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Magazine of the BMAA

Nov–Dec 1985
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COVER: The victorious British pilots pose proudly after taking the team prize at the first World Microlight Championships. Full story on p24.

AGM preview
Mac and Paula Smith get ready for the highlight of the BMAA year 8

Whistles in the wires 12
Book review 16
Letters 18

Thrusting ahead
Norman Burr reports on a new fixedwing trainer 23

Cover story
See above 24

Technical
Peter Lovegrove looks at the mechanics of flight 39

Eight rounds for '86
Jeremy James explains the arrangements for the National Championship's second season 42

Events
Popham through the eyes of Paula Smith 43
Ian Rapley describes Medway's first fly-in 44
Keith Reynolds has his very own Norfolk Air Race 45

Path of the pioneers, part two
Brian Milton concludes his commemorative saga 46

Safety
Striker and Sealand update, by Dave Simpson 56
Spordon accident report, from Norman Burr 56
Watchdog: Dave Simpson on guard 57

BMAA news
Chairman's airwaves, from Peter Blyth 59
Training notes, by Ian Stokes 59

Contact 59
Calendar 60
Small ads 60

Editorial and Advertisement Office Oak Cottage, The Green, Wennington, near Lancaster LA2 8BN (tel 0468 21166 office hours)
Editor Norman Burr (address as above)
Technical Editor Peter Lovegrove (tel 0235 812556) home
Advertisement Sales Wendy Burr (address as above)
French Correspondent Alain Yves-Iberger, 3 allée de Montmajour, Ferrolles Antil, 77330 Ozoir
US Correspondent Hal Adkins, Haljan Publications, 136 South Main Street, PO Box 291, La Moile, Illinois 61330, USA (tel (815) 618-2152)

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Next deadline for advertising and editorial 22 November (all contributions should include home and work telephone numbers)

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British Microlight Aircraft Association New Street, Deddington, Oxford OX5 4SP (tel 0869 38888)
Chief Executive - Brian Cosgrove (tel 0869 38888 work), 0869 38342 home

Member of the Royal Aero Club and the Fédération Aéronautique Internationale

President Mrs Ann Welch OBE (tel 0252 715991)
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Chairman Peter Blyth (tel 0909 731666 work, 0709 812321)

Vice Chairman and Training Committee Chairman Ian Stokes (tel 056686 514 or 08406 517)
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Technical Committee Chairman to be announced
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Competitions & Events Committee Chairman Jeremy James (tel 0869 810646)
Sponsorship & Publicity Cherry Salter (tel 0272 422316)
Club Liaison Dave Mudie (tel 021-445 4292 work, 0527 24457 home)
Chief Observer (i.e Colibri awards) Graham Wilkins (tel 0532 563049)
Council Member Iain Barr (tel 0858 880484)
Safety Adviser John Hunter (tel 01-499 8011 x3272 work, 07072 74730 home)
Chief Inspector Peter Lovegrove (tel 0235 812556 home)
Record Co-ordination Officer Rick Wilson (tel 0734 21099)
Printing PJ Print, Unit 17, Smallshaw Industrial Estate, Phoenix Way, Burnley, Lancs BB11 5SX

Flightline Nov-Dec 1985
Once again

AGM organisers PAULA and MAC SMITH preview the BMAA's Annual General Meeting and accompanying exhibition of microlight aircraft and accessories.

Once more the streets of Wolverhampton will be packed with a multitude of merry microlighters' vehicles sporting all sorts of badges, labels, things perched on roof racks, and a variety of trailers on Sunday 24 November.

The inhabitants of these vehicles will be going to our annual get together to share in the lively goings on inside the Civic Hall. All sorts of goodies will be on display there, and many people will be stretching their financial resources the following week. There will be all sorts of aircraft there this year, with hopefully the emergence of the latest two-seater three-axis machines. Also, loads of useful accessories and interesting odds and ends. Anyone who wants information about microlights or training schools near them just has to go to this momentous once-a-year event.

The venue is as usual the Civic and Wulfrun Halls in the middle of Wolverhampton — just consult the map next to this article. Food, tea, coffee, or something stronger, is available in the catering department, and the doors are open at 10.30 am. Beat the rush. Get there early!

The whole microlight industry in this country is booming now. The introduction of pilot licensing and the airworthiness controls have given the sport a very healthy and respectable image which is a far cry from the situation a couple of years ago, and this is reflected in the tremendous strides made by manufacturers towards safety and improved performance, and by the large number of people now learning to master these incredible flying machines.

The exhibition this year will be more exciting than ever, so don't miss it. It is also your big opportunity to get involved in the organisation of your sport, to voice praise or to voice criticism, to offer advice, to nominate members who you think should be on Council, to talk personally to Council members about any problems, and above all to vote for next term's Council.

Last year there was a slight hiccup in that the general discussion didn't take place, much to the annoyance of quite a few people. That won't happen this time, and your criticisms, queries and comments will have a good healthy thrashing. However, there is only so much time available at these meetings, so priority will be given to written questions which have been submitted to the BMAA office prior to the

Agenda and notes

BMAA Annual General Meeting, Sunday 24 November

Meeting commences 13.30 h; while the meeting is in progress, absolutely no trading is permitted in the Civic Hall.

Note: When you arrive at the hall, show your BMAA membership card and you will be issued with numbered voting slips. No membership card — no voting slips, so don’t leave it at home!

Nominations for the posts of Chairman, Treasurer, and Council members to be written on nomination sheets provided and situated near the stage in the Civic Hall. Nominations must include BMAA membership number and the name and BMAA number of a proposer and a seconder. No nominations accepted after 12.45 h.

1 Apologies for absence
2 Minutes of last AGM
3 Matters arising from last minutes
4 President's address
5 Chairman's report followed by:
   Secretary's report;
   Training Committee Chairman's report;
   Technical Committee Chairman's report;
   Flight Test Group Chairman’s report;
   Safety Officer’s report;
   Other Council members’ reports, ie: Club Liaison, Competitions & Events, Sponsorship & Publicity;
   Flightline Editor's report;
   Approval of the constitution;
   Treasurer's report;
   Election of auditor.
6 AGM closes temporarily for informal discussion:
   So that important issues can be raised and full and proper answers given, questions should be written and sent to the Secretary in advance, as from now, though provision is made for questions to be handed in on the day. Only when the written questions are dealt with, and if there is sufficient time, will questions be taken from the floor. So, if you have a real gripe, or a very important issue to raise, please write it down now and post it to Deddington right now.
7 Tea break — 15 min.
8 AGM resumes for election of officers.
9 AGM officially ends at 16.30 h.

8

Flightline Nov–Dec 1985
Wolverhampton beckons

AGM. So, if you have a real gripe, or a very important issue to raise, please write it down now and post it to the Secretary, BMAA, New Street, Deddington, Oxford OX5 4SP right now. Only when written questions have been dealt with, and if sufficient time is available, will questions be taken from the floor.

Flightline Nov–Dec 1985

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Whistles in the wires

Zipper-de-do-dah

Two new sub-70 kg trikes are announced this month, from Mainair and Skyhook respectively. The two are closely related, and both use the same wing, a new, lightweight design from Len Gabriels’ Skyhook company called the Zipper.

A taut, CFX wing of only 112 ft² (10.4 m²) and weighing only 49 lb (22 kg), the Zipper is a purely Skyhook design, though Len admits it draws on his experience with the Flash, which he helped create. "I was impressed with the Half Pint when I saw it at Woburn," Len told Flightline, "and I decided to go the same route." Skyhook, whose Pixie virtually invented the sub-70 category when it was shown at the '83 AGM, will continue to market the Pixie, which uses a much larger Zeus wing of 195 ft² (18.1 m²).

The change to a small wing has allowed Len to shorten the mast length and use a smaller A-frame, giving greatly improved ground handling, and also allows a heavier, more powerful engine to be used without exceeding the weight limit. Len has opted for the gear-reduction Rotax 277, which he says gives a 60 mph level speed and genuine 700 ft/min climb with a 175 lb (79 kg) pilot. He is also, however, considering a low cost version, which would retain the same Solo engine as the original Pixie and thus allow the pilot to add more equipment, such as a fabric pod, without exceeding 70 kg.

With Zipper wing and Rotax 277-engined trike unit, the new Skyhook machine will be known simply as the Zipper and will sell for £2700 including VAT. Mainair’s version will use the same wing and power unit, but will have the Rochdale-built trike unit originally dubbed Astra. Mainair too is to sell its complete aircraft under the name Zipper — a real recipe for confusion! Price for Mainair’s device is not yet fixed.

Also under development is a high-performance version of the Half Pint/130 SX, which was to have made its debut at the Norfolk Air Race. Due to bad weather, however, the race was rescheduled for 26/27 October.

Scouting Around

Under development by well known automotive engineer Derek Gardner is a replica biplane, known as the T-M Scout. The aircraft, which has no connection to that venerable Australian microlight, the Scout, is a two-thirds replica of the Thomas-Morse S4, designed during World War I and perhaps best known now for its role in the film The Great Waldo Pepper.

A variety of materials will be used, including alloy, steel, and composites, the structure being fabric-covered. With three-cylinder Konig engine the machine will weigh less than 70 kg, but Derek is putting the aircraft through full Section S type approval and as a result does not expect to be in production until the third quarter of ’86. Price is estimated at £5150. Enquiries to Dega Applied Technology, 114 Wymondley Road, Hitchin, Herts SG4 9PX; tel 0462 57474; tx 827547 CG BUS G REF DEGA.

Not far away from Derek, incidentally, another sub-70 biplane is taking shape, this time in Jim Romain’s hangars. Details are sparse so far, but apparently it will be called the Cobra.
The Cobra just prior to its departure from Melbourne airport with its airmail cargo. The aircraft behind is a TAA Airbus.

Kingpost!

Australian ultralight pilot Rodney Birrell made aviation history on 3 April when he took a three-axis two-seat King Cobra on a mail run from Melbourne airport, Victoria, to Riddells Creek airport, 15 nm northwest. Though hardly an epic journey, this is believed to be the first time that mail has been officially carried by ultralight anywhere in the world.

To celebrate the occasion, 950 special first day covers were carried on the flight, each individually numbered and signed by the pilot to ensure authenticity. Rodney tells us that UK stamp and/or microlight enthusiasts can obtain one by writing to his company, Ultralight Flying Machines, at PO Box 182, N Balwyn, 3104 Victoria, Australia, enclosing (sterling) £3 plus £2 postage. The King Cobra, incidentally, is an American design from the Advanced Aviation company.

Still in Australia, another American machine, the Challenger II from Quad City, will be used by pilots Kevin Pearce, Rod Matthews, Peter Evans, and Rod Gunther for their attempt to island-hop some 8700 miles across the Pacific from Tahiti to Melbourne. Each will fly one of the two-seat machines, which will be fitted with floats and have their rear seats replaced by long-range fuel tanks, giving the aircraft a range of some 600 miles.

The trip was due to start in September and take six weeks; as Flightline went to press there was no word on progress so far.

Loud and Clear

'Readability 6 — and that's not a bad mark on a 1-5 scale,' remarked the tower at Shoibdon recently when John Hollings of Microflight tested his latest radio/intercom system. From the days of the Chagrus Titan, John has maintained that a good intercom system plus a 720 channel radio are a boon to the serious cross-country pilot, but now, with the advent of two-seat trikes capable of 75 mph, long distances have come within the reach of the average pilot.

John believes that as a result radios will be more and more in demand as pilots wish to negotiate routes...
through congested airspace. His system is designed for portability and clarity — as befits equipment used day in and day out for training — and fits into a waistcoat and two helmets. He now boasts that he has the best radio on the airfield, including all the conventional aircraft, and will be pleased to provide further information or help iron out compatibility problems on 056881 8864 or 723.

Excitement for '86
Quite apart from an enlarged National Championship series, which Jeremy James details elsewhere in the magazine, 1986 promises to be the most exciting year yet for the competitive pilot. Undoubtedly the highlight of the season will be the European Championships in Spain (the next World Championships will not be until '87), but there will be a real challenge closer to home too, for in conjunction with Graham Hobson Mainair Sports is helping to organise a Round Britain Air Race of about 1000 miles.

A similar event in France a while back was a great success, the idea being to tackle the course in true barnstorming fashion, with pilots funding for themselves as they go along. No back-up of any kind will be allowed, and fuel capacity will be strictly limited. The event is being planned as a challenge to pilots rather than a media festival, although sponsorship is being sought. It will not count towards the National series. Dates, route and rules had yet to be finalised at the time of going to press, but May or June are the most likely months.

The other principal non-championship event of the year will be the BMAA's annual rally. Held at Woburn for the past three years, the event’s date and venue had not been fixed at the time of writing.

Upstairs Downstairs
Readers will have no trouble recognising the face of Gerry Breen on the right of this picture. And the other may ring a bell too, for it’s none other than actor John Alderton, who has a villa nearby.

Algarve Microlight Centre AFI David Young took John on his first ‘Upstairs Downstairs’ trip and the actor was so thrilled with the experience he was soon back for a lesson and to give his three children that ‘upstairs’ feeling.

John lives in Portugal when he gets time off from acting and directing jobs and says he’s looking forward to flying again at the next opportunity.

Seconds Out...
The second edition of Norman Burr and Alain-Yves Berger’s Ultralight & Microlight Aircraft of the World was being printed as this edition of Flightline went to press. The first edition was readily accepted as the standard reference work on this sector of aviation (there’s even a copy in the CAA library), but is now two years old. So much has happened in that time that the Anglo-French partnership decided to wipe the slate clean and start afresh, and the result is a book which, though following the format of its predecessor, is rewritten from cover to cover, much more attractively laid out, and greatly enlarged. A total of 491 aircraft from 22 countries is covered, as against a mere 350 from 11 countries previously, and the publication runs to 504 pages compared with 285 for the first edition.

The book will be distributed through all normal retail outlets, but will also be available by mail order direct from the authors.

Season’s Greetings
Hang glider Michael Carnet has had two designs of Christmas cards printed, one of them featuring a microlight, and is now offering them through his Sky Systems company. Printed with a four-colour cartoon on the front but with the inside deliberately left blank for the sender to write his or her own message, they are supplied in boxes of 10 with white
envelopes, each box costing £2.50 plus 30p post and packing. Five of each design are in each box, or alternatively buyers can opt for 10 of the same design.

Sky Systems is at Knoll Business Centre, Old Shoreham Road, Hove, Brighton BN3 7GS; tel 0273 423650.

Bomb Disposal Experts, Queue Here...
Microlight enthusiast Tony Willgess has found a life insurance policy which asks no questions about occupation or pastime, and thus seems just the job for the bomb disposal expert given to making solo ascents of the Eiger in his spare time.

Microlight pilots, who frequently come up against similar prejudice on the part of the insurance companies, can get further details by contacting Tony at Abbot Associates, 34 Broad Street, Staple Hill, Bristol BS16 5NS; tel 0272 574006.

Open to Offers
The American company Ameritech is looking for a European distributor for its AP303 product, a liquid designed to protect and beautify Dacron and other plastic surfaces. Though well accepted in the ultralight and hang-gliding fraternities in the US, it is so far little used in the UK, though it has been marketed in a small way by Midland Ultralights.

The company is seeking an organisation willing to distribute its product not just to microlighters—who are in fact only a comparatively small market for the product—but also to other areas, such as yachting. Enquiries to Roger K Dyer, national sales manager of Ameritech Industries Inc, Redding Municipal Airport, Redding, California 96002; tel (916) 221-2225.

Hope Springs Eternal
Brian Hope's story of the construction of his Teman Mono-Fly and the subsequent legal problems regarding airworthiness (Flightline May-June '85) has a happy ending. He has finally received an exemption, and can thus fly legally at last.

Sporting a New Approach
Anyone who has ever tried to buy a microlight book in an ordinary bookshop will know how poorly stocked most of them are, so the recent announcement of the opening of Britain's first specialist bookshop concentrating specifically on sports and games, should be good news.

Run by expatriate New Zealander John Gausted, it is located in the heart of London's bookselling area, at the Cambridge Circus Shopping Centre, Charing Cross Road, London WC2H 0JG; tel 01-240 9604. A mail order service is also offered.

Richard Reaches Egypt

Richard Meredith-Hardy's epic 10,200 mile flight from London to South Africa was approaching the one-third mark as Flightline went to press, and all was going well.

The 28 year-old property developer, who sold everything to finance the unsponsored flight, took off
from London Docklands at the end of August in what is basically a standard Gemini Flash, though it is being flown solo to give a useful payload for equipment and extra tanks. Fitted with an inflatable dinghy, various survival aids and full instrumentation, the aircraft made an uneventful 8 h crossing from Crete to Alexandria, Egypt, a distance of 240 miles, navigating on radio beacons and instruments only. This is the second high point in the trip for Richard, the first being his crossing of the Alps a few days earlier.

Undoubtedly the most interesting aspect of the aircraft is the instrumentation, installed by Dave Simpson and including ASI, VOR navigation aid, compass, altimeter, 720 channel radio, twin chtg, tachometer, and twin digital watches for GMT and local time respectively. There’s a retractable cable for a remote press-to-talk for control-bar mounting, the radio aerial being mounted up front and the VOR aerial under the cockpit.

Dave reports that the CAA was extremely cooperative in giving him temporary authority to sign off this one-off installation after an inspection, even though he has no ticket for such work, and that the authority has been similarly helpful over the mountain of international paperwork which Richard’s trip required.

**Fordingbridge Accident**

Stephen Pitt on Saturday 28 September achieved the unhappy distinction of being the first microlight pilot to be involved in an accident where a member of the public was killed.

Stephen was one of three pilots who visited a school fete at Fordingbridge, Hampshire, flying in to an area of the school grounds which had been roped off for the purpose. The intention was not to give a display, but simply to visit the event and allow the public to inspect the machines and ask questions.

When the time came to depart, the first two aircraft took off uneventfully, but Stephen in his Gemini Striker failed to gain sufficient altitude and crashed into the crowd, killing spectator Mrs Kelly, and injuring her husband, her four-year old child, and five others as well as himself. The pilot was uninsured.

Investigations into the accident are under way at the AIB, and by the time *Flightline* went to press it had been established that there was no structural fault with the machine.

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**Book review: Iceland Breakthrough**

*Iceland Breakthrough*  
(by Paul Vander-Molen, published by Oxford Illustrated Press, Sparkford, Yeovil, Somerset BA22 7JJ; tel 0963 40635. 139pp. Price £12.95.)

You’ve read the magazine article (*Flightline* March ’84), seen the film (AGM ’84), and very shortly will be able to watch the TV version (Channel 4, 7 November, 8.30pm). After all this, readers could perhaps be excused for feeling that they know all they wanted to know about the Iceland Breakthrough canoeing and microlighting expedition.

In fact, however, the book goes into far greater detail than any of the above accounts, and in my view is the better for it. The history of the project, the personalities, the problems, the dangers, and the laughs, are all lovingly written down by Paul Vander-Molen’s father Jack, working from notes dictated by Paul in his hospital bed. Paul succumbed to his leukaemia before the book was published, but had the satisfaction of at least seeing the completed manuscript before he died.

Jack has started a memorial fund in Paul’s name to raise money for leukaemia research, but there are better reasons for buying the book than mere sympathy. It provides a fascinating and colourful insight into a historic expedition, and along the way teaches us a lot about a country which, though not far away, is little known to most Britons. No one with any sense of adventure could fail to enjoy this publication.

*Norman Burr*

*Flightline* Nov–Dec 1985
**BERGER-BURR’S**

Perfect Xmas gift!

Completely revised and greatly enlarged, this second edition of what has become the standard reference work on microlight and ultralight aircraft the world over is now available direct from the authors. If you liked the first edition of *Ultralight & Microlight Aircraft of the World*, you’ll be even more impressed by the second - no less that 504 pages covering 491 aircraft from 22 countries, with hundreds of illustrations, a superb colour section and a comprehensive engines directory. For further details see the insert with this magazine.

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Flightline  Nov–Dec 1985
Letters

The Best of Both Worlds
Sir, Having sold my Pathfinder I in July ’83, sampled a Tiger Cub in early ’84 and flown a Pathfinder II with extreme care until it was grounded in July ’84, I was left wondering what would be on offer in the three-axis world of permitted microlights in ’85.

The forecast prices appalled me, but a let-out appeared in the form of an ’83 Phantom, albeit at a stiff price, in December ’84.

I took the plunge and spent the winter fettling it with Nicklow, who fitted their 333 cc liquid-cooled Robin in place of the original 440 free-air cooled unit. This necessitated changing the reduction to 3/1 and retuning the exhaust, hopefully reducing fuel consumption to around 3 gal/h. I subsequently discovered, on meeting a fellow Phantom flyer at Woburn, that I could have got a greater improvement by fitting an in-flight mixture-control for a mere £70!

The Phantom has a rather poor glide ratio and needs careful handling, especially at touch-down, which is fast and long. However, I now have the best of both worlds, at least until I’m 70, when the prospects for further extensions may end. With its short wing span, high all-up weight, full-span ailerons and fuselage bracing, this 100 mph Vne aircraft can fly in good gliding conditions – a venture too unpleasant in a Pathfinder I, unrewarding in a Tiger Cub and, of course, lethal in an unmodified Pathfinder II.

I have been enjoying numerous thermal flights at reduced economic cruising speed (46 mph). Using a rate of climb instrument taken from my glider, I have climbed from 500 to 4000 ft without using any climbing revs, feeling quite secure and comfortable and recording about 2 gal/h with up to 500 ft/min climb.

I haven’t flown the Sirocco but I doubt that I would feel as comfortable in workable thermal conditions – but then its fuel consumption is excellent anyway.

D B White
228 Goldington Road
Bedford

Britannia Boost
Sir, Can I please through your letters column give many thanks to Brian Cosgrove for visiting our club in early July, even though we are small in numbers?

Brian’s talk not only served as a morale-booster to those finding the sport expensive, but also enlightened us all as to what goes on behind the scenes.

I recommend all clubs to take up Brian’s offer of a personal visit. I’m sure they too would benefit greatly. Thanks again to Brian and his team for all their time and effort.

Richard Franks
Secretary, Britannia Wings FC
31 St Johns Road
Exmouth, Devon EX8 4DD

Tell Us How, Please
Sir, As a recent convert to microlighting from sport parachuting, with which I have been involved for 12 years, I feel I can offer a founded criticism of your magazine.

Informative as it is, Flightline does not carry any articles on actual microlight flight techniques for both student and experienced pilot alike. I’m fortunate enough to have John Hollings close at hand to quiz about various basic (and more adventurous) flight techniques, but I’m sure there are others who don’t have such expertise readily available.

So how about a series of articles on how to fly weight-shift, three-axis etc, for people to read, digest and practise. It would do no harm to repeat and update these articles once in a while to cater for the newcomer to the sport.

Bob Cote
27 Pennine Close
Kings Acre
Hereford HR4 0TE

Offers of such a series will be gratefully received from any qualified instructor — Ed.

Honest Uprights
Sir, In-flight structural failure of any make of microlight is generally bad for business for the rest of us and, to say the least, often grossly unfair to the unsuspecting pilot.

There is no need for such incidents, as the strength of any part of an aircraft may be determined by the use of a few simple formulae.

Take for example A-frame uprights. A typical size commonly used a few years ago on hang gliders was 1 1/8 inch 17g, and about 66 inch (1.68 m) long between the pin joints at the ends. (In fact a good many have badly designed end terminations as well, but that is outside the scope of this letter.)

The load at which these will buckle is given by:

$$F = \frac{\pi^2 EI}{l_0^3}$$

where,

- F is the force
- E is Young’s Modulus for the alloy
- I is the Second Moment of Area
- l_0 is the length between pin joints

18
Flightline Nov-Dec 1985
I is given by:

\[ I = \frac{\pi}{64} (D^4 - d^4) \]  

(2)
in this case

\[ I = 0.0269 \]
The material used is HT30TF with a Young's Modulus of about 9,700,000.

Thus the failure load per upright from equation (1) is:

\[ F = 591 \text{ lb (268 kg).} \]

With the typical lift distribution of a flexwing at this sort of load, we could expect the machine as a whole to take around 1200 lb (550 kg) at most at failure.

Now, for a pilot of 160 lb (73 kg) + kit + undistributed airframe weight = say, 240 lb (109 kg) total, this gives us 1200/240 = 5g at failure. Divide this by 1.5 safety factor and you get 3.3g – ie just about OK for a slowish free-flying hang glider. If you now add a trike unit to this machine, you are really asking for trouble.

Even the lightest of trike units weigh over 100 lb (45 kg) typically. So with fuel as well, and (God help us!) a 330 trike, the safety margin is so miniscule as to be non-existent. Typical load here (pilot + fuel + kit + trike unit + undistributed airframe weight) is around 405 lb (184 kg) at least. So, divide 1200/405 = 2.9g, divide this by 1.5 safety factor and you get 1.9g. This is simply not good enough.

If the manufacturers of the machines in question had copied properly designed hang gliders, a fairly balanced structure would have resulted – viz the failure load of all the major components of the wing would be approximately the same. So bunging a couple of sleeves up your uprights is no solution, as your cross-tubes, side wires, leading edge tubes, keel, kingpost, top rigging, ribs, and sail will still not be up to the job.

The sort of situation that might arise here, with say 100 or so machines flying, would be probably one or two failures per year due to turbulence or tight turns.

These same simple calculations apply to cross-tubes as well (if fitted), and worth noting here is the fact that ‘doubler’ sleeves need to be pretty well 60% of the length of the tube. The little three foot ones often seen are not really adequate, and will only create a false sense of security.

\[ \text{(Beadle’s Bookkeeping)} \]

\[ \text{(The Chestnuts, Crays Hill)} \]
\[ \text{Billericaay} \]
\[ \text{Essex CM11 2YA} \]

\[ \text{Not So Cheap} \]

Sir, As I’ve been closely connected with all aspects of microlighting for more years than I care to remember, I thought it was time I summed up the costs for the benefit of people considering entering the sport.

I used to quite regularly fly a light aircraft and found that it was costing me £25 per hour, using someone else’s machine. Since then everything has gone up, so it now costs around £39 per hour — not bad I suppose. But today I fly a microlight, and although I now have many hours accumulated, that awful cramp in my right hand reminds me of how I
seem to keep paying out one way or another. Having composed the following list of minimum costs in the first year of the sport, I am now considering whether to go back to conventional light aircraft. I'd have to sell my microlight of course, and have tried doing that, but I still have it so I suppose I am still fully involved.

- Microlight — cheapest of its kind £2800
- Instruction — 8 h @ £30/h, exams excluded £240
- Insurance £60
- BMAA £15
- Local club (flying member) £140
- Registration and letters £25
- Inspectors £20
- Wear and tear (depreciation) £230
- Petrol, 60 h @ £2/h £120
- Oil £15
- Licence £50
- **Total** £3815

This gives an hourly rate of £63.58, assuming 60 h are flown in the first year.

---

**Why Only Six**

Sir, As a long-standing BMAA member who has received Flightline since the May—June '81 issue, I'd like to report my observations.

First, you now produce a very well printed magazine on very good paper at a size which I find quite acceptable, and I'd like to thank all the members who have helped in its production. However, I have a few suggestions to offer.

We must produce a monthly edition as soon as possible. At the moment some news is outdated by the time we receive our copy. BMAA has always said it can't afford it, but with around 24 pages out of 60 devoted to advertising, surely this should pay for the printing? Many members get nothing other than the magazine for their £15 subscription, which works out at £2.50 per copy. Yet the cost can surely not exceed £1 per copy?

Now for the contents. Just after I joined BMAA we were supplied with a complete list of members' names and addresses, which I found most helpful when starting the Leicester club. But this list is now four years old and out of date — why not issue a new list, which could be printed a few at a time in the magazine to save expense. How many members do we now have?

As we hope to attract new members, could we not have more articles suitable for those who don't know a flexwing from a fixedwing? Articles on the various types, or even a story of their development including the Rogallo wing, would be most useful. Furthermore, what about printing a list of club sites, so that they could be visited with prior permission. A question and answer section would also be useful.

I hope that this letter is taken in the context of improving the magazine and not purely as criticism.

Jack Dilks
29 Westmeath Avenue
Leicester LE3 6SS

Norman Burr writes: Thanks for your comments Jack. Here are some answers.

1. Membership is hovering between 2000 and 2100, and we print 2600 of each issue, the extras being for complimentary copies, corporate members, sample mags for prospective members, and sales at air displays etc. Here's how the cash flow works out per issue, in round figures:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print</td>
<td>£1200</td>
</tr>
<tr>
<td>Post and packing</td>
<td>£500</td>
</tr>
<tr>
<td>General postage</td>
<td>£30</td>
</tr>
<tr>
<td>Miscellaneous editorial expenses</td>
<td>£20</td>
</tr>
<tr>
<td>Items covered by Editor</td>
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</tr>
<tr>
<td><strong>Total cost</strong></td>
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<tr>
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<tr>
<td>Small ad revenue</td>
<td>£100</td>
</tr>
<tr>
<td><strong>Total income</strong></td>
<td>£1600</td>
</tr>
</tbody>
</table>

Net cost per issue: £1300, i.e. 50p per copy.

'Things covered by Editor' includes not only my fee but also various items which I pay for out of my own pocket, including editorial typesetting (£130 per issue), phone (£120), travel, subsistence, office overheads and photographic expenses. The reimbursement was fixed in March '82, since when inflation has totalled 20%, and at the last Council meeting it was agreed to increase 'items covered by Editor' broadly in line with inflation; this will increase the cost of each copy to just under 60p.

To do 12 issues would more than double the costs, since advertisers would be unlikely to buy twice as much space, but the BMAA is working on a scheme to supplement the magazine with a news-sheet, to maintain communication in the months when Flightline is not produced. See Chairman's airwaves for further details.

2. Membership list — I'd love one just as much as you, but its production will be a hopeless time-consuming chore until the BMAA buys a computer, which is not far off.

3. Yes, I'd love to have some articles on basic flying techniques and the pros and cons of different breeds of machine. Offers gratefully accepted from suitably experienced pilots...

4. Clubs jealously guard the location of their sites for fear of cowboys upsetting the locals, so much so that an offer a couple of years back by a member to print a national site map at his own expense produced not a single address for inclusion. If clubs feel differently now, then please write and say so; we may be able to get the ball rolling.

---

Ron Wright
34 Oak Street
Roufords
Essex RM7 7BA

You are wrong to include both depreciation and full purchase price in the same total, Ron, but nevertheless your point is made — though the flying should of course get dramatically cheaper in subsequent years — Ed.
Terrific Team

Sir. I would like to put into print my thanks and the thanks of the BMAA and the pilots of the British Team, to all those who helped us at the World Championships.

There were so many people who contributed to the success of the event, but in particular, thank you Ozee, thank you High Plains, than you Mainair.

We all learned how to fly within the rules of international competition and our pilots performed exceptionally well, putting in 10-12 h per day, from refuelling early on to packing up late in the evening. Wives and girlfriends supplied food and drink all day, and believe me, in that heat, both were very welcome. So thanks girls.

Personally I’m very grateful to Southdown and Martin Lowther of Enstone Microlight Centre for arranging and loaning a Puma Sprint. Thanks guys.

Graham Wilkins
BMAA Chief Observer

Chips, Chifta, Raw, Fob and Net

Sir. Have you ever been at Popham or Woburn, under the gaze of the public and other pilots, with your engine running, waggled your wings, tugged at a few wires and hoped that it would look like a pre-taxi check to anyone watching? You may well have covered everything, but on the other hand you may taxi off with your seat belts trailing behind you — very poor style.

A single set of mnemonics can avoid all that embarrassment and save time wasted in prolonged wing waggling, as you try to remember what else to check.

To begin with, the ‘start-up check’:

C — chocks/choke as required;
H — hand throttle shut or set;
I — indicate your intentions;
P — propeller are clear;
S — switch on.

Those are the basic vital actions; I favour a visual ‘clear prop’ to the verbal: that person admiring your propeller could be deaf. While the engine warms, do your ‘pre-taxi check’:

C — controls full and free movement;
H — harness and helmets; both can find their way into the prop, so check harness buckle, chinstrap, peak and visor;
I — instruments secure (propfodder) and set;
F — fuel level OK, tap on, tank strap and fuel cap secure (more propfodder). Unfortunately, with the tap off the carb holds just enough to get you airborne;
T — note time ‘brakes off’. Trim set if you have one;
A — airframe, during a daily inspection, note how many clips your machine has — they are probably visible from the seat. Tyres inflated, wing tips clear of obstacles.

Now the ‘pre take-off check’:

R — run up engine;
A — all clear above and behind;
W — wings level, line up and take-off.

The least used check is the ‘circuit rejoin’ or ‘overhead’ check, but it is well worth giving thought to it while you’re still above and clear of the circuit, and with all options open:

F — fuel sufficient for overshoot; if not, descend within gliding reach of the field and keep speed high;
O — observe signals square, windsocks, bonfire smoke, and other aircraft;
B — brakes off, nosewheel straight, buckle of harness secure.

Finally the ‘parking check’, the main function of which is to remind you to look at your watch:

N — nose into wind;
E — engine run down, listen for abnormalities, switch off;
T — note time brakes on.

Don’t leave it to chance; when the ‘chips are down’, you’ve got to get it right!

Mark Phillips
CFI, Wealden Microlight Club

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Tel. (0706) 55131
THE ADVENTURES OF Rik Raven

ONE DAY, IN LIVELY CONDITIONS...

MMM, GREAT X-C, AND WHAT A SMOOTH LANDING.

HMM... HE'S HAVING TROUBLE. THAT WING LOOKS HARD TO HANDLE.

BOING!

THREE LANDING ATTEMPTS LATER...

GOOD GRIEF, I'M ALL IN. WEIGHT TRAINING AND PRESS US HAVEN'T HELPED ME FLY THAT BEAST.

ACNE

WOBBLE

CHEER UP; HATE, HAVE A GO ON MY MACHINE.

YOU'LL LOVE IT. YOU HAVE FULL CONTROL WITH ONLY THE LIGHTEST GRIFF.

GLOOM

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22

Flightline  Nov-Dec 1985
Thrusting ahead

Sheep farming the modern way: shepherd, dog and Thruster Gemini in the Australian outback.

By Norman Burr

Though there's every reason to think that the aircraft which has been the backbone of three-axis training in Britain for so long, the Quicksilver MXII, will get its type-acceptance in due course, that alone will not allow its indefinite use by schools. The CAA wants only type-approved machines used for training.

So the race is on to produce a Section S fixed-wing engineered for slow to medium speeds, unlike the Shadow which is simply too fast for the novice. Six months ago it was a two-horse race, between Noble Hardman's Snowbird and Horizon's Sunrise, with perhaps AMF's Chevron as an outsider, but now a new name seems to be heading the type-approval race— the Thruster TST.

To Australians, the name is not new, as the essentially similar Thruster Gemini is now well established there. Now Ian Stokes, proprietor of Southwest Airsports and Chairman of BMAA's Training Committee, has formed Thruster Aircraft (UK) Ltd to import and assemble the machine for the European, African and Middle Eastern markets. By the time you read this the new firm should have company approval and be well on the way to UK type-approval, the aim being to be fully legal in time for the '86 season.

The choice of an Australian rather than American design is a canny one, for the Aussies have recently adopted Section S and as a result have every incentive to give full documentary back-up, as UK type-approval work will also be applicable back home, giving the company a head start over its rivals. Americans, on the other hand, have a habit of burying their heads in their hands and screaming 'product liability' whenever documentation is mentioned...

The Thruster follows the original tube and Dacron concept but is right up to date with its strut-braced double-surfaced wings and water-cooled 462 Rotax engine swinging a 72 inch (1.83 m) tractor prop. Its positive tailwheel steering is claimed to give it unequalled ground handling qualities and the large fin and rudder and full-span ailerons promise excellent aerial manoeuvrability. It made its European debut at the Paris Air Show and stole the show, giving by far the best display of the flying microlight exhibits and coming away with a very satisfactory order book.

Having entered the fray, Ian knows the pressure will be on. Not only will the aforementioned rivals still be around, but Midland Ultralights will be hard at work on type-approving the new Aviasud two-seater biplane. However, the Mistral, as it is known, is not even due in Britain until December, so for the moment it's definitely advantage Australia...

Flightline  Nov-Dec 1985

23
Few people would have forecast when plans for the first World Microlight Championships were announced that, with only two of the ten days of competition left to go, a pilot of only 70 h microlight experience would have emerged the apparently unassailable favourite.

Tragedy stepped in to snatch defeat from the jaws of victory when the pilot concerned, an affable father of two from Frankfurt, Joachim Krenz, lost control of his machine during an engine-off spot-landing task and span in from 400 ft.

In Krenz’s death there were many ironies, not least of which was that he could have pulled out of the spot-landing competition — in which his very clean experimental design had proved less than successful because of its lack of air brakes — and still won by a comfortable margin. But the fact that he did attempt the last in a series of eight spot landings exemplified the highly competitive spirit that pervaded the whole of the championships.

Derek Hall, whose decision to fly dual robbed him of any competitive edge from the outset, equally lacked a real incentive to go for his final spot landing, but go for it he did, and paid the price of a very wrecked machine.

This determination to compete saw umpteen other machines part company with various bits of undercarriage and suffer sundry other injuries. It saw many
The British are the first World Champion Microlight Team, having taken the coveted trophy in a hot, turbulent, tough event at Millau in Southern France. But as BOB SCHOFIELD of AirAcraft Microlight Services reports, tragedy hit the West German team and overshadowed an otherwise happy occasion.

Main picture: Pilot’s-eye view of the Millau strip. Top left: The Americans brought these two Starflight XC280 Stilettos. Bottom left: Neither Falcon was well placed, though Patrick Rebeysol would have done much better but for his disqualification. These American-designed machines are now Belgian-built, by Sonaca. Bottom right: Though neither he nor the Scorcher was competing, Geoff Ball managed to get some flying in.

a pilot finding forced landing sites double quick as he ran out of fuel at low altitude, and saw every man in the competition hauling his machine out in conditions that normal pilots would have regarded as unflyable. It also saw the ten-strong British team, who after a couple of days competition had apparently written themselves off as no-hopers, run out the world team champions.

But to describe the gritted teeth mentality of those last days of competition is to jump too far ahead. The affair began on Tuesday August 13, and so did the British team’s problems. All the machines were weighed during scrutinising to make sure they did not exceed 150 kg. Tony Baker’s six-week old certificate from Pegasus to the effect that his Panther weighed 145 kg held little water when his machine tipped the scales at 156 kg and much furious stripping — both literally and metaphorically — was involved to get it within the weight, including having to beg a plastic container to replace his metal fuel tank.

Derek Hall’s Gemini Flash likewise proved a trifle weighty, but the removal of spats sorted the problem. The difficulties continued on Day Two — the opening ceremony — when Iain Barr threatened to pull out of the team because of what he regarded as poor briefing and a downright dangerous opening ceremony which involved formation flying by each team followed by a fly-past, with all 36 competitors
in circuit, for the benefit of the mayor of Millau.

A dint of hard talking by team captain Bob Calvert brought lain and his Sirocco back into the fold, though lain’s worst fears nearly came true when a clown of a French pilot — flying a two-seater biplane from the Sirocco stable called the Mistral — pulled up a banner through the British team formation.

The day’s only major incident was to a German prone trike pilot who wound up in hospital suffering a broken arm and concussion. I suspect the drama of this incident played no small part in French TV’s decision to concentrate their cameras on Billy Brooks, who was also flying a prone trike. Billy, however, steadfastly refused to become a victim of the turbulent conditions; instead the exposure led to him becoming the darling of the French viewing public.

Day Three brought the first competitions and at this stage it might be as well to describe the terrain and the nature of the tasks. Actually the terrain and weather conditions can be summed up in one word... terrifying.

Home-base for the championships was Millau-Lzarac airfield which lies 2604 ft above sea level on the Larzac Plateau, on the southern fringe of the Massif Central. The plateau itself is a rolling agricultural landscape of stony dun-coloured fields interspersed with the odd green meadow and rock outcrop. Where the terrain is too harsh for agriculture — and that’s most of it — the fields give way to low scrub and coarse grasses.

But the hostility of the plateau for microlighting was as nothing compared with the spectacular gorges which criss-cross the region. Sheer rock or forested valley sides plunge 2000 ft to the rivers which have cut the gorges into a mini Grand Canyon-scape. Viewed from above on a quiet evening’s flight, they look superb, but over-flown during the middle of the day — when the almost constant 20-plus mph winds whipped round the rock outcrops to create a welter of unpredictable rotor turbulence, and when booming thermals caused involuntary wingover aerobatics — they just looked lethal.

All the non-airfield tasks required pilots to overfly these gorges and more than one confided in me that it had taken him three days to summon the courage to go over the edge.

To those wise pilots reading this and pooh-poohing the dangers of these gorges — ‘Plenty of altitude, Mavis, and you’ll be as safe as houses’ — it should be pointed out that the cross-country tasks all boiled down to fuel efficiency, in that the tasks were about flying as far as possible on 25 litre of fuel.

So in the interest of points, height AGL for many competitors could be measured in tens of feet on occasions, and seldom in more than hundreds.

Anyway, back to the first task — circuit navigation — in which pilots were asked to fly round a closed course and photograph the nine road junctions that served as markers. Each junction had to appear in the middle of the photograph (more than one flier remarked some of the tasks were more a test of photographic than flying skill) and each junction had to be in proper sequence (if you blew your photo of junction two, for example, the rest did not count).

You got the standard 25 litre of fuel and the idea was to go round the closed course as many times as possible, photographing the markers. If you ran out of fuel and landed out, score zero. As an added wrinkle, you had to declare how long the flight would take. Calvert came back 2 h 5 min after take-off with 11 markers under his belt and 2.5 litre of fuel left in his tank declaring: ‘It went well, just as expected, I haven’t made any mistakes.’

But his smile disappeared quickly when the French trikes came rolling in having stayed out for almost twice as long and completed two full circuits.

Derek Hall’s lack of competitiveness by virtue of flying dual with David Bosomworth as navigator became evident on the first day when he landed out, running out of fuel as his Gemini Flash consumed 4 gal/h. Tony Baker too had an out-landing and Simon Baker nearly blew it when he had an engine failure on take-off due to a fuel lock.

The bright spot of the day was Pete Davis’ performance in the Shadow — 15 turn points — which helped him establish a sound position in the three-axis class that he held on to throughout the event.

Another economy-oriented task came the day after (Friday), when pilots had to fly as far as possible into wind, photograph the furthest point and return in a declared time (land-out and you score points for the distance between the landing spot and photograph site). The French superiority in fuel economy was confirmed, and the end of this day was the low point for the team, summed up by a bemused Bob Calvert: ‘I really thought we would walk it in the Flash, it’s the best wing around, but we just can’t get the efficiency.’

But amid the desultory talk of coming back next year with a more competitive machine, some brains began working. It was not long before John Hudson of Mainair — who throughout the competition worked all hours with his colleagues Geoff Ball and Kevin to keep the team in the air — and others became lost in the intricacies of density altitude. This, they reasoned, had to be why the French, on essentially less efficient machines but using the same Rotax 447 engines, were winning the economy battle hands down.

Millau-Lzarac airfield was more than 2600 ft AMSL and it was hot. Therefore the air must be less dense and since the British machines were set up for British conditions, the result was a rich mixture.

Surreptitious visits to the French compound revealed more differences: the British machines were over-muffled and were on finer props. So over the first Sunday, when the crowds were being entertained by spot-landing and short take-off/short landing tasks — in which, by the way, the Brits did rather better than most of the competition — there

26
Above: Joachim Krenz's beautiful FK6, photographed just hours before the crash.

Above: Jean-Franc Fauchier tackles a spot landing; note the windsock position. Below: Pete Davies takes off for a short/short attempt.
was much tinkering with jets and faffing with air filters, not to mention rasping of hack-saws on exhaust systems.

Meanwhile Mainair, who were not in the best of spirits since their van had been broken into the night before and £2000 worth of tackle pinched including passports, ferry tickets and aircraft documents, also had almost a rebuild to do on Derek Hall’s trike after one of the British team’s less impressive spot landings.

The mixture tinkering seemed to have had some effect on Monday, when Calvert managed to stay out for 3h, cutting fuel consumption from 10 to 6 litre per hour, but things still were not right as the French continued to outlast us, their pilots occupying the top positions on the trike league table and we Brits taking the middle slots.

Tuesday — the rest day — dawned bright and clear with a nice high-pressure system occupying the skies of southern France. As the French, German, American, Belgian, Luxembourgeois, Spanish and part of the British team (shame on those nameless ones) slumbered, the northern contingent of the team and we spectators rolled the machines out again and flew the 50 miles to the Med.

It was a joyous flight over some spectacular scenery and the whole trip will take some time to fade in my memory. But if recollections of huge gorges, endless forests and the odd mountain do dim, I shall certainly not forget the sight of seven machines circling like vultures over a group of four girls sunbathing in the buff on the beach.
### Open Class

of his Messerschmitt-Bolkow-Blohm experimental.

Krenz and the MBB FK6 (named for its designer Otto Funk) at this stage were lying well in front and with two economy events to come he seemed to have an unassailable overall lead. Despite Krenz’s lack of microlight experience, he had 500 h on light aircraft and the beautifully clean FK6 was out-performing all-comers for economy.

Then lack of experience, I suspect, struck. Having made a hash of most of his spot landings, he was determined that the very last one of the competition was going to be bang-on (I know because I spoke with him just before he took off). He switched off at 1000 ft and began the glide to the precision landing box. As he headed into wind and was flying very slowly at 400 ft, witnesses said the machine stalled a wing tip and went into a flat spin from which it did not recover.

Only the night before over a beer he told me that he would have preferred to be flying with a ballistic chute like that on his own microlight in Germany (he had borrowed the FK6 from MBB for the championships). With it, he might have lived.

Joachim’s death on Friday while unassailably in the lead posed a big problem for the organisers. While not wanting to belittle his achievement in leading the competition so convincingly, no one, least of all the organisers, wanted a dead world champion. There were two further tasks arranged for the Saturday and Sunday, but Saturday was unflyable. Fortunately, Sunday was a little better, good enough for Pete Davies and Bob Calvert to win the speed task. Their victory wasn’t enough to stop Bernard d’Otreppe hoisting himself to first overall in the Open Class, or Pascal Morel, also of France, to the top spot in the Weight-Shift Class, but it did reinforce the British pilots’ position as the first World Champion Team.

Against all the trials and tribulations, the team’s performance was magnificent by any standards, and deserving of far greater recognition than the deafening silence with which it was greeted by the British media.

Footnotes

By Jeremy James, Team Manager

As team manager, I’d just like to say a few words of appreciation to our team, who probably didn’t realise what they’d be in for when they volunteered to fly for their country! So thanks to:

Geoff Weighell — Who didn’t like the look of the rock-strewn countryside, and its 1000 ft deep canyons, and who had a week to worry about emergency landings before the rest of us arrived. The rocks had the desired effect, and Geoff didn’t land out once! Geoff was very proud to beat the Spanish weight-shift pilot.

Nick Hatton — Geoff’s assistant, who wasn’t sick in my helicopter, and who sacrificed two weeks’ love life to keep Geoff in the air.

Tony Baker — Who despite his machine’s weight problem, flew in stripped down form, landed out twice, and ended up scoring maximum spot-landing points. Well done Tony!

Sheila Baker — Who volunteered to spend her honeymoon on a hot dusty windswept airfield, and to keep her husband flying (his microlight). Sheila was awarded the title of chief lunch maker for the team, and her camper became the team’s base for the duration. Thanks Sheila, and I hope you’re enjoying a bit of privacy now!

Graham & Linda Wilkins — Who arranged and transported the team’s Gore-tex and Ozee flying suits to France, and generally assisted the team as and when required.

Pete Davies — Who was described by the organisers as flying very fast, but walks very slowly, who flew through a couple of medical upsets and still kept up a cheery face to the world.

Fiona Luckhurst — Who was the reason Pete was smiling, and who kept him going, and us fully informed as to what ‘The French’ were doing.

Bob Calvert — Who thought of all the angles, and ended up as the fastest weight-shift man in the world.

Dick Clegg — Who sold the team fuel computers, and who didn’t see me standing on that salt pan in the Camargue.

John North — Who did see me, and only bent one strut landing.

Iain Barr — Who kept the team amused and in high spirits, especially during team photographs.

Mairi Barr — Who became our official translator, especially at mealtimes, and who made sure Iain turned up on time.

Mick Philpott — Who kept Iain in the air.

Billy Brooks — Who became the darling of the French press and TV networks, with his somewhat eccentric 70 kg machine. We finally realised that the French like him so much because that’s how they envisage all Englishmen! Billy takes the endurance record for hours in the air. He was so keen to keep this record that he suffered an injury to his person when adjusting his many zips after relieving himself at 4000 ft!

Derek Hall — Who was given no credit by the organisers for flying two up, and flew on regardless — nice to see the trike looking as good as new Derek!

David Bosomworth — Derek’s passenger, who took photos, and got badly windburned with all that fast flying.

Simon Baker — With the only podless trike, who caused no problems for anyone, and didn’t even get excited when the French Mistral nearly flew into him from behind.

John Hudson and the Mainair team — Who figured out the mechanical problems, and increased engine efficiency for everyone, not just Mainair machines. They provided back-up to those without any!

Thanks to all of you for making it an enjoyable two weeks, and certainly a time I won’t forget in a hurry.

30

Flightline Nov-Dec 1985
THE NEXT 500 WORDS
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Robert Schofield introduces the new FUEL MONITORING SYSTEM from AireCraft Industries.

We had just taken off in our Triflyer/Lightening DS from one of the landing grounds in the 1983 Norfolk Air Race. In front, a Sprint was slowly pulling away, boring into a 25 knot wind.

"We'll stay low and use the wind gradient," decided my pilot, Tony Wells. "Get up," I replied, mindful of the expanse of pine trees stretching before us.

The argument continued for a few seconds until it was resolved by a polite cough and then silence from the engine. At 200 ft the only place to land is directly below, in our case a large field somewhat downhill.

As we turned and dived the engine fired up briefly and the huge field shrank as we zoomed along it. The touchdown — at 70 mph ground speed — was fortunately along the furrows, but a hedge loomed ever larger and with the immortal words from Wells "For what we are about to receive ...", we hit it, doing considerable damage to the machine and to unmentionable parts of Mr. Wells' anatomy.

The point of this tale is that the accident would not have happened had we known how much fuel was left — a bubble in the sight gauge misled us into thinking we had half a tank.

We were lucky, but accidents caused by fuel exhaustion are no laughing matter, as the 319 American general aviation pilots who suffered serious ones over the last ten years would tell you — if they were still around to do so, which they are not.

Thankfully fuel exhaustion did not cost lives at the recent World Microlight Championships, but it did cost a lot of points and will cost more if competitions continue to be economy oriented.

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Tony Bomford

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The force is with you!

Although sometimes you might have cause to wish it wasn't, says PETER LOVEGROVE!

What I have to say here is bound to be very old hat to our more expert members, but we have so many members who are new to aircraft that a little background may be of some help to them. I know, chattering to the 'mic-c-lit', that folk do sometimes have very odd ideas of what does what, and how, on a microlight. So let's take a look at some of the sources of forces and their possible importance. I will try to keep it simple.

To talk about the forces acting upon a microlight, we must first be quite clear as to all that might be implied by a 'force'. The vital thing to understand is that two or more forces may combine to form a single apparent force. Don't let that confuse you; consider a simple ground-bound wheelbarrow (Fig 1). If you are pushing it along normally, you must be holding its legs off the ground, so you are applying a vertical force. But since you are moving it along the ground, you must be applying a horizontal force.

Yet you have only one pair of hands heaving it one direction only! So this single force that you are applying must be made up of the two (vertical and horizontal) 'components', as they are termed. What you are actually doing is pushing somewhere in the direction shown in Fig 2. If you doubt me, tie two cords to the handles and move the barrow by pulling on the ends of these (Fig 3). You will find the cords pointing where the force is really directed! See how fascinating gardening can be! Of course you would not rather be flying!

Any powered aircraft is subject to four basic primary forces, viz:

1. Thrust, produced by the propeller, acting through the propeller shaft;
2. Drag, produced by the passage of the air over the aircraft, acting through the 'centre of drag' and parallel to the impinging airstream;
3. Weight, even the smallest microlight weighs something!
4. Lift, produced by the wings, acting through the 'centre of pressure' and at 90° to the impinging airstream.

Assuming that the aircraft is in straight and level flight (Fig 4): Since the thrust (T) is pushing or pulling the aircraft along, it clearly acts horizontally forward. Since the drag (D) produced by the air having to 'move aside', or be pushed downwards, attempts to brake the aircraft, it obviously acts horizontally backwards, being equal and opposite to the thrust (D = T). Drag and thrust must be equal, since the aircraft is not speeding up or slowing down.

The weight (W) of the aircraft acts vertically downwards of course. The lift (L) of the wings supports the aircraft's weight and, thus, is exactly equal to it and is acting vertically upwards (also, note, upwards at right-angles to the airflow which is impinging on the aircraft). If the lift were different from the weight, the aircraft would have to be climbing or descending.

The above set of statements is painfully simple and can only be true so long as the aircraft is in straight, level flight at constant speed (Fig 4). In that condition, the lift and weight are at 90° to the thrust and drag, so these forces act in pairs. The pairs of forces do not affect each other at all. You cannot have any effect horizontally from a vertical force, and vice versa. If you doubt me, lift the handles of that same wheel barrow with the pieces of string (Fig 5). Have the strings exactly vertical and the barrow on hard level...
ground. You'll find nothing will induce the barrow to move forward or backward. Similarly if you pull the strings parallel to the ground, you will never get the legs off it! Not a very earth-shattering (earth-moving?) discovery...

Recapping, if the aircraft is moving at a constant height and speed, then there is no climb or descent, and no acceleration or deceleration, so thrust exactly equals drag and lift exactly equals weight. But what if they occur as in Fig 6, which is a more realistic set-up? Now we are speaking not simply of forces but of turning forces (termed 'moments' — even engineers have them!), that is, forces acting at the ends of lever arms, albeit these arms are invisible.

If you consider the machine in Fig 6, you can see that, if it were a cardboard cut-out of the side-view of the machine, and you attached four elastic bands where indicated, and then pulled on these bands, the following would happen. Pulling on the 'thrust' and 'drag' bands alone would make the cut-out start to rotate anti-clockwise (ie nose-down). Pulling on the 'lift' and 'weight' bands alone would make it start to rotate clockwise. But if you get someone to pull steadily on one pair, you will find that you can pull on the second pair in such a way that the cardboard cut-out assumes a fixed flying attitude.

Since all four effects have to be there, our aircraft is subject to four turning moments in the pitch axis, but in opposing directions, so that if the aircraft is flying level at constant speed, these four turning moments exactly cancel each other out, leaving the tailplane or canard surface doing nothing at all.

But it is a fairly sensitive balance. If you slammed the throttle shut on an aircraft flying in a mode similar to that drawn in Fig 6, so quickly that the speed did not have time to fall off, D, L and W would be unchanged. So the loss of the thrust — and its resultant anti-clockwise turning moment — would make the nose of the aircraft rise fairly smartly. You would probably have expected it to drop sharply, wouldn't you? (The jargon is 'Change of trim with power', although this often involves other effects as well.)

Looked at in this simplistic manner, you may wonder how you can fly this aircraft other than straight and level or descending! Well, of course, you have other controls. The tailplane and elevator, for example, present a source of variable-magnitude, upward or downward force. And since this force is operating at the end of a moment arm (the fuselage), it is effectively a fifth turning force, but a totally trimmable one (Fig 7). We can therefore upset the stable system previously presented by the joint action of T, D, L and W operating at their respective moment arms, by adding in this clockwise or anti-clockwise pitch moment from the tailplane and elevator (Fig 8). With some 'up' elevator, we make the tailplane develop a downward force, and thus a 'climbing' turning-force (Fig 11). With 'down' elevator, the turning-force initiates the 'descent' mode (Fig 12).

Let us digress for a minute, on to an interesting little side issue. It is usually the case, on a typical light or ultralight aircraft, that if trimmed for stable flight with the tailplane effectively at the 'zero-lift' attitude, then the lift and weight vectors are quite close together, whilst the thrust and drag vectors are more widely apart. This is because of their absolute magnitudes.

Consider a microlight weighing 500 lb (227 kg) with pilot and fuel. If it is flying straight and level, at constant speed, the lift is also 500 lb. Yet it may well be flying with only about 160 lb (73 kg) of thrust and, hence, drag. So, if these 500 lb forces are to be balanced by the 160 lb forces, to hold the pitch attitude of the aircraft steady, the distance between the 500 lb vectors must be markedly smaller than the distance between the 160 lb vectors (Fig 9), otherwise the four turning forces — moments — will not be capable of balancing out.

A typical example of a large force acting at a small radius, being balanced by a small force acting at a large radius, occurs when you attempt to loosen a tight nut with a spanner (Fig 10).

By now, though, you should be asking yourself this: if the machine was flying stably horizontally and you now apply an extra turning force for 'climb' say, surely it must mean the aircraft going into a vertically circular path (Fig 13), irrespective of the amount of elevator you apply (which will only decide the diameter of the circle)? Of course, we know that this is nonsense. But where's the fault in the argument?

The fault is in still assuming that the thrust, drag, weight and lift turning-moments have not altered. If we incline our aircraft into a gentle climbing attitude (with a little bit of up-elevator), without altering the throttle setting, the thrust from the propeller will remain essentially the same (Fig 14). The true weight of the aircraft will obviously not alter, but it will act at a different angle to the thrust line. The drag, parallel to the airflow, will maintain more or less its original line but will add an unwelcome contribution (a 'component') to the apparent weight of the aircraft. The lift, which is always at 90° to the direction of the impinging airflow (Fig 15) will also present a different contribution to the balance of the four primary turning-moments.

With this lift force now inclined to the direction in which the weight acts, only a component of it — albeit the major component — actually serves to support the weight. If the lift had not altered, and with only part of it now available to support the weight, then clearly the aircraft would sink, not climb. However, the up-elevator action is forcing the tail downwards, making the fuselage tilt further, relative to the impinging airflow (Figs 11 and 14). So the actual angle of attack, at which the airflow strikes the wing, is increased. The lift from the wing increases, thus the component of it acting directly against the weight is now large enough again to support the aircraft at the new angle of climb (Fig 16).
FIGURE 6
Lift      Lift
Thrust   upward
Weight    (upwards)
Drag     (to the rear).

FIGURE 7
Lift
Thrust
Weight (downwards)

FIGURE 8
Weight
Lift
Drag
Thrust
Tail plane
moment

FIGURE 9
Lift
small
distance
Thrust
Weight
Larger
distance

FIGURE 10
Large force
at rather
small
radius
Modest
force
at large
radius

FIGURE 11
Up elevator

FIGURE 12
Down elevator

FIGURE 13

Component A of thrust supports some weight.
B drag adds some weight.
C lift supports most of weight.
E drag acts horizontally rearwards.
D thrust forwards against drag.
F lift adds to drag (horizontally rearwards).

FIGURE 14

FIGURE 15

FIGURE 16
Eight rounds for '86

By Jeremy James,
Competition Committee Chairman

Following the success of the National Championships this year, the BMAA Council decided recently that an expanded series of events should be arranged for 1986. A meeting of club events officers was called, and every club in the country was invited to attend, so all would have a chance to put forward ideas. On the day, only one club, the Cambridgeshire Microlight Club, turned up, sending three representatives: the Southwest and Bristol clubs sent their apologies.

Review of 1985 Events

Whilst we obviously suffered badly from the appalling weather this summer, the championship rounds that were held went very well. A few potential problems have been identified. Some local club members felt that it wasn’t worth entering events, when the professional pilots would almost certainly win (as they should!). We decided to run a two-class competition system for 1986.

We felt that tasks such as flour bombing and limbo have no place in our competition book. We also decided that there should be no free flying whilst a competition is in progress. National championships should be two-day events, with fly-ins and free flying permitted on the first day (Saturday), and the competition held on the second day (Sunday). The whole competition should be able to be finished in a day.

Navigation tasks have become degraded by the nature of the competition, ie flying to a point and answering a question about it. The only navigational skill required was in finding the point, and competitors tended to follow each other to those points.

National Championships 1986

In 1986, the National Championships will consist of 6–8 individual events, and points will be awarded to the winners of these events as in 1985. The tasks to be carried out in each event will be standardised, i.e., the same tasks, with the same rules, will be performed at each venue throughout the year. There will be two classes to each event, namely professional and amateur. Thus, there will be two championships at stake, the National Amateur Championship, and the National Open Championship. Only amateur pilots (defined as those pilots not earning money through flying microlights) may enter the former, but all pilots may enter the latter.

The Tasks

At each event, the following tasks will be flown:

1. Spot landings — This will be the aircraft-carrier type of landing. First touch will count, and the aircraft must come to a complete stop within the marked area. The scoring boxes will be 5 m x 25 m.

2. Fast/slow — Each aircraft will fly a measured course, once as fast as possible, and once as slow as possible. Points will be awarded for the highest difference between these speeds. Aircraft must fly straight and level.

3. Navigation — Pilots will be allocated a set take-off time, spaced at 5 min intervals. One hour before take-off, each pilot will receive a list of turn points. He/she

The force is with you

Unfortunately, the higher angle of attack also increases the drag. If you look at Fig 14, you will note that if the lift — acting as it does at 90° to the airflow — has a component in line with the weight, so must the thrust and drag. But, since we assumed constant thrust, the extra drag produced by the increased angle of attack (above that drag ‘cancelled’ by the thrust) will have a component in exactly the same direction as the weight; this has the effect of increasing the apparent weight of the aircraft (Fig 14). Now, if the aircraft apparently weighs more and you haven’t altered the power setting, you obviously cannot climb without slowing down!

This is why in order to go into a respectable climb, you must open the throttle and increase the thrust, even though, in the established climb, the final speed might be unchanged. If the thrust has increased, there is now a part of it which can help to support the total apparent weight (Fig 14). So the wing will not need to produce so much extra lift and the angle of attack can reduce. This is achieved by reducing the amount of down-force from the tail-surfaces. As the angle of attack of the wing is reduced, the induced drag falls, so the apparent weight of the aircraft reduces. That bit of the thrust which previously helped to support the drag-contributed fraction of the apparent weight is now made available to accelerate the aircraft in the climb.

By now, you should be getting the impression that controlled flight is a complex balance of forces and turning-moments. And remember, we have only been looking at a simplified view of the pitch axis! It is seldom that a situation exists where one effect is cancelled by another single effect. It is usually the case that components of several forces or moments unite to balance another.
must then complete a flight plan, detailing the true, magnetic and wind-corrected headings to fly, distance, ground speed and elapsed time for each sector, with totals for the complete course. True airspeed and winds to be used will be given by the organisers. This flight plan will be marked, and points will be lost for inaccuracies. Two minutes before take-off, each pilot will be given a list of questions to answer to prove he/she flew the entire course. These questions may relate to the turn points, or to any point along the correct track between two turn points. In this way, merely following another aircraft will not assist a pilot.

Entry Qualifications
These will include possession of a PPL D unrestricted, a minimum amount of airtime, a permit to fly or exemption, competition insurance, and membership of the BMAA. Some of these qualifications are under discussion with the CAA.

BMAA Support
The BMAA realises that it costs money to stage an event, and feels that these basic costs and the cost of site safety arrangements should not be paid by the organising club. Therefore the BMAA will pay a club's costs for staging an event, up to a maximum of £500 per event, provided that the BMAA is satisfied that the safety rules (currently being discussed with the CAA) are observed. The BMAA will have a representative to work with each club to assist in safety rule compliance, and who will have the last word on safety. The organising club will be free to arrange facilities for which it can charge money, and the BMAA hopes that clubs will make money from staging a National event.

Safety Rules
The BMAA is currently discussing these rules with the CAA, and they will be agreed before the start of the next season.

1986 Calendar
Three events have been fixed so far (see Calendar in this issue). Other dates yet to be fixed will include an event at Long Marston; may we please have offers from clubs to stage the remaining three or four events?

National Championship Trophy
The BMAA will present this new trophy to the winner of the 1985 Championships at the forthcoming AGM. At the time of going to press the name of the first champion is not known, since the Norfolk Air Race has been rescheduled to 26/27 October. This was always intended to be the last round of the series, and assuming that everyone who turned up for the first attempt has the opportunity to contest the second — which looks like being the case — then the results of the re-run will count towards the championship.

The weather gives way

August Bank Holiday Popham, as seen through the eyes of PAULA SMITH.

I arrived at Popham Saturday morning with the wind blowing, no queue of cars to get in, and hardly anyone on the field. Having earlier in the month spent three days blown out down at Davidstow, I thought, Oh no! God can't do this again. Three days of Jack Bishop's jokes is more than anyone can take! But listen, I believe I hear a microlight. Yes, a lone craft is just appearing above the trees. Can he land it? With difficulty, yes. And that looks like the finish of today's entertainment for the few public who've turned up. Roll on tomorrow. So after a very good barbeque, a few laughs and a drink we awaited the morn.

It was better. Jim Romain junior was beating around the skies in his much modified Tiger Cub, while several confused Tiger Cub owners came on the field wanting to know what to do with their planes. (Some Gemini Flash owners were telling them, but they didn't seem to take their advice!) It seems that Russ Light is working away in the background to get the Type Acceptance through, so if owners have any problems contact him on 0777 817975. Meanwhile, unknown to most, Jim Romain is working away on a new lightweight biplane microlight named the Cobra, which should be ready in three months time.

Various trike pilots kept the Romain plane company, though the weather was still a bit rough. Quite a few more spectators turned up, and another barbeque followed in the evening. I believe it was as well attended as Saturday's, but I went on to an evening meal and to stay the night 'on the house' at the Red Lion Hotel in Basingstoke to try it out. This hotel charges £40 per night normally, but for microlight pilots or indeed any sort of pilot over any weekend it is a mere £15. Manufacturers, make a note of this: it will be a good place for you to stay over the Trade Fair weekend in March.

Monday dawned with a lovely blue sky and hardly any wind — fantastic. Got down to the airfield at 9 o'clock. A few people already rigging. Two coloured people approach me. Oh! pardon me, they just look like that, in fact it's Jeff Ball and Kevin, the Mainair guys just back from France and with the Scorcher. Jeff puts her through her paces. She's beautiful, and fast too. She has a Rotax 447 engine, a cruise speed of 55/60 mph and a max level flight speed of 80/85 mph. With a highly defined aerofoil and ultra taut sail they
The weather gives way

say the handling is amazingly light, precise, and co-
ordinated. Airworthiness testing is well under way,
and the Scorcher should be available in Jan/Feb 1986.
Jeff was bombarded with questions, and the price of
£3995 plus VAT didn’t seem to put people off.

There’s been a lot in Flightline lately on organisation
of events. Popham events always seem to run
well thanks to Jim Espin and his dedicated family and
club members, plus friends. Jim had organised a navi-
gational exercise and a lot of pilots took the challenge.

The prize was the very coveted RFC Steve Hunt
trophy. The winner, I am pleased to say, was Graham
Slater. I am sure Graham will treasure this for the year
and it will bring happy memories back of his mate
Steve. Graham was at the event displaying and flying
the Pegasus Flash and the Pegasus XL.

The whole of Monday was very enjoyable, with a
whole day of flying. The Raven flew in and joined
about 30 others including the Half Pint and the usual
assortment of trikes for a super fun day, ending with
a rare Piston Provost doing a low fly past over the air-
field. (No it’s not a microlight, it’s a lot bigger and
a bit more noisy!) Thanks go to pilot Alan House for
rounding the weekend off in this way.

Putting Medway on the map

North Kent’s first fly-in put the Medway club on
the map, and may be the forerunner of greater
things, as IAN RAPLEY reports.

Despite our autumnal summer, the weather on Satu-
day 7 September was kind, if a little windy — good
enough for Medway Airports Club’s first fly-in to
get under way at Deangate, near Rochester. During
the day, 25 microlights dropped in, all but two of
them being trikes, many pilots flying in from Essex,
Sussex, and other parts of Kent.

There were a couple of interesting machines. Med-
way Microlights, with whom the club was run-
ning the event, showed a souped-up Half Pint, built
by Chris Draper and Ian Grayland, and intended
for the blown-out Norfolk Air Race. A pity about
that, Chris! This tiny machine, with its pocket-
handkerchief sized wing, seemed to dart through
the sky at 500 mph, but perhaps this is a slight exag-
geration! The other machine which attracted lots of
attention was a high wing monoplane, designed,
built and flown by Gerry Bass. Gerry, in my opinion,
is not only very clever, but also brave to the point of
foolhardiness! However, his machine seems to fly
beautifully, and it was a pleasure to see a ‘real’ three-
axis microlight that works.

Saturday was spent with the usual ‘coffee and chat’.
one always finds when pilots congregate — ‘Good
Lord, George, you didn’t fly here in that thing did
you?’ and ‘I hear poor old Don bent his uprights and
damaged his plane!’ etc — plus a couple of competi-
tions organised by yours truly. Colin Smith from
Hastings convincingly won the balloon popping
(spot landing) competition, while Chris Draper, with
a superb exhibition of controlled slow flying 2 ft
above the ground, won the ball in the hoop (precision
bombing) contest. Chris had been unlucky during
the previous competition, landing a balloon which
bulged but didn’t burst, producing some of the most
disgusting language it has been my pleasure to hear
above the roar of a 440 Robin! Even some sheep in a
nearby field took offence and left for greener, more
tranquil, pastures.

Ground control was efficiently organised by chair-
man Michael Dale, resplendent in his SS uniform and
assuring us that ‘Ve hav vays of making you obey ze
rules! A nasty incident seemed likely when we were
visited by a couple of armed military gentlemen,
taking part in the Brave Defender exercise, but luck-
ily Michael’s surrender was even faster than their
target fingers, and the pilots could safely emerge
from behind a group of female and child spectators.
Brave chaps, we birdmen!

Sunday morning was dark and threatening weather-
wise, and although it cheered up later, fewer planes
appeared than on the previous day. Apart from the
weather, this was probably because most of the pilots
were knackered by their efforts on Saturday. But all
in all we considered the event a great success, which
seemed to be enjoyed by all who took part. Thus
encouraged, we shall be more ambitious next year.
Our thanks go to all involved, both in the air, and on
the ground.

Beware...

This could be the last Flightline you receive! If
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Flightline  Nov-Dec 1985
This space was earmarked for the Norfolk Air Race report, but the weather put paid to the event. Nevertheless, some of the would-be competitors still got some flying in, as KEITH REYNOLDS of Southdown International reports.

As always I was looking forward to the Norfolk Air Race as I consider it to be one of the best events in the calendar. Although it’s designed to be an out and out race, it does actually put great demands on the pilots’ navigational skills because Norfolk must be the flattest and one of the most featureless areas in the country. The favourite for this year’s competition winner was surely the CFM Shadow, although the trike pilots must feel a little peeved at having to compete with a £10,000 all-composite aircraft.

Southdown’s entry was obviously going to be the Raven but unfortunately the CAA would not allow competition on aircraft with only a permit to test. It seemed as though we would have to drop out of this year’s race and instead decided to fly up from Brighton and at least show off the Raven to those who had not seen it.

Saturday dawned with low cloud, wind and rain, not the most desirable conditions. However, the wind was almost in the right direction so we set off for our local field high on the cliffs over Brighton. By the time we had rigged, the southwest wind was gusting at 20-25 mph.

The plan was to use Rochester and Ipswich airports to refuel and get something to eat and drink. This meant that the first leg would be a little cross wind. We launched into the strong wind, climbed rapidly to 1000 ft and turned down wind into pretty heavy turbulence. I radioed to Martin, the back-up driver, that our ETA at Rochester would be in 40 min. It was a pretty rough ride but the Raven handled beautifully and in no time at all we were approaching Rochester. After radioing in for clearance to land I joined the circuit and made my approach. Rochester control were somewhat surprised to see a microlight in circuit and asked me to confirm that I was actually landing.

But the reception was excellent and the look of surprise on the club flyers’ faces was definitely a sight to remember. At first they were amazed that I was flying at all, but when I said I was out from Brighton en route to Norwich they must have thought I was crazy. They kindly let me park in the hangar and use the club house facilities to wait for Martin in the back-up vehicle.

When ready to leave we checked the forecast. Not good: a cold front coming our way with heavy turbulence in the west-southwest wind gusting to 35-40 mph. Undeterred, we took off on the fully lit runway with special clearance to turn out left over the town and headed north across the Thames. Rochester radioed up information on the current conditions and asked if we wanted to enter the SRZ at Southend. We thanked them very much but elected to go round.

The trip to Ipswich was just as bumpy but at least it had stopped raining. The Ipswich leg was about 70 mile but it came up much sooner than I expected. Again we asked for clearance to land and we were greeted by a very friendly girl on control, who informed us that as there was no other air traffic due to bad conditions, we could land at our discretion. On arriving at the control they were again so surprised to hear our story that they didn’t even charge us the landing fee.

Ipswich is a bigger airport than Rochester and had a cafeteria with a snooker table, just the job while we were waiting for the back-up vehicle. Just as the black went in, Jill came in with the fuel and we were off on the last leg. Ipswich control wished us a good weekend and we left off this time into wind to avoid a MATZ. Although the conditions hadn’t improved we made good headway and were soon around the airspace and heading north.

Again the turbulence was severe but I seemed to be feeling no signs of strain or tiredness from the constant buffeting. We did hit some really bad rubbish at times which seemed to toss us about quite severely, but by now I’ve learned that the Raven can handle more than my bottle can, so we pressed on.

At 6.30 pm the Norfolk showground appeared, showing lots of semi-rigged aircraft but very little activity. The landing turned out really well considering the field is surrounded by trees, and we taxied up to be greeted by Kelvin Woodard, who didn’t believe where we’d come from! I asked him who was leading in the competition and he said it had been cancelled because of bad weather. He kindly started the generator to make us a cup of coffee, while those that were still around crawled all over the Raven, giving it a thorough inspection.

The plan was to fly back on the Sunday but the wind had really started to blow by then. Most folk said their goodbyes and headed home without flying at all; at least for us it was an exciting and eventful weekend, thanks to Martin and Jill, Rochester Airport, Ipswich Airport — and Kelvin for the coffee.

See you all in ’86.
BRIAN MILTON concludes his story of the London-Manchester air race 75 years ago with the tale of how he and Judy Leden set out to recreate it, flying in the opposite direction in a microlight.

I had known about the Grahame-White/Paulhan flight for years. Back when I was in the thick of British hang gliding, I mapped out the possibilities of a commemorative flight. But — those with long memories will remember — I had some exciting and off-putting experiences with early microlights (powered hang gliders) back in 1978, when I turned one upside down at Mere at 250 ft, in front of BBC TV cameras, and plummeted to the ground. By some chance, I was not hit by the falling engine, chucked up by the falling propeller, speared by the broken wing, nor bashed to death hitting the ground. The field I landed in had been ploughed the previous day, and it had rained overnight ... that made it soft enough for me to survive the fall.

It’s not true, as the editor of Wings! (Garth Thomas) asserted at the time, that I staged that crash ‘almost, it appears, for the benefit of TV’! It took me 14 weeks to get fit enough to fly again, days full of bruises and some broken bones, days when I would fall asleep six times between dawn and dusk just to get over the shock of being alive. I went back to hang gliding, with only a slight problem of nerves ... my bird brain, inside my main brain, became afraid of heights, having come to the (entirely erroneous) conclusion that being low was safe, because I was able to survive a fall from low down. Years later, I’m still hammering away at this misconception inside my head. But I have to admit I was nervous about trikes, and engines on hang gliders, and for years, while development went on and things got safer, I was just an onlooker.

London/Manchester falls into my definition of a ‘wheeze’. Other wheezes include trying to cross the channel by hang glider (failure for me, success for Ken Messenger), a go at the two-man balloon drop world record (success), and trying to fly a powered hang glider to Paris (failure before I even started). I like wheezes, even if they contribute nothing to the sum total of knowledge about hang gliding. They are usually fun, they clear the blood, and they often don’t need a high degree of skill. But if ever I set out to fly a microlight from Manchester to London, that, at least, would require skill, as well as the usual amount of bottle all wheezes demand...

It was the American invitation to coach their World Championship Team at Kossen that rekindled my interest in wheezes, killed off like any other interest I had in British hang gliding back in 1981 after the Newton Aycliffe Affair. I said yes to the Americans, and in the enormous amount of energy that decision released, I found I had the appetite again to have a go at a big trike flight. It looked even better because 27 April 1985 was the 75th anniversary of the original air race, and that should mean I’d get quite a lot of publicity. Maybe I’d start up Flight Promotions again and have some real fun backing wheezes all over the world...

Of course, I hadn’t got a trike, and I had no PPL D, and anyway, I was nervous of trike flying. These things, I thought airily, would work themselves out. First, Pegasus bought out my interest in Solar Wings, and included in the price was the company trike. That gave me an aircraft to learn on. It took from late October to Boxing Day to actually get the engine started and the microlight rigged for flight. Some of it, no doubt, was nerves. I thought I wanted desperately to get the engine started, but other bits of me obviously didn’t...

One windy day, I dragged the trike on its trailer into my garage, and Jerome Lack came around for a really determined attempt to get the engine going. We checked all the electrics, and found the right way to push the switches to get a spark. That was healthy, and not the problem. Then we followed the fuel down from the tank to the carbs, and that didn’t seem a problem either. But ... it wouldn’t start. Finally, Jerome took off the carb covers, we poured in petrol, he put his hands over the opening, I pulled the starter, and the engine started ... and how! The accelerator cable had jammed open, and the engine roared up to about a million revs. Balanced on the trailer, we shot from one end of the garage to the other, cowering in fright that the trike would break loose and make mincemeat of the pair of us. Jerome held the trike off while I searched frantically for a switch to kill the engine. But a plank of wood was drawn into the prop before I could stop it, there was a rasping spitting sort of noise, and when I did get the engine to stop, the propeller wasn’t the same healthy object it had been a few moments earlier.

Solar Wings were kind enough, after suffering a small hernia laughing themselves silly, to send another propeller. I finally mastered the rigging of the wing, and a foolproof way of starting the engine. It only remained to marry the two bits together on a day good enough to make my first flight...

It was Boxing Day, 1984. Under the (mistaken) impression that Bristol council had given permission...
for trikers to use Ashton Court, close to the city, I had dragged my trike out there and rigged it. The whole area was curiously empty, but I put that down to people suffering after Christmas. I checked and rechecked the wing, and walked around the trike unit a hundred times. By 3 o’clock in the afternoon I had run out of excuses. Either I was going to take-off, or I was the biggest chicken in Christendom. I strapped in, taxied across to a suitable area for take-off, lined up ... and the vision of me falling out of the sky came vividly back to me ...

I would not pretend my take-off was a classic of its kind. In fact, I quote a long-dead reporter about Paulhan’s flight back in 1910 ... ‘to those who looked on it did not seem one of the most successful of ascents. I became airborne in a series of steps ... first, foot hard on the accelerator, the engine roared, I shot off along the ground ... Jesus, that’s frightening, take your foot off, you clot ... bump, bump, bump ... no, gotta go for it ... roarrrr! ... oh, I don’t wanna be here!.. Go for it, go for it ... too high, too high! (50 feet) ... oh, no, that tree’s too close, gotta climb ...

At 500 ft I was still alive, and enough in control of my right foot to stop it surging away on the accelerator. The aircraft was flying straight and level, a little bumpy, but it wasn’t falling out of the sky. I didn’t go upside down either. I had only one problem ... and that was landing the thing. I circled around cautiously, risking all by taking 10° of bank, and having survived that experience, I found myself lined up reasonably to come down. The descent was steep, and I used the engine every now and again to reassure myself it was still there and hadn’t dropped off when I wasn’t looking. I held off — quite naturally — at the last moment, bumped into a safe landing, and thought ... maybe I’ll retire, now I’ve done it and lived.

After a quarter of an hour talking to myself, I persuaded me to have another go. This time I got into the air more like an aviator and less like a pregnant cow having a seizure. The second flight lasted 10 min, including a daring 360 or two, and a nice smooth
landing. As I packed up and drove home, I felt very satisfied. And I have been flying hang gliders for 11 years!

I was not able to get enough hours for a PPL D between Boxing Day last year and the flight itself, though I tried very hard. Having held a PPL years ago, back in the stone ages, on Tiger Moths, I had enough of a moral case to talk to the CAA. They said they wouldn’t chase me into the courts if I was caught flying.

I asked Judy Leden if she’d like to do the flight with me. We would both start from scratch (Judy had no PPL D either). She came down throughout the winter to fly in Bristol, and we had some good flying together, taking turns at my machine. She talked to Pegasus about borrowing two microlights — in fact, we had the first two to go through Section S. They were both 440 machines, with inverted Robins, and they looked ... terrific. We saw them for the first time on the day of our flight.

I was in charge of publicity, the first time I’d done something like this for years, and I made a mistake I now realise was basic. I’ve been with TV-am for the past two years, and got a commitment that they would cover the event live, with an Outside Broadcast unit at the landing spot. But TV-am got paranoid about the expense of an OB unit in the week before the event, so I lost the live coverage. Unfortunately, I had put out a press release the week before, emphasising the live coverage, without realising that, if there is one thing to put off any newspaper, radio, or TV station, it’s the news that one station has live coverage. So we had the worst of both worlds. Also, in making a preview piece on the flight, TV-am carried footage of my fall seven years earlier, which didn’t please Rick Hogarth of Pegasus at all. (I tried to make up for that by carrying nice, clean coverage of his microlights on 2 May, after the flight, when TV-am did a little piece on my getting the Queen’s award, but I don’t think Rick saw that.)

Getting permission to fly into London and Manchester was a long patient job. Briefly, you need to talk to CATO 1 at Uxbridge, as well as the CAA. You need to conform to Rule 5 (always have an opt-out field for landing). It was a balancing job between the historical imperatives of the flight (‘I have to land in Wormwood Scrubs,’ I said, ‘because that’s where Grahame-White took off, or I can land in Hendon — where Paulhan took off — as long as I can find the exact field’) and the CAA’s present job as guardian of the air (‘Not even Prince Charles can get into Wormwood Scrubs after 7.30 on a Saturday morning ... never mind about you!’)

Suffice to say that, after lots of negotiating, I got the permissions — for a flight in either direction, depending on which way the wind was blowing — and all Judy and I had to do was make the flight.

Sponsorship? Sure, we tried. It nearly worked a
couple of times ... but then didn’t. Pegasus sponsored us in providing the microlights, and John Fack as back-up transport. Judy and I called in Mike Atkinson as an additional — and vital — back-up. (I’m rusty about raising sponsorship at the moment. It may come back to me as I get more involved again ... the Americans, for example, want to set up a foundation to help competition hang glider pilots, and I should get involved in that. There are also a couple more wheezes worth looking for money to back.)

On 26 April, a Friday, Judy and I set off from Bristol in an amazing vehicle owned by Mike Atkinson... Son of Galactica, that smell old green van. This one was a Mercedes with such a noisy back axe we couldn’t talk to each other. We met John Fack on route to Manchester, and made Didsbury Golf Course — our take-off point — about 3.30 pm. The weather was pretty bad, with strong winds and some rain. We were terribly wound-up. John supervised the rigging of the microlights, and warned the engines for half an hour. The wind increased. We were actually inside Manchester Airport’s controlled air space, and had transponders to carry (to show up on radar) and radios (to talk to ATC). The radios were inoperative against the noise of the engines, but the transponders were excellent, if expensive.

We kept putting off our time of take-off, hoping the weather would improve. But it didn’t. Finally, at around 6 pm, with an impatient ATC phoning once again (‘When are you going to take-off? we lined up the microlights, did a few photographs, and climbed in. I was to take off first (it was my idea, and if it didn’t work, my neck!). The take-off went OK, bumpy as hell, and my map — strapped to my knee — blew off immediately. I had borrowed John’s full-face helmet, and, with the visor down, found to my delight and astonishment that I could cope with all the bumping around. Somehow, it was all happening to someone else. Every now and again I lifted the visor and found — yes, horrors — it was really happening to me, but I pulled the visor down again quickly and was able to cope with the control bar doing a fandango in front of me.

Judy took a long time to take-off, which I worried over (not having a map, I was not dead sure where we were going). Then she got away safely, and we set off to the west, the junction of the M56 and the M6, Judy climbing to my height of 1000 ft, on the route (and the height) agreed with Manchester ATC. We were bucking a wind of at least 25 mph by this time, and it took close to an hour to fly about 12 miles. I was not very skilled at conserving fuel...

I kept wanting to turn left at every big road we came to, and — being heavier than Judy — I was travelling faster, so every now and again I would circle so that Judy could catch me. Eventually, we reached the M6, turned left, and began to really cover distance, heading south with a northwest freshening

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**G—?????**

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wind behind us. It stopped being bumpy. We climbed to 2500 ft, and it got pretty smooth. Just past the Welsh mountains, it got bumpy again — wave? — and my visor, which had crept up, came down smartly. I knew the route by heart, now we had found the M6. Down to Stafford, then follow the railway east (the way Paulhan had flown), over Rugeley to land at Lichfield. We were due to stay the night in Paulhan's hotel, the George.

At 3000 ft over Stafford, the engine, which until then had been running smoothly, coughed once. Then it picked up. Three minutes later, it coughed again, and died. I had run out of fuel! Like a crippled bomber, I fell away from formation, and Judy didn't notice for some time. I was nervous. Dead-stick landings are all very well, but doing one now didn't make me very happy. I chose a field at 1000 ft and circled above it until I had enough height left for a final turn and a landing. Phew! I'm only 12 miles short of goal, I thought, so if I can get petrol soon, I can take-off and make it!

I legged it across the field, jumped in front of the first car I found, and persuaded them (with no problem at all) to take me to a garage. They had watched me come down. It took 10 min to get to the nearest garage, 5 min to fill a gallon can, 10 min back, 5 min legging across the field and pouring it in. I thanked them both — I learned their names but can't find out where I put the paper I wrote them on — taxied to the end of the field, and took off again.

The problem was, I was suffering from tunnel vision, and had not really noticed how dark it had become. Once in the air, it took me a couple of minutes to realise I couldn't see very far. A train on the railway line I picked up gradually got shorter — I surmised it was going into a tunnel — but I found I couldn't see where it was coming out at the far end! There were lights everywhere, and a nice reassuring glow in the west where the sun had gone down. But the wind had, if anything, increased, and I was being blown to the east where it looked darker than ever.

I decided to go back to my take-off field and land, and turned the microlight west again. But however much I pulled on the bar, I couldn't get enough speed to get back to where I wanted, which was the only field I was certain had no power lines in it. It got darker and darker, and I became quite detached from what was going on. Does that happen to anyone else when they get frightened? Right below me there were fields, and, in the end, I descended to try to land in one. At 100 ft I saw the power lines, but was already committed. They stretched away on my right hand side, converging with the corner of the field, but I put down safely.

(Now I knew, at the same time of night, in the same day of the year, just exactly what had made Claude Grahame-White lose his way over Crick and fly 14 miles south when he was heading to Manchester. I also appreciated the more his feat of taking off in the dark to try to catch Paulhan. There is nothing quite so frightening as flying into a headwind when you can see very little at all, and it's getting darker all the time.)

It was blowing hard on the ground, and because the microlight was brand new, I was not able to derig it without help. I struggled and cursed for ages, and then turned the wing into the wind so there was a sort of stability, with a weight at the wing-tip. Then I started walking. Whichever way I went, it seemed, I ended up at a river or a wide stream. I contemplated staying the night under the wing, and half freezing, but in the end found a small bridge. When I crossed it I heard voices, and three people loomed out of the night. By sheer chance, a man called Chris Ozod, in nearby Little Haywood, was looking out of his window as I descended into that field. Chris not only took a bearing on my landing spot, and worked out where I could have been, but he happened to live next door to one of the few microlight pilots in the area, George Valler. Chris went next door and told George a microlight had gone down, and then they both set off, with George's daughter Joanne, to look for me.

There was a lot of toing and froing. First back to George's home for a cup of tea and a chat with his wife Pat, then a phone call to the George Hotel to tell Judy what had happened, then back to derig the microlight and push the trike unit half a mile along the field to the road. In the end, George turfed his own trike off his trailer and towed me and my machine to Lichfield, where a tired Judy was having dinner with an even more tired John Pack and Mike Atkinson. We were joined by another local microlight pilot, Terry Travis, and I bought beers all round. Without them, I'd have had a really exhausting night.

We left the George at dawn, as Paulhan had done, 75 years to the day from the start of the epic race between Paulhan and Grahame-White, and hopeful that we would make it to London. Rigging my machine, I was aware that the wind had increased, and it was starting to rain. (Conditions were so bad, I later discovered, that the Bleriot Cup between France and Britain, not too far away, was blown out!) But the rigging went fine, although I took off without supports at my back — rigged, in other words, for two people — and had a most uncomfortable flight from Lichfield to Roade, which is where Grahame-White had come down on his first night out of London. I had recce'd the field a couple of weeks before the flight, and knew it was level for half its width, and then sloped down 45° to a railway line. The landing was an abortion, very turbulent, with the engine showing faint signs of losing power on the way in, so being committed meant just that. However, both Judy and I landed safely.

We had another cup of tea from an astonished home-owner, who drew back his curtains just in time to see us both land. Then we watched TV-am's 7 am news bulletin, to see a nicely-written story about our flight. That gave us some satisfaction. Mike Atkinson
Brian Milton meets the Queen on 1 May, to receive his Queen's Award.

arrived soon afterwards (he must have left rubber all over some roads), followed by John Fack. We re-fuelled and taxied to the end of the field, but my engine faltered and had no power. Judy took off before I could tell her, and she had to hang around at 3000 ft for 40 min while Mike took my carbs to bits and blew away the dirt. That fixed it.

The flight to London was uneventful, quite smooth and very fast, climbing to 5000 ft and dodging rain clouds (sometimes!). When we arrived at the RAF Museum at Hendon, where we had arranged to land, it was obvious that conditions just ruled that out. It would have been a tight landing field in very good conditions. With the wind and turbulence we were experiencing (visor down all through the flight) it was impossible. But the quick-witted Rick Hogarth had seen that, and he had gone to some nearby GLC playing fields and lit a flare. He was accompanied by a TV-am camera crew with their distinctive white Volvo. Both Judy and I nearly missed the flare, but then we descended and made really easy landings.

We had to take off again and land to please a Sunday Telegraph photographer who turned up. This caused local residents to call in the police — directly under the flightpath to Luton Airport — to complain about the noise of two microlight engines. It was a slander, because we had been quieter than the local traffic, but local residents will be local residents...

Conclusion

I would like to have had more publicity for the flight, if only because Pegasus could have had a better deal. It would also have helped with future sponsorship. Obviously, live TV has its drawbacks.

But both Judy and I got enough hours on that flight to complete our PPL D, which is a satisfaction. The CAA and civil air traffic control people were very helpful, within the limits they were allowed. We couldn't land at Wormwood Scrubs after 7.30 am, for example, because it would have meant changing the flight plans for up to 50 big jets. Imagine explaining to an American jumbo captain that he had to hold for 10 minutes while a couple of microlights landed!

Judy is a brilliant navigator. I used to follow her to landing fields, then come down first. I find I can now fly a great deal higher without my bird brain getting heavy with me. But I will be making one purchase — a full face helmet with a visor.

Thanks to Pegasus Aircraft, to Rick Hogarth and John Fack; to Mike Atkinson for being there at 12 h notice; to George, Pat and Joanne Valler (and to Chris Ized for telling them); to Alan Smith of the CAA, and Paul Martin-Bishop of the National Air Traffic Service (NATS). Finally thanks to Fiona Campbell and the children for not worrying too much when the urge to 'do a wheeze' overcomes me...
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Tel: (0462) 52103 after 6:00pm.

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Flightline Nov-Dec 1985
First Raven Delivered

Microflight of Shobdon Airfield, Herefordshire, took delivery of their RAVEN demonstrator on August 18. John Hollings has since flown over 1000 miles on G-MNEO outside the UK, working with a British TV company.

His impressions are that a substantial improvement in engine-on and -off performance, handling and stability has been gained over its predecessor the Sprint. Anyone wishing to know more, or to take advantage of a free advanced flying course, should contact John at the address below.

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How to use your free page 11

If you are a non Raven pilot or don’t have a new Raven on order we bought page 11 especially for you. We bought it and then just left it blank. We could have covered it with words advertising the amazing Raven, but we didn’t. If we had, we reckon it would have taken you at least ten minutes to read it! So by leaving it blank we must have saved you those valuable ten minutes. Now the rest is up to you, because we can only give you the time but we can’t make you use it! You can use it wisely or just throw it away. (To throw it away cut along the dotted line, remove page and dispose of in waste paper basket). But since we’ve already paid for the page why not use it to best advantage. To do this, simply snip out the free ten minutes of page 11, fold the page and place it in your back pocket. You can now use it at any time to help redress the advantage that Raven pilots have. For example, you can use it to give yourself a ten minute head start on cross country flights. Wouldn’t that be useful? If your machine is a bit of a pig to rig why not use it to advantage during rigging – maybe then you could rig your machine as quickly as the Raven. To help you if your wing is hard to roll, a real handful in turbulence or needs Superman’s strength to hold on speed, why not use your free ten minutes every day to give you time for muscle building? Not only will you be able to fly for that bit longer before getting knackered, but you’ll also be in wow with the girls on the beach in summer! And if all this seems a bit fraught you can use the free time to drop Southdown a line or order your new Raven. Love to but can’t afford it – well we’ve got the solution for that too. Since most of your friends are probably getting Ravens they won’t need their page 11s. So you can gather them all together to give you forty minutes or so . . . and we’re quite sure you can persuade your bank manager what a brilliant investment a new Raven is in less than that!
By Dave Simpson

Structural tests on the solo Striker wing were completed on the BHGA test rig on 20 September. I am in process of writing a full report but edited highlights are as follows:

1. The modified wing was tested to 820 kg (the maximum that the 4.2 litre Jag would pull) with no failure. The rear of the inner two top battens bent through 20° at the webbing attachment point but no other damage was sustained. This batten deformation is permissible and it has been agreed with the CAA that no further mod action is required in this respect.

2. Tests were carried out, using weak links with known breaking strains, to determine the tension in the bowsprit rigging. As a result of these tests, and to allow for a healthy safety factor, the CAA require us to fit 3 mm bowsprit rigging both front...

Spondon: the probe continues

By Norman Burr

The tragic accident to Adrian Clark and his passenger Paul Bradley, who were killed on 17 August when their Puma Sprint broke up in the air at Spondon, Derbyshire, sent a shock wave through the micro-light fraternity. Not only was it the first serious accident involving a type-approved machine, but it was an accident with no obvious explanation, and one which made pilots of other monopole trikes, not just Puma Sprints, wonder if it could happen to them.

Roy Venton-Walters of Southdown has investigated the accident at some length in co-operation with the Accident Investigation Branch of the Department of Transport, and has produced a weighty report on what happened.

Since that report is broadly in line with the AIB’s current thinking on the accident, let’s start by extracting the summary from it.

‘From the evidence of witnesses and from the examination of the wreckage, the aircraft appears to have entered a whip-stall (hammerhead stall) with the wing reaching a steep nose-up attitude which could have approached the vertical before either pitching nose down or rotating over backwards. As a result of this manoeuvre and subsequent to it, the aircraft appeared to be the subject of severe negative loads. Under such conditions the wing will necessarily develop a nose-up pitching force which appears in this case to have wrenched the control bar from the pilot, causing it to impact heavily with the front strut of the trike unit. Under a negative g loading, both front strut and pylon are under end-wise compression and would suffer severe degradation of strength if any external bending moment were applied to them. Control-frame impact with the front strut was therefore sufficient to sever it completely, though it will probably be difficult to determine the proportion of damage done by the control-frame contact or that resulting from the effect of compression force. Similarly, the main trike pylon was simultaneously bent forward while under the action of compression forces as the result of the pulling together of the front strut attachment points at the pylon top and trike keel front respectively. At this point, the pylon may have broken or remained intact but bent. As the aircraft pulled out of the dive situation following these actions the strength of the trike’s structure with the front strut inoperative was insufficient to withstand the positive g forces imposed, and the trike unit separated from the wing at a height where the occupants could not survive the ground impact.

So far, it has not been possible to unearth any evidence to indicate that a mechanical failure caused the original placement of the aircraft in the whipstall position, and it can only be postulated that the aircraft was put there either deliberately or, more probably, accidentally, by either of the occupants, perhaps by the accidental releasing of the control bar when the aircraft was well above its ‘hands off’ trim speed.’

So what happened seems fairly well established — the aircraft broke up as a result of a whipstall. What neither the AIB nor Southdown, nor anyone else to
Sealander test progress...

(outer) and rear (inner).
3 The complete list of modifications is summarised as follows:

3.1 The bowsprit is extended to 50 inch; it is a single, unsleeved length of 1 3/8 x 17g HT30TF;
3.2 The rear (inner) bowsprit to leading edge rigging is 3 mm and remains the same length and in the same location as the original;
3.3 New front (outer) bowsprit to leading edge wires are 3 mm; turnbuckles are permitted in each side provided they have a safe working load of 450 kg. The bowsprit pulley is replaced by a 5/16 inch bolt, onto which both front bowsprit wires are individually terminated.
3.4 Top front to rear rigging is extended to the tip of the new bowsprit; 2.5 mm is used.

3.5 Control frame to bowsprit rigging is extended to the tip of the new bowsprit; 2.5 mm is used.
3.6 New rigging is fitted to run from the control frame to the noseplate (separate wires to each noseplate leading edge bolt provide a gap for the top of the control frame when rigging, but any position on the noseplate is satisfactory).
3.7 Control frame uprights are 1 3/8 inch x 17g fitted with 1 inch x 17g full-length sleeves; 1 1/4 inch x 17g oversleeves are a satisfactory alternative. Material must be HT30TF seamless drawn tubing.

4 Vre runs were carried out up to 77 mph with no damage. Applying normal rules, the placarded Vre would thus be 69 mph.

The modifications listed above are the minimum.

Flightline's knowledge, can explain why the aircraft got into that position. The weather was good and the pilot known locally for being particularly cautious — certainly not a man in the habit of fooling around in the sky. The aircraft had low airtime, and an AIB spokesman has confirmed to Flightline that 'at this stage in the investigation we have no reason to suppose that the structural integrity of the aircraft is in any way suspect'.

Unless the AIB's final report comes up with something new, which on present indications seems unlikely, we will be left with something of a mystery. The only advice which anyone has been able to come up with for other trike owners is the obvious good sense that pilots should stay within the permitted flight envelope whenever possible.

One thing, however, can be cleared up. This accident was not the result of a failure of the type described in last issue's Watchdog, when a monopole pylon failed as a delayed result of a heavy landing. Since that report, other overloading and/or fatigue failures have come to light, and as you can read in Watchdog this issue, the problem is not confined to Southdown machines; it seems that any monopole trike which has experienced high hours and/or rough treatment is susceptible. The fact that this phenomenon was first noticed on the same make of trike, and at around the same time, appears to be nothing more than coincidence.

Copies of Southdown’s report are available from the company at the address on the centre spread of this issue. Ask for report A10, Issue 1, dated 21 August.

Watchdog

Edited by Dave Simpson

A pylon failure has now occurred on a Mainair Gemini trike, at the side strut attachment hole. The trike had completed around 400 h of flight training and failed during a touch and go. The safety back-up wire remained intact and rear engine support rigging on the Gemini also helps in the event of this failure. No one was hurt.

The failure is considered to be fatigue though it is still subject to further investigation. What is clear, from this and previous Puma Sprint pylon failures, is that sitting a 55 kg load on the top of a 2 m tube and wagging it for hundreds of hours results in failures. This is now a clearly identified weak point on high airtime monopole trikes or those subjected to heavy landings, particularly those with heavy Section S wings.

Mainair Sports has issued a bulletin (No 17) detailing inspection procedures. These procedures are mandatory and apply to:

(a) Trikes which have logged more than 200 h.
(b) Trikes which have logged more than 150 h and have been used for pilot training.
(c) Trikes whose history is uncertain.

The pylon of such a trike must be inspected by sliding clear the main seat frame channel and nylon

Flightline Nov–Dec 1985
Striker and Sealander...

required, are now mandatory for all Strikers and Sealanders and must be carried out before the next flight. The work must also be signed off by a BMAA inspector in the aeroplane's log book. Note that leading edge sleeves are not required but are permitted.

We are now in the unique position of having carried out a realistic structural test on an exempt microglide wing and proved it to 4g. THIS DOES NOT MEAN IT CAN NOW DO AEROBATICS. This load is the very minimum standard we should expect of a wing, and the normal limits of attitude and speed in flight still apply.

bush and carefully examining the area around both the side-to-side and fore-and-aft bolt holes. Use a bright light and magnifying glass. Any cracks mean the pylon must be replaced. Report the fault to Mainair. Repeat the inspection every 50 h.

Because of changes of ownership, not all Gemini and Tri-Flyer Two-Seater owners will have received the Mainair bulletins. For this reason it is helpful to both you and Mainair if you contact the firm when acquiring a secondhand trike so that you can be sent bulletins rather than wait for Watchdog.

Alert 25 — Mainair Reduction Drives

Long-shaft twin-bearing reduction drives have been fitted to many trikes as well as Mainair's own. They may be identified by their black anodised trough-like casting normally supported on four studs. Several shafts of these units, used on Fuji 440s, have failed and in one case led to a complete shedding of the pulley, belt and prop during a landing approach by a student pilot under instruction. (Apparently the approach was less than perfect and the pilot wanted to go round again — his instructor swiftly advised against it.)

The shaft had failed at the Spirol pin hole, within the pulley; it had run for around 20 h. A second failure has occurred on this shaft design at the point of entry to the rear bearing. Also bearing inner to shaft slippages and bearing outer to casting slippages have been noted on other units particularly after strip down.

Fix 25 — No fix for this unit can be recommended by the manufacturers. Mainair's advice is to replace the drive with their later hub type drive which has given much less trouble. Mainair state that engine vibration and prop imbalance appear to be key factors in early failures. In other words, owners with rough engines and badly balanced props are at most risk.

Thanks to Geoff Weighell and Mainair

Alert 26 — Ball-Lock Pip Pins

These T-handled pip pins are commonly used on Quicksilver and other machines. Because the pins are often stiff to remove, the handle is pulled out and twisted hard during extraction. The handle is attached to the body by a press fit onto a serrated rim, and this fit can work loose. When it does, the pin appears to work normally by pushing the button, but the balls can be free to retract after the button is released.

Fix 26 — Check your balls now and replace the pin if the handle is loose.

Thanks to Kay

For the ultimate in Flex-wing two-seaters . . . . . .
Chairman's airwaves

By Peter Blyth

There have been many requests from members for more issues of our excellent Flightline, and the Council and our Editor have been seeing how this could be achieved. Unfortunately, the six issues per annum cost around a third of our subscription revenue (see Letters for details — Ed), and without an enormous increase in subscriptions it just can’t be done.

However, we are trying to work out the cost of issuing six news-sheets to supplement Flightline. These would be along the lines of the news-sheets already distributed to clubs and schools, but rather more ambitious. This of course costs money, and with the ever increasing administration costs and overheads, we may well have to increase subscriptions in any event by £3 or £4 per annum — which after all is only a couple of gallons of fuel.

Following the appalling accident involving a microlight at a fete in Hampshire recently, it behoves all members to make sure they carry a BMAA insurance policy. The pilot was not insured, and if it is proved that he was flying illegally then any policy would not have been valid in any case, but nevertheless the consequences of taking an uninsured risk can be catastrophic. BMAA insurance is excellent value!

BMAA news

Training Notes

By Ian Stokes, Training Committee Chairman
The CAA in their ultimate wisdom, instead of raising the cost of a PPL to cover their alleged need for more money and thereby laying the blame for the exorbitant cost of getting a licence where it truly belongs, at their own door, have imposed charges on FIC instructors, X and GR Examiners. In order just to remain on a financial par, they are therefore obviously going to have to charge more for their services, thereby increasing the cost of learning to fly by far more than would the same percentage increase in the initial costs of a PPL (owing to the snowball effect, as price increases are passed down the line).

Why do they do this? Are they trying to prove my theory that CAA stands for Cease All Aviation, by ensuring that the cost of learning to fly becomes so prohibitive that people will either not bother or, worse still, go out and get a friend to teach them or teach themselves? This would increase the number of illegal pilots and subsequently raise the accident rate to the unacceptable level it reached in 1982 before licencing was introduced. Are they not aware that microlight flying is a sport, and a very weather-limited one at that, and that people will only go so far before they dig their feet in and go their own way? I shudder to think of the results. One death will cost the country far more than the total input from all the Group D Examiners, but I suppose that as this cost will not be borne by the CAA this doesn’t matter.

On a happier note, we have some further instructor updates this month, as follows.

New AFI — John Carpenter.
Updated to QFI — Guy Banfield.
New X-rating granted — Malcolm Hurst.

Contact

Wealden Microlight Club

By Mark Phillips
Our club has had a good year so far, with very strong attendance at Woburn and Popham and many mass cross-countries around the South East, including a much enjoyed flight to the Medway club on the Isle of Grain at their recent fly-in.

Training has been slow this year. I have been instructing for both the WMC and the Hampshire club (HMFC), but to achieve much demanded good weather. In fact the weather has been pretty lousy; perhaps the winter will be better.

The World Championships were of special interest to the WMC as our treasurer/secretary team, Sheila and Tony Baker, were members of the British team. We took great pride in their struggle against the French, and both returned very suntanned and flying even faster and straighter than before.

The WMC is growing steadily in numbers and would be pleased to hear from anyone between London and Brighton who has land suitable for a club site. We meet at the King’s Head, Bessels Green, Sevenoaks, on the second Thursday in the month.
and prospective members are always welcome; alternatively, phone me on Langton 3578.

Bristol Microlight Aircraft Club
By Cherry Salter
The Bristol club has a new secretary. Chris Childs, after only moderate arm-twisting, has gallantly volunteered to take over from me as I am moving shortly and regrettably will be unable to keep the post, although I’ll be very happy to act as ‘foreign correspondent’ from darkest Milton Keynes. Chris can be reached on Yatton 834697 during the day, or Winscombe 3523 during the evening.

We have also lost our treasurer, George Haffey, who has been replaced by Steve Slade, already a committee member.

So I should just like to say farewell to all the Bristol flyers, with whom I’ve had a great time flying and from whom I’ve learned a great deal, particularly about trike maintenance — thanks for all your help boys! And also hello to the Bucks club, who have already made me feel very welcome, when I attended their last meeting.

Good luck Chris — it’s a great job really!

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. Dates marked * are provisional.

Britain

*May: Round Britain Air Race (see Whistles in the wires). Details from Mainsair Sports on 0706 55131.

Whitsun weekend: Fly-in and National Championship event at Davistow airfield, Cornwall. Details from South West Airsports, 056686 514 or 08406 517.

12-13 July: National Championship event at Sutton Meadows, organised by Cambridgeshire Microlight Club. Details from Peter Robinson, 114 High Street, Sutton, Ely, Cambs CB6 2NW; tel 0353 778446.

*September: National Championship event organised by Yorkshire Hornets Club. Details from Hornet Microlights, Bankfoot Mills, Wibsey Bank, Bankfoot, Bradford BD6 3JU; tel 0274 308642.

*November: BMAA AGM.

Spain

European Championships. Date and venue to be announced.

Small ads

Small ads are £2.50 to BMAA members advertising privately, all business ads and non-members’ ads £5; maximum 30 words in every case. Box number £2.50 extra. Please make cheques or postal orders payable to BMAA and send with ad wording to Flightline, Oak Cottage, The Green, Wennington, near Lancaster LA2 8NW. Deadline for next issue: 22 November.

Aircraft for Sale/Wanted/Exchange

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

EAGLE C-MHYX, Robin engine just overhauled. About 30 h flying. Good condition, flies well. £955. Phone 0579 45808 9 am-5 pm or 0579 460246 evenings. Thanks! Ask for Neil. (11/1)

HORNET EXECUTIVE TRIKE, Robin 330, full instrument panel. Flexiform 1+1 wing. Just had a frame mod done by inspector. Valid exemption certificate. Blue pod, blue/gold wing. £150. Tel Yoxall (0543) 472267. (11/2)

QUICKSILVER MX low hours, hangared, £1250. West Chitterton 5745. (11/3)

PUMA SPRINT Rotax powered, long-range tank, J-wire, permit to fly July ‘86, save £300 on brand new machine. Awaiting delivery of Raven and next Sprint. Also available, single-seaters under 70 kg. Tuition available 0785 458199 (Staffs). (11/5)

DUAL STRIKER/GAZELLE, 440 Robin engine, electric start, registered G-MJLF, 78 h, new padded wing bag. Both wing and trike in good condition. £1300. 0763 847394 (Hants). (11/7)

GOING DUAL so buy my immaculate 330 Triacer. Black pod, electric start, full instrumentation, twin fuel tanks, with custom-built trailer. Complete with Lightning Phase II wing. £1900. Tel 0522 42233 (Lincoln). (11/9)

IMMACULATE 330 Sharps trike, full instrumentation, twin fuel tanks, custom-built trailer, complete with Striker wing. £1900. Tel 0522 42233 (Lincoln). (11/10)

330 MAINAIR TRI-FLYER strengthened Typhoon, long-range tank, full exemption, 100% reliable, excellent condition, low hours. £1600. Ali Rogers, 051-608 2190. (11/11)

MAINAIR 333 trike/Scandair, excellent condition, with exemption. Single seat, long-range tank, recently serviced. Engine (kite-trailer) £1600. Ali Rogers, 051-608 2190. (11/12)

PUMA SPRINT 60 h, full instruments, large tank, permit to fly. On new trailer, folded down only seven times. £4000. Ballock 892662 (Herts). (11/14)

SAVILLS

GRASS RUNWAY FOR SALE
Ridgewell, North Essex.
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As part of the sale of Highfield Hall Farm
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Tenders close 27th November 1985
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(10 acre runway subject to lease terminating 1988)

136 London Road, Chelmsford, Essex
(0245) 269311
FOR SALE or exchange for glider: Tiger Cub 440, fine example with trailer and instruments. Will demonstrate. Any offer considered. Tel 0522 682414 (Lincs).

(11/15)

STRIKER DUAL wing/Tri-Flyer 440 trike, G-MMFE registered, with eximium. Altimeter and ASI. £2850. Tel Joe on Leeds 679176.

(11/16)

PANTHER 330, G-MMCF, single-seat, 26 h, full eximium, ASI, altimeter, Skymaster parachute trailer, genuine reason for sale. £2100. Tel Neil on 0773 835189 (Derbyshire).

(11/17)

SKYPUP homebuild project. Full plans and instructions. All spruce, ply, foam, alloy needed to build. Rotax 277 gear-reduction engine, propeller, exhaust etc. Will deliver 100 miles. £1150 ovno. Tel 0829 303446 (Lincs).

(11/19)

250 cc SOLO HIWAY TRIKE (Windsports Centre special) plus 450 cc 880 wing (also free-flyable). Excellent condition, low hours, certificate of exemption, £1500. Trailer £150. Skymaster parachute (unused, factory mods) £295, 0488 60883 (Surrey).

(11/25)


(11/26)

HIWAY/STRIKER single-seater for sale, in excellent condition (including strengthened A-frame). Only 14 h. Looking for a two-seater to exchange, or £1300. View William on 01-228 9033, or Eustone.

(11/27)


(11/28)


(11/29)

THREE-AXIS WANTED preferably two-seater with closed-in cockpit and full or likely Section S approval. Box 8, Flightline.

(11/31)


(11/35)

TIGER CUB 440, Partly completed engine, fuselage, tail assembly, top wings 80% complete, bottom wings as kit. All parts for complete. Located Chichester. £2000 ovno. E Hadley, RAe West Freugh (AFC). Stranraer, Scotland. 0776 2501 x291 work, 077682 211 home.

(11/38)

HUMMER three-axis microlight, Robin 250 cc power plant. Registered, 10h flown from new, ex-demonstrator, full instruments, trailer, always hangared. Clean double-surface monoplane — tow or fly away. £835. Billingshurst 4172 (Sussex).

(11/39)

EAGLE G-MBJ5, Cuyuna engine, has current exemption certificate, long-range tanks, red/white/blue colours. Genuine reason for sale. Best offer for quick sale, around £900. Rugby 060397 after 6 pm.

(11/41)

250 HIWAY SKYTRIKE with Super Scorpion wing. Exemption certificate, nose-pod and instruments. New Nicklow exhaust system gives maximum power. Ideal forgiving machine for beginner. £1050 ovno. Tel Cherry on 0272 422216 (Bristol).

(11/42)

250 HIWAY SKYTRIKE/SUPER SCORP G-MMGE very low hours, but needs attention. Purpose-made trailer for trike. Must sell, so best offer. Tel 021-704 2363.

(11/43)

TIGER CUB 440 with exemption certificate. Full instrumentation, mixture control. Mods: engine offset, undercarriage, new inside fuel tank, wing centre section. Excellent condition, trailer, cover, always hangared. £3400. 0981 6533 (Hereford).

(11/44)

G-MBJ5 SOLAR WINGS TYPHOON and trike 250 Robin. All new cad-plated mountings, new exhaust. Exemption certificate, excellent machine. £9000 ovno. Evenings 0202 675187 (Dorset).

(11/46)

DUAL STRIKER wing. Two years old, blue/white. Excellent condition, superb handling. Suit Cunair trike similar. £550 ovno. May part exchange. Tel Middlesbrough 464614, or 464651 after 6 pm.

(11/47)

CUYUNA-powered Eagle with red, white and blue colours for sale. Ex-demonstrator with low hours, in storage nearly two years. Must sell, highest offer. Tel 077282 4497.

(11/48)


(11/50)

G-MFJY SKYHOOK 330 TRIKE, Sabre wing, pod, instruments, spats, alloy wheels, and more. As new, with trailer, £2000. Also almost new Flexwing form, G-MWEZ, £450. Tel 01777 680635 (Ponctchtruch, Yorks).

(11/51)

SINGLE-SEAT HORNET with 330 cc Fuji engine, Solar Storm wing, pod, long-range fuel tank, trailer, instruments. Current exemption, ready to fly. Bargain, £1600. Ponctchtruch 629035 or 621295 (Yorks).

(11/52)

MEDWAY MICROLIGHTS Hillred Dual, G-MMEN, just rebuilt to obtain permit. XL wing, large Skysharparachute, 440 Robin, electric start, recently rebored and rebuilt. A delight to fly, £3650. Medway 388348.

(11/53)


(11/55)

SOUTHDUN PUMA SPINT 50 h airspace. Fitted pod, long-range tank. Beautiful machine, complete with trailer. £2000. Tel Spalding 0755 67960.

(11/59)

EAGLE G-MBVW, well maintained and stored indoors. Twin Chrysler engine (under 70 kg). Spare engine/trike assembly, various engine spares and car top transporter included. £1650 ovno. Phone Chris Carter, 0533 416949 (Leics).

(11/60)

ROTEC RALLY 2B G-MBJV 5 h airspace. To include fully enclosed custom trailer and unused flying suit. £1000, very good condition. Phone 0980 325262 evenings, or 0722 29810 daytimes. (Salisbury, Wilt's).

(11/61)

EAGLE FOR SALE manufacturer's stated weight under 70 kg. Approx 20h. Stored under cover. Very good condition. Best offer. Tel evenings 021-353 6796.

(11/62)

CASH CRISIS Panther 440 XL dual, '84 model, brand new, unregistered. First with £3000 or more secure. 0374 66721 or 0375 71172 (Essex).

(11/63)

PATHFINDER MKI excellent condition, 60 h, hangared from new at Long Marston. Current permit to fly exemption. Shares available, or sell complete at £2500. Warwick 0926 32525 x4179 work, 495999 home.

(11/64)


(11/65)
QUICKSILVER MXII brand new sail kit, $225. Thumann altimeter, new in box, $50. Two Winter ASIs in nacles, $40 each. Westach tachometer, digital tachometer, $15 each. Tel 0529 30446 (Lincs).

ROBIN 244 cc single-cylinder engine. Carefully run-in but never flown. £95 for quick sale. With stainless-steel exhaust if you want it. Peter Lovegrove, 1 Beaumont Close, Didcot, Oxon OX11 1TS; tel 0203 812556 home, 0203 24141 x4116 work.

CHARGUS THREE-BLADED PROPELLER. Used only to run-in above engine. £35. Contact Peter Lovegrove — address as above.

FUJI ROBIN lightweight 440 cc engine, model EC44 2PM, for sale. Complete with carbs. 16 h only. Engine log supplied. £150ono. Tel 0934 262082, evenings only.

WANTED Valmet 160 cc or Rovensa 210 cc engine, with reduction drive if possible. Phone Nottingham (0602) 623797 early evening.

SKYMASTER parachute, re-packed and checked on 20 August ’85. £200 or exchange for large plus cash. Phone 063084 542 (Shropshire).

WANTED pod to fit Pathfinder MkII, any colour. Phone Martin Swaffield on Cirencester (0285) 67693 (Glos).

INCAL ACTIMETER (panel mounted). Exchange for wirst model with strap. Thumann or similar preferred. Tel 01624 29575 home, 23881 work (ask for Jim) (Isle of Man).

FOR SALE 330 Robin complete with reduction, propeller, exhaust and mounts. Approx 60 h. £400. SOLD 440 Robin or 447 Rotax. Atherstone (0873) 936076. (11/90)

WANTED: PPL (a) seek two or three others similar for joint operation of two-seat-wing-tip microlight in the Stoke-on-Trent/Stone/Stafford area. Please phone Edward Darley, Blythe Bridge 391753 (11/93)

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62

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