

WINGS!

OCTOBER 1978

MAGAZINE





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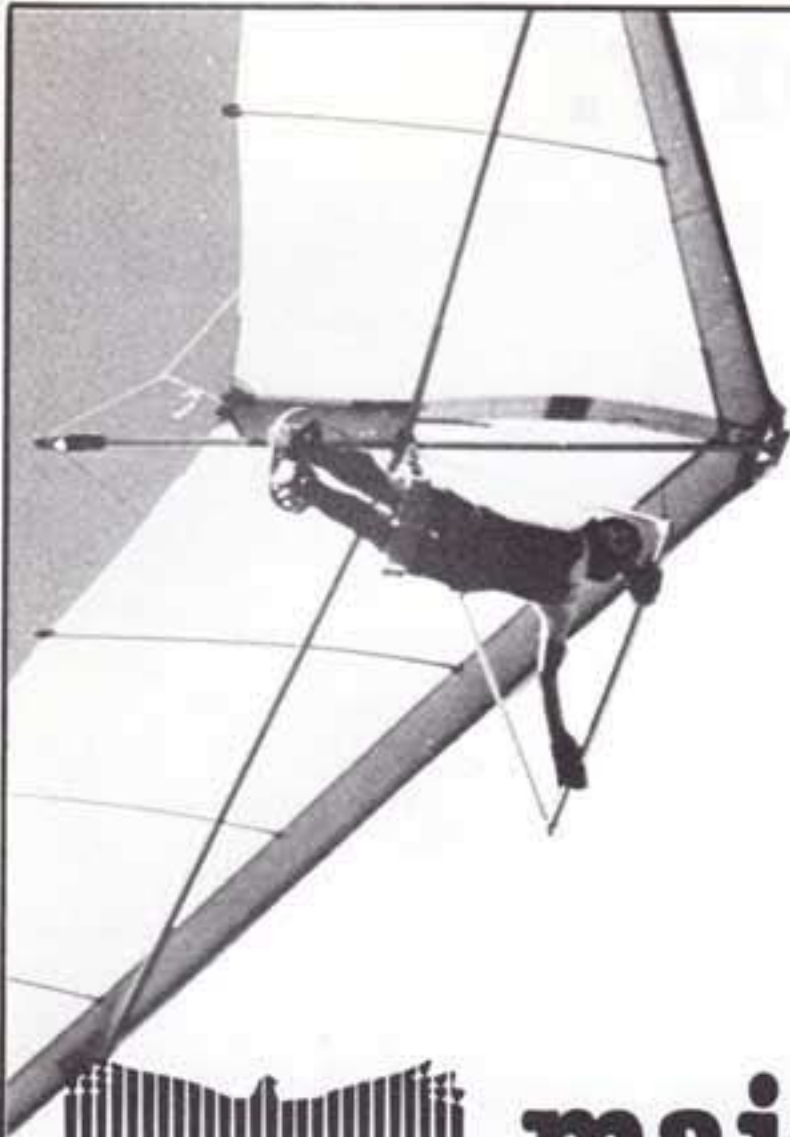
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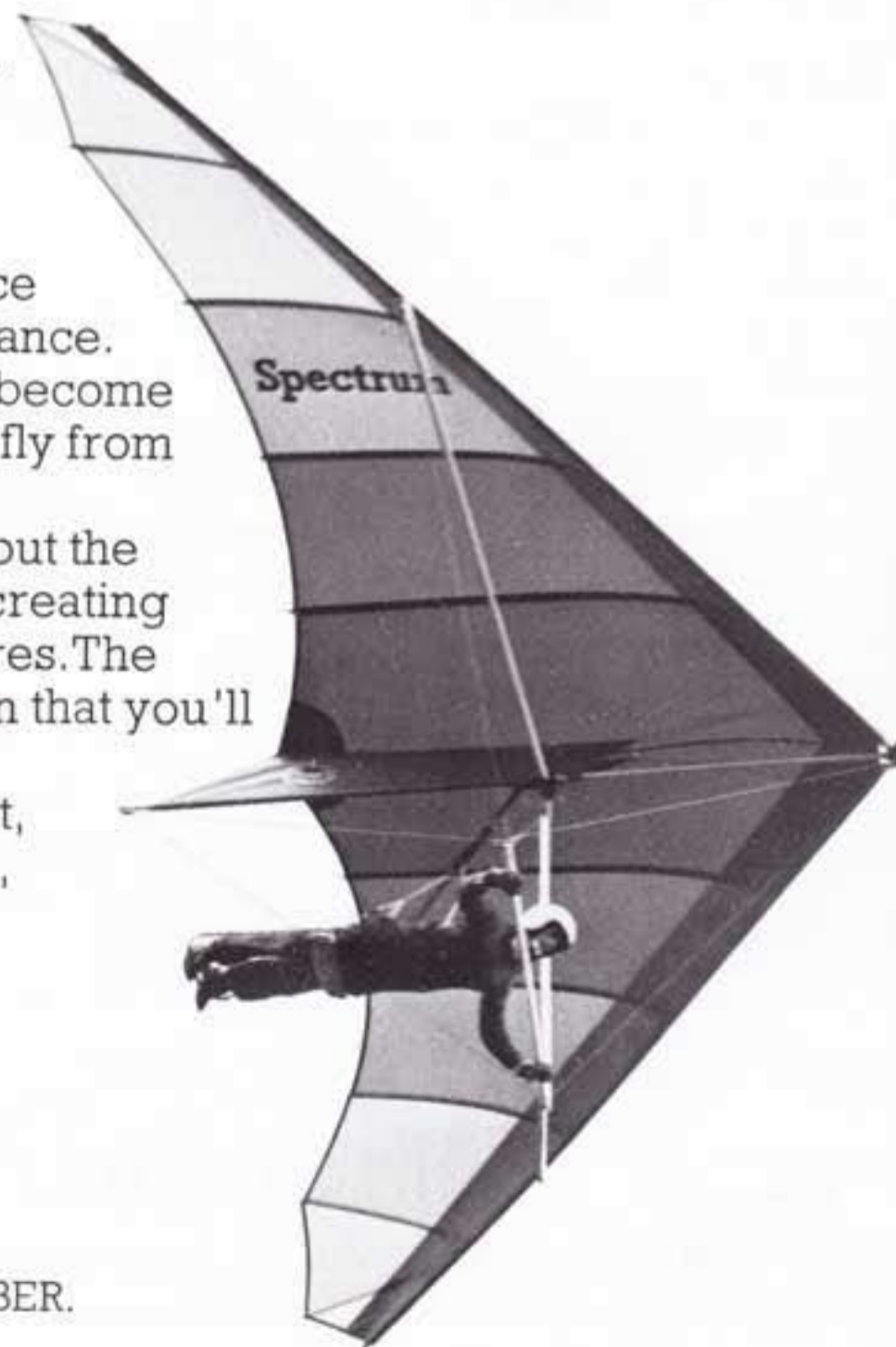
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WINGS!

The official magazine of the BHGA

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Cover: Brian Milton pilots the Atlas Express Moonraker '78 in the League Final at Llandinum

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**BRITISH
HANG GLIDING
ASSOCIATION**

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.

Going . . . Going . . . Gone, but not forgotten

So I have finally reached my last issue. How vividly I recall Tony Fuell's ullulations in his last editorial. I now welcome GARTH THOMAS to the enviable position of 'Editor of Wings!', to love and to cherish, for richer for poorer, in sickness and health, from this day forth . . . etc. **etc. I must say editing Wings!** is like a stormy marriage — boring it isn't. Garth has long been involved with the BHGA at council level and in the past has produced magazines professionally, so we have a really first rate man to take over the job. Give him your support, flood him with mail, bombard him with photographs, inundate him with articles. I know what it's like to run short of material and I would wish it on no other man.

In leaving *Wings!* I would like to echo Ann Welch's words when she talked, at the last general meeting, about the 'present' history of our

sport. We all talk, in what is now a cliché, about the great bounds our sport has taken in a very few years. It is still true, and, quite remarkably, our exploits four years back are already ancient in the terms of development. This in four years! Imagine what fifty years growth might show. The mind boggles. I believe that we are making history in a way that aviation has not seen since it's own birth. However, it is very difficult, when you troll down to your local Mill Hill, to think that you are making history. It is difficult to imagine, when you have a good day and sky out at 1,000 ft, that you are making history. History isn't a series of firsts. True, Bob Calvert and Bob Bailey will be remembered more than most, but history is a complete record of the times. Memory is remarkably short lived and the gradual procession of events becomes blurred and distorted — when did prone flying begin

to supercede seated flying, when did pilots first become aware of thermals. History is written not spoken. There is very little current literature about hang gliding. Books never really document the sport in enough detail to give a clear picture of flying activities as they really were. Probably the most significant documentation of hang gliding history in the UK is *Wings!*

Remember this. One day you will be sixty (we hope) and perhaps one day hang gliding will have developed into regions hard to imagine (man powered flight across the channel?) It may be a common form of transport, particularly for inaccessible areas. Maybe television or a magazine part work, 'The History of Hang Gliding' will want to trace its beginnings. Those of the barnstormers who sat on top of a wet and windy hill all day just to soar a couple of hundred feet from the ground, not even being able to do

loops or barrel rolls on ridiculous, drag creating crudities. And perhaps that article you always meant to write for *Wings!* about your club will mean that the historical picture will be just that bit poorer — without your name. How often have you enjoyed the efforts of aviators earlier this century who's machines were so crude as to be comical.

You are one of those intrepid aviators, now. Don't let yourself slide into the past unnoticed. Contribute to *Wings!* and give your sons and sons sons a richer past to read about.

As a final word I would like to say thank you to John, Bill, Lesley, Ian, Tony, Chris, Bettina, George, Snowy, Ben, Hardman, Mike, Dave, Roger, James, Graham and the many other contributors who have made the last year and a half such an enjoyable experience for me.

David Worth

Council Meeting of 20th August, 1978 held at BHGA Headquarters, Taunton.

Council minutes would in future be sent to all Clubs so that anybody in the Association could apply to their Club Secretary if they wished to read them.

The Treasurer's Report was accepted and items agreed therein were as follows:-

1. The fees for the Association's solicitor to attend a Sports Council seminar entitled, "Sport and the Law" should be paid.
2. £170 would be spent to obtain a film with sound of BBC Grandstand coverage of the League Final for use at BHGA and Club meetings.
3. That Atlas Express, who were sponsoring the League Final, be provided with 1,000 copies of October *Wings!* without charge. This issue would carry a colour cover and their advertisement on the rear cover.
4. The Treasurer and Chairman were appointed as Trustees of £4,000 of BHGA Reserves.
5. The feasibility of running a monthly lottery in order to raise funds for general purposes should be established.
6. The seven remaining parachutes necessary for the British team for the Kossen event at a cost of £1,200 should be obtained, subject to the strict agreement that they are offered for sale at the end of the present competitions programme at the best price possible. The nett outlay was expected to be small.
7. The Bleriot Cup budget and the provisional budget for the America's Cup were agreed, and it was decided that medical expenses and personal

accident cover, which had not been allowed for, be added.

Mike Collis, the Services representative, was involved in a considerable amount of expense in maintaining contacts and promoting the sport within the Services. In the absence of any figures, it was agreed that the BHGA would pay these expenses up to £50 per annum. If the cost is greater Council can be approached again.

Members to promote lotteries and certify lottery returns were appointed.

Delays with the introduction of the new Pilot Rating System were discussed. It was agreed to produce the Observer Handbook and a low cost edition of the Pilots' Handbook as soon as possible.

After a full investigation by a specially appointed Sub-Committee, Council were recommended to remove the Birdman Flight Training School at Mildenhall from the Register of Hang Gliding Schools, as it had been found that the School did not comply with all the requirements laid down in the Schools Registration document. Council removed the School from the BHGA Register and directed the Training Officer to detail the precise requirements for BHGA Registration with a view to recommending reinstatement to the BHGA Register as soon as he was able. Ashley Doubtfire, the School proprietor, had been fully involved with the Sub-Committee's investigation and he accepted its conclusions.

Council accepted the Competitions

Committee Report. Items endorsed therein were as follows:-

1. The recommendations on the make-up of the official party and team that would travel to Tennessee for the America's Cup.
2. The Competitions Committee view that British hang gliders must be flown by British pilots entered in the event.
3. The importance of the Atlas Express sponsorship of the League Final.

Malcolm Hawksworth had submitted a report on his setting up of the Flying Committee, which he would chair, and it was agreed that he should go ahead with the formation meeting and that the terms of reference should be finalised after the meeting.

Council considered the Secretary's paper covering the need for the employment of an extra member of the staff to develop and promote the sport. This included selling hang gliding to major landowners, local authorities, the Establishment and to organise public events. Revisions to the terms of reference submitted were to be considered at another meeting in the very near future.

The initial phase of the Airworthiness Approval Scheme had been introduced and administration would be conducted from the BHGA headquarters.

The BHGMF had requested that harness advertisements from non-BHGMF members should not appear in *Wings!*, which was agreed.

After discussing those nominated to fill the vacancy on Council due to the

retirement of Will Jones, it was decided to invite Malcolm Honeychurch to accept co-option to Council until the next AGM.

Conflict between Members of the North Yorkshire HGC and a local gliding club was discussed. The Gliding Club claim the authority to ban hang gliding from their Aerodrome Traffic Zone. The Chairman and Malcolm Hawksworth would be involved in attempting to resolve the dispute amicably. It was decided that if possible we should establish our own ATZ's.

The Chairman was briefed on points that he should raise at the CIVL meeting in Kossen, with particular reference to obtaining FAI approval for a World Cross Country event to be held in Britain in 1979 and to propose that National Associations should not insist on their own flying requirements applying to visitors. A budget of £250 was allocated to cover the Chairman's expenses in attending the meeting.

It was agreed that \$225 should be spent to advertise *Wings!* in the America's Cup Competition programme.

To date Garth Thomas was the only person who had expressed interest in becoming Editor of *Wings!*. It was agreed that the BHGA should adopt the Advertising Standards Authority Code of Practice.

The Secretary was asked to decide with Bill Cowell and Jim Taggart whether one or both of them be appointed to represent the BHGA in Germany.

Chris Corston

CARAVAN CLUB STRUCTURE

Dear Sir, Has the time not come to emulate the Camping and Caravan Club structure? Who like us deal with land owners and local Council, are casual users of country sites, with dispersed membership and similar problems.

(1) One Common National Subscription, members choosing own district club for voting purposes.

(2) Clubs to band into Regional Groups each region electing (or re-electing to) its own Regional Council Member.

(3) National Sites negotiated with National Trust, and other land owners on an annual basis — fees paid out of national fund, other site fees direct to land owner.

This system would prevent the hassle of financial transactions on hills by club members themselves, making reciprocal flying feasible.

Southern sites are expensive, but the high density of paying member down south will offset that.

We should go for sites managed by local clubs, but financed wherever feasible by national funds.

This is the general concept. How many support it? Raise it at this year's AGM and let's see.

P.J. Powell
Swansea

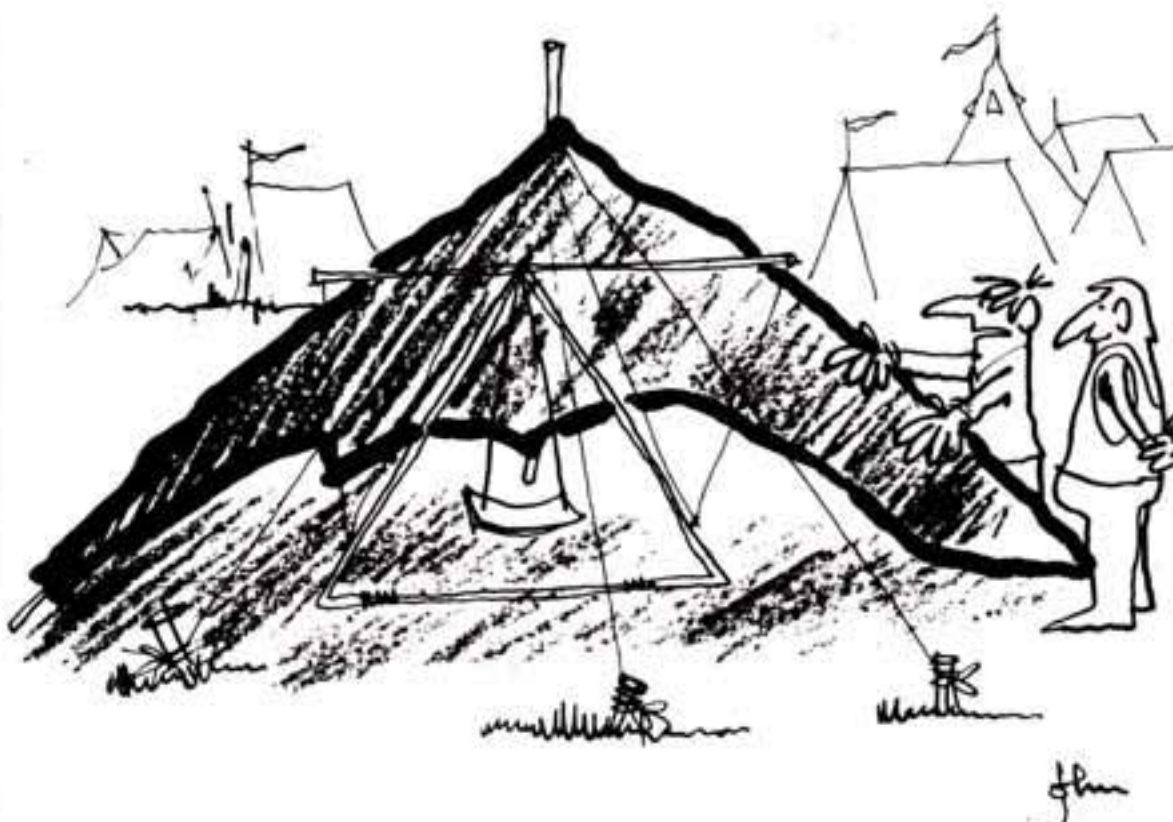
PITFALLS FOR THE PUPIL PILOT

Dear Sir, Further to Reggie Spooner's request for BHGA members to air their views, perhaps the following items which are current to Scottish fliers as problems may also be causing concern to pilots south of the border, and who knows, even in Welsh Wales too!

The growth of the hang gliding fraternity is being stunted by the lack of adequate training facilities for newcomers to the sport, especially since the BHGA regulations make it impractical for clubs to do any worthwhile amount of training. I know that this will bring the reaction that there are schools in Scotland and elsewhere who will be happy to train novices (for a fee) but this arrangement does not suit all potential members, as time involved, distance and costs rule out this method of entry into the sport.

Even if our aspiring new pilot (or is it perspiring?) gains his EPC, he is then faced with the tasks involved in gaining his pilots 'Wings'. As one of the qualifications for this badge is four top landings, and is due to be increased from the 1st August to six top landings, the chances of achieving this total seem remote for a large number of fliers, and doubtless as their tally of observed top landings increases over the months, the required total will be once again increased making the badge a virtually unobtainable goal for the new pilot.

Whilst I am in favour of raising the standards of proficiency in flying, I do



It's not much as a tent either . . . but at least I got a second in Class I with the tent!

AIRMAIL

not consider that the present methods are completely suitable, and in this respect it is obvious from the contents of recent *Wings!* magazines that the novice to intermediate fliers are not being catered for.

In the process of improving his flying, the new pilot is dependant on any fellow club members good enough to spend time with him in the correct rigging and tuning of his kite, for it is my experience that the BHGMF do precious little in the way of providing written instructions on the correct use of their products, and seem to depend on the pilot remembering verbal instructions from the manufacturer or agent when taking delivery of the kite; I hope that such pilots have good memories! If our pilot survives so far, he is still liable to fall out of his seated harness when the backstrap falls under the seat, as no chest or waist strap is fitted to prevent this, as this is only a "recommendation" to the BHGMF and is not rectoactive on older kites as it was shown two and a half years ago that these were necessary, and not 'optional extras', to prevent this type of accident recurring.

No, Mr. Chairman it is not good enough to run before one can walk, and it is time that the BHGA Council came back to earth and gave some consideration to the majority of weekend fliers who are not being catered for in your deliberations or magazine content.

Gordon Murray
Scotland

KOSSEN FAILURE

Dear Sir, The British hang gliding team gave me great mental support during the Kossen event. Special thanks for Mr. Roy Hill who answered

a lot of questions for me. I would like to congratulate Bob England, Johnny Carr and Mick Evans with their successes.

I would also like to say that, in my opinion, there should never be a competition in Kossen anymore. The site and the organisers are not capable of giving the pilots a feeling of satisfaction in joining this competition.

Paul Beukers
Holland

MERE NATIONALS

Dear Sir, I have just come back from Mere '78. The weekend was blessed with fine weather and Bob Mackay, Garth Thomas and their helpers made such competition as the light off-slope winds allowed, hassle free and enjoyable. The friendly atmosphere resembled the Cam Long Down event of a few years ago.

As a rally, fly-in or whatever it was lately billed as, it was an undoubted success. But it never came within a million miles of being the BHGA Nationals.

I don't quite understand what Council and the Competitions Committee are thinking about. At the AGM it was said that Mere '77 generated the best publicity the sport has ever had. To quote April 1978 *Wings!*: 'Last years public event at Mere had been a financial success with excellent TV and press coverage.' We were told that the Sports Council were going to give us about £9,800.

I also quote from April 1978 *Wings!*: 'This year the BHGA has decided on a policy of high publicity for the sport.' And May 1978 *Windsock*: 'It was decided by Council (BHGA) to hold a public event at Mere in August regardless of sponsorship availability.'

It was also reported that Grandstand had been organised to cover the event.

But then suddenly the plans for Mere '78 started to run tepid. May 1978 *Wings!*: 'It was decided that a public event should be run at Mere over August Bank Holiday weekend if a sponsor is forthcoming and the site is available.' June 1978 *Wings!*: 'Council reaffirmed its desire to hold a public event at Mere over the August Bank Holiday this year if possible.'

And then — July 1978 *Wings!*: 'A BHGA members only meeting will be held at Mere on 2nd/3rd September.' — What a cock-up!

Properly planned and handled the Nationals is our best opportunity to present ourselves to the public. It has been done before and God willing it will be done again. Apparently it was a financial success last year, so why shouldn't it have been this year? Not only has the majority of the BHGA membership been let down badly, but the schools and manufacturers have been denied a platform from which to promote their goods and services.

It has become clear that a Nationals event is not the right venue for a serious hang glider pilot competition. The League however does seem to provide an effective way of finding the top competition pilots and thus selecting a British team. But I believe that the League system actually compliments what we should be trying to do at the Nationals.

League tasks are designed to test the flying skills of the pilot to the utmost. Nationals tasks should be designed to appeal to the spectator. The entire Nationals should be more of a barnstorming aerial circus than a hang gliding competition.

Parachuting, parascending, hot air balloons, windskiing, powered hang gliding demonstrations, kite marts, simple knock-out hang gliding tasks as pioneered by Bob and Garth, manufacturers forums, vario clinics etc. etc. all have their part to play. It would be enormous public relations (and they could do with some improving) and would be an opportunity for BHGA members from all over the country to get together.

And if anyone says we can't afford it I'll scream. If we've got enough money to allocate £2,000 to support a British team selected from the League. If the Sports Council can contribute £3,634 to the cost of sending teams to international competitions. If we've got quoted reserves of £9,000. If Atlas Express can sponsor a League competition to the tune of £6,000 — then we can damn well run a proper Nationals.

Mark Woodhams
Brighton

SNIPERS

Dear Sir, May I please raise one small detail in reply to J.S. Cousins piece in *Wings!*. Mr. Cousins if you read Jonathan Livingstone Seagull you will find that J.L. Seagull Esquire ran first a flying school and then an Instructor Training School. Although initially a

rebel Jonathan soon realised that to improve the system you work within it. You do not sit on the outside and snipe at those trying to improve things.

Bob Moffat
Herts

NIGHT FLYING

Dear Sir, Sometime in 1975 I read that an American had flown a hang glider at night over Hawaii. Towards the beginning of 1977 a letter appeared in *Wings!* (January 1977), about flying a hang glider at night. Shortly after this I had an enquiry, by letter, from another pilot, who had flown at night, before the letter to *Wings!*

It was plain that at least four pilots have flown at night, and the chances were that others would try, especially if it was a nice summer. No doubt some did.

I thought it likely that the majority of the three and a half thousand BHGA pilots in Great Britain knew very little about night flying, or dark adaptation. It was my duty as medical adviser, particularly since I have flown fixed wing aircraft at night and understood the dangers, to point out the hazards, in the hope of preventing an accident, rather than waiting for it to happen. I have not myself flown a hang glider at night.

Night flying, which is rather different from flying in cloud, is scarcely more dangerous than flying by day, providing that the additional hazards are recognised, and allowances made for them. It is true that there are some

additional dangers. It is equally true that some dangers are less. For example there is less turbulence and there will be fewer aircraft in the air. Night flying is not for novices anymore than cross country flying.

I have no enthusiasm for night flying, although on a warm moonlit night I might feel tempted. A cross country pilot, whose navigation is at fault, might find himself having to land in the dark. I am not a BHGA Council Member, but appointed by them to give advice, especially on the prevention of accidents.

A pilot who understands the dangers of flying at night, or over water, or too high without oxygen, is far less likely to have an accident than one who does not. The BHGA contains all grades of pilot from beginner to expert. The beginner can learn much, which will be of value to him, by reading an article which has been written mainly for the experienced pilot.

Dunstan Hadley
Medical Adviser BHGA

"Now that all of you are fully aware of problems that you are likely to encounter while night flying, please do not forget that a glider flying at night must display a steady red light of at least 5 candela showing in all directions or lights in accordance with Rule 11 (2) and (3) of the Rules of the Air and Air Traffic Control Regulations 1976.

'Night' for the purposes of defining

night flying is the period from half an hour after sunset to half an hour before sunrise."

CAPE TOWN

Dear Sir, Some of your BHGA members may remember me from places like Dunstable, Rhossili and the South Downs where I learned to fly 3½ years ago. As you can see, I now reside in Cape Town where I became chairman of the 75-strong local hang gliding club.

The flying scene in and around Cape Town is like a dream. There are 9 excellent sites within an hour's drive and Table Mountain, at 3,500ft., is right

next to town.

It occurred to us that some of your readers may be interested in what is happening here, or perhaps they are planning a trip out here. I shall be happy to hear from anyone from the UK who may be interested in coming here to fly our magnificent sites with us. Simply contact the Club at the address below or telephone me on 43-1861 or 41-8702.

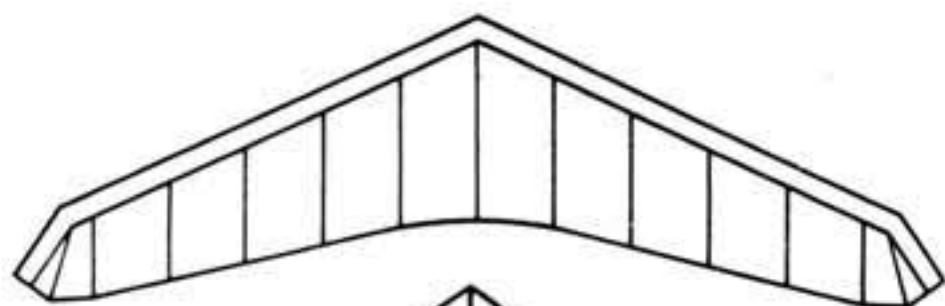
Chris Readman
Chairman, Cape Albatross Hang Gliders,
3 Selbourne Court,
Highstead Road, Rondebosch,
Cape Town, S. Africa.

NEW EDITOR

Please send all contributions and correspondence for *Wings!*

to

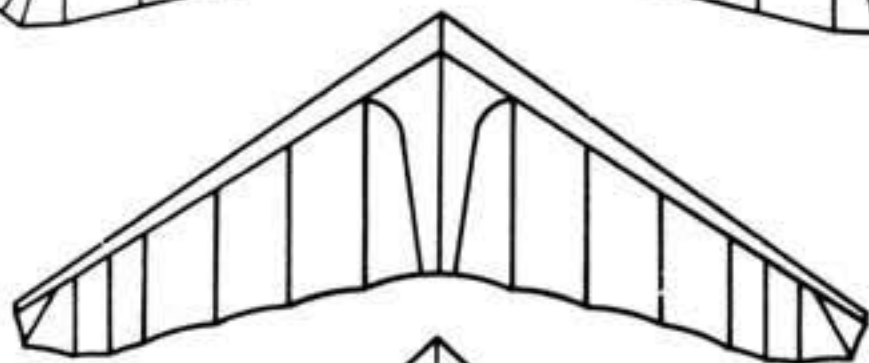
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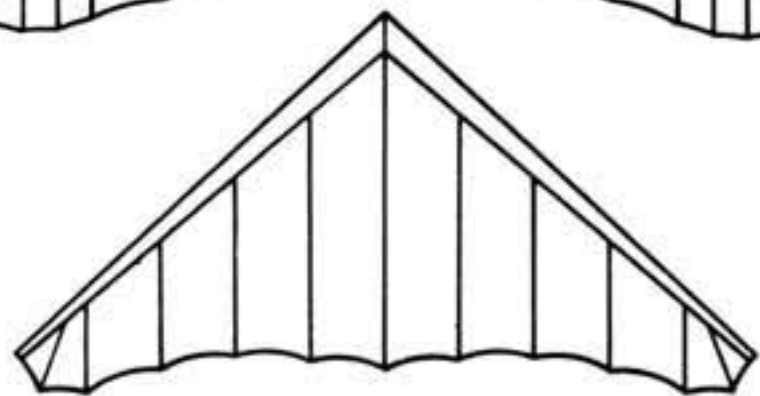
Nose angle 130° Aspect ratio 7 Span 35ft Two sizes available



Moonraker '77

The '77 is well known for its smooth responsive handling and extremely good performance over a wide speed range. For intermediate to advanced pilots. The first hang glider to cross the English Channel releasing from a balloon at 18,000ft.

Nose angle 108° Aspect ratio 5.38 Span 32ft



Firebird 'S'

The 'S' is for new E.P.C. holders to intermediate pilots. A very easy handling glider that will inspire confidence when it is needed most. Performance is as high as possible whilst retaining the forgiving characteristics essential for this grade of pilot.

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POWERNATIC

THE BRITISH POWERED HANG GLIDING CLUB

The British Powered Hang Gliding Club is to hold its first meeting at Crickhowell, Powys, Wales on 28/29th October. The idea is to get as many Powernatics together as possible and see some flying, exchange views and ideas and possibly drink a few beers. There's been an awful lot of talk about Powered Flying, some letters have been written, articles composed in magazines, controversy and argument aired and every now and then someone gets to fly a powered hang glider.

Two things that are certain; Powered Flying is geographically dispersed and there is the potential for the biggest 'stop it' campaign since the CND set off from Aldermaston.

There's Brian Harrison in Scotland, Steve Hunt in Brighton, Gerry Breen in Wales, Murray Rose in Buckinghamshire, Len Gabriels in Manchester and many more scattered around the country either doing it, trying it or talking about it. Ashley Doubtfire is in the middle of it all, wrestling with BHGA Council, sparring with the CAA and taking a lot of stick from the Powernatics who have all got their own ideas.

Let's get it together, come to the meet and speak your piece, show us your powerpack and help us form the British Powered Hang Gliding Club.

COUNCIL MEETING

At the Council meeting on 1st October 1978 Ashley Doubtfire presented a paper which was discussed at length.

Council ratified the following passages from this paper: That it supports the formation of a British Powered Hang Gliding Club.

This month we start a page for the Powernatics — the power fanatics. This first section has been compiled by Jonny Seccombe. We hope that it will give the powered hang gliding community a discussion point from which a safe foundation for this branch of our sport can be built.

(a) that the Club be a member club of the BHGA.

(b) that the Club form a committee consisting of those qualified either by profession or by experience in appropriate fields to develop powered hang gliding in its technical and practical aspects

(c) refer to the CAA through BHGA Council on matters of policy.

POINTS TO PONDER

Is the name British Powered Hang Gliding Club the right name? Should it be 'Association' and what geographic jurisdiction should it cover?

Should powered flexwings be segregated from rigids? Dave Cook let's hear from you.

How do you deploy a parachute from a powered hang glider? Is the BHGA really the best parent, if not who is?

What are the objectives of a powered club, should it just be a policy forming and pressure group or should it make the rules? If it makes the rules can it enforce them and who will do it anyway?

What does the CAA really think about powered hang gliders? Will the CAA be at the meet?

How will Airfield Operators react to Powered Hang Gliders on Finals for 21? Do you really know about Air Law, circuit procedure and let down patterns? If not, do you need to know any Air Law at all?

Should powered kites be registered? Should they be test flown for airworthiness and if so by whom?

How do you make a powerpack quieter and not lose significant performance?

What is so special about zero zero take-offs (nil wind, nil gradient)?

How do we cure vibration and why do rear rigging wires break?

Are powered hang gliders safer than non-powered and what are the optimum handling characteristics?

How do you teach beginners and what tasks should they do before flying unsupervised?

What can be done to stop cowboys and should all manufacturers and retailers/agents be licensed?

How do we learn to live with conventional fliers, do we need to, or why should we?

EXTRACT FROM SOARMASTER MANUAL

The following extract from the Soarmaster Manual is printed in the interests of safety for those people who are thinking about idly dabbling in powered flying.

Powered flying is not just bolting a motor on and taking off. The extra vector produced by a motor can have strange side effects.

There is no substitute for proper instruction. Don't violate basic flight principles! We must ask all of you powered flex wing pilots to take a good power pilot's textbook and read it *before* your next powered flight. This has become a necessity because of the difference from your unpowered flight experience. The safest, of course, would be a few instructional hours with an 'old' aerobatic pilot (one must be good to grow old!).

In a power stall, the kite goes into a peculiar behaviour that is caused by

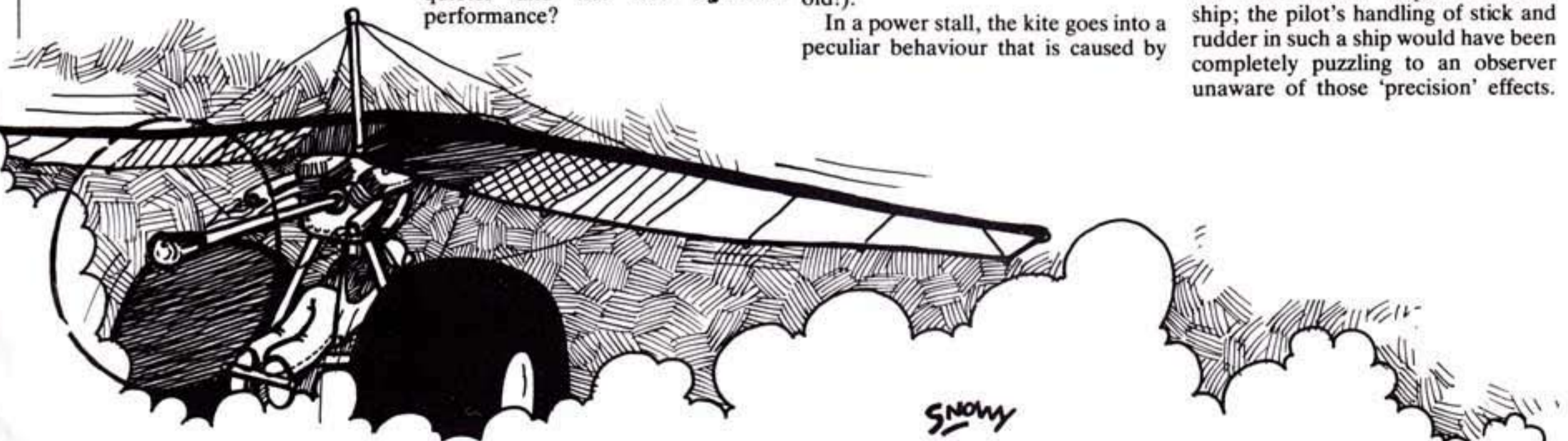
gyroscopic forces, swerving the nose to the left at the moment of the stall with the loss of normal aerodynamic responses when the pilot pulls in on the control bar, thus, making the stall worse.

Why, for example, do many airplanes snap roll more easily to the right than to the left? When at the start of the manoeuvre, the pilot pulls the stick back and the nose swings up suddenly, the resulting gyroscopic forces swerve the nose to the right, thus adding its effect to that of the pilot's right rudder, helping the snap roll. In a snap roll to the left, the gyroscopic force is, of course, the same because it is due to the upswing of the nose; however, its force counteracts the pilot's left rudder and this results in a more sluggish roll.

Airplanes are heavy, therefore, gyroscopic forces do not take the control out of the pilot's hands . . . they just interfere. In contrast, hang gliders are light, rotational masses are a thousand times greater than that of heavy planes and the energies are sufficiently high to take over the control.

Indeed, in the moment of a stall when the kite has already yawed to the left because of the 25 ft-lbs. of engine torque, the pilot's normally correct pull-in reaction will instantly cause the nose to swerve to the left, thus causing additional yaw and the kite stalls secondarily. The post-stall behaviour of the kite is more abrupt. The resulting cross flow causes the left wing and the nose to drop lower than normally expected before, for recovery. 'Old Timers' knew that.

As Wolfgang Langewiesche states in his book *An Explanation of the Art of Flying*, "Many pursuit ships during the first World War were powered by rotary engines. This made the spinning mass comparatively large — and at the same time the ships themselves were light, quiet and jumpy. Hence, the gyroscopic effects were marked, and overshadowed all the more normal responses of the ship; the pilot's handling of stick and rudder in such a ship would have been completely puzzling to an observer unaware of those 'precision' effects.





So marked were these effects that the enemy counted on them in combat.

In the case of usual clockwise rotating propeller, pulling the nose up produces a gyroscopic effect that swerves the nose to the right. Kicking the nose to the right by rudder produces a gyroscopic effect that makes the ship nose down. Pushing the stick forward makes the nose swerve to the left. Kicking the nose to the left by rudder makes it come up."

All of the above is valid for powered hang gliders as well, and more so because of the total mass being so low enabling the inertial forces of the universe to perform the well-known flywheel effects on the pilot who stalled and thus gave away all the *good control* he once had with *sufficient airspeed*.

Performing any aerobatics on a powered kite close to the ground is suicide. Fly at safe altitudes and maintain a safe airspeed. A machine with a light wing loading performing 2g turns (60° bank) and/or wingovers will stall sometimes just because of atmospheric conditions. Or, the pilot may encounter the stall (as aforementioned) and by failing to reduce power, will aggravate the post stall behaviour of the kite to such a degree that a full recovery may not be possible.

DO NOT stall with power "ON" or hold the kite stalled under power — ever. Reduce the power immediately and recover as done in a stall encountered in a gliding mode.

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Span	30 feet rigged	32 feet 8 inches rigged
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Root Chord	11 feet	11 feet
A/R	4.6	5.23
Billow	.68	.68
Area	196 square feet	204 square feet
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Normal packed length	19 feet 1 inch	19 feet 1 inch

Cost

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Richard Kenward Photography

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Although aimed at the intermediate/advanced market, EPC holders will readily take to the 'VORTEX' 110 with its light/coordinated pitch/roll control, stable slow landings (one of the benefits of 'VORTEX' generators) superb sink rate and a very wide speed range ('VORTEX' generators make possible the use of an efficient elliptical plan/form with its inherent low induced drag).

Having just read Ken Barker's interesting account of flying in India, I feel I might usefully add some advice for others thinking of coming to this country. I had six months flying in England on a standard at the beginning of 1976, and then a teaching job in Madras, for which I had been waiting came through, so I left my glider and came out here. During the next year I spent what free time I had motor-cycling around India from its southern tip to the Kulu Valley in the north, to see as much as I could of its scenery and people.

Then, in the Spring of 1977, I was offered a job teaching refugee Tibetans in the Himalayan foothills. I still had a year to go in the south, but reckoned that if I was to be here for several years it would be worth bringing out a glider. I thus made a trip back to Britain and bought a breakdown Falcon 3. The weather was very bad just then, but I managed to get one morning's flying at Steyning Bowl to try it out.

The problem then arose of a transportation to India. Having little baggage I decided to bring it through on my 20kg allowance. To this end I carefully dismantled it completely. All the fittings I carried in a small grip that was not weighed, the sail was folded in my suitcase, and the poles were tightly bundled in one end of the glider bag. This had two advantages. With no loading or unloading problems I did not need to worry about the handling of the glider; and though the customs were initially interested in what I had, and though I explained to them what the poles were for, after one look at them they just did not want to know. Of course one has to take care in putting the glider together again.

Conveying a glider around India has its problems if, as is likely, you do not have a car and must rely on public transport. I have only once used the internal air service but it took me six hours' hassle and a missed flight to find someone I could convince that the A300 plane can take non-containerised luggage. You might be more lucky, but it is worth getting this sorted out well before departure.

As for passenger trains, there is, for some reason, a rule that no piece of goods can be accepted that is more than 8 ft. long. Don't ask me why, as the guard's van could easily take a full 20 ft. glider. This very nearly caught me a couple of times. They are very officious about it. Again the only thing is to talk to the station master well before the intended journey. If he has plenty of time to think about it he will oblige; otherwise pleading on bended knee probably will not move him.

With buses there is no problem. They will all take it on the roof at full or at breakdown length. One word of warning though: the midday sun in India is hot. After a twenty minute journey I found that the poles were too hot to touch, even through the nylon bag. I do not know if that much heat affects the sail, but would always now make sure that the kite is well



UNDER HIMALAYAN SKIES

Neil Kinnear from south London teaches Maths and Science in the Indian State of Himachal Pradesh to Tibetans exiled from their homeland since the Chinese invasion. The school at Dharamsala was founded by the sister of the Dalai Lama, Tibet's spiritual head, whose palace adorns a neighbouring hill-top. Neil flies this neighbourhood under conditions likely to daunt any but the dedicated enthusiast.

Above: Rigging at the top of Triund. Below: A well stowed Falcon III for the hike up.



covered with sacking.

Otherwise I usually carry it on my motor-bike and even in the cities nobody seems to mind in the least. It is easier than might be imagined and I have done several journeys of more than a hundred miles for a day's flying. I have even made short journeys with it full length through the streets of Madras city and elsewhere without comment. Mostly, however, I seem to do an awful lot of hoofing it for a very small amount of flying. A five-mile hike from the road to the flying site can be quite normal.

When I first got back to Madras the monsoon winds were blowing from the west. I had friends living in a small town about 30 miles from the city with a long high ridge facing north-west. This meant that the wind, which was usually steady at about 12 m.p.h. was always at 45 degrees to the slope. There was a slight hook at the ridge's end, and here, once we had cleared a path through the waist-high cactus, it was possible to run into the wind for the take-off. Quite a bit of height could be gained but I never managed to soar. Always I could get strong initial lift at the hook but then I would lose it. Every Saturday we were joined by a large contingent from the village, and without fail we would empty out a local school that was supposed to work Saturdays. With the available sites at the bottom crowded with spectators, finding somewhere to land could be a problem.

After ten weeks my friends moved into the city and the westerly winds gave way to the squally easterlies that heralded the second monsoon and effectively finished all flying. I got two weeks holiday just then, so decided to travel north to visit friends in Mussoorie and try to get some idea of flying in the mountains. Mussoorie is situated on a ridge about 7,000 ft. high, perhaps 5,000 ft. above the plains. On a previous visit I had thought it would be an ideal flying site, but now that I had turned up with a kite I was not sure.

There were very few places to take off. In fact an American had been there the year before with a standard and in the end he had had to launch from the roof of a school building. Unfortunately he had not asked the Head's permission and I gathered from the locals that he would not be too enthusiastic about my trying.

In the end I had to fly from a field only about 1,700 ft. above the plains, with a vertical drop of at least 500 ft. at take-off. There was nothing to do but rig, check everything, stand well back and run over the edge. There was no wind at all. The spectators were well back too, so just saw me drop over and disappear. In fact I had not enough flying speed and my long swooping dive lost me about 30 ft. Surprisingly I did get some initial lift as before long I was able to see the top again, but kept on flying out.

This was a new flying experience for me, having too much room below and no hills or hill-ridges anywhere about. It gave me a first chance to get in some 360s. After about six minutes it became necessary to find a landing site so I set up an approach with a long thin field and came in with a



broad grin on my face. Four Indian ladies were sitting under an umbrella a few feet from my touchdown. They acknowledged my arrival with a curt nod and went back to their conversation. Oh well, you can't win 'em all!

That was the end of flying as the cloud came down for the rest of my stay. The very good launching site at about 7,000 ft. that I found on my last afternoon I did not have time to use. Not much gliding, considering I had come 1,600 miles! But still, it was a beginning.

And that was all until the Spring. Cyclones from the Bay of Bengal were devastating the country to the north and south of Madras, and readers may recall the tidal wave that inundated the coast of Andhra Pradesh with great loss of life.

After that I came up to Dharamsala in March. The school is situated in the fringe of the Himalayas at a height of 6,000 ft. and the plains below are at 3,000 ft. For the first three weeks I spent all my time wondering whether I would make the three miles distance needed to clear the forest and foothills. Before this there are a few places where one might make an emergency landing in terraced fields on the hillsides, so there was nothing

Top: Stand well back and run over the edge! Above: A group of interested make the landing area crowded. Left: The prayer flags are hung out at Triund.

to do but try it. In the end I missed it by about 50 ft. I could not get clear of the forest and managed to scrape into a small field surrounded by trees. It was tight, with both wings brushing leaves. Twenty feet more height and I would have been over the fields.

I tried it again a few weeks later, this time with a little wind. I held height a lot longer, but all gain due to the wind was lost once I dropped into the valley and I had to fight quite a bit of turbulence. As they said when I got back: "You would have made it if you had not started dancing all over the place."

Between these two flights we had a week-end free and one of the staff asked if I would like to come up to Triund with him and a party of boys. Triund is 9,250 ft. Well, why not? After all, in the morning the air is always still and the only difference between there and Steyning Bowl is that one can expect a little more time aloft. We went up on Saturday, the boys helping carry, and arrived early



afternoon at the top. Snowdrifts were still deep round the holiday huts and the high ridge behind was white against the sky. All afternoon my insides felt loose from watching the hawks coming up and disappearing from sight above us in a matter of minutes. I decided I was going to fly early Sunday morning before any thermals could build up; I was quite high enough already. We fooled around in the snow and the boys hung strings of Tibetan prayer flags between the pine trees near the huts.

We woke at about six with the wind gently down the hill. It always blew up during the day, so obviously the change-over time would be ideal. Meanwhile I had found a long slope with plenty of height to clear the trees near the bottom. There were two trees about twenty feet apart a long way down, but too far off for me to worry about. Beyond them was a steep 5,000 ft. drop. By about nine the air was still and I thought: This is it. One last group photo and then hitch in and go for it.

There then followed an incredibly long run. I was knee-deep in snow and just could not get up enough speed. In the end I did manage to get my feet off, pull the bar in, pick up speed while skimming the snow surface and then pull out level. Unfortunately by then the two trees were looming directly ahead. Fortunately there was no time to worry. Aim for one, wait for it, bar hard over, hard out, crank it over into a tight bank through the gap and clear with about a foot to spare on each side: a neat trick I never intend to try again. That ought to look good on film; but no, the camera-man



Top: Rigged and ready high in the Himalayas. Below: The long flight down

was so startled he dropped the camera!

Once through the gap I had 5,000 ft. ground clearance so it was just a question of flying straight to reach the plains. I detoured slightly to take me over the Dalai Lama's palace, lying white among the trees 3,000 ft. below, then carried on down the valley. The mountains unfurled on either side as I gradually moved out from them. Five miles from take-off, at about 700 ft., I came right out above the open ricefields and was flying over Dharamsala town with its Sunday pedestrians. I crossed a main road at about 100 ft., thereby stopping the traffic, and then, with a long ground-skim over a beautifully grassy field offering a perfect stand-up landing I sank thigh-deep in mud. Total flight was fifteen minutes. I had started in snow with fir trees and rhododendrons and ended among ricefields and bananas in tropical heat.

A few weeks later I was to try

Triand again, launching slightly later in the day, about eleven o'clock. This time I followed the ridge down after a take-off well clear of all trees. There are a lot of rock faces, and already there was some thermal activity about. Often there would be a tug on the straps and the vario would go into the up, but most of the way it was hovering about the zero mark. I do not have any thermal experience so just kept heading out. After about ten minutes I was over Dharamsala without much height loss — my altimeter has been on the blink since I dropped it — and from the time of descent I reckoned I had about 4,000 ft. to play with. As I did not want to have to worry about getting back across country, I spent about a quarter of an hour just having fun circling the town and surrounds. Total flight time was 25 minutes.

From near the school itself the problem is finding clear sites to touch down. I have just returned from a lan-

ding in an open, flat valley bottom where I was confronted with an exhausting 200 ft. climb up a steep densely-wooded cliff. All the way it was scramble six feet, then haul up the glider and wedge it in the scrub, then scramble again and repeat the process. With a rough three mile walk, a slow bus ride and another long walk, I was home in just under eight hours, all for five minutes in the air. I have lately found another good site near the school at about 6,300 ft. which takes me down a different valley to the plains, but the turbulence here has proved a little fierce, sometimes turning the kite suddenly through 90 degrees.

Otherwise I have done a little flying off small rocky hills in the plains and if ever we get any wind they may yet prove soarable. I confess I really do miss the English chalk downs with all that rock-free grass in every direction!

The monsoon is back here again now and I am safely on the ground. After it, -who knows? The ridge behind Triand is 15,000 ft. . . .



LEE WAVES

Winter is creeping in, and the summer season of thermalling is over. It is now highly likely that over the next few months any exceptional height gains reported will probably be achieved by using *wave lift*. Wave lift has been talked about recently, but the possibility of exploiting it in hang gliders has been questioned. Well, what is wave lift, where does it occur, and how is it set up? Can hang gliders fly in "wave", and if so, how do they find it, and what are the dangers? In Part 1 of the following discussion on waves Ivor John describes where and how waves are formed, and in second part, to follow, will include more detail for those who wish to make predictions of where and when waves will form. Ivor John wrote the meteorological article on Convergence in the August *Wings!*

Description

Lee waves are large upward and downward motions which can arise in the lee of hills at certain times when atmospheric conditions are favourable. Fig 1 shows how lee waves can appear downwind of a ridge. The wave crests and troughs are fixed with respect to the hill and the air moves through them. The distance from one crest to the next (wavelength) can vary from about 5-50km, and the height difference from trough to crest (a measure of the amplitude) depends on the ridge height, and both of these features depend on the wind speed and atmospheric stability. Beyond the ridge the lee wave flow established may bear little resemblance to the shape of the ground below. Wave formations are most easily recognised by the appearance of characteristic lenticular clouds in the wave crests. They remain stationary with respect to the hill irrespective of the wind speed. Although they provide the best means for identifying the presence of wave, they are present only if the moisture content of the atmosphere is right. It is possible for wave to form without the clouds.

The wave pattern can affect the airstream up to enormous heights, typically 10km (30,000ft.) and sometimes higher! Vertical velocities are related to the wave amplitude and the wind speed, varying from 2m/s to 10m/s. In the most extreme developments (notably in the Sierra Nevada, California) updraughts of 25m/s have been recorded, but these are exceptional! Lift can be very smooth, but some of the dangers possible will be pointed out later. Whilst gliders have described wave as smooth lift, they are a major source of turbulence to powered aircraft flying at much greater speeds through them.

For the best waves to form it is best if the wind blows directly onto the ridge (within 30° anyway), and the ridge should extend as far as possible "into the paper". Wave amplitudes are greater downwind of a ridge rather than downwind of a plateau (Fig.2). But whether waves will form or not depends critically on the variation of certain atmospheric parameters with height. These parameters are wind direction and speed, and atmospheric stability, the latter being dependent in turn on the temperature and humidity variation with height.

Stability

For those people uncertain of the meaning of stability, a brief word here may be useful. Atmospheric stability is a subject in itself, so for the purpose of this article it will suffice to make some very simple definitions. A **stable** atmosphere is one which **opposes** any vertical motions, and an **unstable** atmosphere is one which **assists** vert-

ical motions. In an unstable atmosphere a wind which blows onto a ridge is forced up and will continue to rise freely. (This accounts for the extensive cumulus development which is frequently seen over hills and mountains on summer days when the atmosphere is unstable.)

However, when a stable layer exists somewhere in the atmosphere, any rising (or sinking) air will have a tendency to return to its original level. We will consider only a dry atmosphere to keep things simple, in which case stability depends only on the vertical temperature variation. Fig 3 shows some examples of temperature profiles which correspond to stable and unstable atmospheres. A knowledge of the Dry Adiabatic Lapse Rate and the effect of moisture is needed to understand stability properly, but that is not needed here.

Vertical Profiles

It has been mentioned that for waves to form the three critical parameters have to have special variations with height (i.e. vertical profiles). Essentially, the best criteria for waves are as follows:

- (i) wind direction should be straight onto hill *at all heights*,
- (ii) there must be a stable layer somewhere above the top of the hill, preferably bounded by less stable air above and below, and
- (iii) wind speed should increase with height.

Typical profiles which are suitable for lee wave generation are shown in Fig. 4. The hill-top should correspond roughly with the base of the stable layer, but this is not too critical.

Wind direction is known to veer with height in the friction layer, but direction change also depends on the mean temperature distribution from place to place. This is rather involved, but whatever happens, it is best for the direction to be as near constant as possible.

Vertical profiles actually obtained from radiosonde ascents are by far the best guide for assessing whether waves are likely to occur, but without a Met Office close by, this information is not easy to obtain. The best bet is probably to ask a forecaster (by telephone) if he thinks waves are likely to form. He should know what you're talking about, and if *you* know what the atmospheric requirements are then you should be able to make an assessment between you!

To produce the necessary stable layer, a ridge of high pressure is usually needed somewhere nearby. A good example of a suitable synoptic weather pattern for waves to form in Britain is one with a ridge of high pressure over Ireland with a corresponding W or NW flow over Britain.

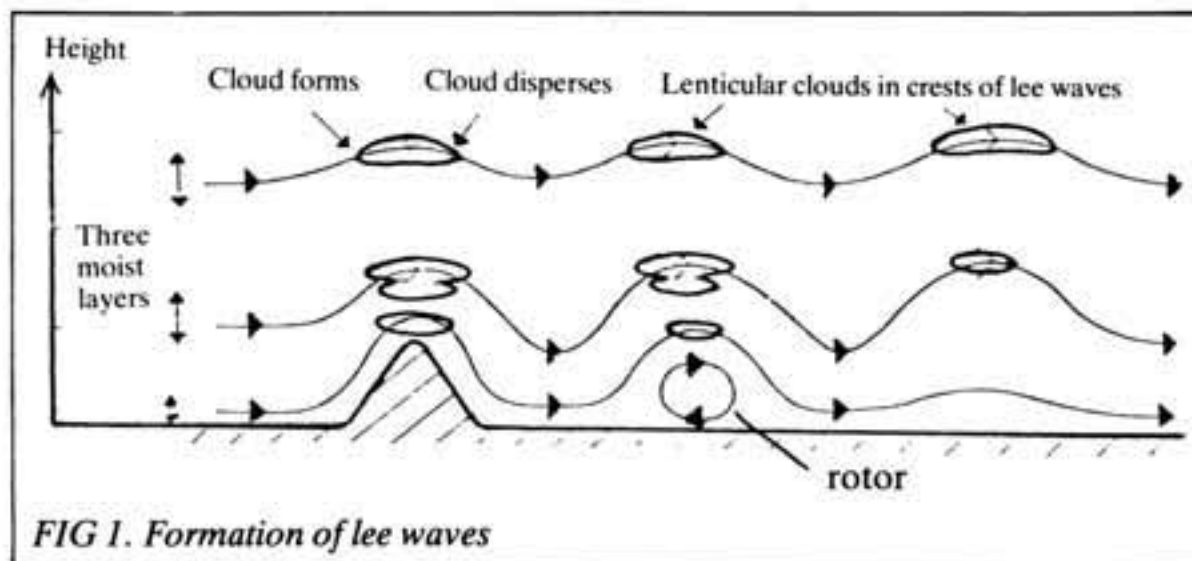


FIG 1. Formation of lee waves

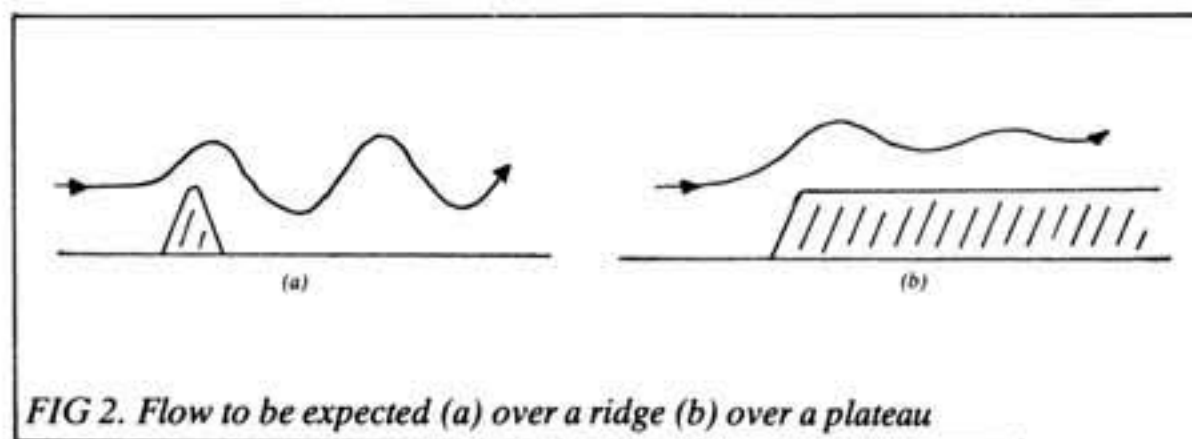


FIG 2. Flow to be expected (a) over a ridge (b) over a plateau

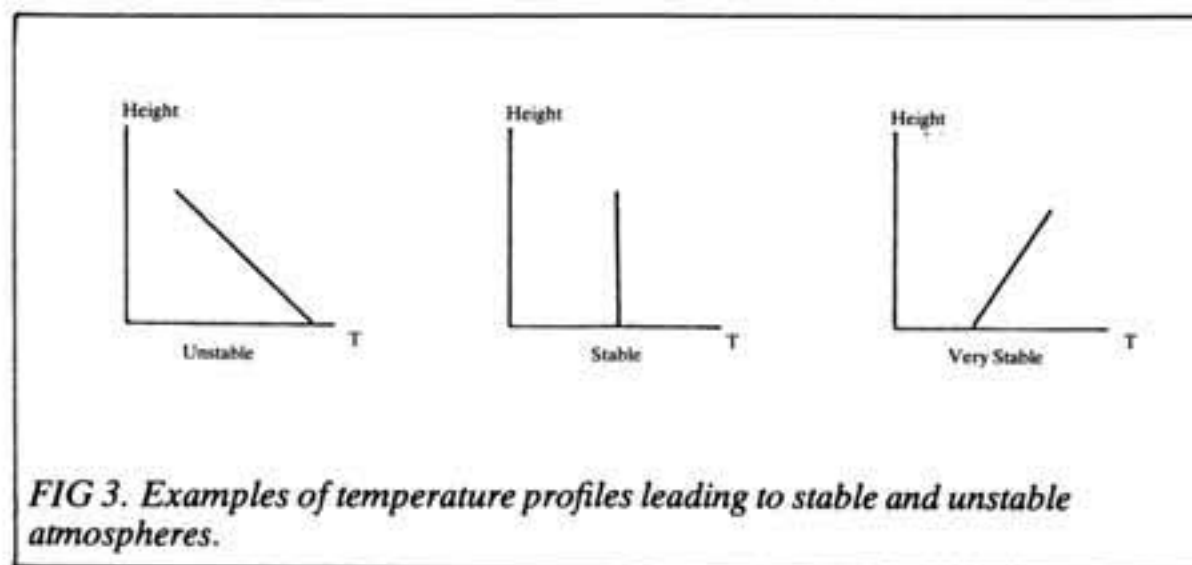


FIG 3. Examples of temperature profiles leading to stable and unstable atmospheres.

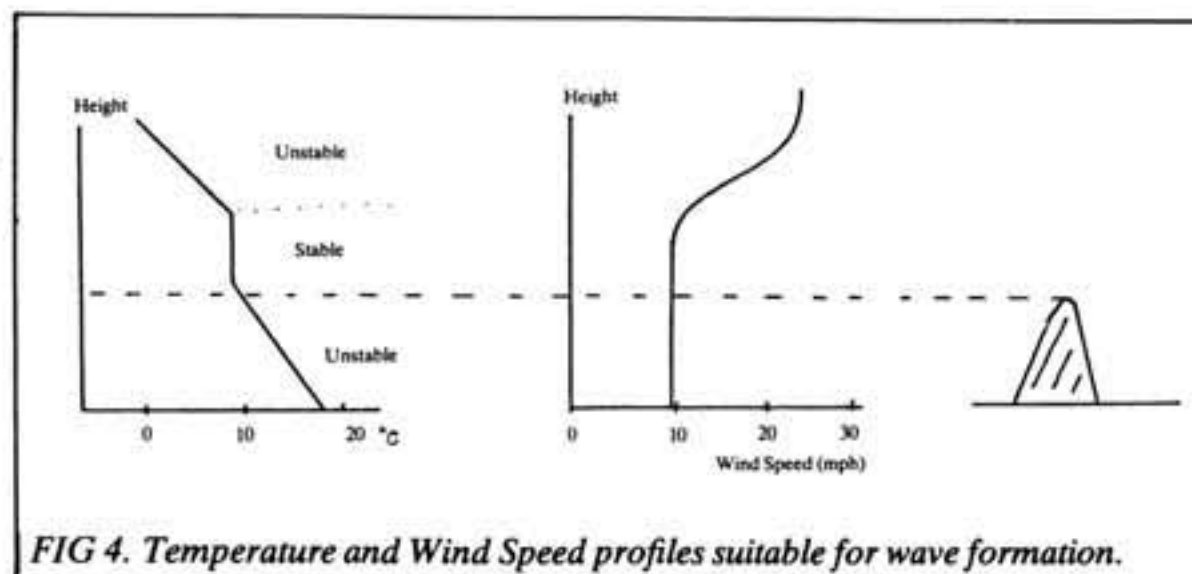


FIG 4. Temperature and Wind Speed profiles suitable for wave formation.

Wave Generation

Fig.5 shows how air blowing onto a ridge is forced up (A), and as it progresses its vertical motion in the stable layer (enforced by the ridge) introduces a "restoring force" which is trying to return the air. Once it is over the hill this force is able to turn it back down (B). Its inertia then makes it overshoot its original neutral level (C) and it is carried to a lower level (D). It now has a restoring force acting upwards, so again it turns, overshoots (E), and flows upwards (F).

The result is a series of oscillations in the lee of the hill with a slowly decreasing amplitude. However, if there is a further ridge downwind, the amplitude may be increased or decreased depending on whether the second ridge is located beneath a wave crest (at X) or a wave trough (at Y), respectively.

Some Problems

Even though wave lift is known to be present, actually getting into it does have its problems! The fact that hang gliders have only been able to exploit wave on odd occasions to date indicates that getting into it is not a straightforward task. One or two speculative suggestions might help.

Once wave lift has been identified, normal take-offs from either the initiating face at M (Fig.5) or from a second ridge under the waveform at N would be in order, but starting from M appears to have some advantages. The pilot would be able to fly downwind into the system proper from here without the problem of flying into strong headwinds. Flying upwind in strong sink to the lee of M might be dangerous, making landing a distinct hazard. Also, if the waveform were out of phase with the second ridge the orographic lift would be cancelled out by the wave downdraught, and as the airstream strikes the hill almost head-on, there would be a consequent reduction of wind speed on the hill.

It is possible for waves to change their wavelength too, so the system could change from being in phase at N to being out of phase. This transition usually takes place rapidly rather than slowly, so starting from N would require a judicious take-off. In practice, the wave system is often produced by a whole range of hills, and defining the initiating hill is almost impossible, and it may be many miles away anyway.

The sink at C will always be equal to the lift at E (roughly), so flying fast between B & D is recommended. Some turbulence may occur near any clouds that form since these would affect the stability of the air. From the diagrams it should be obvious that maximum lift will be obtained with the cloud just *behind* the glider when flying into wind.

If the air speed does increase with height, the pilot may have no option at higher altitudes than to fly downwind with the system. Strong winds are not necessary for wave to occur, but the increase with height should be remembered. The relationship

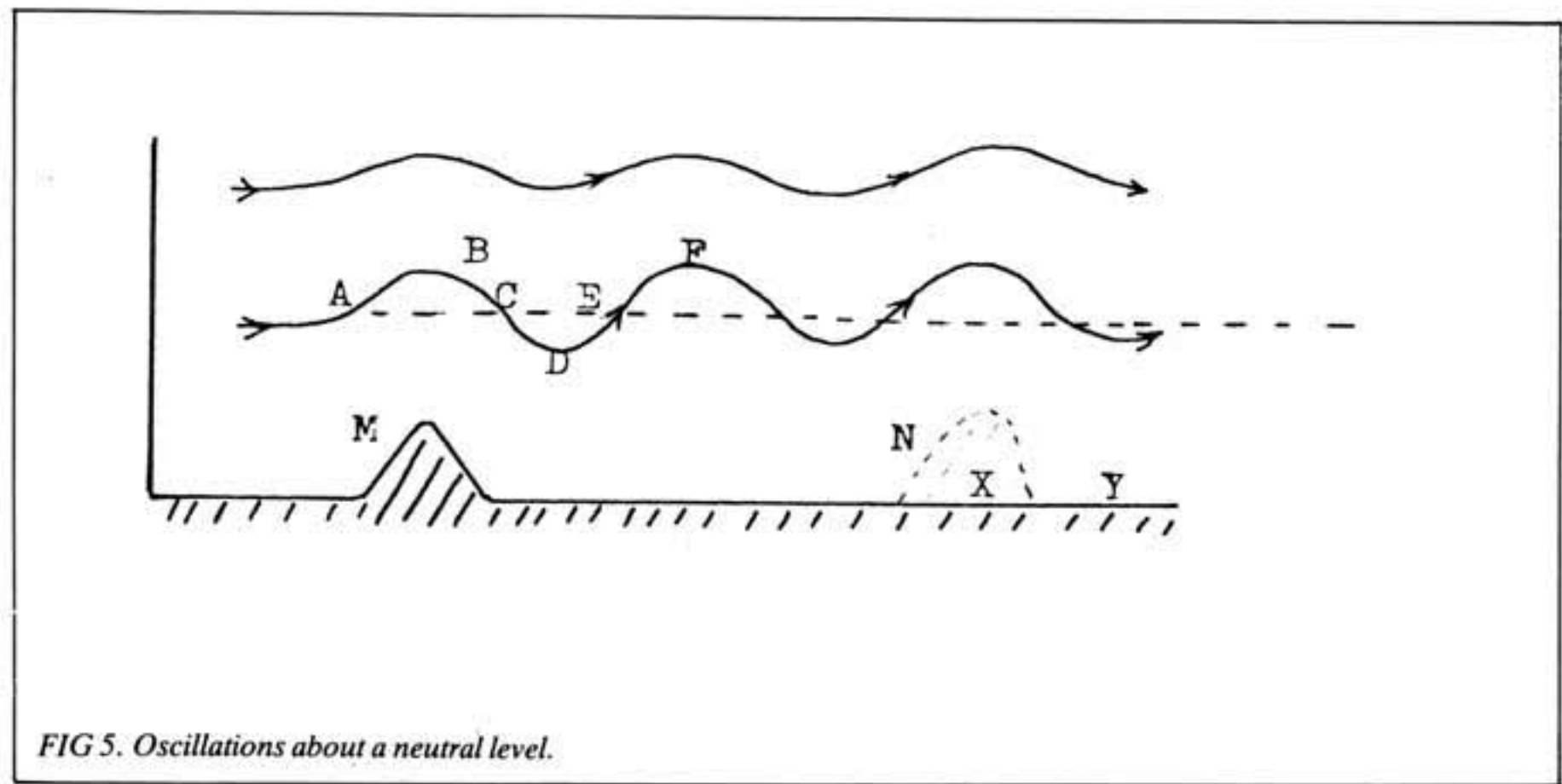


FIG 5. Oscillations about a neutral level.

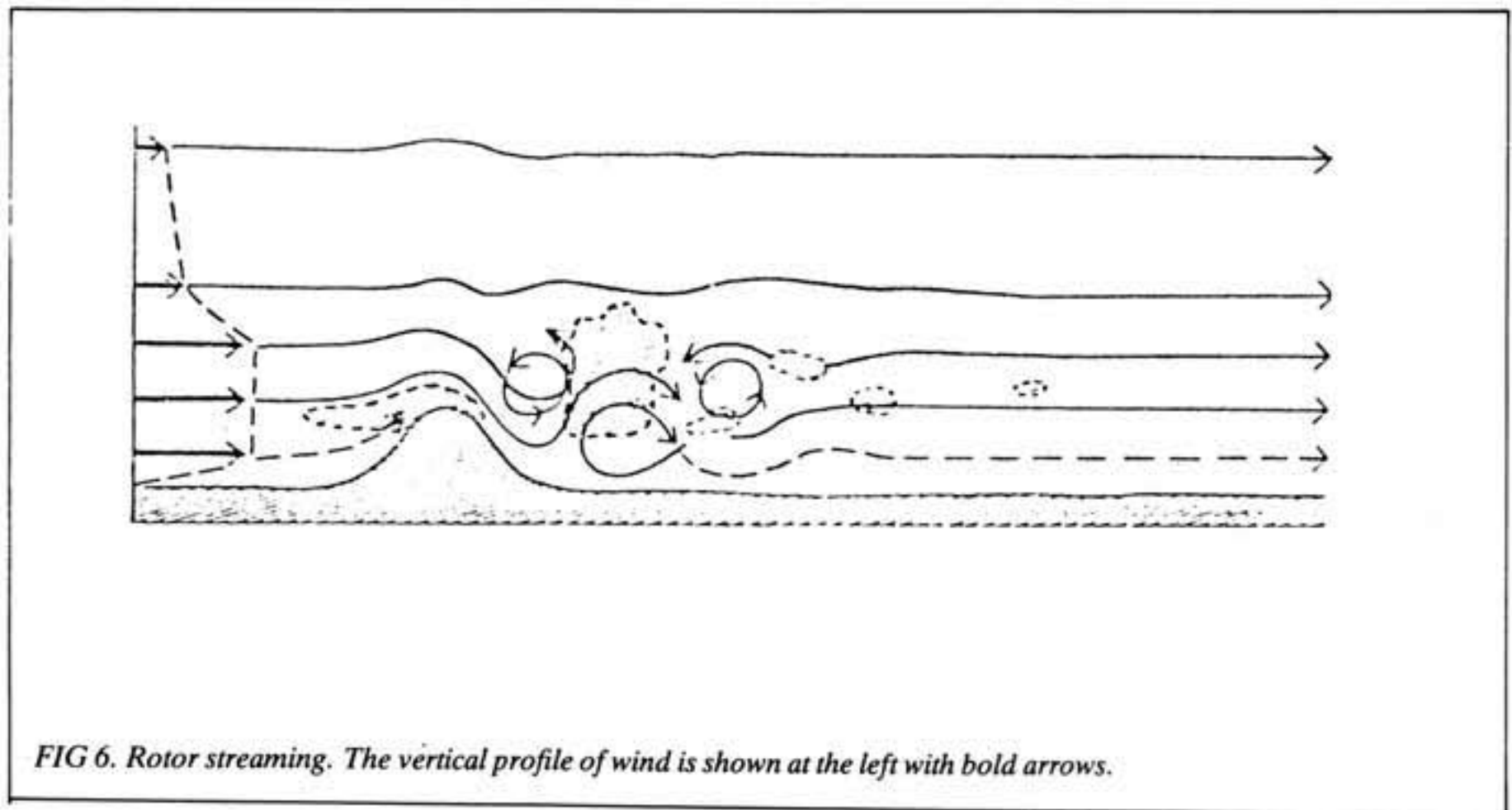


FIG 6. Rotor streaming. The vertical profile of wind is shown at the left with bold arrows.

between wind speed and wave will be discussed further in Part II.

The possibility of lee wave rotors forming should be realised, Fig. 1. Although the reversal has been drawn as a smooth cell, it is very variable and can be intensely turbulent. Flying in this region should be avoided. As a guide, the top of the turbulent layer can be expected around the level of the hill-top. Rotors do not always form, but the more well-developed the pattern is, the greater the likelihood. Sometimes a *roll cloud* forms in the uppermost part of the rotor, and this type of cloud is distinctly different from the lenticular type, being more like cumulus cloud.

One type of mountain flow which should be avoided at all costs is a phenomenon called *rotor streaming*. Fig. 6 shows that for this to occur there must be a restricted depth of very strong winds with lighter winds above. The banner cloud to the lee of the hill is a good indicator, but fortunately, for this to occur, the wind speeds would normally exceed the safe limits for hang gliding anyway.

When flying through clouds at high altitude, ice accretion may well take place on the kite! It's hard not to

laugh when imagining this, but remember that ice will build up quickly, and it does not disappear nearly so fast.

With limited space available, only a summary of lee wave formation has been given here. Part II will be published in a subsequent issue and this

will include more detailed material. More information is available in the standard gliding texts, and there are often articles published in the monthly magazine "Weather". The more one reads, the more one realises that the meteorologists too, still have a lot to learn on lee waves!

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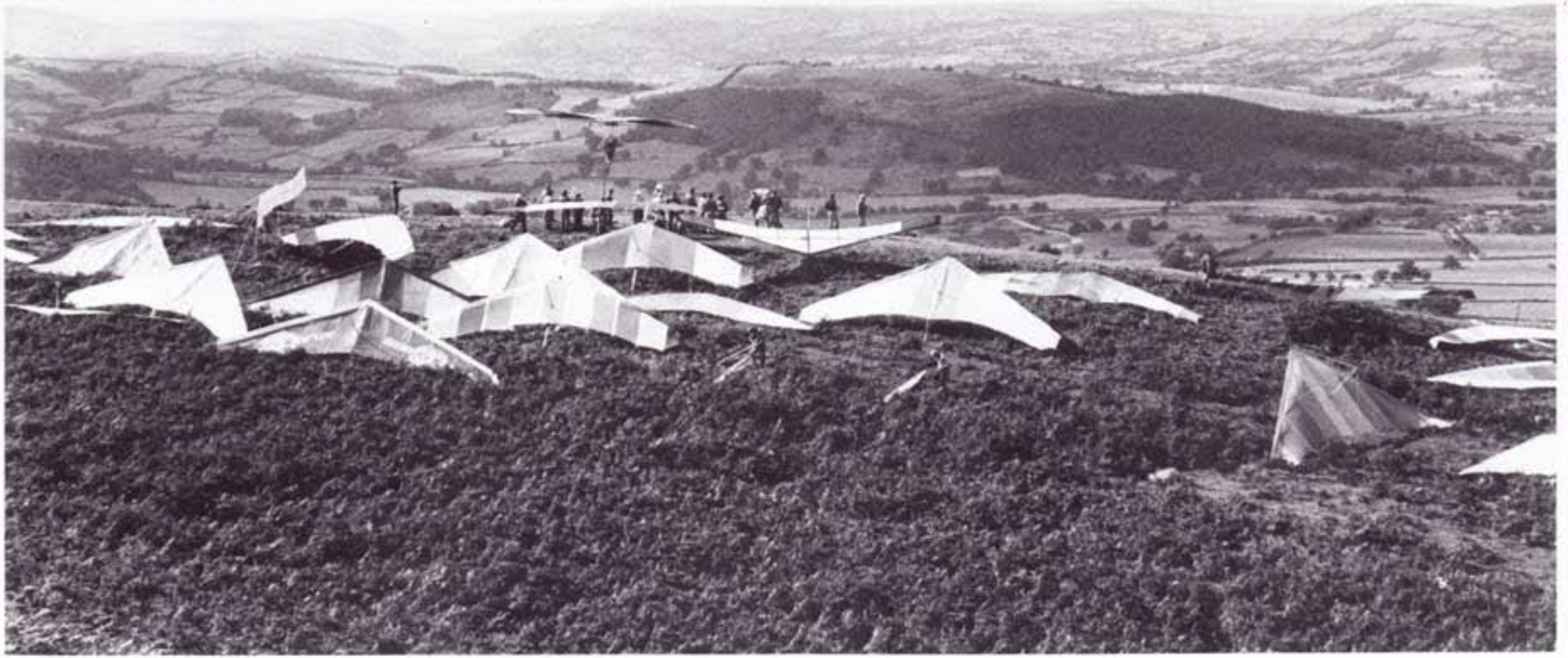
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by **Brian Milton**
BHGA Competitions Committee Chairman

If there are wind gods, they've been displeased with us this year. Tony Fuell had the top hot line upstairs with the Southern League back in April, three days of flying weather, culminating in the best day on the Devil's Dyke for years, with more than thirty fliers going downwind three and a half miles to Brighton. Ken's Birdman competition was plagued by the changing conditions on Clatter; Scotland gave us mountain flying and results distorted by the flying order as the thermals came through; Jan Ketelaar put everything into his competition at Harlech only to look gloomily at a 300 foot cloudbase at the bottom of a thousand foot hill. We thought we'd come right in the Dales at Trevor Birkbeck's competition; all day on a cross-country, with Graham Hobson flying 17 miles, but again the weather hit us, and despite another task, going into the final we all knew it hadn't been a satisfactory League.

In the final the stakes were higher than ever before, because we had, in Atlas Express, the freight carriers, a sponsor. Bob Hunter, one of the Atlas directors, had seen the League in Scotland and been bowled over by the spirit of the pilots. His company, like many others, was looking at sport as a sponsorship possibility, and hang gliding looked like something beautiful and exciting to be associated with. Derek Evans, BHGA treasurer, and I, were involved in discussions throughout the summer about how to sponsor a sport like ours, and following a professional presentation by Flight Promotions, we agreed the outlines for backing the League Final, the Atlas Express National Final. Over the three day final, the

company did us proud, pulling in landrovers, trucks, a forty-foot hospitality caravan, and many of the company staff to introduce them to the sport. All levels of management were there, including — to our apprehension — one of the five top directors, John Ambler, whose wife, H.R.H. The Princess Margaretha of Sweden, was to make the presentation on the final day. That meant a police flurry in Central Wales, calls to the Foreign Office to find out about protocol, and the dreadful uncertainty that, even if we got everything right, organisation all tuned up, transport ready, marshalls, equipment and the vital tasks, the hot line upstairs would break down and we'd be blown out.

Reputations are made and broken in the League, and despite this year's strange weather, class still came out in the results. The top ten going into the final — Reynolds, Evans, both Facks, Maher, Calvert, Slater, Wood, Snape and Cruse — were all class fliers. Keith Reynolds and Geoff Snape, both newcomers this year, had reached the top of the slippery pole — everyone knew Keith would do well, but Geoff hasn't been given due credit for his performance that other — at the moment more fashionable — fliers are given. And breathing closely on the top ten was Bob Bailey, who can put his finger on at least two tasks in which, if he'd been a little more lucky or careful, he'd have been in direct contention for the championships instead of having to make it all up in the last competition.

First Day

Gathered at the campsite, wind SW and moderate, forecast strong and

gusty. Four of us were making decisions on the competition — I briefed pilots, Roy Hill the marshalls, Derek Evans the sponsors and Press, and the chairman of the Long Mynd Club, Paul Bridges, whose guests we were, staked out the sites. It *had* to be Clatter, with a difficult top access, and bottom landings impossible for the hospitality caravan. In two years, the League has become a self-contained unit. I'm not saying we communicate by grunts, but we all *know*, after we discover the site to fly, just how to get there and what to do. This time, we did as we always do, tore off and set up on Clatter, and tried to work out a task.

Setting a Task wasn't easy. We knew Clatter of old. It could be evil. In a half hour of free flying around 11 o'clock, ten to fifteen kites were in the air, but all the pilots, including me, came down reporting massive "ups" and "downs", and some fairly hefty turbulence. Taking a leaf out of Ken Messenger's note-book, the first task was off down the valley between two hills, no take-off order, try and make the sponsors' hotel or even Newtown. Two conscientious, and in the event, rather brave wind dummies tried the task; Alan Hetherington on an Olympus came back and top-landed because it was just too much, while Dave Thomas set out on his gryphon, followed closely by a chorus of "oooohs" and "aahhs", to make a journey he'll never forget two miles down the road.

The wind blew stronger, we stopped for tea, we stopped flying altogether and stood around talking, and when the BBC Grandstand television crew struggled down the slope to the takeoff point at around 3.30,

the commentator — Bob Fisher — just laughed and laughed at the thought of any flying that day. We packed up sadly an hour later, leaving Peter Day and Julian Thomas grimly determined to wait out the closing of the "task window" at 6 o'clock when the task was officially cancelled. They didn't fly.

You can imagine the discussions that night. The forecast was for two days of similar weather, high gusting winds, and there was a sobering half hour for Derek and I in the Atlas Hotel, putting both their and our own hopes back together again.

Second Day

Up at 7 o'clock, peer at a clear blue sky, virtually no wind, but if anything, light northwesterlies. That meant Llandinium, fown only four times before, twice by the League, where Bob Calvert made 16 miles on its virgin day. Our extraordinary host, Farmer Parry, not only welcomed the hundred plus vehicles that turned up in the next hour, but watched, beaming, as we removed a good piece of his hedge and gate to get the hospitality caravan in.

If there was nothing for the land-rover drivers on the first day, the following two days made up for it. We sent up a continuous stream of kites to the top of the 400 foot hill. It was classic cross-country weather — Bob Calvert was off like a hungry ferret at two thousand feet but I wanted one task done first, before the cross-country. At the Dales League, we had flown cross-countries all day, plus one other task, which distorted the scoring. That couldn't happen in the final. So, steadily wound up by that

master of the art — Roy Hill — I pressed for a task first, duration, reverse 360s and a spot. It fitted in with the disciplines imposed by television coverage, provided a spectacle for Atlas, gave us a task done, and left us free that afternoon for a cross-country. We almost immediately lost one wind-dummy, Geoff Ball, who couldn't stand it, and set off across Wales.

The cross-country was simple. Issue a telephone number and leave Derek Evans to organise information for the pick-up cars, say the window is closed at 5.30, and then go when you like, where you like, as often as you like.

There were three options. Turn right and go due East for Newtown, as some pilots did. Turn left and fly along the ridge, jumping forward a bit, for three miles, but when you get to the far end there's a pile-up and some very narrow valleys to land in. Or just cruise around and wait for a "big up", and then fight your way to the top of it with all the other pilots doing the same thing, and set off south-east for England (London was 130 miles down-wind).

I went left, committed myself immediately, ran into awful turbulence, bounced around, worried about trees, made the middle of the valley and landed. All along the road there were cars pulled on to the verges and people lined up with binoculars watching the tremendous sight of twenty or thirty kites wheeling away into the distance. Back up the hill, rig again, won't make the same mistake this time, I thought, and I hung around for ages waiting for a big one. I caught something which the skills of Calvert, Bailey or Hobson would have made a meal of, but I wasn't up to it. Went left again, this time with more height, and was first of a bunch to the far end, way beyond my first landing. But as kites piled up to join me I copped out and set off virtually into wind to land by a road. If I'd gone left, as Mike Atkinson, Johnny Carr and others did, I'd have made an extra ten points.

I caught a lift back to the site to find Fiona bouncing around singing "the record's gone, the record's gone, Bob Bailey and Calvert have landed 30 miles away within fields of each other!" Rush off again, picked up the glider, phoned the press association, and heard stories the rest of the evening about how it had all gone, as weary pilots were retrieved from all over the country ("Who loves Trevor Birkbeck? You're his mate, are you? Right, could you drive 25 miles by road to pick him up?").

Stories that night, in a shindig in which there was free beer and food for most of those who turned up (Derek kept half a dozen plates of food for those who'd flown the furthest).

Brian Wood, like most of the pilots, had made his best ever XC flight, 17 miles, to drop in for tea with the vicar.

Geoff Snape, surely the unluckiest man of all, who broke the British Record (24 miles) with a flight of 27½



Top: Geoff Snape sets off into the sunset on his Vector. Above: A discerning group of spectators.

miles, and must have been feeling delighted until he looked up ten minutes later and saw Bob Bailey 2,000 feet above him.

Bob Calvert, who landed an hour after Bailey, trying to find out if he could add the official title of distance record holder to his present height-gain title (4,468 feet). He couldn't. Both did 30.6 miles, but Bailey, landing first, retains the title.

Nice to find the former BHGA chairman, Pat King, on his first League visit, joined the elite pilots (over 10 miles) with 11.2 miles.

Atlas were delighted. So were we. The forecast still hung over us, but we had a League competition. Rules for the final day — because of television — meant we had to have going-down tasks. I had the horrible job of wishing the wind gods wouldn't, on this one day of the year, give us the perfect XC conditions they had just given us.

Final Day

It looked like the previous day, but the lapse rate was lower, so the thermals weren't strong and the cross-country potential was poor. We all



stricted field. Out of the field, no marks.

Watching the top pilots, who flew not long after me, one really understood what class flying is. It wasn't just the skill in getting maximum speed. One had to have enough height left over, after converting, to make it slowly to the next gate. Brian Wood, as usual, flew a blinder, as did Graham Slater and Bob Calvert, but it was Graham Hobson who topped the lot, with a slow time of 56.0 and a fast of 8.2, for a 6.83 ratio. John North threatened, thankfully without success, to become our first injury this year (1 cracked rib last year), landing between two hedges on the road. But the into-wind speed range test worked.

The final task was a new one, pushed by John Hudson, a pylon distance. Derek Evans went out with some markers and hid them in the fields in front of us, with kite bags pointing at the markers. One went just to the far left of the landing field, another a hundred yards further out behind a hedge on the road, and a third still further out behind a big tree near some woods. The task was: you've got 10 minutes in the air, anything longer is zero points. You must return into wind through a gate in front of the (restricted) landing field within that time. Describe the furthest marker you saw, scoring 20, 50 and 80, in degrees of difficulty.

It caught the imagination. Paul Baker, first off, followed wind dummy Dave Thomas, but couldn't make up his mind which marker to go for, and landed out of field. John Hudson hung around too long for height and was outside the 10 minutes. Thirty-two pilots made the far marker, at least enough to see it, and made it back to the gate, though most didn't get on to the spot afterwards.

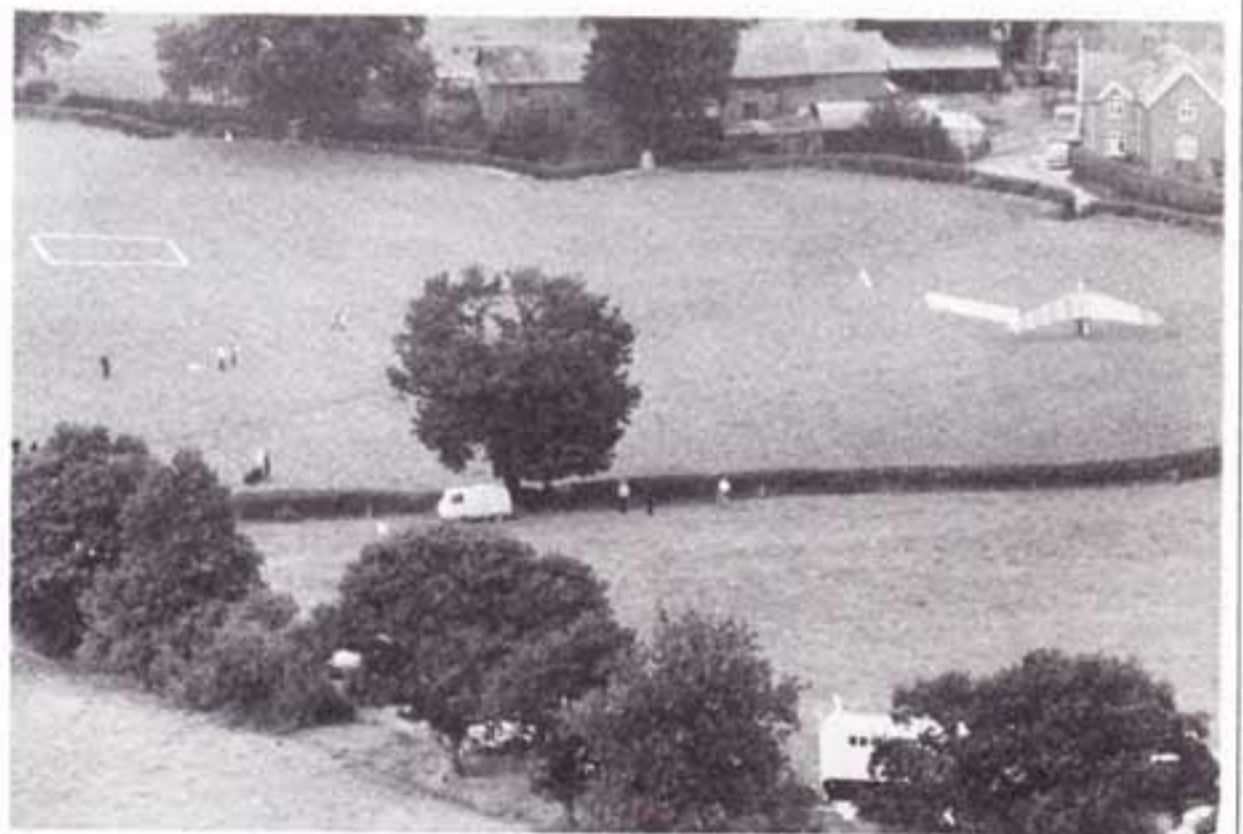
went back to Llandinum, and the pilots got up the hill in double quick time. Down below it was spit and polish; today was the day the Princess arrived. BHGA Chairman Reggie Spooner took over the task from Derek Evans of letting Atlas know what was happening, while Derek became chief marshal (Roy had to go home).

There was a certain amount of wind-up about doing another cross-country, coupled with the realisation that this was it, the final day. Television cameras were all over the place, interviewing the three favourites to win the League, Keith Reynolds, Bob Calvert and Bob Bailey. Public relations men were unrigging the Atlas banners. The drinks were beginning to flow down below, and meanwhile, we knew we had two tasks to complete and still be ready for the presentation in enough time for the cameras to film it.

The first task, after wind-dummying the site, was a speedrange into wind. That is, out over a course, time a fast run over a measured course, enter the second gate again for a slow run, then off for a spot landing in a very res-

The pressure at the top and the bottom on the last day had been considerable. Bob Calvert and Bob Bailey had been winding up Keith Reynolds unmercifully, who knew that all he had to do was make one slip and they'd have pounced on him. Keith had made a good cross-country, so the pair of Bobs hadn't that much on him; if he'd blown this last flight (in fact he made a perfect 100 points) he wouldn't have won the League. At the other end, Steve Marshall (on 46th position) was out to get me (on 45th position), because those on 46 and below are dropped next year, and for a long while, it looked like either him or me. In the event, we both stay in — just.

I'd been flying the Atlas Express kite, built for the front cover picture, and was adopted for photographic reasons by the Atlas wives. That kite was the back-drop to the presentation by HRH the Princess Margaretha, aided by Reggie Spooner and the indefatigable Derek Evans. The actual competition was won by Bob Bailey, with Bob Calvert second, and Graham Hobson third. But the League positions were what mattered,



Top: A diving approach to the landing field. Middle: The picturesque landing site. Bottom: Another low approach, this time on a Phoenix VII and Keith came out tops by more than 60 points.

The Alvin Russell Trophy, a new and magnificent one made by Jim Blackstone, was presented by the Princess to Keith, along with a four-pint tankard filled with champagne.

There are a lot of people to thank. Robert Hunter, John Ambler and Jack Brown, from Atlas, for believing in (and backing) us. Paul and Lesley Bridges, from the Long Mynd Club, for lending us the sites. A special

mention for that peer among farmers, Mr. W.G. Parry, who took us all in his stride. The Atlas organisation, those who sweated getting us up the hill, and those who watched hang gliding for the first time; I hope you enjoyed it. Roy Hill and Keith Coles, the two hard men who make things happen when there are times many of us just want to go off and do anything rather than fly down. Marshalls like Terry Flower, Eddie Horsefield, Joan Lane, Dave Chambers and others,

who cope with hyped-up pilots as if it was the most normal activity in the world. Reggie Spooner, BHGA Chairman, for being *there* when we needed him. The League pilots, who've made the most extraordinary sacrifices over the past two years to turn hang gliding into the only way it's going to be a sport, through competition.

There are two other things to say. Fifteen pilots now drop out of the League, because they're below 45th place. Among them are two men who did a great deal to put the League together. Ken Messenger, who took direct responsibility for three of the ten competitions in the League's life. He set us a standard, in the types of task he made us fly, that revolutionised competition. I shall miss him, both in the League and on the competitions committee.

The other man I'm very sad about leaving the League is Tony Fuell, who organised the Southern Club's competition so successfully this year. You can get advice on the hill about what to do as a task from a dozen quarters (and frequently do!), but Tony was always cool and certain about what

could work. I hope he's able to get back in next year.

The second thing to say is that the Atlas Express National Final wouldn't have worked at all but for Derek Evans. To many of you, the BHGA Treasurer is a shadowy figure behind the financial figures the BHGA produces at AGMs. My experience of treasurers on committees is that dreamers dream, and when they come down to earth they face a treasurer guarding the pennies who invariably says "No, it can't be done." Amongst the BHGA dreamers, that we'll produce the best hang glider pilots in the world, that we'll win the world championships, that *all* is possible, the most important — in my opinion — is Derek Evans. He's *liberated* us, so we can say, not just we'd *like* to do this, but we *can* do it. And when we've raised the money and things have to work, detailed stuff like making a raffle go, or organising marshalls, booking halls, team travel arrangements, talking successfully to the Sports Council, a hundred things that those working in the BHGA know about, Derek Evans makes them happen.

Right: Top to bottom: HRH the Princess Margaretha presents League Winner, Keith Reynolds with his trophy, smiles with a delighted Bob Bailey and awaits a jubilant Bob Calvert. Bottom: The happy trio.



NATIONAL HANG GLIDING LEAGUE — FINAL RESULTS 1978, after five competitions September 28.

Pos	Name	Machine	Atlas	Total
1	K Reynolds	Gryphon	333.95	1429.31
2	B Calvert	Superscorp	391.69	1366.39
3	B Bailey	Wills XC	400.00	1323.86
4	B Wood	Maxi	319.14	1277.40
5	John Fack	Superscorp	214.68	1264.07
6	Jmy Fack	Superscorp	234.19	1258.85
7	G Snape	Vector	317.93	1254.34
8	G Slater	Superscorp	253.42	1239.91
9	L Cruse	Moonraker 78	305.38	1236.40
10	G Hobson	Sky Safari	371.74	1216.48
11	M Evans	Gryphon	173.35	1210.93
12	M Maher	Gryphon	175.58	1177.79
13	R C-Smith	Sky Safari	234.42	1146.97
14	T Birkbeck	Moonraker 78	276.45	1138.35
15	B England	Moonraker 78	305.36	1131.46
16	J Carr	Moonraker 78	259.02	1110.63
17	A Weeks	Gryphon	210.20	1098.69
18	T Beresford	Sky Safari	185.39	1075.79
19	M Atkinson	Moonraker 78	193.97	1065.99
20	N Millhouse	Phoenix B	151.93	1025.54
21	R Brown	Vector	186.11	1001.23
22	P Day	Cirrus 3	126.84	995.75
23	G Leason	Moonraker 78	234.33	984.14
24	B Hudson	Superscorp	151.63	983.61
25	P Baker	Maxi	134.51	977.19
26	J North	Vector	141.62	962.02
27	J Hudson	Vector	119.03	930.33
28	R Wates	Gryphon	123.36	929.39
29	J Ketelaar	Moonraker 78	85.46	907.93
30	C Johnson	Superscorp	191.62	891.76
31	R Black	Gyphon	216.30	889.27
32	C Betts	Superscorp	185.38	885.10
33	I Thomas	Superscorp	234.41	879.73
34	M Southall	Moonraker 78	135.02	839.97
35	D Clothier	Superscorpion	—	778.95
36	A Doubtfire	Moonraker 78	130.77	776.90
37	K Cockroft	Superscorp	218.36	758.20
38	J Bond	Wills XC	180.37	753.47
39	B Chaplin	Olympus	—	734.95
40	L Gabriels	Sky Safari	127.07	715.03
41	F Taryjanyi	Superscorp	—	696.29
42	B Milton	Moonraker 78	217.76	688.99
43	D Goepel	Superscorp	135.35	682.01
44	R Ware	Midas	259.88	653.21
45	S Marshall	Cirrus 3	169.71	635.78
46	BJ Harrison	Superscorp	—	612.21
47	T Taylor	SST	—	584.49
48	R Middleton	Wills XC	—	583.31
49	T Fuell	Superscorp	157.89	478.08
50	K Messenger	Moonraker 78	—	474.80
51	D Heffer	Moonraker 78	42.51	462.21
52	J Thomas	234.10 Moonraker 78	—	460.70
53	R Walder	Gryphon	—	452.27
54	D Worth	Scorpion	—	302.95
55	J Millburn	—	108.80	290.24
56	J Bowyer	Olympus	—	274.83
57	K Jordan	Scorpion	—	177.80
58	D Weedon	Moonraker 78	—	168.98
59	C Coleman	Homebuilt	—	160.02
60	D Lyne	Not flown	—	0

HANG GLIDING 1928 STYLE

“It is easy to invent a flying machine;
more difficult to build one;
to make it fly is everything”. Otto Lillienthal.



Julian Wright, now in his 65th year, describes how he first ‘got into hang gliding’.

In the late twenties the ‘Daily Mail’ offered a prize for the first glider flight across the English Channel. This fired my friend John Love and myself with enthusiasm for the project. We were already interested in anything to do with flight experience up until that date having been the making and flying of model gliders and a five bob flight in an Avro 504K bedight with Gnome Le Rhone rotary and a large wooden skid.

With the aid of a 1914-18 R.A.F. Flying Manual, a theatre stage and lots of optimism we designed and constructed our cross-channel entry. This was thirty feet in span, had conventional control surfaces a wheeled undercarriage, the fuselage being of triangular construction and in the interests of economy completely uncovered, the pilot sitting in a bucket seat in front of and below the leading edge of the wing. To the jeopardy of both our academic careers but to the infinite relish of both our aeronautical aspirations the glider was completed in eighteen months.

I well remember approaching several local worthies who had had the privilege of serving in the Royal Flying Corps and inviting them to pass judgement on our achievement, (we had no knowledge of the existence of the C.A.A. or for that matter the

need to possess a C of A.).

Came the glorious summer morning when we were to carry out our first flight test. These were to be carried out on a local hill with a convenient flat top with North through to south east aspects. A condition of our permission to use the site was that we would engage the services of a local scout group who would surround our activities in order to prevent those interested from damaging the farmer’s hedges.

At half past five in the morning of the great day the tail end of the glider was lifted and secured to the folded hood of a Riley open tourer car, the wings having been secured to the sides of the fuselage, the whole assembly being now trundled along on its undercarriage behind the car. Arriving at the site we then proceeded to rig the glider, our driver (Mr. Ernest Webb, ex-R.F.C.) had to leave in order to open his business premises, promising to return later to tow us (hopefully) into the air.

On the return of Mr. Webb the glider was connected to the back axle of the Riley and towing practice in which the effectiveness of the controls was established. Eventually after some minor trimming adjustments the glider was connected up to the tow and the driver instructed to increase his speed until the glider took off. In a

light breeze and a towing speed of thirty plus miles per hour the glider left the ground but on returning to terra firma the undercarriage collapsed and before the tow could be terminated the fuselage and empennage had sustained very considerable damage.

Shortly after this, due to lack of funds and the influence of our respective parents, who feared that we would break our necks we abandoned our Channel aspirations — furtively converted the wreck of our brain child into a hang glider which proved to be too heavy and unmanageable.

Eventually, having adopted both Pilcher and Lillienthal as our heroes we constructed a biplane hang glider based on a design by the American pioneer Octavus Chanute. This cost us about thirty-five shillings to construct, had a span of twenty feet and a superficial area of about 150 sq. ft. and weighed about thirty five pounds, it had single surface wings which were cambered, the inter-plane struts were of half inch diameter bamboo, the whole biplane assembly being truss braced. The fuselage comprised three bamboo members which supported a lightly constructed tail plane and rudder, (the three fuselage members were frequently broken by contact with the ground, but were invariably replaced by having a whip-round for

nine-pence, and dispatching a cyclist messenger to the nurseryman for replacements).

The glider was first flown as a kite in order to establish its characteristics. Both John Love and myself literally ran ourselves into the ground trying to get off the ground but never managed to accomplish more than hops. An acquaintance of ours, one Charles Palmer being much lighter than either John Love or myself was persuaded, against his better judgement, to act as ballast whilst the glider was flown as a kite and to his horror and our sadistic amusement accomplished the highest and longest flight ever attained on the Wright-Love Hang Glider.

In retrospect although these early efforts were wonderfully exhilarating and instructive I feel that had we had more suitable sites we would inevitable have broken our necks due most probably to complete inexperience and/or in flight structural failure.

The foregoing activities took place during the period 1928-30 and it was not until October 1975 that I at last managed to become airborne in a hang glider. This was a dual trip with the late Alvin S. Russell flying an Argus 265. On 30th July 1977, in my 64th year I was awarded my Elementary Certificate. Recently, in my 65th year, I soared for an hour on my ‘Spirit’.

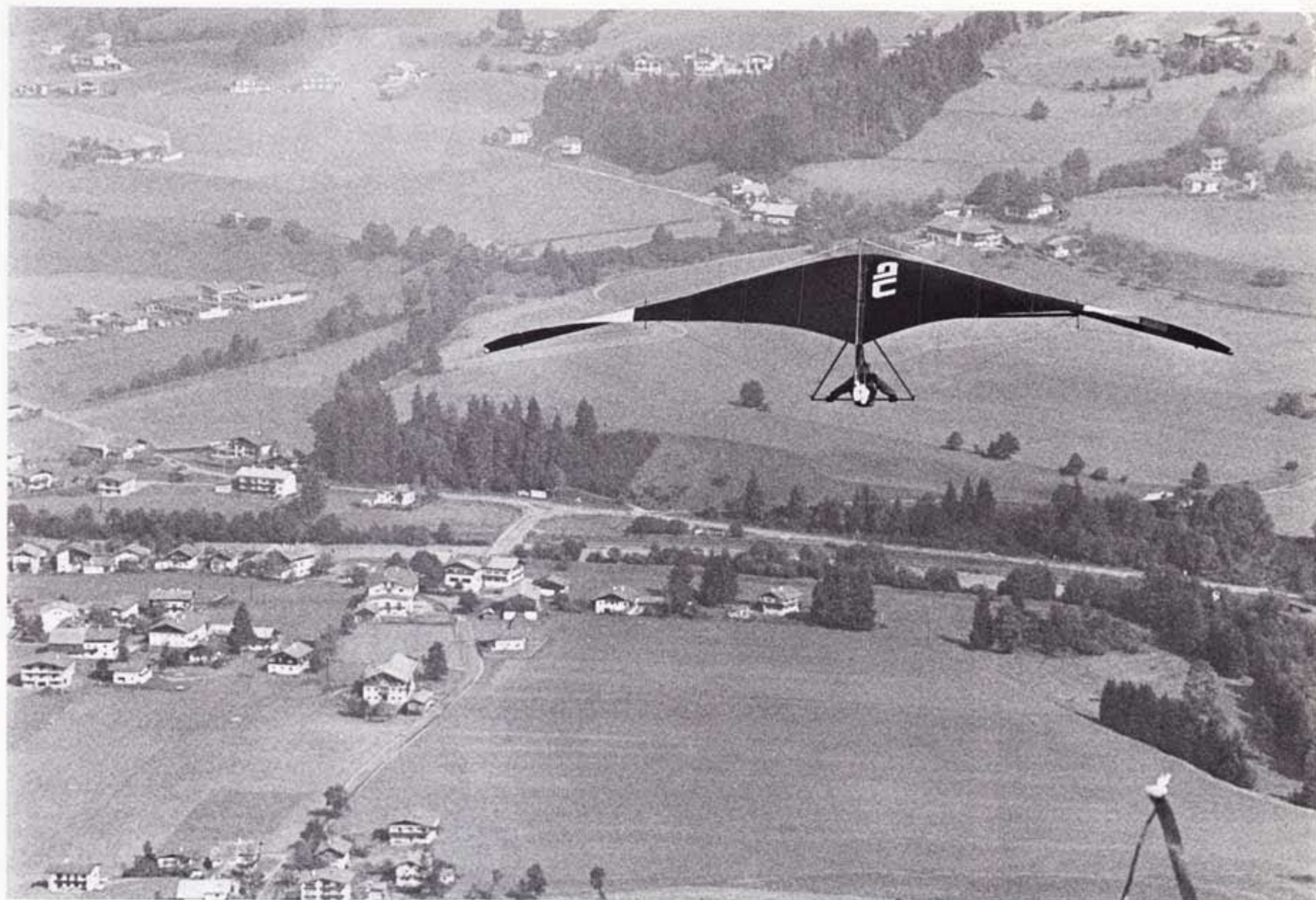
KOSSEN

European Open Hang Gliding Championships 1978

Roy Hill, in charge of the British team at Kossen, tells us of how our team fared in the European Championships and of some of the more memorable moments.

James B. McMenemy was there taking the photographs.





I've sat for an hour now trying to put into words the atmosphere that was Kossen. It's impossible to recapture moments like that, so forgive me if this article sounds trite, sentimental, emotional and nostalgic but that's how I feel right now.

We put a lot of work into the preparation. The Team had all expenses, uniforms, transport, accommodation, the lot. All the pilots had to do was turn up with their passports, gliders and international sporting licences, (if you want a laugh you might ask Slutter or Ren to tell you how they got theirs). There is no truth in the rumour that Bony Teresford and Slutter are identical twins. I digress. To return to the plot. It was deliberate policy to pamper this team into really believing they were the best. They were, so why shouldn't they believe it. They don't realise what a big psychology job we did so don't tell them. We might want to repeat it next year.

I won't bore you with details. Suffice it to say that departure was accomplished via 2 minibuses, 2 V.W.s, hovercraft and autobahn to Austria complete



Top: Take-off over the beautiful Austrian valley. Above: Pilot takes off on a Moyes Maxi.

with busted roof racks and severely dented transit roofs supporting 8 gliders apiece. The journey was completed non-stop.

Our billet was the Pension Astl which was ideally situated at the foot of the ski lift and was run by a charming lady, (at least that's what Paul Beukers said), called Lizel. We took over the place. Apart from a couple of colonials from Canada who stayed for a few days it was all ours and became a centre of attraction for all sorts of Bohemian types over the next two weeks. Don't get me wrong. Everyone, without exception, worked hard and played hard. I'm sure that was the secret of our success. For one week we trained. We ran mock tasks and had our own one on one comps. We began to get a sort of teutonic reputation for efficiency and other teams, as they arrived, began to sit up and take notice. It wasn't only the uniforms our flying was good too.

On the first training day the die was cast and in rare thermic conditions half the team took off and shot up to cloudbase, about 3,500-4,000 ft. One Austrian was heard to remark, 'I've never seen a hang glider at cloudbase be-

fore.' We had made our mark. This first week was invaluable. Our spot landings improved 100 per cent but we had our problems. Brian Wood damaged his knee on take off and Mike Atkinson had a recurrent back problem. Mick Maher, our reserve, was flying well and all the team knew that he was ready to take their place at a minute's notice. Mike spent a fortune on a local physiotherapist in an attempt to improve his back, (anyway that's what he told us). Whatever she did worked and he was soon leaping around with the rest of the mob.

Teams from 24 countries duly arrived, including Japan, Brazil, Sweden, Canada, New Zealand, etc. Some famous names were amongst them, Joe Greblo, Rich Grigsby, Jerry Welch, Mike Arrambide from the States. Joe fresh from his 72 mile cross country. Steve Moyes, John Ogden and Phil Methewson from Australia.

The atmosphere began to build up and there was some really impressive flying. One flyer stole the show in that practise week with superb over 90 wingovers and a display of aerobatics on a blue Gryphon that would leave most pilots gaping. The Pilot? A super 8 stone bundle of blond, blue-eyed Swedish energy called Sylvia Lindgren. She celebrated her 1000th parachute drop by jumping from a hang glider over Death Valley. I never did find out how old she was but she looked about 20. The only accident involved a young Norwegian lad who borrowed Sylvia's glider and attempted to emulate her performance. He managed to stall and tumble inverted. This resulted in a broken leading edge. He plummeted into the ski lift cables from about 400 ft and dropped to the ground virtually unharmed. The luckiest man I've met. The official enquiry by the Austrian authorities attributed the accident wholly to pilot error.

The Championships were officially opened with a march through Kossen by all the teams. It was obvious that we had already endeared ourselves to the locals. Everywhere we went we raised more cheers than the opposition.

And so to the Championships proper. Sepp Himburger, Comp. Director, is clearly a professional with a lot of experience and, in spite of the obvious pressures, he kept a good comp. running well. There were faults, but I challenge anyone to produce a perfect



Top: Mick Evans and his Caledonian Gryphon. Right: The top! Above top: For some things just didn't go right. Above: Parachute folding lessons in the evening.



system. We were told early on that tasks would be based on duration, distance, spot and XC, with the emphasis away from spots. Without getting too technical it was pure distance down the valley, (or walley to the initiated), pylons, 360,s and distance pylons. Most of the tasks were well within our pilots' capabilities and they knew it. I've never seen them so relaxed since Milton swam the Channel. Even Johnny Carr was still laughing and joking, (all riiiiight). From here on it was all work and just a little play. Looking back it seemed an endless round of managers' briefings, de-briefings, pilot briefings, score checking, appeals, panics and pay-outs.

Top left: On a good day. Top right: And on a bad day. Middle: Keith Reynolds on approach. Middle right: Past the start line. Above: The video debriefing.



The scoring system was novel, and good. Pilots flew in groups of four or seven and were given a group placing, 1st, 2nd, etc. At the end of the Championships the pilot with the least score was the winner. You will probably understand the system if I explain Bob England's run up to 2nd place. Of the six tasks in Class 2 he came first in five and second in one. The winner, Thevenot from France got six firsts. But, here's the rub, in one particular task involving duration and spot if you fell over on landing you picked up seven points. If you landed out you picked up 14 points. With half a task run on the final day Bob fell over on landing. For a minute all was lost but a quick appeal



Far left: Bob England samples the Schnapps. Middle left: Mick Evans right, with his spoils. Above: Johnny Carr conducts his own applause. Bottom left: And did it rain. Bottom right: A backdrop of firs.

against the flying conditions brought a halt to the task and the end of the Championships. There's more, lots more I could tell you. Our team was the best, our fliers the best, our hotel best, and our organisation, not just out there but back home. Just little things kept it together. Derek Evans had arranged a credit transfer to the Kossen bank for accommodation costs etc. On arrival at the bank with a request for £1000 there was no record of receipt. A quick telex to Derek produced the money within a couple of hours — thanks Treasurer.

Some memorable moments never to be forgotten were:-

Evenings with guitar, penny whistle and harmonica ably played by Bob (my husband and I) England, Mick (Irish Reb) Maher and Lester (do anything for a schilling) Cruse.

The night the Canadians created one hell of a row and promptly shouted up the stairs, "Be quiet you English". We got our own back. We beat them in the air and in bed. At least I think we did.

The super film night with some magnificent aerial shots from Sweden.

Wendy (Niagara) Hill. Or how to flood an hotel in one easy lesson.

The day of the presentations Ann Welch beaming with pride.

Mick Evans face on the rostrum

Chris Johnson's 7 o'clock reveilles.

Norman Millhouse who seemed



CLASS II Results:

2.	Bob England	Moonraker 78
4.	Johnny Carr	
14.	Bob Calvert	Super Scorpion
19.	Norman Millhouse	Phoenix
33.	Brian Wood	Moyes Maxi
37.	Graham Slater	Super Scorpion
39.	Keith Reynolds	Gryphon III
50.	Bob Bailey	Wills Wing XC
72.	Tony Beresford	Super Scorpion
77.	Mick Atkinson	Moonraker

CLASS III

2.	Mick Evans	Gryphon III
21.	Lester Cruse	Fledgling



The Team: Back row: Roy Hill, Lester Cruse, Tony Beresford, Bob Bailey, Keith Reynolds, Mike Atkinson, Bob Calvert, Chris Johnson. Front row: Brian Wood, Graham Slater, Bob England, Johnny Carr, Mick Maher, Mick Evans, Norman Milhouse.

determined to fly without his glider.

Bob Bailey's laugh.

Bob Calvert's sheer professionalism. He's getting good with the girls too.

The commentator's voice rising in tempo and pitch as an Austrian overshot the target and stuck his nose plate in the commentary box.

The Austrians, the country and the flying, it was magic.

The wives and girlfriends were great. I didn't hear a single grouse. Their cheers and encouragement were invaluable.

The team itself was superb. I will not mention individuals. It was a team effort and I'm sure those with trophies would agree that any one of the team could have been in the prizes. The pilots were what it was all about and they gave their all. We could not ask for more, except 1st, 2nd and 3rd next time. 'Start fry' you lot.

Lastly, I left Kossen four days after the rest of the team but when I did, the girls in the hotel gave me a box of chocolates with tears streaming down their faces. When I asked why they were crying they said I was the last of the British to leave and it would never be the same again. I don't think it will.

« ON BEHALF OF THE BRITISH TEAM AT THE EUROPEAN CHAMPIONSHIPS, KOSSEN »

Chris Johnson, Team Manager would like to extend
a **Vote of Thanks**

to

.....
WASPAIR

**HIWAY
HANG
GLIDERS**

**CHARGUS
GLIDING
COMPANY**

**SKYHOOK
SAILWINGS**

**BIRDMAN
SPORTS**

.....
For the offer of a glider at cost for first prize in Kossen Draw

.....
**British Leyland
Unipart** for the
team Jackets

.....
Mainair Sports for
the altimeter given
for the draw and
the parachutes
sold to the BHGA
at cost

.....
Top Sport for the
reduced prices
charged for team
training shoes

.....
Hoofer who gave
Jeans for the team

.....
Brian Wood who
gave two helmets
to be sold for the
fund

.....
**The Johnny Carr
Disco Show** for
money raised

.....
Britax for giving
the team helmets

.....
Mark Southall for
the kit bags

If you want to follow the example of the Bob Calvert's of this world and do regular cross country flights, it is most important that you familiarise yourself with some of the existing air law regarding controlled air space. Air traffic control, air charts, etc. have a language of their own which at first glance appears quite daunting. Here are some of the basics, which I hope will help to keep you on the right side of the law.

The altitude an aircraft is flying at may be given in feet above ground, or above the sea, or as a flight level. The figures may be very different as will be seen later. A Flight Level (F.L.) refers to the height of an aircraft as indicated when its altimeter is set at an internationally agreed setting of 1013.2 millibars on 29.92 inches of mercury. For practical purposes the point two is omitted. This figure of 1013 mb is not arbitrary, but coincides with agreed temperature and air density readings at sea level. F.L.'s are quoted in hundreds of feet, therefore, FL 45 is 4,500 feet and FL 235 is 23,500 feet.

Mention will also be made of Instrument Flight Rules (I.F.R.) as opposed to Visual Flight Rules (V.F.R.). Aircraft flying under I.F.R. have to fly within certain rules—which are involved. Radio equipment is needed plus the basic "T" flight instrument panel and the pilot must hold the appropriate instrument rating.

Aircraft flight under V.F.R. may only occur within certain meteorological conditions known as Visual Meteorological Conditions (V.M.C), these are either:

- (a) At least one nautical mile horizontally and 1000 feet vertically from cloud and within a flight visibility of at least five nautical miles if flying above 3000 feet (a.s.l.) or if within controlled airspace at any altitude or
- (b) Clear of cloud and within sight of the surface if flying below 3000 feet (a.s.l.) and outside controlled airspace.

All airspace is divided into two basic divisions:

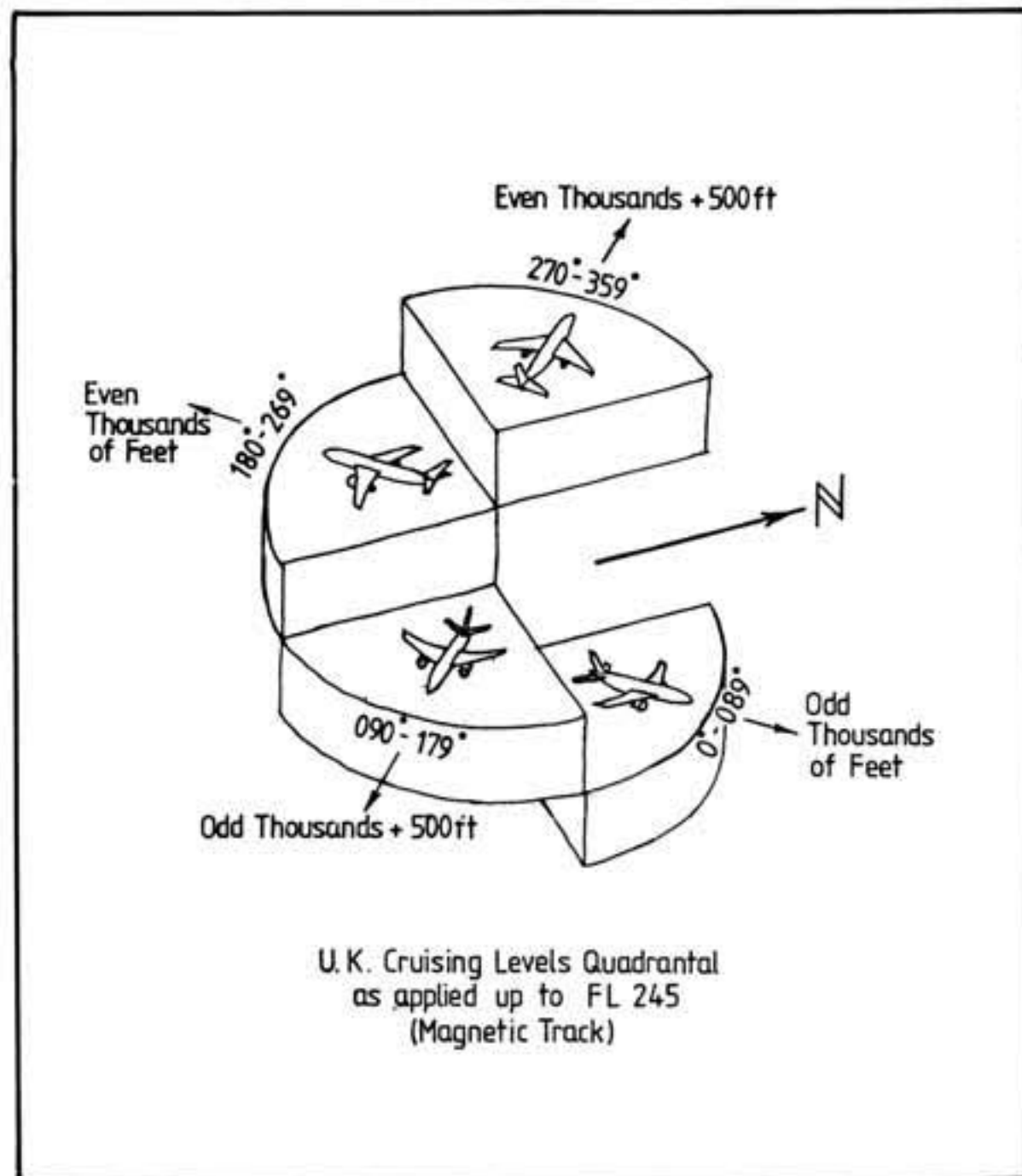
1. Lower airspace, below FL 245 (24,500 feet) comprising regions known as Flight Information Regions (F.I.R.'s)
2. Upper airspace, at and above FL 245, comprising regions known as Upper Flight Information Regions (U.I.R.'s).

F.I.R.'s and U.I.R.'s contain other types of airspace in which more comprehensive air traffic services are provided, these may be of control or information, mandatory or otherwise. The following is a very dry but necessary list of such airspace, and to make sense you will need the appropriate air chart for your area.

(a) **Control Zones (CTZ)** Airspace within which air traffic control service is provided to Instrument Flight Rules (I.F.R.) flights. They extend from ground level to a specified altitude or FL.

AIR LAW

Paul Bridges, Chairman of the Long Mynd Club outlines basic Air Law which any aspiring cross-country pilot should know.



(b) **Control Areas (CTA)** as in (a), but they extend upwards from a specified altitude or FL and in the U.K. also have upper limits.

(c) **Terminal Control Area (TCA)**. A portion of a control area normally situated at the confluence of airways in the vicinity of one or more major aerodromes — very unhealthy areas!

(d) **Advisory Service Areas** Aircraft in such areas flying under I.F.R.'s making use of the service are separated from other aircraft also using the service. So presumably we can enter such areas, but beware of other air traffic.

(e) **Advisory Routes** Are advisory service areas in the form of routes between specified geographical locations. They are deemed to be 10 n.m. (11.51 miles) wide and extend from a specified level, with an upper limit. Such routes are not established within controlled airspace.

(f) **Radar Service Areas** These are areas within which an air traffic control radar service is provided. The whole of Britain and beyond is covered. Fortunately, most of these service areas are Advisory Service Areas, but some are Mandatory and

these fall within controlled airspace.

(g) **Special Rules Areas (SRA)** These are areas within which aircraft are required to comply with the instructions of A.T.C. SRA's extend upwards from a specified altitude or FL and have an upper limit. Whatever you do, don't get tangled up with one of these.

(h) **Special Rules Zones (SRZ)** As above, but SRZ's extend upwards from ground level to a specified altitude or FL — again, keep out of 'em.

(i) **Airways** These link CTZ's and form corridors between centres of heavy air traffic. Generally they are 10 n.m. wide and extend upwards from a specified level to an upper limit.

Aerodromes (Civil) are shown on air charts and have ATZ's of 1½ n.m. radius extending from ground level to 2,000 feet. Military aerodromes have a 5 n.m. radius MATZ which goes up to 3,000 feet and the zone also has a stub projecting from that airspace 5 n.m. along its centre line, aligned with a selected final approach path and is 4 n.m. wide. This stub extends from 1,000 feet to 3,000 feet above the

airfield level.

The list of airspace reservations (not to be confused with controlled airspace) is quite considerable. They are all shown on air charts but include:- Danger, prohibited and restricted areas, (some permanent, others not) which are mostly for military training. Provost Marshall's reserved and restricted areas, which include Oxford, Cambridge, royal dwellings, certain bird sanctuaries and Wilton Petro Chemical Works (of all places!) High intensity radio transmission areas are also shown.

Other hazards not shown on aircharts but listed in "Air Pilot" include free fall parachute areas and glider launching sites.

So now you have an airchart showing controlled airspace of various classifications, and provided you fly round, over or under such airspace you shouldn't go far wrong. But the situation still isn't as simple as that. The horizontal limits of airspace are easy to define, but the vertical limits do vary due to atmospheric pressure changes. Just how much may surprise you.

Suppose you have an airway at FL 45 over your flying site, which is at 1,500 a.s.l. It would be reasonable to assume that a height gain of 3,000 feet would be possible without entering the airway. This is not necessarily so. Once above 3,000 feet (transition level) altimeters should be synchronised to a standard subscale reading of 1013.2 mb or 29.92 inches. Flight levels are based on standard pressure setting and it follows that as the pressure changes from day to day, so the height of FL's will vary somewhat. If the air pressure at sea level is 970 mb—which is low but it does get even lower — this represents a difference of 1,194 feet from the standard setting. High pressure of 1030 mb is 472 feet from the standard setting. As air pressure drops the flight levels also drop and vice-versa. It follows that your 3,000 feet separation from the airway can be reduced to only 1,800 feet or less if pressure is low, and can be 3,470 feet plus if pressure is high.

This raises the question, "What should the altimeter setting be?" For local flying away from controlled airspace and without significant height gains it really doesn't matter, and the obvious setting is to read zero at the take off point (technically known as the QFE setting for that particular point). However, if you are near airways etc. QFE setting will give you error on the dangerous side should air pressure be low, even if you have taken into account your take off height. To check the air pressure set the altimeter to read true height above sea level on the site and note the subscale reading (this is known as the QNH setting for that site). If the pressure shown is below 1013 mb your airspace separation from the airway is reduced, if above 1013 mb your airspace separation is increased. Those of you with perception will realise that at around 3,000 feet the difference between altimeter readings at QNH,

QFE or the standard setting could cause problems. This rather grey area of uncertainty is called the transition layer, and so aircraft under IFR will not use FL 30 but will be significantly higher.

Having checked the charts, steered clear of airways etc. you now have 5,000 feet on the clock with setting 1013 and are maintaining 4 up, drifting gently downwind in a thermal and things look good. One of the rules of the air is to keep a constant look-out for other aircraft, but it so happens that at your FL you are more likely to get aircraft coming at you from one particular direction than another. To explain. In U.K. F.I.R.'s "Quadrantal Rules" apply below FL 245 if flying outside controlled airspace and in Instrument Meteorological Conditions (as opposed to V.M.C.). If you study the diagram you will see that at FL 50 (Odd thousands of feet) aircraft will be on bearing 0° — 089° if flying in I.M.C. and even if they are not, professional pilots tend to use the quadrantal rule when it is not inconvenient. One point to make clear is that the rule applies to the magnetic track of the aircraft over the ground, not the heading of the aircraft in flight. This is because of the effect of drift. For example, a Tiger Moth on heading 350° (magnetic) flying at 57 knots with a 20 knot crosswind from 260° (magnetic) will drift approximately 20° to the right. So the magnetic track will be 010° and he should fly at FL's 50, 70

etc. Whereas an executive jet on heading 350° at 400 knots with the same crosswind will only drift about 3°. The magnetic track will be 353° and he should fly at even thousands plus 500 feet. Consequently, the Tiger Moth could be at your flight level and you know from what quarter of the sky he will come if he is flying under rules applying to I.M.C. By the same token the executive jet will be at least 500 feet below or 1,500 feet above you.

Having listed numerous types of controlled airspace it would not be true to say that on no account should we fly into any of them. Gliders (and consequently hang gliders) have been granted certain limited concessions. The main one is that we are legally permitted to cross air ways *provided* we fly at right angles to the airway and continue through it in a straight line, *which means no thermalling*. In addition, if in such controlled air space gliders must fly in V.M.C. (away from cloud etc.). Perhaps it would be better to keep out of airways altogether. It is important to note that *the C.A.A. as the legal authority have stated that if either a glider or hang glider endangers an aircraft in airways etc. the concession will be withdrawn and the C.A.A. may well take control*. That thought horrifies me!

Well, that covers most of the main points relevant to us regarding controlled airspace, there is more to it, but stick to known safe and permitted areas and we shouldn't go far wrong.

One final point on airspace, etc., should you stray into a prohibited or danger area, apart from jumping up and down and waving their arms, the authorities on the ground may let off smoke projectiles or coloured very lights. They probably aren't trying to hit you with them, but just in case here is what some of the signals mean:

i) A series of black and white smoke projectiles means you are in a restricted or prohibited area and should alter course away immediately.

ii) A series of green lights or stars fired towards you means you are in a restricted or prohibited area and must land at the nearest aerodrome (field in our case).

Topographical aircharts of the U.K. to 1/250,000 scale cost £2.50. (There are 18 so quote your area) and they are invaluable and easy to understand.

The I.C.A.O. Aeronautical Charts of the U.K. to 1/500,000 cover a much wider area per sheet (there are four). Charts are available from Chart Agents. Two of these are: Edward Stanford Ltd., 12-14 Long Acre, London WC2 and International Aeradio, Hayes Road, Southall, Middlesex.

"Air Pilot" has been mentioned, but it costs £30 plus £2.50 p & p and £28 p.a. to keep it up to date, this does include the cost of Notams. Perhaps a visit to the local flying club would be cheaper, they are sure to have one. Fortunately there is

another publication called the "General Aviation Flight Guide". This costs a mere £9 plus £1 p & p and is for people who fly in V.M.C. outside controlled airspace. Amendments cost a further £9 p.a. and in addition you need Notams. Just in case you want a copy it is obtainable from: C.A.A. Printing and Publications Service, 37 Gratton Road, Cheltenham, Gloucester, GL50 2BN. Your Club should have information on Notams. The Rules of the Air and Air Traffic Control Regulations 1976 No. 1983 contain a wealth of legal information about who gives way to who, what signals mean and many other relevant things, and at 75p is well worth getting from: C.A.A., 129 Kingsway, Holborn.

I have found the R.A.F. to be a very helpful organisation if you make contact with a flying type. The R.A.F. En Route Low Altitude Chart of the British Isles is revised every month, and the B.H.G.A. may even be stocking it shortly. It doesn't show ground features, so you will have to plot your flying sites, etc. onto it using the 5ft. graticule intersection marks on the 1/50,000 O.S. map, but it is full of information and a convenient size.

There are numerous other publications which all give information, but of these I would most strongly recommend you to get "Air Law for Applicants for the P.P.L."—C.A.P. 85, published by the C.A.A. at a mere 45p and also available from the C.A.A. at Gloucester.

Sky a Safari

Fly next year's machine this year

Safari Winner of the 5th league, Graham Hobson — 17 miles. Over 18 months of intensive flying of the prototype "Safari" proved to us that we had a winner to follow "Sunspot" and it is now in production. For light winds the medium "Safari" has the min. sink performance to equal the large "Sunspot" and that is saying something. It also has the penetration for strong winds and positive, predictable handling

with immediate response which is so necessary for all kinds of flying.

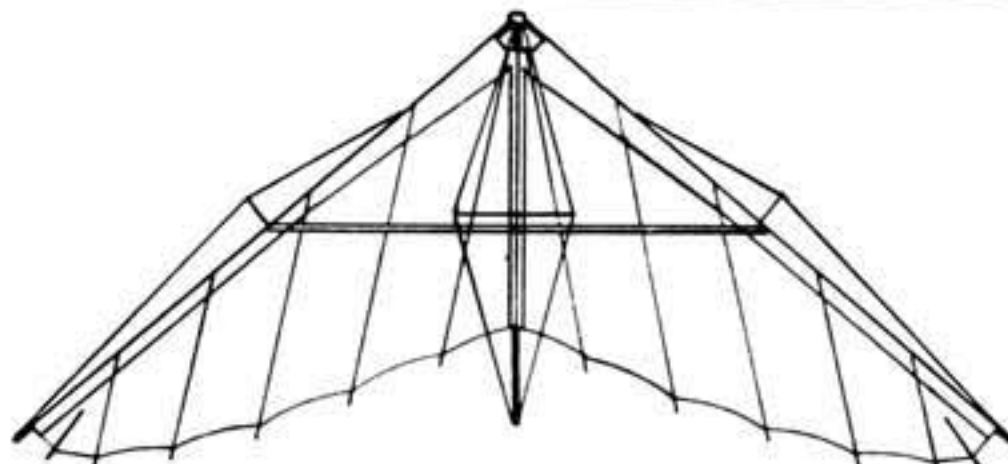
Glide angle at speed is good. The reflexed preformed battens in every seam make the whole wing pitch positive without the need for locked up tips etc. Vertical dive recovery is positive.

Safari is a real cross-country machine which easily makes use of thermals and handles the strong turbulence which often goes with them.

For the experienced pilot who demands the best performance but still wants outstandingly good handling.

Sunspot. Still one of the best all rounders next to "Safari" for fliers of E.P.C. standard.

104° nose angle. A/R 5. Available in two sizes. Prone harnesses and parachutes also available.



Skyhook Sailwings Ltd.

Vale Mill, Chamber Road, Hollinwood, Oldham, Lancs.
Tel: 061-624 8351/3427 Telex: 667849 HOLMES G.

“The Biggest Job in the BHGA”

The Council have decided to appoint a full-time **Development Officer**.

Do you have the energy, enthusiasm, initiative, tact and diplomacy required?

It is considered that by publishing below most of the paper submitted to Council recently by the Secretary you will be able to assess the scope of the job.

The salary to be offered is negotiable.

The successful applicant will be based on the Taunton office but not tied to it.

Applications for interview should be sent to the Secretary in Taunton immediately. In your letter tell us all about yourself, your experience to date and why you think you should be selected.

The Employment of a Development Officer

The BHGA Council's prime duty is to promote hang gliding in all senses of the word. Events continue to show that we are at the mercy of most land-owners, protectionist societies, Councils and Government Departments. We must take the initiative in the campaign to win over those who are undecided or likely to be against us. Within the sport we should be providing a wider range of services for our Members so that they feel membership is worthwhile and reflect this to the outside world. Successful promotion of the sport will bring maturity, acceptance and a more secure future.

The main promotional effort should be in the hands of a full-time employee whom I will call a "Development Officer". Until my accident the majority of my time had been spent working in this capacity, so I am able to describe the duties involved. The main tasks are to sell hang gliding and to create. Take, for example, our dealings with the National Trust. I sold hang gliding to their Director General and Chief Agent making it possible for Clubs to obtain sites on Trust land. Other land-owners, organizations, Ministers, etc., were sold too, but as the administrative work built up it became impossible to maintain or make new personal contact except when necessity dictated. Public events demand a vast amount of creative effort and selling to get the cooperation of landowners, Police, Councils, etc. Each public event helps to show our Members that we are active and obtains for us positive publicity, as

well as giving Members what many of them want.

A Development Officer working alongside the Secretary would be free of routine administration and able to work unhindered on the projects in hand. He would turn over to the Secretary completed projects to absorb into the Association's routine administration. The Development Officer would handle his own correspondence with people and organisations in connection with his work. With a Secretary and Development Officer the Association would be better able to cope with illness or an accident affecting one of them. I do not think you need reminding of the situation in early 1977 when Alvin Russell had been killed and I entered hospital for 10 months.

The Person we are looking for:

Throughout my description of the person's qualities I will use the word "he" though the job could easily be done by a woman.

He is likely to be an intelligent, self-motivated, successful speciality salesman.

He should be in the BHGA and very keen on flying hang gliders.

He will be aware that he wants to do something for the sport and may have become bored by his work and the general rat-race since discovering the sport.

To be successful our man must be very enthusiastic and a skilled negotiator.

He will be so keen to help the sport

progress that a drop in salary or uncertainty about the future will not prevent him from taking the job if it is offered.

He will be mobile and self-confident enough to deal with people at all levels.

He will accept being confined to a suit, as many of those he will be in contact with will expect him to be so dressed.

He will be able to handle simple administration and able to keep comprehensive records of his activities.

He will be a good organizer and able to make decisions within the policy framework laid down without the need to keep referring to Council for guidance.

The Job:

To represent us to all Government, semi-Government Departments, responsible for influencing National Parks, Councils, the Police, etc.

To represent us to all Government Departments responsible for making and confirming bye-laws.

To represent us to all major land-owning bodies, protectionist societies and to as many National Park administrations as possible.

To represent us to as many Councils and Chief Constables as possible, starting with those we know to be unfavourably disposed towards us.

To represent us to any other organisations as directed by Council.

To find a site, or sites, that we can use

for internal, national and international events and competitions, public or otherwise at any time of the year.

To organize public events and competitions.

To represent us to sponsors in conjunction with the activities of any sponsorship brokers who may be helping us.

To maintain continuity with sponsors to attempt to get regular backing (it is thought that with time for regular contact with a sponsor we will be able to be more worthy of regular sponsorship by one firm. The CCPR Sponsorship Survey gives the facts on the sort of relationship that a sponsor wants with an organisation they are sponsoring.)

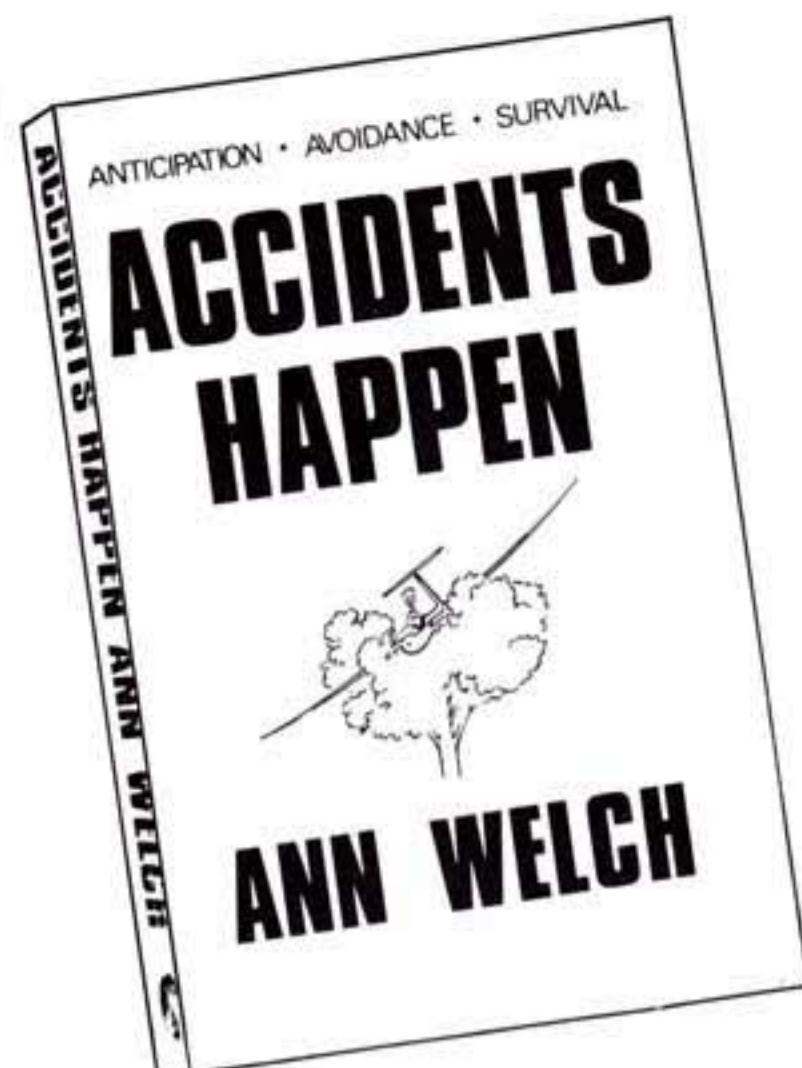
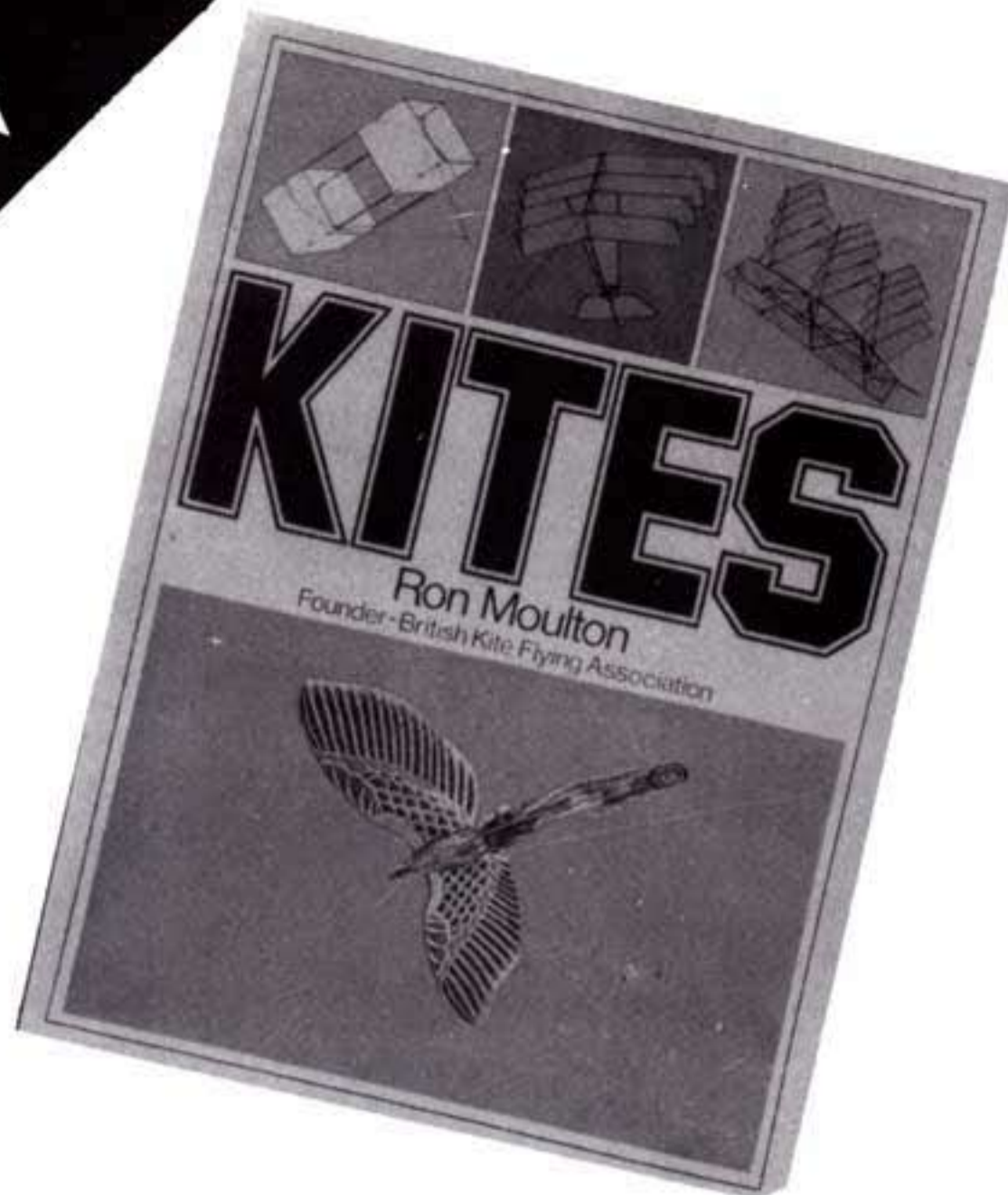
To work closely with the Association's Press Officer and be involved in some aspects of publicity.

To develop new systems and facilities where volunteers need their efforts co-ordinated in order to get things going.

On his travels the Development Officer would also be in contact with Clubs in the areas visited, so that they become involved and can volunteer their help and knowledge to maximise effort.

To represent Clubs in the few cases where they can't resolve a local problem without someone from Head Office making a visit.

Chris Corston



KITES

by Ron Moulton

Published in hardback by Pelham Books; £7.50.

Here is a book for the enthusiast or the uninitiated alike. A book that explores the many, various and certainly unusual aspects of the world of kites.

Opening with a potted history of kites and their development during 19th and early 20th century, we are lead to a good explanation of kite aerodynamics and various kite designs. Practical advice concerning how to fly kites is given with useful hints, do's and don'ts, faults and cures.

The chapter concerning the many uses of kites from 'fishing' to 'music' makes fascinating reading indeed!

There is useful information concerning the various control-line kites available; their construction, how they work, how to fly them, a detailed survey of kite types available and manufacturers worldwide.

Unusual kites ranging from gigantic Japanese War kites and early hang gliders to model hot air balloons are not forgotten.

The information on kite making techniques is useful, as is the survey of the patents taken out on various kite types.

And even after all this, there is an extensive appendix containing the addresses of kite manufacturers and suppliers worldwide, the various kite flying associations and details of books for further reading.

It's expensive at £7.50, but it makes absorbing reading and is well laid out with superb illustrations, extensive diagrams and photographs. Highly recommended!

Nick Regan and Mandy West

ACCIDENTS HAPPEN

by Ann Welch

(Paperback; John Murray; £2.95 net)

Anyone who's been involved in as many dangerous things as our respected BHGA President just has to be a survivor-type. As a founder member of the Surrey Gliding Club in 1938 she went through all the 'danger' phases of the gliding branch of aviation. When war broke out, she joined the Air Transport Auxiliary, and for four years ferried all sorts of aeroplanes around the country — just try and imagine if you will, not only having to take on a new type of aircraft, but also having to contend with bad weather and enemy aircraft as well! Ann has sailed, water-ski-ed, skateboarded, gone scuba-diving and sold second-hand cars in the Fulham Road (which must rank as one of the most dangerous of the lot!). Her insurance man must have nightmares just thinking about it all.

"Accidents Happen" could only have been written by someone who has done all these things. It's not specifically a hang-gliding book — it's about accidents in all forms of human activity. Nothing that is performed by human beings is going to be perfect for 100 per cent of the time. In most areas of human activity the error rate can approach quite astounding rates before people even notice that something's wrong, never mind hurt themselves. The activities regarded by society as 'dangerous' are usually those where the consequences of an error can be serious: if you were riding a bicycle, for example, and rode it too slowly, all you'd do is fall off. If you fly a hang glider too slowly, you will fall

out of the air and quite probably kill yourself.

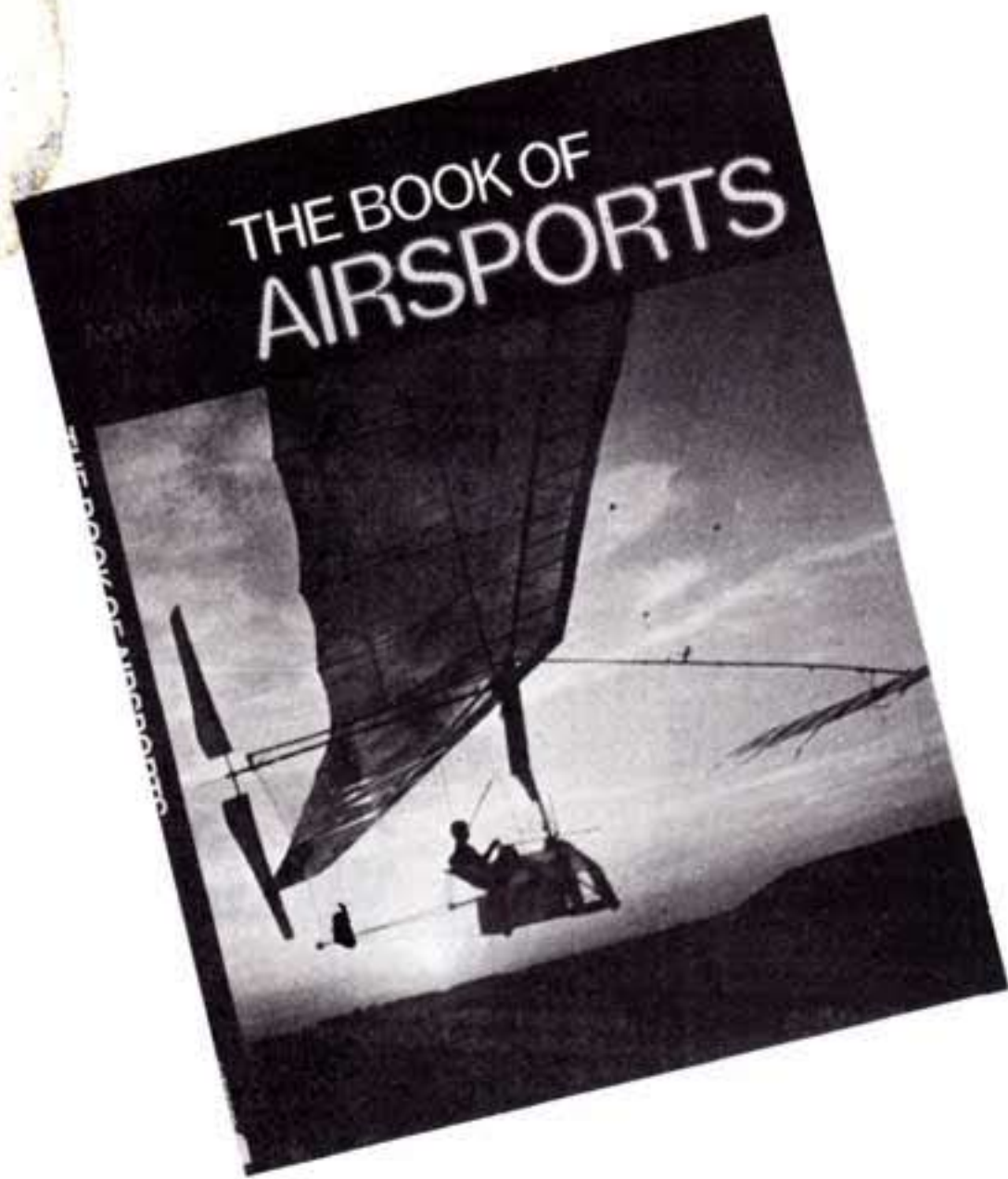
In the book, Ann looks at the sources of errors. She picks out the human factors — 'pilot error', sins of commission, misjudgement, miscalculation and confusion which lead to accidents; how they can be compounded by apprehension, fear and overload. She looks at equipment design and its contribution to danger in use, and studies special problems encountered in the alien environments to which humans subject themselves — altitude flying, diving, disorientation and so on. The whole thing is plentifully illustrated with well-chosen examples such as this one which I can't help but quote since it is not only interesting, but illustrates the general tone of the book so well:-

"There are two quite distinct sorts of accident which can happen with propellers whether they are on a boat or an aeroplane. They can kill or injure, and they create quite remarkable runaway dramas. The most interesting that I have actually seen was the aeroplane towing a glider without a pilot in either. It was all quite simple, really. The tug aeroplane was to tow the new glider to a purchaser across the Channel from a customs airfield. Without the facilities of a gliding club the two pilots positioned the two aircraft, and attached the tow rope to the nose of the glider and the tail of the tug. The glider pilot got in, closed the canopy and waited. The tug pilot went to swing the propeller, but the engine did not start. So he walked around the wing to the cockpit, switched off the ignition, opened the throttle, and returned to the propeller to blow out the too-rich mixture. He then went back to the cockpit, and in his impatience to get going switched on the ignition but forgot to close the

throttle. In this act he was not unique; before the days of the electric starters it happened all the time. He returned to the nose and swung the prop. The engine fired and the aeroplane at once started to accelerate. Dodging out of the way the pilot grabbed at the wing to try to hold it, but was shrugged off and knocked down for his trouble.

The glider pilot realised at once that he must do something, but in the heat of the moment merely achieved a hopeless but heroic act. Instead of just releasing the cable and staying safe, he jumped out to try to hold the glider back and thus slow down the aeroplane. This forlorn gesture merely resulted in his being knocked down as well; while the tug and glider waltzed away over the grass airfield. Without the pilot's weight in the nose the glider climbed steeply, stalled gently, climbed again, then stalled sharply and dived into the ground. The aeroplane got airborne only to take the next hedge in a fine failed-Grand-National style."

The book is full of such little anecdotes, all of them called from real life, and leaving aside the stem good sense which permeates it, the book is worth its price for these alone. It is certainly a highly entertaining read for us connoisseurs of the daft things that people can do. The sections on "teaching and learning" with relation to risk sports are excellent — any hang-gliding instructor who hasn't read this book is really missing something. The general reader has to try a bit harder — it's easy to dismiss bits of the book as not being really relevant to hang gliding — but it's not intended to be a one-sport book. I found it fascinating, and very instructive. And for sure, reading about accidents is a helluva sight more fun than having them! **Tony Fuell**



THE BOOK OF AIRSPORTS

by Ann Welch

Publishers: Batsford, London, 1978. **Price** £5.50.

Presentation: Hard cover, good quality paper, measuring 10 in. x 8 in., with 135 pages. Aesthetically pleasing to handle and read. Containing many good black and white photographs, four colour plates and various sketches.

Contents: Individual chapters on Hang Gliding, Gliding, Light Aircraft, Man-Powered Aircraft, Hot-Air Ballooning, Parachuting, (including parasailing), Wind and Weather, plus three appendices covering Rules of the Air, Example of Medical Certificates, and comprehensive list of useful add-

resses.

Comments: In her introduction, Ann Welch comments on how little people often know of other air sports, tending to narrow their interest down to their own particular sport. If this is true, then this book is excellent reading. As an introduction to the various sports listed, it gives clear, lucid and very comprehensive information. I was impressed by the amount of information transmitted without getting in any way technical. Anne's writing has an appealing mixture of artistry, no doubt arising from her vast flying experience, a fact which makes the book a joy to read. This extends to the chapter on 'Wind and Weather' (a subject which invariably seems to be over-simplified to the nonsensical

level or so technical that I can never understand it!), which strikes a nice balance between sound information and simplicity. There is even a small section at the end of the book, suggesting how to make a model hot air balloon, a chuck glider, and a Peter Powell type kite. I haven't tried making them yet but they look interesting.

The chapter on hang gliding covers aspects ranging from a brief account of the Rogallo's origin, (refreshingly without the by now hackneyed pocket histories of Chanute, Cayley, Lillienthal or the Wright brothers) which seem to fill most other hang gliding introductions), through first flights, to slope soaring, thermal soaring, instrumentation and present state of the art.

The information is up to date with photos and references of all but the most recent machines, including within the chapter on 'Man Powered Aircraft', information on MacCready's Gossamer Condor.

Resume: Although I feel the book is somewhat over priced (what isn't?), it is overall very pleasantly produced, packed with considerable information and enjoyable to read. It is very definitely an introduction to the various air sports as opposed to a detailed reference book, but of particular interest to anyone contemplating some form of air sport and of general interest to anyone interested in the experience we call flight.

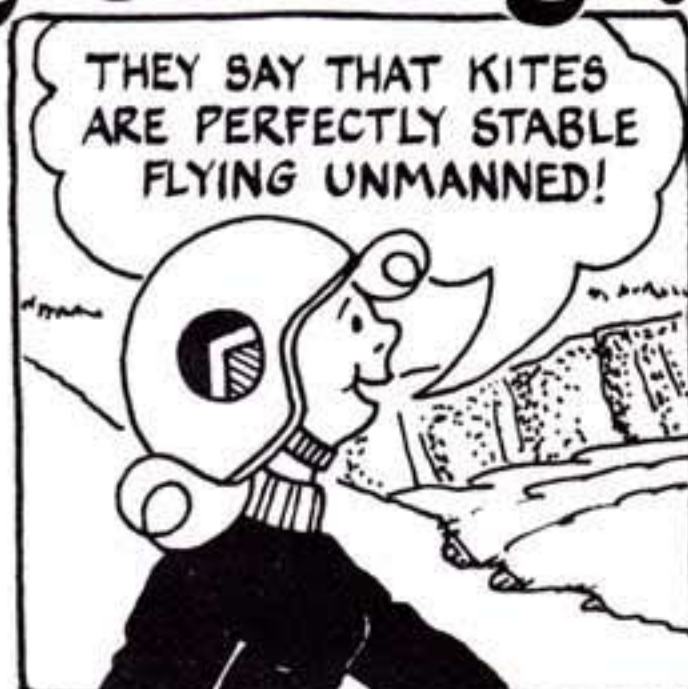
Malcolm Honeychurch
S.H.G.C.



Bill Hurst, who snapped the Sunspot above, also took the photographs which appeared accompanying the spotlight on the Dover and Folkestone Club which appeared in last month's *Wings!*



Peachy by HARDMAN



INFORMATION

AMERICAS CUP DRAW RESULT

The Draw was duly made on 3rd October in the sumptuous offices of Barclays Bank Havant and these are the lucky fellas:-

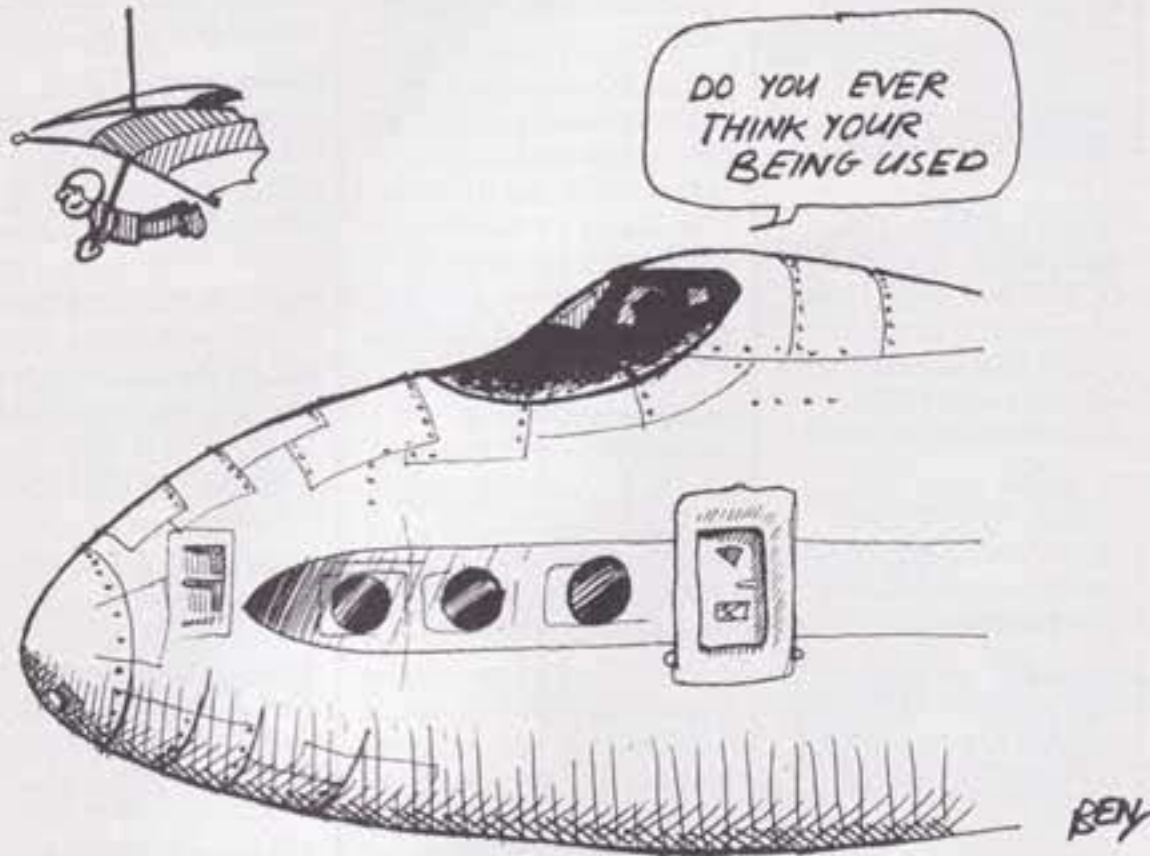
1st **MG Dean** (No 19281)
2nd **P Fowler** (No 12501)

My only regrets are that we can't spread the prizes further because another thousand members dipped into their pockets for this draw and put

£2,333 into the budget for the Americas Cup. Well done, and many thanks to all the contributors.

A special thank you too, for those generous manufacturers who offered to provide kites at cost for both the Kossen and American draws — Birdman, Chargus, Hiway, Skyhook and Waspair, and to Mainair Sports for similar help with the Kossen parachute and a free altimeter.

Derek, Evans, Treasurer



SHEFFIELD & DISTRICT HGC

We are still fighting for site agreements for Mam-Tor and Lords Seat Bergyshire and write to remind visitors that as from 1st September 1978 visiting fliers must hold a minimum pilot II grade unless your flying ability is known to the club safety officers.

The reason for this decision is due in part to the acquisition of more land by the National Trust who have insisted on a strict licence. In addition they have forbidden take-offs and top landings from the east face of Mam-Tor.

Visitors are welcome however providing they contact either of the following prior to flying, to sort out take-off and landing areas, fees etc.

A. Ball 0742 56869
G. Hobson 061 973 4085
R. Kulig 0742 53204
S. Coates 0742 332326

Council Meeting 1st October 1978

Malcolm Honeychurch attended his first Council meeting. He was previously appointed to Council in place of Will Jones to serve as a Council member until the next AGM.

At this meeting also, Council decided to employ a full-time Development Officer. Elsewhere in this issue *Wings!* you will find an advertisement concerning the job.

New Editor

Council Member Garth Thomas has been appointed as the new Editor of *Wings!* and next month's issue will be the first under his editorship.

New Pilot Rating System

The Pilot Handbook was to have been a small publication. Due to the enthusiasm of those contributing it has

become a very comprehensive volume. It will end up as a reference book giving most of the information needed to help a novice flier to self-train and progress safely to become an expert. Currently the handbook is being edited and because it has still to go through the proof-reading and printing stages we will not now be able to bring in the new Pilot Rating System until early in 1979.

Observer Handbooks have likewise had to become far more extensive in their coverage and in the light of a further 6 months flying experience some of the tasks that were to have been incorporated in the Pilot Two rating have been revised.

In view of the delay the deadline for the receipt of EPCs and "Pilot" Task Forms has been extended to 31/12/78.

NEW MEMBERSHIP SECRETARY

We now have Lynne Whitcombe working for us full time in this capacity in the Taunton Office. If you have any queries concerning membership, etc., Lynne is in the office on Taunton 88140 between 9.00 a.m. and 5.00 p.m. Monday to Friday, except during the lunch hour.

MEMBERSHIPS

Nos. 8750 to 9011 are due for renewal on the 1st November, 1978.

STOP PRESS

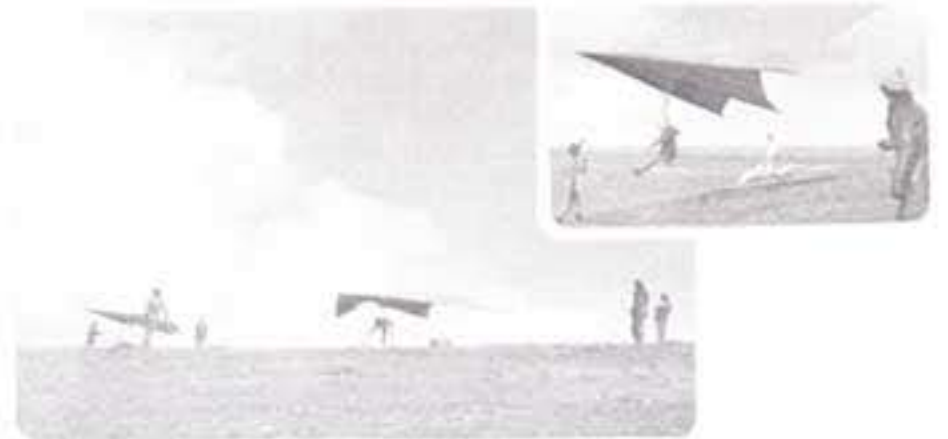
Birdman Flight Training School, Mildenhall restored to Schools Register

NEW EDITOR

Please send all contributions and correspondence for *Wings!* to

Garth Thomas
Bole Hall Cottage
15 Amington Road
Bolehall
Tamworth
Staffordshire

Flying comes easy



at Ashley Doubtfire's

Tel: 067-25-3021

Birdman Flight Training School

MILDENHALL

MARLBOROUGH

WILTSHIRE

BHGA Registered, using CAA approved radios, Static and Gliding tether, Keel assist, Dual soaring; and running two-day and four-day courses for novices to Elementary certificate/Pilot 2. One-Three day soaring and top landing courses to Pilot Badge/3 level - reduced rates for glider owners. Refresher courses at all levels available at special rates. We are 8 miles from M4/Exit 15.



OPEN 7 DAYS A WEEK

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.

Are you a flier who is looking for more performance from your glider? Then buy the new "American Humming Bird" vario, one of the best in the world. Plus the American "Hall Windmeter". **Hang Gliding** (mags) 80p (inc. p&p); **Glider Rider** (mags) 60p (inc. p&p); **Humming Bird Vario** £70; **Hall Wind Meter** £11; **Seagull Necklace** £3; **Astraltunes Stereopack** £95; plus **The New Moyes Maxi Mk III** £650. Contact: Brian Wood Hang Gliding, 27 Lennard Road, Bromley, Kent. 01 462 5212.

Wanted large Spirit or any large Intermediate, 15 stone pilot, will meet half way (long distance). Mr. Hoyle, 59 Tennyson Avenue, Scarborough, North Yorkshire.

Wasp 229 B3 with prone harness, 3 spare booms. £70 01 319 0144.

Hiway 220. Black, seat harness and helmet. Spare leading edge and A frame. Ideal for first kite owner. Overseas posting, therefore £120. In London. Tel. Basildon 553365 — Sedgwick.

Birdman Sports have for sale at the end of the international competition season, several ex works Moonraker 78's. Every glider is in first class condition and fully sorted. As flown by Lester Cruse, Bob England, Johnny Carr, etc. Results achieved with these machines: 2nd and 4th European Championships, 1st and 2nd Bodo Norway, 1st Norwegian Championships. Apply Ken Messenger 0672 53021.

Swift — brand new, only test flown, with bag and seated harness. Ideal for beginner or intermediate. Folds down to 11ft approx. Quick rig, seated or prone. Bargain at £330. Phone Roger Full, St. Ives 7651 (day).

Hustler — Brand new, test flown, with bag, folds down to 12ft. Quick rig, seated or prone. Comes with preformed battens. Absolute superb

performance and handling. Suit up to 10½ stone pilot. Intermediate upwards. Only £400. Phone Roger Full, St. Ives 7651 (day).

Delta Instruments for hang gliders: Variometers, Altimeter, Airspeed indicators. Compact, self contained, easily fitted to frame. Miniature Barographs — only 2lb weight. Brochure and price list from: Flow Technology 2000, 126 Welham Road, Malton, West Yorkshire. Tel. Malton (0653) 2469.

Galaxy Flier Helmet now with the new British Standard 5361. £16 plus £1 p & p. Frank Acton, 53 Royston Park Road, Pinner, Middx HA5 4AB. Tel: 01 428 2686.

"Dragon Hotel" Crickhowell. Central for all South Wales best soaring sites. Already popular with hang glider pilots. Tel: Crickhowell 810362.

Instrumount — vario mounting stalks — fully anodised — 'kick up' feature — secure instant fixing. Send SAE for information or £9.95 inc. p & p and VAT. Money back guarantee. Mainair Sports, Shawclough, Rochdale, Lancs.

Pellet Variometer. We are the UK agents for Makiki Electronics. Self-contained variometer model 2 is only 4in. x 5½in. and weighs 15ozs. Just as sensitive as electronic variometers. £36 incl. p & p and VAT. Dealer enquiries invited. Mainair Sports, Shawclough, Rochdale.

Clearance Sale. Avon Swift, Miles Gulp, McBroom Cobra, Breen Hifli, Toucan, Midas C, Hiway 260, 240, 200. Phone quickly. Merthyr Tydfil (0685) 3780. Wanted Falcons, Scorpions, Spirits.

Spirit, Vector Skyline. One of our gliders is right for you. Contact us first, for the best. Flexi-form Skysails, 061 707-1389.

There have now been 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, Herstmonceux, Sussex.

Hiway 240 standard seated rogallo. Good condition. £125. Days 061-434-3364 Wilmslow 27861 evenings.

Slingsby Tutor Glider £650 o.n.o. Must sell or might consider exchange for boat or Ford Capri. T. Wolley, 109 Victoria Street, Narborough, Leics. Tel: Leicester 862756.

22ft Spirit. Excellent condition with interesting sail design. Superb flier. Breaks down to 14ft. Gold anodised with pulley system. £300. Phone Mike Edge 0532 571511 (work) 787295 (home).

Vortex 120. Excellent condition. 3 months old. £390 o.n.o. Tel. Graeme Baird on 0480 68882.

Wasp C5. Excellent condition, your first soaring flights will come easy with this multi-coloured supership. Prone or seated. £150. Tel. 01 778 2434 or 01 764 7408.

Hiway 220. Seated harness plus bag £100. Good condition. Many soaring flights enjoyed on this glider. Excellent safe start for Pilot 1/EPC holder to gain experience on. Phone Horley (Surrey) 71601 (day) ask for Adrian Whitmarsh.

Moonraker in good condition with bag. Red, orange, gold, yellow and white. Performance speaks for itself. £365. Tel. Malvern (06845) 64818 day 62499 evening. Ken Shail.

Wasp Gryphon III for sale. Immaculate condition, beautiful flier. Offers. Phone Steve Goad at Horsham, 731 392 or Reigate 42950 (work).

Hiway 200. Excellent for beginners, blue sail, rigged seated and prone. Plus seated harness and bag. Soarable in 20mph wind! Suitable for body weights between 8-9½ stone. £150 o.n.o. Tel. Manchester 061 434 4135 or 061 796 8385 (evenings).

SK Super 2. Australian designed high performance glider; on the cover of last months *Wings!* Contact Kevin Cowie at Hiway Brighton 681278.

Hi-Fli. Attractive custom sail. Prone/seated rigging. Wide A frame enables dual flight. Suit 10 stone plus novice or intermediate. Gets up with better kites. £170 o.n.o. with seated

harness and bag. Swansea (0792) 813913.

Hiway Scorpion A. Suitable for pilots up to 10½ stone. Warm sail colours, good performance and handling and very good condition, only 5 months old. Contact Clive Betts, c/o Hiway Hang Gliders, Tel. Brighton 681278. £390 o.v.n.o.

Hiway Cloudbase, 21ft Super deluxe. Waterproof bag, 110° nose angle, twin deflexors, chordwise battens, dacron sailcloth, seated or prone. £270 o.n.o. Phone Battle 3888.

17ft Argus. Ideal for beginner up to 11 stone. Complete with bag and seated harness. £60. Tel: Bristol 45620.

Scorpion B, white with blue leading edges, £350. Phone Howard Pentith, Swansea 25678, Ext 7059 or lave

Scorpion B, white with blue leading edges, £350. Phone Howard Pentith, Swansea 25678, Ext 7059 or leave message with secretary Ext 667.

Moonraker 78, brand new, flown once only. £490. Hang glider spares, tools, rigging, etc. £30. Colver Vario £50. Helmet and prone harness £10. Will exchange for Startrite Planer-Thickneser or van. Phone Bude 4410 to arrange meeting.

Cirrus III — brightly colour dacron sail, highly efficient glider with wide speed range and quick response. £375 o.n.o. Electra Flyer Vario — make thermalling easy! £105 o.n.o. Tel: Steve Marshall, Leeds (0532) 688633.

PTERANODON, white dacron sail. Good strong glider for the lighter pilot. Excellent condition, with seated harness and spare L/E's £150. Tel: 051 427 4068.

Scorpion B, dacron sail, triple deflexors, immaculate condition. New February 1978. £400 o.n.o. including 'B' bar for seated conversion. Phone Steve Meredith at Swansea (0792) 21076.

Hiway Scorpion B, February 1978. As new, dacron sail. £420. **Hiway Prone Harness** as new £30. **Hang Gliding/Grundskimmer** magazines, April 1974 through to present day. Mint condition £20. Contact David Ball 031-336-4148.

Sunspot. Nice colours, good condition, looked after. £350. Contact Pete Anstey. Brighouse 716069.

Wasp Falcon 3 — superb soaring machine ideal for

intermediate pilot. Good condition. £250. Phone Tony Ramsden 021-427-5159.

Wanted — Quicksilver in good condition. Phone Ernie Patterson, Killinchy 541778.

Large XC, American sail, the best balanced XC. I am 10½ stone and found control light, but it needs Bob Bailey's weight to camber the sail properly for top performance. £400 for quick sale. Barrie Annette. 01 894 6374.

Incredible glide angle for only £200 — my **Fledgling 'A'.** E.P.C. holder could fly it. Double surface sail. Rigged for prone only. Wasp knee-hanger prone harness £12. Doncaster 855700.

Cloud Nine 18ft. Immaculate, any inspection. Only 7 hous air time. Updated with battens, large A-frame. Seated/prone. Spare crosstube. £250. Prone harness hardly used £25. Roy Elsdon, Home 021-559-4236. Office Rock 266549.

Skyhook 3A 13ft. Strong beginners kite, up to 8 stone, with blue and white terylene sail, and seated harness. £90 o.n.o. (no prangs) 53 Burman Road, Allerton, Liverpool.

Flexiform Spirit 22ft. Excellent condition, pulley system, plus seated harness and bag. £290. John Bevan. Tel. Spetchley (Worcs) 420.

Kestrel '230' 'Bog Standard Rog'. Very stable beginners kite. Suite pilot around 12 stone. £100 o.n.o. Bob Hall, S.A.P.S.U., RAF Scampton, Lincoln. Tel. Scampton 421 Ext 219.

XC in immaculate condition. Hardly flown. Bad knee forces sale of this excellent performer. A bargain at £450. Also Simpson Prone Harness £30. Graham Driscoll. Tel. Telford 55216.

Small **Spirit** with pulley system. In good condition. £275. Derek Clinch, Weatherby 63881.

Midas E in perfect condition, only flown twice, no prangs, prone only. Marriage forces sale. £380 o.n.o. — Tel. Aylesbury 22650 or 28402.

Osprey 540 Immaculate condition, approx 20 flights of one minute duration. Blue and white sail, ideal for beginners. Seated harness and bag included. £200 Tel. 031 222 2634 days, 031 71 74526 evenings.

Spirit (22ft leading edge) good condition, pulley system etc. £260. Leeds 673861.

Scorpion B, very good nick. Colours: LE, keel, fin — black, dark green, light green, yellow, white. Break down model and triple deflexors £400 o.n.o. Contact Simon Leadbitter, Linkenholt (026487) 601.

Sunspot (large), flies beautifully. Colours Black, blue, white and red. £295. Sheffield (0742) 332326 after 4.30 p.m. Ask for Stuart.

Too light for my **Scorpion C** — red, gold, white, blue. Bainbridge sail. Will sell or exchange for good Scorpion B. Tel. David Jenkins, Freeland (Oxford) 881932 evenings.

Must sell (£380) **Midas Super E,** good condition. This kite still holds the height record on Butser Hill. Light blue, white tips, with bag. Doug Maynard, 31 Bishopsdale, Wildridings, Bracknell (56207), Berks.

Midas Super E, very little airtime, immaculate condition, beautiful white sail with dark green, light green and yellow panels on starboard wing. £460 will haggle. Tony Anderson, 16 Nuns Moor Road, Fenham, Newcastle upon Tyne.

Falcon B, brown/white, excellent condition, never bent. £350. St. Ives, Cambs. 0480-65027.

Falcon IV, excellent condition, prone harness, carrying bag. Must have quick sale, thus £250. Phone: Mike, Epsom 28829.

18ft Skyhook Mk 4 with wing wires, red and white sail, good beginners kite but soars well. 22 months old, one owner from new. With bag and seated harness. £190. Tel. Bridlington 79029, Steve Pickering.

Midas E. Colourful spectrum sail. Top condition, flies beautifully. Easy handler yet high performance. Any trial. Bargain at £330. Tel. Bridgewater (0278) 4513.

Skyhook Super Sunspot. Blue and white, immaculate. Only 15 flights and 17 hours flying. New kite forces reluctant sale at £450. Can probably deliver. Alan Firth, Guildford (0483) 61816.

Cobra 188. White sail with red tips. Seated harness. Rarely flown. Offers around £175. Would consider exchange for Go Kart. Robert Heap, Tel. Leeds 637492 (office) or Bradford 592659 (home).

Avon Swift. Suit 11-15 stone pilot. Good sink rate and excellent soarer. C/w bag and seated harness. £220. Tel. Ken Ryder, Gloucester (0452) 417014.

Large Spirit, good condition. Black and gold sail, soars with the best, prone or seated, but I'm buying a Skyline anyway. £280 o.n.o. Tel. Phil Gibson, Bristol (0272) 422100 evenings.

If you want genuine performance with effortless and forgiving handling try flying my record setting **Phoenix 8 Junior** with pulley system. £450. Chelmsford 50322 evenings only.

SST 100B, 7 months old. All white sail. Often seen at Parlick. Bag. £300. Write Ian Ferguson, 52 Derby Road, Lancaster.

Firefly (Scotkites) intermediate 1 year old. White, red and yellow. Fully battened sail. Always carefully flown, never crashed. Fair price under £190 seated harness included. 01 722 9652 or day 01 953 7411 for demo.

Flight Control Unit contains Electra Flyer **Theotek** vario fitted with rechargeable cells external charger supplied). RAF Altimeter and floating compass, equipped with special fixing clamp. £98. 1 only available. Phone Ickford 244 during office hours.

Wasp Gryphon III, White, red brown and yellow. This

kite won the Welsh Distance Knockout Trophy and has flown in only light winds since. Up to date with adjustable C of G etc. £475. Trevor Birkbeck, Telephone Ripon 5540.

Wasp Falcon IVB Brand new, best flown only. In an attractive mixture of white, blue and green. £395. Trevor Birkbeck, phone Ripon 5540.

Cobra 19ft Red, white and black sail. Complete with bag, seated harness and two spare front booms. £130 o.n.o. Ring Alf Beckett—Bristol 611736.

Cloudbase 21ft De Luxe. Fully Hiway de luxe spec. White and blue Bainbridge sail. Seated harness and carrying bag. Only flown 6 times—as new. £280. Chris Green 01-579-9160 anytime. Can deliver.

Pegasus V all white sail. Beautiful high performance glider, bag and harness. Selling for genuine reason. A bargain at £240. Tel. Luton 505275 Beds.

SST 100C. Gold with white tips. Immaculate condition. £380. Delivery arrangement can be made. Ron. Tel. Billericay 22974.

Spirit Large. Good condition. 9 months old £300. **Wasp** C4 221. Good first kite with Wasp seated harness. £100 or both for

£380. Phone Fes at 061 9691213 (Manchester).

Skyhook Sunspot Gold/black, white wingtips. This glider has climbed to 5000ft and flew the furthest at Glenshee '78 (11 miles). Handles like a dream in thermals. Owner buying Skyhook's latest. £350. Bill, Arbroath 75546 Evenings.

Wanted—Supine Harness. Exchange Wasp stirrup or buy. Rayleigh 775352 after 6.00 p.m.

Flexiform earl **Vector**. Clean, dark red, red, orange, yellow, white sail. Intermediate advanced pilots 10-13 stone. £300. Tel. (Chorley) 025 72 74114.

Falcon 4 floater. Seated harness £375. Vega Aquila 2nd generation kite, seated harness £250. Wasp 229, suitable for spares, could be flown but needs overhaul. £45. Rim Tim, High Wycombe 444205 or Mark 39108 evenings.

Hiway 220. Black, seat harness and helmet. Spare leading edge, A frame. Ideal for first kite owner. Overseas posting, therefore £120. Tel. Basildon 553365, Sedgwick.

Vector, medium, best example, blue, red, orange, gold, white tips. Ex-British distance record holder, brought me to 7th place in

League. £440 o.n.o. Phone Geoff Snape (0254) 885909 (evenings).

22ft Spirit. Excellent condition with interesting sail design. Superb flier. Breaks down to 14ft. Gold anodised with pulley system. £300. Phone Mike Edge 0532 571511 (work)

Cloudbase 21 Radial. Good condition, unstretched sail, easy handling soaring kite for pilot over 11 stone. Conscientiously maintained, c/w bag and seated harness. Good value at £165. Rod Bird, Warwick 46314.

Birdman Merlin. Red/white sail. Complete with bag and seated harness. Ideal first glider. £60. Tel. Tackley 494.

Spirit 22ft. As new, beautiful condition. £330 o.n.o. inc. bag, seated harness and helmet. **Dickenson** apron and stirrup prone harness, new £30. **Dickenson** supine harness £20. **Knee hanger** prone harness £15. Contact Andrew Hounsfeld, Newark 3637.

Phoenix 6, excellent condition, dacron sail. Good intermediate/soaring machine. Owner going abroad. Price, inc. bag,

seated and prone harness £250 for quick sale. Phone Stroud 78743.

As new **McBroom Argus**. Red, blue and yellow sail. Never been used. £140 or offer. A. Lincoln Taber, Jagers, Fingringhoe, Colchester, Essex. CO5 7DN. Tel. Rowhedge 334.

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Lightweight, stylish and designed specifically for
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