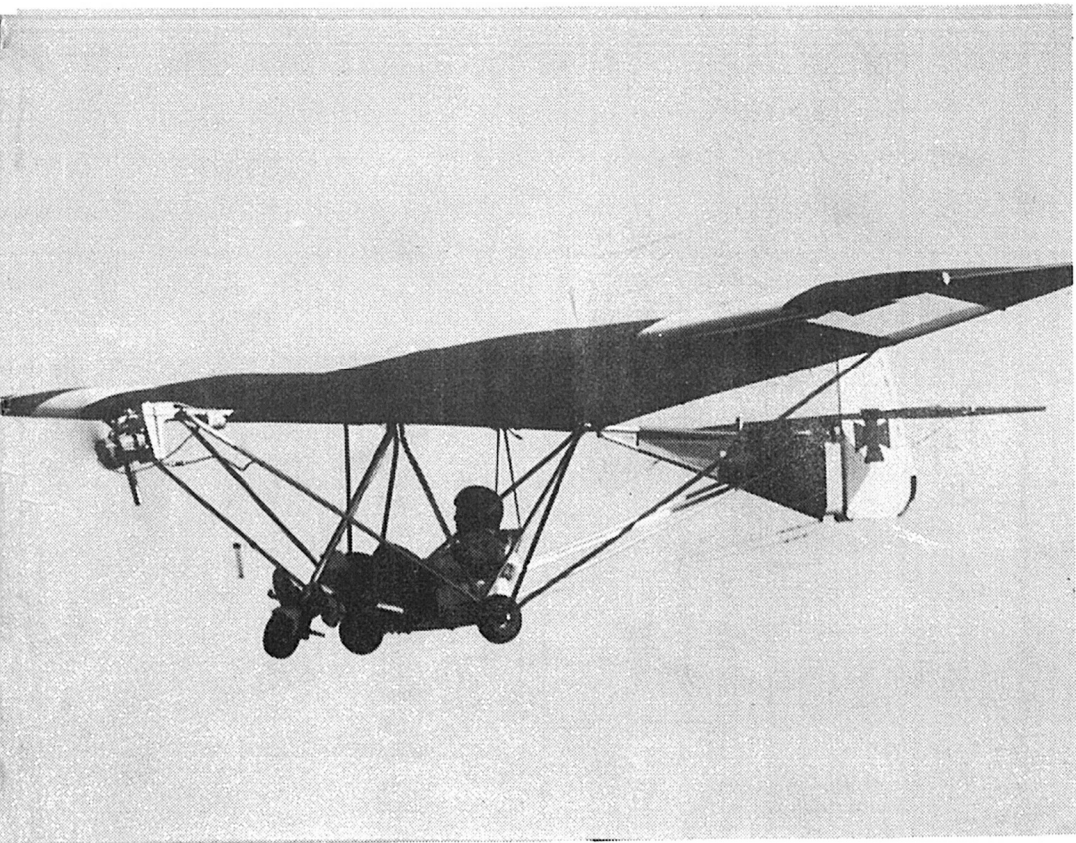


FLIGHT LINE

magazine of the BMAA



No 1 Jan-Feb 1980

BREEN MICROLITE AIRCRAFT CENTRE

New Road Crickhowell
Near Abergavenny
South Wales
Telephone 0873 810019

INTERESTED IN FLYING OR FORMING A CLUB?

We are presently setting up clubs and training seminars throughout Britain using the amazing easy-to-fly EAGLE. Also available - POWERSCORPS and SOARMaster UNITS. Contact GERRY BREEN for all your Microlite requirements.

ELECTRA FLYER *Appointed Agent*
HIWAY *Appointed Agent*

PROPELLERS

Custom-made mahogany
propellers
to suit powered hang gliders
and minimum aircraft.
Contact Steve Hunt at



Hiway Hang Gliders Limited
Sirhowy Hill Tredegar Gwent NP2 4XP
telephone: Tredegar (049 525) 4521

P
T
E
R
O
D
A
C
T
Y
L

We were going to take a full page advert extolling the virtues of the Pterodactyl, but you all know how good it is so we won't bother! Just come and see it fly - contact Paul or Dave at The High School of Hang Gliding Limited, Wellesbourne Airfield, Wellesbourne, Warwick, 0789-841114.

FLIGHT LINE

BMAA COMMITTEE MEMBERS

Steve Hunt (*Chairman*) - 049 525 4521
or 0873 85 514
Paul Baker - 0789 841114
Ashley Doubtfire - 0672 52909
David Kirke - 0865 56110
Dave Thomas - 0252 26182

Editorial Address: Dave Thomas, 80
St George's Road, Aldershot, Hants

Secretary's Address: David Kirke,
31 Park Town, Oxford

FLIGHT LINE No 1 - CONTENTS

Contact! Letters, news	4
Eagle Seminar in Arizona	5
Chairman's Airwaves - <i>Steve Hunt</i>	6
State of the Game	8
Secretary's Section/The Law	9
Festina Lente - <i>Brian Harrison</i>	10

Front Cover: The WEEDHOPPER. Probably the first minimum aircraft to be publicised in the national press of this country. Kits are available from Utah, USA. Basic specifications are: Span 28 ft, Wing Area 160 ft², Maximum Load 220 lb, Cruise Speed 30 mph, Red Line Speed 50 mph, Stall (160 lb load) 22 mph, Range 30 mpg, Engine 456cc, 18 hp @ 3500 rpm. Stressed to 5G positive, 2G negative.

EDITORIAL

There is no truth in the rumour that a Hiway Vulcan was seen thermalling above Aviation House on Thursday 31 January; what is true is that our Chairman and all five Committee members spent the day in discussion with four senior officials of the CAA.

All that can firmly be said at this stage is that the attitude of the CAA on this level was very encouraging. At the end of the meeting the Committee submitted a draft proposal relating to our activities. The outcome of this will not be known for some time. However, it was made clear that our activities would be viewed through a Nelsonian telescope in the meantime, but that that blind eye would soon start blinking at any irresponsible operation of minimum aircraft.

Unofficially it looks as if the BMAA will be allowed to self-regulate single-place aircraft up to 100 kg and two-place aircraft up to 120 kg. The terms of reference of this self-regulation are to be agreed with the CAA. It would appear that it will not be desirable or necessary to alter existing air law. However, certain relevant exemptions may be granted.

So - we hope - it's all on! Fun flying without hassle at minimum cost. There is no doubt in our minds that this form of flying will be more cost-effective than any other form of recreational airport. We've either been travelling miles to a hang gliding site, spending a fortune on petrol only to find that the wind is in the wrong direction, or been toiling for hours on construction projects only to find the frustration of waiting for weeks for the man with the magnifying glass and the rubber stamp.

Opinions expressed by the authors and correspondents are not necessarily those of the Editors or the Committee of the British Minimum Aircraft Association.

CONTACT!

OSHKOSH '80

Anybody interested in going to OSHKOSH this year - please contact Ashley Doubtfire. He is arranging a cheap package visit to the meeting - certainly the largest ultralight gathering in the world. The aerobatic championships (not micro-lights!) follow immediately and are being held in the same area. Obviously the rates will be cheaper if more people apply. Dates: last week of July through first two weeks in August. Return fare including board estimated at £300 per person. Anybody who can do it cheaper, please let us know!

COMMENT

"Power flying in light or in any way reasonable flying conditions will be recognised by 1981 as being SAFER than ridge or thermal soaring!" - Trevor Loxton

SUGGESTED READING

FLIGHT BRIEFING FOR PILOTS, Vols 1 and 4 - *N H Birch & A E Bramson (Pitman)* - essential for student pilots.

PILOT'S WEATHER - *Ann Welch (John Murray)* - an invaluable book.

PROPELLER MAKING FOR THE AMATEUR - *Eric Clutton (available from the author, price £2.00, at 92 Newland St, Shelton, Stoke-on-Trent)* - the best book currently available on the subject.

KWEERIE KORNER

£2 for the first correct answer to the following Kweerie.

What is BUMFFF?

Answers please to Dave Thomas. Another mind-bending Kweerie in the next issue - wait for it!

LETTER FROM DAVE NORTH

Dear Dave

I would like to offer a couple of suggestions about the future of the BMAA:-

1 - hundreds of potential members and sympathisers don't yet know of our existence. I suggest that a press release be sent to all the enthusiast publications such as *Flight*, *Sport Aviation*, *Popular Flying* etc.

2 - apart from photographs in American magazines, I have never actually SEEN a microlight aeroplane.

Therefore I propose a "Minimum Aeroplane Show", to bring together as many microlights and enthusiasts as possible. Kennet Valley Hall or Wellesbourne Airfield would be possible venues. A fly-in, with press and TV coverage, would be even better - so long as nobody crashed in front of the cameras

Finally, thanks for the first newsletter, and please let me know if I can do anything to help the cause.

*Dave North
Tolworth, Surrey*

Thanks for your comments! Re the Minimum Aeroplane Show, the Committee is indeed making efforts to organise a BMAA Rally when we can all get together with our machines as well for our mutual education and enlightenment - probably second half of May at Wellesbourne. More in the next issue, we hope.

SMALL ADS

FOR SALE: VJ-23 DERIVATIVE. Built by John Lee, as depicted in *Wings*, complete in trailer. No reasonable offer (*money only please*) refused. Dave Thomas, 0252-26182.

FOR SALE: EASY RISER BIPLANE HANG GLIDER. Ex Johnny Carr glider, red white and blue - would be much more useful with wheels and a motor! Interested? Contact John Ievers at Hiway, 049 525 4521.

EAGLE SEMINAR IN ARIZONA



Early in January, 31 hang glider dealers gathered near Phoenix, Arizona, for a seminar, the first in a series of monthly meetings. The occasion was the introduction of the EAGLE, Electra Flyer's new powered ultralight, or "aerolight" as they call it. In order to qualify for an Eagle dealership, it was necessary to attend. But attendance alone was no guarantee. Several potential dealers were turned away, cash in hand, because it was felt they would not project a proper image for the company.

During the three-day seminar, sponsors conducted several clinics to educate the dealers. They included: prop, engine tuning, aerodynamics and product development.

Conceived by German-born Romauld Drlik of Soarmaster (with design modifications and production by Larry Newman), the Eagle is the first modern aerolight to use a canard - the funny-looking extension from the keel boom that makes onlookers think it's flying back-

wards. But therein lies the secret. Flying at a higher angle of incidence than the main wing, the canard stalls first producing a mild porpoising, unlike conventional airships. It is felt this attribute extends the margin of safety for learning pilots. Many of those present had never flown power, and three days of flying produced 175 injury-free flights.

All flying took place at a private gravel airstrip, during which time three light aircraft landed in order to closer inspect the Eagle. This evoked the comment from one dealer that the Cessnas "required 20 times the landing space, were 10 times the hassle, five times the cost and only half the fun" as the aerolights.

Also present and flying power, but not directly participating in the seminar was Dave Kilbourne, who 10 years ago became the first person to soar a foot-launched hang glider. And it was evident that ultralight flying had come a long way when, on the last day, four Eagles throttled back at 100 ft and thermalled to 600 ft.

CHAIRMAN'S *air waves* *air waves*

Much has happened since the AGM. We have introduced the BMAA to other aviation bodies and to the CAA, and we have also written to the CAA clearly outlining the AGM proposals for self-regulating all aircraft up to 100 kg.

The CAA was very pleased to see an independent association with a more broadly-based membership than only BHGA members. As such, it was very keen to open negotiations and discuss regulation/self-regulation systems for minimum aircraft.

CAA Operations Division has put out a consultative letter proposing a change to the Air Navigation Order, which would free very light aeroplanes up to 50 kg weight for aeroplane, engine and fuel (eg powered foot-launch flex wings) from the requirements to have registration, permits to fly and private pilots' licences. This was known by everyone at the AGM, and the membership voted to make it BMAA policy to have all aircraft under 100 kg deregulated, in the sense that they would not require CAA registration, permits to fly or C of As and PPLs.

This conflict of proposals led to the need for a very early meeting with the CAA, and so on 31 January 1980 a round-table conference between the entire BMAA Committee and representatives of several divisions of the CAA took place.

It became apparent that some divisions of the CAA were not happy about the proposed ANO change, and the likelihood of this proposal ever becoming law was low, especially as we would want to raise the maximum aircraft weight from 50 kg to 100 kg. It would in fact have met with very fierce

opposition if we had tried to push the maximum aircraft weight above 60 kg, it being fairly obvious that a lot of very powerful craft would come into the deregulated class with an attendant increase in peak kinetic energy and destructive power (to both the operator and the general public).

The CAA's main job is to protect the general public and to protect the various types of air users from each other. The BMAA's main job is to protect its own members and to help develop the sport. The chief way of doing this is to ensure airworthy aircraft and to ensure good piloting standards. With these two viewpoints in mind, all at the meeting agreed that a common operational system was required for all minimum aircraft, whether they be foot-launched powered Rogallos or small three-axis-control aeroplanes. The main argument against an intermediate weight limit is that it would deter people from adding safety devices such as a decent undercarriage or stronger tubes and spars, for instance, when fitting a larger engine.

There are three areas where our association must have either competent self-regulation, or have costly CAA regulation forced on us:

- 1 Identification - *letters displayed to identify ownership of each single aircraft;*
- 2 Pilot licensing - *to ensure operational competence and the ability to interact with other air users;*
- 3 Airworthiness - *the aircraft must not represent a hazard either to the operator or to the general public.*

Let us look at these areas in more detail. Firstly, identifi-

cation: according to NATS, we're all going to have to get used to being easily recognised. We all are at the moment, but there are going to be a lot more people using minimum aircraft. Ashley Doubtfire is looking into an internal scheme involving labelling with small letters (not two feet high) and all administration being looked after by the BMAA.

Secondly, pilot licensing: this can be separated into two parts. One aspect is theoretical knowledge - air law, navigation, meteorology and map reading, and the Committee felt that a high standard should be called for here with a syllabus to PPL standard but geared to the practical use of minimum aircraft (ie no radio procedures, instrument flying or navigation computers). The other aspect is actual flying, and here the requirements vary wildly. Flying a powered flex-wing requires, as one way of becoming competent, a BHGA Pilot 2 plus one or two hours' flying. A powered Mitchell Wing with full three-axis control uses skills far closer to conventional PPL skills. There are at present at least four ways of controlling minimum aircraft and at this early stage with so few aircraft flying, it is difficult to suggest exact experience required to obtain a licence, but the Committee agree that the qualification would be related to the necessary experience on a type to become safe and competent, and not to some block number of hours. One suggested licensing system would require training to an elementary level with a BMAA-approved training establishment followed by a period of flying before removal of certain restrictions. The restrictions could be, for example, no flying more than 5 km from the pilot's base site for a period of 20 hours, finishing with a practical flying test after successfully passing theoretical papers in air law,

map reading, navigation and meteorology. At the end of this, the pilot would receive his pilot licence.

Thirdly, airworthiness: this is simpler as a good many people will be flying similar aircraft. Already draft airworthiness proposals have been submitted to the CAA and distributed to interested parties for comment, and simple structural tests and flight tests will qualify any safe aeroplane for a permit to fly in very much the same administrative manner as the way the PFA works with the CAA.

In conclusion, I consider it to be imperative that the BMAA has a complete operational structure, backed up by the force of law, to self-regulate adequately the aircraft in which we are interested. Vague systems which pilots, home constructors and manufacturers may or may not choose to play along with are not going to be good enough.

If you agree with the thoughts I have expressed here, or if you have constructive criticisms and suggestions, please write to me so that I and the Committee may be best informed about how all the membership wishes to see our new sport grow.

Please write to me at Hiway Hang Gliders Limited, Sirhowy Hill, Tredegar, Gwent, NP2 4XP.

Steve Hunt

ADVERTISING RATES

Small Ads (up to 1 col inch)	£1.00
Display - quarter page	£5.00
- half page	£10.00
- full page	£20.00

Any full page is available except the front cover.

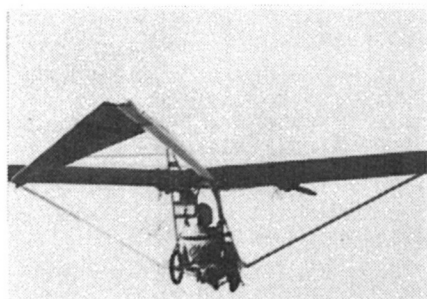
Good-quality black-and-white photographs for the front cover will be accepted at any time and will be used at the Editor's discretion.

STATE OF THE GAME

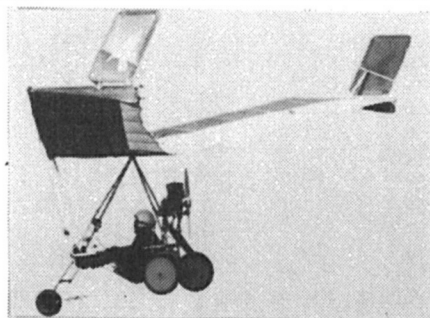
The following is an indication of the types, relative weights, and numbers of minimum aircraft in the UK.

<i>Minimum aircraft type</i>	<i>Weight (kg)</i>	<i>Approximate number actively used</i>	<i>Approximate number nearing completion or not actively used</i>
Powered footlaunch flexwing	35-45	12	15
Powered wheel-launch flexwing	45-55	3	5-10
Catto CA15 wheel-launch	48-55	2	4
Skycraft Scout	56	-	-
Powered Manta Fledge (low power)	50-60	1	2
Powered VJ-23 footlaunch	59	1	1
Powered Mitchell Wing	62	-	4-12
Quicksilver derivative	62	1	-
Electra Flyer Eagle	63	2	10
Pterodactyl Pfledge	68	2	8
Weedhopper	78	-	4
Hummer	82	-	1
Hiway Special	92	-	1

Estimated numbers of minimum aircraft - by end of 1980: 100 - 150
 - by end of 1981: 500



LAZAIR (Canada)



PTERODACTYL FLEDGLING (USA)

MITCHELL WING (USA) Powered SUPER SCORPION (GB)



SECRETARY'S SECTION

As this is probably just about the first communication you have received from the Association, I shall be most grateful if you will have a look at the envelope that your magazine came in and let me know of any major errors in addressing. Likewise if you know someone who believes he is a member and who hasn't had a mag, drop me a line with the details.

Many of those people who expressed a desire to join the BMAA at the inaugural meeting in November will be receiving this

magazine despite the fact that they have not yet sent me their £5. If your conscience is stirring uneasily, then get that cheque off to me immediately, as a new membership list is to be compiled on 20 March and those who haven't paid up by then won't be included and won't get the next magazine!

You'll find enclosed with this issue a couple more application forms and if you know anyone else who is interested in minimum aircraft, please pass on a form. It goes without saying that the more members we have, the stronger will be our Association.

David Kirke

THE LAW

All flying, whether private or civil, amateur or professional, when conducted in the United Kingdom comes under the aegis of the Civil Aviation Authority. They, in turn, are governed primarily by the Air Navigation Order and anyone seriously considering any form of airsport beyond the flying of small kites would be well advised to obtain a copy. It is available, price £1.75, from any branch of Her Majesty's Stationery Office.

The prime concern of the CAA is public safety. If you fall off a home-made man-lifting machine and break your neck they are likely to take a dim view and possibly even prosecute you for an offence against the ANO regulations; if, on the other hand, you simply drop a nut or bolt from a kite and hit a baby in the eye, you can almost certainly count on them coming down on you very hard indeed. However, they are not ogres and they are not out to spoil your fun. Their attitude is governed largely by the application of vast amount of common sense, and if you approach your airsports the same way you should not run into much trouble.

IN THE MARCH/APRIL ISSUE:

Paul Baker on TRAINING; Steve Hunt on POWERING THE SUPER SCORP.

Please send your contributions (articles, letters, cartoons, photos etc) to the Editors as soon as possible!

Glider Rider

AMERICA'S LEADING MONTHLY PUBLICATION

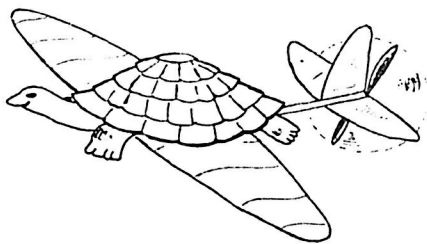
KEEP UP TO DATE WITH ALL THE LATEST DEVELOPMENTS

Annual Subscription £16 (airmail)

euro wing

Unit 20 Dixon Place
Convey Milton North
East Kilbride G74 5JF
Scotland
Tel 035 52 46498

FESTINA LENTE....



In the good old days when I started hang gliding, right at the beginning, I can readily recall the blind enthusiasm with which I bounded down slopes in almost total ignorance, the inevitable result being a kind of vertical plummet with a breathless bone-crushing "landin" at the bottom of the hill. I was quickly followed by the mad scramble back up the hill spurred on by the masochistic desire to do it all over again. In many ways the introduction of micro-light aircraft in this country is a case of history repeating itself. However, there is no way that we can apply the same care-free philosophy to flying our new craft. The new aircraft with which we are becoming involved can really fly and unlike early hang gliders are entirely dependent on the perfect function of several reasonably complex mechanical components.

I firmly believe that one of the most dangerous elements in our new sport is a pilot who has a lack of imagination. By this I mean a person who when looking at his aircraft can only imagine the pleasures of flying through the air and cannot foresee the dangers implicit in the failure of each and every component on which the aircraft depends.

For a few moments, therefore, ignore the obvious pleasures you are going to experience when flying and consider the following, particularly with regard to how it will apply to your aircraft or the aircraft which you are considering purchasing.

VIBRATION can loosen nuts, bolts and "pop"-rivets; cause electrical leads and fuel lines to oscillate and disconnect; loosen engine mountings; cause main composite structures to separate and break up; cause rigging wires to "skip rope" and break.

The following are some sources of excess vibration: an out-of-balance propeller and/or engine; loose engine mountings; loose hang cage (where applicable); loose exhaust system; an intermittent electrical ignition fault.

Note: It is not recommended to use nylocs in assembly of your wing and certainly not recommended to re-use nylocs as these can be loosened with vibration. Always use aircraft-quality bolts, drilled where applicable, and either castle nuts or wing nuts which are then safety-pinned or wired.

FUEL can burn the skin; blind; ignite.

Under no circumstances use plastic or even plastic-reinforced fuel line. You should obtain metal-covered neoprene fuel line carefully clipped at regular points to the frame of your craft but with sufficient flexibility to allow for engine and frame movement. This type of fuel line is available from a racing car component supplier. Do not

attach your fuel line to the tank or carb with spring clips; use only screw-up clips and check for leaks by slightly pressurising the fuel tank - ie, blow into the top. Do not mount either the fuel tank or lines in such a position on your aircraft where,

if anything disconnects, fuel will hit your face.

PROPELLERS can break up; maim; kill.

Always inspect your propeller and its mountings before each time you run the engine. Shout "Clear prop?" and wait for someone to reply "Clear" before starting the engine. Be fully aware of the "shrapnel zones" of your propeller. By the way, if you are using the new Soarmaster alloy prop, have you heard about the fracturing that can occur between the diamond plates and the main blades and how this can be avoided?

ENGINES can seize; break up (explode); fall off.

Do you always fly within reach of a landing area in case of engine failure? Are there any retaining wires to hold your engine in the event of mounting(s) failure?

CONTROL CABLES AND CORDS can jam in dirty, damaged or corroded rollers and guides.

Always check these components regularly and in particular for cable and cord fraying.

Whilst the above may appear to be a recipe for not flying at all, awareness of these factors and making every effort to minimise the risk of failure will in fact enhance your feeling of safety in the air.

Finally, one more thought. Imagine if you will that you have a number of hours' flying time and after a hard day at work a cruise in the smooth air of a summer's evening is your best relaxation; having carefully assembled and pre-flight-checked your wing you have taken off and are cruising 2,000 ft up. One of the reasons for your flight is that having successfully run-in your engine, you have changed to a special low-ratio racing oil which you hope will reduce the oiliness of your exhaust and increase the power. You have also weakened the mixture a little

since you had felt the engine was running rich the last time out. On deciding to increase power to climb a few more hundred feet, you open the throttle wide and after a few minutes the engine revs seem to drop quickly; suddenly, there is a bang and the barrel of the engine literally blows apart showering out hot metal and very briefly sparks from the exposed plug - it has happened! To make matters worse, a piece of metal tears through the plastic fuel line which you had meant to replace, and immediately the fuel ignites and you are on fire. Calmly of course you will hit the extinguisher button, followed immediately by the ignition switch, then having counted five to let the extinguisher work you will deploy your parachute and float gently down with nothing more than an excess charge of adrenaline and a considerable potential dent in your wallet. What??! You haven't got an extinguisher fitted, or a 'chute? Boy, are you in trouble!

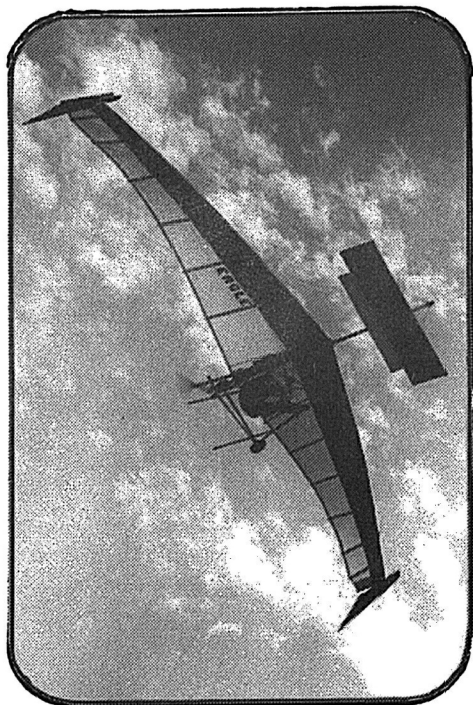
I am sure that most of us who are already flying do not, in fact, currently have either a fire extinguisher or parachute fitted and I should therefore be pleased to learn if any of you have made investigations regarding possible extinguisher systems and any thoughts on parachutes would also be appreciated.

I am strongly of the opinion that we should all help each other in the area of safety, particularly in view of the larger variety of aircraft which we could be flying within the next year. If, in the course of building and/or flying the aircraft, there occurs to you a method or component which would make a considerable contribution to safety, please send details to me at Euro Wing for publication. By communicating we can all contribute to the safety and reputation of our sport.

Brian Harrison

1980 MICRO~LIGHTS

BUY & FLY or HOMEBUILT
We have your wings!



EAGLE



CATTO CA15

**euro
wing**

Send 12p Stamp For Details

Unit 20 Dixon Place
College Milton North
East Kilbride G74 5JF
Scotland
Tel 035 52 46498



ELECTRA FLYER

Manufacture of Hang Gliders and Micro-Light Aircraft