

WINGS!

APRIL 1978

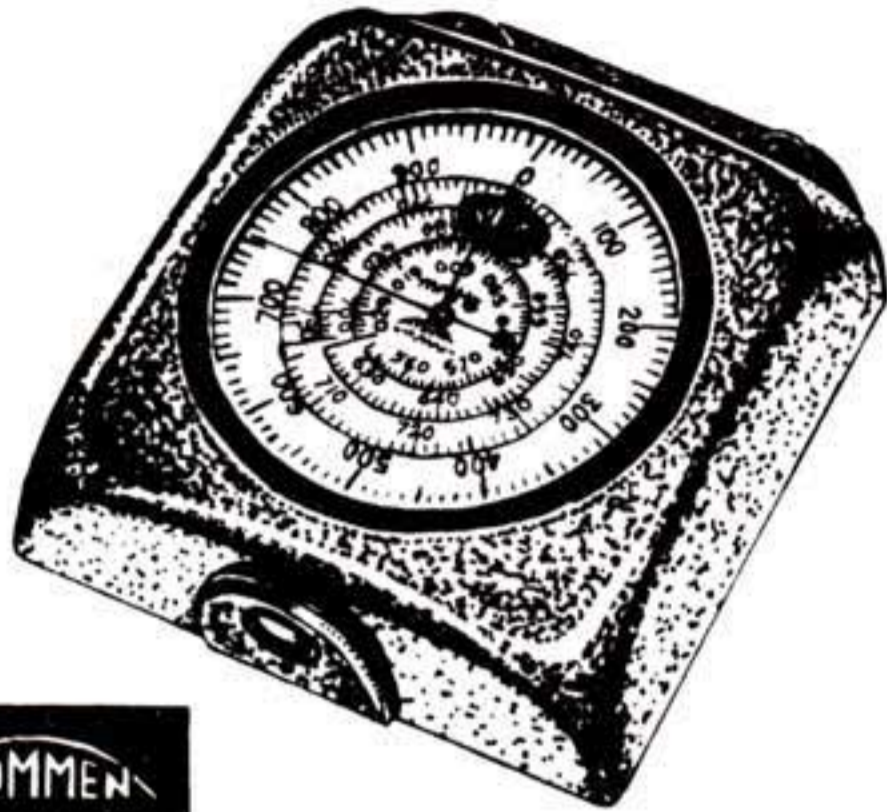
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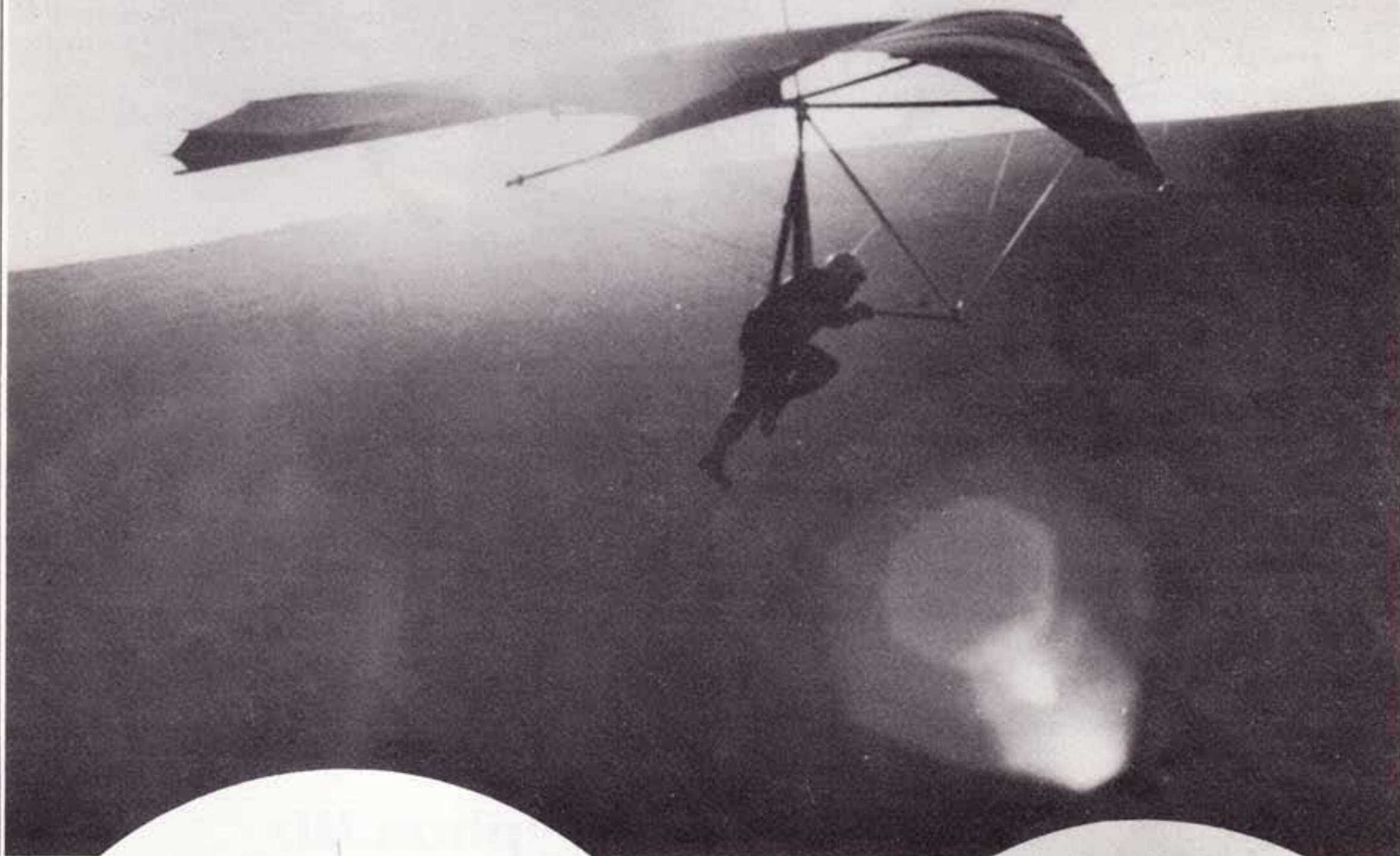
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WINGS!

The official magazine of the BHGA

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Hemel Hempstead, Herts.

1978 Look No. 3: Dave Raymond sets off on the next Birdman production model, the Moonraker '78. Dave is seen here on a prototype.

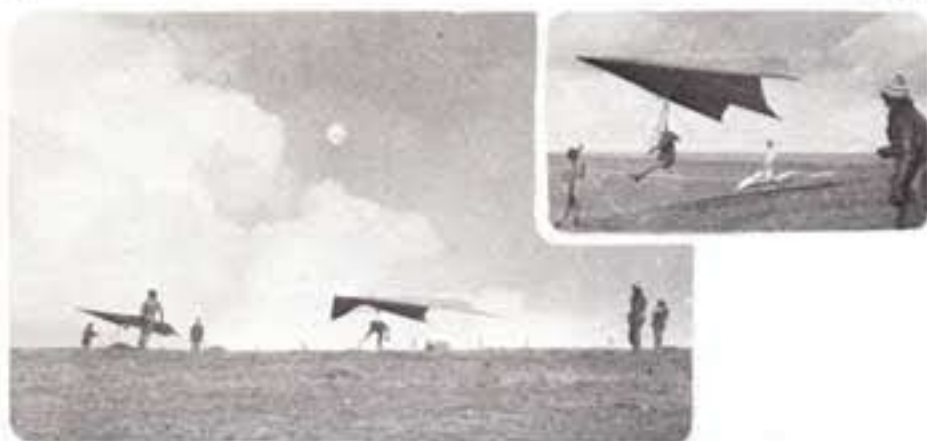
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TA2 7AH.

Wings! is published by the British Hang Gliding Association. The views expressed are not necessarily those of the BHGA Council, its officers, members or the editor. Contributions are welcome. Articles should be typewritten if possible; photographs and cartoons should be accompanied by appropriate captions and any material which is to be returned should be accompanied by a stamped and self-addressed envelope. The editor reserves the right to edit contributions where necessary. The magazine can be obtained by joining the BHGA. BHGA: President: Ann Welch, Chairman: Reggie Spooner, Treasurer: Derek Evans, Council: Brian Milton (Press Officer) Ashley Doubtfire, Garth Thomas, John Hunter, Jeff Marvin, Jeannie Knight, Malcolm Hawksworth, Will Jones. Flight Training Officer: Keith Cockcroft, Accident Investigation Officers: John Hunter and Tony Fuell, Registration Officer: Terry Dibden, Solicitor: Anthony McLaren, Medical Adviser: Dunstan Hadley, Radio Communications Officer: John Westcott, Secretary: Chris Corston. All enquiries other than to members of the magazine staff should be sent to the Taunton address.

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EDITORIAL

This issue of *Wings!* was intended to be a 'Consumer' issue, with kite tests and equipment reports together with a catalogue of current production machines. However, this issue has been postponed until next month because of lack of space in this issue. In the meantime I would like to thank all the contributors to this issue and reassure them that the material is still going to be used.

Despite my editorial encouragement, the AGM was pathetically attended, with only 150 out of 4,000 members present. If the decline continues next year the only members present will be the outgoing and incoming council. One thing is patently obvious. Most BHGA members prefer sitting in front of their tellies than discussing the future of their sport (it was definitely a non-flying day). I invite all those non-attendants to write to *Wings!* to tell us why you didn't come and what would have induced you to come. Perhaps next year we could part with tradition and somehow, make the AGM more attractive.

This year the BHGA has decided on a policy of 'high publicity profile' for the sport. I have a feeling that the time is ripe for such a push. The old line of danger and hang gliding seems to be wearing a bit thin in the press and I suspect they are getting tired of flogging the same old horse. If we don't provide them with more exciting news we will fade from the public view and so will our bargaining power. If you think too much publicity will kill the sport, look what it did for Skateboarding. Local authorities have been forced, by weight of public opinion, to provide Skateparks and other facilities for this booming new sport. I am sure we can persuade them to do as much for us.

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NOVICE TO ADVANCED COURSES

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FLIGHT DIRECTOR: GERRY BREEN

CLAWS

Dear Sir, The enclosed photocopy is of a letter taken from "BIRDS" the R.S.P.B. official magazine for ornithologists. (Spring Issue). For your information the address of The Royal Society for the Protection of Birds is The Lodge, Sandy, Beds. As an amateur ornithologist I think it highly unlikely that any bird would actually attack a hang glider but would, as I am sure many members would testify, "mob" a glider that appears to be a threat to its territory. Perhaps pilots would like to comment through *Wings!*

Mike Lingard
Surrey

Aerial combat

While out birdwatching on one of the local mountains that surround my house, I stopped to watch the antics of the Vost Hang-glider Club. As I marvelled at the daring acrobatic tricks of the members, I noticed a pair of ravens fly out from the side of the mountain. Without warning they attacked the hang-glider from above and below. The birds dived towards the canvas and, as a hole in the canvas can result in a fatal accident, the hang-glider's first thought was to reach the safety of the field that was being used as a landing-strip. Both ravens followed him down to about tree-top level keeping up their attacks for most of the way. There were several other hang-gliders in the area and I was very surprised to see that the birds continued their attacks. The ravens moved away as soon as the sixth hang-glider had landed. It was very interesting to note that the seventh hang-glider, who was not attacked, had a plain, sky-blue canvas, the other six had brightly coloured patterns on their sails. Later on that day I spoke to several of the club's members and they told me that they had been attacked by rough-legged buzzards on several occasions and in the north of Norway attacks by white-tailed eagles had been reported.

EDDIE CHAPMAN, 5710 Skul-estadmo, Voss, Norway.

We are grateful to Mr Chapman for this information since little is known about the disturbance hang-gliding causes to birds. Our conservation planning department has been concerned with hang-gliding proposals and staff at headquarters and in our south-east regional office will be monitoring the effects of the sport on a cliff colony of seabirds in the summer of 1978.

Ed: Arthur Smith, the Science Correspondent of the Daily Mirror has approached Chris Corston for further reports of similar attacks in Great Britain. Please send any reports of 'Close Encounters of the Bird Kind' to Chris Corston as well as *Wings!*

PRONE CONVERSION

Dear Sir, With due deference to Bob Mackay's vastly greater experience, might I make a point which could prevent his article on conversion to prone putting off some from taking this important step in the learning process, just because they have not perfected their soaring technique to the point of top landing — anyway a top landing after a first prone flight? For the average guy, surely not! — or are your sites so much easier down South?

I never really 'got it together' soaring-wise until I converted — but when I did, what a difference! So much easier to get the turns tight to stay in the lift-band, if it is a bit narrow, and a much better feeling of 'being a part of' the glider.

One other point which may or may not be unique to my experience — it took three tries at take-off before I could convince my 'bird-brain' that on getting airborne I had to lean through the control frame, not hold it in front of me. An ignominious, stalled, flop



Expensive paint job, but the birds can't find you when you're up!

AIRMAIL

back to earth resulted in the 6mph. wind, rather than the ground-loop that an 18mph. wind would have caused. I also found landing at the bottom in no wind actually easier than in seated, right from the start.

Everything else Bob says I agree with entirely, and in case it makes any difference, I also am a bit old and stiff — so I say to anyone comfortably past E.P.C. standard and flying seated with confidence — go ahead and convert — you'll improve much quicker afterwards if my experience is anything to go by.

Robin D. Laidlaw
Edinburgh

HARNESS G-RATING

Dear Sir, Some time ago there was an article by Steve Hunt about the design specification and testing of kites, where I believe an ultimate kite stress of 6.5G was mentioned.

Having read the December *Wings!* which had an excellent article entitled 'Hang On', I would like to know whether all British kite harnesses are also made to withstand a loading of 6.5G from the pilot. It seems pointless to fly a kite which will stand 6.5G if the harness won't, and at that loading there's no question of 'hanging on'!

Are harnesses in fact an item which comes under the control of the Manufacturers' Federation?

Roland Bashford
Humberside

A SECOND STRING

Dear Sir, Might I suggest, as an alternative to all the feats of strength proposed, in case of failure of one's harness, that a second string is employed. In other words, fix a rope

around some part of your body and attach this to a part of the glider (not the same hanging point as for the harness). You will therefore be attached to the glider and will have a greater chance of survival. Naturally an additional karabiner of the screw gate sort will have to be obtained.

As an afterthought, I don't think much of the idea expressed about increasing membership dues. Why should the majority be forced to subscribe to a fund to finance the minority who can't be bothered to take out personal insurance?

Toby Balmer
Birmingham

MITCHELL WING FLIERS

Dear Sir, I have been liaising with Mitchell Wing, M Company, in the U.S.A. with the idea of being their U.K. representative. They claim that five people in the U.K. are building the Mitchell Wing, and gave their addresses. I wrote to all five, but only one replied, and he hadn't started construction! I would appreciate, therefore, news of any M-Wings actually flying in the U.K., or known to be under construction. My intention is to import kits and spares to support these builders.

Should any of your fraternity reside near my premises, they are welcome to call in for a chat, and discuss construction problems.

Roy E. Greenslade
Director, Humberside Aviation
Woodside Road
Wroot
Nr. Doncaster
South Yorks.
Tel: 0302 771005

AGM SHAMBLES

Dear Sir, As a Committee Member of the Mercian HGC, I feel I really must complain about the way the AGM was held last week. In my opinion the whole event was a shambles from start to finish. I have spoken to several fliers since, one of whom travelled from the Lake District, and he shares my views, and in fact walked out at the same time as many others. I am surprised there was anyone left to vote when it came to it.

I think next year's AGM should be seriously thought about, because to have an annual meeting, and have around 150 members out of 4,000 turn up, is nothing to boast about, and next year you will be lucky to get 150. More time should be given to flying matters, and not to personalities having a go at each other. An open discussion is essential, and to call an end to a meeting before this took place was a grave error. The venue, whilst in the best area for accessibility, is very poor, and it should be changed. Have you thought of approaching the local club for assistance? BHGA seem to have a talent for picking bad tannoy/microphone systems, (Mere and AGM).

Simon Dudfield
Site Liaison Officer
Mercian HGC

SAFETY

Dear Sir, As I am still recovering from a crash caused by a "Stall" whilst "Converting to prone" I found the February edition of "*Wings!*" depressing reading indeed!

In previous articles on safety it seems to be assumed that everybody should have read the article dealing with a particular subject in a previous issue of *Wings!*, say February 1975. Obviously new entrants to the sport do not have access to such information.

Although the books on Hang Gliding are improving, the articles in *Wings!* are undoubtedly the most authoritative source of information.

What I would like to suggest, therefore, is that when sending out elementary certificates the BHGA should send out a selection of reprints of the most appropriate articles on flying technique.

As well as the two articles mentioned above one can perhaps include the following: "One Good Turn Deserves Another" by Ian Trotter (Sept. 1977) and "Cliff Flying" by Bob Bailey (July 1977).

Someone with longer experience than me can probably produce a different selection but I am sure all newcomers to the sport would be most grateful to have such a selection of articles readily available.

Alan Firth
Guildford

Ed: For a very small outlay you can send off for past copies of *Wings!* See the BHGA advert which appears in this issue

PARACHUTES

Dear Sir, Referring to Gary Mees' and now Colin Bissett's accidents in

falling from their kites, whatever the reason for them, no amount of blame placing can save the pilot once he is on the way down. There is but one chance to save the unfortunate, and that is by his wearing a parachute — as we have to do here in Germany. When this safety feature was made mandatory here, you could hear the cursing for miles, for parachutes aren't cheap. The news of one near fatal, and then a fatal accident however, made everyone realise that what we were cribbing about was for our own good. Even at a mere 100 or so feet, if a pilot is hanging on to the bar with one hand he can still deploy a chute and save himself from what is almost certainly going to be a nasty crunch if he lets the chute pull him off the kite. It may never happen to you, but then again it just might.

The flier who has never experienced the bone rattling turbulence that Scottish (and other mountain fliers) have to fly in half of their time, just doesn't see how a karabiner can be bounced about enough to allow the pilot's weight to fall on the weak part. It can be a very sobering feeling when your feet touch the ground after a flight which includes sudden drops of 60-100ft. like a stone, and it can make you very choosy indeed about the sort of winds you care to fly in on future occasions. Huge areas of lift — or sink — as once can experience in the Alps or Tenerife from heights of around 6,000-8,000ft. are wonderful, but they are not likely to give you the heeby-jeebies that a short sharp ride over the cobbles of the middle of a mountain range do. Be safe rather than sorry, buy a canopy to go with your kite, it's safer.

W. Cowell
Monchengladbach

Ed: Last month's article on parachute systems only shows the parachute anchored at the base of the kingpost, which would not help in the event of a harness system failure. An alternative anchor point is on the harness karabiner. This would protect against a suspension failure above the karabiner but not below. Hang glider harnesses do not make very good parachute harnesses (they can be fallen out of) so make sure your harness system doesn't fail.

DISABLED FLIERS

Dear Sir, I am writing to *Wings!* to see if any other members of the BHGA are in the same situation as myself. I am disabled and fly with the aid of an artificial arm, as I lost my right arm in a motorbike crash five years ago. I lost it below the elbow and weight shift control is affected quite safely as long as the wind isn't more than fifteen mph. on big hills and about twenty mph. on small training hills. I fly a McBroom Arion standard (not a dead one Mr. Fuell) and I've been into hang gliding since about mid-1972. Because I fly a standard kite, due to limitations of wind strength, I've never done any soaring, and this is my main reason for writing. Are

there any members out there who have a similar (or any) disability, what kind of kite do you fly, and what methods of take-off/control/landings do you use? If there are any disabled fliers in the BHGA I'd like to hear from you to exchange info.

I often wonder if I would be able to handle a modern "floater" easier than a standard (seated) because of the much less radical weight shift required on modern kites. If anyone disabled is flying a modern kite I'd really enjoy hearing from them.

If any fliers read this letter and condemn me as a mindless lunatic who will eventually end up as a number on a CAA statistic sheet just think of it this way: You know what it feels like to soar above the earth in the complete freedom of hang gliding. If you suddenly found yourself lumbered with a disablement, would you give up, or would you try to fly by any means whatsoever? Then ask yourself what you get out of hang gliding and why you do it. I hope to hear from any other members on the subjects discussed above.

John Davies
59 Ashgrove Caravan Site
Elgin

INSURANCE

Mike Adam is guilty of some well meaning but muddled thinking. There already exists a national scheme for the relief of financial hardship among distressed hang gliders, their widows and orphans. It is available to all U.K. residents whether contributors or not, and I, like millions of others on P.A.Y.E. make hefty weekly payments to fund its solvency.

Those who consider this safety net to be of limited benefit are free to take out additional insurance at a financial level tailored to their needs and resources. Those neglecting such insurance do so for the following reasons:-

- (1) They consider the D.H.S.S. scheme adequate or are of independent means.
2. They are too mean. (Hard luck chum, pay the premiums next time).
3. They cannot afford it, in which case they can afford a loss of income even less.

4. "It won't happen to me". This group is more commonly known as spectators.
5. They have forgotten to take out or renew their insurance. The last item on the SWANKSHOW check list should read "I — Insurance. Have I got it? Do I need it? If answering No and Yes abort flying until obtained.

The function of BHGA is to encourage and prompt safe flying, not to set up in competition with established insurance companies. The existence of a third party liability scheme should surely be sufficient to make the annual premium value in its own right. Beefing up the yearly subscription rate by £5 will only mean fewer members, not more. The gap that does require to be filled is the one prior to obtaining one's EPC, I accept that a training school has to get its pupils to sign a blood chit, but an insurance fall-back scheme should be available on a daily basis. Surely, learning is not so dangerous that say, for £1 a day some limited insurance cover cannot be issued. The schools can act as agencies and receive 10% commission on all business taken and it would inform all fliers entering the sport that insurance is available to cover any misfortune that may arise. We might then receive fewer Chris Corston type appeals.

Please note that I have no connection with any insurance company or the D.H.S.S.

R.J. Mott (M.C.I.T.)
Biggleswade

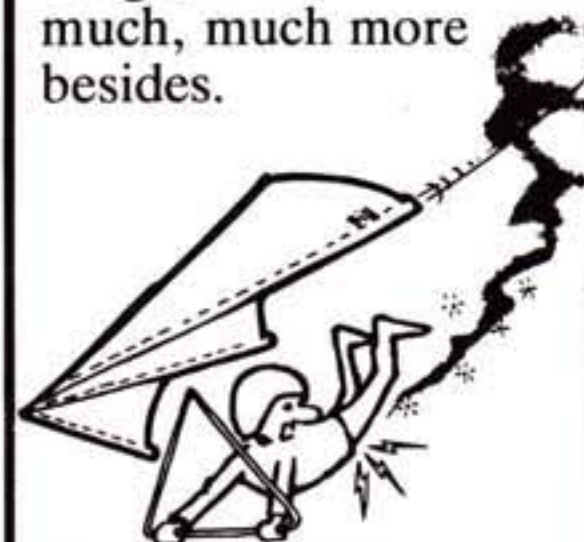


If you have something to say, send a letter to the Editor, 14 Earlsthorpe Road, Sydenham, London, SE26.

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WING TIPS

To the cross-country flier it means that you can leave the ridge in a given direction at the start of your journey, and you can align yourself with your track after leaving your last thermal — umpteen 360's will do nothing for your sense of direction! When you finally have to land in strange terrain, with no helpful smoke or rippling cornfields to give you an indication of where the wind is coming from, then the opposite of your compass heading will give you the best indication.

To the ridge soaring pilot who is flying under a low cloudbase, the compass can be a useful aid in getting the hell out of it if the cloudbase suddenly drops, and you lose your sense of direction in the ensuing 'whiteout'. (However, having a compass is *no excuse* for sniffing at the cloud on top of a thermal, or leaving it too late to leave a misty ridge).

The instrument most widely available is the Japanese divers'-type wrist compass, costing about £7. This to my mind is not the ideal solution, as the compass, being necessarily on the wrist, is quite close to a lot of magnetic material e.g. rigging bolts and wires, vario, altimeter and other sundry goodies. The only logical

place for a compass is in the middle of the control bar, where it is farthest from material likely to cause deviation and is easiest to read. If you fly a kite with galvanised wire running through the bottom bar for reasons of safety or for continuous side rigging, then you'll have to change it to stainless steel if you want any sort of accuracy.

The compass I use is the Swedish orienteers map reading type, costing £3, which I can easily place and remove from a permanent fixing in the centre of the bar. With this type you can set a course (out and return, downwind, triangle) from an O.S. map. If you carry your map with you on your flight you can use it, together with your compass, to fix your position if you land in unknown country. You do it like this:

1. Remember some clearly visible and identifiable landmarks from the air.
2. After landing remove compass from kite and take bearings on the landmarks.
3. Transfer bearings to map, where they cross is where you are.

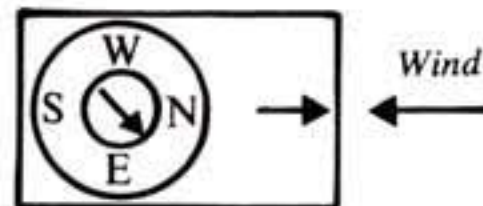
Getting the Needle

Mick Pollard

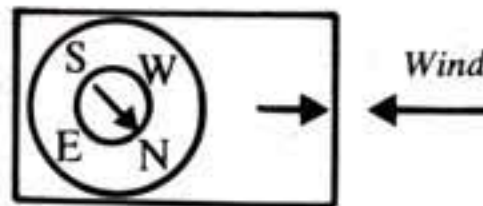
Most pilots seriously considering cross-country flying have equipped themselves with basic instrumentation i.e. vario and altimeter. Not enough thought has been given by the majority to that most useful, versatile, simple and cheap instrument — the compass.

SETTING THE COMPASS FOR DOWNWIND FLIGHT

1. Hold compass in hand and point it into wind:
3. Mount compass on control bar.



2. Turn moveable dial till north end of needle points to north.



4. When ready to fly downwind, turn kite till needle points south — this is your course to follow.

5. When ready to land, turn kite till needle points once again to North — you are then facing into wind.

This may at first sight look a little complicated, but when you have a compass in your hand it becomes amazingly clear, and you will be a little closer to more precise flying.

Glide Angle and Wind Speed

After recent discussion on the subject, Ian Thomas, Chairman of the Pennine HGC, looks more closely at optimum flying speeds for upwind and downwind flying for maximum range

Recent correspondence in *Wings!* on the subject of maximum range in upwind and downwind flying invited a closer look at the problem.

In the January 1978 *Wings!* Ian Trotter investigated upwind and downwind flying for gliders at min. sink and max. L/D speeds. His calculations showed that whereas max. L/D (or best glide) speed gave maximum range in still air, conditions were different in moving air.

When flying downwind, min. sink speed could give a sufficiently extended flight time to allow the glider to drift further across the ground than when at best glide speed. This did not,

however, prove that min. sink speed gave the best possible range, but suggested that an 'optimum glide' existed which was probably neither min. sink nor max. L/D. In a postscript to this letter, the Editor quoted L.J. Clancy's 'Aerodynamics' which stated that the optimum air speed in a tailwind is slower than max. L/D, and conversely in a headwind it is faster. It did not state by how much.

We must first examine the relationship between the flying speed of a hang glider, and its corresponding sink rate. The curve shown in fig.1. is typical of the graph plotted of sink speed across a range of flying speeds.

The minimum sink speed and the stall speed are clearly seen. At faster airspeeds, the rate of sink also increases, but the curve does not clearly indicate the speed for best glide angle. If we consider a particular point 'A' on the curve where the airspeed is V and the sink rate is S, then the time to descend through a height H will be $\frac{H}{S}$. In this time, the distance D

travelled horizontally will be given by:

$$D = \frac{H}{S} \times V$$

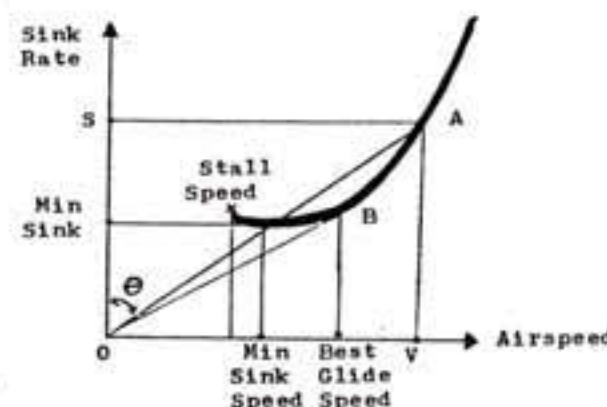


Figure 1

extending the equation we get

$$\frac{D}{H} = \frac{V}{S}$$

In fig.1., the term $\frac{V}{S} = \tan \theta$,

and therefore when the range $\frac{D}{H}$ is a maximum, then $\tan \theta$ must also be a maximum. This is when the line OA becomes a tangent as at OB and hence point B is at the best glide speed.

A pilot will have no clear indication when he is at the best glide speed. He must rely on the result of a calculation as shown above, and then use an airspeed indicator to achieve this speed.

Next we must consider the effect that wind has when a glider is trying to fly at the best airspeed for maximum range. In fig.2. the graph of sink and airspeed has had a dimension added to represent the speed on the air across the ground. (The effect of wind shear has been ignored). It has been assumed in this example that the glider is flying directly

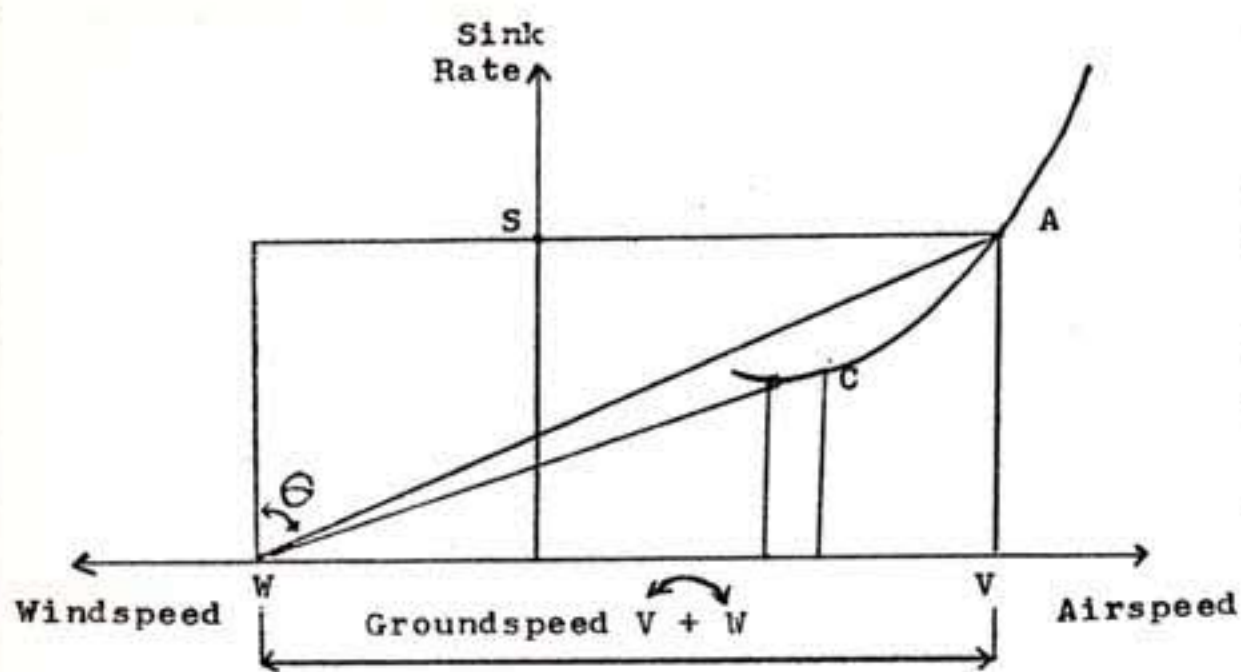


Figure 2

downwind, and that the airflow is purely horizontal. As before, at a particular point 'A' on the curve, where airspeed is V and the sink rate is S, the time to descend through a height H will still be $\frac{H}{S}$.

In this instance, however, the distance D travelled horizontally will be given by:-

$$D = \frac{H}{S} \times (V + W)$$

where W is the speed of the tailwind across the ground.

Extending the equation we get

$$\frac{D}{H} = \frac{V + W}{S} = \text{Tan } \Theta$$

As in fig.1., the maximum distance will be when the line is a tangent as in OC, and the new speed for best glide is at C. This is clearly a slower speed than the Max L/D speed, but is by no means equivalent to the min. sink speed.

In fig.3., the speed to give maximum range in conditions of head and tail wind is shown. In each case the tangent is used to locate the optimum speed. It can be seen how optimum speed is slower than best glide speed in a tail wind and faster in a headwind. Obviously a pilot will not be able to fly at this optimum

speed without precise knowledge of his glider's performance curve and of the exact speed of the air across the ground.

One way of checking the manufacturers' claims for min. sink and max L/D would be to plot the curve for your glider, but this would not be easy. Firstly you need a high launch point and still air conditions where no vertical air currents will affect the gliders natural flightpath. Secondly the glider will need accurate instruments to measure sink rate and airspeed. Assuming these conditions can be met, then simultaneous readings of the instruments must be taken at different flying speeds. This may well be best achieved photographically. I have never tried doing this, and it would be interesting to know how accurately the curve could be drawn.

Using the curve, it would be possible to gauge how much faster (or slower) than max L/D a glider must be flown in typical wind conditions, which would surely be preferable to having no information at all.

When attempting to fly across country, a glider may be circling in a thermal. It must be clear that the speed for minimum rate of

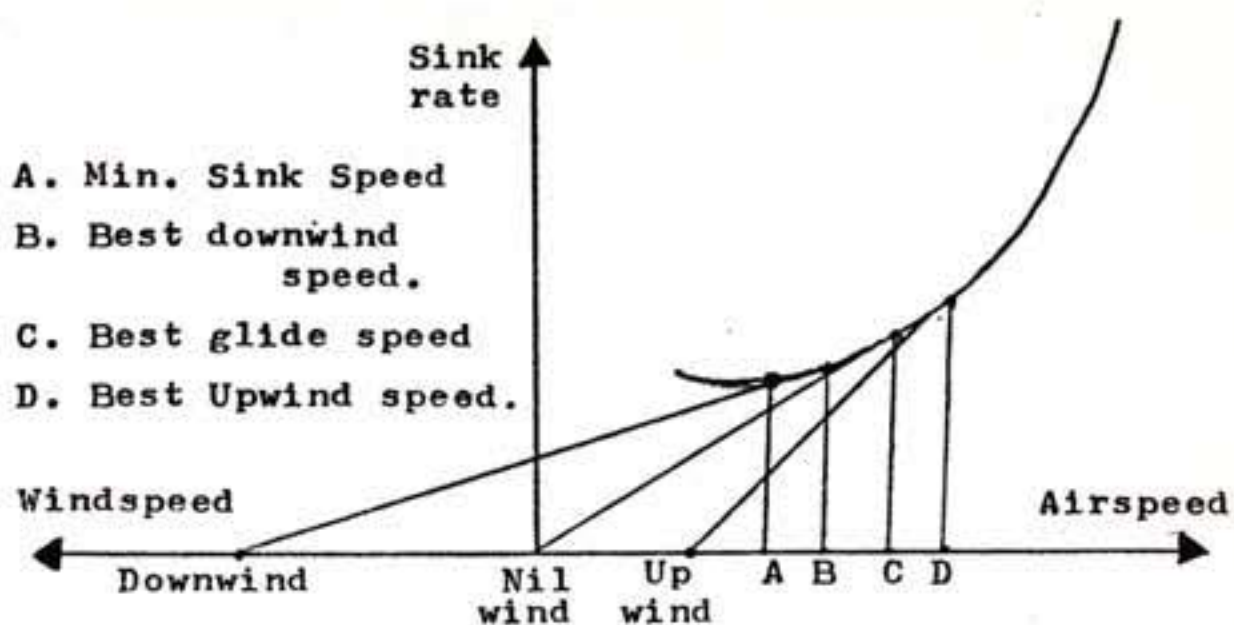


Figure 3

sink must be used whilst staying in the centre of the thermal. If, however, the thermal has expired and the glider is heading for another possible thermal, some distance away, then the max L/D speed must be used to get there with least loss of height. This is because the target (i.e. the next thermal) is not moving in relation to the moving air mass, and effectively 'still air' conditions prevail.

None of this information is of much value if the glider does not carry an accurate airspeed indicator, which may also have the added advantage of warning

against an unexpected stall. Airspeed indicators are considered vital equipment in most other types of aircraft, and it is surprising that so few are used in hang gliders.

Finally, if you do go to all the trouble of taking these measurements and plotting performance curves, then do not go and 'tweak' your glider or else you will alter everything and have to start all over again. At least that would show whether your tweaking had actually done any good!

Ann Welch & Gerry Breen

HANG GLIDER PILOT



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Richard Kenward Photography



Ed Cesar on the new Eipper Antares over the Bean Patch. Photo: © Bettina Gray

GEORGE WORTHINGTON'S L/D CONTEST

In early January at Torrey Pines someone said to me "Hey, George, when is the next L/D contest?" The last contest, about nine months ago, had been sort of an unhappy memory because on that day there was an unusual, strong, gusty crosswind condition. As I recall over 40 pilots had showed up, but only 14 elected to fly. The experience had left me wondering if I wanted to hold another one. There was also another reason for my reticence. I hate work, and it takes a certain amount of work to put even my kind of amateur low-key event together. But like a little kid, whose face lights up at the sound of his name, my reluctance was forgotten when I was asked when the next contest would be. I picked the date of February 25, a Saturday, told a few guys, put a small sign up at Torrey Pines, put a blurb in our U.F.O. Flier (local) newsletter and waited.

The contest nine months ago and the one before that had both been flawed, because the wind-terrain combination on that hill allows some distance-help in the form of ridge soaring. So for this contest I selected a different training hill, in San Diego, called the Bean Patch. The Bean Patch is about 75ft. high, with a perfect take-off slope and absolutely flat

Hang gliders are no longer limited to the confines of a narrow band of lift on a ridge. Steady improvements in performance have meant that cross-country flights are a regular feature of the hang gliding scene, yet, curiously, one of the most fascinating tests of hang glider performance is a straight line distance event held in zero lift conditions. An event, almost bound to be plagued by weather, George Worthington reports on his, now famous, L/D contest at the Bean Patch, San Diego. Photographs by Bettina Gray

farm land in front of it, stretching for over a mile.

San Diego had been "rained out" during the middle of February, and even with nine sunny days the area out in front of the Bean Patch where the pilots would be landing was still muddy. So, we couldn't fly straight out over the farmland as we wished. We were forced to have a dog leg to the right, a turn of about 70°. We put a pylon at that turn, and stationed a referee there to ensure that all pilots went around the pylon.

On February 25, the day of the contest, I had the feeling that maybe only ten or twenty pilots would show up. I had done very little promoting of the event, because we had no permission to fly such a contest on this site. This is a problem with hang gliding.

We can't afford to own and control a piece of land — which has to be very specially oriented and contoured to suit our needs, because the cost is well beyond our means. On a normal Saturday, two or three kites usually fly this little training hill, except when the beans are coming up in the farm below. Now I was about to bring twenty or possibly even thirty kites together. I didn't dare ask the owner — he would surely have said no. So I simply took a chance, but I didn't feel comfortable about it.

The first inkling of the problems, which were to beset us during the 3rd contest, came at about 10 a.m. The wind was 180° different from the prevailing westerlies that we need to fly the Bean Patch. And it stayed that

way past 12.30 p.m. into 1.00 p.m. although at an ever decreasing velocity.

The second inkling of problems to come was that by 1.00 p.m. we had 55 pilots entered in the contest, and guys were still arriving. I didn't have the heart to turn anyone down, and so, finally 64 pilots had entered, and every one was in everyone else's way. The cleared area at the top of the hill could only handle about 30 kites comfortably, and we had 64. It is a real credit to all these 64 pilots — they remained enthusiastic and happy through the entire contest.

At 1.00 p.m., in zero wind a few of the contestants began their flights. Each take-off was a squeaker. Often the pilot's body would be slightly dragging on the ground because the wind was zero or even slightly downwind. But no-one munched a take-off. All of them got off without crashing. It was truly an impressive demonstration of pilot skill.

At the pilots' meeting, at 12.55 p.m. I had announced the rules: 1) the various flight distances made by each pilot would be averaged. 2) the pilots could fly as many flights as desired. 3) the pilots could win prize money only if they flew a minimum of three flights. 4) the prize money would

consist of \$25 for 1st place, donated by me and all the money (\$2.00 per pilot) collected would go to prize money for 2nd, 3rd and 4th.

Of course, the contest is supposed to clearly show the L/D performance of each glider/pilot in comparison with every other glider/pilot. And if the wind direction and velocity had been consistent throughout the contest we would have accomplished that purpose. However, the wind was very inconsistent, and as a consequence the results of the contest are flawed. For example, let's look at Gary Patmor's flights. On his first flight, about 1.15 p.m. his distance, in a zero wind condition, was 588ft. For his second flight the wind was coming directly up the hill at about 5mph and his distance was 667ft. On his third flight the wind direction was still up the hill but the velocity had increased to about 9mph, and his distance was 825ft. Still later, the wind changed and became a crosswind from the right. (After take-off and a turn the pilot was flying directly into this wind of about 5mph). Those pilots who were still flying were getting lower scores. But Gary already had flown his three flights and didn't need a fourth, and he recognized that the change of wind was hurting the scores. The trouble was, that some pilots only had two flights and were forced to take a third flight in conditions that were bound to bring lower scores. I realised this unfairness and changed one of the rules. The change was that prize money could be won with two flights instead of three. My decision to change the rules was unfair and a mistake. However, the contest would have been unfair regardless, because the wind changed decisively during three different periods of the contest.

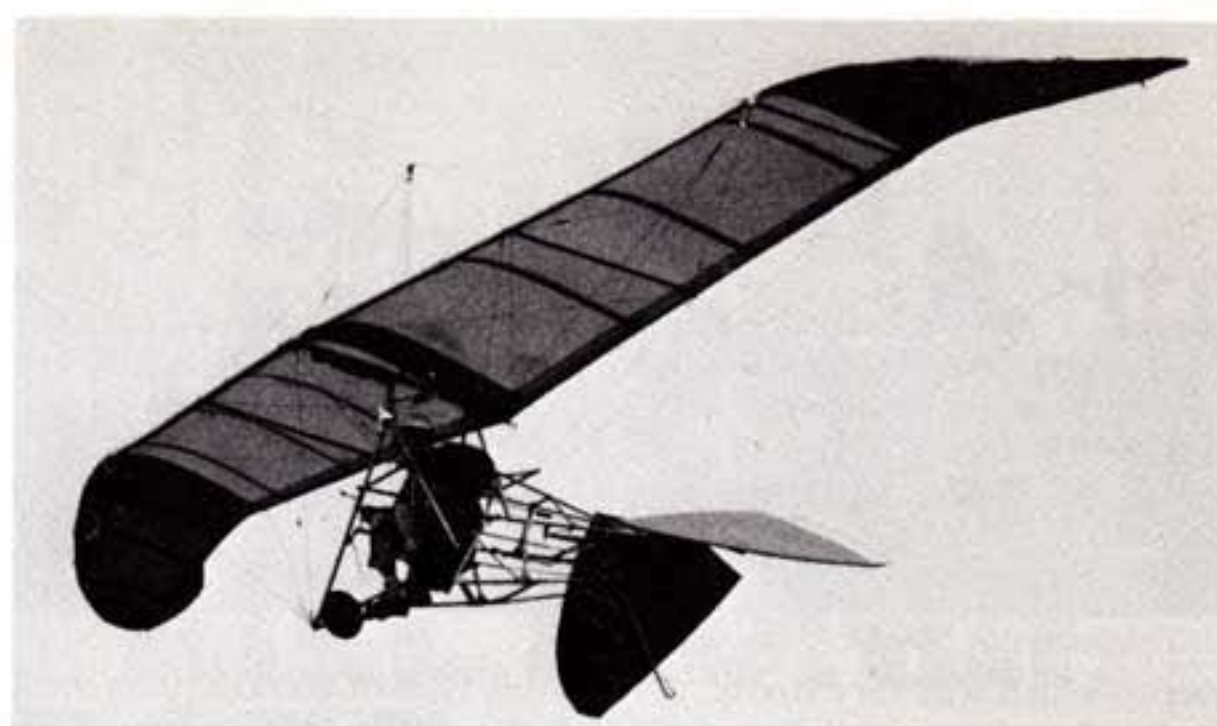
Now, finally, I have learned what everyone else probably already knows: in order to minimize the wind as a factor, the contest should be run like a tennis tournament. Two pilots fly the course within 30 seconds of each other, giving one a win and the other a loss. Losers are eliminated and the contest continues until there is a quarter finals, a semi-final and a final. There will still be problems. Much more time would be required and much more paperwork and effort would be needed by the contest workers.

My original idea in initiating

the first L/D contest was that I could compare my glider with all the others and the others with each other. I knew I'd have fun competing and in learning about the other gliders. But reality caught up with me. With 64 entries and only 110 minutes of good wind, my total energy had to be given to devising a take-off sequence and ensuring that we got as many pilots off as was possible. I was forced to become a drill sergeant and push hard. But the pilots were fabulous. They remained good-natured and enthused through it all. This fact allowed the event to be fun. And so, it seemed to me that the overall theme of the contest was that it was a "happening", sort of like Woodstock was many years ago.

We had three girl pilots. This was as unexpected as it was pleasant. These three pilots showed an excellent competitive attitude and exceptional skill. Everyone was proud of them.

The famous Richard Miller was there. He didn't enter the



Richard Miller in his Model A. Photo: © Bettina Gray

contest. He brought a very strange looking craft that he sat inside of. He took off from a point about 40 yards to our left and sort of ridge-soared the contest site with just one spectacular pass. A elevator of his machine missed fifty people by about ten feet, and missed one parked rogallo by less than twelve inches. Most of the spectators and contestants seemed delighted in one way or

another.

The rules were that any kind of landing was O.K. This seemed to prompt an awful lot of belly landings, as pilots tried to coax the last inch of distance out of their gliders. This added a bit of comedy to the contest.

I felt sure that the rogallos with the best (least) sink rate would not do well in this contest. Generally speaking, that seemed true. Ironically though, the very rogallo, the Super Bee, which invariably flies the highest at Torrey Pines, won the contest. And if that's not irony enough, the winner of this contest is Jeff Magnum, the same winner as the last contest (#2) but in a borrowed kite. The type of kite that won last time finished 37th, even though it was flown by an excellent pilot who weights 195lbs. I can't help feeling that Jeff Magnum has a special skill perfectly suited to this type of contest. Gregg Tharpe, the designer-builder of the one-of-a-kind-winning Super Bee, also flew it in the contest. His average was 626ft. compared to Magnum's 762. Tharpe weights 145lbs. compared to Magnum's 185.

I was very unhappy about the fact that I couldn't even watch the flights. All my attention and efforts, were, as I said earlier, riveted on the job of getting flights off in quick succession. But Don Betts, a very experienced glider pilot was the guy down on the field who watched every flight and marked the landing spot of every contestant. Don did a great job and has this to report about his impressions of the participating ships:

(The comments below are by Don Betts)

The mood of the contestants was interesting. It was festive, though you could feel the competitive



Jeff Magnum, the winner on Gregg Tharpe's Super B. Photo: © Bettina Gray



L/D launch site. Photo: © Bettina Gray

desire which was very strong. As usual, the contestants felt that the rules and organisational standards should be better than those of the international Olympics.

A few contestants grumbled after the contest that "Once again nothing has been proved or resolved", I disagree. If you watch the contest from my vantage point, objectively, and dispassionately, many interesting bits of information became apparent, and I will try to list them below.

I've watched all three L/D contests. Jeff Magnus got 3rd in the 1st contest, 1st in the 2nd contest, and 1st again in this contest. It is becoming apparent that the pilot is more important,

in this type of contest, than most of us realise.

The high scorers seemed to use three distinct techniques during their flights which generally differed sharply from the low scorers. First, their pylon turn was a very gradual, smooth curve, rather than a quick high banking turn. Second, they kept up a good speed right down to the ground and then kept their control bar about 2 to 6 inches above the ground, whereas the losers seemed to try to hang on to their altitude. Third, they pushed out at precisely the right instant to make a *standup* landing, while the losers seemed to land mostly on their bellies. They both had inertia at a particular point just before touchdown, but the

winners converted this inertia into 20 to 25ft. of extra distance, while the losers converted it into friction by being dragged about 10ft. on the ground.

George has already discussed the differences in distance caused by the wind, so I'll just state that this factor was important and did cause some distortion to the scoring. Without these distortions it is my belief that Patmor and Stoverud in their Mariahs probably would have won. At any rate, George is holding a run-off contest between the top six on April 15th wherein all six will fly their flights within three minutes of each other (to ensure that all of them will fly in the same wind conditions).

I also noticed the significant fact that the gliders which get the highest at Torrey, which include the Herron, Olympus, Owl, and SSTs normally did much poorer in this contest than the gliders which are usually always lower at Torrey, such as the Mariahs, Spydys, Wills XC, Eipper 10's, and Sea Hawks. So once again,

we see that if you have a low sink rate you usually don't have the best L/D and visa versa. The Super Bee would be, I think, "the exception that proves the rule".

(End of Don Bett's comments)

I want to thank Don Betts for his help during the contest and for all the comments above.

In summation: it was a *fun* contest. It indicated, but *did not prove* which were the better ships, where L/D is concerned. The popularity of this contest is now so great that I'm afraid of the next one. (Supposing we get a hundred contestants?!).

Due to the unfairness of the wind factor it was decided the usual procedure of a large prize for 1st and diminishing-sized prizes for 2nd, 3rd, etc., would not be appropriate. The pilots who flew three flights and started "on time" were penalised by doing so.

Accordingly the \$150 in prize money was divided equally among the first six winners. Each was sent a check for \$25.00.

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Place	Pilot	Glider Make	Sail Area	Pilot Weight	Contest Number	Distance
1	Jeff Magnus	Super Bee	165	185	55	762
2	Tom Kreyche	U.P. Spyder	192	175	58	757.7
3	Roy Haggard	U.P. Floater	168	157	57	736
4	Bruce Stoverud	Mariah	170	150	44	714.7
5	Gary Patmor	Mariah	170	145	16	693.6
6	*Geoffrey Morlyn	SST	196	130	59	660.5
7	Steven Pearson	XC 220	220	165	50	653.5
8	Rolf Spingler	Seedwings Sensor	157	145	7	652
9	Ed Cesar	Antares	155	144	48	642.6
10	Kevin Kernohan	Mariah	190	175	29	642
11	Donald Webb	Sea Hawk	200	170	52	636.5
12	Greg Tharpe	Super Bee	165	145	54	626
13	Don Kaizen	Olympus	160	150	49	623.6
14	Chris Perkins	Mariah	170	150	33	620.2
15	Burke Ewing	Wills 110G	265	160	56	619.5
16	*Chuck Hobson	U.H. Starship	175	160	31	615
17	Stanley Chase	U.H. Starship	175	185	17	615
18	Rob Kells	Wills Combo	218	155	51	613.2
19	Dan Lenox	Starship 108 ^o	163	197	41	612
20	Tim Joseph	ASG-21	180	185	8	611.6
21	*John Cotton	KC-185	185	145	46	609
22	Yvonne Lawson	Highster	170	135	9	597.2
23	Guy Lindburg	Olympus	158	145	13	597.2
24	Gregg Patronyh	411 Sensor	163	155	32	592
25	Steve Schaffer	U.H. Starship	180	175	19	590.8
26	Steve Barnes	Seedwings Sensor	157	175	2	583.5
27	Tom Dailey	X-C			62	575.5
28	Steve Baker	108 ^o Starship	176	150	27	575.3
29	Chip Creech	10 1/2 Meter	196	175	43	572.3
30	Rich Matros	10 1/2 Meter	196	180	42	569.3

*Flew only one flight and therefore didn't qualify for prize money.

THE UK HANG GLIDING RALLY AT PERRAN SANDS. THE BIGGEST PRIZE MONEY IN EUROPE, AND THE CHEAPEST HOLIDAY IN THE WORLD.

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NEWS ROUNDUP

Ann Welch visits British Aerospace

Mrs. Ann Welch, OBE.,FRAS., President of the British Hang Gliding Association and Honorary President of the FAI Hang Gliding Commission, came to British Aerospace on Wednesday evening to deliver an illustrated presentation on "Hang Gliding" to the Hatfield Branch of the Royal Aeronautical Society.

Before an audience of some ninety people — and with the use of slides, Mrs. Welch gave an informative insight in this increasing and popular method of flying. Tracing the early attempts and design — flexible wings and its development, showing early flights of gliders made and flown by Otto Lilienthal in the 1880's, through to the 'A' frame design with a Rogallo wing depicting early days in the U.S.A. The growth of the sport within the United Kingdom was explained, with gliders having high

sink rates, and with the latest trends of having the aspect ratio of the wings increased, and the drag being reduced by having the pilot flying prone. Looking ahead, other methods of launching such as winching and aero-touring are being considered and the President felt that for competitions, flying should be kept to the pilot skill rather than to glider design.

Members of the Company Apprentice Hang Gliding Association had on hand one of their machines, a Pegasus 2 glider, to allow the Branch's guests to inspect and see the 28ft. wingspan and conventional layout, and gain first hand details of this new method of sport flying which has its origins way back in the last century!

Nigel Price
Press Officer
Royal Aeronautical Society.

The Ladbroke-sponsored Hang Gliding Weekend Competition with prizes totalling £500, will take place at Perran Sands Holiday Village, Perranporth, Cornwall between the 11th and 14th of May.

Spectators are expected at Perran from all over the West Country, as far as Bristol for the event, which is being organised by the Kernow Hang Gliding Assoc.

The association was formed by six hang gliding enthusiasts in October 1974 to present a common front to land owners, etc., when negotiating sites.

Kernow is celtic for Cornwall and although it was felt by some members that it might not be understood by people in the rest of Britain, it was

different and those who were curious would soon find out what it meant.

We have grown slowly compared with other clubs, partly due to the small population of young folk and also the difficulty of finding safe training sites in Cornwall. At present we have about 24 paid up members and to date we have run two small annual competitions, both at Daymer Bay near Polzeath when we were able to accommodate 50 entries. The competitors came from Devon, Somerset, Dorset, Bristol and a few even came from Wales.

We all had a lot of fun and a majority of pilots said how much they enjoyed it.

Our present venture came into being during negotiations over the site

Well, 'Cork 78' has come and gone — blown out of the skies on both days, despite some fabulous 3,000ft.-plus soaring off Claragh Mountain in spring thermals on St. Patrick's Day.

That was Friday 17th; next morning we set off for Mweelin, a 1700ft. mountain near Ballingearry, for the first of the competitions, a spot landing. Before the target was in place the wind was gusting up 35kt. so everyone adjourned to the "Ould Triangle" to discuss the situation. Which is where this photograph was taken as Bob Steele's kite was being partly rigged for the local newspaper's photographer.

A few fliers went off to try the County Kerry dunes after the competition was abandoned for the day, and had no luck. Others drove to Castlefreke later in the afternoon where a little flying took place on the Cork Club's training dunes, down the 40 or 50ft. to the beach.

Late that night, back in Jury's Hotel, Cork, was one of the first

showings of a new hang gliding film made in Ireland, "Da Vinci's Dream". Beautifully photographed in 16mm. colour by John-David Biggs, Ronan Lee and the film's director Declan Langan, the viewer is taken from the teaming streets of Dublin to the tranquillity of Achill Island — the next parish to America — where the expertise of John Ievers, Brian Harrison and Noel Broderick was displayed, much of it from a camera at the stern of the keel of their kites.

Sunday dawned wet and windy, like the baker's cat as we say here in Cork. Early forecasts from the met. men of Cork Airport said a clearance in the early afternoon with a veering of the strong winds to the west. In fact, this happened in late afternoon after the meeting was abandoned completely and many of our visitors (nearly a hundred from Britain alone — serves 'em right for not going to the BHGA AGM) had begun the long trek to Achill Island for the next weekend's I.H.G.A. Fly-In. **Roy Hammond**



John Westcott, Chairman of the Kernow HGA and organiser of the event gets in some practice over Perran Sands

PERRAN SANDS COMPETITION

which will be used for the competition. It was appreciated by the owners, Ladbroke Holidays Ltd. that here was a great combination of accommodation and sports activity.

Perransands is a 2-mile stretch of sand dune and cliff with an average A.S.L. of 200ft. facing N.W. by W. with a bowl at the North end taking a S.W. wind. There is a small projection at the southerly end which allows a NNW take-off. Thus we have at least 120 degrees for take-off.

Due to our small size we are enlisting the help of the local Round Table to act as marshalls under the direction of our members.

The accommodation is adjacent to the competition site. Bars, dance hall, restaurant, living accommodation of

self-catering chalet-type and a touring van/caravanette park.

There is room for manufacturers, exhibitions and demos. All in all it is a great opportunity for a good time. Should the weather prove unsuitable at any stage we are arranging films on hang gliding, talks and discussions plus demonstrations if practical.

There is a free disco on the Friday night and a dance at a nominal fee to a good band on the Saturday.

Perransands is near Perranporth on the north coast of Cornwall, not far from Newquay.

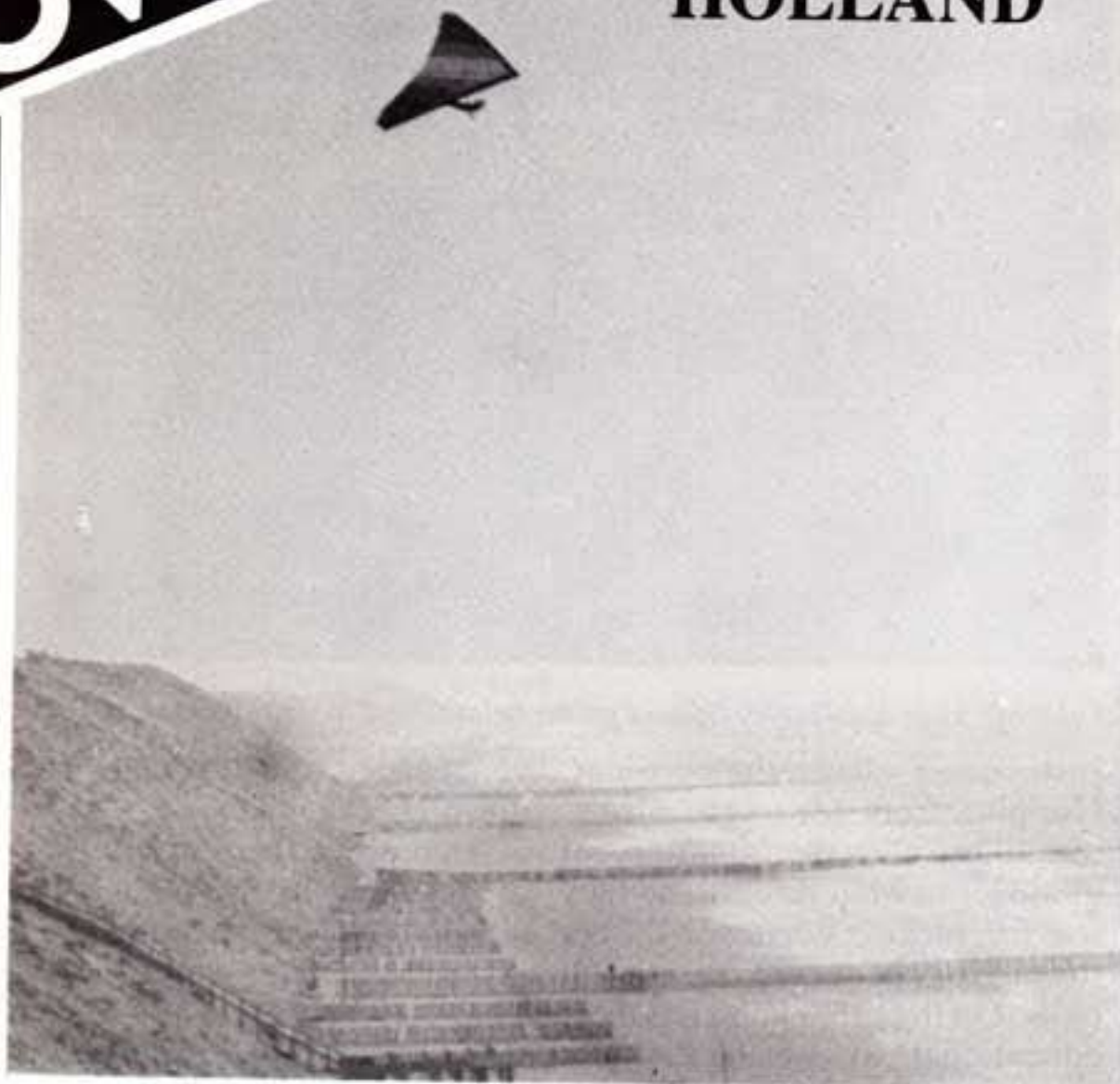
For further information, please contact: Helen Redmond, Public Relations Executive, Ladbroke Holidays, Chancel House, Neasden Lane, London Tel: (01) 459 8031.

THE FLY-IN AT THE FLY-INN



The earthbound pilots get to grips with Irish Guinness. Photo: Sean Horgan, Cork Examiner.

HANG GLIDING IN HOLLAND



Well, let me explain — we really do some hang gliding over here, but unlike some other Dutch habits, we do it in a very modest way, but, to be honest, where do you find people that soar for hours on 90ft. high ridge of dunes?

Hang gliding in Holland started about three years ago and has since then developed gradually, but we had to wait until 1977 to get good kites to fly on. The Dutch duration record stands at four hours now, from which flight the accompanying photograph was taken.

There are some hundred enthusiastic fliers in this country who can choose between the dunes, some mine-hills or go abroad. Some of them go mountain flying in Germany and France, others prefer the smooth hills in the U.K. but mainly we get our kicks on our own familiar sites. The picture was taken at one of our best sites, about 150ft. high and two miles long, enabling you to gain heights of over 300ft. when conditions are right. Mostly the air is very smooth and creates a lot of lift. I personally have been able to stay airborne in winds of about 8mph.

The one big trouble here is the C.A.A. (and some other

authorities) who refuse to see hang gliding as real flying (you are officially not allowed to fly higher than 300ft.!) Although they accepted hang gliding as a sport this year, we have to forget about balloon-droppings, powered kites and all sorts of other things.

The kites that we fly are Skyhook, Wasp, Birdman, U.P., and some French, German and Dutch kites. In our opinion the English kites have given us the best possibilities to extend our flying skills and we have to be grateful to a lot of English fliers who were always willing to back us up. We will need their advice when we go thermalling this summer.

I would like to say that if there is anyone going to Holland, he should take the ferry-boat to Ulissingen, where he could start flying immediately, because the site I spoke of begins at Ulissingen and we happen to be able to see the site from our window. Please give us a ring or send a postcard if you want to fly here.

**Paul Beukers
P.O. Box 104
Middelburg
Holland**

NEW COUNCIL FOR IHGA



This is the new Council for the Irish Hang Gliding Association photographed after the Annual General Meeting that was held in Dublin. Left to right, front row: Mark Leslie (Hon. Secretary), Nick Koumarios (Chairman), and Kevin Barry (Hon. Treasurer). At back are Roy Hammond (PRO) left, and Tom Hudson (Safety Officer).

LETTER FROM YUGOSLAVIA

I'm a member of Hang Gliders Club "Let" which was founded some weeks ago. This club has 60 members, who are busy flying hang gliders. Hang gliders appeared in Yugoslavia in 1973. These were made by plans from Stane Kranje and they have the same characteristics as other hang gliders over the world. Hang gliders became very popular and today in Yugoslavia we have modern and stable hang gliders. The Flying Association of Yugoslavia have found us flying sites and they have looked after schooling of new pilots. The endurance record

in Yugoslavia is 2 hours and 25 minutes. Peter Scetinin reached this record on his own make of hang glider.

I am interested in receiving technical information about your hang gliders in Great Britain. I would also like to correspond with fliers in England. I'd like to know if anyone can write in German, because my English is not good. My address is: Nunar-Jernej, 2G. Bela-50, 64205-Preddvor, Kranj-Slovenija, Yugoslavia.

GLIDING AMONG THE VIRGINS

by
Bill Bullimore

Flying in the British Virgin Islands offers some fine soaring over magnificent reefs, palm trees and white coral sand beaches. But to the learner flier there is one big disadvantage: all the sites are for advanced flying only.

So with this in mind, I had a six-week holiday in England in which to learn to fly and soar before returning to my job in the West Indies. A course with Ashley Doubtfire proved excellent and most important was the instructor's integrity in allowing pupils to progress quickly and at a safe rate. English weather did little to assist, but with some tremendous help from Birdman, I was on my new

Firebird 'S', happily soaring the Dyke, four weeks later. There followed some rushing about England and Wales, flying at different sites to become familiar with varying weather conditions and site evaluations.

I was very pleased with the 'S' and had all faith in its structural strength. Particularly after I found five cows standing on it at Mere, one of them urinating copiously! It still flew fine following this treatment and did wonders in reducing the spectator problem!

It came as a blow not being able to bring the 'S' out to the islands due to problems with freight and not having enough time to organise it. After looking

at U.S. manufacturers, I ordered a Phoenix VI-C and received that also in record time.

The first flight was exhilarating to say the least, lasting over an hour, with a stunning view of the Virgin Islands sprawling over a deep blue Caribbean. Out to sea, yachts doggedly rode the swells toward their distant objectives, whilst 900ft. below those swells pounded onto the brown reef and turquoise shallows further inshore. The islands in the Caribbean are of volcanic origin and therefore provide some interesting slopes. Unfortunately there is little topsoil so potentially good flying sites are troubled with dense scrub, cactus and gnarly little trees. Because of the difficulty in burying cables, power lines criss-cross any area with population and particularly where any landing areas may exist.

In Europe hills for different wind directions are used, whereas here only east-facing slopes are considered as this is the predominant direction for the trade winds. There is some variation from NE to SE. In most cases the wind comes directly off the sea at 10-20 knots onto the slope, so beautifully smooth flying is available in winds untouched after crossing 4,000 miles of ocean. This fact, coupled with the warm weather means long soaring flights can be made with less fatigue. The sun can be blisteringly hot, so it is most thoughtful for glider manufacturers to incorporate an overhead sun-shade as part of a glider's design features.

Landing is usually made on a narrow beach in a cross-wind. As there are always tall palm trees behind the beach, an area of dead air lays in front of them. This turns the cross-wind landing into a no-wind landing at the last moment, so if there is only small bias to the wind, I prefer to land *downwind*, thus having lots of airspeed in hand for the dead air patch. One good dunking proved this to me! There is often a reef offshore from the beach, so an area of calm, shallow water inside the reef allows for any misjudgement in landing, so it is better to err on this side, rather than that of the palms. The take-off, however, leaves no room for mistakes and consists of jumping (on soaring sites) off a dirt road, so not much of a run can be made. All of the slopes must be 'pioneered' and that provides

plenty of research before flying. The favourite soaring spot on Peter Island lacks a top-landing area so much furious work with axe and machete has been done. Fortunately there are no snakes, but mosquitoes and cactus spines make up for it!

Spectators are a real problem on the main island of Tortola with everybody wanting to touch, feel and twang wires to see "what de flyin' ting made of, man". If take-off does not immediately follow rigging, a great deal of 'horossing' follows, with analogies made to your egg-laying qualities.

Thermal activity is very powerful and has yet to be used further, but cross-country stuff is inhibited by the lack of landing area downwind, i.e. scrub covering, or if only a small island, *sea*. It is normal for cloudbase to be 2,500ft. or lower which affects thermal work or mountain take-offs. When soaring a ridge it is quite common to see a rain squall coming up and simply one of the ridges or the other is chosen to miss it. If it is unavoidable, there is a bit of bouncing around and getting wet, but nothing too violent.

A popular way to travel out here is by private airplane or helicopter. ATC exists only around the airports and a certain amount of 'hot-dogging' goes on so some caution must be given before site selection and take-off.

Pelicans and Frigate birds are often seen soaring and the latter



Take-off from road with reef and palms below.

just *never* flap their wings. Hopping from lift to lift too, illustrates their mastery of gliding, but what on earth do they use for variors? Whatever I'll bet they are not made from pith balls. On the other hand it is most educational to watch the less efficient pelicans use a slope to its best advantage.

Transportation of a glider requires some planning. It is not a matter of lifting it onto a roof-rack, but using a boat with its normal quota of spray. What with this and the occasional mouthful of salt water on landing, corrosion must be fought with a

vengeance and regular strip-down checks made.

At present there are only two of us flying in the BV, a local airline pilot, Jeremy Hunter and myself a charter yacht skipper. The complete lack of training slopes deters any learners, but we are working on that one.

Our only contact with hang-gliding is through *Wings!* (great stuff) and the USHGA magazine. If anyone is interested in flying out here, then please contact me at this address: Bill Bullimore, yacht "Rozinante", Homeport, St. Thomas, U.S. Virgin Islands.

A TRIP TO SCANDINAVIA

In January I visited Vikersund, the site of Mark Southall's deviation from standard practice, — an evil place if ever I saw one. However, it was not until my visit to Sarpsborg from Oslo, that I saw any hang gliding.

On my arrival at the site, (a cliff approx. 800ft. sheer drop into the fjord). I noticed the wind was blowing the wrong way, in fact the opposite way to what would be desired. The wind speed was about 5-7mph and there were nine or ten kites rigged. As I approached them I noticed one man, ten to fifteen yards back from the edge, kite on shoulders and apparently ready for a take-off run. Obviously confused I went for a closer look. This bloke charged forward and leapt off the edge. The 'lemming'

hang gliding club, maybe, I thought. I ran towards the edge to watch the splash, just to catch a glimpse of the Manta disappearing into the mist which was covering the bottom. Even more confused I turned round to seek an explanation. Everybody was casually talking and smoking. I said "Hey, what about your bloody mate, won't he drown?" Apparently this is quite normal, because of the height, sufficient air speed can be gained on the way down and much to my relief I was told that the ice on the Fjord was 18" thick.

These people were members of the Norwegian Aero Sports Club — a large body of which the hang gliding sector is a small part. Their address is supplied at the end of this article for anybody wishing to fly there. A word of

warning. Scandinavia is extremely expensive e.g. beer £1.25 a pint and an average meal in a hotel would cost approximately £10 per head. A great pity really because there are some fantastic flying sites and they are approx. eighteen months behind us with hang gliding technology. They are busy buying all our old standards.

I spent 2½ hours discussing our type of flying and cross-country, etc. I'm not very sure whether they believed all I said or not.

For anybody who is wealthy enough to go for a flying holiday, here's the address for flying information: Vidar Solheim, Vestre Adal, Ringerike, Luftsports Klubb, 3500 Honefoss, Norway.

Jim Clithero



LEAGUE NEWS

After a challenge by Brian Milton, Tracy Knaus, the Editor of the American Magazine "Glider Rider" has decided to organise an international competition.

In order to ensure a high standard and a dynamic event only three other countries have been invited:- England, Australia and Canada. Each country has to put forward a team of eight pilots and this should prove to be the most exciting competition ever held anywhere in the world, with the very best from each country competing.

The venue will be Lookout Mountain in Tennessee around October 14th to 30th.

There is a lot of interest in this and as a result the competition committee is looking into the possibility of chartering its own aircraft, and taking across anyone else who wants to go. The event promises to be the holiday of a lifetime, and should be the biggest "whing-ding" of all time. As a result we may end up with more people wanting to come than we can handle, and so we have to have a priority list. The challenge was issued in support of our "British Hang Gliding League", in an attempt to get International competition between National Leagues and so priority goes to League fliers and area organisers followed by manufacturers, followed by pilot badge holders. However, it will also be on a 'first come — first served' basis.

As yet we cannot give a clear idea of costs but expect the flight to be £130-£170 (including glider), hotel charges to be 15% dearer than British ones and car hire to be about the same. Hopefully, we'll be able to book a complete hotel in a central position, but so much depends on the response, that we just cannot sort out any true figures until we know how many people want to come.

If the trip is over-subscribed and we have more than we can handle (or more than would be welcome on the sites over there) then your application date will count. We want serious applications only and so are asking for deposit cheques of £25.00 — if you miss the boat then your cheque will be returned.

So, if you have your "Wings" and want to come, send to me, John Hudson, 'Labrican', Healey Dell, Rochdale, Lancs:-

- (1) Your name, address and telephone number.
- (2) A cheque for £25.00 for each adult in your group (payable to the BHGA please).
- (3) The number of hang glider pilots and the number of gliders in

your group.

- (4) The type of accommodation required, i.e. Full board in a Hotel — Bed and Breakfast — Hostel.
- (5) Transport required:
 - (a) hired car
 - (b) share in car
 - (3) share in minibus
 - (c) camper

I expect to be able to announce the total cost in May, by which time, we should know who is serious about going.

John Hudson
Competitions Committee

BLERIOT CUP

Mike de Glanville has promised, but not yet sent, a challenge match between the British and French national teams at the Alpes Maritime, about 1½ hours from Cannes, on August 6th-8th. It's for the Bleriot Cup, to be presented by Louis Bleriot's grandson, so it should attract a lot of interest. There will be two teams of twelve fliers, twenty-four in all. The French trials for Kossen take place immediately prior to the Bleriot Cup, and it's that team we would compete against. This competition supercedes the Norwegian comp for BHGA backing. The match has been approved by the French Competitions Committee, and our team would have a few days free flying out on the sites before the actual comp.

BIRDMAN LEAGUE 1

The first British Hang Gliding League was again badly hit by the weather. Held in the Long Mynd area conditions were similar to those experienced last year, with fog, rain and squirrely winds taking their toll. On the first day a soaring task was set but after half the pilots had flown a downpour killed all the wind and the task had to be scrapped. A 'going down' task was immediately arranged but after half an hour low cloud closed in and that too had to be abandoned for the end of the first day's flying(?)

The second day saw pilots back at the same Middletown site for a speed run/360 task. This was only arranged after much discussion on whether a soaring task could be held in a wind which was more than 45 degrees off the face of the hill. In an effort to prove the task flyable, Johnny Carr 'went down' only to miss the briefing for a newly arranged task. This cost him valuable points when he later omitted the compulsory 360 to score. Mike Atkinson won this task closely followed by Brian Wood, who completed a maximum number of

360's plus one for good measure. (The task was to complete a measured course as quickly as possible and then do as many 360's as possible before landing on a target). By this time it was too late to hold another task, so two tasks had to be held on the final day to count this league as official.

The wind had veered to the SW on the final day and pilots found themselves at Clatter, a site renowned for its turbulence. The first task of the day was a speed range task. Many pilots blew this task by incorrectly judging their position over the mandatory gates. There were a few heavy landings, as pilots opted for flying the fast leg, second, downwind, towards the hill. This left little room to set up a good landing approach and improvisation was the order of the day. Scores were fairly close until the final stages when strong winds allowed pilots to hover over the course on their slow leg. The resulting enormous 'ratio' reduced all earlier pilots' scores quite drastically (the

winner of a task scores 100, all the following scores are percentages of that score).

With time rapidly disappearing, one more task had to be flown. Ken Messenger, organiser, opted for a cross-country, where pilots took off when they wanted and flew as far down a road, with the restriction that they must land before 4 p.m. Mick Evans took off first and quickly disappeared out of sight for the longest flight of the day. Following pilots either found some good lift in the valley of horrible turbulence, depending when they took off. However, the familiar names of Wood, Calvert and Bailey were all among the leaders. Mick Maher who had been scoring consistently in all tasks emerged the deserved winner closely followed by fellow SHGC member and friend Keith Reynolds, one of the new league pilots to watch. Brian Wood once again proved his ability by grabbing 3rd place.

David Worth

BRITISH HANG GLIDING LEAGUE. Results — Birdman, Feb.25-27, 1978

Pilot	Machine	task 1	task 2	task 3	total	League pt.
1. M. Maher	Gryphon 3	69.86	75.68	79.53	225.07	400
2. K. Reynolds	Gryphon 3	92.11	78.92	53.82	224.85	399.61
3. B. Wood	Maxi Stinger	99.06	23.68	83.48	206.22	366.50
4. B. Hudson	Scorpion	91.13	27.03	80.25	198.41	352.62
5. B. Calvert	Hiway	89.29	25.19	82.68	197.16	350.40
6. B. Bailey	XC	89.29	24.11	83.66	197.06	350.22
7. N. Millhouse	Superlynx	69.95	100.00	25.10	195.05	346.65
8. John Fack	Phoenix 8	83.34	38.81	64.27	186.42	331.31
9. M. Evans	Gryphon 3	84.45	—	100.00	184.45	327.81
10. G. Slater	Midas	96.04	38.92	47.53	182.49	324.33
11. J. North	Vector	77.75	11.68	90.22	179.65	319.28
12. G. Snape	Vector	87.42	8.97	80.61	177.00	314.57
13. M. Atkinson	Gryphon 3	100.00	16.22	54.71	170.93	303.78
14. T. Birkbeck	Gryphon 3	90.37	13.19	65.84	169.40	301.06
15. Jmy Fack	ASG 21	80.50	—	85.28	165.78	294.63
16. J. Ketelaar	Moonraker	81.41	—	81.96	163.37	290.35
17. A. Weeks	Gryphon 3	69.93	34.92	56.60	161.45	286.93
18. B. England	Mariah	96.55	4.54	53.82	154.91	275.31
19. F. Taryjani	Hiway	73.63	52.76	25.10	154.49	274.56
20. R. C. Smith	Gryphon 2	68.88	34.70	48.20	151.78	269.75
21. D. Goepel	Hiway	68.97	27.57	51.03	147.57	262.27
22. J. Hudson	Vector	80.64	—	64.59	145.23	258.11
23. K. Messenger	Moonraker	64.13	22.70	57.59	144.42	256.67
24. C. Betts	Hiway	52.38	11.89	78.50	142.77	253.73
25. G. Leason	Moonraker	56.30	1.30	78.37	135.97	241.65
26. R. Brown	—	72.75	6.70	55.66	135.11	240.12
27. J. Thomas	Scorpion	40.83	—	90.89	131.72	234.10
28. M. Southall	Moonraker	52.63	14.92	63.06	130.61	232.12
29. D. Clothier	Hiway	81.41	—	48.97	130.38	231.71
30. A. Doubtfire	Moonraker	69.86	12.32	47.80	129.78	230.65
31. J. Carr	Gryphon 3	—	42.92	85.73	128.65	228.64
32. R. Black	Gryphon 3	71.79	—	55.66	127.45	226.51
33. P. Baker	Maxi Stinger	92.25	—	34.61	126.86	225.46
34. R. Wates	Gryphon 3	74.57	—	51.26	125.82	223.63
35. B. Chaplin	—	60.12	31.14	25.10	116.36	206.80
36. K. Cockroft	Sunspot	70.82	—	44.70	115.52	205.31
37. J. Bond	—	71.79	23.35	19.84	114.98	204.35
38. P. Day	Cirrus 3	74.57	—	35.86	110.43	196.26
39. R. Walder	Falcon 4	70.82	38.92	—	109.74	195.03
40. L. Gabriels	Sunspot	54.32	19.46	35.59	109.37	194.38
41. C. Johns	Hiway	67.79	—	35.86	103.65	184.21
42. J. Bowyer	Moonraker	69.72	33.08	—	102.80	182.70
43. G. Hobson	Skyhook	79.68	—	21.36	101.04	179.57
44. T. Taylor	—	17.55	—	82.50	100.05	177.81
45. D. Weedon	Moonraker	37.04	8.76	49.28	95.08	168.98
46. D. Heffer	Moonraker	69.08	22.38	—	91.46	162.54
47. C. Coleman	Homebuilt	53.28	—	36.76	90.04	160.02
48. B. Milton	Moonraker	62.05	3.78	21.01	86.84	154.33
49. S. Marshall	Cirrus 3	84.45	—	—	84.45	150.09
50. R. Middleton	XC	—	—	82.94	82.94	147.40
51. B. Harrison	Hiway	69.04	13.51	—	82.55	146.71
52. T. Beresford	Gryphon 3	78.57	—	—	78.57	139.64
53. R. Ware	Midas	47.75	13.93	15.80	77.48	137.70
54. J. Millburn	—	27.29	—	49.69	78.98	140.37
55. L. Cruse	Gryphon 3	73.72	—	—	73.72	131.02
56. D. Worth	Scorpion	17.55	32.97	22.71	73.23	130.15
57. T. Fuell	Scorpion	65.92	—	0	65.92	117.15
58. I. Thomas	Scorpion	—	11.24	23.83	35.07	62.33
Didn't attend: Kev Jordan, Dave Lyne						
Guest Fliers:						
A. Hetherington	OLY 180	63.24	24.86	36.94	125.04	222.22
M. Sylvester	Skyhook	—	—	—	—	—
—	Prototype	45.62	56.76	18.63	121.01	215.06

Having picked up a new Vector on Tuesday afternoon, I was more than eager to fly it on Wednesday 8th March. The day dawned wet and windy. A phone call to Newcastle Met Office gave us 20-30mph gusting 40 Westerly, going North West 15-20mph in the afternoon.

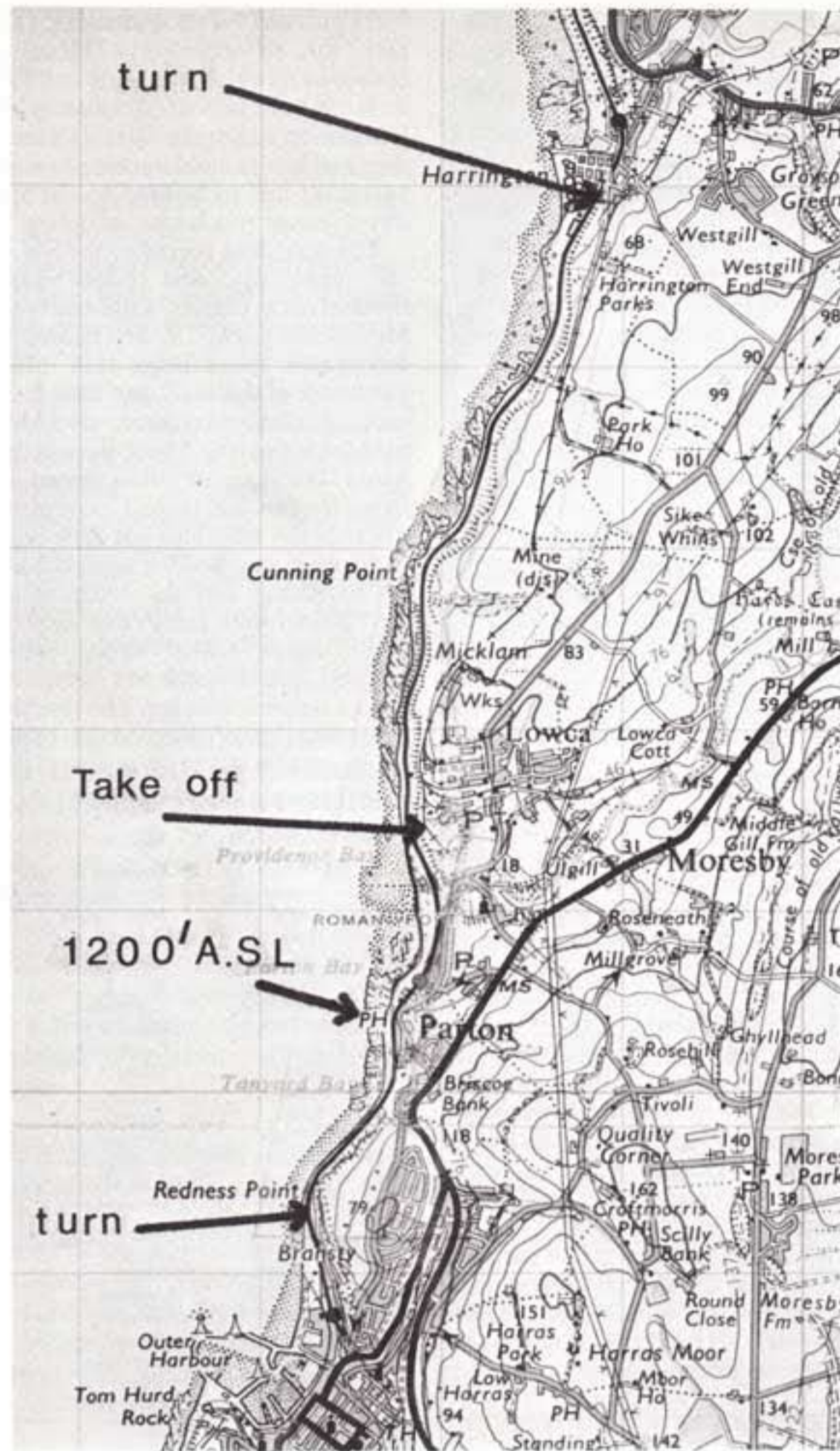
I picked up Eric, Tony and Andy and we headed to our westerly site on the coast at Lowca, north of Whitehaven. It's a small grotty pit heap about 200ft. high with a railway line at the bottom, a sewage works at one end and a brick works at the other. The coastline then goes north for 2½ miles to Harrington with an average height of 60-100ft., but the lift is normally good and smooth.

The wind was 24-26 so we all rigged and I spent some time checking my new kite, while the others got down, or should I say up, to some soaring. After six flights totalling about one hour and twenty minutes I was feeling at home, but the wind was now dropping to 12-14mph and Denis, who had come out later to join us, just scraped onto the top with his Spirit. Andy's Cloudbase had gone down to the beach. I felt the Vector should soar this strength wind O.K. so I took off.

After about five minutes the wind was up to 18mph and I soon had the 150ft. brick works' chimneys below me. At this point Eric took off on his Falcon IV and came up to join me. We watched Tony take off from further along the cliff where he had landed earlier. His Spirit did not get the lift and he had to fly below the edge and ended up on the shore.

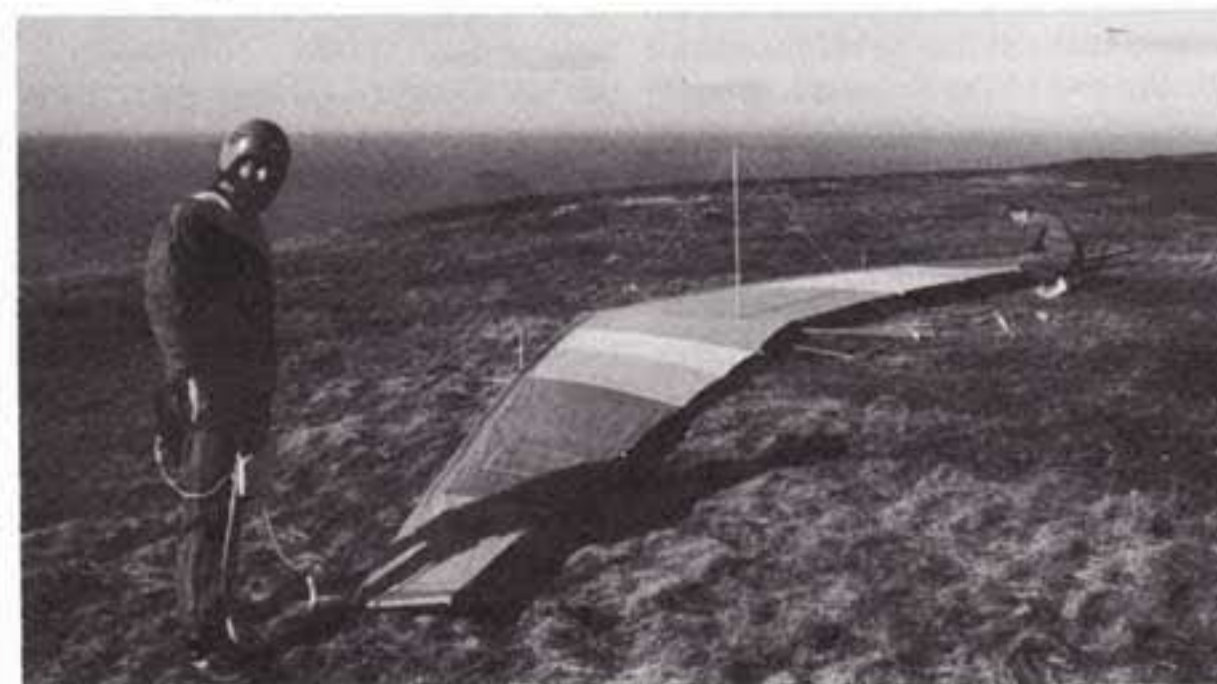
By now we had 300ft. above take-off, which is about as good as we would expect from this small site, so I shouted to Eric that I was going along the coast to Harrington, 2½ miles to the north. The flight was beautiful and smooth and I never dropped below 300ft. a.t.o. On the way back, I passed Eric coming to join me. The lift improved and when we got back to the main part of the cliff we were up to 450ft. above T.O.

We now had a blissful time 360-ing all over the place. We were widening our depth of flying area going further out to sea and inland more than ever before. It was now that I began to realise that this was much more than ridge lift and the vario was between 50 and 100ft. up all the



CONVERGENCE

Dave Weeks describes how he and Eric Hindmarch enjoyed a day of convergent flying at Whitehaven. Dave is seen in the photograph below with Eric in the foreground.



time. I now headed south slowly leaving the cliff and heading over the gap to the next set of cliffs above Parlor. I now had 800ft. up and so decided to head for Whitehaven and the harbour as long as I was in lift. I came round Redness point and looked down on the dry harbour.

I turned to come back and was flying over the houses, roads and railway watching the homeward bound commuters. For once I was flying legally as I had well over the required 500ft. I was still going up and the magic 1,000ft. A.T.O. came round and I was now over 1,200 ft. above the shore. I watched Eric below and further out to sea 360-ing and just flying all over the bay. I found myself laughing with sheer joy. Never in four and a half years had I flown in lift like this. We had been in the air for about an hour when I noticed the vario was now showing a "midge" down, and shortly afterwards I saw Eric going down for a landing on the beach so I headed back to the cliff and passed the normal top landing area with 800ft. up. I decided to come down and for the first time ever, I had to fly down out of the lift. I pulled on speed to gain max sink and got to about 500ft. per min. down. I slowed and did two quick 360s only to find half way round the second one that I had 100ft. per min. up. After about five minutes of max. sink flying, I came down to approach height and as I made my base leg, I noticed the lads standing with their backs to the land and arms outstretched indicating the wind was blowing out to sea.

Surely they weren't having me on! With blind faith I altered my approach and came in over the edge and landed 180 degrees from the take-off direction right into what little wind there was.

I was greeted with smiles and utter disbelief as most of the time we had been flying there had been no wind at all, hence nobody else had taken off. It was also noticeably colder. This, coupled with the lift dropping and the air becoming rough confirmed my idea, shared by the others, that this lift was caused by a convergence of hot and cold air.

How far the lift went for we don't know, but it extended for at least 6Km North South and about ¾ of a Km wide.

What a day to try a new kite out, and where were the seagulls? Sitting on the beach! ☺

REPORT ON BHGA'S THIRD ANNUAL GENERAL MEETING THAT TOOK PLACE IN COVENTRY ON 19th MARCH 1978.

by Chris Corston

"The Chairman's Annual Report and the President's Address were early items on the Agenda and the main points from these addresses are summarized below".

Chairman's Report:

Pat King said that last year had been a year of further consolidation. Flying had evolved and especially with cross-country flights increasing in number we were now really into aviation. We must now pay more attention to other airspace users and must observe our responsibilities to them.

The loss of Chris Corston's services due to his accident had revealed a large amount of work that could not be coped with adequately without the appointment of an Acting Secretary able to devote more than spare time to the job. Pat stressed his sincere thanks to Gordon Wyse for stepping into the Secretary's role and for doing an excellent job.

During 1977 there had been two fatalities and five serious permanent injuries. Twenty serious accidents had been reported. It was felt that there must have been at least 50 that should have been. There had been a drop in the number of accidents. This was probably due to the low influx of people into the sport, with Membership figures steady at around 3,500 it was probable the majority of fliers were more experienced than a year ago.

Our Accident Investigation Officer had carried out an unpleasant but necessary task in a highly professional manner, and our Medical Adviser, Dunstan Hadley, had done a lot of work on the suitability of various helmets, and the problems of annoxia and hypothermia.

Press coverage had been of a relatively low profile nature without the sensational articles that had done so much harm previously. The event at Mere had generated the best publicity the sport has had. Brian Milton, our Press Officer, has used his knowledge of the media in order to get more constructive coverage and had done a first-class job, despite personal disagreement with Council policy.

The new format of *Wings!* had proved a great success. Details of a new Pilot Grading scheme have been finalised and will become operational in the next few months. Clubs had been consulted concerning their attitude towards pilot grading and the letters received back had been used by Pat King and the Flying and Training Officer in shaping the new

COUNCIL ELECTIONS

Reggie Spooner was elected unopposed to take over the BHGA Chairmanship, replacing Pat King, who did not wish to extend his term of office.

Derek Evans was re-elected as Treasure and was unopposed.

There were four vacancies for ordinary Council Members and the following seven candidates stood for election: John Hunter, Jeff Marvin, Colin McCormack, Christopher Simmons, Ashley Doubtfire, Malcolm Honeychurch, Garth Thomas.

Those elected to serve on Council were: John Hunter, Jeff Marvin, Ashley Doubtfire, Garth Thomas.

Proposals for Changes to the Constitution:

"After prolonged debate the meeting did not vote to change the BHGA Constitution".

scheme, details of which would shortly be given to Members through *Wings!*. The new scheme put great emphasis on pilot education, particularly in the areas of Air Law, Navigation and Meteorology.

The new Airworthiness Standards were being finalised. Alan Barnard had recently volunteered his services in the Technical and Airworthiness field.

Keith Cockcroft, the Flying and Training Officer had been very active. There had been a training conference at Buxton, and proposals from that event had been adopted and were now in use, with the co-operation of Clubs and Schools.

League competitions had been a great success and now the Area Leagues were being introduced to provide competition for all interested. The League gave us the equivalent of six Mere-type events a year with the manufacturers developing better machines and testing them in competition. Last year's public event at Mere had been a financial success with excellent TV and Press coverage.

On the International scene we proposed this year to send a British team to events in America, Austria and France. We have approached the Sports Council for larger grants to offset increased costs.

Insurance costs are increasing. He offered his thanks to Reggie Spooner for creating and maintaining a stable insurance platform in a very difficult market and continuing to obtain insurance at comparatively low rates.

Looking to the future, Pat said British pilots and gliders were now quite probably amongst the foremost in the world and this would soon be demonstrated in international competition.

In drawing to a close the Chairman thanked the large armies of people who had helped the Association, but especially he wished to thank John and Judy Hunter whose efforts in the Accident Investigation field were satisfying the A.I.B. of our responsibility and ability to manage our own affairs; Mick and Janet Hayes and the Evans family for so ably assisting with administration over the last year. Ann Welch received a special mention as she is very much a working President, being very much involved in the development of the sport. And again he wished to thank Gordon Wyse, who had given so much of himself as Acting Secretary.

President's Address:

Ann said Schools had reduced greatly the number of accidents connected with training, and accidents overall had been reduced.

New Pilot Grading system and Airworthiness Standard are nearing completion, and this year should see more cross-country flights.

Communication between BHGA Members and the Council is not as good as it could be and in future Council must concentrate on speaking with a united voice. If it does not do so it becomes easy meat for its critics.

Ann said she is revising a book that she wrote 15 years ago. She finds that many significant developments over recent years are connected with hang gliding. She asked all members to jot down and keep a note of their notable experiences for the sake of history. One of these days they may be needed to help tell the story of the development of hang gliding.

She wished to thank Pat King for his hard work. Pat and the BHGA have a sound reputation on the international scene.

Secretary's Report:

A slightly abbreviated version of the accounts which were accepted at the AGM is published herewith. A great year for cash — we 'made' another £6,307 and, last December, our net Current Assets stood at £11,667.

One or two points are worth mentioning — the Subscription income includes £3,400 of subs received from 'Affiliated' Members at the Long John International competition as most of you will remember, our ordinary rates rose from £4.00 to £7.50 p.a. during the year. The *Wings!* magazine doubled in size in July and now costs around £1400 each month to produce.

'Council and Working Members' expenses' is always a heavy bill — the largest part of this year's £3,339 is taken up by travelling costs as our various Committee members are drawn from all parts of the U.K. Petrol or train costs are re-imbursed and essential meals en route. Council meets once a month when the expenses of perhaps a dozen people have to be met and there are other committees such as Airworthiness, *Wings!*, Editorial, Accident Investigation, etc., all adding to our costs. The telephone and private postage bills form the bulk of the remaining outgoings.

Recent Donations for the Alvin Russel Trophy have eliminated the net cost of £56 but subsequent expenditure on office equipment at Taunton Central Office, has cost us a little more than the £85 shown. We had to spend just over £2,000 in setting up our admin. centre but the Sports Council have helped us with a grant of £800 for this purpose. In fact, we are so respectable now, the Sports Council have agreed Administration Grant Aid of £5,000 for this year and a further £4,000 towards the costs of our Training Officer. So, provided our membership numbers hold up, we are assured of some strong finances in the immediate future and we are in a position to spend — but, apart from my new kite, what do we spend it on??

International competitions are a must and we have lodged applications with the Sports Council for help with our travel expenses, but the cost of accommodation for teams will have to be found. We must maintain reserves for the odd crisis of course, but the excess should be put to good use — solutions on a postcard please!

Derek Evans
Treasurer

Accounts breakdown over page

BRITISH HANG GLIDING ASSOCIATION

INCOME AND EXPENDITURE FOR YEAR ENDED 7th DECEMBER, 1977

GENERAL INCOME		£	(1976)
Members' Subscription		24,275	(12,265)
New Members' Entry Fees		1,804	(1,636)
Sale of Badges, Log Books and Books		3,948	(2,302)
Pilots' Certificates		970	(1,742)
Interest and Commission Received		974	
Sundries		1,065	
		33,036	
GENERAL EXPENDITURE			
Wings! - Cost	14,038		(7,471)
Less - Advertising Income	(4,835)		
Magazine Sales	(1,827)	7,376	(3,883)
Administration	6,708		
Less - Sports Council Grant	(500)	6,208	
Council & Working Members' Expenses		3,229	(3,297)
Printing, Postage & Stationery		2,829	
Badges, Books & Log Books		1,618	(797)
Insurance		848	
Advertising		243	
VAT		617	(378)
Sundries	1,424	24,392	
		8,644	(1,823)
SURPLUS OF GENERAL INCOME			
SPECIFIC INCOME			
Members' Competition Income	706		
League Entry Fees (net)	75	781	
		9,425	
SPECIFIC EXPENDITURE			
Loss on 'Long John International'	5,295		
Less Sponsors Contribution	4,000	1,295	
Training Officer	4,044		
Less Sports Council Grant	3,000	1,044	
Cost of Russell Trophy (net)	56		
Training Conference (net)	384		
Taunton Office Costs (to date)	85	2,864	
		6,561	
Less Taxation due on Interest Received		254	
		6,307	(1,311)
BALANCE SHEET, 7th DECEMBER, 1977			
ACCUMULATED FUND			
As at 8th December, 1976		5,360	
Add: Net Surplus for the Year		6,307	
		11,667	
ACCUMULATED FUND 7th December, 1977			
REPRESENTED BY:			
FIXED ASSETS			
Office Equipment at Cost	146		
Less: Depreciation	36	110	
CURRENT ASSETS			
Sundry Debtors	2,000		
Stocks	421		
Bank, Building Society & Cash	9,805	12,226	
CURRENT LIABILITIES			
Sundry Creditors	415		
Corporation Tax	254	669	11,557
			11,667

FLIGHT WITHOUT FORMULAE

A.C. Kermode, F.R.Ae.S., Pitman

The first sentence of this book reads "I am going to try and explain how an aeroplane flies", which is probably the most accurate way of summarising its contents. It was first published in 1940, and was intended for pilots and 'riggers', which gives an indication of how relevant it is to hang-gliding. My edition was the third, published in 1965, so it may well be out of print by now: however it will almost certainly be in your local library.

The text takes the form of a fairly spirited stroll through the field of basic aerodynamics, covering many topics which are being discussed ever more frequently in hang-gliding circles. For example: lift and drag, angle of attack, the centre of pressure and how it moves, pressure distribution, stalling, wing loading, skin friction, boundary layers, slots, slats, flaps, aspect ratio, stability, wingtip vortices and turning. All are covered in detail.

Happily, the author is obviously gifted enough to combine a thorough and practical knowledge of the subject with a fluent, but straightforward, style of writing. This has resulted in a text which, almost unique for a book on a technical subject, is a joy to read whilst giving the reader a mass of information. As an example, the following paragraph is taken from early on in the volume:-

"It is in the boundary layer that the property of viscosity of the air is important. It is rather difficult to explain just what this property of a fluid means except by saying that treacle is very viscous. It is the tendency of one layer of the fluid to 'stick' to the next layer and to prevent relative movement between the two. One can feel this in treacle, one can imagine it in

water, but one would hardly think of air as being 'sticky' — yet sticky it is, though of course to a much lesser degree than water, let alone treacle. It is this property of viscosity that causes skin friction, and, in fact, it is ultimately the cause of all turbulence, all eddies, and all drag. Yet it is only really effective in this small boundary layer, outside which the air behaves almost as though it were not viscous".

Although the contents are concentrated on the aerodynamics of the conventional aeroplane (with its conventional rigid aerofoils), most of the discussion is relevant to flexible winged craft. I was about to say that much of the information on engine speeds and propeller design was irrelevant, but recent developments seem to indicate that The Thinking Man's Outdoor Plaything might soon come equipped with motor and props, so that might be unfair.

The most unusual aspect of the book, its total lack of formulae and numerical analysis, should not be regarded as a disadvantage. Formulae, when all is said and done, are but unnatural devices invented by men to help them understand concepts, and Kermode has successfully used the English language to the same end.

I thoroughly recommend this excellent book to anyone who wants to deepen their understanding of what keeps them skyborne — and who doesn't. It is a goldmine of information, well illustrated — and a thundering good read to boot. Go fetch.

**Rod Bird
Mercian HGC**

Peachy BY HARDMAN.



INFORMATION



THAMES VALLEY HANG GLIDING CLUB

As a result of a few irresponsible pilots landing in the cornfield at the bottom of White Hill, Kingsclere, Berk, the landowner has now prohibited hang gliding at this site.

**KINGSLERE IS CLOSED
UNTIL FURTHER NOTICE**

The owner has now agreed to discuss the possibility of a new arrangement for use of the site, if pilot discipline can be assured. Give us a chance, you wildcats, even if it's for only another year.

REGIONAL ACCIDENT CO-ORDINATORS

The regional co-ordinator for Wales is Gordon Jago, Glenhow, High Street, Congresbury, Bristol BS19 5JA. Tel: Cardiff (0222) 390630 'or Swansea (0792) 462948. In last month's report on accident co-ordination it was not made clear that Gordon Jago was co-ordinator for the whole of Wales. Please do not be confused by the Bristol address. Gordon's Cardiff phone number was also printed incorrectly in the list. The correct number is above.

INVERNESS OSPREYS

Those wishing to fly in the Inverness, Highlands and Ross and Cromarty regions this year, please contact John McConnachie, 7 Lawers Way, Inverness. Tel: 41488.

Enclose with enquiries £3.00. This will entitle you to Temporary

membership (six months) and a booklet outlining sites available in these areas. Our sites range from eight mile long cliffs to quite a number of over one-mile long ridges. Our NW ridge, we believe, cannot be bettered being 1600ft. a.s.l., two miles long and having a lift band of approximately 1/2 mile wide.

THE MALVERN HANG GLIDING CLUB

'In the interests of safety and except in cases of emergency, top landings at Swinyard Hill, Castlemorton Common on the Malvern Hills are now banned.

NEW SECRETARIES

Please note that John Bevan is the new Secretary of the Malvern Hang Gliding Club. His address and phone number are: 'Blackthorn', Plough Road, Tibberton, Nr. Droitwich, Wores WR9 7NN. Tel: Spetchley 420.

Sky Surfing Club: Ray Wheeler, 39 Firgrove Road, N. Baddesley SO5 9JH. Hampshire. Tel: Rownhams 732865.

NEWS FROM WALES

A meeting of the Welsh Hang Gliding Federation Council was held in Newtown, Powys, on Sunday 5th March 1978. Officers of the Federation Clubs i.e. North Wales, Mid Wales, South West Wales and South East Wales met a representative from the recently formed Beacons Park H.G.C. The

Brecon Beacons National Park, popular for activities such as rambling, climbing, caving and pony-trekking, comprises the Black Mountain area to the west, the Brecon Beacons, and the Black Mountains to the east. The eastern boundary is coincident, from Hay-on-Wye to Pandy, with the Wales-England border. The Brecon Beacons National Park Committee has shown concern about Hang Gliding activities in the Park and it is hoped that through the formation of the new club, with its W.H.G.F. support, future site negotiations will be constructive and fruitful. Lesley Bridges was present at the meeting and expressed an interest in the W.H.G.F. on behalf of the Long Mynd H.G.C., some of whose sites are shared with the Mid Wales H.G.C.

Remember, if you wish to fly in Wales, you should contact the Member Clubs FIRST:

North Wales:
J. Evans, Tel: 051 336-2681
Mid Wales:
R. Lees, Tel: 097 084-229
S. West Wales:
R. Symberlist, Tel: 0792 26729
S. East Wales:
G. Breen, Tel: 0873 810019

AVON H.G.C. SITES AT MERE, WILTS.

There are several sites, owned by two farmers, both of whom expect 50p per glider per day. It is incumbent on visitors to see that this is paid "on the spot" to any Avon Club member present, or send it to the Treasurer, Tony Richards, Greenclose, E. Pennard, Shepton Mallet, Somerset. The sites are visible from the farmers' houses and they keep a check on the numbers present, consequently any default has to be made good from Club funds.

The National Trust site is for E.P.C. fliers and above, only BHGA members are permitted under our agreement with the Trust.

Both farmers have repeatedly asked that visitors should NOT call their houses asking for permission to use the hill. Get in touch with any Club Official for details.

During the summer, anyone, whether they be members of the A.H.G.C. or visitors, will be subject to a £2 "on the spot" fine if they land in standing crops at the foot of the hills.

Spot checks will be made on visitors to produce their BHGA and member Club Cards.

Cley Hill, Warminster

The Trust have agreed with the AHGC for a very limited number of gliders to use this site, with specific requirements regarding car-parking. Priority must be for Avon fliers, who pay the licence fee. Details from Club Officials.

MEDICAL OFFICERS

Several times I have been asked, why does hang gliding need medical advisers? There are two main reasons. The clubs and schools need to have a doctor available during competitions and for instruction in first aid. There are also aeromedical problems concerned with changes in pressure, temperature and velocity and some other problems. The two jobs could be done by the same doctor but are nevertheless quite separate. The first is concerned with being available to treat injuries and teaching other people to treat them, the second is concerned with preventing accidents and reducing the number and severity of injuries.

The job descriptions are as follows:

Club Medical Officer

It is not necessary for the Club Medical Officer to fly but no doubt some will wish to, and become flying members of the club, or attached to a school.

There is no requirement by the C.A.A. for a medical examination for flying a hang glider, but the medical officer could advise, in general terms, any club member who seeks advice as to whether certain conditions might be hazardous to flight. Anything which precludes driving a car would probably make the person concerned unsafe in a hang glider. With these provisos in mind the duties are:-

1. To give instruction in First Aid to instructors and club officers if required.
2. When possible to attend competitions so as to be available to treat any injuries, and see that safety precautions are observed.
3. To note what injuries occur and perhaps suggest a cause or remedy.
4. To remind pilots to make accident reports.
5. To contact the regional, or BHGA medical adviser for advice if necessary.

Regional Medical Adviser (one for each region)

1. To acquire, and maintain a sufficient knowledge of flying a hang glider to be able to give relevant medical advice.
2. To advise the clubs and schools in his region on medical matters related to hang gliding.
3. To advise the clubs and schools in his region on the suitability of protective clothing.
4. To be on the look out for practices which appear to be dangerous.
5. To take note of injuries with a view to recommending methods of prevention or attenuation.
6. To answer questions related to the medical aspects of hang gliding from interested persons.
7. To correct incorrect or misleading statements which appear in the news media if possible.
8. To be available to club medical

- officers for advice when required.
9. To maintain contact with the BHGA medical adviser as required.
 10. Should belong to the BHGA.

The club medical officers are appointed by the clubs themselves, the regional medical advisers are appointed by the BHGA Council. The regional medical advisers so far appointed are:

Midland and Pennine Region

Dr. G.M. Yuill,
296 Longhurst Lane,
Mellor,
Stockport.

or Manchester Royal Infirmary

South West

Dr. M.E. Glanville,
Jocelyn House,
18a High Street,
Chard,
Somerset.

Wales

Dr. S. Mitchell,
5 Avenue Road,
Abergavenny,
Gwent.

London and South East

Dr. R. Smyth
St. Bartholomew's Hospital
London.

Medical advisers are still required for the regions of South Midlands and East Anglia, North of England,

Scotland and Northern Ireland. If any doctor who would like to be considered for one of these regions will write to me I will submit his name to the council.

I am hoping to be able to arrange a short course of about two days in aviation medicine later this year. If any doctor, who would like to do this, will write to me, it will give me an idea of the numbers to expect. No details yet available.

Dunstan Hadley
Medical Adviser
to BHGA

**MEMBERSHIP
RENEWAL**

Memberships numbered 7060 to 7323 are due for renewal on 1st May, 1978.

MEMBERS INSURANCE

Members insurance cover has now been extended to cover Europe. The wording on Membership Cards is being altered to give this information. Existing cards refer to insurance cover "in the U.K. only". If you intend to fly in Europe before your next renewal of membership you may obtain a European cover note by sending a S.A.E. to Taunton. You may be asked to produce this proof of Third Party cover in some countries.

Will members please note that BHGA insurance does not cover them for flying powered hang-gliders. If insurance for powered hang gliders is required please consult the BHGA Insurance broker.

COUNCIL NOTICE

'Many members will know that a motion of no confidence in Brian Milton proposed by Jeannie Knight and seconded by Will Jones was tabled for the AGM and that the motion was subsequently withdrawn. The whole matter was fully and frankly discussed by Jeannie Knight, Will Jones, Brian Milton and Council members present at a Council Meeting on 19th February 1978'.

'Council wish it to be known that it expressed regret that the motion had been tabled and that it unreservedly and unanimously expressed its confidence in Brian Milton'.

ONE OF BRITAIN'S LEADING HANG GLIDING CENTRES

AND THESE ARE SOME OF THE REASONS WHY

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Situated in a superb position between the Black Mountains and Brecon Beacons, yet only 2½ hours from London and 1½ hours from Birmingham

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We have a wide range of high performance gliders for hire including the Cirrus 11 and 111, Moonraker, Scorpion, SST and Hi-Fli

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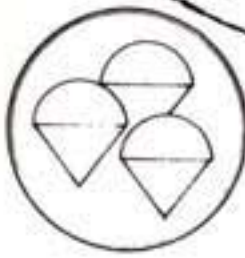


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WELSH HANG-GLIDING CENTRE

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gutter clearance is 5" (13 cm). This rack
is constructed of square section steel.
Features die cast foot assemblies and P.V.C.
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R.R.P. £22.14 SPECIAL OFFER to B.H.G.A.
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NORWICH, NORFOLK.
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Horndon-on-the-Hill, Stanford le-Hope, Essex. SS17 8LZ.

small ads

For your own safety, if you are purchasing a second hand glider, check that it is a registered BHGA model, see it test flown, test fly it, and inspect it thoroughly for damage or wear to critical parts. If in doubt seek advice from the Club Safety Officer.

Propeller making for the amateur. The complete do it yourself book for propellers of all types. £2.50 incl. post. Eric Clutton, 92 Newlands St, Stoke-on-Trent, ST4 2RF.

Clearance Sale!

Intermediate gliders. Vega IIA £340 o.n.o. Vega IIB special 1 3/4 in. airframe suitable heavy weight or two man £360 o.n.o. Advanced gliders. Fledgling B (large). Genuine u.s. model, flies beautifully, £320 o.n.o. Advanced Cumulus 10 thermalling ship, the only one in the country. Handles like a dream. Eipper Agency? £350 o.n.o. All test flown, including harness. Ring Graham Slater, Brighton 25534 for your next flight.

Wasp CB240 in excellent condition with bag and seated harness. All for £130 o.n.o. Contact Wells, 29 Elsham Road, London W14. Tel: 01 602 0130 (evenings).

Moyes Gliders now being manufactured in UK. Best quality airframes, genuine Moyes sails for the best all round gliders in the world. Contact Brian Wood Hang Gliding 01 462-5212. 27 Lennard Road, Bromley, Kent.

Fledgling for sale. Blue and gold. Plastic covering on all wires. Beautiful machine. £250 o.n.o. Roger Aston, Kingswinford 78372.

Scorpion B. Bainbridge sail. Colours root to tip: Red, orange, gold, yellow, white. With bag, £450 o.n.o. Tel: Rob Symberlist, 0792 26729 (Swansea).

Midas C in perfect condition. White sail, ideal pilot 10-11 1/2 st.

Seated and prone harnesses by Robin Goodwin of Chargus. £300 o.n.o. Must sell. Phone Taunton 87922 Ext.324 (day) or Isle Brewers 537, or 01 804-3945 anytime.

Skyhook Mk.4. Never bent, multi-colour sail, little used. Displaced by Spirit. £170 o.n.o. Tony Newell, Clough Bottom Farm, Lumb, Rossendale, Lancs. Tel: Rossendale 3716 anytime.

Your old glider taken in part exchange for a new XC, Gryphon, Falcon, Scorpion, Sunspot or Midas. Free demonstrations. Instructional courses daily. Phone today, — fly tomorrow. Mike Adam, Ibis — South Wales Hang Gliding School, Merthyr Tydfil 0685 3780.

For sale — no reasonable offer refused: Hiway 200, 220, 240, 260, Skyhook 3A, Birdman Hawk, McBroom Arion and other genuine antiques. Also Breen two man, Breen HiFl, McBroom Cobra and new XC, Gryphon & Scorpion. Training given. Phone Adam, Merthyr Tydfil (0685) 3780.

Breen Hi-Flo 20. Excellent condition, seated harness, £200 o.n.o. Suitable up to 15st. Tel: Chesterfield 72798 after 7 p.m.

Wasp C4 221. Red and yellow sail in very good condition, with carrying bag and seated harness. £115. Tel: A.F. Disney, Southend-on-Sea (Essex) 520060.

Avonkites Swift. Breaks down to 12ft. approx. Quick rig, pilots 10-13st. Seated or prone. Excellent soaring intermediate. £270 includes seated

harness and bag. J. Clark, Bristol 655628.

Wasp 229B3. Excellent condition, little used, seated harness. £70.

Hiway 220 mint condition with bag, prone harness, £120 o.n.o. Phone Crawley 37580 or Horley 3276.

Birdman Firebird Mk. II. 19ft. x 16ft. Pilot 9-11st. Blue/gold/orange. Superb soaring machine, suit beginner to pilot. Bag and harness £240 o.n.o. Mike Ramsey, Cramlington 712220.

Large Spirit leading edges, crossboom, keel, noseplate, all cut and drilled. 'A' frame length (undrilled) and plans. Unused, will sell as whole or in parts. Offers Peter Harvey, Phone Shenley Churchend 304 (evenings).

17ft. 6in. Breen Custom Kite. Suits pilot weight 10 1/2 - 12 1/2 st. Ideal beginner's kite. £110 o.n.o. Ring Chris Sykes, Alford (Lincs) 6210.

Skyhook Super Sunspot. White sail, 4 months old. Reason for selling, making way for new kite. £400. Tel: Stowmarket 4598.

Scorpion B. Bainbridge dacron sail, latest model, absolutely perfect. Breaks down to 12ft. if required. £450 o.n.o. Will take motorcycle, car, kite, W.H.Y.? in part exchange. Phil, Blackburn 58924, evenings.

Kestrel Windover with seated harness, carrying bag and crash helmet. Well-maintained and suitable for beginner. All offers considered. Tel: Lytchett Minster 3945, (Dorset) Mike Wills.

Wasp 229B3. Very good condition. Red, white and blue sail. Excellent and stable flier. Ideal for beginners. £110 o.n.o. Tel: Cardiff 35651 Mon-Fri 9 a.m. to 5 p.m.

Wasp 229S. Yellow and blue sail. Excellent condition. Little used, with bag and seated

harness. Ideal for beginner. Price £150. Malcolm Fryer, tel: Castle Rising 628 (Norfolk).

Chargus Vega IIA. Nice kite to fly, good handling. Gets up with Scorpions, SSTs, Falcons, etc. Ideal intermediate kite for progressing from E.P.C. £300 o.n.o. Phone Chris Roberts, Southend 527457 (home) or Canewdon 626 (work).

Pegasus 4. Curved boom class 2 kite. Red/yellow/purple sail and waterproof bag. Rigs seated or prone. Suit 9-11st. pilot. Good performer. One careful lady owner. £220. Della Rhodes, Middlesborough 318556.

Exchange Proneweb harness for supine harness. Cash adjustment if necessary. Phone Cyril at Bilston (0902) 44613.

Scorpion B with clip on bar attachment for choice of seated or prone flying. £440. Ring Greg Burgess, Swansea 66438.

Sundance Wing. Based rigid 140ft.² PA. 6:1 AR. Air foil high profile 8% single surface. Complete but requires further flight testing. Offers below £150. Alan Pearson 0782 657160.

Moonraker. 9 months old in very good condition. With bag. Brightly coloured. £420 o.n.o. Terry, 9 Hillcrest, Knodishall, Saxmundham, Suffolk. Tel: Leiston 831027 evenings.

Skyhook 3A, excellent condition, red sail, seated harness and carrying bag, ideal for beginners. £115 o.n.o. c/o Peter Scott, Seaview (Isle of Wight) 2334 evenings.

Wasp Falcon III. Very good condition, one year old. Recently overhauled and tuned. Three colour sal. £325 o.n.o. Contact Phil Wilson 0702 (Southend) 521560 (can be viewed on South Downs).

22ft. Spirit. Superb condition, only 15 hours soaring. Red,

gold and white. Pulley system to outer deflexors. A fabulous, forgiving, intermediate, soaring machine. First to see and fly will buy. £300, no offers. 077 473 3021.

Cobra 22. for sale. Really good performer. In excellent condition, attractive black sail with coloured panels. Plus seated harness and bag. £210. 18 Albany Road, Abington Park, Northampton. Tel: 0604 21962 (evenings) ask for John.

Icarus V plans wanted. Write to D. Robertson York House, York Place, Cullen, Banffshire, Scotland, or tel: Cullen 40257 (weekends).

Midas E £390. 6 months old, flies beautifully, seated or prone. See it fly at the Dyke or Beachy most Saturdays/Sundays or phone Pete Taylor on South Benfleet 55110.

SST 90 Universal 9 — 12 1/2 st. pilot. Superb condition, never bent, 8 months old. A really good kite to sit anyone from beginner to expert. See it fly any weekend. £425. Dave, Beeford 537 (N. Humberside).

Argus 18ft. Red, yellow and blue. Complete with seated harness and carrying bag. £60. Roger Green, 8 Yarmouth House, Durley Close, Alvaston, Derby DE2 0QH. Tel: Derby 73877 (evenings).

Wasp Vario. Audio/Visual with extension arm for visual pod. Very sensitive, solid and reliable. Probably the best British variometer on the market. £85. Tel: Reading (0734) 864543 anytime.

Wasp C4 221. Excellent condition. Ideal for learning on. Black and orange. Complete with bag and seated harness. £150. Tel: 061 485-4357.

Wasp Falcon 3. Orange/yellow/white sail. Folds to 10ft. Six months old. Excellent condition. Suit beginner to intermediate. Complete with seated harness.

£385. Contact: John Tremer, 33 Drumalane Park, Newry, Co. Down, N. Ireland.

Falcon IV. Superb example of this very superior kite. Top of the stack even against allegedly superior performance machines. Distinctive sail design. Genuine thermal eater — must be seen. Bargain at £360. Please phone Crawley 512220.

Midas E. Excellent condition, handles like a dream, regularly top of the stack. £390. Phone Nick Beach, Rayleigh 775352 (Essex).

Wasp CB240. Now uncomfortably sharing my stairwell with my SST. Excellent condition. Good learner, good soarer. No dents, rips, etc. Also seated and prone harnesses. bag. £150. Write: Ian Ferguson, 73 Dale Street, Lancaster, Lancs.

Wasp 229B3. Excellent condition — recently checked by the manufacturers. Ideal beginner's kite. A bargain at £75. Tel: Nick Mason, Poulton (Glos) 627.

22ft. Spirit. Pulley system outer deflexors. White, light blue, dark blue, purple and black. £300. Seat available. American pellet vario complete with flasks £12. Weeks, Keswick, Cumbria. Tel: Day 72178, evening 72315.

Falcon III. never used. Any reasonable offer. Titchfield 43281 (Hampshire).

Skyhook Sunspot Deluxe. Large (22ft. L.E.), complete 6oz sail and triple wing deflexors, only few months old, very low airtime. £450 o.v.n.o. Tel: Sheffield 366166.

Cloudbase radial, 20ft. good intermediate kite, and strong wind kite, slices through turbulence. £190 for quick sale. Tel: 01 894-6374.

SST 100B. Red, green and white sail, lovely and smooth in flight, £340 for quick sale. Tel: 01 894 6374.

Falcon IV in immaculate condition,

latest type fold down 'A' frame. £340. Paul Rasell, tel: 01 672 1589 between 8.30 a.m. and 5.30 p.m.

Falcon IV for sale. Hardly used, as new. £375 or offer. Beautiful colours. Ring Titchfield (Hants) 43281.

Birdman Firebird. 2 deflexors, 4 battens, 242sq.ft. Pre-formed keel. Yellow and blue sail. Excellent soaring machine. Ideal intermediate glider. C/W seat and cover. £220. Phone Lindsay at Brownhills (054 33) 77808.

Falcon III. 5 months new. Distinctive multi-coloured sail, 5½oz ripple free sail. Seated harness, spares, complete £385. Reason for sale, buying higher performance glider. Ring Mr. E. Horsfield. 01 684 4772.

Unique Argus. Ideal beginner's kite. Extra strong to take learner's prangs. (Phone for more details). Nice

colour scheme, good condition, no prangs, complete with bag. New kite forces sale. £80. Pete, Chew Magna 2705 (near Bristol).

Galaxy-Flyer Helmet now with the new British Standard 5361. Price £16 inc. p & p. Frank Acton, 53 Royston Park Road, Pinner, Middx. HA5 4AB. Tel: 01 428 2686.

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

Second-hand high performance wings including Falcan IIIs and IVs all in perfect condition and tested — £300-£375. Contact Lester Cruse on Downland 54322.

Windskite class land yacht unused £225 o.n.o. Garwood, 48

Lambert Road, Sprowston, Norwich.

QUALITY BINDERS FOR WINGS — HANDSOMELY BOUND WALNUT SIMULATED LEATHER BINDER WITH DISTINCTIVE GOLD BLOCK DESIGN. SIZES: A4 at £2.95 and A5 at £2.50. TAKES 12 ISSUES. CHEQUES PAYABLE TO: LIVINGSTONE PROMOTIONS, 2 TIMBERYARD COTTAGE, HERSTMONCEAUX SUSSEX.

For Sale: Super high performing Australian SK2. £350. Tel: Kevin, Brighton 25534.

TO SUNSPOT OWNERS

In a recent incident a Sunspot suffered a partly torn sail believed to be due to the whip-lash effect of a sail inversion and re-inflation caused by turbulence and/or aerobatic manoeuvres.

The tear occurred alongside the parallel reinforcing strip which covers the join in the two sail halves at the trailing edge. Early Sunspots had a parallel reinforcing strip. Later Sunspots have a triangular reinforcing piece and it is thought that only the early production models could tear in this way and then only if stressed well beyond the 6G safety factor for which this glider is designed and tested.

Please contact us if your sail shows sign of damage in the centre.

Skyhook Sailwings Ltd., Vale Mill, Chamber Road, Hollinwood, Oldham, Lancashire.

Telephone: 061 624 8351 Daytime.

061 681 5045/5639 Evenings.

INSURANCE

INSURANCE The following insurances have been specially negotiated at Lloyd's for BHGA Members
PERSONAL ACCIDENT WHILST HANG GLIDING WITHIN THE U.K. & EUROPE

DEATH, LOSS OF LIMB, OR EYE, PERMANENT TOTAL DISABLEMENT

Code	Cover	Premium
A 5	£ 5,000	£ 6.00
A10	£10,000	£12.00
A15	£15,000	£18.00
A20	£20,000	£24.00

TEMPORARY TOTAL DISABLEMENT (Totally unable to follow occupation — maximum 104 weeks excluding first 14 days).

REDUCED PREMIUM IF ADDED TO CODE A.				
Code	Cover	Premium	Code	Premium
D20	£20/wk	£10.00	XD20	£ 8.00
D30	£30/wk	£15.00	XD30	£12.00
D40	£40/wk	£20.00	XD40	£16.00
D50	£50/wk	£25.00	XD50	£20.00

MANUFACTURERS, THEIR EMPLOYEES AND SCHOOL INSTRUCTORS PLEASE ADD 50% TO ABOVE PREMIUMS

No Proposal Form is required. Provided you are between the ages of 16 and 65 and warrant you are physically fit, we can normally give cover immediately we receive your Name, Address, Age, Occupation, Glider Details, BHGA or Local Club Membership Number and Cheque. Just write direct to Cowes.

GLIDER COVER

Full Ground Risks but excluding flight risks and first £5 each claim (Includes 30 days use abroad)	£300	£7.00
Each Additional £50 Value — add £1.00 Premium.	£350	£8.00
	£400	£9.00

LIFE AND ENDOWMENT ASSURANCE

There need be no Premium loading to cover the Hang Gliding risk. Just tell me your requirements.

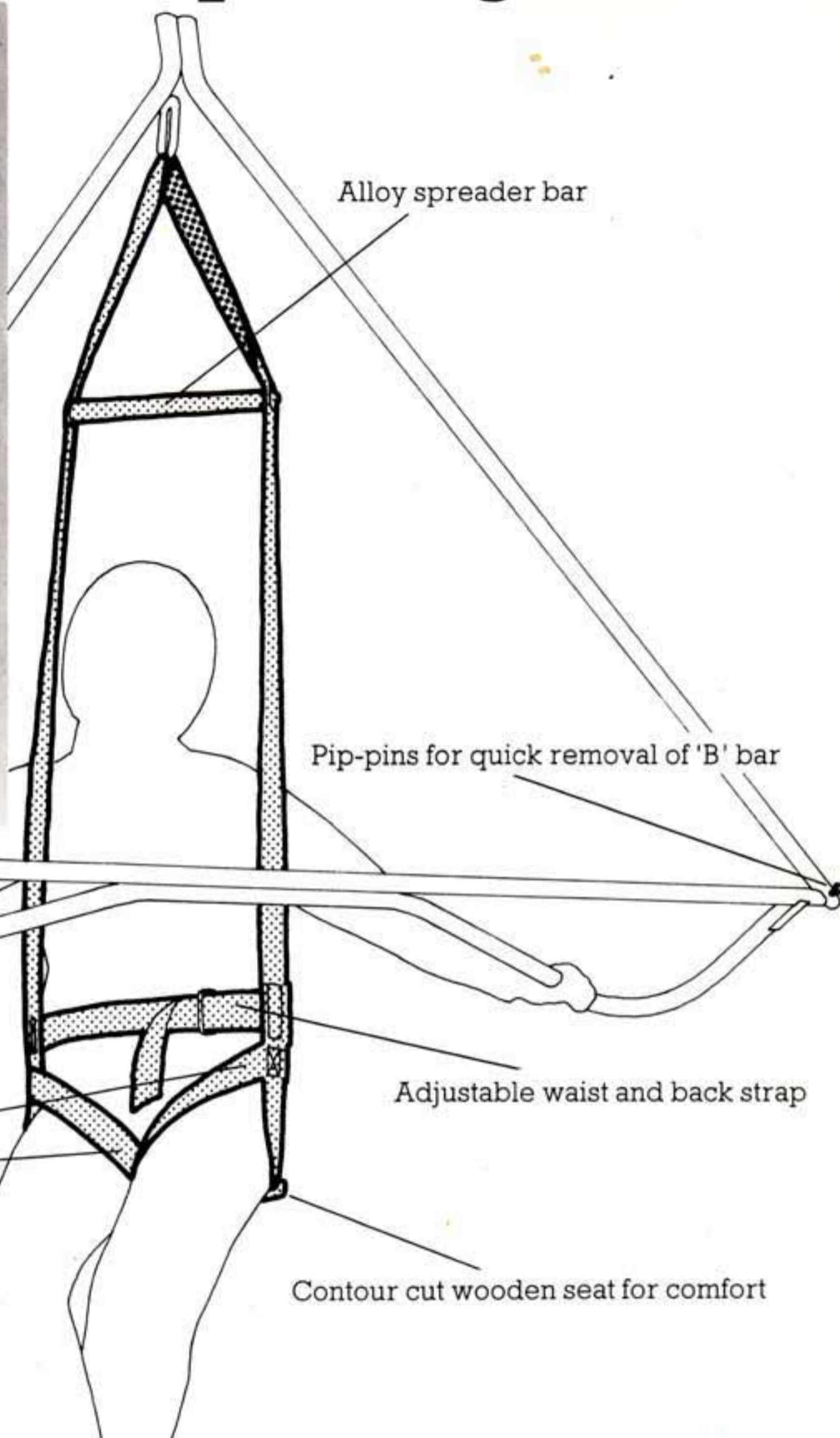
REGGIE SPOONER

INSURANCE BROKER FOR THE BHGA, CLIFTON HOUSE, BATH ROAD, COWES, I.O.W. PO31 7RH. TELEPHONE: COWES 2306

The neatest seated package ever!



'B' bar



The new seated conversion bar or 'B' bar as it seems to be known, lets you convert your prone only rigged Hiway glider to seated in about 5 seconds! You simply release the normal bottom bar of the triangle by removing the two pip-pins and clip in the 'B' bar.

The 'B' bar is designed so that you get both better push-out and dive control than conventional seated systems. In tough winds you'll be grateful for those extra inches you can pull yourself forward.

The Hiway seated harness is one of the simplest, most comfortable and secure available. For long duration flights or just having fun Hiway once again give you the ultimate in comfort and handling.

