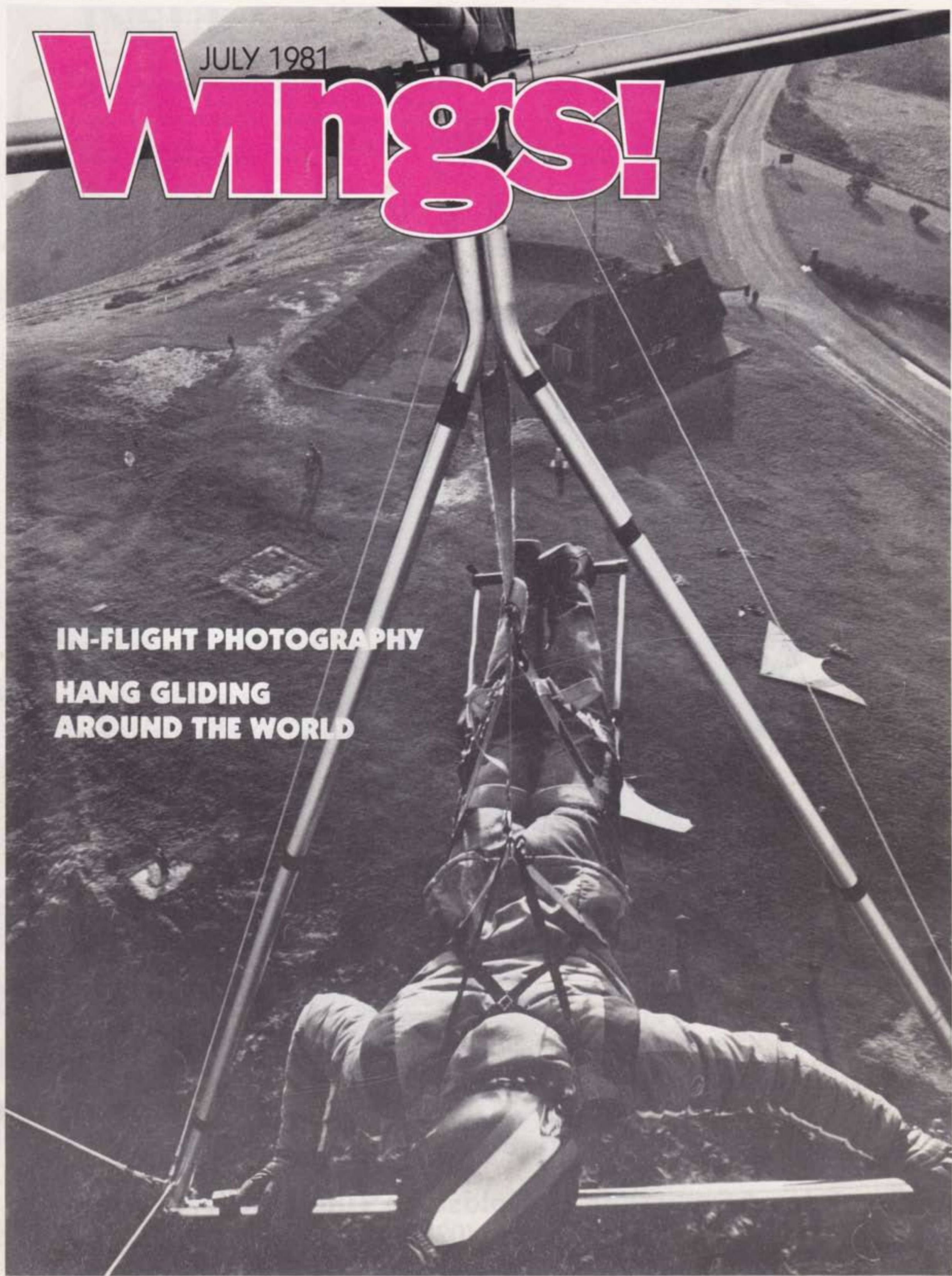


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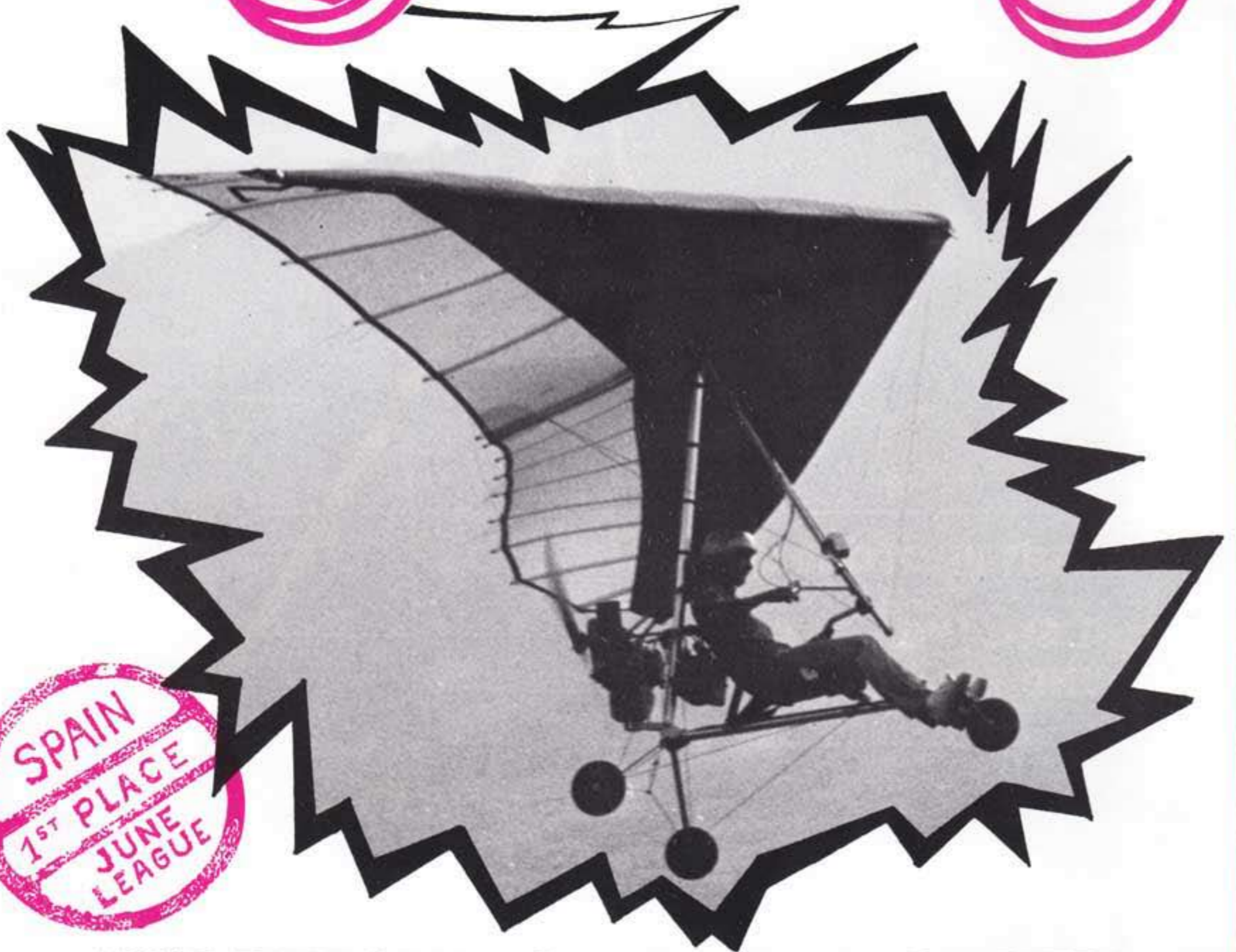
Wings!

IN-FLIGHT PHOTOGRAPHY

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ZEALAND
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The following Personal Accident Insurances are placed at Lloyd's and are applicable to United Kingdom based BHGA Members. They are effective throughout Europe. Extensions beyond that can however be arranged.

Claims experience has forced underwriters to increase premium on all new Personal Accident Insurances — but a lower renewal premium applies to those previously insured without claim.

PERSONAL ACCIDENT BENEFITS IN THE EVENT OF A HANG GLIDING ACCIDENT

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IN THE EVENT OF DEATH, LOSS OF EYE/LIMB (OR USE THEREOF) OR PERMANENT TOTAL DISABILITY

Code	Capital Sum Benefit	New Premium	Renewal Minimum
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A6	£ 6,000	£ 30.00	£24.00
A10	£10,000	£ 50.00	£40.00
A15	£15,000	£ 75.00	£60.00
A20	£20,000	£100.00	£80.00

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D30	£30 per week	£22.50	£18.00
D40	£40 per week	£30.00	£24.00
D50	£50 per week	£37.50	£30.00
D60	£60 per week	£45.00	£36.00

NOTE: Benefits are normally paid at end of Disablement period — but in cases of hardship we can normally arrange a cheque each four weeks after benefit starts.

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

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38mph IAS Cruise 160cc
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The design eliminates nose up pitching tendency experienced with other gliders • Immensely strong • No mods needed to fit leading makes of trike units.



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telephone: Tredegar (049 525) 4521



Wings!

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Printed in Great Britain by Blackburn Print Ltd., 27A Arthur Street, Hove, Sussex.

Phototypesetting by Editypesetters Ltd., Hove

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Cover: The unknown pilot over Beachy Head
Photo by Eddie Horsfield

WINGS! may be obtained regularly by joining the BHGA, or on a subscription of £12 pa in the UK. Those outside the UK are requested to send Sterling International Money Orders — £12 (surface mail) or £24 (airmail) for an annual subscription. Details of membership will be sent on request. IN ALL CASES WRITE TO TAUNTON. 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.

If members or subscribers change address, or copies of Wings! do not arrive, please contact the Membership Secretary at the Taunton Office. In all correspondence give your full name, address and MEMBERSHIP NUMBER (if applicable). Please give five weeks notice for changes of address if possible. If you, your club, or any local hang gliding activity gets written up in a local paper, national paper, or magazine, please send a copy to the Taunton Office for the BHGA Press Cuttings collection. This applies to the UK only.

Editorial

NEW ERA

Last month I remarked on Jim Lee's amazing flight of 168 miles and now . . . another American pilot, Larry Tudor, has flown further still — 181 miles. The barriers are being broken down, and fast!

Jim Lee, writing about his flight in *Glider Rider*, feels certain that 200 miles can be reached using present-day equipment. It's all in the mind. Determination — the will to succeed, that's all you need. Plus, of course, ideal conditions (or radical!), high altitude take-off (min 1000 ft. AGL — Jim had 4000 ft), unrestricted airspace (?), skill, courage and endurance. The latest 'state-of-the-art' machine (goes without saying), a comfortable harness, reliable instruments and a strong bladder (six-eight hours!).

Seriously, though, folks — you've got to hand it to these guys. Thanks to their achievements and the vast improvements in glider design, hang gliding is now entering a new and exciting era. Who needs power!

TOWING

If you haven't got easy access to a 1000 ft hill, power does have its advantages though. Not as an appendix to your 'glider', but as a means of lifting your kite to a decent starting point in the sky. I am, of course, referring to towing. After a great deal of interest and development work, a couple of years ago, towing receded into obscurity, with the advent of the ultralight/microlight revolution. But now, thanks to the enthusiasm of people like Philippe Briod, in Switzerland and Andy Brough in this county, renewed interest in this method of launching hang gliders (after all conventional gliders have been using winches for ages) has been awoken.

FAREWELL

And so, as the sun sinks slowly in the West, we bid farewell to Balham (*Blackburns*), gateway to the south (*Wings!*). As the last cups and saucers (*plates*) are put to rest (*shame*) at the El Morocco Tearooms (*Editypesetters*) we turn to those immortal words, once spoken by the Bard himself (*Peter Sellars*) — "And is there honey still for tea?" — "Sorry Love' honey's off!"

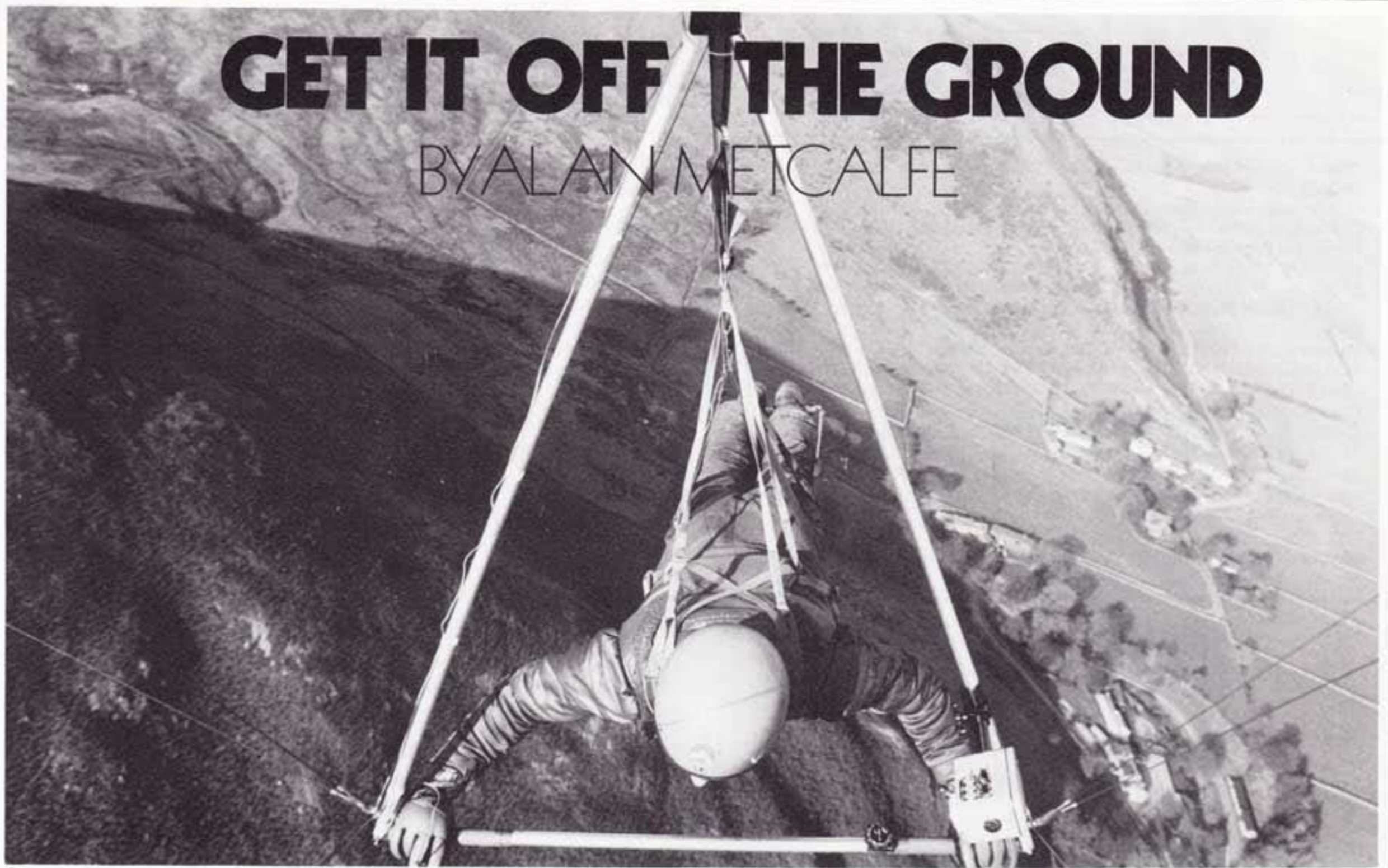
And so, dear readers, am I . . . see you on the hill.

Mike Hibbit



GET IT OFF THE GROUND

BY ALAN METCALFE



In the December issue of *Wings!*, I read of John Newman's plight for information on in-flight photography. I can fully appreciate his problem as I had to make my own camera mount, finding that none were available at the time. I believe that Mainair are currently developing a mount but this is as yet, not available.

There are basically two types of in-flight photography. The first is aerial photography i.e. shots of the surrounding landscape and fellow fliers and the other being in-flight self-portraits. What type of pictures you wish to take is largely dependent on the facilities available on your camera. If the shutter can be remotely fired, and if you have a self-winder, then provided you can attach the camera to any point of your glider, your choice of picture taking is unlimited.

Trying to take off with a camera hung around your neck is definitely not recommended, especially when flying prone. I have seen hand held shots from a hang glider, but these were taken on a 110 pocket camera and at an altitude of several thousand feet. Flying with one hand, and shooting with the other is not recommended, even with adequate ground clearance.

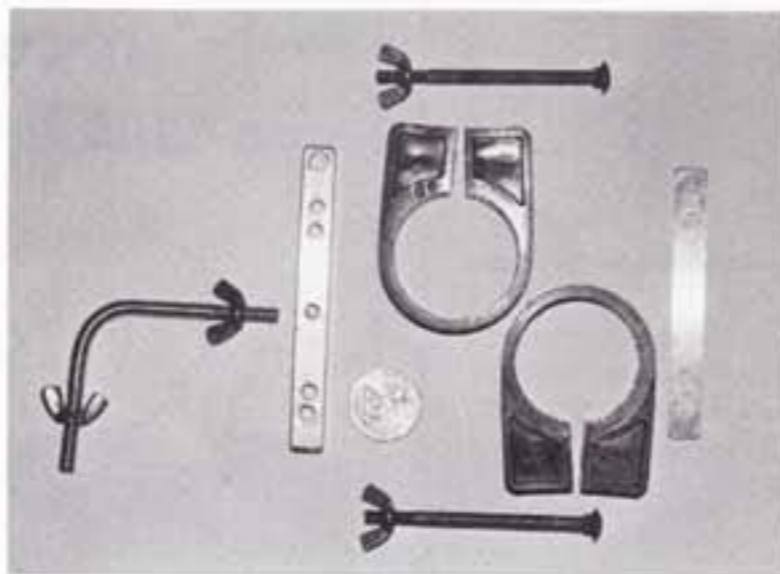
The simplest way to attach a basic camera is to the upright by means of an instrument mount. With the camera being close to hand, you can wind the film on and shoot each picture while still holding the control frame with both hands. With a thread in the shutter release of the camera, by means of an 'air bulb release cable', the camera can be remotely fired. As such if mounted away from the control frame, the picture can include the glider, pilot and local scenery. Wishing to take this type of photograph, I had to make my own camera mount. It needed to be light, small, cheap and easy to attach to the glider. I also had to buy a new camera!

The first camera mount I saw was being tried out by a fellow club-flier. He had an old Ricoh half-frame underwater camera, which has a built-in

clockwork winder. he told me he bought the camera twelve years ago when he first took up skin diving for a hobby. The mount was made of two blocks of machined nylon, two countersunk screws and a bar, threaded at each end and bent into a right-angle, with a knurled nut at each end.

The bent bar and nuts were no problem for me to make, but the nylon blocks were. I discovered the answer to this by seeing cable conduit screwed to the wall at work. The plastic clamps they had used were ideal and I managed to obtain some from a local wholesale electrical store. You should also be able to obtain these from DIY electrical stores.

No tools are required when attaching the clamps to the glider. The bolts and wing nuts I purchased from a local hardware shop.



On my own glider I found the cross-tube and keel tube to be of different diameters, so two sizes of clamps and two hole positions in the bars were required. A couple of points to watch; file all the edges to prevent chafing the sail or even cutting your hand. Also, I found it useful to put an extra hole at the end of the lower bar, to thread the camera strap through. This keeps the strap away from the lens and also acts as a 'back-up loop'.

Having made my mount, I recently discovered

two commercially available equivalents. One is the Cullman touring set, which has a device in this kit consisting of two blocks with V-cuts in, that slide up and down a bar. The cost of the set is about £35. The other is the Manfrotto Sky Hook (no pun intended). This is a spring clip rather like a giant clothes peg, which will cope up to anything 3½" thick. It costs about £16. But for simplicity and low cost, I believe my design wins hands down.

There are several small lightweight cameras on the market, but not many have all the facilities that I required. In the 110 camera size the PENTAX 110 fits the bill. In the 35mm compact size only one is available at the moment; this is the LOMO 135BC, which I bought. It has a clockwork winder which exposes nine individual frames for each full wind up. Unfortunately it has no light meter. The LOMO, like most other compacts, has a lens of 40mm focal length, wide enough to take in the full length of a prone pilot when mounted on the cross-tube. When mounted on the keel I intend to fix a 'fish-eye' adaptor, which screws to the front of the lens. This adaptor widens the angle of the lens to include more of the scene in the photograph. It can be bought from most camera shops for around £20.

There used to be several half-frame cameras with built-in winders—the OLYMPUS Pen EM, the CANON Dial, and two models by RICOH made for underwater use with the addition of a case. But with half-frame cameras going out of fashion, you will have to look at the second-hand market for these. The 35mm S.L.R. range of cameras, which fit the bill, boasts a list of more than sixty models from various manufacturers, and are too numerous to list.

There are no hard and fast rules as to where to put your camera. You only have to look at the covers of last year's *Wings!* to see the variations. The most important thing to remember is that fixed to a cross-tube, one wing is going to be heavier and have drag induced, due to the non-streamline shape



of the camera and mount arrangement. Keel mounted, the camera weight will cause a change in the normal pitch position, but Keith Cockcroft tells me he tied his glider bag to the opposite end of the keel to cure this. With the latest gliders having a full enclosed cross-tube, do not be tempted to mount the camera at the end of the leading edge: the problems of glider control would be horrific. I recently saw in-flight head and shoulders shot of a hang glider pilot in a magazine, which was very interesting. The photographer had mounted the camera on a pole which projected forward of the control frame, and this unusual camera position produced a really original photograph.

Regarding the choice of film, generally speaking, you'll need a fast film to photograph hang gliding. The range is very good and there are quite a number of 400 ASA films on the market in all emulsion types. My personal choice for colour is slide film, from which I have had shots copied into colour prints. If you use colour negative film to pro-

duce colour prints for the family album, it's worth remembering that you can also have a black and white print made from the same negatives. If you wish to first try out your shots in black and white, the new X-type films from both ILFORD and AGFA are excellent. They have the unique property of getting the exposure right in variable lighting conditions, without adjusting to the camera settings.

Shooting with a fast film you can use a fast shutter speed to avoid camera shake and a blurred picture. You are also able to use a small aperture setting to have both the pilot and the background in focus. If you are shooting self-portraits, then focus the camera on the pilot in the so-called hands-off position in the centre of the frame. This allows some margin for movement of the pilot during flight. When taking aerial shots, it's best to set the focus at infinity.

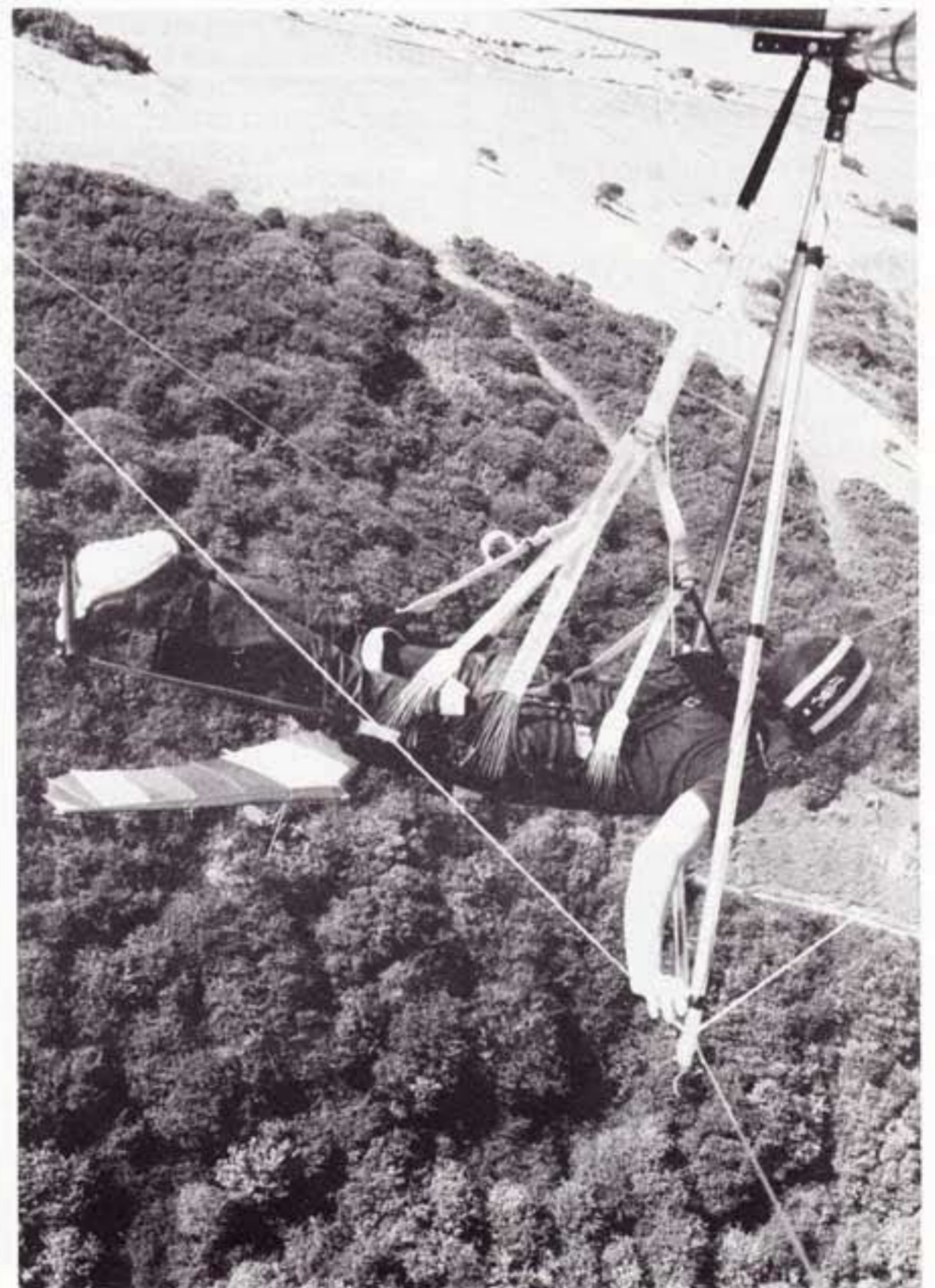
Don't expect every frame on your first film to be perfect. Good pictures come from plenty of prac-

tice, just like good flying. The best pictures tend to be taken with the pilots face in view, and when the glider is banked in a turn, but variety is the spice of life. Take great care when flying with your camera for the first time. First get a feel for the new position before shooting your first shot. Last year a report in WINGS! told of a pilot who nearly came to grief. By not screwing up his karabiner it became fouled on the upright, simply because he was concentrating on trying out his camera on the glider for the first time, and not concentrating on his flying. Be warned.

*In flight photo opposite by unknown photographer
Location: Southern Fell (600ft. ATO) Yorkshire.*

*Photo below left by Alan James
Location: Kossen, Austria.*

*Photo below right by Eddie Horsfield
Location: Beachy Head (ridge) Eastbourne Sussex.*





DOOM GIBLETT

TVHGC's prime 'sight' Doom Giblett is grounded until further notice. Please ring Trick Wilson for latest up to date diagnostic report.

MILL HILL (AGAIN)

I understand that Adur District Council have submitted new byelaws relating to hang gliding and that the Home Office have approved these. We were unaware that such proposals existed. I am seeking a meeting with the Home Office Under Secretary of State responsible as it is clearly quite undemocratic to make laws without adequate consultation, particularly when neither Central Government nor Adur District Council have adequate knowledge of hang gliding. Individual liberties are clearly threatened when authority's reaction is to ban something they don't understand.

David Bedding.

MAINAIR SPORTS APPOINT IRISH AGENT

Peter Willis, who is the current editor of the Irish Hang Gliding Magazine has recently been appointed a Mainair Sports agent. Peter hopes to eventually have a stock of hang gliding accessories available but, in the meantime, is smoothing over importation procedures and the customs hassle. He lives at Carrigower, Kilpeddar, Co. Wicklow, Eire.



Peter Willis

COUNCIL DECISION ON BRIAN MILTON'S SUSPENSION

At its meeting of 31/5/81, Council considered the Inquiry Report submitted by Vice Chairman Reggie Spooner.

As a result a decision was taken, minuted as follows:

"In the light of conclusions contained in the Report of the Committee of Inquiry looking into Hang Gliding Sponsorship by Newton Aycliffe Development Corporation this Council considers that Brian Milton should no longer hold his Offices with the BHGA. His suspension as Chairman of the Competitions Committee and Press Officer is therefore ratified and shall remain in force until such time as he may seek nomination and be re-elected to Council in the normal way.

This does not preclude Brian Milton from acting as an ex-officio member of the Competitions Committee or working for the benefit of Hang Gliding in an ex-officio capacity.

Members will know that Brian Milton's resignations from Council and as Editor of "Wings!" had been accepted by Council on 7th March, 1981."

This decision was made known to Brian Milton on the 2nd June and confirmed by letter on the same day.

Chris Corston,
BHGA Secretary

Although I have received the Inquiry Report and Brian Milton's reply, after much deliberation I have decided against printing either. Neither party expressed objection to the report appearing in *Wings!*, but considering the amount of paperwork involved, i.e. 14 pages (including appendices) from the BHGA and 5 from Brian, I felt it unfair to the BHGA membership in general to devote so much magazine space to this one topic. Nor, in fairness, could I print one contribution without the other. Whether or not I've taken the right course can only be assessed by membership response (to Stan Abbot, please!).

However, copies of the report have been circulated to Club Secretaries by BHGA and can be seen on request. Brian has also circulated the report, with his reply, to Clubs, League members and foreign H.G. magazines, so anyone with any strong feelings on the matter has access to all the relevant paperwork.

Mike Hibbit

YOUR SITE MAY BE THREATENED BY A BYELAW

Councils and many other bodies related to Government have powers to seek byelaws to control activities in their areas. In general they are required to publish their proposals in a local paper so that those affected can make representations to the Government Department responsible for approving proposals. There is only one month to do this. Unless a proposed new byelaw looks unacceptable, approval is likely to be prompt. Where there are objections a Government Department will examine these with care before reaching a decision.

Our only safeguard against this threat is your vigilance. You need to find out which local newspaper would be used by authorities controlling your take off and landing points. You need to examine it promptly and with care. If you find a proposal has been submitted you need to write formally objecting, and contact BHGA Headquarters or me promptly so that we can support and justify objections.

Better still, try and develop the sort of relationship with Authorities locally that will encourage them to consult you about any problems, before they consider introducing byelaws. The more conscientious Authorities welcome this approach and are unlikely to spend much time trying to formulate and introduce controls when a responsible hang gliding club controls activities in harmony with other local activities.

Proposals are often in the least conspicuous part of the local newspaper. The Mill Hill precedent may well encourage other Authorities to take similar action. Don't save all your vigilance for flying!

David Bedding
BHGA Site Representative

WARNING

A recent statement from Germany gives notice that the following hang gliders are banned in Germany and deemed unairworthy pending investigation and further testing:—

- a) Wings.
- b) Wings Competition. Manufactured by Guggenmos — Germany.

Will owners of the above hang gliders contact either myself on — (0235) 834033 or Clive Smith — 0582 26229, for further information.
Barry Blore.

FEDERATION OF BRITISH HANG-GLIDING SCHOOLS

The formation of a School Proprietors Association was initiated at an H.I.A. meeting on Saturday 25.4.81 and was formalised as the Federation of British Hang-Gliding Schools on 14.5.81 (F.B.H.S.).

The committee members voted in were:

Vince Hallam as acting chairman and Graham Slater as acting secretary. Trevor Meecham and Derek Bond as committee members.

The objectives of the F.B.H.S. are:

- (a) To promote and maintain Schools Teaching and Instructors Standards.
- (b) To promote and maintain the interests of commercial schools.
- (c) Communicate and represent the Federation's views and activities to the C.A.A. and B.H.G.A. etc.

Membership eligibility:

Commercial school proprietor or director.

Enquiries should be addressed to any committee member.

Vince Hallam,
18b Queens Road, Brighton.
Tel: (0273) 609925

500 CLUB LOTTERY JUNE 1981

1st J. SEMPIK	£55.78
2nd R. A. KENNEDY	£27.89
3rd R. IDDON	£13.94
4th R. F. KENWARD	£8.36
5th M. C. BARR	£6.97
6th I. HOAD	£6.97
7th P. H. CRANSHAW	£5.57
8th P. D. PRENTICE	£5.57
9th D. J. BECK	£4.20
10th G. W. JAMES	£4.20

A total of £139.45 prize money and a similar amount for B.H.G.A. funds.

P. G. MOSS (Treasurer).

Bill Lehan's Cartoons for your home, workshop or showroom. 12½ in. x 8½ in. Ready to mount.

Bill Lehan, Neale House, Moat Road, East Grinstead, West Sussex.

HORRIBLE MOMENTS — 1981 (So Far)

No. 1. Dunstable: Pilot launches in virtually still air, flies out quite nicely and gets into prone, then starts to ease the bar out to extend his flight. Fifty feet over the field the right wing drops, the nose of the glider follows and pilot and glider plummet (and I mean plummet) into a clump of thorn bushes. Result, a pilot with badly lacerated face and arms and a bent glider, but at least the pilots' walking.

No. 2. Milk Hill: Pilot lobs off in bumpy conditions, not long converted to prone, stays on the uprights and seems to be doing well. Suddenly the nose of the glider pitches skywards followed by the right wing dropping. The glider dives into the hill but the pilot has the sense to pull on speed and get her body across. The glider, now racing into the hill, turns out and misses the face by as much as ten feet. Pilot and glider make a nice landing at the bottom.

No. 3. Hay Bluff: Scratchy and thermic up on the NE face, the pilot makes a good take off, gets into prone and wobbles off down the ridge. He reaches the far end and initiates a gentle left hand turn to come back, but to the horror of onlookers, keeps the turn on and hits the ridge, about 20 feet down, with an almighty whack. No walking away this time; appalling injuries to his arms; I mean white bones sticking out into the fresh air.

Spotted the common factor? Yes, that's right, all three incidents were generated by a "stall". The pilot in example No. 2 has some sympathy however, she was just a bit slow in reacting to a gust stall and managed to fly herself out of trouble. The other two though, well, what can you say? Most people will nod and say that accidents will happen. I don't agree, they were "self inflicted wounds" in my opinion. How do you get it into heads of would-be fliers that if they stall their gliders, they will fall out of control until airspeed is regained? How many more fliers are going to knock themselves up before it is universally understood that stalling near the ground hurts?

Okay, this is just another boring few paragraphs about stalls and you are fed up to the back teeth with warnings about something you learnt in training. But think on this. Your stall will, — cause you a lot of pain, — it will certainly worry your family, — it's ammunition for the anti-hang gliding brigade and last but not least, it's going to ruin the day for your fellow fliers who volunteer to carry you down the hill, get your bloodstains on their clothing and make me angry enough to write this when I've got better things to do.

John Fennell.

WINGS! EDITORSHIP

At the A.G.M. in March, Brian Milton resigned as 'Wings!' Editor, and an emergency meeting was called that same evening to discuss the future of 'Wings!' and it was decided to advertise the post of Editor, I believe, for the first time ever. Mike Hibbit was approached and he very kindly agreed to Edit the magazine until the vacancy was filled.

Surprisingly, there were eight applications for the post. Stan Abbott was eventually selected and will be operating as from the August issue.

Stan's appointment has necessitated a change of printers as it is not practicable to have the Editor based in Leeds working with a Printer based in Brighton. Blackburns, our present printers, understand our problems and wish us well for the future. I wholeheartedly return their good wishes.

I personally do not envy Stan his task as both Brian and Mike are difficult men to follow and, in their various ways, have done so much to improve the standard of 'Wings!' The membership expect that standard to be maintained. Stan's job is to at least do just that, my job is to reduce the magazine budget.

I must take this opportunity, on behalf of the B.H.G.A. to sincerely thank Mike Hibbit for his splendid and successful editorship of 'Wings!', produced so willingly and at such short notice.

Barry Blore



The editor exits — stage left.

HANG GLIDING'S 10th ANNIVERSARY DRAW

This particular DRAW proved to be a great success and the most productive to date raising approximately £2,500 towards B.H.G.A. Central Funds. On behalf of the B.H.G.A. I thank you for your support, especially those who entered the Sellers Competition.

The DRAW took place at noon on Saturday 23rd May. 18 members of the Devon and Somerset Condors were present to see fair play and raise a toast to safe flying during hang gliding's second decade. The weather was not flyable!

In view of the historic significance of this occasion Mick Hayes, B.H.G.A.'s 1st Treasurer, was roped in to help assisted by Janet Hayes, Membership Secretary, Joyce Williams, Secretarial Assistant and Carol Collins, Clerical Assistant.



Barry Blore presenting £750 cheque to Mr. R. J. Wells

WINGS! — WHERE IT'S AT!

Wings! readers who sit by the letterbox eagerly awaiting the monthly arrival of their favourite magazine are in for a treat.

As you read this July issue, the August issue is — all being well — at our new printers in Leeds and should be with you near the beginning of the month.

FINAL copy deadline for *Wings!* will normally be the first Monday of the month but I'm off on two weeks' holiday in the latter half of August, which I had booked long before I was landed with this job.

So let me warn you now — your September *Wings!* may be a little late — it should reach you the second week of the month.

DEADLINES for September *Wings!* will therefore be **THURSDAY AUGUST 13** for all but latest news. Final deadline will be **SATURDAY AUGUST 29**.

Please, if you have contributions, get them to me as far in advance of these dates as possible, preferably giving me a ring in advance.

A reminder of the address: Stan Abbott, 8 Burchett Place, Leeds, LS6 2LN. Tel: 448303 or Bradford 308511 (days).

Our new printers are Athur Wigley and Sons, of Leeds, who are based, very conveniently, just a few hundred yards from my home.

They are a medium-sized outfit, specialising in jobs like *Wings!* They have excellent facilities and are well-equipped for full-colour work when costs permit.

NATIONAL ACTION SPORT SHOW 1981

The above show was held at the 'National Exhibition Centre', near Birmingham, 13-17th May, 1981.

It was a public show designed to demonstrate the wide variety of sports available and gave the general public the opportunity to seek the information they may require in order to participate. Top sporting personalities attended and many sports were demonstrated.

The event was fully supported by Sports Council in recognition that it assisted their "Sport for All" Campaign. The organisers were satisfied and have confirmed that the show will take place again next year 1-5 May, 1982.

Barry Blore.

STOP PRESS

... XC CLASSIC RESULTS ...

1st — Larry Tudor (Comet)
2nd — Rich Phieffer (Comet)
3rd — Steve Moyes (Mega III)
Highest placed British pilot, Andrew Wilson, ... STOP.

... XC OPEN ...

1st — Larry Tudor (Comet)
2nd — Eric Raymond ('Sunseed')

The Celtic Cup



Bob Mackay

By Bob
'Bowler'
Mackay

Mount Leinster is shaped roughly like a giant 2100ft. high starfish with ridges extending to all five points of the compass. (It's in Ireland. What else did you expect?). Our scene is set at the foot of the 300ft. television mast at the summit and on the face between the south and south-west pointing ridges.

I thought the forecast for Saturday was a gentle 7mph wind which would be just about soarable at the top. Nobody told me the Irish weathermen used the Beaufort scale on their TV presentation so I was a bit surprised to find it blowing 35, gusting 40mph when I got to the top on Saturday morning. Competition was out of the question but Jo Binns took off in a Demon from 200ft. down the face and showed us what a fifth generation glider could do. He made it look easy but nobody else seemed to think it was easy. . . Down on the lower south-west ridge there were others having a go. One, I later found out, was Mark Southall in a Typhoon, but most of us had succumbed to the attraction of Kinsella's Anglers Rest, from afternoon to night — quite a night!

(Ed. We have it on good authority that a certain poetical H.G. pilot never found his digs and slept in his car).

Sunday was worse — gusts on the top reaching 50mph (Winter A.S.I. no kidding). One or two short flights were attempted, without the use of a glider, but competition was again impossible. Between 5 and 6pm it began to moderate and those of us who had stayed off the wagon, followed Maxi McManus and Pat Molloy back up. It was still 30-35 mph but having watched Jo Binns the previous day I rigged my new Demon and prepared to commit aviation. . . Only one snag. . . sporadic orographic cloud (occasional lumps of 'orrible clag to you illiterate bums) kept coming through and blotting everything out. I consulted The McManus. "If you can't see the ground you can usually see the mast and if you can't see the mast you can usually see the ground". But what about seeing each other? Alas, there was no reply, he had gone! I waited and watched this fantastic type of flying (hereinafter referred to as "Clag Hanging"). It seemed the method was to circuit when it was clear and on the arrival of clag to go under, over or out to the side. Anyone actually getting in it just seemed to hold position, so perhaps Maxi was right.

Make no mistake about it you need the speed and performance of fifth generation gliders to cope with these conditions. I'd only had a couple of flights in the new "bus" before this and was amazed at how far and fast I could wip out to one side or the other without losing much height. We were using a "box" about 400yds wide, 400yds out, from 200ft. below to 400ft. above take-off. There were about 20-25 up at any one time and we all got an hour or more each of really good flying. Nobody was acting the idiot. I don't think I got nearer than 150ft. to anyone.

The view is quite spectacular in the clear spells, the mountain falls away quite steeply so the reality of flying at 3000ft. is experienced although you are

only 400ft. above take-off.

Monday. There was no wind (*Ed. Ireland without wind — you're joking!*) at all but Cumulus started to build over the mountain from 9am. By noon it was well developed and firmly anchored above the summit. A few scratchy flights on the west (car park) ridge decided that the one and only chance for a comp was a "Go for it" off the top.

We opened the window at 1.30pm, the five longest flights from each country to total for the cup. This was a bit hard on the Scottish Celts since they only had four in their team but we felt they should experience the ruthless tradition established in Wales the previous year. (You remember we doubled the points for 360's and shortened the speed run when we found the Irish had faster gliders than us). The window was to remain open until 6pm.

There was a slight breeze from S.S.W. but no more than 5-6mph. The big Cumulus stretched out covering the whole range. Its core was perhaps half a mile to the north (downwind). We couldn't see from underneath but it was reaching Nimbus proportions. Taking off demanded skill and courage. There was little or no wind and the clear grass runs were short ending in jagged rocks.

Jo Binns, Brian Harrison and Bill Payne of the Hiway tribe were early risers connecting with good thermal lift and getting fantastic height. They beat the "ring of sink" that developed about five miles out as the cloud over developed later, dominating the surrounding area. (Hence the large number of flights between 5 and 8 miles). The Irish claimed that they were airborne before the window as opened but an explanation that Welsh time was an hour ahead of Irish was not challenged. Mind you, if Molloy had not pulled off his diabolical effort it might have been a different story!

The base of the Cu.Nim. now extended a couple of miles and not much sun was getting through to warm the valley in front of the ridge. Everybody was rigged but nobody was going anywhere.

The pressure was on Ireland. We had already got three away. It was looking good for Wales.

Martin Pingle (Wales) decided to give it a try in his Cyclone. He's fairly light and doesn't need a lot of wind to stay up. There was none and he beat back 50ft. down. The Irish sat among the rocks watching like vultures at Wimbledon in slow motion. Martin came back 100ft. down. I discuss with John Stafford (Ireland) the prospect of the valley releasing something if the sun came out.

Martin was 150ft. down. The sun did at last light up the valley. 200ft. below Martin suddenly whipped into a 360 and rapidly circled up past us to 1000ft. above. All hell broke out on the ridge as Team Ireland took to the air in rapid succession. We got some off too. Alan James was among them and was soon sparring with Maxi McManus and Pat Molloy just below cloudbase. Rod Lees just missed the chance, got a midge of tail wind and smashed into the rocks totally wrecking his Typhoon's control frame. (Last year's champion is out. Welsh hopes fade).

Not so. . . up steps Pat Lavery of Airsports. . . "We have the technology — we can rebuild him". That's just what they proceeded to do so that Rod actually took off about 5.30 and made a creditable 6½ miles when the rest of us had given up and were just ridge soaring an evening breeze thinking the thermals had died. Back to the bunch under the Cu.Nim. We could see Maxi diving under Alan and streaking off in the direction of Bunclody. Pat Molloy kept disappearing into the cloud and re-appearing a few seconds later. Others tried it and reappeared a damned sight quicker. Nobody wanted to be in it if somebody else was there too. Then Molloy didn't reappear. I suddenly realised why he and Maxi (and probably others of the Irish team) had compasses on their control bars. Ireland is a wet and cloudy country. Mountain flying is generally cloudy. They seemed very used to "Clag Hanging" — a novelty to us. . . The only way to beat the ring of sink was to go up through the cloud and this was exactly what Pat had done. I didn't believe it at the time. (I hope he writes the story because I understand he iced up at times).

We soon lost track as everyone disappeared in all directions. With binoculars we spotted Martin down over near Myshall about five miles away. Disappointing after the height he had when he left but we didn't appreciate the peculiar restrictiveness of the conditions at that time.

By 7pm we were back down at the pub and results were coming in thick and fast. Maxi we knew had got to Bunclody (where the pub is) 6 miles for Ireland. Doc Killdean (alias Pete Willis — Ireland) was at Kildavin 6 miles, Brian Harrison had got to Carnew 16 miles equalling the two Irish put together. . . Bill Payne was at Mobilisha 10 miles — it was looking good for us. . . Mark Leslie (Ireland) was at Glas Lacken 5 miles. Better still.

Then the death knell struck.

Pat Molloy had made it to Killcullen — 36 miles!



From left to right in the bottom picture, of the five-man winning Ireland team, are Finbarr Warren (Cork); Trevor Wilde (Dublin); Yvonne O'Sullivan (Cork), winner of the Best Lady Flier award; Maxie McManus (Dun Laoghaire, Co. Dublin); Pat Molloy (who flew a record-breaking 36 mile XC) and Ian Kirker, both from Dublin. (Picture by Roy Hammond).

DAEDALUS ODDMENTS..

... After a disappointing period of time spent waiting for the sun to shine and the wind to blow in the right direction (sounds familiar), the **Solar Challenger** abandoned its attempt to fly from Paris to London last month (June). It came over to these shores and sat waiting at R.A.F. Manston in Kent, for untypical British weather (northerly winds and long sunny periods) so that a London-Paris flight could be made. Did the weather co-operate? Was it successful? You *should* know by the time you read this ...

... League pilot, **Tony Hughes** has opened a new hang gliding school based at Hungerford, Wiltshire. Tony, a BHGA C.F.I., will run courses for people wishing to start hang gliding from scratch as well as specialised courses on thermal & cross-country flying, towing, power and competition & precision flying ...

... Tony is apparently interested in forming a **Towing League** ...



... Rumour has it that next year's **League** will be short of one or two of the well-known names. Apparently the poor flying weather over here has finally forced them to take up their gear and travel to sunnier climes, where more reliable weather can be enjoyed ...

... **Bob England** has already emigrated to the US of A ...

... and still with America — **Richard Miller**, pioneer of modern hang gliding, has been thinking a lot about **wingtip vortices**. In a recently published technical paper, 'End Play' he says, "The wing tip has not received the care it deserves. Quite the contrary in fact: while areas inconsequential by

comparison have been worked over time and time again, the end of the wing has been left, so to speak, hanging in the wind." He believes that wing tip vortices can be controlled by using the dynamic pressure of air flowing over and around the wing. "In spite of the very high aspect ratios and correspondingly small chord dimensions of contemporary sailplanes, as much as two-thirds of the total aircraft drag at low airspeeds may result from uncontrolled flow at the ends of the wings — no other part of the aircraft provides such an extraordinary potential for dissipating large amounts of energy into the atmosphere if proper attention is not given to its design." Although Miller is primarily concerned with conventional gliders, it follows that this problem must also pertain to hang gliders, perhaps even more so. Think on, all you H.G. designers ...

... a British designer who has paid a lot of attention to wingtip vortices is **Bill Payne** (remember the Predator?), currently working for Hiway and busy developing a mini Demon. One or two prototypes have been spotted in the Welsh sky and sink rate is said to be magic for such a small machine ...

... **Aldo Balma**, born 1906 in Italy, is the oldest hang glider pilot in the world! Please let Daedalus know if you dispute this statement ...

... talking of senior pilots — an American hang glider flyer, **Rosko Kidwell**, plans to combine three of his many pursuits (parachuting, radio control model flying and ultralight flying) all together in one feat. He wants to fly his Quicksilver up to a couple of grand, jump out and then fly the microlight down by remote control ...

*From an interview with George Worthington
by
Uli Blumenthal of 'Drachenflieger' magazine*

Q. a) In your recent book, 'In Search of World Records', you describe some close calls. What typical difficulties have you encountered since flying hang gliders?

b) Which physical and mental pre-conditions are necessary for an average pilot to fly safely?

c) Is hang gliding a safe or a dangerous sport?

A. Since completion of the book, there have not been any serious hang gliding difficulties. Unfortunately the modern 1981 hang gliders like the Comet have continued with the trend of ever increasing weight. The 1976 ASG-21 weighed 50 pounds. The same size Comet with 5.3 oz/sq. ft., and double mylar in the leading edge, weighs 80 pounds. The difficulty of landing the Comet, in a no wind condition, has increased. These things

are more important to a 61 year old pilot than to those in their 20's and 30's. I am bothered mentally by these twin-trends. Even so, these things should not present a serious problem. Safety seems to be in direct proportion to how much and how often a pilot flies. There is no substitute for continuous every-day experience. This is especially true with pilots of little natural ability, and with pilots who have passed their 40th or 50th or 60th birthday. Mental and physical responses deteriorate every year with age. The mind and body continually lose some elasticity. Pilots in their 70's can and do learn to hang glide, but they must work 500% harder and must be patient with progress which is much slower.

Hang gliding today is an exceedingly safe sport providing the learning-pilot has a proper attitude and undergoes good primary instruction.

Q. What makes the difference between an average and a top-pilot?

A. A top pilot differs from an average one by having more ambition and practicing more often. Talent is important but very hard to quantify or determine, both by the person himself and by expert outsiders who watch the individual. There have been a great number of pilots who were very poor performers in the first few months, but who became the best in the world a year or two later.



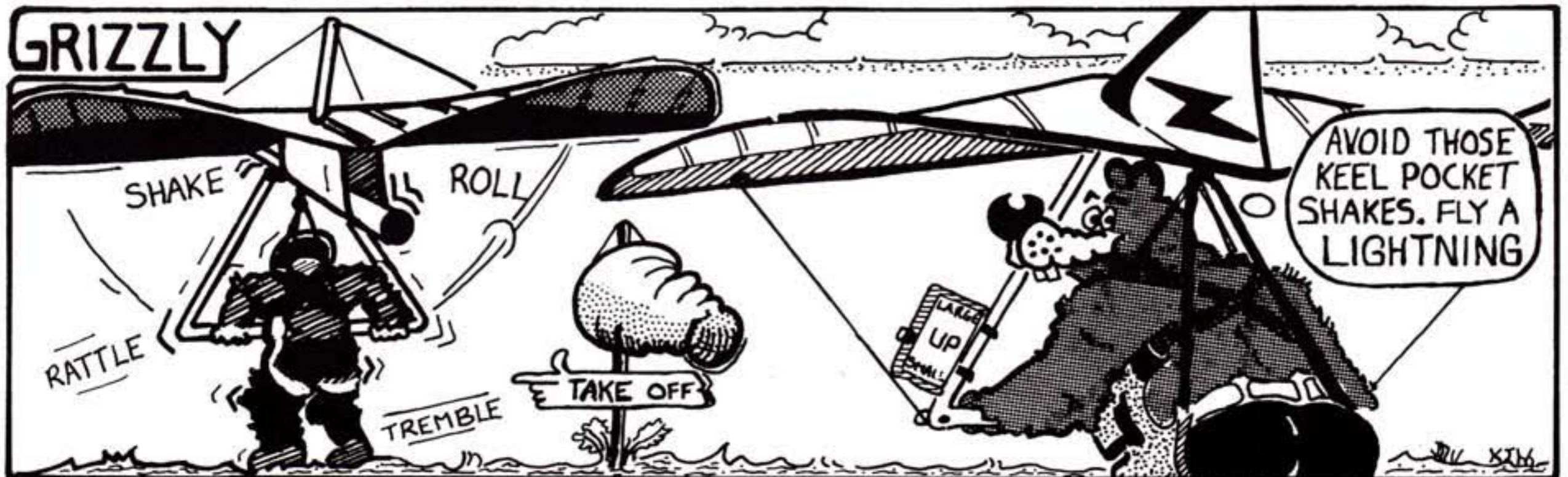
... **Controlled Glide angle tests** carried out in Switzerland during March (calculated over 5 flights) came up with the following interesting results:

FLEDGE (Derivative)	9.73:1
X RAY	9.53:1
GRYPHON (Derivative)	9.5:1
WINDFEX	9.1:1

British gliders were not available. Incidentally the **Windfex**, a German CFX machine is reported to weigh only 22kg (48.5lb). One for the ladies no doubt and some of us 10-stone weaklings ...

* *End Play*, by Richard Miller.

Published by Richard Miller 1368 Rock Springs Road
Escondido CA 92026 5 pages — \$2.00 (no cheques)



Flight Report



Photo: John Wadsworth.

TEST FLYING THE SEALANDER By A. JEFFERSON

With the coming of the new super ships, I decided that it was time to put my old Midas out to grass. I wanted to look at the Sealander, as it features a novel design which may prove to give a significant improvement in performance. With this in mind I arranged with Flexiform, a test flight at Pandy. The Sealander achieves positive pitch characteristics with a tail, similar in shape to a high performance bird, like a seagull. This enables the nose angle to be widened increasing the effective aspect ratio, and also allows the amount of washout to be reduced. The reduction in washout, in turn, allows the wing to work along its whole width, as all parts of the wing have a similar angle of attack, unlike other gliders where the tips have as much as 15° difference in angle of attack relative to the centre of the wing.

Being a cross-boomless glider, rigging was very quick and I was soon flying in a stiff 28mph wind. I was soon at 400ft and finding no penetration problems, the glider behaving much like the Midas would in an 18mph wind. I flew up to the N.E. bowl to discover cloud base at 800ft above the common. In spite of 100% cloud cover I was able to core some weak blobs which took me well above the ridge lift. After about an hour I started to look at the glider's handling characteristics. I found a good turn of speed retaining its glide, and I had no trouble getting round the corner to the N.E. bowl. I later flew against both a Demon and a Comet and found it to be faster than both, although it did appear to be sluggish in roll response. The next day I was able to fly against a number of gliders

such as Atlases, Comets, and Demons and to further evaluate the glider's handling.

Its sink rate seemed to be about the same as the Atlas, and I was not able to catch the Demons in pure ridge lift. However, sniffing the lift provided me with a couple of blobs to over 1000ft. I found it difficult to thermal, as the slow roll response made it hard to get into the best lift. As I applied bank, it was possible to watch the wing tip move backwards against the sky for a while, until the glider started to turn. This is the adverse yaw caused by a stiff, inflexible wing.

Pulling on speed made the glider more controllable, enabling me to throw a few hoolies. I found it quite difficult to co-ordinate pitch and roll in 360s as the glider seemed to want to roll out to straight and level flight. The stall was sharp, as one would expect, with very little lag between the centre of the wing stalling and the tips. I attempted to get the glider to spin by stalling in turns of varying bank and speed. Usually it would nose down and pick up speed. One time it increased bank and started a spiral dive, but it was easy to pull back to a normal flying attitude.

The stall is quite sharp and only a little ahead of the hands off flying speed, and could be the downfall of an unaware pilot. The glider's good sink rate, excellent speed range and quick rigging time were pleasing. I feel that, if modified to remove the adverse yaw on rolling, and the roll rate increased, it could prove to be serious competition to the fifth generation machines such as the Comet, Typhoon, Demon, etc.

P.S. I have just recently contacted Flexiform, who say that a modification has vastly improved the handling of later gliders.

Reprinted from Nova —
the magazine of the Avon HGC

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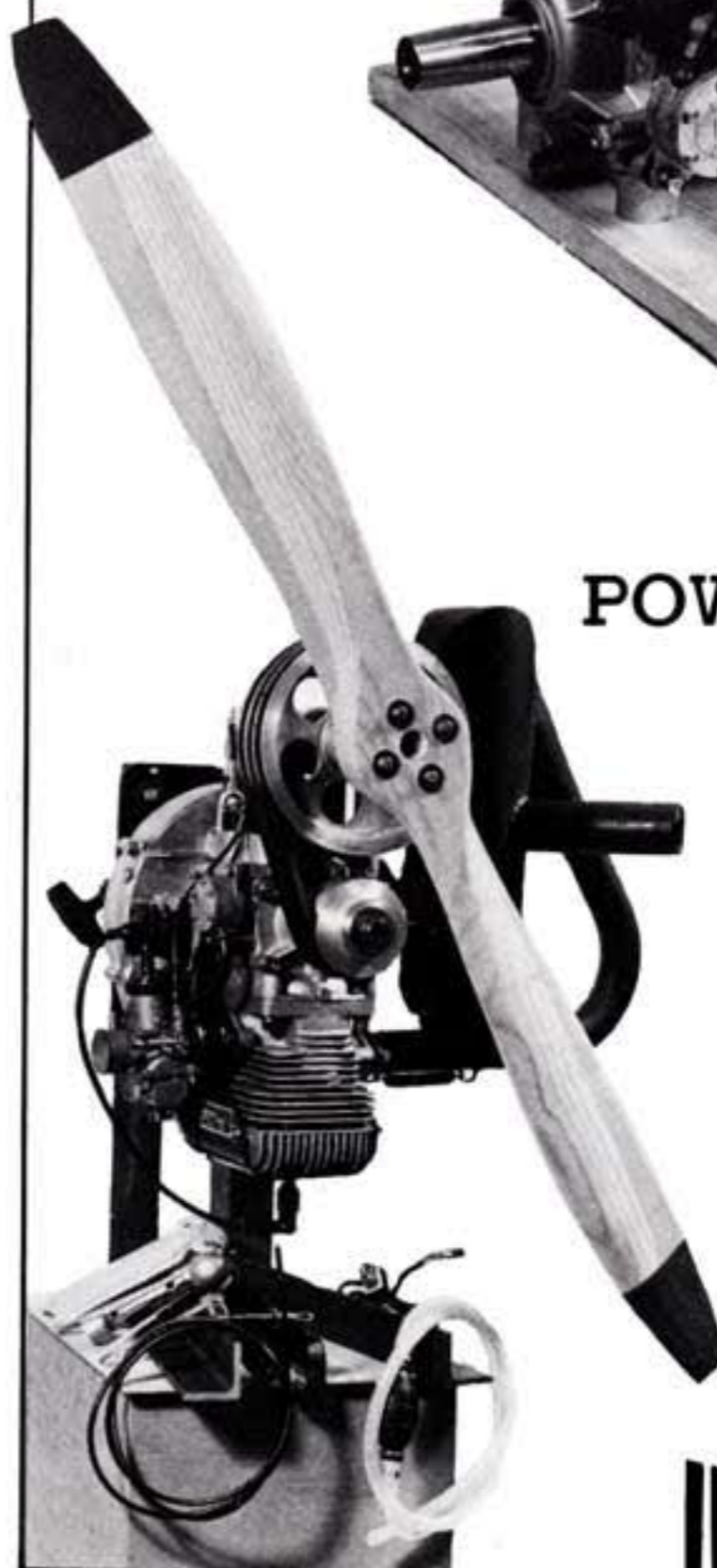
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Flying in Cold Climates

BY MAJOR R. MACDONALD, RE Army Hang Gliding Association

On return from three months military training in Norway this year I was greeted by the News at Ten giving a graphic description of British hang glider pilots almost dying of cold in the French Alps and Len Hull's chilly article in the March *Wings!*

To live and for that matter to fly safely in extremely cold climates does require a certain minimum knowledge and should not be attempted without a basic amount of preparation. It takes three weeks for me to train a soldier to live and fight in arctic conditions and at the end of this time I know he is able to survive in the most extreme conditions. As a guide to what I mean, during part of our arctic training period, soldiers spent 24 hours of a week-long exercise in the snow with temperatures below -15°C surviving in snow holes without sleeping bags, mats etc, wearing nothing other than boots, thin cotton trousers and arctic smock, gloves and an arctic hat. There is no need to aim to reach this standard but it is possible, as we have seen, to be cut off without a glider on the top of a mountain or come down in an inaccessible location, and very possible to get frostbite whilst flying.

This winter I took my glider to Norway and had some memorable flying with Norwegian hang glider pilots in very low temperature conditions. It is to be hoped that the notes in this article might help other pilots to safely fly in similar conditions.

It is important to understand the two main types of cold injuries.

Exposure, which is the cooling of the internal core body temperature to a level which normal muscular and cerebral functions are impaired or reduced and **Frostbite**, which is the freezing or partial freezing of parts of the body, usually the face and extremities, the hands and feet. There are three degrees of **Frostbite**:

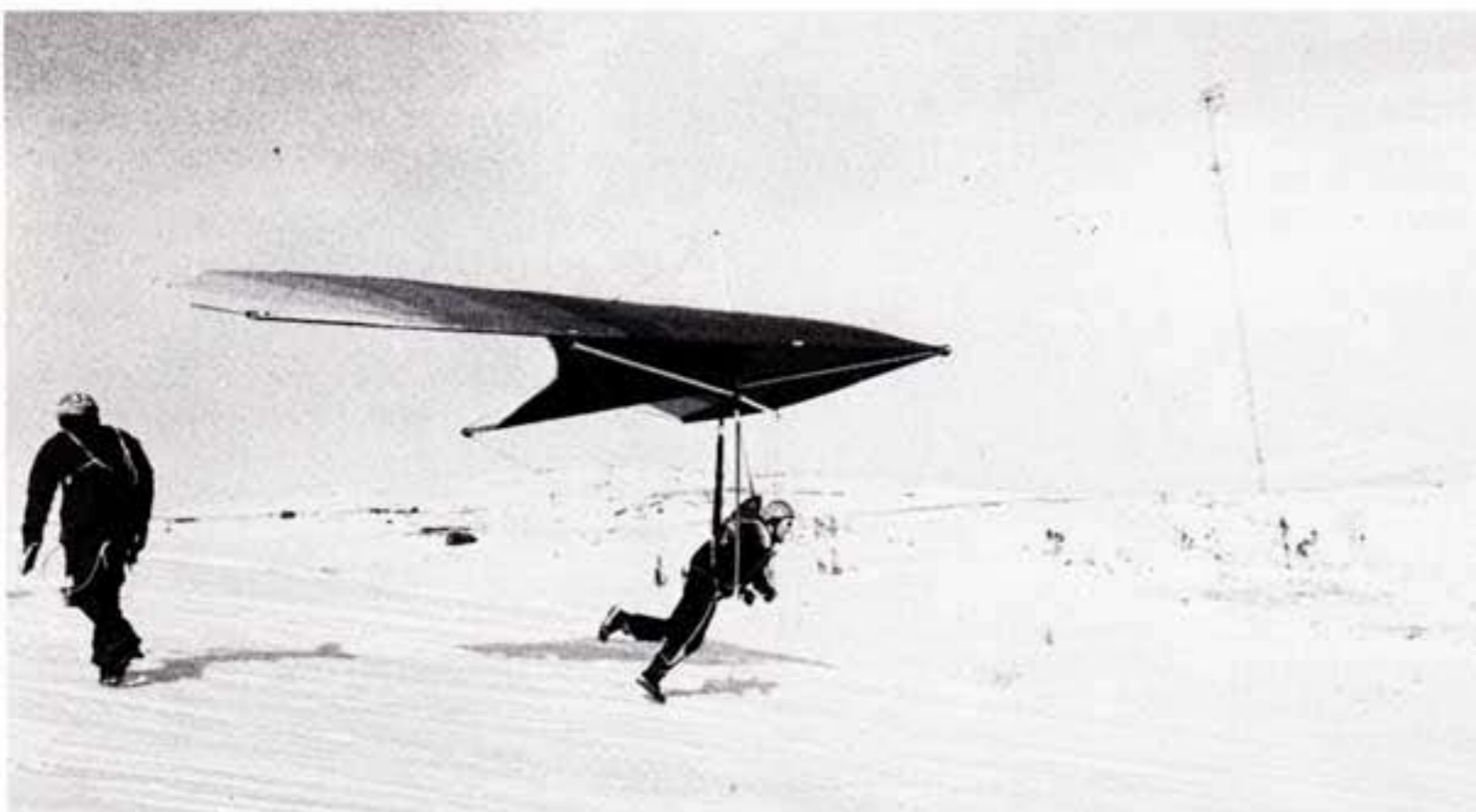
- FIRST** — Frostnip or localised frostbite all mean the same and produce initial warning that the skin is cold and freezing, dead white areas appear but no blisters.
- SECOND** — Blistering but skin does not die.
- THIRD** — Flesh under blisters dies and is lost.



Author in more usual arctic role. (Photo Cdo Forces News Team).

Cold causes exposure and frostbite. The most dangerous combination is COLD, MOISTURE and WIND. It is the WIND or CHILL FACTOR which is the most dangerous aspect of flying in cold climates. As you can see from the chart below, flying a hang glider at 26mph at a still air temperature of only -1°C reduces the real air temperature to -19°C and flying in Norway or the Alps in a still air temperature of -12°C (which is by no means uncommon) at 26mph produces a real air temperature of -36°C and a high risk of frostbite. It is worth noting that below -15°C the hairs in your nose and the tear ducts in your eyes freeze.

WINDCHILL FACTOR		The Risk Of Frostbite On Bare Skin											
Wind Strength		Air Temperature											
Beaufort Scale	Wind M P H	+10	+5	-1	-7	-12	-18	-23	-29	-34	-40	-46	-51
0	Calm	0	10	5	-1	-7	-12	-18	-23	-29	-34	-40	-46
1	Light Breeze	4.2	9	3	-3	-9	-15	-21	-26	-32	-38	-44	-50
2	Light Breeze	8.8	5	-2	-8	-14	-20	-26	-32	-38	-44	-50	-56
3	Gentle Breeze	13	2	-6	-12	-18	-24	-30	-36	-42	-48	-54	-60
4	Moderate Breeze	17.3	0	-8	-14	-20	-26	-32	-38	-44	-50	-56	-62
5	Fresh Breeze	22.3	-1	-9	-15	-21	-27	-33	-39	-45	-51	-57	-63
6	Strong Breeze	26	-2	-11	-17	-23	-29	-35	-41	-47	-53	-59	-65
7	Moderate gale	34.7	-3	-12	-18	-24	-30	-36	-42	-48	-54	-60	-66



Captain Adrian Hicks RE takes off 2,000 feet above MERAKER, NORWAY near the Norwegian/Swedish border. Still air temperature -10°C . (Photo Georg Skjemstad).

You can combat this cold and fly quite comfortably in very low real air temperatures provided you dress and prepare yourself properly.

HEAD. Wear a headover (hood) and goggles that cover your face and try not to leave any exposed flesh on the head or neck. It is in practice very difficult to keep the end of your nose covered. Goggles are essential as it can start snowing at any time and snow flakes hitting exposed eyes whilst flying are painful and will severely inhibit if not completely remove vision. Goggles also prevent tear ducts freezing. Wear a helmet over your headover (balaclava).

HANDS. Wear windproof fleece lined mittens with a thin inner glove. Make sure that the mittens do have some grip, some are too slippery for hang gliding. Make sure that you can still operate your parachute with mittens.

BODY. Thermal underwear is excellent. Use the layer principle and ensure that you have comfortable well fitting clothing. Make sure that there are no gaps at the waist. The Norwegian pilots fly with fleece lined flying suits which look smart and are very practical. They also wear them in summer with just swimming trunks underneath!

FEET. If possible wear duvet or moon boots, if not, wear boots fitted with an insole worn with two pairs of socks.

General points which may help you are:

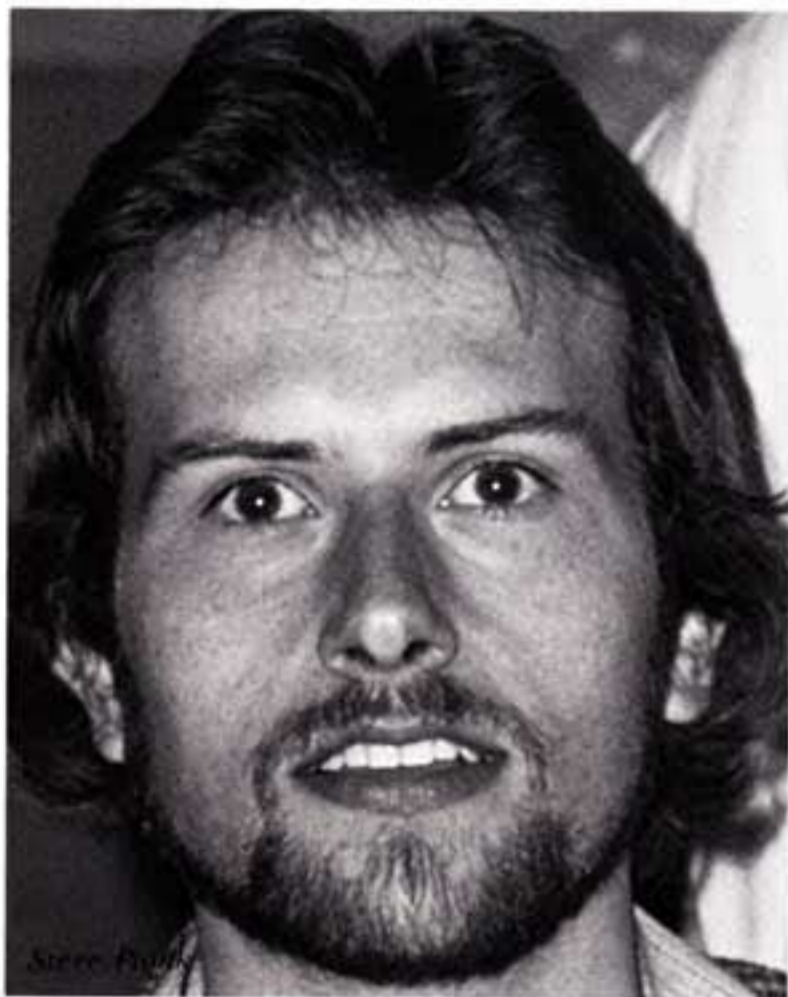
1. Eat well and drink hot drinks frequently inbetween flights. Food and hot drinks provide warmth and you will be in better condition.
2. Keep your feet and hands clean and dry. You should always have a spare pair of dry socks and extra mittens in your flight bag.
3. Shave in the evenings.
4. Keep an eye on your fellow pilots, watch for tell-tale white patches on the face which show frostnip and thaw the area immediately by covering with a warm hand. Do not rub the area.
5. Use your ventometer to work out the WINDCHILL factor and understand what it means.
6. Prior to moving to a cold area treat the airframe and moving metal parts of your glider with WD40 or some other equivalent lubricating agent. Pip pins have an irritating habit of freezing up in extremely low temperatures.
7. If you are flying and find your hands or feet are going numb, land immediately and warm the numb area with body heat.
8. Do not fly a new mountain site unless you have been briefed on the conditions by a local pilot.
9. Keep a wary eye out for changing conditions. Storm fronts and snow storms can appear and come through with surprising rapidity in the winter. If you see anything building up, land rapidly — the locals will certainly do so!

I hope this article will not put off pilots who wish to fly in cold climates. Flying in Norway in winter is a wonderful experience. Sites are huge, majestic beautiful and uncrowded. Coupled with this, the Norwegian pilots are certainly the most hospitable I have ever met and are keen to hear about flying in the U.K. Many of them fly British gliders and spares for most gliders are fairly easily obtained throughout Norway.

NEW
ZEALAND

A Star is Airborne!

by Steve Pionk *'Oh, the shark has pearly teeth dear ...'*



Steve Pionk has been flying hang gliders for 5 years and up until June '80 was editor of the Thames Valley Club Magazine 'Volplane'. He's owned 5 different gliders, the last two being Wasp Gryphons, and is known to be a famous 'glider scrounger'.

Steve is working in New Zealand and writes about a glider that is hoping to break into the international hang gliding market. Its name is Shark, and he claims that its up front with the best CFX* gliders in the world.

I've been here in New Zealand since September '80 and I want to tell you about a guy and a glider that I've been fortunate enough to have become involved with. The guy's name is Warren Bird, and the glider — the Shark.

When I first came to New Zealand, Warren and Rick Poynter of Pacific Kites, were just contacts through which I hoped to get into the NZ scene. They both operated in Auckland and this is why I specifically requested my employers to transfer me there. Not just a pretty face, eh?

Rick Poynter and I talked a lot over the phone, but as you probably know, he wanted to get out of the business for various personal reasons. He sold out to his employees, three young Americans who apart from producing the popular Lancer IV also planned to produce the double surface CFX Vampire.

Being short of cash, I decided to bide my time and see how the market here developed.

It was to be a while, 9 months in fact! But the waiting was worthwhile and it gave me the opportunity to suss this country out without too heavy a financial commitment. I visited various parts of the North Island and met a lot of really great fliers, who flew all sorts of 'home grown' and Australian gliders and who ranged in ability from top competition pilots to novices. I was given plenty of opportunity to fly but, to be honest, a lot of these second hand machines were so dated that I politely declined the offers — for safety reasons, plus also I hadn't flown in ages and didn't want to combine too many 'unknowns'

(new sites, gliders, etc.). So I didn't fly. Got a brilliant sun tan, though!

I wasn't too keen on taking a retrograde step, just to get back into the air, especially after 2 years of flying a Gryphon! I wanted to make sure that my next glider had, at least, the speed, glide and sink rate of my old Griffis — plus one other sorely missed feature, decent handling!

The Vampire was the sort of machine I wanted to fly, but I wanted to hang on and take a look at what someone else was doing. I'm glad I did, because over the months I've watched a glider develop into something that really outshines anything I've ever seen in my flying career. This is the glider that I will be cruising around NZ with, and is worthy of a chance to prove itself in the U.K.

Its difficult to explain the feeling I have about it, but when I came out of the factory tonight after seeing the 2nd prototype for the design ... I felt ... bloody magic!!

Warren Bird and his brother, Graham are no strangers to Hang Gliding. They have been involved in building gliders for many years and are well experienced in design and construction work. Graham originally designed the Lancer and together they helped set up the Flight Designs manufacturing programme in the U.S., Warren being primarily responsible for the sail loft and Graham, design, production and engineering.

Warren, an experienced sail cutter and Champion wind surfer, eventually came back to New Zealand, where he set up his own one-man company — Flight Sails. His first production model, the Santanna, was an immediate success over here. I first saw one in October '80, and although only an intermediate glider. I was quite impressed by the way it flew. It was a brand new glider at the time and its owner, an experienced flier, was over the moon with it. It could be compared to a Lancer IV, with twin deflexors, flexible battens and single surface sail, possessing excellent handling and substantial performance. It certainly went up better than the Lancer which was flying in the same air and its speed is good for a 'floater'.

I first wandered into the Flight Sails factory to have Warren do some work on my harness and to attach my newly acquired RDP chute and 'Hudson' container to it. Having the factory a short stroll down the road was handy, and Warren being the likeable 'hairy heathen' that he is, said he'd fix it up straight away. Thus began a beautiful friendship and we've since spent many a pleasant evening in the company of the 'Phantom Pissmaker' (that invisible character who always insists you have one more beer, makes you drop your glasses, and who has the ability to slur your schpeech and make you see double, hic!!).

The last couple of months have been very quiet as far as socialising was concerned. I knew that Warren had two projects on his mind (project 'Sabre' and also a CFX idea), so consequently a lot of time was being spent, on his own mostly, building and test flying his gliders.

Up until about three months ago he was ready to produce his latest design, a 30% double surface machine called the Sabre, a glider very much along the Storm/Atlas lines with preformed battens and all the handling and performance which I had come to expect from flying similar machines in the U.K. Unfortunately, it had come just a little too late, and would prove difficult to market to pilots who saw the new CFX gliders looming on the horizon. Steve Moyes was producing the Mega III and Pacific Kites were already gearing towards production of the Vampire.

At this time, another friend of Warren was in the country — fellow compatriot and competition flier, Bob Martin. Bob, who used to fly the 'Gilbey Gin' sponsored Cyclone, was sporting his new Lightning

and generally blowing the kiwi minds away as he toured around New Zealand.

Just before going back to the U.K., he sold his Lightning and retired to Flight Sails HQ where all three of us got on with the business in hand, i.e. consuming large quantities of beer!

Somewhere out of the dawn mists (I don't exactly remember when!), Bob and Warren got together and locked themselves in the factory for two weeks, triumphantly emerging into the sunlight one Saturday morning gurgling strange sounds ... "double surface! ... floating X booms ... gargle ... food ... BLAH!!" And so, the Shark was born!



... emerging into the sunlight one Saturday morning...

Yes, they'd gone and done it ... (Star Trek music starts) ... they had gone and boldly trod where everyone else was trodding!! Whats more, it flew right first bloody time! Bob was ecstatic "Well mate ... its unbelievable!" and Warren, in more kiwi tones, wiped the sweat from his brow and agreed "Yeah, shit hot!"

How did it develop so quickly? The Sabre, the design which we already knew worked well. So, how much better would it be if we extended the CFX concept to it and applied 80% double surface? The answer was amazing and beyond all expectation.

They both flew the prototype, making alterations along the way to improve speed and L/D, but basically, they were very, very close to a glider, which as far as Bob was concerned, was as good as his Lightning.

Now to get it better, and Warren knew exactly how to do it.

A couple of phone calls to California and a month or so later, Warren is re-united with his designer and genius brother — Graham. In the meantime, Bob had to shoot back to the U.K., but before he left, we had one last quick round at 'Ye Olde Kiwi' Tavern, to celebrate.

However, time was not on their side. We all knew the Shark was good but Warren, quite rightly, did not want to commit the glider to production until his brother had come over, thoroughly tested the glider to U.S. standards and given it his personal seal of approval. At the time, we were all aware of the need to expose the glider to the flying populace if it was to be a success, and more especially to get top fliers on it for comparison with the competition — worldwide.

Bob was keen, more than any of us, as he knew exactly what the Shark and his ability combined, would accomplish. If he could sort out his financial and sponsors position, a New Zealand Shark would be very shortly winging its way to Gatwick.



* Concealed Floating-Crosstubes

Two months have elapsed since Bob left and Graham Bird arrived. A second glider has been built, the Shark Mk II. This is the one I saw tonight, and believe me, if you could have seen it, sitting there . . . you could'nt help but be totally amazed by its sheer beauty.

The Mk I had the sink rate, and handling, but not quite the speed and L/D which they knew they could achieve. Those changes have been made and the resulting Mk. II is as ready as it ever will be!

Major alterations have occurred in the frame design and construction to make the glider stronger, safer and easier to rig. Warren has also modified his sail construction technique to ensure minimal distortion over an extended period of time. The entry along the leading edges, top and bottom, are of thick Mylar which gives the wing its clean aerofoil section at all times. The sail envelopes the whole frame leaving only the A-frame to induce drag — even the nose is faired and coned.

Shark has never had a Keel pocket — but a floating top fin(skeg) *ala* Lightning. The 16 top surface and 12 bottom surface battens are preformed/composite and employ an aluminium/fibreglass combination.

The keel is no longer continuous but 'two stepped' aft of the X booms and angled down to keep in line with the top surface of the wing. The internal floating X tubes are angled post centre to alleviate the compression loads on the keel. Another nice



Note the 'skeg' and inflated Le. Photo © Bettina Gray.

feature, is the elimination of unnerving slack in the bottom rigging which Graham designed out and which he considers totally unnecessary in a well thought out CFX machine. All metal to metal contact between the booms is prevented by nylon blocks and slats which also help alleviate pressure points. Any brackets or bolts which would otherwise chafe the sail on de-rigging are covered by a thick felt/polythene type material. Excessive keel and X boom movement in all directions is prevented by an ingenious but simple cable arrangement.

The Shark has double luff lines each side and blow down tubes which each act on twin tip battens thus ensuring positive pitching. The whole glider rigs in minutes and all fittings and engineering are in my estimation 100%. It would be difficult to find a better quality glider.

Warren, Graham, Bob and I are confident that the Shark is a winner!

N.Z. SITES

Omarama — the Owens Valley of New Zealand. Surrounded by mountains ranging from 7000' to 12000', it is situated in the MacKenzie Basin, part of the Southern Alps. Take-off 3500'. 700 fpm thermals in abundance! Mount Cheeseman — take-off 4000'. Height gains of 4-6000'. Mount Hutt — 5000' vertical descent. Take-off 7000' MSI.

Hang Gliders Do It... Towing!

By Michel Carnet

On the way back from the *Loriano Triangle Competition, Michel Carnet passed through Switzerland, where he heard about a school giving people their first introduction to hang gliding via a towing system. Intrigued, Michel decided to go along and investigate.

The school is run by Philippe Briod and he uses a winch of his own design. The site used, near Orbe, is a one-mile long concrete road — straight and level.

The world record towing height of 5512' was achieved by Thierry Guignard, using this site and this towing system. Over to Michel . . .

For the first lesson, students are towed to 10 feet maximum, then they go progressively higher. During the elevation phase, the glider and student seem very stable, but when the vehicle stops pulling and the pilot starts to fly on his own, he experiences a pitch problem for a couple of seconds. When the glider reaches the ground, landings looked no different. One good point — there are no slope gradients.

After the first lesson, two out of three students were able to climb to 30 feet, release the cable, control the glider in flight and land (nearly) on their feet.

Then another lesson followed, with higher height gains, after which students were taken to a mountain



Philippe Briod's Trevil.

site to practice foot launch take-offs. The point is that students learn to fly *before* they visit hill sites, so they can launch (after instruction) straight from mountains, which are common in Switzerland.

Later I tried the system myself. Philippe lent me an Atlas, equipped with a three-point towing cable (hang point and both sides of control bar), with a hand release. He told me not to touch the glider during the climb and then fixed a CB radio on one of the uprights. Slowly the vehicle began to move, until it reached 25mph, then Philippe with the 'trevil', started to take charge. I felt the glider going forward, then just two steps and I was airborne. I had to remember not to touch the bar! The glider was very stable. By the time the vehicle had arrived at the end of the road, I was 900' A.T.O. Philippe told me (via the CB) to pull the bar and release. When I landed the van was back at the starting point and after a short rest I had a couple more flights. I know that the conditions were perfect and Philippe has 5 years towing experience, but it looked so easy — not at all dangerous! I think it could be a good way to set off cross-country, in England, when the wind is off the hill. Viva le tow!

As reported by Daedalus in May Wings!, towing is getting off the ground again in this country. Andy Brough, using a site in Buckinghamshire, is now getting 2000' launches. ED.



"Look, no hands" — Philippe Briod gets airborne.

December 28th 1980, found Lindsay Ruddock and myself struggling through Heathrow Terminal 3 with two gliders, flying equipment and all the assorted bits and pieces you take on holiday with you. Trying hard not to decapitate too many people with the gliders, we made our way to the Sudan Airways check-in. Whilst waiting, we talked about what was to come; would the trip be worth all the hassle and would our dreams of fantastic thermal flying come true? — Well, they did!

This is a report of three flights (two in Kenya), that were to be used later, for a FAI Delta Silver claim.

HEIGHT GAIN

The main area we flew was the Kerio Valley. Two degrees north of the equator in Northern Kenya, an extension of the Rift Valley. The valley itself was 15-20 miles wide by 112 miles long, running south to north. Every flight that we made was from the same place — a 40' wide rock situated at Choroget shops (3 wooden shacks and a small school) — with heavy vegetation either side and below. Take-off had to be right! The valley floor, 4,000' below take-off, was a pretty mean place. There was a river running up the centre of it where crocodiles were to be found in abundance. In front of the river it was heavily wooded and leopards, monkeys and other animals lived there. On the other side there was just wide open spaces where hardly anything lived, including people. If you went down, you had to pick your landing area carefully!

On the afternoon of January 11th, I made a flight which was to be used for the height gain task. It was the usual scene at take-off — big fluffy clouds, wind NE 8-12 mph, brilliant sunshine and lots of people. We didn't call them locals, because by this time the word had got about and they used to arrive from miles around by the lorry load, just to see two crazy Englishmen fly aeroplanes without engines.

Glider rigged, first aid, survival equipment, water and walky talkies tied on. All that remained to be done now was for the Baragraph to be strapped to the rear of the keel, after being sealed. Take-off was a nice clean one (makes a change) and I headed straight out into the valley for the other side of the river where the best thermals were to be found. This was nine miles away, so any lift encountered on the way was used to help me get there. Once there, surprise, surprise, there was nothing to be found, and I lost 1500' looking for it, so I decided to hop back over to the other side of the river (at least there was a small rocky road that Lindsay could come down to pick me up if I went down, without too much hassle). Once on the other side I picked up a nice big smooth thermal which took me to 2,800' ATO, so I radioed Lindsay to let him know that I

was 'going for it' and would try to make Tambach, 16 miles upwind. He radioed back and said that he would try to follow me in the Land Cruiser.

During the next forty minutes it was mostly down all the way, apart from a couple of thermals that took me up a thousand feet, but instead of extending the distance of the flight they did the opposite (because I was flying upwind) so I ended back where I had just come from. I could see Tambach in the distance, sitting on a shelf, but it never seemed to get any closer, so when I lost a thermal it would be bar in and go for max glide.

It was during this time that I noticed our old friends, a couple of white-faced eagles, that had come up to say hello. They are really beautiful birds and when you've got one just under your wing tip, thermaling with you, that's when you realise that you are flying with the masters, in a fliers paradise.

While still in a downer, Lindsay had stopped to see if he could see me. I told him he should try looking a little lower down in the sky and that's when he saw me, about 300' from the valley floor sniffing around for some lift.

He told me that he would have to carry on to Tambach in order to get onto the road that went down into the valley. He sounded disappointed (for me) and said that he hoped I could thermal back up. I remember thinking, no chance sunshine!

Believe it or not, the next thing I saw was a truck coming down the road, so I gave up looking for lift and headed straight for it, hoping to get a lift back. This is when I learned a valuable lesson—never give up when the chips are down. Less than 100' up, I passed over an open area and was setting up for a landing when the vario spoke to me again. I up, great, turned into it and got some height, then lost it. Had a good swear, to get it out of my system, then concentrated on what I was doing. Suddenly I turned into a nice thermal, but it only took me to 800' ATO. I made the mistake of relaxing too much and losing concentration by trying to contact Lindsay. Forgetting about the radio, I chased after it, but no luck, so I decided to pull the bar in and head for that open patch. I lost 2,000' getting there, but when I did, WHAM, the right wing went straight up, so I let the glider carry on round to the left. I couldn't believe it, the Atlas was turning on its left wing tip and the vario was reading off the scale. This boomer took me 5,000' straight up, then it just disappeared as fast as it had arrived. The total height gain was 7,250'. Mind blowing heh! I managed to contact Lindsay and he couldn't believe it when I told him that I had just passed Tambach 3000' below me and was still heading north. He said he would follow.

I finally landed 1 hr 57 mins after take-off, at Anin School, which was in a small village with about eighteen mud huts. 21 miles from Choroget shops as the eagle flies.

WEATHER

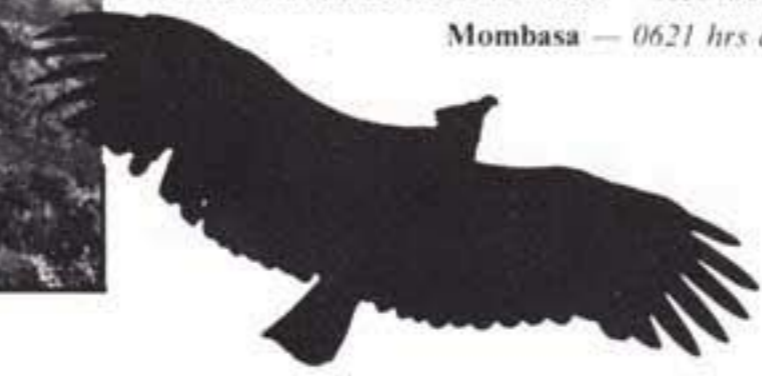
KENYA: The Lake Basin, the highlands west of Rift Valley, central Rift Valley, the highlands east of Rift Valley, the Nairobi area, north-western Kenya, north-eastern Kenya, south-eastern Kenya, sunny and dry. The Coastal strip — isolated showers or rain patches in the morning becoming sunny and dry in the afternoon. Coastal winds — north-easterlies at five to fifteen knots.

TEMPS: Nairobi — max 26 deg C, min 13 deg C. Mombasa — max 33 deg C, min 24 deg C.

SUNRISE and SUNSET: Nairobi — 0638 hrs and 1846 hrs. Mombasa — 0621 hrs and 1839 hrs.



The Choroget Take Off



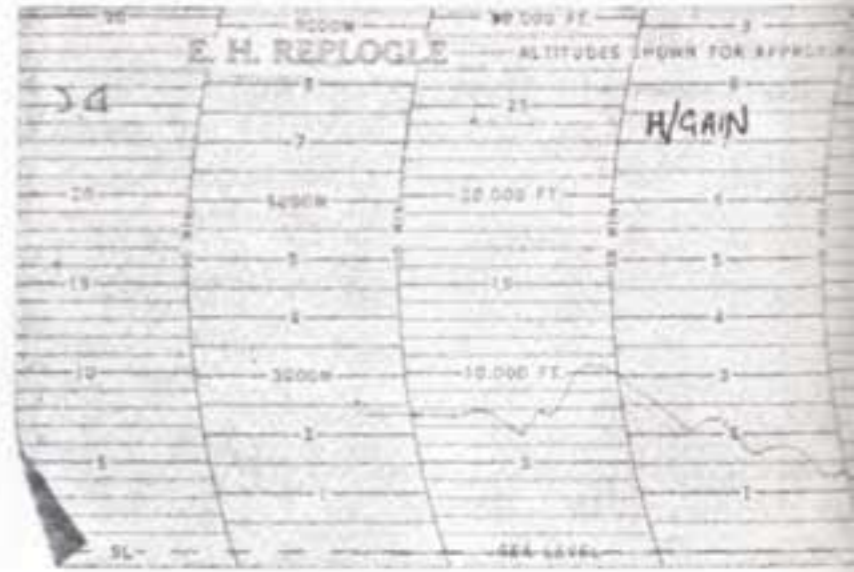
FROM KENYA

In search of

by Dave



Dave after his 'gain' flight about to be rescued by Lindsay



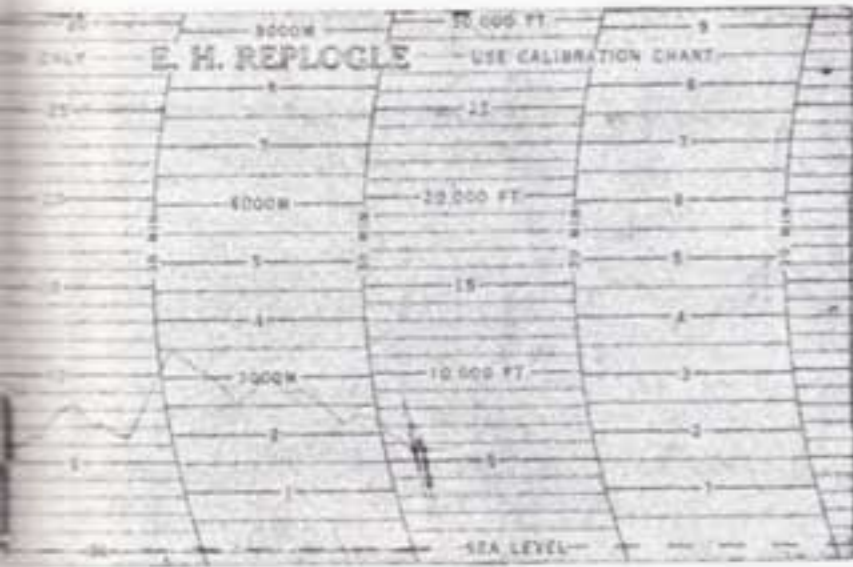
Baragraph trace of Dave's Distance Gain

TO WALES- Delta Silver

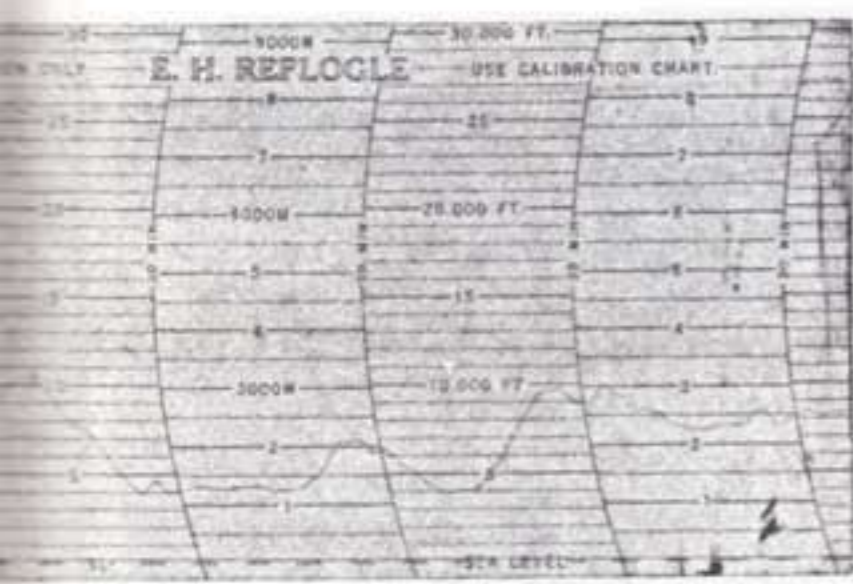
Cheesman



photographs by Lindsay Ruddock



Barograph trace of Dave's Height Gain



DISTANCE

January 15th, last change for the distance, so I rigged up my, by now, injured looking Atlas, and lost count how many pre-flight checks I did. *Did you know that storm uprights fit just nicely over Atlas ones?* Take off was a bit hairy, but once away, all was OK.

I began to feel like a human yo yo, up down, up down, but it was enjoyable. No sign of our old friends the eagles, but I did see a butterfly at 11,000' and couldn't help wondering how long he had been there.

This time getting to Tambach seemed no problem and I had no real worrying moments. Passing where I had landed a few days ago with plenty of height I headed back out into the centre of the valley. Up to now I couldn't believe my good luck. Then I saw it, about 7 miles upwind and heading my way. A dust devil which stretched from the valley floor to cloud base, "time to do a runner Dave." To my amazement, it was gone in no time at all. I circled for a while and then looked up ahead to see what was happening. Two other beauties formed then disappeared. Decision time folks, shall I continue north and chance getting caught in one, or abort the attempt. Well, we've all got to go some time, so bar in and carry on north (sh*t or bust you might say). When I reached the place where the monsters were being formed I hit some really bad sink and I couldn't have been in a more hostile place if I tried.

6,500' later I found myself really close to the ground, maybe 80-100'. What a place! No human life, just a big swamp area with (I found later) quicksand all around it, and a huge open area with all sorts of nasties in it. *I couldn't help thinking that if I landed here I wouldn't see merry old England again.* I flew the hardest I have ever done in my life, staying up in just the heat radiating up from the ground. For nearly 30 minutes I was doing huge 360's, praying for some good lift and a cold drink.

Have you ever flown in a ski suit with all your equipment, in temperatures of 104°+? It's no fun! The sooner I could get to Cloudbase the better.

Then finally some very light lift turned into a beauty. It took me up 3,000' and just as I finished laughing my face off, I got drilled and ended back where I started, only a quarter of a mile from where I was before.

More sniffing around like before, then I got hooked into a real biggy. Bank it over and wind it up for nearly 6000. "Let's try and keep here this time".

I contacted Lindsay again to let him know that I was OK, then made my way NW back to the edge of the valley wall. Once there, I flew along a sheer cliff face until seeing a small village down below, about half way down the face. I knew I had the distance so this would be as good a place to land as any. As the top was covered in thick forest, I circled for some time to let the people see that a man was flying this

machine. (They still hunt lions with poisoned arrows this far north). I managed to put it down in between two mud huts and was instantly rewarded with food and drink, thrust at me by hoards of smiling faces.

How many people can say that they have been shown the highest respect by being greeted by a chief and taken home to meet the wife and family. What an experience!

What a flight, 35 miles which took me just over 4 hours!

DURATION

The duration flight was achieved in this country, at Hatteral Hill, Pandy, in South Wales.

It was the weekend of the Webbington cross country competition and I didn't arrive until 12 o'clock on the Sunday. Take-off was just after 1 p.m. and the lift was good but after half an hour, my arms were killing me. So when in sink I would relax my arms as much as possible. 2 hours into the flight and the temptation to 'go for it' was really bad, but I talked myself out of it. Everything was going fine until the 4 hour mark, when the lift suddenly dropped off. I was the only one up, scratching around trying to find lift. Once again Lindsay was on the radio telling me to hang in there (sorry about that) and I did.

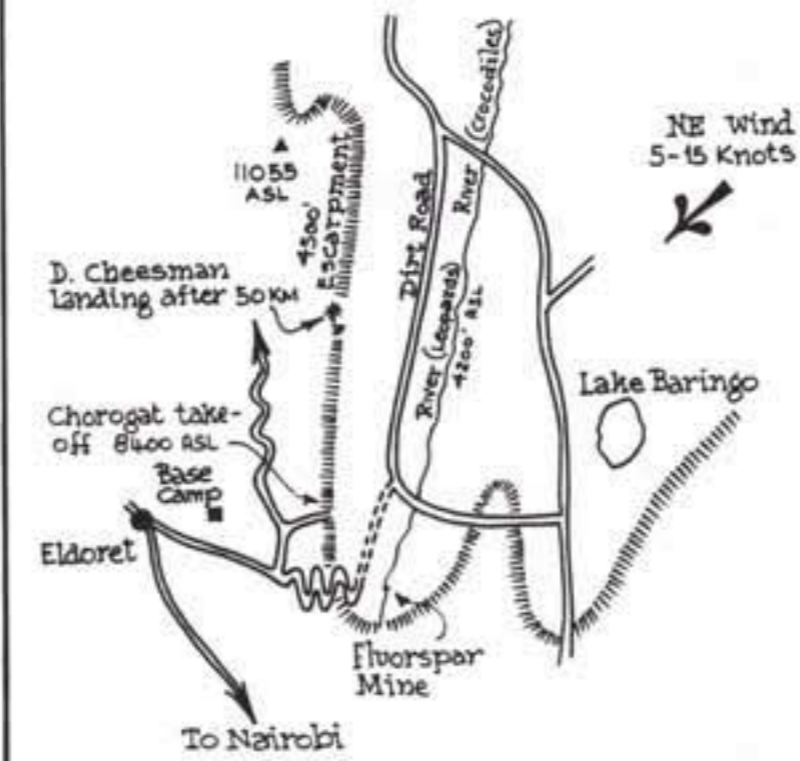
Someone, in an all white Atlas, took-off to fly with me and there was just not enough room. For the first time I flew aggressively. Sorry if I didn't get out of the way, but there was no way I was going down!

Once again I could breathe. It picked up and in no time at all, everybody was up again.

5 hours 10 minutes after launching I let out a scream of joy and flew down for a well earned rest. My back was killing me!

With the tasks completed, all that had to be done was to send the signed forms off to Rick Willson and reflect upon the past few months. There were many people who helped me to get my Delta Silver and I thank you all, but thanks most of all to Lindsay Ruddock. Thanks sunshine, I couldn't have done it without you. Richard Kenwood for being so kind as to lend me his barograph, Bob Jackson (Kenya HGA) for all the help in Kenya, Jerome Fack for the contracts, Mike Heather (Avon Club) & Rose for putting up with me at the weekends and last but not least, Miss Drakley whom we stayed with while in Kaptagat (always on my mind and miss your fish pie and scrabble).

ED. David is a member of the Thames Valley HGC. He started hang gliding just over four years ago and has ambitions to get into the League this year.



SCALE: 30 MILES = 0.5 INCH



Dave after his 'distance' flight

High Flying in the Holy Land

by Graham Hobson

Last year in the November issue of "Wings!" I read an article on Hang Gliding in Israel. It sounded pretty good, so my partner John Higham, and I decided that maybe it would be a good idea to go out there, with some friends and gliders, and see for ourselves.

It took some time to get things organised but eventually, after several phone calls to Alfred Porter (the author of the above mentioned article), including one to Tel Aviv, we were ready and booked on an El-Al flight to Tel Aviv from Manchester, for two weeks in May. Our party consisted of myself, John, Werner Thomen, Steve Bond and his charming wife, Dot.

Alfred met us at the Airport, at one in the morning, and we drove all night in our rented car to the base of operations, a little village called Rosh-Pinna, 20 miles from the Lebanese border in the North of Israel.

In all my previous experiences of flying abroad I had found it very important to contact the local flyers in order to avoid flying delays; in Israel this proved doubly important (see later) and for this reason we were incredibly lucky when the president of the Israeli Hang Gliding Association stumbled onto us as we were loading up the car at the airport. Via this chance meeting we obtained several very important phone numbers!

The first day we spent acclimatising ourselves to the heat (my hay fever started since their vegetation is a month or two in advance of ours) and getting some money changed, which is a tricky business when you realise that inflation in Israel is currently about 135%!

In the afternoon Albert took us to possibly Israel's premiere site — Mivo-choama. This is a steep westerly escarpment rising 1600ft from the Sea of Galilee to the plateau which marks the western boundary of the Golan Heights. There is a Kibutz on top and it was from here that we launched. Before the seven-day-war, all this territory belonged to the Syrians and their old field guns are still there, useless and bent reminders of a grim past.

Unfortunately the wind was blowing straight on at about 50 mph. This proved to be a problem throughout our stay as on many days this powerful sea breeze would bolster a westerly gradient to unflyable levels. Still, it was a sheer delight to stand on the edge in shorts and T-shirts and be buffeted by that warm blast and gaze at the ancient town of Tiberias nestling in the hills on the further bank across the wide blue flats of the Sea of Galilee far below.

When Alfred left us to our own devices the next day we were not very successful. Mivo-choama was blown out again so we went to a site much nearer to the sea (and also much smaller, 300ft) called Zickron-Yaachov. Before we flew we decided to tell the local police, just in case! This proved to be a disaster as we were warned, in no uncertain terms, that we were not to fly, at the risk of being mistakenly shot as terrorists. Team moral at this stage was low as we could envisage a nationwide ban on our flying throughout our stay. Morale suffered another blow, later that day, when we decided to salvage what was left of it and go swimming in the Med. Whilst, doing so, thieves broke into the car and stole all the cameras (hence no pictures). That evening we returned to Rash-Pinna a very dispirited troop.

The next day we met our first local pilots — and oh what a welcome sight to see an old BMW with

two long familiar bags on top. Our new guide, Yoram, took us to a coastal site 10 miles north of Tel Aviv called Gaash. This was a 150ft cliff, very similar to Newhaven cliffs, ten miles long. Here we made our first flights in Israel, on a steady 25 mph sea breeze. Gaash proved to be a "last resort" site, which was nearly always flyable, and it was nice to have this knowledge at the back of our minds. That evening we made the 80 mile journey back to base in good spirits and in excited anticipation of the days to come.

Unfortunately the next day was again blown out on Mivo-choama, but since the burning desire to get some airtime had been somewhat appeased the night before, we were content to spend the hot part of the day wandering about Tiberias and swimming in the Sea of Galilee, with the intention of flying Mivo-choama, if things calmed down, during the evening.

We had learned from Yoram that there was a pilot actually living in the Kibutz on top. When we arrived at his door step, he was overwhelmed to see four foreign Hang Glider pilots, all intent on getting airborne. Our host was an American, called Bob Croker who had been living in Israel for seven years and had learned to fly there. He told us that he thought the wind would die down that evening and true enough, at about six o'clock, one hour before dark we launched into a smooth 20 mph.

I pushed the bar out and didn't stop climbing until it was time to come down again at dusk. At this point the altimeter read 2700 A.T.O. and I was out over the sea. There was so much space and lift that we lost each other during the flight and didn't meet again until landing on top, by the Kibutz.

Whilst there we had a chance to see a little of the Kibutz life at first hand and I must say that it seems idyllic. As Bob's guests we were welcome to eat in the communal canteen and this time we had no worries about leaving the car unlocked. I think the overall impression I got was one of a curious but totally wholesome mixture of pioneering (in land recently taken from the Syrians), hard work, hope and fear for the future, giving the inhabitants a strong communal spirit.

That night Bob, who flew a Cherokee-like glider, told us of his dream of flying from Mt Tabor (a dome-like mountain 18 miles west of Mivo-choama) to his Kibutz on the Golan. Indeed XC was on every body's minds out there and our arrival seemed to act as a catalyst - we noticed pilots were disappearing over the back of Tabor regularly, when we visited there later in the week.

However, XC proved to be difficult for those of us who were unfamiliar with the borders and Israel, being surprisingly small, there was the danger of flying clean out of the country into a less friendly one!

Our best day occurred, midway through the holiday, on Mivo-choama. The wind blew moderately all day and Werner worked thermals and wave to 5500ft A.T.O. and flew out over the sea of Galilee to 7000ft, for over an hour. John, Steve and myself cruised around at 3000ft A.T.O. all afternoon and well into the evening.

On the Thursday of the second week we went down to Tel-Aviv, at the invitation and hospitality of the locals, with whom we had made good friends. The intention was to see some of the sites above the Dead Sea and finally wind up neatly at the airport, for our return flight on Sunday.

From Tel-Aviv we had a two hour drive via

Jerusalem to the Dead Sea. The sea itself is nothing more than an accumulation of very salty water, in a huge natural "sump" at the northern end of the 'Great Rift Valley' where the River Jordan terminates. Since no river flows out again, and the equilibrium is maintained with evaporation, the salts dissolved in the Jordan are left in the sea and over the years it has become so salty that it is totally dead (hence the name) and now has peculiar buoyancy properties!

As we drove along, we would pass on the side of the road, here as elsewhere in Israel, constant reminders of the troubles. At one point we came across an up-ended tank, its caterpillar tracks hanging sadly from the wheels; the whole mass left like an horrific and grotesque sculpture. The significance was denoted, in Hebrew, on a nearby plaque.

We had decided to fly from the cliffs on the Israeli side of the Rift, above the sea, and after a 45 minute drive from the base up to the plateau, we wound our way back to the edge. Here there were vertical craggy rock faces with heartstopping drops into yawning chasms, requiring very wary footwork whilst scrambling around near the edge prior to take off — one false move and you were gone for good!

The region is desert and very largely barren. Colours are stark and contrasting with varying hues of reds, sandy yellows and browns butting against the wide even blues of sea and sky. This combination of colour and space, with the unfamiliar contours, produced a (weird) panorama — fantastic and so totally alien to our European sensibilities, as to be almost unnerving.

The temperature was about 100°F and we had been warned to drink water regularly, as the body loses it at a rate faster than its warning system can detect.

The flying proved to be uneventful but spectacular. Unfortunately the lapse rate was zero and we experienced a smooth sled ride down 1700ft to a Kibutz with a newly built swimming pool for a cooling dip. We then decided that the day would be better spent floating on the buoyant waters of the Dead Sea — incredible stuff!

All in all we had a marvellous holiday; this being largely due to the friendship and hospitality of the local pilots. These guys are very much 'with the times' and gliders used out there include Comets, Vipers, Atlases etc. We saw all the ancient Biblical towns — Nazareth, Bethlehem, Jerusalem etc and we found Israel, on the whole, cheaper than Britain (excepting car hire).

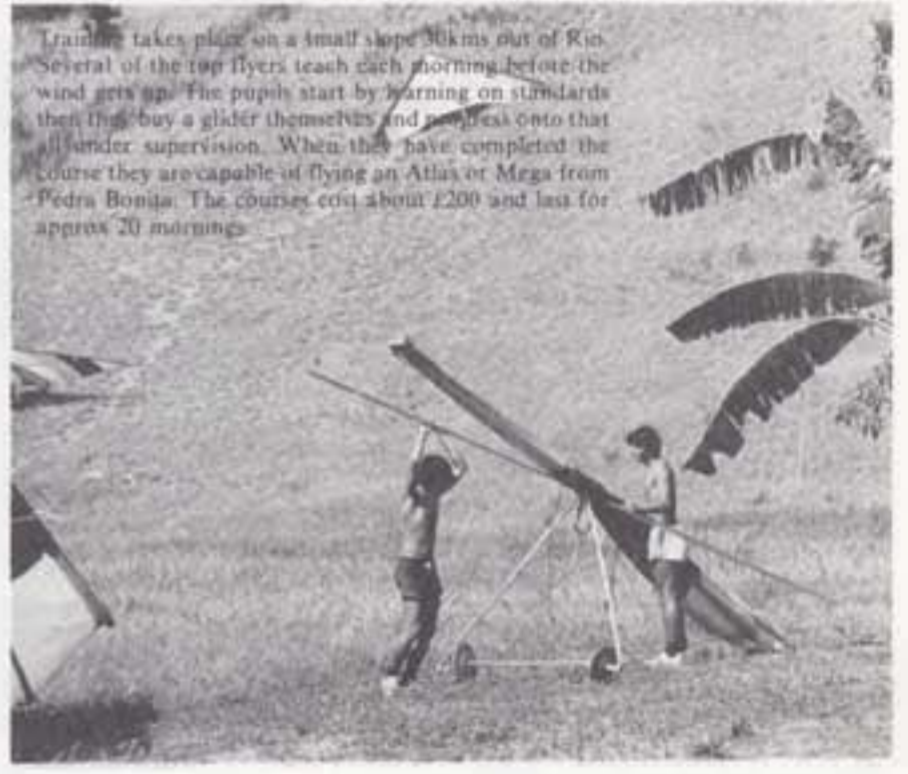
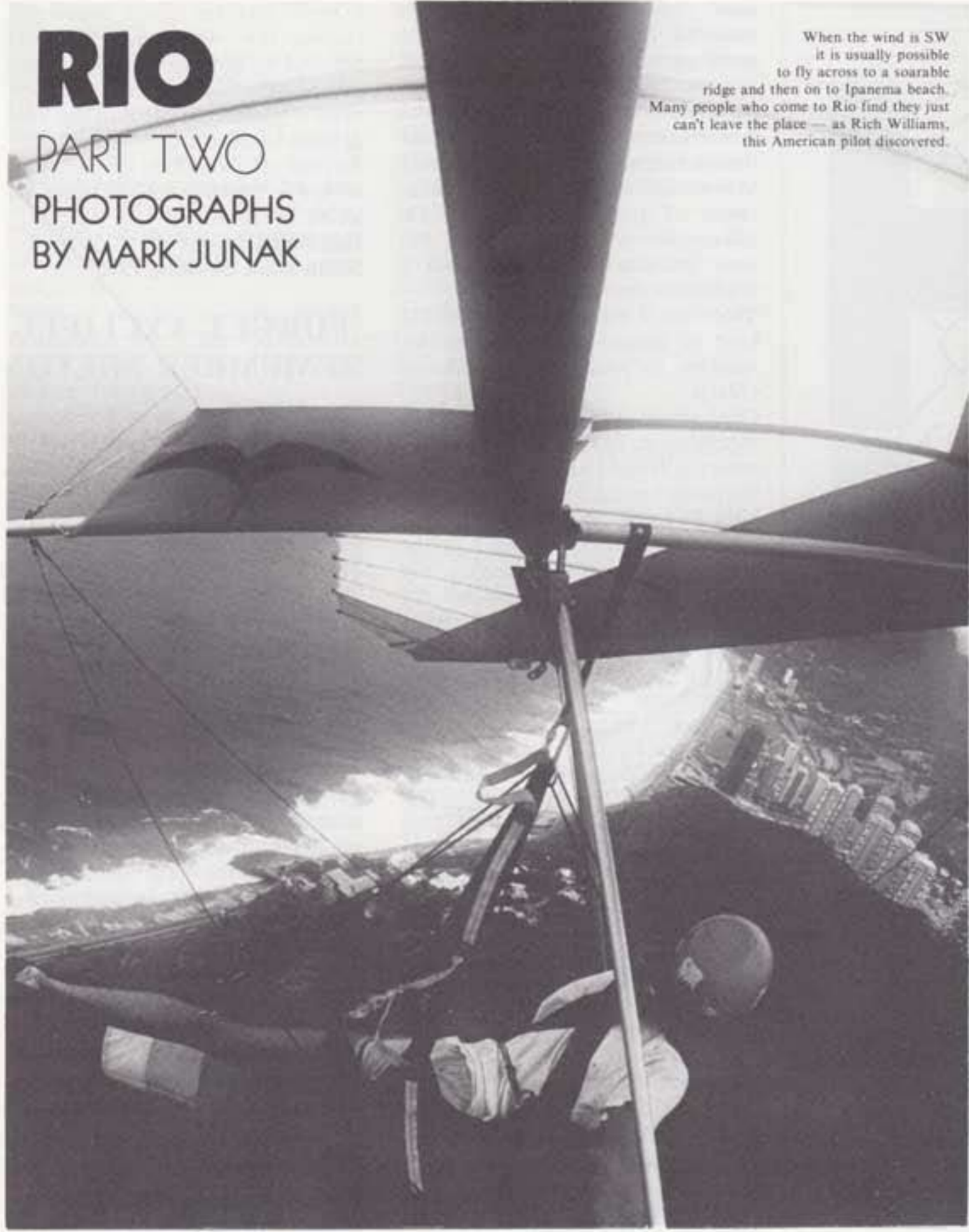
So, with possible reservations due to future troubles in the area, I don't think I could recommend a better place for a Hang Gliding holiday.



RIO

PART TWO
PHOTOGRAPHS
BY MARK JUNAK

When the wind is SW it is usually possible to fly across to a soarable ridge and then on to Ipanema beach. Many people who come to Rio find they just can't leave the place — as Rich Williams, this American pilot discovered.

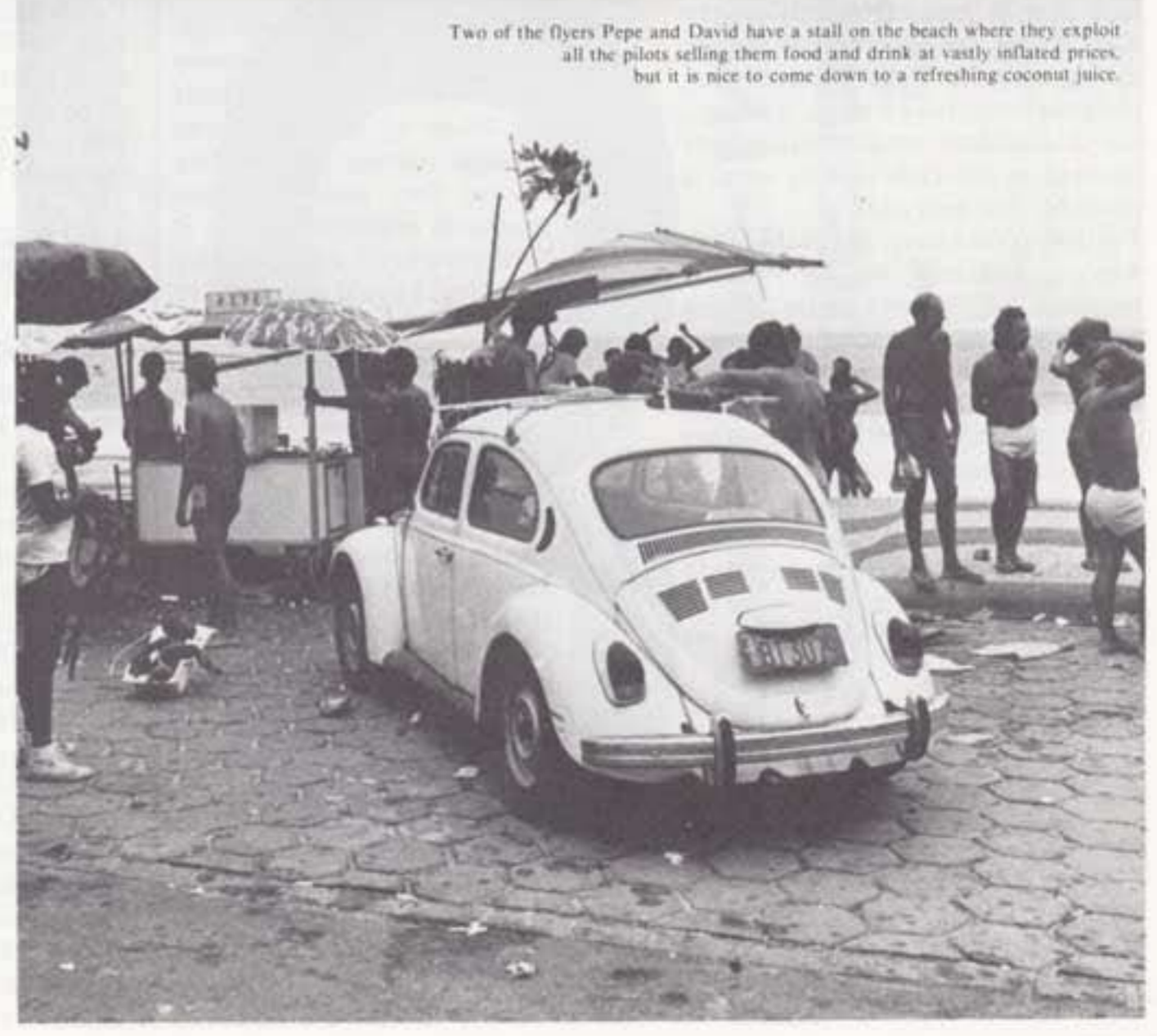


Training takes place on a small slope 30kms out of Rio. Several of the top flyers teach each morning before the wind gets up. The pupils start by learning on standards then they buy a glider themselves and progress onto that all under supervision. When they have completed the course they are capable of flying an Atlas or Mega from Pedra Bonita. The courses cost about £200 and last for approx 20 mornings.

Haakon Lorentzen, flying the same Comet that he flew in the 1980 American Cup, went on to win the Brazilian Nationals held at Pedra Bonita in December



Two of the flyers Pepe and David have a stall on the beach where they exploit all the pilots selling them food and drink at vastly inflated prices, but it is nice to come down to a refreshing coconut juice.



Letters



OUT OF BOUNDS

Dear Sir,

Several weeks ago (letter dated 11/6/81) a party of pilots from a number of universities about the U.K. arrived at Pendle Hill, near Clitheroe and held a hang gliding competition on this site. The Pennine Club is always happy to play host to visiting pilots, subject to the usual phone call which allows us to acquaint the caller with any rules or problems which exist on our sites. I regret that in this instance the club was not afforded the courtesy of such a phone call.

The result, of our not being allowed to indicate to these pilots areas in which they should land, was that a number of hang gliders landed in a field that is 'out of bounds' to the club. As yet, we have been fortunate enough not to have received any repercussions due to these landings, but this incident could so easily have resulted in the club losing what is probably our best site!

Further to the above, one of the pilots was approached by a Pennine member of many years flying experience and warned of the danger of flying his glider with a bend in the tubing of the control frame. The pilot sought the advice of another university flyer, and took no notice of what our pilot had said.

I, like many pilots, have benefitted from the advice of others and would hate to see the helpful attitude of fellow pilots change due to rudeness of others.

John S. Wood,
Secretary, P.H.G.C.

PROBLEMS!

Dear Sir,

I started hang gliding in 1974 using a Skyhook IIIA belonging to friends, then built my own Seagull III which first flew in March 1975. Although I made some slope-soaring flights of

around half-an-hour's duration, my log book shows a total of only 72 flights and 6¼ hours airtime up to August 1977, when I sold my second machine. The familiar problem of trying to synchronise free time and good weather was almost impossible. Many's the time I remember sitting on top of a hill when it was blowing 30+, raining and getting dark, saying to my companions, "Definitely dropping now folks, rain's easing off, too," as they shuffled around wondering whether to leave without me. My wife complained that I went off on Sundays when I should have been at home with her. Divorce was mentioned more than once, and after three weeks in hospital with a dislocated hip, after crashing whilst flying off a local sand dune, she said I had better call it a day.

I was by now disillusioned, not with all the aggravation, but with the poor performance of my home-built machines. When my Seagull III was new, it could outsoar all the bog standards (as they were then) but better machines appeared, almost it seemed every weekend, and soon they left me standing. I could not afford to buy one, and so I had the choice of building another or giving up. I made a crude attempt to copy a 'Cloudbase' in July 1976 but this ended up with the sail too small and it sank like the proverbial brick outhouse! After many futile mods to improve its performance, I considered myself lucky when I sold it in August 1977. Since then I have not flown hang gliders, but I joined my local aero club and after 13½ hours, over two years, went solo in a Cessna 150.

At this point I had to decide between continuing, to obtain my PPL or spending my, now somewhat increased, allowance on some other cost-effective aviation outlet. After much heart searching I gave up PPL flying and began the present period of self-imposed 'grounding'. This was in order to research all aspects of low,

slow, ultralight and preferably powered flight, and to hopefully come up with a design which would give me lots of good flying without hassle. I joined the BMAA as soon as it was formed and went to some of the fly-ins, but many of the microlights I saw seemed to be unsafe combinations of airframe/engine/control system. Some showed promise, but none combined all the features I considered essential.

Therefore, I concluded that I would have to design and build my own machine to satisfy my own design criteria.

I had, meanwhile, kept up my BHGA membership, to keep up to date with news via *Wings!*, and so that if I won the pools I could order the latest and hottest hang glider immediately! Although I looked forward to the arrival of *Wings!* every month, my excitement was always tempered as I reached the last page and realised that amongst all the gossip and hot air about people, places and competitions, there was almost nothing about the machines themselves. By this I mean the kind of detailed, well-researched and well-presented technical articles which one comes to expect in every issue of *Sailplane and Gliding*, and from which BGA members learn a considerable amount. I do feel that the new editor should actively canvass for material to improve the standing of *Wings!* as a journal of real technical merit — even to the extent of paying good money for consultant experts to write on selected subjects every month! (Ed. *One for you Stan*).

Quite apart from the above minor grumble, I feel that as my interests are no longer with hang gliding as such, that I must leave the BHGA and develop my own powered design under the umbrella of the BMAA.

I wish hang glider pilots all the "ups" they need, and hope that one day hang glider manufacturers will cease to be so bloody secretive about their precious new designs, and explain to the pilots who use them exactly how and why they fly as they do!

John Reece,
Liverpool

SOFTLY SOFTLY

Dear Mike,

It was brought to my attention recently that two powered hang gliders were seen in the air over Gloucester Park, Basildon, Essex on or around the weekend of the 30th May. According to eye witness accounts, the hang gliders "proceeded along Whitmore Way towards the 'Jolly Friar' public house at not more than 30 feet above the rooftops."

I mentioned this incident at a S.E.S.C. meeting but although the action of the people concerned was condemned, neither the Chairman, Fred Dash nor the Safety Officer, Russ Richings were prepared to follow this up, even though they suspected that they knew who the pilots might have been.

I hope that the pilots concerned, reading this, will realise that they behaved in a dangerous, illegal and irresponsible manner and will think twice if tempted to perform this kind of stunt in the future.

Anyone else who feels like breaking air law in South Essex had better not let me see them.

Rob Softly,
South Essex Skywing Club

FORGET AYCLIFFE REMEMBER MILTON

Dear Mike,

I have just been told of the latest shabby chapter in the Aycliffe sponsorship squabble, and I am left wondering just what kind of organisation I belong to. Mr Sponner's report on the affair has been completed; it has been heard 'in camera'; Brian Milton has been pronounced 'guilty as charged' and has been sent packing, minus his good name. WITHOUT HIM EVEN BEING PRESENT. Did those concerned forget to invite him? Were they afraid to tell him to his face that he was out, or were they afraid he might defend himself vigorously and put them down in the process, OR had he made too many enemies along the way for them to give him a chance? Were he 16 times guilty, Milton had a right to present his defence, and a right to be present when sentence was passed. Is he now also to be denied the right of appeal? How ironic that during the tenth year of Hang Gliding in this country, BHGA has contrived to cast from the battlements the one person who has done so much for the sport nationally and internationally, and I am sure is motivated and poised to do infinitely more.

Are we hang gliders such small-minded people that we have to behave in this petulant manner because the glittering Aycliffe prize has been snatched from our greedy fingers? Are we going to stand by while Council allows itself to be a party to the selfish disappointment of the people initially involved, and heaves internally until it spews up a sacrificial scapegoat, who is then despatched most hastily and clumsily? Or would we rather be members of a democratic organisation prepared to judge fairly, wisely and benevolently, and above all with the good of the sport and the interests of the membership at heart.

I say let the miserable, mythical, pipe-dreaming sponsorship deal with Aycliffe be forgotten. I say that Brian Milton should not be treated in this way because he failed to bring it off. He should not be pilloried for requesting a 'fee' that he was never likely to get — in any case a paltry sum in advertising terms, and a sum that he would most certainly have earned! I say that the BHGA should stop all this agonising, should recognise that it does them no credit, and that we cannot afford to lose a

man with Milton's track record and his potential.

I have not spoken to anyone in the North at club level who thinks the BHGA are justified or well advised in what they have done, and I cannot imagine that even those directly involved think the BHGA are justified in the way they have done it. This affair should not pass unnoticed, the outcome should not pass unchallenged.

Please, if you feel as outraged and frustrated over this distasteful episode as I do, then raise your voice for an extraordinary meeting and an explanation as to why we are losing (or have already lost) one of the strongest, most effective voices in our sport.

This is a sad anniversary indeed for British Hang Gliding.

Len Hull
Sheffield

WHO ARE WE? . . . WHAT DO WE STAND FOR?

Dear Mike,

A long time ago, Brian Milton wrote about how the league would benefit all flyers, indirectly, if not directly. In the meantime, sparks have surrounded him. That is what you get for being right, when surrounded by others of lesser vision. His vision is not perfect or he would have seen what was coming to him — but who can see everything?

He thought there was something wrong with me when I retreated to a safe position after I got the BHGA to agree to publish the Sites Guide. (Sic., and not without effort.) What a strange bloke for not standing there to be kicked in the teeth!

He thought they would like him for doing something they could not do themselves. And he is not the only disillusioned person now, which leads us to a problem: how to get somebody as effective as him to take over, if we cannot get him back. All of which makes us look like children, because the BGA faced this problem right from its inception. All right, we need people who are prepared to do some work, but it all comes to nothing if at the end of the day we do not know who we are and what we stand for. Waving a little flag is no apprenticeship for waving a big stick. When the votes are cast in future, let us hope that a good lesson has been taken in: the people with the closest feel for hang gliding are the best hang glider pilots.

Barrie Annette,
Isleworth.

FLOATING HANG POINT

Dear Editor,
Whether you be Brian, Mike or Stan, I'd like to point out that what Daedalus calls a 'gadget' in the June edition of Wings! and what should be

called a *floating hang point*, is, from my point of view, one of the most important inventions in hang-gliding technology — as important as floating X-booms or keel pockets. The first manufacturer, open-minded enough to accept, digest and integrate it into one of his designs will definitely achieve one more step forward. Therefore I'd like to credit the inventor **Jean-Louis Darlet**, who was incidentally, one of the French team members at the recent Bleriot Cup Competition.

Hubert Aupetit
France

Ed. Hubert is editor of the French H.G. magazine — Vol Libre.

FACE THE FACTS

Dear Sir,
Ian Walker has some controversial things to say in his article AU NATURELLE (June issue, page 11) but his thesis that HG pilots can find thermals BETTER without a vario than with one is simply not true in practice. I speak as a Pilot 2 and as a Bronze C sailplane Pilot with some thermal experience in each type of glider.

The fact is that an experienced pilot, who can get a good idea of his lift or sink rate from observing the ground, can certainly thermal quite well in strong thermals. When high (say over 2000ft AGL) or in weak thermals a vario will give a very much better indication, particularly of areas of steady sink/lift.

He has not got all his facts right, either. As a generalisation, on a thermal day about one third of the air will be rising strongly in thermals. The other two-thirds will be sinking, i.e. SINK can be expected between thermals, often increasing strongly near to them, NOT weak LIFT changing to strong sink. His chimney thermal is a novelty too, bearing in mind that what goes up must come down, although it is true that thermals come in many forms.

His stated method of centring bears some resemblance to the best advice I know on the method of doing this by feel which is: flatten the turn (e.g. to half the angle of bank) until the vertical *acceleration* in the lift surge has ceased, then tighten it again. It is simply not true that the glider will centre automatically — unless it is already well centred in a good, regular thermal. I recommend study of the article "Using the Thermal" by J. S. Williamson in a pamphlet "Cross Country Soaring" published by the B.G.A., in which the above advice is given, for use by very experienced pilots in speed tasks.

Despite my comments, every attempt to discover new ways of flying is to be welcomed, for flexwings may indeed behave differently to other gliders and there is much to learn. However, if you want to stay up — take your vario with you!

Mike Collis,
Gosport

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Best of the Clubs

TAKE-OFF . . . (DOWNWIND)

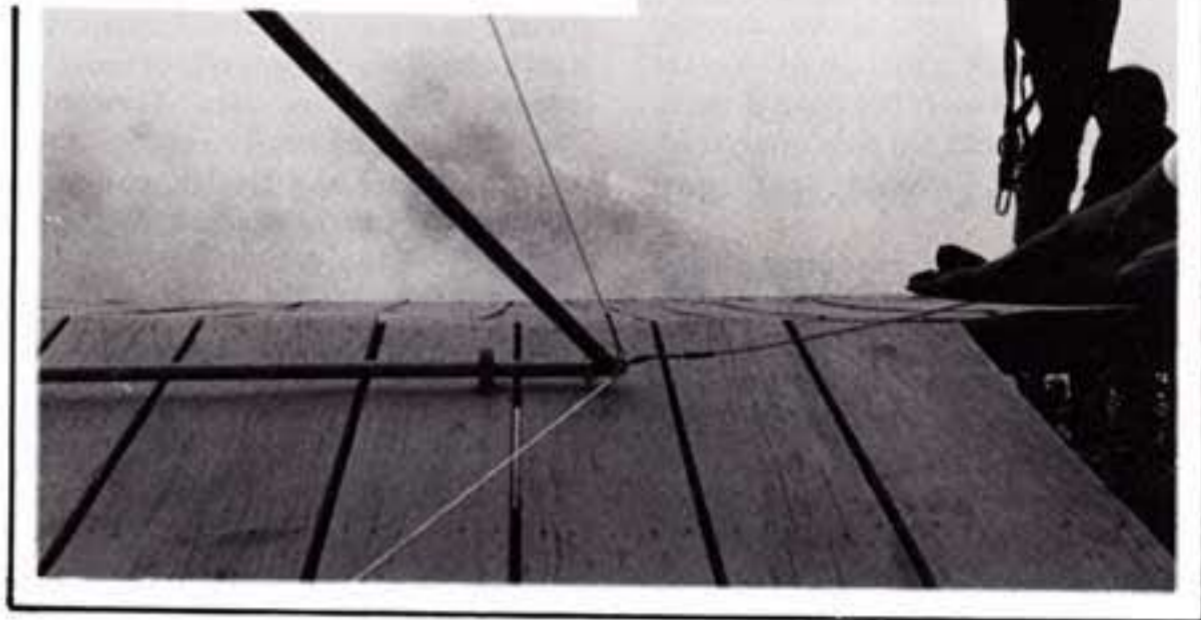
By Andy Wiseman

On holiday in France, at Saint Hillaire Du Touvet near Grenoble (scene of the 1979 World Championships) we went straight to look at the specially built ramp take-off on arrival. It was about 6ft wide, 10ft long and at an angle of 70° — it looked horrific! Myself, Paul Kavanagh and John Doherty sat up until 3am with a bottle of Bacardi, discussing how we would make a ramp take-off. I personally hoped I would never get brave enough to try it.

The next day we checked the other take-off, a grassy field, dropping at a nice angle about 100ft to the rock face, dropping vertically 2500ft to the valley floor and wind socks all over the place. I felt reborn. We had several enjoyable flights, travelling back to the top on the funicular railway.

We had heard in the early evening, with the drop in temperature the movement of air, reversed blowing down the sides of the valley, pushing the air in the middle up. Excited with the thought of flying up and down the valley for hours, we were ready and waiting at 6pm and we did not have to wait long before we saw the wind socks change direction and point down the hill.

It was then I realised a slight problem with this catabatic lift — the take-off. Paul and John started to talk about the ramp. I had to move quick, I carried my kite over to the take-off point and stood there watching the wind sock pointing away from me. That was when I noticed a growling sound from just behind me. John was holding back a wild looking dog, it was scratching one of its paws on the ground, like a



Spanish bull. I decided it was time to leave. I picked up the kite, it was very heavy, at this point; John said he couldn't hold the dog any longer before it bit his hand off. I tried desperately to accelerate, encouraged by the dog hard on my heels. I kept running for what seemed like forever; eventually the ground dropped away steeper and I committed aviation, rather slowly. I

was not sure what to expect as I flew over the cliff edge. My vario sounded 2 up, I chose to pull speed and ignore it — from then on it read between 2 and 7 down all the way to the landing field. I was the first in the field; within an hour 20 kites had landed.

Well, I pondered, at least I'm not the only one to fall for this catabatic lift yarn!

LANDING . . . (IN THE DRINK)

By Richard Iddon

During last year's Lorian Triangle competition in the lake Como region of Northern Italy, several members of the British team, including myself, were asked if we would join with some local fliers who were doing a demonstration flight from a 4000ft hill, over several of the lakeside villages whose communities had helped to sponsor the event. This sounded great until we were told that there were no dry landing places and we would have to land in the lake! We were very reluctant at first but after some gentle persuasion from the local

fliers, who make water landings regularly, Mark Southall and myself agreed to join in.

There were plenty of rescue craft around the landing area and it turned out to be a great experience. In fact we enjoyed it so much that later in the week, when the locals were making another demo flight, the whole of the British team joined in.

From my experiences in the water, it seems to me that the main points to watch for if you are contemplating, or are forced to make a water landing are as follows:

(1) DON'T PANIC! This is by far the most important thing. As long as you take it calmly you will have plenty of time to unclip and swim clear of your glider. A conventional glider with cross booms (I was flying a Solar Storm) will remain afloat, unaided for about five minutes. Dick Brown was flying a Sigma, a crossboomless glider, and we noticed that this began to sink much more quickly. There was, however, still plenty of time for him to get clear.

(2) Use a non-screw gate carabiner or unscrew the gate fully. It is possible, by swinging out of prone, to reach up and unscrew the gate whilst still in flight. It is a good idea to practice unclipping from your glider with your eyes closed occasionally. (On the ground of course).

(3) Landing. When approaching the surface do not look directly below you as it is difficult to judge your height above the water by looking straight down into it. It is much better to watch the shoreline or concentrate on something floating on the water close by. Make a normal landing approach but **flare out extra hard so that the glider enters the water keel first** and with little or no forward motion. This method seems best as it traps a pocket of air under the sail. With any other landing approach, the control bar hits first and tips the glider nose down into the water, making it more difficult to unclip and causes the glider to sink faster.

(4) Harnesses. A harness with closed cell foam type padding will provide a little bouyancy but it is difficult to swim in a harness. If you have to swim a long way I think it is better to get out of it.

(5) Do not attempt to tow your glider to shore unaided unless you are very close. It is almost impossible to drag it through the water. We watched one guy struggle for about 20 minutes to drag his glider 10 feet to shore.

We all agreed that, although it is not something you would want to do if you could avoid it, there is nothing to be worried about in water landings as long as you take it calmly — that is assuming you can swim!

Happy Landings.



'In the lake', photo Mark Junak



Richard Iddon photo by Mark Junak

LORIANO TRIANGLE 1981

By Michel Carnet



Take-off from Mt Bollettone 1300m.ASL. Photo by Giorgio Loviscek



Jo Binns takes-off in his Demon. Photo by Giorgio Loviscek

From the 8th to the 14th of June a competition took place in the north of Italy, in the mysterious triangle of Lariano. It is situated at the extreme south of the Alps, just touching the plain of Po, the greener and richer part of Italy.

It was a cross-country competition, arranged by the Delta Club Como, for 30 pilots. This is the second year that this competition has taken place. The B.H.G.A. received 5 invitations for British pilots and many league pilots were interested in going, but the fourth league finished on the Sunday evening and the Lorian competition began on the Monday morning, so...

Hiway jumped at the opportunity to send 4 of their pilots: Jo Binns, Bill Payne, Brian Harrison and Alan James. I was able to attend the competition by going straight from the league on Sunday, missing only the first day, the Monday. After a journey of 48 hours, I arrived at the hotel, in Erba, situated at the base of the site, Mont Bollettone, 3300' (A.L.L.) above lake level.

Bill Payne was in the lead from Monday, flying 15km, when the average distance for the other pilots was only 12, so he was in high spirits, but fog covered the mountain and the valley, on the Tuesday, and the site director called off the competition for the day.

Wednesday dawned with high pressure persisting but the conditions were a little more unstable. There was a very light westerly wind, so pilots chose to go east; except for Jo Binns and the Swiss pilot, Briod, who chose to fly west! Jo travelled only 8km — Briod saw Jo's mistake and managed to get back to the original take-off point and followed the other pilots east, making a creditable 21.3km for the second-best flight of the day.

The challenge, for the pilots, was to leave the triangle, but it was not so easy. Two sides of the triangle were bordered with lakes (therefore no thermal activity) and the other was the plain, which was very stable. The best distance which could be achieved within the triangle was 15km.

Thevenot (X-Ray) flew the best distance of the day with 40km, double that of Briod (Pirana), followed by two German Fledge pilots Hartl and Olschewsky with 21km apiece.

One of the biggest problems of the competition was the lack of suitable landing areas, so football pitches and large gardens, etc. had to be used. As you can imagine, your approach had to be well prepared and precise. Another Swiss, Haroutunian (Comet) landed in the grounds of a Mental Hospital and had quite a problem explaining where he had come from!* Thevenot landed on the side of a mountain, one day, and the field was so steep that he ground looped two or three times backwards.

On Thursday the conditions were similar to Wednesday and everyone 'went for it'. Nicoli (Comet) flew

54km, for the best distance of the day. Thevenot surprised everyone by landing inside the triangle, doing only 14km. I managed fourth place with 21km and after landing, I phoned the recovery number — before I had packed my kite, the car had arrived. I was amazed by such good organisation; there were about 10 cars for 30 pilots.

Friday brought the same, stable, conditions but cloud-base was easily reached at 4000 feet. There were no good distances on this day, though. In a desperate plight to leave the triangle, Jo Binns flew across the lake, at a frightening height, just managing to reach the other side, pushing out at the water's edge, to land in a space where three gliders could not be rigged. Reichhoff, the Austrian (Demon), landed in a convent and broke his glider, whilst Thevenot surprised us again with only 8km.

On Saturday, the last day of the competition, the best flights were made. Cirila (Mega III) 74km, Reichhoff 64km, Thevenot 38km, Briod 37km and Alan James (Demon) 32km.

Alan wouldn't tell us how or where he landed, but apparently his glider was in pieces. We found out later that Thevenot and Briod landed because of a very close storm, whilst Reichhoff and Cirila were both pushed along by the same storm.

Sunday was free flying at another site, followed by the prize presentation and a huge Italian meal. 1000, 750 and 500 dollars were given to the three top pilots. Everyone then returned to their respective countries, after thanking Tony Masters for such an enjoyable and well organised competition. Finally I would just like to add (to everyone's delight) that hotel and restaurant charges were paid for by the Delta club Como. Needless to say, I hope to be there again next year.

*John Hammond, a pilot from the Sheffield HGC landed in the grounds of a Mental Hospital after a 20 mile XC. Ed.



Marco Cirila with his Mega III. Photo by Giuseppe Girola

RESULTS

		Mon 8/6	Wed 10/6	Thur 11/6	Fri 12/6	Sat 13/6	TOTAL	
I	Cirila, <i>Mega III</i>	14.0	10.4	13.0	20.0	74.0	131.4	1st
I	Nicoli, <i>Comet</i>	6.2	17.5	54.0	18.3	25.5	121.5	2nd
A	Reichhoff, <i>Demon</i>	7.2	17.0	17.6	12.5	64.5	118.8	3rd
F	Thevenot, <i>X-Ray</i>	10.0	40.6	14.7	8.0	38.0	111.3	4th
A	Lorenzoni, <i>Demon</i>	14.0	7.0	48.0	7.3	21.0	97.3	5th
GB	James, <i>Demon</i>	10.0	18.7	7.2	17.8	32.5	86.2	6th
GB	Payne, <i>Demon</i>	15.2	15.7	17.9	15.0	21.8	85.6	7th
D	Baier, <i>Fledge</i>	2.0	18.2	14.0	15.0	31.8	81.0	8th
D	Olschewsky, <i>Fledge</i>	14.0	20.9	14.0	17.8	14.0	80.7	9th
CH	Haltiner, <i>Firebird</i>	13.3	7.3	13.0	17.8	29.0	80.4	10th
GB	Binns, <i>Demon</i>	10.0	8.0	38.7	13.8	8.5	79.0	12th
GB	Carnet, <i>Typhoon</i>	—	15.7	21.0	14.5	18.8	70.0	15th
GB	Harrison, <i>Demon</i>	13.4	8.8	13.4	10.2	21.8	67.6	18th

All distances in kilometres

I=ITALY, A=AUSTRIA, F=FRANCE, GB=GREAT BRITAIN, D=GERMANY, CH=SWITZERLAND

STRUCTURAL TEST RIG

By Len Gabriels

Firstly, our reasons for doing load testing this way rather than the more usual static load tests.

Hanging a glider upside down, suspended by the pilots hang point and filling the sail with more and more weight until something breaks sounds simple enough. Why bother with another method which apparently needs a piece of expensive equipment i.e. a test vehicle, and a long runway, neither of which is readily available?

There is a tendency to think that it is necessary to have a sophisticated test vehicle for dynamic testing. For pitch and performance data that is so.

The B.H.G.A. test vehicle was, I believe, originally expected to perform full load tests as well as its main function of producing the aerodynamic data, however recently it appears that this would not be possible so we seemed to be stuck with static tests. I recollect that Miles Handley did the first static tests several years ago using ordinary builders bricks to load the sail with. The glider was a total write off with lots of holes in the sail.

When we did our tests on the Sunspot we had a brilliant idea, or so we thought, and used water filled plastic bags to spread the load on the sail and avoid making holes in it, the idea being that we wanted to test fly it afterwards to see if sail stretch had altered anything. The idea worked and we did fly the glider, after replacing a broken cross boom, but abandoned this method for subsequent tests.

Because of the risk of water leakage we did the test outdoors, unfortunately it was freezing cold, drizzly weather, it took ages to fill the bags, they sprang leaks and tried to roll all over the place and generally made life difficult. It took all day.

The next tests were done indoors using hundreds of sheets of cardboard which are available to us from an associate company. These spread the load nicely without damage to the sail, and weren't hard to keep in position. This method has been fairly satisfactory and has been used to load test all our subsequent gliders until we came to our Sabre which has an enclosed cross boom.

Static testing then became a bit impractical because of two main problems. One is that if the sail is loaded in the normal way, the cross booms, being inside the sail, are subjected to bending loads because the load is placed directly on top of them. This load applied at the same time as the usual compressive load could lead to early failure.

To avoid this it would have been possible to arrange for the load to be attached underneath the inverted glider i.e. to the top surface, or alternatively placed inside the double surface below the cross boom.

The second problem is that the cross boom might then be subjected to little or no bending load (whereas in flight it would be subjected to some as the sail tried to billow more with increased load). Either of the last two methods would require a special sail making.

The result of normal static testing depends on how the load is distributed. If it is placed too far out to the tips or too near the trailing edge, premature failure would occur. If placed too near to the keel and nose, one could apply a greater load than the glider would stand in the air and a lot of judgement had to be used to distribute the load in a hopefully realistic manner.

At best it gives an approximate result with earlier type gliders. With the added complication of an enclosed cross boom we felt that static testing was no longer a valid method and of course the floating cross boom is the item most in need of testing and least likely to be proved by a static test.

As a matter of interest, our Silhouette, Cutlass and Sabre share virtually identical geometry and construction and because of load tests on these previous models we were happy about the strength of everything except the floating cross boom.

We did evolve a method of testing the cross boom by itself but we still wanted proof of what would happen in flight in a severe overload situation.

We became totally convinced that we had to do a dynamic test and once we became convinced of the need for it, found a way of doing it which would



apparently not be very difficult.

We borrowed a trailer and tow car, courtesy of Terry Silvester Motorcycles, and attached a skeleton of one of our trike units to it, clamping the trike to the trailer. The glider was attached to the top of the trike in the normal way (and on our trike the glider attaches by a bracket to the normal pilots hang point so that the load would be applied at the correct point).

Concrete blocks were attached and we checked the weight by lifting it all by the glider attachment point whilst the trailer was connected to the ball hitch of the tow vehicle.

At the airfield we removed some of the weights for the first run down the runway and put them back slowly for subsequent runs until eventually we had the full load on.

At the full weight we had to drive at approximately 70 mph airspeed (50 mph ground speed into a 20 mph head wind) to achieve lift off.

We achieved a lift of over 1600 lbs and subjected the glider to an estimated 250 lbs of drag (and as drag is not applied during static tests, this is another good reason for doing dynamic tests).

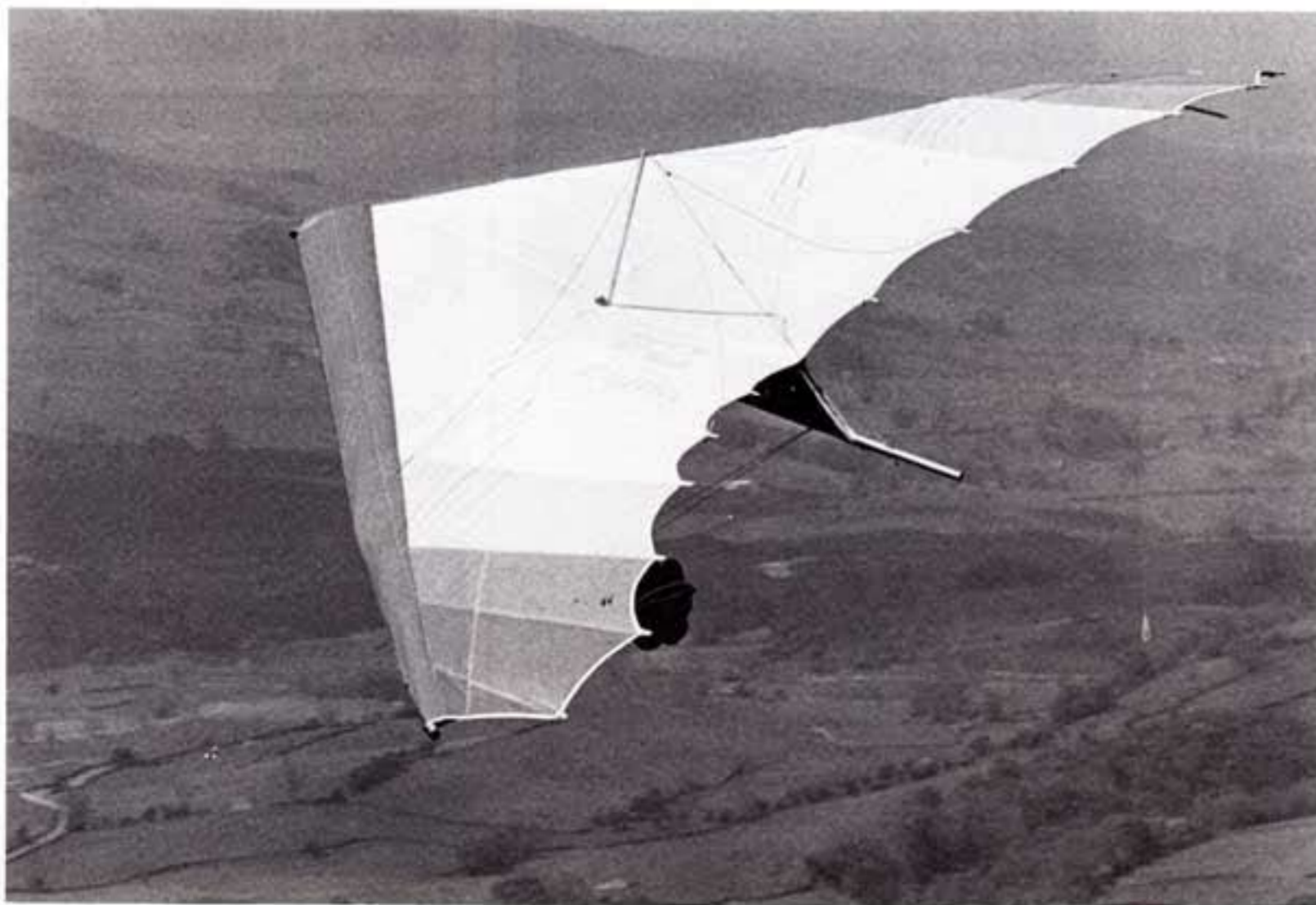
As expected, various problems were encountered. We had to go a lot faster than we would have thought necessary, partly because of load shedding at the tips, no matter how high an angle of attack we used. Because of this most of the lift (and drag) appeared to be generated by the centre of the glider which would be moved forward in front of the attachment point of the glider and nearer to the ball hitch. This would increase the load felt by the glider as it tried to lift the tow vehicle. The distance from the attachment point to the ball hitch was 75" so a forward shift of the centre of lift of say 15", would increase the load by 25%. As we have no way of making a reasonably accurate estimate of the effect of this, we have ignored it, but it is probable that the glider picked up much more than the calculated load.

As the L/D ratio of such a distorted wing would be no better than 6:1 we estimate the drag to be at least 250 lbs.

As we did this test for our own satisfaction and peace of mind, it is perfectly O.K. from our point of view not to have instruments and to rely on observation and calculation to assess the results.

I believe however that this method is worth developing as a way of load testing all new designs to a common standard using a purpose built trolley, sufficiently instrumented to give visible readouts which could be photographed for record purposes. Such a trolley need not be too expensive or complicated.

Len Gabriels
Skyhook Sailwings Ltd



Sabre

photo by Mark Junak

WINTER AIRSPEED INDICATOR FOR HANG GLIDERS

By F. G. Irving,
Imperial College,
27.3.81

Tests have been carried out in the 20' wind tunnel at the Department of Aeronautics, Imperial College, London.

The instrument appears to be of adequate accuracy: indeed, it is very good over the range 32-48 mph. It is also fairly insensitive to the effects of incidence and sideslip up to large angles.

(It was not possible to achieve sideslip angles greater than 20°).

Possible improvements would be:

(a) The provision of more than one pressure-tapping hole at the venturi throat to reduce incidence and sideslip errors.

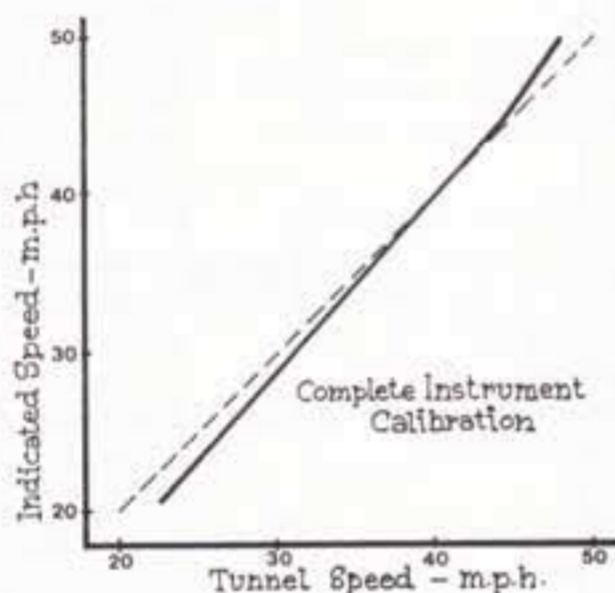
(b) Adjusting the calibration of the indicator to take into account the changes of pressure coefficient with speed.

The 'static' pressure applied to the indicator is presumably whatever pressure occurs within the box which surrounds it. The use of such large suction from the venturi means that errors in static pressure are markedly

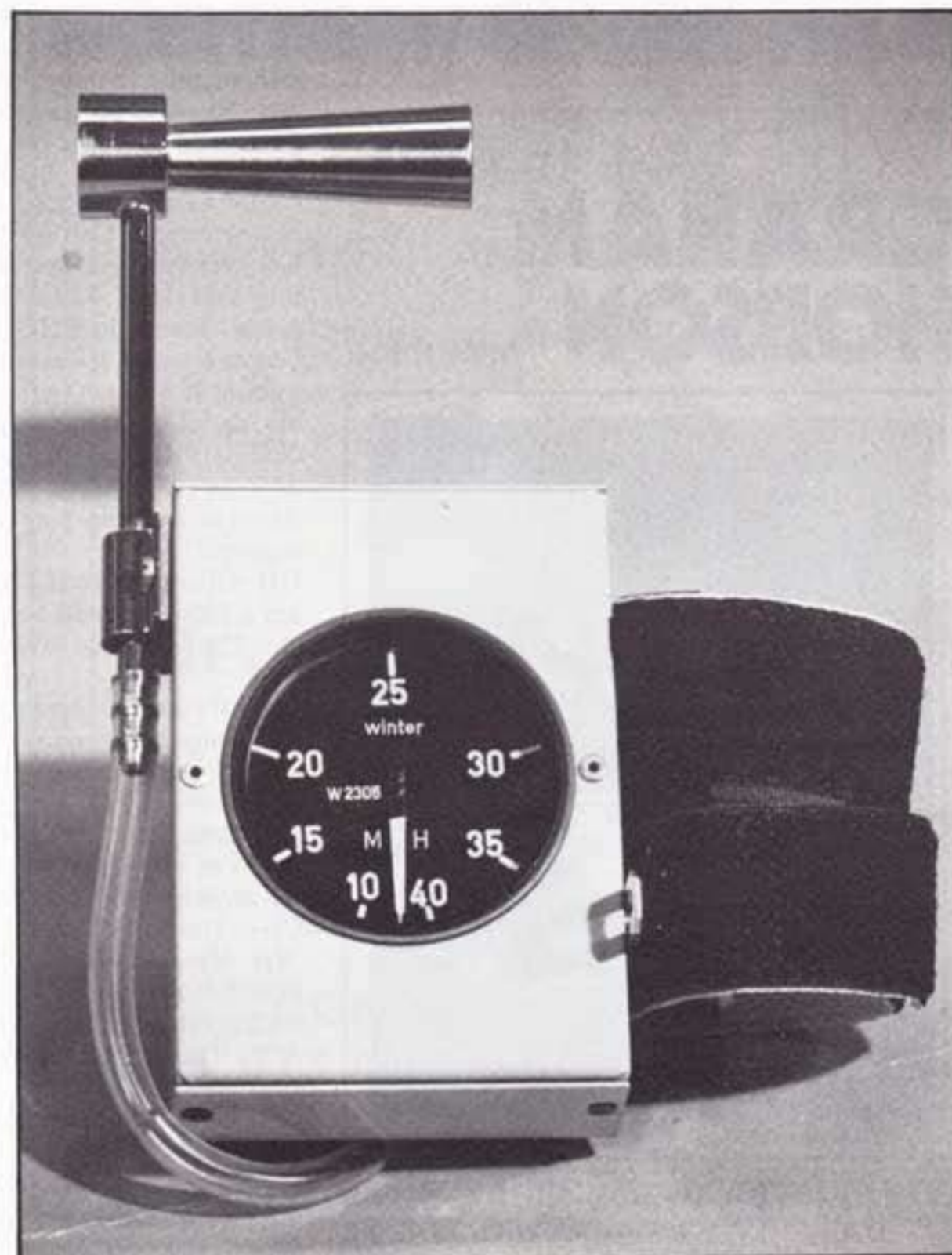
less important than in a normal pitot-static system. For example, if the pressure in the box were $(P_s + \frac{1}{4}q)$ instead of P_s , the error in indicated speed would only be about 3%.

In general, it appears to be a good practical instrument.

It does suffer error at very high incidences (usually reading low) as do all ASI's, but kept well out of the slipstream, it's a very good, steady reading ASI. The odd faulty Winter has slipped through, but the suppliers are quite happy to change an unused one — now available in a 50 mph version.



... you're not going to believe this but ... during this year's XC Classic a pilot (British?) has his nose pecked by an eagle ... Andrew Wilson is reported to have performed an involuntary loop! ...



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INTERVIEW WITH GRAHAM HOBSON

Mike Hibbit



PART TWO TRANSCRIBED by BOB FISHER

MH: In 1979 you were flying in the Bleriot Cup in France when you were suddenly dropped from the team. The reasons behind this move were not made clear at the time. Could you tell us what happened?

GH: Well, the situation was — the competition was on in the South of France and there was a British team sent out there. I was in the team — but I went independently, under my own steam, with my own money, because I had in fact booked a holiday in the South of France prior to hearing that there was to be a comp. on there. So, because I was going anyway, I said “yes — I’ll be in the team.”

When I got there, the French didn’t have a team: there were only three Frenchmen. There was even talk of them ‘borrowing’ some of our pilots, and because I was there with a group of my friends, I thought “well there is no point spoiling my holiday for this competition which I thought was a Mickey Mouse affair.” I was under tremendous pressure from the people there who wanted me to fly, but I didn’t. Now, some people said it was selfish and intolerable that I should do that, maybe, but I didn’t think it was, remembering the state of the competition, as it was then, although it did become better organised later. I just didn’t see why I should spoil *my* holiday, which was at my expense, for (pause) nothing.

When I got home, everyone on the competitions committee was up in arms about it; that I had refused to fly and stopped someone else from going out there, but I can’t see how that was the case when, as I say, I was there under my own steam, in my own van. I certainly didn’t take any money from the BHGA for it.

As a result I was dropped from the team for the World Championships at Grenoble, later that year. The reason, they said, was not as a punishment, but that they couldn’t be sure that I would take such an important competition

seriously, which from my point of view was ridiculous because that was a properly sanctioned, well organised competition with a lot of people there and there was no way that I would have let the BHGA down under those circumstances. They said that they had considered my previous record — and the best example of that was the first American Cup when I worked my tail off, like everyone else, and came third — and yet, they said that I was unreliable.

I don’t blame the BHGA for the fact that some people thought I was wrong and that I should be punished; it doesn’t affect me, and won’t affect me, and if the same situation arose, I would definitely do it again.

MH: In other words — if it hadn’t been such a fiasco at Lachens, you would have given your full support?

GH: Of course! In the light of what happened, I am a bit wiser and I suppose in that particular case I shouldn’t have agreed to compete *before* I went.

MH: We were talking earlier about XC and the possibility of 100 miles in this country. Now Owen’s Valley is considered to be the place for world records. Do you go along with this or do you think there are other places . . .

GH: I’m sure there are other places, but I can’t see anywhere else that would be as likely as Cerro Gordo.

MH: Have you flown in Cerro Gordo, yourself?

GH: No, the nearest I have been is flying in California, near Los Angeles.

MH: Would you consider going to the Cross Country Classic?

GH: I would consider going, certainly, but I don’t believe I would be able to because I have too many other commitments now. I am not quite so willing to go out there because (pause) to be fair, those sort of conditions scare me a little bit.

MH: There are other British pilots who feel the same way about this area, so although you have never been there yourself, you presumably go along with what they have told you and feel that it is, perhaps not your ideal type of flying?

GH: No. If I was there all expenses paid and I was under competition stresses . . .

MH: You feel you might push yourself beyond the safety limits?

GH: Well, yes, because you definitely feel that pressure and you ‘go for it’ more than you would normally do. I certainly wouldn’t mind flying out there under normal holiday conditions, because from what John Hudson tells me, it sounds marvellous.

MH: What are your feelings about hang gliding over the next ten years? Do you think that powered microlights are going to come more into the scene and overshadow hang gliding?

GH: No. I think there will always be about the same number of true hang glider pilots. I have done a lot of powered flying — triking — now, and there is no way I would change one for the other. They are two sports which are closely related and can live side by side.

What does worry me a bit though, is that I’ve noticed so far, and I think it will increase, that we are getting people coming into microlighting who have not had any hang gliding experience and therefore they don’t have the understanding and consideration for people that the hang glider pilot has grown up with. Microlight flying is more akin to hang gliding than to any other type of aviation, so we are used to the problems they are likely to encounter, but people without a hang gliding background aren’t used to those problems and they might start causing trouble.

MH: What sort of problems?

GH: Flying low over houses, causing problems with other people, outside the sport — things we

are used to because we’ve been dealing with it for seven or eight years. They have not — they have no background of having to negotiate for a site, having to keep the people happy who live near and if they are not careful they might . . . what I am saying is that I would like to make sure that people like that, who come into the sport are under the control of the B.M.A.A.

MH: So, you don’t think that hang gliding per se will be subdued by the wave of microlights that seem to be sweeping this country and America at present.

GH: In general, it is the hang gliders who are going to the triking, so maybe there is no such thing as a purist hang glider pilot. Certainly, I am as much a hang glider pilot as I ever was although I fly regularly on a trike. I have discovered it as a *new* sport.

MH: Can we talk about aerobatics now. As you know, in the south there seems to be a vogue for people trying to out-hoolie one another. What is the situation in your area?

GH: Well, I noticed you said in the south, because in the north, it is not very prevalent at all. Flying is more orientated towards skill and going XC and there are very few people I know who hoolie in a way I would regard as dangerous. I certainly don’t like doing it. I like to fly as efficiently and economically as I can.

For the sheer exhilaration of being in the air. I sometimes like to do gentle hoolies. With modern gliders, and executed properly, near 90 degree wingovers are not dangerous. If you start going over 90 degrees or start pushing it, or trying to prove something to people, then that is the big danger and I think you have to be careful of that.

MH: What are your other involvements in hang gliding other than competitions and running a school?

GH: Well, the school is totally separate from Northern Glider Sales. I am a member of the Sheffield Club and the Pennine Club.

MH: You have never been involved in manufacturing?

GH: Well, all through my career I have been involved. I have worked in America with Bill Bennet on research and development. I helped Paul Maratos a lot on R&D and I built gliders for him and Len Gabriels, in the beginning, but I have never wanted to manufacture gliders — I don’t think my talents lie in that direction.

MH: Finally, do you have any personal goals that you would like to achieve within the next couple of years?

GH: As far as hang gliding goes, I have no major goals or ambitions. My aim is, to be allowed and able, to continue doing what I have been doing for the last seven years — flying hang gliders.



Photo Adrian Whitmarsh

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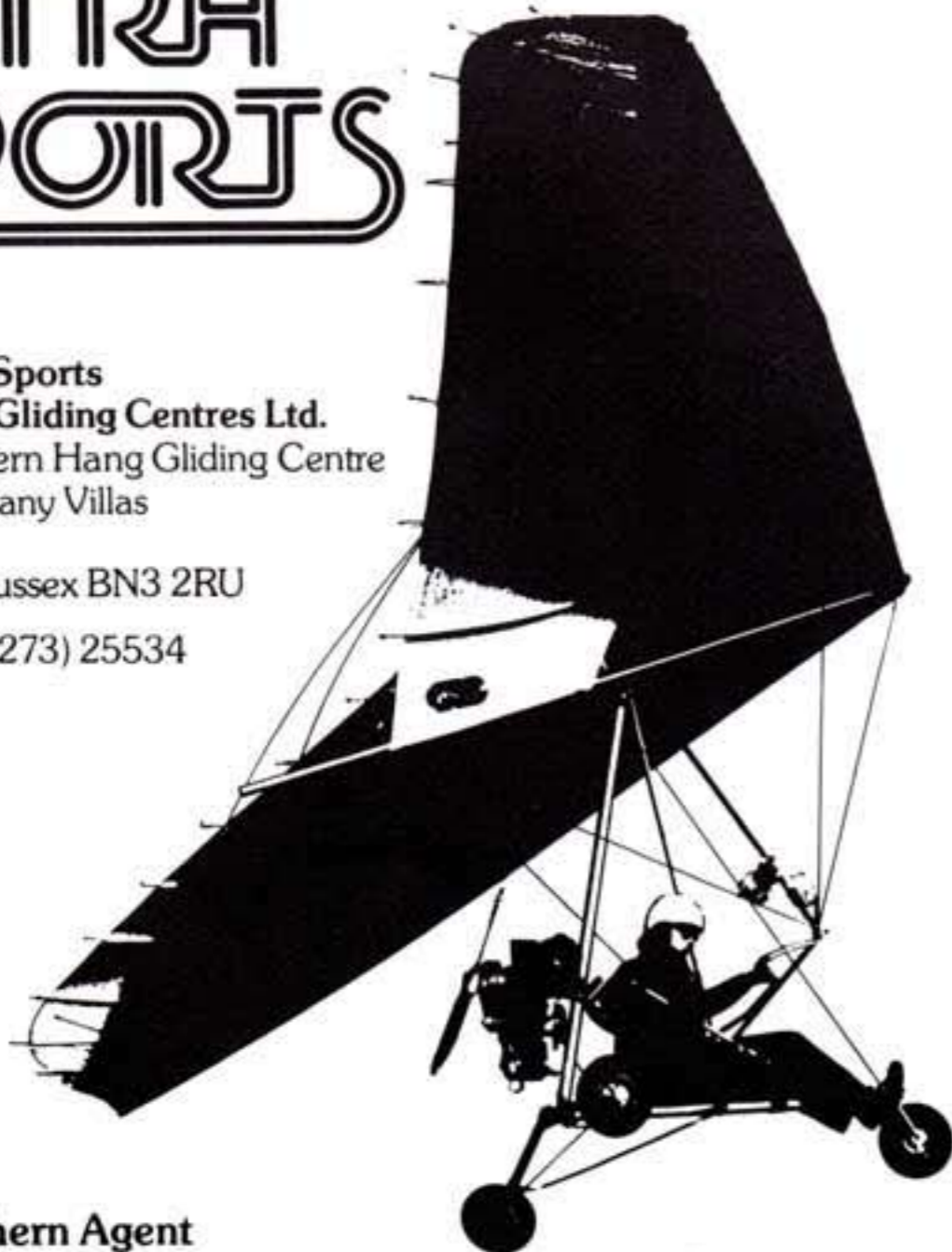
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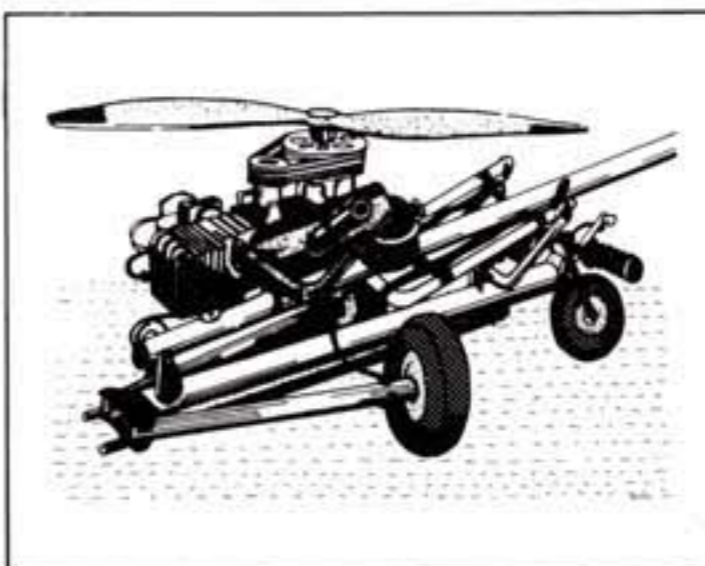
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COMPETITION

NEWS

MORAY EAGLES XC COMP

The Moray Eagles are one of two member clubs from the RAF. A very dynamic club, they draw their membership from the RAF stations in the North of Scotland, but are based at Lossiemouth, where the majority of members are stationed. Two of their members are part of a team of RAF Hang glider pilots, who are competing in this year's Owens Valley XC Classic.

Whilst the British and French teams were crossing swords in Yorkshire, 400 miles north in the Moray Firth area, the RAF Moray Eagles were holding a competition for Service flyers. It was essentially a XC comp. The scoring was a 1 on 4 basis to even out the varying weather conditions, with points biased towards XC, rather than tasks, with a 5km minimum distance to score.

Day One

Our first site was a 1,400 ft hill in the Cromarty Firth area. Min sink and speed ratio tasks were flown as well as open XC. In the min sink the Super Scorps and Vortexes had the edge, but in the speed ratio part of the task, the new kites showed their versatility. The task was max speed to a line one mile out from the ridge and then min sinkover a designated area. Bonus points were given for safe and spot landings.

In the open XC Tom Hardie led the day with 9.5 kms. But Al Smith was the overall leader at the end of the day. Final task of the day was to formate on the 'Drouthy Duck Tavern' and get as close to the stripper as possible. Super wind dummy Ron Docherty maxed out on this task!

Day Two

The day started with horizontal flags at the campsite, so a trip to a smaller hill was agreed on. Open XC was called from the 350ft hill but only the double surface kites ventured out. Tom Hardie took off and spent ¼hr keeping his wings level, before latching on to a big one, to notch up the longest flight of the day, 20 kms. Seeing Tom leave the hill, the other fifth generation kites tried to emulate him but with varying success. This flight gave Tom the overall lead with one day remaining. Final task of the day was to remain awake during the Jim Taggart and Pete Osborn midnight film show!

THE NATIONAL XC LEAGUE

NAME	CLUB	1	2	3	Av
1 JIM BROWN	DALES	78.1	37.3	21.7	45.7
2 PETER ROBINSON	WESSEX	29.4	50.4	43.0	40.9
3 MICHEL CARNET	SOUTHERN	48.4	31.9	28.6	36.3
4 BOB HARRISON	DALES	18.2	49.5	34.3	34.0
5 COLIN LARK	AVON	32.0	28.9	40.1	33.7
6 JOHNNY CARR	SOUTHERN	22.3	35.1	39.6	32.3
7 ROBERT BAILEY	DALES	26.8	38.6	31.1	32.1
8 RICHARD BROWN	PENNINE	27.0	18.5	39.0	28.2
9 JOHN STIRK	DALES	82.6	—	—	27.5
10 JOHN FENNEL	DUNSTABLE	12.4	25.8	29.3	22.5
11 MARK SILVESTER	PENNINE	30.7	17.3	17.3	21.8
12 SANDY FAIRGRIEVE	NORTHAMPTON	20.6	23.5	18.0	20.7
13 JOHN NORTH	PENNINE	17.4	15.8	28.1	20.4
14 DONALD CARSON	OSPNEY INVERNESS	21.4	13.5	21.3	18.7
15 TONY HUGHES		20.6	29.9	—	16.8
16+ RICHARD IDDON	PENNINE	17.7	16.3	15.5	16.5
16+ BRIAN GODDEN	N. YORKS	10.0	25.9	13.5	16.5
18 CHRIS TAYLOR	CUMBRIA	22.8	8.6	17.4	16.3
19 DAVE BLUETT	SOUTHERN	12.4	12.8	22.6	15.9
20 MICK POLLARD		10.7	33.8	—	14.8
21 NEIL ATKINSON		7.0	36.7	—	14.6
22 CARL TONKS	WESTERN COUNTIES	24.0	11.2	7.1	14.1
23 TOM HARDIE	RAF MORAY EAGLES	8.7	15.3	12.7	12.2
24 PHILIP HIGGINS	SHEFFIELD	12.9	7.7	10.7	10.4
25 GORDON HOLMES	G. CAYLEY	19.8	7.9	—	9.2
26+ LEN HULL	SHEFFIELD	7.7	18.8	—	8.8
26+ ALLAN SMITH	WESSEX	26.4	—	—	8.8
28 MIKE HIBBIT	THAMES VALLEY	23.8	—	—	7.9
29 RICHARD ARMSTRONG	LANARKSHIRE	13.3	20.2	—	7.8
30 JOHN CLARKE	PEAK	7.1	6.1	9.9	7.7
31 JOSEPH CULLEN	LANARKSHIRE	11.2	7.4	—	6.2
32 JENNY GANDERTON	DUNSTABLE	18.0	—	—	6.0
33 BRUCE GOLDSMITH		17.0	—	—	5.6
34+ JOHN HARTHMAN	SHEFFIELD	7.1	7.8	—	5.0
34+ NATALIE WILSON	SKY SURFERS	8.3	6.6	—	5.0
34+ IAN RAWSON	PENNINE	15.1	—	—	5.0
37 NICK STANSFIELD	DALES	14.8	—	—	4.9
38 MALCOLM CLEE	SKY SURFERS	14.4	—	—	4.8
39 GRAEME BAIRD	DUNSTABLE	12.4	—	—	4.1
40 JOHN WILKINS	DALES	8.6	—	—	2.9
41 JOHN HEWITT	SOUTHERN	8.1	—	—	2.7

All distances in miles. Positions as at 1.7.81

INFORMATION REQUIRED TO ENTER

- a) Name, club etc
- b) Date of flight
- c) 6 fig. O.S. map refs T/O and landing
- d) Restricted airspace circumnavigated (if any)
- e) Witness T/O and landing
- f) Approx distance

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Day Three

The final day looked very hopeful, with a smooth 18-20, so a roll rate task was called. The Comet, piloted by Al Smith, set a blistering pace which was only beaten by Tom Hardie on his Typhoon. Jim Taggart was close behind on his Cyclone, but zeroed the task by bending an upright on toplanding.

The next task was a min sink, and with a decreasing wind this proved exciting, as a top landing was required to score.

On the final minute before the hooter, Steve Byrne on a Sigma, found a bubble and started rising steadily to be joined rapidly by Jess Flynn. As conditions were obviously improving a two hour XC window was opened. Several pilots took advantage, of the Marshalls '15 mins to go' whistle, by leaping over the back, and these last minute XCs' proved decisive in the final team placings.

With the recovery of the contestants arranged, the Marshalls made a rush for their kites to take advantage of the good conditions. The chief marshal (Al Macneish) absconded with the comp co-ordinator's (Pete Osborn)

kite, and sat 1,000 ft above the ridge for ¼hr ignoring all whistles, hoots and gesticulations from a very distraught co-ordinator!

Later that evening, in the Skerry Brae at Lossiemouth, Linda Osborn presented the prizes. Overall winner was Tom Hardie, who also collected the trophy for the best XC. The Navy team (Al Smith and Steve Byrne) stole the team prize from the Moray Eagles.



The chief marshal, Al Macneish, being 'wound up' by Jim Taggart.

LEAGUE NEWS

4th Comp.—Yorkshire Dales—June 5/7 1981

FRIDAY 5 JUNE dawned a wet and miserable day. At the 8.30 briefing it was decided to come back again at 12 noon, so most of the pilots went to the local cafe to catch up on all the latest Hang Gliding gossip — it was great to see Bettina Gray again. I'm sure she took some great photos! Mid-day arrived and although the sun came out, the wind was still too strong, so back to the cafe for lunch . . . by 4 o'clock we could see people soaring Wetherfell — it began to look like a task would be set after all, so all the remaining pilots went in convoy to the top.

The organiser Bob Harrison set an XC task with a choice of take-off site, Wetherfell or across the other side of the valley at a site called Nappa Scar. I chose Nappa as did 70% of the League. The wind direction was slightly off both sites, but on Nappa it was much stronger. For about an hour we could see the other pilots soaring to about 800ft above take-off, which for the time of day was reasonable. By now the wind had decreased enough to make launching possible and about 30 pilots took to the air; unfortunately no clouds formed above our hill, while it all seemed to be happening at Wetherfell. But that was our choice and we were stuck with it.

Suddenly a kite was seen coming towards us, out in the valley — it was Mick Maher and we knew that if he reached us, he would make the 10km minimum distance to score. He landed close to us! There then followed some desperate attempts to get 10km. Bob Calvert did 9km, others did 8s and 7s, but Mick was the only one to score (what a sickener). Well done Mick.

SATURDAY was blown out, but in the afternoon there was a video film show of various TV hang gliding films after which there followed a big debate on the Milton saga.

SUNDAY threatened to be rained out, but we were lucky and the rain cleared away early as the wind moderated. Return to Nappa Scar.

The Task

The task was to fly 45° into wind, round a pylon, back to the ridge (and boy were you low sometimes), scrape your way back up, then round a second pylon about a mile further along the ridge and up-wind of it. Then back along the ridge to a finishing line, in the shortest possible time.

The task was in heats of 5. Your position in the league determined who you flew against, i.e. the top 5 pilots flew against each other, 6 to 10 flew against each other and so on down the league.

Because during each heat some-

one wins and someone comes last, positions change and it heat someone wins and someone comes last, positions change and it gets very exciting at times. Needless to say if you keep winning, you keep climbing, and the top pilots always fly against each other. These hot rounds cause a lot of interest within the league, but it's a wind-up if you find yourself in one of these rounds.

With 3 tasks completed (Mick Maher the only one to score on the first day), here are the results:

see chart opposite

CONCLUSION

We were worried the weather was going to blow out the competition completely but as it happened only 1 day was lost. Mick Maher cleaned up on the first task on the Saturday, leading everyone by 100 points.

The second task was very difficult and 11 pilots failed to complete it and landed at the bottom. Including aces, Keith Reynolds, Graham Slater, Mick Maher and Bob Harrison, to name just four. The times varied from 24 minutes to 7 minutes 12 seconds for Ronnie Freeman - this boy is really doing well this year! Ronnie has worked his way up the league and has found himself flying against Calvert, Carr and two new hot league pilots Andrew Wilson and Michel Carnet. With the exception of the first pylon being moved about 80 metres, task 3 was the same as task 2. In task 3 only 5 pilots went down. In the top heat, Michel Carnet had been put down and Jim Brown, who had flown a blinder in task 2, moved up into the top heat for task 3.

In both 2nd and 3rd tasks, extra points were scored. 5 points for a clean standing-up landing and 15 more if you did it on the target.

Ah well, that's all for now folks. The next League will be held in the Pennine area during the weekend August 14/16th.

Report by Johnny Carr



Ron Freeman, photo by Mark Junak

SCOTTISH OPEN

The Scottish Open XC Competition took place over the weekend of June 26/28th. Friday was blown out. Saturday produced changeable weather with best distance of 24 miles by Donny Carson. Sunday - no wind, only 6 miles best.

Full report will appear in August Wings!

RESULTS OF 4th LEAGUE

(By Johnny Carr)

1st	Graham Hobson	Demon	185 points	overall position	15th
2nd	Jonny Carr	Comet	169 points	overall position	2nd
3rd	Robert Bailey	Comet	154 points	overall position	5th
3rd	Dick Brown	Typhoon	154 points	overall position	9th
3rd	Lester Cruse	Typhoon	154 points	overall position	8th
6th	Bob England	Demon	153 points	overall position	28th
6th	Mick Maher	Lightning	153 points	overall position	12th
8th	Ron Freeman	Typhoon	152 points	overall position	3rd
9th	Trevor Birkbeck	Typhoon	149 points	overall position	16th
10th	Andrew Wilson	Comet	138 points	overall position	4th
10th	Richard Iddon	Typhoon	138 points	overall position	35th
12th	John Stirk	Typhoon	133 points	overall position	30th
13th	Chris Johnson	Demon	122 points	overall position	21st
14th	Brian Milton (wow)	Typhoon	121 points	overall position	38th
15th	John Duncker	Demon	177 points	overall position	45th
16th	Chris Elison	Comet	166 points	overall position	14th
16th	Bob Harrison	Demon	166 points	overall position	18th
16th	Keith Reynolds	Lightning	116 points	overall position	10th
19th	John North	Demon	112 points	overall position	25th
20th	Mark Sylvester	Sabre	105 points	overall position	28th
20th	Tony Hughes	Lightning	105 points	overall position	17th
22nd	Roy Richards	Demon	101 points	overall position	41st
22nd	Mick Pollard	Demon	101 points	overall position	36th
22nd	Jim Brown	Sabra	101 points	overall position	7th
25th	Calvert (oh dear)	Typhoon	90 points	overall position	1st
25th	John Hudson	Demon	90 points	overall position	37th
27th	Tony Beresford	Demon	89 points	overall position	23rd
27th	Peter Hargreaves	Comet	89 points	overall position	42nd
29th	Graham Slater	Demon	85 points	overall position	11th
29th	Geoff Ball	Sealander	85 points	overall position	34th
29th	Mark Southall	Typhoon	85 points	overall position	20th
32nd	Graeme Baird	Typhoon	80 points	overall position	40th
33rd	Geoff Snape	Demon	74 points	overall position	46th
33rd	Colin Lark	Demon	74 points	overall position	31st
33rd	Michel Carnet (GB)	Typhoon	74 points	overall position	6th
36th	Mike Atkinson	Typhoon	69 points	overall position	19th
36th	Steve Goad	Lightning	69 points	overall position	29th
38th	Sandy Fairgreave	Typhoon	68 points	overall position	13th
39th	John Fennell	Typhoon	64 points	overall position	26th
40th	Mike Macmillan	Comet	53 points	overall position	32nd
41st	Donney Carson		52 points	overall position	39th
42nd	Graham Leason	Typhoon	21 points	overall position	24th

RESULT OF THE LADIES COMPETITION

1st	Natalie Wilson	Comet	128 points
1st	Jenny Ganderton	Typhoon	128 points
3rd	Judy Leden	Comet	80 points
4th	Sue Semour		32 points



The Ladies - left to right Natalie Wilson, Jenny Ganderton, Judy Leden, Sue Semour. Photo Mark Junak

ITALIAN OPEN COMPETITION

Sept. 10-13th

San Sicario (Torino) Italy

An open competition for all pilots, in one class. Two XC events and two duration or time trial events. Prizes:
1st: 500,000 Lire (£215)
2nd: 300,000 Lire (£130)
3rd: 200,000 Lire (£85)
4th: 100,000 Lire (£43)
5th & 6th 75,000 Lire (£33)

(Approx. equivalents).

Plus numerous cups and other prizes.

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Giorgio Ferraris

San Sicario is a purpose built ski resort, about 2 hrs drive west of Turin near the French border, on the western slope of Monte Fraitere.

CROSS-COUNTRY CLASSIC

STOP PRESS . . . Tuesday 7th July from John Hudson . . . yesterday (6/7/81) Larry Tudor flew 181 miles on a U.P. Comet . . . Larry was carrying a barograph . . . this flight will be submitted for an official world distance record . . .

Tom Kreche (Voyager) flew 151 miles on the same day . . . Sandy Fairgrieve (Typhoon) G.B. flew 100 miles . . . conditions on the day were very radical . . . 5 pilots (including Richard Iddon, G.B.) were blown over the back of take-off . . . Richard suffered a knee injury but is OK . . . STOP.

A full report on the XC Classic by Andrew Wilson, including photographs by Bettina Gray, will appear in the August edition of Wings!

ED. To qualify for a F.A.I. Delta Gold award a pilot must complete a flight of not less than 333 Km (186.4 miles) and an out and return or triangular flight of 200 Km (124.2 miles).

A year ago this would have seemed impossible, but now . . . who knows? It might even have been achieved by the time you read this!



Larry Tudor pioneering 'Free-fall Cliff' Utah, back in 1977. (Photo Mary Plumb).

SMALL ADS

All small ads should be sent to Silvia Howard, Commercial Editor, *Wings!*, 4 Somerwood, Rodington, Nr. Shrewsbury, Salop.

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

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.

WANTED. Glider BAG to fit Gryphon or similar. Tel: Tedburn St. Mary 562.

Large **SKYLINE** for sale. Little used due to increasing business commitments. Striking red and blue sail. Excellent condition, complete with prone and seated harness, £275. Unused Arbee vario and altimeter also available. Offers? Phone: Richard Smith, tel: Carlisle 27986 or 25291.

Large **CUTLASS** modified for power, also **MIDAS E**, both excellent condition. Offers or will part exchange Safari, or C.B. 40 channel. Ring Kidderminster 515884, 5-8 pm.

MIDAS SUPER E Kd. New multi-coloured sail, new L. Es, new x-booms and A-frame. Top condition. Offers around £190. Leatherhead 76081.

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HIWAY 250 cc. Skytrike + Super Scorpion flown 1½ hours. Immaculate. Offers £1,400. Will split. Tel: Telford 591529.

Immaculate **CHEROKEE** medium (3 hours only), spares plus 20' fibreglass storage tube. £400 o.n.o. Windhaven **PARACHUTE** with prone harness, £125. **RADAIR** vario — audio and visual + altimeter, £75. Ken Barker. Tel: 01-427 3014.

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SUPER SCORPION B. Dacron sail, v.g.c., attractive white and blue colours; only three hours flying. Humming bird vario and Suunto compass, prone harness and more for a bargain £500 ono. Phone: Mike, 01-998 7549.

MOYES MEGA II. Less than one year old. Hardly flown. Immaculate condition. Owner going abroad. £550. Phone: Barnstaple 72577 or 77201.

Hiway **CLOUDBASE,** not flown for some time, suit 12 stone pilot, inspection welcome. £125 ono. Tel: Brackley 703415.

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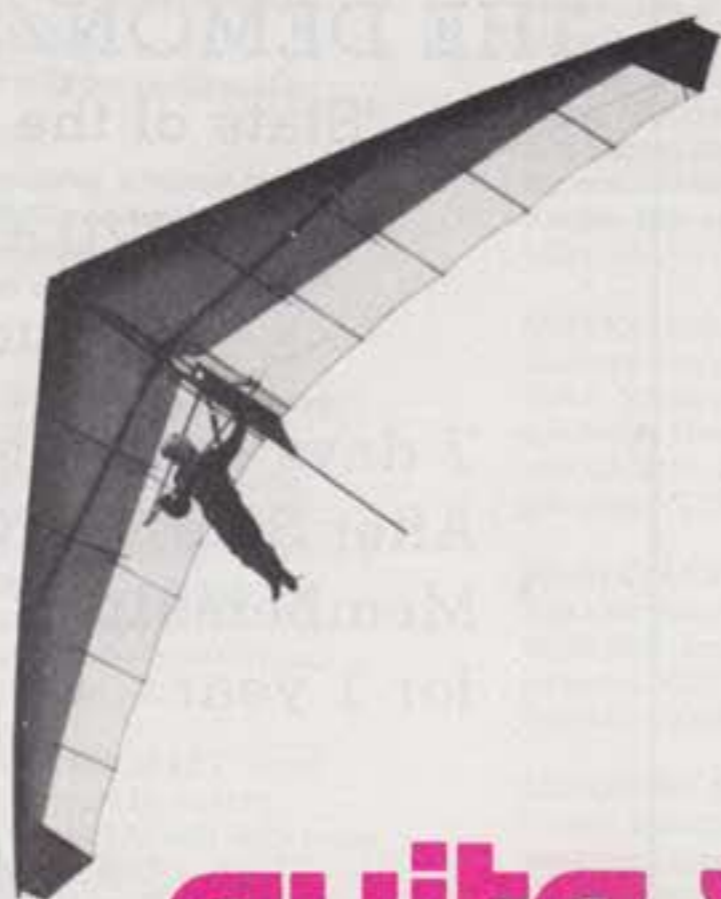
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