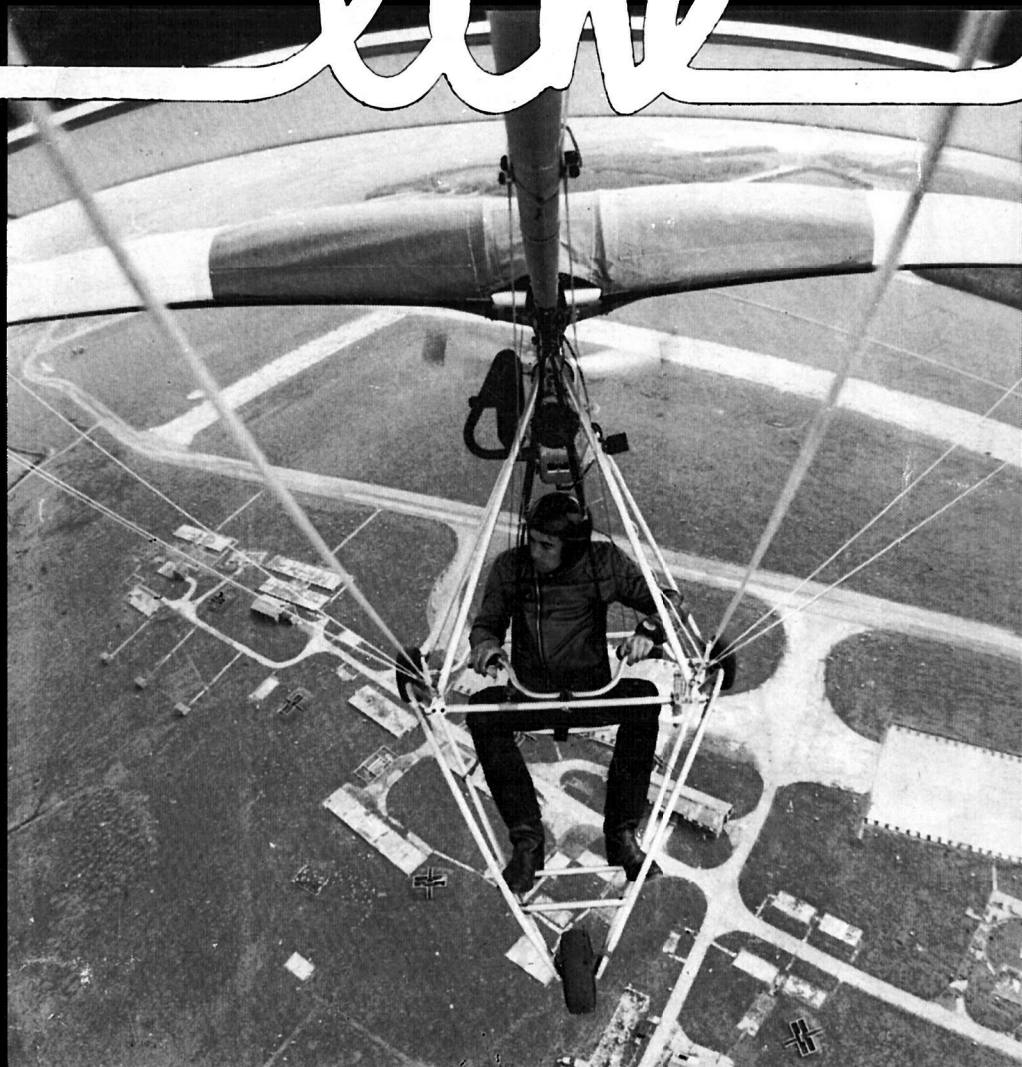


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Jan-Feb 1982



Magazine of the BMAA

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Cover: John Player (photo) flying Southwest
Airsport's training Eagle at Davidstow Airfield



COMMENTS

From John Wincott

At present, the editor is an unpaid appointment by the BMAA Council. However, due to the huge amount of work involved, Nick now requires some form of remuneration for this task. No, Nick has not **been** sacked, and is not **being** sacked for the last editorial.

To ensure that you, the members, have the best possible deal from Flight Line (quality versus cost) applications are invited for the position of editor. Nick wishes to continue doing the job of editor and will be applying for the position. Can you do the job as well as (or even better than) Nick? If you think you can, then write to Ron Bott giving full details of your qualifications, detailed production costs and the reward you require (if any!). Before writing, please think about the amount of work involved in producing this magazine. Nick spends five days a week, every week, working on Flight Line, ferretting out articles, producing all the artwork, organising, planning and talking with his world-wide network of contacts.

The budget for Flight Line is small when compared with magazines produced by similar associations. This constraint is inevitable since most of our income is from the membership subscriptions. To maintain the existing schedule of magazine production, your applications must be with Ron Bott by the 28th February. The person appointed as editor will take over the post within 10 days to produce the March/April issue.

Just a note on the subject of your Council of the BMAA. Most people think of the committee members as a "faceless few" who are far removed from the "everyday flier", or at least I did until I was elected to this post. Well, I was wrong! Your Council, without exception, are just normal people with a terrific enthusiasm for flying in general and microlights in particular. If you have anything you want brought to the attention of the Council a telephone call to your local committee member, the relevant officer (e.g. airworthiness, safety, etc.) or the Secretary, Ron Bott, will ensure that your viewpoint is heard. Remember, this is your association, but we only know what you think if you tell us.

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CHAIRMAN'S AIRWAVES

Happy New Year! In spite of Christmas snow and ice your committee has met three times since the Wolverhampton AGM. That must be some kind of record! More importantly we have had two meetings with the CAA, Graham Andrews and Ron Bott putting themselves on the line in both cases, and although it is too early yet to report details of the progress that has been made, I am glad to be able to say that the results achieved so far have been met with unanimous approval by your committee. Graham Andrews has taken the mantle of chief CAA negotiator and he has worn it with exceptional ability. It is not a coat of many colours as we are all agreed on the objectives that we require to reach in order to lay the foundations of a safe, inexpensive and unfettered aviation sport.

A major feature of the negotiations and other meetings that have been attended is the spirit of co-operation and assistance that has been extended to us by other representative bodies of aviation in this country. These bodies include inter alia, the Popular Flying Association, the British Gliding Association, the British Hang Gliding Association, the Aerodrome Owners Association, the Aircraft Owners and Pilots Association and the Guild of Air Pilots and Air Navigators. In addition we have been offered assistance by representatives of the Records, Racing and Rallying Association of the Royal Aero Club and the British Precision Pilots Association. I would like to thank all these bodies for the confidence they have placed in your Association.

This confidence will be misplaced unless we show the ability and the will to operate aircraft in a competent, knowledgeable and responsible manner, one subject to the disciplines that we impose on ourselves rather than the disciplines imposed on us by others, as surely they will if they feel the need at some future date. Our job is to

show that we can do it ourselves. Naturally it is not necessary to remind people to get insured, get trained, log their flights and report all accidents and incidents, everybody does it as a matter of course — don't they?

On another matter **THE DAWN TO DUSK COMPETITION** (DDC) is unique. The general idea is to spend an interesting and original day's flying in pursuit of a praiseworthy objective, or words to that effect. The DDC started about 20 years ago and a microlight competed for the first time in 1981; it came third but did manage to win the Icarus Trophy for best single seat performance! The competition is judged by a panel set up by the Tiger Club and chaired by HRH The Duke of Edinburgh. The judges are keen to encourage more microlight pilots to participate and there is a suggestion of a special award for this year. Entries must be in by the end of May and the attempt/s must be made during June. In order to stand a chance of winning, a lot of preparation is required, so don't delay, send off today for the Rules from "The Tiger Club", Redhill Aerodrome, Redhill, Surrey. Any help or advice is willingly offered by myself, Jonny Secombe, on 01-370 5177.

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J.S.



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LETTERS

ANNOYED!

Dear Sir,

I'd like to write to you about a certain Tom Sawyer of Pegasus Ltd. It seems this SOB has recently gone bust, which does not cause any feelings of sympathy but a great deal of anger.

I had the misfortune to enrol in his microlight school in March last year and during the same week paid him £1,550 deposit on a Mirage. The rest of the year was then spent giving me numerous excuses why it hadn't arrived. Then in December he told me there was a new Eagle for me at the hangar, but I had to pay the balance in readies (£1,300) in advance, which I did. When I arrived at hangar to collect my plane I found both Tom and Eagle gone to the UAE where they probably still are. So I took charge of a second-hand and somewhat tatty Eagle with a written promise from Tom's wife for it to be replaced by a new one at a later date. Now it seems that promise has gone the way of all the others. Needless to say I was somewhat annoyed!

I would recommend anyone planning to do business with him to refrain, to put it mildly. I'd recommend them to knock his teeth down his throat, to put it more strongly.

But more than anything else I'm annoyed at the bad feeling his behaviour must have given some people about the sport as I was not, apparently, the only one to fall foul of him.

Anybody not totally dedicated and enthusiastic could well have been discouraged by this character's offhand treatment, and there are several people who have paid money and received nothing.

I hope I bump into you one day, Tom, and not so I can buy you a drink.

Paul Griffiths

CONCERN

Dear Sir,

I feel I have to answer the article by Peter Lovegrove headed "good and bad engineering practice", with concern to the last few paragraphs in which Mr. Lovegrove talks about use of cable bracing on Trikes. Of course, as you know, Ultra Sports was the first company to utilise a Monopole Trike with folding axles using cable bracing. Mr. Lovegrove's points are valid, if you were using $\frac{3}{4}$ bolts as he suggests and tubing which is not supported by a bush or inserts. Obviously Mr. Lovegrove has looked at a copy of a Tripacer and

has not examined an original production Ultra Sports Tripacer which utilises 8 m.m. bolts and plastic inserts in the axle tubes. The cable utilised is double 3 m.m. 7 x 19 which will withstand loads of approx. 2,000 lb. The axle tube is $1\frac{3}{4}$ in. x 16G HT30TF and as you will note it is of a thicker gauge than the standard 17G used in hang glider design. The angle between the leg and horizontal on the Tripacer is 25° and not 10° as described in the article. We have sold some 150 units without failure of bolt, tubing or axle, and in fact feeding compressive loads in the axle tube and utilising the correct size of bolt cable and axle tube makes this system stronger than conventional straight rear tubes as used on a lot of Trikes. I would like to ask Mr. Lovegrove if he would like to take a look at a Tripacer when he sees one next, rather than jumping to conclusions and generalising on the Monopole design. Obviously as the original designers of this system we have done a lot of research in development before production. Naturally, I do not speak for every Monopole manufacturer as I do not know their specifications. We have in fact increased the angle of the rear axle on our twin seater Trike to 45°. This has completed 54 logged hours air-time, and has had an all up weight of 600 lb., and some very heavy landings without any failure on the undercarriage system. The only difference in the two seater is that we use double 4 m.m. cable instead of the usual 3 m.m.

Graham Slater

DISQUIET

Dear Sir,

As microlight aviation has developed in the UK I have watched the debate over CAA intervention with interest and I hope an open mind. Having spent most of my life in long range military transport operations with my fair share of air-misses with gliders and private pilots doing their own thing I cannot say that I favour a free-for-all in the air. Nevertheless there seemed to be a good case for a minimum of red tape in the microlight world.

A visit to Popham in August coupled with Nick Regan's letter in September/October Flight Line has forced me to revise my ideas overnight. With the perhaps biased outlook of a retired professional aviator I could not conceive a situation in which anyone would become airborne without having first studied the rudiments of airmanship. This would include a smattering of navigation, airflow, meteorology and top of the list for microlight operators would be non-radio communications including among many other matters the signals square. Nick's plaintive comment that no-one told

him about the signal square fills me with disquiet. It is for pilots to inform themselves surely. If not then there is only one body which can tell us. That is the CAA and they will have to do it by regulation. We may not want the CAA but if Nick's experience is typical then we need CAA intervention and we need it fast. Without it we are quite clearly a danger to ourselves but far worse we are a hazard to other aircraft. It is only a matter of time before a microflight gets tangled up with a 747 and with perhaps a thousand passengers, inhabitants and crew dead the phrase "nobody told me" is going to sound a little silly.

Come on chaps — do a little homework before leaping into space. "Aviation Law for applicants for the Private Pilots Licence" published by CAA, Greville House, 37 Gratton Road, Cheltenham at 60p plus post and packing makes a good start but it is only a start. If you don't the CAA will have no choice but to descend on us like a brick-built eagle. September/October Flight Line was certainly an open invitation.

Ian Lewis

OVERHEATING

Dear Sir,

Talking to people with a variety of thrust packs, one common factor emerges. By and large, the engine is running, static, at full power, between 5 and 10% below its peak power r.p.m., and in some cases more.

Unfortunately, extensive experience (with air-cooled two-strokes in light hovercraft racing) suggests that if an engine is going to overheat, this is the condition in which it will do it; obviously, cases vary, and a standard, fully run-in 250 c.c. single (such as the Robin) running on the maker's 18 b.h.p. exhaust will run indefinitely at any point in the power band — at least as far as our purposes are concerned. But once fitted with an "aftermarket" tuned exhaust, we need to be rather more careful. The extra power produced by the new exhaust is achieved by burning more fuel in the same old cylinder, and thus producing more heat to the cooling fins. Moreover, the carburettor will most likely be jetted for peak power, too. Since all carburettors are a compromise, it is safe to say that it will run weaker at lower r.p.m., whilst still on full throttle.

So at 10% below peak power, with this new pipe, we have up to 50% more heat to lose, a mixture that may be 3% weaker, and a cooling fan that delivers 10% less air.

Is it any surprise that this is a critical condition? Especially when after a full throttle climb, with a "glowing" piston and barrel you throttle back

suddenly, cutting off the cooling air and the cooling mixture from the carburettor!

Further down the rev. range the pumping effect of the pipe is lost and the problem goes away. Be sure you know your set-up is matched to its pipe, and if you are in or near the danger area, beware full throttle! If the cylinder head gets hot enough, the spark plug (or carbon deposits) will glow, detonation will take place, and the piston will look like the moths have been at it.

N. P. Low

A5 OR A4?

Dear Sir,

Having failed to make my up-raised arm noticed at the shambles of an AGM, may I now make at least one voice heard on the question of magazine size.

I was, frankly, disgusted at the apathy of the membership over this issue and do not share the apparent underwhelming indifference as to whether A4 or A5 should be used. I begin to get the impression the 90% of members will continue to let others make all the decisions for them, and we have all seen the results of that to date.

To my mind, A5 was an acceptable size for our magazine when we were a struggling 300 membership group with very few funds to play with. In the same sort of way, it is a suitable choice for Women's Institute newsletters, Parish magazines and the like. For an organisation which charges its members £12 per annum — and for most of these members, the magazine is the BMAA — it simply is not good enough, especially with the current membership.

With A5 pages, figures and diagrams come out too small to read, reproduced articles need a powerful magnifying glass to be rendered easily readable, photographs print with miles too much contrast and obscuration of all the interesting detail (even the December cover was marginal!) and you cannot even bind the copies together in a useful-sized file.

Dare I say it, the dreaded opposition (the PFA) with its greater outlay on engineering, etc., manages to print a professionally-sized magazine. Please let us do the same; it's no extra work for the Editor.

Peter Lovegrove

(Personally I was very surprised that you all didn't register a choice to go to A4, but it's too late now. Perhaps you will all get your minds into gear before the 1982 AGM, if this question comes up again. — Ed.)

FLIGHT REPORTS

THE LAKES AND BACK

By Martin Hargreaves

The trip started innocently enough in the pub on Friday night (6th November) with a "coming for another try at the lakes tomorrow?" Well, it seemed a good idea with a few pints inside me so "OK give me a ring in the morning". I thought no more of it until the phone rang at 7.45 a.m. — with blurred red vision and a steam hammer inside my head I crawled out of bed.

After much confusion and driving about Keith Dickinson and myself arrived at the take-off field at 10.30. Bob Calvert was already there having flown up from Blackburn. We did not really expect to complete the trip successfully as although Keith and Bob had flown to Bowness on Windermere before, only Bob had made it both there and back. I had tried twice before both ending in ignominious failure; the first time getting only three fields away before seizing my engine and landing in a cornfield, and the second getting 7 miles before my petrol tank fell off. On rigging I had the usual few snags. My foot throttle was broken and the petrol tank was leaking. No great problem — there was nothing we could do so press on regardless. In the rush to get here I had also forgotten to bring any tools or spare spark plugs — never mind! We loaded up with spare petrol, oil, toothbrush, etc. The great moment had arrived. Take off! I went first with the mighty thrust of 160 c.c. Valmet of questionable origin. I drifted up to 50 ft. then "tinkle, tinkle, phut". Damn partial seizure, backed off power, blipped throttle

gently and regained power back down to 10 ft., reset throttle at $\frac{3}{4}$ power and ascended gently to 200 ft. By now the other lads were off and Bob had made a bee-line for the lakes. I followed with some trepidation, but thought I might as well have a go.

Twenty miles of smooth flying later and still on reduced power we were over Lancaster at 4,000 ft. — brilliant! There was an inversion at 3,000 ft. so all we could see was a fluffy white blanket with the peaks of the lakes to the north and the Pennines to the east — very, very beautiful. Letting down through the inversion we passed over Morecambe Bay and let down at Cark Airfield.

Breakfast time! Cups of tea and sausage butties while we chatted to the lads at the parachute club. I could not really believe we'd made it this far but we knew that the testing time was now to come.

Refuelled and off! Oh dear, I was having difficulty climbing as fast as the ground was rising. Bob and Keith seemed better off with their 250 c.c. Tripacers, so I got left behind. We were flying over inhospitable ground now, for although it would be possible to land without harm to yourself, you would break your Trike and recovery would be an epic as there are no roads. Climbing slowly I caught up and we passed Newby Bridge and headed up over Eshwaite Water and Hawkshead. Dropping over a ridge we left Ambleside to our right and started up the pass to Keswick. Back up to 3,000 ft. now and the scenery was really stunning. We passed Helvelyn and Dunmole Raise about level with the top and headed out over Thirlmere. Panic! No landing areas, so flew for 15 minutes with the choice of water (looked cold and deep), 70 ft. pine trees and sheer rock faces — very beautiful but it sure stretched the imagination.

The end was in sight, we caught our first glimpse of Keswick. The wind had been a gentle south easterly most of the flight so had helped us along, but we were now entering the infamous (in hang gliding circles) Suther Triangle, well known for its unpredictable wind speed and wind direction. We came level with Latrigg when wham!!! the nose pitched up with irresistible force. The airspeed dropped and I stalled. Turbulence, I find, always seems much worse after a long smooth flight and this was terrible! I could see both Bob and Keith being flung about with surprising ferocity. Don't panic! We let down to 500 ft. and the air smoothed out nicely. We picked a field, landed and proceeded to leap about shouting and laughing. We must have looked a strange trio indeed, dressed in innumerable thermal layers, thick mittens, etc., etc., and behaving like over-excited five year olds!

A few of the Cumbrian hang gliding lads turned up to welcome us. They had been on top of Latrigg as we flew past and had thought that our being thrown about was voluntary aerobatics to celebrate our arrival! The flight air time was approx. 2 hours — not bad for a 60 mile point to point flight.



... 70 ft Pine trees and sheer rock faces...

RETURN FLIGHT — NEXT DAY

We arrived at the field at the crack of dawn, well 11.30 actually as the celebrations the night before had got totally out of hand as usual. We checked over the machines, tightening up a few loose bolts, etc. I cleaned my one and only spark plug which was getting a bit worse for wear, filled up with petrol (the leak in my tank was not getting any worse), so we were ready.

The wind was getting up from the south (Sods Law) so we made an alternative flight plan. We decided to fly into the valley over Thirlmere, but if the headwind or the turbulence was too much we would retrace our steps, fly round Suther Fell, down Mungresdale, over Shap and so home.

We went into the valley at 1,500 ft. We managed to penetrate the headwind, but the turbulence was not very pleasant. Communication is always a problem and as we had been split up we did not really have any option but to continue.

About a mile in I suddenly hit an area of consistent sink. I lost over 1,000 ft. in about two minutes on full power. This left me only 300 ft. over the valley floor. I had to keep going as Bob and Keith were now out of sight, about a mile in front. I next came to that part of the valley with no landing areas. It got the imagination going even more this time, as I was out of touch with any landing areas for half-hour or more because of the headwind. All good exciting stuff.

I eventually popped out of the valley and over the ridge at the same time as Bob and we flew together over Hawkshead and landed to refuel. Keith arrived 15 minutes later — he had been forced to stop and refuel earlier. Much joy, relief and leaping about. Later we took off and climbed up to fly over Morecambe Bay. The tide was out so when we crossed the channel we descended to zero feet over the wide sands, more excitement as we shot along at 35 m.p.h. trying to keep just the rear wheels on the ground. One day I'll get as good at it as Bob!

Over Lancaster and on course for home even I was starting to believe we might possibly make it. Flying at 500 ft. alongside the A6 when phut! — out of petrol. I landed dead stick in a rather rough field and spotted across the road a petrol station (somebody was looking after me). I had known I was very short on petrol for some time, but failed to find a decent field, silly me. The lads landed, we refuelled and took off again. We parted with Bob at Garstang as he made his way to Blackburn, while Keith and I took a very smooth flight home to Lytham. We had made it! Flight time was just over three hours giving a very respectable 20 m.p.h. average ground speed. I had enjoyed it immensely. For me it had broken down barriers and opened the door to much more challenging things to come.

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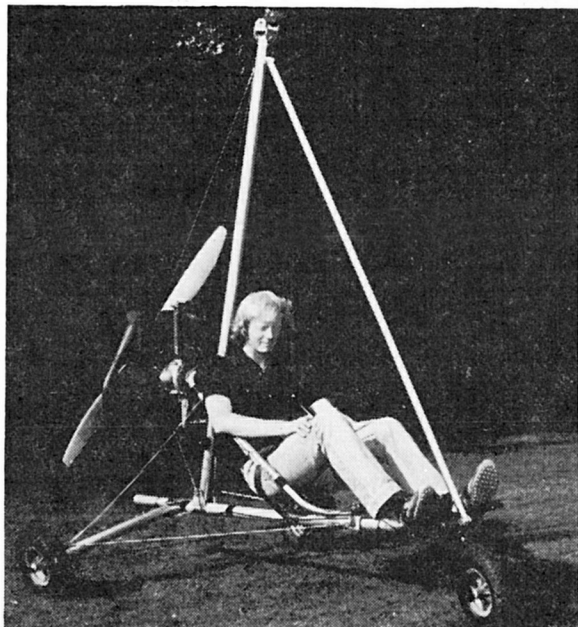
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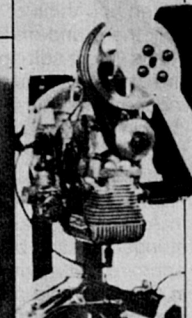
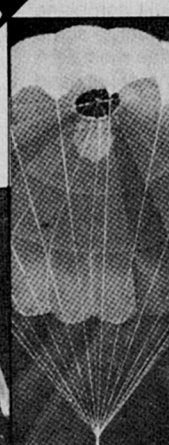
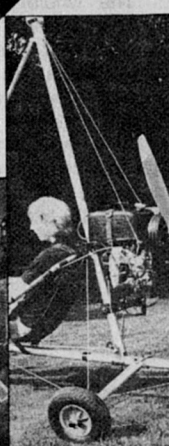
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THE HUMMER

By Brian Wronski

When you think of the Hummer you think of Klaus Hill, the grand-daddy of modern microlight design. Klaus was a soft-spoken German who emigrated to the States and was among the early pioneers of our industry. In my view the Hummer was his best design and over the past three years it has proved to be a very safe and popular microlight in the United States. I say "microlight", but in fact the Hummer is an FAA certified home-built aeroplane in America and as such has had to undergo some stringent testing before certification. The main FAA approved kit manufacturer of the Hummer is based in Pennsylvania and it was a chance meeting with the company president that led Bill Allen and myself to eventually take on the United Kingdom agency for the aircraft.

Just a look at the Hummer tells you that it is a sturdy, well thought out design with pleasing lines that make the aeroplane "look right". Control authority is excellent with a conventional stick operating ruddervators on the V tail through a mixer system. Visibility is unparalleled with no aluminium structures around to restrict the view.

She will cruise along at 40 m.p.h. on just half throttle, climb at over 450 ft. per minute, and has a top speed of 55 m.p.h. and a nice gentle stall at around 22 m.p.h. with no hint of a wing drop. The

Hummer must be one of the most comfortable microlights afloat with its fully padded seat and back rest. Cross country flying is a real pleasure and with four hours' endurance from the tank 100 mile trips with a good reserve are quite possible. The engine is situated so far back that the noise level is very easy on the ears; in fact, that's how the Hummer got its name in the first place. We are using the 250 c.c. Robin adapted by Steve Hunt, a well known and reliable engine which is backed up by Steve's helpful and professional approach to after sales service.

Rigging time is about 15 minutes. You'll need a trailer to move the Hummer around on, but this does not in our opinion represent a problem; the comparative readiness of the aircraft to fly merely by laying the main wing in position and stressing the aircraft up with adjustable flying wires certainly has its advantages as regards set-up time.

The whole aircraft features standard aircraft quality 6061T grade aluminium. Dacron flying surfaces, AN quality hardware, and a good range of instruments, i.e. EGT gauge, air speed indicator, compass, tachometer and altimeter all come as standard. Options include a glass fibre fairing, wheel spats, sprung undercarriage and a full harness set up. The throttle position can be varied during manufacture to suit the pilot, as can the centre of gravity position to suit the pilot's weight.

The Hummer will take off in 200 ft. off grass (no wind) and has a ground run of around 100 ft. on





landing. She is extremely easy to fly, has good pitch and roll response and in my opinion is the next best thing to flying a magic carpet.

The Hummer is available as a kit or ready to fly custom built by our own staff who also flight test the machines prior to collection by the customer. We shall be appointing three dealers for the Hummer based around the United Kingdom. The aircraft is an exceptionally safe machine and our choice of dealers will reflect their common sense and safe approach to microlight flying. Further information is available from — Hummer Sales, Bath Place, Birdlip, Gloucestershire.

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BLOIS

By Michael Carnet

Photos: © Vol Libre Magazine

At the end of last year, the French microlight aircraft Association (FFPLUM) organised a big meeting in Blois, West of France, on the river Loire. Almost every French professional was there, with the presence as well of Belgians, Swiss and Italians and the weather, if not sunny, was not too bad.

The FFPLUM has about 1,000 members at the moment, but the market and the interest are expanding and next year this should double or triple. The FFPLUM does not edit a magazine because Vol Libre Magazine reports every month microlight activities as well as hang gliding. There was a queue on the runway and there were more microlights taking off than landing. Imagine how crowded was the sky!

The Motodelta is quite interesting when you think that this "trike-type" microlight had been designed in 1977! It is controlled like a hang glider in pitch and roll, but with a rudder for the yaw. It has no top or bottom rigging just faired tubes. The cockpit is very clean and the engine is a JPX 425 c.c. (made in France), apparently very powerful, but very noisy as well.



Another French production is the Mosquito 210 by Veliplane, which was the first trike to fly on a hang glider and also started a revolution in powered hang gliding over the last two years. The first prototype flew in October '79 (the first British trike flew in February '80). The engine is a solo 210 c.c. with no reduction. It is noisy, badly finished and is not very powerful but when you switch off, you can thermal with a good sink rate because the dry weight is 23 kg. (50.6 lb.).



Bernard Danis was there as well to show his production, especially his tandem trike. The finish is terrible like all his productions, but it flies: in one day he took 20 passengers for £20 each! He is using the Hirth engine 440 c.c. with reduction drive, which looks and sounds good. He is also manufacturing a trike with the same engine for agricultural use, like crops spraying. The Hirth 440 c.c. is pushing out about 200 lb. thrust.

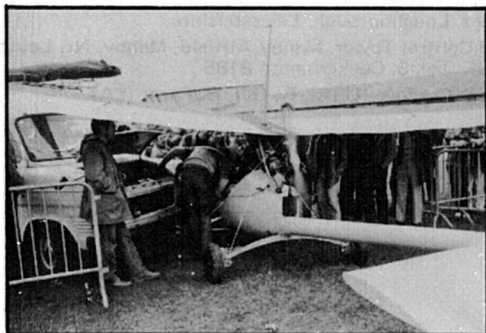


The Tripacers were there in force: the Tripacer 250 c.c. distributed by La Mouette in France and the Tripacer 330 c.c. brought by Graham Slater and Michael Carnet of Ultra Sports, the only British manufacturer which was there. The Fuji-Robin engines 250 c.c. and 330 c.c. showed their superiority with their excellent compromise of weight-noise-power-reliability.



Another microlight equipped with the Fuji-Robin 250 c.c. is the Vector 600 (made in USA) imported in France by ULM Ltd. It has no spoilers, no rudder but just a V-tail which is stick-controlled. Climb rate is limited but the Vector 600 offers a very good compromise for the one who doesn't want to fly on a trike.

The Hiro 125 c.c. engine was there with KDA, a French company manufacturing a copy of Southdown Sailwing trike with this Italian engine pushing 150 lb. thrust. For a 125 c.c. this is exceptional. We are waiting impatiently for the Hiro 250 c.c.



Present as well were the Libellule from Aviasud, whose engine (Konig three cylinders) never started, the Quick Silver MX, the Motoplane which is the French name for the Rally Rotec and the Weed-hopper which was so noisy. Rendezvous in Blois for the next meeting will probably be in November 1982. It was not as far as Oshkosh and it was maybe better.

In France to fly legally it is necessary to get a registration number from the ministry of transport and a PPL, or the theory of the sailplane pilot licence. The FFPLUM is planning to have soon microlight pilot licences.

The address of the FFPLUM is: 489 Chemin de la Sacriste, 84140 Montfavet, France.

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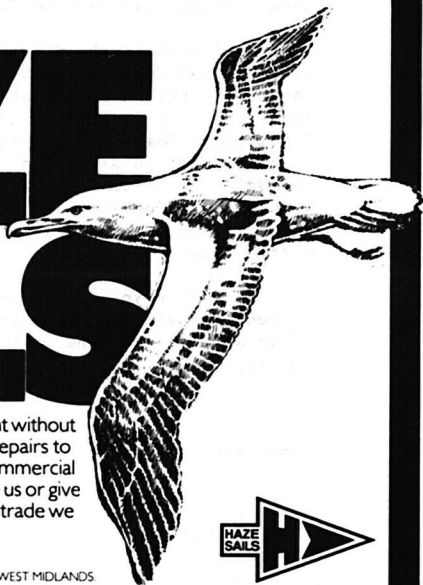
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Paul Bennett who flew Eipper's 3-axis MX recently for FLIGHT LINE'S "Road Test" commented "The MX is a docile machine in the hands of a beginner and both exciting and maneuverable in experienced hands." A twin seat MX is now available to our dealers. The American Aerolights' Eagle has proven itself to the industry as a standard of excellence in safe, fun flying. The Mirage MK II completes our product line as the original "looks like an aeroplane" microlight with high performance and conventional controls. It stands well ahead of its competitors in the development of second generation microlights.

We invite you to fly our products and make up your own mind. If you are satisfied with your current product line and price structure, we wish you continued success, if not, please contact us,.....we think we can help.

Sincerely,

Barry J. Gordon
Chairman

THE LIBELLULE

(The Libellule was designed last year by two non professionals, Bernard Broc and Rene Berniere. It is now in production by Aviasud directed by Francois Goethals. Francois was French champion of hang gliding in 1980 class II on a fledge II. It is not surprising to see him now powering this type of wing. He tells us all the information concerning his product — Ed.)

The microlight Libellule has been designed for travelling: So it had to be fast, stable and comfortable. Bernard Broc succeeded in this triple combination. The wing (standard fledge) has good performance and stability and is rigged on a cockpit-frame made of polyester which reduces drag and allows you to fly in comfort. The whole machine is car top transportable and can be rigged in 25 minutes.

The control in roll and yaw is done by rudders on each tip as on the fledge. In pitch the stabilizer (fully mobile) avoids the weight shift control problems; which are present on the Pterodactyl for instance. All the controls are connected to a single stick in the middle like an aeroplane. There are also aero-brakes; activating both rudders at the same time.

Air speed indication, altimeter and variometer are the three standard instruments, plus optional rev-counter, cylinder head temperature indicator,

compass and a radio transmitter CB or VHF. There is an instrument board to receive them.

FLIGHT IMPRESSIONS

Take Off: 50 m.

Climb: The prototype equipped with the Konig engine has a climb rate of 240 ft./min. The Fuji Robin 250 we are using for the production, the climb rate is 400 ft./min.

Cruise Speed: About 58 m.p.h.

Max. Speed: About 66 m.p.h.

The comfort allows long journeys: the windscreen is very effective and the stick is very light. Visibility is excellent and the seat squab is really comfortable.

Stall Speed: 28 m.p.h.

The stall with or without the power is very safe. Landing is very easy, speed can be cut down by using both rudders at the same time (aero-brakes). The back axles absorb the landing shocks smoothly.

The Libellule is a fast machine, easy and nice to fly, allowing aerial journeys at unbeatable prices. It is directly available to every pilot able to fly with a stick.

The wing is an unmodified fledge II. The 60 litres (13 gallons) tank allows 10 hours flying.

The Libellule costs about £3,200.

For further information: Aviasud, François Goethals (les cigales), Chemin St. Antoine, Bagnols en Foret, 83600 Frejus, France. Tel: (94) 40 60 42.



Photo: © Vol Libre Magazine

THE SKYMASTER PARACHUTE SYSTEM

By Len Hull

Photos: © Steve Thompson

Readers of Wings! magazine will realise already that something is afoot in the parachute world. That "something" was designed 12 months ago, constructed and tested in the North of England by two hang glider pilots, Pete Best and Len Hull, and is called "Skymaster". In terms of microlight safety systems, it is a major step forward.

It is a self-contained, rapid deployment parachute system for use with trikes, microlight aircraft and hang gliders. It also offers real possibilities for use with sailplanes and light aircraft, and part of the system's undoubted appeal is the fact that it will not only save the pilot, it will also lower his precious machine to earth in a civilised fashion, without leaving many thousands of pounds' worth of sailplane (or Cessna) to fall uncontrolled to earth, destroying both itself and anyone who happens to be underneath it. Skymaster is fully patented, and uses a canopy of unique design and construction which gives a sink rate approximately half that of conventional "reserve" parachutes. The parachute is packed in a purpose designed aerodynamic container and is operated by a spring-propelled drogue chute. All-up weight of the standard system is 8 lb. approx.

The system is secured to the airframe in any position that gives the main canopy a good exit into clear air behind the wind, or tailplane. On a trike it is attached either above or below the keel, clearing a spinning propeller and causing a minimum of drag. The bridle of the parachute is then routed along the airframe and over the wing surface, where it is attached to the C of G and thence to the pilot if desired. The pilot has a simple "D" ring fixed in position on the airframe or in the cockpit. A cable release runs to the vital locking pin. When the pilot makes the decision to deploy, he has just one movement to make: he grabs the "D" ring and gives it a firm pull for 2½ in. That one movement operates (a) the parachute and (b) the engine stop switch.

Skymaster then goes into action as in the picture sequence. John Clarke (Peak School of Hang Gliding) agreed to help in testing, and the Skymaster is seen attached to his Skyhook Sabre and trike, total weight 350 lb. After successful completion of tests on solo hang gliders, we were concerned to prove the system with "power on" deployments, and first trials were undertaken with John racing along the runway with the nose held firmly down and throttle wide open.

We were delighted to find that the only effect of the slipstream was to make deployments 40% faster than before, with the drogue being helped on its way by the prop. draft.

The next stage was to deploy the parachute in

flight, allowing the canopy to inflate and then pull away, utilising a small weight to keep the canopy inflated. Again the speed of operation was impressive, with estimates of 3-4 seconds from all ground observers. Some of you will have seen this test done at Mere in September, with Mike Hurlley playing pilot on his Sealander trike. In a fit of enthusiasm we decided to demonstrate just how fast the canopy would perform with plenty of weight on it, and to this end we bound the bridle to Mike's heels as if it were Houdini himself we wanted to restrain.

Mike was blissfully unaware of this, and deployed as normal at 350 ft. His expression could be seen from the ground as the trike stopped almost dead in mid-air, before the bridle catapulted off into the canopy, sending the Sealander into a dive. On landing, Mike came looking for the bloke who had attached the bridle (i.e. ME), and his language would not have disgraced McEnroe!

After Mere, we had a long wait for suitable weather conditions before we could do any more live testing, and we took the opportunity to set up a framework on the roof of a car so that we could fire the system at all sorts of unnatural angles. The most unfair test was to fire it at 30 m.p.h. DIRECTLY into wind (might someone ever stabilise in a tail slide?) and as soon as the drogue emerged it was whipped back in the airstream, pulling the main canopy out of the canister and through 180° into a normal deployment that picked up the back of the car! In every case the performance of the system exceeded its designer's expectations.

Our local pioneer John Clarke volunteered to help us get the pictures of the "live" descent that you see here, so on 6th November the Skymaster team assembled at Ashbourne airfield, in company with Len Gabriels, who was to fly our photographer Steve Thompson (you've seen his work before) on the Skyhook dual trike. After a few "detaching" deployments, John managed to put one of our canopies in the tallest tree of a neighbouring wood, and Len and Steve announced that they had their "act" together on the dual trike, so we decided to "go for it". We secured the master release on John's keel at the C of G and clipped in the parachute bridle — this was to give the pilot the option of jettisoning the canopy, gliding down and doing a deadstick landing. His other option would be to land by parachute. Len Hull would be talking to John by radio during the descent, giving him a commentary on the behaviour of the canopy, and Pete Best was filming from the main runway.

John climbed out to 1,300 ft., cut the engine and did a circuit. At 1,000 ft. with Len in position 250 ft. above, John pulled the "D" ring and the parachute

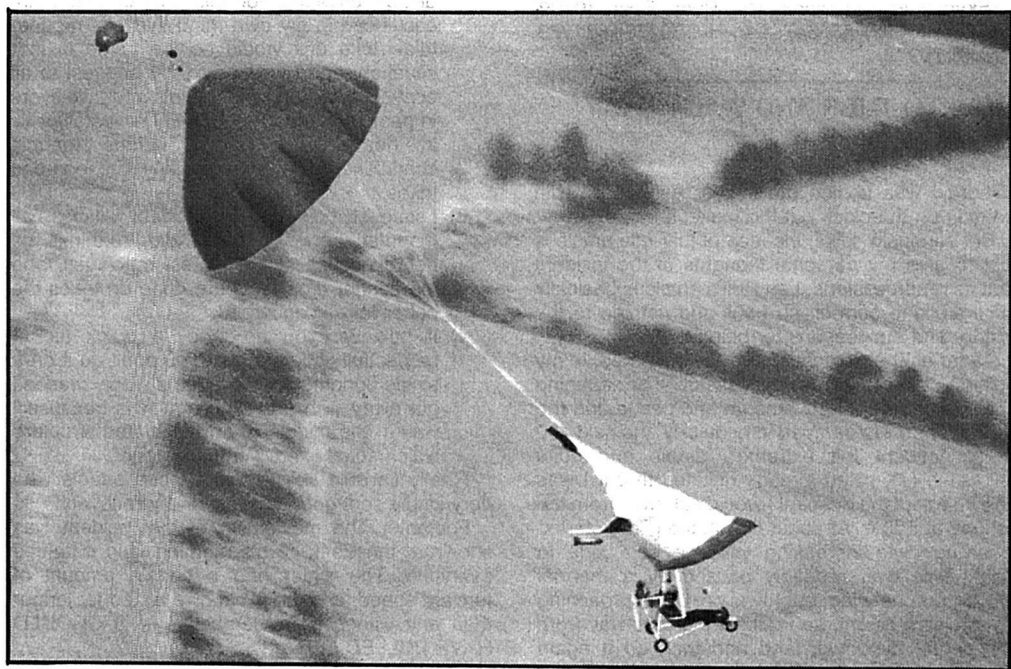


deployed perfectly, stopping the trike abruptly. The spectacular backswing was damped out very quickly, and a stable descent ensued, with a steady reading of 500 f.p.m. down on the variometer — the spread of the wing was obviously causing a very

high drag factor. **SUCCESS!** Cameras were clicking, and Len Hull was leaping about and bawling superlatives into the radio — all to no avail, because the pilot never heard a word. John therefore had no real idea of what the canopy was doing above the wing, which probably influenced his next move. His decision height of 500 ft. was approaching when the Sabre caught a thermal under the left wing, which was sufficient to cause an uncomfortable side to side swing. The canopy remained stable and everything looked OK from the ground, but the pilot decided (ironically!) to play safe, jettison the chute, fly down, re-pack and do it again.

What the ground observers saw was this: as John hit the release, the canopy separated from the glider, shooting the bridle up into the parachute. In less than **ONE SECOND**, without a suggestion of recovery, the glider fell into a vertical dive, continued to rotate and "tucked" viciously, breaking both leading edges as soon as it inverted. Some observers think there was a further tumble before the wreck stabilised inverted with the trike unit on top, but events happened so fast that it is impossible to be sure. Enclosed in his shroud of wreckage, John impacted in the central grass area of the field, and the sound reached us half a second later. With sinking hearts we began to run.

Incredibly, John was still conscious and able to tell us that everything felt OK except his arm, which was broken, and his bum, which was sore. The airframe and double pole trike unit had taken all the





impact and looked very sad, but the sail had survived. The parachute on which John had been descending in complete safety seconds before, had settled gently to earth only 20 yards away.

This is intended as a cautionary tale, and no doubt John will supply his view of it from the "hot" seat, but it is plain that there were forces operating on that microlight that we never anticipated. Thank God we picked the only pilot who didn't really **need** a parachute!

THINK about it — pulling whip stalls, or flying in turbulent, thermic conditions could put YOU in much the same situation as John was, only you may not be so lucky — so **BE CAREFUL**. Skymaster will undoubtedly save lives — let's hope John Clarke has saved a few too!

Skymaster enquiries to: Pete Best (0709) 583235, (0302) 866647; Len Hull (0298) 871289, (0709) 76979.

HOW TO TUCK AND WALK AWAY

By John Clarke

"There I was upside down over Ashbourne with nothing on the clock but the maker's name."

But seriously, folks, the idea of this little article is just to give my personal thoughts of the incident and its repercussions. Len Hull's article is basically accurate and correct, so I will add nothing to the history and our reasons for being there.

As far as the parachute side is concerned, in my opinion it was 100% successful. The opening shock was reasonably smooth and gentle and the oscillations were damped very quickly; the next 400 ft. of descent felt extremely stable and quite enjoyable (?). I had already decided that if I was unsure about the descent I would cut away from the canopy at 500 ft. At about 600 ft. the glider started to swing (with increasing violence from side to side). This was probably caused by a thermal picking up one wing, but I was rapidly approaching my decision height, so I decided to cut away from the 'chute, fly down, land and then do it again

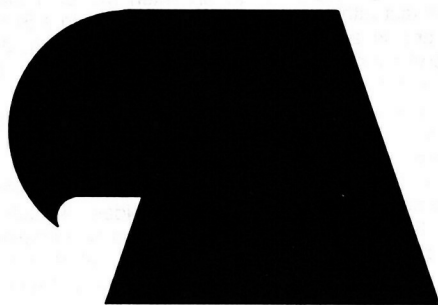
having had a chance to discuss it with the ground observers." As soon as I cut away from the 'chute the glider dropped extremely quickly, pitched vertically nose down and continued gently to tuck without any suggestion of a recovery. I then heard two small cracking sounds which turned out to be both leading edges breaking, and at this point I realised something wasn't quite right. The whole tucking sequence, daft as it may sound, seemed to be really quite smooth and not at all as you might expect, but the distinct impression was of the glider rotating around the trike and me. Some seconds later I landed (in a rather large crumpled heap) but even the landing was far more gentle than anybody really believes and now on reflection the following points I think need stating.

- 1) The Skymaster parachute system throughout the test development programme has been and is a complete success.
I considered taking up an ordinary chest parachute as a reserve but it would have been completely useless in my situation because the wings had folded around me like a shroud, and apart from problems such as a panicking, disorientated pilot throwing the deployment bag out in the correct direction in a spin (and finding a hole in the wreckage to throw it), there would not have been time for it to work. The only thing that would have saved me in my situation was a second Skymaster 'chute mounted on the keel.
- 2) I was performing a manoeuvre outside the design envelope for this aircraft and I am convinced in my own mind that any modern glider/trike unit would do the same in that situation, and I would strongly suggest to all conventional hang glider pilots and trike flyers in particular, that they NEVER whipstall or fly in heavy rotor and/or vicious thermic conditions, the latter particularly with regard to trikes.
- 3) I seriously hope that this incident will make all manufacturers sit back and re-think the aerodynamics of their latest machines, and the sooner drop tests are done on trikes the better for all concerned.
- 4) If however you do fancy a quick tuck I respectfully suggest that you don't do it on a single upright trike, because the only reason I got away with a broken arm was because I was in the middle of a triangulated structure which acted like a "crumple zone".

Finally I would like to thank those people who very kindly sent good wishes for my recovery.

Footnote: The movie film of the incident was shown at the Peak Club's meeting, and it baffled everyone. The glider *had* a certain amount of forward speed, and the initial dive lasted far longer than any witnesses remembered — it **SHOULD HAVE PULLED OUT**. . . .

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TECHNICAL TALKING POINTS

OF PLUG OILING AND CARB ICING

By Dave Thomas

This article is not intended to be advice nor was my earlier one, entitled "Pterrible Ptube Pfret". It is for the reader to decide whether he considers my ideas — born out of not an inconsiderable amount of practical operational experience — to be good, bad or indifferent.

Many of us with early aircraft suffered noise problems associated with direct drive propellers. We tried various means of utilising reduced ratio propeller drive systems with varying degrees of success! Many machines are such that the thrust line is critical, in order to maintain this criterion and to keep the centre of gravity down, many engines were inverted — there the problems began.

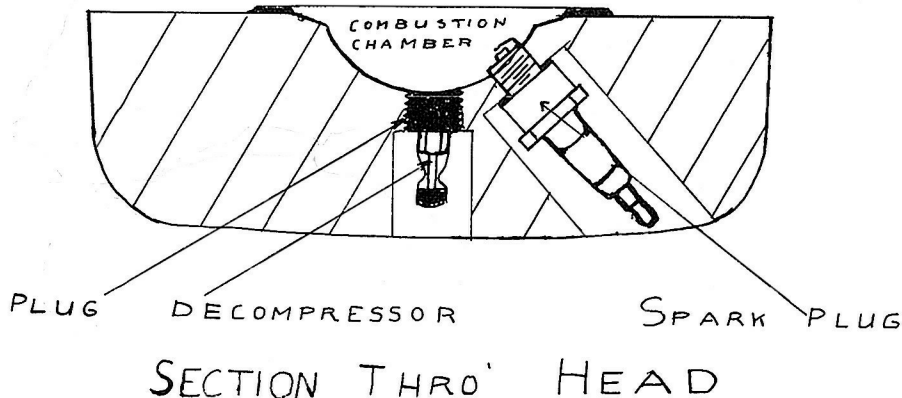
At time of writing, I know of no four strokes in use on our type of aircraft. All are two strokes utilising a lubrication system known to most as "Petrol". Basically, this means that a small proportion of oil is mixed with the petrol. As this mixture finds its way into the combustion chamber, the oil is carried through, hopefully lubricating the moving parts on the way. Crude, but it works. Problems arise from the engine remaining inverted and unused for a period of time. Residue oil in the crank case trickles down the cylinder wall and arrives at the spark plug. Attempts at restarting an engine in this condition are rarely successful until the plug has been either thoroughly cleaned or replaced with a new one. Here's my answer to the problem — and it works — it has done so for around 30 hours without aggro.

First, an automatic poppet type decompressor valve was fitted in the original spark plug hole position. This necessitates plugging the head then retapping to suit the decompressor valve. I used the type usually fitted to a Stihl chainsaw engine. A new

plug position was then spot faced, drilled and tapped so that the resited plug enters the hemispherical combustion chamber at an angle of 45 degrees to its original position. The spot face was taken slightly deeper than the original so that the spark plug protrudes further into the combustion chamber. (Yes, I know, it does raise the compression ratio, oh dear what a crime!) Now; when the inverted engine is left for any appreciable time, the decompressor must be set to the open position. Residual oil will still run down the barrel but it will circumvent the plug tip and exit via the decompressor. To restart, a few pulls with this valve open will ensure all muck is cleared. Once the motor fires, the valve will automatically close. This provides an additional bonus — the starting mechanism will last longer, as it has to cope with less of a load!

CARBURETTOR ICING

In the beginning we microlighters believed ourselves immune from this particular problem, even though many with conventional flying experience had learned of the importance of the carb. heat control. However, it was not long before some engine failures, particularly those occurring shortly after take off on full power, were discovered to be undeniably caused by partially blocked carb. choke tubes with, yes, you've guessed it, ICE up the barrel!! My answer to this problem is very simple. A "C" shaped moulded rubber hose is clamped to the air intake using a jubilee clip. Its route is such that warm air is now drawn from around the cylinder head area. Do I hear a scream of "Reduced volumetric efficiency"? Yes, I do know, but I would rather that than keep on landing in embarrassing places and, in any case, there is far more thrust available than that required to achieve a respectable, safe climb rate, so I don't believe it matters that much! It has certainly cured my engine failures (24 last year). However, my arrangement could be improved by the use of a hot/cold control flap. But why complicate things,



why not continue to enjoy simple aviation without unnecessary gadgetry? Many early aero engines operated on a permanent warm air system, but then, you all know that anyway, don't you!

ON PROPELLER PROTECTION

By Ray Wijewardene; Sri-Lankan microlight flier has been building and flying home-builts and kit-builts since he was 16, including a Bowlus sailplane (one flight); Mignet "Flying-Flea" (two flights — improving!); Autogyro, Wallis WA-116 (a lovely flier); Helicopter — Scorpion (that Jesus-nut worried me!) and now the "Pterodactyl-Ascender" (marvellous!). He is a member of EAA and BMAA.

You have probably converted from an inefficient small propeller (direct-driven) to a 2:1 "geared-down", large 4.5 ft. diameter propeller which still rotates at over 3,000 r.p.m. at take off. At this speed and diameter, tip speeds are between 450-500 m.p.h. and being pretty low to the ground pick up pieces of grit from runways or thrown up by the front wheel. You probably — like me — been concerned at the damage thus being done to your propeller.

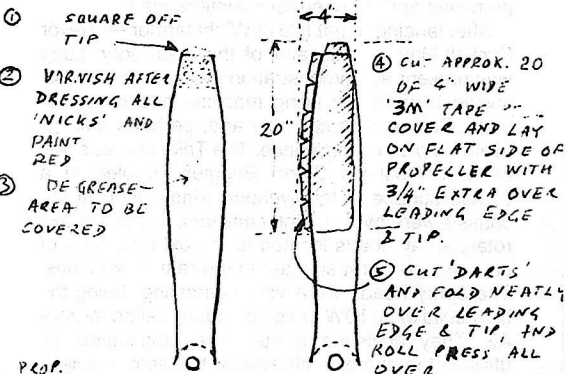
I'd like to share my "solution" with you. 3-M, the manufacturers of "Scotch" tape, market a special transparent tape, four inches wide, especially for the leading edge of helicopter rotor blades (with similar, slightly lower, tip speeds). Following RC-model helicopter practise too, I protected my "Ascender" propeller with this tape after dressing, re-varnishing and balancing the propeller "like new". Only the outer half of each propeller blade need be covered with the tape, on the "flat" side, which should be laid with a full 3/4 in. extending beyond the leading edge and folded over so it hugs the leading edge closely. Pleats should be avoided by cutting "V" darts over the edge before folding. Any bubbles trapped under the tape which will not ease out can be punctured with a needle. It is best to dress the tip of the propeller flat (not curved) before taping (remember to repaint the tips with fluorescent red paint before varnishing).

This enables you to extend a 3/4 in. edge of the tape over the tips and fold this neatly over too. It is a wise precaution to degrease the area to be taped with carbon-tetrachloride before applying the tape, and to ensure there are no sharp corners; all corners of the tape being rounded to avoid their lifting up.

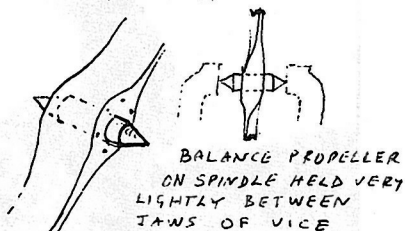
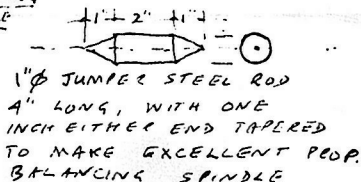
I have found this completely cures the problem and now after 20 hours of use from dirt and tarmac runways (4 second take-off run at 6,400 engine r.p.m.) the propeller still looks like new! I can recommend the "mod"! However, before fitting on your microlight you should re-balance the propeller. This is easily done after machining a 4 in. long, 1 in.

diameter, bar of "jumper" steel with a 1 in. long taper on either end (like a pencil sharpened both ends) and balancing the propeller held lightly in the jaws of a vice on the tapered axle. Don't brush the balancing varnish on — it causes streaks. Use a wad of cloth dipped in polyurethane varnish and stroke it smoothly over the area to be varnished on the covered side of the blade until it balances without movement in any position.

A PROPELLER PROTECTION



B PROP. BALANCING SPINDLE



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Apply:

BAF Engineering Ltd.
Southend Airport, Essex
Tel: (0702) 48601 Ext. 49
or (01-351) 5345

MICROLIGHT CROP SPRAYING DEMONSTRATION WINTERBOURNE GUNNER, SALISBURY, SEPTEMBER 11th, 1981

By Dave Thomas

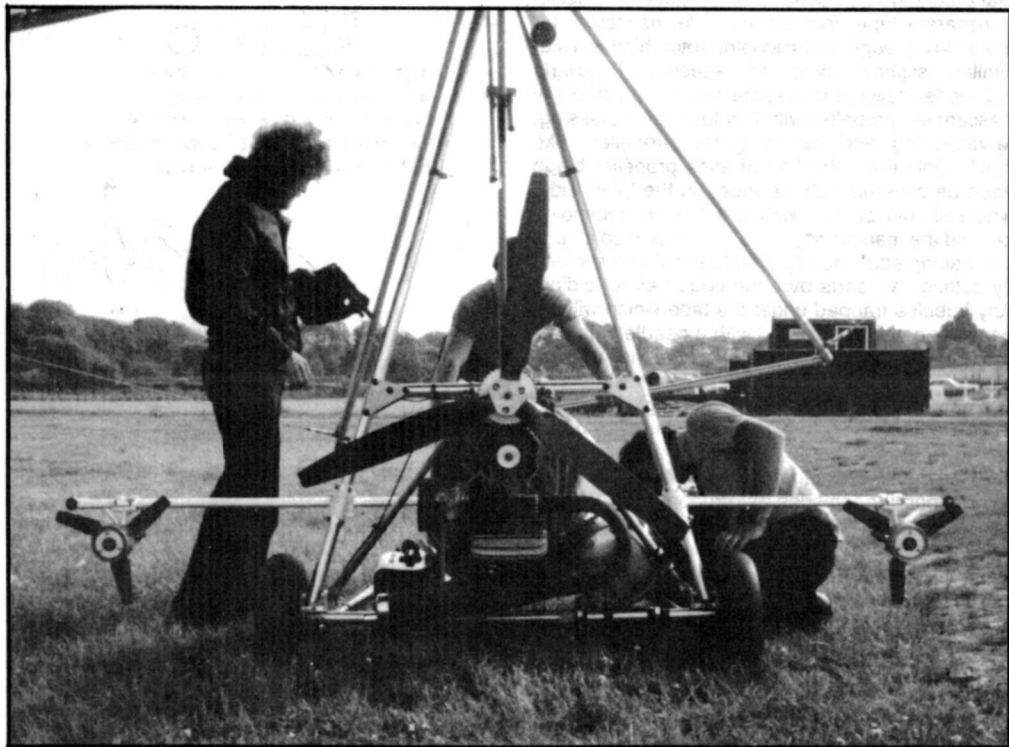
After first clearing a flight plan through Boscombe Down and Middle Wallop (both MATZs) I cruised to the demonstration area, encountering a few patches of very low cloud on the way. My faithful old Pterodactyl was now, at last, mercifully quiet on its crude but amazingly effective vee belt reduction propeller system. (Nearly 30 hours to date with no problems and no need for maintenance.)

After landing, I met Isle of Wight farmer — Trevor Buckell-May — instigator of the idea. John Long was present as demonstration pilot. I was cordially invited to view the flying machine and its equipment. This was remarkably and, perhaps, deceptively simple in appearance. The Trike unit was one of Nick Wrigley's Storm Buggies coupled to a double surface Solar Typhoon wing. Fitted to the chassis were two 5 gallon canisters. These fed two rotary spray heads located at the extreme ends of an horizontal strut situated to the rear down tubes. The spray heads were very interesting, being the brainchild of an IOW based company called Micron-Air. They achieved a very fine atomisation by utilising the aircraft's slipstream to rotate impellers

coupled to the fluid spray nozzles. The units are small and light, the impeller pitch can be adjusted to vary the atomisation, i.e. 80-1,000 microns.

Next came the flying demonstration, this was very convincing indeed. It worked so well that, as a spectacle, it appeared ordinary, to the point of, dare I say it, being dull. There were no hitches, no problems, no desperate spannerings and muttered curses! A large area of field was quickly and effectively treated, though it must be said that the site selected was ideal for the exercise and the weather, for once co-operated.

Demonstration over, celebrations were in order, a triumph for British inventiveness, another first, a breakthrough! Now our Great British farmers can have crops sprayed for a fraction of the normal aerial cost. No longer will they need to drive tractors carrying spray gear all over their precious crops in order to rid themselves of aefids, blackfly, greenfly, redfly, bugs, hang glider pilots, courting couples and all other sorts of pests! The farming community receives the news on the front page of their National Journal and Trevor Buckell-May, together with



his associates, are toasted throughout the length and breadth of the country as this year's heroes. Oo ARA, oo ARA, HAR, HAR!

But, alas, somewhere in an office on the 99th floor of Aviation House a chair leg scrapes on the polished parquet flooring, a bone china tea cup rattles, nervously, in its saucer. Someone, having nothing better to do, is reading Farmers' Weekly!

And, lo, it came to pass, a thunderous and terrible voice was heard from on high. It said, "No microlight shalt perform any form of air work or it and its pilot shall suffer the wrath of the great god KAA who will smite thee down out of the heavens with a terrible vengeance . . . gloom. . . ."

This does not occur elsewhere. The Third World, in particular, being free of such constraints expressed great interest. It follows therefore that these emergent nations could benefit enormously whilst the Trevor Buckell-Mays of this country are forced to continue knocking down their hard-won produce! CAA must, surely, be morally wrong in denying the fruits of their own brains and initiative. This issue should be fought as far as Parliament if necessary, but again regrettably BMAA currently cannot lend much, if any, support to this cause since it exists to promote microlight SPORT flying only.

So, where to now?

TECHNICAL DETAILS

Specifications: Microlight

340 c.c. 22 h.p. two stroke Sach engine driving 3 blade propeller reduction gear.
Climb rate: 600 ft./min.
Maximum speed: 60 plus m.p.h.
Cruise speed: 50 m.p.h. (2/3rd throttle)
Fuel consumption: 1.5 gallon per hour
Fuel capacity: 2.5 gallons
Weight — not including spray system: 120 lb.

Specifications: Spray System

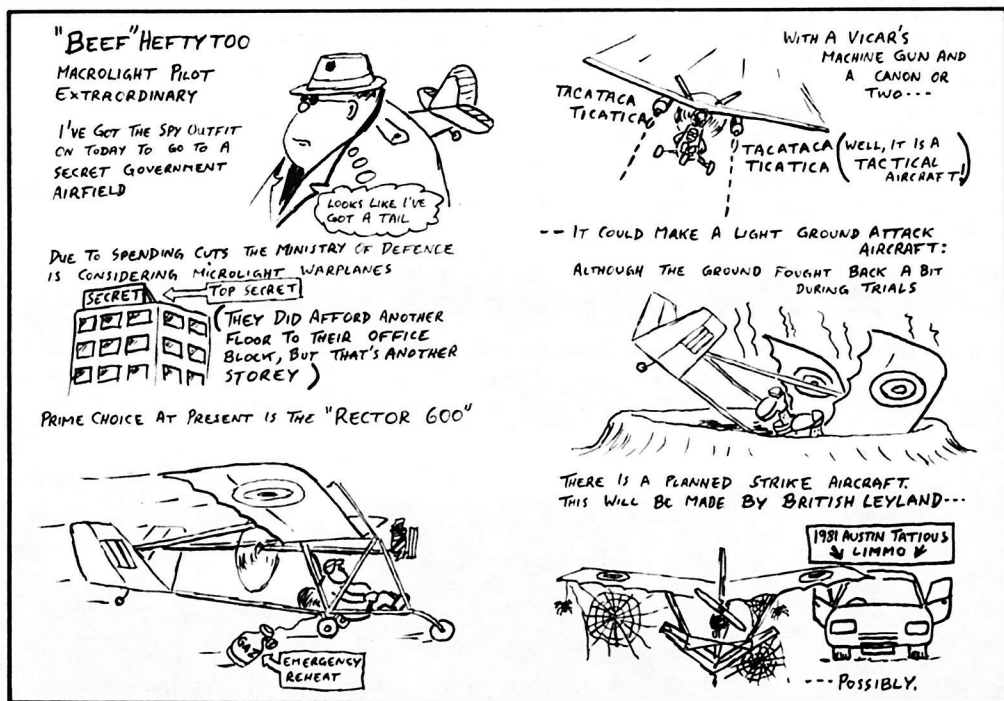
2 Mini Micronair Atomisers for spraying. Application rates from 0-25 litres per minute per unit. Droplet size 80-1,000 Microns.

T. R. Buckell-May lives at Roud Manor Farm, Godshill, Isle of Wight.

FOOTNOTE

Trevor Buckell-May has now successfully negotiated an agreement with CAA which in effect permits the use of his system for agricultural purposes. Basically, it's like this. A person wishing to crop spray his **OWN** land may do so with his own equipment providing that he holds a current PPL or a BMAA Pilot's Certificate of Competence and that the CAA consider the area of land in question to be suitable.

Trevor also wishes it made clear that he has **SOLE** rights in respect of the marketing of the Micron air microlight crop spraying system.



THE SKY-RIDER PROJECT

By Gary Kimberley

The Sky-Rider was designed in 1977 as a rather sophisticated ultralight aircraft which would possess, as near as possible, the same handling characteristics as a conventional light aircraft whilst still remaining in the Australian Air Navigation Order 95.10 (minimum aircraft) category.

Construction commenced in October 1977 and took 12 months and one week, working part time. Considerable research and development, mainly in the form of trial and error, was involved. Some parts were made up from drawings and others were made up first and then drawn. Some were actually made two or three times before I was finally satisfied.

The aircraft was completed just in time to make its debut as a static display at the October '78 Schofields Air Show in Sydney. Its first flight took place one week later on 5th November at St. Marys. I subsequently received an "OUTSTANDING INDIVIDUAL ACHIEVEMENT AWARD" from the E.A.A. which I consider a great honour and which now takes pride of place in my study at home.

As a result of widespread publicity received by the aircraft, I began getting requests from all over the world (mainly Australia and the U.S.) for Sky-Rider kits or plans. At first I was somewhat embarrassed by all this and often had to return money sent to me in advance. I replied to each letter, explaining that the Sky-Rider was purely a private venture and a one-off experimental prototype designed to suit my own personal requirements as a professional pilot. As the amount of correspondence continued to increase, however, it became obvious to me that a genuine demand really did exist. Accordingly I decided to put together a collection of drawings and construction notes which would enable a home builder to construct his own version of the Sky-Rider along similar lines to the way in which I built mine. There

will, of course, be slight variations from country to country depending on parts and materials available.

I am not a qualified aeronautical engineer nor am I an experienced draughtsman. My only qualifications are 9,000 hours of flying on many different aircraft types, ranging from hang gliders to Boeing 747s. Whilst I do not claim my plans are professionally produced, they are, however, simple and easy to follow. The first U.K. Sky-Rider has already been built; I have been down to Cornwall and inspected this aircraft myself. The builder had no previous experience in aircraft construction.

The Sky-Rider project was not originally planned as a commercial proposition and even now I have yet to recoup the amount of money I have spent on the project so far. Because of my determination that all plans should be fully amended and as up to date as possible they are only printed in small batches at a time — an expensive method but in my opinion well and truly justified. Any additional help or advice is cheerfully given free of charge. I include a B.M.A.A. membership application form with every set of plans sold in the U.K. and encourage all enthusiasts to join an appropriate group.

My next project will be a MARK II version of the Sky-Rider with double surface wings. It must be pointed out, however, that the single surface wing, although less efficient, has many important advantages over the double surface aerofoil. After all the Sky-Rider was never intended to be a high performance aircraft.

For me the Sky-Rider project has not only been stimulating and exciting but also a whole lot of fun and I'm sure that anyone who is interested in building this type of flying machine would get just as much pleasure out of it as I did. Apart from my initial ads. notifying enthusiasts of the availability of plans, I do not intend to embark on any further advertising campaigns. It is hoped that the success of the Sky-Rider project will speak for itself.



PLAN REVIEW

From Geoff Shine

KOLB FLYER

Plans supplied by the Kolb Company Inc., RD3, Box 38, Phoenixville, Pennsylvania 19460, USA. Price: \$45 plus \$15 p&p.

The Kolb Flyer is a microlight of fairly conventional configuration with main wing, boom fuselage, tailplane, fin. Control is affected by ailerons, elevators and rudder. The aerodynamic surfaces are cloth and dope covered and the "cockpit" is a welded cage with one axle, the aircraft is a tail-dragger.

The plans consist of 17 drawings 53 cm. x 41 cm. accompanied by a construction manual which consists of:

- 24 sides of construction notes

- 1 side solo engine installation

- 4 sides flying notes

- 1 side index for the 40 photos

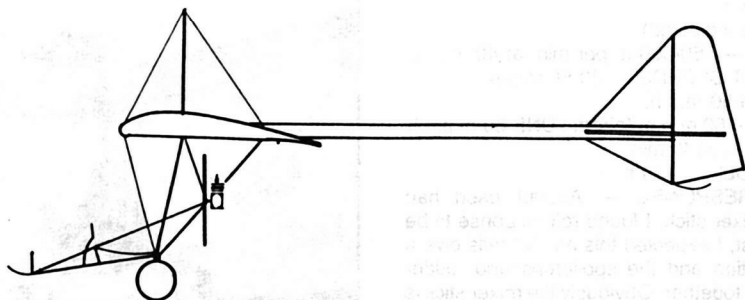
On first glance through the plans they look complicated, with a profusion of notes which are not immediately understandable. The construction notes are not light reading, they are very detailed and specific and again on first reading, they are difficult to take in. My first impressions were that the plans are not easy to follow, BUT! . . . read on. I proceeded to carefully relate the construction notes to the drawings and all became clear. I was very impressed by the detail which the notes and drawings cover, and the way in which the notes and drawings fit together to give a very clear understanding of the construction do's and don'ts. Nearly everything is covered twice, so if you construct something incorrectly you must have misunderstood the notes and misread the drawing. There are 40 photos which also aid greatly an

understanding of each construction stage.

The drawings are to a very good standard, although they possibly could have been laid out slightly less erratically. But all the information is there. The major failing of these drawings and notes is the lack of general description of the aircraft, which would help the understanding of the general layout, before plunging in on the details. A good example of this is the fact that the aircraft can be constructed in two ways, one with lower rigging struts or else with lower rigging wires and a king post. No mention is made of this except when it is encountered in the construction details, and even then it takes a little deduction to work out that there is a supporting jury strut and what it does. There is also no comparisons given between the two methods of rigging, and therefore no way to make a decision as to which to choose.

The construction of the pilot cage and strengthening brackets uses welded tube joints and the builder would require at least enough knowledge of welding techniques to tack together the construction, at which point a professional welder could finish the job although this would probably increase the time it would take to construct the aircraft. It would be a much easier craft to complete for the builder with adequate welding experience at each stage as suggested.

I believe these plans are good value for money at \$45 plus \$15 post and packing to the UK and have all the required information to complete the aircraft. In Steve Hunt's review of Oshkosh in an earlier Flight Line Steve mentioned that this was one of the microlights he was most impressed with.



ROAD TEST

General

AIRCRAFT — "Vector 600", manufactured by Vector Aircraft Inc., Connecticut, USA.

UK DISTRIBUTOR — Vector Aircraft, Sibson Airfield, Sibson, Nr. Peterborough. Home tel. 0778-345416.

PRICE — £3,043 + VAT ready to fly.

CONSTRUCTION — 6061 aluminium, stainless rigging. 3.8 oz. dacron. AN fittings.

POWER UNIT — "330 c.c. Panther unit." Twin cylinder Robin. Reduction drive. 30 h.p.

WEIGHTS — Empty weight 205 lb. Pilot weight range 100-250 lb.

FUEL CAPACITY — Standard 5 gal. tank.

PORTABILITY — You can either (a) totally breakdown making aircraft cartopable or (b) partially de-rig for a trailer or (c) just fold the wings back if you have just got to push it into a limited space (8 ft. 6 in. wide x 17 ft. long x 8 ft. high approx.).

RIGGING TIMES — (See portability for rigging condition). (a) 50 mins., (b) 30 min., (c) 10/15 min. Suggested with two persons or means of supporting wings until king post positioned for rigging (b) and (c) method.

CONTROLS — Full three axis. "V" (butterfly) tail giving rudder and elevator plus spoilerons mounted on top of the wing. The aircraft is normally supplied with a single mixer stick operating all three control surfaces, but optional pedals are available.

LOADING — (As supplied by manufacturer) 5.8 g positive and 2.8 g negative — without failure.

FUEL CONSUMPTION — Approx. 1.2 gal./hr. at 35/40 m.p.h. (IAS).

Performance

Pilot weight — 1,751 lb.

Air temp. — 5°C.

Wind — 8 m.p.h.

(All figures are indicated)

CLIMB RATE — 750/800 ft. per min. at 40 m.p.h.

LEVEL FLIGHT SPEEDS — 30-60 m.p.h.

CRUISE — 35-50 m.p.h.

TOP SPEED — 60 m.p.h. (aircraft UNE 60 m.p.h.).

SINK RATE — 250 ft./min.

TAKE OFF ROLL — 100 ft. +

ROLL/YAW RESPONSE — Aircraft used had complete mixer stick. I found roll response to be light and fast, I expected this as "V" tails give a twisting motion and the spoilerons and rudder being linked together. Obviously the mixer stick is not the best for crosswind take offs, although I found it to be better than expected.

PITCH RESPONSE — Positive with little pressure feedback. This particular aircraft was trimmed fast, and needed over 3/4 throttle to maintain level

flight, hands off, and the IAS being 50/55 m.p.h. This could obviously be adjusted by attaching a bungy cord to the stick.

STALL CHARACTERISTICS — Throttle setting just under 1/3. My airspeed initially 40/45 m.p.h. I steadily started easing back the stick, airspeed dropping steadily. At about 28 m.p.h. she began to mush, at 25 m.p.h. the nose dropped through. I relaxed on the stick and the aircraft recovered immediately with minimum height loss (max. 50 ft.). The stall is predictable and conventional and the aircraft maintained some roll control.

Comments

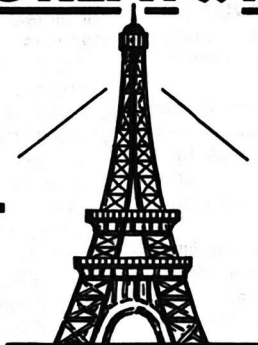
A fairly easy machine to fly. Good seating, that is to say I found it comfortable. I liked the fact that you can keep your arms inside the framework; some you can't! The nosewheel is not steerable but I found the ground handling adequate. Crosswind capability I found better than expected, considering this machine was fitted with a mixer stick, for better than, for instance, a two axis control machine. I was impressed by the way the engine is attached. To remove the engine it is simply one wing nut and bolt. This might sound inadequate but in reality very simple and strong and needs to be seen to be understood. Rigging is one of the big advantages as it is fairly quick for this type and offers several stages of breakdown. The general finish is quite good, the tubing is satin silver anodised. One thing that is immediately noticeable is the simplicity of the framework. The undercarriage appeared strong but did not have any form of suspension.

I would like to finish by saying that I enjoyed flying the Vector and that I am surprised that there are not a few more flying about.



MICROLIGHT THE GREAT ^ RACE

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(TOWER)



PARIS
(EIFFEL TOWER)

5/6 JUNE 1982

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AN ALTERNATE VIEW OF A SCHOOL

By Christian Marechal

THE DORIS DICKSON ACADEMY OF AVIATION

Lessons in: microlight flying, brain surgery, needlepoint, taxidermy, pipe lagging, millinery, home cooking and karate.

Welcome to our Academy. Its sole purpose is to provide our instructors with a good laugh at your expense. It also provides the eponymous Mrs. Dickson with a pathetic income which just about keeps her in Kit-e-Kat, but which fails to attract instructors who know how to fly.

Our training aircraft, a Wright Horlicks, is fitted with radio. We recommend you tune in to Jimmy Young. This takes your mind off flying an aircraft which has all the aerodynamic sophistication of a breezeblock.

Courses are supervised by our C.F.I. Miss Joy Stick, who once crossed the English Channel in a Silver Cities air freighter or the Lord Warden car ferry (she's not sure which, owing to prior ingestion of copious amounts of Valium and Jack Daniels). Al Titude, her assistant, has considerable experience aloft: in 1953 he ascended Blackpool Tower.

Miss Stick also runs our Karate Courses.

The Doris Dickson Academy of Aviation cannot accept responsibility for damage to pupils by Miss Stick when her patience is exhausted by complaints about rips in the wings of the school's training aircraft, bends and breaks in the aluminium tubing and student's limbs, and the smell of alcohol on Miss Stick's breath. The Academy's official view is that its

customers are a bunch of ignorant, whining, yellow-bellied, penny-pinching, pea-brained muttonheads who can't tell a tang from the hole in their bottoms (and still won't be able to after we have parted them from their 250 quid).

May we take this opportunity to remind you that our airfield is the home ground of the Macclesfield Manglers rugby team — beware goalposts, spectators and low-flying scrum halves.

You may, of course, find it inconvenient to train at our airfield in which case you might wish to avail yourself of the following instructions for home tuition.

You will require:

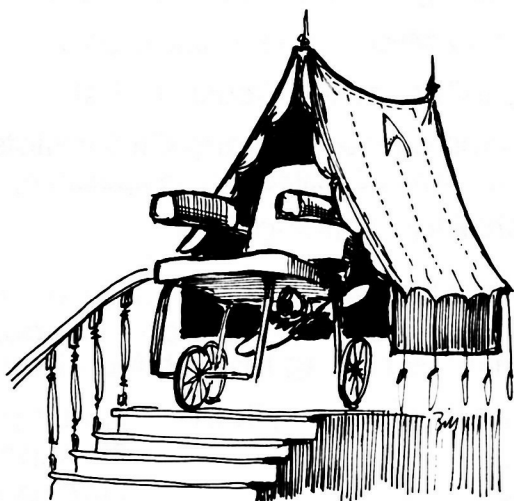
1. A good, stallable microlight aircraft
2. A low I.Q.
3. No outside help
4. A flight simulator comprising:
 - office chair
 - three pram wheels
 - Snowmobile engine
 - an old tent
5. A staircase

To assemble simulator:

Fasten engine to back of chair
Attach pram wheels to chair legs
Drape tent over complete assembly (to simulate fabric wing)

To simulate take offs and landings:

Rig simulator at top of staircase
Crawl under tent
Install yourself in pilot's seat
Raise tent fabric in front to improve forward vision
Launch yourself off top step
Place broken limbs in splints as necessary
and repeat



...drape tent over complete assembly...

Control flights in such a way that Snowmobile engine lands on your head at bottom of stairs — this realistically duplicates a real touch-down on aircraft such as the Horlicks and the Terry Bull Nose dive.

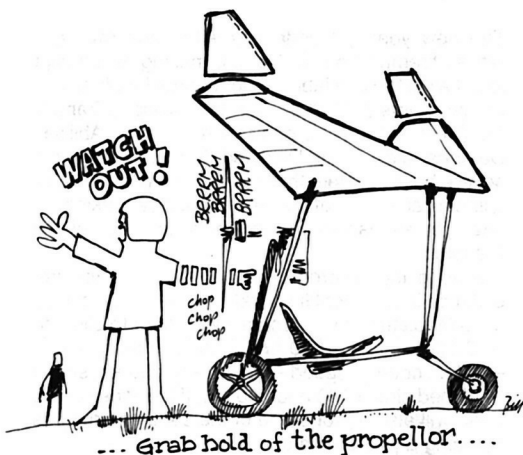
After two or three flights in the simulator you may develop a craving for alcoholic drinks. On no account resist. As Miss Stick says, "It'sh a well known fact: the pilots who fly highest are always pished. Fetch me another gin dearie."

Take advantage of your hospitalisation to get through our list of recommended reading:

Biggles Flies Undone
Biggles Combs His Hair
Biggles Says No

Now take your microlight out to your practise site. Do not bother with pre-flight checks — they only waste valuable flying time. Start up. If someone walks towards the spinning propeller grab hold of it. Hang on until they are well clear.

Point microlight in desired direction, open throttle and take off. When at 30 ft. (easily judged if you stack 30 pairs of shoes on top of each other at your flying site) do a stall test: stick the nose up, shut off the throttle and call to an assistant on the ground (we suggest a pre-arranged message such as "Ring the bloody ambulance Charlie", though some people prefer alternatives such as "Oh Christ" and "Give my love to Ethel").



When you have completed this first lesson in the course send £250.00 for the second lesson. "Emergency surgery using bread knife, meat skewer and tin opener".
Snappy landings.

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FROM
£62

Two and three blade nylon propellers with pitches to suit all engine configurations.

Highly efficient and extremely resistant to wear and accidental damage.

Currently producing 200 lbs of thrust from 22 Bhp Sach 340R engine.

UAS

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Ultralight Aviation Systems**

STATESIDE VIEW

From Glenn Brinks

The new year got underway with Zane Myers, a retired fireman from California, making an attempt to set all of the available world records for ultralights or microlights (FAI Class C-1 a/o, Group I). Zane is president of an organisation called Abilities Demonstrated by the Disabled. Zane himself has a severe back problem that keeps him on crutches or using a cane most of the time. He will be making his attempts as part of the International Year of the Disabled.

Among the records Zane will be trying for are: distance in a straight line, distance — closed circuit, altitude, altitude in horizontal flight, time to climb to — 3,000, 6,000, 9,000 and 12,000 metres, speed — 3 km. course, speed — 15/25 km. course, speed — closed circuit 100 and 500 km. If logistics permit, Zane will also try for some of the seaplane records by using a pair of floats.

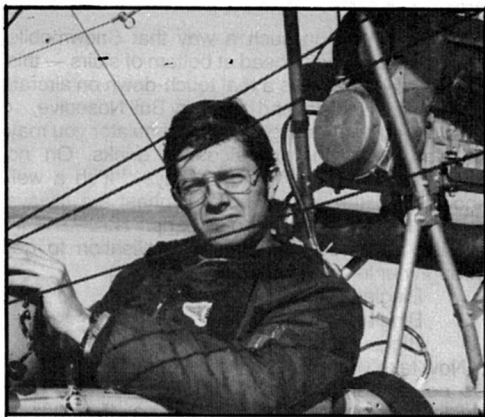
The planes used for the attempts will be a conventional weight-shift Wizard with a 40 h.p. Kawasaki engine with reduction drive, and a new three-axis control Wizard with the same Kawasaki engine.

The project has not been an easy one. There have been many delays in getting needed parts and equipment, including the ultralights themselves. There have been minor problems, such as the wing panel that arrived with the spoiler pockets sewn on backwards. And there have been major problems. During testing at an abandoned airport in San Bernardino, one of the Kawasaki engines began running roughly and then seized up solid while Zane was over the only patch of ground in the area not suitable for landing.

The resulting crunch wiped out a landing gear and bent a few tubes and Zane narrowly missed being seriously injured. Luckily, a wing tip caught on a tree and swung the Wizard around so the impact was sideways rather than head-on. The next day, he was back at work, fixing the one ultralight and assembling the other one. Cause of the engine failure turned out to be an air leak.

Despite the setbacks, Zane is continuing with the attempts. He has made several trips to the Salton Sea and reports having set two distance records as this is being written.

The distances involved are not great, being less than 40 miles, but they were set without using additional fuel. Because the FAA's proposed rules on ultralights specify a fuel capacity limit of 15 lb. (about 2.5 US gal.), Zane elected to do the attempts with less than the legal limit of fuel. He plans to do the same on the altitude attempts, where his altitude limit will be determined by how long the fuel holds out in a sustained climb rather than the ultimate capability of the ultralight. We'll have more on the results of the record attempts after the project has been completed and the NAA and FAI



rule on the application for the records.

Aerobatic Quick

Jack Britton, a long time ultralight dealer, has been doing virtually everything but snap rolls in a clip-wing Quicksilver. It's probably only a matter of time before someone finds a way to fly a routine at an airshow and move ultralight aerobatics into the big time. Rumour has it that the clip-wing Quick may find its way into production. Will there someday be an ultralight class at the World Aerobatic Championships?

Credibility Gaining

It's been a hard fight, but ultralights are at last becoming accepted as a legitimate part of aviation. A measure of this is that Air Progress and Flying magazines are both planning to do a number of articles on ultralights and will continue to cover ultralights in the future. The articles will cover general aspects of ultralight flying as well as flight tests.

Richard Bach, author of the tremendously popular "Jonathan Livingston Seagull", reportedly is flying a Pterodactyl now and planning to begin writing about ultralights.

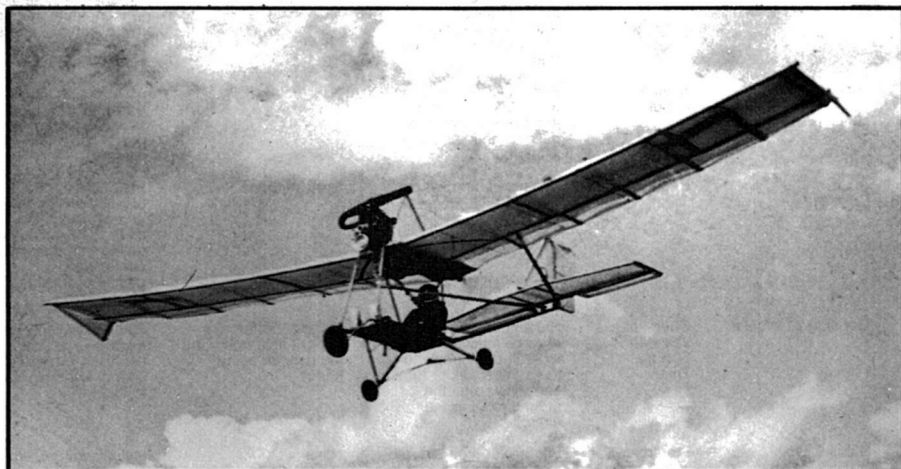
In the Los Angeles area, John Ballantyne, president of the EAA Ultralight Assn. and designer of the ultralight flight simulator, has been named as the local FAA General Aviation Safety Counsellor. The name is misleading, because John's function is to advise local ultralight pilots on safety matters, and more importantly, to advise the FAA on the needs of ultralight pilots, flying procedures and techniques for ultralights and the like. He says that, at least in the Los Angeles area, the FAA is sincerely interested in learning about ultralights. The FAA's Notice of Proposed Rulemaking on ultralights received a lot of comment asking for changes and it has reportedly been tabled, awaiting developments. So for the near future, local FAA offices will have some latitude in interpreting the rules regarding ultralights. When they approach this by seeking liaison with the ultralight community in an atmosphere of mutual respect, it can only be a good sign.

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Length 20ft
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SUMMARY OF REPORTED ACCIDENTS

December 1980-November 1981

<i>Date</i>	<i>Name</i>	<i>Aircraft</i>	<i>Nature of Accident</i>	<i>Pilot Injury</i>	<i>Comment</i>
6.12.80	Unknown	Chargus Trike	Cross wind take-off. Aircraft turned right after take-off and impacted with the ground	Wrenched shoulder	Report states two people both in possession of Chargus Trikes without tuition attempting to fly. Manufacturer asked for clarification and explanation. NO REPLY RECEIVED
21.12.80	David Jones	Solar Storm and Skytrike 250	Pilot executing wing-overs, side slipped, x-spar broke on recovery	Fatal	Radical manoeuvres on Trike, resulting in overstressing of air frame
29.3.81	John Leigh-Pemberton	Pterodactyl	Break up of reduction system at 5,000 ft. Propeller hit the roof of a house making a hole about 3 ft. in diameter	Nil	Experimental reduction system not sufficiently strong to withstand loading involved
5.4.81	Robert Stephens	Eagle	Owner took delivery of aircraft without any practical tuition. Attempted first flights in 10/15 knot wind in lee of trees	Fractured pelvis and abrasions to leg and face	Pilot of over 2,000 hrs. experience in service aircraft attempting to fly a microlight for the first time in adverse conditions
13.4.81	Michael Kirk	Skycraft Scout	Filming for television in a 10/25 knot wind, flew into the lee rotor of a building and impacted with ground	Nil	Pilot of 1,900 hrs. experience flying a microlight in adverse conditions under media pressure
28.4.81	Andrew D. Cranfield	Eagle	Tooth belt stripped on climb out, hit fence	Bruised legs	Pilot claims "brain disengaged on take off" and he had not consciously rehearsed emergency procedures should such a mechanical failure occur on take-off
23.4.81	Geoffrey E. Walker	Cherokee 220 with Chargus Trike	Student on taxiing practice inadvertently took off and "froze" on the throttle. Glider turned and wing tip hit the ground rotating the aircraft	Compound fracture of right tibia and right leg gashed below knee	Pilot of conventional aircraft — 110 hrs. — confused by weight shift control and not expecting to take-off
7.5.81	David Giles	Pterodactyl with Canard	Pilot took off on aircraft with new canard conversion seriously out of trim	None	Insufficient pre-flight inspection
24.5.81	Frank Tarjanyi	Owner designed Trike	Owner running engine to test thrust. Safety wire not attached, Trike folded and owner's head was hit twice by the propeller	Head hit twice by propeller. Head required 40 stitches, severe concussion, skull not fractured, no brain damage	Owner was using a thin section Ritz propeller which breaks immediately on impact with any object (some have also been reported as breaking without impact!) and this undoubtedly minimised injury
26.5.81	John H. V. Cross	Hiway Vulcan and Trike	Rebuilt engine seized on take-off, aircraft struck wall during emergency landing	Sprained left ankle	Running in and thorough check of rebuilt engine absolutely essential. Two min. full throttle run should have been taken on ground before take-off
31.5.81	Rodney Blois	Rotec Rally 2B	Lapsed PPL on first flight landing too fast, converted excess speed into height gain and on stalling, the throttle was opened with a resultant wing over and dive into the ground	Two broken legs, one broken arm, cracked ribs and facial injuries	"Pilot error" injuries however made more severe by bad seat belt design, three seat belt buckles being subsequently tested and shown to slip at 160 lb.

Date	Name	Aircraft	Nature of Accident	Pilot Injury	Comment
14.6.81	D. J. Thomas	Pterodactyl	Stitching in seat failed on take-off dropping pilot on to runway	Bruised!!	Regular check of harness should have revealed possible stitch failure. Back-up strap around hang tubes and under seat recommended
29.7.81	David Giles	Pterodactyl (Canard)	Engine faltered on climb out, aircraft lost speed, possibly stalling, pilot lowered nose and engine picked up. Aircraft apparently tucked, wings folded	Fatal	Aircraft had been fitted with a Cuyuna twin with British built reduction system. Circumstances of accident still under investigation
30.8.81	Raymond Jones	Skyhook Sabre and Trike	Pilot on initial flight attempting to land, stalled, too high and impacted with ground	Nil	Student pilot with apparently 40 hrs. on conventional aircraft assured vendor that he had experience of three types of microlight. On taking off there was little or no evidence of skill level or ability to fly the aircraft
14.8.81	R. J. Adams	Skycraft Scout	During turn for final approach aircraft started to oscillate on maximum power. Pilot applied forward stick to increase air speed and left stick to stop right turn. At between 5 and 700 ft. altitude the aircraft began to side slip to the right and struck the ground	Two broken ribs, two broken ankles, two broken toes, broken foot, cuts and bruises to arms. Facial injury	Pilot flying without an ASI. Near maximum wing loading on a minimal powered aircraft
13.9.81	Bernard Houlihan	Eagle	Demonstration flight aircraft flying at 10 ft. downwind, stalled and nosed over in soft ground	Nil	Pilot suggests more theory training regarding stalling in a downwind situation. Need for full understanding of the difference between airspeed and ground speed
15.9.81	David Barr	Rotec Rally 2B	Heavy pilot under instruction, considered after take-off that he could not clear trees and reducing power, dived to lose height. Aircraft landed at high airspeed and turned over	Fractured arm	N.B.: Revised seat belt held 200 lb. pilot on this occasion
6.11.81	John Clarke	Parachute test with Skyhook Sabre C and Trike	Parachute deployed at 1,500 ft., descent to 500 ft., release of parachute, glider dived, inverted, and leading edges broke	Broken arm!	Glider was oscillating under parachute and on release without any airspeed tucked quickly. Tests being undertaken by parachute designer. Cause of accident still under investigation
7.11.81	Frederick Hogarth	Chargus Titan 38	Stall after take-off, right wing dropped and impacted with ground rotating aircraft	Fractured right ankle, cracked ribs, dislocated elbow, compressed vertebrae, shock	Lapsed PPL of 400 hrs. experience with over 2 hrs. experience under tuition on Trikes. First flight of the day on a different Trike in different conditions, should have received more detailed briefing from instructor

ALSO RUMOURED BUT NOT FORMALLY REPORTED

- 1) Proprietor of hang glider manufacturing company waving from Trike to friends on the ground, hand impacted with propeller.
- 2) Pilot flying Trike, hand impacted with propeller.
- 3) Pilot flying Trike, skimming surface of river — ended up in the river!
- 4) Owner of new Eagle without tuition endeavouring to fly in the late evening collided with tree and left aircraft in field assembled. Reported to police as crashed aircraft, police spent many hours endeavouring to find an injured pilot in the dark.
- 5) Several rumoured breakages of engine mounting bracket on Hiway Valmet Engine Trikes. One recorded incident reported to manufacturer inviting comment. NO REPLY RECEIVED.

CONCLUSIONS AND COMMENT

The BMAA accident report system is essentially a voluntary procedure which was supported wherever major incidents were involved. However, there were many minor accidents and incidents which were not reported at all and details of which could have benefited other flyers.

There is a definite danger area where pilots with considerable experience of conventional aircraft appear to assume that in moving "down" to microlights they will experience little difficulty in flying this type of aircraft. Particular emphasis of possible problems will require to be made by instructors in pre-flight briefing. During the coming year emphasis will require to be placed on pilot education with regard to air frame maintenance and inspection. Already there are signs that aircraft of 12 to 24 months flying exposure are showing signs of air frame deterioration which must be rectified if the aircraft is to remain 100% airworthy.

Brian Harrison
ex BMAA Safety Officer

SAFETY MATTERS

From Brian Giles

The increasing growth of microlight flying will bring an increasing incidence of accidents, some due to aircraft faults but most due to pilot errors. These include not carrying out a thorough pre-flight check, not aborting a proposed flight because of some minor malfunction or structural defect, not possessing adequate skills for the undertaking of the proposed flight. Our type of flying is at the moment mercifully bereft of onerous regulations but this places more responsibility on the self discipline of the pilot. Flying, of any type is potentially dangerous, but the risks are considerably reduced by knowledge and skill on the part of the pilot and integrity of design, construction and airworthiness of the aircraft.

How are your airmanship skills? Are you knowledgeable about procedures, air law, met. and navigation? Are you sufficiently current in experience to undertake a flight in the prevailing conditions? If not, **DON'T FLY**. Acquire the necessary skills, undertake (under the guidance of an experienced instructor) flying training to ensure that you are **SAFE** when in the air. Only fools take risks.

THERE ARE OLD PILOTS AND BOLD PILOTS but few **OLD, BOLD PILOTS**.

We need to know of accidents and incidents affecting microlight flying to enable a knowledgeable record of weaknesses to be built up and disseminated for the benefit of all pilots. This information can only come from you. With this copy of Flight Line, we have enclosed an **INCIDENT/ACCIDENT** report form. Please complete, when appropriate, and forward to BMAA Safety Officer for recording (in confidence). In future issues we will give consensus reports on incidents and hopefully learn what not to do.

It would be useful to have area Safety Officers on hand to investigate incident/accidents in a particular area when necessary. If you have the

interest and skills to volunteer for such an appointment, please let me know and I will compile a list to cover the country. We could then organise safety seminars and other such activities to keep people aware of their responsibilities and the over-riding importance of **SAFETY** in flying.

ACCIDENT REPORT

Scout

In the September/October issue of Flight Line there was a report under Safety Matters of an accident that occurred to a Scout microlight that resulted in serious injury to the pilot. It was reported at the time that the aircraft entered an uncontrolled sideslip after encountering turbulence and the pilot was not able to regain control from a height of 400 ft.

Post accident investigation of the aircraft by representatives of the BMAA revealed that both leading edge spars had been bent upwards just out-board of the inner flying wires, the starboard wing by about 25° and the port wing by about 5°. There was no evidence of any direct impact damage and it is considered unlikely that such failure would have occurred through any secondary effect of impact. Reports by witnesses stated that the aircraft did not impact with one wing first and this evidence suggests that the starboard wing may have suffered an in-flight structural failure, resulting in a canted attitude with a high rate of descent. This ties in with the evidence of the pilot prior to loss of memory soon after the aircraft rolled uncontrollably to the right.

Suppliers of the Scout have not assisted the BMAA in supplying components for dynamic testing and until such tests have been successfully concluded the BMAA Committee feel it prudent to warn operators of this type of microlight to exercise extreme prudence before flying. Any offers of assistance in supplying components for testing would be gratefully received.

BMAA Safety Officer

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SECRETARY'S LETTER

Your Council had two meetings in December, the first decided who did what and at this meeting Graham Andrews and I were delegated to meet the CAA in London on the 9th December 1981. After this very important meeting we felt that we had achieved a good deal for the members of the BMAA.

Firstly, licencing was put back to September 1982 at the earliest. BMAA were recognised as THE self regulating organisation for microlight aircraft, our training syllabus was accepted and with one or two small amendments this will form the basis for a recognised course of (CAA) approved training on microlights. Task Forms A and B with the Certificate "A" for local flying will ensure that all students on microlights go through a well laid out course leading to the BMAA Certificate of Competence. Changes in any regulations will be notified in good time through the medium of Flight Line.

We also met other departments of CAA and we are happy to report that in each one there has been friendly co-operation throughout.

The advertisement for the Training Officer brought a limited response but several applicants were of a very high calibre. More about this later.

In order to finance the forward looking programme that we have for 1982 we are now proposing a membership drive. Clubs and schools are invited to submit ideas for encouraging new members.

As all forms of control, weight shift, two or three axis now come under the description **MICROLIGHT**, provided that the weight and wing areas fall into our category. Powered hang gliders are now officially microlights and perhaps those that have been flying unofficially for a long/short time could be encouraged to join BMAA.

There is a wealth of flying experience out there that is needed within the Association — to help form the CLUBS and SCHOOLS that are the backbone of BMAA.

The second Council meeting in December was full of surprises, not the least was the discovery that no one is indispensable. Our Editor's future was very much discussed and perhaps our future meetings will be devoted to the furtherance of the BMAA. However all is now well, I am assured.

Several members have written to me complaining about the lack of finance at Pegasus, Langar near Nottingham. I have tried to contact Tom Sawyer who runs (ran) Pegasus, to no avail, so would anyone knowing his whereabouts please contact me as I have a small list of people who would like either aircraft or money as soon as possible. If you have had any financial problem with Pegasus, could you please supply me with written details that can be passed on to an organisation of

dealers in the same geographical area as Pegasus who are trying to resolve the situation.

Remember, before parting with a lot of money to anyone, try to find out if they are as they appear. Your bank will be pleased to carry out a check on your behalf **before** you hand over large sums of money. It's **your** money, we can only advise.

Membership renewals are coming in fast. Please try to renew within 28 days as we cannot guarantee numbers after that time. Renewals are based on magazine dates so that everyone has a year's supply of Flight Line (six issues). I would also like comments on the new membership card and the new style envelope for Flight Line.

At the time of going to press, membership is up to 1,766. Not far to go to 2,000.

Articles on microlights are appearing more frequently in the media and we ask all our members to be very careful if you are interviewed by any budding journalist.

Newspapers are produced to sell, and any good story is a saleable commodity. Please fly carefully at all times, the future of microlight aviation is in your hands.

And lastly — to the gentleman from Yorkshire who phoned me up during a blizzard (at my end) and told me what a fabulous day's flying that he had just experienced — a happy 1982, make the most of your weather — the new club on the Isle of Man had even better weather, so they tell me. There was I, digging out the snow, with about four or five pairs of skis upstairs that would have fitted my microlight — if only I could have got into the garage, through the 9 ft. drift. . . .

Happy landings.

Ron Bott
20 Church Hill, Ironbridge,
Telford, Shropshire TF8 7PZ

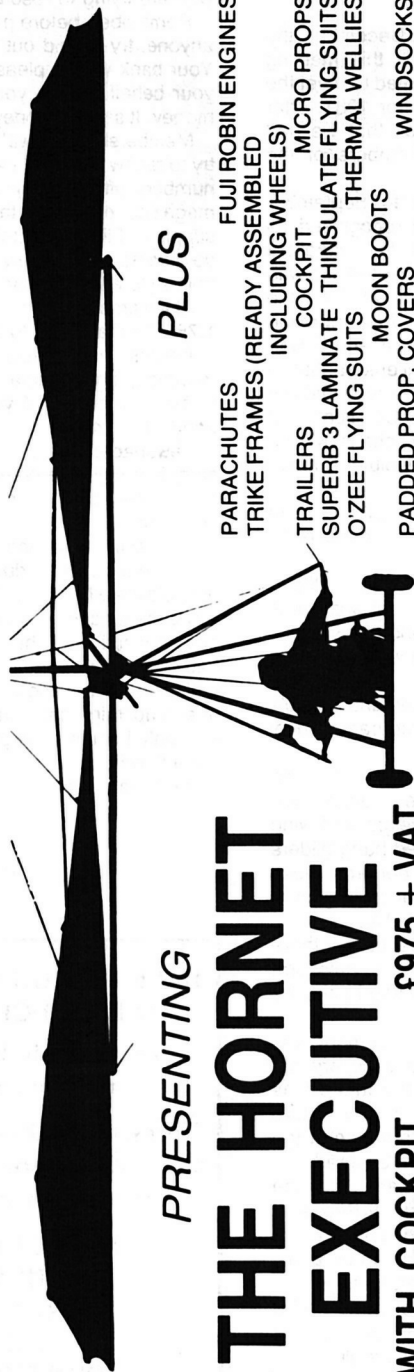
**HAVE YOU GOT WHAT IT TAKES
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Interested in being the Editor?
(see comments Page 3)

**Then send details of your qualifications
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Tel. (0274) 308642. Showrooms Open Mon. to Sat. (Late Night Wed. Till 8 p.m.)

CONTACT!

KENT MICROLIGHT CLUB has been formed to give everyone information regarding local problems and keep them in touch with all current developments. We meet each month in the Canterbury area and welcome new members. Full membership is £5 per annum. For details ring Les Sears (0795) 25627 or Ted Battersea (022778) 614.

CAMBRIDGE MICROLIGHT FLYING CLUB held its inaugural meeting on 22nd December. Anyone interested in membership please contact Tony Palmer — Cambridge 60614 (evenings).

LONG MARSTON AVIATION are pleased to announce the two greatest fly-ins to be held during 1982. Micro Aviation '82 — 8th and 9th May. Micro Festival '82 — 25th and 26th September. Enquiries to: The Control Tower, Long Marston Airfield, Stratford upon Avon, Warwicks. Tel: (0789) 295050 or (0905) 423929.

SOUTHERN MICROLIGHT FLYERS CLUB has been formed at Sevenoaks, Kent. They meet on the first Thursday of each month at 8 p.m. in the King's Head, Bessels Green, Sevenoaks. For further details contact: Godfrey Gardner on Crookham Hill 417, or Andrew Gardner on Crookham Hill 240 (answering machine).

WEST ESSEX MICROLIGHT GROUP has been formed. They are hoping to get the use of North Weald Airfield for microlights. For further details contact: Neil Mackay, 19 Stanley Road, Hornchurch, Essex. Tel: Hornchurch 72109.

RAF MICROLIGHT ENTHUSIASTS — would all RAF personnel interested in microlight aviation, please contact Flt. Lt. P. Bidston, Aberdeen UAS, RAF Leuchars, Fife, tel. ext. 430; or Flt. Lt. H. French, RAF Cranwell, tel. ext. 7336; with the following information: rank and name, location, contact tel. no., flying experience, BMAA qualifications and membership no. if applicable. Should interest be sufficient, an attempt will be made to have the sport recognised officially.

MANCHESTER AREA — interested in forming a local club: (a) with monthly meetings, first Wednesday in the month? Contact Hal Williams 061-969 6555 or Phil Wiles 061-928 5281. (b) sharing information on local flying fields? SAE to John Colloff, 2 Hawthorn Road, Rochdale, Lancs. OL11 5JG.

THE MIDLAND MICROLIGHT CENTRE was formed by a meeting of members at Halfpenny Green Airport, West Midlands on Sunday, November 15th, 1981. The club is operated under the wing of Micro Aviation Limited and offers full flying facilities to members. Enquiries re membership should be made to Tony Faulkner, CFI, telephone (038 488) 218 or (0543) 79075 (evenings).

LINCS. MICROLIGHT FLYING CLUB is available

for the use of microlight pilots. Come and see us at Mamby Airfield. Hangarage available for rigged microlights. Tel: Ian Masterman (0507) 606561.

THE SHANKLIN FESTIVAL 1982 will be having a Microlight Aircraft Event again this year.

The newly formed IW Microlight Aircraft Club has been fortunate to obtain the IW Airport at Sandown again as a main base to stage the event. This time we are to have a full length runway and a special parking area together with many other facilities which last year's rally showed were required.

This year our flying brethren in the hang gliding world will be holding the first Open British Championships during the Shanklin Festival, run by the BHGA, and it is the intention of the local microlight club to offer a challenging and interesting meeting for power buffs to participate in at the same time. The dates are: British Open — Monday, 26th April to Monday, 3rd May 1982. Microlight Rally — Friday 30th to Monday, 3rd May 1982. All dates inclusive.

Once again the Shanklin Hotel and Guest Association has come up trumps and will offer special package deals for pilots, their families and friends, etc.

This year ALL ferry services are offering a special £20 return fare for a vehicle up to 17 ft. 6 in. with up to five passengers with hang gliders and microlights. Please contact Viv Rayner on Shanklin 863364 for full details and assistance.

A programme of flying events is being planned which we hope will please you all, and an extensive evening entertainment programme will be available to soothe frayed nerves, etc.

Last year a lot of work was done by a small number of people trying to make you all feel welcome. It was hard graft but very, very rewarding. We made mistakes but learned a lot — this year we hope to do better. Please do come, we would love to see you again. **Exhibitors welcome.**

THE DESBOROUGH FLYING CLUB has been formed and is based at Desborough Airfield near Market Harborough, Leics. They already have several flying members and hope to get involved in towing hang gliders. Anyone wishing to join should contact: Barry Underwood, 8 Pope Crescent, Enderby, Leicester. Tel. (0533) 864699.

CALENDAR

14th-20th March: EAA Sun 'n' Fun Fly-In 1982, Lakeland, Florida, USA.

30th April-3rd May: Shanklin Festival 1982, IoW Airport, Shanklin, IoW.

8th-9th May: Micro Aviation '82, Long Marston A/F, Warks.

5th-6th June: The Great Microlight Race (Blackpool to Paris), information on (0253) 45440.

25th-26th September: Micro Festival '82, Long Marston A/F, Warks.

SMALL ADS

Small Ads are **free** to members of BMAA, 30 words max. Commercial Ads are **£3** for each insertion, 30 words max. Please make all cheques payable to BMAA and send ads to: Flight Line, 11 School Hill, Wrecclesham, Farnham, Surrey.

FLIGHT LINE back issues are available at 50p per copy plus postage and large envelope. Postage rates are: 1 copy 15½p, 2 copies 22p, 3 copies 28½p. Also **BMAA PILOT'S LOG BOOKS** at 70p each, enclose SAE please. Always quote your BMAA Membership No. and send to: Secretary BMAA, 20 Church Hill, Ironbridge, Telford, Shrops.

FREDDIE BECKETT — please could you contact Peter Grange of 82 Collinswood Drive, St. Leonards on Sea, East Sussex (office tel. no. 01-434 2233 ext. 216), who would much appreciate the chance to compare notes on Weedhoppers.

PART COMPLETE Trike unit, lightened Yamaha 200 electric start engine, GRP leaf spring suspension, brakes, gold anodised with chrome fittings. Bargain for someone with spare time! £350. Phone Tony (0672) 81052.

ROTEC RALLY. Excellent condition, 7 hours flying logged. Complete with special car roof rack. Bargain at £1,850 o.n.o. Tuition arranged if required. Tel: (0793) 721303, daytime.

RING FLAIR PRODUCTS, Britain's most experienced Goldwing constructor, for a quote on your Goldwing either completed or in kit form. One completed aircraft in stock at time of advertising. Tel: (0793) 721303, daytime.

EXCHANGE, my 1980 Fletcher "Arrowport" speedboat, plus 140 h.p. outboard and road trailer, with many extras, immaculate condition, valued at £3,000, for best microlight offered. Prefer Mirage, Scorpion or two seater. Contact Barry North, 45B Harbour Road, Pagham Beach, Pagham, Sussex. Tel: (02432) 66628.

SEALANDER POWER + Mainair Tri-Flyer + Austin Maxi "K" reg.; offers around £1,900. Tel: Kendal (0539) 27803.

IS IT CALM enough to fly? Find out with these superb terylene windsocks, complete with 14 ft. telescopic, guyed mast and carrying bag. Send cheque for £26 to Southern Microlight Supplies, Alberta Lodge, Gouthurst Common, Nr. Sevenoaks, Kent.

BARN/HANGER accommodation sought for Eagle in Surrey/Hants area. Ideally adjacent to field for take-offs and landings. Tel: Headley Down (0428) 714101.

250 c.c. TRIKE, single upright designed and built with cart, very reliable, 28 hrs. flying time, many good features; £750. Sale reason — cash needed to build two-seater. Roger Garland (Saturdays only), Bristol (0272) 513460, or write 81 Lacey Road, Stockwood, Bristol. **WANTED**, clean, low hour 250 Trike/Vulcan or similarly stressed wing. No suspect wings or Trikes please. Tel: Adrian Clark (0332) 674212. Cash waiting — distance no object.

TRI-FLYER Trike unit for sale, fully built, with a 250 Fuji-Robin engine, not yet run in. £1,100 o.n.o. Tel: Reading (0734) 479231 (evenings).

330 c.c. SUPERTRIKE/LIGHTNING 195. Climb rate 1,000 f.p.m. Top speed 55+ m.p.h. Electronic ignition. 12-ply prop. Low drag airframe. Kick start. Alloy wheels. S/steel welded joints. The best quality Trike available. Factory reinforced wing. Five hours use. £1,950. Tuition available. (03745) 53227/56831.

FOR SALE. Weedhopper complete, ready to fly. Nil hours. Red Baron colour scheme. Registered. £2,200, trailer available. (0621) 88278.

PTERODACTYL PTRAVERLER, G-MBBD, June 1981, canard, single stick, Cayuna 430, reduction drive (extremely quiet, ample power), nosewheel steering, "Winter" ASI, road trailer (halves rigging time, tows behind Mini). Immaculate, exciting, safe microlight; £2,500. Tel: Chichester (0243) 59303.

EAGLE, good second-hand one wanted. Contact Tony Palmer, 23 Pentlands Court, Cambridge (60614) with full details.

WANTED, 5 in./27 in. tip-damaged propeller. Tel: Knightwick (0886) 21370.

PTERODACTYL 430D. Supership with genuine performance and reliability, approx. 30 hrs.; £2,500 or build your own Manta Fledge, but tatty hence £300. Soarmaster type power unit, £250. Tel: Penketh (092572) 8856.

WANTED, Valmet engine new or used. Complete unit including reduction gear and prop. as used on Hiway Skytrike preferred. Would consider anything similar up to 250 c.c. Tel: Leicester (0533) 862756. T. Woolley, 109 Victoria Street, Narborough, Leics.

SKYTRIKE for sale. Excellent condition, mahogany prop., approx. 13 hrs. on engine, always runs at 25 to 1 two-stroke mix, never had plug out, starts first or second pull and very reliable. Tel: (0270) 811895 for details.

USED BOOKS: 4 Dennis Pagen, £10; Wings! vol. 3 '79 through Nov. '81, £15; 4 misc. on two-stroke tuning, £5; H-G Bible, £3; or all for £20. All hardly used, price includes postage. Tel: Charlie on 031-331 1919.

HIWAY SKYTRIKE, 160 c.c. Valmet. 20 hrs. on engine, in excellent condition. Reason for sale, I want a 330 to go with my Sealander;

£625 o.n.o. Tel: Sunderland (0783) 814653.

ROTEC RALLY 2B, 5 months'old, few hours, new Fuji-Robin and transmission, instruments, etc., seen flying by appointment; £1,800 o.n.o. Owner buying two-seater. Tel: West Kingsdown (047 485) 2219.

TRAILERS for Scorpion, Mirage, Chargus, etc., for details or drawings for us to quote you. Contact: Alta Car and Engineering Co. Ltd., 34 Canada Way, Worcester WR2 4ED. Tel: (0905) 423929.

EAGLE UNDERCARRIAGES, complete and spare parts. British made and improved design in blue, black or silver anodised duralumin aircraft grade. For details contact Alta Car and Engineering Co. Ltd., 34 Canada Way, Worcester WR2 4ED. Tel: (0905) 423929.

FIT SNOW SKIS to your microlight. Scorpion and Mirage ex stock. Conversion kits to suit other models. Contact: Alta Car and Engineering Co. Ltd., 34 Canada Way, Worcester WR2 4ED. Tel: (0905) 423929.

LAND REQUIRED — I am prepared to finance the purchase of 10-20 acres of suitable land in the Home Counties if a few members can assist with interest payments, in return for flying rights. Please contact David Lloyd on 01-731 3164 if you are interested or know of any suitable land.

WEEDHOPPER, with Panther 330 twin, good flier, many extras; £2,200. Tel: (0529) 303446.

MITCHELL, U2 plans, unused, with fully illustrated building instructions; £40, delivered. Don Harker, 29 Farndale Road, Nunthorpe, Cleveland TS7 0JH.

MAH can help you cut your flying costs in the future. If you don't think you want to spend £1,500-£3,500 on a microlight, but still want to fly, watch out for MAH adverts in Flight Line.

SOLEAIR STING — the new all British, purpose built microlight engine. Specifications — 525 c.c. twin cylinder two-stroke. 42 b.h.p., electric start, alternator, electronic ignition, twin carb., 65 lb. (less exhaust). Price from £440. Complete power pack (reduction gear and prop.) under development. Soleair Aviation, Isle of Wight Airport. Tel: (0983) 402208.

PROPELLERS. Range of propellers from 50 in.-58 in. dia., tractor and pusher, to suit engines 25 h.p.-55 h.p. All from high quality spruce, molybdenum/epoxide sheathing, £75 all sizes. Trade/quantity discounts available. Soleair Aviation, Isle of Wight Airport. Tel: (0983) 402208.

SOUTHWEST AIRSPORTS wish all our clients and students, past and future, a happy and prosperous New Year. We are now taking bookings for tuition through to Pilot Certificate of Competence and for the aircraft of your choice. For any information required ring Ian Stokes, 056686 514.

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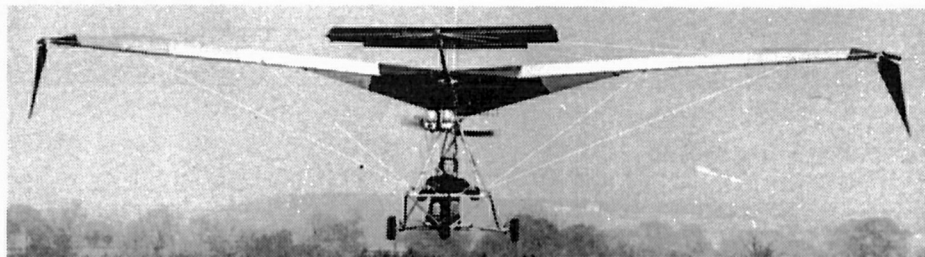
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