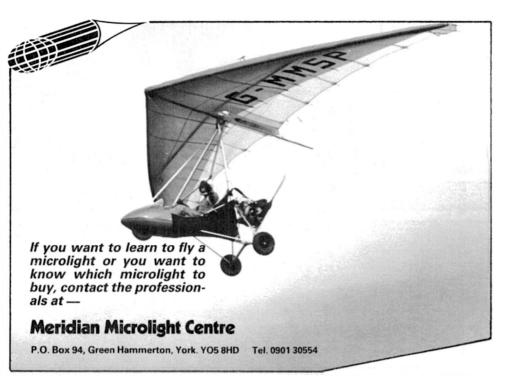


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July-August 1985



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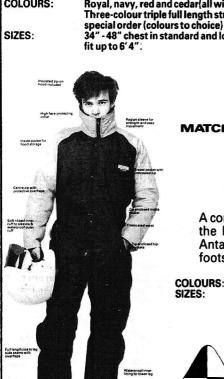
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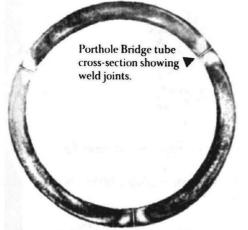
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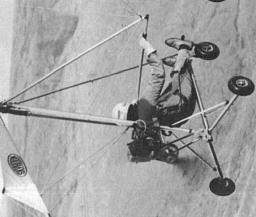


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FLIGHT

Published by the BMAA

July-August 1985

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Whistles in the wires

Snipe Snippet

The three-axis sub-70 kg Snipe, from Snipe Aircraft Development, has now reached prototype stage and an order for 15 has already been received from the Middle East. UK sales will come later in the year, as a little subtle redesigning is needed to bring the machine under the 70 kg mark for British sales.

But the machine promises to be worth the wait, for this Arthur Luff-designed aircraft is unlike anything else ever seen on the British microlight scene, with its 'diamond' configuration — swept back canard joining main wing, with tip rudders. The Hall-Warren wing profile is used. Of composite construction, the machine features a fully enclosed cockpit and a JPX PUL425 engine, and is expected to sell for around £3500.

The company can be reached at 622-640 Wood-borough Road, Nottingham NG3 5FS; tel 0602 624131.

Wilson Winds Down

Rick Wilson, BMAA's Record Co-ordination Officer, is taking a summer break from 1 July to 31 August. During this time, anyone requiring help with a record attempt should contact his stand-in, Tony Keefe, at 6 Mowbray Road, Didcot, Oxon; tel 0235 813758.

A Mini-Flash?

Work is progressing on Mainair's first solo wing, which will be part of a new solo trike called the Scorcher. The idea is to couple a small, light wing to a Rotax-engined trike unit with a pod and spats fitted as standard, to produce a nimble, fast machine. The wing has an area of 136 ft² (12.6 m²) with 85% double-surface. Engine options will be Rotax 377 or 447.

Little other information has yet been released about the wing design, but in view of the success of the Flash, it would be surprising if the new Rogallo did not bear a family resemblance to its larger stablemate.

Quite separately from the Scorcher, the company is also working on a sub-70 kg trike unit, the Astra, which will be sold without wing.

East Anglian Expansion

Two new schools are now open in East Anglia, run by David Clarke and Alan Reynolds respectively.

David is operating from Tibenham, 10 mile south of Norwich, and offers training to full Group D, including ground school. One of the minority of schools able to offer both weight-shift and threeaxis instruction, David uses a Gemini Flash and a Dragon as his training tools. For details contact David Clarke Microlight Aircraft at the address on the advertisement in this issue.

Alan Reynolds, who formerly worked at Enstone, is concentrating on weight-shift instruction at his new school, which operates from a site near Sudbury, Suffolk. Alan's venture is known as East Anglian Microlight Centre and can be reached at Rose Cottage, Tilbury Hill, Tilbury Juxta Clare, Great Yeldham, Halstead, Essex; tel 0376 46217 after 4 pm Monday—Friday.

Zephyr Blows In

Zephyr Barton has joined Southdown International to handle the company's marketing and public relations, working from the firm's Sussex headquarters.

Zephyr, from Houston, Texas, studied psychology and marketing at university there before moving to Britain, and has been involved in the ultralight/microlight industry for some time. She invites anyone interested in the new Raven, or other Southdown products, to contact her directly at the usual address (see p60).

Get It Logged!

Following the introduction of its revised pilot's logbook in April, the BMAA has now introduced an airframe and engine logbook to complement it.

Under the airworthiness legislation, it is mandatory to keep an accurate record of airframe/engine hours, modifications and maintenance work, and the new publication is designed with this in mind. It is a paperback, but with a fairly robust cover.

The book can be obtained from the usual Deddington address (see p7) for £1.80, quantity discounts being as follows: 10% for five ordered, 15% for 10, 20% for 15, and 25% for 20. All prices include VAT, post and packing.

Any More Legal Eagles?

So far there is only one microlight owner among the 67 members of the newly formed Lawyers Flying Association, but that could change. At present, 43 are licensed non-PPL D pilots, 12 are student pilots, and a few more fly gliders.

The association has two objectives — to encourage all varieties of light aviation, including microlighting and hang-gliding, among those working professionally in law, and to provide consultation and advice to the light-aviation

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Area 16.4 m²

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Nose angle 149°

Dihedral 1°

V_{ne} 60 knots

V_c 45 knots

Vsi 20 knots

Take-off distance 40 m

Comment

By Norman Burr

You'll read a lot about Woburn in this issue — in BMAA news, and the report itself — so I won't take further space here discussing the successes and failures of the event.

What I do want to do, however, is to float an idea which could be of considerable organisational help with future events, and which had it been applied at Woburn this year might have prevented some of the problems.

It is time, I believe, that we took a leaf out of motorcycle sport's book. In that activity, the chief organiser, or clerk of the course as he is known, is invariably a local club stalwart who does a great deal of work for no pay and little thanks. Sounds just like a fly-in, I hear you say. But it isn't — because unlike the BMAA, the body controlling the sport — the ACU — appoints a steward to oversee the entire event. In motorcycle sport, the ACU steward is god. Ultimately, he carries the can, and if he doesn't like what the clerk of the course is doing, he can stop the event until it is put right.

In our sport there is no such independent arbiter. The poor organiser, often desperately hard pressed and too close to things to see a potential problem until it has turned into a real one, is expected to do everything and be everywhere. It isn't fair on him, and it isn't fair on the BMAA either, for if things go sufficiently awry for the CAA to get involved, it is the BMAA not the club which will get it in the neck, and the sport as a whole which will suffer. For any event carrying British Championship status or where the public are admitted, the association needs to have its own man on the spot, someone who normally will be working closely with the organiser but who if necessary can overrule him, someone who ultimately carries the can.

It shouldn't be hard to find such people. Every club has a safety officer: why not ask safety officers to act as stewards at other clubs' events? To ensure impartiality, the steward should not be a local person, so there would be travelling expenses to be paid, but to my mind this would be a small price for the BMAA to pay for having its own representative on the ground.

community which is not currently available from existing organisations. Two fly-ins for members are planned for this summer, Compton Abbas on 20 July, and Wellesbourne in September.

Annual subscription is £25, reduced to £15 for articled clerks, bar pupils, and student pilots. Enthusiasts from all branches of light and sporting aviation are invited to contact Tim Scorer, 1 Finsbury Avenue, London EC2M 2PJ; tel 01-377 9191.

Old Warden, New School

Pegasus has become the first of the Big Three trike manufacturers to set up its own training side, with the establishment at Old Warden Aerodrome of the company's own school, staffed by John Fack and Bob Calvert. John has been associated with hanggliding and microlights since 1974, and is director of the enterprise, while Bob Calvert, who needs no introduction to *Flightline* readers, is the CFI. The school uses the just type-approved Panther XL for training and can be reached at the address on p19.

The company is continuing its experiments with hang-glider towing.

Sports Council Money At Last!

Just as we went to press, we heard that BMAA Chief Executive Brian Cosgrove had secured a £4000 grant from the Sports Council to help with the association's World Championship challenge in France this August. Details of the selection trials for the British team appear on p24.

Ideal For Club Nights . . .

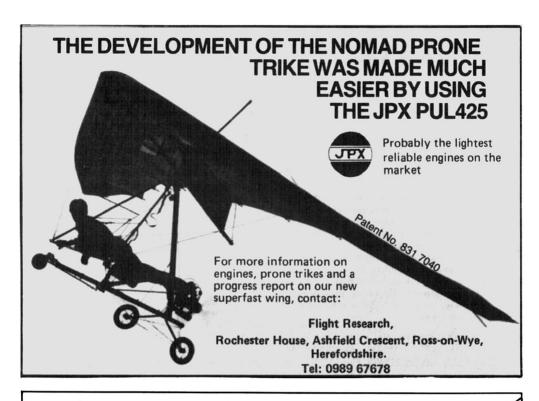
Last year Duncan Byers made a professional quality video of the Popham manufacturers' fare, and the tape is now available for hire to clubs, for just the cost of registered post both ways. Anyone interested should contact Jim Espin on 0256 75733.

Another video worth chasing is Richard Pawel-ko's film on microlighting, including scenes of Woburn '84 and Sally Huxtable in Egypt, which was shown on Welsh Channel 4 on 22 June. To the best of *Flightline*'s knowledge, no screenings elsewhere are scheduled, but John Hollings of Microflight has made a video and will lend it to clubs; he can be contacted on 056881 723/606/8864.

All Geared Up

Rotax has introduced two new engines, both liquid cooled and with rotary inlet valves. The smaller of the two is the 462, which offers 52 hp — the same as the twin-carb version of the larger, air-cooled, 503. For those needing more power, Rotax offer the 532, which gives 64 hp at 6500 rpm and is the most powerful Rotax yet produced.

Both the new engines can be had with gearboxes, and since the 503 can now also be fitted with one, this means that the entire Rotax range with the exception of the little 185 is now available with integral reduction drive. For further details, contact Cyclone Hovercraft at the address on p62.





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Airworthiness round-up

By Brian Cosgrove, Chief Executive

One day perhaps I will have the chance to write about more exciting matters but at the moment my job, concerned as it is with the day to day operation, means being closely involved in knowing what has to be done and passing this on to you.

Six-monthly inspections are now becoming due for many individual-exemption aeroplanes that 'got off the ground' early in the year. The good news is that the CAA have permitted the BMAA office to issue a 'flight clearance certificate' on receipt of an inspection declaration, so there will be no renewal fee as such — only an administrative charge of $\mathcal{L}4$. An application form is enclosed with this issue of the magazine so keep it by for future or immediate use. By the way, no check flight is involved in a six-monthly inspection.

Annual renewals for permits to fly are not far away for some. It was agreed at the last Council meeting that the renewal fee for permits and exemptions will be reduced from £45 to £30. There is a genuine desire to see costs cut wherever possible, but having to 'paddle our own canoe' financially means that there was no small discussion in arriving at this decision. A close watch will have to be kept on our 'piggy-bank'.

Type acceptance on pre-84 aeroplanes has proved a headache as godfathers have in many cases found it an impossible task to equate the aeroplane with Section S. I have proposed a simpler alternative to the CAA and received a most sympathetic hearing. Hopefully, by the time you receive this issue a new approach will be in use, so please keep in touch with your godfather.

As this is one of the few chances of grabbing your ear may I stress one or two points? First, if say 50 aeroplanes of a type are known to exist and only 15 owners are co-operating with the godfather in providing a history for their machines, then it becomes difficult to make an acceptable submission. Secondly, never let the fact you have



had problems inhibit you from providing a history

– a submission containing no reports of anything
having gone wrong would never be believed!

Chief Inspector types don't grow on trees. We are fortunate in having Peter Lovegrove, Technical Editor of Flightline, as our new Chief Inspector, taking over from Tim Cox. As our association is primarily an inspectorate-oriented entity from an airworthiness point of view, there is much to be done in this field in the interests of uniformity. Inspector seminars will shortly be held throughout the country to achieve this aim.

Inspectors manual. This is a first class manual which is compulsory for inspectors. However, any aircraft owner cannot fail to benefit from this well produced piece of work which is available to all — but at an unsubsidised price of £8.75 including p&p.

Airframe/engine log books are a mandatory requirement and a BMAA version is available at £1.80 including p&p – details are in Whistles in the Wires.

Incidents/accidents must be reported as every scrap of information on one incident goes to avoiding a similar one for someone else. Your name is never published, so don't fret.

Newcomers

By Norman Burr

Dave Cook, who made history a few years back by being the first man to fly a microlight across the English Channel, has made history again, by designing the first three-axis microlight to win type approval. His CFM Shadow, pictured in our Woburn report, received its type approval in May.

But for a succession of last minute details which kept delaying its final clearance, the Midland Ultralights Sirocco 377GB would have got there first, but in the event it was pipped at the post by a matter of days. These two are likely soon to be joined by a third fixedwing, the AMF's Lazair, which according to the CAA is now close to approval.

There's also a new entrant in the flexwing stakes, for Pegasus' Panther XL is now through, while approval on the related Medway Hibred 440, which uses the same wing, is imminent, and may in fact be granted by the time you read this. In both cases it is the Robin-engined variant which has been tested, but Rotax versions are on the way.

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Letters

Too Simple by Half

Sir, With reference to Spar failures: how much do we know? (Flightline May/June 1985), we feel a more deadly hazard could be the propagation by the BMAA of potentially dangerous misconceptions.

The statement, 'Another point to remember is that the summation of the horizontal forces on a wing *must* (your italies) in normal flight be rearwards due to drag', is dangerously misleading. If by 'normal flight' is meant horizontal flight, then it is strictly correct. However, if the intent is to imply that the wings experience a force tending to pull them off towards the rear of the fuselage then the implication is false.

Over a considerable portion of the flight envelope, precisely the opposite is true, as a number of earlier aviators discovered to their cost, puzzling over the wreckage of wings which had snapped off in the forward direction. A wing stressed only to resist rearward forces is inherently dangerous. In certain portions of the V-n diagram specified in BCAR-S, Section S333, a reasonably efficient wing could experience forward forces of several hundred kilograms. It is unlikely that the rearward forces, if they occur at all, could reach this magnitude.

David Hardman

Chief executive and managing director Noble I ardman Aviation

Peter Lovegrove writes; Any misleading implications which Mr Hardman may have read into the critique of Dave Campbell's article are quite simply the result of my inept attempts to cram umpteen pages of well-written comments, by several authors, into an acceptably short overall item for the magazine. Had I left the lengthy paragraph which ensued, in that particular set of comments, there would have been no ambiguity. However, it has to be borne in mind that technical articles like this are less than popular with a large proportion of our readers, so I try to avoid leaving the editor with the iniquitous task of shortening them; I can foul that up quite satisfactorily on my own!

Nevertheless, the only people who would be seriously likely to be misled are designers who are scheming up their own machines. If they do not know about drag and anti-drag, and the fact that early aircraft not only lost their wings in forward breaks but also lost them in downward breaks—that is, landing wires can suddenly get to be flying wires—then what the heck are they doing trying to meet Section S?

I think it is an understatement to say that wings

stressed to withstand only rearward forces are inherently dangerous; they are totally incompetently designed.

The basic point that all were trying to make was that the type of wings on which a fair number of our members are flying today, actually have a lot of problems and unknowns associated with them. Any designer attempting to cobble up a craft which uses the same general features, had better think hard before assuming that, because those features seem to work on one machine, they have to be fine on his design. The margins of safety may not necessarily be small but they will certainly be largely unknown. That is the fundamental point which David was making.

Flexwing Fallacy

Sir, Two weeks ago 1 saw Paul Currell fall to his death from 1000 ft after his machine broke up in midair. I was flying alongside him at the time. The left hand leading edge of his Mk1 Striker collapsed during the second of two consecutive steep wingovers, sending him into a near vertical spiral dive. Ten seconds later he hit the ground and was killed on impact.

The reason I am describing his accident is to try to explode the myth, once and for all, that seems to be developing among many trike pilots, that flexwings are virtually indestructible. If your trike has no permit to fly, and therefore no defined flight limits, then all the more reason to treat it with the respect it deserves. If on the other hand your machine has a permit, then it will have clearly defined limitations written on it. No light aircraft pilot worth his salt would regularly exceed the V_{ne} or permitted manoeuvres of his craft, so why do we accept these excesses as being the norm in microlights?

I believe the answer and blame for this can be largely directed at the manufacturers. One minute they produce manuals for their trikes preaching safety, and the next they can be seen demonstrating their machines way beyond the limits that they themselves have set. It may well sell machines, but it's rotten flying and can only encourage members of the trike flying public to believe that it is safe to abuse their machines in a similar way.

Letters from the likes of Bob Calvert stating that we now have a machine that will truly exceed 100 mph (Flightline Mar/Apr '85) can only help to encourage this attitude. Who's he trying to kid? — the Flash has a Vne of 89 mph, Similarly a letter from Frank Ogden in the last issue demonstrates naivety almost beyond belief. He argues that it is impossible to pull excessive g on a flexwing because the wing dumps the lift by increased billow allowed by the flexing of the leading edges. Sure, this is true to a point, but try to dump too much lift too quickly and you will flex your leading edges to breaking point. Certainly the

➤ Section S machines are now very much stronger that the pre-permit 'triked' hang-gliders, but this is no reason for complacency.

In Paul's case he was flying a bowsprit machine, which when flown at high speed and g loading is trying to resist all the compression loads of the flying wires and sail through a single curved leading edge. Whilst not wanting to pre-empt an accident investigation, the paragraph on buckling in last month's article by Dave Campbell couldn't read truer here, particularly on the Mk1 Striker which does not have a sleeved leading edge.

Paul died because of his misapprehension about the strength of his flexwing - don't let it kill you.

Tim Franklin

Church Meadows Gravely, Hitchin Herts

Fewer Mysteries

Sir, May I thank the 21 people who took the trouble to write or telephone about a total of 28 of the aircraft listed in *Peter's plea* in the last issue? Of those, John Bridge alone sent information on five aircraft.

I have too much on my plate to be able to write back and thank you personally. As for the rest of you, I do hope the stiffness in your fingers is better soon and you can get back to flying!

Peter Lovegrove

1 Beaufort Close Fleet Meadow, Didcot Oxon OX11 8TS

Tyre Talk

Sir, I recently had a slow puncture in the front wheel of my trike. I could not find a tyre size marked on the inner tube, so I took the tyre to a dealer as a pattern.

The manager pointed out that I needed a new tyre because the side wall had failed. He explained that, due to abnormal flexing of the wall, probably due to very low tyre-pressure, the cords in the side walls had broken. This could be seen very easily.

He suggested that I inflate the tyres of my 'situpon mower' to a higher pressure! When I informed him that the tyre was fitted to a microlight aircraft, he shrugged his shoulders and said, 'Well, what do you expect? That means the tyre is subject to impact and torsion.'

Now, how many of you, including me, have dropped the pressure in your tyres when flying from fields during the hard frosts? I have actually witnessed it on several occasions.

The general rule of thumb, and the only printed

Obituaries

Paul Currell

Paul's friends at Gravely and Great Gransden were shocked and deeply saddened to learn of his death in a microlight accident near Auch, Toulouse, France on 4 May.

Paul, 29 years old, was a skilled pilot, nearing completion of an instructor's rating with Dave Garrison, and a person with seemingly boundless energy. He ran a building business as well as being constantly involved in the repair, maintenance and operation of several trikes belonging to himself and his friends. His enthusiasm, energy and unfailing support when any help was needed were impressive enough by themselves; when viewed against his disability they become little short of miraculous. Paul had lost his entire right leg to the hip, much of his left leg and his right index finger in a bomb explosion in Northern Ireland as well as sustaining serious head injuries. In spite of these enormous potential handicaps, his attitude to life, his determination and sound mental balance allowed none of his friends to treat him as disabled or even consider him handicapped.

His life has been a poignant lesson to all of us,

and its loss leaves us cold, sad and angry. We were honoured to have known him.

Dave Simpson

Paul Vander-Molen

Paul Vander-Molen passed away, a victim of leukemia, on 15 May, at 28 years old.

Paul pioneered the concept of using microlights with kayaks for exploration purposes. Though primarily a kayakist, Paul had more than one string to his bow. In 1981 he led an international expedition using kayaks to negotiate the Alsek River in Alaska, during which he directed a 26 minute film which was viewed throughout the world. Following this, he organised and led an expedition to France - again canoeing - but this time accompanying disabled people. For this effort a substantial sum was raised for the Spastics Society. His natural inventiveness, which had previously gained him two world patents in the automotive field, was this time used to construct a paddling device for a one-armed person. This was used very successfully in the French expedition.

Paul's major claim to fame, however, came as a result of his foresight and ingenuity with

indication I have seen, is one third loss of height under full load. My tame tyre salesman will not commit himself. I have put 24 lb/in² in the tyres of my Panther. Does anyone have a more technical idea of what pressure for a given load?

I have just fitted Haywood Design all-round suspension, which allows hard tyres without the vibration and bone-shaking. If you have lowered the pressure, I suggest it is worth a check on the next windy weekend and probably worth adding to your periodic maintenance check-sheet.

T L Travis

4 St John Close Stowe by Chartley Staffs ST18 OLZ

Peter Lovegrove writes: These are excellent points. The question of sidewall damage is highlighted in the Inspectors' Handbook as being one for which they should look carefully. A tyre bursting on a hard landing could prove disastrous, if not fatal.

Sidewall damage does not only occur due to loading on tyres which are under-pressurised; I have some new and unused Taiwanese tyres which have developed splits in the side walls. As yet, the cords are still OK, but, with the rubber split, the cords could not last long. These tyres are therefore not usable on an aircraft. Yet they have simply been left lying flat, in a dark place, with a modest

the Iceland Breakthrough expedition in 1983, which brought together experts from canoeing, skiing, elimbing, rafting and microlight flying. Never before had such a diversity of sports joined forces internationally, and the result was worldwide publicity. The film of the expedition has been shown in the US and France, with viewings scheduled for Britain, Iceland and many other European countries. Articles on it have appeared in National Geographic, Sunday Express Magazine, La Figaro and Stern, as well as a variety of sports publications.

It was only on return from Iceland that Paul learned he had leukemia. Despite his debilitating illness, Paul carried on in the only way he knew. When out of the hospital, he worked with the editor on the film of the Iceland Breakthrough, and those BMAA members who attended the AGM will no doubt remember Paul's presentation of the film. During spells of hospitalisation, Paul, together with his father, wrote a book on the expedition. This fine tribute to him will be available in September.

Nearly every sector of the adventure sports world has been enriched by Paul's endeavours, and his passing will be mourned by many.

Mick Coyne

pressure in them to help them keep their shape. The probable cause of the tendency to split in the walls as easily as this, is that the wrong amount or type of filler has been used to 'stretch' the rubber mix — a problem typical of low-grade, cheap tyres. So, whatever type of tyres you use, and whatever pressure you apply to them, keep a very close watch on their side walls.

Incidentally, the 'one-third deflection under load' is still probably the best all-round guide as to optimum pressure. On the question of sprung suspension, I think there is seldom any doubt that it has to be most helpful to the survival of the airframe as a whole, apart from the added comfort for the pilot. One might argue that undamped bouncing could be a problem but, frankly, I do not think the average microlight is running on the ground at highish speeds for long enough to make this a worry.

With springing, you can obviously go up to higher tyre pressures, but your tyres may still develop splits in their side walls for other reasons. So do not be lulled into thinking that one change cures all other associated ills! Incidentally, we hope to publish a test of the Haywood suspension in the next issue.

Calvert Moves On . . .

Sir, Having become a full-time microlight instructor and competition pilot for Pegasus/Solar Wings, I'd like to take this opportunity of thanking Airwave Gliders and Mainair Sports for their superb support and service.

I wish them both worldwide success in the future.

Bob Calvert

Pegasus

. . . But Is Missed

Sir, Now that the startling news of Bob Calvert's move to work with Solar Wings in the South is more common knowledge, I would like through *Flightline* to wish Bob all the best in his new career.

The South's gain is the North's loss. Never have I known a more superb aviator; his unrivalled skill and enthusiasm for flying, along with his refreshing willingness to take on any flying challenge, will be greatly missed.

Graham Hobson

Northern Microlight School

Good Sorts at Windsports

Sir, On 5 November last year, at the age of 46, I began microlight training at the Windsports Centre, Wombleton, North Yorkshire.

On 28 May I successfully accomplished my final qualifying cross-country, completing the course for my PPL D — an unrestricted licence in seven months, at a time when prolonged grounding due to frustrating weather was the norm.

You may think I am singing my praises. Not so. The purpose of this letter is to publicly acclaim the excellent teaching and training given, firmly and encouragingly and with patience beyond the call of duty, by chief training officer Eden Blyth.

By his brilliant tutoring he made an impossible

dream a reality.

F Crai

224 Manchester New Road Alkrington, Middleton Greater Manchester M24 4BX

PS: Gone flying!

Sub 70 Sequel

Sir, Through *Flightline* may I thank everyone who responded to my recent letter regarding the possibility of forming a sub 70 kg club?

I received some very interesting suggestions, but all the letters agreed that there is a future for this class of microlight. Nearly all the major UK manufacturers are now involved in this field.

Steve Comben has very kindly allowed me to stage a sub 70 kg get-together at Long Marston on 6-7 July. Please remember that the success of this club is entirely dependent on all the interested parties turning up, in some shape or form. See you there then...

Rupert Sweet-Escott

Flight Research

Nice Try, Leicester

Sir, Thanks to the Leicestershire club for arranging a fly-in and rally on 11/12 May. They must have been very disappointed with the adverse weather which prevented the planned programme from taking place. Although the five members of this club who attended the event had looked forward to flying over the rolling hills of Leicestershire, nevertheless we found it very worthwhile to meet people from other clubs, exchange ideas and discuss problems.

The main problem seems to be the lack of a permanent site for many clubs. Here at Cambridge-

shire we have a permanent site of 25 acre of grass and we welcome new members. Our own fly-in and national championship event will take place on 13/14 July. Overnight camping will be available.

Meanwhile we fly during the week and at weekends and welcome visitors flying in at any time. Further details from the secretary on Ely 778446.

M Robinson, Secretary to the CMC

114 High Street Sutton, Ely Cambs CB6 2NW

No Go at Norwich

Sir, Unfortunately the planned microlight exhibition in Norwich, due to have taken place on 25 May, had to be cancelled due to lack of support from other aviation clubs and interests — ie local gliding, parascending, parachuting clubs etc, which would have made the event complete and also promoted their sport.

Also, and probably more importantly, was the lack of interest shown by the BMAA. On two occasions letters were sent to HQ asking for any possible help, display material etc, but we are still waiting for a reply, even to say no.

The Sports Council in Bedford was also approached and asked for its participation, but all we had from it was out of date, photocopied leaflets on gliding, parascending and parachuting — not a great deal of use.

There would certainly seem to be a reluctance from aviation people of different persuasions to mix with each other and especially, it would seem, us! Is the BMAA doing anything to improve relations with our fellow aviators, and also to upgrade our standing with the Sports Council?

Kelvin Woodard

Chairman Eastern Airsports HG&MC

Things have been pretty hectic at Deddington recently, due to pressure of work on the airworthness scheme, but there is good news on the Sports Council front — see Secretarial Slipstream — Ed.

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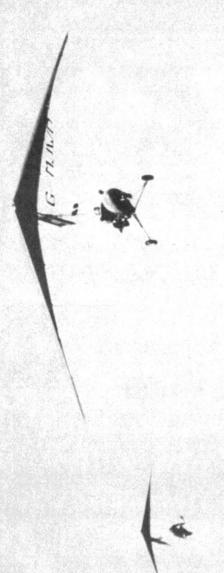
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June 1985

Dear Simon,

Congratulations on Winning last week's Belgian Rally outright as well as achieving first in the Two Place Class.

It seems that once again a standard Puma Sprint has demonstrated its superiority, even over the formidible team entries from both Europe and the UK!

We know we don't have to wish you luck in future competitions because your flying skills enhanced by the remarkable performance of your new Raven will undoubtedly carve a place in the record books.

Best wishes from all at Southdown!

Roy Venton - Walter Production Pr



By Norman Burr

A new chapter has opened in the history of British microlight flying, with the issue in May of the first PPL D scaplane licences, to South Coast pilots Robin Martin and John May.

Robin and John both fly Rotax-powered Eagles (377 and 447 respectively), which being the high-payload Double Eagle variants have easily enough strength to take a good set of floats. The wheels have been retained, but made retractable so that they can be lowered after landing and the aircraft taxied onto the beach.

The pair's motivation to go float-flying is primarily geographical: 'Where we live,' Robin explains, 'we've lots of water but no fields.' This posed a problem when licensing we introduced on 1 September '82. There was no provision for seaplane rating, yet they were already waterborne and the shortage of land meant that there were good practical reasons for staying that way. 'Besides,' says Robin, 'it's great flying over water. Even on hot days, the air is beautifully smooth.'

Clearly a landplane licence was a lot better than none at all, so with the services of then-Eagle agent Breen Aviation at Enstone, Robin achieved the coveted PPL D on 3 November '82, only a few weeks after licences became mandatory. But how were they to make the conversion?

After discussions with the CAA, it was agreed with the authority's Mr P J Thompson that the written part of the syllabus should be taken at the CAA's Aviation House in London, and that Ron Campbell of AOPA would oversee the flight test. The paper part of the exercise was completed in February, but it was not until 18 May that Ron was able to complete the flying tests and pronounce Robin and John fit to carry the first sea-

plane PPL Ds, by which time they had logged over 300 float-flying hours between them. Naturally, they are feeling pretty pleased with themselves right now, and would like to thank Mr Thompson and Ron Campbell for making it possible.

In a sense, the pair have been guinea pigs for the scaplane system, and what is now needed is for at least one microlight school to offer float training alongside its normal services. And of course before than can happen, the instructor himself has to obtain the necessary experience and authorisation. At present, the route to a seaplane rating is rather cumbersome and involves first getting a landplane PPL D, but all this could change if a school took up the challenge scriously.

Robin is convinced that, in his area at least, there is a market for such training. He points out that Eagles fly particularly well on floats once they are adequately powered, and that his own experience should stand others in good stead as far as choice of floats is concerned. Starting with Breen polystyrene units, he then moved on to a set built by Philip Newell. These didn't prove nearly robust enough, so he turned to Martin Levi of Go-Plane on the Isle of Wight, Martin's first efforts were also too frail, but his latest versions have apparently proved just the job. With ample buoyancy, there is no risk of 'digging in' on landing, and this in turn allows a more comfortable approach speed, rather than the 'just above stall' technique necessary before. 'We can come in as fast as we like,' comments Robin. 'These floats just skim over the surface.

Robin would be delighted to talk to any prospective float students or instructors, and can be reached at 68 Clayhill Road, Gosport, Hants PO12 2AJ; tel Gosport 522245 home, Portsmouth 662385 work.

Long Marston: Choosing the

Although future British teams for the world championship will be chosen on the basis of national championship performance, as far as the '85 team is concerned, there are no national results to draw on, as the first series is still under way. So to choose the first ever British team, Competitions & Events Committee Chairman JEREMY JAMES organised some trials at Long Marston, helped by DAVE MUDIE. Here's their report.

On Saturday 20 April, a wet morning, some 16 aviators crawled from their sleeping-bags for the start of the British team selection trials for the World Microlight Championships in France this coming August. The tasks to be completed were exactly those that will be required in France, and included a spot landing task (aircraft-carried type, ie first wheel touch is what counts, provided the aircraft stopped within a marked area), and a hop over two tapes.

The cross-country events consisted of a navigation task, during which pilots had to find and photograph as many turn points as possible out of the 15 given, on only 20 litre of fuel, as well as a speed/economy task where what counted was to complete a fast circuit followed by an economy leg, again on 20 litre.

Bob Calvert was the first in the air at exactly 9 am, having volunteered to be first to try the spot landing — and as we all expected he scored top marks! He was followed by Dick Clegg, and the task was completed within an hour, thanks to efficient observers and marshals.

We couldn't hold Bob back from again being first to try the short take-off and landing, a novel task which requires the pilot to judge where to start his take-off roll so as to clear a tape, and then to clear another tape 50 m away, and finish the landing roll as close as possible to it. Bob started in the extreme right-hand corner of the course and easily cleared the tapes. Again the task was completed swiftly, in worsening weather, a steady drizzle having set in.

Before the cross-country tasks, each pilot had to fly a 1 km course as slowly as possible, without stalling, so the 'speed efficiency' of his machine could be worked out, and by 12 noon all had successfully completed this.

The cross-country navigation was by now impossible due to weather, but a 3-4 pm take-off window was announced, and pilots given the turn points, from which they had to compute their own route, taking in as many points, in any order, as they thought they could do on their 20 litre and in their chosen flight time.

Results - British Team selection trials

This list constitutes the provisional British team for the World Championships. Reserves will be Brian Berry and Graham Wilkins.

Pilot	Machine	Spot Landing	Short TO&L	Nav	Speed	Econ	Total
Pete Davies	CFM Shadow	40	0	80	129	65	314
Bob Calvert	Pegasus XL	50	15	50	110	29	254
Geoff Weighell	Southdown Puma Sprint	50	25	50	103	23	251
Derek Hall/David	THE RESERVED THE WARRENCE						
Bosomworth	Mainair Gemini Flash	30	5	65	93	38	231
Dick Clegg	Mainair Gemini Flash	30	20	0	109	34	193
Tony Baker	Ultra Sports Panther XL	0	10	20	87	42	159
John North	Mainair Gemini Sprint	0	0	15	84	22	121
Billy Brooks	Solo TS4/Typhoon	20	5	0	58	29	112
Iain Barr	Midland Ultralights Sirocco	30	0	65	0	0	95
Richard Wolfenden	Hornet	50	0	0	0	0	50

tes: 1 Iain Barr could have come in the first four had he competed on the second day.

2 Richard Wolfenden would have done much better if he had not suffered a mechanical failure.

best of British

Derek Hall with co-pilot David Bosomworth were off first, but there was a distinct lack of eagerness from most of the rest, until about 15 min from window-closing time. With all pilots away, the observers watched a very large black cloud obscure the sky to the east, and within a few minutes two pilots had returned, reporting severe turbulence. The cloud drifted away, and first to return was Pete Davies in the Shadow, who landed exactly on time with 8 turn points. John North and Bob Calvert were next, John 3 min early, and Bob dead on time. Pilots gradually returned, and we soon became aware of the usual hard luck stories - Dick Clegg running out of fuel half a mile from the field and scoring zero as a result, Graham Wilkins being caught in a snowstorm and landing at a fire brigade training school, and saddest of all, Bill Brooks who was airborne only 9 min less than 4 h in his prone trike, and who scored zero for being 20 min late. All Bill could say when he landed was 'I've still got half my fuel left!'

Sunday's schedule included speed efficiency and economy tasks, starting with a speed run of some 40 mile around 2 turn points (to be validated with photos). Pilots then had to touch-and-go back at base, stops being forbidden and the pilots being timed from the moment they applied full power. They then set off on the second half of the task, the economy cross-country, which required them to fly as far as possible along a given bearing without landing, take a photo of the turn point and then return to base. Again only 20 litre was measured into each machine, a distance formula being used for those who didn't make it.

Again, the weather was not helpful, and at the 8 am briefing the first turn point was still in cloud. The cloudbase generally was very low with light rain and a moderate wind, set to increase during the day. The course was altered to include lower ground and at 9.30 a warning was given that an 11 am start would be attempted. With the cloud breaking, pilots were put on a 10 min warning as 11 am approached - though someone forgot to tell Pete Davies, who by then had very nearly packed up and gone home - but it took until 12.30 before a useable window appeared. As they took off, Bob 'Patrick Lichfield' Calvert was following Geoff Weighell, Geoff being the man Bob had to beat at this stage, while Billy Brooks was allowed to use a section of grass instead of the runway, to make the most of the wind.

Everyone got back OK for the touch-and-go, except for Billy, of whom more anon. But the economy run was more eventful, with most pilots

returning with only an eggcupful of fuel and Tony 'Pie in the sky' Baker running out altogether, in sight of the airfield but unable to reach it safely. After Tony's girlfriend had walked across three fields to take him some fuel, G-MMTC landed back at Long Marston, but in the freshening wind his aircraft had other ideas and the wing decided to fly without him on derigging, fortunately without damage apart from a couple of bent battens. By now the odd rain cloud was towering above us.

Meanwhile Billy had returned from his speed task to do a hairy touch-and-go in the strengthening wind, setting off on his economy run at 3.35. By 8.45, however, it was getting dark and there was still no news of him, so we reported him missing to the police. Fortunately, he was OK, having hit a 15 mph headwind and landed near Evesham, and rang in just as the police arrived on site for more information.

Thanks go to Steve Comben for recovering him and for the use of his facilities, to John and Dave of Long Marston Club for marshalling, helping with course layout and measuring the pilots' fuel, and to Barry Gordon of Aerolite for providing coffee and a warm place to hide. Top man on Sunday, incidentally, was Pete Davies, who got the Shadow to Wales and back.

So ended an enjoyable weekend, despite the weather, and one which has given us our first ever national team. Full details are in the panel. Next stop France!

Brits best in Belgium

By Simon Baker

Held in brilliant sunshine, the warmest May weather for 30 years, the third Round Belgium Rally was a resounding success.

Flying started from Maubray in the southwest and wiggled its way over very scenic countryside to the hilly spa area. With a gigantic cunim pushing from behind, the northerly trip into Holland was covered at a great pace, though the front gave me and passenger Andy Scott a drenching whilst returning to the last stop at Leopoldsburg.

Our Puma Sprint once again proved its reliability by taking the overall winner's medal in a very tight finish from last year's winner Roland Coddans, flying a Fulmar trike.

Rene Thierry, whom many will remember for his second overall in the '82 London-Paris in a Butterfly, this time showed off the sleek Sirocco to good effect, taking first place in the solo category.

A strong four-plane team from Pegasus encountered numerous problems, but Keith Dickinson/Andy Wiseman flew a good last day after replacing a keel to take a creditable third place in the two-seat section.

Mixed weather, mixed

By Norman Burr

When organiser Dave Simpson wandered around the paddock on Saturday afternoon, he counted no less that 84 aircraft at the BMAA's third Woburn Rally, despite weather which was far from ideal and a forecast which was hardly optimistic. Comparison with last year, when 30 turned up on the first day and around 45 on the second, in glorious weather, provides a graphic illustration of the way the sport has grown in size and confidence in the past year.

Success, however, brings its own problems. Woburn is a marvellous place for the public to get a taste of the sport, but its obstructions and no-go areas make it far from ideal for the pilots, and with the present paddock position it is not possible to lay out a second runway without going too near the stud. Clearly, the circuit density was

going to be very great indeed.

The weather didn't help either. Though most of Saturday was flyable, a nasty thundery squall brought the proceedings to a halt for a while in the afternoon. Marshals had to turn back several pilots from the take-off area, while those already aloft all wisely decided to get down promptly, fortunately without incident, though there were one or two tricky landings.

Earlier in the day the marshalling had been much less effective, and had led to Richard Butler believing he was clear to take off when in fact Sally Huxtable was coming in. Each got in the other's blind spot, and the pair touched a few feet off the ground. Though no one was hurt and aircraft damage relatively slight, the incident was a clear warning that only the strictest of marshalling is good enough with such congested airspace.

Sally, shaken but determined to make the most of the weekend, went on to take second overall in the competitions, helped by her second place in the accurate track competition, which carried more marks towards the final tally than the water bombing, fast/slow runs, and spot landing competitions. Sharing her second overall spot was husband Nigel, a fortuitous result which, as Dave Simpson wryly remarked, will ensure that there's no argument about whose mantlepiece the trophy resides on!

First overall came Duncan McFadzean, again a reflection of his performance in the accurate track competition. Duncan has a history of doing well at Woburn, having won the air hunt and his class in the concours last year, in his Mainair Rapier. This year he brought along the same machine, looking as immaculate as ever, an aircraft which may well have a rarity value in years to come. Though quite

a few were sold abroad, the one-plus-one concept was killed in the UK by Section S, and as a result there are very few Rapiers around.

One could hardly describe Eagles as rare, but nevertheless they are rarely seen in numbers these days, so it was particularly good to see Kevin Gillett's twin-Chrysler machine aloft at the same time as Dick Boarder's Zenoah variant, flying together in the circuit, each doing 35 mph and trying to prove that he could do 36. This was on Sunday, when it rained most of the day, but it was so still that the conditions were fine for Eagles. Soaking wet but with a big smile on his face, Kevin concluded that there was virtually nothing in it for top speed, and though the Zenoah was a clear winner in the climb stakes, he is adamant that he will not change engine. 'I'd swear by them' was his reply when asked about the reliability of the Chrysler unit, an answer which is sure to gain him a bulging postbag of 'What's the secret?' letters.

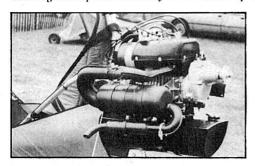
At the other end of the scale was a welcome newcomer to the ranks of the type-approved machines, the CFM Shadow. This being the first event since the magic piece of paper was signed, designer Dave Cook was there to see two of his machines in action. He was, understandably, in high spirits, and his enthusiasm was infectious - too infectious perhaps for John Wibberley, who achieved second place in the fast/slow run but blotted his copybook on Sunday by giving an impromptu display of semiaerobatics, for which he was promptly grounded. True, the Shadow has taken more, much more, in testing than John was giving it, but he was undoubtedly outside the approved flight envelope. Geoff Ball was undertaking similarly dramatic manoeuvres in Mainair's Gemini Flash and earned a stiff rebuke as a result, while Rupert Sweet-Escott was asked to leave after persistently refusing to sign in.

This is all a long way from the free and easy early days of the sport, but it is a fact that growth brings with it responsibilities, and history will probably record that Dave Simpson did the sport no disservice in issuing the reprimands he did. He had enough to do on the ground, without pilot indiscipline making his life harder.

His biggest problem of all was the paddock. A line of ATC cadets kept the public well clear of the strip, and the paddock had been marked with alternate park/manoeuvre lanes, both welcome improvements on last year, but a major deficiency remained, in that the public were not kept away from taxying aircraft. Admittedly, access was restricted to a degree, the public having to pay at



Above: After staying in business, and only just, on export sales, Dave Cook's CFM company can now look forward to a more secure future, with the Shadow now carrying full UK type-approval. Below left: This very neat Rotax power pack, complete with Medway-built tank, is to be offered on the Pegasus two-seat trike and will probably find its way onto Medway's own machines too. Below right: It's no easy task, water bombing with a prone trike. Billy Brooks comes up with a novel way of hanging onto his balloons.





Flightline July-August 1985



a gate bearing a large notice warning them to keep clear of moving machines and keep children under control, but that is a poor substitute for separate parking and run-up areas.

The importance of this was rammed home to the

organisers when Peter Greenslade caught his foot on his throttle cable while manoeuvring his Tripacer/Striker and the machine ran forward into a Raven and a parked car. No member of the paying public was involved, and apart from a bruise or two

Results-Woburn Rally

Water bombing

- 1 Nigel Beale Homebuilt/Aerial Arts 130SX
- 2 Duncan McFadzean Mainair Rapier
- 3= Steve Comben Southdown Puma Sprint, Andy Barnish Ultra Sports Tripacer/Southdown Lightning

Fast/Slow

- 1 Nigel Huxtable Ultra Sports Tripacer/Flexiform Striker
- 2 John Wibberley CFM Shadow
- 3 Dave Simpson Ultra Sports Tripacer/Flexiform Striker

Spot Landing

- 1 Nigel Huxtable
- 2 Alan Reynolds Southdown Puma Sprint
- 3 Simon Kenyon Mainair Tri-Flyer/Flexiform Striker

Accurate Track

- 1 Duncan McFadzean
- 2 Sally Huxtable Ultra Sports Tripacer/Flexiform Striker
- 3 Alan Reynolds
- 4 Simon Kenyon

Overall

- 1 Duncan McFadzean, 90
- 2= Sally and Nigel Huxtable, 40
- 4 Alan Reynolds, 30
- 5 Nigel Beale, 20
- 6 Simon Kenyon, 15

British Championship Positions

At the time of going to press these remain as before, because the points allocation from the Woburn results has been contested.



no one was hurt, but the message was clear enough. It is very hard to sum up Woburn '85. A success in many ways - with superb turnout and much better supported competitions than hitherto - it nevertheless became a victim of its own popularity. The sport is just too big now to rely on a very small band of enthusiasts to organise what should be its showpiece event with minimal backup from outside, and if safety is to be ensured, rather than just hoped for, at future national rallies, then the organisation must be greatly improved. As you can read in Chairman's airwaves, the BMAA Council has taken the lessons from the event to heart and is likely to exert much stricter control in future. with perhaps even a change in venue, if safety requirements demand it.

This page: Hard luck story of the month must go to D Baldwin of Peterborough, an ex-glider who painstakingly constructed this Mitchell U-2 Superwing only to find himself unable to get an exemption. The U-2 uses a similar wing to the B-10, though it is utterly different elsewhere, and with doubts hanging over the integrity of the B-10 wing — so much so that B-10 owners are advised not to fly — no BMAA inspector has been willing to recommend use of the machine.

Facing page: Well known in North America but a very rare bird indeed in the UK, this Birdman Chinook attracted a great deal of attention, not least because of its luminous green Dacron. Note the fuel tank hung beneath each pair of struts.

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More goodies to come...

By the time you read this, the next British Championship event will be only a few days away, on 13–14 July at Sutton Medlands courtesy of the Cambridgeshire MC. Only a week later comes the next round, at Long Marston, which you can read about in *Contact*. Then there's a break in the Nationals until September and the Norfolk Air Race, which we preview below, but in between are two important non-championship events — Popham on 24–26 August and the Staffs Aero Club's Weston Park fly-in in early September, the latter also previewed below.

Norfolk Air Race

By Kelvin Woodard, Eastern Airsports HG&MC By popular request, this year's Norfolk Air Race has been moved back to a late summer date, 14–15 September being chosen. Once again it will be based at the Royal Norfolk Showground just outside Norwich on the A47 at Easton. Results from the event will count towards the national championship.

Significant changes have been incorporated for this year. On Saturday the course takes pilots from the showground up to Hethel (the Lotus Cars factory) and on to Ludham, a strip we haven't used before. This takes the course over the Norfolk Broads.

Then it's up the coast to North Repps and back across-country to the showground, the entire circuit being flown twice, with a timed break between each circuit.

On Sunday there will be a different approach. Instead of flying the same circuit again, there will be a long-distance out-and-back leg from the show-ground to the Cambridgeshire Microlight Club base at Sutton near Ely. This is some 60 mile each way, and again there will be a timed break, at Sutton.

Three classes will be run — under 70 kg, up to 350 cc and above 350 cc — and two-scaters can be flown either solo or two-up. Each class will have a winner, and the overall winner will be the person who completes the entire course in the shortest time.

All machines entering must have a current permit to fly or exemption, except for sub-70 kg machines, which require neither but which will be inspected on the day. All pilots must produce a restricted PPL D or better, club competitions insurance to at least £250,000, and be a current member of the BMAA.

Entry forms may be obtained by sending an SAE to me at 127 West Acre Drive, Old Catton, Norwich, Norfolk NR6 7HX,

Staffordshire Aero Club Fun Weekend

By Dave Brocklesby

By kind permission of Lord Bradford and the British Balloon & Airship Club, we are participating in an international fun flying weekend for balloons and microlights at Weston Park in Staffordshire, on 7–8 September.

Weston Park offers a wide variety of family attractions and will provide participating amateur pilots and their families and friends with the prospect of an interesting weekend. The location and surrounding area offer a wealth of natural beauty and form an ideal flying location.

Camping facilities will be provided from the evening of Friday 6 Sept to Sunday 8 Sept in the grounds of Weston Park and a barbeque and barn dance will take place on the Saturday evening. Microlights of all types are welcomed. Entrance is by ticket, obtainable only in advance. For an application form contact Dave Brocklesby, Alyn House, Top Road, Acton-Trussel, Staffs ST17 ORQ.

G = ????

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Stateside view

Hal Adkins from La Moille, Illinois, USA

Another Try . . .

LAMA is not a furry beast of burden from the Peruvian Andes, it is a new ultralight manufacturing organization formed this year at the Lakeland, Florida Sun n' Fun show in March. LAMA stands for the Light Aircraft Manufacturers' Association and is made up of all the old Powered Ultralight Manufacturers' Association members, plus more. Chief organizer is once again Bill Sadler of Vampire fame, the same man who helped spur interest, albeit not for very long, in the PUMA organization at a tent meeting during Oshkosh '84. Certain things the PUMA people said would come about if manufacturers joined or rejoined just didn't happen. The organization fell apart and left a bad taste in manufacturers' mouths, but the entire affair did at least get a spirit of co-operation going among manufacturers, and LAMA is the result.

PUMA has been granted FAA recognition for their ultralight vehicle airworthiness standards, while LAMA as a new organization has not, but LAMA has the most memoers, so it is presumed and hoped that both groups will be working together for their, and the sport's, mutual benefit. Any planes wanting to have some sort of FAA certification will have to work through PUMA, and most of the people wanting to avail themselves of this process may well belong to LAMA. Both outfits will have to feed off of each other and although I did not attend Lakeland this year, I am told that an atmosphere of co-operation certainly did exist.

I and others have speculated that some time in the future LAMA and PUMA may merge into a central organization, or perhaps found another combined group. I think it should be called YAMA: Yet Another Manufacturing Association.

New Kolb Aircraft: The FireStar

Showing up at Lakeland, and following the trend of building two-place aircraft, Homer Kolb displayed his latest design, the FireStar. Although having a definite Kolb heritage, with features from Homer's UltraStar ultralight and its two-place version the TwinStar, the FireStar is a new aircraft. It uses the same boom-tube fusclage found on other Kolb planes, but in a lower position with the pusher-prop engine above it. The wing from the TwinStar is utilised, but an enclosed cockpit is incorporated, with the control stick being centermounted as opposed to the side stick found in other Kolb aircraft.

The kit is said to be quick build with all compo-



nents welded and most holes pre-drilled. Options include a parachute system, balloon tires, instruments, and a shoulder harness, while empty weight is 253.5 lb (115 kg), and wingspan 27 ft 5 inch (8.36 m). Power comes from the Rotax 377 35 hp engine, giving a stall speed of 27 mph, cruise of 50 mph, top speed of 63 mph, and Vne 80 mph. Climb rate is said to be 1200 ft/min, which is right in line with the way Homer Kolb builds airplanes.

The Skies are Clearing

Over the past few months there has been a lot of concern about the government stepping into the ultralight sport with a heavy foot. All the rumors and fears of more regulation - combined with the usual winter sales slump - made for a rather discouraging period for manufacturers and dealers as customers staved away in droves. A lot of companies faltered and some died, but throughout the industry this spring and early summer people have reported a marked increase in interest and sales, with two-place versions outselling singleplace models by more than two to one. I would imagine this is a natural progression, as experienced ultralighters grow tired of flying alone and want to move up. And having a few what I would call respectable years behind us now, and with a greater choice of well engineered and well built flying machines on the market, the licensed pilot too may be in a more receptive mood towards ultralights.

Happily, all the rumbling about new rules for ultralights seems to have moved off into the distance like a thunderstorm that never let the rain fall. Our FAA does not on the whole want to get involved with any more rule making. They would dearly love to see our *Part 103* continue to be the law of the land as far as ultralights are concerned, and so would most of us. *Part 103* is self-regulation and now with the 'get our act together or perish' attitude of the manufacturers, this self-regulation — in time — will work.

I think we may have that time, as the FAA has said that any proposed new rule making is probably 1½-2 years ahead. But in the meantime we can't just ignore it; we have to work at keeping a good safe image over here. All the noise from our detractors comes from the standpoint of safety. What the FAA views as safety is what is safe for the public in general, rather than the pilots. We have had fatalities in this country, far too many, but there have been no mid-air collisions between ultralights and general- or transport-aviation aircraft, nor has there been any instance of an ultralight hurting anyone on the ground. This I believe is what the FAA defines as a good safety record as far as the general public is concerned.

So we have this record on our side. With proper training — few manufacturers and dealers today will sell you a plane without it — and a responsible attitude towards people and property around us, not to mention our own butts, I reckon American ultralighters will pass into a new phase of respectability and maturity that can only benefit the whole world of ultralight aviation.

SITUATIONS

We are currently involved in long-term planning for expansion and growth. We wish to establish a file of qualified personnel for the following positions, which are not all immediately available. Even if you are currently satisfactorily employed but would consider change, or if you are not able to commence employment now, please send your CV and we will contact you.

Sales Manager

Sales and promotions of microlights — U.K. and overseas. Literature, publicity and air displays.

Production Engineer Prototype development, planning and manufacture.
Production engineering.

Designer Draughtsman Design, airworthiness and drawing maintenance.

Engineers and Technicians

Microlight manufacture.

Sailmakers

Sewing layout and production.

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ROS O'DENNING gives you that eagerly awaited opportunity to use your home computers for checking your microlight's performance.

Microlights fly at low Reynolds Numbers and use unconventional aerofoils. Neither of these areas have been fully researched, so precise performance prediction is not usually possible.

Despite this, a general assessment of the drag of a machine can give a useful indication — if no more — of areas where improvements are possible. This also allows an assessment of stall speed and power requirements to be made. The problem is that the maths required, while not advanced, are tedious and unlikely to appeal to the usual pilot.

With the advent of the home computer, these restrictions do not apply and the following program should allow anyone, who can (with the assistance of his children!) input computer programs, to run checks on his or her idea before "cutting metal". The program uses only about 1600 bytes of memory, and has been used on a Commodore or BBC machine without problems. The program is written in Basic and it should readily transfer to other computers.

Tests have been run to compare with test-report data, and reasonable (about 10%) agreement has been achieved. It is slightly optimistic on top speed achievable, because it does not allow for variations in propeller efficiency, but shows what could be achieved with a propeller designed for efficiency of 60% at a given speed.

This is issue 1 of the program, and it can be tailored to give better agreement with test results if this becomes necessary, by adjusting the constants – 10.758 in line 440 (to correct errors in glide angle and power requirement), and 1.6 in line 430 (to correct stall speeds). Nevertheless, within the range of tests to date, these values look adequate.

How to Use the Program

- 1 Input the program, RUN it to check that the input is OK then SAVE it.
- 2 The inputs requested are self-explanatory. Approximate values are used for drag of tubes and fairings. To include drag of wheels, treat them as tubes of diameter and length equal to the wheel dimensions. For 3 wheels, input the diameter and 3 times the length.
- 3 To calculate the maximum level speed, recalculate at different speeds until the printout gives

your living room...

```
10 PRINT""
   Performance
   30 PRINT"O
   40 PRINT"O MICROLIGHT PERFORMANCE O"
50 PRINT"O ESTIMATE O"
                                 o"
   60 PRINT"O
   80 PRINT"
   90 PRINT"PRESS SPACEBAR TO CONTINUE"
   100 GETAS: IFAS=""GOTO100 ...
110 PRINT""
  120 PRINT"INPUT PARTICULARS REQUESTED"
                                                     ATTECHNOLOGY TO
   130 INPUT"SPAN M."; B
   140 INPUT"WING AREA M.2"; SW
   150 INPUT"AREA OF OTHER SURFACES M.2"; SA
   160 INPUT"FRONT AREA OF ENGINE M.2"; SE
   170 D=(SA+SW)/2000+SE/80:AR=SW/B*2
  -180 INPUT"IS A FAIRING FITTED Y OR N ":A$ 190 IFA$="Y"GOTO 290
  200 PRINT" IS THE PILOT"
210 PRINT" HANGING(H)"
  220 PRINT" SEATED (S)"
230 PRINT" PRONE (P)"
 240 INPUT"TYPE IN THE LETTER & RETURN"; B$
250 IFBS="H"THEND=D+1/100
   260 IFB$="S"THEND=D+1/200
   270 IFBS="P"THEND=D+1/400
   290 INPUT WHAT IS FRONT AREA OF FAIRING"; AF
  280 GOTO310- -
  300 D=D+AF/200
310 PRINT"HOW MANY DIFFT SIZES OF WIRE OR"
320 INPUT TUBE ARE THERE NI
   330
      FORN=1TONI
340 PRINT"MMAT IS DIA.MM OF SIZE NO."N:INPUTD1
350 PRINT"FOR TURNBUCKLES ADD .5M EACH"
360 PRINT"WHAT IS LENGTH M. OF SIZE NO. "N: INPUTLL"
370 INPUT IS THIS KOUND OR STREAMLINED R OR S": CS
380 1FCS="R"THENK=1:1FCS="S"THENK=.15
390 D=D+D1*L1/5000*K
400 NEXT
   410 INPUT"REQD CLIMB RATE FPM"; CR
420-INPUT"ALL UP-WT KGs"; W
430 VM=SQR(W*(AR+3)/SW/AR*1.6): PRINT"MIN SPEED="VM
                                   ### 460-INPUT WHAT SPEED DO YOU WISH TO CHECK VI
   470 GOSUB500
490 GOTO460
 - 500 REM DETAILS AT SPEED V1-
510 Q=V1^2/80:DT=D*Q+W/V1^2/AR*24.25
520-VS=V1*DT/W*88/60:HP=2:204*W*VS/550/:6
   530 PRINT"PARTICULARS AT SPEED ="V1"MPH
40 PRINT"L/D RATIO ="W/DT" = "S50 PRINT"SINK SPEED FPM = "VS"
   560 PRINT"H.P. @ 60% ZFFCY # HP = 570 PRINT"H.P FOR REQD CLIMB AT "CR" F.P.N.="HP+W*CR/550/.6/60*2.204
S80 RETURN
```

"HP @60% Effey" equal to the installed HP.

- 4 To change the climb rate, and no other variables, press 'return' twice, type in 'CR = the new value', say 500, and 'return' then type 'GO TO 430' and 'return'.
- 5 To change the all up weight, press 'return' twice, type 'W = the new value', 'return' then type 'GO

TO 430' and 'return'.

6 Two-seaters without fairings are not catered for in the program but can be covered by answering the question 'IS A FAIRING FITTED' with the false answer 'Y'. The fairing area should then be input as 2 m². Then continue with the program unchanged.

Lacking the means to find

No. Not 'Microlight Aircraft Club' but 'Mean Acrodynamic Chord'. PETER LOVEGROVE tells you what it is, and how to find it.

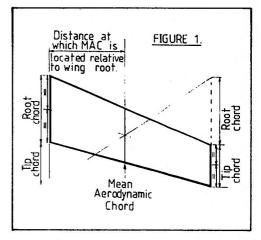
If you read books on the design of light aircraft, you soon come up against the term, 'mean aerodynamic chord'. It's an odd thing, because it is very convenient to use in doing design calculations, as soon as you have established its size and location. But, strangely, as you will soon see, it does not really exist!

Conditions of lift and drag are usually different everywhere over the surface of a wing, because of changes of profile, location along the span, propeller vortices, aileron effect and sundry other influences. Twisting effects along the wing also tend to vary.

Thus, what we need, in order to simplify the calculation procedures, is some single location where we can assume the lift, drag and twist forces are all acting. So - to put it a little more technically - we are seeking this 'mean aerodynamic chord' where the same force vectors operate, throughout the designed normal operating range, as will act on the complete wing. In case that confuses you, consider this example. We know that the wings support the weight of the aircraft, and we know that this support is derived by the action of the air over the entire surface of the wings, although not uniformly. It isn't hard though, to imagine the aircraft being supported by lift acting on one single chord line of each wing, like a single rope from each wing up to a 'sky-hook'! The same sort of argument applies to drag and twist.

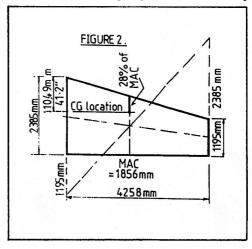
Now, whilst the MAC is a splendid concept, it is not so easy to say where it should be assumed to lie. Ideally, one needs to do a fair amount of wind-tunnel research to get the information. However, there is fortunately another route, in that we can use a simple graphical method or a little calculation to establish its size and location.

The procedure is shown in Fig 1. First lay out a scale drawing of one of your wings. Then extend the root chord backwards by a (scale) length equal to the tip chord. Similarly, extend the tip chord forward by a length equal to the root chord. Now join up these two extensions diagonally. Finally, draw a line from the mid-point of the original root chord to the mid-point of the original tip chord. Where this line intersects the first diagonal is where the mean aerodynamic chord lies. Draw it in, parallel to the root chord.



If your wing is intwisted and without ailerons, etc, so that it is as nearly uniform in its behaviour as possible, you can make certain direct assumptions at once. If you take it that the centre of gravity of your machine should be at about 35% (0.35 of chord) back along the wing from the leading edge, you are really saying it should be 0.35 back along the mean aerodynamic chord. You can measure this fraction on your scale drawing and work it across to the root chord, which then tells you where to balance the aircraft at the fusclage.

To clarify this a little further, consider the dear old Weedhopper B wing (Fig 2). Our scale drawing



your MAC?

shows us where the MAC is located. The Weedhopper wings, like most microlight wings, are markedly twisted, to induce the inboard sections to stall before the tips. Thus, we would expect the centre of gravity to be located a little nearer to the leading edge than the usual 30–35% back. (In case you think that the location of the MAC should have taken care of this, remember that we have used a simple graphical method, and that the MAC is assumed to cover the drag and the twist forces, etc).

Anyway, the centre of gravity of the Weedhopper is stated to be located at 28% of the mean aerodynamic chord. Drawing this on to our scale layout, we see that the C.G. is found to be at 41.2 inch (1049 mm) from the front of the root chord. The Weedhopper literature states that 42 inch is the ideal, with 45 5/8 inch (1159 mm) as the rearmost tolerable position and 36 1/4 inch (921 mm) as the farthest forward location. So we aren't far off the mark! You can, of course, work in millimetres or inches. It makes no difference, so long as you use consistent units throughout.

If you would like to calculate the length of the MAC, use this equation:

$$MAC = \frac{2}{3} \left[Root Chord + Tip Chord - \left\{ \frac{Root Chord \times Tip Chord}{Root Chord + Tip Chord} \right\} \right]$$

Again, for the Weedhopper, the MAC calculates out as:-

MAC =
$$\frac{2}{3} \left[2385 + 1195 - \left\{ \frac{2385 \times 1195}{2385 + 1195} \right\} \right]$$

MAC = $\frac{2}{3} (3580 - 796)$
= 1856 mm. QED!

By the way, for parallel, unswept wings, it is not hard to see that the MAC will fall exactly halfway along the wing and have the same value as the rest of the wing chords; it has to!

Beware...

This could be the last Flightline you receive! If there's a green renewal form with this magazine, your membership is just about to run out and you must fill in and return the form with your subscription to Deddington promptly if you want to continue receiving the magazine. Do it now while you think of it!

The Great Woburn Cover Up!

Haywood Design trike covers were very much in evidence at Woburn, with many trikes taking advantage of covering up to avoid the heavy showers.

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Flight test: Half Pint

By Keith Vinning

Introduction

It's about three years since a new single-seat flexwing hit the market. The big three manufacturers have concentrated on getting their two-seaters through Section S, and though we must be grateful for this — without their dedication the sport would have suffocated a couple of years ago — it means that as far as solos are concerned, we were virtually in the same ball park as in 1982 — until the sub 70 kg machine came along.

One example of the breed is the Medway Half Pint, or to be more accurate the Medway/Aerial Arts Half Pint/130 SX, since Medway only makes the trike unit, the wing coming from Ian Grayland's Aerial Arts. Ian's contribution to the evolution of the flexwing is considerable with several successful designs under his belt including the Lightning, forerunner of the Puma on which many of you will have started your flying career.

The test was conducted at the recent fly-in at Woburn Abbey. The conditions were less than

ideal, as was the landing strip, but inbetween the rain the Half Pint was put through its paces.

Discussion

First the wing. It follows the principle we have come to know and love - the CFX (concealed floating cross-tube). The first thing that you notice is that it is small, 130 ft² small. The design has evolved from the popular Clubman intermediate hang glider and now sports the title 130 SX (Sawn off and Xtra strong). The finish is very good with excellent features, like clear sections in the lower surface to allow inspection of the LE-cross-tube joint, webbing reinforcement at the bottom of the batten pockets to stop the battens pushing through after a couple of years' wear, and a Mylar leading edge (at extra cost). The wing itself is tuneable through the normal CFX methods - ie LE tension. secured by rope, adjustable hang point and adjustable cross-tube draw cord.

The wing looked very clean and pretty with a red flash on the upper surface giving it that customised



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Medway/Aerial Arts Half Pint/130 SX

(Weight-shift)

MANUFACTURERS — Medway Microlights, 6 Beatty Cottages, Allhallows, Rochester, Kent ME3 9PE; tel 0634 270780/270868. Chief executive: Chris Draper. Aerial Arts, 30 Sillwood Street, Brighton BN1 2PS; tel 0273 727033. Directors: Ian Grayland, Nick Minnion.

SUMMARY - Single-seat single-engined flexwing aircraft with weight-shift control. Rogallo wing with keel pocket. Pilot suspended below wing in trike unit, using bar to control pitch and roll/yaw by altering relative positions of trike unit and wing. Wing braced from above by kingpost and cables, from below by cables; floating cross-tube construction with 65% double-surface enclosing cross-tube; preformed ribs. Undercarriage has three wheels in tricycle formation; no suspension on any wheels. Pushright go-left nosewheel steering independent from aerodynamic controls. No brakes, Aluminium-alloy tube trike unit, completely open. Engine mounted below wing, driving pusher propeller.

EXTERNAL DIMENSIONS & AREAS — Wing span 29.0 ft, 8.84 m. Total wing area 128 ft², 11.9 m². Aspect ratio 6.6/1. Wheel track 5.2 ft, 1.57 m. Wheelbase 5.2 ft, 1.57 m. Nosewheel diameter overall 10 inch, 25 cm. Main wheels diameter overall 10 inch, 25 cm. Other data NC.

POWER PLANT — JPX PUL425 engine. Max power 26 hp at 4600 rpm. Propeller diameter and pitch 39 × 30 inch, 1.00 × 0.76 m. No reduction. Max static thrust 166 lb, 75 kg. Power per unit area 0.20 hp/ft², 2.2 hp/m². Fuel capacity 2.4 US gal, 2.0 lmp gal, 9.1 litre.

WEIGHTS & LOADINGS – Empty weight 143 lb, 65 kg. Max take-off weight 362 lb, 164 kg.



Payload 219 lb, 99 kg. Max wing loading 2.83 lb/ft², 13.8 kg/m². Max power loading 13.9 lb/hp, 6.3 kg/hp. Load factors NC recommended; +5.7, -NC ultimate.

PERFORMANCE — Max level speed* 45 mph. Never exceed speed 70 mph. Cruising speed* 35 mph. Stalling speed* 20 mph. Max climb rate at sea level* 350 ft/min. Min sink rate* 200 ft/min. Best glide ratio with power off NC. Take-off distance 50 ft. Landing distance 50 ft. Service ceiling 7000 ft. Range at average cruising speed 120 mile, 193 km. Noise level NC.

*Under the following test conditions — Airfield altitude 400 ft. Ground temperature 15 °C. Ground pressure NC. Ground windspeed 8-12 mph. Test payload 155 lb, 70 kg.

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Italic figures are Flightline test estimates, made using a Winter 0-60 mph ASI and a Thommen altimeter.

Figures in ordinary type are supplied by manufacturer.

NC means data not available.

look, though it's actually a standard feature. The tubes look rather thin for microlight use but Ian assured me that it has been tested to nearly 6g and passed with flying colours. The wing in fact weighs around 55 lb (24.9 kg), leaving ample weight for the trike unit.

The top of the control frame is connected to the keel through a steel pin, an unconventional method but which is theoretically as strong or stronger than the usual arrangement. Two different types of keel will be available, short or long depending on the customer preference, with the long keel provided to assist rigging. A pulley is provided with

the short keel option to assist with wing tensioning. The wing is fully battened with five upper and two lower surface battens per side. Rigging is straightforward and follows the pattern of most CFX machines — control frame first, followed by kingpost and battens prior to extending the wings.

The trike unit was professionally finished with gold anodised tubing and stainless-steel fittings. All tubes have nylon inserts similar to those used on the Ultra Sports dual trikes. To reduce the weight of the trike the rear axles look rather thin but in compensation they are strut-braced and thick gauge. A safety wire connects the extremities of

▶ the axles and also prevents the rear end from collapsing when the machine is derigged.

The near vertical rake of the front forks gave a homebuilt appearance to the trike though it didn't seem to produce the jittery front-end feel characteristic of this set up, perhaps because the rear wheels have no toe-in or camber. Medway may increase the forks' rake to give greater aesthetic appeal. Although there is no hand throttle, the foot throttle is nice and beefy, just right for a moon-booted pilot — top marks in this area.

My 29 inch inside leg couldn't easily open the throttle fully without sliding down the seat a little, but Medway came to the rescue; they would customise the trike keel at no extra cost. I found the seat very comfortable and well padded under the legs, but on the ground I could feel the tank pushing into my back slightly, though not in the air.

The engine looks light and purposeful and unusual for a 400+ cc machine in it develops little more than 20 bhp. This however means that it revs slowly enough to allow a small prop to be driven direct from the crank. I say small because that is what it is – tiny. The engine frame is stainless-steel, similar to that used on the Puma Sprint, and though the upper support is up to the job, on completion of the test I noticed cracking in the welding of the lower support. This immediately became the subject of a redesign and as you read this report is no longer a problem. The 10 litre plastic fuel tank is located behind the pilot's seat and is pumped to the engine.

So with a borrowed helmet and gloves I was all ready to go — well I would have been if we could have got the engine going. I say we because it took one to pull the recoil starter cord and another to push in the manual decompression valve on each cylinder after every attempt. This was a pain! However, automatic decompressors will be fitted to production units, thank goodness. Once started the engine took about two minutes to warm up and run smoothly, and though in the car park onlookers thought the engine noisy, they commented that the noise reduced considerably once I had taxied away from the cars, which were acting as noise reflectors.

The note from the engine is different though not unpleasant and once in the air I thought it no different from a 330 Robin as far as noise is concerned. Take-off was positive, although I had to push out a lot further than I expected, probably due to the small wing area. This also meant that the rotation speed was higher than normal for a solo CFX machine, the Demon for example. Acceleration across the ground was adequate with the engine producing more thrust than a 250 but less than a 330 Robin engine. The power available is admirably suited to the aircraft and the beauty of such a low revving engine is that it feels as if it

will go on for ever. It is really nice to cruise along with the engine chuffing gently behind you.

The wing is a pure delight to fly. It's not a toy, but it feels as if it was designed with fun in mind. It was trimmed to cruise at 35 mph indicated and though by pulling the bar to chest level I managed 45 mph indicated, that's not really where it's at. This wing likes to be thrown about, it almost challenges you to make a mistake, to catch it out. That is very hard. It didn't sideslip unduly in turns and showed no signs of tightening up. The stall was positive though the small area meant it was a little heavy, but recovery was good without dropping a wing.

To be honest I expected it to drop like a brick without power, but I was pleasantly surprised. For a small wing the sink rate is respectable indeed. There was a fair amount of turbulence on the approach at Woburn and landing had to be done with care, but the Half Pint took it in its stride. Just as on take-off, the wing required plenty of push to flare out and in fact I had to lean forward to complete the flare, indicating that a B-bar might be beneficial to those with a short reach. Having said that, this attribute of the wing would soon be mastered by most pilots.

Conclusion

Most microlights can be summed up in a word, such as fast, docile or even obsolete. The word I would use for the Half Pint is delightful. Once the starting problem and the engine mounts have been sorted, this will be a good machine for novice and experienced pilot alike. The one thing I did miss was a hand throttle so that I could set the engine to that gentle chuffing cruise. Now if someone could convince Medway to try a Rotax engine as an option, I could do the test all over again . . .

Score chart

(A excellent, B good, C average, D poor, E very poor)

Engine	В
Flight controls	Α
Noise level	В
Ground handling	В
Flight handling	A+
Crosswind control	B+
Ground steering	В
Climb rate	В-
Glide and sink rate	В
Speed range	В-
Rigging and portability	B+
Design and construction	B+
Novice suitability	A+
Experienced pilot suitability	A-



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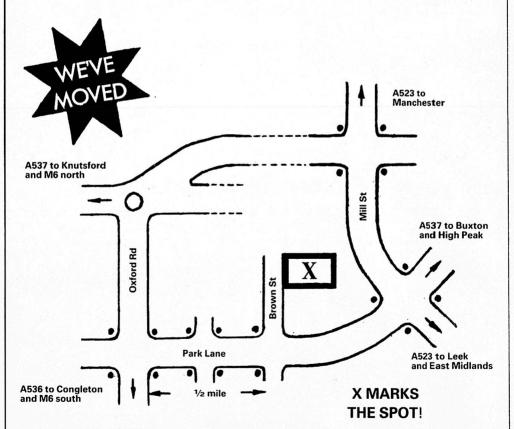
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Sunshine on our wings

We've had a crummy spring weatherwise, and here's something to make you feel even more frustrated — a report from DAVID YOUNG on Gerry Breen's Algarve flying school, the school where nearly every day is flyable. And while Gerry's school may be the only overseas establishment where your hours will count towards the PPL D, it certainly isn't the only place where you can go triking in the sun, as STAN MOODIE discovered in Tenerife. His story appears in the panel overleaf.

Flying off to the sun to learn to fly has always had great appeal. For the conventional pilot, courses in America and the south of France are available but for the British, microlighting has only sporadically showed up in Spain and France and then really just for trial flights. Without government approval and a firm base to operate from, the schools' lives were short.

Having decided at last to do my AFI rating, imagine my delight when Gerry Breen invited me to his centre in the Algarve, Portugal, for six months to work up to QFI! Not having had a holiday of more than a fortnight in my life, it was strange leaving Britain for such a long time. But the more I thought of cold windswept disused airfields in England, where I might have been working, the more I looked forward to this adventure.

Arriving in Lagos I found the airfield just outside of town on the main coast road and there was even a bus stop right by the entrance. The white control tower with windsock on top beckoned me past a quaint Portuguese church and over a little tidal river, the boundary of Aerodromo de Lagos.

Warm air engulfed me, I couldn't believe how green the scene was. Orange and almond trees stood out clearly in the sunshine on little hills nearby.

Within minutes Gerry was taking me aloft to survey the scene from my new working environment. We blatted down the 550 m grass strip and up into the blue. We turned inland, the 3000 ft Monchique mountain range ten miles north sweeping past the instruments in front. Suddenly before me, the sea. We flew over miles of white sandy beach curving gently east and pointing to Faro in the far distance.

Then it was back to the west of Lagos over cliffs with fantastic formations carved in the soft rock and little secluded sandy coves. Descending, we soared in the sea breeze in front of 300 ft cliffs. Climbing again, Gerry pointed out Sagres 35 miles

to the south west, the point dubbed The End of The World by ancient mariners who set sail from there to discover two thirds of the globe.

Down to earth again — I was feeling quite emotional — we proceeded down the taxiway at the side of the strip, and turned off to a hangar 200 yards away. To my amazement we pushed the machine into the hangar without any form of de-rigging, which was a surprise after my experience at British centres. I found out later that Gerry had the floor lowered to allow this; his microlights live in the hangar all the time they are not in use to minimise degradation to the sailcloth from sunlight.

The modern octagonal control tower had looked a little strange externally but Gerry ushered me into a smart reception area where he detailed our flight on the booking-out sheet. Next door is a bar and off that a lecture room with maps, standing orders, code for the environment, circuit diagram etc, displayed. Slides and video lecture support are on a shelf to complement the old-fashioned blackboard. There too are a range of sizes of Sonic intercom helmets and a dozen flying suits, while upstairs is an instructors' room where there is a 280° panoramic view of the airfield and surrounding area.

Two new Puma Sprints, complete with rear foot throttles, parachutes and instrumentation, are the training machines. Gerry explained how he takes new students up into the smooth coastal breeze and later on inland to subject them to varying degrees of turbulence.

Encouragement from the local (Lagos) council to develop flying training here stems from their half constructing an airfield and then running out of money to complete it. The site had been derelict for several years.

Gerry and his wife Manuela have worked hard since October last year to transform the place into what it is now. Then the control tower was a shell, the hangar had no doors and was surrounded by marshland and the airstrip was overgrown. It was only today, 23 May, that at last we have running water for the kitchen and toilets. The telephone has just been connected — something short of a miracle in Portugal where a domestic phone can take years to be connected. But now, with the earth removers gone, in the words of BMAA chairman Peter Blyth, who popped into the centre in May, 'Everything looks ship shape.'

Encouragement from the Portuguese civil aviation authority in Lisbon gives Gerry confidence for the future. But it is at the local level where contact



is best. We provided a formation flying display for the official opening of Meia Praia beach for the season. Three Sprints, two with streamers and 'Nao suje as praias', — don't pollute the beaches on the wings.

I think a first for a microlight school is the microlight coastguard patrol. As a lot of training takes place high above the beach, we have been asked to keep an eye out for anyone in trouble in the sea. Radios are being fitted so the coastguard can be contacted and immediately launch a rescue boat. We will also be able to give quick warnings of fires which are a particular problem in the isolated Monchique mountain area.

Rapidly it seems, the centre is becoming a part of the community. Two days ago someone turned up who had lost his horse — so out we went to look for it. Spotting could have been difficult, but luckily this horse still had a saddle on!

Training to solo standard in one week or three weeks for a PPL D is no stretch of the imagination, given the usually good weather, and students receive a recommended British schools' list for further teaching.

Approval for FIC has been given by the British CAA, subject to an inspection of facilities which should have been completed by the time you read this.

All in all Lagos Aerodrome is in fact the threshold of a dream for Gerry. Long-term plans include: re-aligning and extending the runway for light aircraft, providing a swimming pool and children's play area and, who knows — parachuting, hang gliding, a conventional flying centre, motor gliding with soaring in the mountains, aerobatic training in a biplane?

Me? I'm looking forward to getting up to those mountains for some solo soaring. A final note on statistics. From 23 March, when the airfield's booking out records start, until 23 May there have been nine days unflyable. One hundred and eightyseven dual instruction lessons have taken place, 36 student solo flights and the total number of flights is 329.

Robins sing in the Canaries!

Southern Tenerife and Playa de las Americas in particular with its dry (12–15 days rain per year), warm (average temperature in the high seventies), gentle climate must be the almost perfect microlighting environment. These and other thoughts were going through my mind as I lay on the beach on the first day of my holiday, when overhead at around 3000 ft flew a trike! I could hardly believe it!

I followed it by eye and eventually saw it on finals high in the hills above Playa. Next day whilst my wife was at the shops I plodded up the hill and sure enough came across a small windsock next a palm-leaf thatched flight control and caravan, set out with a few tables and comfortable wickerwork chairs overlooking a 300 yd runway. The utter peace and quietness of the place overlooked by the majestic mountain peaks to the north gave one a feeling of complete relaxation.

However not a soul was in sight so I made my way to a nearby farm building and suddenly inside I was confronted by a well equipped workshop with trikes and hang-gliders in every corner. I was no sooner inside than I was given a warm handshake and 'Hello I'm John, pleased to meet you'. John Sausville introduced me to CFI Gert Van Spijker and we had a talk. Gert (pronounced Hertz) did a lot of hang gliding

and even more microlighting in his native Holland but due to the very strict regulations it was almost impossible to obtain permits to fly, so, fed up with banging his head against a wall, he decided to start a school in Tenerife 'where you can fly 90% of the time'.

John Sausville — a genial American who had piled up a mountain of flying time in the USAF flying a variety of fixed wing jets and helicopters — had a civvy administration post in the timeshare business in Tenerife, but found life too dull and teamed up with Gert.

The school works in close liaison with the police and local coastguards and keeps an eye open for trouble off the expensive beaches in the area. Flying takes place nearly every day. Thermals sometimes get a bit strong in the early afternoon but then the breeze takes over and smooth lift abounds, so a pupil pilot can very quickly get his or her hours in.

Unfortunately for British students, none of the instructors have UK ratings, so any hours put in at the school won't count towards the PPL D. However, if you already have a licence and want a triking holiday, with unlimited airtime in shorts and T-shirt, followed by a pint in one of the many bars, you know where to go.

For details phone Stan on 04084 209 - Ed.

The airfield (beneath wing tip), with banana plantation in background. The massive cutting is to allow cold air to drain away from the bananas, preventing 'frost' damage.



Watchdog special

Solo Striker Wings — Structural Failure, 4 June 1985

Background – A structural failure on a medium, (solo) Striker wing caused a fatal accident to an English pilot, Paul Currell, while flying in France. The failure occurred during or immediately after a series of steep wingovers and this is considered to be the primary cause of the accident. The trike unit was a 330 cc Hornet.

Although the wing had been overstressed in this instance by manoeuvres outside the normal flight envelope and the Striker has an excellent track record, it is probable that several solo Striker pilots are flying a little closer to the limits of their wing than they had realised.

The failure — On the wing involved in the accident, the left hand leading edge appeared to have failed in buckling at a point about 40 inch (1 m) outboard of the nose plate. The bend was forwards and outwards and had continued until a fracture occurred. The right hand leading edge was bowed in the same way.

The leading edges of this wing were 2 inch 17 gauge unsleeved. Strikers manufactured after about November 1983 were fitted with internal sleeves at this point.

Structural tests — By kind co-operation of Percy Moss of the BHGA, structural tests are being carried out to arrive at a proven modification enabling the Striker to support around 750 kg suspended load. Initial tests have shown that the uprights of the control frame fail at 550 kg. The uprights on the wing under test were 1 1/8 inch 17 gauge unsleeved. Tests will continue with sleeved uprights.

Recommendation — It is vital that Striker owners check that their uprights are reinforced by either the addition of an inner sleeve of 1 inch 16 gauge or an outer of 1½ inch 17 gauge (the latter is preferable though more difficult to find. I have a small quantity (phone 0462 52103), so does Flexiform). In each case ensure that the tube extends to within 11 inch (28 cm) of each end of the upright. Check yours now!

The most important message to impart to all pilots as a result of this accident is obvious, do not perform high stress manoeuvres on a microlight. A full bulletin has been distributed to all Striker owners on the BMAA register who will also be notified of future test results and modifications. If you know of any other wings, outside the system, please ask their owners to contact Brian Cosgrove.

Watchdog

Edited by Dave Simpson

If this column has nothing else, it has variety. John Cook was towing his Tiger Cub home when, looking in his mirror, he noticed black smoke coming from the trailer rear. He quickly pulled into a layby, got out and saw the plastic mudguard beginning to burn, together with the Cub's wing resting near it. The flames rapidly spread to the fuselage and fuel tank, which exploded and spread the fire to his car. Then the car's tank went up, and within three minutes aircraft and an almost new Ford Escort were completely destroyed.

The Fire Brigade reckon that the fire was caused by a wheel-bearing overheating and its grease igniting. The lesson is obvious: check your trailer — it probably receives a worse hammering, for a longer period, than your microlight. The microlight was fortunately insured and broker Reggie Spooner has undertaken to settle the claim immediately. However, John points out that he has lost the trailer and valuable possessions in the car, none of which were insured, and advises others to learn from his mistakes.

Thanks to John Cook (and commiserations)

Alert 9 Continued - Nicklow Reduction Drive

(see Watchdog, May/June issue)

Propshaft failures continue to occur. Dave Young, flying a Sprint in Portugal, reports a failure on his at 34 h. Previous comments still apply but owners should be thinking seriously about replacement to prevent in-flight failure.

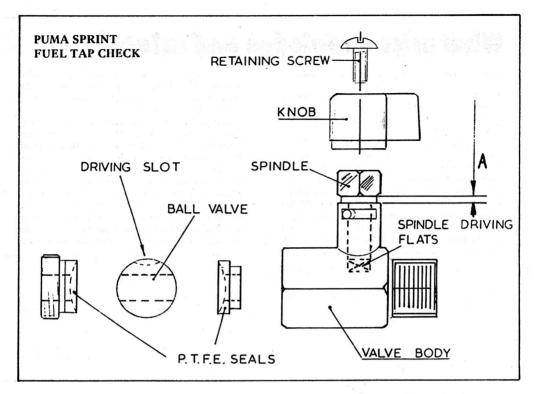
Alert 14 — Puma Sprint Fuel Tap

Southdown International have informed us of a malfunction on a single fuel stopcock (SI 700-23) fitted to a Puma Sprint. This was caused by a lack of engagement between the drive spindle and the driving slot in the ball itself. This was in turn the result of a misjigged drilling for the spindle location pin, preventing its full engagement in the ball.

The current batch of valves have been checked for spindle engagement and no rogue assemblies have been found. However, owners are requested to check their fuel valves as a matter of priority.

Fix 14 - Proceed as follows.

- 1 Remove the retaining screw and withdraw the plastic knob.
- 2 Using feeler gauges, measure the distance (A) between the valve body base and the underside of the spindle head. If this is in excess of 0.045 inch (1.14 mm), then the valve is suspect and



must be returned to Southdown for immediate replacement. Once the check has been completed and found to be within tolerance, the valve knob and retaining screw should be refitted using Locktite on the retaining screw... Great care must be taken to ensure that the valve knob is not placed 90° out of phase, causing the valve to be off when the knob is in the 'on' position. As an insurance, the fuel line should be disconnected from the carburettor, and the valve operated such that fuel pours from the line when the valve knob projection is in line with the valve's axis — ic, as shown on the adjacent placard on the fuel filter.

The fuel valve should always turn against an acceptable level of friction caused by the PTFE seals within the body. An overtight or excessively loose feel may be adjusted. This is readily done by removing the male fitting from the female end of the valve body and adjusting the PTFE seal retainer by means of an Allen key inserted into the socket inside the female valve end. The correct feel is when the valve turns easily under positive operating pressure, but is no way slack enough to be closed by engine vibration — ie, a force similar to that required for winding on a camera film. All pipe threads should be secured by a Locktite type sealant.

If in doubt about the above procedure, remove the complete valve assembly and return it to Southdown International, who will inspect it free of charge and send it or a replacement by return.

Thanks to Roy Venton-Walters, Southdown International

Alert 15 - Puma Sprint Throttle

A Puma Sprint delivered recently had double throttle return springs fitted to the carburettors to prevent throttle sticking problems. An instructor using the aeroplane reports that the conduit (outer) was nipped in several places, causing additional stiffness and as a result pupils were not fully opening the throttle. In addition the nosewheel was being pushed left in an attempt to hold open the throttle, causing problems on approach and landing.

Fix 15 — Throttle systems are one of the main areas of weak design on most microlights. Bicycle parts are used, two-into-one junction boxes are pressed into service in a mode for which they were not designed, the wrong type of inner is often used, prevention of the conduit escaping its socket(s) is left to good luck, and throttle cables are either wrongly lubricated (with thick oil) or not at all.

On the assumption that the Puma Sprint's

What price knowledge and safety?

By Ian Stokes, Training Committee Chairman

At our last Council meeting, the Chairman brought up the fact that a few members thought the cost of learning to become an instructor was excessive.

Now this is something that neither I as Training Committee Chairman nor any other Council member can do anything about. We are a democratic association and do not have any commercial control over schools in the UK, nor I hope would we ever attempt it. What the BMAA Training Committee does control, however, is the standard to which AFIs are taught, and this I can assure you is very high. The work put in

by the FIC instructors to achieve this standard is generally totally out of proportion to the price of the course, and I do not mean in the FIC instructor's favour.

Having looked around the country I have found the cost of Group D AFI courses varies considerably, from £800 to £1400, and there are several deals that bring the price down even further if the prospective AFI is prepared to give his or her body for a period of time to the school that has taught him or her to instruct. Now is this really a lot for three weeks of dedication by an FIC instructor? He is passing on an art that you could be using for the rest of your working life, and because that knowledge has

throttle system has worked properly once, the only legal fix is to remove sharp bends, remove or replace kinked or nipped conduit, lubricate lavishly with WD40 or Plusgas and apply some intelligent thought to areas of possible trouble.

In the next issue, space permitting, you'll be lumbered with an article from me about ridding yourselves of the curse of the throttle system. Included will be a design of a two-into-one junction box which can't jam, has no sliding members, cannot eject conduits and is cheap.

Alert 16 - Puma Sprint 7 inch Nylite Wheels

Several reports have been received of punctures caused by the inner tube rubbing on rough areas of the wheel centre.

Fix 16 — Unbolt the wheels and remove their tyres and tubes. Remove any burrs, sharp edges, or moulding flash from the wheel centres and refit the tyres and tubes. Keep the tyres at their correct pressure (about 30% depression when loaded). Over-inflation can worsen the problem.

Thanks to Dave Young

Alert 17 — Panther Trike Pylon/Keel Mounting Plates

A Panther XL, built by Ultra Sports in May '84, had completed 100 h when one of the plates connecting the pylon to the keel fractured. Inspection revealed that its partner was also cracked along most of its width. The problem is thought to have been caused by inadvertent side bending during rigging, although inadequate bracing during trailer transit cannot be ruled out.

Fix 17 - This fault can probably apply to any trike with high hours. Owners should clean off their plates and inspect carefully. If a crack is

detected, both should be replaced. Use HT30TF alloy.

Thanks to Geoff Weighell

Alert 18 — Rotax Engines Ignition Voltage There have been isolated cases of misfiring at high rpm on some Rotax engines. An investigation by the manufacturer has revealed that an adverse tolerance build-up on ignition system components can result in an HT as low as 13 kV at 6500 rpm. Rotax says this is too low under certain conditions.

Fix 18 – The ignition voltage can be increased by 4–5 kV by taking either of the following actions:

- 1 short together the green and green/black wires from the second lighting coil (situated above the generator coil), or
- 2 connect the Rotax rectifier-regulator unit, part no 866-080.

Rotax has undertaken to fit future engines with a shorting plug to take care of this problem.

Thanks to Nigel Beale, Cyclone Hovercraft

Alert 19 - Betacraft Air Intake Boxes

Betacraft tells us that a case has occurred of a float valve sticking and the airbox becoming awash with fuel. No harm was done in this instance, but there is an obvious fire risk.

The company also says that early boxes used a small-diameter tube to connect the two internal compartments. This has now been found to reduce power, and a larger tube has therefore been substituted.

Fix 19 — To guard against fuel build-up, drill a small drain hole of 1/16 inch (1.5 mm) diameter in the bottom of the box. Also, if you have a box with the small-diameter tube, return it to the manufacturer, who will modify it free of charge.

Thanks to Malcolm Saunders, Betacraft

been imparted safely and surely, that working life should be a long and reasonably profitable one.

Look at light aviation, where the cost of attaining an AFI rating is well in excess of £2500 and with a prerequisite of many more hours and ratings than we require. Another interesting comparison is driving schools—£450 for a four and a half day course which gets you even less than the equivalent of our AFI rating seems very expensive to me.

Always remember, it's the standards that matter. Ask yourself if you would like your spouse or child to be taught by a part-time instructor who has himself been taught by a part-time FIC instructor. Under these conditions it would be very easy for standards to drop and this is when accidents start to happen.

BMAA news

Training Notes

By Ian Stokes, Training Committee Chairman I'm pleased to report some additions and amendments to the instructors' list published in the last Flightline, as follows:

New AFIs - David Corke, Peter Harris, Fiona Luckhurst, David Young.

Upgrade from AFI to QFI - Brian Berry.

Re-validations of ratings - Tony Hughes (X Examminer), Nicholas Stansfield.

New X ratings granted and instructors omitted from last list — Tony Anderson (X Examiner), Chris Bishop (X Examiner), Brian Godden (X Examiner), Alan Reynolds (X Examiner), Chip Smith (X Examiner), Newby Tate (X Examiner).

Safety Notes

By Mac Smith, Safety Officer

If you haven't yet read Tim Franklin's contribution to *Letters* in this issue, please do so now, for it sums up much of what I had intended to write about in this column. And if you have a Striker, make sure you also read *Watchdog* before turning back to this page.

The tragic accident to Paul Currell should bring home to all of us that the excellent safety record of flexwings has ironically made us rather blase about the safety of Rogallos. To my knowledge Paul's accident was only the second structural failure of a proven wing in the history of British microlighting, and in both incidents the wings involved had not been beefed up to present re-

quirements, but even if they had, that doesn't make them fit for aerobatics.

We must all remember that if we start throwing a trike around the sky, we are inviting other, less experienced pilots to do the same, probably in their first machine — ie an old, pre-Section S aircraft without the reserves of strength offered by the latest generation of wings.

It is this fact which adds to my concern about the activities of Geoff Ball, a test pilot of great skill and daring who, unfortunately, insists on looping in public, for instance at Woburn. This is quite simply illegal. It is not permitted under the airworthiness legislation to intentionally exceed a bank angle of 60°, or a pitch of 30°, unless the machine you are flying has been certified to perform aerobatics - and no microlights yet have, not even the Phantom. Now Geoff is a very likeable character and without the pioneering of him and others like him, microlights would not have reached the stage of development they have achieved today. But there is a time and a place for test pilots to explore the limits of their machines, and public events are not it. To be fair, Geoff is the most obvious but by no means the only example, and I admit that in the past I too have indulged in over-the-vertical wingovers, but I don't do it any more. People learn by example, and as BMAA Safety Officer I of all people have a duty to set one.

All microlight pilots must realise that anyone flying outside the legally defined envelope is liable to prosecution.

Legality apart, a really good humdinger of a wingover needs a hefty whipstall to get the speed required to set it off, and whipstalls apart from being illegal because of the pitch angles involved are also potentially dangerous on a flexwing due to the possibility of tucking. This may be unlikely if the wing luff lines are properly set, but nevertheless, it must be realised that flight into deep whipstall situations in flexwings is still relatively unknown territory, and, even if the wing is structurally strong enough, it is not to be indulged in simply because the machine has always behaved normally in the past in such situations.

For those who need the thrill of aerobatics, the answer lies in the next generation of microlights, aerobatic microlights. We'll just have to be patient!

Secretarial Slipstream

By Brian Cosgrove, Chief Executive

With Flightline appearing only once every two months we have a real communication problem as news always breaks just after the magazine has gone to print — a touch of Murphy's Law! The problem is partly solved with Club/School News Bulletins but these do not reach all of you. A Council sub-committee is looking into the matter but it is going to be hard to come up with a solu-

By Peter Blyth

At last the weather improves and microlight pilots are out in force. Anyone who doubts that our sport is really 'taking off' only has to look at the turn-out at Woburn, at the North of England coast to coast rally filmed by Sid Perou for BBC TV and at the innumerable club activities taking place just about every weekend.

I am pleased to report that the BMAA administration has pretty well got its act together after a hard uphill slog during the winter months. Whilst we pilots have been dreaming around our firesides, Brian Cosgrove has been working extremely hard to improve our image and relationship with the CAA. Thanks to Brian's hard work and the CAA's commonsense approach to the problem of control and regulation, we are becoming a world authority in the setting up of microlight standards. Already several countries, including Japan, Canada,

Chairman's

Australia and Norway, are monitoring our progress and development as an organising body very closely. It behoves us therefore to grab this opportunity with both hands to set a standard and example for the rest of the world.

There has been no small number of complaints to the BMAA, quite justifiably, about the way Woburn Rally was run and consequently I called an emergency Council meeting on 11 June to decide on a course of action. There had been a moment early in the proceedings when the BMAA was about to stop the event, but fortunately this was prevented by the combined efforts of our Chief Executive Brian Cosgrove, and the Editor Norman Burr in ensuring more competent control at the take-off point (thanks)

tion which doesn't require more money. Heaven only knows, those of you owning aircraft have 'been caned for cash enough over the past few years.

So what's new?

The Woburn Rally came close to being a nonstarter along with many other similar events. Surprised? I wouldn't expect you to be otherwise, as the idea is unthinkable. Nevertheless if you look at the conditions on an exemption, as opposed to a permit to fly, you will see that flying in the presence of the public is not allowed.

On spotting this, I immediately approached the CAA and they reaalised that the very core of our sport — the fly-in — was not possible for exemption aeroplanes as the law stood. Hasty negotiations began which ended satisfactorily in the principle being accepted that microlight pilots could take part in fly-ins or displays before the public and, more to the point, that the spontaneity of our activities made it impractical for each participating pilot to apply individually, giving 28 days notice as is normal procedure.

Having established these facts, a code of practice was drawn up, modified somewhat by the CAA and finally the necessary legal document enacted to enable exemption aeroplanes to fly at such events.

Two points follow. First, the rules for participation in competitive events in terms of flying hours are a bit 'heavy'. These will be reappraised in the near future but there was no time to do so prior to Woburn. Second, and this is the most important one, the dispensation I have obtained covers all future fly-ins which are BMAA sponsored or run by BMAA associated bodies, so if 'noses are kept

clean' the public can officially watch the sport without pilots making individual applications every time.

Don't accuse me of being a killjoy if I stress the need for adherence to event rules. We have fought hard to get rid of the poor public image we had in 1982 and BMAA will no longer accept as a member any pilot who puts in jeopardy the hard work that has gone in to improve our image. This is no idle warning, as we want self-regulation some day and we are going to prove we deserve it.

Air displays, fetes and other such events not BMAA regulated will require application to be made to the display department of the CAA at least 28 days before the event. Application forms are available on request from CAA.

The BMAA office soldiers on. Initiating the airworthiness procedure and carrying it out with no extra resources has not been an easy task. I don't think you realise how lucky we are in having Joy Austin and Gill Sellwood — our two part-time ladies with a full-time mental approach. Their output is phenomenal and I take this opportunity of publicly thanking them on your behalf. Unfortunately, we do have a backlog of letters needing replies — they are mainly requests for detailed or specialised information which would take undue time to deal with at once against other priorities. Membership applications, renewals, insurance and exemption/permit requests are all turned round the same day in virtually every case.

The BMAA insurance scheme is not far off its first anniversary and by the time you read this I hope to have met the underwriter and brokers to discuss its

airwaves

for the compliment, but actually my contribution was quite small — Ed).

You will read in Secretarial Slipstream that we were lucky to have Woburn at all. Although a somewhat last-minute affair as far as the CAA dispensation was concerned, with it came a clear set of rules which were passed to the organisers together with a letter from the Council emphasising that strict adherence was to be the order of the day. It was obvious that these rules in the main were not passed on to pilots at the event. I must make it clear once and for all that in future BMAA or BMAA-associated events will only be run under the CAA dispensation we have gained with the strict adherence to those rules and evidence of sufficient authorised

and competent people present to enforce them. Already action has been taken in respect of certain pilots, both at Woburn and afterwards, and there will be no second warnings. The overwhelming majority of us wish to enjoy our flying with the minimum of fuss and the maximum of safety, and as long as I am Chairman I intend to ensure just that.

The member's suggestion about changing our lengthy name to something shorter and more appropriate produced eight reactions, four in favour and four against, hardly enough interest to officially suggest a name change. However, I think the idea was a good one and would be worth resurrecting again in due course.

PS: Dear illegal pilot flying an unregistered machine too low over my house last week — thanks for the cheery wave, if indeed that's what it was!

continuation. I had hoped to have news in time for this issue but it seems no underwriter ever enters into a commitment over 30 days ahead, so it will be a case of writing direct to those currently in the scheme — if, hopefully, there is something to say.

Incidentally, the cover only applies to legal aeroplanes and legal flying — this was naturally the crucial point in securing the scheme in the first place. So, if your machine has no fireproof placard in place; is not displaying its exemption certificate as laid down; has no up to date engine/airframe log; the registration letters are not in place or are of the wrong colour/size, then why on earth bother to pay your premium?

STOP PRESS: I have just received the news that the Sports Council are to grant us just over £4000 towards the cost of entering our team in the World Championships. I am sure you will all be delighted at this tangible outcome of our recent recognition by this body, to which we tend our sincerest thanks.

Club news

By Dave Mudie, Club Liaison Officer
During May all clubs should have received a
letter from me asking for details of anything
they intend to organise for the charity weekend. If your club hasn't received a copy, please
let me know.

At the time of writing I have only received one reply — thanks to Britannia Wings — but despite this apparent apathy the offer of help still stands, as does the offer of visits by Council members to your club nights.

On a different tack, are there any pilots wanting to form a club in Ireland, north or south? Anyone interested should drop me a line giving a few details, such as address, experience, etc, as soon as possible, and I'll pass the information on to interested BMAA members keen to get things moving.

Contact

Long Marston Microlight Flying Club

By Nick Hatton

This new club was started on 1 April by forming a temporary committee which will run the club for three months until the long-term committee has been elected.

A few problems have been encountered due to the demise of the previous club, but we hope to overcome any bad feeling and welcome any members, whether newcomers or from the old club. We are now an independent unit operating at Long Marston airfield and with our own private take-off/ landing area seven days a week.

We are organising a fly-in on 20-21 July open to all pilots and incorporating a competition which will be part of the British Championship. Entry

forms, for those who didn't get one at Woburn, are available from the club secretary, Long Marston Airfield, near Stratford-upon-Avon, Warks. The weekend should be well attended and we have a permanent bar with toilet facilities as well as camping/caravan sites. Catering facilities will also be provided.

The committee at present is: chairman Geoff Weighell, treasurer Bob Shelswell, secretary Linda Comben, safety officer Steve Comben, events officers Brian Hill and Dave Lewis, newsletter Nick Hatton, committee member Basil Cardew.

We look forward to seeing as many competitors as possible to make sure our first event goes off with a bang. Ours must be one of the best microlight sites in the country, but we need pilots to do the airfield justice.

Any enquiries about the event or the club should be directed to Linda Comben on 0789 204010 or Brian Hill on 021-351 3032.

See you in July!

Severn Valley Microlight Club

By Daryle Parsons, chairman

It is with deep regret that I report the death of Ray Savery, the owner of Stoke Orchard airfield, currently used by our club. The local fliers and indeed the microlight movement as a whole owe much to Ray, who possibly without knowing it did more for the sport in Gloucestershire than anyone else, by letting the club use the superb facilities of his airfield.

A keen aviator himself, he always showed an interest in our activities and never once to my knowledge said no to one of our requests. To his wife and family on behalf of the club and the BMAA, I extend our sincere condolences on their loss, and express our perennial gratitude for Ray's unselfish attitude, a characteristic that endeared him to all aviators alike.

Bristol Microlight Aircraft Club

Would readers please note that club meetings are held on the third Thursday of every month, not the third Wednesday as wrongly reported in the last *Flightline*. Venue is the Bristol & Wessex Aero Club, Lulsgate, and the time 8 pm. Queries: contact Cherry Salter, Bristol 422316.

Windsports Flying Club

At its June meeting the club was treated to an excellent and informative talk on Cleveland from the air, given by member Richard Crosthwaite. Twenty-eight people attended, and membership is growing steadily. Anyone in the Yorkshire and Cleveland area is invited to come to the meetings, on the first Wednesday of every month, at the Feathers Hotel, Helmsley. Alternatively, prospective members may phone either David Bosomworth (0904 796576) or Eden Blyth (0751 32356).

Calendar

All queries relating to events in this calendar should go either to the contact number listed, or to Jeremy James at the number on the *Contents* page. Closed-to-club events are not included in this calendar; before organising other events, clubs are urged to check with Jeremy to avoid date clashes.

Britain

13-14 July: Cambridgeshire Microlight Club fly-in at Sutton Medlands. Contact Peter Robinson, 114 High Street, Sutton, Ely, Cambs CB6 2NW; tel 0353 778446. British Championship event.

20-21 July: Long Marston MFC fly-in at Long Marston Airfield, near Stratford-upon-Avon. Details in Contact. British Championship event.

24-26 August: Microlight fly-in and competition at Popham Airfield, near Winchester. Details on 0256 75733.

7-8 September: Staffordshire Aero Club Fun Weekend at Weston Park near Telford. Contact Dave Brocklesby, Alyn House, Top Road, Acton Trussel, Staffs ST17 ORQ; tel 078571 4465.

14-15 September: Norfolk Air Race, organised by Eastern Airsports HG&MC. Contact Kelvin Woodard, 127 West Acre Drive, Old Catton, Norwich, Norfolk NR6 7HX; tel 0603 49934. British Championship event.

24 November: BMAA AGM.

Belgium

17-18 August: Third Coxyde Flying Show, including microlights. Contact Jacques Jacob Publicite, ch de Waterloo 496D, 1060 Bruxelles; tel 02 539 3033.

France

16-24 August: World Championship at Rens. Contact Jeremy James at the number on the Contents page.

12 September: 'Grand Course' at Blois, organised by French microlight association. Contact 01033 9032 5675.

United States

26 July – 2 August: Oshkosh fly-in and convention, organised by EAA. Contact EAA at Wittman Airfield, Oshkosh, Wisconsin 54903-2591.

The Government imposed VAT on advertising in the Budget. The BMAA is absorbing this for small ads in this issue, but to cover this and other increases in costs, small ads will from the next issue onwards cost £2.50 to members advertising *privately*, and £5 to all others. The 30 word limit remains. Prepayment please — clip cheque or postal order (payable BMAA) to ad wording and send to *Flightline*, Oak Cottage, The Green, Wennington, near Lancaster LA2 8NW.

Small ads

Aircraft for Sale/Wanted/Exchange

Readers are reminded that the CAA should be informed of any change of aircraft particulars or ownership.

USED MICROLIGHTS, Quicksilvers, Eagles, trikes. Always used aircraft in stock. If we haven't got yours, we'll find it, then inspect it and test fly it. Training 6 days. Aerolite, 0789 299229 (Warks).

PATHFINDER MKI G-MJJR, 330 Robin, 50 h, electric start, instrument console with ASI, altimeter, bank indicator, fuel gauge, tachometer, compass. Also pilot pod and road trailer. £2200. 051-922 9804 (Merseyside). (7/7) CAPRICE 19 ft four-berth sailing cruiser, b/keels,

CAPRICE 19 ft four-berth sailing cruiser, b/keels, Mercury engine (in well), road trailer, dinghy with Seagull engine, extras, in good condition. Exchange for weight-shift — Sprint or similar. Cash adjustment. 0272 674545 (Bristol). (7/8)

SUPER TIGER CUB 440, complete fibreglass cowl and centre section, fully equipped instrument panel, large wheels, flown 4 h. Registered G-MJZA. Space required, £2000. Phone 0533 431852 evenings (Leics). (7/9)

PTERODACTYL G-MJST, canard, Robin 330 engine, two props, always kept under cover. TT 50—60 h. £1500. Ballistic Recovery Systems parachute system and harness, £600. G Sutton, Tunbridge Wells (0892) 890271. (7/12)

TIGER CUB 440 on Ambrow trailer, full instruments, flown 4 h, aluminium fuel tank. £3000. Phone Gillingham 3012 (Dorset). (7/14)

TIGER CUB 440, concours condition, exellently built example, full panel, 15 h flying time, special single-man trailer with ramps, latest prop, not to be missed: £3800 ono. Tel Whissendine (066479) 694.

EAGLE G-MBYX, Robin engine just overhauled. About 30 h flying, Good condition, flies well, £995. Phone 0579 45018 9 am—5 pm or 0579 46046 evenings. Thanks! Ask for Nell. (7/17) NOW IN MIDDLE EAST, forces sale of Tiger Cub 440 with trailer, ASI, altimeter, dual egtg, slip indicator and Skymaster chute. 25—30 h, first class condition, well maintained, no prangs, will consider any reasonable offer or exchange. Contact Eddie (Thornbury 412094) or write Robert Pearce, c/O UBM Overseas, PO Box 78, Bristol BS99 7EW.

330 TRIPACER single-seat, strengthened medium Typhoon, long-range tank, excellent condition with full exemption. 25 h. £1950 ono. Astwood Bank 3297. (7/19)

STRIKER DUAL WING, new type, absolutely brand new, never flown due to purchase of wrong trike unit (suits Geminis only). Cost £1450, will accept £950. Tel Dave on 0642 467037. (7/20) CUTLASS/HORNET 250 trike, a perfect combina-

tion that flies like a dream, only 26 h, registered and with exemption certificate. £995 ono. Phone 075782 442 (Yorks). (7/22)PANTHER XL440 G-MMRL, 10 months old, 55 h. Red/white/blue wing, blue pod. Excellent condition, £3500, will take good single-seater in p/ex. 0407 710541 (Cemaes Bay, Anglesey). (7/24) HIWAY SKYTRIKE 250/DEMON plus altimeter and spare prop. Registered G-MJGP, exemption ticket obtained. Completely serviced Jan '85. Low engine hours. £1100 ono. Greg Thomson, Norwich 890911 business, 890442 private. EAGLE G-MBWY, well maintained and BMAA inspected. A complete twin Chrysler engine/drive assembly, various engine spares and car-top transporter are included. Best offer accepted. Chris Carter, 0533 416949. (7/26)MITCHELL U2 SUPERWING G-MMNS, four-piece wing, full instrument panel, construction passed PFA, all welding CAA, in enclosed trailer 11 x 6.5 ft. £4000. Write D Baldwin, 65 Storrington Way, Werrington, Peterborough PE4 6QP.

PATHFINDER I for sale. Superb condition, 87 h only. Pod etc. Comes on its own trailer which could be a portable hangar with the addition of a cover. £2100.0530 243466 (Leics). (7/29) BE LEGAL! Tiger Cub 440 with CAA exemption, trailer, cover, full instrumentation, in-flight mixture control, metal fuel tank, excellent condition, sae for photo. £3450, finance arranged. 09816 353 (Hereford). (7/30)

WANTED: 250/330 trike. Must be in good condition with low hours. Will consider with or without wing. Tel 0926 52326 (Warks). (7/32)

TIGER CUB 440, well instrumented, test flown, registered, mobile hangar, trailer. Owner too infirm to fly any more. Bargain for someone. Any offers? Southampton 812273. (7/33)
MISTRAL two-seat side-by-side dual-control trainer, under 2 gal/h. Registered with exemption, 10.5 h. Mint condition, sensible offers. Also Chargus Titan, low hours, registered with exemption, a very sturdy easy to fly side-by-side fun machine. 063084 842 (Salop). (7/34)
50% SHARE of Skyhook Sabre/single-seat trike.

Only 0.5 h since new Ideal for beginner. Only £600. Jim Petter, 0789 299418 (Warks/Oxon). (7/35)

SOUTHDOWN SPRINT/ULTRA SPORTS 440 PANTHER, pod, instruments, trailer, long-range stainless-steel tank, spats, nosewheel springing, fantastic prop, exemption ticket, beautiful machine. £3450 no offers. 054884 2168 (Devon). (7/36) TIGER CUB G-MMFT, on trailer, built as good as it looks, has exemption, only airtime with examiner. Kept in heated garage. £3500 ono. Ring Eric, Chesterfield 451803. (7/38) HORNET INVADER dual with in-flight mixture control, mated to Sprint wing, has exemption, all as new, will drop £1500 on new. Also double

chute. Eric, Chesterfield 451803. (7/39) MAINAIR 250/5KYHOOK G-MJTU, above average condition, very reliable, excellent handling, with exemption certificate. 4 gal keel tank, trailer, 60 h, £1150 ono. Would p/ex Sprint. Duncan Wade, Steeton (0535) 52762 (W Yorks). (7/40)

TIGER CUB 440, G-MAMM, trailer, red/white sunburst, full instruments, mixture control. Mods: engine offset, new undercarriage, fuel tank lowered. Exemption cert, immaculate condition. £3500. 0600 890229 (Herefordshire). Also Robin 250 with reduction, 15 h only. £120. (7/41)

QUICKSILVER MXII, current exemption, complete with wing/tail bag and purpose-built foldingtop trailer. £2500 ono. Mullion (0326) 240798

evenings/weekends (Cornwall).

LIGHTNING DS/440 GEMINI dual, inspected and exemption paid for. Very low hours — 75 total — pod, long-range tank, compass, ASI, altimeter, tacho, vario, battery. Very good condition. £2800 ono. Phill Wiles. 0244 45888 day, 0270 73396 evenings (Cheshire). (7/43)

TIGER CUB FOR SALE full instrumentation, test flown. Excellent finish. Professionally built trailer with lights. Make me an offer. Christchurch (0202) 482082. (7/44)

HUMMER microlight. Virtually unused. Stored indoors since new. Robin 250 engine and reduction gear, £650. Tel Ely 2435 (Cambs). (7/46)

RING UP and book one of my early Raven or Sprint production slots and you will get more than you bargained for, Keith Vinning, 05645 77733.

SOUTHWEST AIRSPORTS have an ever changing selection of new and secondhand aircraft, with prices from £1500. Call lan Stokes on 056686 514 or 08406 517 for details. (7/49)
PUMA SPRINT new Jan '85, 35 h, pod, spats, muffler full instruments £4000 one 021.351

muffler, full instruments, £4000 ono. 021-351 3032 (West Midlands). (7/50)

Miscellaneous

FLIGHTLINE back issues are available to members (for prices contact Deddington); non-members



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SKYMASTER parachute for DUAL-seat machine. NEVER USED, just flown. Offers to Jeremy James, 0869 810646 (Oxon). (7/1)

TRAILER — purpose-built for MIRAGE MKII. Large tough wheels and spare. Never a problem with it. Offers to Jeremy James, 0869 810646 (Oxon). (7/2)

GENTEX HELMET with built-in communications. Helmet has transceiver and microphone. Works perfectly with 720 ch portable transceivers. Fly in controlled airspace. Cost £450, nearly new, offers to Jeremy James, 0869 810646 (Oxon). (7/3) ROTAX 377 engine. Approx 45 h only. Superb

smooth running. Offers to Jeremy James, 0869 810646 (Oxon). (7/4)

FOUND AT POPHAM manufacturers' meet, a camera in case. For information please ring Roy Douglas on Studley 2104. (7/6) INTERCOMS. INTERCOMS. Few only, ideal for

INTERCOMS, INTERCOMS Few only, ideal for two-seaters and training. Throat mike, earphone, tone/volume controls, with battery, only £8.95 plus post and packing. 0709 370073 (S Yorks).

PODS, PODS To fit Quicksilver MX. Quality glassfibre, lexicon screen, various colours. Weight 10 lb. £110. Orders now being taken. Hiway Skytrike being developed. (7/11)

SOLO 210 cc engine, weight 20 lb complete with carb and silencer. £265 ono. Wallingford (0491) 37455 (Oxon). (7/13)

ENGINES — one Cuyuna 430 (428 cc, 35 hp at 6200 rpm) £220; one Zenoah G25B1 (242 cc, 20 hp at 6500 rpm) £100; two Chrysler Soarmaster (130 cc, 10 hp at 8000 rpm) £55 each. All as new, under 5 h. Phone Wilson, Prudhoe (0661) 32087 evening, or Thatcham (0635) 69002 work. (7/21) PROPELLERS Quality hand-carved laminated mahogany propellers, finished in clear fibreglass resin. Available in any size/pitch, prices start at only £45. Ken Fern, 311 Congleton Road, Scholar Green, Stoke-on-Trent ST7 3JQ; tel Kidsgrove (07816) 73140. (7/23) BUSINESS OPPORTUNITY — QFI or AFI re-

BUSINESS OPPORTUNITY — QFI or AFI required in southwest Scotland. Ideal opportunity to run your own centre. Ready made facilities. Phone Bert on 029256 782 for details. Hurry! (7/28)

SKYMASTER emergency back-up system for single-seater. Brand new. £300. Tel 0241 75546 evenings only. (7/31)

CHOTIA 460B square-head, twin-plug engine.
Manufacturer's rating 26 hp. Not fully run-in.
With Chotia wooden propeller, new and in zipped
case. £100 for quick sale. Buyer collects. Lovegrove, 1 Beaufort Close, Fleet Meadow, Didcot,
Oxon OX11 8TS; tel 0235 812556. (7/37)

PPL D sample examination papers, two nav and met £3, two air law £2, two technical £3 (all papers include answers) or £7 set. Send cheque or PO to C R Bishop, 40 Rookery Road, Innesworth, Glos. (7/45)

FIC COURSES IN CORNWALL. Get trained for your Group D AFI rating with Southwest Airsports at Davidstow Moor Aerodrome, the country's leading microlight school. For full details phone Ian Stokes on 056686 514 or 08406 517.

(7/48)

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For further details contact: AERIAL ARTS, 30 Sillwood Street, Brighton BN1 2PS. Tel: 0273 727033

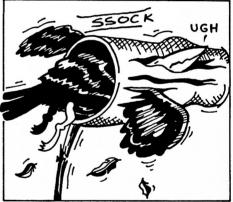


THE ADVENTURES OF Rik Raveu













THINGS LOOK ROUGH FOR RIK RAVEN...THE MEDICAL SKILL OF A LOCAL VET IS HIS ONLY HOPE ...SO WITH NO TIME TO LOSE EQUIPMENT IS MADE READY IN THE OPERATING THEATRE...

THE TABLE IS CLEARED AND RIK LIFTED IN... THE OPERATION BEGINS .. WELL, MERCY ME, IF
I WORK FAST THIS BIRD
SHALL LIVE... BUT IT
WILL BE A LONG TIME
UNTIL HE FLIES AGAIN, IF EVER



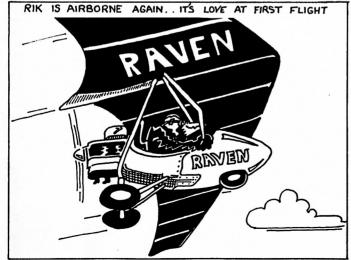
TIME PASSES AND OUR HERO SLOWLY RECOVERS... BUT HIS WINGS, HAVING LOST MANY FEATHERS, WILL NOT LIFT HIM'SKYWARDS!

RIK REMEMBERS
THE STYLISH SIGHT
OF THE MICROLIGHT
HE ASKS QUESTIONS,
HE SEEKS ADVICE,
AND FORMULATES A
PLAN ... HE WILL
TRACK DOWN THE
FASTEST FLEXWING .
AND FLY IT!



WELL HERE IT
IS THE LATEST WING
FROM SOUTHDOWN.
100% DOUBLE SURFACE
CAPABLE OF OVER
100 MPH AND HANDLES
LIKE A DREAM!
SLIP ON THE HELMET
AND GIVE IT A GO.





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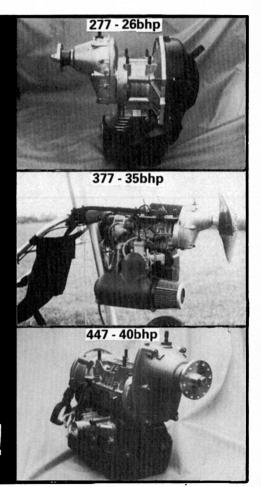


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