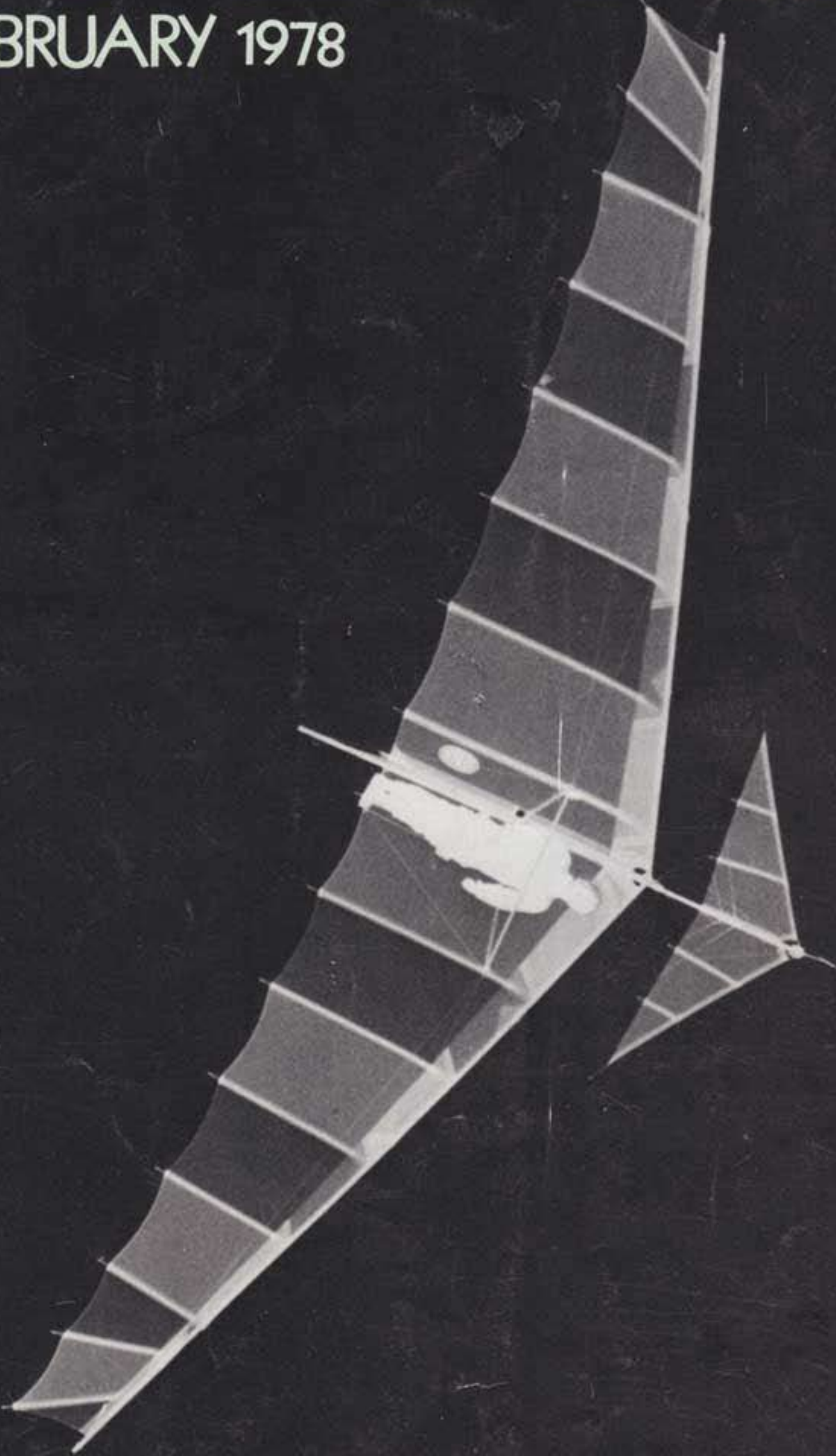


WINGS!

FEBRUARY 1978

MAGAZINE



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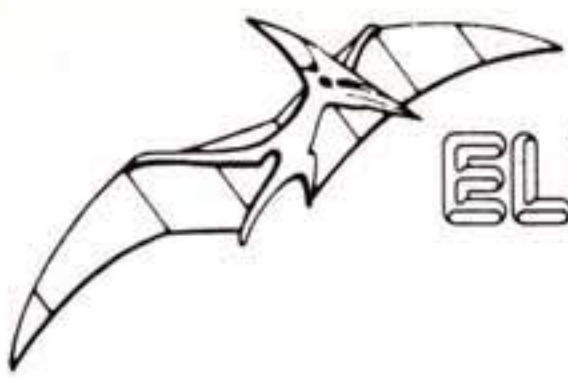
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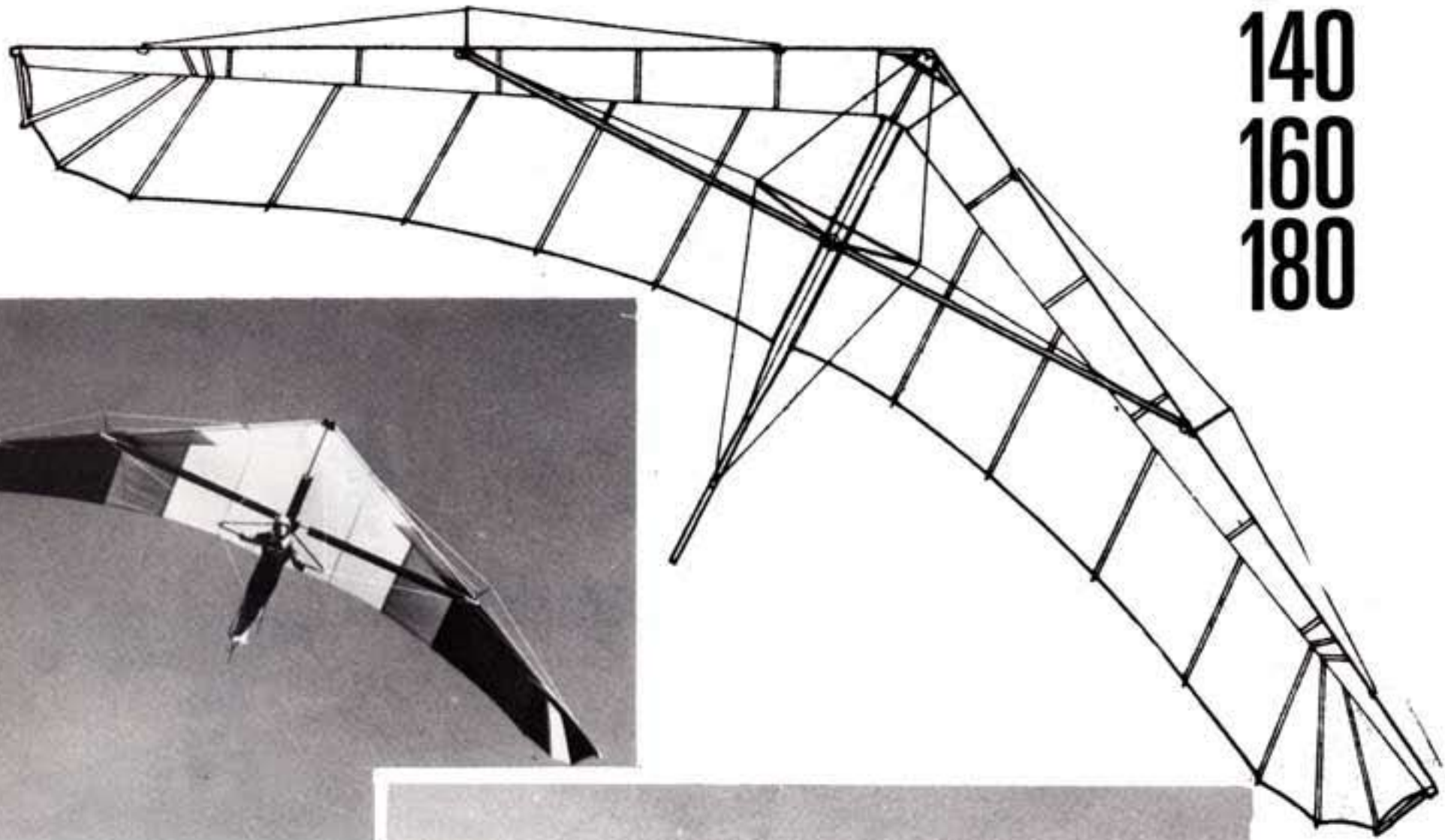
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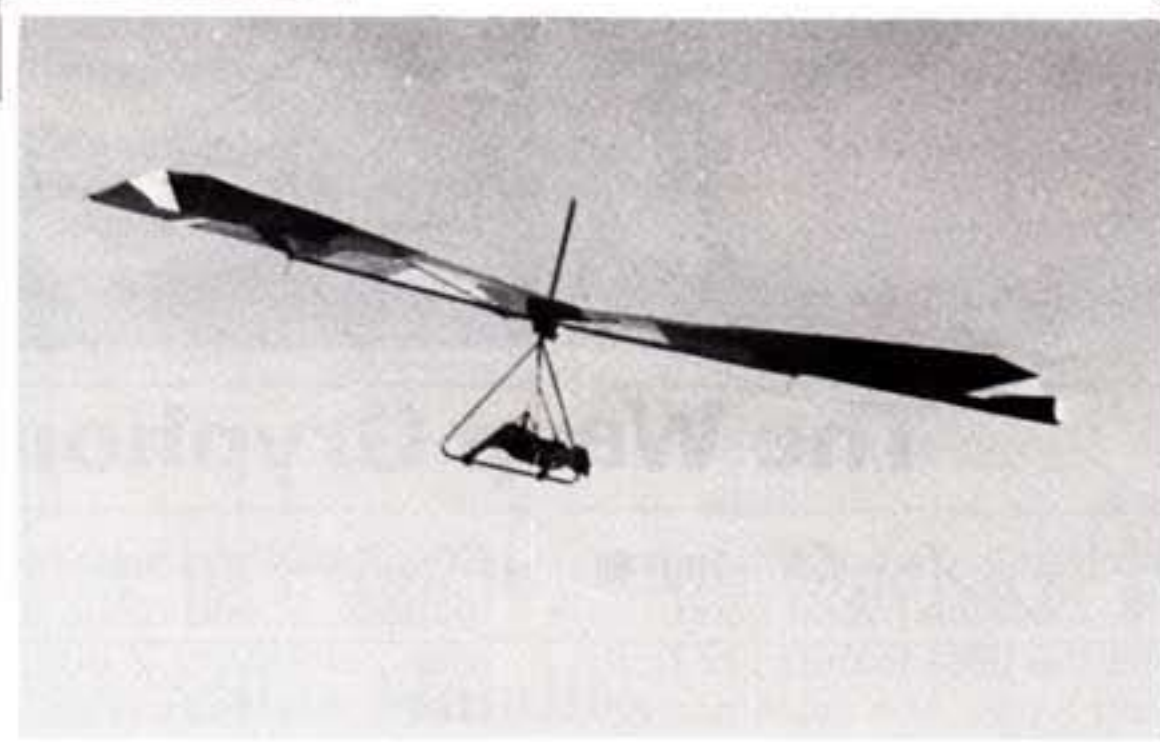
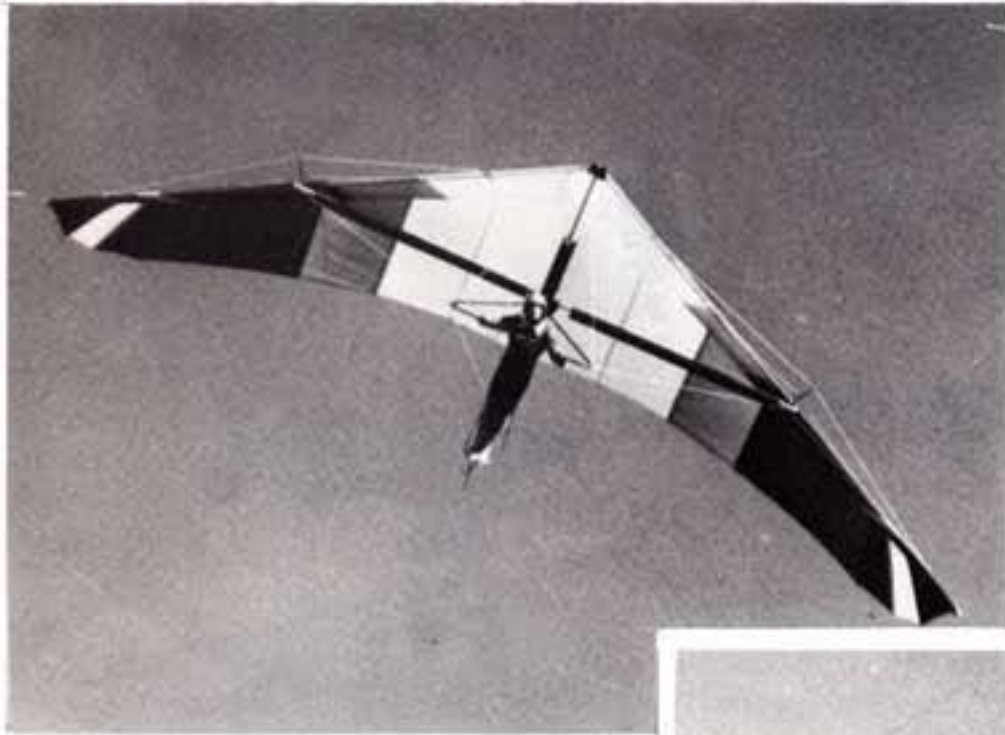


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WINGS!

The official magazine of the BHGA

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 **BRITISH
HANG GLIDING
ASSOCIATION**
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TA2 7AH.

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EDITORIAL

As this is probably the last issue of *Wings!* before the AGM, may I take the opportunity to say that if anyone wishes to tackle me on any subject relating to *Wings!* I will be at the Matrix Hall and will be happy to discuss it with you. I shall wear a crash helmet and carry a February issue of the mag. under my arm. The crash hat will be to protect myself from anybody who wishes to see me about *Wings!* Seriously though, feel free to approach me and voice any complaints.

Considering the membership of the BHGA (currently about 3,400), the AGM is usually quite poorly attended. This is a great shame because, not only are some very important decisions made at the AGM, it is a very entertaining way to spend a day. There are many animated speakers expressing their point of view and equally as many animated members of the audience ready to disagree with them. If this isn't sufficient, there is a bar and usually, a display of the latest machines from our top manufacturers. It is a perfect opportunity to put faces to those names who spatter the pages of *Wings!* This is the only day in the year where you can find everybody who is anybody in British hang gliding under one roof.

There is of course a very serious side to the meeting, for it is here where the future of your flying is decided at least for another year. Do you care about the regulation of your sport? If the answer is yes, then attend. If you don't want to stand for council, you can always vote in

somebody who is in sympathy with your views. One of the proposals for debate should produce plenty of heated discussion. This is the proposed replacement of the member club representative voting system with a postal vote. Under the present system clubs can collect signed voting slips from club members not attending the AGM and entrust them to the club representative who casts the vote in their interests. Unfortunately, it is possible for one or two large clubs to dominate the ballot and last year saw some less than subtle liaising between club representatives. Are you certain that your club representative will cast your vote in your interests? If you aren't, now is the chance to change it.

John Hunter and Tony Fuell's article on harness system failure provoked a large postbag on the subject. It couldn't have come at a more timely moment. The 1977 accident review in the USHGA Hang Glider Magazine revealed that no less than 7 out of 45 deaths, reported worldwide last year, were caused by failure to clip in, on take-off, or harness system failure in flight. The other great killer was the stall (9 deaths). In this issue Graham Hobson has written an article on how to identify and avoid stalls. Read it carefully. By avoiding these two accident situations, according to last year's statistics, you could cut your chances of a fatal accident almost by half.

We've been away from the advertising pages of "Wings" for over a year and consequently many of our old friends and customers wondered if we were still in business. The truth is that we are very much alive and kicking, but since we moved to larger premises and launched our "Sunspot" a year ago, we have been loaded to the limit of our capacity, selling entirely by demonstration and recommendation. Mostly our sales have been in the North and in some areas our products are not well known. Our agents would like us to tell you about them.

For those who don't know, "Sunspot" — originally a floater — is a high performer which has been refined until it is considered by many experts to be a hot ship equally at home in strong or light winds, yet having extremely good handling characteristics and no bad habits. It is a confidence inspiring machine, enabling the EPC holder or well taught beginner to soar easily in the lightest winds, seated, with no landing problems at the end. It parachutes well.

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ALTERNATIVES TO PRAYER WHEN DANGLING FROM THE BOTTOM BAR

The illustration heading the article by Tony Fuell and John Hunter which arose from Gary Mees' hang system failure is maybe not as daft as it looks.

When I heard about Gary's accident (I have this fortunate habit of flying at some other site whenever a fellow club-member crunches), it occurred to me that he could possibly have landed unharmed had he not attempted to climb into the control frame. Admittedly this is the 'conventional wisdom' in this situation, as described by Dennis Pagen in 'What's your hang-up' (*Groundskimmer*, January 1977).

I have no quibble with this when flying at height, with a ground clearance of at least 1,000ft. Even if you practise, as Pagen recommends, it is still extremely difficult to raise yourself from hanging below the bar to standing inside it and impossible, I would suggest, to do so without causing radical roll. It was just such a roll which caused Gary to return to his hanging position. The pitch control is already ruined of course for the (ex-) prone pilot who is by now in a steep dive.

On ridge-soaring site, or any situation with less than 1,000ft. clearance in all directions, I would suggest that the pilot transfer his hands to the back wires and hang from them instead of from the bar, though a lot closer to the frame than shown in the illustration. The advantages are:

1. the effort of raising the body is reduced to almost nil, though good co-ordination is still required.
2. the time-span of the unavoidable radical roll is considerably reduced.
3. pitch control (for ex-prone) is quickly regained by moving to a suitable point on the back wires, and *this is the one that counts.*

At great heights, this method suffers from the disadvantage that the pilot is still supporting his weight through his hands. At such heights, the radical attitudes involved in climbing in are probably justified which remains and there is space to allow radical attitudes for a reasonably long time. Below 500ft. I doubt if there's enough. The 'hang-on' times quoted in the Fuell/Hunter article indicate a reasonable maximum time of one minute, given the added incentive of being in the air rather than in a safe experimental situation. From 500ft., I would expect that this would be enough to allow *deliberate* dive and/or sideslip, followed by a (relatively) controlled landing.

Perhaps regrettably, my arguments are theoretical rather than practical and I've no intention of verifying them in practice. Perhaps some braver flier would like to try it, with a long back-up suspension system, or some of the people with tether



AIRMAIL

experiences.

Needless to say (I hope!), this is a 'second-string' situation and there is no excuse for flying with defective materials anywhere in the hang system (or elsewhere for that matter), for failing to clip in, or for tolerating an attachment which is in any way ambiguous, or for failing to check it.

If the worst comes to the worst, try and land like a parachutist — legs together and relaxed, aim to land on hips and shoulders and then roll. Wear decent boots — if you break a femur, the chances are you've shattered a foot as well, which might be more troublesome in the long run. I suspect that boots, and proper ones at that, are nearly as important as crash-helmets.

Ian Trotter
Edinburgh

KARABINERS

Dear Sir, The article in December *Wings!* on harness attachment systems suggests that hang glider pilots are having to 're-invent the wheel' as far as the use of Karabiners is concerned — an invention well-known to climbers.

Could I, as a climber, suggest a few simple rules for the use of Karabiners.

1. Oval or D-shaped Karabiners are usually best.
2. Look for name and UIAA (Union Internationale des Associations d'Alpinisme) breaking strain loadings and buy the best.
3. Never have more than two loadings on the Karabiner (Gary Mees had three) or sideways loadings.
4. Always use screwgate Karabiners (and screw gate shut) unless landing in water seems likely.
5. Always face Karabiner gate away from possible contact with 'A' frame

and wires i.e. rearwards if possible.

6. Use as few Karabiners as possible: one for preference.

7. Always use screwed tight Karabiner for thermal flying. As the article pointed out you'll descend very quickly from 3,000ft. if the Karabiner fails — without your kite!!

Alan Firth
Surrey

Re: Hang on for Dear Life December *Wings!*

Dear Sir, Naturally, we all wish Gary Mees full recovery, but before anyone gets to thinking that Gary got it wrong somehow, lets be careful. Perhaps you are thinking: my karibiner is first class, so everything is fine, it must be safe, it can't happen to me, can it? Wrong! Wrong! Wrong!

Gary did not get it wrong. At least, not in any blatantly obvious way. Gary was caught out by accident statistics as you can be, tomorrow, on this or some other safety problem not fully analysed.

There was a lot more to this letter concerning this type of accident but it just added up to one thing — 'you're nowhere without duplication.'

Vernon Girling
Norfolk

GUIDELINES ON SAFETY AND FIRST AID

Dear Sir, Our Club has been on the go for around two years now. We try to follow BHGA recommendations as much as possible, arranging teach-ins and general club coaching sessions for the near future. One of these sessions is to be on Safety and First Aid as we feel it very much applies to our sport. In view of this, my better (?) half and I got together and compiled an eighteen-page booklet on the subject.

It was originally designed to be used by our Club members in conjunction with their site forms, etc. Since completing it, various people have expressed interest in it and I thought it might be of use to other members or member Clubs of the BHGA.

It is written in three parts, the first dealing with general safety, the second on first aid and the third contains extracts taken from the BHGA's Accident Prevention and Investigation Manual. To help cover Club costs we are asking for 25p per copy, payable to the above Club.

If any of you are interested, please write to me and I can send you a copy. We, at the moment, have a limited number, but if demand is sufficient, we can easily get some more printed.

May we, in this Club, take this opportunity in wishing you all safe and enjoyable flying in 1978 and extend a warm welcome to any of you who may be in this area to join us in our flying by contacting our Secretary at the same address as below.

Elizabeth J. Squires
Accident Officer
Strathclyde Hang Gliding Club
33 Whitehurst
Bearsden
Glasgow G61 4PF
Ed: A review of this short manual appears in this issue.

DEFLEXORS

Dear Sir, I have to comment on some points recently raised in *Wings!* namely pilot suspension and aircraft strength.

Single point harness suspension has never been 'on' as far as I am concerned. Ever since Wasp produced their first hang gliders with the 'pair of braces' double 'D' ring suspension from the main cross boom of the kite, I have not seen a better, safer or stronger method of harness attachment for pilots either seated or prone.

The horrifying accident of falling out of the glider due to the release of a karabiner is very unlikely to occur. When flying prone the two strap hang system helps enormously to eliminate body rotations about a vertical axis, there is absolutely no problem 'getting the bar back' and it is much easier to swing into and out of prone because there is no harness material in the way of the pilots head.

Quite apart from safety the response of the kite in flight is greatly enhanced when the pilot is suspended from the kites centre of gravity and not somewhere below. This can be demonstrated by simulating the form and weights of the kite and pilot system using pendulums made from plasticine and string and swinging them around gently in 'turns'.

One more bonus is that the load in tension in the heart bolt is reduced by 1/2 the pilots weight at lg.

Now about aircraft strength. Why do we see kites which have deflexor blades that are parallel with and 90° to the ground when the kite is held level?

To most efficiently shape a sail and most effectively brace wing booms against flying loads the line of action of the deflexor blades must be parallel and 90° to the line of sail tension. It is best too if there is a deflexor blade in line with the sail when this sail is inverted e.g. when the glider is parked fully rigged facing into wind.

An example of this is the deflexor system used on the Chargus Vega 1.

What happens when the line of the sail tension bisects the angle between two deflexor blades is that the blades tend to spread apart from each other by trying to rotate about the longitudinal axis of the wing boom. What also happens when tuning of the sail is attempted is that adjustment of tension in any one deflexor wire alters both sail tension and sail camber.

The only viable way of rigging flexible sail booms is to completely separate out the actions of each tuning wire and this can only be done by making sure that the line of action of each deflexor blade and wire is either in line with or 90° to the line of sail tension.

P.C. Mawer
Cornwall

THE COMPETITIVE URGE

Dear Sir, We all know that our Association has a Press Officer. It strikes me that amongst the other qualities needed to do this job is the ability to stand aside from one's own ideas and represent our sport as a whole, for how much longer, then, must we put up with blatant misrepresentation, such as that written by our Press Officer, Brian Milton, in his piece on the League in December *Wings!*

I quote 'Put simply, pilots want flying competitions.' Does that make me a non-pilot then? Likewise all the thousands of others like me who have no interest in competitions, and, I believe there are thousands. In the same article, almost as an aside, Brian mentions that there are no Scottish or Welsh fliers in the League. Has it never occurred to him that this is simply because there are no fliers from Scotland or Wales interested in competitions? I can't really speak for Scotland, but I do know most of the fliers in Wales, so I can say for a fact that almost all fliers here have no interest in competition flying (only three put themselves forward for next year's League, one of whom made it — the other two didn't bother, as they came to the conclusion that the whole thing just isn't worth the trouble).

So please, Brian, no more absolute statements like the one I mentioned earlier — I think all of us non-competition-orientated pilots are quite happy to co-exist alongside those of you with the competitive urge, so how about a bit of reciprocation on your part? I'm sure this would bring for greater understanding all round.

Tony Fletcher
Mid Glamorgan

MEMBERSHIP INSURANCE PREMIUM

Dear Sir, I regret to say that I do not feel the BHGA as a whole shows enough sympathy for the unfortunate ones — the ones who fall victim to the hazards of our sport.

I consider the council and in particular certain members have been exceptionally good and carried their responsibilities extremely well during the past very difficult year.

But it is sad to see, that the majority of members, as shown by the pitiful results of the Chris Corston and Alvin Russell appeals, have shown an indifference that is positively shameful.

I say that this must not be allowed to happen again.

Would it not be possible for the annual subscription to be increased by say £5, a sum which surely most of us would not miss; to provide insurance for all members against permanent disability and/or death.

This would not be enough to provide any large sums so that people would still take out their own insurance, but it would be a safeguard to those, who for one reason or another hadn't.

In addition it would be an incentive for people to join the BHGA before attending a course. If my experience is anything to go by 85% of students attending courses never join the BHGA.

This is a large potential market for the BHGA Memberships which is at present lost.

It might happen that those who thought the sport too arduous or difficult, would find a monthly dose of *Wings!* an encouragement to try once more, whereas at present they drop out and are never seen again.

This proposal may not of course meet with everyone's approval, but I do think it is worth consideration.

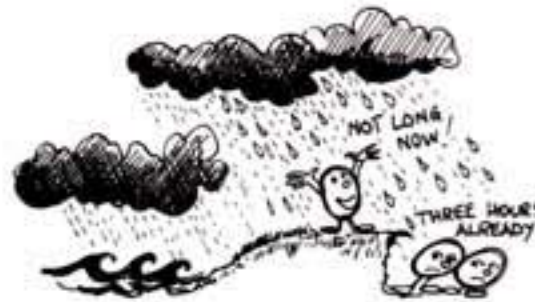
Mike Adam
Director,
South Wales Hang Gliding School

If you have something to say, send a letter to the Editor, 14 Earlsthorpe Road, Sydenham, London, SE26.

THE DEDICATED OPTIMIST

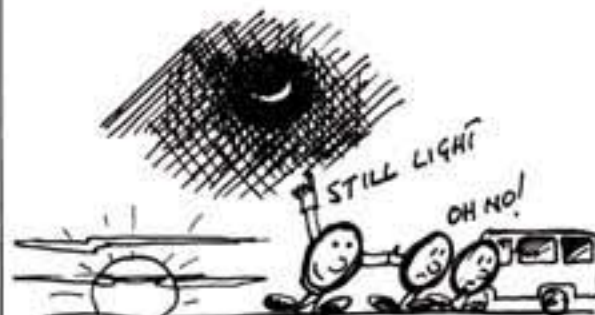
Cowering on the hilltop
Behind a clump of gorse,
The 'Dedicated Optimist'
Assess the wind force . . .

"Easing some and fancy
And shifting round again."
(Its angled forty five degrees
and blowing storm force 10).



A blackened line of cloud bank
Approaches from the sea,
The 'Dedicated Optimist'
Is huddled in the lee . . .

"I've noticed that quite often
It drops after a squall."
(It chucks it down in buckets
And it doesn't drop at all).



The rain is horizontal
I'm bloody soaking wet,
The 'Dedicated Optimist'
Is ever hopeful yet . . .

"Oh look! a patch of blue sky,
I think the sea's less rough".
(We looked and didn't see it
'cos we wasn't quick enough).



The non-existent sun has set
There's no escape for us
The 'Dedicated Optimist'
Has brought us in his bus . . .
"We'll wait a half hour longer
The daylight's not quite gone."
(For chrissakes no one tell him
That moonrise is half past one).

Bob McKay

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2 adult members of same family and household. Existing members can extend to family category on payment of additional £3.00.

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- "HANG GLIDING" — by Bob Mackay. An informative book
mainly for those who have just entered the sport50p
(Plus P. & P. if only ordering this item)10p
- Log Book£1.00
- The BHGA leaflet "An introduction to Hang Gliding"
(including a list of major clubs) Free to Members
- List of British Hang Glider Manufacturers Free to Members
- List of Schools on Current Register Free to Members
(Send s.a.e. if only ordering free items)
- 'WINGS!' BACK NUMBERS: Single copies to Members 40p, to others 50p, for July 1977 issues onwards; deduct 10p for prior issues.

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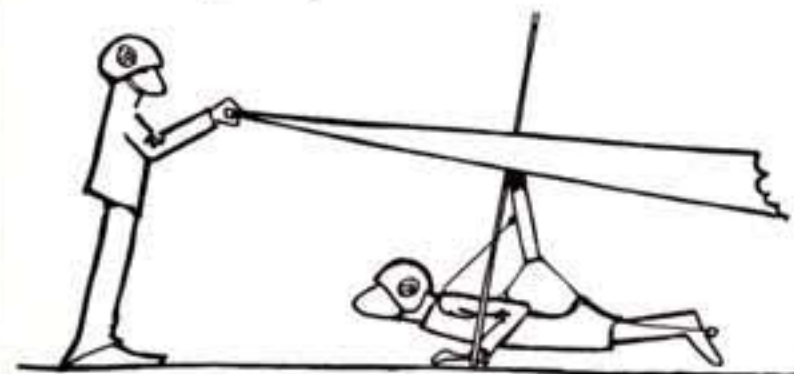
CONVERTING TO PRONE

The older you get the harder it is to learn, so the saying goes. Ex-spitfire pilot, Bob Mackay proved this wrong when he recently converted to prone painlessly and quickly. While the problems and fears were still clear in his head Bob wrote this lucid article for those who are shaking at the thought of their first prone flight.

If you can't afford one of the four or five top class apron harnesses on the market, forget it! If you are young light and agile the choice is less difficult, but if like me you are old heavy and stiff you need to choose carefully.

Insist on it being rigged high enough so that you can practice rotating for five minutes. Fit a temporary 'nonk' loop. Only this way can you be sure of getting the one that suits you best. This is what I liked about Mere, it gives you a chance to try several.

If you chose a harness from a manufacturer who didn't make your glider, make sure it has sufficient adjustment to allow for a lower or higher hang point. Hook up with your glider rigged for prone on flat ground, get someone to hold the nose about shoulder height and adjust the harness so that you can at least get a clenched fist between you and the bar. Push the stirrup full back and your toes should just be touching the ground.



Next rig up a practice hang point in the garage or garden. Again you must be high enough so that you can do the whole rotation sequence both ways without your feet touching the ground. Its no use hanging in an 'A' frame that moves with you, you need something solid to push against (I used an old washing machine). Read the later paragraphs on rotating and turns, then practise, practise, practise.

Sort everything out at home not on the hill on the day. Work on the 'OFAAT' principle (one first at a time)

Choose the best site you've got on the best day. You want conditions that give you the easiest take off. For me that is between 16-18mph, what I like to call a three step take off with a nice steady up and away climb. What you *don't* want is less wind requiring something of a run and the need to pull on speed or *more* wind with penetration problems.

Have a couple of seated flights first to 'suss' out how the ridge is working and what sort of turbulence is about. Get your approach and top landing tidy so you know what to expect. (What do you mean you haven't top landed yet! Go to the next article. Go directly to the next article. Do not pass comment, do not consider going prone (yet!)) Easy take off conditions also mean easy top

landing conditions, don't contemplate going down if you can avoid it, you want a slow descent with a *low groundspeed*. You won't get this at the bottom.

Have a couple of experienced prone fliers check your harness and position. Friends, non flying types or relatives won't do. You can't see through the back of your neck to make adjustments you have to rely on others. Check your 'nonk' loop gives you the stirrup nicely. I prefer to have a small loop made from strong rubber. Just big enough to go firmly round the boot and under the instep but capable of stretching to about double that size.



This is it then. You pick up the glider, you can't lift it quite as high as when seated so you have to stand slightly stooped. If you try to straighten up the thigh loops are dragged up your thighs. The bar is, of course, further

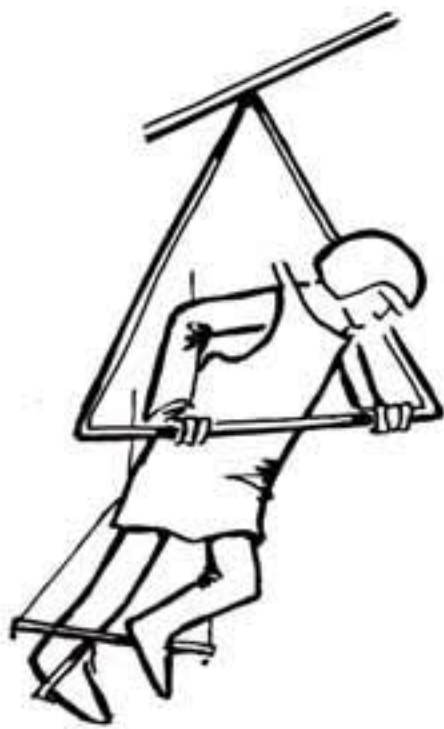
away from you. All this will be no problem after two or three flights but on your first it feels terrible. It will be easier, for the first flight, to pull the thigh loops up as far as you can, this will make finding the stirrup and rotating a bit more difficult but for the moment that is secondary. Forget about going prone, concentrate on making a good 'seated' take off.

Look for a bit of clear airspace to yourself. Once you do rotate you will be a danger to anyone else in the air for three or four minutes so warn the other pilots of what you intend, they'll probably give you a wide berth.

Position your hands for a normal 'seated' take off. I prefer one on the upright one on the bar. Before you tell the wire man to **RELEASE** make sure you have lift in the sail, the glider feels balanced and the wind is steady.

OK — RELEASE — lead off with your nonk foot, gently pull on the bar. You lift off feeling like a trussed up sack of potatoes as you climb away 'seated'. You are immediately aware of being suspended a little higher and leaning forward, the bar is well in front of you, you seem to be taking a bit of weight on your arms. Make your half turn to 'crab' along the ridge and concentrate on getting as much height as possible.

Look round — all clear — turn back — right this is it. Stretch your nonk foot back slowly and steadily, feel for the stirrup with your free foot — **FEEL FOR IT DON'T LOOK!** Keep your orientation, **KEEP FLYING THE GLIDER!**



When you have got your free foot firmly in place on the stirrup get ready to rotate don't worry about your 'nonk' foot yet. **OK** start your push and as the apron is pulled down your thighs your body rotates, you are not actually conscious of pulling your top half down. Check your airspeed, keep flying the glider, now work your nonk foot round onto the stirrup, still with the loop on. If you get stuck half way go back to seated and land, don't try to sort it out in the air.

Once settled into prone position try pulling on a little speed and notice how incredibly easy it is. Similarly reduce speed a little. All this in about 20-30secs, which is about all the



time you'll have before your next turn becomes imperative.

LOOK ROUND, more difficult, easy to look sideways and backwards not so easy to look upwards and forwards.

There will be a tendency to pivot your body rather than make a weight shift across. To avoid this imagine you are trying to turn the handlebars of a stationary bicycle. Use a push and pull action with a little more pull than push to give a slight increase in speed. Opposite correction in the same terms will straighten you out.

The beauty of a good soaring day is that you can now stay up and get your turns really sorted. You will find it harder to initiate the weight shift — you are using different muscles — the whole thing seems more 'mechanical' and you have to *think* your turns. You can't move instinctively as when seated. After a while you will find yourself easing off on the 'pull with the inside arm' and you will begin to just 'push with the outside arm'. Watch it! You are slowing your turns. Keep using the bike handlebar technique for your first few flights.

Now try rotating back into seated. Always keep your nonk foot on the stirrup you may have to overshoot your landing and need to push back into prone. Try this a couple of times so that it comes easily when you prepare to land (**OFAAT** remember).

After about 10 minutes your neck is aching, your arms are aching and a cramp is developing somewhere down one side, time to land. Follow your previously planned flight path and rotate into 'seated' before you turn into wind. Get your hands on the uprights. You'll find control and flare a lot easier than if you are leaning forward and holding the bar. Only when you are sure of your touch down, release your 'nonk' foot so that both are free for landing. If you are not sure then **ROTATE** back into prone and **GO ROUND AGAIN**.


Minimise your flare and ground the 'A' frame as soon as possible. We'll assume you have a glider that is 'auto-stable' and won't want to drop the nose. Getting unclipped can be awkward so a bit of pre-flight practise is

well worth while.

As soon as you have rested your aches and pains you can try your second flight with less worries about flying in company. This time stand a little stooped and don't pull those thigh loops up too much. Hold both uprights, forget about one hand on the bar, one hand can be higher than the other for pitch control. Let the 'A' frame sit on your shoulders. When you feel she's balanced get the wire man to position the nose so that she is giving you that slight forward pulling feeling sort of 'wanting to go'. Start your run with your 'nonk' foot first and push with your shoulders. As you move the glider lifts and your push transfers to your hands, she lifts you. Drop your hands onto the bar, one at a time and pull on a little speed. Push slowly back with your nonk foot in 'slow motion' and bring your free foot in. Keep it all slow and easy, **KEEP FLYING THE GLIDER**, foot in and push, work the nonk foot round — **EEEASY!**

Early on in your learning schedule give top priority to studying low speed roll characteristics. Make sure you have plenty of height and try initiating turns at slower speeds. You will find it takes a lot more effort. Try a couple of insipient stalls and recoveries, don't let it catch you out near the ground. The dreaded tendency for an involuntary *push* instead of a *pull*, is much more likely in the prone attitude.

Expect to make one or two less than perfect rotations after take off especially in lighter wind conditions when you have to run a little more and pull on speed. Be prepared to lose it and go down. The first bottom landing will make you fully aware of the need to get your hands on the uprights when you rotate into 'seated'. Your groundspeed will be much higher and if you leave your hands on the bar you may not be able to push your weight far enough back to achieve a full stall to kill that speed. Even if you do, your body attitude will be almost back to semi-prone. You will pitch forward on touch down and bring the nose down with a hell of a thump. I know I did.

You didn't? Well good for you. 360 next flight is it? 

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MIDAS



| | MIDAS 'C' | MIDAS 'E' | V IIA | VIIB |
|--------|------------------|------------------|--------------|--------------|
| L/E | 19 ft. 3 in. | 19 ft. 11 in. | 18 ft. 6 in. | 19 ft. 8 in. |
| KEEL | 8 ft. 3 in. | 8 ft. 3 in. | 14 ft. 7 in. | 15 ft. 7 in. |
| S/A | 166 sq. ft. | 188 sq. ft. | 195 sq. ft. | 220 sq. ft. |
| N/A | 110 degrees | 110 degrees | 100 degrees | 100 degrees |
| BILLOW | 1.6 degrees | 1.6 degrees | 2.25 degrees | 2.25 degrees |
| A/R | 6.0 | 5.7 | 4.16 | 4.09 |
| L/D | 8 to 1 + | 8.5 to 1 + | 7 to 1 + | 7 to 1 + |

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DW: Your main interest in hang gliding now seems to be as a designer. What led you into this field?

MH: Basically I started as a designer of cameras, gunsights — all those kind of things. It's one of those things you get a reputation for and then people ask you to design for them. You don't just start saying "I'm going to be a designer". I suppose I was about 40 before I realised I had this spark and people were starting to ask for my services which made me realise that perhaps I was a little bit different from other people. It's very easy to assume that if one is good at something everyone else is good at it as well. I couldn't spell and was told I was an idiot. Therefore I thought everyone else was much brighter than I was.

DW: Is designing an abstract thing that you pluck out of the air or is it a scientific process?

MH: It's a feel, an abstract thing. I can't tell you why it happens, all I can say is that to me an answer is obvious, to other people it isn't. This is the only sort of criterion. I was talking to Bill Moyes and he said exactly the same thing. He said that he designs a kite how he wants it and he goes to various symposia where they ask him complicated questions and he doesn't know what they're talking about. He designs a kite and knows it will fly by the look of it and feel of it. The technical people afterwards tell you why it flies and it is the same with all sorts of things I've designed in my work. I designed a vacuum detinning machine for ginger cakes and it wasn't until after I'd got it working that I realised all the big manufacturers said it couldn't be done. They didn't tell me, I just went ahead and did it.

DW: And so you find you can turn this design talent to almost anything.

MH: Yes, it's just the way I think.

DW: When you came into hang gliding, did your eye immediately look on it from a designer's viewpoint?

MH: At first I didn't look on it as a design possibility. I thought "this looks good" and I got into it. Then I began to think that the performance was not there. The main thing that spurred me on was the fact that we were having trouble with sites and I wanted something that would hill soar apart from ridge soar. I wanted a lot more performance not just a little more performance and this is where the Gulp came in. This was my first crack at getting something that really flew.

DW: What were you flying until then?

MH: A Skyhook, then I made the 'Bighook', both from plans. The Bighook was an extended Skyhook, which flew very well for a time until the sail stretched, but it wasn't a new design as such. It was an extension of an existing design. It went all right but it had colossal limitations, and I wanted something that had a much better glide angle so I built the Gulp. I found that with this I had penetration problems — no better or worse than the normal hang glider, but higher top speed was required.

DW: How did you come to design the



INTERVIEW: miles handley

Dave Worth talks to Miles Handley about his flair for hang glider design

Left: The Gryphon Mk. I.

Gulp? Were you inspired from some other source?

MH: Only aeromodelling and some years I had spent at Croydon airport as a greasemonkey. I had a feeling for it. When I was aeromodelling I designed my own models because kits didn't interest me. I wanted to design something myself. I made all the mistakes that an aeromodeller does, designing his own planes. This of course stood me in good stead and gave me a fundamental understanding of aerodynamics. Not the sort of aerodynamics that we're dealing with in hang gliders, where we have a thin membrane. Thin membrane aerodynamics is quite a bit different. It has a number of drawbacks. The first is the colossal rolling moment on a high

lift, low area section, which I discovered on the Gulp, hence an enormous amount of tailplane elevation to counteract this rolling moment. Then I went on to the first Gryphon. I realised then that the maximum camber had got to be well forward to get a good lift without this colossal rolling moment. This also paid in that it increased the top speed, so I knew I was on the right track even with the Gryphon I. It had drawbacks. It was very difficult to make with its double membrane. This taught me an awful lot about high drag. Even with a moderate section, as the speed is increased the drag goes up so much. We've got to get a (at high speed) good glide angle. At the moment the Gryphon III has still got

a reasonable glide angle at 50mph. In fact it's got a better glide at 50mph than a lot of the second generation kites at their best glide angle. That is about 6:1 at 50mph. I only got that through cutting down the sail area and making what sail area there was work properly. All the wing has got to work and this is why the Gryphon has truncated tips, tension on the trailing edge to hold the wing section at something like the right angle of attack.

DW: What made you design the Gulp without a cross boom? Was it the only non-rigid kite without one at that time.

MH: No the Tweetie didn't have one and I'll be quite frank, the Tweetie taught me a lot. I also thought there was a lot wrong with it. The cross boomless Gryphon I came from the Gulp. I thought I could sweep the wing back but how much, keeping structural integrity? I thought it was about 140 degrees. Will this handle as a wing? Well, the only way to find out was to build one, and I did. The first time I flew the Gryphon I it handled beautifully, but on weight shift it was heavy. It did yaw a lot, but on the Gryphon II I found I could overcome this with the droop tips. The pitch control, which I thought was going to be a pig, was beautiful, it got better as the angle went up and not worse.

DW: Why didn't the Gryphon I take off as a production kite, speaking metaphorically of course?

MH: I think people were frightened of the fact that it didn't have a cross boom. They didn't worry about the Gulp not having a cross boom because it had a tail plane and it looked like a conventional plane. To have a wing without a cross boom seemed wrong.

DW: Was the unfortunate death of Guy Twiss a brake on the future of the Gryphon I?

MH: It didn't help obviously, although in that particular accident Guy Twiss shouldn't have been killed. It was a standard down wind stall, but having a smaller wing area the Gryphon parachuted a lot quicker than usual. Parachuting down wind onto a 20 degree slope, his impact speed was quite high. Most people would have got away with it, but he was unlucky, and broke a rib which pierced his lung. It was unfortunate.

DW: All the same it did cast a shadow over that particular design. Were you not demoralised at that point?

MH: I very nearly gave up.

DW: What drove you onwards?

MH: Johnny Carr mainly. He talked me out of it. Johnny said that the same thing could have happened with any newer hot kite. The characteristics are the same. Wing areas are getting smaller and smaller, which means that they won't parachute like the standard rogallo.

DW: Let us go back to your designs. The Gryphon I had aerodynamic controls, are there limitations to weight-shift control of hang gliders?

MH: We don't know what the limits on weight-shift are at the moment. This is what makes the whole concept of weight-shift control so interesting. I was surprised to see how well the

Phoenix 8 handled and realised that aspect ratio had little bearing on control. Weight-shift on a rigid wing will not work, for if you move to the right, the right-hand wing (which is under high loading) will increase its speed — this is adverse yaw. On a flexible wing, the increase in pressure is used to warp the wing and, when done correctly, gives you your roll.

DW: To the lay pilot, the sail of the Gryphon III seems very tight, almost rigid, where does this wing distortion occur?

MH: It is only relatively rigid. If you look at a proper rigid wing, the size of the aileron is very small, and then look at the roached tip on a conventional hang glider, it is quite a large area, so obviously you don't have to change that area much to cause a turning moment. The basic hang glider has flying surfaces and control surfaces. The flying surfaces can roughly be enclosed by lines drawn from the front of the keel and back of the keel to the centre of the wing booms where the side wires connect. The wing tip contributes very little to your flying, it is a weight sensitive device. When you put your weight over it senses that there is more pressure there and flexes. It is critical because it can do one of two things, it can either lift up and the other one go down which will cause a turn or it can stay straight which will cause adverse yaw. A careful balance between the two will give sufficient turn without adverse yaw. It is getting this balance correct which is a science we know very little about. The only way we can learn is by building something, seeing what happens and then saying, 'Ah yes, if we do that we can improve that'.

DW: Why have we seen the appearance of the floating keel pocket?

MH: This helps billowshift. By moving your weight the keel pocket enables the billow to shift to one side. The billow is connected to the roached tip by the cut of the sail which in turn gives much more reflex on the pressure tip and deflex on the low pressure tip which helps rolling. There are also other stabilities which have to be built into a glider. Dihedral is one of these. By putting too little dihedral in a sail it will be very responsive but once rolling it will be a hell of a job to stop. Too much dihedral can do the opposite. Getting the right dihedral is something that is very dependent on each individual machine. If you remember on the early machines we used to say: make sure there is no anhedral. In fact we needed the anhedral to make the machines lighter to turn, and easier to come out of the roll. The standard rogallos were heavy to get into a roll and came out very easily, but if the wind was turning you sideways, they would want to go sideways and you couldn't roll out of it. So there are two sides to it — you have got to arrange tuning so rolling is easy in either direction. This is something which I managed to achieve with the Gryphon II and the Gryphon III. It takes a bit of getting used to at first, and some



Miles meets Bill Moyes, who appears to be wistfully eyeing the Gryphon.

people think the Gryphon III is over sensitive. It is very light on roll and very light on return, when one has been used to flying machines on which one needs to keep on the weight to keep the roll on. This is one difference between a high aspect ratio wing and a low aspect ratio wing.

DW: Does this mean that flying technique will have to change with the performance increases we are getting now?

MH: Oh yes, if someone had got on a high performance machine of today three years ago they would have said it was unmanageable. If you are used to flying this type of machine and you were to get on a rogallo you would find it so heavy you would wonder how the hell we flew them. It is a matter of getting used to flying in a particular way.

DW: Is there an apprenticeship we have to go through with design and flying developments or can we take great leaps forward?

MH: I made quite a big leap with the Gryphon going up to 140 degree nose angle and I deliberately took a big leap because I wanted to find out what would happen. It is pointless putting a degree on at time. It won't tell you much. I thought I would go for 140 degrees. There was a reason. It was the minimum sort of angle I reckoned I could get away with without a cross boom — as the nose angle becomes lower so the stresses go up.

DW: In designing hang gliders, are there any particular problems building in glide angle at high speed or is the problem to preserve the large speed range?

MH: It is preserving the large speed range so that the stall speed is low enough to land. In other words you're talking about a 14-15mph stall speed and that must be maintained at all costs. Imagine a machine with a 25mph stall speed landing at the bottom of a hill in no wind. You just can't run that fast.

DW: Would you say that you approached the problem from higher performance downwards rather than from the poor performances of rogallos upwards.

MH: Yes. The only thing I'm disappointed about is that I never built a true rigid. I made lots of rigid models. The thing that really turned me away from rigid was the hassle on the side of the hill, putting them together. So I decided that it had to be collapsible. Then I decided that I wanted a collapsible wing not a collapsible rogallo.

DW: Does that mean you would design rigids if conditions dictated it.

MH: Oh yes, I would build rigids if we had the sites for it, the conditions for it and competitions were geared round it. I do have a bias against rigids in that they are a hassle to carry about. You couldn't stick six rigids on the car and go across to the continent, with 4 or 6 blokes inside — no way.

DW: What do you think of rigid craft like the Mitchell Wing? Isn't this just reinventing the glider?

MH: I feel the Mitchell Wing is a very good machine without a doubt, but it is not in the pocket or the spirit of hang gliding as we know it. It is specialist and expensive thing if you buy, time consuming and probably more critical to make than a normal rogallo. It is not in the realms of the average do-it-yourself man, but they are good machines.

The Swiss glider with a canard wing is a beautiful machine and by definition a hang glider, but from a usability point of view it won't take over from a hang glider. You won't get sales of two flexible fold downs to one of those, it will always be 300 fold down flexibles to one of those, so it is a fringe hang glider.

DW: What other factors dictate hang glider design.

MH: Obviously a hang glider design has got to be something that the manufacturer can build with the pocket of the average pilot, so it has got to be reasonably priced.

DW: You could say that conventional gliders are very highly priced but they still sell. Do you as a designer want hang gliding to remain within the pocket of the average pilot?

MH: I think that this is its whole charm. I think if you were rich you wouldn't bother with hang gliding you would go into conventional gliders. A top sailplane can cost in the region of £15,000. You can get a glider for about £2,000 but top hang gliders are beating it anyway so you are not gaining anything by buying one. The difference between the two is portability and independence.

DW: Will the hang glider ever reach the performance of a true glider?

MH: It will never get to the stage of the true glider. It will score over the glider in radius of turn, minimum sink, and where you can use minimum sink — it can get more out of a ridge. It can stay up in winds that a normal glider couldn't, purely because it can stay in ridge lift where a conventional glider can't. The conventional glider gains in thermal activity where it will get a lot higher. It has a better min. sink and a better top speed. The only time a hang glider does better is in the lift right in the top of the ridge where the conventional glider cannot use it. It can't scrape it's wing tip along the grass, do a 180 degree turn on its wing tip and come back again. I have seen a glider run out of lift and go down where hang gliders are staying up.

From that point of view we are better off, from the cross country point of view we will never be as well off.

DW: You don't think there are micrometeorological conditions which

we may be able to utilise for cross country flying.

MH: I think maybe we could. A hang glider can pick up lift at 50ft. where a glider couldn't. So perhaps in marginal conditions we might be better off provided we could learn to read where the thermals are. The biggest advance in cross country flying is going to be in pilot education rather than the machine. The machines are capable of cross country flying and if we knew where the thermals were we could hop from one to the other and fly a long way.

DW: For the future, is hang gliding design going beyond the practical approach where you build a prototype and then see if it flies? Are we moving into computer design?

MH: No, because the information is still being compiled and you can't use a computer until you have got all the information compiled. We have got so little information yet on hang gliders. Primarily because what information we have got is not tabulated and we don't really know why things work on the finer details. I remember being told that the coefficient of lift for a hang glider could never be more than one. The Gulp stall speed was 13mph with a wing area of 130sq. ft. which gives a coefficient of lift getting on for 3.

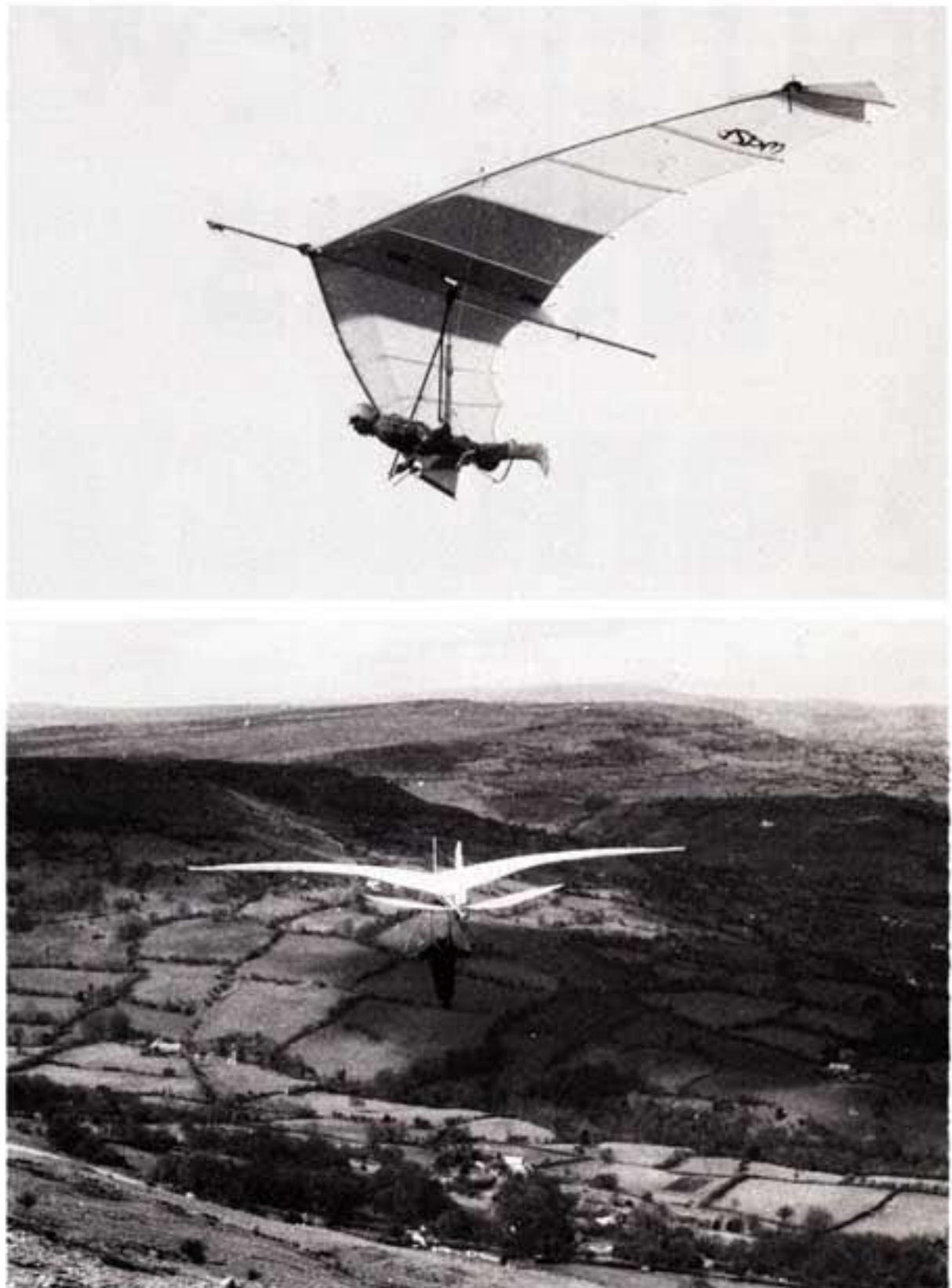
DW: So the information relating to

hang gliders doesn't correlate at all with that for other aircraft?

MH: No. Virtually all aircraft information is on high speed aerofoils with stall speeds of 50mph plus. We are talking about stall speeds of 13mph. The only people who really knew about it were Otto Lillienthal and the Wright Brothers in their early days, who did tests, none of which were tabulated or integrated. There are no formulas for low speed thin section aerofoils. If we keep to foot launching, there eventually will be, because we have to keep to stall speeds of around 13-15mph. The boffins will do it. By boffins, I don't mean designers. The designer designs something and the boffin tells him why it works. This is all a long way ahead. We are moving so fast at the moment we are not tabulating (as we go) and analysing. We can't afford to, there isn't that sort of money. Until universities get really interested and, heaven forbid, the beaurocrats say that they want a clamp down on hang gliders — which is what killed the glider industry in this country — people couldn't afford all the paper work that went with it.

DW: Have you any ideas for future designs?

MH: We must have ideas for future designs because gliders go step by step. You must also take into con-



Top: The Gryphon Mk. III. Above: The Gulp! looking not unlike a large swallow!

sideration that people are buying gliders and don't want, (in two months time), to find it out of date. You build a glider and when somebody else builds a glider better than that, then you build your next machine. You don't change the design just for the sake of it. There is also a lot of graft that goes in to designing and building a new hang glider. I have a lot of designs for the future. The next one, the one after that, and probably the one after that I have vaguely in my head, but I can't do the second and third one until the first one is built. From that I am going to learn something that I am going to put onto the second and third one. You can only take a certain step at a time and you come up against snags that you just can't get round and you have to say that is the limit. Structurally, I don't think we can go above an aspect ratio of 9:1 purely because of the weight penalty for carrying the thing. One can't go up in nose angle much more because the pitch would be too light for the average person to

comprehend.

DW: What about new materials, carbon fibre, for example?

MH: Carbon fibre as it stands at the moment is a bit of a miss because glass fibre is stronger. Carbon fibre is slightly more rigid, and when one is talking about carbon fibre it is usually 2% carbon and the rest glass, but really glass fibre is a better material than carbon fibre. One has only got to watch a pole vaulter working. If you made a glider with carbon fibre it would probably put £200 on the price of the glider straight away. Also its abrasion resistance is not very good. These materials don't like a hole drilled in them and a bolt put through, because they chafe round the hole horribly, much worse than aluminium tube which is very tolerant. One would have to adopt a much more careful method of doing the bolt hole positions, like moulding them in place. The duraluminium tube is going to stay with us for some time.

DW: Up until now you have been an independent designer and quite

suddenly you have teamed up with Wasp in that they are developing and producing the Gryphon III. Is this a permanent arrangement?

MH: It could be. I get my kick out of designing machines, and when it comes to the hassle of producing them I don't really want to know. It is a hobby with me. The Gryphon was getting a lot of attention and several manufacturers showed interest in it. I chose Wasp mainly because they were virtually next door to me, and liaison would be relatively easy. I've got a full-time job which I can't afford to jeopardise because I have people working for me. The Gryphon III had to go out or not be produced. I produced 24 Gulps in my spare time and that nearly killed me, I didn't want that to happen again.

DW: You are very well known as a designer and it may be forgotten for the moment that you are still a top class pilot, flying in the British League. Do you still enjoy flying?

MH: I still enjoy flying. After my last accident it took a bit of time getting

my bottle back, but I am getting it back now and I am very interested in flying. I would hate to think of life without flying. When you get a thousand foot above a ridge and start going places this is what flying is about. I think I get as much kick out of flying as out of designing.

DW: Do you get a particular kick out of flying your own design?

MH: No, they are not connected at all. The fact that a lot of my machines are being flown by top pilots does give me a kick.

DW: Have you any flying ambitions?

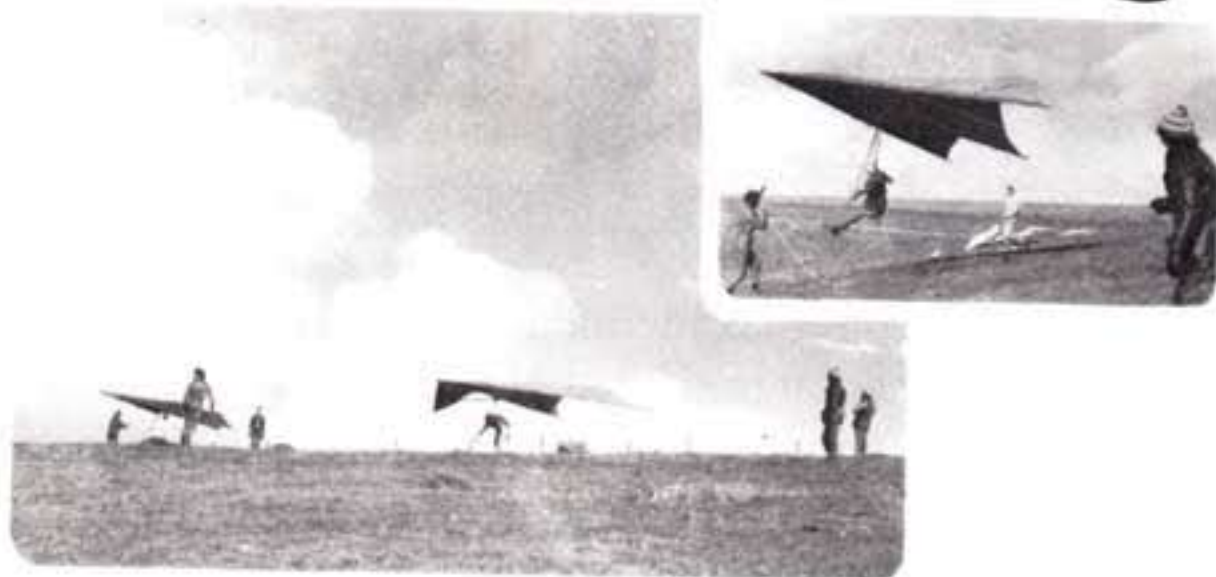
MH: I would like to get the cross country more together. I think I have got a lot to learn on that. We have all got a lot to learn. Cross country for me is the big one. It frees us from sites, and the dangers of crowded flying which I don't enjoy. I like to be up and away.

DW: Thank you, I think that is about it unless you have got anything to add.

MH: Not really... except the Gryphon is superb!

Laughter. ☺

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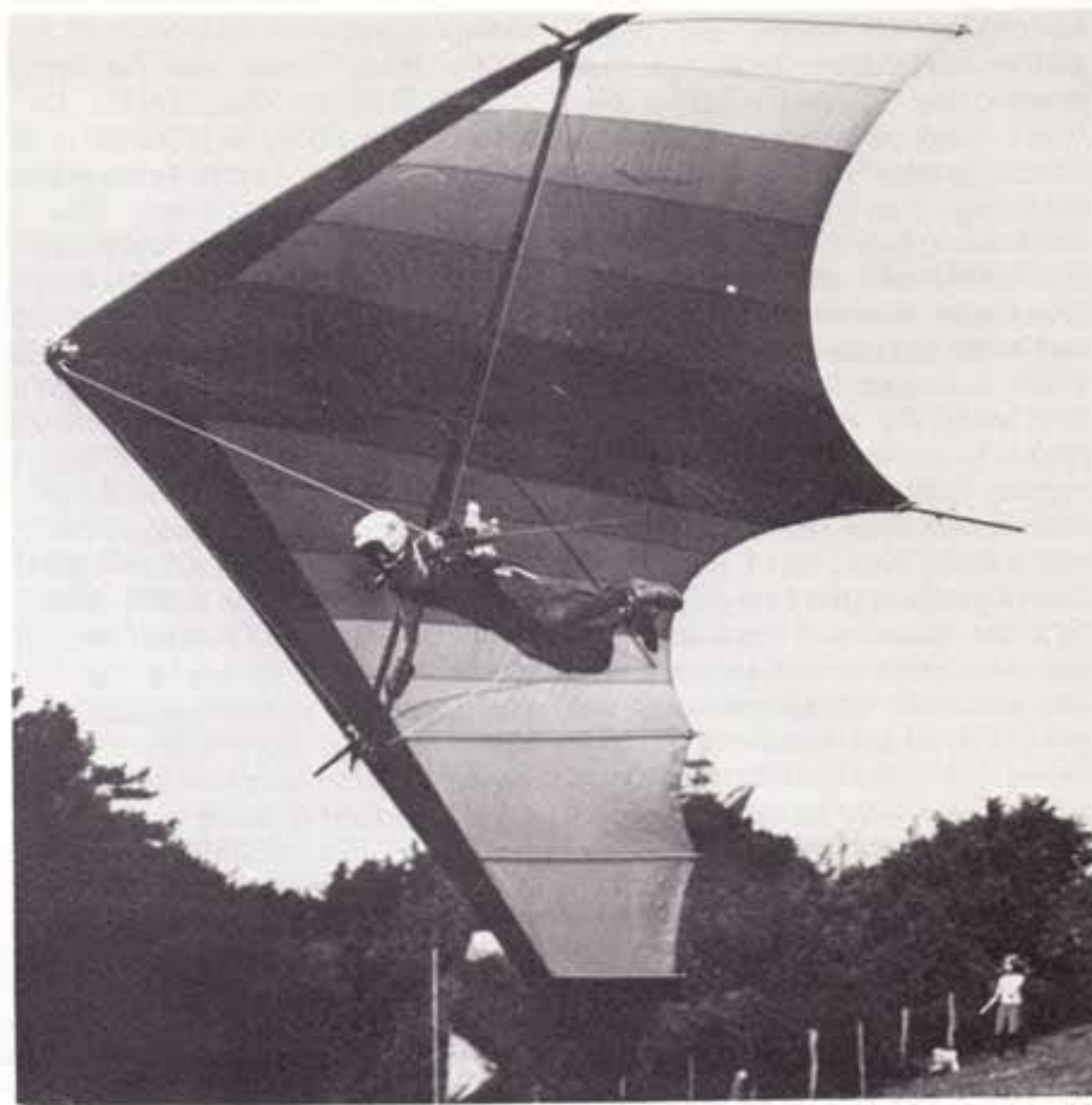
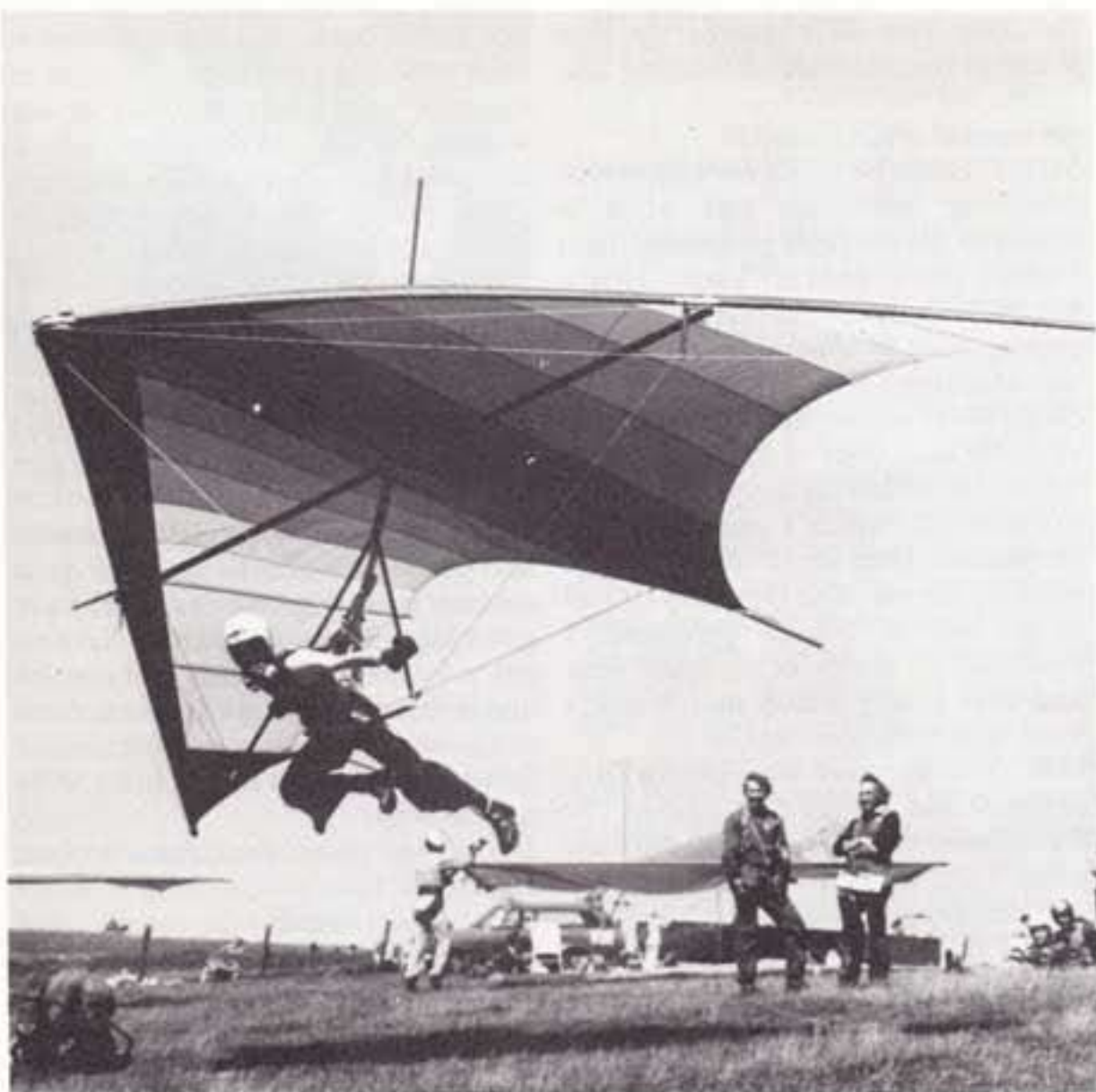
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T.N. White captures a perfect example of a stall on take-off. Lack of attention as the pilot searches for his stirrup allows the stall situation to develop, probably

STALLS

In a large percentage of hang gliding accidents a stall has occurred at some stage, whether as a direct cause or as an intermediate stage in the process of the accident. It may well have been the case, that if the unfortunate pilot concerned had recognised the stall symptoms and had taken the correct measures, then the accident may not have happened since, to all intents and purposes an accident has not happened until impact with the ground. Graham Hobson, Chief Instructor of The Northern School of Hang Gliding describes the most likely occasions when a stall will catch out the unwary pilot and gives guidance on how to avoid these situations.

We all should know that a Hang Glider is a flying machine and flies by virtue of passage of air over the wings (airspeed). When this passage of air slows down below a certain critical value then the wing is no longer able to fly and is said to have stalled. After stalling the glider is virtually uncontrollable until it regains sufficient passage of air over its wings to fly once more i.e. by falling! (See August '77 Wings! Page 31, 'Stall').

Any properly designed and trimmed glider flying in reasonably smooth conditions should fly 'hands off' without stalling and the pilot can be confident that after a control input it will always want to return to this 'hands off' airspeed. This is as true for downwind flight as it is for into wind flight.

One type of stall which frequently causes accidents is the downwind stall; Again everyone should be aware that when flying downwind the groundspeed or the speed with which the glider is passing over the ground is faster than when flying into wind. The extent

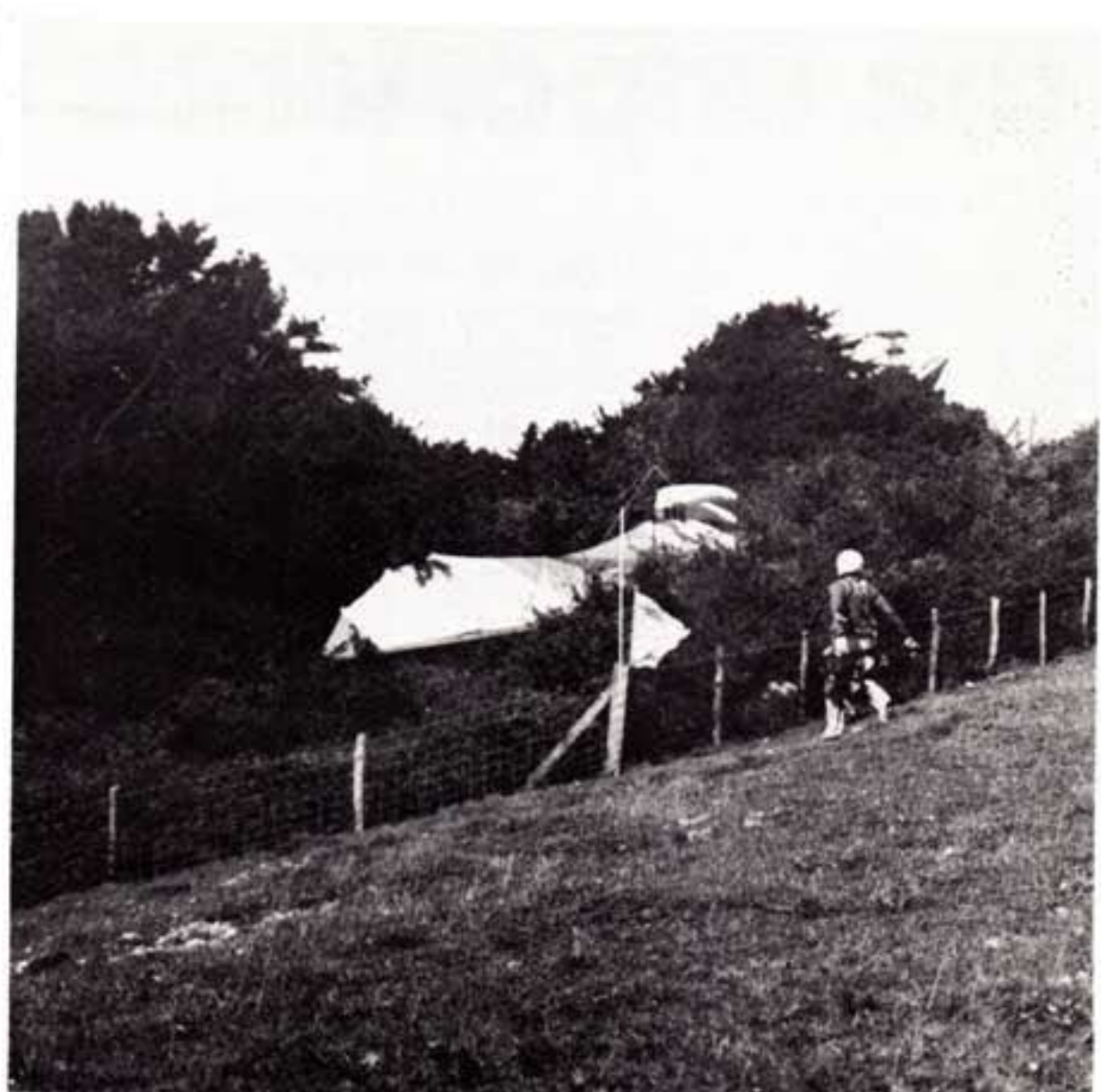
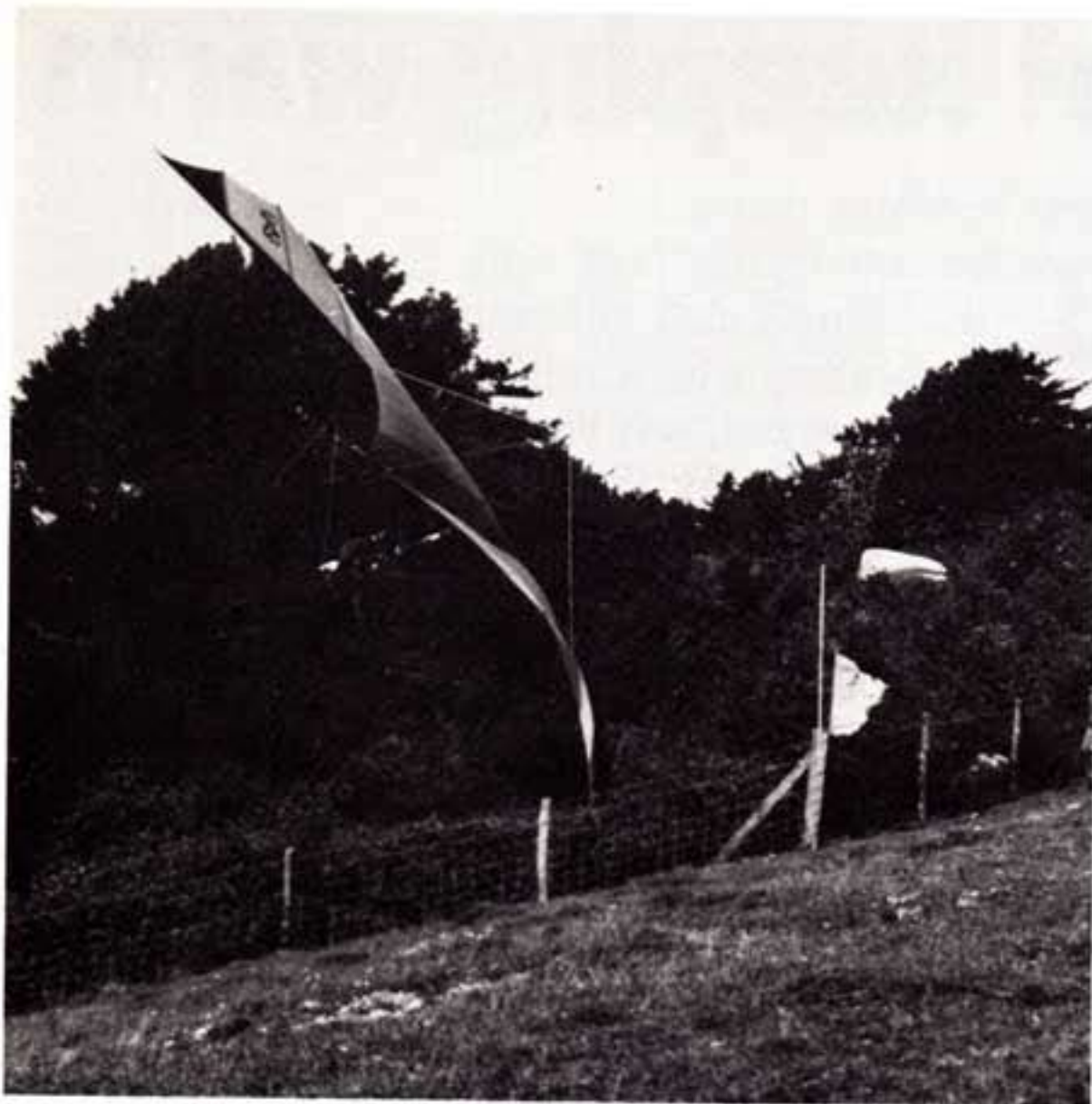


of the difference between into and downwind flying is obviously dependent upon the windspeed.

Some pilots are, unfortunately, not fully aware of this and when flying downwind they

are alarmed by the speed with which the ground is passing beneath their feet; and the lower the worse it becomes. They want to slow down so they push out and the glider stalls, going in downwind — heavy! When flying downwind keep your airspeed on just as you would do when flying into wind, always allow yourself plenty of height and therefore time to turn the glider through 180° for an into wind landing.

There is another related type of stall which has been responsible for numerous accidents. This I term the crosswind/downwind stall. It is a type which never occurred in the early days of standards but with the influx of large wing span, high aspect ratio wings, has reared its ugly head. Because these newer gliders stay up in very light winds pilots attempt to soar in lighter and lighter breezes scraping along the hill top, back and forth, squeezing every last ounce of performance from the wing. Due to the unfortunate fact that hang gliders stay up best when flown close to the



aggravated by wind gradient.

stall then it is easy to see how sometimes the over enthusiastic pilots can over do it and stall. If these pilots were immediately aware that they had in fact stalled and took quick and sure action by pulling on speed then the following crash could be avoided, but it seems that a stall is the last thing that they expect.

Imagine the following situation: A shallow hill and alight crossed wind producing poor lift. The pilot takes off and flies crosswind/downwind close to the stall for the minimum sink rate so as to make best use of the lift. He gets a bump tipping the glider into the hill so that his weight comes hard over to level out, but it's hard work because he's flying too slowly and with the effort he is not aware that the control bar is slowly being pushed out and the glider is starting to stall. He realizes — too late as the glider slews around pitching its nose down and dives into the hillside.

Another, better pilot, takes off and soars along the same route. He is fully aware of the dangers because he had *thought* about them before take off and he knows that when flying close to the stall the handling of his glider is a little sluggish. In the same spot he receives the same turbulence but pulling on a little airspeed, moving his weight over and levelling out, he *flies* through the turbulence and so, without batting an eyelid avoids a possible disaster.

When flying in the above conditions there is also the risk of stalling the glider in a turn. Remember there is poor lift and a light crosswind so that the glider is being flown slowly. On the turn from the into wind leg to the downwind leg if the glider stalls its momentum will carry it past the level out points and onwards 'spinning' into the hill.

The problem with hang gliders is that the criterion by which we assess whether they are stalling or not is largely a psychological one i.e. we 'feel' when the glider is stalling and if

the awareness to constantly check that the feel is right is not foremost in our minds then we, having forgotten, can be taken by surprise when the glider actually stalls; if then the reflex to pull on speed is not there then there is little hope that a crash will be avoided. This situation seems to call out for someone to invent a practical instrument which, when the airspeed is dangerously low, screams at the pilot — 'Beware, you're stalling, pull on speed and get flying properly!'

There are other situations in which the unwary pilot runs the risk of stalling, for instance, newcomers to prone flying sometimes make the mistake of concentrating too much on engaging the stirrup after take off and inadvertently push the control bar out as they look downwards for the stirrup.

When flying prone the pilots orientation is different to seated flying and the control bar may feel to rest in a different position; this can sometimes cause a stall as the pilot is unable to let the control bar rest in the flying position which he otherwise could do when flying seated. The simple remedy for this is to fly with a deliberate but slight pressure on the control bar causing the glider to fly slightly faster than normal, hence minimising the risk of stalling. If the pilot gets into real difficulties then he should swing into the seated or 'gorilla' position to reorientate and hopefully he will be in time.

When rigged for prone the control bar on most hang gliders is further *forward* than when seated. If a pilot makes the mistake of flying prone with the control bar still in the seated position then in pushing the bar into the position that the pilot is used to for prone flight (when the glider is properly rigged) he will be effectively pushing it about 7in. forward of the normal flying position and inadvertently causing the glider to stall. I have seen even league pilots makes that

error! So always make sure the glider is rigged for which ever flight position that you will be using.

People can stall gliders when top landing — imagine a situation where someone is trying to top land in a light wind — on a very gentle slope falling away towards the edge of the ridge. Desperately the pilot endeavours to fly slower and slower to prevent the glider from penetrating back over the edge; suddenly one wing drops and, 'dink', a broken leading edge, or perhaps worse. Another related stall sometimes occurs when pilots are attempting to spot land. Again the pilot flies slower and slower trying not to glide over the spot, trying to 'parachute' vertically downwards on to it, but alas, modern hang gliders do not parachute particularly well and a similar occurrence takes place as for top landing stalls.

For those who don't already know:

1. When a glider is 'parachuting' or 'mushing' it is flying at an unstable attitude immediately before the stall where the glide angle is relatively poor. It is difficult to hold a glider at this attitude for long without actually stalling.
2. The reason for a glider dropping one wing first and entering a piral or spin after a stall is that on today's high performance wings where washout is pilot tunable on each wing it is possible for a wing tip to stall before the other hence to fall causing the rest of the glider to spin around that wing. (See *Wings!* March '77 'Hang Glider Tuning' No. 2 Washout Page 25).

For future reference the signs of an approaching stall are; a feeling of sluggish or non-existent control depending upon how imminent the stall is and a dropping off of the noise level as less air passes over your face and the sail of the glider. The remedy for these symptoms, and for that matter, almost anything that goes wrong or doesn't feel right is to **pull on speed**, get the glider flying properly so that you can **then** effect control.

the importance of keeping warm

It is a warm day and those booming thermals beckon the pilot across the sun soaked countryside. Tee shirt weather, right? Wrong! At two thousand feet the scantily clad pilot can suddenly find himself in near freezing conditions and having to abort what could have been the flight of a lifetime. If it is colder on the ground, it is even colder up there. Dunstan Hadley, Medical Advisor for the BHGA, recommends methods of keeping warm, on the ground and in the air.

Most of the food you eat is used to generate heat. The liver is the central heating system, assisted by the muscles and controlled by the heat centre in the brain, which also controls the sweat glands and the ventilation of the lungs. This system maintains your body temperature at about 37°C. If your heat loss is greater than production the body temperature will fall. Since the body works best at its optimum working temperature, as soon as the temperature begins to fall the blood circulating system, which distributes the heat around the body, is progressively shut down so that the vital centres like the brain and the heart can continue to function at their best.

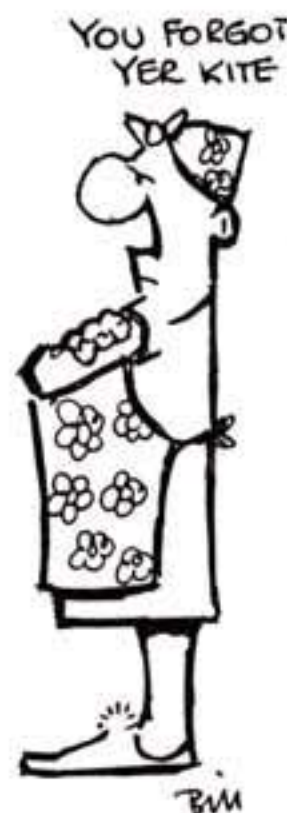
The first places where this economy begins are the skin and the hands and feet. The hands and feet therefore feel cold, and are cold, when the rest of the body is still quite warm. This process may be carried to extreme lengths so that the hands and feet, nose and ears may become frost bitten and even frozen solid, while the rest of the body carries on normally. In time the frozen members will die and fall off. This process is almost painless to begin with, so that the parts may become frozen without the owner becoming aware of it.

It is therefore important for the winter hang glider pilot, especially if he is going cross country, to keep his feet and hands warm. In the days before aircraft were heated the pilots used to wear several pairs of gloves and socks, and fur-lined gloves and boots over these. They also had fur-lined pockets for occasional use. They were still cold but not frost bitten.

To keep these parts warm it is also necessary to keep them dry. Water conducts heat about 250 times as fast as dry air so long as it is not moving. You must therefore wear boots which do not leak. It is possible to buy waterproof boots, and if the outside is treated suitably they can be made water repellent as well. Otherwise you will take off from your wet or slushy hill with a pair of water soaked boots. Even if your feet are dry the water soaked boots will freeze solid in the slipstream and quickly cool your feet. The cold surface of a frozen boot is likely to be colder than a dry one. Rubber wellington boots would



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THICKSHIRT
WOOLLY VEST
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OVER TROUSERS
TRACK SUIT
LONG JOHNS
THERMAL U/WEAR
WOOL GLOVES
GAUNTLETS
GOGGLES



probably be better than poor quality leather ones and remember you do not want boots with hooks or buckles that may become caught in the rigging wires. If your boots are dry your feet will still become wet inside them eventually, due to the moisture which is continually evaporating from them. This will happen faster in completely impervious boots, like wellingtons, than leather boots, but is probably the lesser of two evils. Once the socks are damp the heat loss becomes more rapid.

The important thing is to keep a layer of air trapped in small compartments between your feet and the boots. The most effective method is to wear two or even three pairs of socks. In fact a pair of 'tights' which will also keep the legs warm followed by a pair of thin wool socks and a pair of thick wool socks will give good insulation from the cold. If in addition you own a pair of waterproof fur lined boots so much the better.

Wool is not easy to crush flat, soaks up perspiration and traps a lot of air in its meshes. Because of this any water taken up also tends to warm up, and stay warmer than in cotton for

example, where it squelches about. The hairs of reindeer fur are hollow so that a layer of air, being trapped in the fur, makes reindeer skin much warmer than most. If you ever go to Lapland get yourself some reindeer boots. Wool also absorbs so much water like a wick that the skin surface tends to remain dry. Dirty socks, because of the particulate solid matter

they contain, which displaces the air, do not insulate as much as clean ones. Plastic insoles are recommended by hill walkers as they trap air under the sole of the foot in the area which is compressed by the weight of the body. The boots must be large enough to accommodate all this extra thickness comfortably. If they are tight the air is squashed out. Keeping the legs warm also helps to keep the foot warm. So wear your socks long or consider a pair of 'long john' pants and a vest.

For the hands a pair of silk gloves with wool gloves on top and a tough pair of leather on the outside is probably best. Try to keep the outside dry or wear nylon mitts overall if it is raining. It is said that up to 75% of the heat of the body is lost from the head. It is true that the nose is one of the first places to become frost bitten, just as it also becomes sunburned easily. A balaclava helmet under your crash helmet, or a full face helmet, will help to keep your heat inside. It also helps to keep the feet warm, because if the head does not need so much blood circulating to keep it at 37°C then there will be more for the feet, it sounds silly, but true.

When the body temperatures drops the muscles become stiff and almost immovable after a time. The thought processes in the brain become sluggish, progressing eventually to loss of consciousness. Keep yourself warm, do not fly if you feel cold, and you will live to a ripe old age.

D.L. Hadley
Medical Adviser BHGA



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Many pilots are not interested in competition. Well and good. But those who are may not all be in the National League. What follows is an outline of an *Area Leagues* system which reflects different competition interest around the country. If some clubs are not interested, they don't have to join. If individual pilots in a club can't get their own club interested, then they have an option to join in through *Area Organisers*. If one area produces two or even three different Leagues, because there's intense competition interest in that area, the proposed system will reflect that interest.

The idea is to use Area Leagues for two main purposes:

- (i) To provide a pool of pilots outside the National League of 60 pilots from which pilots to fly in National Competitions may be found;
- (ii) To provide a pool for National League entry at the end of every competition year.

Areas

Eight areas are proposed, each with one organiser:

- (i) South East and Anglia — Dover and Folkestone, North Downs, Southern, South Essex, Dunstable, Norfolk.
- (ii) Central Southern — Isle of Wight, Wessex, Sky Surfing, Hants Constabulary, Reading Civil Service, Thames Valley, HMS Dolphin.
- (iii) South West — Avon, Devon and Somerset Condors, North Devon Sailwing, Western Counties, North Cornwall, Kernow, Bristol Univ.
- (iv) Wales — Welsh HGC, Long Mynd, Malvern, North Wales, Mercian, Aberystwyth, Northampton.
- (v) Midlands and Pennine — Peak, Sheffield, Pennine, Dales, Manx.
- (vi) North — George Caley, North Yorks, North East, Cumbria.
- (vii) Scotland — All Scottish Sailwing Association clubs.
- (viii) Ulster — All Irish clubs,

AREA LEAGUES

by Brian Milton

We can't run the British Open again and the way we did. One hundred and eighty pilots is too many. It's been said often enough, we need an elimination system to get a manageable number of pilots through to National or Open Championships. It can't just depend on the National League — even though these are the most committed competition pilots — because that would mean, from one year to the next, pilots would have to rely on League-entry to get anywhere in competition. If a pilot fails League-entry — what else does the BHGA have to offer him in competitions? including those in Eire.

National Programme

Within each area, any number of Leagues can be formed, as long as each one has a *minimum* of 20 fliers, and every flier has at least a pilot 2 rating. (Which is the PILOT rating under the present system, bearing the right to wear Wings).

Each League must, within a competition year, which ends on August 1st, have completed a programme of 10 tasks, all scored "comparatively". In fact, five tasks are set, which have been tested and proved in National League flying; each of the set tasks must be done *twice*.

If one area produces more than 20 fliers, but less than 40, then that area has only one League. If, by the closing date for entries, more than 40 fliers apply for a place in their area League, then two League tables will be set up, and pilots will be allocated to one or the other by the Area Organiser, with every reasonable attempt being made to achieve parity (and not fill one League with aces and the other with novices).

If an area produces less than 20 fliers, then it can't, in itself, run an area League, and it must merge into another area.

Individual pilots may fly in more than one area League, but each area is self-contained. A pilot may not complete four tasks in one area, and six in another, and then claim his ten tasks done. He must complete the programme in either area, or both.

The rules governing area League competition will be, broadly, those governing competition in the National League. A draft handbook has been produced, and will be available — price 50p — to any pilot and all organisers who need to know how tasks are judged and disputes adjudicated.

Any class can enter and fly against any other class. It's an 'Open' competition.

All National League pilots are barred from entering area Leagues.

Because 'comparative' scoring is used, and each task is worth 100 competition points, there will be parity between one area League and another. A pilot will fly against other fliers in his area, and the points he collects will directly reflect how much better or worse he is than those other fliers. It doesn't matter that a competition in one area takes place on a 1,000 foot hill, and in another area the hill is only 300 feet, because each League is self-contained. As soarable and non-soarable tasks are

included, organisers are able to pick to suit conditions.

All scoring flights should be recorded, and the raw material, as well as the organiser's scoring, must be sent to a central point, which this year is my house (26 Grosvenor Road, St. Albans, Herts). As each area completes its allotted tasks, the scores are "melded" with those from other areas, and a few top pilots will emerge from each participating area. The top 30 in the area League for 1978, for example, will be invited to enter a slimmed-down more competitive British Open, along with 30 League fliers. And the top 40 in the area League would be invited to a League-entry competition at the end of the year to try for a place in National League competition in 1979.

We have organisers for four of the 8 areas: these are, WALES, Lesley Bridges, Yard House, Wentnor, Bishops Castle, Salop; SCOTLAND, David Squires, 33 Whitehurst, Bearsden, Scotland C61 4PF; MIDLAND & PENNINE, Colin McCormack, 1 Wolsley Place, Withington, Manchester; and NORTH, Trevor Birkbeck, Hambleton House, Clothholme Road, Ripon, Yorks. Applicants are invited to organise in the four remaining areas. Organisers work on a budget of roughly £80 per League, depending on the number of fliers, and will work with the full backing of the Competitions Committee, BHGA Council, and National League fliers.

The five national tasks are enclosed, with explanations. There are two task deadlines: five tasks *must* be completed by June 27th, 1978, and the other five must be completed, and results to me, by August 1st, 1978. The top pilots will be 'creamed off the top' for the British Open.

There will be a chance at the AGM, to talk about the area League structure, and I'll hold a meeting in Matrix Hall afterwards for queries and explanations.

TASK ONE

Non-soarable

Target:

Inner ring = 15pts

Outer ring = 5pts

Scoring:

slow time = 85pts

fast time = 85pts

BUT: zero ratio *must* be set before task starts.

Zero = 1/2 average top 3 ratios

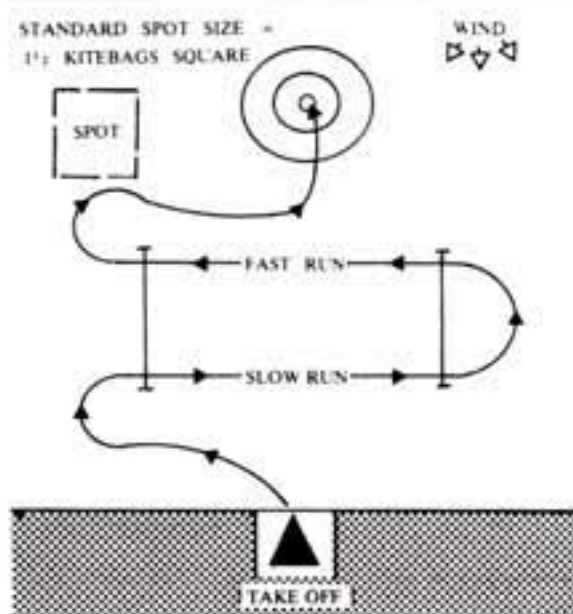
Task: Speed range/spot.

Scoring: Comparative.

Pilots fly away from the hill, with a time limit to enter the course, which may be entered from left or right. They then fly as slowly as possible along the course, make a 180 at the far end, and fly back as fast as possible. They may then try for the target.

If a pilot fails to complete the flying task, which means completing both runs, he scores zero flying marks, but he may still make his target score, as long as he makes a stand-up landing.

Pilots have the option of making the fast or slow run first, or entering the course at either end. The organiser must set a time limit, after the flight has commenced, for the pilot to reach the course, otherwise the task drags on as pilots sniff for height on the ridge.



TASK TWO

Non-soarable

Task: sink rate/360/spot

Scoring: Comparative.

Pilots must fly straight away from ridge to cross out-of-lift line before 360ing, and must land in landing field to score. Organisers must set a max. and min. number of 360's.

Most 360's, up to max, minus min. = 45pts

Longest time in air = 45pts

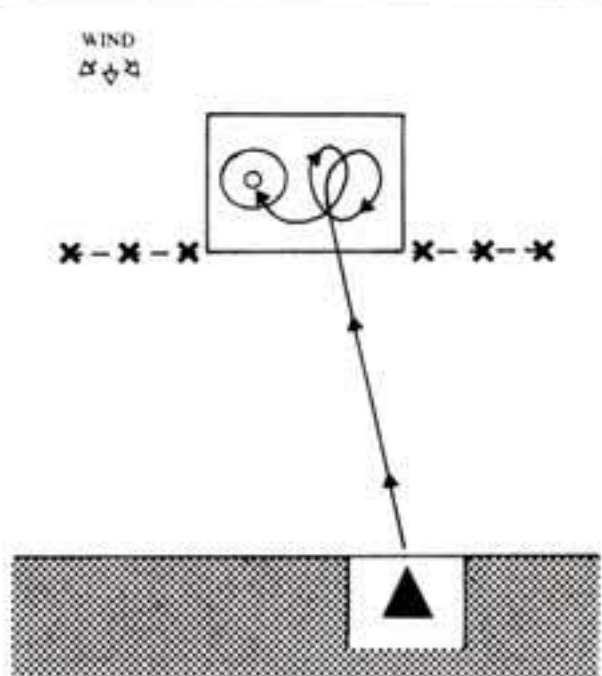
Half average of top 3 durations = zero

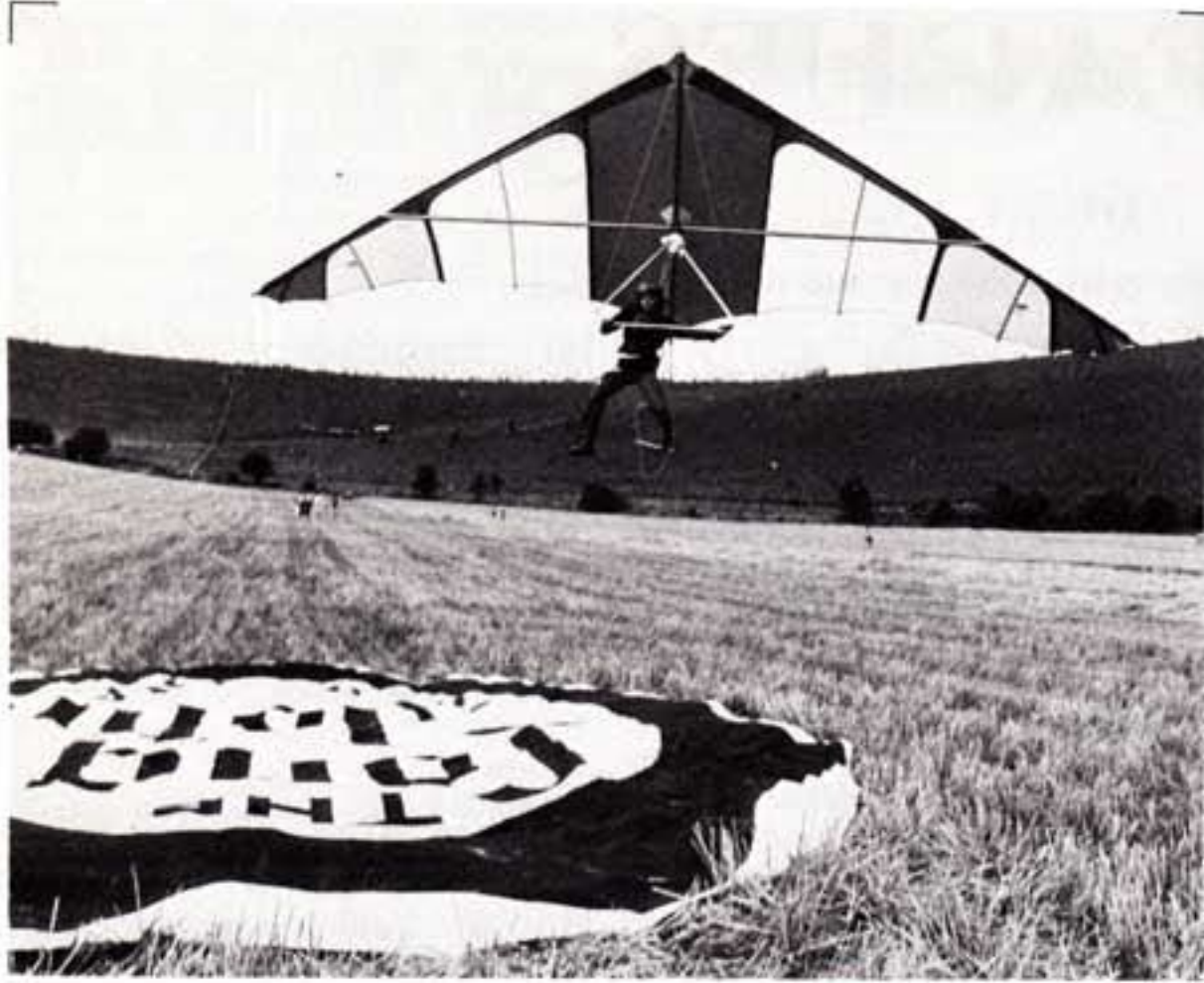
Target = 10pts

Landing outside landing field = zero for task.

Highly unlikely one pilot will make 100 task points, but task winner's score is adjusted to 100, and others raised proportionately. If, in chief marshall's judgement, a pilot doesn't make straight for out-of-lift line, that pilot scores zero for his duration; 360's count only after a pilot has passed the out-of-lift line. A maximum is set on the 360's to eliminate one pilot catching the only thermal of the day, and a minimum is set to test a pilot's skill.

Minimum, one 360. Maximum, depending on the hill, six 360's.





TASK THREE

Non-soarable

Task: speed/glide angle/360/spot.

Scoring: Comparative.

Pilots fly away from the hill, timed from t/o, to cross a line, as fast as they can. They must then do a minimum number of 360's and land on the spot.

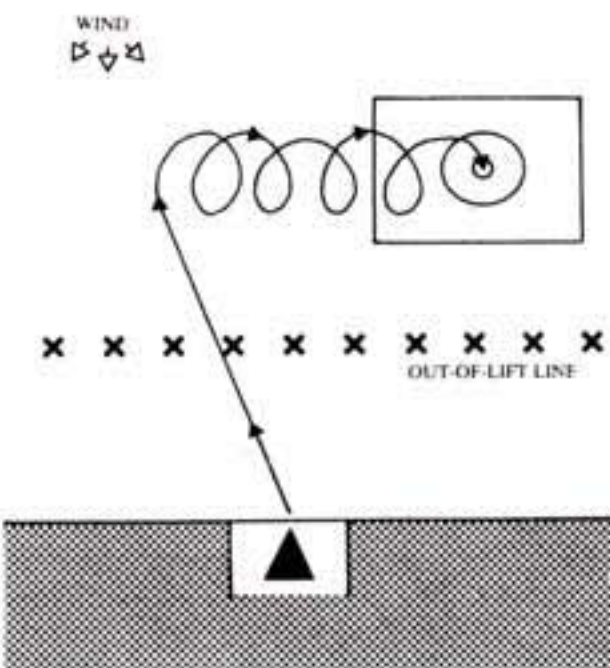
Fastest time = 55pts

Most 360's = 30pts

Target = 15pts

Failure to land in landing field = zero for task.

BUT: a time zero must be set, the average time of the five slowest fliers.



Again, it's highly unlikely any one pilot will score a maximum on each of the different tests, so the winner's score should be made up to 100 points, with the others adjusted accordingly.

If the minimum number of 360's is not made, that pilot scores zero flying points, and may only score his target points.

Sophisticates will recognize that the setting of a time-zero, as the average time of the five slowest pilots, eliminates the likelihood of 'team manipulation'.

Minimum number of 360's, one.

TASK FOUR

Soarable

Task: speed/360/top landing.

Scoring: comparative.

Pilot flies from ridge, timed from t/o, around pylon 1, past pylon 2, and back past t/o point; at some time during speed run, he must do a 360. Pilot then lands back on top scoring a bonus on one of two targets.

Speed run, fastest time = 80pts

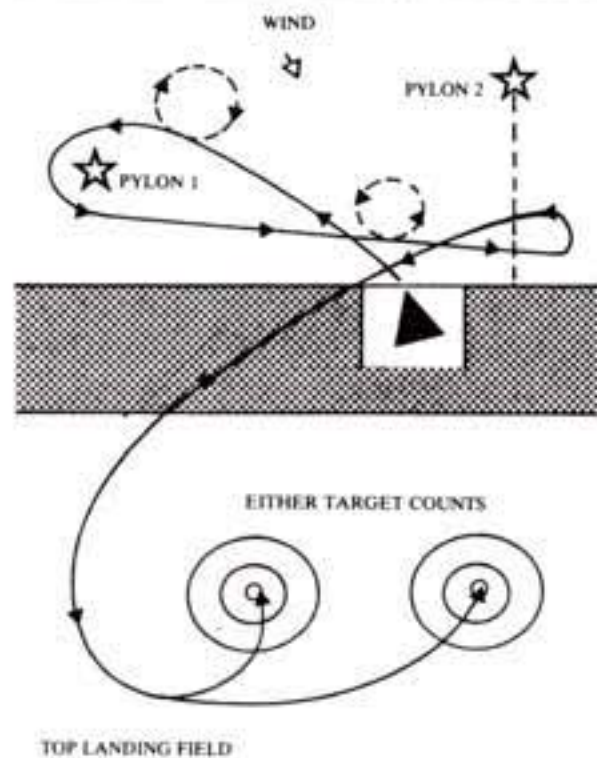
Zero = either twice fastest time, or discretion (slowest time).

Top landing = 5pts

Any target = 15pts

Failure to top land = zero pts

Failure to make 360 on speed run = zero speed points



Organisers must set a maximum time for pilots to land after completion of speed-run, to avoid congestion over target area.

Organisers may, for reasons of safety, declare that the 360 must be made on the 1st and 2nd legs of the speed run, and not the 3rd leg.

Landing points, whether on or off the target, will only be awarded for a stand-up landing.

Pilots may go right or left of pylon 1.

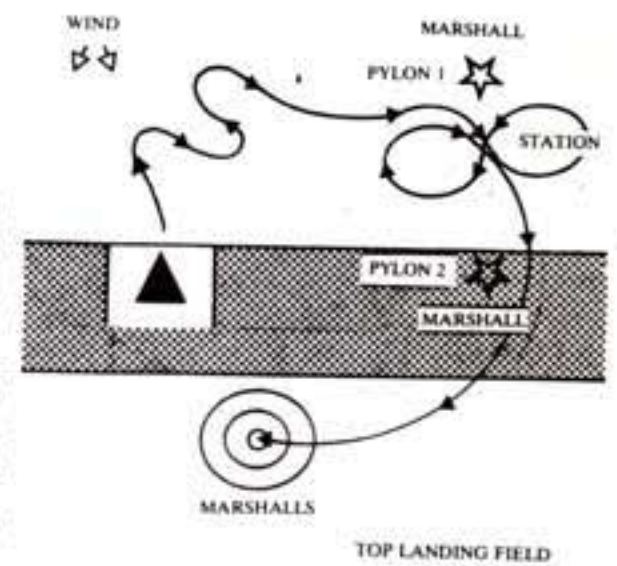
TASK FIVE

Soarable

Task: roll-rate/top landing.

Scoring: comparative.

Pilot takes off, has 2 minutes to gain height and at signal from marshall, he takes up station. He's given 5 second (green flag wave) warning, and when flag drops, clock starts, and pilot must steer his kite across 40yd line as many times as he can in two minutes, Pilot then top lands, with a bonus for target. His kite must not cross pylons (1) or (2), or that crossing is lost.



Scoring: Maximum line-crossings, minus pre-set minimum = 80pts

Minimum *must* be set before task begins, ($\frac{1}{3}$ rd, raised up to round figures, of maximum number of crossings) = zero pts

Top Landing = 5 pts

Target Landing = 15pts

Minimum time must best set to land after course is completed, with loss of landing points if that minimum time is exceeded.

Name Club

Address BHGA No***

..... Telephone No

..... BHGA Pilot No

I wish to apply for a place in the area League,* and enclose an entry fee of £5.00 (FIVE POUNDS)** to cover the costs of area League competition in 1978. I agree to abide by the rules of the organisers.

DEADLINE: April 9th, 1978

* If you want to enter more than one area league, it costs £5.00 for each, and please stipulate the areas you wish to fly in.

** Cheques payable to BHGA.

*** Must have pilot's rating by APRIL 9th, 1978.

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WEATHER FLYING by Robert N. Buck

Until more books on our form of aviation find their way into print, hang glider pilots can profitably study the many books on gliding and on flying powered aircraft. It's a rare aviation book which does not, for at least 10% of its length, offer material of value to us, provided that we read with a bias towards the type of machine we fly.

"Weather Flying", by Robert N. Buck (A & C Black, 1977, £5.75) offers much more than 10%. Buck flies 747s for TWA, a Cessna and a high-performance sailplane and has conducted research into weather flying to the point of taking a P61 into a thunderstorm cell.

As Wolfgang Langewiesche says in his introduction, "... the pilot does not want to make the weather — or even the forecast. All he wants to do is to fly it. And for that he does not need *more* meteorology, he needs a different kind and he is getting it here."

Buck's preamble includes: "Most books on weather start out by saying that air is made up of 21% oxygen, 78% nitrogen and 1% other gases. This isn't that kind of book, and instead we might say that air is made up of wind, turbulence, clouds, precipitation, some fog and a lot of nice clear days." — a refreshing and valid approach. He assumes a reasonable knowledge of meteorology in his reader and if highs, lows, air masses and fronts, and their characteristics and development are not already familiar, defer reading this book until they are.

His advice for power pilots flying thunderstorms could have been written for hang glider pilots in severe turbulence. In the first instance, don't, but if you must, choose a speed high enough to avoid gust-induced stalls, yet low enough to minimise gust loading and maintain *attitude* by quick and gentle corrections, allowing altitude and airspeed to vary if they will. "Too diligent an attempt to maintain altitude will result in wild attitudes.

and/or power changes which lead down the path of loss of control."

His description of clouds is particularly good, avoiding the trap of throwing out a long list of names and emphasising the fundamental classification into either cumulus or stratus.

Photographs, printed by a process I haven't seen before, are few but apt and including a dramatic shot of severe sink downwind from a mountain range. If you think sink was invisible, this shot will prove otherwise!

It's interesting to note that power pilots reading this book will gain knowledge gleaned from the author's experience in sailplanes. The day may not be far away when both power and sailplane pilots learn from our experience of low speeds, micro-met and flying close to the ground. You and I know, almost instinctively, that flying over a crosswind ridge will give lift on the upwind face and sink on the downwind. The fact that Buck finds the point worth making indicates that power pilots are less conscious of orographic effects.

The psychology is good too. "Too bold, and we cause emergencies and have accidents. Too timid and we destroy the utility of the airplane and let our skill as pilots atrophy. Then pretty soon we have to be more timid still." (This from Langewiesche actually). "There will always be some time when it will be wise for a pilot to say, 'I cancel!' The thing is to know when it's that time for each of us." "If a pilot uses logical thought processes and keeps his emotions under control he will be able to handle tough problems. And if he trains himself to think in the proper way, he probably will not get into bad situations in the first place." If every hang glider pilot had read understood and acted upon that advice, accidents would be infinitely fewer and flying time and satisfaction infinitely greater. Many of us think less than we should.

At the risk of being longwinded, I'm going to indulge in one lengthy quotation which particularly delights me. "A good pilot is wind-conscious; he trains himself to be aware of its direction and velocity, he knows how it smells and feels. He knows a warm humid wind or a crisp cold one and where they come from and what kind of weather they will bring. He wakes in the morning, looks out of the window, and sees on the ground where the wind is coming from, he looks up at the clouds, checks which way they are drifting, and learns the wind aloft. All through the day he is subconsciously aware of the wind and if it changes he senses it and asks himself what this may mean. He puts the wind and flying together too, and visualises it tumbling over some trees or buildings near the approach end of the runway and what that will do to his airplane. He tries to 'see' the downdraft on a sharp mountainside; he always relates wind to aircraft performance as well as to weather. The good pilot is animal-like in his sensitivity to the wind, feeling and

understanding its motions by instinct."

Finally a quotation which we should all endorse: "I do want it to be clear however that I thank all meteorologists. They are a misunderstood group who are cussed more than praised, when it should be the other way around."

Ian Trotter

HANG GLIDING IN IRELAND Area (8) Achill, Mayo and Galway

By Mark Leslie

Published by Ringsend Airline Publications and obtainable direct from: Mark Leslie, Stableyard Flat, Knockmaroon House, Castleknock, Dublin.

Cost: £1.50 + 25p p.p.

This is the second area guide to be published by Mark in a series of ten which will eventually cover all of Ireland's major flying sites. The Achill, Mayo and Galway booklet encompasses a very wide geographical area and, as such, is a much thicker volume than area 9 (Sligo and Fermanagh), hence also the increase in price.

Mark has chosen this area for the second volume largely because of its staggering cross-country potential. Many routes are described, ranging in length from 5 to 82 miles, most of which involve only marginal assistance from thermal activity and could be confidently attempted by the pilot of an intermediate kite; owners of high performance machines are assured of many cross-country bonanzas.

The main drawback in relation to area 9 is the comparatively fewer number of sites with roads to the top (although one cannot forget, of course, that prima donna of sites The Minaun Heights on Achill Island). Everyone has heard of Achill, but until Mark's researches who had considered the possibilities of the Maun valley sites, for instance, where a standard can do a 14 mile round trip on smooth, 1,000ft. high hills? The booklet is packed with information on such sites which cater for soaring and lengthy cross-countries regardless of the wind direction. My small criticisms of the Sligo and Fermanagh booklet (see *Dec Wings!*) have been ironed out of this volume and we are provided with plenty of maps and diagrams which will completely remove the time-wasting element of searching for sites from one's Irish holiday.

The wealth of detail is indeed so extensive over such a wide area that visiting fliers will have no trouble in pioneering many of the cross-country routes. Nevertheless it is essential that the visitor should equip himself with sheets 6, 10 and 11 of the 1/2in. Irish Ordnance Survey: this will ensure

that recoveries are made with the minimum of trouble.

This region of Ireland (apart from Achill island) is even less well known to fliers than Sligo and yet I feel that it would be commensurately that much more rewarding to the adventurous visitor. The freezing gale-blown days of February need not be entirely without hang gliding interest — what better way to spend them than planning your first 20 mile plus cross-country for 1978 over the hills of Connemara.

I should also note here that the previous booklet (Sligo and Fermanagh) has been improved since the first review was written and the overall Map of Irish Hang Gliding Sites is being constantly revised and up-dated as more information becomes available.

The booklets for area 10 (Derry region, Donegal and Tyrone) and area 3 (Dublin region and the Wicklows) are on the drawing board and should be out by April.

Roger S. Willbourn

GUIDELINES ON SAFETY AND FIRST AID FOR THE BEGINNER TO INTERMEDIATE PILOT

Compiled by
David H. Squires &
Elizabeth J. Squires

25p from: Strathclyde Hang
Gliding Club, 33, Whitehurst,
Glasgow G614 PF

This is a short typewritten manual, xeroxed on to 18 pages and held together with a plastic spine. The obvious economy of production is reflected by the giveaway price of 25p.

The manual is split into three sections:- Introduction to flying; First aid; and Accident reporting. The first section attempts to condense into nine pages what would fill a book, — namely, how to fly a hang glider. Starting with necessary equipment, weather conditions and ground handling it goes on to describe the elements of taking off, soaring, turning and landing, including a complex explanation of how to condense the elliptical path of a 360 in wind into a circular one.

Most of it is written in a sensible and clear manner, but I feel it does attempt to take on too much in too small a space. There are one or two statements which betray a certain lack of experience on the part of the authors:- 'On most sites, the *maximum* safe wind speed will be 26-28mph for an *experienced* pilot. I wish this were so in the South, where winds now have to reach 40mph before the sky is finally clear! 'When ridge soaring, crab fast along the ridge and

Continued p23

scottish training conference

Ian Trotter reports on happenings over the border

With the assistance of the Scottish Sports Council, The SSA organised a Teach-in at Falkland on the weekend of 21st/22nd January.

Sod's Law inevitably struck, in the form of Saturday, which was devoted to lectures, being flyable, or so it seemed, whereas Sunday, when it was all going to happen, wasn't, so it didn't.

Proceedings started at 10.00 a.m., still early enough for your reporter to be late, with Roy Surtees, CFI for the SGU at Portmoak, talking about cross-country flying. 150-odd fliers (some very odd), including visitors from Brighton and Belfast, gained several tips, such as leaving a thermal while you're still low enough to see the next, and jealous moans could be detected when he described sailplanes with three different variors and when he chalked up a comparison of sink rates, L/Ds and airspeeds.

Mr. R.N. Holton, Chief Officer, NATS, Edinburgh Airport followed, and gave an excellent resume of restrictions on airspace, with a well-prepared set of overlaid slides. By the time the last overlay landed, the Edinburgh/Fife area looked like a multi-coloured patchwork quilt of restriction, but we later gathered that we're a lot better off than the folks down South, and it's not really as bad as it looked. Brian Milton was heard to enthuse on discovering that certain sailplane fields had been claiming airspace restrictions to which they were not entitled.

Lunch, mainly liquid, followed and perhaps because of this, or perhaps because two of the afternoon speakers were fliers, proceedings became less formal, or maybe I should say even less formal, for Mr. Holton had a number of light-hearted interjections and gave as good as he got.

Mr. Winspear, attached to RAF Leuchars, gave a lecture of forecasting and hit a happy balance between those of his audience who were or were not familiar with lapse rates and the like. His suggestions for making things easier on phone calls to our local forecast office should prove very helpful: Give your name, ask for the general wind and then ask for details at specific sites which take that wind; provide them with a list of sites with associated winds to save going over the same stuff several times on the phone.

Keith Cockcroft then went into Pilot grading, coping ably with interruptions from Brian Milton, Jim Potts, Brian Milton, myself, Brian



Top: Murray Rose indicated the 'gubbins' of the power unit. Middle: Keith Cockcroft, FTO, gives a talk on pilot grading. Bottom: The attentive audience. Photos: Ron Docherty.

Milton, Graham Slater and Brian Milton. The Scots accepted that their flying is not up to Southern (sorry — English — don't get me wrong) standards and the visitors accepted that, despite some good sites, we probably suffer more from bad conditions. Substituting 30 ten-minute flights for 5 hours' soaring provoked an interesting debate, with an attempt towards dispensation for the Scots which was quashed when it became clear that the implied emphasis on top-landings was justified and valid. Mr. Milton invited and received howls of derision by referring to that part of the UK south of Hadrian's Wall as Britain.

Time was pressing now, so Murray Rose merely held up the Midas power assembly and invited questions which were answered informatively and with a deal of wit.

Brian Milton then spoke for a few minutes, standing in for Pat King, and describing current thinking on regional leagues, feeding pilots up to the existing League, and on the necessity for a strong and efficient Scottish Sailwing Association to correlate and represent the interests of Scottish fliers in dealings with the BHGA. Brian's drive and enthusiasm awoke a strong response and by the time this appears, a Scottish mini-league or leagues should be in being. Scottish insularity and apathy towards competition, qualification and representation took a strong and deserved knock.

The meat of the weekend of course was the evening in the Stag, with bull sessions in every corner. Your reporter, short of food, discovered that what he thought to be 7.30 was in fact 9.15 and took little part in proceedings thereafter which went on till 1.00 at least.

Sunday was a washout. The powered Midas was rigged and the engine started and various other machines lay forlornly in the mist. Chill drove people back to the Stag, then a clear view of the top drove them back up, resulting in minor chaos on the narrow road and blockage of a relatively main road while A told B not to bother going back up.

All in all a fine weekend, though it would have been a great deal better if we'd got any flying. The more English (and Welsh and Irish) fliers we see here, the happier we'll be. Given half-decent weather, and I can remember some, we've got some lovely sites.

Ian Trotter

INFORMATION



Hey! I thought WE were supposed to learn from THEM.

DEVON & SOMERSET CONDORS

Those wishing to fly the Devon and Somerset Condors sites this year which includes Bossington and North Hill Minehead. Please send £3.00 for temporary membership (6 months) and Site Information Pak to: Bob Doel, 7 Hillview Close, Minehead, Somerset.

2p off petrol to anyone with a hang glider on top of their car at the Premier Garage, Alcombe, Minehead, (first on left as you enter Minehead).

SCOTTISH OPEN HANG GLIDING CHAMPIONSHIPS 25th-28th May 1978

Flying will take place from Cairnwell Mountain, Glenshee (1,700ft. descent) which is flyable in all wind directions and soarable in 90% of them. A main road takes one within 1,000ft. of the summit where a chairlift takes you the rest of the way. The competition will be open to Class II machines only and, with the flying tasks envisaged, the minimum entry qualifications will be BHGA Pilot Certificate. Entry forms and further details will appear in March *Wings!*

Alistair Munro
Competitions Secretary

BRITISH HANG GLIDING COMPETITIONS PROGRAMME 1978

25/26 February
1st League, Abergavenny area, organiser Ken Messenger.

8/10 April
2nd League, SHGC area around Brighton, organiser Tony Fuell.

12/14 May
'UK Open Hang Gliding Rally', at Perransands Holiday Village, Perranporth, Cornwall, sponsored by Ladbroke Holidays Ltd (with £500 prize money), organised by the Kernow HG Association.

21/23 May
(note Sun to Tues), 3rd League, Scotland, organiser David Squires/Gustav Fischnaller.

25/28 May
Scottish Open, Glenshee in Scotland, organiser Gustav Fischnaller, limit of 100 pilots, entry fee around £10 which will include 2 tickets a day for the chair lift.

June
(Around the 22nd but date still not finalised). Scandinavian Open Championships in Norway. Sports

Council back for an official team. Details still under discussion, but likely that choice of British team will be made at 2nd League:

1/3 July,
4th League, North Wales, organiser Jan Ketelaar.

12/14 August,
5th League, Dales area, organiser Trevor Bickbeck.

25/28 August
British Open at Mere, Wiltshire, organiser Brian Milton, but whole event still under discussion. Likely to have strictly limited number of competition pilots.

2/10 September
European Championships, Kossen, Austria, sports council backing for team of 9 fliers in 3 classes, 3 reserves (1 per class) and 2 managers to leave London 26 August. Team chosen at the end of May.

16/18 September
6th League, Final, Long Mynd area, organisers Paul Bridges/Brian Milton.

October
(Actual dates to be finalised) UK Open at Look Out Mountain Tennessee, USA, organiser Tracy Knauss. Expected team of 6 fliers plus 2 reserves and 3 managers to go a week before the competition. Details still under intense discussion. Expected Sport Council backing for travel costs of team, and private sponsorship being sought.

NORTH DEVON SAILWING CLUB

Please note change of address and telephone number as from 28th January 1978. Hon. Sec. North Devon Sailwing Club, Ted Gray, Copper Beeches, Torrs Park, Ilfracombe, N. Devon, EX34 8AX. Telephone Ilfracombe 64047.

DID YOU EVER HAVE IT SO GOOD?

Did you ever travel aboard a liner to a hang gliding meet? Would you like to? Then visit 'Cork '78'.

It's true. Cork HGC have arranged a special rate for the Irish Sea crossing in conjunction with their Fly-In on 18th-19th March, £51.80 return for car, four people and kites.

And while the normal car ferries of B+I Line are having their annual dry-docking, the company have chartered a luxurious Swedish Liner, the Stena Germanica, and this great ship will be on the Swansea-Cork route during March.

As last year the Fly-In will be simply a get together of hang gliding enthusiasts, with a simple competition like a spot landing and a few nice trophies.

And Irish hospitality, for this is St. Patrick's weekend, a time of great rejoicing in the Emerald Isle.

The annual IHGA Fly-In at Achill Island takes place the following weekend, and you can extend your

visit to bring in that, at no extra charge for the ship. And, what's more, if you want you can return from Dublin to Liverpool if that suits you better. If you don't really fancy the luxury of liner travel then you can go to Ireland by that route as well.

NEW BHGA ADDRESS

From now on all correspondence for attention at the new BHGA Offices should be sent direct to the offices at 167a Cheddon Road, Taunton, Somerset, TA2 7AH. Classified ads should be sent to Lesley Bridges, Commercial Editor (Address on title page).

UK HANG GLIDING RALLY CORNWALL

The Kernow Hang Gliding Association are organising a rally with competition prizes totalling £500 sponsored by Ladbroke Holidays Ltd.

Dates: 12th, 13th, 14th May 1978.

Venue: Perransands, Perranporth, Cornwall.

For information on entry and/or accommodation write to:

Ladbroke Holidays Ltd.
Perransands,
Perranporth,
Cornwall.

See advert in next issue of *Wings!*

GUIDELINES ON SAFETY AND FIRST AID FOR THE BEGINNER TO INTERMEDIATE PILOT

Continued from P21

then apply a little opposite bank, so that you skid round the turn'. I wonder how one shifts one's weight to crab sideways fast... sounds interesting. The description 'classic downwind approach' for spot landings sounds dangerous for a beginner without the proper explanations of maintaining adequate height and airspeed.

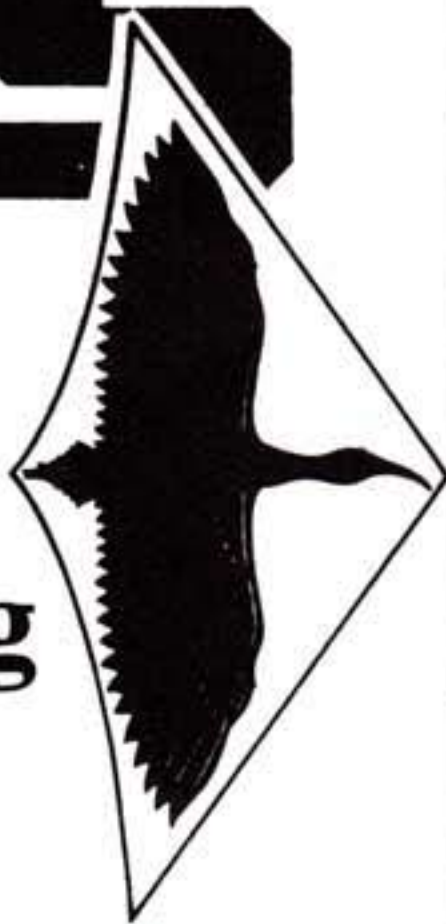
The last two sections are straightforward and informative. The first aid section covers what might be found in any first aid handbook but is certainly useful in the context of taking up hang gliding.

Altogether, the manual is not a hang glider's bible, but does provide a good background for the newcomer or a useful addition to the club bookshelf. At 25p you might as well get it, if only to see how your club can produce a better one.

David Worth

IBIS

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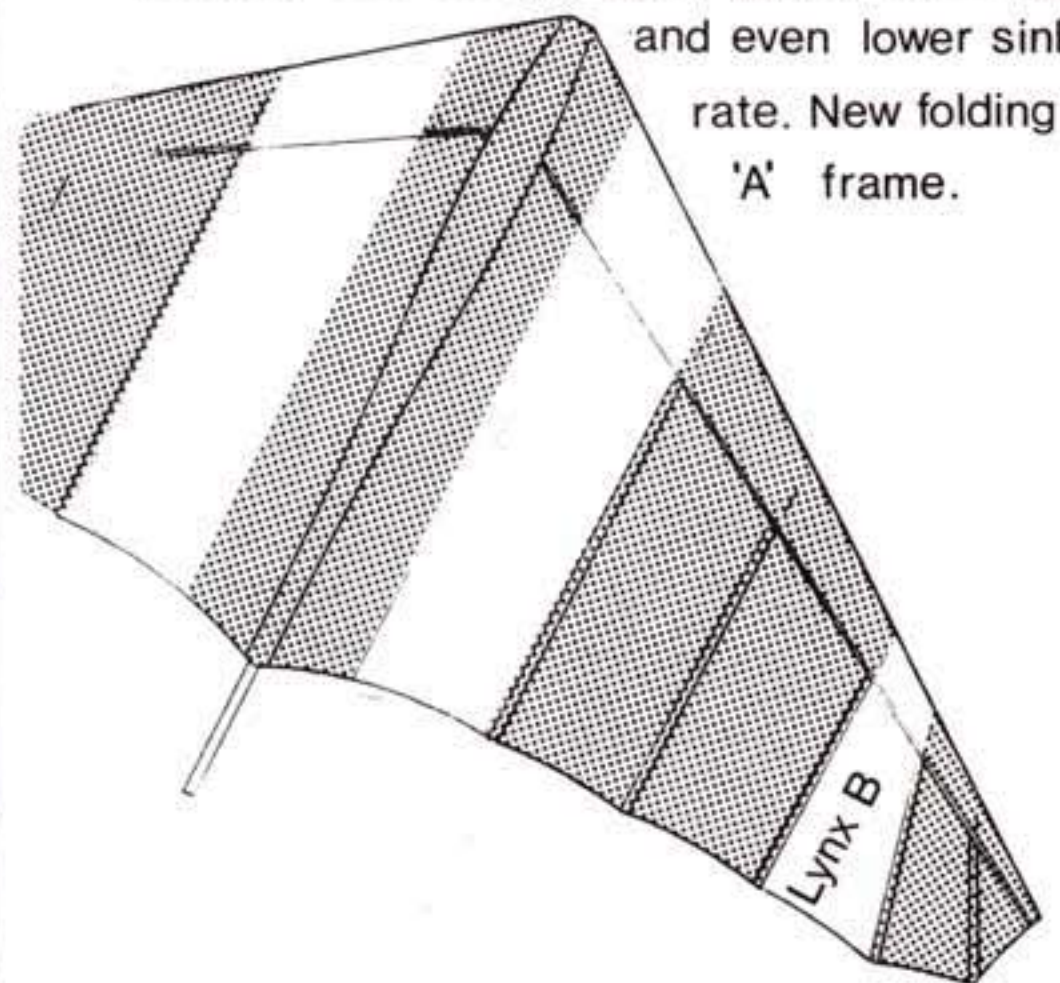
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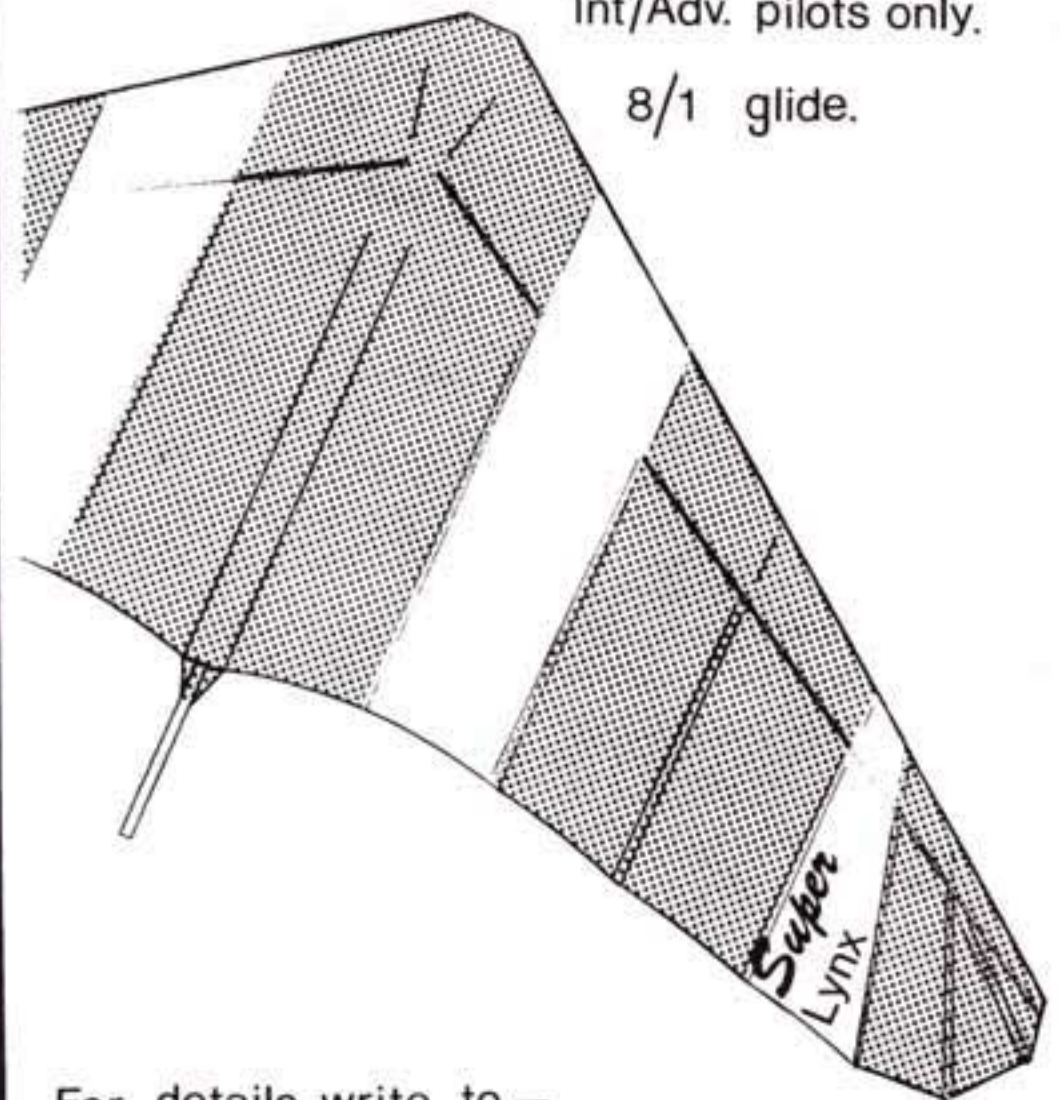
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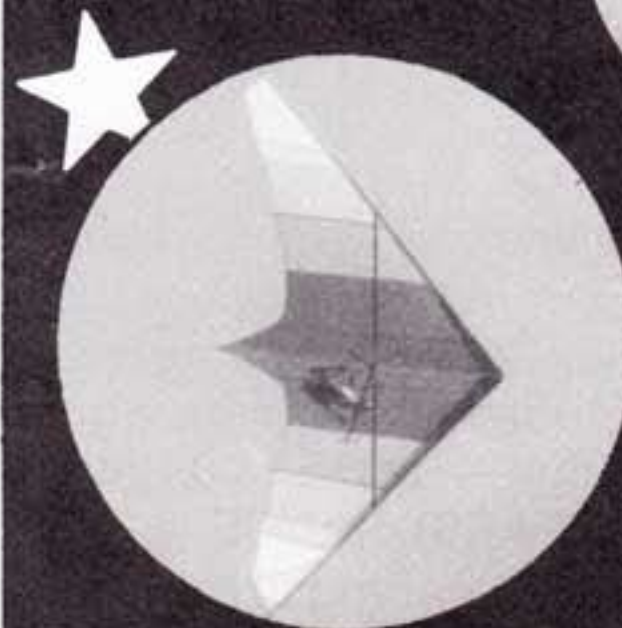


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Midas E 4 months old. Seated and prone rigging. Nice kite, no major prangs. £390. Phone South Benfleet 55110.

10 mins from Hole of Horcum, N. Yorks. Hang Gliding enthusiasts offer Bed/Breakfast (supper and packed lunches optional). Phone Thornton Dale (075 14) 704.

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Hiway Scorpion B nearly new. Prone with seated/supine conversion bar as a clip on extra.

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Wanted 22ft Spirit or similar. Jim Stothard, Hull 505888.

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Skyhook 3A blue/orange, unmodified, little used, well above average condition, ready to fly, suit beginner. Must be sold — will haggle. Ring Sheffield 79018 evenings and weekends.

Hiway 240. Red/white/blue. Still flies well seated. Reluctant sale at £125 with bag — gone Sunspot. 100mph Kite carrier, fits Mk3 Spitfire, won't damage bodywork. £20 — Gone VW. Greg Stokes Brierley Hill 73825.

McBroom Lynx 7 months old in perfect condition, red and white sail, with bag. A bargain at £335. Tel. Stratton on the Fosse 232365 (evenings).

Midas E 3 months old. Perfect condition, no prangs. A dream to fly. £395. Tel. Nick Beach, Rayleigh 775352 (Essex).

Wasp 229B3 Ideal beginners hang glider. Red white blue nylon rip stop sail, full seat harness, soaring bar, zip up carrying bag. Little used so in

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Midas E. 2 months old, no prangs. Good reason for sale. £435. Ben Ashman, 16 Nunsmoor Road, Fenham, Newcastle Upon Tyne.

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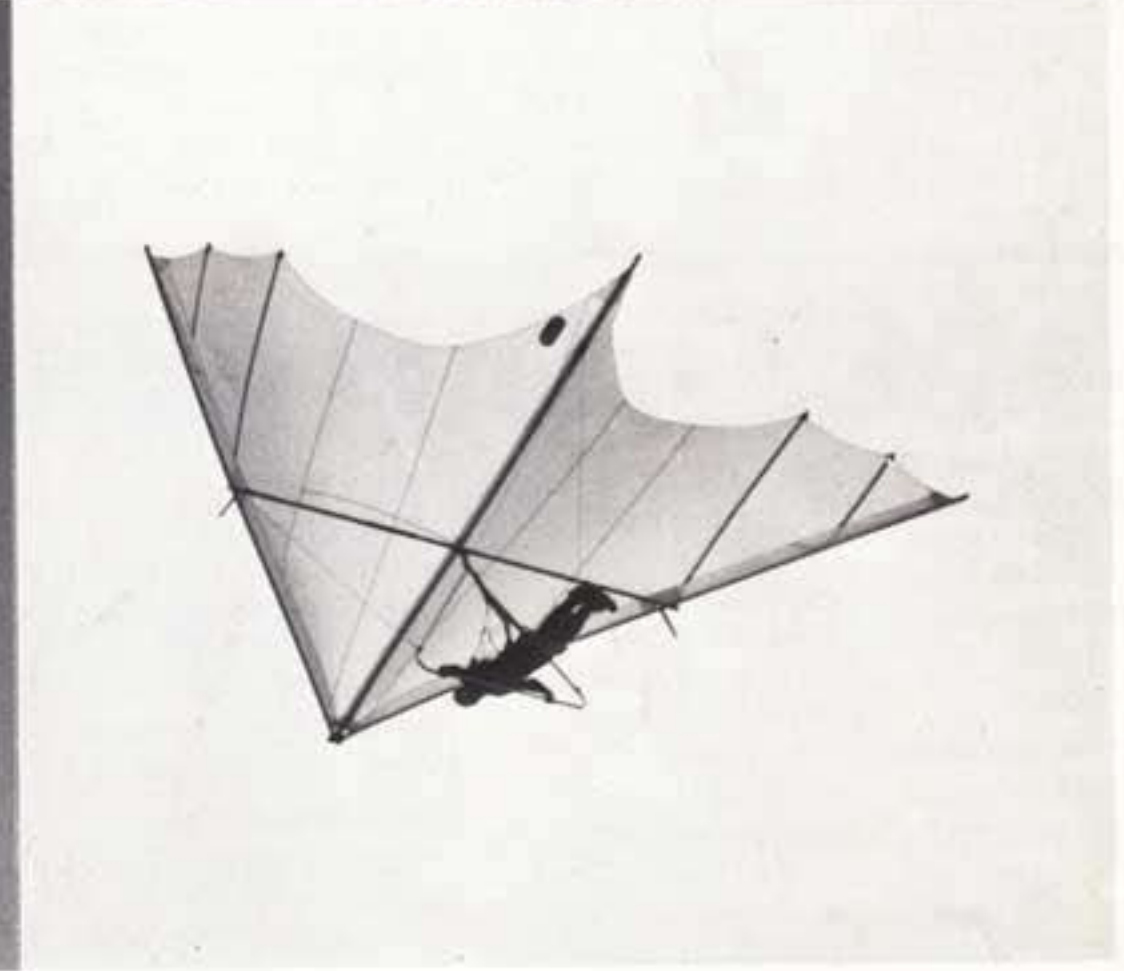
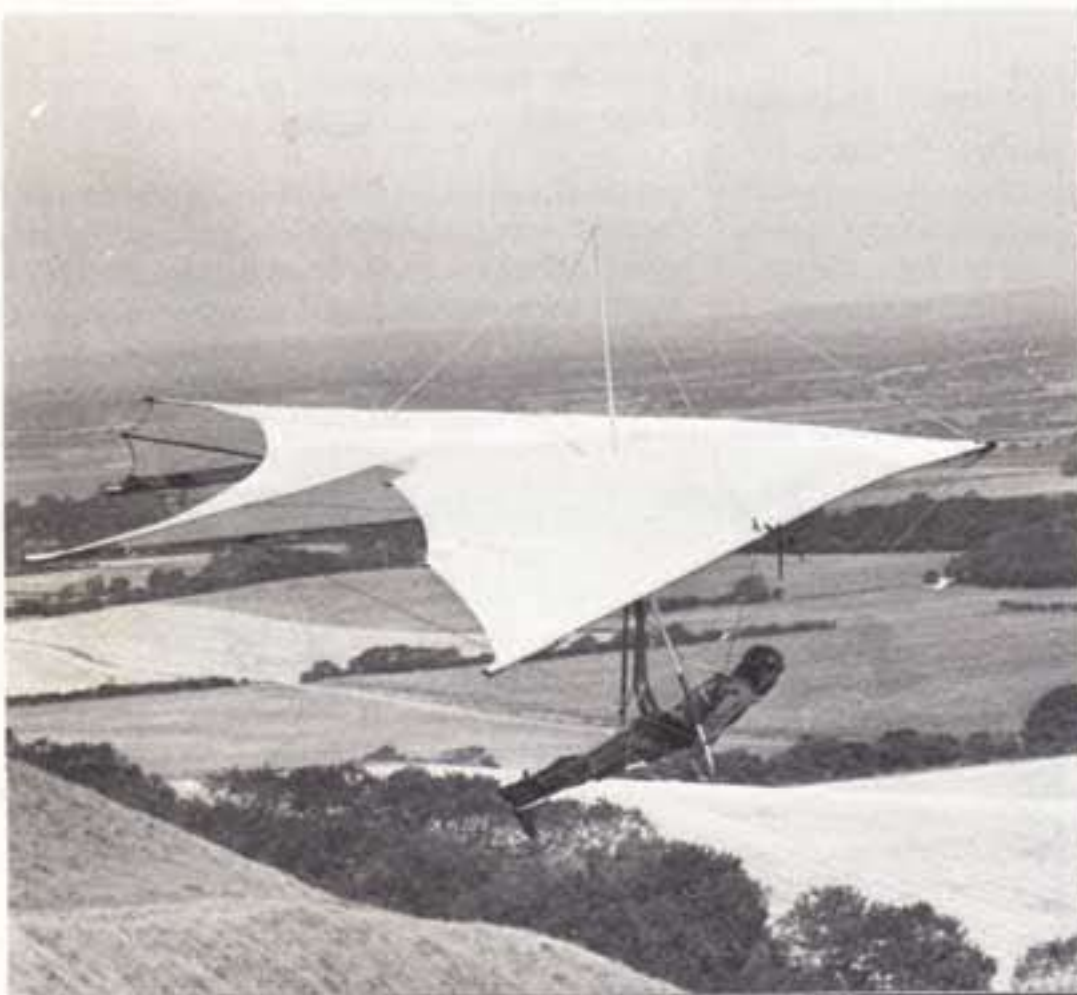
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