

Downings!

The Official Magazine of the BHGA

Dec 1979

**WE WON THE CUP
AGAIN!**
FULL STORY INSIDE



NORTHERN GLIDER SALES

(PARSEC LTD)

New and second-hand gliders in stock:

All our gliders are guaranteed to be test flown and tuned to suit by C.F.I. and British Team Member Graham Hobson, whether for the beginner, intermediate or advanced customer.

N.G.S. also undertake to repair, at cost of parts only, and test fly any new glider purchased from us, for the first 4 months after delivery.

Agents for:
HIWAY
Super Scorpion
VULTURELITE
Emu

*"Sole importers
for leading
continental glider
upon which
Bob Calvert won
the League final."*

Inquiries for new and second-hand gliders are welcomed and demonstration flights are invited at:

Northern Glider Sales

061 973 4085 Graham Hobson
061 434 3364 John Higham

ANY saleable glider accepted in part exchange

ARE YOU INTERESTED IN THE FUTURE OF HANG GLIDING?

If so see the future at our Ultra Light Centre at Wellesbourne Airfield near Stratford. We are establishing a centre for powered and free flight with a full range of services to suit the requirements of all pilots from P.1 to experts.

The high school has been developing Towed Hang Gliding for over two years. Our instructors Paul Baker and Dave Garrison have over a thousand launches between them, the main winch man Chris Baker has safely conducted over 1500 launches impressing a considerable number of people including Keith Cockcroft, Safety and Training Officer, Roy Hil, Chairman of the Training Committee, Brian Wood and Lester Cruse, Competition Pilots, Brian Milton etc. As we conclusively demonstrated at various displays this year, our techniques, knowledge, equipment, and experience have clearly established us as leaders in this field. (We are currently drawing up the Safety Standards and Procedures for the BHGA.)

As the first school to register with the BHGA we have had five years of successful teaching experience at all levels. This includes teaching Dave Garrison from beginner to expert. After only two and a half years flying he has represented Great Britain in 4 International competitions this year.

Come and benefit from this experience; try the pleasures of towing under our safe expert guidance. We will also use our instructional abilities to help you improve your flying techniques once you have released from the top of the launch. How does 1500' to 2000' of clear unobstructed air, with no hills in the way, sound to you?

Spare yourself the discomfort of those cold windy exposed hillsides. We can offer you shelter, comfort and warmth between flights. It's not quite a clubhouse, but that luxury should be coming soon!

The Glider that won the American Nationals this year, taking all the top places, and making the very latest flex-wings look obsolete, is available. You will not believe it's performance, strength and quality.

Come and see the incredible derivative of the Manta Fledge II — The Pterodactyl. This is the state-of-the-art powered Hang Glider. It has flown 4,000 miles, coast to coast, across the States including crossing the Tetons at over 14,000 ft.!!

We stock the advanced air parachute smaller and lighter in it's one handed deployment bag, than any other Hang Gliding reserve chute. It has a big 26' canopy, it is fully T.S.O.'D.

The high school tow-frames designed by us after careful examination, testing, and analysis of many of the releases and tow-frames available in Australia and the States, have safety features and innovations that are not available on any other tow frames in the world. We also supply all other equipment necessary for safe tow-launching.

We have the experience, come and share it. Join the REVOLUTION IN FLIGHT with the High School of Hang Gliding at Wellesbourne Aerodrome, Wellesbourne, Warkshire. Telephone: (0789) 841114

Do contact us for details and further information.



wings!

Editor: Jeannie Knight, 10 Spring Gardens, Washington, Pulborough, West Sussex. (Ashington 892770).

Layout Artist: Mike Hibbit, 2 Mitford Close, Whitley Wood, Reading. (0734) 864543

Commercial Editor: Lesley Bridges, Yard House, Wentnor, Nr. Bishops Castle, Shropshire. (Linley 322)

Editorial Board: Jeannie Knight, Tony Fuell, David Worth. **Area Reporters:** Scotland: Ian Trotter, North: John Hudson, Eire: Roy Hammond

South West: Steve Moss, Wales: Rob Symberlist. Printed in Great Britain by Blackburn Print Ltd. Hove, East Sussex.

BHGA Council: President of Association: Ann Welch, OBE., Chairman: Reggie Spooner (Cowes 292305), Treasurer: Derek Evans (Sevenoaks 59995)

Brian Milton (St. Albans 55231), Jeannie Knight (Ashington 892770),

John Hunter (Hatfield 71027) Ashley Doubtfire (Marlborough 52909) Roy Hill (0865 735204),

David Squires (041 943 0322)

Northern Ireland: Chris Simmons, **Council Officers:** Technical Officer: Alan Barnard (Crewkerne 72478)

Training Officer: Keith Cockcroft (Halifax 882883), Registration Officer: Terry Dibden

(Wimborne 886464), Medical Advisor: Dr. Dunstan Hadley, BHGA Solicitor: Anthony McLaren (Halnaker 457)

Development Officer: Barry Blore (0235 834033)

Secretary: Chris Corston (Taunton 88140)

British Hang Gliding Association, 167a Cheddon Road, Taunton, Somerset, TA2 7AH.

- | |
|---------------------------------------------|
| 4. Editorial |
| 5. Airmail |
| 6. More about Glide Angles by Tommy Thomson |
| 7. We Won the Cup Again by Bob Harrison |
| 10. Why do we Fly? by Mike Lingard |
| 11. Airmail Answers from Clive Smith |
| 11. New Manufacturers on the Scene. |
| 12. Information |
| 14. Small Ads. |

*Cover: Bob Harrison (Cyclone) off the high board
at Whitwell - photo by Noel Whitall*



Wings! is published by the British Hang Gliding Association. The views expressed in it 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 the appropriate captions and any material which is to be returned should be accompanied by a stamped and addressed envelope. The Editor reserves the right to edit contributions where necessary. *Wings!* may be obtained, either by joining the BHGA, or on subscription from The BHGA, 167a Cheddon Road, Taunton, Somerset at a cost of £7 per annum. All enquiries other than to members of the magazine staff should be sent to the Taunton address.

Report of the BHGA Committee examining FUTURE POLICY FOR WINGS! which met on the Devil's Dyke on Saturday, November 10th, 1979.

Presents: Barry Blore, Percy Moss, Brian Milton.

Occasionally present: Tony Fuell, Nick Regan (former editors, WINGS!), Jeannie Knight

The meeting began with each committee member giving his views on the present state of WINGS!

Percy Moss - Had gone to a number of clubs about WINGS before meeting. Feeling was it was only a reasonable Club magazine, rather than a national mag. Should be a flag-carrier, not a house magazine. Felt there was a lot of bitchiness in the mag.

Barry Blore - WINGS depended on its size for advertising, and should continue to be to be a "control", as in air-worthiness. Should aim for self-sufficiency.

Tony Fuell - Poor journalistic standard. What looks like bitching is "caring people". Advertising restrictions a grave mistake.

Brian Milton- Membership levelling out. Magazine needs to go public, be self-sufficient, paid editor, otherwise public image remains bad. Present WINGS doesn't reflect what is going on in British hang gliding. Poor journalism, and self indulgent.

Discussion went on throughout the day, with the committee breaking at times for food and gossip. Agreement emerged on five major points, and there's a minority report or a sixth point. Nick Regan was part of some of the discussion. He felt much as the committee felt about the present WINGS, and offered himself as editor, saying he had the time, energy and experience to edit the magazine again. There was no enthusiasm to recommend his appointment. Jeannie Knight, on a lunch-break from her school, also joined the discussion, but made no comment on the five major points. Asked her policy on WINGS, she said it was getting it out on time. Felt I was, as always, pushing competition news ("which isn't the only thing").

Recommendations to BHGA COUNCIL, agreed unanimously by the Committee.....

1. WINGS is a flag carrier, not a house magazine.
2. WINGS should aim to become a public magazine, sold on the bookstands, with a professional full-time editor.
3. WINGS should aim to become self-sufficient financially.
4. The present restrictions on advertising should be abandoned. Advertising rates should be raised, with discounts for "approved" items.
5. Editor is appointed, on a 1-year contract, by BHGA Council, to whom he's responsible through a management committee. Editor bears sole responsibility for all contents of WINGS, subject to financial guidelines set by Management Committee.

Majority Recommendation....That Jeannie Knight resign as editor immediately, and Brian Milton take over the job.

Minority Recommendation....that the five major changes be implemented, and that Jeannie Knight carry on as editor, at least until the AGM.

NOTE: Whatever steps are taken to implement the above, they must follow a logical order. First, the magazine must pick up advertising from within the sport, and begin to reflect again what is going on nationally. Once it's a good journalistic product, a distributor should be approached for negotiations to put it on the public bookstands. A change of title may be contemplated. After it goes on the public bookstands, and begins to become self-sufficient, then the editor can make a living salary.

Brian Milton, November 12, 1979

HELP NEEDED

From Rookwood Hospital, Cardiff we hear that B.H.G.A. member Rod Surrige, 28, from Surrey who damaged his spinal cord, in a Hang Gliding accident on 21st August, is permanently paralysed from the neck down. He has a wife and two small children and was not insured.

Rod will find it almost impossible to accept the fact that for the rest of his life almost EVERYTHING will have to be done for him. Financial problems at the same time will be making life a nightmare for him and his family.

Can any of us ignore this family's plight?

Please make cheques payable to the Surrige Family and send them to Taunton ASAP.

Health Service Cuts have reduced the number of beds in Stoke Mandeville, the National Spinal Injuries Centre, to almost half the former number. Rod should be in Stoke which normally takes spinally injured patients from the South of England but they were full up. Rod is in a Spinal Injury Unit even though its far from home. We hear that there are many people in hospital with such injuries that cannot be treated in specialised units because countrywide capacity is too small.

TAKE CARE.

Chris Corston

Dear Members,

This letter is as much of a shock to me as it is to you. This has all happened in the last fourteen days. The subject was discussed in my absence at a council meeting on the 28th October, which I had to leave early.

As the issue was not on the agenda, I could not ask for it to be brought forward and discussed before I had to leave. At the discussion of the issue, a sub committee was formed. The date of the meeting of the sub committee was not forwarded to me until four days before the meeting, which left it impossible for me to attend, except for a brief moment.

The next I knew of the meeting was that you have just read. Having had a phone call from the chairman of BHGA, and having rung other council members, I find it my duty to step down as editor to allow you, the membership, to decide what you would like.

Please make sure that you make sure you let every council member know. That means you, the member, — It's your magazine. JEANNIE KNIGHT

HANG GLIDING CHRISTMAS CARDS

Hang gliding Christmas cards are here at last. Paul Bennett, of 9 Woodfield Road, Burbage, Hinckley, Leicestershire has produced some cards, which come in packs of ten.

The packs, complete with envelopes, have two different

illustrations, with five cards of each illustration. Proceeds will be split between charity and the BHGA Central Fighting Fund.

Prices are £1.75p per pack, including postage, or £1.65p when three or more packs are ordered. Send cheques or postal orders to Paul at the above address.

When not involved in printing, Paul can be seen flying his Emu in the Peak District.

VARIO

Find as many words as possible from the word variometer, as seen here. Each word must be of four or more letters, contain the letter V, no proper names or foreign words. Submitted by N. Hannah of Bradford, who got 25 words from the puzzle. See if you can do better. Prize for the winner. Send your lists on a postcard direct to Jeannie Knight.





DOVER REPLY

Dear Jeannie,
As the Dover and Folkestone HGC official referred to in Mr. Henry's letter in October *Wings!* I'd like to put the record straight. Mr. Henry did at least do one thing right — he tried to contact Club officials by telephone. But, having failed through no-one's fault to establish contact, he made no attempt on arrival at Crete Road to enquire whether it was okay to fly as a visitor. He just rigged and flew. When I later explained the situation to him and asked why he had not made enquiries on site he said he didn't see why he should! There were in fact local flyers and their wives and friends around at the take-off point at this time and he could easily have found out the facts if he had wanted to.

The Club has always welcomed visitors and places no restrictions on them that are not fully justified by local needs. Following the September 1978 article about the Club in *Wings!* the Club Chairman made a special point of mentioning the Crete Road situation in his letter on page 32 of November *Wings!* Evidently Mr. Henry doesn't read his *Wings!* carefully enough.

The lesson of this depressingly familiar story is that flyers visiting other Club's sites should take *all possible* steps to consult local flyers before taking-off in case a breach of a local rule should cause the loss of another precious flying site. I feel sure that the Club to which I understand Mr. Henry belongs, the Dunstable HGC, would agree with this, particularly in view of their own site difficulties.

As to who hang gliding can do without, I nominate Mr. Henry and all those like him.

Martin Brenchley,
Whitstable,
Kent.

FASHIONABLE STALLS

Madam Editor,

In the October issue Tony Fuell pleads for an end to the depressingly long list of accidents caused by pilots stalling shortly after take-off.

I believe that many of these stalls may be the result of what can best be described as the fashionable method of taking off, i.e. taking a few gentle steps and easing the glider into the air. Some experienced pilots do this, successfully — and so smooth and natural does it appear, that less skilled flyers are quick to copy.

Leaving the hill with such ease, if it in itself does not precipitate an un-gainly return to earth, may lead to a casual attitude once airborne... which will. We all know that much.

Far safer, if less aesthetic, is the totally committed (but controlled) charge that is seen all too rarely these days.

I fear people are hurting themselves and killing themselves because they are more concerned with looking like league pilots than they are with the basic principles of flight.

Bob Bird,
Warwick

LET'S USE DISCIPLINARY POWERS

Dear Editor,

With all the problems we have with councils, National Trust, gliding clubs and sensitive farmers — and why shouldn't they get annoyed; it's their land! — we are still getting the few flyers who consistently behave irresponsibly, give the sport a bad name and lose valuable sites.

Now that we have a disciplinary committee we should make use of it to show the 'few' and the authorities we mean business. I would even suggest that the kites be registered with the BHGA, complete with numbers on the wings — as per aeroplane, glider, sailing ships and cars etc. This would make for easier identification for lost or stolen kites as well as offenders.

Offences should be punished by a fine as well as a grounding for three, six, nine or twelve months depending on the crime. This could be enforced by the withdrawal of BHGA membership and insurance, including Reggie Spooners. Also all clubs could be informed by letter as well as in *Wings!*

This may seem very hard to some, but my concern is for the majority who really love our sport and do not want to see it banned by irate farmers, MPs etc.

I really don't think it would need a lot of organising as I feel the serious offenders are so few that even they would be cut down by the fear of grounding, together with the personal publicity that would go with it.

Also while my pen is still full of vitriol, many people I have spoken to feel that the Exchange and Mart should be asked not to advertise hang gliders — schools yes, but not gliders — because in this way we are catering for the non BHGA members. They do not know any of the rules and worse still, probably do not know how to fly.

Ken Barker,
Thames Valley Club

CHOICE OF GLIDER

Dear Editor,

I don't suppose there are very many of us who buy a car because it wins a Grand Prix. The car that wins races is very special and the driver is an extraordinary person trained and practised to near perfection.

Now, what has happened to me has prompted me to write to you, not because you can help me in any way, but simply to put before you the sense of absolute helplessness and frustration I feel.

Last year I bought a new hang glider, which had won the cup — so to speak — in the world of hang gliding, for the total cost of just under £600. The glider was supplied without a users handbook and with no data sheets of any description. There were no trimming instructions and none were ever supplied even after written request.

When I came to fly the glider it was an unmitigated disaster. It was unflyable in any wind stronger than 12 mph and repeatedly spun in at higher wind speeds or when the speed was pulled on.

I visited, phoned and wrote to the manufacturer and all I ever got was a letter instructing me on how to recover from a spin and the suggestion that I should attend a flying school, topped off with the promise that after each cataclysmic prang he would return the kite to its 'Original Trim'.

My visit to hospital this last April was after I narrowly escaped death at the bar of this same hang glider and during my agitated phone call to the manufacturer I was told I was 'over sensitive'!

Subsequently my solicitor informed me that hang gliders are not covered by the 'Trades Descriptions Act' and that to bring an action to recover damages would cost me at least £2,000 with no guarantee of success. To cut my losses and save my conscience I sold this glider for £50.

So back to my racing cars — I solemnly suggest to all you casual flyers out there — take a good look at what our top pilots are flying in contest and practice, note down carefully the make and model and **take very good care not to buy one — ever.**

Peter Mawer,
Bude, Cornwall.

PUBLIC RELATIONS

Dear Jeannie,

You are very right to remind us that good flying of good hang gliders is not enough to ensure a continuing future of our sport. We are a tiny minority of the population indulging in something that amazes and frightens people. New things are always, and rightly, looked at with very critical eyes. Most people see us through the eyes of the media which has only occasionally viewed us seriously, and that generally in relation to a fatal accident. Most people when they think of us at all just think of us as mad. I suspect that their parents and grandparents thought the same way about the first motor cars as well as the first aircraft.

Theo Willford's letter is a fine example of the way we must try to influence people both through the media and more directly. One of the things we must attempt to do is to cultivate the help and understanding of other minority groups. Ironically it is often these that put pressure on government at various levels to limit or curtail hang gliding. We are perhaps too ready to develop conflict with other minority groups. Amongst these are flyers of other sorts of aircraft and

here the line should clearly be one of 'fellow flyers — a threat to us may extend to you'. A public fight would be a threat to all types of flying.

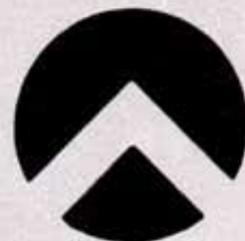
Model aircraft flyers have their problems too. I landed in a field that the local council had given them formal approval to use for three hours every Sunday morning whilst flying was in progress. They didn't like it and thought I shouldn't have.

I explained that I had no knowledge of the problem when I took off, and without a motor it just wasn't possible to maintain height and look for another landing field. The difficulty was one of effective communications and a compromise was clearly possible once we began to talk. Their main worry was that their less experienced model flyers could lose control of their powered craft and if we were operating nearby a collision could result and they would be blamed. I can understand this as I did a little aero-modelling in my younger days. People on the ground are wary of the noise and fury of model aircraft. Probably we are of similar danger to the population at large.

I suggested that we threatened each other's existence and that it would be better for the local clubs to get together and sort it out themselves. A possible compromise might be that if we landed (or were attempting to land) in an area that was being used for model aircraft flying then the risk was ours, and all we would hope for was that they would try not to create a collision with our invasion of their airspace. The less attractive compromise is that we could agree to fly at different times, but it seemed to me that in this particular case it would be taking safety considerations too far and would create friction as we each tried to obtain the best time. The BHGA League were using the hill on the day of this exchange (Sunday 16th September) so you will realise that the hill was not an unimportant one, and the local club should recognise the problem. I understand there was nearly a fight at the last meeting of the two clubs.

Part of our problem is that hang glider pilots are not always their normal selves just before, during or immediately after a flight. We must try to be pleasant and helpful to others even when we are pre-occupied by our flying. We may be entitled to risk our lives, but we will not have the freedom to do so if we are associated with unpleasantness, let alone appear to threaten the health or property of others.

David Bedding
Monks Risborough
Aylesbury





MORE ABOUT GLIDE ANGLES

By Tommy Thomson

Could the next development from designers be an improved glide angle at reasonably high speed? If so, how will this be achieved?

It is impossible to go on stretching the wingspan ad infinitum, not simply because of the roll problem. The larger bending moment at the root will call for either greater weight of conventional materials or greater expense of exotic material, both of which rise sharply as the wing span stretches — as has been proved in sailplanes.

We have already got down to fairly respectable minimum sink-rates (better than some sailplanes in fact), so the next step is to try for better glide-angles at higher speeds, even although *some of this sink rate may have to be sacrificed* (as will be shown later).

Although usual, it is not absolutely necessary to go in for very high aspect-ratios to achieve a good glide-angle, *if that is all you want*. We could take the example of the Me.163 Rocket Fighter, a very much underestimated design (in British eyes), although if I had ever encountered one (which fortunately I did not), I would have treated it the greatest respect. After exhaustion of the rocket fuel, this design claimed a glide-angle of 1 in 20, no less, which was as good as many early sailplanes of much higher aspect-ratio, so that even with the very short propulsion duration, it could operate at quite long distances from its base. And this figure was achieved with an Aspect-ratio of around 5, and a wingspan of around 30 feet. How? Well, apart from being a very "clean" design, the wing-section was virtually symmetrical, i.e. The minimum coefficient of profile drag coincided with a very low coefficient of lift (affecting induced drag) at a high speed. A similar philosophy and configuration was also followed by Dr. Horton when he designed his Mark 10 semi-hang glider. This claimed a glide angle of 1 in 18. In 1953! There is nothing new under the sun.

Before proceeding any further, let me state a few accepted facts, the proof of which would take a whole *Wings*, but accept them anyway. Induced drag (sometimes called lift-dependent drag, since it is characterised by the wingtip vortices resulting from the overflow of high-pressure air from the underside escaping round to the low-pressure upper-surface) is proportional to the Square of the coefficient of lift, and inversely proportional to the aspect-ratio. High-lift (high-camber) aerofoils give their minimum profile drag at a fairly high coefficient of lift, i.e. slow speed, but this profile drag increases sharply as the

angle-of-attack is reduced to zero and beyond (fast speed). Conversely, symmetrical or near-symmetrical sections give their minimum profile drag at low coefficients of lift (fast flight), but unfortunately are not able to provide high coefficients of lift at all, and if they do, are pretty draggy at high angles-of-attack.

Now drag can be placed into 3 groups; induced drag, which we have already mentioned; profile drag, also already mentioned; and parasitic drag, i.e. from those components which contribute nothing to pure flight, cross-boom, struts, pilot, wires etc. The relative importance of these three components will vary considerably at various speeds. The parasitic drag has a nearly constant coefficient, and therefore does not enter into this aspect of the discussion (although not unimportant); but the other two will change places in magnitude as between minimum flying speed and maximum flying speed. The slower the speed, the greater will be the induced drag coefficient, but this will diminish rapidly at the faster speeds. At the two comparative speeds mentioned, the coefficient of profile drag will behave according to whatever sort of wing-section is chosen.

So, if we want a nice slow flight with good lift-drag ratio for thermalling etc., (amongst other things), we need either a massive wing-area (impractical), or else a wing-section giving a high coefficient of lift (deep battens etc.). But in using this high-camber section, we have to remember that induced drag is proportional to the *square* of the coefficient of lift, so that in order to avoid an exorbitant amount of induced drag, we have to increase the aspect-ratio quicker than we increase the coefficient of lift. So we now have a glider capable of a very low sink-rate at a slow speed, and this set-up is ideal if you want something to stay up when everyone else is falling down in scratchy conditions, but don't want to stray far from your site. Unfortunately we are now stuck with the high-camber aerofoil, so if we did want to lower the angle-of-attack to go places fast, we have the penalty of the high profile drag, just when we don't want it, because it has now become the dominant factor.

On the other hand, if glide-angle at high speed is the main target, what we really want is the symmetrical section, giving its low profile drag at low angles-of-attack. By now, aspect-ratio is relatively unimportant, because induced drag is relatively unimportant. This being so, why did not the Standard Rogallo with its essentially "flat-plate" aerofoil, (roughly the equivalent of a symmetrical section for the purposes of this discussions only) not have a better glide-angle than it did. Unfortunately its flexible wing surface would not permit it to be operated at sufficiently low angles-of-attack (because of luffing) to offload quantities of both profile drag and induced drag.

From the foregoing it can therefore be seen that one can design for absolute minimum sink at low speed, *or* absolute maximum glide-angle at high speed, but not both together. One must reach a compromise, unless one has some means of altering

the wing profile. Sailplane designers sometimes use a "Flap-up-flap-down" system to alter the profile, but that particular system is far too complex to be incorporated into a hang glider. There have been some attempts to achieve this simply, e.g. the Princeton Wing, sometimes called the Eagle Wing; although it seems to have enjoyed only limited success, mainly because it relied on the airflows and pressure patterns to alter the profile, instead of the other way round; viz. to use an alteration in the profile to achieve the change in the airflow and pressure pattern.

In order to increase the effective aspect-ratio of a modest wingspan, as a means of combating massive induced drag at low speeds, several devices have been proposed. Tip-plates; non-planer wings; etc; now Richard Miller claims some benefit from his "diffuser-tips", although no test figures are available. There have also been some experiments with "tip-sails" something like the pinion feathers of land-soaring birds. They do not function on the same lines as tip-plates. They utilise the cross-flow of the embryonic vortex to produce forward thrust, just like the sail on a dinghy. Wind-tunnel tests show that they are certainly beneficial at low speeds/high angles-of-attack, since their extra profile drag is far outweighed by their ability to reduce induced drag. Unfortunately they are a hindrance at high speeds, just when that ability is no longer required, but their profile drag is still there. It seems that some method would have to be found of closing them at high speed, just like those birds mentioned.

If I have not been too successful in trying to explain what is really a complex proposition, members may find a more lucid explanation in "New Soaring Pilot" by Welch and Irving, which devotes a section to all the variables in sailplane design, the principles of which are of course equally applicable to hang gliders, if not the figures. An understanding of this matter is of course just as important to the buyer as to the designer, so that you can choose a glider most suitable for your type of operation. But in reading that book in conjunction with this article it should be noted, in order to avoid any ambiguity, that Frank Irving has used profile drag (C_{d0}) as including all components, whereas I have separated the "productive" components, whose coefficient (C_d) alters with the speed, from the "parasitic" components whose coefficient is practically constant regardless of speed. Before anyone poses the inevitable question — "How can drag remain constant regardless of speed?" I would reply that we usually express such things as a numerical coefficient, which indicates the quality of a particular entity, and not its quantitative measurement.

I said previously that parasitic drag did not enter into this particular discussion of comparatives, but of course on a hang glider it represents a considerable proportion of the total drag, much more so than a sailplane, and consequently every effort must be made to streamline all parts of the glider/pilot combination. ♣

All Photographs from Slides by Noel Whittall

Johnny Carr, developer, glider at Whittall in the Squatchie Valley



WE WON THE CUP AGAIN!

BOB HARRISON

How, in such a short article can I do justice to an event that after its teething problems will become hang gliding's most important, coveted and select international competition on any year's calendar?

The cup started for the team a long time ago. Somewhere buried back in the mists of this last year's league, competing pilots were slowly battling it out between each other, and all the time making or breaking their chances of being selected for the squad.

For the lucky ten finally selected, the cup started in earnest one Sunday afternoon at St. Albans. There we discussed and prepared ourselves ready for the onslaught to come.

The Australian team, except for three names were completely unknown to us. The American team had all the familiar names in it and the Canadians we guessed were going to be very hungry to win after last year's third place defeat. Our task this year was going to be harder — a lot harder.

Continued on next page.

On arrival at Chattanooga airport (7 a.n. Sunday October 7th) we were met by the beaming American fliers who took great delight in telling us of Peter (Black Death) Brown's epic 81 mile flight, done in a nearby valley a few days earlier. The Australians naively thought it would be a sufficient wind up to put us off our stroke — instead we spent the afternoon 1,000 feet and more above the beautiful massif Lookout Mountain. The warm autumn sun lit up the green and golden leaves of the uncountable trees that completely covered the 1,500 feet high and 15 mile long American pimple.

The British were here again and I felt proud and humble to be one of them.

It was my first international competition — or would it be? Two of the squad had to become reserves, the final selection still wasn't made and we had four days of hard practice in front of us before the team of eight would be known.

And so it was. The next day and the next and the one after was spent practising, flying against each other and yet we were comparing flights and thoughts. Each giving the other advice and still knowing that the advice we gave to our team mates may put oneself out and him in the team. However it had to be done, experiences had to be shared and a strong pool of knowledge had to be collected so as to have a base to make tactical team decisions from.

Only on the first practice day did we see anything of the other teams — the wind was good. The other days proved less so, enough to put off the competitors, but not the Evans and the Milton. With whips, pens, pencils and stop watches they coaxed us into flying — even if it was from a training slope with a wooden ramp rake off. This 50 foot monster was situated in a cross wind position with a nasty kite eating sink hole between launch and landing.

The days ticked by and the pressure rose. Every one of the 10 pilots were flying well and the managers' job to choose the eight was getting more and more difficult — no one should obviously be made reserve, let alone two people.

Eventually the first pilots' meeting came to be and so the managers had to spill the beans. Their decision in alphabetical order was Rob Bailey, Bob Calvert, Johnny Carr, Bob England, Dave Garrison, Bob Harrison, Keith Reynolds, and Graham Slater, with Jeremy Fack and Lester Cruse as reserves.

THE TASKS

There was a total of 3 possible tasks that would be run depending upon conditions.

1. Speed run, with a set number of alternate 360's to be made in turn either side of an imaginary line running from take off to the landing field.

2. Sink task, with a maximum of 15 minutes in the air before entering the landing field. A set number of alternate 360's also to be made either side of the same line.

3. The optional pylon (ridge) task. If any pilot in a heat during the course of the Sink task made the first pylon (about a mile down the ridge) before 15 minutes of this launch, then this task took priority and the pilots in that heat had to make as many of the other three pylons as possible. The furthest pylon (No. 4) was some eleven miles down the ridge at the end of Look Out Mountain.

To make things interesting a mile gap existed between pylon 2 and 3.

Brian and Derek did everything possible to alter some aspects of these tasks so as to make them easier to judge and more authentic to fly, but the other teams became suspicious and refused to agree to the changes.

THE COMPETITION

Saturday October 13th, Day 1 blew up nicely and soon after the pomp and ceremony we were up to the top ready. The first task was the 15 minutes sink rate with the options for the pylons. The camp was divided into heats, each heat consisted of one pilot



L to R. Steve Moyes, Andrew Barber-Starkey, Dennis Pagen and Graham Slater. Australian, Canadian, U.S.A. and British captains at photo call.

per country, i.e. four pilots. The pilots and flying order changed each heat.

Keith Reynolds was first to launch and so start the 2nd Annual American Cup. He reached pylon 1 in about 4 minutes and pushed ahead towards pylon 2. The others followed in close pursuit behind him.

Meanwhile heat 2 followed with Rob Bailey leading the way. Shortly after it was my turn. I launched first and made pylon 1 easily, but the others were hard on my trail. Looking back I was surprised to see both the American and Canadian turning at No. 1 and making for the landing field, but not the Black Death — he was coming fast and low just above the trees at ridge top level. From the practical sessions I knew the air would be rough and lift unreliable. Looking ahead I saw Ren and Bob returning from No. 2, but very low, so I stowed up a touch, gained height and didn't mind that black Moyes was closing the gap. He was being chucked around something bad and there was plenty of sink about (once below the top you're damn near down and certainly in no position to race). We turned at the second pylon together (the gap was too big in this wind) and I pulled the bar in and started to trade height for speed. Burning away I looked back at Pete, low and in bad air, but still coming after me. Bob Calvert came racing up on his way towards pylon 2 and I indicated by a pre-arranged secret British Code that the lift ahead of him was poor. He indicated the lift ahead of me was good, so I pulled on a little more.

Malcom Jones looks unconvinced by Jack McCormack's arguments for power while Phil Matthewson (in cap) from Australia and Shirless Derek Evans (British organiser) look on.



Bill Moyes and Brian Milton in discussion while Bill Bennett takes it all in.

Although I landed first, Pete's time (who actually made it back to landing) was faster by seconds and he gained himself a well-won, but risky, first place. And so it was after two tastes of riding running that afternoon, the Australians were leading us by a small margin. The other two countries were somewhat behind.

Perhaps the best flight of the day was that of Phil Matthewson (Australia). He reached pylon 2 late in his heat and had little choice but try for a shit or bust attempt of crossing the gap and making pylon 3. After half a dozen times, he gave up and flew back. But over launch he got a good thermal and returned to the gap. On the way he hit a couple more and simply sidled across the elusive gap to reach pylon 3. Two hours later he landed, winning over the poor old nail-biting Bob Bailey who had been willing the Aussie all the sink in the world. After such a good start to the competition excitement was high. The British had taken the day easy (no risk-taking) whilst the other teams had pushed it — only the Australian luck was holding and we knew it would run out one day.

Unfortunately the wind started a mischief and the third and fourth tasks took days to complete.

The third task was a task to be remembered and it should go down in British Hang Gliding history. No wind, but some nice-looking blobs. The task was the sink rate, and 15 minutes deviation, but this time the pylons did seem out of the question. During the fifteen minutes scraping around we had to put in three 360's one on the left and one on the right and



James McCormack flies his Pterodactyl over the British team Bus.

one back on the left of this imaginary line I mentioned earlier. Simply yes, but we had to fly for at least two seconds pointing towards the judges' tent, 360 and then point back again for another two seconds. Failure to point or track or 360 resulted in a nice big penalty. We did however have complete freedom to decide when to do all this, i.e. before, during or after a thermal, and, yes, we were allowed to 360 in thermals, but those of course wouldn't count because of the tracking for two second element. So now you see (just as the whole of the British team did) how in hell's name could a judge watch a kite non stop, a mile away, doing a million 360's for fifteen minutes and be able to see which 360's to count. The task seemed more suited to the judges and not pilots.

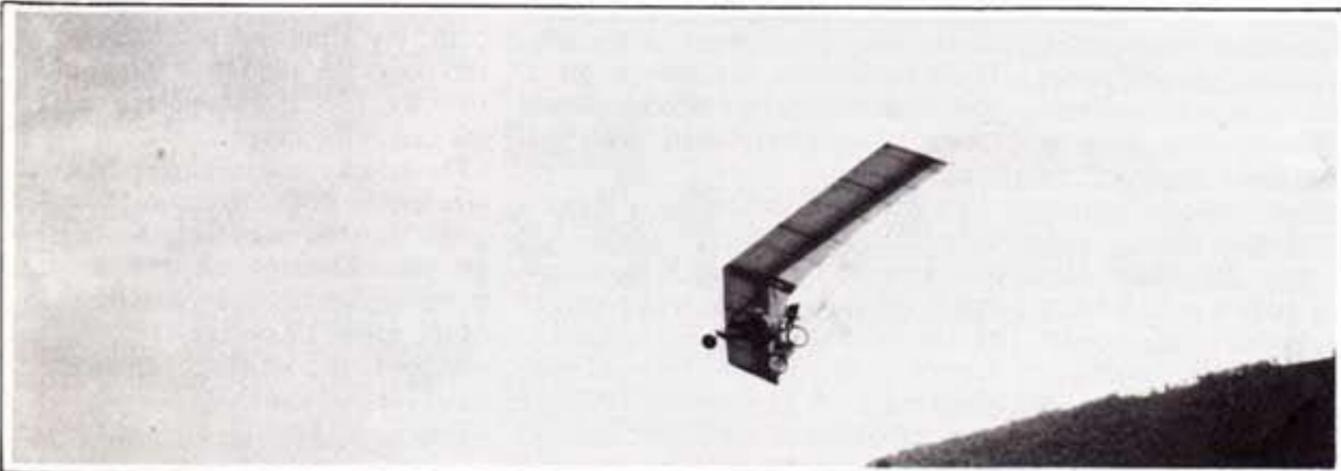
Our fears were relived in full horror. Five British Pilots had 360's disqualified, including Graham Slater who after fantastic flying got high above take off and had all the time and space in the world to do (and did) his 360's with four second tracking (just to make sure the judges saw him).

And so Johnny Carr created a new word in Hang Gliding — The Proctor Factor, named after Proctor Thomas, the judge who watched all the British Kites.

The other teams were delighted to discover our plight, but the laugh was to be on them for Brian protested against the fact that each country had the same judge to watch the 360's — it was agreed to rotate the judges from then on.

The following day, and task 4 (which was a speed run with five of the 360's!) put the boot on the other foot, because true to form the Proctor Factor struck

McCormack entertaining on the Pterodactyl again.



Bill Moyes, Bill Bennett and Lester Cruse

again! We musn't bare our teeth at Proctor for he was only doing an impossible job given to him by the organisers and we shouldn't get nasty with the organisers either because unlike the Milton and Evans they lacked competition experience.

Despite the Proctor Factor, we closed the gap on the Aussies after task three and took the lead after four. The Americans and Canadians were swapping 3rd and 4th places.

The next couple of days passed on by without any flying action. The site takes N.W. wind but the swind was S.E.

When Saturday October 20th came round, the penultimate day, the wind still hadn't changed and we were two tasks under the minimum required. This forced the organisers to hold the competition on another site. Whitewell was chosen 25 miles away in a neighbouring valley. This was potentially the best flying day we had in the U.S. The wind was 20 m.p.h. and head on (Bob England complained about this and demanded a tail wind). The thermals were large and plentiful and 50 mile cross country would have been child's play.

The last two tasks of the competition were designed specifically to be quick and simple. They were both fifteen minutes deviation and spot landing. The usual time bonus points were awarded for landing accuracy. The field, however, was so turbulent it made accurate landings impossible. The American, Canadians and British did very well. The Australians' luck ran out and by the day's end we were the clear leaders, 416 points, U.S.A. and Canada joint second and third with 404 points and

the Australians last with 396 points. Sunday morning, the last day was spent back at Lookout waiting hopefully for one more task, which would satisfy the crowds and split the ties between the U.S.A. and Canadians for the American Cup and between Phil Matthewson (Australia) Jeff Scott (U.S.A.), Penderson (Canada) and Graham Slater (Great Britain) who all shared the individual score of the competition and so qualified for the Rogallo Trophy.

The task never happened and score analysis was used instead. Graham won the Rogallo and U.S.A. came 2nd, Canada 3rd.

The presentations were made, including a private gift from Bill Moyes to Brian Milton. Bill gave Milton a pair of false teeth with a padlock and chain through them! — Say no more.

CONCLUSIONS

It was a shame that one full compliment of tasks couldn't be run (15 in all) because I believe (contrary to foreign belief) we would have steadily increased our lead, leaving the others to fight it out for second and third and fourth places. The British team had depth. The skill difference between the best English pilot and the worst was far smaller than compared to the other teams. Our ability to do competitive tasks was better and it wouldn't matter what task was thrown at us, we had done them before in the league.

The Canadians were brilliant at speed 360's and Artificial flying down an imaginary line, but they totally blew the minimum sink tasks.

The Australians were brilliant at minimum sink but they struggled on the speed runs.

The Americans were more consistent, but they weren't a team — not in the beginning. Later however, they started flying less like individuals and more as a team and the score board reflected this.

The British were good at speed, good at minimum sink, good at ridge running. The selection of kites flown also covered all aspects of the different tasks.

Another overriding factor exists, we had two brilliant managers. Brian who knew how competition organisation works, who can foresee problems and will go out and deal with problems forcibly.

Derek, on the other hand, is quiet and methodical. He is the politician and negotiator. Brian was the engine of the team (the great motivating force). Derek had control of the steering wheel, the brake and the accelerator.

In short we had depth, breadth and strength in management, pilots, reserves and machines. We were the complete team. The others had weaknesses and sooner or later the weakness showed. Our instructions were simple "to keep our noses clean and let the others make mistakes".

It won't be easy, but the British will continue to win the American Cup Team Championship as long as these situations exist.

You may ask why Britain has been successful in forming such a strong and complete team. To answer this fully would take another article, but in one sentence we get a lot of flying in, in a small country, and we are lucky enough to have the league. (The league structure is the best method so far adopted to produce and select international pilots).

On a free flying day an American saw Bob Calvert launch in nil wind condition in hot pursuit of two birds. After a lot of hard work and height loss Bob hooked the blob and skied out 3,500 feet above take off. As Johnny Carr was doing the same the American said "and we wonder why we are losing this god damn competition!"

WHY DO WE FLY?

BY MIKE LINGARD

Irresponsible ... no consideration for others ... living with a death wish ... risking life and limb in nothing more than poison butterflies. These are the criticisms often levelled at us along with the question 'why do we do it?'

Each pilot has his or her personal reasons for flying but it is difficult for most to express in a few words the very complex stimulation and motives that encourage one individual to take up a risk sport that others would shudder at the very thought of.

I do it because hang gliding is the nearest man will ever get to tasting pure flight. I believe that in this world man must grasp with both hands anything that he considers challenging and worthwhile. The hang glider pilot serves a hard apprenticeship, but the effort is more than justified by the end result. The achievements in life that have any real substance are never gained with ease.

I believe that risk is an intrinsic ingredient in all men and a means of sharpening his knowledge of himself. Life cannot be fully appreciated until it has been risked and the future belongs to those who dare. There is a lot of talk these days about freedom: in reality there is no such thing. Man to survive must form personal attachments and have a degree of obligation to others, either in his personal relationships or job commitments and can therefore never find complete freedom.

In hang gliding I can escape temporarily and touch a kind of freedom few others outside my world can attain.

There must be more to life than a job, a mortgage, raising kids and then musing over opportunities lost while dosing in an old rocking chair. Like a growing number of people, I save my energy and zeal for the pleasures of life and I have found like many others that, having tasted flight, my eyes are turned skyward and there I long to return.

The more I fly, the more I see the much cherished goals of the ill-informed pale and view them with a new, enlightened perspective. The rat race, the headlong rush for material wealth, the clamouring for power in its many forms - these things have lost all substance. I have a more meaningful set of priorities, a new set of values. My values are now about becoming aware of myself, finding out what makes me tick, learning my limits and



obeying the warnings of caution that come from stretching yourself to the very edge of your capabilities. Learning to trust my own decisions and recognising and accepting mistakes when I make them and learning something from them.

I enjoy the easy friendship that surrounds hang gliding and the fact that it offers honest achievement. Unlike many other sports, you cannot buy yourself in to the top ranks of flying. Money is no advantage, no short cut to the top of the stack. True

talent will show itself eventually. There is no room for self-deception. Any fool who thinks differently will soon receive a painful reminder of that truth.

In a grey world where there appears to be little pioneering spirit left, I feel privileged to be part of a movement that is still in its infancy, with plenty of new and exciting developments still to happen. Although other forms of aviation have been in existence longer, I have experienced some of them and have found that when you are engulfed

by a metal or fibreglass body, the world that passes by appears like more T.V. You need the wind and sun to touch you to make the magic work. Lilienthal, the grandfather of all hang glider pilots, felt the magic when he started the ball rolling in 1895, when he flew just sixteen feet off the ground. He felt the first twinge of anticipation and excitement about the first-ever flight. He felt the first to be filled with awe as his body became sensitive to all the new sounds of flight, the wind humming on his many rigging cables, the flutter of his delicate sail fabric, the sound of his own heart beating. He was the first mortal to feel that the sail above him was an extension of himself, part of his own bone and muscle, an extension of his dreams. The intoxicating power of these dreams left Otto Lilienthal with a very clear perception of the profound pleasure he felt. He gave hang gliding its goal and I have been fortunate enough to have inherited that from him.

I enjoy the fact that when people ask friends of mine what I do, they are told that I fly hang gliders, not given a run down on my day-to-day job, because flying is important to me, and it shows. Flying for many has become a deep commitment, an obsession, so strong that it can tear a relationship apart, cause the break-up of marriages and jobs to be lost. When a pilot is really hooked, and in full flood, nothing in the world will stop him. He is drawn to the hills like a magnet, drawn like a homing pigeon returning to its loft, impelled by an instinct he has little control over. When a man has that kind of commitment those closest to him do not insult him by asking him to give it up.

I see our multicoloured sails giving a large splash of colour to an often drab, grey world. I have traded contentment for the freedom of the skies. I have experienced the dangers and the exquisite beauty of this new place.

As I wheel about the sky, I see only the ground below me, I am conscious of (but cannot see) the sail that supports me. My body moves this way and that, obeying my very thoughts, I am not really aware of the aircraft turning and adjusting its attitude to hold me secure, just the thoughts transmitted to my body. I am the aircraft, my arms are the elevators, my shoulders the ailerons. I think, rather than fly, myself through the air. For me that is the magic.

The air I fly in is no longer the exclusive territory of birds and mythological gods. Man has many faults but he is not all bad. Through his curiosity and perseverance he has broken the chains of the earth. I have been offered, and accepted, the ultimate experience. I have wings, I can fly.

That's why I do it.

AIRMAIL ANSWERS From Clive Smith

G.L.M. JONES

You have probably seen my own comments on Ted Frater's letter in the September issue which takes care of your first point. As for the L-shaped nose pins, I would replace them by something you are happy with, taking good advice on the details and techniques of airframe fitting work of course! There can't be anything much simpler than a multi-hole channel section (Jack Holt or Seasure) plus a button-pin. Perhaps you can use a button/pin-pin in your present channel section? Use a good quality h.t. pin of at least 1/4 inch diameter and if it is not a close fit then only drill the hole out if there is enough 'meat' to do this safely. Otherwise fit a new stainless multi-hole channel.

Note: this is not fail-safe. The aircraft industry is hastily reviewing its f-s design concepts at the moment. Old and New f-s structures have failed catastrophically. 'Inspectability' and damage-tolerance are prime requirements of a failsafe structure. Is a hang glider pilot plus a parachute at 1,000 ft. failsafe? Most people would think so but hang glider pilots know better, now. We should be primarily looking for a structure that won't fail at all, let alone safely, AND can be easily inspected AND is resistant to minor knocks and snagging. Most rear rigging uses a similar channel section plus dowel and split-pin. Once the glider is 'run-in' and its position determined an ags (aircraft general supplies) bolt plus lock-nut can be substituted — a much more inspectable assembly — Are there threads showing out the end of the nut or not? Yes, its okay. No, look closer.

Use of bolts: Standard aeronautical practice forbids contact of the threads with anything other than the nut and washers since the loads must be transmitted through the plain shank of the bolt. This is why ags bolts are available with plain shank lengths stepping up in such small increments (0.5in.) and all with a similar thread length (.45in.) so that only the smooth full diameter is in the structure. Aim for this, use a good washer and lock-nut, inspect it before flying and then forget it! Do not use aluminium bolts (however classy looking) on primary structure.

G. CAMPORI

The conventional King post type top-rigging is quite sufficient to stop the glider 'folding up' under normal conditions of speed and turbulence. (BHGA CoA -4.5G static). However, the rapidity with which a flex wing gust stalls and tucks is frightening to behold and the resulting loads on the airframes and sail difficult (and worrying!) to predict. Nevertheless we can look at several philosophies that are being used to overcome the problem.

(1) Stop the glider tucking after a gust stall (or high speed dive) — aerodynamic design — anti-dive rods — make the stall (fix it if necessary) so it is 'soft' without a sharp loss of lift and consequent rapid change in P.M. (We want a gentle nose down pitch at the stall).

(2) Reduce the likely loads — stop the sail reversing — thin t.e. top-rigging, heavier battens? — possibly achieved by most 3rd generation machines with well battened tight sails and anti-dive rods.

(3) Stop the pilot hitting the keel — Your pendulum idea sounds good for the odd back injury. Seriously though, what is wrong with a web around the back of the harness to be clipped to the control bar in violent conditions? Can be sprung if necessary and must slide freely along bar.

(4) Make the glider flyable inverted — Impossible? Pendulum effects and anti-dive rods holding tips washed-in prevent this? Some kites with lots of anhedral might even be more stable laterally upside down!

(5) Make the structure withstand all likely loads — tucking included — For those gliders that might have a l.e failure o/b of the wing bolt an extra top wire to a position near the tip should help. Torsional failure due to the anti-dive rods wants watching together with l.e. compression failures on cross-boomless kites.

(6) Discover how to fly the glider through these situations — comprehensive (and anon. if required) reports from pilots who have been inverted or near to it. Speculation: the natural reaction to pull in may be dangerous when violently gust stalled. Controlling pitch too 'stiffly' might cause the kite to rotate about the dominant mass — you! I believe Geoff McBroom first proposed this theory.

BART DOETS

If you doubt the stability of your kite then don't fly it, let alone admit to aeroplane pilots that it might not be stable. Surely, its the lack of speed that worries them most?

(Re: para 4) There seems no need (as yet) to develop alternative towing methods to the now common combi-

nation of 'V' bridle, payout winch plus pinman — override if maximum height gain is the sole object of the tow. If lock-outs occurred more or less often, then, going on the number of winch launches being done in this country, we should be running out of pilots about now! The tendency to lock out is always there but should be controllable through wind veer, thermals and general turbulence. The Bart bridle may well be better for this but seems to have many disadvantages. Foremost, is that effort is needed to climb (3 minutes to 1,600 ft!) Your ultimate line angle will be limited at the top of the climb, and compared to cantilever bottom-bars a sudden change in line load could do worse than start a lock-out. This is because the attachment point is behind the c.g. as seen from the winch at high line angles — have you seen any toy kites using such a pick-up?

A 'V' bridle controls both the maximum and minimum angle of attack at take-off. To get clear of the ground quickly adequate airspeed and incidence are required. It is well known that ground effect increases L/D but both the lift/incidence relationship and the maximum lift are affected, usually both adversely. (reduced) (Our normal landing flare, being a dynamic stall, swamps the latter effect.) These combine to produce a fairly critical and 'high looking' take-off incidence, and if the bridle is holding this constant, the pilot can concentrate on lateral control alone.

PILOT RATING QUERIES

Many BHGA Official Observers who have scored less than ten out of ten in any section of the Pilot Two Rating examination paper have written to the Training Officer asking which particular question they answered incorrectly, and what the correct answer should have been. They rightly

wish to know so they will not pass on incorrect information to other pilots.

However, it is the policy of the training committee, not to answer the specific question in the belief that if one question was answered incorrectly then there is probably a deficiency of knowledge in that section as a whole. It is therefore considered preferable that they read their Pilot and Observer handbooks together with books from

the recommended list (see Pilot Handbook Page 66) to discover for themselves where their knowledge was incomplete and absorb the correct information before they sit the examination again in four months time.

It is hoped that all observers will attend the Observers/Club Coach courses being organised by their club.

Any pilots having applied for entry into the pilot rating system with any

queries outstanding for three months please write to the Training Officer, 3 Mill Field End, Midgley, near Halifax, West Yorkshire HX2 6XD, ensuring that you give the following information.

1. Name, address and BHGA number.
2. Date and amount sent (cheque/PO).
3. What your requirements were.

Keith Cockcroft.

NEW MANUFACTURERS ON THE SCENE

The liquidation of two hang gliding companies — Vulurelite and Wasp — has coincided with the setting up of two new manufacturers, who are at present working towards conforming with BHGMF and airworthiness requirements before releasing a new glider.

SOLAR WINGS

We have pleasure in introducing a new hang gliding design manufacturing team, 'SOLAR WINGS LTD.' of Katherine House Yard, Kennet Place, Marlborough, Wilts. Telephone 0672 54414.

The object of this company is to offer efficient, professional and re-

liable service. Our intention is a steady growth, maintaining the highest standards of development and design.

Although the company is new, the faces will be familiar to you. Dave Raymond, Mark Southall and Cliff Ingram. All pilots of proven ability in the design and production of top quality hang gliders.

It need hardly be pointed out that we are working on a new ship, the 'Solar Storm' the details of which will be released shortly.

We will be more than pleased to see you at our new premises.

Yours sincerely,
Cliff A. Ingram

SOUTHDOWN SAILWINGS

Ian Grayland, who parted company with Vulurelite before they decided to go into liquidation, is to start again in the manufacturing field. He has formed Southdown Sailwings, based at 48 Applesham Way, Portslade, Brighton, and intends to concentrate on out and out high performance gliders.

The company's first product will be a flex wing based on a machine Ian was flying a year ago. He hopes to rekindle enthusiasm amongst the more experienced pilots in the sport.

MAINAIR

NEW APPOINTMENT

Bob Harrison was recently appointed Manager of Mainair Sports. Bob is well-qualified for the job being well versed in sport retailing and having a good flying record. He taught himself to fly in 1976 and became an instructor in 1978. Since then he has shown himself a very capable competition flyer by winning the 1979 Scottish Open and the Dales League. He was also placed 10th overall in the 1979 League (his first). He has many cross country flights under his belt including a 15 mile one and has finished the hang gliding year as a member of the American Cup Squad.

INFORMATION



**THE BRIFORGE
PARACHUTE SYSTEM
DEMONSTRATED BY
JIM TAGGART
& DAVE TAYLOR
FROM JOHN ARMITAGE**

THE MALVERN HILLS

A delicate situation exists with the Malvern Hills Conservators, and unless the following rules are strictly adhered to this excellent site will be lost to us for good.

- (1) Car parking fees must be paid.
- (2) Take off:- Only from Swinyard Hill (Castlemorton) and Pinnacle Hill (known as "Kettle Sings"). Nowhere else Only P2 holders from Pinnacle.
- (3) Landing:- Castlemorton Common and private fields negotiated by Malvern H.G.C. If in doubt contact a member before flying.
- (4) Do not fly any further north than the summit of the Worcestershire Beacon (Cafe on top).
- (5) No top landings anywhere.
- (6) No power.

Anyone breaking rule (1), apart from the fine, will get the sport a bad name before he even walks on the hill. If you haven't the 20p change for the meter at Pinnacle Hill please get it — its not that difficult.

NOT CHEROKEE

For followers of the top pilot/glider combination, Bob Calvert's winning machine in the league final was not a Cherokee as stated on the television Grandstand film. Bob was flying an Atlas.

THE 1980 AGM

This will be held on 1st and 2nd of March at Warwick University. Topics that members want debated should be notified to the Secretary. There will be Council vacancies to be filled. Do you want to stand and, if elected, to be partly responsible for running the BHGA?

PARACHUTE SEMINAR 1979

The first BHGA parachute seminar, organised by John Hudson, will be held on December 15th. The venue is Hall No. 1, The Royal Agricultural Showground, Stoneleigh, Coventry.

One of the country's leading parachutists will speak at the seminar and repacking and deployment sessions will be organised — with major parachute dealers present to answer questions and give advice.

A small entrance fee of £1 per head will be made to cover the hire of the hall. The hall is costing £165 and anything taken above that amount will be paid into the BHGA Central Fighting Fund.

To get to the showground, take the A46 heading south from Coventry. The showground is signposted about three miles from Coventry. The Mercian Club will provide BHGA direction signs and the seminar will start at 1 p.m.

This is an essential seminar for anyone owning or considering buying a parachute. Make sure you don't miss it.

SECOND DRAW RESULTS FROM 500 CLUB

- 1st Prize — Elite, Newark.
- 2nd Prize — Tansley, Rochester.
- 3rd Prize — Dupre, London SW12.
- 4th Prize — Ives, Norwich.
- 5th Prize — Joyce, Enfield.
- 6th Prize — Greenwood, Basingstoke.
- 7th Prize — Powell, Swansea.
- 8th Prize — Dunmall, Sevenoaks.
- 9th Prize — Smith, Northfield, Birmingham.
- 10th Prize — Hazelhurst — Handsworth, Birmingham.

COUNCIL MINUTES

These are sent to the Secretaries of all Clubs known to us. We can send more than one copy if required but its up to the club to arrange its own internal distribution.

OBITUARY

The Scottish Sailwing Association and the Lothian Hang Gliding Club announce with deep regret the recent death of Alistair Munroe in an accident in Tripoli where he was working.

No details are known except that this was not a hang gliding accident. Alistair will be remembered by the hang gliding community at large for his work for the past two years as Scottish Competitions Secretary and by his wide circle of friends for his cheerful good fellowship. He will be sadly missed.

Robin Laidlaw

RADIO COMMUNICATIONS

John Westcott has now resigned as Radio Communications Officer and we offer our thanks for the work he has done for us in this field. Is there a volunteer who feels able to represent the BHGA in dealings with the Radio Communications departments of the CAA and HOME Office?

MERE 1978 and '79 BADGES

A few of each are available at 50p. Write to the Taunton Office with an s.a.e. making it clear which years badge you want.

THE CENTRAL FIGHTING FUND

This was set up to cover the cost of legal expertise in cases where our freedom to fly is threatened by the proposed introduction of bye-laws or other forms of bureaucracy. Current problems were explained in an appeal in the October issue of *Wings!*. To the time of going to press (30/10/79) £747 has been received. A large proportion is from individual members including amounts of £100, £50, £25, £20 down to £1. Obviously some members are better off than others but those who have contributed have shown that they really care about the defence of their freedom to fly.

The Pennine Club explained that their cheque represented a contribution of 50p from each member of their Club. The Isle of Wight Club are going to send us what they would have spent on their Club Insurance Policy. (All Member Club and Registered Club policies are now paid from Central Funds. Total Public Liability Insurance costs for Clubs, Individual Members and Landowners amounts to almost £6,000 p.a.) All food for thought especially for the small number of clubs who have said they can't afford anything!

If donations averaged £1 per member that would put £3,600 into the fund which would more than cover our immediate costs in relation to The Southern Club's problem over Mill Hill, (Adur District Council v Tarjanyi in the High Court) and leave a healthy balance to help us cope with whatever else we may have to deal with.

Council wish on behalf of all members to thank, and acknowledge donations from, the following:-

- Peak Club, North Wales HGC, D. Newell, R. Engeham, Pennine HGC, Tudor Engineering, Mainair Sports, D. Targett, M. Hadland, J. Moffatt, Lord Mostyn, J.D. Webb, G.S. Baker, W.E. Mitchell, E. Thomson, G.L. Marsden-Jones, North Devon Sailwing Club, J.K. Emsue, R. Bashford, D. Robinson, C.S. Allen, A.J. Wiseman, C. Hudson, A.J. Watson, C.J.A. Balfour, Bill Nunn, P.K. Shaw, J.A. Cunningham, Mercian HGC, Dales HGC, Malvern HGC, Dunstable HGC, Sheffield HGC.

CURRENT BHGA MEMBERSHIP INSURANCE TERMS

Included in the membership fee is Public Liability Insurance currently in the sum of £500,000 which undertakes to indemnify a member for his/her "Legal Liability at Law" in accordance with policy conditions, a copy of which is held by the Secretary of the BHGA. The insurance is in force whilst a member is flying throughout Europe. The current terms of insurance include the following requirements.

- (1) that the hang glider being flown is acceptable to or "approved" by the BHGA.
- (2) that the member, if flying solo or as pilot in charge of a hang glider, is over 16 years of age.
- (3) that the member bears the first £25 of each and every claim.
- (4) that the member is ordinarily resident in the UK (Overseas Members are covered while flying in the UK only).
- (5) that accidents likely to result in claims are notified to head office immediately and liability is not admitted.
- (6) that the hang glider flown is not motor powered, tow launched or balloon launched.

DARTMOOR COMMONS BILL

The situation as at 30/10/79:

The Devon County Council seek in the Bill to generally "look after" Dartmoor and to control what goes on there. We have no quarrel with the main aims of the Bill, in which they seek additional powers to make byelaws affecting common land not owned by the County Council. One of them could amongst other things prohibit or regulate hang gliding. Not a desirable state of affairs especially as only one of the six sites on Dartmoor is owned by the County Council!

The power to make such a byelaw might never be used but its obviously far healthier for us if its not available. We are petitioning against the Bill at its Commons Committee Stage and have at least one MP who has promised to object to a Formal Second Reading which will mean that the matter has to be debated. We will be circulating all MPs to seek their support in the debate and in a vote. Club Secretaries will be contacted at the appropriate time by the Secretary to ask them and their most articulate members to lobby MPs. Will those members, not in clubs, who would also like to tackle their MPs please write to the Secretary.

ABERDEEN HANG GLIDING CLUB

New officers of this club are as follows: Chairman, Robin Smith, telephone Aberdeen 322173, sites officer, Bob Dunthorn, telephone Aberdeen 877899, while the new secretary is Eric Brooks of 477 North Deeside Road, Cults, Aberdeen, telephone, Aberdeen 861067

PROTEC

Designed for hang gliding £18.40 + 50p p&p. Colours: Royal blue and Navy blue.

Winter hilltop suits (quilt lined throughout) £19.55 + 80p p&p. Navy blue only. Send Cheque or P/O to:

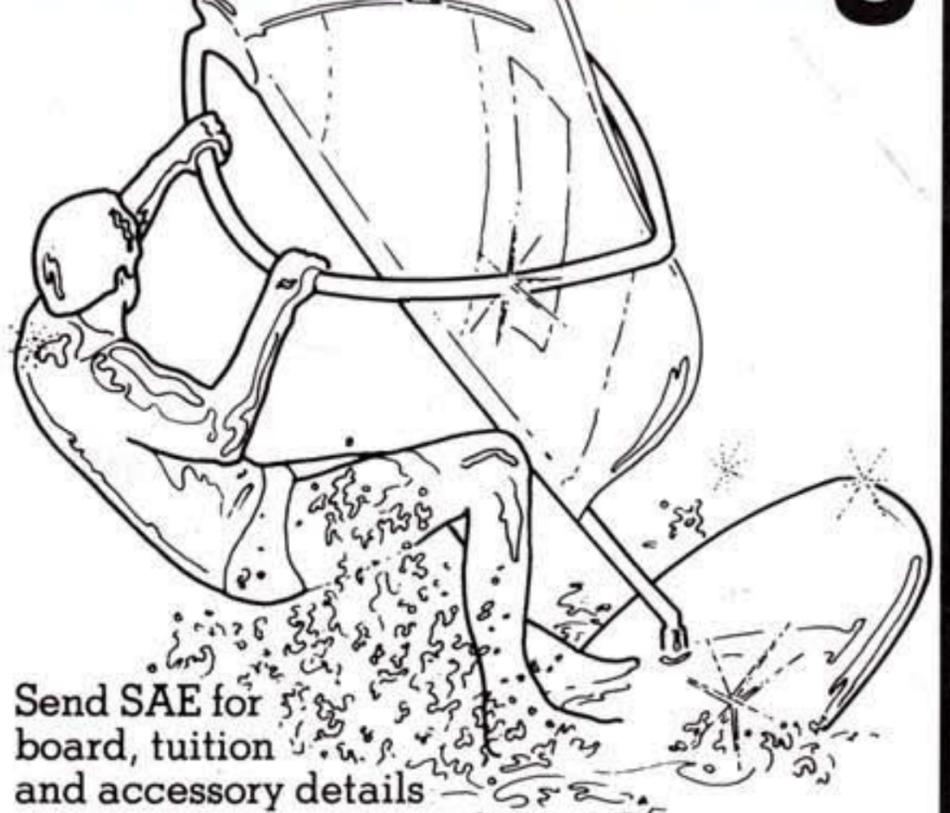
PROTEC
11 SINCLAIR ROAD, KILLEEN,
BANGOR, COUNTY DOWN, N. IRELAND.
Telephone: BELFAST 54072

PROTEC Size Chart

Size	Height	Chest
Small	5ft 4in to 5ft 7in	34in to 36in
Medium	5ft 8in to 5ft 10in	38in to 40in
Large	5ft 11in to 6ft 2in	42in to 44in
Ex Large	6ft to 6ft 3in	46in to 48in

★ Measures not conforming to size chart are 'SPECIAL MEASURES'
Please state Chest and Height Measurements.
Special Measures price — add 10%

sailboarding



Send SAE for board, tuition and accessory details

Mainair Sports, Shawclough Road, Rochdale, Lancashire OL12 6LN
Telephone Rochdale (0706) 55131/2/3 Telex 635091 MAIN

mainair moneystretcher



A bonanza of gifts with every new glider under our unbeatable

WINTER OFFERS

- ★ FREE VARIOMETERS
- ★ FREE THERMAL WEAR
- ★ FREE SPARES
- ★ FREE INSTRUMENTS
- ★ FREE SKI SUITS
- ★ FREE ALTIMETERS
- ★ FREE GLOVES

★ If you need new wings, copy or clip the coupon



mainair sports

Mainair are agents for all top UK and USA manufacturers

To: Mainair Sports, Shawclough Road, Rochdale, Lancashire
Yes I am interested in buying a new glider under your WINTER OFFERS scheme

Name _____
Address _____

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.

All small ads should be sent to Lesley Bridges, Commercial Editor, *Wings!*, Yard House, Wentnor, Nr. Bishops Castle, Shropshire.

Ads sent to any other address will be redirected and therefore delayed.

CHEROKEE 200.

Gold/yellow/white. Perfect condition. Rigged prone but seated harness and rigging available £15 extra. Suitable Pilot 1 upwards. Only selling to buy a 220. £480. Tel. Ken Sheaf, Woolacombe 320 (027 187 320).

HIWAY CLODBASE.

Pale blue/white Bainbridge Dacron sail: very good condition: complete with seated and prone harnesses, bag. £180. Phone Southampton 432471.

WASP FALCON IIB.

Breakdown model; multi-coloured sail; seated harness; bag and ventimeter. Little used. £250 o.n.o. Phone Martin, 01-863-8727.

FLEXIFORM SPIRIT.

22ft. multi-coloured sail; pulley system; excellent condition. Will deliver. Need garage space. Give away £250 o.n.o. Eric, phone 8-5 works no Nottingham 636423.

For sale — MIDAS E. Keel out — red orange gold yellow white. £275 o.n.o. Keith Vinning 021-772-6434 anytime.

SUPER SCORPION C —

Plus, 9 months old. £470. Also homebuilt copy of above, flies as well as original. £260. Ian, 16 De Vitre Street, Lancaster, Lancs.

LOST. Pair of blue leather gloves at Rhosilli during August. If found, would you please ring me at 07062 27797 during the evening so I may retrieve them. Thank you.

HIWAY Prone harness, at half new price. £25. Phone Richard Iddon 0772 600582.

FOR SALE - SUPER SCORPION C and Hiway Prone harness, excellent condition, only flown a few minutes. Never damaged. £500 o.n.o. Ring Birdham (0243) 512310 (working hours).

Medium **SPIRIT**. Good condition. With seated harness; owner going overseas. £250. Phone Royston 3763.

VORTEX 120. 6 months' old. Good condition. Also prone harness and helmet. £400. Ring Hitchin 51837.

Large **MOONRAKER 78.** Immaculate — must sell as going round the world. Pete Anstey, Brighthouse 716069. Offers.

PHOENIX Junior. Good handling and good performance. Still one of the best kites around. Would suit Pilot 1 onwards. Bargain at £210 or part exchange for engine. Phone John Hunt, Bristol 696866.

ICARUS V complete with excellent trailer, seat and tools. Buy now and be prepared for next year's thermals. £200. Mike Batchelor, Thornbury 414729.

Two **SUPER SCORPION C's** both in excellent condition with fine performance. Renowned for their cross country capability. New price now £670. Yours for £485 each. Phone John Hunt, Bristol 696866 or Nigel Milnes, Bristol 32972.

MOYES MAXI. Still the glider with amazing sink rate. No fewer glider yet to beat it. £310. Also for sale **SKYDART**, Australia design, good performance. Nice to fly. £285. Kevin Cowie, 27 Clermont Terrace, Brighton.

CLOUD 9 in very nice condition. Not used for 18 months. Seated harness available. £180. Also transport brackets to suit TR7. £20. Phone John King, Swinford 287271.

McBROOM LYNX. High flying for intermediates - stability for EPC holders. Good condition. £250 (inc. seat). Also Hiway prone harness, £35. Willis Vario, £75 - both hardly used. Ring 01-997 8570.

MIDAS E. House purchase forces sale of my versatile 'national Panasonic'. It flies beautifully. £245. Tel: 0823 672046. (Somerset).

CHARGUS VEGA I. Suitable for beginner. £140. Tel: Bridgwater (0278) 56989.

Small **SUNSPOT** (to 11 stone). 1 year old. Never pranged. Low airtime; flies well. Multi-coloured sail. Cheap at £320. Phone John Mallender, Sheffield 52547 (or contact any Sheffield Club member).

ELECTRA FLYER CIRRUS 5B. Good condition; recently overhauled by agent. Genuine reason for sale. £450 o.n.o. Air Sports parachute on prone harness £150 o.n.o. Phone Mr. Williams, Bloxwich 406347.

Sale: **SUPER SCORPIONS** £130 - £500; **CHEROKEE**, as new £480; **SPIRIT** £200; **WINBTER BAROGRAPH** £130. Bob Calvert, 390 Preston Old Road, Blackburn, BB2 5LL, Lancashire. Tel. 0254-21615.

SOARMASTER (or similar) power package complete wanted. Contact Bill Allen, Cheltenham (0242) 28989 evenings.

CYCLONE 180. Latest spec. as good as new. £495. Percy Moss, 40 Moseley Road, Kenilworth, Warwicks or phone Kenilworth 59924.

SKYHOOK SUNSPOT (22ft). Green, gold, white and black sail. Superb soaring kite. Phone Simon Ogston, Dundee (0382) 60111 ext. 2426 (daytime).

MOONRAKER 77. Immaculate condition. Multicoloured sail. Superb all round performance and handling. Absolute bargain at £300. Contact Ray Wheeler, Sec. Sky Surfers, Tel: 0703 732865 or work, 0703 30331.

WASP CB 240. Post Kossen, orange terylene sail; very good condition. Kept in storage last 15 months. Good stout beginner's kite. £110 including bag, seated and prone harnesses. Phone John, Harlow (0279) 34208.

OLYMPUS 160, suit weight 145-170 lbs., made in USA. Never flown. £450 o.n.o. including new Price harness. Would consider exchanging for Super Scorpion, telephone 01-589 2280, evenings.

MIDAS E. Excellent condition. Less than 3 hours airtime. Emigration imminent hence would accept around £250. Office: Dartford (0322) 23456, ext. 416 or Home, Dartford 20150.

RIDGE RIDER with carrying tube, harness, helmet. £120 o.n.o. Mr. Yardley, Crawley 37837.

HIWAY SPECTRUM Mk II (Large). Only six months' old. Hiway's latest model of Spectrum. Similar to the Super Scorpion in appearance and performance. Smooth, forgiving handling. £420 o.n.o. Phone Nigel 01-398 7175 (24 hr. Ansaphone).

For Sale. **CLODBASE** Chordwise. Rigs prone/seated, plus seated harness. No reasonable offer refused. Tel: Peter, Fordcombe 328 (Tunbridge Wells).

For Sale. **CLODBASE** - red and white. Ideal beginner's kite, with bag and prone harness and helmet. £120 o.n.o. (may deliver). Simon Jones, Tel: Aberystwyth 612011.

SCORPION C. 1978. Break into the high flying bracket for only £350, with this yellow, red and white ace stacker. Thommen altimeter for £35. Will give another dimension to your dream. Tel: Strathaven 20141.

HIWAY CLODBASE. 20ft., radial battens, multi-coloured sail. Beautiful flier, good condition and good buy at £215. Ring Andy (91) or Byfleet 43383.

Large **SPIRIT.** Excellent condition. Attractive 4 coloured sail. Rigs prone or seated. Complete with seated harness, new helmet and variometer. Ideal first kite. £250. Nottingham (0602) 383426.

SCORPION C. Very good condition. Never pranged. £320. Ex RAF altimeter £25. Gloucester 417014, evenings.

SUNSPOT. Excellent condition. New '78 and very lightly flown. £350 o.n.o. for quick sale. Please ring Bishopston (West Glam) 3763 or Oxford 880384.

Large **SKYHOOK SUNSPOT** for sale. Good condition. With bag and seated harness. £325 o.n.o. Phone: Burntwood 74043.

BIRDMAN MOONRAKER 77. Excellent condition. No prangs. Beautiful sail. Flown seated most flights; handles well. £325. Vario by Theotek with stalk £50. BNirdman red prone harness £40. Birdman seated harness £10. Contact Bert Threll, Wootton Bassett 2994.

SCOTKITE FIREFLY for sale. Good condition. Similar design and performance to Cloudbase. £150 o.n.o. Contact R. Laidlaw, 105 Clermiston Rd., Edinburgh (031) 334 6356.

Small **CYCLONE.** Very good condition. Hardly flown. Assymetric sail. £395. Phone Graham 0480 68882.

VORTEX 120. Excellent condition; 12 months' old but hardly flown since Christmas. Absolutely never bumped; brightly coloured sail; seated harness; spare uprights, plus set of unused Dunstable pairings. £400. West Drayton 43262 (evenings).

MOONRAKER 77 with the best looking sail I have seen. Fantastic performer, yet suitable for anyone from beginner to expert. Tuition provided. Must sell unfortunately due to lack of funds. £350. Phone Wainstones 423.

ARION 17ft. Strong standard in v.g.c. with all black sail; suit beginner; for the lighter pilot. £90, including seat and bag. Phone Keith, Aldrige 56612.

GIVING AWAY FREE to anyone promising to use it fully: Home-built wind-tunnel, pretty crude but has served me well for 7 years. Space urgently needed for glider construction. Recipient collects. West Drayton 47569.

SPIRIT. Small. 9-11 stone. Excellent condition; red and blue sail. Pulley system. £200 for quick sale. Wetherby 62622.

For sale. **SAFARI B** pilot weight 10-13 stone; fitted for wing posts and locked up tips. £380 o.v.n.o. Also strong adjustable ladder type roof rack. £6 A.H. Trapp, tel. Kidderminster 515884 after 6 p.m.

Back numbers of Wings! magazines 1975 to date. Best offer secures. Tel. Office 0322 23456 Ext. 416. Colin Charles.

For sale. **WASP FALCON 3.** Breakdown. Superb condition. Nice colours. Ideal glider to gain experience. Beginner to intermediate. Long and breakdown bags, plus spare uprights. Must be seen £200. Heinz Schmitt. Tel: Chertsey 62708.

SUPER SCORPION C. 4 months old. Multi-coloured sail; never pranged and in as new condition. Genuine reason for sale. £530. Keith Vinning, Phone 021-772-6434 anytime.

ATLAS 16. 4 months' old. Sponsor's name on sail but can be removed. £500. Phone Pete Jackson on Sheffield 585644.

For sale. **19ft. CLODBASE CHORDWISE.** Rigs prone/seated, plus seated harness. No reasonable offers refused. Tel. Peter Fordcombe 328 Tunbridge Wells.

Large **SPIRIT** in good condition. Soars well with 13 stone pilot. £240. Longridge 2676. Evenings 3443.

CLODBASE 20. Blue bainbridge chordwise. Very good condition. Spare control bar/upright; bag and helmet. New kite forces sale. Thus first £85 secures. - Phone 01-977-5565.

MIDAS E. Multi-coloured sail, in good condition. An easy to fly, high performance glider at bargain price of £225. Peter, 0634 576152.

VORTEX 120. Excellent condition. Attractive multi-coloured sail. Bargain at £360. Phone Ralph on Eastbourne 643207.

VORTEX 120. One year old. Excellent performer. Suitable EVV to advanced. Superb condition. Attractive yellow and white sail. £340 o.n.o. Phone Winchester 69332 evenings and weekends.

SUPER SCORPION C. Beautiful multi-coloured sail in dacron. Excellent condition, almost new; 'B' bar, prone and seated harnesses. £500. Tel. Cophorne (Sussex) 712384 or Haywards Heath 58472.

VORTEX 120. Almost brand new. Colourful dacron wing. Perfect condition. £360. Haywards Heath 58472 or Cophorne (Sussex) 712384.

WANTED FOR SPAIN. S.H. Intermediate glider v.g.c. and spare parts for 65kg pilot. Delivered to south England port or airport. Any brand currently manufactured in UK considered. Leave name and tel. no. Paul Woolman, Cornwall. Tel: 0726-860706

MIDAS SUPER E (K-D). Absolutely new sail, L/Es etc. following major prang. Low airtime. Tuned to soar 8 to 35. Ideal for under 11 stone P1 to P3. £450. Will haggle. Ring Swansea 896785.

SKYHOOK IIIA. Complete with seated harness. Used only twice. Dismantles into 6ft. lengths. Ideal for beginner. £160 o.n.o. R. Crutchley, 3A Cathwaite, Paston, Peterborough.

HIWAY CLOUDBASE. 21 ft. Suit beginner/intermediate pilot. Good condition. £200 o.n.o. Ring Chris Sturdy, York (0904) 790286.

McBROOM LYNX, Red and white, good soarer, suit beginner or intermediate flyer. Complete with seat, spare A frame sides and other oddments. £200 o.n.o. Contact Roy Bennett, Bristol 627813.

WASP FALCON IV. Immaculate multi-coloured sail. Breakdown version in superb condition, to include seat and bags. Less than 1 hour's flying time. Tel. Basingstoke (0256) 29211, ext. 256 (work) or 0256 26896 (home).

MCBROOM LYNX. Good soarer but stable for Pilot 1. Good condition. £210 inc. seat. Also Hiway prone harness. £30 and Willis Vario £75. Both hardly used. Tel. 01-997-8570.

MOONRAKER 77. This kite is in very good condition and has been well taken care of. Personal reasons for sale, but it must go. Thus, £300 o.n.o. Ring Richard Coates, Chandlers Ford 61499 (Hants).

SUPER SCORPION C. Plus. 9 month's old. £470. Ian Ferguson, 15 De Vitre St., Lancaster, Lancs.

MOONRAKER 78. Very good condition. One of the best performers. Blue with red flash. £395 o.n.o. Tel. Graham Leason 073477 2423.

AUDIO VISUAL vario — bargain £38. Tel. 073477 2423

SPIRIT Large. Pulley system. Breaks down to 13 ft. Rigs seated or prone with prone harness. £265. Contact: S. Cook, 1 Sewerby Avenue, Bridlington, N. Humberside.

FALCON IV. Multi-coloured sail, with white centre panel. Spare 'A' frame. £260 o.n.o. Also prone harness £25 o.n.o. Tim, Leamington Spa 23464 after 4.30 p.m.

CIRRUS 5B. Good condition. £340 with spares. WASP audio/visual vario, less than an hour's use, £65. Bowen, Tel: Ferndown, (Dorset) 893318, Office hours.

GRYPHON III RECENTLY CHECKED BY Waspair and modified to 160 scallop trailing edge. It has had about 10 hours flying. Please contact Mike Griffiths, Tel. Monmouth 3108.

SPECTRUM (small). Immaculate condition; any trial; complete with B bar and seated harness. £395 o.n.o. For further information phone Sittingbourne (Kent) 25627.

Could **ANDY SMITH** last heard of working on North Sea Oil Rigs please contact Steve Poink. Tel. 01 969 2788.

FALCON 5 latest Wasp Falcon. Breakdown model 28' wingspan, defined tips. 2" tubing. P.1 to intermediate. Genuine reason for sale. Tel. John Wadsworth Reading 471851.

As new **CHEROKEE.** Medium. Nearest to £470. Going rigid. Workington 0900 3503 Cumbria.

GRYPHON MK III. No reasonable offer refused. Plus spares. Phone 0536 516778.

THERE HAVE NOW BEEN Over 12 issues of *A4 Wings!* You will appreciate them even more if they are bound in a dark walnut simulated leather *Wings!* binder with gold blocking on spine and motif of hang glider on front. £2.95 for A4 (Hang Glider also fits). £2.50 for A5 (original *Wings!* and Club magazines). Livingstone Promotions, 2 Timberyard Cottage, Herstmonceaux, Sussex.

ARBEE VARIO, VISUAL POD AND A.S.I. Due to the increase in VAT and general inflation we have been forced to increase our prices. New prices: Vario — £52.50. Visual — £17. A.S.I. — £64.50. Coming in the new year, various instrument pods. Arbee Developments, 18 Stephens Crescent, Horndon-on-the-Hill, Stanford-le-Hope, Essex.

FLY THE MOUNTAINS WITH AN EXPERT! Snowdon view. Cosy converted barn; sleeping loft, open fire. Electric mod cons, beautiful surroundings. Sleeps 4 + 2. Also simple, comfortable 4 berth caravan. Llanberis 707. Susan or Jan, Madog Parc, Brynrefail, Caernarvon, Gwynedd.

Small ads must be limited to 35 words. Personal ads are free to BHGA members. Non-BHGA members or commercial small ads will be accepted at a cost of 8p per word. Send to the Commercial Editor, Lesley Bridges, with a crossed cheque or postal order for the correct amount (minimum charge £1) made payable to the British Hang Gliding Association.

AMPLIFIER aerobic hang-glider. 28" wingspan, largely prefabricated, 80p including p & p. Also Simpli-flier standard 40p or £1 for one of each. Robert Keddie, 41, Townsend Place, Kirkcaldy, KY1 1HB.

GALAXY FLIER HELMET NOW WITH THE NEW British Standard 5361. £16 plus £1 p & p. Frank Acton, 53 Royston Park Road, Pinner, Middlesex, HA5 4AB. Tel: 01-428 2686.

GLIDER RIDER. World's finest hang gliding publication. Up to 75 pages monthly of news, views, tec' tips, power and rigid information. 1 year's subscription £15. All back issues available including November American Cup and January Milton profile. £1.20 each. Euro-Wing, Unit 20, Dixon Place, College Milton North, East Kilbridge G74 5JF.

INSTRUMENT Vario Mounting Stalk — "Kick-up" feature — secure and instant fixing £11.00 including VAT and postage. **MORE — WILLS WINGS — COLVER —** Soaring Variometer and Chad. **AVT** flight deck — Price prone harness and a great deal **MORE.** **MAKIKI** pellet Variometer — self-contained model 2 is only 4in. diameter x 5½in. long and weighs 15 ozs. Just as sensitive as electronic variometers. £35.00 inc. VAT and postage and packing — great value but **MORE —** Hang Gliding magazine and Glider Rider — Keep up to date with a Mainair annual subscription, £14.38 surface mail; £17.83 air mail. Plus **MORE —** parachutes, spare parts, components, wind meters, Mitchell Wings — Harnesses — Who else stocks 8 types? Try each before you buy — **MORE** choice of 5 makes of hang gliding helmets from £14.38 to £31.92 — and finally — **MORE —** **MAINAIR** now stock a full range of thermal wear, gloves, ski suits and all you need. If you fly a hang glider, you need a Mainair catalogue. Send large s.a.e. to **MAINAIR SPORTS,** Shawclough, Rochdale. Tel. Rochdale 55131.



C.F.I. ROBERT BAILEY
BEGINNERS LESSON ALL
EQUIPMENT PROVIDED
GLIDER SALES ETC.

2 Denton Avenue
Leeds LS8 1LE.
Tel. 0532 662518
0532 684830

B.H.G.A. H.I.A. REGISTERED

DO YOU WANT TO:- Fly better?

Learn more quickly?
Have bed and breakfast
surrounded by fantastic hills

WHY NOT CONTACT:- Mike Adam

South Wales Hang Gliding School
67 Cardiff Road
Troedyrhiw
Merthyr Tydfil CF48 4JZ.
Telephone: Ynysowen 690787

*ACCOMMODATION ALSO AVAILABLE IN RHOSILI
FURNISHED FARMHOUSE TO SLEEP 8*

STOP PRESS

2nd NOVEMBER 1979. INFORMATION RECEIVED BY PHONE FROM CUSTOMS EXCISE ON IMPORTED HANG GLIDERS. A revision of GATT rules covering the importation of civil aircraft, including hang gliders, is **EXPECTED** to come into force on the 1st January 1980, subject to ratification by EEC Commission. Will importers of hang gliders whether trade or private contact their local Customs and Excise office for details of the revised rules which will allow the import of hang gliders for civil use without the payment of import duty.

If the local office are not in the picture ask them to contact Mr. D.G. Riley, HMC & E, Kings Beam House, Mark Lane, London EC3R 7HE. Telephone 01-626 1515 ext 2250.

Chris Corston

WHERE TO GO IN 1980

Wondering where to go for your 1980 hang gliding holiday? Watch out in the January issue for our special travelogue feature, when several pilots describe their experiences at different places.

Hiway territory.



The sky becomes your playground when you fly one of the new range of Hiway hang gliders.

No longer need you sacrifice handling to gain high performance. Super scorpion and Super scorpion II are your obedient servants. Thermal soaring is a breeze.

And... simplicity of operation. Whether you are a cross-country pilot, competition pilot or just gliding for fun, Hiway have the machine for you.

STOP PRESS... HIWAY OBTAINS FIRST B.H.G.A. CERTIFICATES OF AIRWORTHINESS. AWARDED FOR SUPER SCORPIONS B, C & C+ . . . FLY WITH CONFIDENCE, FLY WITH HIWAY.



Hiway Hang Gliders, Sirhowy Hill, Tredegar, Gwent NP2 4XP.
Telephone: Tredegar (049 525) 4521.