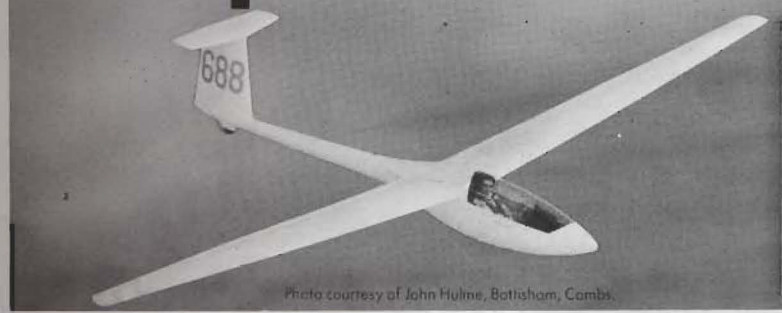


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INTERNATIONAL GLIDING COMMISSION (CIVV) MEETING
- Paris, March 16-17, 1978

IAN STRACHAN, BGA Delegate to CIVV

I attended on behalf of the BGA with Roger Barrett (BGA Chairman) as official alternate delegate. This account is a briefer version of a full report which goes to the BGA Executive and Competitions & Badges Committee.

There were 23 countries attending the meeting which commenced with the delegates standing in silence in memory of Philip Wills and other distinguished members of the world gliding community who had died since the last meeting.

★ ★ ★

Lilienthal Medal. This, the highest international gliding award of the year, was awarded to George Moffat of the USA.

World Championships, Chateauroux, France. The impending Championships were discussed and four countries said that they would not fly if South Africa competed, whereas four others were losing government team subsidies. However, there are 112 entries: 33 Open, 44 15 Metre and 25 Standard.

Future World Championships. These will probably be held in 1981 and 1983. West Germany will bid for 1981 at Bayreuth and other nations interested in running World Championships in the 1980s are ourselves, USA, South Africa and Australia. The BGA would like some opinion from clubs and members on support for the UK hosting a World Championships in the early 1980s.

European Club Class Championships, 1979. In 1979 there will be a European Championship at Orebro, Sweden, from June 14-24, for club gliders. The "Club Class" will be, roughly, Standard Class gliders (although use of waterballast not allowed) and gliders of similar or lower performance. If your glider is at 100% or less on the BGA handicap list, **you** could be a European Champion. The contest might either be handicapped or run in two groups of gliders of similar performance. The point of the contest is that a K-6, Skylark or Astir should all have a fair chance of winning.

Airspace. This was a matter of concern to all glider movements and the long term international trends were towards more control, use of radio and even transponders. Bob Buck (USA), CIVV and FAI Airspace Co-ordinator, pointed out how vital it was to establish a good relationship with other airspace bodies, government and other airspace users. We hope to see Bob in the UK later this year.

Sporting Code. The next edition is due to operate from 1980. The BGA Competitions Committee invite comments so that they can discuss them and instruct the CIVV delegate accordingly.

Classes. Some nations wished to reduce the number of World Classes from three (one wanted to go back to one Class), others wished to preserve the Standard Class at all costs to continue with at least one relatively cheap glider at international level. Your views are sought, channelled through the Competitions Committee.

Tasks. More versatile contest tasks were discussed, particularly a "pilot selected triangle" marked mainly for distance, where a pilot could pick his route from the organisers' list of turning points (See S&G, April, "Thoughts on New Contest Philosophy in Gliding", p57.) Another task tried in the USA at Regional levels was where triangle distance to be flown was proportional to glider handicap, **eg** a 50% glider would fly half the size of triangle that a 100% glider flew. The Competitions Committee will discuss these matters in due course.

Scoring. Simplification was discussed. It is apparent that in the stronger thermal countries, points for distance could be dispensed with altogether, but there is no suggestion of this being supported for the UK and such an idea would discourage the setting of big triangles in contests due to the risks of non-competition.

International Instructors' Conference to be held at Lasham from October 27-29. This was publicised and there may be several distinguished visitors from abroad.

The next CIVV meeting will be in Paris from March 22-23, 1979. The CIVV Bureau will meet this November - the Bureau is a non-executive body consisting of the CIVV President (Bill Ivans, USA), the six Vice-Presidents (currently the delegates of France, West Germany, Italy, Norway, Poland and Switzerland) and the CIVV Secretary.

Questions. CIVV is our international governing body in terms of the sporting aspects of gliding, *ie* competitions, records and badges. If you have any questions, or suggestions for change, raise this with the BGA Competitions Committee, the BGA Executive or directly with your CIVV delegate, all c/o the BGA office.

WORLD CHAMPIONSHIPS' FUND 1978

The BGA acknowledges donations to the World Championships' Fund from the following:

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SHUTTLEWORTH DISPLAY

On Sunday, June 25, the Shuttleworth historical collection at Old Warden Airfield, near Biggleswade, is laying on a display of aeroplane types reminiscent of the great days of sporting aviation. Gates open 11am and flying starts at 2pm with take-offs of seven different types of DH Moth.

AVIATION ART EXHIBITION

The Guild of Aviation Artists are again holding their annual exhibition in the Qantas Gallery, Piccadilly, London. It is from June 13-July 6 and will be formally opened by Winston Churchill, MP, on June 12.

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OVERSEAS NEWS

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NEW ZEALAND NATIONALS

Set among grand scenery of central Otago, with mountains to 6000ft and inversions often below them, good thermals and occasional waves, the small township of Alexandra with one dusty airstrip, hosted this event for the first time.

Ingo Renner, Champion from Australia, flew *hors concours* in his first mountain soaring contest, but on the first day he found himself trapped among mountains, broke his LS-3 in a tussock landing (later retrieved by helicopter) and had to walk five hours and cross waist-high streams to reach a telephone.

Another *hors concours* pilot, Justin Wills, flew one day in a K-13 with Alan Holgate and clocked 64.25km/h on a 203km quadrilateral.

Best speeds during the Contest: Day 5, I. Evans (Nimbus 2), 100.62km/h on 322km triangle (Renner 98.42km/h); Day 8 (the last), 102km/h on an 189.5km triangle, involving crossing the Dunstan Range in the face of a low inversion.

Leading final results:

Open Class: 1, I. Evans (Nimbus 2), 6294pts; 2, I. Finlayson (ASW-17), 5993pts; 3, D. Yarrall (Nimbus 2), 5966pts; 4, I. Pryde (ASW-17), 5661pts; 5, P. Heginbotham (Nimbus 2), 5566pts; D. Waters (Nimbus 2), 5513pts.

Standard/Handicap: 1, R. Gordon (LS-3), 6285pts.

Sports: 1, A. van Dyk (K-6E), 5117pts.

ROSS MACINTYRE (Condensed)

A DANISH CLUB

Carl Ulrich, editor of *Stig og Synk* (Lift and Sink), organ of the Silkeborg Flying Club in central Jutland, writes to bring up-to-date the news published in the December, 1977, issue, p272. Founded in 1934, the club has 70 active members, one of whom, Ib Wienberg, has been National Champion twice. All the groundwork, including repairs, is done by members – mostly by private owners. The airfield is 1km long by 100m wide. Launches, 2000-3000 a year, are nearly all by winch, with very few aerotows. Total cross-countries average 25000km a year (20000 in 1977 including six Diamond goals). Weekend "cottages" built by members now number eight, with room for ten more. Instructors number 15, and operate a Blanik and a Twin Astir.

GOLDS AND DIAMONDS IN FRANCE

Figures for Gold C legs and Diamonds earned in France during the last three years show that though, as expected, 1976 was an exceptional year for distance, this was not so for altitude. Figures in each category for each of the three years in succession were:

	1975	1976	1977
Gold altitude:	190	131	167
Gold distance:	52	364	127
Diamond altitude:	78	67	58
Diamond goal:	51	367	106
Diamond distance:	12	174	55

Total distance flown from French centres during 1977 was 1,364,539km – *Aviasport.*

SECOND NEW ZEALAND AERIAL DERBY

This event started from Paraparaumu and finished after four flying days over an 847km course at Kaitaia. A rail strike caused a week's postponement of the start because many entrants could only return from the Nationals by ferry.

After a dinner party at Wellington on Friday, March 3, Saturday dawned fine with thermals from 9am. Ten pilots set off at 1pm on a 212km course Paraparaumu-Umutoi-Oringi-Waipukurau, except that Peter Lyons found he had no ASI and landed for a second launch, then found he had no variometer, and finally got away on his third launch. No relights after outlandings were allowed, and Brian Chesterman, who came down after 20km, had to complete the course by trailer. Eight finished the course, Finlayson (Open/Handicap Class) being first at 113.76km/h. Brian Kelly won in the Standard Class.

Day 2, 196.7km *via* Oringi, Raumai, Umutoi, Taihape to Raetihi. Three pilots, Gatland, Finlayson and Banton, had finished the course when cloud cover and increased wind prevented the others from doing so: all would have completed if launches had started 40mins earlier. One pilot, though in sight from the finishing airstrip, failed to find it. Oddly, if he had done so, speed points for the day would have been 600 instead of 175. Now leading were Neville Banton in the Open/Handicap and Brian Kelly in the Standard.

After two non-flying days the party moved by road to Taupo and on March 8 their task, after high cirrus had moved off, was 207km to Ardmore. In poor visibility only three got there, Finlayson regaining first place overall with 74.59km/h. In the Standard Class Peter Holthouse reached overall lead with the farthest outlanding.

On the final day, back to Auckland, a 5°C inversion at 3500ft and weak thermals did not encourage high speeds on the 231km course, but seven finished. Ian Finlayson was fastest and clinched the "Air New Zealand Derby" title, gaining the Georgeson trophy in the Open/Handicap Class for the second time. Neville Banton, though very slow this day, retained second place overall.

In the Standard Class of five sailplanes, Brian Kelly won the Westenra trophy, taking the lead from Peter Holthouse who landed out.

The race executives in their Cessna 172 were delayed by a control zone from seeing the first arrival, but this was catered for by Alan Rowe who reached the finish line in time in his little Andres Al ultra light.

Leading Final Results:

Open/Handicap Class: 1, I. Finlayson (ASW-17), 3865pts; 2, J. Benton (Kestrel 17), 3673pts; 3, D. Haslett (LS-3), 3528pts.

Standard Class: 1, B. Kelly (ASW-15), 3587pts; 2, B. Lyons (Std Cirrus), 3573pts; 3, P. Holthouse (Hornet), 3369pts.

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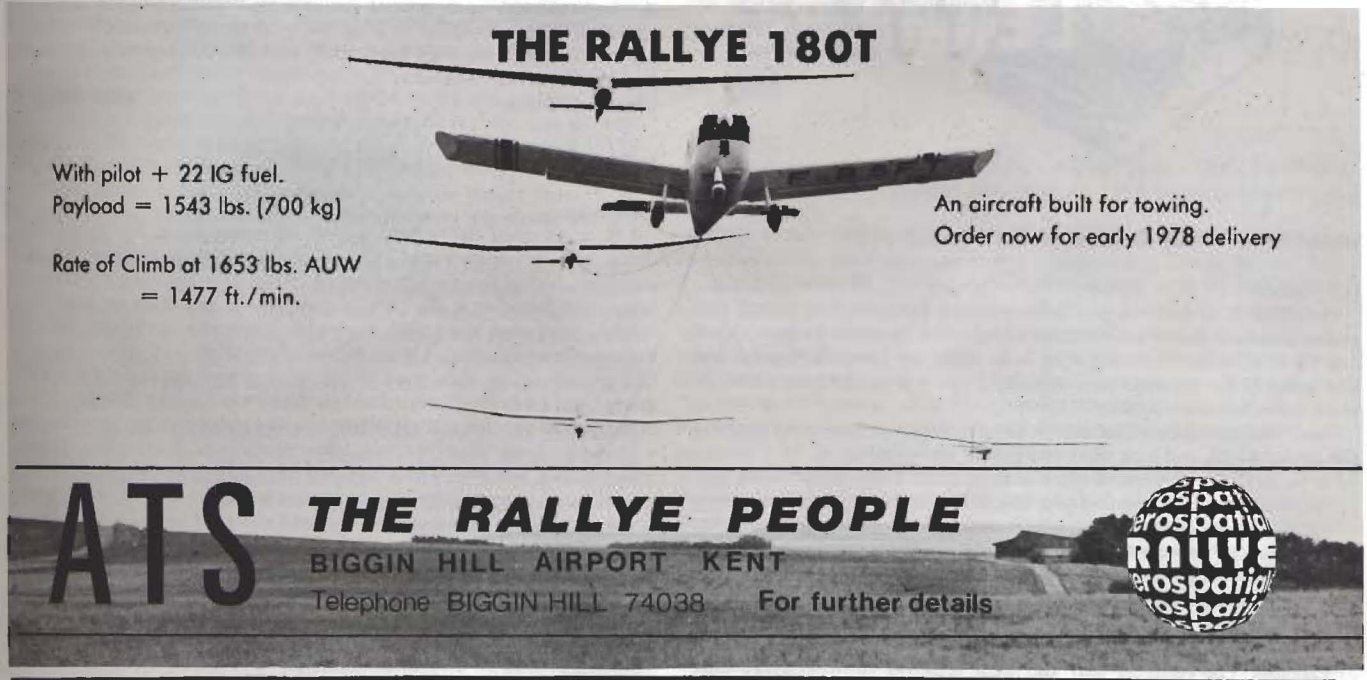
LOW-SPEED AND MOTORLESS FLIGHT SYMPOSIUM

The Third International Symposium of the Science and Technology of Low-Speed and Motorless Flight will be at the National Aeronautics and Space Administration Langley Research Center, Hampton, Virginia, USA, on March 29-31, 1979. Papers, to be submitted by August 1,1978, will be considered in the areas low-speed aerodynamics, including airfoil design; new materials applications and structural concepts, including aeroelastic considerations; advanced instrumentation; performance testing techniques; sailplane optimal flight path techniques; self-launching sailplanes, man-powered aircraft and ultra-light glider technology.

For further details, contact: Perry W. Hanson, NASA Langley Research Center, Mail Stop 340, Hampton, VA 23665, USA.

VINTAGE INTERNATIONAL

Aviasport announces that the 6th International Vintage Glider Rally will be held at Brienne-le-Chateau, France, from July 8 to 16.



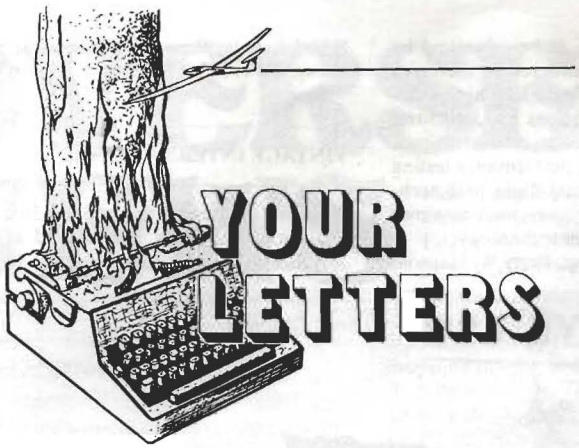
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WHAT'S SO WRONG WITH TODAY'S GLIDERS?

Dear Editor,

The columns of S&G carry a fairly constant percentage of moans and groans about the line of development being taken by glider design today. I find the modern machine such a joy to fly that I am forced to wonder just how many of the groaners have actually flown a glass machine at all, let alone flown one cross-country.

Cost? Yes, a modern glider costs a lot of money, but so does everything else in this world, and look what you get for the money:

1) A modest investment. Unlike a motor car your glider does not depreciate from the instant you buy it. It's value just escalates away steadily, more or less in step with general inflation. So, you can even buy it on an unsecured loan and the escalation in numerical pounds will just about cover the interest charges.
2) A low maintenance vehicle. If you are used to the annual inspection effort required on a wooden bird you will be very pleasantly surprised by the minimal work-load of a GRP inspection.
3) Comfort. The reclining seat and light sensitive controls make long flights a genuine pleasure instead of a tiring chore. I find that I now regard any flight of less than three hours as a bit of a failure and five hours as about the norm.
4) Performance. This aspect seems to be the one most misrepresented. The modern (competition) glider is not a fierce racing car – it is a Rolls-Royce in which you sit back in comfort and silence with the whole spectrum of performance available at a finger light touch. And don't think that the performance is only there on strong days – it is my contention that the advantage over the Wooden Wafter is equally evident on the weak days. Have you never had the experience of working your heart out in an Oly in very weak conditions, being joined by a glass bird which has sniffed at your thermal and then snooped off a mile or so, searching, searching? Suddenly you are aware that he is climbing above you; his performance gave him the ability to go and have a look around with little height loss; your performance means "miss one thermal and you hit the ground". This performance also releases you at last from the eternal circling – you find that you can fly for considerable distances without turning, just weaving along seeking the areas of reduced sink or weak lift.

And what's so wrong with today's competitions? The Regionals are all run on handicap, and the present system nearly always puts a wooden glider or two near the top, so it can't be far off, particularly when you remember that most of the more experienced pilots fly glass anyway. Personally, I enjoy a competition as a holiday, doing what I like best, amongst people who like the same thing.

At first sight I am attracted to the idea put forward by Fred Weinholtz (S&G April, p57) of pilot selected tasks, however the scoring system needs careful thought. But, after all, if there was so much wrong with the present competition scene, club task weeks would be swamped with entries and the Nationals would be under-subscribed – and I don't think that is the situation at all!

There is, however, undoubtedly a gap which is not being filled in some clubs. In my own case this gap was due to lack of a suitable soaring club machine, and lack of opportunity to fly the machine that was available when conditions were soarable (because someone else had gone off in it!). I was saved from stagnation, and possibly disillusion, by a fortuitous job change which placed me within reach of clubs with machines in the K-6 to Phoebus range – a giant step up from the Swallow. Having flown Phoebus, I made the decision that I **had** to become a member of a glass syndicate, a decision I have no cause to regret.

Does the above hold the key to the problem? Is the missing link the cheap soaring machine (Swallow performance) owned by clubs in such numbers that **everyone** can get some soaring on a good day?

At first sight it would appear so, but it is vital that it has absolute minimum (approaching zero) maintenance requirements otherwise the voluntary manpower resources of the club will be swamped by the extra number of machines requiring attention. And that first-cost spectre remains; how to design a DIY glider requiring only reasonable man-hours to complete, with such rugged features that maintenance will not be crippling, for a sum of money proportional to the performance? Perhaps it ends up looking something like a hang glider, with wing-warping control and some undercarriage other than my legs?

Thatcham, Berks. BILL MEYER

MORE THOUGHTS ON LIGHTWEIGHTS

Dear Editor,

I have schemed lightweight gliders for many years, but only settled down to a thorough exploration of their potential performance and economy during the past year spent living in a Japanese construction camp on a mud-flat at the edge of a desert – a fine place for thinking if terrible for communication. So my first reaction on seeing Richard Fortescue's article "Very Light Gliders" (S&G, February, p2) was "now to hear something about the State of the Art, and what the rest of the world is doing"; but I was disappointed to find that it was another "If only . . ." sort of thing, with very limited expectations and a viewpoint that seemed to me a long way back down the trail. His examples of lightweights, Hippie, which sounds like a kind of congealed hang glider, and Pegasus, which I remember as a miniature GB which no pilot bigger than Harald Penrose could get into – it was a one-off also and scrapped soon after the war as unrestorable – were hardly inspiring. The brilliant Baynes designs, Scuds 2 and 3, still outclimbing most other types after 40yrs, although not so small, would have made a better starting point.

The trouble is, Richard seems to have got a "second-class" complex, so that he visualises separate specialised Associations, badges and all, fluttering around on their own exclusive sites – and no doubt taking cover when the shadow of a BGA registered hawk passed over. I feel that such fragmentation would be pointless and harmful, not least to the "wee free" VLGs; and a rigid machine however small must surely meet the same airworthiness and operating standards as do all other gliders, and the VLG or K-8 groups could do that under the umbrella of the BGA, or take their chance alone with the Air Navigation Order and the CAA. Remembering the anxious days of the late forties, I think it would be a miracle if they established as good a position as the BGA did then, and has held onto by determined effort ever since. No, I believe that lightweights should develop within the framework of the BGA, as a new Class, with its own meets and competitions, and records if you like, different but not inferior to the existing standards; after all, with a few years growth, we might be referring to "normal gliders" and "very heavy gliders".

My analysis of the complete spectrum of glider performance, expressed in general terms of loadings, speeds, etc, and including points for all existing types for which I have data, convinces me that there is a wide band in which lightweights could perform to good effect. Until now this region has been almost completely unexplored, and we do not know its limits or where any optimum design point may lie; in my opinion, to impose Class restrictions or a one-design policy at too early a stage could inhibit development without any real cost benefit. Low cost is assured by low material content, and my aim is an empty weight of around 45kg, a fifth or sixth of most 15m racers, and a quarter of a K-8. It does not require primitive design, such as open primaries, and is most likely to result from the same sort of sound design and practical development that will provide the best performance and operating features of which the Class is capable.

Paradoxically, a very cheap basic airframe would leave buyers with more money to spare for refinement of equipment and finish, so there is no need for any "second-class" image to go with the type. Nor need this apply to performance, either, if one applies the kind of thinking expressed by Chris Riddell in "Horses for Courses" in the same issue of S&G (p20). My aim is a machine that will thermal comfortably at 100ft radius; outclimb any heavyweight racer in British conditions, at least; that is warm, comfortable and controllable at any altitude; will reach the top of the highest wave or cu-nim and with a glide ratio of 25:1, I would reckon to reach the coastline in any usual direction. And that is only one way of doing it – did someone say "compromise", more like a radical alternative.

Basrah, Iraq PETER RIVERS

A GLIDER IN THE GARAGE

Dear Editor,

The need for a cheap light glider (LG) has been amply proven by the recent letters to S&G, yet the concept remains rather nebulous. The remedy is to define our needs – not in terms of performance but by what is practicable for the majority.

Clearly cheaper commercial sailplanes could be produced but only home-building from kits or plans will cut costs dramatically. Factory-built LGs will of course be preferred by some but it seems inevitable that the majority of light gliders will be home-built. To build a 15m sailplane such as a K-8, however, one requires a workshop at least 8m (26ft) long. In most parts of the country it is a sad fact that such places are either virtually non-existent or exorbitantly expensive. This problem has certainly inhibited the development of home-built gliders in the past and could well kill off an LG movement before it starts. It is time we realised that the only workshop readily available to the majority of people is the standard 16x8ft garage. This is surely fundamental to the light glider concept and provides the limiting design factor as no component may be longer than 15.5ft. Creating a design within this limit poses no great problems but the advantages are considerable.

Workshop. No rent, no fears of being evicted with a half finished glider. Easily heated, no wasted travelling time, close enough to work on every night, no security problems. A workshop always available for repairs, Cs of A (and the next one). The glider must be economical on materials, be able to circle in the smallest thermals and light for rigging and derigging. The trailer, only 16ft long, can also be built in the garage for a modest sum and be towed by a Mini.

Based on the above philosophy, it should be possible to produce a simple home-built in the LD 15-22 bracket for £1000-1500 (at a guess) complete with trailer. If you must have more performance then the extra expense and complication of a three-piece must be accepted in order to achieve greater wingspan and aspect ratio. Personally I find the challenge of developing 7-8m span sailplanes a far more exciting prospect.

The question of a one-design Class seems to keep cropping up – it certainly has economic and organisational advantages but may tend to stifle the development which LGs definitely need. The freedom to "do your own thing" is a valuable part of any home-building movement and leads directly to the creation of innovative prototypes. As competitions seem inevitable I would suggest a compromise; LG competitions could be open to any machine which fell within the definition of the term – whilst those building the same designs could get together to arrange the bulk buying of materials. Whether or not this scheme is adopted, a definition of what constitutes a light glider will be needed eventually and I offer the following as a basis for discussion:

1. Any glider, sailplane or self-launching motor glider other than Rogallo-type parawings.
2. Be capable of being built in a standard 16x8ft garage.
3. Have no component longer than 15ft 6in.
4. Have a wingspan less than 10, 11 or 12m (it's up to you).
5. Not exceed an empty weight of 300lbs.
6. If equipped with flaps, retractable undercarriage or waterballast, it shall not be permitted to use these features in LG competitions.

I think that there is plenty of scope for all our ideas within such a loose specification and the table below indicates what is possible with machines in this category. However when considering performance figures we should remember the many cross-countries and hours of local soaring provided by types such as the Grunau Baby and Olympia. Even an L/D of 17 beats sitting on the ground with an L/D of zero.

	Scud 1	H-17	Horten X	Lo-100	Moore Gypsy
Span (m)	7.72	9.96	7.5	10	12
Wing area (m^2)	7.9	9.47	11.2	10.9	8.36
Aspect ratio	7.5	10.5	5	10.9	17.15
Wing Loading (kg/m^2)	14.54	21.6	10	24	28.2
Empty weight (kg)	46.7	100	37	100	124.7
AUW (kg)	115	210	112	240	237
Min sink (m/sec)	0.98	0.98	1.0	0.78	0.68
L/D ratio (best)	15	18	18	25	31

The obvious next step would seem to be the creation of a light sailplane association to promote development of such types, and whilst independence is certainly desirable, I feel that this is possible within the BGA as the success of the Vintage Glider Club has shown.

I am sure this point will be hotly debated but the big problem is one of communication. The many people who have been working in isolation on light glider designs need to be made aware of each other's ideas and activities *via* a newsletter. Such a publication could also carry articles on construction, aerodynamics, structures and materials; there is a vast body of relevant information scattered about that requires bringing together, to say nothing of the practical experience gained in the design of rigid hang gliders. If this information becomes generally available, well then, there are, no more excuses, it's up to you . . . but as inspiration here is a piece of news which has not reached most British glider pilots. In 1977, George Worthington flew a Mitchell Wing (a rigid tailless hang glider of approx 10m span) a distance of 107 miles.

Warwick PAUL WILLIAMS

DIY TUGS

Dear Editor,

In response to D. J. Clark's letter in the last issue ("Why Don't We Build Our Own Tugs?", p88) my comments are not going to be inspiring or encouraging!

Great Britain has become one of the most aeronautically illiterate countries across the whole spectrum of aeronautics, except for our half share in SST (with the French) and world leadership with the RB211! The lighter the aircraft, the less we have to offer! Any talent that may lie dormant and which should have the opportunity, time and facilities, to rectify this deplorable situation, must come from the dozen or more universities, colleges or polytechnics which continue to churn out "aeronautical engineers". The BGA has not the time to devote to this task, managing, as it does, a very large private airworthiness system with one part-time staff member dealing with this section!

The Royal Aeronautical Society and the PFA are both launching design promotional activities this year. My contribution as a member of the RAe Soc's Light Aeroplane Group has been to focus attention on the absolute necessity to concentrate any talent and resources that may be stirred out of somnambulance onto a MRCA (multi-role Club aircraft), fulfilling the roles of training, towing and touring (two seats).

The Practavia Sprite and Roy Procter's Kittiwake are both available, but there is negligible evidence that energy will be devoted to DIY'ing them into tugs. In the meanwhile the BGA will be wholly preoccupied developing resources, modifications and maintenance philosophies to prolong the existence of the fleet of 90-odd geriatric tugs still remaining intact!

R. B. STRATTON
BGA Chief Technical Officer

MORE ON BUILDING OUR OWN TUGS

Dear Editor,

I support Mr. D. J. Clarke's suggestion. He puts his finger on the point when he asks "Why don't we build our own tugs?" His specification seems to me to be very similar to the Mitchell/Procter Kittiwake of the 1960s and which was built by gliding people in their spare time. I flew this aircraft in July 1967, and I thought it a very practical and effective aeroplane. It has been used for many years at Lasham as a tug, and this says much for the quality of the product and its state of development.

With the interest in home-built aircraft in this country, and the accelerating costs of the manufactured product, home-building our own tugs is both a reality and a necessity. Can we have sets of plans made available of the Kittiwake 1 as a starter?

Wetherby, Yorks. J. C. RIDDELL

NEWS OF KITTIWAKE AND PETREL

Dear Editor,

I read with some interest (and a little wry smile) the letter from D. J. Clark. He may be amazed to know that someone has done what he advocates. Drawings are available for an aircraft that virtually exactly meets his specification. It has been built, flown and certificated – all in the UK! It is called Kittiwake and the prototype lives at Lasham and tows regularly as our privately owned reserve tug. A second example was built by the Royal Navy apprentices and is believed to be still flying.

The real problem with enterprises of this sort is that what is required is a production and financing competition, rather than a design competition. For more details of this aspect of this activity I would refer Mr Clark to the paper "How we done it" given to the Royal Aeronautical Society last

year and published by them in the December 1977 issue of *Aerospace*. Since then a local engineering firm has acquired a controlling investment in Procter Aircraft Associates and is hoping to be able to make parts available. A certain amount of tooling and templates for pressed parts are in existence - even a mould for a splendid bubble canopy!

A two-seater (called Petrel) has also been developed for towing duties for those who prefer a two-seater. One of these is virtually complete and should fly shortly. So, Mr Clark, if you like to contact Procter Aircraft Associates, c/o Kinetrol Ltd, The Trading Estate, Farnham, Surrey, you can start building your own tug right away!

Camberley, Surrey ROY G. PROCTER

NOTAMS AND AIRSPACE

Dear Editor,

Whilst I might agree with the Chairman of NATMAC that the spurning of NOTAMS at £7.50pa may appear penny-pinching, I should hesitate to express my total condemnation of the club concerned without knowing how the saving was ultimately utilised. If, for example, it turned out that this money was used in the development of a handy micro-library that enabled us to refer to the latest NOTAMS whilst in flight, the accusation would be misplaced. It is my experience that although the amount of information directed for my attention prior to take-off is steadily increasing, the time that I have available for its digestion remains constant, and being a simple minded chap I can think of only one way that NATMAC might be able to help me with this problem.

Of course none of us, I am sure, wishes to break the law, either through ignorance or otherwise, but when it comes to transgressing the continually fluctuating boundaries of controlled and prohibited airspace I wonder if the law is being altogether reasonable. For if we look at what is considered reasonable when authorities seek to deny the public access to other portions of Her Majesty's Realm, then I think that both the amount and extent of notice required and the procedure for appeals as applied to airspace, leave much to be desired.

Ilford, Essex CHARLES ELLIS

COMMENTS ON THE APRIL ISSUE

Dear Editor,

Congratulations on the well-produced variety you served us all in the April/May S&G, which was quite the best issue seen in recent years. Please endeavour to keep the variety high over the summer and autumn issues without an excessive inbalance towards competition reports.

Fred Weinholtz's thoughts on new contest philosophy (p57) were a most valuable contribution and the best proposal yet on how the undesirable way in which competition flying has developed in recent years might be changed to produce more varied aircraft and better rounded pilots. Similarly, news of the proposed Trans-European tour (p67) from William Malpas promises a diverting change from the hell-for-leather fixed-triangle routine.

There was an interesting giveaway in Chris Simpson's account of Championship flying in South Africa (p60) which if, as I suspect, it reflects the attitudes of his hosts, goes a long way to explaining why South African sportsmen and women are not universally welcomed and why South African participation will cost both the British and Irish teams at Chateauroux substantial sums in lost Sports Council grants. Chris writes that after an outlanding his crew chief "had to round up all the local boys to carry the parts from the fields".

Dare one suggest that he means the indigenous **men**?

Belfast BOB RODWELL

MEMORIES OF JOAN PRICE

Dear Editor,

I was interested - and saddened - to read in your February issue (p33) of the death of Mrs Joan Price. When Sir Alan Cobham's flying circus visited the Exeter district before the war, the then Devon GC (of which I was the youngest member) was asked to put on a demonstration of primary glider training which would then be followed by Joan Meakin's demonstration in her Rhönbussard.

I remember we hired a furniture van to transport our Dickson primary glider from our site near Exmouth. We built the Dickson ourselves, in the printing works of the local paper.



A photograph of that day with Joan talking to the Dickson pilot, Maurice Morey, who is still living in Exmouth. Charles W. A. Scott, the England/Australia air race winner, is on the left and Sam Tolman, Secretary of the Devon GC and later President of the Devon & Somerset GC, who died three years ago, on the far right.

On the day we were made very welcome by Joan (billed as "The Glider Girl") and gave a demonstration of bungey launching. Her Rhönbussard was the first sailplane we had seen and we drooled over it for most of the day. I never met Joan again but you can imagine the impression she made on a teenager who was learning to fly a Primary.

Winkleigh, Devon LES PYM

SPEED INCREASE IN A DIVE

Dear Editor,

I once listened to the CFI of my club briefing a pilot to fly his new high-performance glider (Foka 5) for the first time. He said: "You will notice that in a dive the speed will increase far quicker than if you were in your old Swallow." Although the CFI was correct up to a point, the difference is in fact so small it is impossible to notice.

I did some sums and worked out that it takes a Std Libelle 2.31sec and 151.6ft and an Olympia 2B 2.38sec and 156.7ft to go from 40 to 70kt in a 45° dive. The difference in times for the two gliders is only 3%. A dragless glider takes 2.24sec and 147.1ft.

A possible explanation for the illusion that certain gliders pick up speed in a dive quicker than others stems from the fact that the steepness of the dive can be deceptive in a glider like the Foka 5 where the canopy reaches right up to the nose.

The derivation of the figures quoted is too involved to print here but I will send a copy to anyone who sends me a SAE before the end of June, 1978.

43 Woburn Avenue, Farnborough, Hants. RICHARD FORREST

ABSOLUTELY THE LAST ON THE RULE MAKERS!

Dear Editor,

Dave Watt's article ("The Rule Makers", S&G December, 1977, p254) produced a predictable storm of correspondence in the last issue (p84) remarkable for its muddled thinking and lack of reliance on fact. For example Dave Cockburn quotes Dave as saying he has "had to enforce several rules I personally disagree with" over the years. The article not only does not contain that phrase, it has no reference whatsoever to Dave enforcing or neglecting to enforce rules at any time. Many other critics seem equally as concerned to argue against what they think Dave ought to have said instead of what he did say.

Let us now consider what can be said on the subject of rules in gliding. There are in fact three categories of people to be "ruled". First the gliding minor (say less than Silver C and 100hrs, an arbitrary figure I agree and one which varies from individual to individual), second the mature private owner and third the mature club pilot. Having divided pilots into this category the rules are easy. The minor must be given rules to prevent breaches of airmanship, (*eg* don't tow a glider behind a car without somebody at the nose of the glider) because he hasn't yet had time to accumulate the knowledge to work these things out for himself. He also needs rules to prevent him attempting things beyond his still developing abilities (*eg* no aerobatics below 1500ft) since he has not yet the experience to assess his own competence. In both of these cases the wise CFI or instructor makes the rules for each individual and tells him of them and any changes: a blanket set for everybody is laziness.

The mature private owner needs only those rules which prevent him being a danger to others, not himself (*eg* circle in the same direction as others in a thermal). The mature club pilot must be restrained from risking the club's property. The rules necessary for this will vary from one individual to the next, one being permitted to do low level aerobatics, another being told that further training or experience is required, while a third might be told he will probably never be that good. None of the above prevents you warning a private owner that in your view he is taking unacceptable risks (I have done this on many occasions), but he is not compelled to take your advice.

And so to the objections: you do not need to be a full time CFI to say to an early solo pilot watching some flashy flying "I will tell you when you are able to do that, and the time is not yet." Any instructor can (and should) say just that.

No, I don't think any of the above will help to reduce the accident rate. It is not meant to! It is meant to promote freedom and accidents may be part of the price.

Dave Cockburn makes the point that every accident puts up our insurance premiums - probably true but I take the opposite view and say **the convenience of the majority cannot be allowed to interfere with the freedom of the individual.** This sentiment sums up my views on the matter and it is only left for me to confess that I am the CFI who has recently invited Dave Watt to become a deputy CFI of my club.

Marlow, Bucks CHRIS ROLLINGS

A MISLEADING AND CONFUSING SUGGESTION

Dear Editor,

I am surprised that no instructor has written in to comment about the article "Keeping the String Straight?" (S&G, February, p18). Nothing could be more misleading and confusing to beginners than the suggestion that for an accurate turn in any type of glider the rudder needs to be applied against the direction of the turn. This is simply not true, whether we fly a T-21B or a Nimbus or Kestrel 22. In all cases it is normal to require a small, into the turn deflection of the rudder while controlling the tendency to over bank with some opposite aileron.

For the power pilot converting to gliders, these deflections seem unnatural, since they are associated with the undesirability of flying with "crossed" controls. The large span and low flying speed makes these control positions necessary for accurate turns in gliders, whereas they are a sign of over ruddering in the case of faster powered aircraft. Readers have only to take a launch and confirm that for a steady accurate turn, a small amount of rudder will be required *in the direction* of the turn and not against it.

Lasham, Hants. DEREK PIGGOTT

HORSES FOR COURSES

Dear Editor,

Chris Riddell tells us in his article ("Horses for Courses", S&G, February, p20) that Dr Eppler is wrong, but to what extent do Chris's conclusions depend on his assumptions about the radius of thermals?

Before Dr Eppler does something desperate, perhaps Chris should have his computer do the sums again, using modern ideas about thermal radii. As long ago as 1974 you published the results of flight tests by Reading University, giving an average radius close to 1000ft for a sample of 588 thermals in average British soaring conditions. That is the figure used in the BGA glider handicapping scheme, not the outdated 600ft radius on which Chris's theories appear to depend.

Oxford MICHAEL RANDLE

A KIND OFFER FROM AUSTRALIA

Dear Editor,

Many years ago my mother gave me a subscription to S&G for my birthday and for as many years I have been going to write and say how much I enjoy your publication. I belong to a large gliding club in the south of Western Australia and my copy of S&G quite often does the rounds of the clubhouse - the comments from the members would make you well proud of your interesting and enjoyable magazine.

We, down under, may enjoy really strong thermal conditions for longer periods of the year than do our cousins in UK and Europe, but we have much to learn when it comes to weak conditions. We never cease to marvel at lengths of some of your tasks in conditions which would be termed "good for training circuits only" out here. Happily, we have had a steady stream of visitors from your parts and we certainly hope that this will continue. B. J. "Tug" Wilson is a member of our club. Some of your members may remember that "Tug" and his partner owned a Blanik in which they knocked off many UK two-seater records. "Tug" is a pilot with Cathay Pacific and flies with us when he can get a flight terminating in Perth.

I would like it to be known that anyone visiting West Australia is very welcome to fly with us. Contact me on arrival in Perth (44 Arkwell Street, Willagee, 6156, tel 3374104) and I can arrange for visits to the club of their choice. Our fleet at Narrogin GC consists of Twin Astir, Blanik, Club Libelle, Pilatus and two Auster tugs.

DENNIS A. GORTON

FIELD LANDINGS MNEMONIC

Dear Editor,

Bill Scull's Accident Review concentrating on field landings (S&G, December 1977, p264) prompts me to suggest a simple mnemonic for field landings. Assuming that we can pick fields which are large enough to land in and we can land more or less into wind, I suggest SOS, *ie* slope (or surface?), obstacles and stock. I feel the sentiment of this mnemonic is equal to the occasion.

Berwick Upon Tweed JOHN MARSHALL

Solar Cell Battery Charging

HUMPHRY DIMOCK

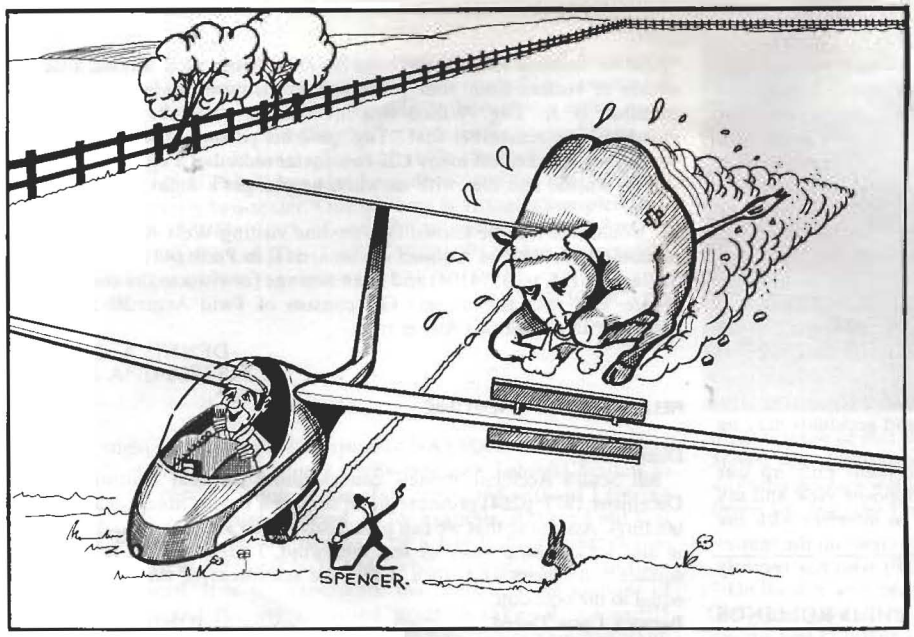
"If progress be the way of life, let's have more of it." (Apologies to Shakespeare.) Gone are the days when one need be frustrated by finding the glider battery flat when doing the DI, or worse still to find the blind flying instruments toppling in that wonderful cloud.



The photograph shows the solar cells fitted in my Mosquito. I use a 14v "Dry Fit" 9amp hour battery. The solar cells give 0.46amps, which is slightly more than double the RT radio consumption. It is very easy to fit and a milliameter indicates when the battery is fully charged because as the voltage rises the current falls off, therefore you need a switch to turn it off to prevent overcharging. The panel only weighs a few ounces. With a "Dry Fit" battery there is no more trouble with acid spilling. Had I known of solar cells when I bought my Mosquito I could have made use of a battery of half the capacity.

When I take delivery of my Vega I propose to have the cells re-arranged and faired in along the top of the fuselage. The panel lies flat along the line of eyesight and does not interfere with vision at all. This is confirmed by several pilots of my Royal Naval Club who have flown it, including one who has only one eye.

The cost of the installation is only a small proportion of the total cost of the glider, but oh what a comforting and extra joy while flying.



"Uneventful landing – just one cow in the field!" By Mike Spencer

CLUB NEWS

Copy and photographs for the August-September issue should be sent to the Editor, S&G, 281 Queen Edith's Way, Cambridge CB1 4NH, tel Cambridge 47725, to arrive not later than June 13 and for the October-November issue to arrive not later than August 15.

April 14, 1978

GILLIAN BRYCE-SMITH

AQUILA

This seems to be a year of change – we welcome Ken Jarman as our new CFI, a new clubhouse has appeared and during the winter new syndicates have formed. With help from the Sports Council, we have added an Auster tug to our fleet. However, we do need more tug pilots. If that role fits you, please contact Ken on Brackley 702384.

Facilities have now overtaken our club size and we are able to offer our excellent facilities as an incentive to encourage new members. All will be welcome from *ab-initio* to instructors. Syndicates in particular will find our under used facilities a welcome break from the long wait for a launch experienced at larger clubs.

M.F.L.

BATH & WILTSHIRE

By May we will have been flying for 15yrs. Our start was very modest with a T-31 and a very elderly Grunau bought with borrowed money. Since then, in spite of our rather tenuous hold on the airfield, we have flourished and there are now 24 aircraft (including tugs) flying from the field at weekends. Our members have become more competition minded in recent years and this season Andrew Davis (Nimbus 15) and Chris Rowland (Std Cirrus) will be in the Nationals for the second time.

The latest aircraft to join the private owners' fleet is a syndicate Twin Astir housed in a vast and beautiful trailer on which Jim and Anita Kettlety have lavished months of flying weekends.

Our thanks to Marjorie and Brian Selmes. Marjorie, our superbly efficient Secretary, and Brian, our CFI for the last two years, are both retiring for a well-earned rest at the end of April. Richard Grundy is the new Secretary and Ron Lynch will be CFI for the third time.

J.L.

BORDERS

Our club height record has been broken. Four Counties GC visited us again in March and Andy Penswick borrowed an Oly 460 and was launched to 1700ft. He contacted wave at an average of 2½kt and climbed to 20000ft. The owner of the 460 was last seen crying quietly behind the new hangar.

B.R.F.

BRISTOL & GLOUCESTERSHIRE

Agreement has been reached with the Motor Falke syndicate so that club and course members now have the use of a motor glider. The club fleet is at full strength, apart from the usual C of A work under the supervision of "Chalky" White. It looks as though some panel beating may be required on our Blanik – tin gliders don't seem to like Nympsfield bumps!

The bar is being completely revitalised with a large selection of beers and a new decor. With a new bunkhouse and toilet block also under construction, the club is more like a builders' yard than ever.

Flying has bucked up after a rather unexciting winter. We have had many good ridge and thermal days but, as yet, no wave. Even the annual treks to Portmoak failed to produce wave.

Our annual djnner-dance was a great success and we are now looking forward to our open day on April 30. Preliminary figures from David Barker, our Treasurer, show a healthy financial position and our AGM on May 6 should be a cheerier affair than we have been used to over the last year or two.

R.A.R.

CORNISH

We recently had a successful weekend's gliding at Land's End airport with both thermal and ridge flying plus aerotow practice and experience. Our CFI, John Turner, is now planning an experimental weekend of flying from a field near Bodmin.

A privately owned K-6CR has joined the fleet and is the first syndicate machine for six years. Mike Alken has returned to us from Australia with stories of successful flying, making us feel very sick!

Congratulations to one of our instructors and CFI for many years, George Collins, who has received a BGA Diploma (see S&G, April, p78).

Pete Arthur has finished the C of A on our K-13 and we have at last got the canopy back on the Blanik after several months of extremely cold, windy flying. The Italian evening went very well and our thanks to the organisers, Clive and Jackie Stainer.

A.L.J.

DEVON & SOMERSET

The spring expedition to Portmoak ("Oh Blessed Bishop's") yielded a crop of Gold and Silver legs: Steve Barber (Gold height and duration); Chris Miller and Dave Minson (Gold height); Simon Minson, Mike Heath and Mel Pitts (Silver height and duration) and duration for Kevin Jenkins.

Back home, Ian King gained his second Bronze leg with a flight of over an hour and Gordon Peters put up a good show at the Yeovilton task week, completing a 100km out-and-return. He then attempted to fly back to the TP for Silver distance, but unfortunately landed short.

We had several days' flying as part of the "Sport for All" campaign with members of the North Devon Leisure Centre, which was enjoyed by us all. A number of Scouts have also visited North Hill.

There have been some excellent alterations to the bar and our thanks to Peter Cooper for fitting the clubhouse radio so neatly.

M.G.P.

DONCASTER & DISTRICT

Our future in the short term seems a little more secure than of late. The local council, our landlords, are about to offer us a further lease which we hope will be for three years.

With the Falke back after engine problems, our training programme is running faster than our intake of *ab-initios*, so we are campaigning for more members. Amongst the newly solo are Martin Knight, Ted Riley and Bob Lightfoot.

Late February and March produced some

"strong" days both vertically and horizontally with exceptionally high cloudbase for so early in the year. Winch launches have frequently been reaching the 2000ft mark, even the two-seaters, which for 50p is good value.

Our number of glass syndicates grows daily and now outnumbers the wooden gliders. Our tugs are kept quite busy, the Super Cub taking the brunt, but our Sperlin, which is flapped and has the 116hp engine, is extremely economical and can tow a fully loaded Kestrel 19 provided the crosswind component isn't too severe.

J.A.S.

DUNKESWELL

Thanks to our enterprising Canadian member, David Bowsher, we were lifted out of our late-winter doldrums by the excellent dinner-dance he organised for us in March. This was announced in the second issue of the DGC News, which promises to become a regular feature under David's editorship.

Congratulations to Jeff Vosper on going solo and to Mike Bird who opened the Easter weekend with a half-hour flight on Good Friday. Nicholas Keevil-Pitt celebrated his sixth gliding anniversary and 16th birthday on Easter Saturday with his first solo, followed a fortnight later by his second with 16min soaring. Jane Keevil-Pitt was prevented from making her brother's birthday a double solo day by gusty winds but has now joined the ranks. We congratulate them both and welcome back Ian Widger who used to be a very early bird but who can now join us at more conventional hours.

A.C.P.

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SG

EAST SUSSEX

Our recent trip to Portmoak was a great success and among the most memorable flights was a Gold height by Doug Gardner and a duration by Bert Elsey (Oly 2B).

A new Super Falke, owned by Bernard Eastwell, should be an invaluable aid for navigation exercises. At last we are making final arrangements for fortnightly aerotowing which has been anticipated by members for some time.

At our AGM on March 18 our Committee was re-elected with the addition of two new members – Barry Clarke, Social Secretary, and Stewart Foster, Treasurer. The cups were presented, two being awarded to Doug Gardner and Bert Elsey for their achievements at Portmoak and a third to Doug for a cross-country flight.

D.E.C.

ENSTONE

The poor weather has given members time for hangar building and the frame is now erected and the sheeting progressing nicely. Our tug will be back in service any day and we hope to start mid-week and occasional evening flying during the summer.

Our task week, again organised by John Halford, will be over the Whitsun holiday week.

M.W.

HIGHLAND

This has been a busy spring for the Highland Gliding Club, in spite of the shocking weather earlier on. Whilst the pundits were busy plotting their 300km triangles, Mike Foreman and Martin Knight, on successive days, flew Silver distance to complete their Silver Cs.

The thermal season opened auspiciously at Easter with a record number of launches (73) in one day, and on another day, a record number of hours soaring (17½). Aberdeen University brought their Bocian for their annual week of winch launching over Easter, and converted a record number of pilots to our single-seater.

The K-6CR, back from its C of A, is now a dazzling yellow and the Oly 2B at last has a new coat of fabric.

There were big Committee changes at the AGM in March when Chairman, Hendry Dyce, and Treasurer, Bill Hill, resigned after eight hard working years. In recognition of their services, we gave Bill and his wife Margaret honorary life memberships and, in Hendry's name, we presented a silver trophy to be awarded annually to the pilot who is top of the Club Ladder. Our new Chairman is John Lambert with Sheena Armstrong as Treasurer.

The trophies for 1977 were awarded at a very successful dinner-dance in March. The CFI's trophy went to Mike Flaherty; the Alasdair Raffan trophy to George Hobben, the Tait Altitude trophy to Jeff Howlett and the Hendry Dyce Club Ladder trophy to Martin Knight.

R.E.T.

KENT

We were saddened by the sudden death of John Dickins while on holiday in Spain over Easter. John started gliding at Dunstable in the 1950s before moving to Central Africa, USA and Australia, returning to England in 1972. After joining us that year, John became one of our leading instructors and bore the brunt of the Wednesday club flying until forced to give instructing up due to illness late in 1976. We shall miss John's cheerful presence and extend our sympathy to his wife, Gerd, and their two young children.

After a two year gap the club is holding a task week at the end of July. We may be able to take one or two visitors from neighbouring clubs but anyone interested should first contact Roy Hubble, our CFI.

Spring has produced a crop of solos. The ladies have shown the way with Rhona Whittingham soloing in March and Rachel White on

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April 9, just two days after her 16th birthday – her father, Bill, accomplished the same feat a week earlier.

D.H.

LONDON

Our wave week at Shobdon at the end of February consisted of the usual exciting flights, if not all in wave then in good soaring conditions, and Peter Milner got his Silver distance.

Tony Southard completed his Silver in March with a duration and Bill Christey gained his Silver with a 153km flight to Little Snoring, claiming his height on the way. Colin Cruse also got his distance going to Abingdon.

Our Easter Comp was as usual well subscribed with a good battle fought between Simon Carr (Cirrus) and Francis Russell (Kestrel 19) to lead the High Handicapped Class. After the first day's race only one point divided them but Francis was finally the overall winner. Geoff Copping and Phil Cook had a team entry in their K-6CR and both flew well to win the Lower Handicapped Class.

Everyone certainly made a great effort and nearly all had rewarding flights, although the persistent 30-45kt winds didn't help. However, Richard Brown nursed his Weihe round a 73km out-and-return in 3¼hrs.

At our annual dinner-dance in the clubhouse the cups were presented to Len Cross (best flight in a club glider); Eric Smith (longest Silver C flight); John Cardiff (longest out-and-return and longest flight of the year) and to John Jeffries and Adrian Coobes (best flight in a two-seater) – 340km triangle in a K-13. Bob Drewel was given the best constructional effort award and Dick Cooper a cup for his services to the club.

D.Y.

MIDLAND

Congratulations to Steve Allsop and Dave Woolf who successfully completed their assistant instructors' course, to Nigel Holmes on gaining Bronze C and to Chris Alldis on reaching 11500asl in his Dart 17R. Wedding congratulations to Pete Orchard and Modwena Littleton, Keith Bull and Christine Holt and Mike Batkin and Sue Humphries.

Our annual dinner-dance and trophy presentation was successful with awards being won by Malcolm Allan, Steve Allsop, Don Brown, Robin Bull, Pete Orchard, Jim Parkes, Ken Payne, Bob Scarborough and Warwick Swancott. A special presentation was made to Ernie Ainscough, our retired CFI.

Happily more private owners are using our facilities mid-week due to the favourable terms now offered. We were pleased to host groups of Coventry GC members and welcomed the use of their tug.

Graham has reorganised our catering with the help of Bev, Claire, Doreen, Norah and Ruth. Thanks for the improvement.

Pete Salisbury and Brian Trowe, our professional winch drivers working during courses and at weekends, have improved launch rate and aircraft utilisation considerably.

Sadly, on March 19, we had a serious accident which resulted in the death of Dave Willett, an *ab-initio* (see p130). We wish to extend our deepest sympathy to Glenda, his wife.

S.H.

NORFOLK

In recent years we have changed our policy in regard to open days for fund-raising and recruiting. Air shows proved to be high-risk ventures, so we have chosen to have a spring event to help the funds, followed by a recruiting drive during "Sport for All Week" in the summer. On Easter Sunday and Monday we held two open days at Robin Combes' fish farm,

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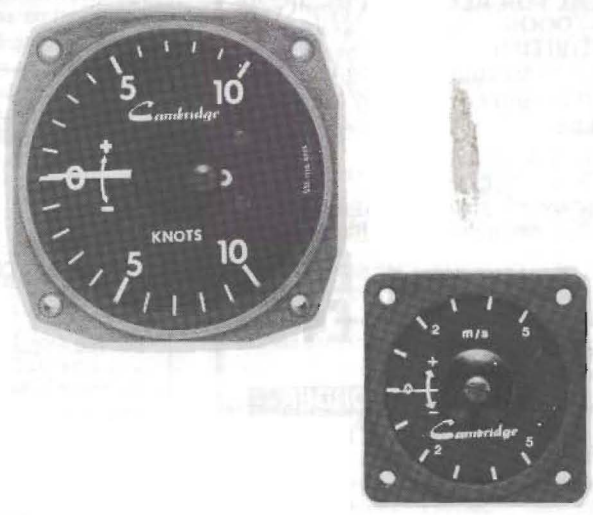
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with static gliders on display and raised several hundred pounds.



At the fish farm.

We now have more than a dozen syndicate gliders, the latest addition being an Astir CS. Our trailers are well organised with a row of picket points along one side of the hangar.

To add to the award for the year's youngest solo pilot, we now have one for the oldest, a cup, turned by Doc Souper from an old propeller boss. Last year the age range between the two was over 30yrs.

As a token of continuing interest in the club, we recently received a second generous donation from our most famous honorary member, James Stewart.

C.E.H.

NORTHUMBRIA

Our club fleet is sadly depleted. The Swallow was badly damaged recently after a launch failure. The pilot suffered a cracked vertebra, the Swallow a broken fuselage. The IS-28 is still awaiting parts to modify and strengthen the undercarriage frame which collapsed. We hope both aircraft and the Swallow pilot will be flying again by the time these notes appear.

We had thermal soaring in early March, which is unusual in our northern climate, and wave to over 15000ft. In February the club Blanik climbed to 9000ft during a flight of 37min.

With the generous help of voluntary instructors, we intend running a three month course season this summer at very competitive prices for the public and club members.

A.T.

OUSE

Congratulations to Mark Thompson who went solo on his 16th birthday. We are now able to fly our tug from the airfield which has renewed the enthusiasm of our soaring pilots.

The club is selling the Swallow and has bought a K-6cR. The Capstan is back from its C of A looking very different in new colours of cream and crimson.

The now annual trip to Portmoak was well attended and five members, Geoff Harris, John Taylor, David Bullock, Brian McDonnell and Tom Stoker, achieved their five hours.

J.G.

ROYAL AIRCRAFT ESTABLISHMENT

Our membership stays static at around 80 but the number of seats available has risen dramatically over the last year. Our club fleet consists of K-7, K-13, K-8 and Pirat with another K-8 on order. In our syndicate fleet we have a Skylark 2, Skylark 4, Pirat, SHK and a Kestrel 19. We launch by autotow and still use ½-ton Parafil. The Parafil has proved very reliable if well looked after, the occasional aborted launch usually due to the cable pulling out of a joint fitting rather than an actual cable break.

For our present healthy position we are indebted to the Chilterns GC for inviting us to operate with them throughout the majority of 1974 while Farnborough's runways were being resurfaced. In fact the Chilterns still display great hospitality by putting up with our invasions every August for our summer camp. Our thanks also to Oxford GC for the occasional winch launch and their excellent barbeques.

But when are the Chilterns going to fly the undesirable perishing plastic potty back? It's been stuck behind their bar for the last couple of years. We promise that we won't keep it long.

M.J.W.

SCOTTISH GLIDING UNION

The new bar, opened in early March, is a resounding success and the kitchen and bedrooms are now being modernised.

A K-13 has been added to the fleet and a major drive is underway to increase cross-country efforts this year.

Bob McLean has left and the workshop is in the capable hands of Bert Jarvis, to whom all queries should be addressed.

R.H.

SOUTH WALES

We are at last on mains electricity, thanks to Peter Trivett and Andrew Sparkes-David. Anybody want a 230v diesel?

The rains finally relented and allowed flying to start for Easter, Ivor Shattock found the 15000ft stuff on Easter Monday whilst most others were content with 8kt thermals. Lyn Ballard has produced another strange unpronounceable machine in an equally unfamiliar trailer which we hope will show its paces in the July mountain soaring week.

Yet another K-6E has arrived to be flown by the Glamorgan Flying Group who operate with us and eat most of the exceilent food provided by the new volunteers, Sue White and Joice Storey.

I.H.S.

STRATFORD ON AVON

Our AGM was very well attended in March and we have three new Committee members, Peter Candy, Geoff Grainger and Gerald Kelly. We thank Don Hale and Mary Neal for their services during the past three years.

Several syndicate changes have taken place during the dormant season and Phil Hunt's Astir is now on site. The clubhouse is under construction, complete with full flushing amenities, and should be ready for May/June. Andy Coffee and his team welcome any assistance in



any capacity. Rather belatedly we congratulate Yvonne Oldham and Humphrey Yorke on their wedding, wishing them every happiness.

H.G.W.

ULSTER

Our long-desired move to Bellarena, in the NW of the province, happened over a wild and virtually unflyable Easter weekend. Dublin GC visitor Cecily Begley recorded the season's first soaring from the new site the following weekend when she contacted weak Sperrins-generated wave on a grey, unpromising SE day in her syndicate Phoebus.

There's a lot of work ahead to make the site a permanent facility but the potential is enormous and the setting superb; already the spirit is reviving and we're attracting new members from the area. The first task was to dig out several tons of solidified sheep droppings, five feet deep, from the derelict cottage earmarked as the fuel store.

On the badges front, Alan Sands took the new PIK-20D to Aboyne in March to gain his Diamond height with a hard-graft, six-hour ascent to 22000ft westward from Morven.

As this was written a three-man syndicate was about to depart for Bavaria to tow home an SHK, which will be the second of the type in the club. The re-emergence of a much-improved and very elegant club Skylark 2 was due while the Twin Astir was expected to start flying in May on completion of its trailer. Much of this work was being done by Jeremy Bryson between his business commitments, fettling the PIK and brushing up his French and gamesmanship in preparation for carrying the shamrock at Chateauroux.

Ruth Hall and Mary Craig have made an excellent job of reviving the long-dead club newsletter while new Social Secretary, Hilary Holmes, was laying the groundwork for the club's annual dinner-dance on April 28.

R.R.R.

VECTIS

After 2½yrs preparation, we became airborne on January 1 to provide the first gliding on the Island since the old Solent Club at Bembridge closed some ten years ago. Under Chairman, John Galt, ex RAFVR and Thames Valley, and CFI, John Kenny, an instructor from the Cornish GC, Vectis has the gliding concession at the recently re-opened Isle of Wight airport at Sandown.

Founder members Gary Westbrooke, Gerry Jones, Alan Wade and Neil Watts, all Lasham pilots, have jobs as Treasurer, Secretary and Committee members (respectively). An additional member in an honorary capacity is Ian Creighton, formerly with the Solent Club but better known as a popular member of the Lasham training staff for many years.

With only a K-7, membership has been limited to the present number of 28, but we have been promised the use of a Bocian and hope to buy a single-seater soon. The main drawback is we are entirely dependant on the Lee on Solent Club to get us airborne. However, a Tiger Moth may soon be available.

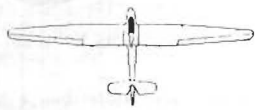
Sandown airport is worth a visit but please treat us as a PPO site if you are coming by glider to ensure that means are available to get you back home! We operate at weekends only but as the weather improves this will be extended to evenings and some weekdays by request.

G.J.

Gliderwork

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WOODSPRING

We have just emerged from another two months of waterlogged airfield, a repeat more or less of last winter's misfortunes. Happily on April 2 we

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launched most of our gliders for the season's first happy hour of thermal soaring. We look forward to visits from other clubs and especially to the first flying arrival from North Hill to reclaim the inter-club pot.

At our annual dinner-dance in March we set aside the £50 proceeds from tickets, raffle and auctions to support the BGA's World Champs appeal for the British team entry. Annual trophies were awarded as follows: President's shield for the best gain of height shared by Dave Keeley and Pete Carlyon; Chairman's trophy for best *ab-initio* progress, John Church; Martyn Griffiths bowl for furthest outlanding from Weston, Eric Lee and the Pete Griffith's shield for contributions to the club, Arthur Robinson. Special awards for contributions to club progress were made to Clive Pepper and Ray Snelling in recognition of their substantial work on club MT/winch and aircraft respectively, and to Alan Nicol, Robert House and John Winter.

We welcome the tenth aircraft to join the club flock, a syndicate owned Oly 2_B, and this season intend buying a K-8 or similar aircraft. The cash will be funded by a local authority grant of £500, in excess of £1600 members' interest free loans, with a bank loan covering the balance.

We are sad to be losing our CFI, Pete Turner, whose commercial flying duties take him to Wales. With the help of the National Coaches, we hope to have our first all "home-made" CFI, thus reaching another milestone in the club's path of progress.

J.W.

YORKSHIRE

The replacement Falke has now arrived and is in welcome use. A club member, Dick Bourne, collected it from Germany and had a bad turn when a trailer wheel fell off near Essen. Luckily there was no damage to the Falke.

A Pilatus has been added to the club fleet and there has been quite a change around among the private owners with DG-100 and 200s proving popular.

The courses started on April 10 and it snowed!

G.B.

Service News

BANNERDOWN (RAFGSA)

On April 1, with the help of many members, the MT Section at RAF Lyneham, a Chipmunk from Bicester and the assistance of the local constabulary, Bannerdown moved from its old home at Colerne (now Azimghar Barracks) to RAF Hullavington. Hullavington airfield adjoins the A429 Malmesbury/Chippenham Road, which links with the M4 at Junction 17. The club is happy to have been provided with a hangar, overnight accommodation and a small building which is ripe for conversion to a clubhouse. We hope eventually to welcome many new RAF members, based at Hullavington and Lyneham, and particularly wish to gain the support of the Lyneham Air Traffic Controllers!

Flying will not start until May, which on-the plus side enables us to settle in gradually and on the minus side means we begin the soaring season in a very rusty state. Our pilots selected for the Inter-Service Regionals in May are going to other sites for essential cross-country practice. Air Traffic restrictions will keep us to a Max height of 1500ft over Hullavington; aircraft climbing from Hullavington will have to inform Lyneham ATC on 123.4 when going above this height. (This restriction applies only to Bannerdown aircraft). RAF activity in this busy area will keep us on our toes and we ask all visitors to exercise caution.

As always in a Service club, members come and go, and we are pleased to welcome home Phil Phillips, returning from Hong Kong after two years. We are sad to lose Mick Alexander and wish him well in his new posting. Phil Phillips and Jackie Hancock are going on an instructors' course in July.

J.J.H.

FENLAND (RAFGSA)

Congratulations to Carol Whitworth on winning the Alf Warminger trophy for the best flight in Norfolk in 1977. Mick Miller gained Diamond height and Doc Bramwells, Mick Simmonds and Ian Hewitt their Gold heights at Aboyne. Sarah Langwell, Dana Negley and Rick Best have gone solo.

Thanks to hard working members our aircraft and ground equipment are in a first class condition. Geoff Matthews has been posted and is taking Helen Hickling with him – congratulations on their engagement.

Visitors to Marham are welcome at weekends but check in on 130.1 first to make sure the airfield isn't active with RAF flying.

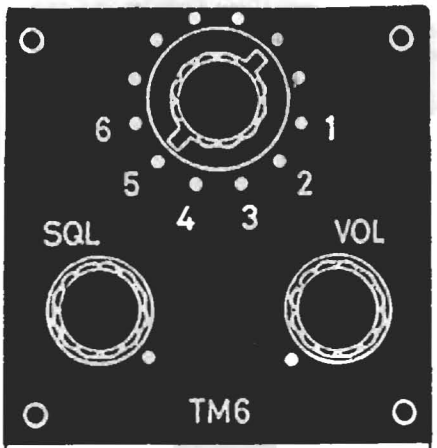
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FOUR COUNTIES (RAF Syerston)

The Easter task week and subsequent weekends resulted in the following achievements: A and B certificates for Cliff Edmundson, Peter Cullens and Michael Gerschefske, K-18 conversions by Louise Farmer, Sue Reeves and David Dunlop; Julie Fearon a Bronze leg, Alan Tolson completed his Bronze C and gained Silver height and duration with a duration for David Fearon.

A new site altitude record was established by Hamish Brown (Kestrel 617) when he reached 12400ft in wave. A total of 927 cross-country kilometres (flown in six club gliders and one privately owned) were achieved on one day in March, including a 360km triangle by Mike Throssell.

The new tractor seat provided by Chey Chinn is now in use and withstanding trials to test its indestructibility.

L.B.

FULMAR

March gave us an excellent start to our soaring season. The club bar is now virtually completed thanks to the hard work and inspiration of Steve Partridge. We wish Graham Heady good luck on beginning officer training at RAF Henlow and welcome Paul Wells.

Congratulations to John Garret on his A and B; to Bill, Alan and Peter Ofee on completing their Bronze C and to Tony Smith on gaining his Silver C with a 56km flight. Roger Hanson's luck ran true to form as he successfully completed his first field landing after 47km.

R.G.H.

GREYLAG (Benbecula, Outer Hebrides)

The impending move of Tim Baldwin, CFI, has been staved off for a while and the improving weather has encouraged new members. Several members went on a course at Bicester in February which resulted in two C certificates.

We have a second K-4 (unfortunately currently under repair after a heavy landing) and a second Jaguar towcar which needs considerable work before use.

We are again preparing to move as the old camp is being knocked down to make way for new buildings. This time we have acquired enough space for gliders to be stored fully rigged and hope to build a proper bar. The CFI is planning a flying day and barbecue for the longest day of the year, which promises to draw new members from the mixed Service personnel on the island.

C.C.

HUMBER (RAF Lindholme)

Easter Sunday was memorable for Kathy Gildea. While on a visit to Dishforth, she climbed to 14000ft in wave for her Gold height, only to find that the turbulence had messed up her barograph trace.

It looks as though Dave Cockburn will be joining us shortly and may well become our CFI and we welcome Tony Smith from Fulmar. We now have two winches, our membership is looking up and we will soon have our new Astir.

K.M.G.

PHOENIX (RAF Brüggen)

We have a welcome influx of new members, both experienced and new to the game - one of the former being Chris Sherlock, and we look forward to seeing "his half" of the Detmold tug! We congratulate John Bosworth, Steve Penny and Steve Hall on going solo; John Hughes on his second Bronze leg; Terry Mitchell on completing his Bronze C; Pete Spevack and Ian Smith on successfully completing their instructors' course at Bicester and Colin Jacques on acquiring his full Cat.

The club expedition to Sisteron didn't produce wave, except for one 12000ft climb by Roy Thompson, but the 105hrs flying in our four aircraft was extremely exhilarating and the site is worthy of a re-visit. Our next outing will be to Detmold in early June for the RAFGSA Comps, where we hope to enter six single-seaters and a two-seater.

M.T.

TWO RIVERS (RAF Laarbruch)

Unbelievably the workshop is now empty, thanks to the efforts of most of the hard core members, and our revised fleet of K-13, K-7, two K-8s and Cirrus is once more airworthy. The Sie 3 has been sold to Tarrant Rushton and we hope to fill the gap with an Astir in the immediate future.

Our hardworking Treasurer, Geoff Cox, is leaving and will be missed by everyone.

M.H.

WREKIN (RAF Cosford)

Congratulations to Martin Platt, John Richardson and Steve Burnell on gaining Gold heights at Aboyne during an expedition in March. Martin and Steve were in the club Astir, but John's was a notable achievement in the syndicate K-8.

Flying hours and launches are on the increase and there are plans for an *ab-initio* course and a number of soaring weeks during the summer.

We have said farewell to our club news contributor, Ian Moss, who has gone to Bulford and the Wyvern Club. We are sad to part with our Cirrus which we can no longer support on the basis of club utilisation, especially as we have a K-18 and Astir.

I.D.M.

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WYVERN (RAF Upavon)

Congratulations to Lt Col John Welsh, Chairman of the Army Gliding Association, on being awarded a BGA Diploma (see S&G April, p78).

The AGM in February was well attended with a lively party afterwards. Our Chairman, Major Sid Falla, who is leaving soon, presented a shield to be awarded for the best cross-country of the year. The first recipient was CFI, John Dabill. Mike Stamp, MT member, was awarded the Merit cup by popular vote for his work on our "new" retrieve vehicle, and Mike's mug went to Teresa Welsh for the most progress from *ab-initio*.

We welcome three newcomers on the committee. Merv Kelly has taken over the bar from Grahame Sharpe who is now Fuels member; Alan Burch has become Radio member and Andy Harkins replaces Judy Dabill who is retiring as Secretary after five years' hard work. We thank her and the others who have left.

The poor Easter weekend weather gave time to renovate the clubroom and bar. Our thanks to Merv Kelly and Rex and Pat Parkinson who did the organising and most of the hard work.

The four members representing the Army in the Inter-Services Regionals are Brian Roberts (Astir CS), Sid Falla (K-6cr), Alan Mittson (K-18) and Grahame Sharpe (K-8) with Pete Cook (DG-100) entering individually.

Bronze legs have been gained by Merv Kelly and Dave Jupe with Pam Cooley, Stephen Welsh, Merv Kelly, Alan Burch and Phil Woods converting to the K-8. Bev Cook gained Gold height at Aboyne in March.

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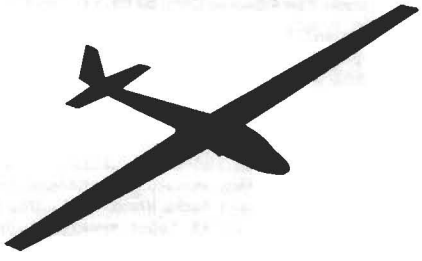
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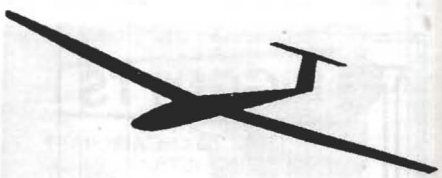
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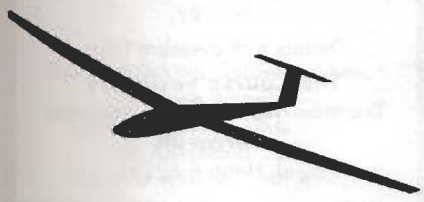
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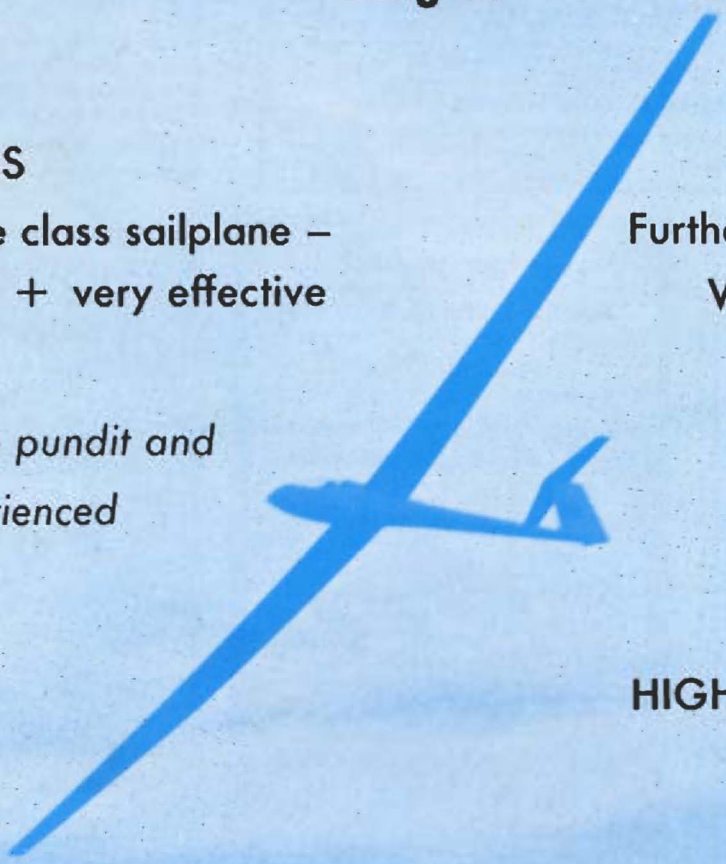
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