SAILPLANE & GLIDING

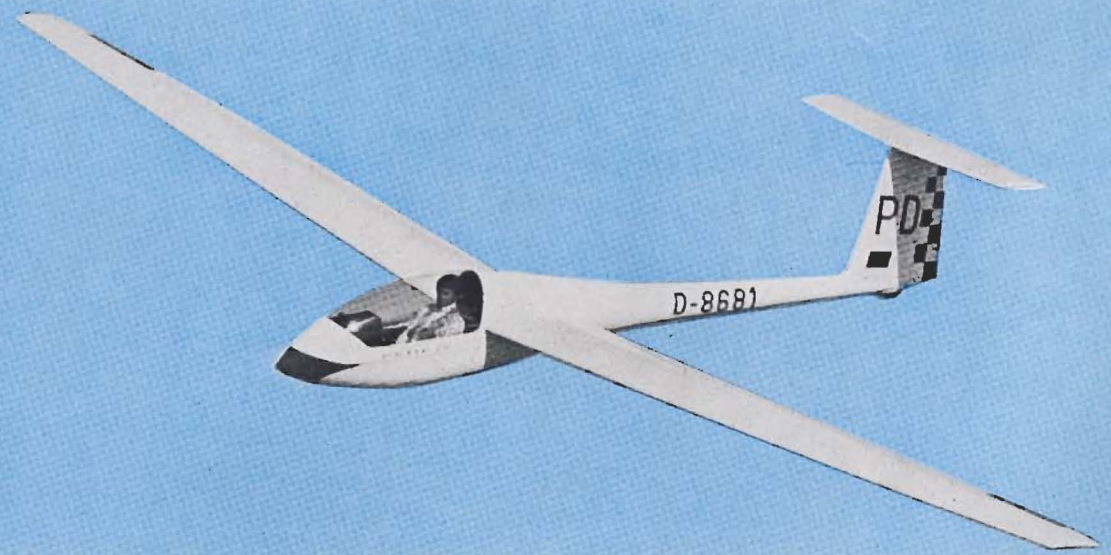
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SAILPLANE & GLIDING

Magazine of the BRITISH GLIDING ASSOCIATION

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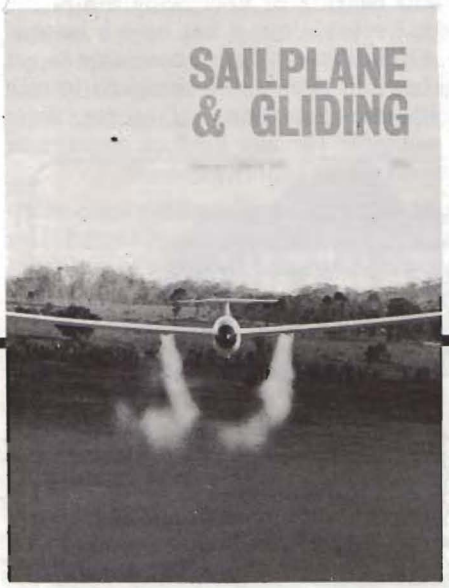
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Cover: Ted Pearson (Nimbus 2) finishing low at the Rhodesian Nationals and dumping water. Photo by John McGeorge.



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OPEN CLASS



Bernard Fitchett



George Lee

Team Manager



Roger Barrett

STANDARD CLASS



George Burton



Ralph Jones

BRITISH TEAM TALK

Teams are now making their final preparations for the World Championships being held at Räyskälä in Finland next June so we thought it a good time to talk to ROGER BARRETT, the British Team Manager, about his job.

S&G: Are you satisfied with the result of the voting for the team?
RB: Yes. During last year it became obvious that Bernard Fitchett, Ralph Jones and George Lee were the favourites to make the team but the fourth place was wide open. I don't know how many votes each pilot got but I guess not many separated George Burton and John Delafield who is first reserve. I think having two pilots with previous World Champs experience (Burton and Fitchett) and two who are 'new blood' is a good mix.

Did the system of having eight pilots short-listed for team selection work?
From my point of view it produced the right result. I came back from Australia convinced that in Britain we spent far too much time worrying about the best way to choose our team and not half enough on training. One of the key things we had to do was get our top pilots to compete abroad against the best competition we could find. With the Sports Council's help we achieved that and I am sure the team have benefited from it.

Can you remind us exactly how the team was chosen this time?
In the autumn of 1974 the short-listed eight were selected by a secret ballot of the top twenty or so competition pilots. It was announced then that the final team of four would be chosen from amongst those pilots. Last September a panel consisting of the short-listed eight, a further eight pilots who finished at the top of the '75 Nationals and Euroglide, and me voted secretly for the team.

And can you explain how Ralph Jones, surely a natural Open Class pilot, comes to be flying Standard?
Ralph is certainly not very happy about flying in the Standard Class, and I can understand why. It happened because after thinking about it quite a lot the BGA decided that the division into Classes would, if necessary, be made by pilot-choice in order of the final votes cast. I had hoped that the pilots would be able to sort out themselves who would fly in which Class without having to resort to pulling the rank of their votes. But it didn't work out like that: three of the four wanted to fly Open and as Bernard and George Lee had more votes than Ralph he found himself in the Standard Class. I guess a different way of solving this problem will be tried next time when four pilots have to be fitted into *three* Classes!

What do team managers actually do in the lead-up period to a world champs?
Cultivate their ulcers mostly! I don't know about other countries but I have been spending quite a lot of time trying to raise money and begging or borrowing things the team is going to need. I must admit it has been a bit disheartening this time. Often I haven't even been able to get past the door to see the right people in a company to talk about sponsorship. It's not just gliding of course, there hasn't been money available for any kind of promotion when firms are concerned about simply surviving.

Apart from working on money matters we have team meetings every few months to talk about training, tactics, our budget and organising the gliders and the team to and from Finland.

What about your rôle during the Championships?
Basically my job is very simple—it's to bring home a world champion. I believe a manager has to concern himself a lot with pilot psychology. I am convinced George Moffat is right in emphasising the importance of a pilot's mental approach towards winning. Until you have been involved in a world championships you don't realise the degree of tension and stress that is lying just below the surface. We

shall be getting advice on the psychological problems of world-class competition from a university that has been doing work in this area and I am very hopeful this will show some good results.

One important thing I have to do is to try to help reconcile the conflict that must exist in any pilot's mind: he's there to win as an individual, which means he's got to beat the other Brit pilot in his Class apart from anyone else, yet at the same time for the sake of the team as a whole he ought to share information—about conditions on course for example—with the rest of the team. It's no secret that in Australia co-operation in the air between our Open Class pilots was pretty minimal—and afterwards they both agreed they had lost out because of this. In Finland I have a clear brief from the BGA Executive about our objective. This means if at any time during the Champs one of our team is in a position to win I can instruct other Brit pilots to fly in a way that may not be to their own best interests. But, of course, if the team is working together well it ought not to be necessary to do any 'instructing'.

What about your more routine duties?
We shall have daily meetings to discuss tactics and to organise the admin side. I'm lucky because most of the crews and the base team are experienced World Champs campaigners. This means I ought to be able to delegate most of the jobs to people who can do them far better than I! One other thing—a team manager ought to know the rules backwards, in fact better than the organisers who wrote them. So far as I am concerned the 'spirit' of the rules is something I don't recognise, it's what is written down that matters.

What do you think our chances are this time?
You would expect me to say good wouldn't you? Quite frankly the main reason I accepted the job of manager again was because I saw we stood a very good chance of winning in Finland. Look at the pilots we are taking and their records. Bernard and George Lee (both flying ASW-17s) will have a tremendous advantage over most of their Open Class rivals because they competed in last year's Finnish Nationals. And I know that George Burton and Ralph Jones are both highly motivated—for different reasons—to win the Standard Class. Ralph will be in a modified Cirrus-75 and George probably in a Hornet. We also have our own Met man, Tom Bradbury, who went on a recce to Finland last summer; his know-how is going to be vitally important.

Who will we be up against?
Not all the entries are in yet but I don't deny there are already some very good pilots we have to beat: Dick Johnson in an ASW-17 from the USA, Klaus Holighaus (Nimbus) and Helmut Reichmann (LS-1f) from Germany—and don't forget our Polish friend Kepka in a Std Jantar. After what happened on the last day in Australia I wouldn't be human if I didn't want to see both our Standard pilots well and truly beat him this time.

You mentioned money worries earlier on, can you tell us any more about how you spend the team funds?
The cost of living in Finland must be about the highest in Europe. By far the largest item on our budget is the entry fee (about £4500), then travel (say £3500) and insurance (over £1000); various miscellaneous things bring the total to about £11000. The budget we are working to this year is a strictly no-frills one but even then, assuming we get some help from the Sports Council, each pilot will have to find at least £250 and each crew member £200. Unlike the Australian Champs in '74 we can't afford such niceties as team uniforms and, more worrying, we can't afford to go to Finland early to practise.

We are certainly extremely grateful to everyone who has donated something to our World Champs fund so far. Perhaps I could just add there's still time to send a cheque to the BGA if anyone hasn't yet got around to it.

WORLD CHAMPIONSHIPS FUND

Please send your contribution to Roger Barrett, British Gliding Association, Kimberley House, Vaughan Way, Leicester. Cheques should be made payable to 'BGA World Champs Fund'.

Whilst I'm talking about help we need, I wonder if one of your British readers is going to be in Finland on any day between June 5—13 with access to a light aircraft? We could make very good use of it and I'd be happy to explain our plot to anyone in more detail if they contact me.

All that remains to be said is—Good Luck!
Thanks. You're right—we must have luck running with us whatever else we manage to do.

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Planning a Flight

ANN WELCH continues her elementary series on weather for the benefit of inexperienced cross-country pilots.

Although the instructor will designate the occasion and direction of the first cross-country flight, there is no substitute for pre-thinking and pre-planning by the pilot. After Silver distance he is likely to be on his own. There are three problems to be solved. The day—which of course should be tomorrow—,will it be good? And there are the two inter-related questions of what flight to make and when to go. Few pilots are able to take advantage of the best day of the year, most having to make the best of whatever time they have free, so the art of tailoring tasks to the weather needs to be developed. In the broadcast terms a usefully good soaring day is likely when:—

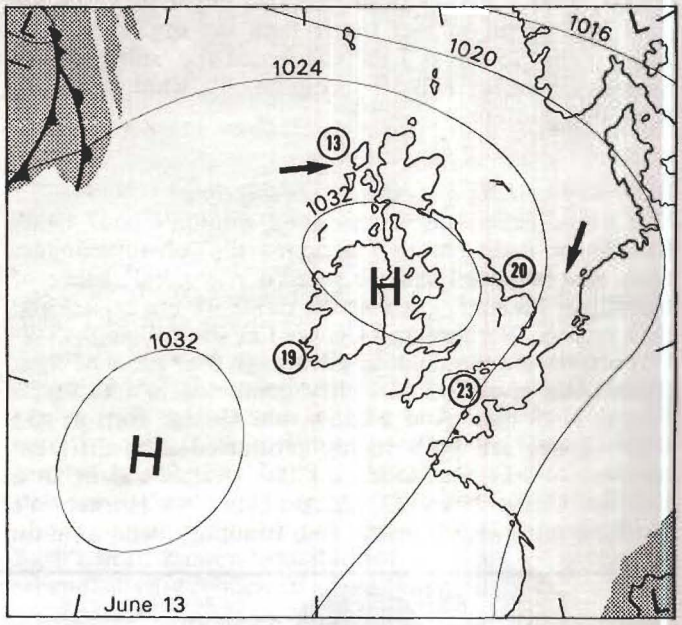
The pressure is rising, but not too rapidly.
The pressure is not less than about 1008mb or more than 1032mb, above which the chances of a low, strong inversion are increasingly great.
The wind is not above 15—20kts at 2000ft and the direction is such that the air has been overland for some time.
There is little or no high cloud cover.
The sun will be high for a good number of hours, as from April to August.

In an adverse sense the most critical feature is pressure, any falling of pressure leads to increasing cloud. This may range from mild overdevelopment of cumulus with consequent periods of overcast to much more extensive cover in the medium and upper levels. It is also wise to have a look at where the air which will be covering the country has come from. If a warm, moist SW flow from the Azores area of the Atlantic moves over a cold Britain, as for example in early spring, the result is likely to be more cloud than is desirable. On the other hand a cold N flow from the arctic over a bright and sunny Britain can produce rapidly growing cumulus of a squally nature. In summer a dry E flow from the Continent may well give a good soaring day, though perhaps spoilt by poor, hazy, visibility.

To begin with there is more chance of taking the right day off by watching out for the more obvious of the possibilities. These include a ridge of high pressure a few hundred miles W of Ireland which is likely to track across Britain next day, the day or so following the passing of a cold front where pressure is slowly building over a large area, and a developing High which is *not* centred over the Midlands—the flight area needs to be somewhat nearer the periphery than the centre. These are only a few generalisations to work on as a start, and the new cross-country pilot will profit most by close questioning the best soaring experts in his club.

When planning a flight, considerations other than the weather of course apply; there may be controlled airspace or even insufficient land in the best direction. So the pilot will inevitably have to compromise on where he will go. He will also have to decide on the size of his flight not only on the weather but on his experience and skill as a cross-country pilot. To begin with some triangles or out-and-return flights successfully completed, although perhaps a bit small, are better than rampant ambition ending in long and expensive retrieves.

With only a downwind Silver distance under his belt, the most practicable next step is usually a 100km triangle, or an out-and-return of much the same total distance. Which of these is chosen is often determined by considerations of good landing country or nearness of the coast, rather than on the general weather.



A fairly typical summer situation giving good soaring over central and SE England away from the East Anglian coast. The wind arrows show only a light breeze. The temperature (centigrade in the circles) indicates the effect of the air's overland travel.

Which way to go

Unlike the competition pilot who can often choose the best time of day in which to make his flight, a pilot flying a club aircraft may have to go when the chance occurs. Nevertheless the same principle applies, that the most difficult leg—into wind if this is fresh or the longest, or even one diagonally across cloud streets—should be made at the time of the strongest thermals. The competition pilot will aim to do this leg in the middle so that his flight straddles

the best thermal period, but the club pilot unable to get even airborne until afternoon should aim to do it first. It will pay to be prepared to fly one of two or three alternative triangles (or go round them the other way), selecting just before take-off what is most likely to be successful at that time. On the same score, particularly if the flight is started late, the last leg should be downwind. If the glider is kept as high as possible using every scrap of lift, it is surprising how far even a K-8 or a Skylark can be persuaded to drift. Gentle lift may be found coming off such sources as large woods, so hope should never be abandoned even though all cumulus have died from the sky.

A factor affecting the choice of flight is the thermal distribution, because if thermals are widely spaced the problem associated with turn points will be halved if there is only one instead of two. There is a relationship, not unexpectedly, between the size of cumulus and their distance apart. Early in the day cloudbase is low, cumulus are small and close together; during the day, as cloudbase rises, cumulus will become somewhat larger with a spacing often ideally suited to the club glider's performance. If, however, cumulus grow into larger units, or develop cu-nim tendencies, the lift areas may separate sufficiently to make reaching the next one doubtful without cloud flying. If the forecast gives any hint of this the non-cloud flying pilot will need to be extra cunning in his decisions on when to leave whatever lift, or no sink, that he is in.

To get the best out of the weather as often as possible the new cross-country pilot should collect and keep information about his flights, starting with Silver distance. By keeping together or sticking in a book the newspaper weather maps for the day, two or more days before, *and* the day after, and adding notes on the visual appearance of the sky, height of cloudbase and thermal strength, a useful source of reference will be built up. It is also worthwhile adding the barograph trace with the actual rates of climb marked, plus of course the timing of the flight. Such a record will also enable the pilot to discover more objectively whether or not he is teaching himself to improve his cross-country speed, or whether it is just the thermals which have got better.

As we go into the last quarter of this century PHILIP WILLS *writes about his hopes for gliding in the future*

FROM HERE TO 2000 AD

How would I like to see gliding develop over the next 25 years? I expect most of my gliding friends will know what I hope for—indeed those rich enough to have read *Free as a Bird* will know in more detail than I can repeat here.

I hope that, as the top end of gliding, driven by international competition, becomes ever more expensive and scientific, more encouragement will be given to bringing into the movement the large number of those who want to fly, without an engine, not because they want competitively to hurtle £15000 (or, soon, £50000) bits of glass and electronics through the atmosphere, but because in a sailplane they can explore the wonders of the circumambient air, and in doing so meet up with likeminded people.

It is rather interesting to see that it is almost exactly a quarter of a century since it all started.

The 1937 Wasserkuppe Internationals gave us the idea of a scoring system, but it was not until Samedan in 1948 and Orebro in 1950 had set the fashion for task flying that, in 1951 at Camphill, we finally persuaded reluctant British pilots to accept set tasks each day, and these thus became the first British National Championships. The result was quite dramatic.

In the autumn issue of *Gliding* I wrote: "Ladies and Gentlemen, I have much pleasure in declaring that this stone, engraved 'Contest Flying, the Cinderella of the British Gliding Movement', is at long last well and truly laid. Fate cannot harm me, I have dined to-day . . .

"It was a heroic meeting, and we were all heroes. When I am old and grey and full of sleep, and nodding by the fire, and my grandchildren clatter in and tell me of their safe return from the moon, I will reply: 'Welcome back! But you know, the spirit of you young folk is not what it was in *my* day. I recall the 1951 Gliding Championships, when George Charman-Thomas did the out-and-return race from Camphill to Derby and back in four hours in a T-21 . . . Ah me! those were the days . . .' "

"the pendulum would by then have swung too far."

When I wrote these words, little did I think that 25 years later I would be inclined to think that the pendulum would by then have swung too far. But then, neither did I believe that by now people really *would* have clattered back from the moon. It only goes to show—something or other.

Now there is not, of course, a sharp dividing line between two contrasting sets of people, but a continuous spectrum, ranging from the ultra-violet who wouldn't dream of flying on even the most interesting day if it could not promise 'fair' competitive conditions, to the infra-red, who are graduating to vintage gliders. Each have their quirks.

I remember seeing a vintage two-seater crash in splinters and upside down on a hedge, and as we all dashed up, the vintage members veered to the left, to inspect the tail-end

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to see if the machine was repairable, whilst the rest of us dashed to the nose to see if the crew were. (Fortunately, they were. Their inverted heads fitted snugly into a miraculous ditch in exactly the right place.)

But in this spread of interest there is a structural danger. By their very nature, the ultra-violets are the organisers (for which we must be grateful, for *someone* must do the back-room work), and so the policy direction of the movement is in their hands.

Thus we see all Regionals forced into ever tighter straitjackets in such details as the prohibition of relights and pilot-selected take-offs, and other rigidities which are necessary at World Championships but, at lower and more friendly levels are likely to select out many whose basic wish when going to a contest is to get in as much friendly flying as possible.

The hours of flying achieved at nearly every contest I go to nowadays have been lessened, and in some cases very greatly lessened, by the restrictive practices which are year by year being progressively tightened in the drive to make even the friendliest Regionals directly comparative to actual World Championships. And the justification for this is to make the biennial task of selecting four pilots for the next World event slightly easier.

"Is it better for 25 pilots to sit on the ground . . .?

I don't believe it. Is it better training for 25 pilots to sit on the ground all day because pilot-selected take-offs are banned, whilst a visitor rolls up and flies off on a 500km flight? It has happened, and will go on happening unless we reverse the direction of events. Flying in World Champs is the tail, not the dog.

Also don't tell me the demand for friendlier flying *isn't* there—these things are self-fulfilling. The tighter you tie down competitions, the more you exclude—or even drive out—those who think as I do. The demand *is* there, as I found out when I did an opinion survey before the first Competition Enterprise, but by drawing a hard line between the two—Enterprise is not rated, so if you fly in it you are excluded from all other comps and so you can never fly against half your friends—you give each individual a fairly agonising choice, except for the very few who have enough holiday time to fly in more than one contest a year.

"more and more a rich man's sport"

Next consider the question of cost. The promotion of 'hard' contest flying is virtually bound to require increasingly costly equipment, and so to make ours more and more a rich man's sport. This may destroy us politically. So don't think I am being merely soppy in my advocacy. And so I hope for a much more liberal line on competition flying—from ultra-violet to infra-red soft, with varying factors applied to each for rating purposes. If we produce a George Moffat, you won't handicap him out by any rating system within reason. Of course, this wouldn't stop Competition Enterprise saying it wanted no rating system at all, if a number of people wanted it that way.

It would be possible to make the system even more elastic. Let me envisage the briefing on the second day of the 1977 Regionals held by the Nether Midwallop Club.

"Ladies and gentlemen, the forecast today promises several spells of weather during which it will be possible to take-off, but none of them likely to enable the whole field to get away in one single launch period. Would you prefer therefore either (1) to scrub the day, (2) to put your machines on the grid and reassemble here hourly to see if I can by chance set a task, or (3) that I now set a 150km out-and-return to Little Pidlington with pilot-selected take-off times, and relights, which will be devalued 50% in marks?"

I have little doubt what would be the answer, I have little doubt that we should end up with more and larger Regionals, and I have little doubt that George Moffat would still win the contest.

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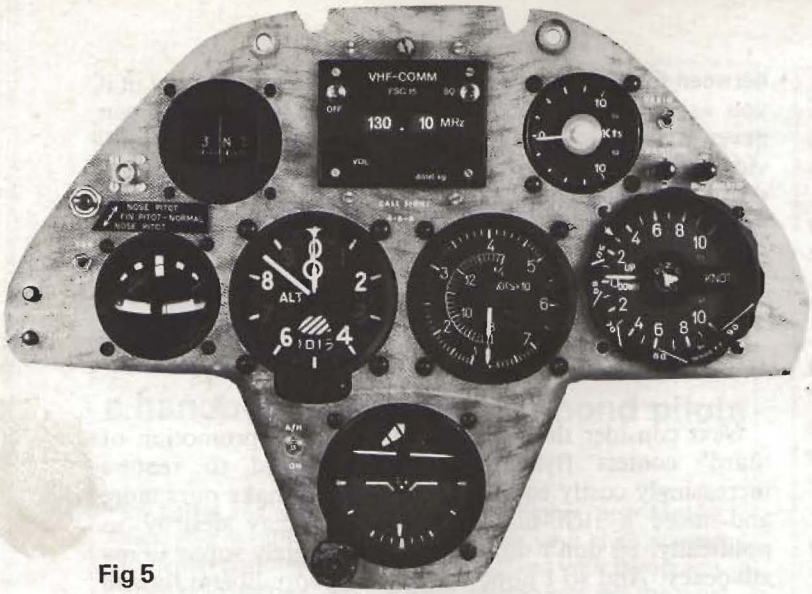


Fig 5

The instrument panel of the author's syndicate Std Libelle. Due to the tight packing, there was little freedom of choice in deciding the arrangement. The compass, although close to the T&S and radio, does not seem to be affected by them. The MacCready ring on the PZL variometer is calibrated for sea-level at its inner edge and 10000ft at its outer edge.

RELIABLE INSTRUMENTATION

and how to achieve it

FRANK IRVING

The instrumentation season is upon us, when serious chaps contemplate building panels for gliders both old and new. This article is an attempt to gather together assorted lore, advice and dimensions. It relates to straightforward instrumentation for single-seaters, although much of it obviously applies more generally. It is certainly not going to tell you how to install and wire-up the latest glide angle computer with digital read-out and stereo audio: if you want that sort of thing, you're on your own.

Philosophy. An instrument panel provides an opportunity for an owner to personalise his glider but, primarily, it must be thoroughly functional. The expression of individuality should reside in the elegance of the layout and the quality of the craftsmanship and not in superfluous gimmicks: there is no point in decorating it with the latest spray-on MacFlugel tartan paint if it causes horrifying reflections in the canopy. The aim is to convey information to the pilot conveniently and reliably. For many, the word 'economically' should also be added to the last sentence: but beware of false economies! It is a genuine economy to achieve a Netto variometer by means of a few feet of capillary tube rather than a box full of transistors; it is a false economy to use the old ASI with only a slight crack in the glass, salvaged from the Tutor that got pranged in 1950. Obviously, some secondhand instruments are inevitable (guess what a new altimeter costs?) but they should have been tested/adjusted/calibrated by professionals. What you need, lad, is the minimum instrumentation which will provide information required for efficient and convenient operation of the glider.

Which instruments? Obviously, the instrumentation for a Kestrel to be used really seriously is a good deal more esoteric than that in the club K-8. When the world was young, we used to fly Cadets and suchlike with no instruments at all and some clever folks even managed to soar. But now, a pretty irreducible minimum for a single-seater trainer would be:

Altimeter
Airspeed indicator
Variometer (mechanical)
Compass.

If the machine is to be used for solo aerobatics, add an accelerometer. And maybe a turn-and-slip indicator wouldn't be a bad idea: the wretched pupil might blunder into a cloud and at least it might help him to fly straight.

That collection represents a reasonable panel-full for a K-8, particularly if most of the instruments are 3 ¼ in size.

For the high performance machine, we would like:

Altimeter
Airspeed indicator
Variometer (mechanical)
Variometer (electric, doubtless with audio)
Compass
Turn-and-slip indicator
Artificial horizon
Radio.

One or both variometers would be fitted with the MacCready ring and/or a Netto device. They would certainly both have total-energy. A second compass, doubtless a Cook, would also be desirable.

There are, of course, plenty of goodies which can be added: Sollfahrtgeber, clock, accelerometer, electronic contraptions, turn co-ordinator, battery level indicator, and so on. They all involve cost, weight and panel space, and mostly get one well into the realms of diminishing returns. Obviously, the pilot must make his own choice but discernment should come first and ostentation last. Also, since panel space is limited, the more instruments there are, the more of them will have to be of the little $2^3/_8$in variety, which usually cost more than the standard type.

The panel: materials. The choice, for all practical purposes, is: metal, wood or glass-fibre. In some cases (Std Libelle, Kestrel, etc) the choice is made for you. If you are making-up your own panel, glass-fibre is probably only advisable if the assembly has to be a three-dimensional affair which cannot easily be achieved by bending metal. There is the considerable fiddle of making a mould—remembering that the smooth side of the finished panel should face the pilot—and the craftsmanship has to be pretty good.

Wood, delicately varnished, looks splendid in vintage gliders but it is pretty awkward stuff elsewhere. It has to be fairly thick ply to achieve adequate strength and stiffness—at least 3mm; the instrument holes cannot be really close together; some of the edge of each hole shows and needs careful finishing if it is not to look rather hairy; it is difficult to avoid damaging the outer lamination around screw holes; and so on. With great care, attractive results can be achieved with formica-faced ply but glass-fibre or metal is usually easier. Incidentally, there is no point in using glass-fibre if the panel is simply a flat sheet.

A metal panel will often be the most convenient, preferably of

L.72 dural sheet. Although the panel is considerably stiffened by the instruments themselves, it needs to be a reasonable structure in its own right, so 16swg (0.064in or 1.6mm) is about the smallest acceptable thickness and 14swg (0.080in or 2.0mm) appreciably better. Remember that the inside radius of any bends should not be less than three times the thickness of the sheet.

The panel: layout. The best way of settling the panel layout, although some may regard it as pedantic, is to produce a genuine dimensioned, full-scale drawing. It will usually pay to draw the panel outline and juggle cardboard templates representing instrument cases until a good layout is obtained within the available area. (See Fig 1.) If the instrumentation is sparse and the panel size reasonably generous, this process can be short-circuited by doing the juggling on the actual panel. But you may not have the physical panel, or the desired instruments may be a very tight fit, and then you simply have to explore the possibilities on a drawing board. If the panel is also to support other equipment (inverter, total-energy capsules, etc), it may even be necessary to make a full 3-view drawing.

There are various boundary conditions to be taken into account, such as desirable groupings of instruments. For clear-air flying, the pilot will want to concentrate on the ASI and variometer(s), so they should be adjacent and prominently placed. When blind-flying, probably only one variometer is of primary interest together with the ASI, artificial horizon and turn-and-slip so, again, these instruments should form a reasonably compact group. Other instruments (altimeter, compass, etc) will only be observed occasionally, so they can be relegated to the outer parts of the panel. Other considerations are that gyro instruments should be mounted on a vertical panel face, compasses should be kept as far as possible away from electrical instruments, wiring and radios and some parts of the panel may be unusable due to ventilators, canopy attachments, panel supporting structure, etc.

Ingenuity, perhaps compromise

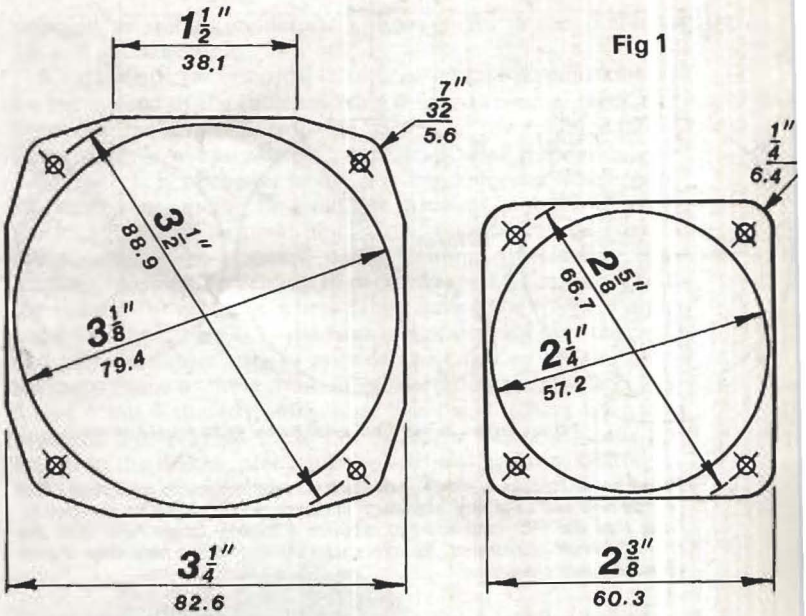
If the panel size is fixed for you by the glider manufacturer, as in the Std Libelle, it may simply not be possible to fit-in all the desired instruments, or some will have to be of the $2^3/_8$in size. Even then, and with clearances as small as $^1/_{16}$in (1½mm) between the cases, considerable ingenuity may be required to pack them all in. It may also be necessary to make some compromise with the ideal layout: for example, about the only practicable place for an artificial horizon on a Std Libelle panel is on the small vertical portion at the bottom centre, where it tends to be obscured by the stick.

Although there are nominally standard cases for aircraft instruments, a surprising number of them are slightly different, having knobs and bulges. The templates need to reproduce such features.

Sometimes there is a certain amount of freedom in deciding the panel shape. Most wooden Slingsby gliders had panels with elegantly curved lower edges: in the case of the Dart, for example, it is possible to devise a replacement panel with straight lower edges which give improved knee-room (by raising the bottom hinge slightly) and enable the panel to be provided with 3in flats projecting forwards above the pilot's knees, greatly reducing the risk of bruising or injury.

If a panel is to have such flanges, it will be necessary to draw a 'developed' shape, *ie* the flat piece of sheet which, when bent, will produce the desired result. When laying-out the developed shape, allowance has to be made for the length of the bends, based on the assumption that the metal half-way through the thickness of the sheet does not stretch. (See Fig 2). Also, the inside radius of a bend should be at least three times the sheet thickness.

Fig 1

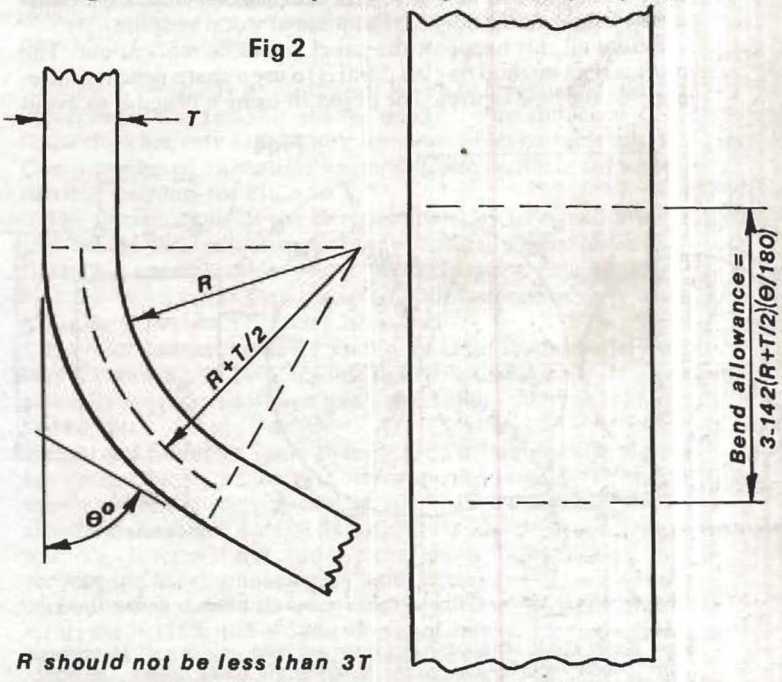


Nominal case sizes of 'standard' and 'small' instruments (UK/USA) in inches and mm.

At the layout stage, it is important to remember the odds-and-ends such as switches, placards, potentiometers for the audio, perhaps a valve in the vario plumbing, attachment for a tow-release, and so on. Electrical components such as miniature switches and pots are relatively easy to squeeze in, but pneumatic valves can be quite bulky. The location of switches, etc, is obviously a compromise between the personal taste of the constructor and available space: some prefer switches next to the appropriate instrument, others like to see them in a neat row.

Having achieved an apparently satisfactory layout, it is pretty essential to fit a mock-up to the actual aircraft to ensure that it is all visible and is unlikely to foul controls, latches, ventilators, etc. Trying to produce a panel in the absence of the aircraft (*eg* from manufacturers' drawings) is a well-nigh impossible task if only because the drawings often differ from the reality. And do not forget that the finished panel is not just an array of pretty

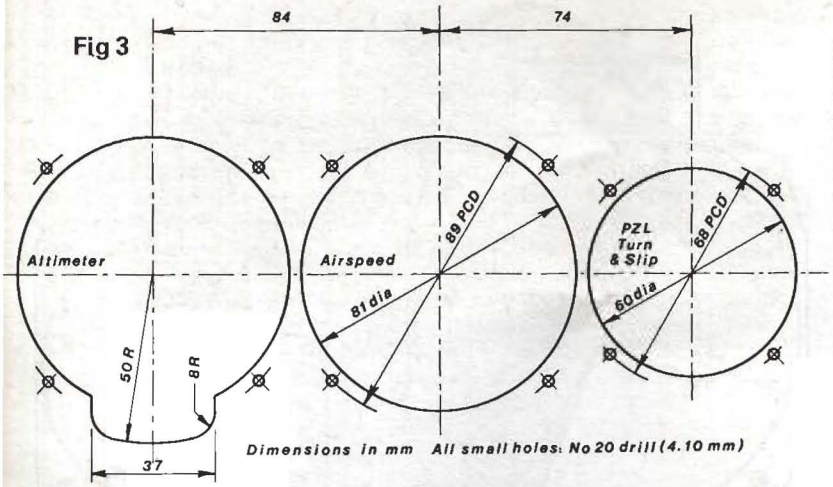
Fig 2



R should not be less than 3T

Bending sheet dural. The right-hand part of the diagram shows the developed length of the curve on the left.

Fig 3



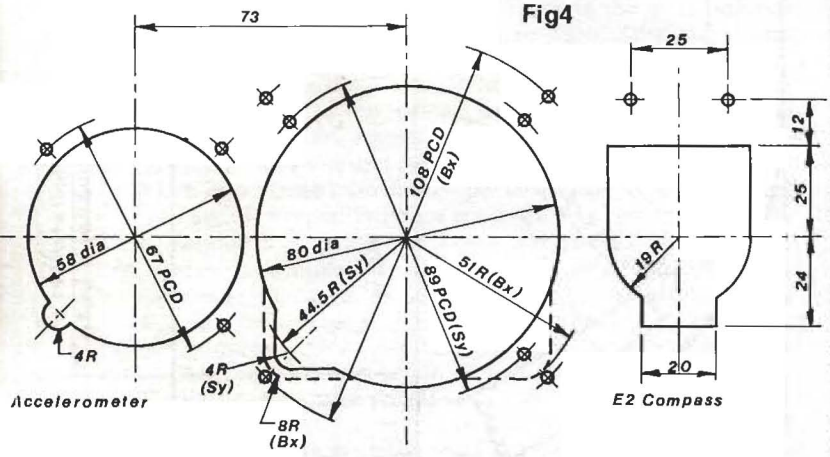
Panel holes to take various instruments, and minimum spacings. The central hole will take any 'standard' instrument (UK, USA or European). Note that the PZL turn-and-slip requires a slightly larger hole than the UK/US 'small' instrument. No tolerances are stated: the hole sizes shown give adequate clearance.

faces: it is a distinctly three-dimensional object and may well foul the structure or the pilot somewhere down in the front fuselage.

Construction. Having achieved a splendid layout on the drawing board, it has to be translated into reality. If the whole panel assembly is a 3-D affair built of metal, it is likely to involve all the usual workshop processes of marking-out, cutting, bending and riveting, which would take too long to describe here, save for a few hints on making instrument holes. The tedious way of making a nominal $3^1/_8$in instrument hole is to drill a lot of little holes just inside the perimeter, chop out the middle, and file the edge to the right size: very trying, and difficult to achieve a good result. A much more satisfactory method is to use a trepanning tool, which usually requires a ¼in pilot hole, accurately located. It will pay to make a trial hole in a piece of scrap sheet to ensure that the finished diameter is suitable: otherwise, it is all too easy to achieve a beautiful hole about 0.005in too small, which then has to be filed away. Incidentally, by a trepanning tool, I mean a single-point rotating cutter, not one of these things for graunching holes in domestic water tanks. It cannot really be used manually: you need a proper drill stand to which the panel can be firmly clamped with a flat piece of wood beneath.

Before all this happens, the panel has to be marked-out. The professional method on clad dural is to use a sharp pencil, centre-popping the hole centres. The object of using a pencil is to avoid

Fig4



More panel holes. The left-hand hole will take any 'small' instrument (with suitable modifications to the layout of the screw holes). The right-hand hole is for mounting an E2 compass behind the panel, attached to the two screw holes by a suitable angle bracket.

scriber lines which might damage the cladding or start cracks at bends. These considerations are unlikely to be of much significance on an instrument panel and, in any case, it may be possible to put scribe lines in areas which will mostly be removed later. Whatever method is used, the marking-out has to be done accurately, particularly when locating holes for instrument screws. If the screw hole diameters are to be 0.020in oversize—a generous allowance—each hole has to be located within about 0.010in of the correct position, which is quite difficult.

On wood or glass-fibre, the nature of the surface usually makes such accuracy, perforce with a pencil, difficult to achieve and in any case, there is a marked tendency for small drills to wander in these materials. It pays to locate the instrument centres and then use a sheet steel drilling jig to locate the screw holes in relation to the pilot hole.

Typical hole sizes are shown in Figs 3 and 4.

Nuts and Bolts. A few instruments have clear holes in the lugs on the cases, suitable for taking 4BA or 6-32UNC (American) screws, but many are likely to have tapped inserts. If the instruments are American, the inserts will have 6-32UNC threads; if British, they may be either 4BA or 6-32UNC, the latter usually being denoted by a pattern of overlapping little circles on the lug. It is important to use the right screws, otherwise the threads will be severely damaged. Instruments of European origin may use some obscure metric screws, usually supplied with the instrument. Be careful not to lose them, since replacements are difficult to obtain. The consequence of all this confusion is that you may well find that screws with three different threads are required even on a simple panel. In theory, each requires a different panel hole size but in practice a No. 20 drill (0.161in) will suffice for all of them.

Concealing minor confusions

There is a lot to be said for *not* countersinking holes for instrument screws. There will inevitably be slight errors in the location of some holes and then the screw heads will not be concentric with the countersinking, which looks messy. My own preference is for mushroom-headed screws: a little obtrusive, perhaps, but far stonger than countersunk screws and useful for concealing minor confusions in hole location.

Screws attaching the compass and adjacent instruments should be non-magnetic, so it is simplest to use such screws everywhere. In practice, stainless steel screws are pretty nearly non-magnetic and, surprisingly, can be blackened by a chemical process. Those shown on the panel of Fig 5 are of this type, except for the round-headed screws supplied with the PZL instruments.

Although gliders are subjected to relatively little vibration, Murphy's Law decrees that, if nuts can drop off, they will, and the most inaccessible nuts will drop off first. So any nuts need some form of locking. Where the screws are structural, it is advisable to use genuine aeronautical stiffnuts, but stiffnuts can be an awful nuisance behind instruments not provided with tapped thread inserts, because the space available for a spanner is often very small. An acceptable substitute consists of a plain nut with a spring locking washer. 'Loctite' may also be useful, but is likely to be as much of a nuisance as a stiffnut. Again, stainless steel nuts are recommended.

Plumbing. The days of perishable rubber tube and metal T-pieces are happily past, being supplanted by plastic. T-pieces and adaptors for joining tubes of different diameters are readily and cheaply obtainable as standard laboratory items. Tubing can be a problem since the most easily-obtained type is of shiny PVC. Unless wired-on, connections become slack and leaky and it kinks quite easily. A far better type of tube is of polythene, distinguishable from PVC by its dull surface. Although far less prone to kinking than PVC, it may still be necessary to do some-

thing about tight bends. One anti-kinking measure, when a slight resistance in the tubing is unimportant, consists of slipping a suitable length of spiral wire curtain-rod inside the tube. If a proper static source is provided, the static side of the ASI must be connected to it and, in modern gliders, it is usually advisable to connect the altimeter to the static source rather than leave it open to the cockpit. Otherwise, at high speeds, there is some chance, admittedly small, that the cockpit pressure will differ sufficiently from the static pressure to produce an altimeter error.

Worth making a sketch

In a sophisticated glider, fitted with total energy and dolphin-flying devices, the plumbing can be fairly complicated. To avoid confusion, it may pay to sketch a rough circuit diagram and it will certainly pay to indulge in a little experimentation to determine the neatest runs for the tubing. Four-way connectors between the panel and the fuselage plumbing are very useful but rather variable in reliability. Since the connections simply must not leak, it is worth saying that, in my experience, the expensive German type which comes with the Std Libelle has been entirely reliable whilst experience with another moulded-plastic type variety has been less happy.

Electrics. If the circuitry consists of a battery, a switch and a turn-and-slip, there is not much point in drawing a circuit diagram. But, given a full panel for a Kestrel or the like, with radio, undercarriage warning device, etc, there is a surprising amount of circuitry even in the absence of fancy computers. There is no doubt that drawing a full circuit diagram is well worthwhile if the wiring is not to turn into the most awful lash-up. The diagram for the Std Libelle whose panel appears in Figs 5 and 6 covers a large sheet of drawing paper and the lines are quite close together! By spending some time on such a diagram, it is possible to devise neat wiring runs and to settle the location of connectors and terminal blocks. There may well be several connections between the panel and the aircraft, and quite a lot more if the radio is fitted to the panel, so it is obviously essential that suitable connectors are used.

Plugs and sockets come in endless variety. Many of the little electronic type are just too small and fiddly, whatever may be the contact current rating. Opinions doubtless differ on their reliability, but I have always found miniature Jones plugs—fitted with retaining blades—very satisfactory. Remember to install them so that, when unplugged, any live contacts are on the female side of the connector. Batteries should also be provided with proper plugs: fixing loose wires on to terminals is bound to cause trouble.

Because the currents involved are mostly quite small, there is a great temptation to use rather thin cables. For example, a 7/0.2mm cable has a rating of 1.4A by itself or 1.0A when part of a multi-core cable. However, it has a resistance of 88mΩ/m so, if used to supply a radio taking 1.4A on transmit and if there are 4m of cable between the radio and the battery (*ie* 2×2m), then the voltage drop will be about 0.5V. This is too much, and since the weight of wiring is unlikely to be significant, it would pay to use a much heavier cable such as 32/0.2mm. So any wiring taking a significant current (1—2A, say) needs to be quite hefty, particularly if the runs are long. You are trying to get something close to the full battery voltage at the panel. Only when the current is really small (*eg* for an electric variometer) can light wiring be used. Colour coding of the wiring may be helpful, so it will often pay to use automotive cable, readily obtainable in all sorts of pretty colours.

In consequence, the wirer-upper is likely to be faced with bundles of cables of assorted diameters, since the utility of multi-core cable is very limited. There is a splendid substance—spiral cable wrapping—which converts the potential birds-nest into a neat harness. Incidentally, cables should have multi-strand, as opposed to solid, conductors. The latter are prone to fatigue failures at connections.

A sure recipé for electrical trouble is to make a connection by baring the end of the cable, shoving it into a terminal block and tightening the screw. Even if the bare wires are soldered into a blob, there is a nasty stress concentration at the end of the insulation. It is far better to use a crimp connector which grips the insulation, ending in a pin for insertion into the terminal block. The use of terminal blocks in strategic locations enables components to be removed neatly, without unsoldering connections. A similar attention to detail is worthwhile throughout the system: for example, where cables have to be soldered on to small switches, it payes to put heat-shrink sleeving over the cable end and the solder tag, to provide some protection and extra stiffness. Some of these counsels of perfection are visible in Figs 5 and 6 but I should confess that this panel suffers from one problem. For reasons of space, the main terminal blocks are buried in the depths, alongside the artificial horizon. Getting at them involves dismantling most of the panel.

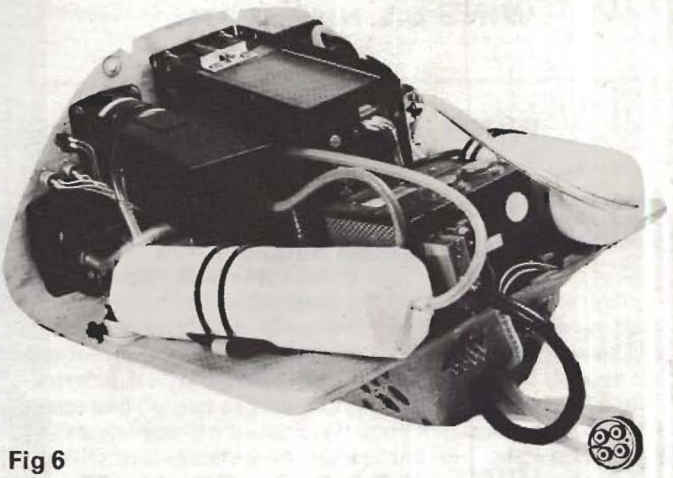


Fig 6

Rear view of the Std Libelle panel, which incorporates the variometer electronics, audio, undercarriage warning, total energy units, inverter and radio loud-speaker. Electrical connections are by way of the two 8-pin connectors. The variometer bottles are of the Glasflügel type and are not particularly well-insulated.

One can obviously go on at great length to recommend suitable components but fashions change quickly. Two thoughts: BNC connectors are very satisfactory for co-ax antenna leads and RS Components sell an audible warning device (suitable for undercarriage warning) for £1.25.

The ramifications of the electrics are likely to extend around and behind the cockpit area. Many modern gliders make provision for running cables under the seat, and it pays to do so. Nothing looks worse than a cockpit with festoons of tatty wires along the sides, like a French post-office.

Fuses or contact-breakers should be close to the battery, so they are unlikely to be accessible in flight. Incidentally, it is not generally appreciated what a nasty effect spilt battery acid has on glass-fibre.

Weight and Strength. Some gliders have a maximum weight limit for the instrument panel (*eg* 22lb for the Std Libelle). The panel shown in Fig 5 incorporates most of the items normally strewn around the cockpit (radio, loudspeaker, audio, undercarriage warning, inverter, etc) and weighs about 18lb. Taking into account the usual manoeuvring load factors (+5.3, —2.65) the corresponding maximum limit loads applied to the panel attachments are +116lb and —58lb. These, of course, are flight cases, but panels also take a terrible beating when landing or taking-off from rough ground. So, not only does the panel need quite strong attachments to the surrounding structure, but its own structure

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and the attachments of components need to be correspondingly robust. The same goes for battery housings.

If you are making any mods, other than very minor ones, to the original panel attachments, it ought to be inspected by an Approved Inspector.

Finish. On most gliders, the instrument panel will cause reflections in the canopy so it is generally advisable to have a smooth matt black finish with the minimum of shiny screws and switches. Matt black aerosol spray is quite satisfactory provided that a suitable undercoat is applied first. Ideally, metal panels should also be protected with etch primer before applying the undercoat.

Black anodising looks very good indeed but it is only really suitable for small components not exposed to bright sunlight; otherwise, the black slowly fades to a very light brown.

A more durable finish on metal panels can be obtained by stove-enamelling in matt black, giving a finish which is more resistant to scratching than cellulose spray. Ideally, the panel would be clear-anodised first.

Lettering in Dymo, whilst reasonably neat, lacks the really professional finish such as one obtained with properly engraved plaques in a laminated plastic such as Traffolyte.

Another neat process involves using white Letraset characters applied to the panel. It is difficult to achieve really good alignment if the letters are small but, if carefully done, the result looks very good. Such lettering has to be protected by varnish which, even if described as matt, is invariably shinier than the panel. Letraset numbers are particularly useful for MacCready variometer rings.

Some useful addresses. These are firms in the London area which I happen to know about. There are doubtless many others, both in London and elsewhere.

Screws, nuts, etc: Allscrews Ltd, 282 King Street, London W6.

Plating, anodising, stove-enamelling, chemical blackening: The Harris Plating Works Ltd, 18 New Wharf Road, London N1.

Electrical components (trade counter): RS Components Ltd, 13-17 Epworth Street, London EC2P 2HA.

There is not enough space to reproduce the diagrams at full size, but if anyone wants copies of the originals for use as templates, please write to my Cambridge address, enclosing a sae. EDITOR

PARTED — Passive Acoustic Radar for Thermal Detection

BRENNIG JAMES

Passive Acoustic radar in World War 1

Counter battery fire is shooting up the enemy guns with even bigger guns of your own; but a first requisite is to know where the enemy batteries are. After the gun has fired, the barrel functions for a short time as an organ pipe giving a sound of characteristic frequency, depending on the length of barrel and the speed of sound within it.

If you make an organ pipe of the same frequency and put a heated platinum filament across the opening your pipe will 'hear' the enemy's gun, the filament will be cooled and you have a signal. If you have several organ pipe detectors scattered about the countryside linked up by telephone lines, it is a simple matter of school certificate physics to work out where the sound is located.

The interesting part was that the Germans produced the Paris gun which could hit Paris 70 miles away. The shell reached an altitude of 25 miles so it was the first space craft. The allies guessed correctly that the barrel was twice the normal length, so made organ pipes of twice the normal length. When the Paris gun fired everything else in the district fired as well to mask its sound. Nevertheless, the allies located the gun and sent an aircraft out to confirm.

The recce aircraft spotted a decoy some way away and amended the location. The decoy was duly destroyed and the Paris gun survived. Let us return to our Moutons.

Active Acoustic Radar

The Australians are a nation given to making loud unintelligent noises (being an the other side of the earth I think it is safe to insult them), and one of their favourite games is to make a loud noise and see what bounces back from the atmosphere.

If you read Bourne and Keenan's *Nature* (not *Naturist*) vol 251 p206—208 you will see what I mean. They send out a 8.1kw pulse at 1350Hz for 0.4sec. When you think that an 8 watt Hi Fi set is deafening, you can imagine what 8kw is like. Yes, you are quite right, a thousand times worse. However, this brute force approach pays off, they get quite nice pictures of atmospheric discontinuities like inversions and thermals. Clearly pitting active acoustic radar to a glider to find thermals is reasonable in theory but obviously absurd in practice.

Passive Acoustic Radar for Gliders

The question is do thermals generate noise? It is quite a reasonable proposition. When you talk or whistle the primary sound source is a region of turbulence, so why not thermals? As you approach a thermal you can feel its turbulence through the airframe and the seat of your pants, often before you hit the lift.

The reason you can't hear it is that its frequency range is about 0.1—10Hz and therefore inaudible, and also one's ears are so close together that even if one could hear the thermal one couldn't locate it. The solution would be to scatter microphones along the leading edge or, simpler, strain gauges within the airframe which all lead into a central computer. A/D conversion would be performed on all the signals and the computer would be programmed to ignore the signal from the air that it was in and just concentrate on noises in the 0.1—10Hz band coming from the surrounding air.

It would look for the best source and express its location in terms of range, heading and strength. In effect you are spreading the seat of your pants over the entire airframe and fitting it with brains. This should work quite well, the strain gauge part is easy but you would need quite a decent computer to do the sums. At the rate at which the cost of computers is coming down and the cost of gliders is going up, one could probably double the effectiveness of a glider for a 5% increase in its cost. Here is the idea, now get on with it.

Addendum

Here is my attempt at a solution. A strain gauge is attached to the upper surface of the wing strut and another to the vertical surface. The former will react to flexural loads in the vertical plane and the latter to loads in the horizontal plane. We want the wings to look forward and slightly downwards, so we will feed the output of the strain gauges into a summating network with a lot more gain in the fore and aft direction since in that direction the wing is obviously in addition a less sensitive detector. We will express the output as an audio signal (as in the audio variometer).

Obviously this is a pretty crude first attempt. Phase two is to put strain gauges in each wing, double up the electronics and give a stereo output via earphones. This would have the advantage of being directional.



coaching corner

BILL SCULL, Senior National Coach, discusses

CROSS-COUNTRY ORIENTATED BASIC TRAINING

Introduction

The training syllabus at most clubs only takes the student pilot up to Bronze C standard though in a few cases training is given up to Silver C standard. The aim of this article is to suggest a slant to basic training for both pre- and post-solo stages and to prepare a pilot for speed flying as well as cross-country. Whilst it is accepted that speed flying as such requires a high degree of self-motivation on the part of the pilot, the benefits from this proposed training scheme should enable, for example, the completion of a 300km task at a speed of at least 60km/h in typical British conditions.

Analysis of existing faulty techniques.

Most pilots of moderate cross-country experience will be aware of those faults which slow them down, or, more accurately, preclude them from ever achieving a good speed. Most of these faults in technique are due to lack of training in the first instance and to local soaring practice in the immediate post-solo period. The techniques which may seem appropriate enough to local soaring flight, especially when one is attempting to qualify for a Bronze C leg or a Silver C duration, bear little relationship to the skills and decision making when cross-country soaring. These recommendations to be incorporated in the basic syllabus aim at producing a pilot without these faults or eliminating them if they already exist.

Entering a thermal

If, as must be assumed, the glider is being flown at cross-country speeds in excess of best L/D, then one of the first requirements is for the pilot to be able to establish himself quickly in the thermal. The appropriate exercise is to fly the glider straight at speeds in the range of 55—75kts then to pull up and turn. A thermal turn at correct speed and angle of bank should be established as quickly as possible—certainly within one full turn. To start with this can be practised without using a thermal, but thermals should obviously be used when conditions permit. The instructor should note either the time taken before the glider is correctly centred or the number of turns (assume 20—24sec/turn). If the pilot fails to achieve the rate of climb expected in the prevailing conditions, then the possibility of rejecting the thermal should be raised (*ie* don't settle for 2kts when there are 4kts about).

Climb rate and height band flying.

In local soaring practice most pilots will be satisfied if they are climbing at all. This attitude may become quite deep-rooted to the extent that many pilots, on successive thermal climbs, will continue to climb in weak lift to the serious detriment of the achieved cross-country speed as the following example shows. Suppose the lift has been contacted at 2500ft and it has taken the pilot three turns to centre (one minute approx). The glider is climbed steadily to 4000ft at 300ft/min (3kts) which takes a further five minutes. If the lift now deteriorates to say 1kt, then further climbing is futile; it will take five minutes more to reach 4500ft. Obviously the rejection of the lift as soon as it falls below the value previously achieved is essential for a good cross-country performance. Put into terms of the number of thermals used for a 300km flight, say 15, then this means 1¼hrs lost as a first approximation although the pilot flying the correct height band might need an extra thermal or so.

Leaving the thermal.

In observing solo pilots (on check flights) they usually only increase the speed after flying into sink and often, even then, only if prompted to do so. On leaving a thermal sink will be encountered, although not usually immediately. Height will be conserved by increasing the speed before flying into the sinking air. If, say, the glider is being flown in the thermal at 50kts and the typical inter-thermal speed is 75kts, then increase the speed to 60 or 65kts on leaving the thermal.

The next thermal.

Having gained the maximum height possible in the first thermal the local soaring pilot will wander around the sky until the next thermal finds him. Frequently he will only find weak lift, *ie* in that part of the height band which he should not be using, and climb slowly or just maintain height. This is not purposeful flying and certainly does not resemble any part of an organised cross-country flight. The need is to encourage positive flying with a definite choice of next thermal source by reference to clouds and terrain, cloud shadows etc, depending on height and flying at the appropriate inter-thermal speed using the MacCready speed-to-fly ring.

Glider performance.

You only learn the glider's performance by going places. An awareness of performace may only be necessary, in the first instance, when a pilot has drifted downwind in an attempt to soar. Good use of airborne time will be made by gliding from point to point within the local area so that rather more than a subjective impression of the glider's potential is gained. Although an appreciation of the glider's performance may only be appropriate to final glides, this practice will establish the pattern of cross-country soaring. Other considerations in these glides are acceptance or rejection of the next thermal.

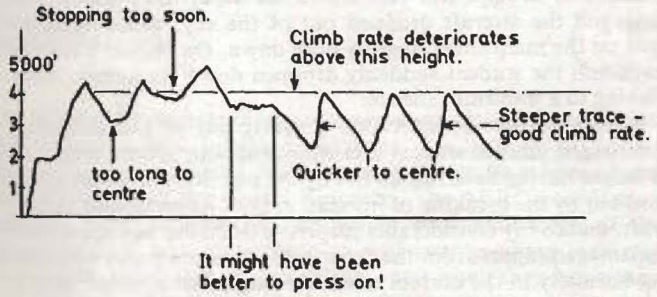
The next thermal.

Suppose the cloudbase is 4000ft agl, a climb has been made to 4000ft and a glide has been commenced at the right speed towards a sunlit area with good cumulus. What criteria must the pilot take into account in stopping to use the next thermal? First must be strength. Now unless the glider is flown through the middle of the thermal he will not know its strength, and even if he does (fly through the middle) then the strength will only be

known when the centre has been passed. Most pilots with local soaring hangups will stop and attempt to centre as soon as they encounter lift, even though they may only have lost four or 500ft since leaving the last thermal. This does not make for efficient progress (remember the time lost in centring), although one may of course slow down to gain maximum benefit from it. Only in this way—by making protracted glides—will a good cross-country speed be achieved.

Secondly, the time taken to centre must be considered. If, because the glider has been flown through the edge of the thermal, it takes several turns to centre, then would it not be better to press on until stronger lift is encountered? Acceptance or rejection depends on the height at the time, but in a glide losing 1500ft or so a number of thermals will be passed. With a good enough glide performance the point comes where it isn't worth circling at all. Obviously hard and fast rules cannot be given but within the cruising height band—suppose our pilot is using 4000ft to 2500ft and the conditions ahead look good—then the glide should be continued.

As recollection of various climbs and glides is not easy a barograph trace is essential for critical analysis. Although you may be quite pleased with your efforts, comparing the trace with one of a more experienced pilot will show up many features.



Analysis of the chart in this way will confirm the fundamental weaknesses of your technique. Improvement of technique may be essential for a pilot to complete a 300km task in the time available. Like all aspects of flying, bad habits acquired at an early stage become increasingly difficult to eradicate. *The best defence is never to acquire them in the first place.* Much has been said about dual cross-countries and advanced training, but there is a lot that can be done at the preparatory stage.

Flying for speed.

The MacCready ring with the arrow set to zero is used to fly for distance. Cross-country speeds will be increased siginificantly by rotating the ring so that the arrow points to the rate of climb achieved in the last thermal and expected in the next one. This rate of climb must take into account the time taken to centre; a useful first approximation is to use half the value indicated once the glider has been centred. It is interesting, however, to time the climb from start to finish and compare it with the approximate value.

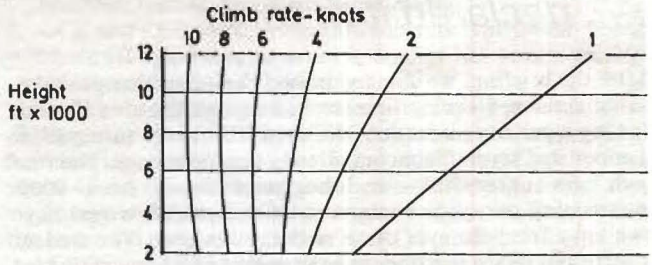
Summary.

Local soaring practice should prepare you for cross-country flying.

1 Do not stay high—climb and then glide.
2 If the lift deteriorates and re-centring does not produce results—press on!
3 Make a definite choice of a likely cloud for the next lift. It is better to fall down rather than 'be found by a thermal' and delude yourself into thinking that you made a choice.
4 Increase the speed before you leave the thermal and fly MacCready speeds.
5 As you gain confidence rotate the ring to fly for speed.
6 Use a barograph to help you analyse your technique. Compare the centring time and climb rate with those of a more experienced pilot.

Appendix

If you are really interested in checking climb rates from the barograph then the diagram below will be useful. It could be transferred to transparent material and laid over actual traces. The drawing, which is actual size, was copied direct from a special calibration.



Winter 10 km barograph on 10 hr rotation.

pik 20



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I LEARNT ABOUT GLIDING FROM THAT

The first of three articles by DEAN CARSWELL

Stimulated by Bill Scull's excellent series "Accident Review" and the interest pilots show for the anecdotes of other pilots wearing hair shirts in public articles like "I Learnt About Flying From That" which appears in the RAF magazine *Air Clues*, I am reminded of an experience of my own.

A number of years ago, when the T-31 was regarded as a tool for basic instruction rather than a candidate for the Science Museum and very soon after I first received an instructors' rating, I was engaged in instructing on one of these machines. The airfield was a large flat relatively unobstructed site and launching was by twin-drum winch, cables being laid about six feet apart on the grass. The time was mid-July and the weather was fine, with wind 12 to 15kts down the take-off run. The only point worthy of mention was the student who was, I suppose, middle-aged (to my cynical youthful gaze, he was old), around 170lbs, with the reputation of being endowed with a grip of iron, but no other obvious ability that his previous instructors had been able to discern. We were to have a briefing on circuit procedure and launch failure, followed by a few circuits with, of course, a couple of simulated cable breaks to allow the briefing to be put into practice.

". . . declared it fit to fly . . ."

After the briefing, we climbed in and completed the pre-take-off vital actions, I having first strolled around the aircraft and, following a cursory inspection, declared it fit to fly (after all, it had completed several launches already that morning). The first launch was uneventful—we tobogganed down from 900ft demonstrating our glide angle in a manner which would have drawn envy from the eyes of an airbrake designer. The student was less than quick reacting, but the calm conditions permitted us to arrive back with a minimum of instructor squawking, however, good enough for a practice cable break. On the next launch, the aircraft was attached to the first of a set of two cables and the all-out was given. After a bit of wing drop and swing, we took off and started climbing away.

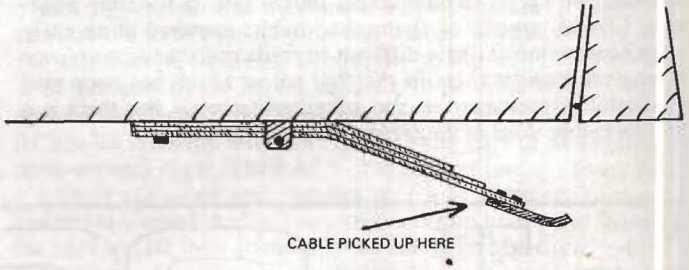
By the time we reached a couple of hundred feet, it had become clear that the aircraft was not climbing as fast as I had expected. A shout at the student to "get the stick right back" was wasted as I discovered the stick was being held hard back against the rear stop. Quickly loosening my shoulder harness and looking around, I could see nothing apparently wrong, yet the rate of climb was now very low in spite of a steeply climbing nose attitude. Having reached between 300 and 350ft, I decided that we weren't going to get much higher, so I pulled the plug and released the cable—after all, we were doing launch failures, and there was no need to take over control—I was an instructor, wasn't I?

As soon as the cable released, the aircraft proceeded to stand on its tail. The student in the front seat reacted by demonstrating his steadiness on the controls and continuing to hold the stick hard back. A strangled scream from the instructor, later recognised as my own voice, two hands, straining back and a panic stricken shove got the stick forward. Taking stock of the situation, I decided to do a 360 degree turn and land into wind. This decision was helped greatly by the fact that the aircraft was by this time banked about 45 degrees to the right, and heading about right angles to the take-off direction with nose fairly well down, at about 200 to 250ft above the ground.

At this point the alarmingly high rate of descent became apparent, although airspeed was satisfactory at around 40kts. Also it seemed that the aircraft was going to strike the ground long before it completed the planned 360° turn. There was plenty of room to land downwind, so I levelled the wings with the aircraft pointing generally towards the launching area, trying to check the descent by raising the nose. I then discovered that the elevators were only marginally effective. Starting to level off as the aircraft passed through 50ft, the rate of descent reduced at last with the speed around 35kts. (Does wind gradient work in your favour when downwind?)

Suddenly around five feet above the deck, there was a loud bang and the aircraft dropped out of the sky, touching down hard on the mainwheel, slightly nose down. On impact a further crack and the student suddenly dropped down six inches. After running to a standstill, silence.

Having helped myself rather gingerly out of the aircraft, I ascertained that the student was uninjured—his sudden reduction of height having been caused not by the compression of his spinal cord but by the breaking of his seat. A brief inspection of the aircraft, and to my considerable surprise everything was apparently undamaged (apart from the front seat, of course) and functioning normally in the correct sense. At that point a rather breathless and white-faced duty instructor ran up, closely followed by a band of inquisitive onlookers.



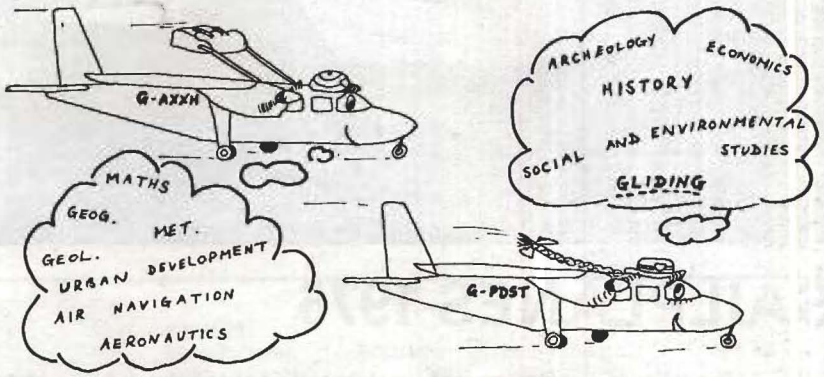
On investigation, it transpired that the rubbing shoe of the leaf-type tailskid had been incorrectly assembled so that the front end of the shoe (see diagram) projected below the leaf. The aircraft on its initial take-off had run across the other cable lying on the ground and the tailskid shoe projection had caught on this cable. The shoe rubbed against the cable until a groove was worn in the soft metal of the shoe, and the cable was then jammed in the shoe. Meanwhile as the aircraft gained height, there was an increasing drag and down-force at the extreme tail end of the aircraft. When the launch was abandoned and launching cable dropped, the opposing force to the one at the tail was removed, hence the tail-sitting attitude. The control ineffectiveness in pitch was presumably the result of the instability caused by the heavy weight at the tail. Finally the arresting action at five feet with the tail cable catching an obstruction and falling off, virtually stopping the aircraft in its tracks.

Looking back, I can see numerous mistakes. The first was over confidence and its attendant myopia. The aircraft had been inspected and flown already; thus it must be serviceable—result, sloppy inspection. A good summer day, a basic exercise and a

viceless basic training aircraft. I'm an instructor now—when a more cautious and questioning approach to the business would have ensured that the instructor took over control immediately matters started to appear out of the ordinary and not waiting for the tailslide to develop. Plain bad airmanship contributed substantially—the aircraft was too close to the second cable; no allowance was made for a swing on take-off. Inexperience played its part—with the benefit of hindsight the possibility of picking up the second cable should not have been overlooked when the launch started to go bad; and I am sure you can see a number of other errors. One thing which must be remarked on is the degree of luck (the aircraft was never in full control from the time the release was pulled) which found the event taking place in an open area instead of among some hangars and buildings nearby, and caused the cable to fall off when the aircraft was at five feet rather than 50ft off the ground.

This little experience certainly taught a lesson to this glider driver. Perhaps it may encourage some others, and even stimulate a few to pass on their own hard won experience in the same way.

THE AIR EDUCATION AND RECREATION ORGANISATION



ROBIN TRAVES

AERO was formed some six years ago as a voluntary association of educators and interested aviators. Its aim is to foster, encourage and promote Air Education throughout educational establishments in the United Kingdom. The AERO constitution defines Air Education as "imparting such knowledge of the practices and uses of aviation as will enable young men and women to appreciate its capabilities, and when they leave their schools and colleges, to know how aviation can serve them, their business, their country and civilisation." It should be noted that this definition does not include preparation for a career in aviation, although an Air Education programme in a school, especially in the secondary sector, will undoubtedly encourage some youngsters to take up a career in flying or aeronautical engineering, military or civilian.

There are good reasons for fostering an interest in aviation in our young people. Aerospace has made massive progress in this century, but it is still a rapidly developing technology with great development potential.

Balance of payments helped

On the purely material side the industry makes an enormous contribution to our balance of payments: "Aerospace takes a small quantity of raw materials (only part of which is imported) and sells the finished product at ten or more times the value per lb. In terms of the value that is added by brains and skill—our greatest natural resource—and the volume of business won, aerospace exports in 1973 exceeded by a factor of 100 the overseas achievements of the vaunted UK vehicle industry." (John W. Fozard, Chief Designer—Harrier, writing in *Air Pictorial*).

That is but one side of the coin. Flight, its history and lore, its technology and associated disciplines are inherently interesting and captivate the imagination—and may be used to great effect by teachers aware of the possibilities and able to exploit them. By supporting these teachers AERO hopes to increase public awareness of the real issues facing aviation and of the value of the air not just commercially but also recreationally.

AERO activity at national or branch level takes many forms:

1 Courses and conferences for members.
2 Dissemination of advice and information to members. There is an annual bulletin and several "Aeroletters" a year.
3 Development of teaching materials.
4 Air days and exhibitions. Some readers will have seen the AERO exhibition at Lasham last June.
5 Air experience in light aircraft and gliders.
6 Observation flights in connection with geography, environmental studies and other subjects. Preferred types are Islander, Herald, Viscount, in that order.
7 GCE and CSE work in aviation subjects. The development of Mode III syllabuses in aviation studies has been a particular achievement of AERO members.

It will be noted that gliding remains relatively underdeveloped, although the Hertfordshire AERO branch has been operating an air experience scheme at the London Gliding Club for some years. Given the interest of members and the will to find a way, even small clubs could offer air experience or even training facilities in certain cases to schools or AERO branches.

AERO would like to hear from you if you are interested in the work of Air Education. Ideas, schemes and articles are always welcome. Anyone may join AERO. The annual membership subscription of £2 is less than the cost of one aerotow. For further information please write to me at Carwarden House, 118 Upper Chobham Road, Camberley, Surrey.

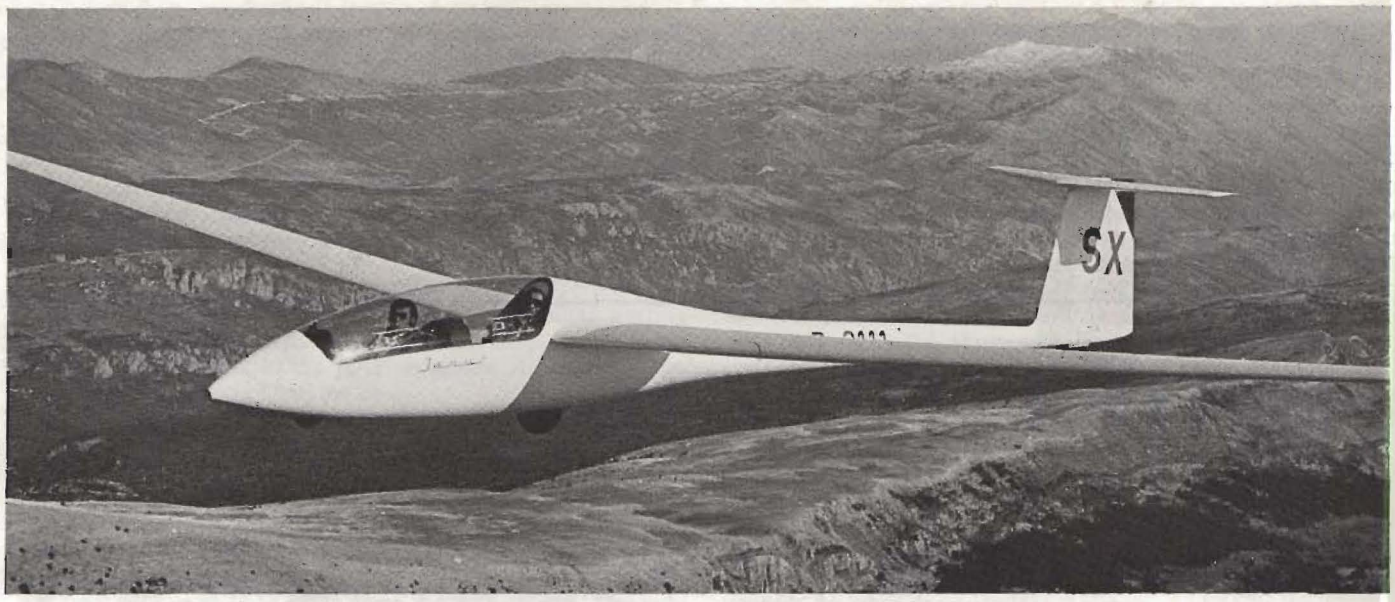
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AERO have published an attractive booklet, "An Introduction to Gliding for Schools," which is written with commendable simplicity by Lionel J. Pike and Graham Joyce with countless drawings to further explain the principles of powerless flight.

It answers all those basic questions the newcomer pours out within minutes on a gliding site and takes no time in emphasising it is a potentially hazardous sport.

"It must be said that the accident rate in gliding is very low but this is because safety is a prime objective of all gliding training," the authors point out with the additional observation that "gliding clubs impose strict flying disciplines and have short shrift with those who disregard rules. Mistakes by the careless pilot become common property in no time and misdeeds pass into gliding lore for ever!"

It is a Surrey Air Education publication, prepared by the Surrey branch of AERO for National distribution, and is available from the BGA office at 25p plus 10p p&p. G. B-S

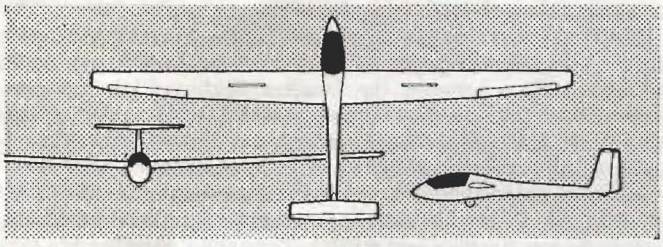


SAILPLANES 1976

Compiled by ANDREW COATES

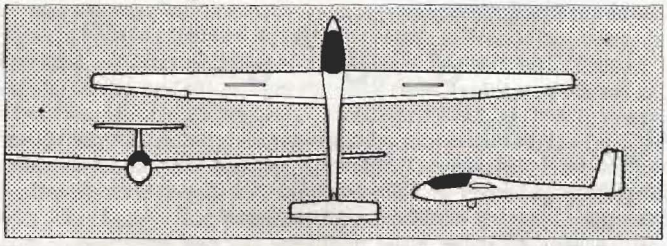
The following tables present (in alphabetical order) the majority of sailplanes at present in, or about to go into production, in addition to those which appeared in last February's S&G. The figures included give a guide to the sailplanes but for a complete picture, careful reading of the Pilot's manual is essential. In particular the weight of maximum waterballast should be checked against the maximum all up weight. Stall speed is given for minimum weight, because of the jettison of water before landing. Performance figures are in most cases calculated.

These three view drawing are all drawn to the same scale except the larger AVo 60. Prices have not been included this time, and anyone interested should write to the manufacturers or their agents.



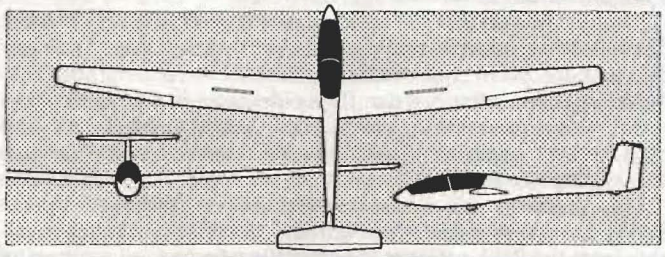
Astir CS

Manufacturer	Burkhart Grob	Empty/auw	240/450kg
Span	15m	Waterballast	90kg
Wing section	Eppler	Stall/max speed	60/250km/h
Wing area	12.4m²	Min sink	0.6m/s at 75km/h
Wing loading		Max L/D	38 at 105km/h
without w/b	25kg/m²	Glass-fibre; tail dolley designed to drop off at take-off.	
with w/b	36.5kg/m²		
Aspect ratio	18.2		



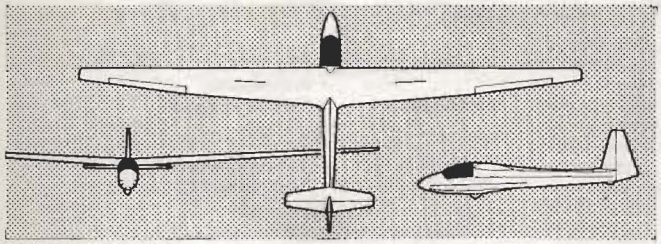
Speed Astir

Manufacturer	Burkhart Grob	Empty/auw	270/480kg
Span	15m	Waterballast	120kg
Wing section	Eppler	Stall/max speed	62.6/250km/h
Wing area	11.9m²	Min sink	0.59m/s at 74km/h
Wing loading		Max L/D	42 at 102km/h
without w/b	30kg/m²	Astir CS fitted with new wing section and trailing edge fowler flaps.	
with w/b	40.3kg/m²		
Aspect ratio	19.0		



Twin Astir *Two-seater*

Manufacturer	Burkhart Grob	Empty/auw	330/650kg
Span	17.5m	Waterballast	90kg
Wing section	Eppler	Stall/max speed	68.5/220km/h
Wing area	17.9m²	Min sink	0.68m/s at 80km/h
Wing loading		Max L/D	39 at 110km/h
without w/b	31.3kg/m²	Tandem version of Astir CS; low wing position; retractable landing gear.	
with w/b	36.5kg/m²		
Aspect ratio	17.0		

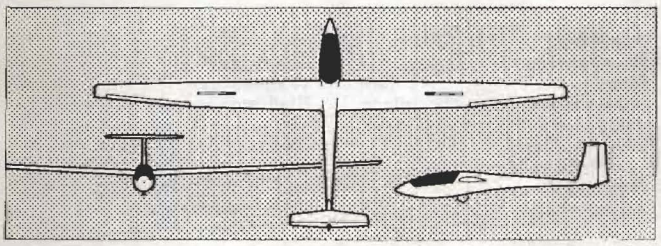


ASK-18

Manufacturer	Schleicher
Span	16m
Wing section	Wortmann
Wing area	12.99m²
Wing loading	23kg/m²
Aspect ratio	19.7
Empty/auw	215/335kg
Waterballast	None

Stall/max speed	60/200km/h
Min sink	0.6m/s at 65km/h
Max L/D	34 at 75km/h

Club Class; simple construction; based on K-6E and K-8; roomy cockpit.

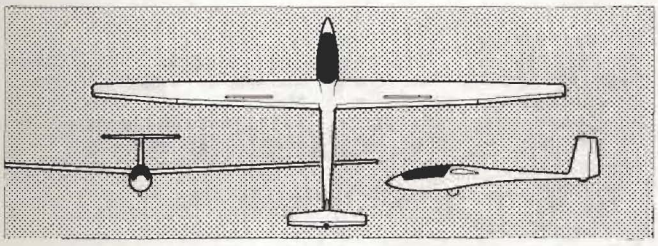


ASW-19

Manufacturer	Schleicher
Span	15m
Wing section	Wortmann
Wing area	11.0m²
Wing loading	
without w/b	27kg/m²
with w/b	37kg/m²
Aspect ratio	20.4

Empty/auw	230/410kg
Waterballast	100kg
Stall/max speed	66/240km/h
Min sink	0.65m/s at 73km/h
Max L/D	38 at 105km/h

Replaced ASW-15B; larger cockpit.

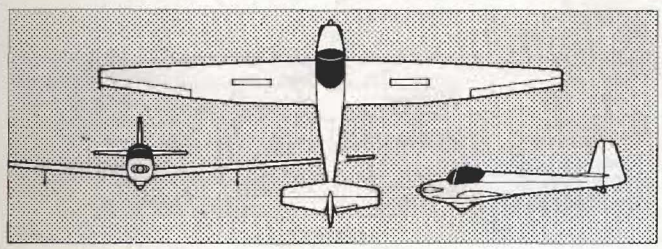


ASW-20

Manufacturer	Schleicher
Span	15m
Wing section	Wortmann
Wing area	10.5m²
Wing loading	
without w/b	30kg/m²
with w/b	40kg/m²
Aspect ratio	21.43

Empty/auw	240/420kg
Waterballast	120kg
Stall/max speed	69/250km/h
Min sink	0.60m/s at 73km/h
Max L/D	43 at 100km/h

Pilot workload and concentration reduced by automatic flaps.

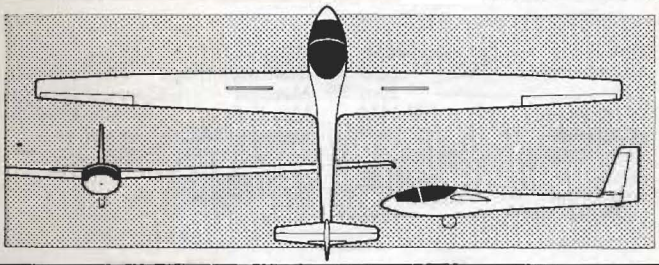


AVo 60 *Motor glider*

Manufacturer	Alpa-Werke
Span	16.7m
Wing section	—
Wing area	20.7m²
Wing loading	31.4kg/m²
Aspect ratio	13.6
Empty/auw	450/650kg
Engine	Limbach 60hp

Stall/max speed	60/170km/h
Min sink	0.85m/s at 74km/h
Rate of climb	2.29m/s
Take-off distance	150—180m
Max L/D	24 at 80km/h

Powered by Limbach 68hp available as AVo 68. Folding wings to 10m span.

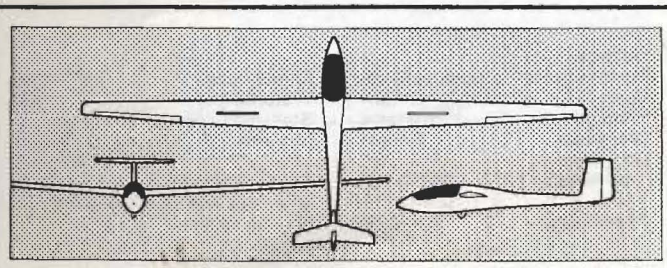


CE-75 Silene *Two-seater*

Manufacturer	Cerva
Span	18m
Wing section	Bertin
Wing area	18.0m²
Wing loading	29kg/m²
Aspect ratio	18.0
Empty/auw	320/540kg
Waterballast	None

Stall/max speed	70/284km/h
Min sink 0.67m/s	at approx 80km/h
Max L/D	38 at 91km/h

All glass-fibre. Hydraulic wheel brake. Above data for max weight of two pilots, radio and oxygen.

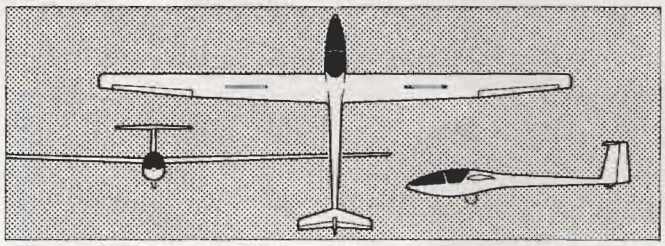


Cirrus-75

Manufacturer	Schempp-Hirth
Span	15m
Wing section	Wortmann
Wing area	10.0m²
Wing loading	
without w/b	30kg/m²
with w/b	39.0kg/m²
Aspect ratio	22.5
Empty/auw	215/390kg

Waterballast	60kg
Stall/max speed	62/220km/h
Min sink	0.6m/s at 75km/h
Max L/D	38.5 at 90km/h

Improved version of Std Cirrus. Nimbus 2 nose; new wingroot/fuselage fairing. Airbrakes increased by 10%. Waterballast system changed.

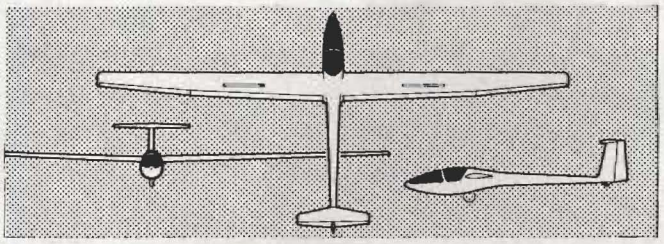


DG-100

Manufacturer	Glaser-Dirks
Span	15m
Wing section	Wortmann
Wing area	11.0m²
Wing loading	
without w/b	27.34kg/m²
with w/b	37.83kg/m²
Aspect ratio	20.5

Empty/auw	227/417kg
Waterballast	80kg
Stall/max speed	63/250km/h
Min sink	0.6m/s at 70km/h
Max L/D	40 at 111km/h

Development of the D-38. Prototype tailplane shown.

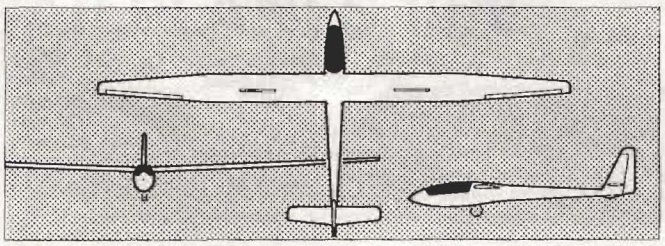


DG-200

Manufacturer	Glaser-Dirks
Span	15m
Wing section	Wortmann
Wing area	11m²
Wing loading	
without w/b	—
with w/b	—
Aspect ratio	20.5

Empty/auw	—
Waterballast	—
Stall/max speed	—
Min sink	—
Max L/D	42 at 107km/h

Data is not available. Production mid-1976. Trailing edge flaps and new tailplane.

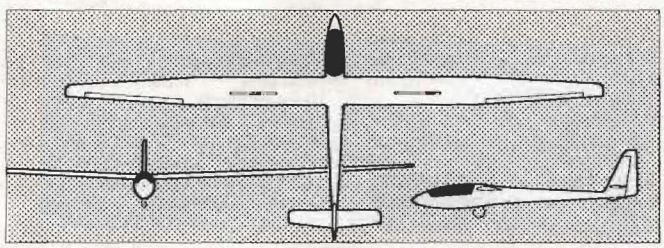


Elfe 15

Manufacturer	Neukom
Span	15m
Wing section	Wortmann
Wing area	11.8m²
Wing loading	29.6kg/m²
Aspect ratio	19.0
Empty/auw	230/350kg
Waterballast	None

Stall/max speed	65/210km/h
Min sink	0.60m/s at 70km/h
Max L/D	37 at 90km/h

All wooden with glass-fibre front fuselage. Aluminium wing spars.

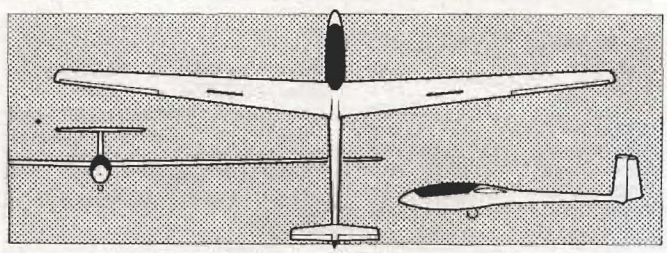


Elfe 17

Manufacturer	Neukom
Span	17m
Wing section	Wortmann
Wing area	13.20m²
Wing loading	28.8kg/m²
Aspect ratio	21.8
Empty/auw	255/380kg
Waterballast	None

Stall/max speed	65/210km/h
Min sink	0.56m/s at 65km/h
Max L/D	39 at 88km/h

Similar to Elfe 15. Both versions are available in kits.

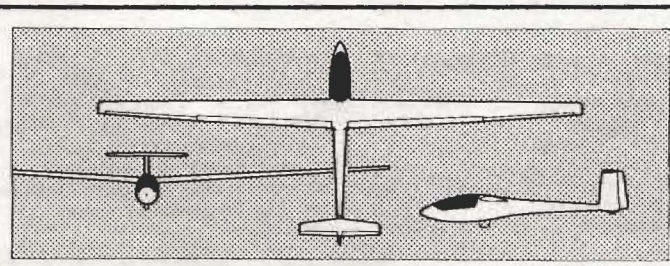


Halny *Two-seater*

Manufacturer	SZD
Span	20m
Wing section	NN-11M
Wing area	16.11m²
Wing loading	36.9kg/m²
Aspect ratio	24.66
Empty/auw	410/596kg
Waterballast	None

Stall/max speed	65/240km/h
Min sink	0.55m/s at 75km/h
Max L/D	43 at 100km/h

Experimental; modified Zefir 4 wings; hingeless flaps; controls in rear cockpit only; glass-fibre fuselage.

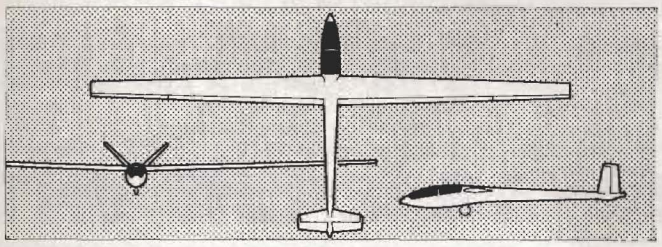


Hornet

Manufacturer	Glasflügel
Span	15m
Wing section	Wortmann
Wing area	9.80m²
Wing loading	
without w/b	35.7kg/m²
with w/b	42.9kg/m²
Aspect ratio	23.0

Empty/auw	227/420kg
Waterballast	70kg
Stall/max speed	66/250km/h
Min sink	0.6m/s at 75km/h
Max L/D	38 at 103km/h

Std Libelle's successor. Trailing edge flap brakes. 'T' tailplane. Roomy cockpit.

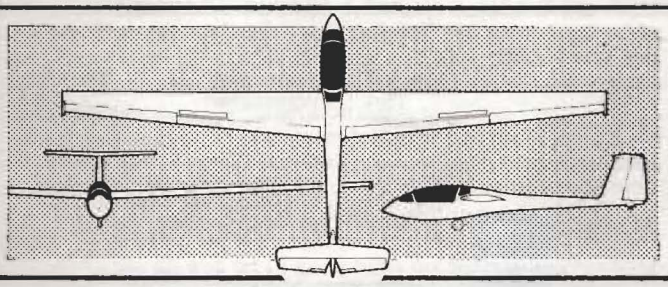


HP-18A

Manufacturer	Bryan Aircraft
Span	15m
Wing section	Wortmann
Wing area	10.5m²
Wing loading	
without w/b	24.02kg/m²
with w/b	42.33kg/m²
Aspect ratio	21.4

Empty/auw	168/444kg
Waterballast	136kg
Stall/max speed	53/241km/h
Min sink	0.52m/s at 75km/h
Max L/D	40:1

'V' tailplane; water carried inside wing box spar; carbon fibre spars.

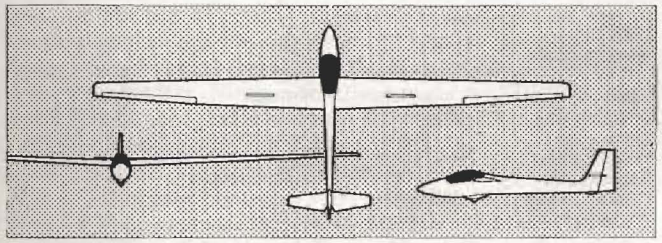


IS-28B2 *Two-seater*

Manufacturer	Romanian
Span	17m
Wing section	Wortmann
Wing area	18.24m²
Wing loading	32.34kg/m²
Aspect ratio	15.80
Empty/auw	330/590kg
Waterballast	None

Stall/max speed	63/250km/h
Min sink	0.67m/s at 60km/h
Max L/D	34 at 100km/h

All metal with fabric covered control surfaces. S. Hirth-type in place of DFS brake. Plain flap instead of Fowler flap. One piece canopy.

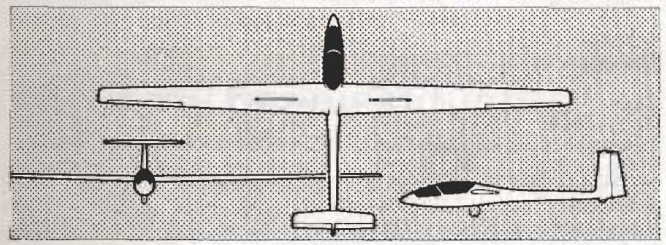


JP15-36

Manufacturer	Carman
Span	15m
Wing section	Wortmann
Wing area	11m²
Wing loading	35.5kg/m²
Aspect ratio	20.4
Empty/auw	200/390kg
Waterballast	None

Stall/max speed	62/240km/h
Min sink	0.60m/s at 75km/h
Max L/D	36 at 92km/h

Club Class; glass-fibre; fixed landing gear; waterballast optional.

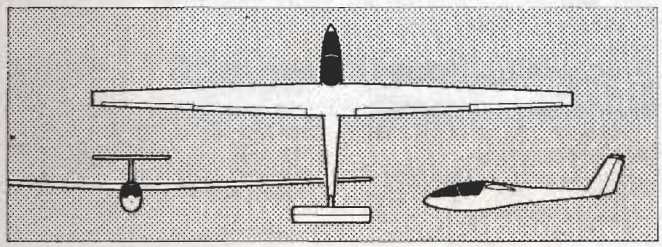


Std Jantar

Manufacturer	SZD
Span	15m
Wing section	NN8
Wing area	10.66m²
Wing loading	
without w/b	33.78kg/m²
with w/b	41.27kg/m²
Aspect ratio	21.1

Empty/auw	227/440kg
Waterballast	80kg
Stall/max speed	64/250km/h
Min sink	0.56m/s at 70km/h
Max L/D	40 at 117km/h

Version of Open Jantar, winner of 1972 19m cup. Glass-fibre.

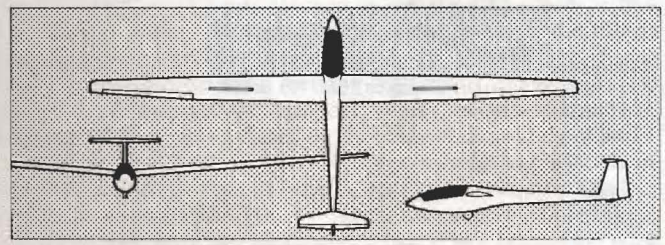


LP-15 Nugget

Manufacturer	Laister
Span	15m
Wing section	Wortmann
Wing area	10.13m²
Wing loading	
without w/b	—
with w/b	35.87kg/m²
Aspect ratio	22.1

Empty/auw	210/408kg
Waterballast	84kg
Stall/max speed	63/233km/h
Min sink	—
Max L/D	38 at 64km/h

All metal; glass-fibre front fuselage; water carried in centre section of fuselage.

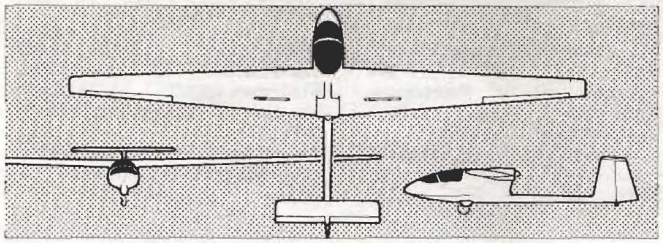


LS-1F

Manufacturer	Rolladen-Schneider
Span	15m
Wing section	Wortmann
Wing area	9.75m²
Wing loading	40kg/m²
Aspect ratio	23.0
Empty/auw	210/390kg
Waterballast	None

Stall/max speed	62/250km/h
Min sink	0.6m/s at 75km/h
Max L/D	38 at 90km/h

Fixed tailplane and elevators in place of all flying tailplane. One piece hinged canopy.

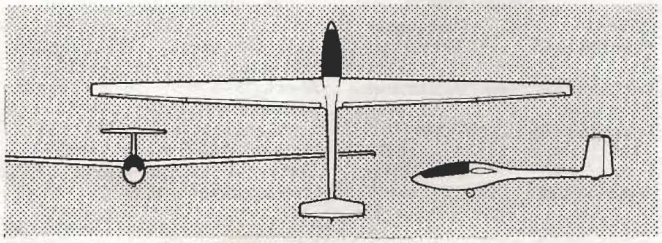


Ogar *Motor glider*

Manufacturer	SZD
Span	17.5m
Wing section	Wortmann
Wing area	19.1m²
Wing loading	36.6kg/m²
Aspect ratio	16.0
Empty/auw	470/700kg
Engine	Limbach 68hp

Stall/max speed	75/180km/h
Min sink	0.96m/s at 72km/h
Rate of climb	2.8m/s
Take-off distance	200m
Max L/D	27.5 at 100km/h

Mixed construction. Driven by 1500mm dia pusher propeller. Partly retractable wheel.

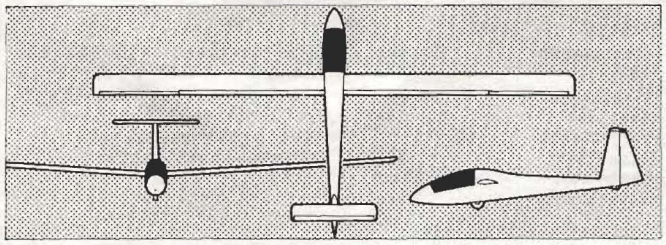


PIK-20

Manufacturer	Eiri Avion
Span	15m
Wing section	Wortmann
Wing area	10.0m²
Wing loading	
without w/b	32kg/m²
with w/b	40kg/m²
Aspect ratio	22.5

Empty/auw	235/400kg
Waterballast	80kg
Stall/max speed	65/270km/h
Min sink	0.62m/s at 82km/h
Max L/D	40.5 at 98km/h

Pneumatically sealed one piece hinged canopy; coupled flaps/ailerons. Choice of colours.

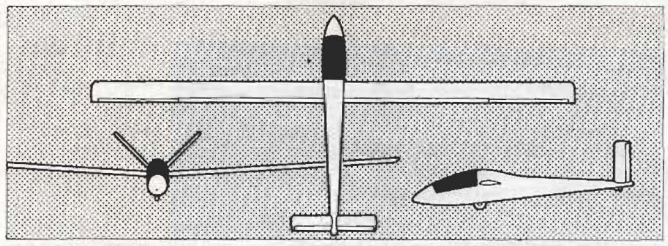


SD3-15T

Manufacturer	Swales Sailplanes
Span	14.9m
Wing section	Wortmann
Wing area	9.57m²
Wing loading	34.17kg/m²
Aspect ratio	24.0
Empty/auw	222/330kg
Waterballast	None

Stall/max speed	65/210km/h
Min sink	0.65m/s at 74km/h
Max L/D	36 at 89km/h

Development of BG-135. Above figures provisional. 'T' tailplane. In production.

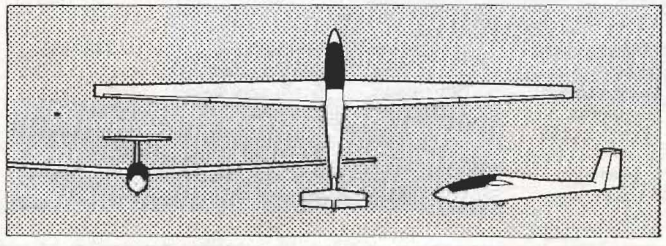


SD3-15V

Manufacturer	Swales Sailplanes
Span	14.9m
Wing section	Wortmann
Wing area	9.57m²
Wing loading	34.17kg/m²
Aspect ratio	24.0
Empty/auw	222/330kg
Waterballast	None

Stall/max speed	65/210km/h
Min sink	0.65m/s at 74km/h
Max L/D	35.5 at 89km/h

Development of BG-135. Above figures provisional. 'V' tailplane. In production.



SGS 1-35

Manufacturer	Schweizer
Span	15m
Wing section	Wortmann
Wing area	9.54m²
Wing loading	
without w/b	28.21kg/m²
with w/b	43.75kg/m²
Aspect ratio	23.29

Empty/auw	190/422kg
Waterballast	145kg
Stall/max speed	66/—km/h
Min sink	0.54m/s at 74km/h
Max L/D	39.2 at 105km/h

All metal; trailing edge flap brakes; nose skid.

Cirrus-76 Schempp-Hirth

The details are not available yet, but it has 15m span with flaps and a spoiler type brake that works in conjunction with the flaps. This type of brake system will remove the problems associated with trailing edge flaps *ie* sinking before gaining speed if the flap deflection is reduced when undershooting. The wing section is modified from the Nimbus 2. The fuselage and tailplane are as the Cirrus-75.

Mosquito Glasflügel

Fully flapped high performance 15m. No details are available but may use the same wing as Cirrus-76. Prototype nearing completion.

HUMPHRY DIMOCK recalls how he competed for the ninth successive year in the French International Mountain Competition at Vinon last summer when he took his Nimbus 2 for the second time.

THE ALPS RE-VISITED

Since a Kestrel tailwheel has been fitted there is now no fear of those ghastly groundloops which I and many other pilots have suffered. The aircraft runs true until the rudder control takes over. There were 32 Standard Class and nine Open Class. As usual the weather permitted flying every day, although only eight out of eleven days were competition days.

The first day, June 28, was scrubbed owing to the organisation and late arrivals. Another day which would have been very exciting was when strong north-west gales were with us and a task was set which would have involved wave flying at heights requiring oxygen. At briefing we were told to have two wing holders until take-off. When all was set to go, a wing holder released his hold and a glider took off amongst the grid but the pilot landed it safely on the same spot. However, the pilots decided for themselves that the risk of several gliders being damaged by one or more such happenings was too great and began streaming for the hangar. I was amongst these, ditching my water as we retreated. Having secured my Nimbus in the hangar with others piled around it, I noticed that about one third of the field decided to fly anyway, just for fun, but it was too late for me to change my mind as my glider was completely hemmed in.

Due to being possibly over-cautious during the competition, I flew much longer courses than those who took risks or were wiser than I as to where safety lay. I flew within gliding range of aerodromes for as long as possible, making long detours in order to do so. I only had one field landing, and that was during the practice week. My score was not impressive.

One of my happiest flights

One particular day deserves special mention, it was one of my happiest flights. Soon after the first turning point I could see ahead the 9000ft Alp called the Pic de Bure with a 30 acre plateau on top, and a lenticular cloud sitting 1000ft above that. Obviously I would have to arrive 3000ft below the summit and work my way up. Flying along the various flanks was very laborious. If one flew through an up-gust of 15kts and turned to circle in it, invariably it was not there, it had vanished, being replaced by a down-draft of several knots, and the net gain was only 100ft. It took 20 minutes to climb to the plateau, but on the rim the lift increased to 6kts, rising to 10kts up to cloudbase.

Suspecting a westerly wind I flew that way and climbed at 6kts over the edge in the clear and rose to 15000ft before the smooth wave lift slowed to 3kts. Oh what joy, to the south the broad valley and not a cloud in sight, but ahead were many clouds, flat lenticular and orographic, over the rugged mountains on the north side of the valley. The turning point was 30 miles onwards and without turning it was reached at varying high speeds with a loss of only 3000ft. Returning by the same route to the Pic de Bure was very slow, but again I achieved 15000ft and it was lovely to glide to St Auban arriving with 5000ft in hand and 30 miles to go. However, a thunderstorm had brewed up between St Auban and Vinon and I jibbed at the thought of landing in pouring rain on a wet field, so I kept within a safe gliding distance of St Auban, holding height as long as possible. Eventually I had to land there when the rain fell. Six others had already landed there and we all had aerotows home about two hours later. One pilot saw the storm and had the sagacity to wait on the Pic de Bure until the storm subsided and then completed the task, flying a total of eight hours.

Ruminating on this wonderful day, it is difficult to find enough adjectives with which to describe the sublime superior feeling sitting up there in my great white bird above all those beautiful Alps on the side of the valley running up to St Crepin aerodrome and beyond. Only yesterday those beautiful Alps were sitting there like beautiful maidens, each maiden waiting to be admired and conquered, and having conquered to rise high above in her warm breath. Sometimes her breath was not so hot and it was a long way to go to the next maiden, perhaps arriving near her base, there to struggle with other competitors to climb in the anabatic wind on the sunny side. It can be a long struggle.

A way of life itself

Not so today, high above them all at a conservative 90kts, porpoising joyfully above the lenticular clouds, or in the warm breath of those lovely maiden Alps. It all seems so unreal and impossible that I should be up there in my glass-fibre water carrier weighing all of half a ton when carrying as much ballast in each wing as myself, and able to travel at high speed to a place over the horizon 70 or 80 miles away. It is a way of life itself.

On another day I landed at Sisterons (Theze). From Sisterons I was given a tow as far as St Auban, 30 miles from Vinon with 4000ft in hand. It was now fairly late, about 19.00hrs. My crew were surprised to hear from me after a long silence, all hitched up ready to collect me from a field. They were relieved at not having to do so. Half way to Vinon at 3000ft I realised that I was not losing height at all, there was a continual uplift all the way, and on arrival at Vinon I was still at 3000ft. Discussing the unusual situation with Mike, I over-flew Vinon another 15 miles towards the coast. Not wishing to risk an outlanding I flew back, still not losing height and then proceeded ten miles towards the east. It was most delightful to sit up there with nothing to do except admire the wonderful view and entertain Mike. He suddenly said "Here comes Patsy to spoil your fun . . . ." Sure enough Patsy came on the radio. "You come down at once and have supper, it has been waiting a long time".

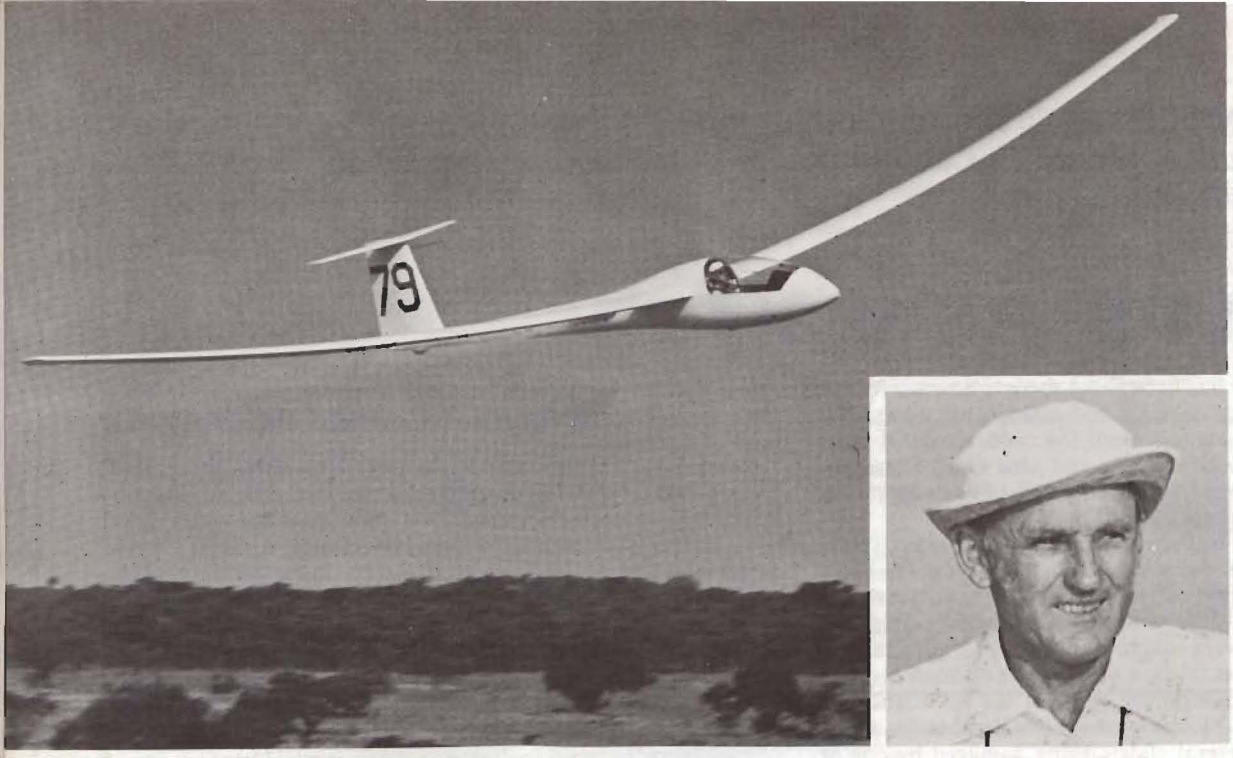
One of the most extraordinary happenings was when one of the 15 gallon black plastic water bags was left on the car roof with a little water in it. The hot sun boiled the water and burst the bag! Noon temperatures are usually 90°F or more in the shade on the ground, but we pilots are OK at a mile or more altitude . . .

A big improvement is that no longer do the 200 crew members have to do all their washing at or from the one hand pump—water is now laid on, and there are basins inside and outside a long shed with closets. All girls and boys together . . . the French way, with Giants' Footsteps!

My logbook tells me that I flew 55hrs in 13 days covering 2000 miles. It is all wonderful scenic flying, often only 25ft from the rocks to get the best anabatic current, sometimes looking eye to eye at a shepherd, passing and repassing unable to get to the ridge. My one regret is that there is no suitable side-by-side two-seater so that I can share my joys with others. Roll on June.

CONTEST
YOUR MOU

Rhodesian
Salisbury,



Photos: Mike and John McGeorge.

Tim Biggs crossing the finish line in his Nimbus 2 after his record 750Δ.

Tasks Open/Standard	Fastest Open km/h	Fastest Std km/h	Limited Tasks	— All O+R	Fastest km/h
1. 301.3kmΔ	112.6	101.8	210.32km	—	61.82
2. 324. km↔	111.82	82.6	204.62km	—	71.2
3. 402.7km↔	99.4	96.85	270.75km	—	61.72
4. 301.3kmΔ	114.46	90.76	215. km	Δ	54.05
5. 311.5kmΔ	101.53	93.12	154.26km	—	70.69
6. 311.9km↔	111.34	98.79	201.32km	—	75.21
7. 306.2kmΔ	120.14	96.87	208.34km	—	85.56
8. 311.9km↔	121.32	107.65	311.9km	—	76.93
9. 512. kmΔ	118.41	107.48	311.9km	—	80.04
10. [1]311.5kmΔ	138.68	118.52	234.15km	—	86.94
11. 756. kmΔ	124.98	103.79	500. km	—	82.46
12. 301.3kmΔ	118.47	102.76	210.32km	—	67.53

The 1975 Nationals will be long remembered by those who flew in them. It put Rhodesia on the world record list for the [1]second time and in the gliding annals for the longest and first ever (still magic) [2]750km Δ which was set on October 16; as briefly announced in our last issue p274. During the contest days, 12 out of 12, a total of 4452 task kilometres were set for the Open Class (an average of 371km per day). The tasks for the Standard Class totalled 4200km (average 350km per day). Except for Day 11 they flew the same tasks. The Limited Class tasks totalled 3033km (average 253km per day).

Despite these long daily tasks and the outstanding day on October 16, the weather was not the usual record breaking kind; but since the contest finished the conditions improved considerably with records broken—so writes Mike McGeorge.



Waiting for the ships to come home.

The Rhodesians rely on their neighbours from South Africa to give them competitive flying, and the weekend of October 4 saw the arrival of the largest contingent of SA pilots yet seen in a Rhodesian Nationals. Among them the reigning SA Champion, Klaas Goudriaan (ASW-17), Tim Mouat-Biggs, winner of the previous Rhodesian Nats, and our most numerous British National record holder Ted Pearson (Nimbus 2) who resides in Rhodesia. In all, four South Africans, one British National and two Rhodesians flew in the Open Class with four Nimbus 2, one ASW-17, one Calif A-21 and a Diamant 16.5.

Two Rhodesians, six British Nationals and four South Africans, flying four Std Libelles, three Std Cirrus, three ASW-15s, a new Elfe and a Phoebus 15, made up the Standard Class.

Two British Nationals and seven Rhodesians flew in the Limited Class sharing three K-6s, one Dart and one Blanik. Only Jim Bannantyne had a K-6 to himself and flew every day, his scores being adjusted accordingly.

A damp start

A cold southeaster, bringing with it low cloud and some rain, greeted the arrivals on Saturday, Oct 4; it dampened everyone's hopes in more than one sense, and there was no indication of the exciting time which lay ahead of them. Fortunately, by Sunday afternoon it started to clear and pilots took to the air quickly to get in some final practice. Then a continual high pressure system over the South African coast dominated the first week's weather. Clear dry days with a gusty southeaster blowing most of the time! It made take-offs tricky, especially for the 'wet' ships, but Alf Thompson, the Director, had a very successful recipé for setting the tasks, aided and abetted by Harvey Quail the Met. man.

In the second week the conditions changed and became more like the usual October pattern. Cloudbase went up to 8—9000ft agl, and regular 4—5m thermals could be relied on most of the time. It all culminated in the magnificent October 16 which will live for ever in everyone's memory. Especially so for Ted Pearson, who, unlike the others had not heard the forecast the previous evening, and had no idea that a low pressure area over

[1] *The first world record was the 500km Δ (women) set on Oct 16, 1974, by Yvonne Leeman (SA) in Rhodesia.*

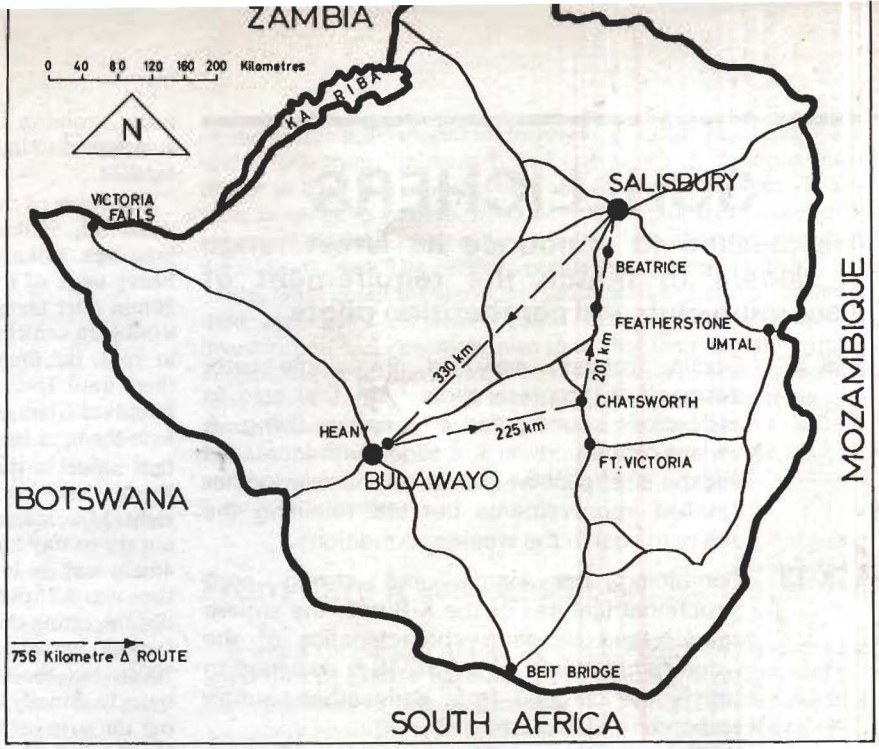
[2] *The previous largest task a 707km Δ was set on Jan 20, 1974, during the World Championships in Australia.*

ST TASKS TO MAKE MOUTH WATER!

sian Nationals

ıry, October 6—17.

ge.



Natal, and a rise in temperature to 31°C, might lead to an exceptional day. Some moisture was also coming in which promised fine weather cu—the pathfinder of every pilot! Alf Thompson, and Harvey Quail the Met wizard, reckoned an early briefing at 9am was called for, and so they declared; thus most of the pilots retired early, full of anticipation of what tomorrow would bring!

Ideal weather

And so the last day but one arrived. The weather expectations were as hoped for, there would be an inversion to 3000ft agl before 11am then, with rapid temperature increase, conditions would improve quickly over the whole route, and so 756km Δ was set for the Open Class. Heany Rail Junction (330km) north-east of Bulawayo, then east over some forbidding country to Chatsworth Rail Junction (225km), and 201km northwards back to Warren Hills (Salisbury). The Standard and Limited Class were given a 500km goal and return to Fort Victoria.

Launching had been scheduled for 10.15am with the Limited and Open Class to go first, in fact they rolled five minutes early, as everyone was ready on time for once, except Ted Pearson. He made a fatal mistake by going to his office that morning not realising a long task had been set, thus he took off late and missed the last thermal home—landing 50km short—as already said; he won't forget that in a hurry!

The startline became busy almost at once as most pilots left as soon as they could. Tim Biggs, third off the grid and the first to leave, had worked out a seven hour flight. He felt that on a task like this an early start was vital and wanted to leave with the first bit of lift—inversion or not! Using his thermals skilfully, initially to gain height, then going faster and faster as conditions improved, he reached the first TP in 2.25hrs, and average of 139km/h, and at once realised he had a good chance to break the world record. The second leg, however, proved more difficult. There were no good landmarks, and the TP was difficult to locate due to the heavy bush in the area. But Tim wasted no time looking for the TP and hit it straight on the nose of his glider, but the 15kt headwind along this leg, had slowed down his average somewhat! He had been flying now for over four hours, and with ten consecutive days flying behind him, he was rather tired. As he was catching up with the Standard boys on their way back from Fort Victoria, he decided to take it easy and using them as stepping stones and snifters did not have to work too hard and so completed the triangle in exactly six hours. His speed of 124.98km/h should, subject to homologation, be the necessary 2km/h faster than George Eckle's flight of January 5, 1975. Thus Tim, after 40 years of gliding, can add his first world record to his many national records and the Rhodesians were delighted that the flight was done in their country.

Tim Biggs has twice represented South Africa in world championships and has been selected to go to Finland next year. He has flown in practically every SA Nationals as well as six Rhodesian ones. His longest flight was made two years ago, a 800km goal and return, but the record Tim is probably proudest of is his 40 accident-free years of gliding, which must be close to yet another record!

Klaas Goudriaan had a very uncomfortable experience: he flew the whole flight with waterballast discharging into his cockpit. Just imagine it, sitting in a pool of water for s e v e n long hours! Jan Geerling from SA in his Nimbus 2 was the third and last pilot to get back in the Open Class. He had to be talked down by



Mike McGeorge surrounded by fellow members after his night landing in a K-6, having completed a 500km out-and-return.

SCHLEICHERS

Are pleased to announce its latest range of gliders to match the requirement of discerning club and competition pilots.

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ASW-17 Super high performance Open Class sailplane for those who want only the best.

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radar, coming in after dark, all cars on the site had been summoned to light up a strip on the runway to help him to a safe landing.

For some of the Limited Class pilots this day was a hard grind. After all, 500km in a K-6 is still newsworthy in everybody's language. Mike McGeorge (K-6), who was in overall lead, made heavy work of it even before he started and could not leave until 20min after his nearest rival Jim Bannantyne (K-6). Then he had trouble in centring his thermals and instead of getting to the TP at 2pm, the time he had worked out to get back, he didn't get there until 3pm. To his great relief, however, there were several Standard Class ships still in the TP area, and he managed to stay with them, at least, until the final 100km. He kept telling himself that whatever they did he had to stay high or risk landing out. A Nimbus had passed him at Featherstone and was soon lost to sight. Mike was at about 8000ft agl there—a pity the Nimbus did not try to stay high too because he landed 20km short! "The last 45min was the longest short period of my life," Mike wrote. The time was 5.15pm and with 6000ft and 50km to go in a sky full of disintegrating cloud and a crosswind component his chances were rapidly decreasing. He managed another 1m climb, gaining 700ft, but the sun was setting and, once gone, darkness falls quickly. Finally, with 3000ft and 20km to go, he could just make out the strip in the gloom so he had to hurry if he was to make it. He did, it had taken him over seven hours and he was frozen to the marrow and could not stop shaking—but instead of a nice hot cup of tea he was given an ice-cold beer while still in the cockpit—the last thing he wanted! Bannantyne had won the day but Mike had enough points in hand to win the Limited Class.

A final 300km Δ, which must have been almost routine by now, for the Open and Standard Class, and a 210km for the Limited Class, wrapped up this championships. They may not have had what Mike McGeorge calls record breaking type weather, but I am sure that European pilots would give anything to be able to fly for 12 days in conditions like the 75840km they flew in the 1975 Rhodesian Nationals.

Open Class		Points	Standard Class		Points
Mouat Biggs (SA)	Nimbus 2	11610	Hodge (Brit)	Std Cirrus	11571
Goudriaan (SA)	ASW-17	11558	Falkingbridge (Brit)	Std Cirrus	10942
Pearson (Brit)	Nimbus 2	10.322	Harrold (Rho)	Std Libelle	10708

Limited Class		Points
Mike McGeorge (Rho)	K-6	5597
John McGeorge (Rho)	K-6	5534
Bannantyne (Brit)	K-6	5222

A number of British National record claims have resulted from the Rhodesian Nationals; some of the flights were carried out after the contest. (All subject to homologation.)

Ted Pearson, 100 and 500km Δ in Nimbus 2 at 137.2 and 131.9km/h respectively; 300km goal and return at 141.3km/h. (Dates Oct 19, Nov 5, Oct 25.) Single-seaters (Women), Karla Elizabeth Karel, ASW-15B, 100 and 300km Δ at 110.8 and 109.4km/h; 500km goal and return at 102.6km/h. (Dates Nov 2, Oct 15, 16.) Multi-seaters, C. Lucas and B. C. Turner, Calif A-21. 300km Δ at 97.4km/h on Oct 12.

Compiled by Rika Harwood from news received from Philippa Berlyn and Mike McGeorge.

MIKE BIRD'S MNEMONIC

Mike Bird has found his own mnemonic to solve the problem of his 'absent-minded approach', see S&G Dec 1975, p243. It is **WUFBC.**

Water		**Wet**
Undercarriage		**Underpants**
Flaps	=	**Feel**
Brakes		**Bloody**
Chute		**Cold**

DIESEL AUTOMATIC LAUNCHING

CLIFFORD CARTER

Although there is no doubt that the petrol engine is far more suitable for launching gliders by winch or autotow, most clubs have now been persuaded of the economic benefits of diesel launching and accepted the drawbacks. One of the chief difficulties has been the non-availability of an automatic transmission system for the diesel engine.

At our club, Cotswold, Aston Down, reverse pulley autotowing has been the standard method of launching for several years now. Because large engined, petrol-run, automatic saloon cars are readily available on the car market, it is always possible, given the finance, to purchase a vehicle suitable for autotow launches. The same does not apply to diesel vehicles. Our club originally chose to operate Mark 9, 4.2 automatic Jaguars.

In the early 1970's, we experimented with a diesel powered towcar, constructed from a 1950 Austin Sheerline chassis, powered by a six-cylinder Perkins engine, fitted with a commercial manual gearbox. After two or more years of faithful service, during which the economic benefits became increasingly evident, the Mark II was conceived. This was one of the old Jaguars converted to diesel, again with a manual gearbox. In both cases, launching procedure was similar and required only one gear change. It was necessary to start the launch by slipping the clutch in third gear, then changing into top. Problems arose due to the inevitable pause between gear changes early in the launch, mainly of a minor nature, *eg* over-running the cable, but including two hang-ups which luckily avoided serious consequences.

Both towcars served us well, but there was no denying that they were uncomfortable, noisy, dirty,—and cold!

A new towcar was called for.

The criteria for the new vehicle were that it should be a modern, light commercial model (thereby ensuring that there would be no problem with spares), diesel and automatic, and that the engine could be mounted behind the driver, to minimise fumes and noise, and to distribute weight evenly.

The vehicle chosen to convert was a Commer walk-through van, model No. KAC 30.It has a forward driving position and a channel section chassis, sturdy and easy to work on, with enough room for an engine behind the driver. We chopped up the body and discarded the petrol engine. We chose to keep the Perkins 6.354,—a five and a half litre, six cylinder engine, with a maximum of 2800rpm. The major drawback with diesel is that most of the torque is developed in the lower rev range—up to approximately 2000rpm, unlike a petrol engine which develops more power at high revs, usually between 4000 and 5000rpm. Therefore, in order to achieve the same acceleration from diesel, it is necessary to increase the cubic capacity, and to increase the number of gears used. The Perkins engine met our requirements.

But, what about the automatic gearbox? The Perkins engine is used essentially in heavy goods vehicles, and months of investigation had already proved to us that there was no suitable automatic box for the Perkins 6345. However, I kept trying, and rang almost every company in the UK having anything to do with auto transmission. Eventually, I was informed almost casually that the back of the Perkins 6345 was the same as the back of another engine, which did fit a Borg Warner model 12 or model 8 automatic gearbox.

From here it was easier

It was a simple step to find the specification, and to purchase at the cost of £100, a back plate, bell housing, flywheel, and the parts necessary to bolt on a second hand Borg Warner model 8 automatic box—the type fitted to 4.2 Jaguars from 1966 to 1971. This box has three gears, reduction ratios as follows:— 1st gear, 2.40:1, 2nd, 1.64:1, 3rd, 1.00:1. There is also a 2.00:1 reduction on the torque converter.

This major problem solved, we fitted the engine onto the chassis, connected up the necessary pipes, and controls, and tried a few test launches. After some adjustments to account for the lower rev range of the diesel engine, the automatic box functioned perfectly. However there was a lack of top speed due to the vehicle's low differential ratio of 5:1. We approached the problem in the simplest way, by exchanging the 7.50 × 16 rear wheels and tyres for two bus size 11.00 × 20 wheels and tyres. This increased the top speed from 42 to 60mph and although it also increased the overall weight to 1 ton 19cwt, the acceleration speed proved quite adequate for normal launching, except on those occasional 'no wind' days.

The new towcar went into service in the spring of 1975, with fingers crossed. Would the automatic box stand up to the strain? Several thousand launches later the answer is Yes, it has stood the test of time (and towcar drivers) well!

Although restricted to one type of engine and one gearbox, it is now possible to launch with a diesel automatic, overcoming some of the previous drawbacks of diesel. The system could easily be fitted to a winch.

Should anyone be considering using this system, I would be happy to assist in discussion of technical details. Engine mounting conversion drawings for the Commer van have been retained, if any prospective towcar builders are interested. My address is 9 St Georges Close, Cheltenham, Gloucestershire, telephone Cheltenham 32334.

WINTER BAROGRAPHS

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RUTH TAIT *gives her experience of the dreaded five hours*

What struggles we have seen, what four-and-a-half-hour disappointments in those heroic attempts to achieve the magic five hour duration flight, and how trifling they will all appear when viewed in years to come from the eminence of a pundit's pinnacle!

So often, at our coastal site, a potential five hour sky is swept clear of thermals by the relentless sea breeze, whilst, in winter, when the wave is at its best, days are short, with darkness engulfing all before 4pm. However, on those increasingly frequent occasions when the wind is an unstable northerly, fresh to strong, Ben Aigan, a 1544ft hill a few miles to the south of our site, works beautifully, and aspiring Silver Cs are towed out there with morale-boosting friends, and told to get on with it. A local farmer obligingly lends a field for landing in, and a gaggle of cars and trailers stations itself alongside the fence to deter any attempt on the part of the pilots to come down because they are cold or hungry or frightened or desperate. Sitting at 2500ft, flexing their frozen feet, they feel responsible for all those people drinking hot coffee in the warmth of their steamy cars. If it were not for this marathon, they would, in these awkward crosswind conditions, be working in the shelter of the hangar instead of waiting to wrestle in mud with impossible wing sections and intractable bolts.

This was the way

Waking one Saturday morning to the roar of the wind in the chimney, our nervous female Olympia 2B pilot, who is slowly creeping up the gliding ladder step by tentative step, leapt out of bed, glanced out of the window at the clouds scudding before a strong northerly wind, and realised that this was to be the day when she would take her courage in both hands, turn her back on the airfield and set out for Ben Aigan and a five hour slog. To hasten this doom, she hustled her family through breakfast, packed her husband off to some distant piscatorial assignation and the children to their Saturday morning swimming lesson, washed up the dishes, ignored the unmade beds, fished the children out of the swimming baths, dragged the baby-sitter out of bed, politely choked off the unexpected visitor who had nothing better to do on a Saturday morning but talk, and finally rushed out to the club, to be greeted by the tug pilot, who had left his wife to deal with *his* domestic trivia, with:

"Where the blazes have you been? It's a five hour day today. The lift on Ben Aigan is so strong that even the Auster is staying up. Get that Oly ready quickly and you may still have time. Why you women can't get out at a reasonable hour beats me."

Postponing the urge to throttle him till after he had towed her out to the ridge, she set about doing a very careful DI on her faithful Oly, and stocking the cockpit as if for a siege with sweets, an apple, sandwiches, de-rigging tools, spare glasses, sun-specs, anti-mist cloth, a map folded at the right section, gloves, ballast, cushions (the Oly was designed for very tall pilots only), parachute, barograph. (She unscrupulously helped herself to one that was lying about ready-smoked.) She did wonder vaguely where she was going to sit amongst all that junk, but comforted herself with the thought that it would help to keep her warm. A lofty individual to whom ridge soaring for five hours was child's play, added yet another chalk diagram of Ben Aigan to the artistic collection on the hangar floor as he briefed her before leaping into the instructor's seat of the Blanik and being whisked away by the impatient Auster.

In a remarkably short space of time, she was squeezing herself into the cockpit, glancing anxiously at the straining windsock and wishing she was at home cooking the lunch. Last time she flew in rough conditions she chickened out and landed whilst everyone else was merrily soaring on the best thermal day they had had all season . . . there would be no going back today, no quick return to base when things looked a little difficult. If she made it today, then the way ahead to full Silver, even Gold, was clear; if not, it was back to the children, the garden and an occasional day's salmon fishing. She gritted her teeth and made a vow as they rolled the Oly out onto the tarmac.

"Rhoda Partridge," she promised, "look to your height record: I'll catch you up—one day!"

The checks were done, the cable attached, the all clear given. As the rope tightened and the glider started to roll, her nervousness drained away under the soothing effect of the familiar movements. A year ago this simple take-off would have tied her stomach, the glider and the cable in knots and driven some hapless instructor demented.

"You get used to anything," she thought, as she turned her back on the airfield, irrevocably, for the first time, and headed south.

All too soon, the safe fields were left behind and they were climbing gently to cross the shoulder of the Brown Muir, an inhospitable patchwork of purple heath and sombre forest. Then, over the ridge, there it was:— Ben Aigan, two and a half miles of steep, wooded hill with the aristocratic Spey curving at its foot and a flat valley floor just one field wide. There too was the landing field, 300 yards of stubble with two balers in one corner: it was a comforting sight. The tug waved her off at 2000ft out over the valley.

Release in sink

"But I'm in sink!" she protested as she obediently pulled the release and floated on towards the hill. Brooding over the radio mast like some garishly striped hover-fly sat the Blanik. Its wings rocked invitingly, and she cautiously flew towards it. The variometer, a pessimist at the best of times, grudgingly crept from three down to two down, then one, but she felt a lightening of the glider beneath her long before the needle jumped over the zero. Secure in the support from the hill, she looked at her watch: 1.15pm. If she stayed until 6.16, she would be well over the five hours.

She followed the Blanik respectfully until she had grasped the technique, then she set off on her own, trying to remember all she had read or been told.

"I must keep my eye on the other gliders." she thought. "I should know where everyone is. Gliders, as she already knew, were quite extraordinarily elusive. The Pilatus B-4, the K-6CR and K-8, being white, or nearly all-white, liked to masquerade as bits of cloud and she was forever losing sight of one or all of them and then rediscovering them in unexpected places. Even the

Blanik with its "day-glo" orange stripes managed to disappear occasionally; only the Swallow in its red and yellow livery remained obstinately visible.

From time to time, like some pale moth frightened out of the stubble, the Auster appeared below, nosing about the fields, searching for any that might be suitable for towing out of. Each reappearance meant another glider to watch; with cat-like aloofness, she stationed herself at the opposite end of the ridge from everyone else, so that she could keep her eye on them. Every so often, as she and they passed each other on their endless patrols, she could feel the hair at the back of her neck rise and knew that behind her, in her blind spot, hovered another glider, and she blessed again the genius who had given the Oly orange wings and tailplane, and an orange band on the white fuselage, making it visible against any background.

Moved sedately crabwise

Cautiously at first, she explored the ridge. The wind was blowing up the Spey from the north, and there was always lift at the north-east end, in front of the radio mast on Knock More and out over the Mulben Burn, where the back road to Keith wound up from the valley, and at the south-western ends; where the hill bulged out westerly towards Rothes in between, it varied, as the wind veered and gusted with passing squalls or thermals. But there was often a good kick in the turbulence over the three gullies that scarred the hill face, and every so often a passing thermal would send the variometer and the ASI crazy. She ignored these thermals: the other gliders went twirling upwards, but she flew solidly on, pausing a little in the cores to be shot up a hundred feet or so, then moving sedately crabwise across the hill once more. Her thermalling technique was not good: she had wrestled all summer with tight turns that became spiral dives, and cores which always moved away whenever she poked a tentative wing towards them. Nothing would induce her to risk being blown back over the hill whilst doing a spiral dive in a thermal that was not there any more, to encounter the horrors of the curl-over she had been told to avoid.

"Today," she said firmly, "I am doing my five hours on the ridge; I've got to stay up and show them I can do it. I'll have another go at those thermals next week, though," she added thoughtfully, as the Oly once more leapt up like a scalded cat.

From her elevated position she could look out to sea and watch the lines of squalls marching across the Moray Firth, grey curtains through which it was still possible to glimpse the surf pounding the beaches. Sometimes the trailing hems swept Ben Aigan, lashing the canopy with raindrops that dazzled and blinded her as she turned south-west into the sun. Sometimes the curtains parted and swept past on either side in a swirl of rainbows. For a few moments, she chased an upside-down bow, intrigued by its strange inversion, until she found herself sinking towards the pot of gold itself in the new distillery at Auchroisk, and hastily scuttled back to the sober slopes of Knock More. The larger squalls brought their own excitement, snatching the gliders up with invisible fingers as the pilots dived to evade those cloudy tentacles, hands poised over airbrake levers, eyes straining to catch a glimpse of the next glider through the rain.

As the sun swung round behind Rothes and the wind blew more steadily, the Oly pilot relaxed in the cockpit for the first time in her gliding career, loosening her tense, cramped fingers at last, wriggling her frozen feet and wondering if there was a cure for a frozen behind. She allowed herself her first glance at her watch since 1.20—the first five minutes had gone so slowly that she had been bribing herself not to look again ever since, with sweets and hungrily-anticipated cheese and tomato sandwiches which had been mysteriously and disappointingly transformed into crummy ginger cake. Just after five o'clock. One hour-and-a-quarter left.

Allowed herself another apple

"I won't look again until after the next squall," she decided as she drifted gently towards Rothes for the hundredth time, and allowed herself an apple.

Down below, the lane which gave access to Delfur, that most exclusive of salmon fishings, was blocked by cars and trailers; irate anglers who had not paid extortionate fees for the fishing to be buzzed by impudent gliders doing approaches over their heads into muddy stubble, were reeling in their lines and draining their flasks prior to returning to their comfortable hotels and their hot baths. On the other side of the fence, the retrieve crews were nursing their wounds after lifting bits of Blanik over the barbed wire and contemplating with disfavour the K-8 and the Pilatus B-4 squatting in the mud awaiting their turn. High above, the three gliders flew doggedly on, with three stiff five hour hopefuls trying not to look at their watches. Another squall approached, dithered and passed behind the hill. The K-8 safely leapt the fence and was stowed in its trailer. The Pilatus shed its wings into groaning arms and ponderously followed suit.

The Oly pilot finished her apple and looked at her watch. 6.15!

"I've done it!" she exulted. "I'll do one more beat, just in case . . ." Almost reluctantly, she took a last look at Ben Aigan. To her surprise, she found she had not been bored, or even particularly nervous: in fact, she had enjoyed herself. Her confidence, meagre at the best of times, but lately non-existent as she fell out of one thermal after another, had suddenly returned now that she had found the stamina for a long flight, and had held her own with the other gliders. She detached herself from the hill, and circled over the valley, descending slowly, an orange bird silhouetted against the dark trees, coming down to roost after five-and-a-half-hours on the windy hill.

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BGA & general news

AGM IN MARCH

The BGA AGM will be held at Imperial College, London SW7, on March 20 at 2.30pm, but will not be followed as in previous years by a dinner-dance.

Further details will be circulated to all clubs.

WINNERS OF THE NATIONAL LADDERS

Laurie Beer (Thames Valley) has covered more than 7000km in cross-country flights during the year 1974-1975 in a Std Libelle, as well as instructing for his club, to come top of the Private Ladder and gain the Enigma trophy.

Paul Löwenstein (Surrey & Hants) is top of the Club Ladder and claims the L. du Garde Peach trophy. Paul's flight included 600, 500 and 300km triangles and an undeclared 500km out-and-return.

The total number of entries is higher than the record season the year before but this doesn't necessarily mean there were more flights—with two lists, pilots may now make more entries on the Ladders.

In all, 18 clubs are listed with Coventry the biggest supporter followed by Yorkshire. And in spite of handicapping, the winning scores are the highest ever recorded.

Private Ladder

Leading pilot	Club	Pts	Flts
1 L. E. Beer	Thames Valley	6801	4
2 N. Hackett	Coventry	6614	4
3 T. E. MacFadyen	Cotswold	6423	4
4 P. Partridge	Coventry	6261	4

Club Ladder

Leading pilot	Club	Pts	Flts
1 P. Löwenstein	Surrey & Hants	6097	4
2 A. B. Crease	Imperial College	3419	4
3 C. C. Rollings	Airways (Booker)	3187	4
4 D. B. Walker	Imperial College	2178	4

GROUND FREQUENCY—CONFIRMATION

Following the successful completion of the trial operation of 129.9MHz as our ground to ground frequency, NATS have confirmed that this shared frequency will be retained as our permanent ground to ground frequency. The original frequency of 121.65MHz will no longer be available for gliding use. The change came into effect on November 1, 1975.

Licence holders will receive an amendment to their licence schedule from the Home Office in due course. The CAA will publish an Aeronautical Information Circular confirming our permanent use of the frequency for general information.

Having retained 129.9MHz for our ground to ground use, would R/T operators please take advantage of the facility and keep the airborne frequencies clear of ground to ground communications.

Colin D. Street
Radio Communications,
Airspace Committee.

INSTRUCTORS' TASK WEEK

Two task weeks for instructors have been arranged for 1976. The first is at Lasham from June 14—20 and the second at Sutton Bank from June 28—July 4. All instructors are welcome regardless of qualifications and experience. If you do not have a Silver C come along and gain it during the week. The week's syllabus covers task setting, cross-country flying techniques, training for soaring and cross-country flying, organising a club ladder and national ladder scoring and as much flying as possible, weather permitting.

We would like each two-seater to have three instructors (one for retrieve) but do not be put off if you wish to come on your own as places may be available in gliders from other clubs. It is hoped that single-seaters will also be available.

For cost, booking and further details, contact Bill Scull or Brian Spreckley, the National Coaches, or the BGA office.

WORDS COST MONEY

The Club News section has been eating into more and more of the magazine. With production costs rising, it is important to avoid wasting space and a lot of the comments in the reports are unnecessary.

I hate cutting copy, but I do try to take out superfluous words and details which are of little interest to those outside the particular club. I would be grateful if contributors would give their copy a hard, critical look before posting.

We just haven't the space for the niceties, such as the announcements of engagements and weddings and the thanks to clubs for hospitality. And if you can't get your reports typed, please print all names. Some are impossible to decipher. EDITOR

For Sale. Open frame trailer, fittings for Falke but will easily adapt for any two-seater. Useful club trailer. £250. Contact BGA Secretary, telephone Leicester 51051.

C of A TO COST MORE

The BGA wish to remind all owners of gliders that regrettably the charge for application or renewal for a C of A was increased to £8.00 from January 1. This charge attracts VAT at the standard rate so the total sum due to the BGA with each C of A is now £8.64p.

CONTEST AT PORTMOAK

After a lapse of some years, the Scottish Gliding Union are organising a Regionals at Portmoak (July 3—11) with Chris Day as the Competition Director and task setter.

Correction: In the December, 1975, issue the Eiri Avion advertisement on the front inside page for the PIK-20 gave the deposit as £750. It should have been £450.

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GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	Name	Club	1975
50	W. A. H. Kahn	Surrey/Hants	5.10
51	D. J. Robertson	Coventry	5.10
52	A. A. Vincent	Essex	3.10
53	R. F. Aldous	Airways	3.10
54	M. G. Throssell	Essex	3.10
55	B. T. Spreckley	Buckminster	6.11
56	C. C. Rollings	Airways	4.11

DIAMOND DISTANCE

No.	Name	Club	1975
1/102	E. R. Lysakowski	Polish	31.5
1/103	M. H. B. Pope	Thames Valley	31.5
1/104	T. S. Zealley	London	31.5

DIAMOND GOAL

No.	Name	Club	1975
2/660	S. L. Hoy	Fenlands	17.8
2/661	A. F. F. Webb	Thames Valley	17.8
2/662	S. F. Beck	London	31.5
2/663	G. H. Herringshaw	Stratford-on-Avon	17.8
2/664	N. C. Morland	Inkpen	25.8
2/665	R. Penswick	Anglia	25.8
2/666	G. E. Love	London	28.7
2/667	B. E. Evans	Albatross (USA)	23.4
2/668	L. Barnes	SW District	25.8
2/669	P. J. Rowney	Chilterns	27.7
2/670	M. T. A. Sands	Ulster	25.6
2/671	J. H. Davies	Bannerdown	26.8
2/672	Dilys Yates	London	30.6
2/673	J. C. Shipley	Derby/Lancs	2.8

DIAMOND HEIGHT

No.	Name	Club	1975
3/233	J. J. Scarsbrooke	Deeside	3.10
3/234	W. A. H. Kahn	Surrey/Hants	5.10
3/235	D. J. Robertson	Coventry	5.10
3/236	I. Paul	Shropshire	5.10
3/237	C. Gildea	Humber	3.10
3/238	A. A. Vincent	Essex	3.10
3/239	R. F. Aldous	Airways	3.10
3/240	N. V. Parry	Swindon	6.10
3/241	C. A. Marren	SW District	25.10
3/242	P. J. V. Verkroost	Imperial College	3.10
3/243	I. D. Parker	Imperial College	3.10
3/244	K. G. Guest	Fulmar	25.10
3/245	P. R. White	Bannerdown	3.10
3/246	M. G. Throssell	Essex	3.10
3/247	J. H. Welsh	SW District	25.10
3/248	B. T. Spreckley	Buckminster	6.11
3/249	C. C. Rollings	Airways	4:11
3/250	R. B. Pilcher	Airways	6.11
3/251	P. G. Sheard	Airways	25.10
3/252	R. E. Burgess	Bicester	25.10
3/253	R. H. Brown	SGU	25.10

GOLD C COMPLETE

No.	Name	Club	1975
494	G. H. Herringshaw	Stratford-on-Avon	17.8
495	N. C. Morland	Inkpen	25.8
496	A. Brown	Yorkshire	20.9
497	G. F. H. Singleton	Doncaster	20.9
498	D. C. Pentecost	Cornish	3.10
499	J. H. D. Partington	Surrey/Hants	5.10
500	M. R. Pack-Davison	SW District	24.10
501	D. B. Walker	Imperial College	26.9
502	P. J. Rowney	Chilterns	27.7
503	M. T. A. Sands	Ulster	25.6
504	J. H. Davies	Bannerdown	3.10
505	K. Hartley	Bannerdown	3.10
506	B. T. Spreckley	Buckminster	6.11
507	R. B. Pilcher	Airways	6.11
508	S. H. C. Marriott	Army GA	6.10
509	M. H. B. Pope	Thames Valley	17.11
510	R. M. P. Richards	Anglia	6.11

GOLD C HEIGHT

Name	Club	1975
N. C. Morland	Inkpen	20.8
N. Fisher	Doncaster	20.9
R. Staines	Fenland	3.10
A. Brown	Yorkshire	20.9
C. K. Lewis	Surrey/Hants	5.10
L. H. Singleton	Doncaster	20.9
R. M. Grout	Bannerdown	6.10
H. B. E. Middleton	SGU	5.10
G. F. H. Singleton	Doncaster	20.9
D. C. Pentecost	Cornish	3.10
D. A. Abraham	Surrey/Hants	6.10
J. K. Greenaway	SGU	6.10
D. Walker	Glasgow	6.10
T. G. B. Hobbis	Surrey/Hants	26.9
R. L. McLean	SGU	6.10
J. H. D. Partington	Surrey/Hants	5.10
I. B. Gregson	Yorkshire	6.10
J. Clarke	Deeside	6.10
J. N. Wardle	Surrey/Hants	6.10
D. Hunter	SGU	6.10
M. Farrow	Yorkshire	20.9
M. R. Pack-Davison	SW District	24.10
S. E. Lloyd	Imperial College	3.10
A. P. Porter	Imperial College	26.9
N. D. Leak	Imperial College	16.9
P. G. Smith	Imperial College	6.10
P. J. V. Verkroost	Imperial College	3.10
Christine Walker	Imperial College	26.9
D. B. Walker	Imperial College	26.9
K. G. Guest	Fulmar	26.10
S. J. Driver	Clevelands	15.10
Elfriede Nowell	Clevelands	5.10
I. D. Bell	Southdown	6.11
J. H. Davies	Bannerdown	3.10
F. C. Porton	Bannerdown	3.10
P. R. White	Bannerdown	3.10
K. Hartley	Bannerdown	3.10
R. T. Bromage	Cotswold	6.11
D. Breeze	Cotswold	6.11
B. T. Spreckley	Buckminster	6.11
R. B. Pilcher	Airways	6.11
P. G. Sheard	Airways	25.10
P. S. Lutley	SW District	25.10
M. S. Parkes	SW District	22.10
S. H. C. Marriott	Army GA	6.10
A. F. Thomson	SW District	24.10
M. H. B. Pope	Thames Valley	17.11
R. M. P. Richards	Anglia	6.11

GOLD C DISTANCE

Name	Club	1975
S. L. Hoy	Fenlands	17.8
A. F. F. Webb	Thames Valley	17.8
S. F. Beck	London	31.5
G. H. Herringshaw	Stratford-on-Avon	17.8
N. C. Morland	Inkpen	25.8
R. Penswick	Anglia	25.8
G. E. Love	London	28.7
B. E. Evans	Albatross (USA)	27.4
P. J. Rowney	Chilterns	27.7
M. T. A. Sands	Ulster	25.6
J. H. Davies	Bannerdown	26.8
R. G. Proctor	Lasham	25.7
J. C. Shipley	Derby/Lancs	2.8
I. Robertson	Deeside	25.6

SILVER C

No.	Name	Club	1975
4211	A. J. Leigh	Derby/Lancs	7.6
4212	B. A. Toulson	Midland	25.8
4213	S. D. Barnes	Portsmouth	7.9
4214	J. Redman	CGS	11.9
4215	R. Grey	Northumbria	25.8
4216	J. D. Pullen	Hambletons	20.9
4217	J. C. Tait	Highland	14.9
4218	F. N. Gray	Doncaster	21.9
4219	G. L. Marshall	644GS	21.9

Correction In the December issue, p270, J.S.R. Bodkin of the London GC was listed as gaining his Gold C distance on August 7. It should have been Gold C height.

all pilots can read — but the BEST PILOTS read

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OVERSEAS AGENTS

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ANNUAL STATISTICS—October 1, 1974 — September 30, 1975

GLIDING CLUB	AIRCRAFT					LAUNCHES		HOURS		KM CROSS-COUNTRY		FLYING DAYS		COURSES		MEMBERSHIP		
	Club MG	Club 2S	Club 1S	PO	TUG	Gliding	MG	Gliding	MG	Gliding	MG	Total	Soaring	No.	Pupils	Male	Female	Non-Flying
Albatross	-	2	1	1	1	1051	-	80	-	-	-	33	9	5	72	33	3	9
Angus	-	2	2	2	-	5442	180	556	65	125	-	109	23	-	-	93	7	10
Aquila	-	2	1	4	1	1853	-	359	-	956	-	89	29	-	-	30	4	6
Avro	-	2	2	-	-	4415	-	626	-	320	-	143	81	-	-	169	6	5
*Bath & Wilts	-	2	3	10	2	2811	-	1069	-	2805	-	91	47	-	-	97	10	7
Blackpool & Fylde	-	3	2	8	-	2543	-	904	-	300	-	-	-	-	-	126	9	8
Borders (Milfield)	-	2	2	3	-	2343	-	363	-	206	-	94	28	-	-	54	5	2
Bristol & Gloucestershire	-	3	5	23	3	7102	-	4447	-	33868	-	262	165	25	211	218	14	54
Buckminster	-	2	3	8	2	6115	-	1121	-	3979	-	187	57	-	-	79	5	8
Burton & Derbyshire	-	2	-	7	1	3045	140	1139	260	2327	-	136	74	-	-	94	3	11
Cairngorm	1	2	-	1	-	2182	118	378	43	-	600	107	85	21	134	23	1	10
Cambridge University	-	2	5	23	2	8773	-	4026	-	34684	-	215	129	9	50	246	9	31
Cornish	-	2	2	9	1	4322	48	709	25	1172	-	84	25	95	127	56	7	35
Cotswold	-	4	2	9	-	6106	-	1613	-	10252	-	153	79	-	-	100	11	19
Coventry	1	3	2	29	4	5729	556	3148	304	78490	-	133	83	20	159	274	24	25
Cranfield	-	1	2	9	3	1670	-	992	-	3560	-	-	-	-	-	103	6	-
Deeside	-	2	2	3	1	2500	56	1557	-	600	-	196	133	-	-	62	6	2
Defford (RRE)	-	2	-	-	1	1181	-	129	-	-	-	52	-	-	-	23	2	-
Derbyshire & Lancashire	1	4	3	22	-	8228	450	2724	270	3727	1000	180	135	14	194	184	-	87
Devon & Somerset	-	3	1	12	1	7238	-	1829	-	19218	-	196	118	7	59	188	14	30
Doncaster	1	2	3	13	1	5344	756	1358	400	2314	-	148	78	4	20	191	12	59
*Dorset	-	3	3	10	1	3453	-	1488	-	4975	-	-	-	1	7	161	9	208
*Dumfries	-	2	-	3	-	-	-	-	-	-	-	-	-	1	10	20	2	4
Dunkeswell	-	1	-	7	1	5099	-	462	-	-	-	-	-	12	96	42	11	13
East Sussex	-	1	1	4	-	1688	10	156	4	460	-	63	21	1	6	73	3	10
Enstone	-	2	-	6	1	2213	-	1040	-	-	-	80	54	-	-	35	2	-
Essex	1	2	2	20	1	6956	-	1682	-	-	-	-	-	-	-	209	10	51
*Essex & Suffolk	-	1	2	6	3	2323	-	978	-	1166	-	107	28	-	-	63	6	-
Glamorgan	-	1	-	-	-	Figures Included in South Wales Return										14	-	-
Glasgow & West of Scotland	-	1	-	-	-	Figures Included in SGU Return										41	2	1
Hambletons	-	2	2	4	-	3831	-	1398	-	2503	-	141	68	-	-	98	10	-
Herefordshire	1	2	1	15	3	5310	-	3550	515	16000	950	271	159	32	216	150	10	-
Highland	-	1	2	1	1	2123	-	354	-	210	-	89	24	-	-	25	8	1
Imperial College	-	-	3	3	-	735	-	650	-	6550	-	-	-	3	15	75	2	34
Inkpen	-	2	1	20	2	3618	-	2279	200	12250	-	220	160	12	21	101	2	3
Islay	-	1	-	-	-	229	-	24	-	-	-	17	3	-	-	12	1	-
Kent	-	4	2	11	1	7076	-	1047	-	2207	-	130	80	-	280	174	12	44
Kirknewton	-	1	-	-	-	64	-	5	-	-	-	8	1	-	-	12	-	2
Lakes	-	2	1	6	1	2947	30	723	14	1160	--	138	57	7	56	61	6	9
Lanarkshire	Figures Included in University Glasgow & Strathclyde Return															10	2	-
Lasham	2	4	-	65	4	22686	7677	6348	1328	54468	-	318	-	35	288	675	55	246
*Lincolnshire	-	3	1	5	1	4292	-	352	-	-	-	-	-	-	-	40	4	5
London	-	4	4	38	4	13267	-	5158	-	-	-	-	-	33	202	361	20	58
Midland	-	3	4	15	-	11342	-	3213	-	5984	-	-	-	29	469	159	16	29
Newcastle & Teesside	-	1	1	3	1	1710	-	404	-	100	-	124	71	4	24	37	1	6
Norfolk	1	2	2	8	1	3016	1011	1926	408	5540	400	210	150	7	42	120	8	12
Northumbria	-	3	1	17	1	4749	-	924	-	800	-	-	-	5	32	146	7	11
Norwich Soaring	-	-	1	2	1	197	-	249	-	2790	-	103	78	-	-	12	-	-
Ouse	-	2	2	9	1	4859	-	1117	-	5700	-	132	60	1	10	111	12	20
Oxford	-	2	2	8	-	5042	-	1649	-	5000	-	132	-	-	-	83	15	11

Peterborough & Spalding	–	2	1	7	2	2348	–	1027	–	1000	–	122	76	3	25	56	4	–
Polish AFA	1	–	3	1	–	436	–	348	136	8550	–	–	–	–	–	23	–	6
Royal Aircraft Establishment	–	2	2	2	–	4086	–	795	–	1904	–	124	69	–	–	61	3	10
Scottish Gliding Union	1	5	5	40	2	9684	521	5501	363	1683	–	302	228	23	276	250	25	27
Scout Association	–	2	–	1	–	1423	–	214	–	300	–	140	–	14	80	20	3	–
Shropshire	–	–	–	8	1	414	–	698	–	6700	–	69	69	–	–	16	–	–
Southdown	–	2	2	11	1	6099	–	1267	–	4881	–	264	61	–	–	150	20	45
South Wales	–	3	1	7	1	3525	–	1162	–	2000	–	110	49	2	20	94	5	12
*South Yorkshire & Notts	–	2	2	4	–	2817	–	268	–	200	–	101	29	1	7	35	4	1
Staffordshire	–	1	1	6	–	1718	–	214	–	180	–	75	25	1	17	57	5	1
Stratford-on-Avon	–	1	1	8	2	5491	–	2078	–	1452	–	136	72	–	–	46	4	15
Surrey & Hants	–	–	11	–	–	5755	–	2577	–	13734	–	–	–	–	–	288	22	44
Swindon	–	2	3	8	1	5182	–	1370	–	8168	–	–	–	–	–	85	5	–
Tiger Club Soaring	–	–	–	1	5	124	–	50	–	–	–	19	8	–	–	9	1	–
Trent Valley	–	2	2	8	1	6177	12	1132	6	2023	–	98	36	–	–	74	4	–
*Ulster & Shorts	–	1	3	3	1	699	50	291	23	700	–	60	25	–	–	50	5	–
Universities of Aston & Birmingham	–	1	1	–	–	1150	–	162	–	250	–	60	28	–	–	23	4	–
Universities of Glasgow & Strathclyde	1	1	–	–	–	533	54	33	20	–	–	24	9	–	–	12	–	–
*Upward Bound	–	2	–	2	–	1863	–	194	–	–	–	53	17	–	26	20	5	–
Vale of Neath	–	1	1	2	–	977	–	121	–	–	–	–	–	–	–	36	4	4
Welland	–	1	–	3	–	1462	–	328	–	203	–	–	–	–	–	28	2	–
West Wales	1	2	–	–	–	1653	310	220	132	–	3000	–	–	–	–	28	2	–
*Wolds	–	2	1	2	1	5195	–	668	–	100	–	176	70	–	–	89	12	5
Woodspring	–	2	1	2	1	2665	–	266	–	–	–	–	–	2	18	130	8	–
Wycombe (Airways & Thames Valley)	–	5	9	28	5	9432	–	3930	–	–	–	325	150	30	200	350	28	–
Yorkshire	1	2	2	25	2	7865	1600	1416	800	11265	4000	305	260	22	260	287	13	60
CIVILIAN CLUB TOTALS	14	146	133	660	79	297591	13579	93663	5316	392059	9950	7454	3673	481	3729	7880	571	1426
Army Gliding Association																		
Kestrel	–	2	3	2	–	4755	–	593	–	5513	–	84	35	–	–	45	3	41
South West District	–	2	4	3	1	5348	59	1092	–	5480	–	122	–	4	40	71	6	–
Royal Air Force GSA																		
Anglia	–	2	2	1	–	3675	–	672	–	2564	–	106	64	–	–	66	3	–
Bannerdown	–	2	3	4	–	8543	–	1382	–	12320	–	130	60	–	–	93	11	–
Bicester	–	6	7	9	5	20005	–	8064	–	22227	–	265	143	13	164	625	27	–
Chilterns	–	3	3	–	–	4621	–	1300	–	7321	–	137	60	–	–	89	2	6
Clevelands	–	2	5	5	3	5758	–	3890	–	8113	–	155	70	4	50	190	20	–
Cranwell	–	1	2	4	–	5006	–	920	–	6101	–	99	43	–	–	85	2	–
*East Midlands	–	2	2	–	–	4043	–	486	–	593	–	–	–	3	25	35	2	–
Fenland	–	2	3	2	–	7793	–	1259	–	3544	–	100	–	–	–	90	40	–
Four Counties	–	2	4	4	–	7761	–	2102	–	12981	–	120	52	1	7	95	5	–
Fulmar	–	2	2	1	1	3488	–	751	–	735	–	102	29	1	4	51	2	14
Humber	–	2	3	2	–	5878	–	868	–	4800	–	100	40	–	–	60	5	–
Mawgan Vale	–	2	1	3	–	2145	–	261	–	75	–	78	12	12	–	40	3	10
Wrekin	–	2	4	2	1	9499	–	3172	–	16000	–	170	–	2	20	105	20	1
Royal Naval GSA																		
Culdrose	–	2	2	2	2	2478	–	513	–	1300	–	–	–	1	12	40	5	–
Heron	–	3	4	2	3	3774	120	1019	96	3307	5570	–	–	1	9	89	8	–
Portsmouth Naval	–	3	3	2	4	3132	–	886	–	1727	–	128	41	2	20	150	12	–
SERVICE TOTAL	–	42	59	48	20	107702	179	29230	96	114701	5570	1896	649	44	351	2019	176	72
(CIVILIAN TOTAL B/F)	14	146	133	660	79	297591	13579	93663	5316	392059	9950	7454	3673	481	3729	7880	571	1426
SERVICE & CIVILIAN TOTAL	14	188	192	708	99	405293	13758	122893	5412	506760	15520	9350	4322	525	4080	9899	747	1498
ATC																		
28 Gliding Schools and 2 Centres	1	138	11	–	–	157246	—	–	–	–	–	–	–	–	–	–	–	–

*Clubs marked have not supplied statistics and 1974 figures have been used

overseas news

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

WHERE THE WORKERS FLY FREE

DAVID SIMPSON writes about a West German Club

The Hamburg Aero Club has about 350 members, four glass-fibre club aircraft and the usual quota of training gliders. Many of the members are still at school and a surprising number of women (by our standards, anyway) also fly. The principal method of launching is by winch.

In comparison with British clubs, it would appear that there is a very high glider-to-member ratio. And how many young people in this country have the money to fly?

I must admit that the Hamburg Club does have several inherent advantages. One is that the airfield is lent free by the local borough council, a manifestation of the support the German Government gives to gliding. The field is also in a very central position and on a bus route. However, the real root of the club's wealth lies in the way in which it is run.

Subscriptions are comparable to those in this country, as are flying fees. But there isn't any flying in the winter months, this period being reserved for maintenance and repairs to aircraft. This doesn't mean, however, that ten or 20 people work their hands to the bone while everyone else goes home till April.

Every member must do a certain amount of work, for which he is paid a certain number of points per hour. When he has achieved his required amount, he has done his share. But if he is feeling industrious, or hard-up, perhaps both, he can continue to work and use the extra points accrued to pay for flying during the coming year. So if he works hard he can escape all flying fees. If he doesn't do enough work though, he must pay a fine to the club in lieu of the excess. This money goes to subsidising the flying fees of those who have worked. In effect, a form of communism is in force.

This ensures that there are very few non-flying members because the penalties are too high. At the same time, it provides a powerful incentive for those of limited means, especially young people, to go gliding. It also ensures that there is a large fleet of aircraft, which allows those with talent to develop.

The system means a much higher level of commitment to the sport than is often found in this country, the richer members pay more for their flying than would otherwise be the case and as many people as possible have the opportunity to do as much flying as possible. I should think there is scope for it in Britain.

100km △ NOW 175km/h

Yet again the 100km △ world speed record has been broken by nearly 10km/h bringing it to a staggering 175km/h. The flight was carried out by Klaas Goudriaan in his ASW-17 on November 22, 1975 from Odendaalsrus, South Africa.

HOLIGHAUS-HILLENBRAND NEW FIRM

Klaus Holighaus, co-owner and managing director of Schempp-Hirth, who had before the tragic death of Eugen Hänle in September acquired a large interest in the firm of Glasflügel at Schlattstal, has now registered a new company under the name of Holighaus-Hillenbrand GmbH & Co KG.

Klaus Hillenbrand, a fully qualified engineer and active competition pilot, took over the running of the Glasflügel works after Hänle's death. At present about 12 Hornets a month are being produced while the proto-type of the new Mosquito is nearing completion. The Glasflügel workshops at Saalgau are to be closed down.

NEW ZEALAND NEWS

Large triangles and out-and-returns have set the pace at the beginning of the soaring season in New Zealand. Among them was Peter Lyons who on Nov 7 flew his Std Cirrus in wave from Bridge Pa (Hawkes Bay) to Turakirae at the southern tip of North Island and back (506.8km) at an average of 148.73km/h which subject to homologation will be a new National record.

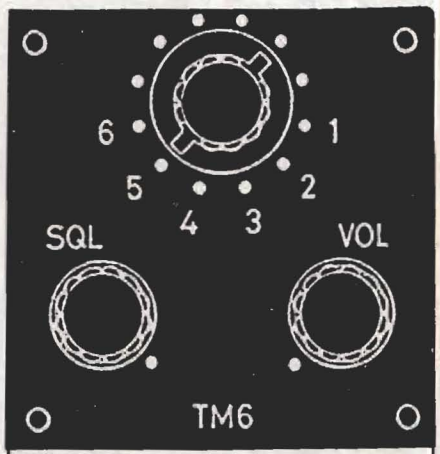
The South Island regionals, seven Open/Standard and seven Sport Class entries, were won by Dick Georgeson in his Nimbus 2 after five contest days. The Auckland Provincials which followed had 24 entries and only four in the Sport Class. D. Yarrall, Nimbus 2, was the winner after five contest days.

Ian Pride, Nimbus 2, who was second, flew the first-ever New Zealand 28% 500km △ a week later which is awaiting homologation. *R. MacIntyre.*

NEWS FROM SWEDEN

Besides the Championships already reported, among other events last year was the first 750km triangle by Bengt Goök at 80km/h in his Std Cirrus. Then, during the "Texan" European weather in early August, with cloudbase at nearly 10000ft, there were two triangles of over 600km, and a new Swedish 300km triangle record of 108km/h by Irve Silesmo in a Std Cirrus.

Among the year's 30 imported gliders were five Std Jantar, five LS-1f, three PIK-20, and one each of Club Libelle, SF-30 and Salto. All these types were new to Swedish gliding.—*Bernt Hall.*



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RIETI

This most beautiful of clubs in the midst of the unexampled scenery of the Italian Appenines is in future to be managed by the Association of Italian Sailplane Clubs.

In 1976 it will run a series of fortnightly courses, starting on March 27. There will also be a Whitsuntide competition, and the Nationals, starting on August 16. Available gliders range from the M-100s to the Calif A-21 and two Motor Falke.

Information from: AVAL, CNVV, Rieti, Italy.

FRENCH GLIDING MUSEUM

Eric Nessler, first French Silver C and author of *"Histoire du Vol à Voile (1949)"*, writes in *Aviasport* of a proposal made to the Conservator of the *Musée de l'Air*, General Lissarague, to reserve a section for gliding history in his one of six "vast hangars" at le Bourget, which, he says, is the biggest air museum in any country in the world, and to be opened in 1979.

There are already historical collections at Meudon, Villacoublay and other places in the Paris region, some of them partially on show, which could be brought together in the central museum. They include, Nessler writes, a Biot machine of 1878 which, he states, is the oldest aircraft in the world still in existence; an original Chanute glider which was in use in 1904 near St Louis by Avery, an associate of Chanute; and a full-sized replica of a Lilienthal glider made in Berlin in 1928 by Hans Richter.

ISRAEL CONFERENCE

The Israel Annual Conference on Aviation and Astronautics will be in Haifa from May 19—20 and include invited lectures and contributed papers. Accepted papers will be published as a special issue of the *Israel Journal of Technology*.

For full details write to: The Secretary, Organising Committee, Eighteenth Israel Annual Conference on Aviation and Astronautics, c/o Department of Aeronautical Engineering, The Technicon, Haifa, Israel.

OBITUARY

EUGEN HÄNLE

Eugen Hänle was really the man who introduced glass-fibre gliders to the world and following his sad death on September 21, 1975, this will be what he is remembered for.

I first met him in 1969 when Slingsbys were negotiating for the license agreement on the Kestrel 17. Physically he was not very tall and he walked with a limp from a previous flying injury, but he had a very strong personality.

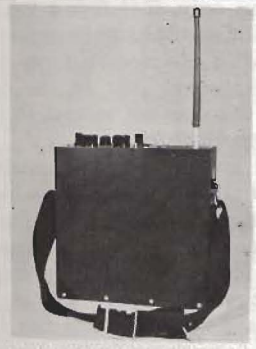
He was born on October 5, 1924, at Ellwangen in Southern Germany. He served in the Luftwaffe during the war and was a JU88 pilot. After the war he studied engineering at Esslingen where he began gliding. At this time he was working with Professor Hütter and was concerned with the building of the H-17B. He first used glass-fibre and epoxy resin to make large fan blades of up to 30ft in diameter and from this he developed the process which he and Hütter patented for producing glass-fibre spars.

He founded his own company 'Glasflügel' in 1957 together with his wife Ursula, and began producing the Libelle 301 in an old mill at Schlattstall. Under his leadership and guidance the company prospered and became the first company to produce over a 1000 glass-fibre gliders.

Glasflügel produced also the BS-1, the Kestrel 17 and the 604 but it will be the Std Libelle, of which over 500 were made, that glider pilots the world over will be grateful to him for.

I have many personal reasons to be grateful to him and Slingsbys owe him a debt for their survival. The whole gliding world will feel very sad at his loss.

G. E. B.



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your letters

AIRMASS READOUT AND SPEED COMMAND VARIOMETERS

Dear Editor,

An old idea of Paul MacCready's has recently been revived in West Germany and the news is slowly spreading. Both the instruments named above are products of this idea. They both function by introducing a calibrated leak into the vario system and are identical except for different calibration principles.

The airmass vario is John Williamson's 'Dolphin', which gives the pilot an indication of what the air is doing regardless of the speed at which he is flying, *ie* the glider's inherent sink-rate is removed from the read-out, leaving only an indication of actual vertical air movement. The speed command vario is a little more intriguing but just as cheap and simple. It combines the functions of the ASI and speed ring equipped vario in one instrument making speed control more accurate—how often can you manage to keep the pointers in the right place for more than a few seconds? There is also a safety benefit insofar as it should enable you to get your head up out of the office more often and take a peep around. There are a number of electronic air data computers on the market which do the same job, but they start at £200 or so. If you convert one of your mechanical varios using MacCready's idea, the cost should be well below £1!

The speed command readout is easy to interpret and it should be possible to link it to an audio system. If, for example, you decide the next thermal is going to be 4kts, then you increase speed until the 'vario' shows 4kts 'climb'. Any movement of the pointer away from 4kts is corrected by increasing or decreasing speed. The effect of the speed changes are dealt with by the total energy system as usual.

Having, I hope, whetted at least a few appetites, I shall now disappoint you by not telling you how to do it. The plumbing *is* cheap and simple, with no need to tinker with the instruments themselves. The mathematics, at least for the layman, seem complicated and might well frighten him away. I should also need about four pages of S&G for the description. If you would like the details contact Peter France at the South Wales Gliding Club, Gwernesney, Nr Usk, Gwent or ring him at Wolvesnewton 263. The instrument is installed in Peter's K-6E and he is prepared to help anyone who would like to have one in the hope that the Club funds might benefit from their gratitude!

Akaflieg Münster ALAN HARRIS
(lately South Wales Gliding Club)

CALL SIGNS NEED NOT CONFUSE

Dear Editor,

Judging from Harold Drew's letter in the October issue of S&G (p230) on the pronunciation of call signs, it appears that the use of a radio in the UK doesn't require a radio telephone operators' licence as here in Germany (even for gliders), for if this were the case such confusion could not possibly arise.

Any privare pilot should be able to point out that all numerals are spoken singularly and therefore the call sign mentioned is 'three six.' One shouldn't enter cloud at 'three six' but 'three six zero zero feet' at a QNH of (say) 'one zero one five decimal niner.' The only shortening of any series of numbers is the use of the word thousand, *eg* three thousand, four thousand one, five thousand etc.

I mention QNH as I trust any cross-country pilot entering cloud would utilise this setting to ensure compatability with other non-local gliders and the surrounding powered aircraft. (The latter would certainly be on regional QNH.)

I would hate the UK glider pilots to believe the clouds belong to them, for when I visited England in a motorised glider I frequently indulge in flying through clouds and keep a careful ear tuned to the relevant radio frequency. The receipt of any message other than of the internationally understood variety mentioned above would certainly confuse.

I thought the BGA would have issued very clear instructions covering just such items to avoid any unfortunate misunderstandings.

Krielerstr 19, W. Germany. JOHN PEACOCK

Colin Street, BGA Airspace Committee, replies:

John Peacock is quite correct in his assumption that an R/T operators licence is not required for gliding operations. The airborne frequencies assigned by the CAA to the BGA are for the exclusive use of glider operations only, therefore a CAA R/T operators licence is unnecessary and would be an imposition.

A call sign may be registered in any speech form desired, subject to the Home Office approval, but in the case of competition number registration this does not necessarily have to be registered as a singularly spoken number.

The procedures that are used on the gliding channels are a matter for glider pilots and the BGA, however, I take his point that private power pilots listening into the 130.4 frequency should be able to interpret altitude reports and his comments are valid. It is the practice in the UK for glider pilots to express cloud flying and cross-country altitude reports using the datum of sea level pressure, and he should have no problem in this respect; however, as most cloud flying is done above 3000ft, there might be more of a problem if he assumes that his fellow power pilots are using Regional QNH.

MORE ABOUT WOMEN'S RECORDS

Dear Editor,

With reference to the recent corespondence on women's records, (October S&G, p230, December issue, p276), we don't accept the principle that success in gliding is dependent on any sex-linked ability and therefore, just as we would not expect to compete in separate classes in competitions, we do not wish to compete for separate women's records.

However, we feel that it would be beneficial to introduce, as in other countries, Club Class records for those who can't afford expensive glass-fibre gliders. If we must have records for those whose attempts are only second-best, then let us call them so honestly. This will allow equal opportunity for men and may encourage other women to try harder.

Marlow, Bucks. LINDA WALTON and friends

JOSEPH C. LINCOLN AWARD

Dear Editor,

The Harris Hill Soaring Corporation, in conjunction with the National Soaring Museum, has established an annual Lincoln award for the best popular writing about the sport of soaring. The award is in memory of Joseph C Lincoln, whose writings about soaring did so much to get so many started in the sport. His articles and books are the inspiration for the award, and they will be models for selecting the piece of writing each year on which the award will be based.

We have contacted Mrs. Lincoln and she is delighted with the idea. "It will be a great tribute to Joe," she wrote. "I'll hope to present the first award . . ."

For the first award, we shall consider any poem, article, short story or book, fiction or non-fiction, published in 1975 in the English language. To be considered, send a published copy to the Editorial Board, Joseph C. Lincoln Award, Harris Hill Soaring Corporation, Harris Hill, R.D#1, Elmira, New York 14903, by April 1. Anyone may submit as many pieces as they wish.

Elmira, New York. ARCHER N. MARTIN

President of the Harris Hill Soaring Corp.

IS THERE SOMETHING WRONG?

Dear Editor,

There seems to be something wrong in the gliding world. Something wrong in the repair of gliders. Something wrong in the cost of repairs.

How is it that a damaged glider is accepted for repair by the insurers at a figure which should be far in excess, double even, of the true cost? Why do I think this? I have three cases on my files where gliders could have been repaired at half the cost—if the system were different. Are we in such a desperate hurry to get our gliders airborne again that we and the insurers accept the only figure offered?

Who is interested in reducing costs? The BGA suggested I wrote this letter to S&G to see what interest prevails. The insurers can't be interested—apparently they don't even tender, and I'm not talking peanuts.

One job which cost over £1500 was quoted at half price, unseen, by a fully qualified repair workshop. It's happened before. It will happen again.

Have you got a case? Are we interested in a better system? Perhaps the insurers will put pen to paper to tell us how they keep costs down. But if costs go up, the percentage premium goes up *QED*—and with it the percentage profit.

If anyone's interested, I've got a few ideas on how to improve this state of affairs. First, let's have damaged gliders costed at an impartial depot—with several centres for reasons of geography. Then let's have a list of interested repairers for each depot and ask for at least two tenders, with delivery dates. With a bit of prior organisation and arrangement, we'd only lose a little time and gain so much.

Bedwas, Gwent. IVOR SHATTOCK

GLIDING AS A TRAINING FOR BUSINESS ADMINISTRATION

Dear Editor,

When I read of the dramatic success of Rolls-Royce Aero Engines Ltd, I like to feel that perhaps the time Ken Wilkinson had put in at Booker has not been wasted and that some of the tips I gave him in the bar have been put to useful application. We must all look forward to a period of British prosperity when people like Ralph Jones, Ken Fripp and George Burton find their way into the corridors of power.

Marlow Common, Bucks. BRENNIG JAMES

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club news



A dramatic photograph by J. Wooldridge of the Cornish Club, to show just what 'autumn ridging' is like over their cliffs when there is a good north-westerly. The Pilatus B-4 is flown by Ian Sincock at 800ft off Cligga Head.

Copy and photographs for the April—May 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 February 20 and for the June—July issue to arrive not later than April 21.

December 8

GILLIAN BRYCE-SMITH

BRISTOL & GLOUCESTERSHIRE

Sadly, the economic climate has forced the committee to lose the services of Mike Munday as full-time instructor. Attempts were being made to see that mid-week flying continued during the winter.

The move was announced at a meeting called to discuss the new club set-up which proposed a new holding company and an operating company. The decision on the new organisation was left until the annual meeting.

B.S.

BUCKMINSTER

Flying achievements during 1975 have far surpassed our hopes and we look forward to an even better season in 1976. Particular mention should be made of the efforts of the Spreckley brothers. Brian, our ex CFI and now BGA Assistant National Coach, has gained all three Diamonds in a space of six months in the Kestrel, and Roy, our new CFI, flew a creditable 300km triangle in the Skylark 3F. Silver badges are sprouting quickly and the well supported advanced course of evening lectures and flying exercises in the YS-53, run by Chas Cowley, should assist in turning these Silvers into Golds and Diamonds.

Our sincere thanks to the Sports Council and our landlords, the Buckminster Trust, for their help in the provision of our new hangar, now housing the tug and club fleet which consists of T-21, YS-53, Olympia 2 and K-6, now joined by Nottingham University Club's T-21.

Life has also been made easier with our fully equipped mobile restaurant, a converted double decker, which also serves as a log keeping/signalling booth.

D.R.B.

DEESIDE

The three months from September to November 1975 produced 22 Diamond height claims and 23 separate Gold height claims. In addition, when club member Robert Henderson (K-6E) was waved off tow at 1400ft over Dinnet, he worked up to 29000ft in clear air in west wave. Running out of barograph trace, he decided to break off while still in 4kts up.

The club has since bought a bigger barograph. The upper wave system cloudbase was at 28000ft. This is the best absolute and gain of height at Aboyne, so far.

R.H.

DERBYSHIRE & LANCASHIRE

Several clubs have 'pots' at Camphill awaiting collection. So for 1976, why not plan a cross-country to visit us and claim your trophy.

Activity has recently centred on our caravan park. The Peak District National Park decreed that all static caravans be painted in 'natural colours' to blend with the landscape. Believe me, the colours they came up with were most unnatural. However, with a little ingenuity some of the vans are looking very nice, others are decidedly ugh! Fortunately we were able to save the glider trailers.

We now have a hot snack service throughout the day and a more substantial evening meal, instead of our previous set times for lunch and tea which tended to interfere with flying.

The clockwork mouse had an outrigger bounce through the wing trailing edge. Bob Fordsham, who recently finished repairing the canopy which blew away in the wind, got to work on the needed patch. The bond store was out of fabric but Bob had a pillow case of the same material, so devotion being greater than personal comfort, soon had the mouse airworthy.

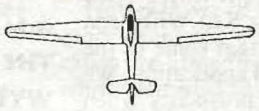
P.H.



Gliderwork

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DEVON & SOMERSET

It is just over a year that Sam Tolman, our President, was killed in a road accident and we are indebted to Mrs Tolman for making the first contribution to the memorial fund—some weather recording instruments which are now in the clubhouse.

Congratulations to Keith Selmes on his first solo and to Joseph Watt, a former member, on becoming a Pilot Officer in the RAF.

The AGM on December 13 will be combined with our Christmas party and arrangements are being made for Competition Enterprise, which starts on June 5.

Many of our catering problems have been solved now that we have a deep freezer. A large selection of meals are available at any time at a

very reasonable cost. Ian Beckett, Neil Templeman and helpers are working on a glider repair workshop, which they hope to complete by the spring, and members are cutting back the grass in preparation for re-surfacing our main entrance road.

J.R.H.

DUNKESWELL

Bob Eames, Ian King and Bill Evans have gone solo, Bill progressing from a BAC 111, and Bert Culverhouse has his C certificate.

The *ab-initios* of this time last year are now competent pilots and the advanced training they are receiving is being supplemented by another course of lectures given by our CFI, Dave Bindon.

There are a number of parties and dances in the clubhouse during the coming weeks and we now have a new briefing room.

Our summer courses are nearly fully booked and there are plans for an 'advanced flying course-cum-task week' for members in June.

B.H.F.

ENSTONE

1975 has been very successful for us; we have many new *ab-initio* members who keep our two training gliders and two towcars busy, even on the dullest and most miserable day.

Our thanks to Bill Scull and Roger Bunker who have successfully put six of our members through an instructors' course. Our congratulations and also to Paul Lees and Doug Blore on obtaining a full category rating. Doug Blore has taken over as CFI from Mat Wilcox who hopes to devote more time to his own flying. Thanks, and good luck Mat.

Eric Giles was re-elected Chairman at the AGM on November 22. The committee remains the same except for the resignation of Bernard Kelly and the election of Ron Bridges and Robin Smitton.

Our Christmas dance was a great success. A presentation was made to Mat Wilcox on his retirement as CFI and Pam Lees and Kate Dewhurst were thanked for their culinary contributions during the year. Martyn Wells (again) received the John Mole trophy for 'best personal performance' and Ron Bridges the Lorne Dannielle trophy for 'services rendered'.

M.W.

ESSEX

An Essex expedition shared in this year's best wave day at Aboyne on October 3. Diamond height claims were made by our CFI, Mike Throssell, and Alan Vincent, with Peter Johnson, Norman Hall and Mike Beattie gaining Gold height. Mike also completed his Silver C with a duration flight, most of which was flown above 10000ft.

Unfortunately Mike Jeffries was only 1000ft short of his Diamond height and he lost his beloved 'thermal hat' at 18000ft when he was making adjustments to the oxygen equipment and the canopy catch released, letting the canopy open an inch or two. The pink corduroy hat went away in the airstream.

Dennis Howell, Minister of Sport, visited us to consider North Weald as a site for various sporting activities—although we already have all kinds of groups on the airfield at the week-ends from football to rifle shooting. However, the Minister enjoyed a flight in the K-13 and the local mayor, who was also visiting, went in the tug.

We had an unpleasant set back recently when vandals set fire to the new self-powered double pulley. It was mounted on a Ford truck and found one morning with the cab and engine compartment completely burnt out—its fire extinguisher was in the next field. The double pulley is still in service but no longer self-propelled. Mike Throssell (CFI) is running a new style competition for solo pilots. Called the Tyro trophy, it is open to pilots with up to 20hrs solo experience. Tests in the two-seater include wire and aerotow launches followed by a variety of flying exercises to test airmanship and flying ability, with a stringent written examination at the end. It is intended that this should be an annual competition and a club member has donated a cup.

S.M. and D.P.

HIGHLAND

Fame at last! The only gliding site in Britain with a purple airway above it! We hope that Prince Andrew is enjoying his experience flights with the ATC at Milltown, and that he will, in due course, take up gliding in earnest.

Several members spent an enjoyable soaring week at Aboyne in October, but it was a week-end (October 25—26) of good wave at Milltown that provided all the excitement. Grant Guest, of Fulmar Club, reached Diamond height at 20000ft, as did Trevor Armstrong at 18500ft—without his barograph! George Hobben and Bill Meyer reached Gold height, and Ruth Tait, Charlie Grant and John Macfarlane, Silver height. John Macfarlane has also completed his Bronze C.

Bill and Margaret Hill have acquired a caravan which we will be able to use when we get to the new site at Dallachy. We are grateful to them, especially now that we see the work Bill has done to turn it into a mobile clubhouse. All we need now is the site, but as the local authority is still stalling over Dallachy, we have yet to get our planning permission.

R.E.T.

LAKES

Bernard Knowles, Ian Henderson, Roy Jones and Neil Braithwate have gone solo and Nigel Harrison completed his Bronze C with a 30min thermal flight off the wire in the Capstan. There has been wave on several occasions recently with Roy Kingan and Peter Craven gaining Silver height with flights of more than 7000 and 8000ft. Roger Bull terminated a cloud climb at 14000ft due to lack of oxygen and VOR.

A successful evening class covering the Bronze C syllabus, organised by Peter Gillett, resulted in six new members. At the annual dinner on December 5, Peter Redshaw was presented with the Leighton Hall trophy for the third time in succession, The Duddon trophy, for services to the club, went to Roy Kingan; the Lonsdale trophy, for the best flight from Walney, to Peter Jackson and the Dodd trophy, for the best progress by a junior member, is shared by Ian Henderson and Nigel Harrison.

As our best wave seems to come mid-week, we are holding a wave hunting week from Saturday, April 10. Visitors with their own aircraft are welcome, but please let us know if you wish to come. There are aerotows, limited hangarage, bunk house and catering facilities.

D.J.C.

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LONDON

We are lucky to have such an interesting site. We have had the usual continual west winds which enable us to soar our baby hill quite satisfactorily for the whole day if wished.

However, it is our easterly wind wave which is the really interesting factor. John Jeffries and pupil, in a club K-13, flew the entire length of the Chinnor Ridge, about 60km, in 0 to ½ kt wave.

"This" John explained "was the most exciting flight of the year. Breaking 500km triangle records on booming days wasn't the same kind of challenge."

The wave has proved quite strong and steady, 5kts have been noted, but this autumn it has rarely gone above 4000ft, although that's not bad when you consider our hill is only 300ft.

It's our CFI's ambition to collect the Lasham plate in wave during the winter. The plate was collected early in March by 'Lofty' Russell and stayed in our bar for the entire summer, apart from four days when a Lashamite took it away, we think to clean it.

D.Y.

NEWCASTLE & TEESSIDE

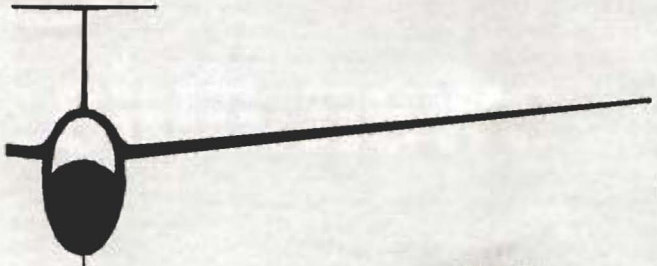
Considerable work has been done on our main runway with the transfer of 500 tons of soil from one part of the site to the runway. The area has now been grassed and should save stone damage to the gliders.

Several of our members visited Millfield in September and took along C. Richardson's Bergfalke.

A new fuel store has been built and our generator has been fixed after being out of action most of last summer. This, along with redecoration of the clubhouse and improvements to the road, has made life much more pleasant on the top of the Yorkshire Moors.

Congratulations to J. Turner, A. Jones and D. Hodgson for going solo.

C.B.R.



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NORFOLK



Despite the ever rising cost of flying, our membership has increased during the year from 109 to 169. This encouraging fact, plus our plans to extend passenger flying, has prompted us to consider the acquisition of a second Condor, or at least ensure the availability of a back-up tug.

Our annual dinner-dance is on February 27, the task week begins on May 17 and there will be six *ab-initio* courses during June and July.

James Stewart, a life-member, has made a very generous donation of more than £200 which has been invested to provide an annual book prize for the youngest first solo of the year. C.E.H.

OXFORD

The club is suffering from its annual attack of syndicate fever. Phoebus 666 was sold and the new Astir CS (the first in the country) has made its appearance. Apart from trials at Cranfield, its maiden flights were on AGM day at the end of November.

The club's first two-seater syndicate has been formed with a Blanik purchased from Inkpen. Next season should also see two Kestrels operating from Weston.

At the AGM, members heard that the club's financial position was reasonably healthy after a record-breaking season. Accordingly, increases in subscriptions and flying fees were relatively small. Dave Roberts was elected Chairman for the coming year, and the outgoing Chairman, Peter Pratelli, took over as Secretary from Norman Woodward. An 8mm film of the club's activities, made by Phil Hawkins, was shown.

A trip to Aboyne by the Phoebus C syndicate resulted in a Gold height claim by Colin White. Recent first solos include Ian Mailer. G.P.H.

SOUTHDOWN

As winter closes in, and various renovations commence on trailers and clubhouse, we still hope for some northerlies over the Christmas period so that we can soar our ridge. We are pleased to report that approximately 100 badge legs have been scored this year to date, including many first solos in the K-7.

Three Gold climbs to around 14000ft were made on November 6 at Portmoak by our members Alan Curry and Chris Backwell in consecutive flights in their SHK, and Ian Bell in his Dart 17.

To help launch the studies for a full rating for four of our assistant rated instructors, we were pleased to have a talk from Bill Scull at the end of November. I.D.B.

SOUTH YORKSHIRE & NOTTINGHAMSHIRE

Amongst many achievements is 19 year-old Jeff Wayte's first solo after seven weeks and 31 launches with the club. Les Hill has finally passed his Bronze C papers and our Secretary, John Marsland, is claiming Silver height.

The Skylark 2 syndicate, Steve Evans and Allan McClelland, is with us permanently. Steve missed his Gold height by 500ft at Portmoak but during the same visit to Scotland, John Walker (Swallow) gained his five hours.

Ron Cousins has achieved our highest launch so far with 1650ft, solo in the T-21. Ron has formed a syndicate to buy the club T-21 as we feel we should be streamlining the fleet. We now have a K-4, Capstan and Grunau 2 with the T-21, Tutor, Krajanek and two Skylark 2s privately owned.

Negotiations on our lease are at an advanced stage and we hope we will soon be erecting our hangar. The AGM is on February 13. J.M.

STAFFORDSHIRE

The latest field improvement work has resulted in extra land drainage and a safe undershoot area for landings in a north-east wind. It also extends the cable-break landing area for the reciprocal heading. After three seasons at Morridge, the improvement in the field is quite considerable.

Our AGM is in January and the date has been set for Boris Clare's 1976 course. It seems likely another glass-fibre sailplane will be on the site next year.

Philip Barnshaw is the latest to go solo and congratulations also to Frank Hemmings for his Gold height at Aboyne. F.B.

ULSTER

Private ownership increased in October when a syndicate headed by Brian Sloane brought over from Yorkshire a remarkably pristine and surprisingly young Oly 2B, which has since been flown intensively.

Earlier we had an expedition to Magilligan when, for the first time in our 40yrs of soaring in that littoral aviary, a bird strike was logged—a buxom *kamikaze* seagull making a big hole in the leading edge of the Capstan's starboard wing just as the aircraft accelerated to circuit speed.

The Queen's University Skylark 3, out of service all last season for a complete recovering, will soon be flying again in a white and yellow trim.

An influx of Army members on short-term postings has been welcomed, with Alan Somerville and John Mitchell, both instructors, helping us to cope with the new students from Queen's and other seats of learning. The end of November and early December saw two successive Sundays of weak wave.

In the interests of a strong all-Ireland gliding movement we've approached the IGA for affiliation, without intending to weaken our BGA ties in any way, of course. Cross-border visits, both ways, are now the in thing but it was left to our Billy Craig, and the Dublin GC's winsome Mary McCormack, to do something really practical about forging stronger links by jointly renouncing their respective solo ratings to fly dual into wedlock soon.

Hopefully, 1976 should see our departure from rarely soarable Newtownards to far more fruitful pastures further north. We also expect to introduce a new form of financing, based on a heftily increased sub and a reduced launch fee. This has worked well with the Dublin GC, who found it guaranteed they met their overheads whatever misfortunes might halt operations for a spell. It also seems to stimulate the utilisation rate as people tend to take more launches in an attempt to get their money's worth. R.R.R.



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WOLDS

We have had several A and B flights during the latter part of the year. Jennie Hurd, who weighs about six stone wet through, had to wait until a lead-lined cushion was completed before she (and the cushion) made the ballast requirements.

Several members generously gave up half a day's holiday on Monday, December 8, so that Shane Douglas, who was allowed time off school, could go solo on his 16th birthday. The event was filmed for a special feature on Northern Television.

The club hangar is bulging at the seams, the latest arrival being a M-100s brought from Italy by Brian McFadden. At present a secure compound is being built for winches and trailers to confound the activities of local vandals, and plans are well advanced for a 30ft × 10ft workshop, complete with power generator, where we can repair equipment. G.H.H.

YORKSHIRE

There are several new syndicates and we have two more glass-fibre gliders—a DG-100 and a Std Jantar. The Super Cub is back in operation after a new engine being fitted.

In spite of all the hot ships, it's nice to report that for the second year running a K-6 has taken top place on the club ladder—congratulations to Jon Hart.

As usual we have the Northern Comps during August and will be hosts to the Vintage Club for their Easter rally when bungey launching is planned.

We now have a proper workshop between the hangars which makes more space for storing gliders in the hangar area previously used as a workshop.

We are sad to hear that Malcolm Sutherland died in South Africa a short time ago. Malcolm emigrated there last year, with his glider, and we hoped the climate would improve his health. He had been a member and instructor at Sutton Bank for a good number of years and will be remembered with affection.

P.L.

OBITUARY

MALCOLM SUTHERLAND



On November 2, Malcolm Sutherland, late of the Yorkshire Gliding Club, died in the Rand Clinic, Hillbrow, Johannesburg, South Africa.

We first met in 1972 and I flew with him twice to complete his MGPPL. In May, 1973, he appeared at Lasham on a BGA instructors' course, where once again I had the pleasure of his company. He had obviously done his homework before the course and at times I felt superfluous; needless to say he passed with flying colours.

We met rather infrequently during the remaining months of 73, and early 74, at which stage I was preparing to move to South Africa. Imagine my surprise and delight when Malcolm appeared at Baragwanath on April 20, 1975. Before long we were both airborne in the K-7, Malcolm complaining about being rusty but nevertheless squeezing 45mins out of a mediocre day.

Our friendship blossomed from that day onwards and Malcolm became one of the family. He very quickly established himself at the gliding club as a capable and conscientious instructor, and was very well liked by everyone. Late in the year we became partners in an ASW-15A, which gave us both a tremendous amount of pleasure.

During early November, at the Orange Free State Regional Championships, with Steve Thomas, ex Usk, and myself as crew, Malcolm finished his Gold C with a Gold distance and Diamond goal flight of 334km. In his own quiet way he was delighted and didn't mind in the least having his leg pulled about stopping off at the second turning point for tea; it was an old English custom, explained Bobby Clifford.

Bara-G won't be the same for some time to come, even though time is a great healer. Malcolm, we all loved, liked and respected you, may you forever sail on quiet thermals.

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SERVICE NEWS

ANZUK (Singapore RN)

The latest news indicates that despite the British Military withdrawal the club will continue to operate. A very active civilian expatriate membership headed by CFI Ray Parkin (ex Trent Valley) will continue to combine with the remaining RNZAF and RAAF members to keep the club going. With all the Army members now departed, the remaining RAF members will be sorely missed when they go as they represent a large slice of our work force.

We have recently benefited from several visiting RN members who have had long associations with the club through its time as 'Straits', 'FEAF', 'RN' and ANZUK Gliding Clubs, which brings me to a request to all those who have been associated with gliding in Singapore. I am attempting to compile a history of the club and would appreciate any help past members can provide, particularly in relation to dates of formation, title changes etc. The address is WO John Wilson, RAAF Support Unit, RSAF Base Tengah, Singapore 24.

J.W.

BICESTER (RAFGSA Centre)

The future location of the RAFGSA Centre has not yet been 'officially' decided but we are hopeful that we may remain at our present airfield under the auspices of the Army. Our previous co-users of the airfield, Oxford UAS, have moved to Abingdon and the Centre now has the use of the entire airfield and local airspace seven days a week.

The RAFGSA hope to have an ASW-17 to replace the Kestrel as our 'hot ship'—the aircraft will be based at Bicester but will be away for a number of competitions during the summer. It is also intended to replace the K-6 with a K-18 in the spring. The passing of an era occurred in November when the last of the RAFGSA K-6CRs was sold to a civilian syndicate.

Two privately owned aircraft have arrived, John Delafield's Nimbus, replacement for his Kestrel 66, and a Skylark 4 owned by a seven party syndicate. One of the Motor Falkes is undergoing its C of A and the other Falke has been operating satisfactorily for the last few months using a three bladed propeller which provides greater ground clearance and an imperceptible change in performance. The 'Lycoming Supermunk' has reappeared after its mandatory checks and is still proving its worth—it will tow a 'two-up' Blanik to 2000ft quicker than the standard Chipmunk can tow a K-8 to the same height, with only a marginally greater fuel consumption.

Our trailer member, Tim Herrington, has put in considerable hours on our trailer fleet, preparing them for their summer usage and Harry Chapple has finished the Grunau Baby II mini-trailer.

The late autumn expedition to Aboyne was rewarded with a Diamond height for Frank Burgess (Std Libelle) after a number of season's attempts. On the same visit Terry Cawthorne came within a few hundred feet of his Diamond.

W.T.

CHILTERNS (RAF Weston-on-the-Green)

The AGM on November 29 was opened by the new Chairman, John Delafield, who announced that official approval had been given for the repair of our hangar, damaged in storms two years ago. Reporting on the year's achievements, Jock Manson, CFI, said we were a little down on 1974's performance. Cross-country kilometres were less because pilots had omitted to record tasks.

The 'aspirants' trophy went to Alan Muir; the CFI's trophy to Oscar Constable; 'member of the year' trophy to Bob Lloyd and the 'pundit's pot' to Eddie Wright, who finished second in the Inter-Service Regionals Club Class.

The Kestrel's place should be taken by a Cirrus-75. The K-8, K-13 and K-4 are to have a major service and the K-8 should soon be replaced by an ASK-18. The winches are having new engines after some ten years' hard use and our immediate cable problem, the result of a duff centre strand, seems to have eased.

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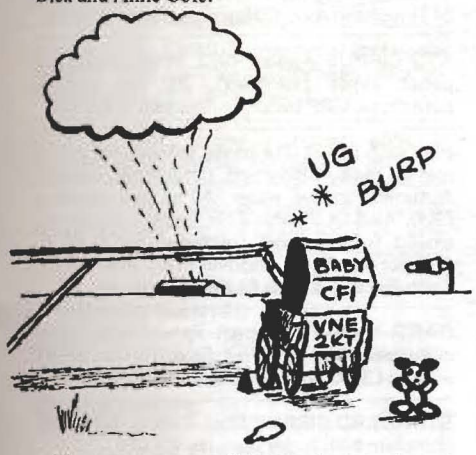
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The October Aboyne expedition was again a limited success with two Gold heights and a climb to 18500ft. G.M.

CRANWELL (RAFGSA)

Cranwell has recently had two newcomers—the K-4 from Brüggen, Germany, and the baby CFI arrived on October 23. Congratulations to Dick and Anne Cole.



There was an expedition to Portmoak and Bryan Harvey notched up another field landing trying for his Diamond height. E.G.N.

CULDROSE (RN & RMGSA)

The season was pretty good with quite a few A and B, C and Bronze C certificates gained along with two five hour flights. Mary Squire and Denis Williams successfully completed their instructors' course at Bicester, during which Mary gained her Silver height.

We recently had a change of Chairman, saying goodbye to Cdr Sarginson whilst welcoming Cdr Claridge who, since joining us, has checked out as a tug pilot and obtained his first Bronze leg.

The work on our damaged Pirat at Dunkeswell is nearing completion and we have an ambitious programme of maintenance under Keith Robinson, who has recently become a BGA inspector. Apart from Chipmunk servicing and gliders C's of A, the syndicate Prefect is taking shape with its rebuild and work has started on the complete refabricating of one of the Capstans.

P.W.

WREKIN (RAF Cosford)

Our fleet has recently changed with the transfer of the Pilatus B-4 in exchange for a Club Libelle, and a K-18 is due in the near future. Our K-8 (No. 334) stays at Cosford but as a syndicate glider owned by Jenny Saunders, Jake Jacobs, Patricia and Martin Platt, John Richardson and Ray Coventry.

Our most recent A and B successes include Simon Davies, Ian Boosey and Gary Fury.

Awards for last season were as follows: 'Tug' Wilson for the first one hour flight from the winch, when he stayed up in the Cirrus for 1hr 50mins in March; Keith Rootes for best progress, going from *ab-initio* to two Silver legs; Paul Whitehead for gaining Silver C in the shortest time, three days; Benny Goodman again won the K-6E trophy for the best flight of the year, a Diamond distance attempt; the CFI's award for sheer endurance and continuing keenness, despite countless setbacks, Steve Burnell, and the award for the best services to the club again went to Dave Cottle for his excellent efforts with our MT.

We made a special presentation to our CFI, Neil East, of an engraved silver cigar box in recognition of his outstanding services to the club during the last two years. Statistics have nearly trebled and he has unselfishly sacrificed his own solo flying to help others. I.D.M.

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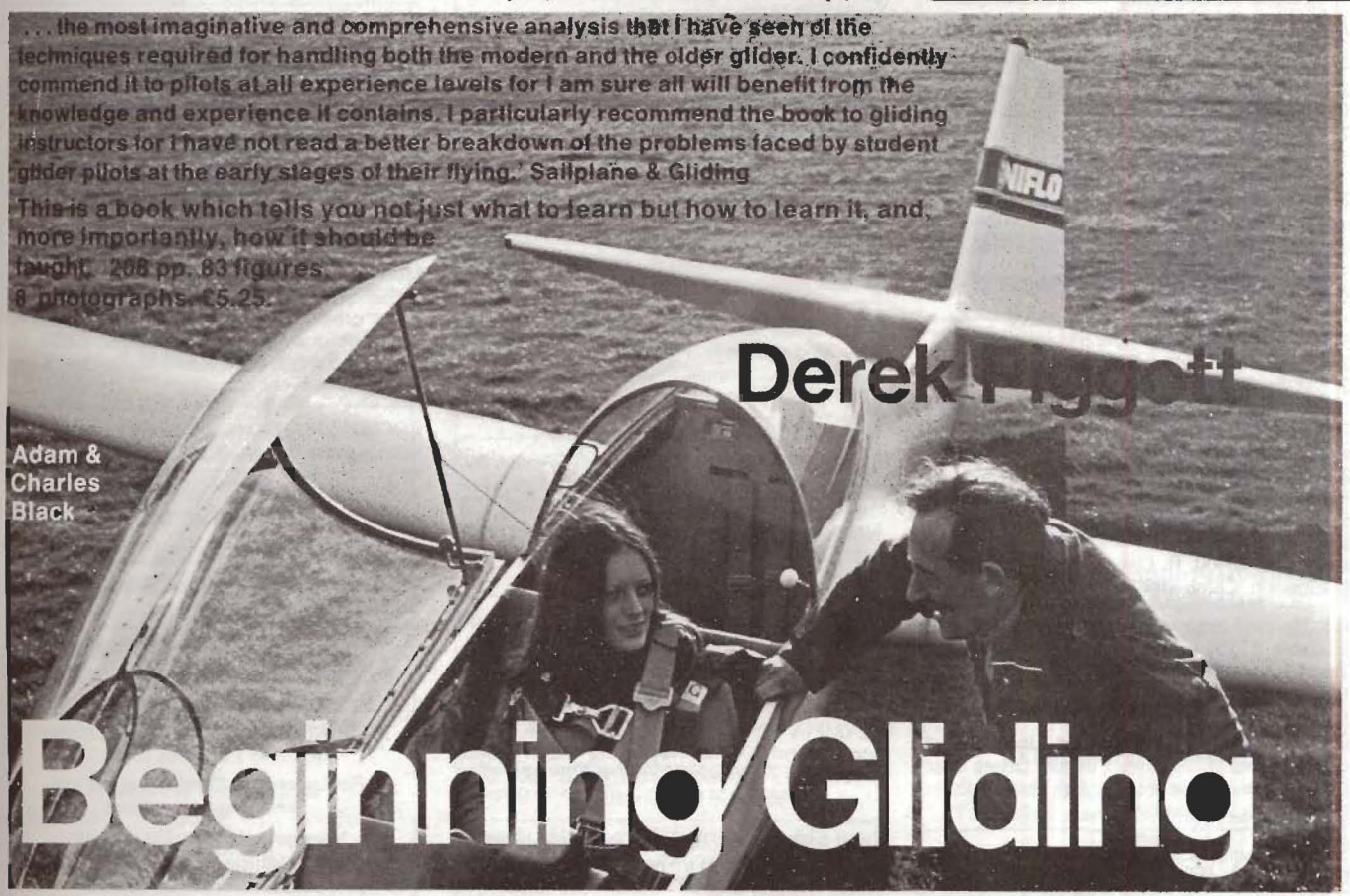
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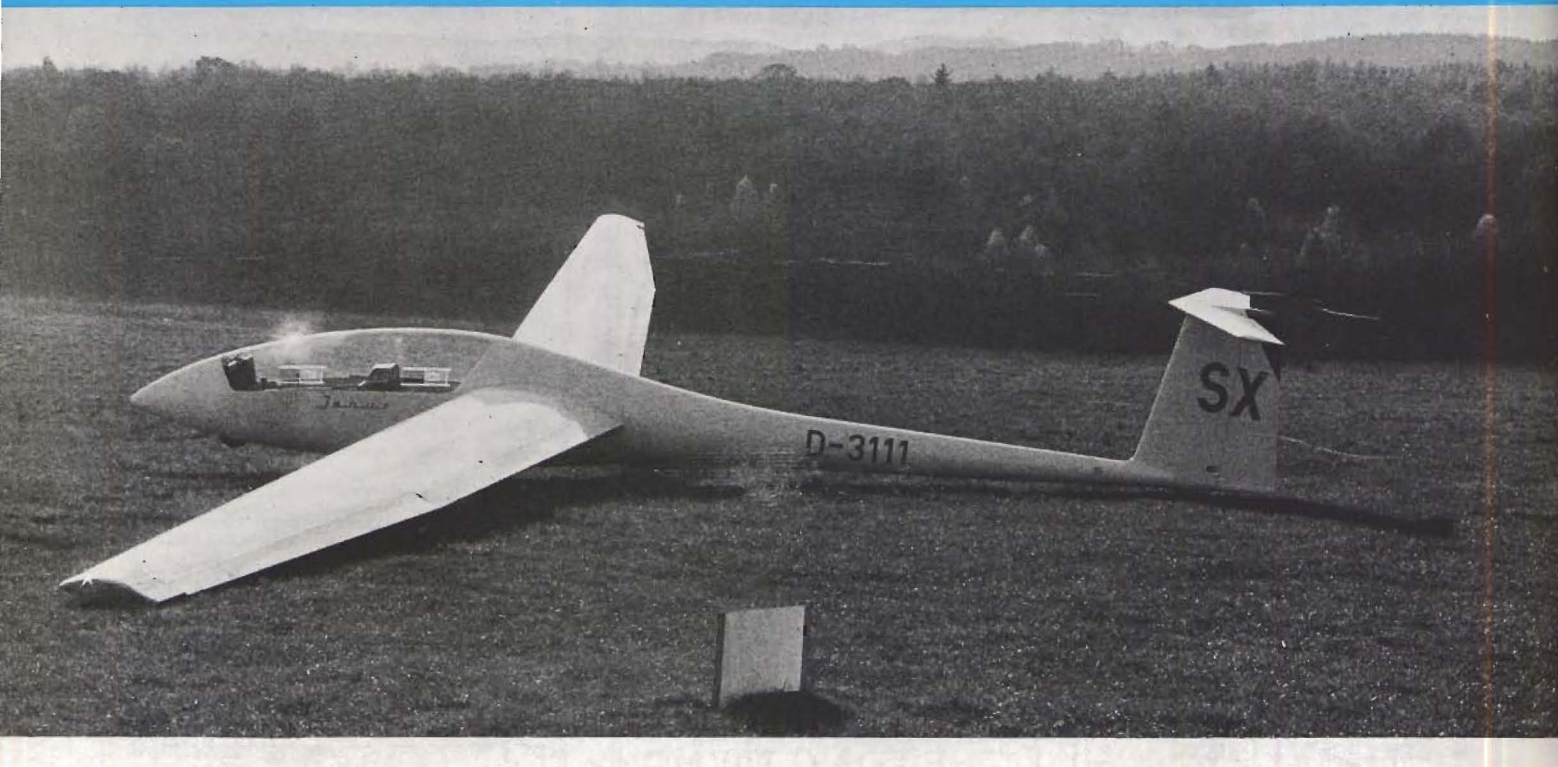
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