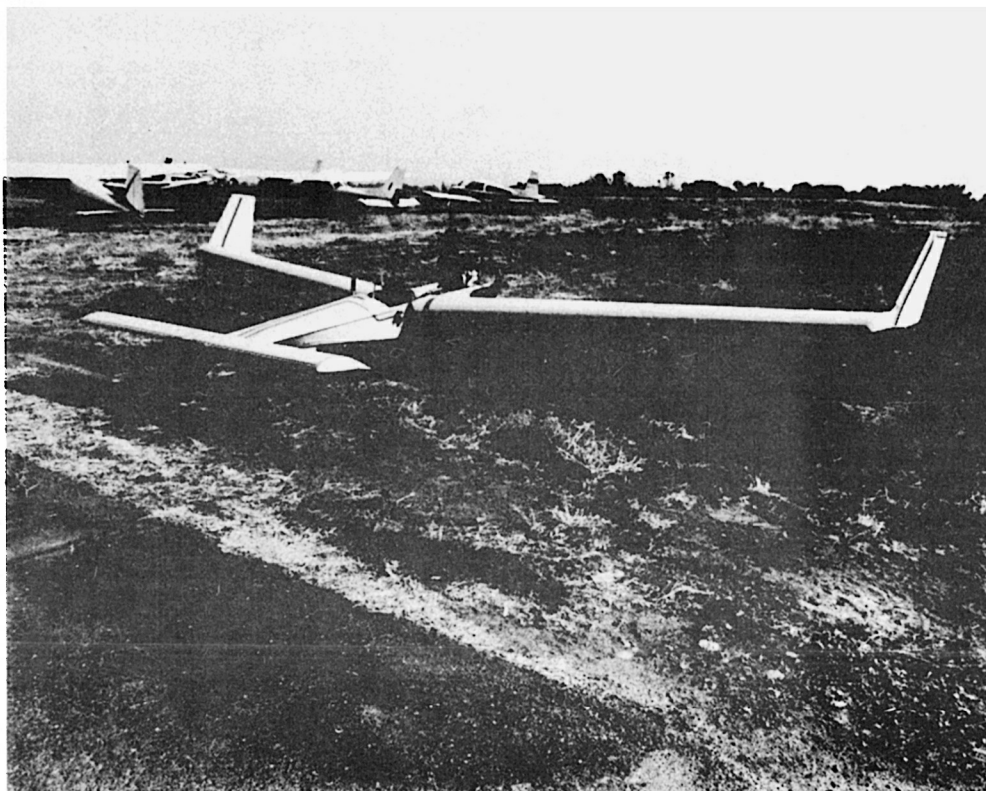
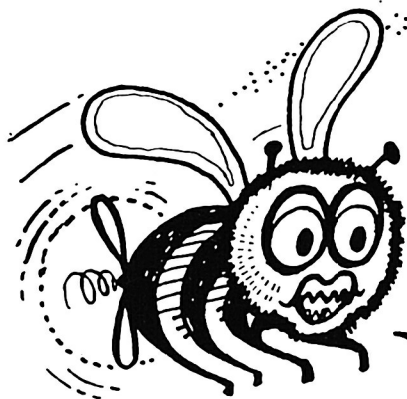


FLIGHT LINE

magazine of the **BMAA**

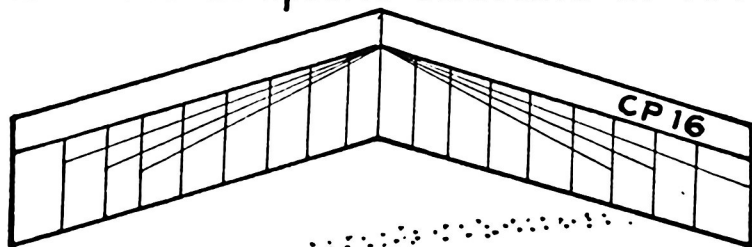


No 6 Nov-Dec 1980



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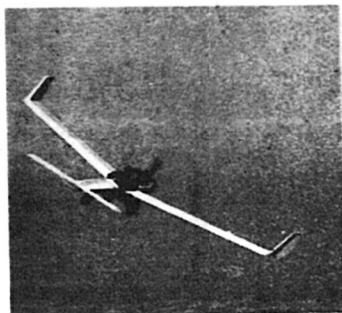
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Front Cover: The Catto Goldwing, a canard configuration microlight from the USA. UK Dealer: Euro Wing.
(Yes, it IS coming towards you!)

EDITORIAL

SWAN SONG

Nick Regan is your new Editor; support him in his efforts, bombard him with articles, news cuttings, photographs, cartoons - anything relevant and useful that you can put your hands on. His address is 11 School Hill, Wrecclesham, Farnham, Surrey. Do your best to make his life hell - he'll love it! A full AGM report appears later but most people seem well pleased with our new name, BRITISH MICROLIGHT AIRCRAFT ASSOCIATION.

Thanks to all of you for your help and contributions last year, and in particular my - now - dear friend Joan Hunt without whom the magazine would never have been possible.

Dave Thomas

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MEMBERSHIP of the British Microlight Aircraft Association costs £12.00 per year. Details and membership form from Dave Thomas at 80 St Georges Road, Aldershot, Hants. Please enclose SAE.

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

CONTACT!

LETTERS

Dear Dave

Congratulations to Dave Garrison and John Leigh-Pemberton on their End to End flight - and to Dave for the article.

I will now risk inviting a Dave Kirke-type reply, however, by saying that two things about the flight bother me enough from the safety point of view to prompt this letter.

First point - flying up Loch Ness - "nowhere to land for miles" - seems to imply trusting too much in the continued functioning of a relatively failure-prone engine. Relatively compared to light aircraft power units, that is, which cost many thousands of pounds chiefly due to the built-in reliability involved. I realise that the pilot's life may not be at stake to quite the same extent in a micro-light, but we are comparing a multi-cylinder, dual ignition, pressurised fuel system, force-lubricated unit to a single-cylinder, single-magneto, single-plug, gravity fuel-feed, fuel-mix lubricated two-stroke, and a life is still a life. In the Falke motorised glider there is a cockpit notice to the effect that it should not be operated in any situation where continued functioning of the engine is essential to safety - and its engine is nearer the first-mentioned than the second.

I realise this was a prestige flight by expert pilots - but perhaps some warning to the rest of us is in order here. What is the BMAA attitude to operation out of glide range from a suitable field?

The second point is perhaps of less general interest, but seems to involve an even more unnecessary piece of irresponsibility - that is, the downwind excursion over the sea at the end of the trip. This could so easily have turned a brilliant prestige effort into tragedy. Was the wind-speed checked by a quick up-wind trial before going out over the sea? What if the 'near

gale-force winds' had started to arrive a little earlier? Seems to me this part of the article would tend to give an outsider cause to point the finger on the grounds of irresponsibility in the sport at the highest level just when we so much need the confidence of those who will decide on the vital issue of self-regulation.

I hope a copy of this letter can be sent to Dave Garrison in time for his reply to be printed in the same issue - I would have sent one myself had I had his address. This would avoid my being kept in suspense for another two months, and produce more interest for the readers. If you don't leave me a leg to stand on, Dave, at least I'll still have arms to fly with!

Sincerely
Robin D Laidlaw, Edinburgh

Dear Robin

Everything is relative!

Kind regards

Dave Garrison
Wellesbourne, Warwickshire

Dear Ed

The following incident occasioned during early Skytrike flights caused me later to moderate my flying habits for the sake of safety.

Whilst burning off height in a friend's 3-year-old Super Scorpion and Trike, I heard a loud ping from the sail; the machine still flew okay so I carried on to land normally. On inspection, the eyelet retaining the keel pocket to the keel had torn out and the bottom of the pocket had slid forward about 4-5"; fortunately the top attachment to the keel pocket had held so the machine still flew. The bank angle at the time was, I am told, about 80°.

With the increased pendulum weight of a Trike set-up over a normal hang glider it is, of course, very easy to pull radical manoeuvres, as demonstrated at Mere, but this sounds like a recipe for disaster especially as handed-down Trikes may later become fitted onto older and weaker gliders.

Perhaps microlight pilots should follow conventional aircraft practice where machines are not taken beyond their

stress limits or, if it happens, the aircraft is grounded for stress tests.

Incidentally, later Super Scorps have the keel pocket eyelet considerably strengthened by the addition of braid.

T J Birkbeck
Yorkshire

Comment from John Ievers of Hiway:

The problem which Trevor mentions was recognised early in the production of the Super Scorpion. The design was modified immediately and many early gliders were subsequently strengthened by the application of webbing at this point. If anyone has an early unstrengthened model, they should contact Hiway who will carry out the modification free of charge.

Dear Sirs

You may be interested to know that early last week I had a call from two chaps in our area who had heard that I was flying an Eagle, to ask if I would be prepared to train them on their newly-acquired trike/glider combinations. As my total air time is only about three hours and only on Eagles, I answered in the negative. I was then invited to fly over and show them our aeroplane and inspect theirs, this was done, and the following morning in a 15-20 kt wind they proceeded to rig one of their aeroplanes and after two or three taxi-runs in the shelter of some trees they ignored our strong advice not to fly, and one of them proceeded to take off 90° cross-wind with the inevitable consequence that from about 50 ft a steep spiral dive developed until plane and ground came together with a resounding crunch!

Fortunately no bones were broken but the trike was quite badly bent and several rigging wires snapped. The shocked pilot will no doubt listen to our advice next time, but my point is that I feel quite strongly that these aeroplanes should not have been delivered into TOTALLY inexperienced hands with no training whatsoever! I realise that manufacturers are in a very awkward position over this, but if we get many more serious accidents it could well mess up the freedom of the skies for all of us. These two chaps are not total idiots, but are completely carried away with their enthusiasm, and I think the

inherent danger in flying of any sort needs to be stressed much more strongly rather than the usual "anybody can do it" sales blurb.

On this, some pointers could be taken from Julian Doswell (Breen Microlite Aircraft) and Christian Marechal (Norfolk Microlite Centre) who are both excellent teachers and got this point over to me very successfully without frightening me off in the process.

In conclusion then, the sooner we get some obligation on people selling these aircraft to ensure that their customers are familiar with basic micro-meteorology and have become competent in handling the their aeroplanes, the better.

Happy landings

M J Smith
Cuckfield, Sussex

The Editor has also received the following letter and prints it for your consideration . . .

Sir,

It has come to my notice that a new class of slow-moving heavier-than-air machine is operating over England. While of pleasant colouring and graceful appearance these aircraft appear to be powered by small, noisy internal combustion engines that disturb the peace of the countryside, interfere with pheasant shoots and fox hunting and generally cause a nuisance.

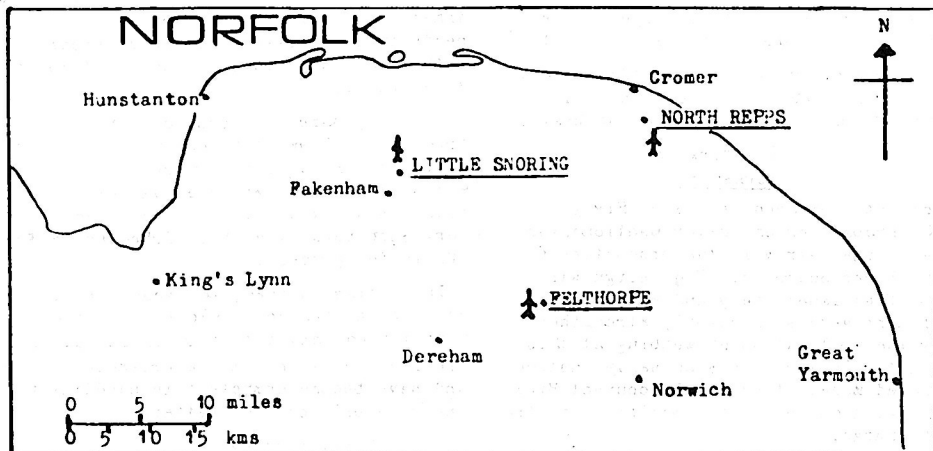
If the persons who operate these machines feel unable to silence them effectively I shall have no alternative but to write to The Times and get them banned.

I have the honour to remain, Sir,
Your most obedient servant

G Mainleigh-Hydebounde MC RA
Lieutenant-Colonel (Ret'd)
The Old Monastery
Brighton Marina, Sussex

S M A L L A D S

See Page 30



THE FIRST NORFOLK AIR RACE

Saturday 4 October 1980 found members of the Norfolk Hang Gliding Club receiving contestants from the BMAA at Felthorpe private airfield for the first Norfolk powered hang glider race. Contestants had come from all over the country, but sad to say the weather was against us with winds of just over 30 knots being the culprit. So most of the flyers assembled their trikes for the locals to look over.

At around 4.30 pm (too late to hold the race), the wind dropped so most contestants took to the air to try out their machines. The local flying club watched in amazement!

The evening was spent in the Clubhouse with the usual talk and wisecracks. Most people slept in their cars that night, but some accepted the Air Club's hospitality and used the Clubhouse floor and billiard table. Alan Weeks spent a restless night with mice running over him.

Around 8 am on the Sunday morning I went round the cars getting the contestants up, with the cheerful news that the wind was around 12 knots south-west, but the forecast was for it to get stronger during

the day. Unfortunately two flyers had gone home on Saturday night - Dave Jones with his Solar Strom and Hiway Trike who had other arrangements for Sunday, and Len Gabriels with his Silhouette and own design of trike. Len was having very bad weather back home, and thought we were having the same so did not return. Gerry Breen had entered but did not turn up, likewise a few local pilots. This left only nine contestants.

A briefing was held to explain the rules. The course was to be a triangle of three airfields, with approximately 20 miles between each: Leg 1 was from Felthorpe to Little Snoring, with two map references along the way to be identified (these were large letters of the alphabet). The second leg was from Little Snoring to North Repps, a private airstrip near Cromer, also with two more map references en route. The third leg was back to Felthorpe, with only one map reference to identify. The first four map references (if correctly identified) each carried a ten-minute bonus to be deducted from the flying time, and with the last leg it was twenty minutes; and there was to be only one class. Pilots were to take off at five-minute intervals.

First away was Fred (I'm sorry, Fred, I can't remember your name), flying a prone Fledge. Unfortunately engine trouble forced him to return to the airfield and withdraw. Next away was Les Ward flying a Solar Storm and Buggy. Then came Robin Jeffrey-Goodwin flying a Cyclone and a three-bladed-prop trike, followed by Alan Weeks in his Pterodactyl, then Steve Morris on his prone Cyclone. Local flyer Greg Thomson was next on his Vulcan and Hiway Skytrike, then Mark Southall with his Solar Storm and Buggy, then another local Will Reynolds flying his new Super Scorpion and Hiway Skytrike, and coming up the rear was Chris Ellison. Chris was lucky to make it to the start line



Race participant GREG THOMSON pictured outside the Hiway factory taking delivery of the first production Hiway Skytrike.

Photo: Steve Hunt

as his van broke down and had to be towed in; then he had trouble obtaining petrol, until a local helped him out.

First home in a record time of 1 hour 38 minutes was Alan Weeks. Having identified all the markers correctly, his final score was just 38 minutes. The next two home were very close with only one minute between Mark Southall and Les Ward on their Buggys. Will Reynolds came down just three miles short of the finish line and I think this flight was the greatest achievement; he had only had his Trike for about a week and got his ten hours' qualifying time in during the week. Weighing 17 stone all-up and flying only a 160 cc machine, getting so close and not quite finishing was bad luck. After checking times it was found that he would have come second if only he could have made those last three miles. He also lost two bolts from his engine at North Repps. The final leg was the hard one with headwinds gusting up to 30 knots. So, sadly, these were the only contestants to make it to the finish. But it must be said that everybody put up a great show against the weather.

The weekend finished in the Clubhouse with the prizegiving. First was Alan Weeks who received £75 and a large silver cup, and six cans of Duckhams two-stroke oil; second was Mark Southall who received £50 and six cans of Duckhams two-stroke oil. Third was Les Ward who received £25 and - yes, you guessed, six cans of Duckhams two-stroke oil, plus a chicken donated by a local for the slowest contestant to make it home. Fourth was Will Reynolds who received a carton of, would you believe, Duckhams oil, plus a small silver cup from the Flying Club for the furthest distance achieved by an under-200 cc machine.

All in all, a great weekend. Thank you all for your support and see you all next year!

Terry Aspinall
Norfolk Hang Gliding Club

A CAUTIONARY TALE

TREVOR BIRKBECK introduces the story:

Folk who own Skytrikes will soon find themselves mightily popular with hang gliding friends, and even people they did not know before, clamouring for a go on these fun machines. To be fair, though, I fairly welcomed the interest of my friend Mike Laundry in microlights as it is good to meet folk from other flying regimes.

I briefed Mike thoroughly on take-off, landing, and control in pitch and bank etc, but after a creditable take-off, he proceeded to put me through 10-15 minutes of sheer terror, forced to watch but powerless to do anything. In his following account, he does not mention that whilst careering around the sky over the airfield, he came within 50-100 ft of a light aircraft which was landing; when questioned afterwards, Mike said he never even saw the aircraft, presumably because he was concentrating so hard.

I know now that I was wrong to let a conventional aircraft pilot have a flight on the Trike and that only hang glider pilots of known soaring ability should be allowed to fly these machines without prior training. I hope that others will be warned by my experience; now read Mike's account:-

MY FIRST AND PROBABLY LAST HANG GLIDER FLIGHT

When I was invited to a meet of micro-light aircraft enthusiasts I jumped at the chance - I spend most of my working days instructing young men to fly in jets as an RAF QFI, and slow basic aircraft have always appealed to me, particularly if they have open exposed cockpits where you can feel the wind in your hair. So when I was offered the opportunity to fly a powered hang glider I readily accepted. After all, I reasoned, I had 3,000-odd hours flying experience on a wide range of aircraft from gliders to V-bombers, and the little motorised hang glider looked to be very simple to fly.

A little later there I was, strapped to the contraption having been fully briefed on how simple it was to operate. Of course I understood the theory behind moving the centre of gravity to control the flight, but I had never actually done it before.

The first sign of trouble came as I taxied to the runway - the "rudder bar" was akin to a bicycle's handlebars so moving my right foot forward turned me left - exactly opposite to a conventional aircraft. Anyway, a minor problem, I

thought, as I zig-zagged my way to the take-off point.

I must say the take-off went quite well. Full throttle, just like a car accelerator holding the bar hard back. At 24 kts (yes, it had an ASI), bar forward as briefed and up she went.

After nearly a whole second of exhilaration, I realised I had made an awful mistake. Not only were the controls slower to react than anything I had experienced before, but everything happened back to front. After years of flying conventional aircraft I find I have a powerful subconscious instinct to push on the controls to go down, pull to go up, move to the right to break to the right etc. I also found I had no fixed datum in front of me by which to select an attitude and hold the horizon steady. I rapidly found I was severely over-controlling in pitch and quite unable to hold a steady climb. Simultaneously I was unable to keep the wings level as any slight turbulence causing a roll was very difficult to damp out as I had to think almost by numbers - ie, "I'm rolling left": so ignore instinct and move the

bar to the left. Thus I began a meander around the sky with very little control over height or direction. The inevitable soon happened: the machine rolled left, possibly because I had stalled - I don't know. But I instinctively moved the bar to the right. Very rapidly I was in a steep descending spiral going downwind with the distinct feeling I was about to spoil my whole day. For the first time my previous experience came to my rescue, and I didn't panic. I thought about the problem and pushed the bar as far left and forward as it would go. I came very close to the ground, probably about 15 ft, and then rapidly into a climbing turn, where I regained a semblance of control. After that and some gross overcontrolling, at the third attempt I managed to point at the runway. The landing was almost an anticlimax except for the swing as I touched down - which I instinctively corrected with "rudder"... the wrong way. However, after a bit of "hopping" and using my feet on the ground as brakes I came to rest with no damage to the

aircraft or me (except my pride).

I know I was lucky to come away unscathed and I hope my experience will be of value to other conventional powered pilots who are contemplating this new sport. Clearly for experienced hang glider pilots adding an engine presents few problems, but for conventional aircraft pilots I feel the only safe way is to learn to fly a hang glider first, at one of the schools, until a successful "two-seater" is produced which can be used for dual instruction. To owners of microlight aircraft I can only say, THINK TWICE before allowing your conventional aircraft friends to have a go. To the manufacturers, maintain your responsible attitude towards sales of the aircraft only to experienced hang glider pilots.

Thanks for the experience - I certainly learned another useful lesson about flying!

Mike Laundry

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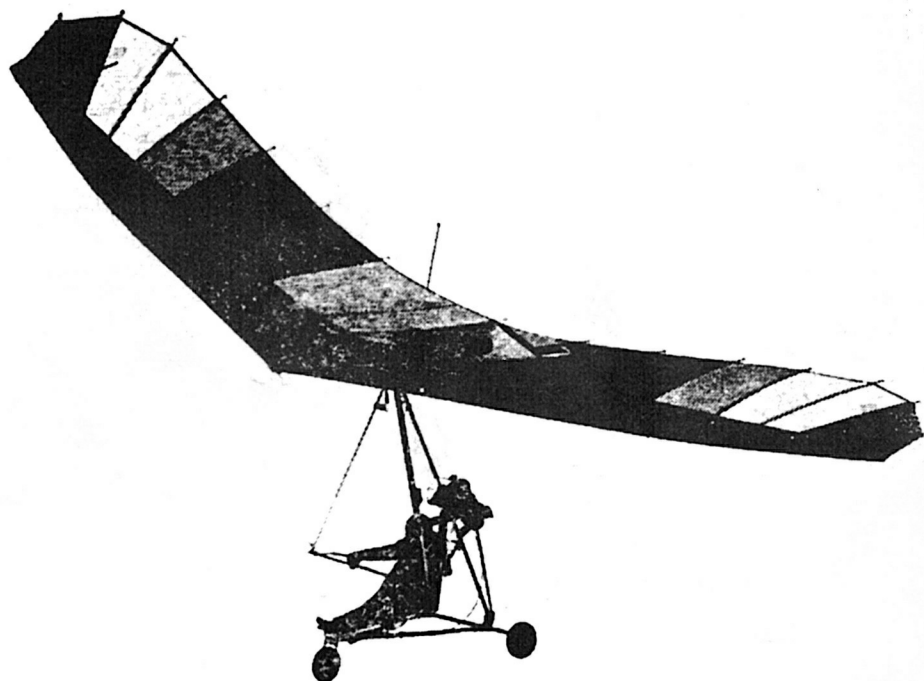
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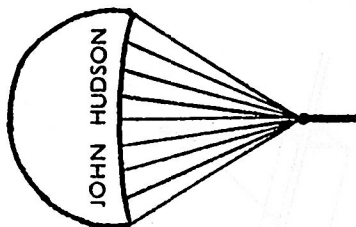


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POWER 'CHUTE

In an earlier issue of Flight Line I described our thoughts and ideas about a parachute system for microlight aircraft.

I sometimes wish I'd never started thinking and attempting to design a system since it's caused me many a sleepless hour and a few nail-biting sessions. I've been tormented with frustration and find myself baffled and unable to design the perfect system.

Firstly, flying under power even in the most well-tested aircraft exposes one to many times the risk than that associated with normal gliding conditions. Power can get you out of trouble, but it can also put you into it. In addition we have to face facts and the current range of 'trikes, Fledges and Eagles etc are experimental aircraft only.

Many a fatiguing hour has to go by before we find the limits of aluminium, Dacron and wire and like Boeing and other multinational companies we'll find out just what the limits are when our aircraft fall apart in the air. Something will fail, that's for sure, and as a member of these microlight experimenters you might be clipped into it 2000 ft up.

A good power parachute system is more of a necessity just now than an airfield to fly from.

The headache lies in designing a flawless system. To consider . . .

1: Any deployment will result in the systems streaming rearward unless the craft is in a stabilised tail slide.

2: Most microlights are "pushers" and have a rotating propeller just waiting to slice through a parachute bridle.

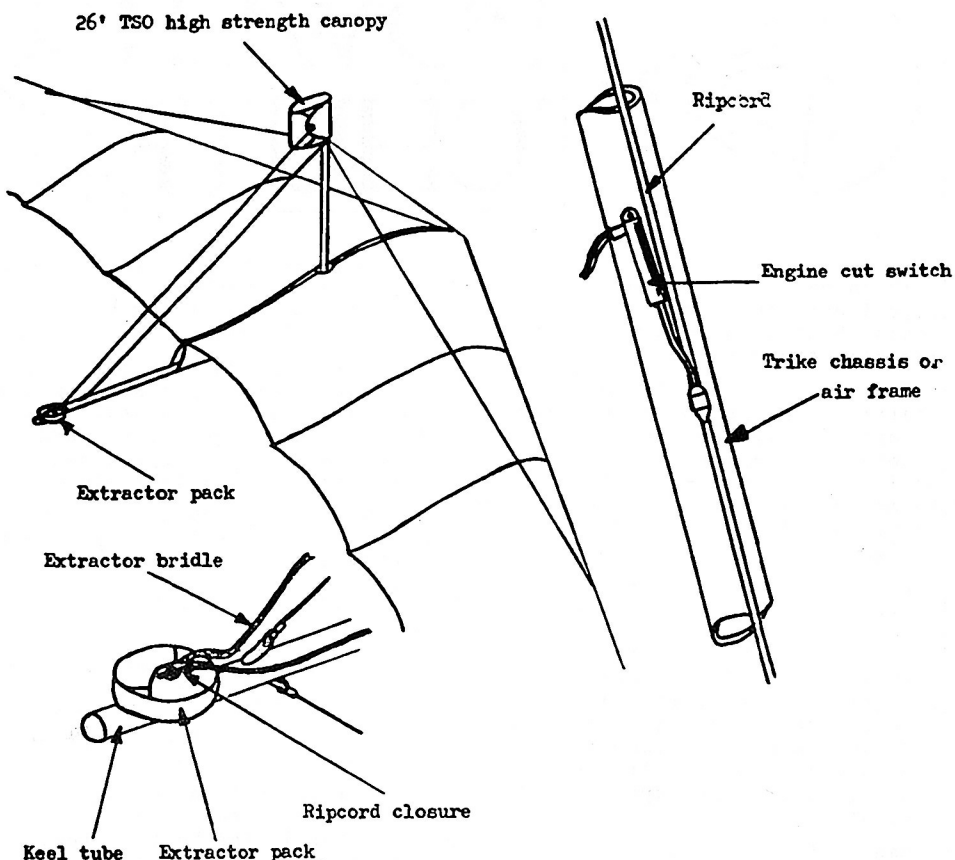
3: Bridles have been sliced through on rear wires during straightforward hang gliding deployments. Regardless of the propeller the additional weight and opening speed means more potential for bridle failure.

4: Manual deployment from the pilot's position is fraught with problems. The bridle may get caught around wires, tubes, axles etc, forcing the trike upside down on opening.

5: To attempt to locate the cut switch, stop the prop and then deploy is impractical when the aircraft may be spinning, tumbling or dropping vertically.

I consider that an automatic deployment system using a spring extractor is the best system. The extractor must be located in free air away from wires and tubes and the best place is right at the end of the keel tube.

This would also be the best place for the parachute pack, but 8 lbs of canopy seven feet out from the centre of gravity would cause a major "out of trim" problem. This means we shall have to locate the canopy pack as near the centre of gravity as possible and the kingpost seems to be the only place. Not at the base where the deploying parachute may get caught on the rear wires, but right at the top, above the kingpost itself. We cannot put the extractor here too because of the major risk of it falling down onto the sail and being trapped there in a "dead" area.



Many's the skydiver who has had to half-roll during free fall because his extractor has been bobbing about in the dead area behind his back. The potential on a hang glider is far greater and besides in the structural failure problem it's possible that one or both sides of the wing may be bent vertically upwards, thereby trapping a kingpost-mounted extractor.

The sketch shows the scheme we are currently working on and we envisage the extractor operating on a single pull pin, activated by a rip cord which travels along the keel and down the main chassis of the trike. This cord

cannot be attached to the A-frame since it must be in reach of the pilot at all times and in all situations.

Built into the rip cord housing would be an electrical switch which will automatically cut the engine as the cord is pulled.

As soon as the rip cord is pulled the 25 lb extractor will spring from the pack and fly away about 15 ft when it will then open the main canopy pack and withdraw the parachute. A 25 ft 5000 lbs bridle will connect the parachute to the glider at the heartbolt and a back-up loop will act as safety between the trike and glider.

Any successful deployment will be a total failure with the current range of microlight seat belt systems. We consider it essential that the pilot be firmly attached to the machine to prevent him being ejected from the aircraft on deployment. To this end we have developed a microlight harness made from webbing which features leg loops, waist buckle and shoulder straps. The idea is that the microlight pilot will wear this and simply clip himself into his machine by means of a snap shackle at each side located at the hip/waist area. The harness is very comfortable and should ensure that an unfortunate pilot does not see his aircraft descending gracefully under canopy as he hurtles earthwards. Believe me, opening shocks can be extremely severe and it's going to take a lot to keep the pilot in his seat.

Obviously the system described above is not the best in the world, but we believe it is a good basic start. Any ideas from anyone would be gratefully received.

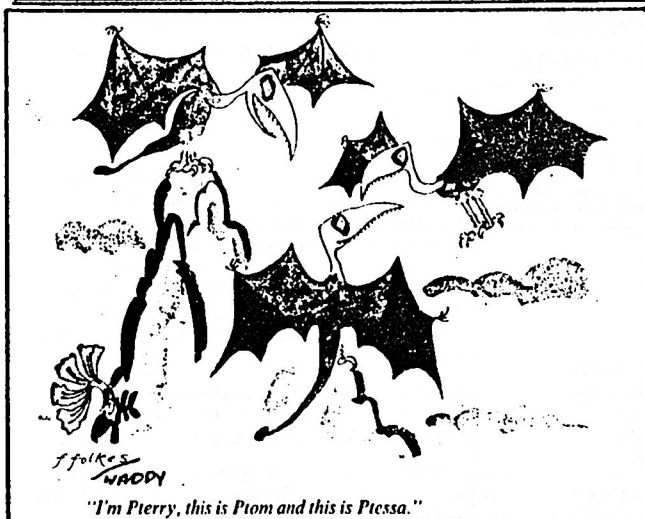
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(Submitted by
John Wadsworth)

A.G.M.

REPORT

AGMs often generate hot air, points of order and little else, but they are necessary to close one year and open the next; and all things considered, this year's indoor thermals were kept to a minimum and the meeting was a constructive one. About 200 people attended the AGM and apart from the business proper, there were pleasant diversions like the trade displays, Steve Hunt's comprehensive Oshkosh '80 film and the chance for a good matter!

Steve Hunt's Chairman's Report outlined the Association's activities over the year. A magazine had been produced, fly-ins held, and draft proposals for the sport's organisation submitted to the CAA and made available to members. The

membership was about 400 and even this comparatively small number had generated an enormous workload of applications and correspondence which had passed to Dave Thomas and his wife Katey upon David Kirke's resignation in May. Most of the magazine production had been handled by Joan Hunt. Steve underlined the likely need in the near future for at least a part-time paid officer to handle routine matters as substantial growth was anticipated. The year had seen a considerable growth in minimum aircraft activity and Mrs Ann Welch OBE had recently been asked to form an international minimum aircraft committee under the auspices of the FAI, indicating the growth of interest internationally. The FAI and CAA were only two of the many bodies with whom the Association had been in contact over the year.

Dave Thomas presented a Treasurer's Report which was accepted by the membership (see below).

Ann Welch was adopted as President of the Association, and eight officers were elected or re-elected to serve on the Committee and their names and responsibilities are listed separately. These are the people to contact with your views, questions and complaints, and in particular Nick Regan, as your new Editor, is aiming to provide you with a bigger and better magazine so tell him what you want to see in it!

Much criticism had been voiced over the year of the name "British Minimum Aircraft Association", and it was decided to change it to "British Microlight Aircraft Association".

The Association's Constitution was also considered and the Committee empowered to make amendments and to agree a final version. Space prevents the Constitution being presented here (it was of course freely available at the AGM), but if you are concerned to have your say, write now to Steve Hunt for a copy.

It was agreed that membership fees should be increased to £12 per annum, to run for one year from date of joining.

There was also a general discussion on a number of topics such as insurance, noise, the draft proposals and the magazine.

JHH

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ACCOUNTS

INCOME & EXPENDITURE ACCOUNT AND BALANCE SHEET FOR THE YEAR ENDING 30 NOVEMBER 1980

Income and Expenditure Account

		£	£
INCOME	Membership fees receivable	1,879	
	Proceeds from the Wellesbourne Meeting	394	
	Advertising - Flight Line	<u>626</u>	2,899
Less EXPENDITURE	Cost of Flight Line	1,046	
	Wellesbourne Meeting expenses	451	
	Printing and stationery	280	
	Postage	126	
	Telephone	190	
	Prize money	6	
	Subscription (Royal Aero Club)	25	
	Sundry expenses	<u>12</u>	2,136
NET INCOME FOR THE YEAR			<u>763</u>

Balance Sheet

CAPITAL ACCOUNT	Net income for year	763	
	ADD sum brought forward from the British Powered Hang Gliding Club	<u>127</u>	890
LIABILITIES	Membership fees paid in advance	171	
	Sundry creditors	<u>78</u>	249
			<u>1,139</u>
REPRESENTED BY	ASSETS: Cash at bank	832	
	Sundry debtors	226	
	Stock of stationery	<u>81</u>	1,139
			<u>1,139</u>

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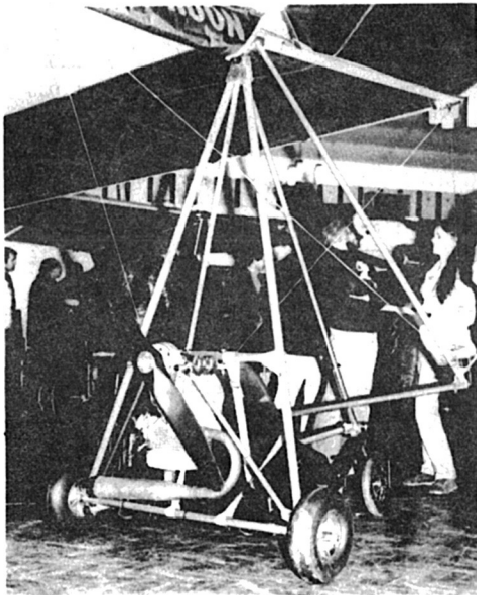
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- * Sole Hiway Skytrike Agents responsible for using the European cross-country record holding wing - the Birdman Cherokee as a powered trike combination.

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DISPLAYS

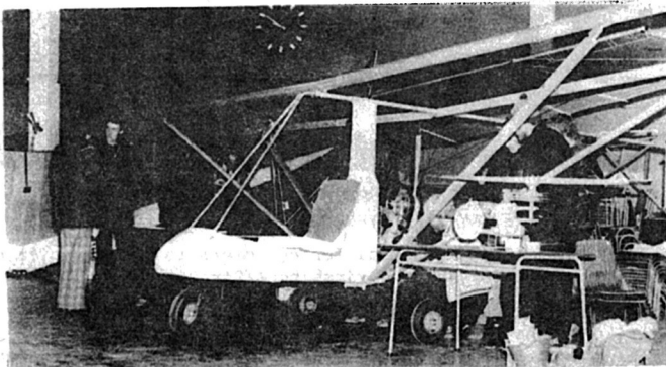


At the Annual General Meeting trade displays and this proved of the day. Trikes were on show. Limited, Chargus Gliding Company, Birdman Flight Training School; displayed a 250 cc Skytrike with and also a 340 cc two-man Skytrike. Steve showed their new glider, the Ty Sachs-powered two-man Buggy.

The Ultralight Aviation Centre Steve Hunt, under the banner of exhibiting his Panther engine and prototype of his Pathfinder through Steve had taken delivery of the tubes only eight days earlier, complete but the "bones" gave a Euro Wing's Catto CP16 was the wing machine and also generated

Gerry Breen didn't rig the Eas news-stand selling copies of the magazine carried a feature on -

Photos: Above left - Solar Win Typhoon with UAS Buggy; below right - Hiway Skytrikes in the with John Ievers (bespectacled) of Pterodactyl at rear of hall; right - Euro Wing's Catto CP16. All these photos by John H Wads



, eight manufacturers mounted
to be a very worthwhile aspect
from Skyhook Sailwings
y, and Ashley Doubtfire's
Hiway Hang Gliders Limited
h the new Demon hang glider
ike, and Solar Wings Limited
phoon, with a UAS 340 cc

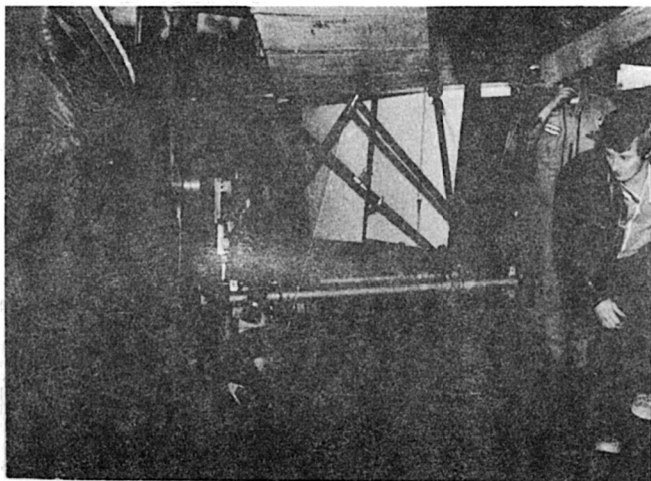
re displayed a Pterodactyl, and
his new company Huntair, was
unit and also the partly-built
ee-axis-control machine; as
specially-manufactured alloy
the machine was far from
good idea of his intentions.
only example of a fully rigid
a lot of interest.

gle but instead set up a
e Sunday Times; the colour
guess who??!!

JHH

gs' new
left -
above
foreground
and wing
below

worth.



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Nick



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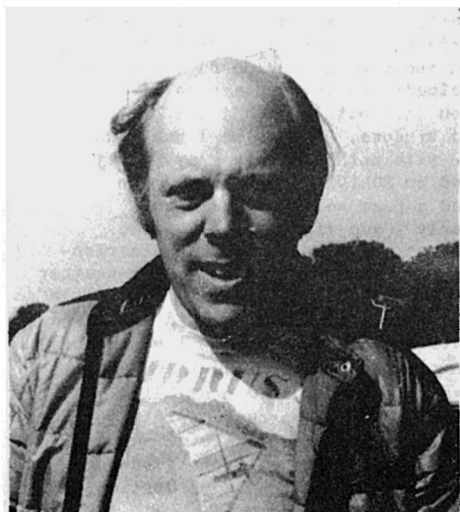
Jonny

Dave



Adrian

Brian



TRIAL RUNS

'Now you've got it here's what to do with it'. So beginneth the Gospel according to McCornack, who has hit the jackpot hatching Pterodactyls in his Californian back yard. With every kit comes a shiny plastic camper's altimeter, a screwdriver, a treatise on American aviation law, and the book of instructions reading like a Tom Sharpe novel. I quote the opening words above.

In fact Mr McCornack has understated the performance of these amazing flying machines. Do you ever have that dream where you flap your arms, and hey presto take off into the big blue sky, wheeling and diving like Jonathan Livingstone? A friend of mine who suffers from vertigo even does it in his bathroom. Well, I no longer have that dream; instead it has become a reality. The Pterodactyl climbs, soars, wheels, dives, glides, and occasionally flaps its wings. It is pushed around the sky by a powerful little three-forty cc snowmobile engine, driving direct a thirty-six by eighteen inch propeller.

Two weeks ago, I felt like going high. Armed with the aforementioned shiny plastic camper's altimeter, a pair of long-johns, and a Gardener's World greenhouse thermometer, I just well er .. took off. For the benefit of those with degrees in applied mathematics and astrophysics, there was a five knot south-westerly, and the sun was shining through ragged cloud. The surface temperature registered sixty-seven Fahrenheit on the thermometer. I had earlier been driven to hitting it with the handle of the screwdriver to get the needle off freezing point, but I reckoned that it was functioning as well as a Gardener's World greenhouse thermometer could . . .

The south-west corner of the Cheshire Plain is a reasonably traffic-free area, especially after five-thirty when all those low-flying boys have gone home to Anglesey for their tea. As a precautionary measure I always treat the first fifteen hundred feet with a certain amount of respect. Perish the thought of being spewed out of a Harrier's back end in small pieces. From fifteen hundred to five and a half thousand feet there was

less to worry about, and a good deal more to enjoy. The sun was shining through thin patches of cloud, and its rays were tracing across the green countryside like brilliant spotlights. The landmarks I had known for thirty years, miles apart on the ground, were all within one sweep of my eyes. The sky above was very very big.

At five and a half thousand feet I was climbing between two airways, which extend upwards to twenty four and a half thousand. This time I was looking out for plane loads of trippers returning from Benidorm suffering from sunburn and Legionnaire's Disease. It would not have been a good idea for them to start spilling out all over the Cheshire Plain. The engine was going at half power, and after forty minutes of long lazy turns into the setting sun with a thin layer of cotton wool coming in below me, Wilfred (the propeller) and myself decided to call it a day. Wilfred was biting on thin air, and even with the long-johns it was becoming a bit nippy. The Gardener's World greenhouse thermometer read thirty-eight, and the plastic camper's altimeter showed that we had reached twelve thousand feet. Hey ho, it was time to zap on down through that white stuff before it got too thick ...

The descent was like something out of a fantastic dream. The clouds had piled in fast, and great white pillars towered upwards as we swept down to meet them. In an enclosed aeroplane flying above the clouds has the appearance of a film as you look out through those little round windows. This time I was right there with nothing in the way. They looked so SOLID! I spiralled down around a huge woolly pillar, and suddenly I was right in it - grey, thick, warm and wet. Totally disoriented, I relied on my plastic all-weather air speed indicator tube with the little yellow disc. If the air speed increased dramatically I assumed that I would be turning into a steeper and therefore faster dive, which in a near blind state would freak me out completely. This seemed to work; my plastic airway adjustable compass originally designed for the dashboard of a 1963 Ford Cortina,

remained defiantly pointing south. The fact that the plane was on a northern heading when we both entered and emerged from the cloud seemed irrelevant.

The landing was a bit bouncy; it always seems to lack finesse after a long time in the air. In fact the trip took fifty-five minutes - forty up and fifteen down. When I got back to the house for my supper a good friend, aged four and a half, ran round me twice and back inside shouting, 'Simon's been to see God, Simon's been to see God!'

Simon Dewhurst

E.A.A.

Some people may be wondering how to join the Experimental Aircraft Association, the American organisation which publishes SPORT AVIATION monthly and runs the annual OSHKOSH meet. Membership is \$25 for one year (\$48 for two years and \$69 for three), including 12 issues of the excellent Sport Aviation per year. Junior Membership (under 19 yrs of age) is \$15 annually. Cheques (or checks, as they say!) should be payable to EAA at PO Box 229, Hales Corner, WI 53130, USA. You can buy international money orders at banks without production of a passport, and with the present state of the £, it's a bargain at the moment!

HUMBUG

THE HUMBUG - Klaus Hill's last design, now being made under licence by Gemini, a company run by Ed Sweeney.

Ed is pictured with his son and the aircraft.

The Humbug packs fully for transportation and features a very interesting method of achieving full three-axis control by articulating the rear portion of the outer sail battens.

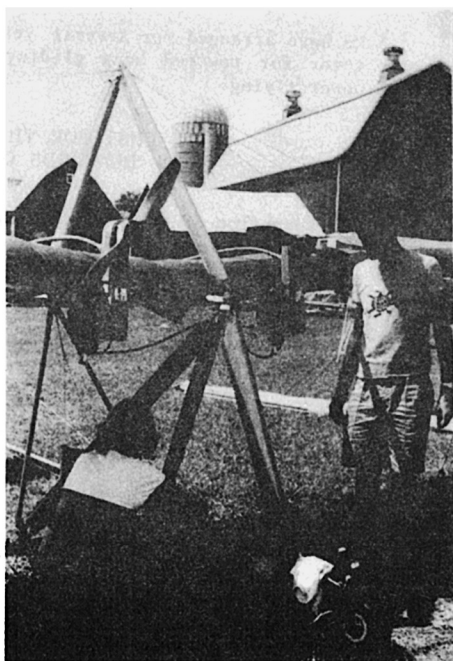


Photo: Steve Hunt

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REGGIE SPOONER, CLIFTON HOUSE, BATH ROAD, COWES, I.W.
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I have been interested in aviation matters since the end of the last war. In 1952 I joined the RAF as a fitter (engines); in the late 1950s I joined Bristol Siddeley on the Flight Development Department and in 1964 I entered the teaching profession as a craft teacher.

I have always yearned to own an

for transit. The whole wing is covered with Dacron. The flight cage is built of light alloy tubing and is attached under the centre section by four pip-pins.

The technical specifications are a span of 34 ft with a chord of 5 ft to 2 ft and an aspect ratio of 8:1. The whole craft weighs in at 146 lb empty. For a pilot of 190 lbs the performance figures are

THE MITCHELL WING

aircraft of my own, even to the stage of contemplating PPL training in 1954. I never did get any further than contemplating, however, as the cost always seemed just out of reach of my pocket. I eventually found that soaring with a gliding club fulfilled some of this yearning. Then recently I became aware of the new microlights, or minimum aircraft; I saw a prototype in action and decided to look further into the subject. I studied what was available, particularly in the field of home-build models. I found that for the home constructor there is not a great deal available. I did find that the Americans have some interesting rigid wing models available, while the British microlights tend in the main to feature flexwing designs.

As a person who has had a lot to do with full-size aircraft I tend to be biased towards the rigid wing. I believe that if compact car-top portability is not the prime requirement, then the rigid wing has much to offer. It has good penetration, a much flatter flight attitude and is altogether a cleaner aerodynamic form.

I have decided to build the MITCHELL B10 WING. I like the design and the method of construction. The wing is built onto a D-section 1mm ply leading edge/main spar box with extruded foam ribs every $4\frac{1}{2}$ " to retain the D-section. This forms a very strong stable main spar onto which are attached the 24 girder ribs. The wing can be constructed as four separate units, two inner and two outer panels each about 8'6" long. The two inner panels are eventually joined at the centre and the two outer panels attached with hinge joints to facilitate folding

take-off 150 ft, landing 95 ft, climb rate 400 fmp, top speed 55 mph, stall 22 mph, landing 35 mph, service ceiling 12,000 ft, glide ratio 18:1.

The makers claim a building time of 200 manhours. As I build this will be either proved or disproved. I shall continue this article with descriptions of the building snags etc in future issues of Flight Line; perhaps this will help others who may be considering the Mitchell Wing as a project.

In 1935 one Henri Mignet designed and built the 'Pou du Ciel' (or Flying Flea), and surprise surprise, it weighed in with a design weight of 100 kg. I believe it achieved rather a reputation as a disposer (permanently) of pilots in this country. Can anyone recall why this was so? I should be pleased to know as having seen the drawings etc it appears to be an ideal project - span 6 metres, power 500 cc two-stroke (1935), and just think of modern materials and power plants, and designed to fold and tow behind a car too. Anyone whose grandfather or father had anything to do with the "Flea" might be able to shed some light on its performance and perhaps its vices!

Gordon Holland
Plymouth Devon

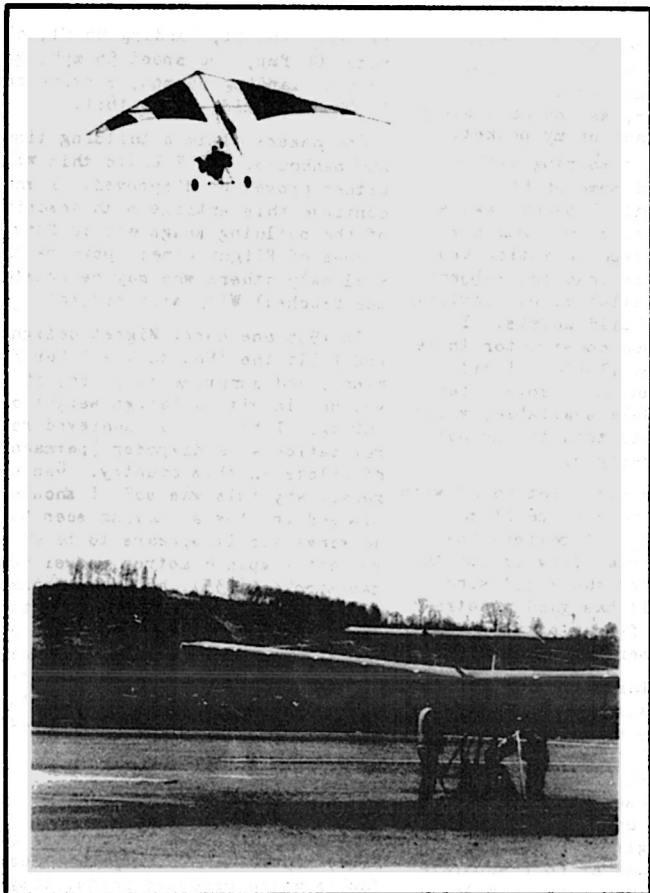
Editorial note: Le Pou du Ciel (Flying Flea) had certain aerodynamic design faults which produced instability. I have heard it said that it was more stable inverted than the right way up! I would recommend the membership to leave this machine dead and buried. DT

DESOUTTER'S DREAM

or reality at last?

Many readers, especially those under 50 (which, I guess, means most of you) will not perhaps

have heard of Marcel Desoutter - unless you happen to be vintage aircraft buffs as well as micro-light enthusiasts. So I will broaden your education by saying that he was French, a well-known



First gathering of micro-light aircraft at Wellesbourne Airfield, Spring 1980. Hiway Skytrike/Super Scorpion airborne; Eagle on runway.

Photo: Tony Fuell

name in the early days of flying, was already appearing in air shows in 1911, and designed inter alia the French equivalent (more or less) of the De Havilland Puss Moth in 1931 or so.

The reason I'm giving you this free history lesson (wake up, Garrison Minor, in the back row there!) is that, browsing through some of my old copies of Popular Flying - a superb magazine, price 6d, which was edited by W E Johns between 1932 and 1939; it carried the first Biggles stories, among other gems - I came across an article dated 1933 by the aforesaid Marcel, entitled "The Future of Private Flying". It seems worth quoting.

He starts off his article by saying that, in his opinion, even 70% of motorists (which he took as an example of a class of individuals with some experience of controlling a vehicle at speed) would not consider learning to fly the present day (1933) light aeroplane on the grounds that it was too dangerous, because one had to think too quickly and of too many things at the same time; and he goes on, "The first step, therefore, is the production of a new type of light aircraft (which must, of course, sell and operate cheaply), the chief characteristic of which must be that it will operate safely at speeds not in excess of those at which the average motorist is called upon to exercise his functional powers. This means an aircraft which will maintain height safely at approximately 25-30 mph . . . Secondly, the landing speed should not exceed 20 mph . . . Thirdly, this aircraft should definitely land on three wheels, or two wheels and a skid, so as to enable the pilot to fly onto the ground and stand on his brakes without fear of turning over. Lastly, the pilot must sit out in front, in order to give him a completely unobstructed view. The view, or lack of it, from the present-day aeroplane would cause far too much

strain to the average motorist."

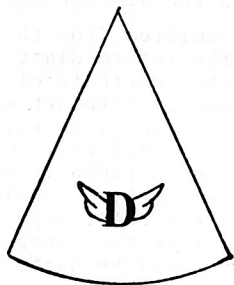
I have omitted from the above some of the intermediate sentences, in the interests of brevity. He continues, "Although with our present aerodynamical knowledge the maximum speed of such an aircraft would probably not exceed 60-70 mph, I consider this of relatively small importance, as I feel sure that large numbers of people would be quite happy to go for an afternoon's spin in such a machine, not with the object of getting from here to there as quickly as possible, but merely for the enjoyment . . ."

He concludes by saying, "It would, of course, take time to educate the public to the fact that they were being offered an aeroplane whose main characteristics were entirely different and very far removed from the zooming, looping, twisting, rolling and upside-down flying types with which they are only too familiar, thanks to the circus atmosphere of most flying meetings.

Comment from me is almost superfluous; the parallels with almost any of the current microlight types are obvious. Perhaps the surprising thing is that nobody seems to have taken Monsieur Desoutter very seriously at the time; on the other hand one might have asked him why he did not, as an experienced designer, get back to the drawing board and produce such a machine himself. (There was an attempt to do so with the Flying Flea, a do-it-yourself ultralight designed by another Frenchman in 1935 or so; it had a brief moment of fame but came to grief after several of them crashed, sometimes fatally, and was withdrawn.)

Now, at last, the BMAA should be able to bring an approving smile to Marcel Desoutter's moustachioed face somewhere up there above us. Let's hope he will be there to give a helping hand when the motor cuts at 200 feet and there's a line of trees dead ahead . . . !!

Donald Gurrey



TELLING TALES OUT OF SCHOOL

One of the genetic/electronic engineering fraternity's most closely-guarded secrets is a factory that makes androids. Not just any old androids, but specialist jobs programmed to inflict terminal brain damage on the staff of microlite flying schools. When they sign on for a course you can't tell them from a flesh-and-blood human; but sooner or later, sometime during the course, their circuitry suddenly switches to BDM (Brain Damage Mode). Then all you can do is kiss the plane goodbye and look up a 24-hour brain surgeon in the Yellow Pages.

Recent examples which have been assigned to scramble my cortex include the following:

1: Rich Kid from the Stockbroker Belt. Makes contact on the jellybone, is in desperate hurry for course. Is told we could fit him in on one starting tomorrow except our terms specify payment in advance. No problem. Mummy's just given him his pocket money (down to a monkey a week, you *must* have heard about the recession?) He'll bring cash. Can he make it to the airfield by 8 am? Sure, he'll rent a kite and fly in. Next day 8 am comes and goes. I wait. At 6.30 pm RK plops the rentakite onto the runway, decants himself, wife and friend, lays it on the line: can fly anything, no time for the full course, will get it together on the Eagle in an hour or two, let's do a deal. I propose full course, full payment. He proposes a couple of hours for £35. I laugh. He makes like I'm trying to skin him alive. I tell

him he was born out of his time, should have been a Kamikaze pilot. Brain hurts. Made aware of this by build-in BD sensors, he presses the attack. He's flown more planes than I've had hot dinners or cold; can get all the theory he needs from books; has forgotten more air law than I'll ever know and gets along fine without it thank you. While he steams into me the light fades. I entertain secret notions of sticking him in the hot seat and sending him up for a jolly solo in the dark; decide I can't afford a replacement aircraft, bid him goodnight and depart the airfield with a brain so inflamed it's distending my eardrums. At least he never got as far as the plane, unlike:

2: Council Worker from Up North. CW breaks canard on first morning while rigging. Is told canard may take time to fix; is invited to lunch at my house while I work on canard; declines - will wait at airfield. I arrive back at airfield with repaired canard to find CW gone and note taped to the aircraft: RETURN COURSE FEE IMMEDIATELY OR I WILL TAKE IT FURTHER. The Moonlight Flit is an old BD technique most familiar to hang gliding schools - illogical aggressive note is a new twist. I plug myself into the mains, whack 240 volts through my frontal lobes and apply for newspaper round (turned down because pilots have reputation for lunacy). Oh well, at least he didn't fly it, unlike:

3: Cecil Lindbergh. Has a zillion hours' PPL, taught the Wright brothers, has experience on gyros, jets, sailplanes, hydroplanes, carpenters' planes - you name it. CL handles the Eagle beautifully under tow. Perfect in-flight control and landings again and again. We mount the engines and prop, brief him for a short straight hop up runway, set throttle lever to facilitate gentle lift-off and shallow climb, clear CL for take-off. At this moment BD circuit switches in. CL yanks throttle open, leaps into wild blue yonder like Lightning on re-heat, gets to 50 feet then cuts throttle right there in the climb-out. Cross-wind landings with no pilot input into ploughed fields bend microlite undercarriages. In voice of forced calm I ask reasons for CL's actions. CL says he opened the throttle because he didn't think I'd given him enough, and cut it because

the beast took off so fast it caught him out. Why had he ignored all my instructions? "Look, I can fly. This is just another aeroplane. I know what to do." What, cut the power in the climb-out? "The nose wouldn't come down." Bullshit. It doesn't make sense. Brain damage never does.

Finally, an example to them all: Francois the Pawnee pilot. Learned to fly before he could walk. Keeps his plane at the airfield we fly from. "Chreestian (*French accent*), I'd like to learn to fly thees theeng (*Eagle*). I want you take your time. I don't want to get straight into eet and try to fly, I want to be towed. I want to learn right. Learning is important."

No flies on Francois. No BD circuits either.

Christian Maréchal
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PAUL BAKER ON TRAINING

When I look at training, I see that it is just a part of safety. The first thing to look at, then is safety. What does safety mean to you? What is it, is it important, who is responsible for it, etc. Now let's play a little game. I really want YOU to think about those and any other associated questions and come up with some answers before you read on, otherwise you are doing YOURSELF a disservice. I mean YOU, not everyone else who is reading the magazine. I want you to compare your definitions with mine - which, if you haven't got any, makes it rather difficult.

Safety is keeping within your limitations. The first question is, are they primarily Safety is knowing what those limitations are.

Safety is knowing which limitations limit your ability to cope and therefore your safety.

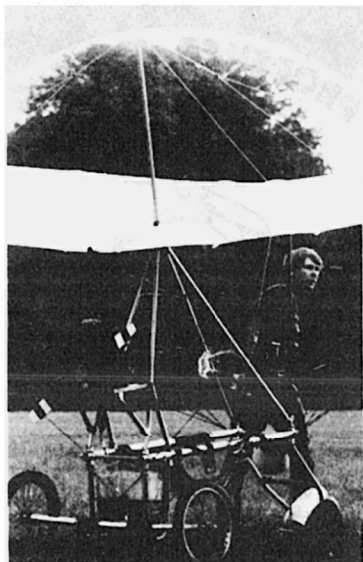
Safety is working towards being so good that there are no limitations.

True safety comes from within the individual, not something imposed from outside.

Safety can be seen from two points of view: that of the pilot, and that of the third party. For the pilot, safety means continuing survival with progress and increasing enjoyment and fulfillment - a positive concept. For the third party, safety in microlight flying means not getting hurt by someone else, ie a protective or negative concept.

How does training help achieve safety? Training should start by establishing what safety is. Training uses the experiences and insights already gained to help support the individual as he learns. Good training ensures that the pilot gains experience in the order that allows him to learn as quickly as possible without leaving significant gaps in knowledge. High quality training is essential for the satisfactory development of microlight flying, is great for the pilots and satisfies the third parties. How do you achieve these aims? We need a structure and we must apply it.

The first thing is to examine what exists already and to see how satisfactory or unsatisfactory it is. Will it produce the high level of safety and the high standard of flying that we all want? There are various schools around the country; they are all agents for one or more types of microlight aircraft.



Paul Baker with his Pterodactyl
Photo: Katey Thomas

more money in it?) Is there a conflict between selling aircraft and training to a high standard? Training requires the right weather and the pupil to be there for it, patience, skilled instruction, lots of time, still the right weather, and so on. There is far more time when flying training is not possible than when it is. This creates a bottleneck in the flow of customers, it puts financial pressure to move the people through as quickly as possible to clear the way for the next one, it also means that the chances of learning without buying an aircraft are slim. Overall I feel that the circumstances make it difficult and financially unsatisfactory to train to a high standard. This must be rectified. It is very important that we agree realistic standards and that these are adhered to. This will only be achieved by the full co-operation of the participating schools. The commercial schools have a very important part to play: the ones who are professional and aim for high standards deserve to succeed and will be encouraged; the others will NOT.

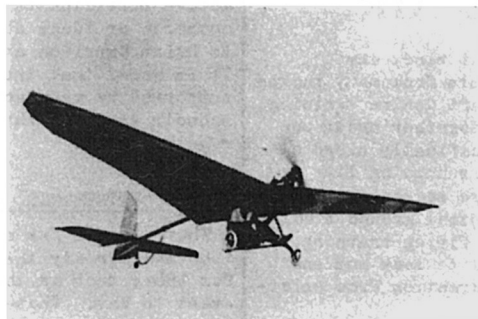
How are you going to continue learning after you leave the school? On your own is slow and not very satisfactory. The

answer has to be - with the help of other fliers. What you need to do is get together with other fliers, fly with them, drink with them (after flying!), exchange information and then analyse it. Build up a common pool of knowledge. You get together because by contributing, by sharing your knowledge, you gain far more. If YOU ALL start doing this, you will all gain and the BMAA will be a movement, not just a few words. It's in the Club that we will be able to create safety and training based on positive values, rather than on negative ones. This is the only way that we will control our sport ourselves, rather than have the CAA control us.

Believe you me, there is a real danger that the CAA will decide that they want to issue the licences to fly. The way to prevent this is to demonstrate that we are a strong movement of responsible people. If you care, you had better contribute. You - don't rely on someone else - YOU make your local club happen, and NOW. Consider what will happen if you don't!

Paul Baker
Training Officer

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SMALL ADS

For sale: SKYTRIKE/SOLAR STORM. Fully sorted and as new with low airtime. Selling complete with ASI, altimeter, vario, parachute, spares etc. May split. Best offer secures. Bill Allen, 0242-24498/28989.

POWER AT BAILEY'S YORKSHIRE HANG GLIDING CENTRE. Courses for beginners to thermalling techniques for extended XC flights. For sale: TRIKE/STORM £1200, TRIKE/HILANDER £1100 - tuition free with sale. R Bailey, 2 Denton Avenue, Leeds 8 - (0532) 662518.

For sale: Ritts propellers, from the States. Various sizes. £55 each. Call Ken Wilkinson (Bristol) 0272 313697.

For sale: HIWAY SKYTRIKE/SUPER SCORPION combination, 40+ hours' successful flying. Mahogany prop. £1,000. PLEASE no time-wasters or spies. 0252 26182.

ULTRALIGHT AIRCRAFT IN THE AIR

Useful reading on that windy day!

In response to requests from many pupils the Ultralight Aircraft Centre Training Notes have been put together under one cover. Although specifically aimed at the newcomer, there is nothing like a refresher for the more seasoned. The book covers the essential ground studies needed to complement flying training. No longer do you need to seek out and extract relevant information from existing publications.

A limited number of copies of the first edition remain so send your cheque/PO for £6.50 (inc P&P) to The Ultralight Aviation Centre Limited, Wellesbourne Airfield, Wellesbourne, Warwick, CV35 9EU (tel. 0789 841114 or 0926 612932)

NEWS

PILOT CERTIFICATES OF COMPETENCE

The present position in this country is that the CAA control all flying and pilots need licences; at present the CAA are choosing not to enforce our need for a licence - but there is no guarantee whatsoever that this 'honeymoon period' will last.

In particular, the CAA take a very serious view of people doing display flying other than at official air shows where notification has been given.

It's time to start building a pool of responsible qualified pilots who are seen to be such, and the way to begin doing this is to start implementing Pilot Certificates of Competence. Initially this is going to be difficult because we do not have any approved instructors! We are inviting five instructors from the main schools to help us get started. More information next time.

Paul Baker

TRADE INTEREST CONFERENCE

Early in the Spring there is to be a BMAA Trade Interest Conference chaired by Brian Harrison, aimed at unifying approaches to and training of potential active participants in the sport. Any comments or ideas about the Conference to Brian Harrison at Euro Wing, please! It is hoped that the event will be widely supported by manufacturers, dealers, schools etc, and that it will become a regular forum.

EVENTS, GATHERINGS, FLY-INS ETC

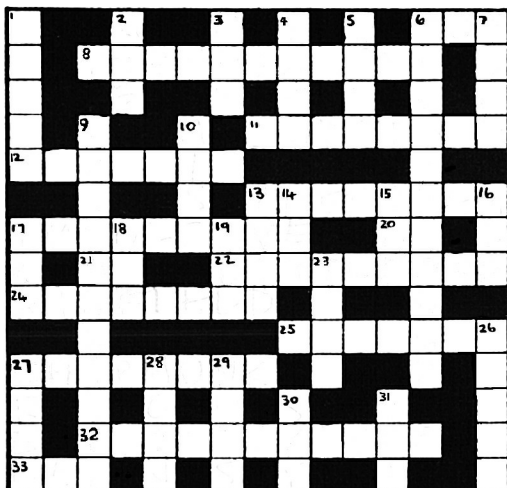
There were a few enjoyable fly-ins in 1980 and already there are some planned for 1981, such as the Isle of Wight event in May. These events obviously pose their own special problems, and so that the maximum amount of knowledge and expertise can be shared with prospective organisers, Jonny Secombe will be our Events Adviser and Co-ordinator. There will be a regular calendar of forthcoming events in Flight Line, and anyone proposing to run a meet can contact Jonny to discuss publicity, safety aspects etc.

KWEEBIE KORNER

ANSWER to last time's problem - THREE AIRCRAFT. Five answers received, the first of the two correct ones being from Ken Shail, Malvern, who gets the £2. (Mark Crew's answer was wrong, so sorry, Mark, you didn't get the £2 to buy a Pterodactyl!) Full answer available from Joan Hunt if you want.

- - o o o - -

THIS TIME'S KWEEBIE is a Kryptic Crossword compiled by Joan Hunt. £2 for the first correct solution picked out on 30th. January. Answers to Yew Tree Cottage, Llanover, Abergavenny, Gwent. NP7 9DD.



ACROSS:

- 6: Love in a steamship leads to Mayday signal (3)
- 8: Prehistoric microlight? (11)
- 11: Girl's credit controls aircraft (8)
- 12: Transports lose recreation and rest on seat passing through (7)
- 13: A French sea pretence - hometown of microlight instruction advertiser (see Flight Line) (8)
- 17: Description of impetuous propeller? (9)
- 20: Hydrogen batchelor grades pencils (2)
- 21: Headless Ben is fourteenth of 26 (2)
- 22: Small extremity, of con rod maybe? (6,3)
- 24: I led fair mixture for flying place (8)
- 25: Wolf goes back after atmospheric gas mix, describing its motion (7)
- 27: Postwar RAF trainer sounds like monastic friar! (8)
- 32: Clever impersonation is also successful launch (4,4,3)
- 33: Cutting tool reverses for tailless wasp (3)
- 9: Mushing microlights at Oshkosh; potassium snake, then radius in JR's family (6,5)
- 10: Young male pilot likes a near one on the ground but not in the air! (4)
- 13: Keen in a video recorder (4)
- 14: Encountered for the weather forecast (3)
- 15: "___ Stoops to Conquer" (Goldsmith) (3)
- 16: Abbreviated defence department sounds like rocker's enemy (3)
- 17: Behead architects' institute to find broadcasting authority (3)
- 18: Fine thread found in fun fair (abbrev) (3)
- 19: I'll be unwell (3)
- 23: Control aircraft to make it neat (4)
- 26: Catherine might give us hers for use on undercarriage (5)
- 27: Wreck loses king but, rebuilt, yields aircraft team (4)
- 28: Muse on earth's satellite (4)
- 29: Bolts insecure without them - or even insane (4)
- 30: You fly in it, in whisky (3)
- 31: Initially, unidentified flying object (3)

DOWN:

- 1: High place useful for engine installation (5)
- 2: Took food in a tent (3)
- 3: You could find a pea or a pilot in this (3)
- 4: O, Ant! What scrambled organisation? (4)
- 5: Namesake company of pop-star Redding creates lifts! (4)
- 6: Audible warning on Santa's transport sounds like deadly beauties! (6,5)
- 7: Airfield indicator full of wind, on foot (4)

PROPOSALS FOR THE ORGANISATION OF MICROLIGHT FLYING

The proposed standards which have been drawn up by the Committee are still available and can be obtained by sending 6 x 12p stamps to Dave Thomas. At this stage the standards are still only DRAFT PROPOSALS and this is your chance to have your say on their contents.

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