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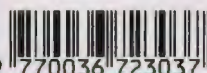
Hans Werner Grosse interviewed

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Feb – Mar 2001

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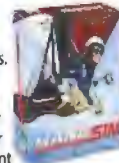
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The magazine of the
British Gliding Association

February ~ March 2001
Volume 52 No 1

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Does Diamond distance seem daunting? Klaus Ohlmann did 2,463km - nearly five consecutive ones - in a Stemme in wave over the Andes last November. He is shown at Serres, near Gap, France, with his Calif, registration KO. See pages 40-43.
Photo: Régis Tripter (S&G's thanks also to Vol à Voile)

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Where next?



British Gliding Association chairman **David Roberts** outlines the plan for the next five years, ahead of February's Annual General Meeting

bullockda@talk21.com

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Adventures in the air



In the first of an occasional series, **Michael Bird** interviews Hans Werner Grosse about a lifetime of flying: from Ju 88 to Eta

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A taste of the mountains



Jay Rebbeck and Justin Wills describe Jay and Henry Rebbeck's first flight in the Alps, while **Peter Hearne** recalls his earliest mountain expedition

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Fools rush in



Dreaming of restoring a glider? **Ian Dunkley**, experienced on Fauvel and T-21, tells you what you really need to know

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2,463km in Argentina



Klaus Ohlmann describes how he made the world's longest flight, while **Tom Bradbury** looks at UK research into wave lift

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Your letters

Chris Hughes, Gerry Martin, Peter Saundby, Val Howells, Roy Ferguson-Dalling (reply by Terry Slater), Bronnig James, Jon Hall (reply by David Roberts), Roy Bickerton (reply by the editor), Ted Coles, Peter Whitehead, Chris Wills, Bill Thorp, Paul Harper-Little (reply by Terry Slater), Bill Kronfeld, Alan Self

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and the
Fédération Aéronautique Internationale



Looking ahead

ON THE day that we went to press, a bulky parcel from New Zealand landed on my doormat. It was a video with an admirable goal – to persuade people who've come for a trial lesson to take up the sport. Produced by John Roake and directed by Gavin Wills for the Fédération Aéronautique Internationale and the International Gliding Commission, it aims to tackle the downward world membership trend. There's no time to review it this issue, but we'll make sure we report on it in the April-May edition.

The second stage of their project will focus on reducing membership turnover – something the BGA has already identified as a problem and, under the direction of sub-committee chairman Ian Godfrey, is starting to tackle. You can read more about the BGA initiative on page 12.

On another subject, I have – quite rightly – been taken to task by more than one vigilant reader for allowing ambiguous advice on ridge soaring to creep into the last issue. Given that I'm based at a hill site, it's very embarrassing! The BGA's Recommended Practice for overtaking on ridges is: "A glider overtaking another glider must pass between that glider and the ridge." (Laws and Rules, 12th edition, RP23d, p35). If you're new to ridge soaring, it's well worth dusting off your copy and reading all of RP23. Apologies for any confusion.

Finally, you have only to read *Club News* (pp54-8) to see what an abysmal autumn we suffered. The figures from the Met Office (opposite) confirm – as if it were needed – that it wasn't all in the mind. But this is a whole new millennium and things can only get better.

How about 2001, a *gliding odyssey*?

Helen Evans, Editor

Wet wings on launch

THE AAIB Bulletin 11/2000 describes the accident to a motorglider which attempted to take off, failed to climb, clipped a tree and ended upside down across a road. Both occupants were injured.

It is likely that the motorglider's failure to become safely airborne in the distance available was related to the adverse combination of the presence of water on the wings, the length of the grass along the take off run and the prevailing wind.

When in the presence of ANY adverse conditions, a predetermined "no go" point must be established prior to take-off so that in the event of the motorglider failing to get airborne by that point, there is sufficient space available to abandon the take off and land ahead safely on the airfield.

Details of the various performance considerations are published in the CAA Safety Sense leaflet 7B, *Aeroplane Performance*.

Pete Stratten, Chairman, Safety Committee

What's going on in the world of comps

IT MAY BE the depths of winter in the UK, but the international competition scene has been active while we shivered in the rain.

First, in November 2000, came the Masters competition at Mafikeng in South Africa, used by some of the British Team as practice for this year's worlds. British Team Manager Bob Bickers reports sun, floods, two inches of hail the size of marbles and ... a plague of frogs. "There were thousands surrounding the hotel and they croaked all night," he says.

Despite the climate and fauna, the Masters was good for the Brits, with Justin Wills winning (LS-8, 2635 points) and Andy Davis 4th (Ventus 2a, 2550). Steve Jones and Al Kay came 9th (2268) – out of the 16 competitors – hit by the handicap of their Nimbus 3D. For Ireland, Paul Crabb was 5th (LS-8, 2420) and his twin, Steve, 7th (2314). Other British entrants were Gill Spreckley (LS-6, 11th) and Lucy Withall (LS-8, 13th).

Lembit Öpik MP (below), our man in Parliament, prompted a question in the House of Commons on November 10. He asked the Liberal Democrat spokesperson for Sport, Bob Russell MP, to draw the Government's attention to the need for BGA to have access to lottery money to develop and train gliding teams for international competitions



The pre-worlds, Gyps Africanus, were held at Mafikeng, South Africa, from Dec 17-31, 2000. Given the Latin name of the Cape White-backed Vulture, a local soaring bird, this competition was a chance for pilots and organisers to practice for 2001's 27th World Gliding Championships (15-Metre, Open and Standard Class)

For details, see www.soaringclub.com/news

The pre-worlds (see above) attracted one British entry – Jay Rebbeck, who came 4th out of ten in the Open Class in a Nimbus 3 with his father, Reb. The winner in that class was Zehnder Griffiths from Australia in a Nimbus 4D.

In the Standard Class, Selen Baer from The Netherlands took top place in an LS-8. New Zealander John Coutts won the 15-metre class in an ASW 27. For the full results, see www.sssa.org.za/Gypa.com

And, of course, the Gawler Club Class World Championships were taking place in South Australia just as this magazine was being printed. The team of Afandi Darlington, Rich Hood and Pete Masson, who featured in *The Daily Telegraph* on December 28, 2000, have set up a website so that you can follow their progress. See www.glidingteam.co.uk for news of how they got on and the next S&G for their account of the whole experience.

Final scores at the top of the 1999/2000 ladder

THE OPEN Ladder was won – by a considerable margin – by Mike Young from Cambridge, flying a variety of gliders over large distances at high speed and showing the rest of us what could be achieved if only we knew how. The Weekend Ladder yielded scores more representative of the season's weather, but a special mention must be made of Matt Cook, a promising young pilot from Norfolk who finished well ahead of the competition in the Junior Ladder.

The National Ladder is an informal, UK-based competition open to any pilot cleared for cross-country flying and, last season, claims were received for the Open Ladder from over 360 pilots. If you would like to be one of them during the 2000/2001 season, please tell your club Ladder Steward. If your club is not currently involved, please contact me at johnb@aircross.co.uk, or by regular mail via the BGA, and I will be happy to provide further information.

First submissions for the 2000/2001 season,

please, by the end of March 2001.

John Bridge, National Ladder Steward

OPEN LADDER

Pilot	Club	Score	Flights
1 Mike Young	Cambridge	12269	4
2 Andy Davis	Bristol & Glos	9327	4
3 Phil Jeffery	Cambridge	9235	4
4 John Bridge	Cambridge	8969	4

WEEKEND LADDER

Pilot	Club	Score	Flights
1 John Bridge	Cambridge	6409	4
2 David Caunt	Booker	6312	4
3 Adrian Halton	Four Counties	6055	4
4 Sarah Harland	Cambridge	5974	4

JUNIOR LADDER

Pilot	Club	Score	Flights
1 Matthew Cook	Norfolk	7892	4
2 Mark Parker	Cotswold	5838	4
3 Jon Meyer	Bristol & Glos	4165	4
4 M. Pettican	Aquila	3823	4



CFI Tim MacFadyen (in rear cockpit of SF-34, above left, and in DG 505, right) was among Nympsfield members who helped the BBC film a "reconstruction" of the 1999 K-21 lightning strike. Keep an eye on the TV listings if you want to see this episode of 999. In series 10, it should appear in late spring/early summer – possibly in May

Dismal end to a damp year

RAINFALL figures for England and Wales show autumn 2000 was the wettest since records began in 1766, with 492mm falling during September, October and November. This beats 1852's record of 456mm for these months. April was also the wettest ever recorded, according to the Met Office.

While December's rainfall was exactly the same – at 142mm – as in 1999, it was well above average. The norm is 95mm.

Overall, 2000 was the wettest for more

than a century, with a total of 1,233mm of rain. Only 1768 and 1872 were worse – the record, from 1872, is 1,284mm.

Globally, the current trend of very warm years continues, which the Met Office says is largely due to the burning of fossil fuels.

It also thinks 2001 could be the second warmest year recorded, if an anticipated strong El Nino develops in the tropical Pacific. But, it says, it cannot predict what this might mean for the UK climate.

Lottery results

Winners of the November draw were:

AB Stokes (first prize)	£57.50
<i>Runners-up</i>	
TA Bradbury	£11.50
D Siegfried	£11.50
G King	£11.50
VC Carr	£11.50
M Throssell	£11.50

Winners of the December draw were:

M Brockington (first prize)	£57.75
<i>Runners-up</i>	
L Holden	£11.55
M Davies	£11.55
Mrs E Dawkins	£11.55
R Barrett	£11.55
A Mason	£11.55

Instructors on duty

THE BGA's back-up insurance policy, to cover instructors carrying out instructional duties – including flying and supervision – has been the subject of much discussion over the past year and negotiations have been held with the BGA's underwriters to ensure the cover will be in place during 2001 for all instructional duties.

The policy is not primary insurance cover but is there in case there is some failure or inadequate total cover on the frontline insurance. The BGA cover is a total of £1million in the aggregate during any year for which we are paying an annual premium in the order of £25,000.

Our insurers now accept that in future all current instructors flying in club-owned two-seat gliders will be deemed to be in instructional mode for the purpose of the policy. This will also apply to privately-owned two-seaters whilst they are being operated from their normal base.

A declaration form has been introduced and must be completed by instructors who wish to instruct in privately-owned two-seaters while operating away from their normal base, if they are to be covered by the back-up policy. Completion of these forms will mean that there should be no confusion as to whether cover applies while instructional duties are being performed during expeditions, competitions or any other operations away from the home club. A copy of the form has gone to all clubs and can be copied, or ordered from the BGA office.

New student soaring club

ABERYSTWYTH University has become the latest to establish a Student Soaring Society, with the help of the university's Student Union and Midland GC The Sports and Activities section of the Athletic Union is providing financial help and minibuses to transport the students to the Long Mynd in Shropshire, where the society is to be based. So far 11 people have signed up as members under the organisation and guidance of Ian McDougal, who has a Silver Badge.

• Students at Leeds University who want to join its gliding club (which flies from Dishforth) can contact Charles Robinson at bgy9cer@leeds.ac.uk or on 07968 333774. Other student gliding club contact details can be found in the December 2000-January 2001 issue at the bottom of page 51.

In brief

The Public Inquiry into planning consent for the North Wales GC's site at **Llantisilio** was held on December 19-20 at Llangollen. The inspector's decision is expected in June.

The **investigation** into the fatal crash of a Nimbus 4D in Spain last summer is continuing. A BGA accident investigator attended a meeting of interested parties last autumn, which included FAA representatives. S&G will report the official conclusions once the inquiry, which is being conducted by the Spanish authorities, is completed.

The **Royal Aero Club Trust** is asking pilots to consider supporting it – maybe by undertaking a sponsored activity. Trustee Charles Ranaid, aged 67, is leading by example with a 1,000-mile pilgrimage on foot from France to Spain. He hopes to raise £25,000. If you are interested in raising funds for the Trust, please contact write to The Trust Fundraiser at the BGA address on page 3, or email trustfundraiser@royalaeroclub.org

The FAI has signed a long-term partnership with a TV channel in a bid to give airports more **media coverage**. Daily programmes about 2001's World Air Games in Andakucia, Spain, are being prepared for Discovery Wings Channel. They will be broadcast on that channel in North America and on its network in the UK, Latin America and Asia. In gliding, the 18-Metre and World Class Worlds are part of the games.

Insurance brokers **TL Clowes**, who sell the Cumulus insurance product for gliders, have signalled their intention to develop their aviation business by appointing Tony Mitchinson as Associate Director, Aviation. Formerly of Cox Insurance, he has 25 years' broking and underwriting experience and brings two team members with him.

CAA Safety Evenings will be held at Perth (Feb 1); Headcorn (Feb 6); Cranwell (Feb 7); Wickenby (Feb 8); Earls Colne (Feb 15); Woodvale (Mar 1); Sandtoft (Mar 5); Little Gransden (Mar 6) and Rochester (Mar 8).

Austrian-based **Diamond Aircraft** is now a JAA-approved aircraft Design Organisation, which speeds up the certification process.

The December 2000 *General Aviation Safety Information Leaflet* reports that spectators at the Biggin Hill Battle of Britain Airshow this summer were bemused when a **foreign fighter formation** did most of its display at Kenley, having confused the two airfields. GASIL believes the gliding club wasn't operating at the time. (We hope they enjoyed the show.) The moral? Keep track of where you are – and keep a good lookout.

2001 BGA AGM, Dinner

*Eastwood Hall Conference Centre
Nottingham, Saturday 17 February*

Provisional Programme

- 0945 Welcome and Introduction by the BGA Chairman, David Roberts
- 1000 Instructing - Where are we, and where are we going?
Terry Slater, Chairman of the BGA Instructors' Committee
- 1040 Ted Lysakowski Memorial Trust
Andy Davis
- 1055 The British Club Class Team in Australia
Feedback from the first Club Class Worlds
- 1110 An introduction to the new "Ottfur" release
The new "Ottfur" release, approved by the BGA, has been developed as an alternative to the German "Tost" release.
Peter Wells, Technical Director of "Ottfur" development, Cair Aviation
- 1130 Coffee
- 1200 What does the BGA do for me?
A look into the British Gliding Association and its 5 year strategic plan, with sub-committee Chairmen: John Bradley (Technical), Terry Slater (Instructors), Carr Withall (Airspace), Peter Stratten (Safety), Max Bacon (Development), Ron Bridges (Competitions), Ian Godfrey (Marketing & Communications).
Chaired by David Roberts, BGA Chairman
- 1300 Lunch
- 1400 AGM of the British Gliding Association
- 1530 Coffee
- 1545 Exhibition
View the many exhibitions on display in the Chatterley Suite, and the static glider display area located in the centre's grounds (including DG, ASW, Schempp-Hirth, Russia Sailplanes, LAK)
- 1630 Klaus Ohlmann - World record flights in a Stemme
*"Speed over out-and-return 1500km" (122.34 kph),
"Free out-and-return" (1550.20km), "Free 3-points distance" (2459.60km)*
Klaus Ohlmann
- 1730 Close
- 1900 for 1930 : Dinner
- 1900 Pre-Dinner Drinks in the Lounge Bar
- 1930 Dinner in the Lawrence Suite
- 2130 After-Dinner Speech by Rod Dean, Head of General Aviation, CAA
- 2145 Awards
- 2215 Live Band


& Conference

BGA 2001 AGM, Dinner

Finding K-6CR 175

By pure coincidence, if Gerry Burgess had stood by the nose of the glider shown on the cover of the December-January S&G then walked 20 yards to the right, he would have found his old K-6CR (*Come in, No 175*, December 2000-January 2001, p7) happily sitting in its trailer.

In 1983 I acquired a rather old K-6CR from members of the Newark & Notts GC to form a ten-person Nympsfield syndicate of very experienced pilots, to be based at Talgarth. The glider was lovely to fly and I was particularly pleased to find we had picked up the 1963 Standard Class champion glider, flown then by John Delafield. About 12 years ago, when it was re-covered, the structure appeared almost as new. In 1997, the syndicate finally became a five-person Talgarth one. Regular visitors to the Black Mountains GC will have recognised No 475, usually viewed from underneath, still soaring as well as ever. It has been on site longer than any other glider.

Chris Hughes, WITCOMBE, Glos

Still going strong

K-6CR 175, manufacturer's No 960 and BGA No 1423, is indeed still going very well. It is a second glider for the partners who all have other aircraft. The glider has 2,400hrs, 1,600 launches, the tail number is 475 – it lost 175 in its travels. I still hold most of the older documents for the aircraft including the final inspection from Poppenhäusen made out in Gerry Burgess' name.

Gerry Martin, CFI, Black Mountains GC

Another sighting

The K-6 to which Gerry refers is still flying and is in very good condition. I have seen the technical record and my signature is in there from the early 1960s when it was owned by the RAFGSA.

Peter Saundby, CRICKHOWELL, Powys

In praise of BC SIFT BC (E)

Is Roger Millens really a man (*BC SIFT BC (E)*, December 2000-January 2001, p7)? His brilliantly simple and amazingly sensible idea costs absolutely nothing. In my experience, men's good ideas usually involve seriously advanced technology and always cost loads of money.

Val Howells, WOOLSTON, Cheshire

More on cockpit drills

I would like to support Roger's basic idea, but for different reasons. I agree that ballast needs to be considered before getting in and that with some aircraft it may be impossible to see the controls once seated.

However, once in the aircraft there is still a need to confirm full and free movement of controls as it is possible that some fouling could occur due to misplaced straps, unsuitable seating positions, etc.

When considering ballast I habitually confirm "tail dolly removed" under B (after all, it would become tail ballast if attached



*K-6CR 175, whose first owner, Gerry Burgess, asked S&G readers where it is now, graces the 1967 edition of Derek Piggott's *Gliding* (A&C Black). See also left*

to the aircraft after launch). The confirmation takes place once lined up, covering cases where the glider is pushed into launch position with crew in.

Where Roger has got it right is the feeling of finality once the canopy is closed and locked. At this time of year, the minimum delay between this action and launching is vital to avoid the problem of canopy misting, when we used to get hot summers that minimum was desirable to avoid basting in our own sweat.

What I would suggest is that before getting on board you do A B C checks.

- Airframe: ensure that it has been DI'd and not damaged since.

- Ballast: check placard and fit or remove ballast if necessary.

- Controls: full, free and correct movement. Once on board and with a launch about to be offered, use CB SIFT BE C.

This has the added benefit of not encouraging those outside to interrupt Eventualities with the offer of a cable and would make it clear to tug pilots and signallers when the crew are ready to launch, or, more importantly, when they are not ready.

Roy Ferguson-Dalling, via email

Terry Slater, chairman of the instructors' committee, replies: the suggestion will be considered by the committee this autumn

Pick up thermals by radar

According to *Aviation Week*, radar will get a lot smaller and a lot cheaper: it will be a chip the size of a postage stamp with the radar on one side and the computer on the other. Cost, about \$200. If it has enough gain to see a light aircraft 200 miles away, it can see dust and atmospheric particles at a

range of about two miles so the glider pilot can see thermals even on a blue day. The Doppler will be set to the same value as the glider's airspeed, range about five miles, maximum gain.

Brennig James, MARLOW COMMON, Bucks

The BGA at Telford?

I have just returned from the International Airports Exhibition at Telford where I and other members of Midland GC spent two days talking to members of the public, all mad about aviation. This included quite a few 12 to 16-year-olds, who were delighted to discover that for as little as £16 they could join our club for the rest of the subscription year and learn to fly at half price, hang-glider pilots looking to move up to something better and more challenging and PPLs who find the cost of power flying inhibiting. We sold course places and gained another 200 or so addresses to add to our mailing list.

We also spent a lot of our time doing what the BGA should have been doing, namely spreading the word and answering questions about our sport from aviation enthusiasts from right across the country. But the BGA decided not to attend this year. I for one think this was a bad decision and a real opportunity missed to spend some small part of our subscriptions in a way that really matters. Our stand cost just over £300. May I make an appeal to the BGA committee to reconsider for next year?

Jon Hall, MARKETING OFFICER, Midland GC

David Roberts, BGA Chairman, replies: It was a conscious decision early last year not to attend this time (December 2000) because of affordability issues. In 1999, it cost the BGA about £1,500 because of the space required for the rigged Duo Discus, and the projected cost this time was nearer £2,000. The marketing & communications sub-committee is to consider the question of possible future attendance

The Piggott-Hook

For the benefit of bears of little brain, could you please publish an explanation of the Piggott-Hook – where does it go and how does it work?

Roy Bickerton, CUMNOR, Oxfordshire

The hook stops the weight of the airbrake handle pulling unlocked airbrakes wider open during launch. It is a strip of metal incorporating a series of teeth, which fits on the cockpit side. A fitting on the airbrake push-rod engages with one of these notches, and is released by rotating the airbrake handle. Please see www.dg-flugzeugbau.de/piggott-haken-e.html#animated for pictures of how it works, along with the full story of why Derek Piggott came up with the idea and persuaded DG to develop it – Ed

Age limit for instructors

Since my letter was published in the October-November issue (*Age limit for instructors*, p9), I have received a phone call advising me to read *Laws and Rules* ➤

Your letters

➤ which, of course, we all have done – but how recently?

At the same time our own CFI – at Dunstable, not Booker (to which I was transferred erroneously when my last letter was hacked about) – looked at the 12th edition and checked the addenda sheet.

Anyone who is concerned should look at paragraph 13.4 on page 25 which states clearly that instructors can continue after the age of 70 so long as they hold a current CAA medical certificate Class 3 (this has now been superseded and becomes Class 2). I am sorry if publishing my mistake has caused confusion to others. I certainly confused myself!
Ted Coles, STEVENAGE, Herts

Oshkosh identified

The unknown aircraft Pat Ladd saw at Oshkosh (*Oshkosh unknown*, December 2000-January 2001, p7) is a prototype Esprit twin-engine ultralight motorglider, designed by Czech Dobro Hajek and calculated to have a glide ratio of 26:1. The folding props are said to align with the wind whenever power is reduced to improve soaring performance.

Peter Whitehead, BOLTON, Lancs

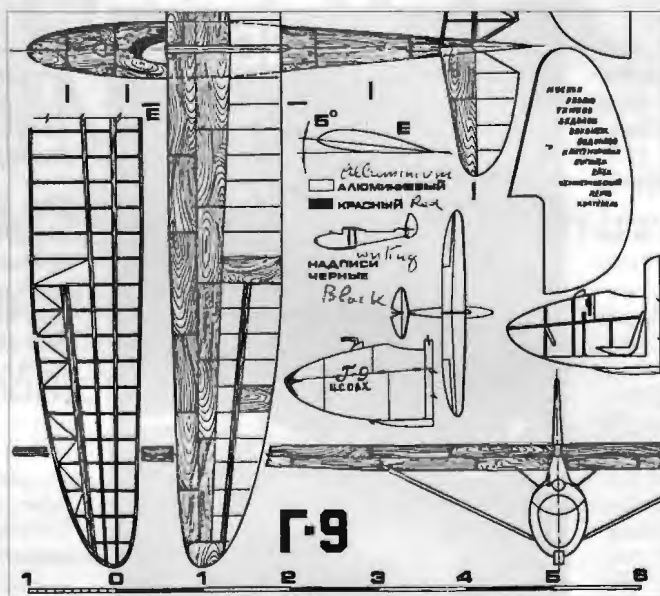
Soviet aerobatics

Edward Mole was not the only 1930s pilot to seek to beat world records for looping (*Back to Barbara Cartland*, October-November 2000, p10). In 1933, Soviet pilots began to compete doing aerobatics. Stepanchenok in a G-9 sailplane managed 200 figures – including 184 loops – in one flight. A few days later the pilot Borodin, with passenger, flew for 3hrs 50mins in a Sha-5, and carried out 216 aerobatic manoeuvres, including 209 loops. In 1934, S Boruzdin increased the record to 227. In April 1935, N Simanov flew a G-9 for 5hrs, looping 300 times and rolling ten times.

Chris Wills, EWELME, Oxfordshire

What do students need?

Few instructors can be fully competent in all aspects of the sport. Instead, they specialise



Part of the plans – complete with the grain of the wood – for the Russian G-9: wing span, 12.07m; wing area, 13.0m²; length, 3.77m; aspect ratio, 11.3; max L/D, 17.5; and empty weight, 150kg. See *Soviet Aerobatics* (below left)

in certain aspects: competition, aerobatics, or training new students. The quality of these latter instructors determines whether we have hooked a new addict or lost a new member. That depends on the interest the instructor takes in the pupil, on his ability to communicate, on the guidance he gives on how to progress – and on the efficient management of the airfield so he can concentrate on the student's needs. Instructors must be experienced at their home site and familiar with local conditions and the aircraft used for training/early solos. For this, the annual number of flights in his log book from that site will be much more significant than the number of cross-country kilometres or the hours flown.

To help the student with ground studies, the instructor must be familiar with them himself. The requirements of the Bronze paper should be phased to meet the knowledge the new pilot requires as his flying progresses. Air Law and Airmanship should be covered pre solo; principles of flight before solo stall/spin exercises; navigation, meteorology and use of radio before the Cross-

Country Endorsement. Requirements for the instructor rating should include the ability to teach these subjects to the level required.

After an instructor has learnt how to teach at elementary level, options should exist to gain endorsements to teach elementary exercises in the motorglider, navigation and field landing (in glider or motorglider), advanced stalls and full spins, and cross-country soaring – as interests and time allow.

Renewal would depend on which aspects he wished to maintain. Not all instructors need maintain a high standard in every one.

As students progress through their education there is an elementary school, a secondary school and a university to give, respectively, the basic grounding, the beginning of deeper knowledge in a narrower range of topics and a specialised insight. At each level, the qualities required of the tutor differ. Why should gliding be different?

Bill Thorp, SELBY, North Yorkshire

Tug pilots

I am mystified by the BGA move to appoint tug pilot instructors and examiners. This move, I understand, is to save our tug pilots the cost and inconvenience of having to complete a biennial check with a properly-qualified instructor at his local flying school. I would have thought such a small inconvenience was well worth it in return for all the free flying tug pilots get. So why is the BGA putting in place an army of tug pilot instructors, which must be costing us all something in BGA time and money?

The whole project seems even more ridiculous as when the NPPL comes into force next year, renewal requirements will be as in the past, so for most pilots, who will become NPPLs, this army of instructors will be surplus to requirements. I am very much in favour of high standards, but these should be maintained by experienced club tugmasters who can train, and monitor standards, much more effectively at club level.

I believe power licence validation should

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Bill Kronfeld suggests that the BGA provides stickers for display on trailer sides (See Convey the right image, below). There'd be even more room on the monster above, which took three gliders to New Zealand for the winter

be left to the CAA, while the BGA get on with running the gliding movement, which is what it's meant to be doing. And just in case you think I'm one of the 10hr-per-year brigade having a moan, I'm a 9,000hr airline training captain, with 3,000hrs gliding, 1,500hrs instructing in gliders, two 750kms and was a tugmaster for 15 years.

Paul Harper-Little, STROUD, Glos

Terry Slater replies: The BGA asked the CAA to authorise our own instructors to carry out PPL revalidation instructional flights for several reasons, as have the PFA for their members. The CAA approved our proposals, agreeing the BGA is the best organisation to revalidate our tug pilots. This enables BGA club member tug pilots to have the biennial instructional flight at a gliding site rather than at a commercial flying school. Revalidation will then mostly take place using aircraft the pilots are familiar with, and should reduce the cost to members (I have heard of some flying schools charging up to £250 for this flight!). Surely one of the BGA's functions is to provide services to members – we have been carrying out PPL revalidations via Certificates of Experience for many years. This could be considered as an extension of that service. Not all pilots will convert to the NPPL, as it will be UK VFR only, at least initially. There is NO significant cost impact to the BGA – all the examiners and instructors are volunteers, and there is no provision for charging other than travelling expenses. Of course, tuggies are free to have revalidation instructional flights at a flying training organisation of their choice: the scheme is not compulsory.

Convey the right image

Jim Hammerton (*Ensure your glider is airworthy*, December 2000-January 2001, p13) exhorts us to maintain our trailers in good order to create a good image. This, however, begs the question: to whom are we trying to convey an image? Judging by the mystified expression on the faces of most passing motorists, the public, although curious, have no idea what lives in our trailers.

Perhaps we should take Jim's observations one step further. If we really want to convey the right image, and increase both visibility

and publicity for the gliding movement, why not use the sides of our trailers to promote our sport? For example, an attractive decal depicting a sailplane against a cloud with a Union Flag emblem and BGA phone number would:

- Inform the public what is in the trailers
- Give excellent visibility to gliding in general.
- Provide a central phone number, enabling the BGA to refer enquirers to their nearest club.
- Wave the flag for British gliding, when gliders travel abroad.

Before anybody asks, decals can readily be removed by the application of very hot water, and a scraper. This, incidentally, also works for those infuriating car rear window stickers. Maybe the BGA could add suitable decals to its range of promotional material?

Bill Kronfeld, SOUTHAMPTON, Hants

Albatross flight

Having got so close to understanding the soaring of the albatross, it was a great shame that the wisdom of William Froude (*Flight of the Albatross*, December 2000-January 2001, p41) was then fogged by the dynamic soaring brigade. Dynamic (gust) soaring was considered to be the way to do it right up to the early 1920s, confirmed by Friedrich Harth's world record of 21 minutes in 1921. No-one has "gust soared" since, except perhaps to clear a line of trees after a misjudged final glide.

Realising the importance of wave speed, Froude would soon have connected the surfing of the ship with albatross soaring. In effect, the albatross is just a very efficient surfer, flying in the stagnant air just about the water on the front of a wave, traversing along the wave front to gain speed (airspeed) using exactly the same technique

Please send letters – marked "for publication" – to:
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or to: helen@sandg.dlron.co.uk
Please include your telephone number and full
postal address, and try to keep your letter concise.
The deadline for the next issue is February 13

Dates for your diary

Air League Educational Trust

Opportunities exist for individuals to secure funding from a range of Air League Educational Trust's awards. Application deadlines are as follows:

Flying bursaries (for PPL/BCPL holders)	March 30, 2001
Engineering Scholarships	March 30, 2001
Breitling Balloon Scholarship	April 30, 2001
2002 Flying Scholarships	June 29, 2001

Eligibility for these awards varies and more details can be found at www.airleague.co.uk or obtained from the Secretary.

Air League Educational Trust, Broadway House, Tothill Street, London SW1H 9NS. Tel: 0207 222 8463

UK and International competitions in 2001

Aerobatics	Dunstable	Mar 31–Apr 1
Overseas Championships Spain		May 14–25
Regionals	Tibbenham	May 26–Jun 3
Glider Aerobatic Nationals	Saltby	May 31–Jun 3
Regionals (motorglider)	Bidford	Jun 9–17
Club Class Nationals	Hus Bos	Jun 16–24
18-Metre World Champs	Lillo, Spain	Jun 18–Jul 1
3rd World Class Worlds	Lillo, Spain	Jun 18–Jul 1
15-Metre Nationals	Booker	Jun 30–Jul 8
18-Metre Nationals	Tibbenham	Jul 14–22
Enterprise	North Hill	Jul 21–28
Regionals	Hus Bos	Jul 28–Aug 5
Open Class Nationals	Lasham	Jul 28–Aug 5
Regionals	Lasham	Jul 28–Aug 5
Regionals	Sutton Bank	Jul 28–Aug 5
Women's Worlds	Lithuania	Jul 27–Aug 12
World Junior Champs	Issoudun, France	Aug 5–19
Standard Class Nationals	Nympsfield	Aug 11–19
Inter-Services	Bicester	Aug 11–19
Regionals	Dunstable	Aug 18–26
Regionals	Gransden Lodge	Aug 18–28
Two-seater Comp	Pocklington	Aug 19–26
Junior Championships	Aston Down	Aug 25–Sep 2
Mountain Soaring Comp	Deeside	Sep 2–8
Aerobatics	Saltby	Sep 8–19
Worlds	Mafikeng, S Africa	Dec 18–31

Bold text shows additions/amendments from the last issue

The 31st annual exhibition of aviation art

If you would like to submit your non-computerised creations – paintings, sculptures, reliefs, even cartoons – to the Guild of Aviation Artists' 2001 exhibition, its Submission and Selection Day is in London on May 13. Contact the Guild at 71 Bondway, London SW8 1SQ. The exhibition itself will be at the Carlsbrooke Gallery, London W2 2HF from July 17–27

as the surfboarders. (See *Surf Soaring*, December 1971-January 1972, p458–460).

Chris Hughes, WITCOMBE, Glos

Why not try black?

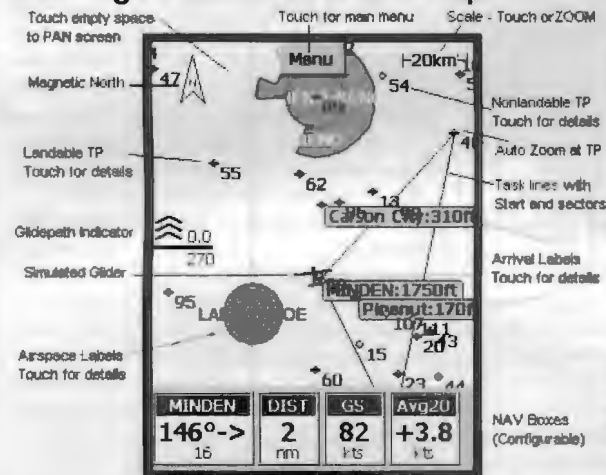
If the best colour for conspicuity against sky is black (*Flashes don't show*, December 2000-January 2001, p611), why not make wings white on top and black underneath? Direct sunlight can only fall on the underside intermittently, while turning, climbing or diving. The higher and hotter the sun, the shallower the angle at which it could possibly strike the surface. While in shadow, a black surface is an effective radiator of heat.

Alan Self, CONGLETON, Cheshire

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Turning your club's churn rate

THE REPORT of the BGA's Project 2000 *Membership and Marketing Study Group* and the subsequent market analysis by Ian Godfrey conclude that:

- gliding membership numbers, both at home and overseas, are in decline
- most, but not all, General Aviation sports are suffering from the same problem
- membership turnover rates ("churn rates") are too high, at 15-20 per cent of the average club membership
- two percentage points reduction in wastage from members leaving would result in a return to overall membership growth
- the most efficient method of halting the decline in membership is by concentrating upon retaining existing members, rather than by expensive recruitment campaigns, followed by poor membership retention.

If there was one message taken back to clubs by their chairmen, attending the recent Chairmen's Conferences, it was to take action to stop the unnecessarily high wastage due to membership turnover. We all know it happens: we all know that the "churn rate" is at an unacceptably high level. But how do we stop it?

Unfortunately, we find in practice that in many clubs information on membership turnover is lamentably lacking.

Few membership secretaries know what their normal turnover rate is, nor do they know how many new members are needed each year to retain a constant membership. If you try to determine why members fail to renew their subscriptions or at what stage of their gliding careers most members pack the sport up, it is pretty clear that no one has asked. Certainly, that information is seldom available.

Pilot trial

In recognition of the serious nature of the problem, Southdown GC has volunteered to run a pilot trial for the BGA. The objective is not only to stop membership wastage at Southdown but also to provide guidance to other BGA clubs on how to improve membership retention and return to growth.

Southdown GC is piloting ways of reducing turnover of members

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Method

A logical investigation is adopted at Southdown. The first task is to establish the facts on recent membership turnover for the last three years. If the membership numbers are known, both at the beginning and the end of the period, and there is a record of the numbers who have joined during that time, it should be a straightforward task to establish membership gain or loss and turnover rates as an annual percentage of the surviving membership. Next, we need to determine the most sensitive and vulnerable stages for losing members. Is it pre-solo or

early post-solo, pre-Bronze, post-Bronze, pre-Silver – who knows? We also need to find out people's true reasons for leaving, accepting that such information is more likely to be derived by personal contact than by questionnaire. Armed with the knowledge of the most sensitive and vulnerable times in a glider pilot's career, it should be possible to anticipate the next batch failing to renew membership and to do something before it is too late.

Early-warning system?

Can the club's accounting system provide the essential data to help identify the potential quitters? Simple lists based on, for example, number of flights in the last month or number of hours in the last six months? These should provide the necessary early warnings upon which action can be based.

Once the potential "quitters" have been identified, then someone needs to provide friendly advice or counselling to encourage them to stay and to try for a little longer. Clearly the choice of individual to undertake such an personal approach will be important. Some club members are good at that type of approach – others are hopeless!

Action needed

We plan to replicate the Southdown trial at Derby & Lincs GC, and to use the resulting information to produce "best practice" guidelines for other clubs. No doubt a lot of interesting and absolutely unpublishable information will also be generated, but we hope that a better understanding of the problem will lead to a positive result.

What really matters is that clubs take effective action in time to stop the rot.

Roger Coote
BGA Development Officer

Things to get with the money you had for Christmas

Take Up Slack

by Edward Hull

From the London GC, or the BGA office in Leicester for £11.50.

A MUST read if you are a glider pilot! Although it is really the fascinating history of the London GC, spanning its 70 years from 1930 to date, it also traces the early beginning of the British gliding movement.

This fully-documented account of some of the goings-on at Dunstable, both in the air and on the ground, makes delightful reading. The characters, their gliders, their trials and tribulations, which in fact made gliding infinitely pleasurable, are all well recorded. I hope this labour of love, of which Ted Hull can be justly proud, will encourage other UK clubs to record their own histories which, in time, might even be put on display

at a future British Gliding Museum. Now there's a thought! For the past and current members of Dunstable, any glider pilot who has flown to or from there, or indeed still has the pleasure of flying at Dunstable to come, I strongly recommend that you buy, borrow or steal this book. You will not regret it.

Wally Kahn

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the company which commissioned the survey; *Getmapping.com*. Their standard product is an aerial image 20x20cm on an A3 "certificate" to which additional text may be added. Priced at £19.95 (unframed) they may make a novel souvenir or gift for someone who finds aerial views fascinating. The colour image covers an area of approximately 400m², centred on a location of your choice, and gives an impression similar to what we might expect from our better turning point photos – don't try to submit one to an OO, though.

Alternatively, you can specify the location and scale of the image, reproduced at any size from A4 to A0. Despite impressive results, the larger sizes are a tad pricey for gifts at £85 for the laminated A3 version.

Phil Morrison

Ten tips to help you buy a glider

SO YOU finally decided that the faithful old "K-whatever" you bought with the student grant must go – or the kids have flown the nest and you now have so much money it's burning a hole in your pocket... And you have to buy a shiny "new" glass machine or self-launcher. Well, I'd like to offer some guidance and advice. I constantly hear tales of woe, from poor refinishing or repairs to motorgliders that cost far more than the purchase price to bring up to a reasonable airworthiness standard. And money is no measure of the heartache if you get it wrong.

Buying a used glider is similar to buying a used car. Most of the same rules apply. Because the majority of gliders are private sales by individuals "buyer beware" applies. You don't have the same protection as you would if you purchased from a dealer.

Once you've found the perfect glider, work through this checklist:

1. Does the person selling the aircraft own it or are they acting as agent? If in doubt you can check the last registered owner (with the BGA if it's a glider or with the CAA if it has a G registration). The same rule applies as if you bought a stolen car; you could lose the aircraft and your money.

2. Is the aircraft what it purports to be? Check the data plate for model and serial number. Cross-check this with the C of A and logbooks. Does it have the correct equipment installed – the engine and propeller may have been changed so check that they are correct for the model – this information will be on the type data sheet. It's worth noting that if the aircraft is to be registered with the CAA and an incorrect engine or propeller is fitted, having it approved could become a very expensive exercise. Ensure that any modifications have

been approved either by the BGA, CAA or local airworthiness authority as appropriate.

3. Is the "mileage" correct? Scrutinise ALL the logbooks and make sure that the hours flown and flights increase at the appropriate rate. Is the obvious wear and tear consistent with the age and hours flown? Airframes never revert to zero hours; engines and propellers do, but only after a complete overhaul: that is, it has been returned to the manufacturer's original tolerances and certain parts are brand new.

4. Check the history. The BGA keeps files on all aircraft registered with it, copies of 267 forms and accident/incident reports. There is probably a file at Leicester on every motorglider, too. For imported aircraft checks are more difficult, but at the very least ensure you get the correct documentation and an export C of A if possible.

5. Get an independent inspection. Ask or employ someone who knows the series of aircraft to carry out an independent, thorough inspection of the aircraft and documentation. As no certification is involved at the survey stage you do not have to use a BGA inspector, but I would recommend that you do, as they will be familiar with all the inspections and checks on a particular type. Check the physical condition. How has it been stored? Have all mandatory mods and inspections been complied with? Look for evidence of recent repair work or refinishing and if found ask why it's there. Carry out a thorough inspection of all the paperwork and logbooks. One suggestion is to use a spare 267 form as a basic checklist. Of course, you can conduct the survey yourself but remember that you may not want to find fault or any abnormality, since all you really want to do is fly it!

6. Check the life remaining on items such as the propeller, engine, landing gear, fuselage, wings and service life items in the maintenance schedule.

7. Rigging the aircraft. Be aware of uneven gaps, any tendency to lean one way, its symmetry and general ease of rigging.

8. Check the trailer. Is it roadworthy? Does the glider fit? What about the internal and external fixtures and fittings? Has it been serviced? Does it leak? See also my article about trailers in the last issue (*Ensure your glider is airworthy*, December 2000-January 2001, p13) or visit manufacturers' websites.

9. The flight test. First ask yourself: "Am I insured and hold the appropriate rating?" If you can't answer YES or you are not confident to fly the new machine ask someone else who is to do it for you. You should be completely happy with all aspects of the flight, but remember that if you break it you will probably have to pay for it!

10. The price. Negotiation is the name of the game. Look in S&C's classified ads or on the web to gauge the market. Does the aircraft come with a new C of A (one year for gliders and three years for motorgliders)? Is it due for a maintenance check? Is it complete or are there any optional extras like oxygen system, GPS, bugwipers, fluffy dice, etc? Does the vendor offer any guarantee or does the price include delivery?

Finally, consider why the vendor is selling such a "perfect" aircraft, listen to the stories then make up your own mind.

Buy with your head then with your heart – and remember, if in doubt walk away. Good hunting, and I'm sure you get the chance to buy the aircraft of your dreams!

Jim Hammerton

BGA Chief Technical Officer

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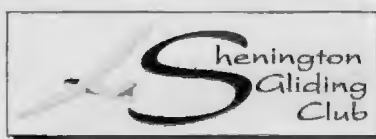
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Where do all the ex-virgins go?

IT IS an axiom of marketing that getting the punters to sample the product is the surest way to convert them to loyal and enthusiastic customers. Personal trial is much more efficacious than just seeing or hearing an advertisement. Hence the tiny free tubes of toothpaste pushed through letterboxes, and gracious ladies in superstores foisting complimentary slugs of some new liqueur on shoppers. I have often thought that if you were a master of disguise you could do several tours of the gondolas (which is what the racks in supermarkets are unaccountably called) and get high as a kite, before attracting the suspicion of the merchandisers. Then, when you are arrested on the journey home for Driving Under the Influence, you hire a New York lawyer and indignantly sue Safeways for leading you astray with intensive saleswomaniship.

(Get to the point! Ed.)

The point is that sampling the great sport of soaring is done on a colossal scale these days. Thousands of people take to the air as a result of some pretty nifty marketing by clubs – and far from being free, these air experience flights are quite expensive. That should even further enhance the likelihood of persuading the trial-flight passengers to become long-term practitioners of the art of motorless aviating. For it is well known that something that has been paid for at a stiff price is treated far more seriously than something that is gratis. Free advice, for example, is hardly ever heeded; which is why I charge the proverbial arm and leg for it – not out of avarice, mind you, but for the clients' own good, since it is the only way to make them swallow the beneficial medicine that I dispense. Likewise you might think that a brief but costly sojourn with the birds on a summer's day should produce a willing convert to gliding almost every time.

Far from it. Following an experience which one would hope rivalled almost any of life's greatest thrills, of every hundred trial-lesson samplers the number that take up the sport is not 50, it is not 25, it is not 12, it is not six.

It is one.

Some of the excuses that can be dragged

up for this miserably low Conversion Rate, as we call it in the huckstering game, are obvious. The most obvious is that the typical passenger whom we see being shoe-horned, pale and shaking, into the front end of a K-13 on a windy morning is not the original purchaser but is merely the recipient of a gift. The exhilarating, vertiginous surge of a modern winch launch, and the ensuing succession of rate-three turns before swooping in to land at just short of VNE, was presented to them as a birthday or Christmas gift by someone purporting to love them, which came as a total surprise, welcome or unwelcome as the case might be.

I accept that not every gift recipient is going to sign up to a year's membership on



master of disguise

the spot immediately after stepping back onto solid ground. Nevertheless, something is not quite right about these derisory results.

Let me use an analogy, not for the sake of provoking coarse guffaws, but purely for the purposes of illustration. This is a family magazine (or so Madame Editor keeps telling old Plat, though frankly you could have fooled me) and there is absolutely nothing prurient in my thoughts. I hope you will accept that honest disclaimer in the spirit in which it is intended.

Imagine that instead of Soaring Flight being the great experience that you wish to promote and that your innocent punter has not yet savoured, it was that of Close Encounters with a Very Attractive Member of the Opposite Sex. You carefully arrange for such an encounter to take place under the most favourable circumstances. (Clearly

you must not do this for personal financial gain, or a term in the slammer – probably involving Close Encounters with Very Unattractive Members of the Same Sex – will rapidly ensue.) You book the innocent and the, er, EEI (Erotic Experience Instructor) into a rose-covered small hotel, with a wishing well, as it says in the song, and provide a candle-lit supper and the whole works. Then you retire discreetly to let Nature, helped by a logbook-full of hours on the part of EEI, take its course.

The next morning you visit the no-longer-innocent punter and ask anxiously: "Well, how did it go?"

You are relieved and delighted to hear your former virgin say: "Wonderful, fantastic! Never had so much fun. Worth every penny. I'll certainly recommend this place to my friends, etc, etc." They are positively bubbling with enthusiasm.

Naturally you follow up with: "Now I suppose you'll want to do it again? In fact," you add with a light laugh, "again and again and again?"

"No."

"No?"

"Sure, it was great but now I've been there, done that, bought the T-shirt. Next weekend I thought I'd try bungee-jumping or white-water-rafting. They say marlin-fishing just has to be done once in a lifetime; what do you think? I've got this long list of things to try, and I've only got half-way down the page. Well, so long and thanks again." And they disappear, never to return.

You would be right to wonder if something had not gone badly wrong. Especially after 98 more tries and not a single recruit signed up. Naturally you would want to interview the EEIs and even consider installing hidden closed-circuit cameras to monitor points of technique. Is it the patter? I'm told the patter is enormously important; these carefully-rehearsed words relax the punter, and inform and instruct at the same time. Are the EEIs up to the job? Has it all become a bit of a treadmill for them, as a result of which personal charisma has worn thin, and the customers, rather less thrilled than we think, are just being polite before beetling off into the middle distance and not coming back.

Or worst of all to contemplate, is it all

the punters' fault? Maybe this Sturdy Island Race is not what it was? Not prepared to put up with a bit of frustration and waiting for conditions to perk up? (I'm back to gliding now; try to forget my elaborate example, if you can.)

I had better leave it there. But if I have had the effect of provoking thought on this issue, so crucial to the future of the sport, then I feel I have been of some small service.

(More) advice to editors

Following my piece on the subject of editors' dependence on amateur pen-pushers as contributors to club newsletters, I am grateful to get this message from a Ms T W: "Thanks for cheering me up – how nice to know that I'm not alone! I read your comments re editing club newsletters last night (this morning) at 12.45am, as I gave up waiting for the final promised articles to fill the blanks in the already overdue quarterly newsletter. The Chairman runs away when I mention "his bit for the newsletter," the article I'm currently awaiting is to soothe the feathers of someone ruffled by comments in the last newsletter, and sadly the club neglected to give me a bribery fund at all. So you're spot on! Keep up the good work."

Ms B W adds: "I liked your comments about luckless newsletter editors! That's exactly what seems to happen. I've even got one pilot who keeps saying when are you going to print MY reminiscences in your Club Aviator series? I have to gently point out that he has yet to write them..."

Delinquent authors let editors down with a frequency that can almost be called reliable. However, the equal and opposite pest is the constant sender-in of unsolicited, unprintable, unreadable, tedious and long-winded codswallop. In short, they can't write but they still insist on doing so. And you have to get shot of them somehow without giving mortal offence. With hun-



some spot over the Scottish border

dreds of years of experience the Chinese, who invented printing and have had the problem longer than anybody else, show us how to turn away unwanted submissions gracefully, with something like the following: *Most Esteemed Sir,*

Into this mean, rat-infested and squalid hovel, that we dare to call our editorial offices, has burst your illustrious article, outshining the very sun above. We are obliged to shade our astonished eyes as we read it, such is its dazzling splendour. The wisdom and poetry of your words rival the great Confucius himself.

Sadly, the effect on readers of your brilliant contribution would be to reveal cruelly the wretched inadequacy of all other parts of our miserable journal. Our few subscribers, disillusioned, would desert us. Abjectly and with heavy heart, therefore, we return your manuscript to you, humbly begging you to look elsewhere for a superior setting in which this literary jewel may find its proper place.

Yours grovellingly, etc
Hsiu Chung, Editor

There I was, nothing on the clock

My ambition in this first year of the new millennium, 2001 (*Oh Lord, there he goes again! Ed.*) is to do a flight of at least 800km from Dunstable to some spot over

the Scottish border and back. The nearest effort was a few years ago, a nine-and-a-half-hour flight in the ASH 25 with a 19-year-old female student from University College, London as P2. (All I remember of this splendid young woman was that she never complained, never got sick and never mentioned any need to visit the bathroom.) I declared Bellingham reservoir in Northumbria and return, 760kms. We made a really early start, taking off a good 30 minutes before the thermals had even got out of bed. After release, a long glide from 3,000ft in dead air brought us to the first tentative burbles 20kms on track, and we were happily on our way before 10am. However, after many struggles, with only another 5,000ft of climb needed, a strong, cool, easterly sea breeze brought us down 70kms from home at 7pm. Although a creditable 690kms had been scored I felt sufficiently disgruntled with this failure not to bother to write the unfinished flight in the club cross-country book. My attitude then was that if the declared flight was not achieved then it was, competitively speaking, a wasted day. I can see now, especially after listening to Hans-Werner Grosse, that this attitude is quite wrong.

One tiny vignette remembered from this epic was after the 500km mark had been passed, somewhere over Yorkshire on the way home. I was rightly beginning to worry about running out of time, and also getting pretty tired after several low points over unlandable northern hills and some essential cloud-flying in ragged weather. Suddenly I announced with a shout of joy: "Oh, we've got bags of time yet, it's only half-past four!"

(Pause.)

"Hang on, that's the altimeter..."

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PW-6



NEW two-seater trainers have become increasingly expensive, but Polish glider and aircraft manufacturer PZL Swidnik believes they don't have to be. Its unflapped PW-6, based on the World Class PW-5, is just DM 77,000 plus VAT.

From the moment you see it, the PW-6's design heritage is apparent: a slim, high tailboom with a conventional 'crossed' tail and a mainwheel so far back that the glider rests on the nosewheel even when empty. The wing has a simple trapezoid planform with a leading edge that sweeps back at the tips, while the tailplane is rectangular with interesting-looking elevator mass balances at the outer ends. With a 16-metre span and empty weight of 340kg the PW-6 – developed by the Warsaw University Aircraft Composites Structures design team under Dr Roman Switkiewicz – is smaller and lighter than most GRP two-seaters.

Rigging is easy, it can be done by just two people, and incorporates new and old features. The two main pins, for instance,

Jochen Ewald tries out the new two-seater sister ship of the world class PW-5

are fixed in guides in the sides of the rear cockpit so they cannot get lost and are easy to reach and check. Sadly, the ailerons and airbrakes don't connect automatically. Control rod connections, made through an opening in the top of the fuselage, use 'Polish links', which are said to be easier to connect and check than l'Hotelliers.

Tailplane rigging isn't state of the art, either: it is pushed into place from behind with front bolts that slide easily into their fuselage-side holes. The rear connection of the prototype's tailplane was fitted with a screw and crown nut, secured by a cotter pin. A needle-secured bolt will be used in production. The elevator pushrod is connected manually to the lever at the elevator by a 'Polish link'. This connection, under the elevator, is easy to make and check, but could become dirty.

The surface finish of the sole prototype showed some weak points which, given the professional quality and finish of PW-5s from the same factory, will hopefully not be found in production. I didn't like the soft feeling of the tailplane's leading edge shell: it's strong enough for flying, but could be damaged by careless ground-handling.

Moving the PW-6 around is easy as the nosewheel stays on the ground so there's no need for a tail-dolly, and for directional control you simply push the tail down slightly. The low cockpit wall gives easy entry behind the forward-opening front canopy and rearward-opening rear perspex, although both might open a bit wider. The locking/jettison system has two knobs at the canopy frame for normal use, but in emergencies a third red jettison handle has to be pulled to free either canopy from its hinge. That means in an emergency you have to operate three levers in different directions. The front canopy also lacks a Röger-Hook to flip the canopy clear; in the rear, the hinge serves as one.

Both cockpits are comfortable, with an upright seating position. The adjustable seatbacks can be removed to provide extra room for tall pilots up to 1.90m, and for even taller ones the cushion is removable. The weight range in the front cockpit is from 55 to 110kg, and max payload is 210kg (200 on the prototype). This gives a wing loading of 36kg/m with the 15.25m² wing. Solo, it is a little below 30kg/m, similar to most early solo single-seaters.

The front panel is mushroom-shaped, while the rear bridges the canopy frames and both are large enough to take a standard set of instruments. The cover of the front panel is fitted to the canopy frame



The flying characteristics of the PW-6 two-seater make it suitable for club use, says Jochen – and it's fun to fly



The front panel's cover swings up with the canopy frame

and swings up with it. I'd have liked a cover on the bottom, too, to prevent possible damage to tubes and cables from feet.

All the controls are easy to reach and operate, although the front cable release knob is at the foot of the instrument mushroom and too far from the air- and wheel-brake lever and very close to the similar pedal-adjusting knob. As usual with Polish gliders, there's a pee-tube hole in the seat.

The spring elevator trim system is on the left and unlocked by turning the knob to the right, and its numbered positions will help pupils find the proper position for take-off. To operate the drum wheelbrake there are bicycle-type brake levers on the airbrake handle. While the front pedals can be adjusted in flight, the rear pedals are fixed, so I asked some different-sized instructors to try the rear position. They found it comfortable, although some remarked that there was no space to place their feet without touching the pedals.

For my aerotow test flight there was a 10-15kt 90° crosswind, and we had a take-off weight of approximately 510kg, with the c of g in a middle-to-front range. With a heavy load the nosewheel takes some time to lift off the ground and allow directional control, but the aileron efficiency was good straightaway and the crosswind didn't produce any difficulties. I'm told that winching is straightforward, too.

Passing through strong turbulence between trees at the end of the airfield, the

PW-6 proved stable and easy to fly. Control forces were comfortably low and the view from both cockpits was very good, but the fresh air supply (only through the forepart of the front canopy) could be better for flying in warm weather. You can, of course, open the vents in the DV panels, but adjustable nozzles on the cockpit walls would be preferable.

Flying slowly, a little above 73km/h, the controls began to feel soft and shook as a stall began. With the stick back further the PW-6 started to stagger. Easing forwards brought things back to normal immediately. Some modern trainers just don't want to spin, so more and more instructors want two-seaters which do. In the PW-6, they can. With our C of G position it turned steeply and without oscillations. With the correct control inputs, rotation immediately stopped and the speed built up for recovery.

Thermalling is fun thanks to the light controls. I measured the 45°-45° roll-rate at four seconds (right to left) and 4.5 (left to right) at 100km/h – not bad for a training two-seater. The rolling control harmony was good, too, with first a little more aileron, then a little more rudder, needed to keep the PW-6 on its line. Normal thermalling speed is 80-85km/h in calm thermals. In turbulent conditions, the control response was best at 90km/h. As for climbing performance, there didn't seem to be much difference between the PW-6 and the K-21s which joined me in the bumpy, weak thermals. At higher speeds, the control forces rose nicely on the straight, upright control stick. Simple aerobatics, like loops and stall turns, are certified and no problem.

To check the secondary effect of the Schempp-Hirth single airbrakes I trimmed to 85km/h and then, opened them fully. The nose went down and the speed increased to 120km/h, which was excellent, as no change of trim was needed for landing. As they also destroy a lot of lift, though, it's wise not to approach below 105km/h (plus wind reserve). Sideslipping is also effective and easy to control, but with full airbrakes the approach becomes extremely steep and care has to be taken to maintain speed for a proper round-out. The brakes were also very effective in steep dives.



Rear panel bridges cockpit; 'bicycle' brake for wheel

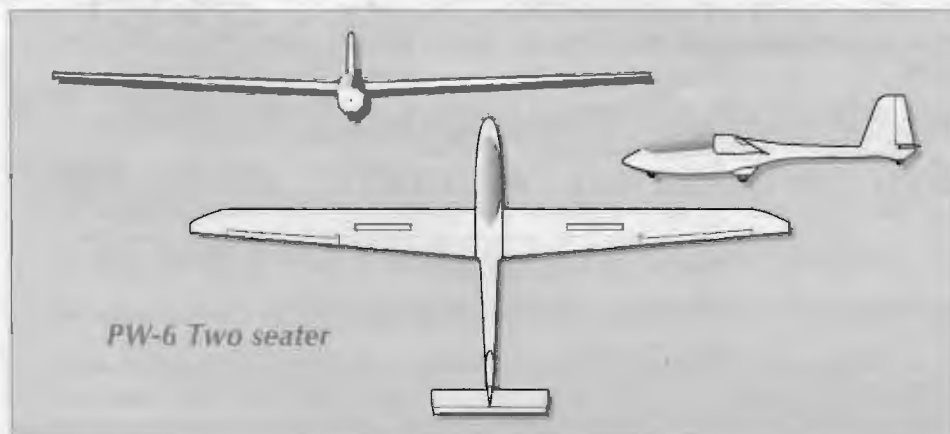
The landing was fully held off with the well sprung main wheel touching first. The small tailwheel only protects the tail when hitting the ground during winch launches with too abrupt acceleration. Almost immediately after touchdown, the fuselage nods forward onto the nosewheel. Unfortunately, this quite heavy-loaded wheel isn't sprung, so landings on rough ground aren't always comfortable, especially for the person in front.

With this type of undercarriage, the maximum wheelbrake forces are also limited as some of the weight needed for good friction is brought forward onto the unbraked nosewheel. Directional corrections when the nosewheel is on the ground are nearly impossible. This type of set up is used by a lot of modern two-seaters as it allows easier ground-handling and is more stable during crosswind take-offs and landings, but most others that use it have a lower load on the nosewheel.

The PW-6's chance of success appear quite good. At DM 77,000, it fills the price gap between the older wood, steel tube and aluminium two-seaters and the significantly costlier composite ones.

Although it doesn't completely fulfil the standards of a modern two-seater in all features, its flying characteristics are very suitable for a club trainer and it's fun to fly. And that will make it attractive to clubs which want to convert their fleet to plastic, but are hesitating for financial reasons.

Text and photos: Jochen Ewald



PW-6: basic technical data

Wing span	16m
Overall length	7.85m
Wing area	16.25m ²
Aspect ratio	16.8
Min weight	405kg
Max weight	550kg
Empty weight	340kg

Calculated performance for the aerobatic version

Stalling speed	68km/h
Min sink at 80km/h	0.75m/s
Best glide at 95km/h	34
V _{NE}	260km/h
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Apologies for the small print, but the April-May S&G has

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of good things for you to enjoy. In the next issue, there is:

- Jay Rebbeck on how to find thermals
- *Salutary Soaring* – involving nuclear weapons...
- Klaus Ohlmann on the OSTIV Mountain Wave Project
- Great pictures from a lesser-known soaring destination
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This is on top of all your usual favourites – your letters, Club Focus and, of course, Platypus. That means you've

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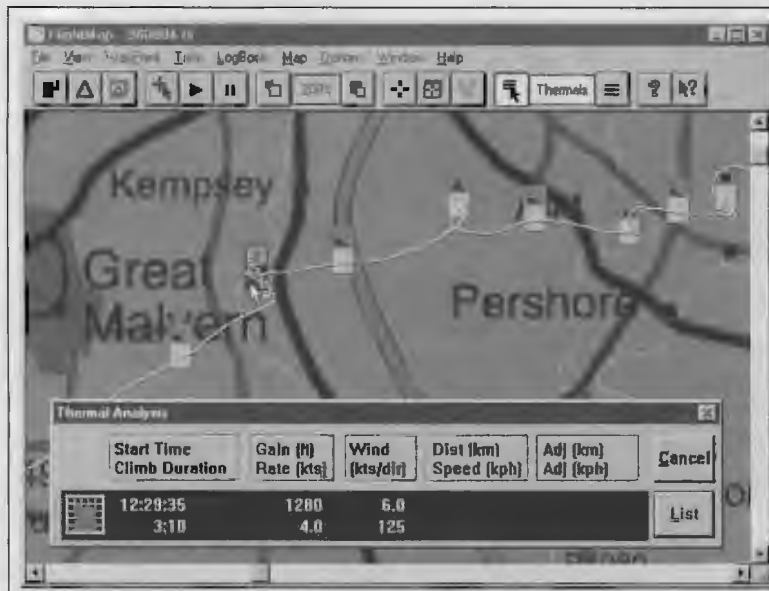
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David Roberts, the BGA's chairman, describes your Association's plans for the next five years

ORGANISATIONS need to review their purpose and operation from time to time, to refresh their thinking and set new courses for the future.

Over the last two years the British Gliding Association has been engaged in such reviews, starting with the *Project 2000* initiative of Dick Dixon, my predecessor as BGA Chairman. Membership, marketing and communications featured prominently in the deliberations, and it is no surprise to learn that the world outside gliding has been changing more rapidly than the world of gliding, despite the technological advances of recent years with higher performance gliders, GPS, vario systems and even a new generation of winches on the market.

Dick's insight into the BGA's activities (*Planning for the future*, October-November 1999, p13) provided a useful resumé of the terms of reference of the various BGA sub-committees. In this article I shall put these into the wider context of where the BGA should be heading and the strategies it should employ.

The new five-year strategic plan has been the subject of consultation with club chairmen at the Chairmen's Conferences at Lasham and Pocklington last autumn. The final version will be outlined at the BGA AGM and conference on February 17. Here is a brief insight into the main thrust of the plan.

Roles of the BGA

The BGA exists to represent and further the interests of what is a minority sport in an increasingly competitive environment – competitive not just for members but also for the facilities required, such as airspace and airfields, and the finance to enable the sport to exist and prosper. The justification for the BGA's existence is as the governing body of gliding in the UK, through which services can be provided with economy of scale and relationships with government and other national and international bodies can be conducted more efficiently, cohesively and effectively on behalf of clubs, than by clubs acting individually. The diagram at the top of the opposite page sets out the Association's key roles.

Philosophy and core values

Organisations have a culture, an ethos that is often expressed in terms of philosophy and core values. Invariably intangible, it is nonetheless worth trying to identify them, since they bring together the Association and its members. The BGA is there to provide airborne opportunities and adventure for all commensurate with safety,

Where next?



the white planes picture co.

which is paramount through all levels of gliding. The freedom to experience that adventure, through responsible risk-taking in setting personal goals, seems to be a strong belief held by many pilots. A purist philosophy and respect for the natural environment exists in gliding, as in sailing. Gliding is open to all: there is equality of opportunity and it provides for peoples' aspirations through comradeship and teamwork. Gliding is its people. In our community, life-long friendships are made.

Key strategies

Much of the plan confirms what the BGA has been doing for many years, but with an emphasis on improvement and growth in certain areas. Strategies are clustered around the aims and objectives that support the roles of the Association.

Six key strategies have been set out according to the priorities emerging from the consultation process.

Firstly, emphasis must continue to be on self-regulation in vital areas such as:

- standards of flying and gliding operations
- training instructors and coaching
- airworthiness of gliders and motorgliders
- safety environment in and around gliding

In an increasingly regulated society, the BGA's mission on self-regulation is to provide a platform acceptable to various authorities, and which gives member clubs a sensible, practical and economic framework of operations to standards that can be justified and defended in terms of acceptable risk.

The CAA has long supported the BGA's role as a responsible self-governing body. To continue this role, with the associated

benefits to glider pilots and their clubs in terms of compliance costs much lower than they would be otherwise, requires the BGA to invest in key people, systems, processes and communications.

It has been said many times: the UK gliding movement must reverse its declining membership. The plan aims to restore it to more than 10,000 members by September 2005. The BGA's role will be primarily as the facilitator, by helping clubs to define and plan their market strategies and by promulgating "best practice". Ian Godfrey, as Chairman of the Marketing and Communications Committee, leads this initiative. It concentrates on clubs reducing their membership turnover ("churn") rate because of the evidence that we do not have great problems attracting people to gliding, more of a problem retaining them.

'The world hates change, but it is the only thing that has brought progress'

— Roy Edwards, NZ Gliding Association

Closely linked to the membership and marketing strategies are communications. A perennial problem for the BGA is that, whilst it can communicate with member clubs, many of the communications it puts out need to reach individual members. *S&G* provides one route, but more timely methods are available, particularly through the internet. Resources are now being put into improving the BGA's communications within the gliding movement by the appointment of a part-time communications manager early in 2001.

Part of the strategic plan is a Sports Development Plan. This aims to build on the existing initiatives which provide coaching towards the goal of sporting excellence, by raising the game at all levels of gliding, from grassroots to international competition. We must be seen as a serious sport, creating favourable impressions in the media and in political circles. International success, which we have had from time to time, but not consistently, can act as a powerful facilitator and lever for the grassroots of the sport. This is clearly evident in those sports that gain success at Olympic level. For the Sports Development Plan to be implemented, it requires funding from external sources, in particular for the employment of a part-time Director of Performance – which most other sports have in one form or another.

Bringing marketing and sports development issues together requires clubs to develop and implement sound business plans. The BGA's strategy for club development is based on the provision of consultancy and advisory services to member clubs through its Development Officer, Roger Coote, and others, as well as through the provision of conferences and seminars on management topics.

Last, but by no means least, a key strategy is in relation to airspace. The BGA will continue to play a leading role for non-commercial and non-military aviation interests in representing the interests of sporting aviation to defend the rights of access to the maximum amount of UK airspace. This is particularly important during the forthcoming period that will see major changes in the management of UK airspace (NATS privatisation), and new proposals from Europe for airspace designation and structure.

Supporting strategies

Space precludes outlining all of these here, but they cover areas such as organisation, safety, site security, markets and brand, social inclusiveness, environmental issues, a national gliding centre, sponsorship, data management, and publications.

Three of these topics merit particular mention. The BGA "brand" and logo needs a "clean-up" in its application, in order to create a crisper image generally. Some may



say it needs a complete overhaul. What we are suggesting is that competition gliding should have its own brand image, within the BGA fold. My own suggestion is something like "Racing Sailplanes" © with a suitable logo. It would be part of an image creation to secure significant sponsorship funding for competition gliding, particularly international representation.

The plan endorses a feasibility study for a national gliding centre which could house a future BGA office on an airfield with long-term security for gliding, and provide the fixed base for coaching and instructor training operations as well as a technical centre. Interestingly, the Popular Flying Association, for many years at Shoreham, is planning to develop a freehold property headquarters on Long Marston airfield.

Financing

If gliding is to survive and grow it needs to be properly financed. The plan contains some elements, such as the Sports Development Plan, that can only go ahead

if we secure external funding; other parts will have to be financed from within the movement. As we go to press the final review of the plan's resource and financial implications is taking place.

Clubs and individuals should be aware just how much is provided by the BGA in their support with the amount of money available currently, and then look at what needs to be done further and how that can and should be paid for.

Summary

This is just a quick overview of the strategic plan but I hope you find it useful. After the Executive meeting in January we aim to produce a summary version of the plan for distribution to clubs.

Plans take time to produce. However, execution of the plans is the really difficult bit. This is where we need the support of clubs, club members, all the volunteers and the few paid professionals in the BGA – your support – to ensure a successful future for gliding in the UK.

The plan so far...



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How to thermal better

the white planes picture co.

CENTRING thermals efficiently, and climbing quickly, are probably the most fundamental skills you need to soar successfully. Even a small improvement in your technique could easily mean an extra few hundred feet in every thermal – or thousands of feet in a typical cross-country flight of, say, 20 thermals.

Come the end of the day, this might even make the difference between getting home and landing out. In a competition, what you gain in improved climb rate could well equate to the points separating the winner and mid-table obscurity.

Before you even reach a thermal, you can start building a mental picture that will help you centre and climb quickly when you get there. Typically, you will be approaching a cumulus hoping to climb. You can improve your chances of finding a thermal by assimilating all the experience gained on that day to guess where the thermal might be in relation to the cloud. Whilst on some days, thermals appear to form randomly, there are others when you can find them quite reliably. For example, if a strong wind and bright sunshine were feeding a cloud from one direction, you would expect to find the thermal on that same side. I'll cover this in more detail in the next issue of *S&G*.

As you approach the area where you expect the thermal to be, hold the stick very lightly. Other than maintaining a good

So you've found your cloud – but what's the best way to use it? Jay Rebbeck explains

lookout, you should be totally focused on feeling which side the thermal is. If the thermal feels strong enough, turn towards the wing that's lifted.

After you have rolled and turned into the thermal, one of two things might happen: If the lift steadily improves, great. But what should you do if the lift drops into sink?

The answer depends on how good the surge felt and how desperate you are to climb. If you weren't confident of the lift when you started to turn and the clouds ahead look good, then simply roll out and get going – if you've got the height. However, if the surge felt smooth and solid, but you turn into sink, then you've probably turned the wrong way. At this point FORGET any distractions about what techniques to use, and resort to a mental picture (see right). Logically, the quickest way back into the centre is to do a tight 270° turn, and then re-centre. This manoeuvre brings you back to where you would have been if you'd turned the right way in the first place! You're now in a position to maximise your climb.

Despite the enormous importance of climbing quickly in thermals, this is one of most controversial topics in gliding. Most

people want to be taught a prescriptive technique for thermalling, and this is where the confusion begins. There are two widely-taught techniques, but they appear to be completely contradictory.

The *tighten on the surge* theory says that when the vario indicates the greatest climb rate, you should increase the angle of bank. In apparent contrast, the second theory says you should widen out when encountering the strongest lift. So how do we resolve this contradiction? The answer is that both theories are right, but they are appropriate in different situations.

Tighten on the surge

So, having positioned your glider in the thermal, how do you establish yourself in the centre and optimise your climb rate? The answer is to use the *tighten on the surge* technique: when you feel the thermal pushing solidly, or the vario indicates the strongest lift, you should tighten the turn and dig the wing into the thermal. Most pilots don't turn tight enough, but of course, if you only tighten up in lift you'll end up in a spiral dive! To prevent this, when the vario indicates weaker lift or sink, you should widen the turn out to anticipate banking and pulling into the next surge.

The importance of tightening on good surges was brought home to me during the World Air Games in Turkey. Climbing in

hot, blue thermals with massive gaggles in identical-performance gliders, often the only way to achieve an advantage on anyone else was simply to get stuck right in to the core of the thermal. The pair-flying French pilots who went on to win always managed to centre on the strongest cores.

Widen out in strongest lift

Tightening on the surge is the technique for staying centred in one core of a thermal. So what is the role of the opposing technique of *widening out in the lift*? Quite simply, this should be used when you think there is a developing core nearby. But how can you recognise this emerging fresh bubble?

Having centred on one core, there are a few tell-tale signs: firstly, the average rate of climb drops off and, secondly, the thermal seems much stronger on one side than the other. Another core has formed, is bumping up the side of the one you are in, and the outflow from that bubble is interfering with yours. Sometimes this is marked by birds/gliders circling or tendrils being sucked into cloudbase nearby.

In any case, the solution is simple: widen right out in the strongest lift, wait a few moments, and tighten up in the emerging bubble. Then continue to stay centred in the new pulse of lift using the *tighten on the surge* technique.

The ability to re-centre quickly can sometimes be the key to competition success. On a critical day in the Junior World Championships in Holland, I was able to gain enough height on the gaggle in just one thermal to make it home as the sole finisher. What made the difference that day was simply that I re-centred efficiently and caught a short-lived bubble which the rest of the gaggle missed. That turned out to be the last thermal of the day, giving me enough height to glide home over the unlandable forest, whilst everyone else had to hit the ground the wrong side of it.

There is a strong correlation between the width of a cumulus and the number of bubbles feeding that cloud. For example, when arriving under a vast cloud street you should expect loads of bubbles and will probably need to widen out into wind frequently when you feel a fresh surge. On the other hand, climbing under the last isolated cloud of the day, you are likely to have to rely on simply tightening on the surge to get you home.

Whichever style you adopt, if you want to climb fast, you have to keep working it all the way to the top! You'll also need to be planning where you'll go when you leave the lift – which takes me neatly on to the subject of my next article: how to find thermals.



Jay, a member of London GC, has recently clocked up 400hrs as a cross-country instructor in Spain and South Africa. The Junior National Champion, he has a total of almost 2,000hrs

The key: build a mental picture



Jon Hall, HRA

WHEN YOU fly into a thermal, you want to turn into the best area of lift, centre efficiently and climb quickly.

Developing a good mental picture of your thermal is the key to achieving this. Absorb as much information as possible from your environment, using all your senses to produce a continually-evolving internal "map". While the vario tells you how much lift or sink you were in a few seconds ago, your senses tell you what is happening *now*! So keep looking outside for visual cues, listening to the changing sound of the air flowing over the glider, and feeling the lift through the seat. These cues, along with the vario, combine to build your ever-changing "map".

However, beginners can find it almost impossible to visualise how this abstract model relates to their thermal – unless they can anchor it to the cues available. Your spatial awareness can help you relate your picture to the external world, creating a map in your mind's eye of areas of worst sink and best lift. You need to relate this mental picture to what's above you, what's around you and what's beneath you.

- Above you: examine the shapes, textures and colours of the clouds you're under.
- Around you, watch for birds and gliders,

circling, or smoke blown by the wind.

- Beneath you, fix your position relative to obvious ground features: these include towns, woods, lakes, ridges, roads, etc.

How do you pull all this information together? To take a common example, imagine you're climbing under the right-hand cloud in the diagram (*above*). As you climb, you feel yourself drifting away from the town and the wooded area upwind of it, towards the lake. By monitoring your drift, the chimney smoke from the town, and the ripples on the lake, you know the wind is southerly. As you look up at cloudbase, you notice a new cell developing on the upwind, sunny side over the town. You see it has a firmer, darker base than the cell you're under, and at the same time you feel the thermal starts pushing the glider particularly on the southern side. Similarly, you can hear a change in the noise of the airflow on that same side.

The mental picture is the glue that enables you to stick together all the information you can glean from your senses to work out what the thermal looks, sounds and feels like. In this example, your mental picture will lead you to widen out towards the stronger lift to the south-west, wait for the good bit, then tighten on the surge.



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OSTIV President Prof Loek Boermans, who designed the Antares electric motorglider, describes the process



THE ANTARES is the world's first high-performance, electrically-powered, self-launching sailplane. A small but very powerful electric engine enables the 20-metre glider to climb silently and rapidly to the chosen height, where engine and propeller are retracted and soaring begins.

From May 1999 a flying testbed, the Lf-20E (right), a 20-metre modified DG-800, has been used to test engine and propeller, the hydraulic systems for the retractable propulsion system and landing gear, and the electronic management system.

A new factory has been built by makers Lange Flugzeugbau GmbH on a former military airfield near Zweibrücken, and preparations to produce the prototype Antares are ongoing.

The main dimensions of the wing and fuselage were specified by Axel Lange. Wing areas at 18- and 20-metre – offered as one package – were determined from weight estimates for favourable wing loadings. Aspect ratios were specified: cross-country performance calculations using several models (combinations of strong, weak, large and small thermals) showed that the optimum of the aspect ratios is very flat. Fuselage size was governed by crashworthiness considerations.

Electric propulsion system

The brushless electric engine, compact and powerful, produces 42kW (56hp) with 90 per cent efficiency. With only two bearings and no electronic components on the rotary part, it is practically maintenance-free (TBO 1,000hrs). Power is transmitted to a slow-running (1,500rpm) large-diameter (2m) propeller, 83 per cent efficient, which enables the Lf-20E to launch with an initial climb rate of 4.5m/s

and sound emission less than 40dB – very quiet. The powerful lightweight NiMH batteries, in the inner wings, allow a climb to 1,750m. Engine use is via a simple one-lever control system and an electronic management system. The propulsion system is safe, compact, powerful, silent and vibration free, a development, until recently, considered unlikely.

Wing

The wing causes 90 per cent of the glider's total drag at low speed (in thermals) and 65 per cent at high speed (Inter-thermal). So minimum wing drag is essential for high performance. At low speeds, about 70 per cent of the wing drag is induced drag, and at high speed 80 per cent is profile drag; the design takes this into account.

An elliptic planform creates minimum induced drag of planar high aspect ratio wings. Because it is curved both chordwise and spanwise, manual production is hard and such wings are usually approximated by a multi-tapered planform. However, computer-controlled milling machines now allow the creation of complicated, accurate moulds, offering the possibility of wings that really do have minimum induced drag.

The wing aerofoils have a camber-changing flap of 15 per cent chord. The hinge line, which must be straight, determines the planform of a wing with elliptic chord distribution. The resulting gradual sweep of the leading edge helps with directional stability and flutter prevention.

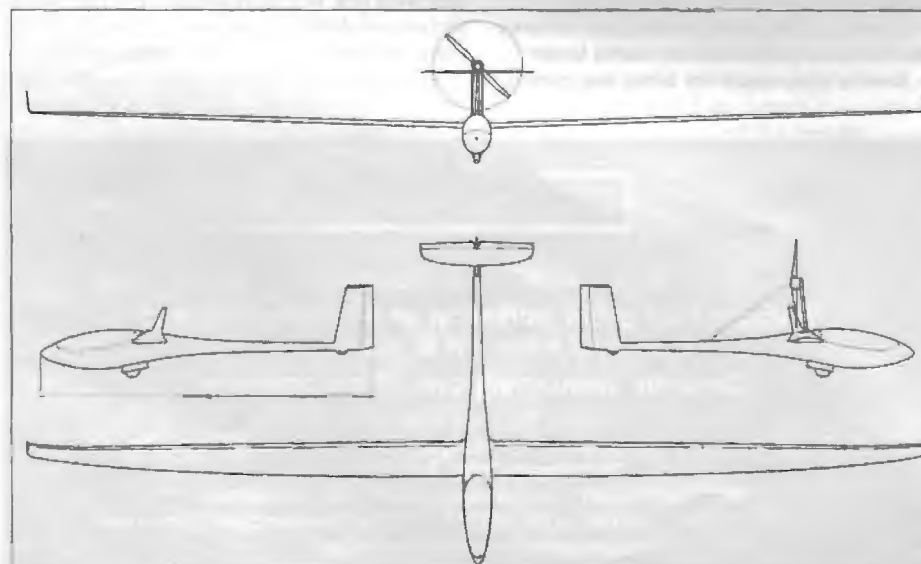
A disadvantage of an elliptic wing is the narrow chord at the tip; the corresponding low Reynolds numbers do not help with profile drag. This problem was solved by using a superelliptic (overelliptic) planform and sweeping back the trailing edge of the removable tips of the 20-metre version. Calculations show that the ideal minimum induced drag is realised up to a negligible 0.1 per cent, while creating preconditions for low profile drag.

Induced drag can be further reduced by adding winglets. Any gain should more than outweigh the loss from winglet profile drag. Wind tunnel and flight tests show that the design procedure developed in Delft works. For both 18- and 20-metre wings, the designed winglets reduce induced drag by the theoretically-possible maximum. The winglets' profile drag predominates only at very high – impractical – speeds.

Much effort has gone into designing

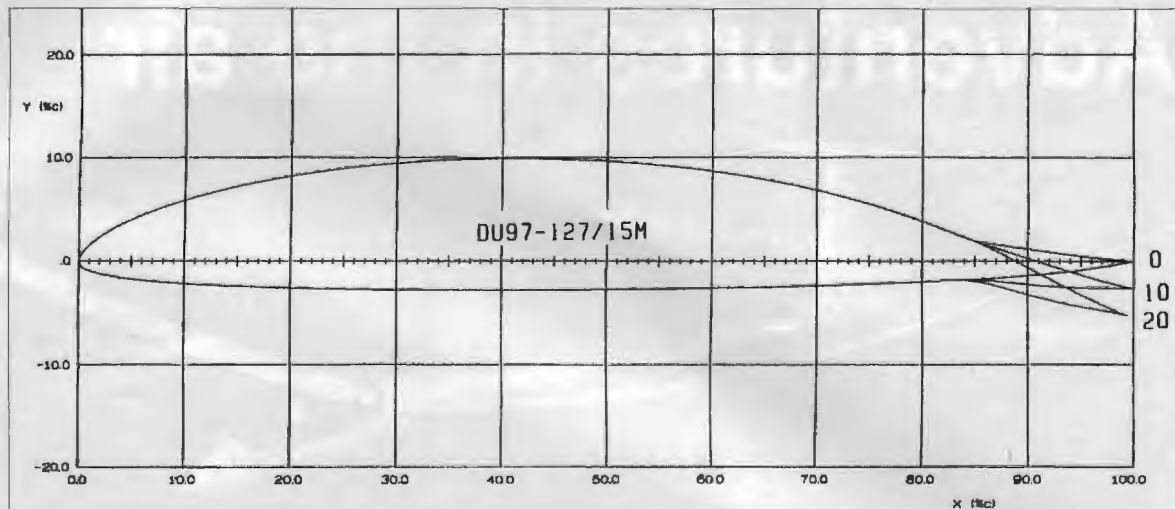


Designing the Antares



TECHNICAL DATA	18-metre version	20-metre version
Wing span	18m/59ft	20m/65.6ft
Wing area	11.9m ² /128ft ²	12.8m ² /135ft ²
Aspect Ratio	27.2	31.7
Fus length & ht*	7.4m/24.3ft & 1.45m/4.7ft	(*both versions)
Empty weight	405kg/893lb	410kg/904lb
Max weight†	570kg/1256.6lb	(*both versions)
Waterballast*	100l/26.4US galls	(*both versions)
Min wing loading	39.9kg/m ² , 8.1lb/ft ²	38.1kg/m ² , 7.8lb/ft ²
Max wing loading	47.8kg/m ² , 9.8lb/ft ²	45.2kg/m ² , 9.3lb/ft ²
Best glide	52	58
Min sink	0.51m/s, 1.67ft/s	0.48m/s, 1.58ft/s
Stall speed	73km/h, 39.4kt	71km/h, 38.3kt
Engine*	DC/DC brushless	(*both versions)
Power*	42kW, 57hp	(*both versions)
Revolutions*	1,500rpm	(*both versions)
Max climb spd (800kg)*	4.4m/s, 14.4ft/s	(*both versions)
Min climb spd (570kg)*	3.8m/s, 12.5ft/s	(*both versions)
Max climb ht (800kg)*	3,000m, 9,843ft	(*both versions)
Min climb ht (570kg)*	2,500m, 8,202ft	(*both versions)

Left: the testbed LF20E self-launching (Jochen Ewald)
 Below left: three-view of 20m Antares (Lange Flugzeugbau)
 Right: basic aerofoil section of Antares wing (TU Delft).
 The Antares team are: Profs Jeanneret and Vezzini, Technical University, Biel (engine and electronics); M Hepperle, German Aerospace Centre, DLR, Braunschweig (propeller); M Sperber, TÜV Rheinland (crash tests) and Prof W Roger, Fachhochschule Aachen (crashworthiness); Prof L Boermans, Faculty of Aerospace Engineering, Delft (aerodynamic design)



aerofoils with minimum profile drag by keeping the boundary layer on upper and lower surfaces laminar as far aft as possible, and at the same time looking for the thinnest airfoil that produces a certain range of lift coefficients. Sophisticated computer codes and experience built up in the excellent Delft Low-Speed-Low-Turbulence Wind Tunnel led to an aerofoil whose thickness is only 12.7 per cent of its chord (above right). Wind tunnel tests proved that laminar flow on the lower surface at high speed zero degrees flap extends up to 95 per cent of the chord, that is, on the flap, and that the flexible slot sealing does not disturb the laminar flow. At the high-speed low-lift coefficients this is the longest laminar flow extent possible.

To avoid subsequent separation of the laminar flow and an increase in drag, the laminar boundary layer is made turbulent artificially at 95 per cent chord by pneumatic turbulators (blowing a small amount of air through small holes periodically spaced in spanwise direction). The hollow flap is the channel for the air, which enters it via a small NACA inlet. This boundary layer control system acts like a turbulator with self-adjusting thickness and is an improvement on Delft's well-known zigzag tape turbulator, developed in 1981.

On the upper surface of the aerofoil the boundary layer is laminar up to 75 per cent chord. It is limited by flow separation on the flap and the consequent risk of bad handling characteristics in thermals, where the angle of attack varies all the time. Tests show this aerofoil has no such problem, and the drag at all flap settings is the lowest of all sailplane aerofoils tested in Delft.

The upper surface of this excellent basic aerofoil has been modified for the inner and outer wing where the Reynolds numbers are different. Special low-drag aerofoils have been designed for the winglet too; their lower surface is completely laminar while on the upper surface a zigzag tape turbulator is needed to avoid a laminar separation bubble.

Much attention was paid to the wing-fuselage junction. Crossflow caused by the

fuselage means the angle of attack in the wing root region increases considerably at low speed and decreases at high speed. And the complicated flow in the junction is always turbulent. The inner wing aerofoil, designed for laminar flow, is not suitable here; as a result, the chordwise position of transition – where the laminar boundary layer turns turbulent – moves forward in the direction of the fuselage, both on the upper and lower surface, and early flow separation occurs at the wing root. The drag due to such wing-fuselage interference effects increases the sink speed.

By using an unique aerodynamic design code (developed at Warsaw Technical University and refined with Delft) a wing root region was created where the boundary layer on upper and lower surfaces does not separate early. This means there will be no vibration to warn the pilot of an impending stall. Flight tests will show if a stall-warning system is needed.

Fuselage

The fuselage is designed for minimum drag and maximum safety. Wind tunnels and computer codes were the basic design tools. Over the years, 14 wing-fuselage combinations have been tested in the Delft wind tunnel, providing valuable data.

Numerous crash tests, with sailplane cockpits and dummies, showed that making the cockpit longer and higher – along with construction measures – improved crashworthiness substantially. The longer cockpit does not create more drag because friction is lessened by the lower pressure gradient, but the higher cockpit does. Narrowing the fuselage behind the cockpit helps a lot.

Other essential considerations in fuselage design were pilot's view at launch/landing and preventing wing drop on launch.

As the Antares' speed is controlled more by flap than elevator, the fuselage's angle of attack varies only a few degrees. So the fuselage shape could be adapted to wing streamlines to minimise drag-increasing crossflow effects. Surface curvature should be continuous in all directions to guarantee a smooth pressure distribution and undisturbed boundary layers.

Tailplane

New aerofoils for the tailplane and fin have laminar flow up to the elevator and rudder, where zigzag tape eliminates separation bubbles which would increase drag and affect rudder effectiveness. The design problem was less achieving low drag than avoiding loss of lift due to separated flow at high angles of attack and rudder deflections (sideslip, flare out and cable break).

Final remarks

The calculated performance shows an impressive glide ratio of 56 for the 20-metre version and 52 for the 18-metre. The revolutionary propulsion system has demonstrated its benefits and new lithium-ion batteries have been tested that allow a formidable climb of 3,000m. The wing moulds have been milled (left) and look perfect. Fuselage moulds are being prepared. Flight tests of the prototype and serial production are scheduled for 2001. It has been a great pleasure to design this special sailplane, using the best theoretical and experimental tools to turn ideas into reality and find the best combination of safety and performance.

See also www.lange-flugzeugbau.com



Antares wing moulds at the new Zweibrücken factory

Adventures in the air

In the first of an occasional series of interviews with eminent people, Michael Bird asks Hans Werner Grosse about his lifetime of flying

Aerokurier photograph: Gerhard Marzinzik

HANS, I am tempted to call this article *War & Peace*, except it has been used before. It is in two sections: your war experiences and your gliding, culminating in flying the world's highest-performing sailplane, Eta (above). First, tell me about your role in World War Two. **HWG:** In action I flew only the Junkers Ju 88 torpedo-bomber. In training I flew more than 30 different types of pre-war light aircraft and airliners. The oldest was the Junkers F13, an open cockpit airliner dating from 1921. The best fun was the Focke-Wulf Stösser, 240 horses, very suitable for contour-flying around cumulus clouds and blowing over sailboats.

We lost some friends visiting their families by air and stalling into the backyard in first-generation biplane fighters similar to Gloster Gladiators.

As preparation for the Ju 88 we flew the Ju 52 (tri-motor transport) and the Heinkel 111 (bi-motor bomber). On a transfer flight I ran out of fuel and belly-landed a Junkers 86 twin (originally a small airliner) uphill in snow but only bent the props. In that week in January 1943 my school lost six Ju 88 crews in poor weather and our commanding officer was just happy we were alive. Me, too!

MB: Tell me about when you ditched in the sea in 1944.

HWG: This was in the Mediterranean near the Balearics on D-Day: June 6.

We knew an Allied invasion of France had started in Normandy, but our commanders thought that a supporting invasion might take place on the southern coastline of France. We were reconnoitring at night with radar, looking for an enemy armada, searching in wide circles at low altitude. Suddenly, the right engine burst into flames. We saw no tracer-bullets, nor

Hans Werner Grosse

Born: 29/11/22, Swinemünde
Pommern (in Poland post-WW2)
Solo: 1938
Silver: 1955
Gold: 1956
Diamond: 1958 (No. 3 in Germany)

World Championships: one 2nd, one 3rd

Nationals: one 1st, one 2nd; 18 years in the National Team. Did last Nationals in 1975, then concentrated on record flying.

World records: 48, including:

World first 1,000km goal
World first 1,000km triangle
World first 1,250km triangle
Largest triangle 1,379km
Speed round 500km triangle,
170km/h, ASH 25
and Lübeck-Biarritz, 1,450km

any enemy ship or aircraft that might account for the explosion, and it is possible it was a malfunction.

Thinking we were being attacked by a night-fighter, I feathered the propeller and dived towards the sea. I yelled to my co-pilot to apply full rudder trim to correct for the dead engine – and yelled at him a lot more when he applied the trim in the wrong direction!

Eventually we got the Ju 88 flying straight, but we were losing altitude. We wanted to get back to Marseilles or Istres but had the full force of the Mistral against us, which I did not know about then. In this wind the waves were tremendous, and I knew that if we hit the water in the wrong

part of the wave we would be finished. I was lucky enough to pancake the Ju 88 on the crest of a great wave.

Maybe the experience of ditching a Ju 88 in daylight after an engine failure during torpedo training in the Baltic helped me against all odds to survive this time.

The aircraft was beginning to sink. I hit my head on a bomb-sight fitting; blood streamed down my face. I could see the legs of my crewmen thrashing about under the water as they struggled to find the escape hatch. My own legs were trapped for a while in the tangled metal stringers of the damaged nose of the plane.

Three of us eventually got out of the aircraft together, but the fourth, the radio operator, could not be found. We had only our individual inflatable rafts which we tried to lash together, while the waves tried to separate us.

We began firing off our red distress flares, and when we ran out of the red ones we started on the green and white ones. This mixture of colours puzzled our rescuers, who though they might not be from German airman at all but from the enemy. So the boat did not venture out till daylight, and when help arrived we had been in the sea for eight hours. Having landed only 12km from the French coast, we had drifted 30km further away at the mercy of the Mistral.

When our rescuers reached us we were in danger of having the bottom of the boat crash down on our heads as it rose and fell. We were too exhausted to drag ourselves onto the vessel without help.

For some weeks afterwards, the effect of the concussion when I hit the bomb-sight platform was to swell the blood-vessels in the brain so that after an hour of flying the vibration caused intense headaches and I

could not function in the air. This probably saved my life, since many of my colleagues were sent to Normandy against the invasion forces in their Ju 88s and never returned.

MB: at least you were able to survive in those waters. Tell me about the Arctic adventure.

HWG: The next incident took place off Norway, in February 1945. We were all aware that if we came down in the sea, especially at that time of year, we would not last eight minutes, let alone eight hours. The sailors on the Allied ships, mainly British, knew that too.

Attacking ships with torpedoes is terrifying for everyone involved. To start, we must fly towards the convoy as low as possible, props almost touching the water, to hide from enemy radar. However, the really difficult part is when the attack itself begins. First we have to climb to 30 metres so that when we release the torpedo it dives into the water at the correct angle. Too low and it lands flat and bounces off the water. Secondly, we have to level out and hold a steady course and speed for 20 seconds, so that the gyroscopes in the torpedo can orientate themselves properly. There must be no jinking about to avoid flak from the enemy gunners, who now have a very good view of you. As do the enemy fighters, Grumman Wildcats. We release the torpedoes about a kilometre from the target and naturally turn away as fast as possible from this wall of tracer bullets coming at us, which is like driving down the Autobahn through a snowstorm. Only one round in five is tracer, so that means there is five times more flak than you can see.

Of course the pilots themselves never get to see whether they have hit a ship, since after release they are pointing the other way and going for home as fast as they can, back down on the wave-tops. So the reports on our success come from the rear-gunners/radio-operators. In the excitement



"Now, of course, I'm glad my torpedo didn't score a hit!"

Hans at the Embassy with old enemy and new friend Peter Lyons (left), who served on the Royal Navy escort carrier Nairana on the Murmansk convoy

(Michael Bird)

they will claim any big splash as a hit on a target, whether it is a depth-charge or a bomb hitting the water or someone else's torpedo scoring a hit. Thus successes are magnified by those who get home.

But we nearly did not get home. Keeping under the flak and jinking to avoid the fighters, I hit the water. The left propeller struck a wave: 40cm had been chewed off each of the three wooden blades. I wanted to throttle back on the affected engine and take it easy, but the fighters were still around and I needed to get away as fast as I could. For 700km we flew home with the wounded propeller and vibrating engine.

Those who returned celebrated sinking many ships. Over the course of the war great numbers of ships were sunk in these Arctic convoys – on one occasion 24 out of one British convoy of 36 ships were sunk.

However, 50 years later I met some of the sailors who took part in that February 1945 battle: they told me that for once the entire convoy got through. Despite our rejoicing back at the Luftwaffe base, our squadron hadn't hit a single ship.

MB: Which are your favourite flights of all time?

Exploits in sailplanes

HWG: The most noted flight, and the one which caught the imagination of the public, was the free distance record from Lübeck to Biarritz: 1,460 km on April 25, 1972. Even now, after almost 30 years, I could bore you for hours describing it. If I were a better writer it would end up as another Anabasis¹: how I almost landed near Bremen, how I tiptoed with zero MacCready setting abeam Paris, and avoided the low level jetstream that brought down so many of the dozens of other Germans flying on that day. The decision to abandon the world goal distance record and fly on and on, changing certain success into a risky adventure. The silvery sun setting into what we called in the war "Bloody Biscay". Overhead Biarritz, calling it a day, opening two drag-chutes² and wasting by the metre what had been accumulated by centimetres all day.

But you shouldn't give old farts a chance to talk about the past. However blurred the reminiscence, their stories get better and better over the years.

MB: Well, let's talk about the present and future. Haven't you been pretty scathing about modern competitions?

HWG: People are instinctively competitive. It is said: "One sailboat is relaxation; two sailboats are a race." It's human nature to want to be the best. The question is, how do you define "The Best"? With closed-circuit races over the past 20 years the only decision, more or less, has been the start-time. How late can you leave the site? Let others mark the thermals – the one behind will catch up. Even an inferior pilot can catch up with a better pilot. The race has been decided by the lottery of the start gate. Of course if the weather deteriorates unexpectedly the one who starts too late may land out or do a slow time. But you never know the best start time from the point of view of weather until afterwards. That is why I call it a lottery.

MB: But don't the same people seem to win consistently?

HWG: Of course, but that might only mean that they are consistently good at working within the current rules. People who win by the existing system will not want to change the rules.

For instance, when the Cat's Cradle (forerunner of today's POST pilot-selected tasks) came in over 30 years ago, I was very keen on it. But the top pilots were having secret meetings in the toilets to agree where they should go, then the weaker pilots would all follow them round the turnpoints.

After 1975 I decided to give up National Championships, but in 1986 I gave contests another try. But I found that some pilots were using hidden batteries to drive illicit blind-flying instruments; some were flying with far too much water and ➤

In June 1941, after Hitler's invasion of the USSR, Stalin asked Churchill for supplies. The resulting convoys from Britain around northern Norway to the Russian port of Murmansk came under constant attack from German surface ships, submarines, dive- and torpedo-bombers.

On December 4, 2000, I accompanied Hans, and Marion Barritt (pictured right with a Ju 88 night fighter at Hendon), to a moving event at the Norwegian Embassy in London. Dramatic footage of the Murmansk convoys was shown as well as interviews with Hans and Norwegian and British veterans – who were also Embassy guests



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➤ doing everything to avoid being weighed. I have not flown competitions since then.

An innovation that I really like is our online contests, which run throughout the season. This looks like the UK's National Ladder at first sight, but with important use of GPS-logger technology and the web to enhance people's enjoyment. Each participating pilot's flight-recorder data must be loaded onto the internet as soon as possible after the flight. So, instead of finding out about other people's great flights several weeks later, you can see them in detail after only a few hours, and then you may realise that they have used the day much better than you. All your friends can see exactly where you have been: everyone can look at an overview of your track on the map and at your barograph trace. Rates of climb and sink can be examined. The climbing efficiency of different pilots can be compared: for instance, you can answer the question, how long does it take each pilot to find the core?

MB: Seventy years ago, in the 30-metre Austria, the world's biggest sailplane until today's 31-metre Eta, Robert Kronfeld hoped to fly cross-country without having to stop to circle in thermals. Even if the Austria had not broken up in cloud, its penetration between thermals would have been much too poor to achieve that. But can modern gliders achieve that ideal?

HWG: We're getting close. In the ASW 17, on my earliest 1,000-km triangles, I found that I could achieve 100:1. Then in the ASH 25 I was getting 200:1. That is, I was travelling 200kms for each 1,000m of climb.

MB: So Eta might achieve 300:1?

HWG: With little bits of cloudstreets, and using clouds that are lined up on track, Eta could probably fly hundreds of kilometres



Hans Werner Grosse, now 78, looks forward to great flights in the 30.9-metre Eta (below) (Michael Bird)

without circling. That is only possible, however, where the terrain is consistent and not interrupted. Thus you could do it over flat country, or in continuous lift over orographic sources.

MB: I have a 1999 vario which shows the currently-achieved glide angle through the surrounding air (that's in the ASW 22 that I bought from you in 1987.)

HWG: My Cambridge vario likewise shows my instantaneous achieved glide angle, but only up to 99. That's not enough today! But even in a good ship you often see only 25 or 30 being achieved.

MB: A glider like Eta must have huge momentum. Is it a good idea to dolphin such a glider close to the stall, when you are flying slowly through rising air? In theory you benefit from spending the maximum amount of time in rising air.

HWG: No, it is a bad idea. First, any additional up-draught increases the angle of attack and stalls the glider. Conversely, if you hit sinking air you lose too much height because you are travelling too slowly to penetrate through it and minimise your time in the bad air. If you want to cover the ground without circling you don't want to fly at more than about 130km/h (c. 70kts). But in a competition you are trying to maximise speed and cannot afford to stay high, which is what I have been doing so far.

When I get over my concern about derigging Eta, or about the engine not starting, I shall return to a racing style. We don't know what the high-speed performance is yet: we need to fly against other gliders.

MB: Has any Eta polar been published?

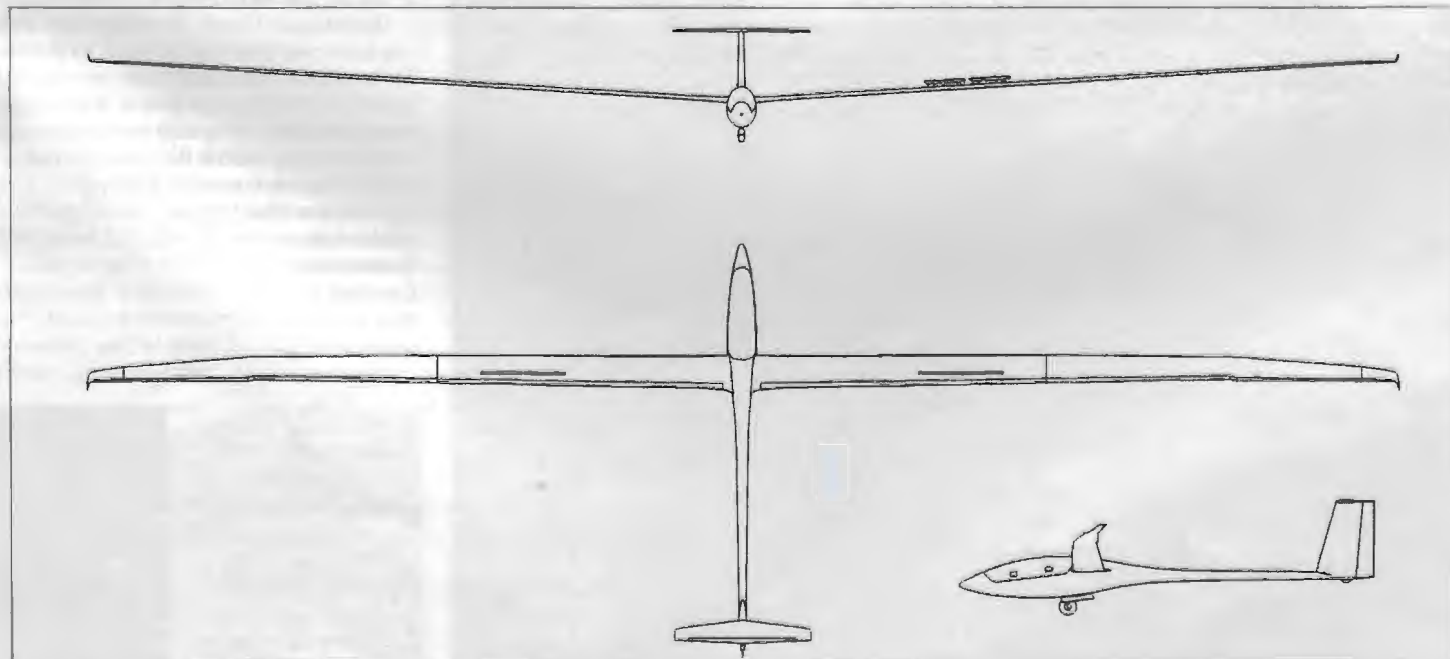
HWG: Not yet. The people who have flown with me just say "Incredible!"

Next, we need to marry up a new fuselage with a lighter tail-end to the existing wing. (The glider at present is at max weight without waterballast.) I am not sure what the achieved flap-settings are yet, and we are still working to make it more manoeuvrable.

I hope it will be ready in February or March, when we can start test flying it in the South of France. In April and May I want to make some long flights with Karin, my wife, from Lübeck towards the Mediterranean, using the cold air from Scandinavia at that time of year.

1. Anabasis: originally the wanderings of Xenophon and his 10,000 Greek soldiers in Asia in 400 BC. Now any epic journey. Just thought you'd like to know. MB

2. The ASW 12 had no dive-brakes, and depended on flaps and drag-chutes for approach control, which could be exciting sometimes. MB



Hans, several of whose records still stand, was the second person to gain a 1,000km diploma. As owner of the first Eta, he plans to stay ahead (3-view thanks to Reiner Kickert)

First flight in the Alps

Henry and Jay Rebbeck were introduced to Alpine flying by Justin Wills. Jay and Justin describe the experience. Overleaf, Peter Hearne recalls the first time he soared above mountains



Left: Henry Rebbeck in 232, taken by his brother Jay, who says: "Cruising past the Matterhorn that first time was awesome"

Right: Justin Wills approaches the Matterhorn. The cloudbase was lower on the Italian side to the south. Justin noted four distinct air masses in the course of the 200km flight



AOSTA lies at the foot of a 12,000ft-deep valley that rises sharply into and above the snow line, writes Jay Rebbeck. On the day I arrived with Justin Wills and my brother Henry, it sat under a perfect clear blue sky. We had driven straight from the Mediterranean Cup's closing ceremony at Rieti (see right), and when we arrived the view was spectacular.

To get out of the pool of cool, stable air that settles in the valley overnight, Hen, Justin and I took high tows on to the valley side. When we finally scrabbled away up the rock face, and on to the peaks, life was much, much easier.

Justin pointed us in the direction of Zermatt and the Matterhorn and off we went. Ridge-soaring our way along virginal glaciers, over isolated lakes and along sheer rock walls, we worked our way to the head of the valley. At just over 12,000ft indicated, but only a few hundred feet above the intimidating terrain, we struggled to gain a few scraps more height.

Looking over from the Italian side (where we knew we could glide back to Aosta) to the Swiss side of the Matterhorn, we could see excellent soaring conditions. But flopping over on to the Swiss side meant we would certainly drop below the peak and have to rely on the far cumulus working.

Justin decided that we should go for it, explaining we could glide out to airfields in Switzerland if it all went pear-shaped. Cruising past the Matterhorn that first time was an awesome experience... and singularly impressive from 3,000ft below the peak.

On reaching the good-looking cumulus on

'Without doubt single most exciting flight'

The airfield at Aosta, where the flight started, showing the three sailplanes and their pilots

Justin flew his LS-6, number 1; Jay was in LS-4 ETG, and Henry had LS-8 232





Competing in the Apennines

RIETI is a picturesque yet challenging place to fly, writes *Jen Stuart-Smith*. In the Apennine mountains about an hour from Rome, it sits on a flat valley floor at the foot of the Appennini Marchigiano and Gran Sasso ranges. Waking up after a 24-hour drive and late-night arrival, we were greeted by lush green slopes rising, it seemed, directly from the airfield.

The usual British suspects taking part in the Mediterranean Cup, an annual competition attracting some of Europe's best pilots, were: Justin Wills (ultimate professional and top international pilot); Henry Rebbeck (cool, calm, collected – our secret weapon) Jay Rebbeck (rasher version of Henry, current British Junior Champion) and Andy Perkins (youngest, dogged and eventual winner of Rieti's coveted Alitalia prize). Not a bad line-up, really.

Each day the guys would return with tales of hilltop castles, wild horses and the quintessentially Italian landscape. Traditional, small-scale farming means that wooded mountain slopes are broken only by olive groves, vineyards and sunflower fields. Fine if you're Van Gogh, but not so good for landings. The lack of obvious land-



From left: Jay and Henry with Dave and Andy Perkins

able fields, Andy says, gets the heart pumping even before you go anywhere. Seat-of-the-pants flying was the rule and colloquial expressions for "Hey, chaps, that was pretty nail-biting stuff!" were common. "The first time the four of us flew up the high point of the Apennines was so cool," says Jay. "Ridge-soaring up the very spine of Italy was mind-blowing. There was one particularly memorable basin at Castelluccio. You drop into this 5,000ft-high bowl knowing that if the ridge on the far side doesn't work you'll have to land at almost a mile high! However the ridge you're going for is practically designed for slope soaring. Inevitably, this 45° face that rises 3,000ft out of the basin, smooth as a billiard table and directly into the afternoon sun, gives you a solid 10kts. Every time we climbed there it was a buzz."

So, how did conditions differ from the boys' (as the Italians liked to call them) previous experiences? Jay's other mountain flying has been on New Zealand's South Island. "Rieti flying is predominantly in thermals," he says. "The lighter winds mean there are many more convergence days, where air from the east ➤

the other side of Zermatt, we were rewarded with 8kt to almost 14,000ft. With this in the bag, we were able to make a dirty dive for the Matterhorn itself, in the hope of circumnavigating the peak.

From five miles, the chances of rounding it seemed slim. By now, cloud had formed around the top, and the exit on the far side looked blocked. Fortunately, right on cue, as we approached the peak a sizeable gap opened up. We nipped round the side, Justin first, with Hen and myself in hot pursuit.

It was with a certain level of anxiety that we flew round the back of the mountain – and a certain, slightly greater, level that we realised a fairly desperate dive was required

bt, it was the beautiful and we have had'

to slide under the final bank of cloud to get back. But as we put on the speed for this, blue sky opened up on the

far side, lighting our way up back on to the main face.

We pulled up on to the main face, to see the colourful flash of a climber apparently whistling past our wingtip. From there, we glid back to our familiar cumulus, climbed again and then made for Mont Blanc. Some 25 miles later we got there, with enough height to work our way round the back face. Then we ridge-soared our way on to the ski resorts of Tignes and Val d'Isère to the south before finally turning back to the Aosta valley.

On our return, Hen and I had the pleasure of burning off 12,000ft with aerobatics and fun. A local paraglider had what must have been the display of his life as we wasted height beside him.

When we finally landed back at Aosta, we reflected on quite how much excitement it is

possible to have in less than 200km. Without doubt, it was the single most beautiful and exciting flight both Hen and I had flown. Apparently we were fiendishly lucky with the weather. Nevertheless, we'll certainly be going back for more, one day.

Soaring conditions

The flight took us through four distinct air masses, writes *Justin Wills*. Usually, soaring in the Italian Alps during late summer is very limited due to the diurnal inflow of moist, stable air from the Po valley and ultimately the Adriatic. However, Aosta can prove the exception, as the valley is both deep and narrow, with a sharp kink at its mid point. These factors help to dry the air somewhat and accelerate it, both horizontally and vertically. The town is built at a junction where the main valley continues north to Mont Blanc, whilst a side valley runs north-east to the Great St Bernard Pass. This valley also divides with another arm running south-east toward the Matterhorn. The additional blanking effect enabled us to climb high enough to access the Zermatt valley, whose central high alpine air was much drier and more unstable. Flying around the Matterhorn took us briefly back into the murky Italian air.

Heading towards Mont Blanc along the Alpine watershed we flew into air originating from the northern Alps, which include the great lakes of Geneva, Annecy, and so on. Whilst not as good as the Zermatt area, thermals still yielded 6kt to 11,000ft.

Thereafter, heading south-west, we flew over Val d'Isère and along the Modane valley, from which we could look across the divide towards Briançon and the air mass of the Alpes Maritimes.

Conditions there were magnificent, and we could have easily flown to Vinon, but time pressed so we returned along the ridge that runs east from Bardonecchia towards Turin. Being wider and shallower than its Aosta counterpart, this valley's conditions were very poor, and we carefully stayed on the northern (French) side. Our last climb, beside clouds billowing up from Italy, took us level with the peak of Gran Paradiso, over 10,000ft above glide for Aosta. The weather gods had certainly smiled upon us.





Above left: Henry Rebbeck and girlfriend Diana Smith at Rieti.



Above right: back in 1971, another young British hopeful – Justin Wills – in a Std Libelle at Rieti, his first international comp, with girlfriend Gillian Howe and crew Tony Joss.

➤ and west coasts meet somewhere in the middle. The resulting lines of lift can be fantastic." Henry's recipe for success is to: "Take south-westerly faces, bake in the summer sunshine erupting with strong thermal conditions, add a touch of westerly wind – and the ridges are a giant playground.

"Picking thermals close to the rocks was a whole new experience for me," he adds. "The key thing is to keep your options open, and it is amazing just how many options there are. Ridge, thermal, convergence, confluence: it's all there."

This was Andy's first international comp, and what an initiation! In a class of 28 his was one of just four real gliders, an Open Cirrus. "Flying with lots of motorgliders can be rather demoralising," he admits. "You're scratching away when someone pushes you out of a thermal trying to get their motor going when you have managed to get 0.5kt having flown through the drizzle around the turn. You re-centre as the next one does the same thing! Our learning curve was incredible and I was working at 110 per cent each day – knackered but fantastic."

Contest days fell into two distinctive types. In westerly winds, the afternoon sun reinforces the prevailing wind so the terrain is quite predictable and local knowledge will lead you to the key spots that almost always produce good thermals. But with an easterly component, the wind and the sun's heat are acting in opposite directions. This makes decisions trickier. For each mountain you need to make a value judgement about which factor is dominant and so about which side of the mountain to find lift.

Perhaps most obvious to me as ground crew was the winning quality the team shared: the ability to keep one's cool. Everyone had bad days, but these were calmly analysed (daily debrief by the swimming pool, eating ice-cream) and used positively toward flying better the next day. Obviously, our despondent pilots initially thought these were just needless cock-ups but were pleasantly surprised to discover such flights' essential place in the learning curve.

"The Italians," says Jay, "were the friendliest

and funniest bunch you'll meet". He didn't realise the Italians thought we English were the funny ones. Whilst they laughed at our disorderly, Wacky Races arrival, eccentric charms and youthful naivety (and that's just Justin) we successfully duped them. As Henry led his class on the first two days, the hosts realised one must never underestimate the opposition. Generously forgiving Henry's impudence they continued to congratulate the Brits throughout the competition and supported their open praise by presenting Andy with a coveted prize. Deputy Director Signor Volpe looked after us magnificently, even telling the on-site mechanic, "You do anything for these boys, OK?" Jay adds: "We were exceptionally lucky to have Justin Wills out there to guide us through the competition. Without him we could never have had such fun."

Linguistic barriers caused amusing confusion, including the whole irreligious British mob turning up for a 09.00hrs briefing equipped with maps and GPS, only to find ourselves in the hangar repenting our sins at Holy Communion! And nowhere but in Italy would you find scantily-clad women lying on the wings as gliders are towed out. Crew note: it is important to clean them off before flight as the wind resistance created is far more severe than from your average insect.

Justin and Gillian Wills are keen to encourage anyone who is interested in flying at Rieti, as is the Ted Lysakowski Trust. Rieti is an excellent stepping-stone, bridging the gap between flatlands and serious mountain flying such as the Alps... as described on the previous page.

Jen Stuart-Smith

Perhaps fittingly, the pilots' performance on paper almost seems less important than the fun we had. Justin's consistently good flying led to his winning the 15-Metre Class. Henry came 4th overall in the Standard Class, beating the old hands and locals alike. Jay finished in a respectable mid-field position in the same class and Andy (in the 18-Metre Class) impressed everyone with his determination and grit, winning the Alitalia Trophy

AS THE Storch's leggy undercarriage finally finished clanking over the rough heath of La Montagne Noire (50km east of Toulouse) I little thought that the next ten days would be some of the most unforgettable of my gliding life.

Although I had started gliding in the Air Defence Cadet Corps in July 1939, the last ten years of my career in the Operational Development groups of BOAC and BEA had given me such a surfeit of flying that gliding had taken a back seat. On coming back to it in 1958 I realised that I was no longer a glider pilot but an aeroplane pilot who had a glider rating, and one whom the finer points of gliding meteorology and soaring techniques had passed by.

Rather than trying to regain currency in UK weather I set off at Easter 1959 for the French National Centre at Montagne Noire. But after two days we were told that the course was moving to another site and I was invited to fly in the Storch being ferried down to tug. It took a little time to believe that this combination of Victorian bridge technology and Meccano really could fly on the sometimes doubtful power from its 30-year-old Salmson radial. We turned on to a southerly heading and set up a slow cruise climb, if that is not too grand a term for a 1936 "light" aircraft.

As we slowly gained altitude, a thin white line began to dominate the horizon, the snow line of the Pyrenees. I was familiar enough with mountains from BOAC route flying experience but this was distinctly different. Climbing towards the mountains from below ridge line height as we neared the lower slopes, it seemed as though we were melding into and becoming an integral part of the landscape in a way I had never felt in any previous flying. Looking back on it, I suspect that the smaller scale of the Pyrenees compared with the Alps helped create this feeling of intimacy, but whatever the reason the memory of that flight has stayed with me for the rest of my life and it hooked me on mountain flying from that day on. Too soon, we came up overhead Puivert at some 1,800m, followed by a tightish spiral approach into a small grass airfield in a rather "closed" valley.

Once the ground it rapidly became apparent that there were two quite distinct Puiverts. Puivert International, where we had landed, was a bi-directional grass strip with a small hangar housing a collection of sailplanes, including the rather ordinary Breguet 900, together with some of the so-called necessities of modern life (telephone and electricity).

Puivert Old Town, as it were, was quite different. An agricultural hill village, its most recent addition – built around 1553 or so – seemed to be the large, centrally-placed wellhead. One side of this three or four metre diameter fountain was reserved for washing human bodies and clothes, and water collection, whilst the other side was used to water the cattle. We glider pilots were housed in the height of luxury in the

Magic valleys in France

Peter Hearn recalls the 1959 expedition to the Pyrenees which hooked him on mountain soaring

village – our house was the only one to have electric light. Luxury did not extend to running water, however. My prim English enquiries about toilet facilities were met with the robust French “en campagne”.

The distance between the two Puiverts was some 400 years in time and about 1.5km by road or, rather, track. The first bit of magic was the manner in which you actually felt the time-warp forcefield as you walked between the two. Moving from the 20th to the 16th century after a hard day sweating round the mountains was like visiting Brigadoon.

The second bit of wizardry was, of course, my first experience of mountain flying. Within a very short space of time I had been introduced to mountain thermals – very narrow and strong – a treble scotch compared to the weak beer of the average British thermal. Next evening, by courtesy of a well-programmed Met office, came my first experience of wave in a 904. If the mountain thermals were like a treble scotch, wave seemed to me – and still does – like beautifully-chilled gin, very smooth and satisfying. And overall, of course, one was having to get used to the fact that slope on which one was flying was a sizeable rock some 2,000ft high, not the 300ft or so of dear ol’ Dunstable.

The third new experience was to fly in the “restitution”. At the time the French creed was that at the end of the day the hot rocks gave up their heat and for a period of about an hour or so thermal flying could continue even though solar radiation had ended. Even the British believed it. Today French dogma has changed and it no longer seems politically correct to discuss it with them. My own experiences suggest that in certain special circumstances the restitution does exist, though it is not as widespread as originally thought. In the wider (12km) valleys of the Alps, it seems masked by the much stronger valley breeze effects, but in the narrow closed valley of Puivert at sunset the rocks appeared to fire off thermals like cannon balls.

After some five hours I was pronounced fit for solo. Another instructor took me over and briefed me on the Javelot, a sort of agricultural Skylark 2 with a NACA 6 series wing profile and a steel tube fabric covered fuselage.

A largish man of apparently few words, his briefing was conducted entirely in French and consisted only of asking me how many hours I had, and the following remarks reported here verbatim:

“Maintenant vous volez le Javelot. Le Javelot est un bon planeur. Attention les

First inspired by the Pyrenees (right), Peter now flies a Ventus 2c T at Lasham and Gap Tallard. A BGA Vice-President, he is much involved in its interface with the Government.

Puivert, the magic valley, is in the north slopes of the Pyrenees, 40km south-south-west of Carcassonne, 42° 54' north, 02° 03' east



Paul Gamham

aerofreins! Ils sont très, très forts.” (At this point he extended his hand in the usual “bar flying” pilot mode.)

“On pose tout pret au dessus le but de la piste.” (Here, he held his hand high and level.)

“Ouvrez les aerofreins. PHFFTT!” (The hand jumped upwards a bit.)

“PHFFTT!” (The hand pointed straight at the ground and descended somewhat.)

“PHFFTT!” (The hand levelled again as if to land.)

No speeds, no nothing; that was all. So I solemnly repeated *“Phfftt! Phfftt! Phfftt!”* with the appropriate hand motions; he nodded his head and told me he would watch my circuit.

I posed, I opened, descended like a bat out of hell at all of 110 or 120 km/h, I levelled and stopped after a short run. The instructor came over and helped me push back the short distance to the launchpoint.

Now came the shock. In near-perfect and slightly-accented English, he said: “That was quite a good approach and landing – now you can go off on solo local flying.”

I nearly fell over. Surely he couldn’t have learned to speak English in the short time it had taken me to fly the circuit? “Where did you learn English?” I said, slightly peeved.

“Well,” he said, “I have been in your country five or six times.”

“Really?” I said. “When were you there?”

“As a matter of fact,” he replied casually, “I visited your country a number of times during the war.”

I could feel the 20th-century time-warp starting to destabilise. “Really?” I repeated.

“Yes,” came the reply. “You see, I was in the Resistance.”

This time I was sure I had him. As a graduate apprentice at Hispano Suiza in Paris in 1948 I had seen how many hangers-on claimed Resistance connections; so many, in fact, that if all were true we ought to have been able to push the Germans out of France by the end of 1940.

“And how did you travel?” I asked.

“Well, sometimes,” he said, “I went by submarine”.

Walter Mitty is alive and well and standing before me, I thought. But then the time-warp flipped and, sensing my disbelief, he produced from his wallet, carefully encased in plastic, his citation for a British high military honour, saying simply: “Your king – Ee give me a medal”. In fact, he had been a deputy head of one of the Resistance networks, and had made regular visits to planning meetings in London.

Some six days later, on our last day, he led three of us on a wave cross-country at about 3,000m to the south-west towards Andorra. I felt pleasantly reassured that, if the Andorran flak got us, he would be able to organise a successful escape and evasion! It wasn’t a long flight, only about 80km out and return, but I still recall how all the various sensations of the smoothness of the wave, the beauty of the mountains in the evening sun, the comradeship and radio chat of the other pilots, who felt equally exhilarated, came together to give me one more unforgettable memory.

I think of that flight when battling with the difficulties which continue to arise from time to time for British pilots in France. I remind myself it is still worthwhile and that British pilots young or old should have the opportunity to experience these pleasures.

And when I am faced with some particular degree of personal intransigence, instead of immediately succumbing to the obvious temptation of lambasting the French as a collective whole, I try to think of that instructor. An individual not too different to the average Brit gliding instructor who, like many others of his countrymen, put his own life and his family at serious risk throughout that long war so that we could regain a world in which, among many other things, the pleasures of magic valleys are available for every nationality and not just a conquering horde.



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Dreaming of restoring a glider? Ian Dunkley tells you what you really need to appreciate...

IT MIGHT have seemed a good idea at the time, but do you really know what you are letting yourself in for? This article, based on my own experience, tells you what I wish I'd known before I began. Don't be put off, though, or you will miss satisfactions mere pilots cannot imagine.

You must realise, right at the start, that this kind of thing will very rarely make you money, unless your time is free – and even then, as one American restorer put it: "The best that can be said is that it's cheaper than seeing a shrink". In your case (with the NHS) or in mine (my partner, Pat, is a psychiatric nurse), this does not apply. If you just want to fly, then buy something with a C of A, polish it up, and avoid pilots questioning your sanity.

Still keen? Then help someone else with his glider – and money. When it's finished both you and he will know how to do it properly next time. The difference is that he will have spent the money. Take this advice very seriously, having made sure he really will help you – and not go back to his wife/family when he/you have finished his.

This leads us to the question of time. Glider restoration operates according to the simple formula: $e=mc^2$ (where e = elapsed time, m = months you thought it would take, and c = a "can do" personal optimism factor, min value 1.41). A marriage is said to last five years – do you want yours to lower that average? I should be saying "he/she," for I know ladies who have restored gliders, but they generally have a big advantage: a husband or partner who is "into gliding". So they manage to avoid the biggest, though quite misguided, threat: "It's me or that glider".

Still keen? Form a group. Well, you know how hard it is to get anything done by gliding club members: on the whole, social misfits who co-operate only out of enlightened self-interest. What you want is one person (who owns the aforementioned glider) and one or two more who really are prepared to learn, and work.

We had a group of at least 25. Only a small corps have done any work, but all contributed to the cost, which was fine. When it's ready to fly, watch them... I was going to say: "pop out of the woodwork," but that implies they've been near it. Anyway they'll be welcome: the more pilots flying "old" gliders, the better.

Next, get the club on side. How much money will they want over the course of the project, given that they need it to keep all their expensive glass-fibre kit in the air? Make sure any deal is costed and watertight before you start.

This leads neatly to workshops: you want one, even more than you want helpers, and you want it before you start. A Portakabin and begged and borrowed tools, most of which were later stolen, gave us all we

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Fools rush in



As it was at the beginning: Fauvel after being rescued from on top of a scrap car

(Ian Dunkley)

needed to start. Only then did we discuss "what glider". Our stated goal was to develop club members' skills by means of restoration – a fine objective and just about as practical as world peace.

Two years later, after much slow progress and a developing understanding of $E=mc^2$ a Fauvel AV36 became available. Since one flying wing was not enough for me, I bought it. At least six months' work, I thought (I hadn't yet learnt enough about e) so I picked up my hammer and chisel and walked off, saying: "The others can do some work for a bit." In reality, Ken Hardy and I split our time between projects and a small group joined us in the Portakabin.

There was clearly no room at the club, so I moved the Fauvel down to a disused cowshed. This taught me several things. A cowshed is no place to have a glider, let alone a baby. And cow dung and straw make a composite so strong that a keen cattle-shed owner in the past probably built a glider, giving rise to stories about "Angels of the Lord," and supported by an early geo-stationary satellite.

Over the next two years, during which time six winter months were lost because glue, paint and Ken's and my fingers do not like the cold, we gradually did what we should have done at the start, installing wooden floors to cover the ventilating floor slats (the wind blows at 1,300ft); two large polythene tents to keep out winter winds and dust; and lighting, heating and the club's trestle tables (the latter reclaimed each time we had a party). It was only when the Fauvel reached the covering stage that we realised that our tents were a combined gasometer and hallucinogenic wonderland. The locals got used to glue-sniffing geriatrics, and we got used to going outside and seeing the hills alive, if not with the sound of music, then gently moving. A brief chat with a pathologist – it's wonderful, the skills in a gliding club –

persuaded us that ventilation was again required. We reluctantly ruled out plans to entice teenagers to work for us with offers of cut-price solvents and installed a fan behind a NASA inlet in the tent wall. A rather pretty pink Oxfam bedsheet at the far end served as a filter, and a switch enabled us to implode the tent with a very satisfying "bang". Incidentally, if you've been paying attention you'll realise you have an explosive mixture on your hands. If you install the wrong heating you could have a most unsatisfactory "bang".

Meanwhile, back in the group Portakabin (two years earlier) we had been discussing what to restore: the T-31 I had pinched from under the nose of Ron Davidson in Northern Ireland – clever, I thought at the time – or a T-21? (Ron, incidentally, knew all about e and also where he could buy an airworthy T-31 for only a little more, but he didn't tell me that at the time.)

Wrapped in polythene sheet and tape the T-31 left Bellarena, via a stately home, to feature in a lively discussion at Camphill. The consensus of our group was that they would love to work on (sic) a T-21. I put up an argument for the T-31 (after all, I'd paid for it) but to no avail, so Ken and I departed on the T-21 trail, ending up with three wrecks – another story in itself.



"My Fauvel before going back for work I should have done before covering it," says Ian. "If in doubt, do it!"

The moral is quite simple: make sure you buy the right aircraft. Do not let yourself be compromised by offers of money or help into going for less than the ideal. A T-21 is great, but if you have no hangar for it, it needs a big closed trailer. The T-31 could have been flying in six months, honest, had an open trailer that could have been clad, and two of our T-21 wrecks had blown over even before coming to a windy hill site (but then, I never give in gracefully).

At the end, you will need a little sticker to put in your cockpit, provided by a BGA inspector. Having one in the group is the cheapest and best solution. It is essential that he, or she, knows what you are going to do and sees any bad workmanship before you cover it up with ply or fabric. I am a BGA inspector, along with one group member and two club members; Ken could be if he wanted – we were off to a good start. So find an inspector, remembering that, according to well-established custom, they come armed with excuses to prevent them actually doing anything really useful.

Another essential task the inspector can help you with is deciding what you are going to do in the first place. OK, any repairs may be obvious, but what standard are you going to work to? This may sound daft, but is your aim to bring it back to its original as-new state (pretty tatty, by modern standards)? Or an award-winning super finish that makes the whole thing look like a glass glider in the wrong colours, with rosewood instrument panel and gold-plated pee tube?

I had decided the 40-year-old fabric on the Fauvel didn't need replacing. This was confirmed by half the inspectors I asked – after, of course, I had spent a lot of time rubbing it down to repaint. Sadly, the other half – a year later – said "get it off," so I did. This, of course, proved me and the first half right – the fabric and the structure were perfect. This kind of thing can have a major impact on e . However, the now-bare skeleton revealed a major repair – expertly done, but it might not have been.

So my advice is to decide what you are going to do as early as possible and only change your mind with good reason. If in doubt, do it. Old fabrics do deteriorate and covering is good fun; think of the glue-sniffing and your own colour scheme. However, if you are genuinely sure of the glider's history, and the fabric is good, you may be able to save a lot of hours.

Finally, I would like to thank the late Mike Birch, Graham Saw and the Booker Vintage Group for their help when we formed the Camphill Vintage Glider Group. They knew all the problems but obviously decided that either we could overcome them, or why the heck should they be the only fools. Thanks, guys – I wish there were some legal way of repaying you.

Contacts & help: Ian Dunkley, ian_dunkley@pgen.net; Vintage Glider Club, geoffmoore@cw.net; Popular Flying Association, engineering@pfa.org.uk; Standard Repairs to Gliders, £5.00 from the BGA

How I flew 2,463km



Photo: Régis Tripler

Klaus Ohlmann talks to S&G about the highs and lows of his truly amazing flight, believed to be the longest ever

IN YOUR freezing cockpit, you've been racing close to VNE for much of the last 14 hours. The sun is going down over the unlandable mountains to the north – and you've already flown over 200km further than the previous world record.

Your co-pilot thinks you should turn back and land. What do you do?

If you are Klaus Ohlmann, you make a neck-or-nothing decision to go on... and claim a new world record with seconds to spare. A minute later, it would have been official night at the Argentinian airfield of Malargue – and the 2,463.7km flight, now awaiting ratification by the Fédération Aéronautique Internationale, could not have qualified as a world record.

The 48-year-old German dentist from near Frankfurt, who gambled and won in such a spectacular fashion, is no stranger to mountains. On his "days off" he shepherds compatriots on Alpine lead-and-follows in his Calif, KO (above). An infectiously positive person, he has 11,000 gliding hours, as well as 20 weeks' experience of

wave in Argentina gathered on three visits with the OSTIV Mountain Wave Project.

That bold decision to continue was based, he says, on the knowledge he has accumulated since his first visit to the Alps 22 years and 8,000 hours ago.

"I didn't want to damage the glider," he explains, "but people don't realise how fast you can go in the final hour. I know it's possible to do 200km in an hour if you are at this height and know how the wave

works – and I knew that the waves in the north were very good. At 20.10 we had exactly 40 minutes because the last legal time to land in Argentina is 20 minutes after sunset. We had 180km to fly.

"My co-pilot Alois Urbancic said: 'no, let's go back,' and I said: 'I will try it'. It was fantastic because it was a race against time. It was amazing."

Not even landing was straightforward: strong winds at height had dropped to

The flight of a lifetime, all thanks to

WE TAKE OFF from San Martín de los Andes around 06.00hrs, a little late. on a world record attempt: I want to do a 1,700km out and return flight to the south.

Unfortunately, after about 500km the initially excellent weather deteriorates dramatically. We abandon our task to try a record free flight around three TPs (Open Class) which currently stands at 2,049.44km, flown by Terry Delore in 1994 in New Zealand.

At 13.15 we're back over San Martín, having covered 1,050km. To the north there are lots of clouds from the approaching cold front.

After a long glide we contact rotor lift right over Zapala – the stepping stone for the wave system reaching from the Valley of Loncopue to the Cordillera del Viento. From there we continue in the lee of the main ridge via the Barrancas Valley and the Rio Grande, always above 5,000m. At around 16.00hrs we turn back south. If we make it home, we will have beaten the world record. But with 120km to go we decide to exploit the extraordinarily good soaring conditions in the north rather than fight the bad weather back to San Martín. A wise decision: we learn that a Brazilian DG 500 takes forever to make it

nothing at ground level. "We were a little bit high, and I couldn't turn: I wasn't sure about the time, and a whole circle would need 30 seconds. So I turned right and left to use up some height. It was a very fast landing but the runway is long."

Alois, an Argentinian with 4,000 gliding hours who flies from the Condor club near Buenos Aires, says: "When we landed we cracked open two bottles of mineral water! But later on we made it into the town and had a proper celebration with red wine." Klaus adds: "We needed two bottles of wine to calm down!"

Alois was chosen to fly on November 26 with Klaus after helping with work on the Stemme S10-VT's landing gear. "I said: 'tomorrow will be a good day, let's fly together' – and then we made this flight," explains Klaus. "It was unbelievable! Alois is a very good flatlands pilot but had never flown in these conditions. At 65, he was like a child. He was thrilled and for him it was really magic. To fly at 280-300km/h and climb at 5m/s: he couldn't believe it." Alois adds: "The last part was the most spectacular, and flying over snow-covered mountain ranges was beautiful."

The lowest point after launching from San Martín de los Andes was 2,800m at Zapala, an airfield about 150km away. Klaus' only mistake during the flight, he says, was falling out of the wave into turbulence. ("We had good luck," he adds, "and found 2m/s."). The highest point was around 6,500m. "With 500-700m more than I wanted, it was not possible to fly faster. You are always so close to the flight limits. I respect a speed of something like 200km/h at 6,000m."

The rarefied atmosphere and the cold are also problems. "You cannot economise on oxygen," says Klaus, "because all your decisions – and there are many – must be good. We use oxygen from the ground up: two bottles of five litres at 200 bars for each pilot." And how does he keep warm? "The onion system," he replies. "You need some layers at -20°C in the cockpit." Five, in fact. A solar panel recharges the main battery (for the engine) and the auxiliary

the bad weather

back. The groundspeed rarely dips below 250km/h as we race north.

Then I face a critical decision: to head to the airfield at Chos Malal for a landing – wasting a lot of kilometres – or to gamble on the tailwind and try to make it north to Malargue, risking arriving too late to land in official daylight. At 20.10, with sunset at 20.34, to decide to fly another 180km would be a truly gutsy move. Our actual groundspeed of 300km/h pushes me towards an all-or-nothing bid. Just in time, after 14 hours and 20 minutes, our miracle bird touches down in Malargue.

See overleaf for a map of the record flight

one (which powers the instruments). A third battery runs the logger.

The engine, seen by the uninitiated as a safety feature, is nothing of the sort. "At -35°C outside," says Klaus, "not even a car motor would start". Instead, he has noted several small airstrips in the mountains, and will land if necessary to warm up the engine for a retrieve: "You cannot say: 'I'll use the motor if there's nowhere to land,' or one day you will have a problem."

The story of this flight begins four years ago, when Klaus visited Argentina with his wife, Sidonie, an airline pilot. They instantly saw its potential and returned in 1998.

"That was my first experience here of wave," says Klaus. "It was great, and I saw the chance of making the biggest flight in the world. If there's anywhere you can do it, it's here: the country is so big and the conditions are so good. But you need local experience, even if you can already fly wave cross-countries."

It took three years to realise his dream. In 1998, he spent five weeks at the airfield of Chos Malal, and seven more in 1999, when he and Sidonie flew 1,833km (his previous longest flight). He decided to stay for three months in 2000-01, flying from San Martín, partly to test conditions in January. October might also be good for distance flights, though strong winds are a risk (once in the Rio Grande Klaus had an indicated airspeed of 100km/h and a groundspeed of 20km/h – backwards).

'To make cross-country flights in wave over wild country – that's very special,' says Klaus

During November and December 2000, he thinks there were more than twenty 1,000km days; and two when more than 2,000km could have been flown. The first was November 26; the second, Christmas Eve. On the latter, he managed 1,700km.

But he warns flatlands pilots not to rush to Argentina in the hope of breaking records. He points out that no-one else has flown 1,000km there. "It is easy," he says, "to climb to 5,000m in wave, but to make cross-country flights over wild country in it, that's very special. Of course if you have good wave cross-country experience you will easily do 1,000km, but you need to know the local conditions. The day I did the 2,463km, pilots at Chos Malal didn't fly because they said that it wasn't a good day. When I passed there I had 11m/s."

What does he think is the longest flight possible? Perhaps, he says, he could have started 45 minutes earlier, or abandoned his O/R attempt 50 minutes sooner. An hour could be worth 150 to 200km. So, if all factors were favourable, 2,600km might be on. Flying for 14 or 15 hours without a mistake is no joke, he adds. "You need a very good day and especially good luck, too. Some people talk about 3,000km and I know that's not so easy. They don't



Figure 1: Conditions at 15.00hrs, November 26, 2000

Forecasting for long distances

ON THE DAY Klaus flew his sensational record, most members of the Mountain Wave Project (MWP) team were gathered in a small town in southern Germany, where Wolf-Dietrich Herold gave a talk about the experiences and achievements of the MWP's 1999 expedition to Argentina, at the annual get together of OSTIV's meteorological panel.

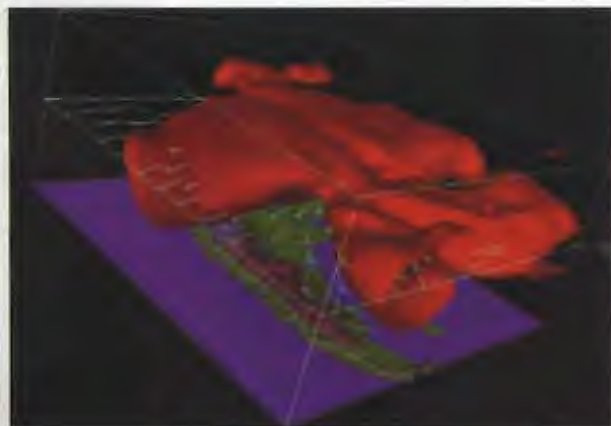
Over the previous fortnight I had provided Klaus with prognostic charts of wind and humidity, using the regional wave forecast of the RBL (Relocatable Boundary Layer) model from the German Military Geophysical Service (see Figure 2, overleaf).

Pre-frontal situations are most favourable for long flights in the Andes. However, the often associated rapid increase of low-level wind speed and a marked advection of humidity in the Esquel region frequently pose difficulties. Rarely can this wall of clouds be penetrated towards the south (see photograph, overleaf).

The challenge, then, is to filter out and forecast situations where, in addition to the necessary south-westerly flow increasing with altitude, a rather strong gradient exists up to Chos Malal, about 300km to the north-east. Our observations so far indicate that there are perhaps one or two days during November and December displaying this favourable combination.

Thermals are not a viable alternative to wave lift. The rather wet valleys to the south are much less active convectively than the dry Pampas to the east. Furthermore, a frequent weak cold air advection from Chile tends to weaken thermal development considerably. Local synoptic observations and radiosonde data come from widely scattered stations and are rarely representative for the complex topography.

René Heise, MWP Meteorologist
Translated by Wolf-Dietrich Herold



➤ realise what it is to do 15 hours at 200km/h. To do 14 at 170km/h or more is crazy enough!"

For someone claiming the longest glider flight ever, Klaus seems remarkably relaxed about the status symbols other pilots cling to. He isn't sure how many 1,000km flights he's done – "it must be about 15, three of them in France" – and has never claimed Gold or Diamond. He once flew 1,416km O/R across five countries in a Nimbus 3 – to Austria from his base at Serres in the French Alps – without realising it was a two-seater world record. He does, though,

have Silver, which he needs for national competitions in Germany. He also holds, with Sidonie, the free O/R Open Class world record: 1,412.22km flown in the same Stemme on December 29, 1999.

"Of course, records are very nice: I'm a gliding professional so my reputation matters. But I enjoy my flying; it's not only records, records, records.

"I am really fascinated by the wind. It's so much fun to battle with such very strong forces. You know you are a little nothing, but you use them. My passion is mountain flying, because in the flatlands if there are

no thermals the day is finished. In the mountains you will always find something – a little thermal in the middle of the valley at the day's end or a weak wave.

"What I want now is to learn how to fly in this fantastic region. Exploring a new region is a lot of fun. And if there is a record day, I'm ready to go." He has goals in mind: a 2,000km flight in one direction to win the \$3,000 prize offered by wave pioneer Joachim Küttner – perhaps from the south to use the southerly component often found in winds over the Andes ("I think it's possible"); a pre-declared O/R to beat Tom



Figure 3. above: weather over Argentina at 12.00hrs on November 26 (René Heise)

Above: the region of Klaus Ohlmann's flight along the Andes, from San Martín to Malargüe. He believes that 1,000km over the flatlands in thermals is also perfectly possible. "In Argentina, you can fly every day," he adds (Map: Steve Longland)

Far left: Wolf-Dietrich Herold took this picture of lenticulars ahead of an approaching front in Argentina on flight in Stemme S10-VT D-KMTE last year. Used by Klaus for his epic flight, it has been made available to the MWP by the manufacturers. See also www.mountain-wave-project.de

Figure 2, left: RBL wave forecast from Thomas Presnill at the Germany Military Geophysical Office. Winds of more than 60kts at 18.00hrs on November 26, 2000, are shown in red. "You want a jetstream in the north and another in the south, not too far apart," says Klaus

Knauff's 1983 world record of 1,646.68km ("It's not easy to know what the weather is like 850km away"); a flight round Aconcagua, the highest mountain in the Andes; and, within two years, he plans to glide full-time ("I'd like to do 'tourist' lead-and-follows; three active volcanoes in a day. I once saw the shadow of the Stemme on the smoke of a volcano...")

Only the introduction in the FAI Sporting Code last year of the category of three free turning point flights made his record possible; the longest glider flight started as a failed 1,700km O/R attempt. When conditions deteriorated, he changed track to achieve something new.

This could stand as a metaphor for his whole approach to gliding. As my final chance to amend this S&G loomed, a series of increasingly-frantic emails, faxes and phone calls to France, Germany and



Argentina elicited no response... because Klaus was away flying, of course! I was told he would return to his hotel for Christmas – but on Christmas Eve, I heard: "I am very sorry, he left at 4am to try another world record". He finally called me back on Christmas Day. I didn't dare ask what his family thought of his giving interviews in the middle of festivities... As we go to press, he still has a month's flying left – I wonder what he'll do.

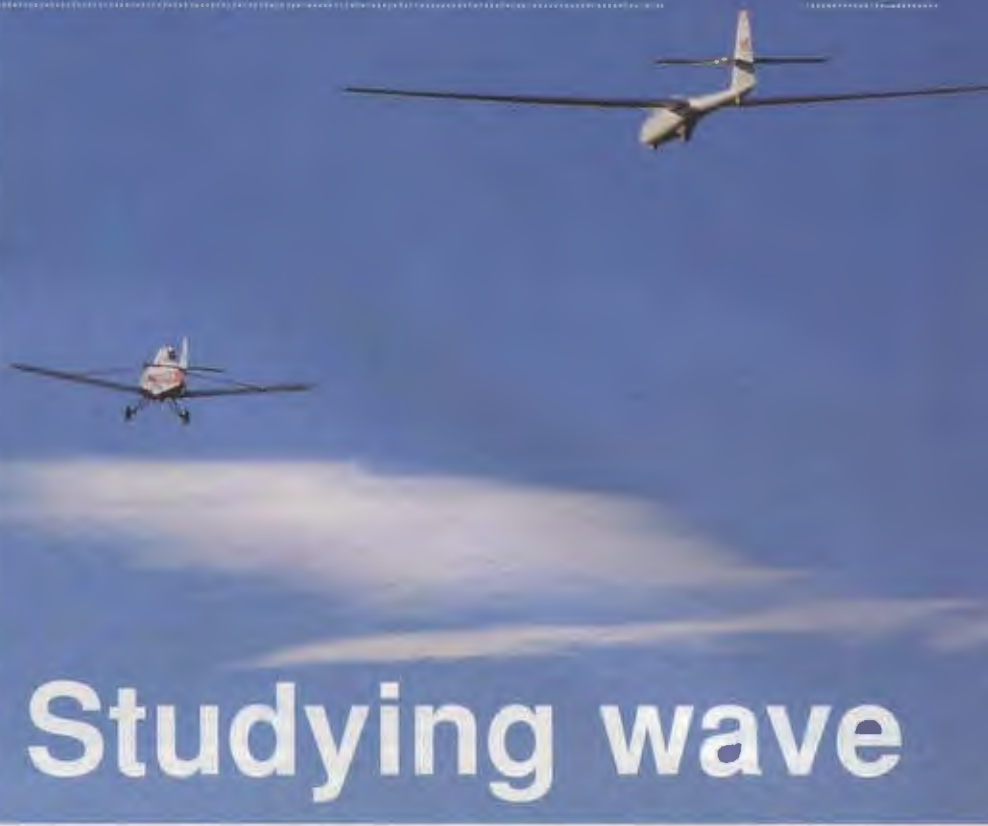
It's no surprise, then, to learn that he thinks determination – "endurance" – is the most important personal quality for a record-breaking pilot. "You have to want to do it," he says. "Even if you think 'no, it's not worth it today,' you must continue. Even if that day you don't make it, what you learn will be very important for the next time. It's a whole philosophy of life.

"All these things start with a dream, and if you really want to do something, it will happen. Never give up!"

Helen Evans

Next issue: Klaus, whose epic flights are part of the OSTIV Mountain Wave Project, explains why he came up with the idea and what the project aims to achieve.

My thanks to Klaus Ohlmann, Alois Urbancic, Jean Molveau-Vol à Voile; Régis Tripier; Gill Sanders, and the Mountain Wave Project's René Heise and Wolf-Dietrich Herold for all their help with this article



Tom Bradbury investigates other research into lee waves

ALTHOUGH sailplanes have been soaring in lee waves since the 1930s most meteorologists at first regarded waves as interesting but unimportant phenomena. Then the era of numerical forecasting began. Computers could predict upper winds fairly accurately over the entire globe and it was realised that lee waves were causing enough drag to slow down the airflow. This stimulated research into how waves caused drag.

A thorough study of wave dynamics began using balloon trajectories, making special aircraft flights, probing the atmosphere with radar and comparing

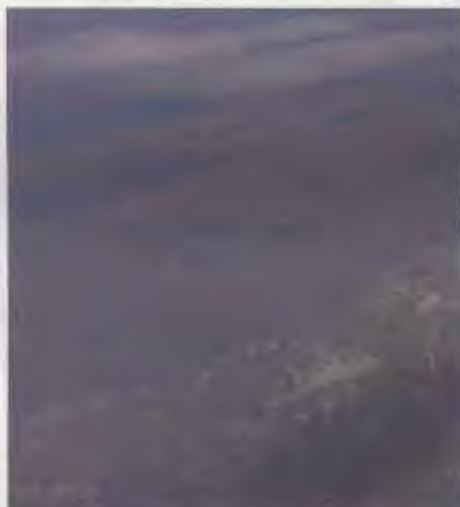
the findings with numerical models and satellite pictures.

Balloon Studies

Every six or twelve hours, a few selected stations release large balloons carrying radiosondes. These transmit at 400 to 405 MHz and radio back the pressure, temperature and humidity. The wind is found by tracking the balloons by radar or using self contained navigational systems such as GPS or LORAN.

Most balloons have enough free lift to climb at about 12kts but the actual rate of ascent varies as it goes through the lift or sink in lee waves. By plotting the rate of climb against distance one can display the wave pattern graphically. For research purposes a series of balloons was launched at intervals of ten minutes or even less. In the UK temporary balloon sites were set up at Caersws near Newport in mid-Wales, Eskmeals on the coast of the Lake District, and also near the eastern end of Loch Cluanie in the Western Highlands. Fig 1 (overleaf) shows changes in the rate of climb as the balloons drifted downwind. The waves faded out after the balloon had travelled some 60km, probably because it had risen above the wave level.

One series of launches found lee wavelengths varied between 8 and 16km with lift ranging between 2 and 13kts. The strongest lift was found at 3km (about 10,000ft) but the level of maximum lift varied between 1.5 and 8km (roughly 5000-26,000ft). One ascent found lift of 4kts as high as 15km (49,000ft). The highest wave activity was found by a balloon launched from Leuchars (east of Portmoak). The max lift was in the stratosphere



Wave bars, seen from 35-37,000ft, which are probably caused by the Kūhā-ye Zagros (a mountain range in western Central Iran) between Shirāz and Eslāhān

the white planes picture co.

➤ between 15.5 and 22km (51-72,000ft) to lee of the Cairngorms. Big waves cause large temperature swings. In this case the air temperature (usually fairly constant in the lower stratosphere) fluctuated by 16°C over a height of 6,500ft.

This is not the upper limit for lee waves. Nacreous ("Mother of Pearl") clouds seen from Norway and Scotland were measured at 24km (nearly 79,000ft).

In the USA, radar-reflecting "chaff" projected up to 30.5km (about 100,000ft) revealed stratospheric waves. Noctilucent clouds, sometimes visible at night when the summer sun is below the northern horizon, show wave-like undulations at heights of 80-85km, about 270,000ft.

Aircraft flights

Research flights by aircraft have been carried out over the USA, UK and Europe. In England the Met Research Flight used the C-130 Hercules, which has gust probes, inertial navigation and also DECCA and LORAN hyperbolic navigation systems.

The C-130 was supplemented by a Canberra for some high-level sections.

Straight and level tracks were flown up and down wind for distances of 200km. The Hercules flew at several levels between 2 and 7km (6,500ft to about 23,000ft) while the Canberra went up to 13.6km (about 45,000ft). Fig 2 (right) shows some of the results from one day's flying. Many of the UK flights were over and downwind of the Lake District with a climb made over the sea upwind to obtain a temperature and wind profile for use in subsequent wave calculations. Repeating some legs showed that although the wave crests and troughs looked similar the waves had drifted slightly between runs. Run 7, the lowest traverse at 1.8km, produced a more ragged trace, possibly due to turbulence.

Waves set off by the small UK mountains formed a fairly regular pattern. Alpine waves seem more complicated. The Alps are so much higher and broader that several different wavelengths occur.

On one flight (Fig 3, *opposite top right*) the largest wave was found over Innsbruck and here the phase line sloped into wind with height. Just downstream there was a train of much smaller waves instead of a single big wave.

Flights were also made over and on the north flank of the Pyrenees. Southerly winds blowing across this range set off both trapped waves

① Lee waves over the English Lake District

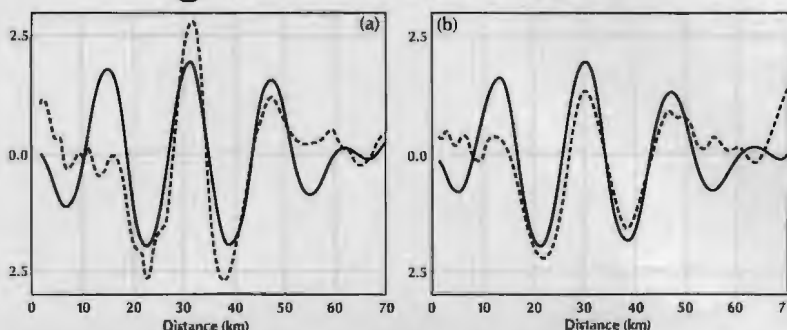


Fig 1: by plotting the rate of climb of an untethered balloon (see p43), you can display wave graphically

(with a downstream wave train) and hydrostatic waves whose energy was propagated almost vertically above the peaks. The researchers seemed more interested in the regions where turbulence broke out and the results look less interesting for soaring pilots.

Cirrus waves

In some cases there is a marked wave at high levels between 10 and 12km even though the flow seems smooth lower down. Fig 4 (*opposite, far right*) shows an example when the Hercules at low levels found only smooth streamlines below 7km but the Canberra found a steep wave between about 9 and 11km. (29,500-36,000ft).

Similar waves at cirrus level have

Waves over cumulus

The NCAR (the US National Center for Atmospheric Research) made many flights with a Beech King-Air to study waves set off by cumulus clouds and blue thermals. These flights started during the early stages of convection when there was moderate or strong vertical wind shear. They measured the wind inside the clouds and in the clear air aloft and found a difference of horizontal velocity of 15-20kts. The clouds were in effect behaving very like solid obstacles deflecting the flow over them. Even cloudless thermals could produce this effect. Most of the flights were made over central Nebraska some 350km from the mountains to avoid complications from real mountain waves coming off the Rockies.

The method was to make horizontal traverses of 50-100km along the direction of the upper wind or (when possible) along the shear gradient. Some of the convection waves extended up to 9km (nearly 30,000ft) which was as high as the King-Air would go. It is believed that some waves could have reached the stratosphere. The wavelengths ranged between 5 and 15km giving lift of 2 to 6kts.

Radar studies

Aircraft are expensive to operate but the running costs of radar installations are small. With radar the air motions can be watched continuously for long periods. There are two main wavebands in use. One is known as VHF radar and operates at about 46.5 MHz. The other uses microwaves with a frequency around 915 MHz. Microwave radar works best when there are precipitation particles in the air to give echoes.

The VHF radar is sensitive to small-scale fluctuations in the refractive index of air due to layers of water vapour, turbulence and waves. The observations can extend to very high levels because the profile of temperature and the decrease of pressure with height influence the radar returns. During daytime further echoes come from

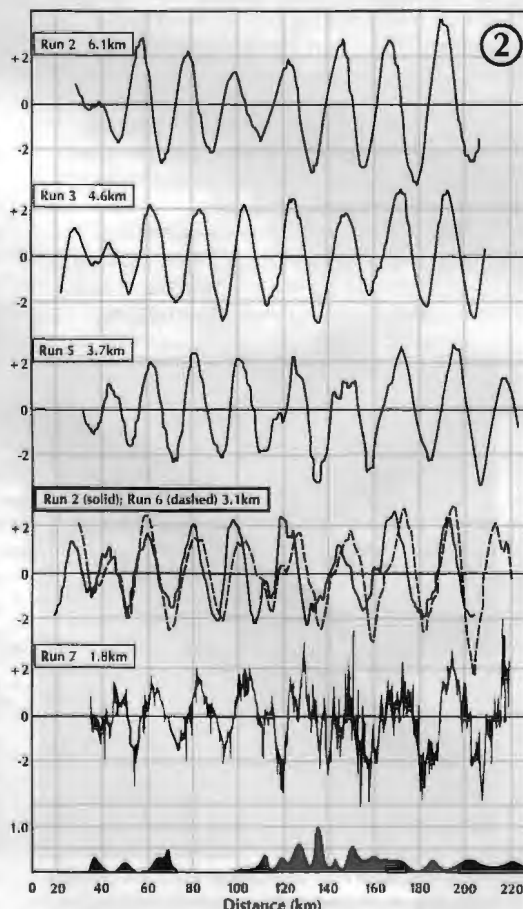
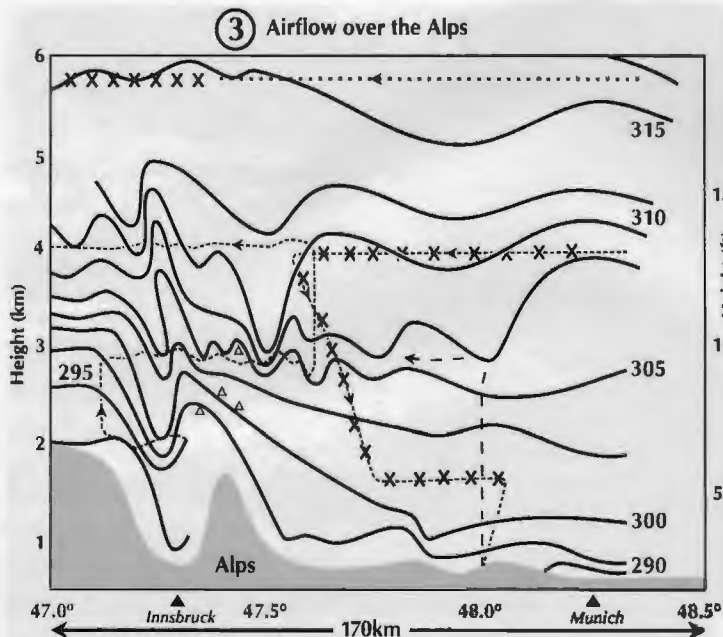


Fig 2: research flights. Run 7's ragged appearance may be due to turbulence

become attached to the Pennines for many hours before the pattern changed and the cirrus blew away into Germany. Satellite pictures showed a similar effect to lee of Greenland when a jet stream was curving over it. The wave-induced cirrus streamer extended south-west turning south for nearly 1,000 miles. (Fig 5 was sketched from a satellite picture of this).



the change in electron concentration at heights above 60km.

VHF wind profilers

VHF radar provides a continuous profile of the winds above the transmitter. Echoes moving along the line of the radar beam show a Doppler shift, which can be converted into a velocity. By combining beams at different angles the computer calculates a continuous profile of the winds aloft, hence the name "wind profilers". There are many such installations in the USA and recently new results have been published from similar sets in France and Australia.

In the UK there is the MST radar at Capel Dewi, about three miles from Aberystwyth. The initials MST stand for Mesosphere, Stratosphere, Troposphere; this indicates the depth of the atmosphere which can be probed. (The Mesosphere is the layer above the stratosphere and is about 50-85km high).

The Aberystwyth radar has computer links with the Rutherford-Appleton Laboratory where much of the data processing is done. The radar has five transmitters each giving a peak power of 32kW and a maximum mean of 1.6kW. They power five sectors of the antenna system. This is a phased array of 400 four-element Yagis arranged in a square with 110m sides. These can send beams in the vertical and at zenith angles of up to 12°.

The Aberystwyth radar picks up its best waves when the wind comes over the mountains to the east but lesser waves have been detected with south-westerly winds. Over the British Isles easterly winds do not usually extend very high. The wind direction often changes higher up, resulting in a "critical layer" where the wind either drops to zero or the direction changes by 90°, producing the same effect.

Fig 3 (above left): wave systems in the Alps are often complicated
Fig 4 (above right): wave at high levels with smooth flow low down

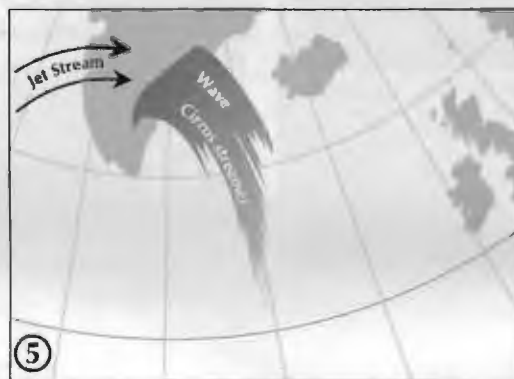
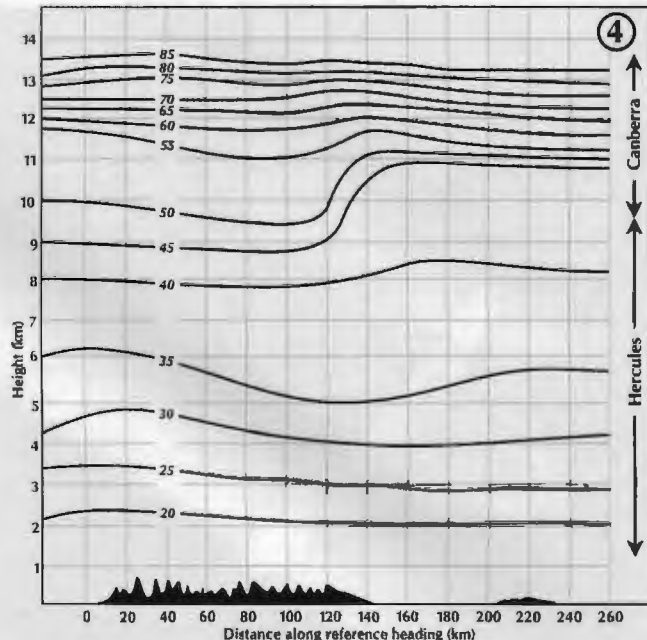


Fig 5 (above): a wave-induced cirrus streamer nearly 1,000 miles long

The critical layer shows up on radar as a lull in the wind speed and a broadening of the Doppler profile due to turbulence. Turbulence makes the echo rather fuzzy. Since the critical layer absorbs wave energy no waves are found above it.

Shear waves

The MST radar is chiefly confined to waves in the zone directly above the transmitter. More distant waves have been picked up with a large steerable radar dish such as the installation at Chilbolton (west of Lasham). This radar operates at 3 GHz

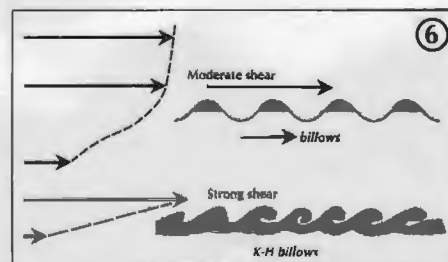


Fig 6: the effects of moderate and strong wind shear
Figures 1 to 6 enhanced by Steve Longland

(about 10cm wavelength) and uses a dish of 25-metre diameter, giving an angular resolution of 0.28°. It has detected shear waves forming Kelvin-Helmholtz billows in a shallow layer where there is a marked change in wind velocity between top and bottom. Fig 6 (bottom left) shows wind shear and billows. With a moderate shear the billows can form separate little wave clouds, strong shear makes the waves curl over into K-H (Kelvin-Helmholtz) billows. Shear waves are not usually stationary; they move with the weather system which caused the shear. In one case radar detected waves which formed within warm frontal cloud.

Numerical results

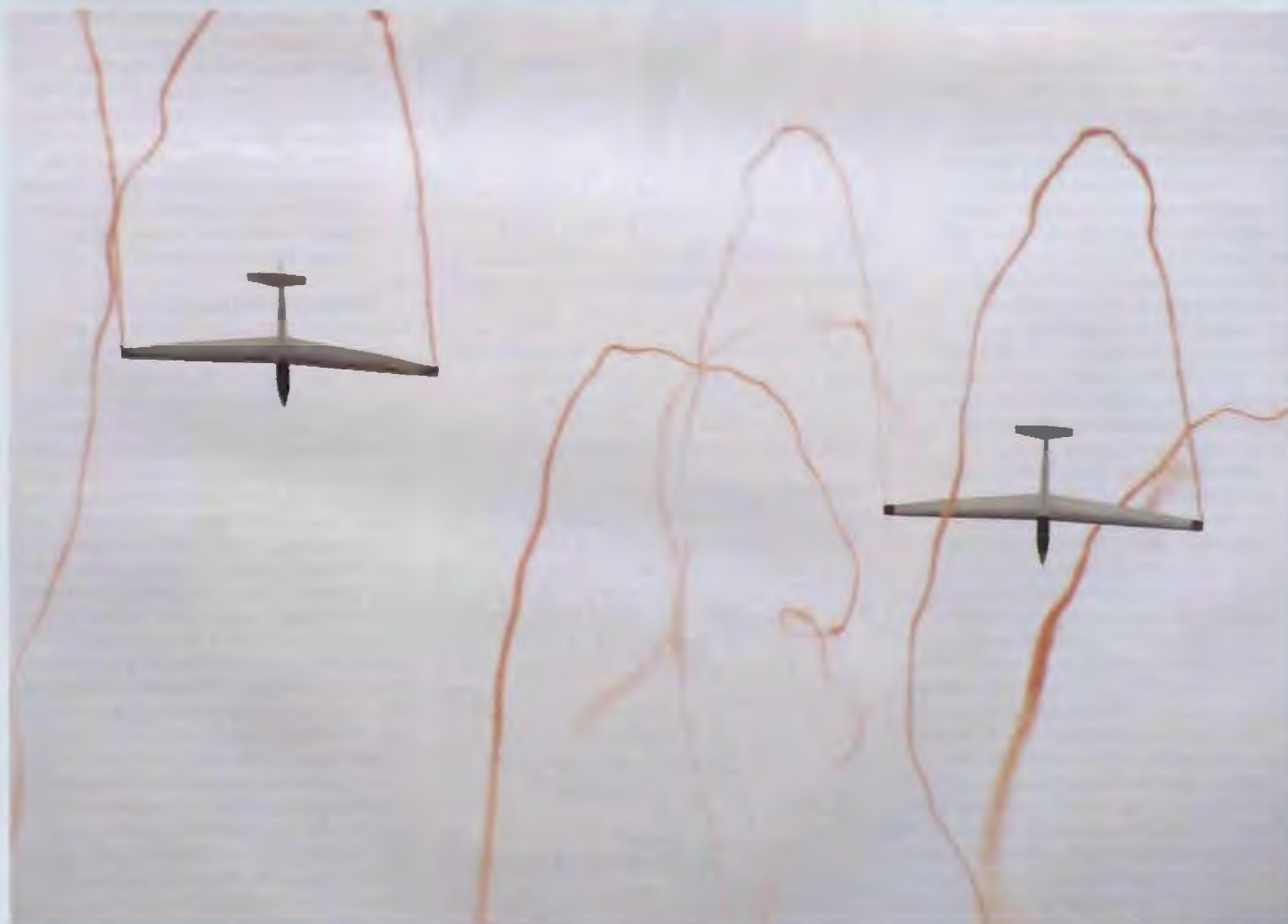
The preliminary studies had to use early computers with very limited speed and power. They could only handle a two-dimensional wave and many assumed an idealised shape of ridge. Even so these 2-D models proved very useful. Improved computers allowed the wave models to be extended into three dimensions. Since waves change with time, a 4-D model was developed to calculate such changes. Lately a fairly accurate copy of the underlying mountains was included. The mathematical model can be tested by predicting the actual pattern of wave clouds which would form for a measured distribution of humidity upstream. This is too elaborate for global weather prediction but all the major centres have included wave drag in their models for a number of years now.

Unfortunately, meteorology has become a commercial business and private wave forecasts for specific gliding sites seem likely to be rather expensive. However a simplified version may become available. Perhaps some American university may put one on the internet!



Left: the first K-6CR imported into the UK (by Gerry Burgess) now flies as 475 at Talgarth, as this picture of Gerry Martin by Robbie Robertson shows. See also p7

Above: wave over the Cairngorms, in Scotland, last autumn, photographed by Mike Lindsay



Above: Jamie Allen (R25) and Chris Heames (R73) flew an aerobatic display under stratus at the Royal International Air Tattoo, Cottesmore (by kind permission of Peter R March)

Heaven & Earth

Right: if you thought that "TMA" stands for Thermal Manufacturing Area, this proves that lift from wave, too, can be found where you can't make use of it. In the foreground is the Imperial War Museum, home of the Colditz Cock glider (courtesy of the white planes picture co.)



Above: Carl Peters took this shot of unpacking the trailer in Spain last year



Above: Arrival at a BGA wave soaring course, Abayne. "It was below freezing and the mist was rolling in across the field from the river Dee," says photographer Michael Roberts

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COCKPIT WIRING

Ian Keyser concludes his two-part series on cockpit wiring with a look at batteries, mikes, and associated problems

THERE are three types of batteries you might use in your glider – and each requires different treatment. The most popular is the gel cell, a normal lead acid cell that uses a gel electrolyte instead of sulphuric acid.

It is imperative that these cells are not overcharged, because if they gas they will quickly dry out and become useless. They should be charged using a proper charger – not a car battery charger, if you want them to last. Using a voltage-regulated charger, many years of life will be obtained. Makers' maximum terminal voltages range between 13.8 and 14.3, but my charger is limited at 13.6 volts and my batteries are now seven years old and still usable. It is wise to keep these cells topped up at all times to minimise sulphation of the plates.

The next most common is the NiCad, Nickel Cadmium cell. These have a terminal voltage of 1.2 volts and so for an efficient 12 volt pack it is worth making it from 11 cells and not the normal ten. These

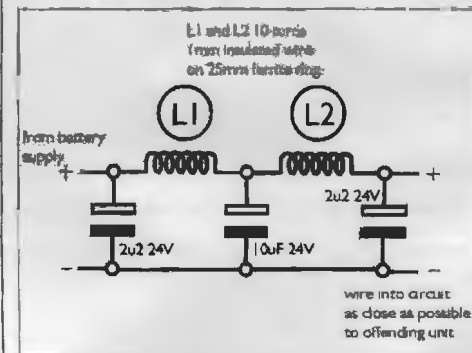


Fig 1: Circuit for a supply filter (see photo above right)

require constant current for charging and like the gel cell must not be overcharged otherwise they will dry.

Becoming more common is the NiMH, Nickel Metal Hydride cell. These are similar to the NiCad but require a slightly longer charge time. With both these cells follow the instructions supplied, often printed on the cell itself.

I use two gel cell batteries in my system, one large and one small, which means I am

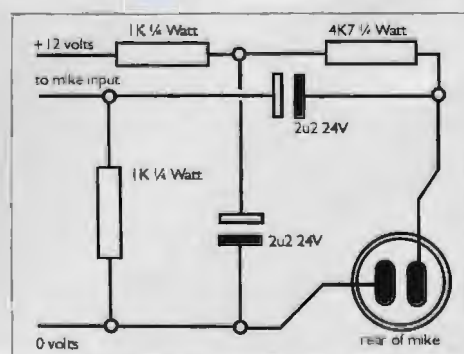


Fig 2: a two-terminal microphone circuit

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Fixing wiring problems



Above: a suitable supply filter can help prevent noise in the cockpit

Photo: Ian Keyser. Diagrams: Jon Hall, HRA

unlikely to run out of power. The main A battery is 5 ampere/hour and the smaller B battery is 2 ampere/hour. Mounted on my panel are a voltmeter and battery/master switch. If A gets below 12 volts I have B ready for use, which under full load will give me three hours' flying.

Noise

In modern glass ships life is peaceful, but we are not all that fortunate. At 100kts a Pilatus, however well taped, is not peaceful and a radio call could easily be missed. For the electronic engineer it is a relatively simple matter to have a little circuit to increase the audio output from the radio and instruments as the cockpit noise increases and vice versa, but sensible location of loudspeakers can obviate the problem to a very large degree. An ideal location is behind the head. Instruments to the right and radio to the left helps the brain isolate one from the other.

For the hard of hearing a ten-turn loop of wire mounted round the canopy frame and external phones socket of the receiver will feed a useful audio signal into the hearing aid tens of feet from the glider. While chatting on the runway it causes some amusement when the hard-of-hearing pilot suddenly walks from the company and answers a radio call from his cockpit which no-one else has heard!

Not all noise will be acoustic; some will be electronic and interfere with other

electronic equipment. Output from inverters on artificial horizons and strobes cause havoc if not properly filtered. This noise is usually induced into other equipment via the supply leads; suitable supply filters can easily be made to stop this (see Fig 1, far left). Occasionally, however, noise may be induced by electromagnetic (em) radiation. This is far harder for the non-technical pilot to tackle, especially in glass aircraft, and help should be sought elsewhere...

In an ideal world all fused circuits would have wire going directly to the battery terminals so there is no common cable between the circuits. This would decrease the supply-borne interference to a large extent. In the practical world we require battery switching and master switching so this cannot be achieved. The conductor from the battery should have the largest practical possible diameter and master and battery switches should be of excellent quality. Chunky toggle switches are the

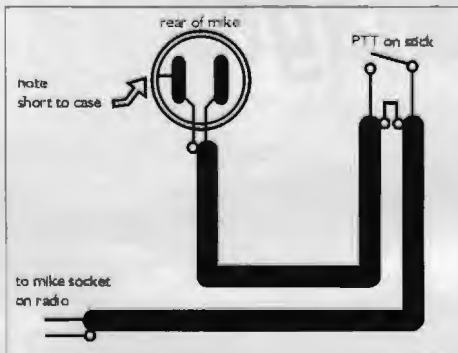


Fig 4: a simple microphone wiring circuit

order of the day, not push switches that will burn out if an accidental short-circuit occurs.

Microphones

By far the most common microphone used is the electret. This dinky little thing comes in two types, easily identified. The most usual is the two-terminal unit, used with most modern transceivers. The three-terminal unit is far less common but in many cases can be used, with additional circuitry, in place of a dynamic microphone. If you have a two or three terminal unit and wish to drive a transceiver designed for a dynamic microphone it is worth a little experiment to see how it goes (see Figs 2 and 3, left). Suggested circuits are given for you to try. Older sets such as the TM6 and Bantam were designed for use with dynamic microphones, similar to a miniature loudspeaker. As the sound waves vibrate the cone a current is induced into the coil suspended in a magnetic field.

All microphones must be wired to the transceiver via screened microphone cable.

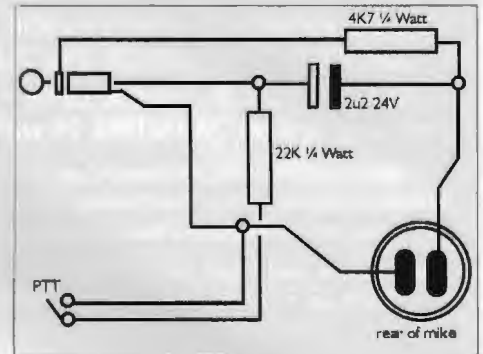


Fig 5: a simple two-terminal microphone circuit

Most transceivers are designed with a PTT (push to talk) line and the microphone can be connected directly to the transceiver. Modern hand-helds do not have this facility and the handset is switched to transmit by connecting the microphone to the input via a switch. It is possible to wire the screened wire up and back down the stick and use the switch to connect the inner conductors together (Fig 4, left) but this can cause problems with RF (radio frequency) getting into the microphone input and causing distortion (often heard on air!) A fairly simple and more elegant method is to wire a simple little circuit into the microphone plug (Fig 5, above).

One final useful circuit is the suppressed zero meter (see Fig 6, below). The little battery meters you often see on panels are almost useless! A fully-charged gel cell will settle to a terminal voltage of approximately 13.6 volts. After about five per cent of its charge is used its terminal voltage will be about 12.5 volts; this will slowly sag to 11 volts when fully discharged. On these little meters that is about a needle's thickness! What is needed is a voltmeter which reads 10.5 volts at one end of the scale and 13.5 volts at the other. These are available with mechanically offset springs but an electrical version can be made with a few components. It will be necessary to calibrate the scale after building as it will not be truly linear, but the readings can then be relied upon.

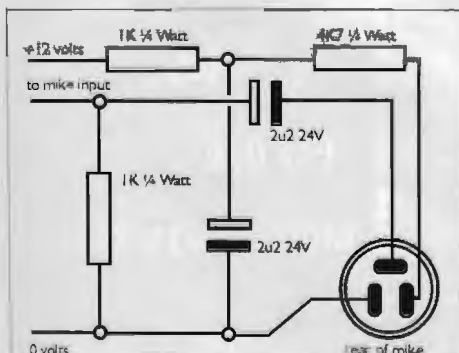


Fig 3: a three-terminal microphone circuit

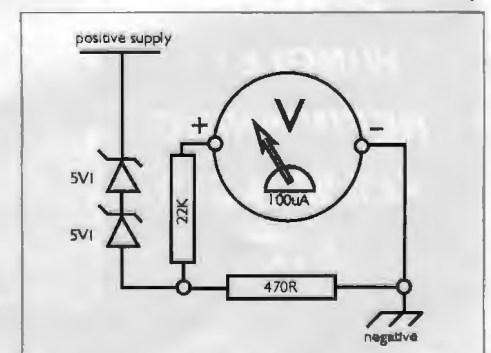


Fig 6: Suppressed zero meter. Calibrate before use!

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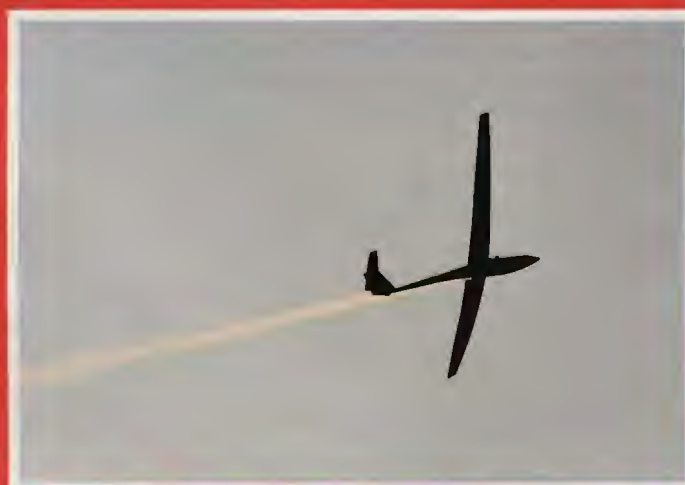
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	Club 2s	Club 1s	PO	Tugs					Full Flying	Estimated No. of Temporary Members	No. of Female Members
Andreas Gliding Club	2	0	3	1	422	24	59		18	0	0
Angus Gliding Club	4	1	4	0	842	0	125		30	74	2
Aquila Gliding club	3	2	31	2	1585	1579	974	10000	92	183	2
Bath Wilts & North Dorset Gliding Club	4	4	1	1	3377	980	1663	12000	129	294	2
Bidford Gliding Centre	3	3	51	2	2964	2934	3100		110	459	5
Black Mountains Gliding Club	4	1	38	1	1477	1473	2641	12000	77	193	4
Booker Gliding Club	7	8	86	5	8605	8605		260000	225	1249	26
Borders Gliding Club	2	1	29	2	2209	2140	1945	8000	92	165	3
Bowland Forest Gliding Club	2	4	33	0	4934	0	2120		138	496	9
Bristol & Gloucestershire Gliding Club	4	5	66	2	6066	1653	3400	122000	197	377	
Buckminster Gliding Club	3	2	21	1	3159	2376	1683	2960	70	264	7
Burn Gliding Club	4	4	31	1	6034	1111	1915	76	130	376	7
Cairngorm Gliding Club	2	0	11	1	1126	702	1045	2700	37	55	2
Cambridge Gliding Club	4	5	68	2	9349	1932	7200	255000	191	810	9
Carlton Moor Gliding Club	1	1		0	461	0	80		14	7	2
Channel Gliding Club	3	1	5	0	2842	0	343		35	362	2
Connel Gliding Club	3	0	7	0	224	0	96	1110	14	29	0
Cornish Gliding Club	2	2	8	1	1717	1448	483.48	1200	44	375	2
Cotswold Gliding Club	3	5	48	0	9410	413	2592	25000	200	873	16
Dartmoor Gliding Society	3	2	14	0	2207	0	576		50	249	5
Deeside Gliding Club	2	3	23	2	4067	4067	2631	20874	111	299	11
Derby & Lancs Gliding Club	4	3	41	0	6033	0	2700	3200	181	537	8
Devon & Somerset Gliding Club	5	2	47	1	7286	773	3482	11067	223	530	15
Dorset Gliding Club	2	3	11	1	2031	481	539		59	206	2
DRA Farnborough Gliding Club	1	2	4	1	496	421	196		28	29	3
Dukeries Gliding Club	2	2	8	0	2762	0	407	1400	37	202	2
Dumfries & District Gliding Club	1	1	1	0	341	0	78	250	19	10	1
East Sussex Gliding Club	4	3	20	1	4710	192	1203	5150	120	848	16
Essex & Suffolk Gliding Club	5	4		0	6074	35	2131	26785	143	347	6
Essex Gliding Club	4	2	25	1	2433	1143	965	5000	91	276	2
Herefordshire Gliding Club	1	1	8	1	685	685	510		23	75	1
Highland Gliding Club	2	1	15	1	1875	204	574	2000	42	140	9
Imperial College Gliding Club	1	2	0	0					26	24	4
Kent Gliding Club	4	3	30	1	7325	1543	1641		170	446	12
Lakes Gliding Club	3	2	10	1	1011	996	553	2740	46	83	3
Lasham Gliding Society	12		211	5	24766	9353	9583	371821	466	1966	38
Lincolnshire Gliding Club	3	1	10	0	2815	74	353	368	54	115	9
London Gliding Club	7	5	132	4	15312	7593	6372	68702	281	2508	16
Mendip Gliding Club	3	2	8	0	3138	0	718	1000	83	538	6
Midland Gliding Club	4	4	37	1	9181	620	4032	15761	162	523	18
Needwood Forest Gliding Club	3	0	11	0	2242	0	640		72	156	4
Nene Valley Gliding Club	2	2	14	0	3181	29	779	1241	57	255	3
Newark & Notts Gliding Club	3	4	14	0	3429		639	1546	79	257	7
Norfolk Gliding Club	3	3	43	2	3851	2385	2165	43400	140	447	11
North Devon Gliding Club	1	0	8	1	250	250			11	38	
North Wales Gliding Club	3	3	3	0	630	0	102.36		41	16	3
Northumbria Gliding Club	2	2	1	1	2598	647	652	2000	78	343	6
Oxford Gliding Club	4	4	19	0	4210	561	1320	9083	112	568	14
Oxfordshire Sportsflying Club	0	0	10	0	0	0	1356	15000	53	36	2
Peterborough & Spalding Gliding Club	3	2	21	2	2416	2416	1430		75	280	6
Rattlesden Gliding Club	3	2	24	1	2188	460	1217	5350	95	386	19
Sackville Gliding Club	2	2	10	1	1200	555	580		28	42	2

OCTOBER 1, 1999 TO SEPTEMBER 30, 2000

GLIDING CLUBS	AIRCRAFT				ALL LAUNCHES	NO. OF AEROTOWS	HOURS FLOWN	KMS FLOWN	MEMBERSHIP		
	Club 2s	Club 1s	PO	Tugs					Full Flying	Estimated No. of Temporary Members	No. of Female Members
Scottish Gliding Union	5	4	55	1	9034	812	5559		216	539	
Shalbourne Soaring Society	3	3	32	0	4376	6	1509	10000	98	402	6
Shenington Gliding Club	3	4	32	2	10330	599	2410	19000	139	452	16
Shropshire Soaring Group	0	0	12	1	452	452	717	5400	23	0	1
South Wales Gliding Club	2	3	25	1	3546	1103	1992	16000	87	270	7
Southdown Gliding Club	3	3	46	3	5480	4539	3694	36883	232	678	20
Spilsby Soaring Trust	5	3			800		150	220	47	200	27
Staffordshire Gliding Club	3	4	21	1	3621	153	660	6540	122	371	12
Stratford On Avon Gliding Club	4	3	29	0	6770	0	1090	17500	124	944	12
Strathclyde Gliding Club	1	2	6	1	477	126	83	0	20	43	1
Surrey & Hants Gliding Club	0	11		0	2027	639			163	1	3
Surrey Hills Gliding Club	4	3	5	0	4528	0	514		76	570	0
The Motor Glider Centre	0	0		0			721	3000	21	20	5
The Soaring Centre	6	7	103	3	11312	6192	6105	31000	359	1498	30
Trent Valley Gliding Club	3	2	18	1	4309	540	1318	18000	68	205	9
Turweston Gliding Club	1	1	0	0	405	0	50	0	7	25	0
Ulster Gliding Club	2	1	18	2	1969	1812	1132	1500	50	231	3
Upward Bound Trust Gliding Club	2	1	4	0	1952	8	328		25	30	3
Vale of Neath Gliding Club	2	2	3	1	256	247			19	9	1
Vale of White Horse Gliding Club	2	2	12	1	1950	50	482		53	150	6
Vectis Gliding Club	2	1	7	1	1086	1086	453		34	90	2
Welland Gliding Club	4	3	17	1	3362	262	1169		71	202	5
Wolds Gliding Club	4	3	43	2	8955	1417	3840	26000	205	1243	24
York Gliding Centre	4	3	24	3	5870	2750	3445	4000	179	948	10
Yorkshire Gliding Club	3	5	49	3	5595	4437	3363		241	973	17
CIVILIAN CLUB TOTAL	230	195	1935	79	296008	90083	122372	1520827	7778	29510	584
Anglia Gliding Club	3	3	1	0	2204	3	505	1540	51		
Bannerdown Gliding Club	3	2	17	3	6052	357	2330	7211	133	406	7
Chilterns Gliding Club	3	4	10	0	4631	24	1650	4361	108	140	14
Cleveland's Gliding Club	2	4	11	2	2392	1028	837	3093	70	330	9
Cranwell Gliding Club	3	4		1	4558	433	1404	12114	82	150	12
Crusaders Gliding Club	3	1	1	0	2603	10	366		36	1	3
Fenland Gliding Club	2	3	7	0	2276	11	574	2523	50	55	3
Four Counties Gliding Club	3	4	16	1	4253	528	1763	32605	68	150	6
Fulmar Gliding Club	2	1	2	1	271	183	139	540	16	27	4
Heron Gliding Club	2	2	4	0	1389	89	476		35	30	2
Kestrel Gliding Club	2	3	4	0	1356	101	466	1825	31	110	1
Phoenix Gliding Club	2	4	1	0	1807	184	480	7409	53	130	7
Portsmouth Naval Gliding Club	6	6	9	3	8498	2206	1942	1800	113	1079	2
RAF GSA Centre Bicester	5	5	15	4	14560	6266	6188	22587	172		0
Seahawk Gliding Club	3	3	3	2	1221	364	505	637	49	198	6
Wrekin Gliding Club	2	3	5	0	2887	335	798	2360	75	49	10
Wyvern Gliding Club	3	4	7	1	5607	168	1533	6000	55	130	
SERVICE CLUB TOTAL	49	56	113	18	66565	12290	21956	106605	1197	2985	86
CIVILIAN CLUB TOTAL	230	195	1935	79	296008	90083	122372	1520827	7778	29510	584
GRAND TOTAL	279	251	2048	97	362573	102373	144328	1627432	8975	32495	670



Countryside Photographic – 01233 714747

KENT GC was founded on January 4, 1930 and original documents show it to be the first BGA club to be formed. Other firsts are attributed to founder member Lowe-Wylde. Jimmy not only gained Britain's first Gliding Certificate, he also built the first glider to be registered by the BGA – a primary affectionately called Columbus. Though flourishing during the 1930s, the club was disbanded at the onset of the Second World War when the aircraft, including Columbus, were requisitioned by the Air Ministry.

The club reformed on April 26, 1956 and amalgamated with the Royal Engineers' Flying Club, operating on the old Battle of Britain airfield at Detling. After three years the land was returned to the farmer from whom it had been requisitioned. A nomadic existence followed with flying taking place at a variety of places, including West Malling Aerodrome. During this insecure time it became obvious that survival demanded a permanent base. In May 1961, contracts were signed for the land at Challock and purchase made possible by generous loans from members and supporters. It was to be another two years before the new field could be used for gliding. The Royal Engineers were delighted to have a chance to train their Sappers by preparing a real airfield from scratch. As an official training exercise, they cleared a small wood, levelled the worst of the lumps and prepared a single grass runway. Members were left to remove thousands of huge flints, sow grass and erect a hangar.

At 14.00hrs on June 15, 1963, the first "movement" at Challock took place when Chief Instructor Roy Hubble arrived to a smooth landing and followed by the rest of the fleet – all towed from West Malling by Tiger Moths. The urgent need for a clubhouse was soon apparent and building work, made possible by loans from members, culminated in the official opening on August 21, 1965.

Kent GC today is a far cry from the early days of hand-to-mouth existence. We own sole title to our land, buildings and fleet and offer seven-days-a-week flying during the summer months. In an effort to encourage youngsters, we run a successful scholarship scheme. Last year, a SkyLaunch winch and a

building for ground equipment were partly funded by a lottery grant of nearly £100,000.

In spite of the nearness of the sea on three sides, we often enjoy good thermals. A number of 300km flights have started and ended here. The successful pushing back of the London TMA a couple of years ago enables us to fly further inland at sensible heights. Sea breezes are obviously a consideration, but the resulting fronts often give spectacular soaring and spectacular views. Ridge soaring is to be had in south-westerlies: runs to Rochester and back are possible. The best wave is in a north-easterly, and flights up to our permitted FL55 have been achieved.

The club (above, looking south, with the chalk pit which serves as a landmark) is picturesquely sited on one of the highest points of the North Downs. Its proximity to the Channel ports attracts regular visitors from overseas. A wealth of interesting places and some good beaches are within easy reach. We have a well-appointed clubhouse with comfortable accommodation – a good stopover point for pilots from other clubs going to or from the Continent.

Caroline Whitbread

At a glance

Launch type & cost:

winch, £5.30; aerotow, £18.00/2,000ft

Club fleet:

K-7, 2xK-13, Puchacz, 2xJunior, K-8, Pawnee

Private gliders: 35

Instructors: 34

Types of lift: thermal, ridge, wave

Operating days:

May-September (inclusive): every day
October-April: weekends & Wednesdays

Contact:

office (10.30-16.00): 01233 740274
clubhouse: 01233 740307
www.kent-gliding-club.co.uk

Club news

Angus (Drumshade)

CONGRATULATIONS to Graham Ralston, who soloed on November 11 in a T-21. He has since been flying the Bocian and will no doubt soon fly a single-seater. Although the weather has not been brilliant, we have had a few good days and even some wave. During the winter, we will operate, weather permitting, on Sundays only. We welcome back Charlie Devine, who spent the summer as Campbells' winch driver and thanks all its members for their welcome. It's good to have him back.

Wolf Rossmann

Aquila (Hinton-in-the-Hedges)

WINTER refurbishments complete, we look forward to the forthcoming season. The committee welcomes new CFI Tim Wheeler. Aquila will be promoting trial lessons and training with even greater vigour in 2001. Two K-13s, our K-21 and two tugs are ready for the summer and our ASW 19 awaits cross-country pilots! We also have a new launchpoint coach (including refreshments). Our "Learn to Fly Package" offers six months' membership and 25 aerotows for a fixed fee. Contact Andrew Preston: 01296 720415/ andrewpreston@lineone.net or visit www.aquilagliding.com

Hugh Gascoyne

Bath, Wilts & N Dorset (The Park)

AFTER weeks of dreadful weather, an encouraging number of people attended our annual supper in our clubhouse. CFI Stuart North won the Keevil Cup for the most outstanding cross-country flights of the year. We are fortunate in having a field on a hilltop from which the water drains quickly, so in spite of the rain we have been able to keep flying. On reasonable days we have soared our small local south-west facing ridge. Our newest *ab initio*s have contributed to keeping the enthusiasm going. Much work is going on in the hangar, including the restoration of our launchpoint caravan.

Joy Lynch

Bidford (Bidford)

THE ALMOST incessant rain has put our airfield out of operation for two months. It's so bad I think we should change the name to Bidford Sub-Aqua Club! Our Christmas dinner will be held at the Falcon Hotel in Stratford on Avon on February 3.

Nigel Howard

Black Mountains (Talgarth)

AFTER a reasonable summer season – a new club distance record and several 300km triangles – winter is well and truly here. Although the field normally drains well into the Wye Valley, the sheer volume of rain has turned it into a quagmire, which stops us launching. Still, there are all those C of As to do... We always welcome visitors to sample the best ridges in the UK.

Robbie Robertson

Please send your entries to helen@sandg.dircon.co.uk or Helen Evans, 6 Salop Close, Shrivensham, Swindon SN6 8EN, to arrive by February 13 for the April-May issue (April 17 for June-July). Photographs – slides or prints from film – are welcome

Club news

➤ Stu Naylor completed Bronze, and a determined core of members flew whenever safe to do so, using ground time to maintain premises, MT and aircraft. While hangar and clubhouse survived the October gales and a near-miss from some very large trees, the fuel compound was not so lucky. Forethought enabled Mark Evans to agree a plan to avoid conflict with the East Midlands University Air Squadron (South Airfield) circuit requirements. Relationships were cemented in the bar after the first day of joint operations. Kiera Evans organised an enjoyable Christmas event.

Paul Skiera

Deeside (Aboyne)

MARC Schulten was dined out on October 27: a great asset to the club as tug pilot this season, he will be missed. The Christmas party at the Loch Kinord Hotel was notable for the number of airborne objects launched from various points of the room. No damage was recorded to persons present or the hotel fittings. The following trophies were awarded: Bob Kerr, to Richard Arkle (best cross-country from the Scottish Highland clubs); Lord Astor of Hever, to Mike Jefferyes (best gain of height); Charles Davidson, to Richard Arkle (most meritorious flight from Aboyne); John Milne, jointly to Dave and Jack Pirie (best all-round contribution to the club); club Ladder, to Jack Stephen. December 7 saw wave cross-countries with two O/Rs to Feshie and an Inverness-Feshie-Aboyne triangle.

Sue Heard

Denbigh (Denbigh)

ONE OF our members was happily soaring the autumn wave over Snowdonia when a bodily function was required and the luggage raided for plastic bags. The ensuing warm sensation was not one of relief. Close inspection revealed a tear – and similar holes in the entire supply. Our stunned pilot now sought comfort by taking lunch only to find he had been beaten to it: there was a stowaway on board! Having survived sub-zero temperatures at high altitude without oxygen our furry friend was not so lucky a couple of days later tackling a mousetrap baited with Mars bar. Time to review the definitive pre-flight checklist and wonder how many other animals are learning to fly? Congratulations to John Friend on achieving his Bronze Badge and Richard Maisonnier (visitor) for Gold height.

Martin Jones

Devon & Somerset (North Hill)

THE DECEMBER AGM was held in the new hangar, not an entirely successful exercise – when it rained you couldn't hear anything! The downpour did serve to jog the Chairman's memory and he apologised for his rash election promise of fine weather for the 2000 season. Dave Reilley, Simon Minson, John Pursey, Clare Alston and our CFI Malcolm Chant were worthy recipients of club trophies. Members recorded more kilometres than in 1999, with five gaining Diamond goals. There was a presentation to Norman Jones, retiring membership secretary, for his services. Flying? What flying? Luckily our hilltop site sheds water very efficiently, allowing us to grab what we can in these inclement times. Even wave eludes us, unless it plans to return as a tidal one!

Phil Morrison

East Sussex (Ringmer)

WE SADLY report scenes of rowdy behaviour at the inaugural meeting of the Ringmer Mud Surfing Club when the chairman was seen drooling lasciviously over an illegal copy of the RD Aviation catalogue featuring the latest in glider technology add-ons, an outboard motor. Heard muttering: "I could stay up for hours in that," he was sent to polish our new Junior and scare some small furry animals. He also handed out trophies at the annual dinner dance and told us we were a great bunch! The clubhouse and hangars have melted.

AWL

Keith Simmons



Mendip's Hugh Talbott, in glider, with Brian Headon

Essex & Suffolk (Wormingford)

I FOUND learning to drive the winch nearly as daunting as learning to fly. You are acutely aware that, if you get it wrong, you could muck up everybody's flying for the rest of the day (or longer!). For the driver who achieves this, read pariah. You're thinking: what's this got to do with *Club News*? Well, as I have no flying news (guess why) all I can report on is our efforts to convert two big block Chevy marine high-performance engines to gas operation and fit them into modular cradles. It should let us change an engine very quickly. So when someone becomes a pariah, the exile should be short-lived.

Steve Jones

Highland and Fulmar GCs (Easterton)

DESPITE what seems like continuous rain and southerly gales we have had a few days' ridge or wave soaring, with Martin Knight and Steve Young reaching over 9,000ft. We are investigating possible ways of flying in strong southerly wave-producing winds. Well done to Pete Smith (Fulmar) on his Bronze and Cross-country Endorsement. Angie Veitch is now a BI coach. Trevor Cook has joined Fulmar, a much-needed instructor. Electricity is being connected for the first time at Highland GC. We host a BGA soaring course in April so come and join us for ridge, wave or early thermals.

Teresa Tait

Imperial College (Lasham)

RECENTLY, we have integrated many *ab initio*s into the icGC pilot's way of life: all play and no work. (If IC's Rector is reading this, I deny all responsibility!) Our Grob 103 (496) was sent away for C of A and fuselage re-gelling in December. C of A work was carried out on single-seaters, too; a big thank you to all who helped. There is fierce competition for the limited places available on our summer expedition to Jaca in Spain. Sun, sand (most of Spain) and soaring, what more could you ask for? For club details, see www.su.ic.ac.uk/gliding

Hemraj Nithianandarajah

Kent (Challock)

WE ARE fortunate that Challock is on top of a chalk ridge. This has let us keep flying when most other airfields in the county have been closed. There have been a number of ridge soaring days, albeit only local flying. Retrieves would be something of a problem: the Weald of Kent has often appeared to be a series of lakes. Read *Club Focus* on p54 to see us in more normal times.

Caroline Whitbread

Lakes (Walney)

NOT MUCH to say about the flying this time, unless you happen to have flapping wings and webbed feet. We had a successful dinner dance: thanks go to Lyn Martindale for her sterling efforts. The club awarded its annual prizes. Highlights include: best cross-country flight from Walney, Neil Braithwaite, 212km; Lyn Martindale won the club ladder with over 17,000 points, closely followed by husband John with nearly 14,000. Most outstanding progress went to Dave Heron (solo in 21 flights). We hope for drier weather this year.

Peter Seddon

Lasham (Lasham)

WE WELCOME Gordon MacDonald as DCFI and Nick Hewitt as winch driver. Judy Mitchell has left the office but will still be gliding. Geoff McVey, our winch driver, and Denise Stuart, our cook, have left. We thank them for their hard work. Despite the bad weather, 140,000km have been flown cross-country in 2000 and membership numbers have been maintained over the year. Projects carried out in 2000 include demolition of buildings on the south side of the airfield, fitting bunkhouse smoke alarms, replacing the kitchen ceiling and lights, new office lighting, work on the boundary fence, new airfield signs, a new water main, installing heating in the tug hangar, waterballast points, trailer tie-down points and a new AVCAS pump. Ian Godfrey has worked hard on marketing Lasham. Pat Garner has given valuable legal advice on estate matters following our purchase of the airfield.

Tony Segal

Lincolnshire (Strubby)

NEGOTIATIONS with one of our landlords have succeeded: we have doubled our operating area and secured a ten-year licence. We now have an east-west strip 1,200 yards long and 90 yards wide and can land and take off side by side instead of having to clear the launchpoint every time. Most of this area is grass, giving us the chance to operate glass ships. We owe a debt of gratitude to Dave Ruttle and chairman Mike Fairbairn for this. Dave has stood down as CFI and been replaced by Steve Crozier. We thank Dave for all his hard work moving the club forward. A Land Rover replaces the tractor some thief stole the engine from.

Dick Skerry

Mendip (Halesland)

OUR THURSDAY group has grown in size to challenge the weekend flyers. The gods of the weather have rewarded them: amazingly only two flying days have been lost since June 1. Keen duty pilots have ensured high launch rates in spite of a muddy airfield. Our popular K-18 suffered repeatedly with mud blocking the wheel box. Now off-line, it will be refurbished. Months of planning are now giving way to actually building a shed to house bus, tractors and winches. Weather permitting, March should see it completed. Our latest solo pilot is a now fully-recovered Hugh Talbott, our flying vicar, whose training was restricted by many problems, including serious illness. The dinner dance was a great success. The intriguing award of the CFI's Red Ball went to the member who got the prize for the furthest landout on a Silver distance. Apparently, a map-reading error meant he was not where he told his crew – a veil is drawn over the actual location.

Keith Simmons

Midland (Long Mynd)

THE BLEAK midwinter it may be but more visitors than ever have enjoyed tasters of our ridge and wave, often from bungy launches. Midweek flyers reached 9000ft. Water is running in all directions but at least it is running and didn't stop John Macmillan soloing. We are enjoying a fashion parade of Ozee suits. John Blackhurst has the snazziest with a fluorescent Y front (promises, promises.) December's visitors may have smelt gunsmoke after seeing Chris 'Chester Dillon' Harris limping to his tug after a bathtime accident: who needs a rudder? And beware, those flying with a certain major airline: Andy Holmes has his instrument rating!

Roland Bailey

Needwood Forest (Cross Hays)

WE HAVE successfully used the Geomesh-reinforced launch/landing area and Alan Roberts' tractor-powered retrieve winch. The grass appeared a little muddy when it was used, but inspection a few days later showed no rutting whatsoever. The committee are canvassing the views of the members on whether to build a new club-

house, and if so what form it should take. Val Roberts has got our website up on www.GoGliding.co.uk
Grant Williams

Nene Valley (Upwood)

THE WEATHER in recent weeks has not been too kind. Even our "Thursday Glides" have been disappointing. During October Taff Turner and Roger Morrisroe, helped by members, completed the guillotine on the second winch. The ladies, as usual, provided an excellent menu on two successful social evenings. In the clubhouse, Barry Meech continues to lead by example in detail work of painting, wall-papering, varnishing, carpeting and floor tiling. The transformation has been dramatic. John Young has carried out the mandatory examination of our instructors, which proved beneficial to everyone involved. At the November AGM, Martin Reynolds retained the reins of an unchanged committee. Our annual dinner will be in February in St Ives.

John Pike

Norfolk (Tibenhams)

WE HAVE bought a Grob 103 with the aid of a Lottery grant, selling a K-13. Barry Furness has his Silver Badge and Matt Cook won the Junior National Cross-Country Ladder. We have had many refugees from waterlogged sites to fly from our three hard-surfaced runways. Nice to see old friends in winter as well as the summer. At the Christmas party almost 100 people packed into our briefing room for a cabaret which ranged from the sophisticated satirical songs of the Brigges through Mike Bean's dreaded Alternative Awards to the frank vulgarity of the Wednesday Old Boys' Extravaganza.

Bonnie Wade

Peterborough & Spalding (Crowland)

AT THE TIME of writing (December) our airfield has small lakes all over it and no flying, except for the ducks, has taken place for three weeks. Well done to Mike Edwards, who returned from Aboyne with a Gold Badge after climbing to 12,500ft for his height. The private fleet has increased by two: Bill Baker's Skylark 3 and the former club Sport Vega (sold to Peter Kettle). Next on the calendar is the AGM on February 23.

Pete Goulding

Rattlesden (Rattlesden)

WELL DONE to Terry Broyd on completing Bronze and Mike Clover on soloing. After three successful years as CFI, Dave King has handed over to Mark Manning. Thanks, Dave, and good luck, Mark. Fortunately, given the autumn monsoon, we have just completed two improvements. First, thanks to Dave Stannard for new windows to our clubhouse (a WW2 control tower). We now have to open one if we need ventilation. Second, we have finished phase one of resurfacing our runway. No more potholes, puddles and stone blasting. Launches now happen in surreal silence. Wonderful! Finally, yours truly has been let loose as a Basic Instructor.

Patrick Gold

Scottish Gliding Centre (Portmoak)

OCTOBER and November weather was moderate by our standards, but we have still had a few good days. The best height by a club member was Kevin Hook's 15,000ft, and Tony Brown did just under 300km on the same day. We have been very busy, with visitors from Bristol and Glos, Cotswold, East Sussex, Fenland, Lakes, Dukeries, Southdown and Trent Valley GCs. Apologies to any I have missed. Keith Buchan has now become a BI; Bob Street, Hamish Eagleton, and Ian Meacham have got Bronze Badges. Peter Sharphouse, a former helicopter pilot, soloed after only 17 flights. Other first solos are Robin Birch, David Robinson (the day after his 16th birthday), Gareth Francis, and John Munro.

Neil Irving



Portmoak soloist David Robinson, left, with Ian Trotter

Shalbourne Soaring Society (Rivar Hill)

AT DECEMBER'S AGM, Chairman Steve Otter stood down after eight years of sterling work which has seen the club expand and progress towards the signing of a long-term lease. Although we have not signed the lease, we hope to be able to do this within three months and achieve security of tenure. We welcome Janice Watts as chairperson and Kay Draper as secretary. There was much discussion over the decline in trial lessons, particularly evening groups which mirrored the national trend in declining involvement in the sport. We plan to reverse this with more publicity, including a CD Rom. An expedition to Aboyne had a good number of wave flights. Thanks to Ralph Jones for taking members to heights they had never been before, in his Nimbus 4.

Clive Harder

Shenington (Shenington)

CHRIS Horne has soloed while Trevor Bainbridge has Silver and Part 1 of the Cross-country Diploma. Janet Mare and Bob Playle have SLMG ratings. We have a new chairman, Elaine Crowder, and treasurer, Paul Duffy. A big thanks to Paul Gibbs and John Whiting, who have stood down from these roles. Our Annual Dinner is on Feb 9. We also plan to continue our research into local hostilities. Our concrete runways ensure flying starts when the rain stops! If you're stuck at the bottom of a hill or fancy a change of scenery, then do visit us. We will run courses again in 2001 and welcome expeditions - see www.gliding-club.co.uk

Tess Whiting

Shropshire Soaring Group (Sleep)

FOR THREE weeks the trailer park and tug hangar were under a foot of water; something we think happened to a lesser extent some 20 years ago. The airfield itself remained dry and after rescuing trailers and re-packing the Chipmunk axles with grease, we have had a few days' gliding. The longest flight has been around one and a half hours. Wave has been weak on most flying days with tempting stacks of plates too early, too late, or above thick wet, lower cloud. Jim Lynchehaun has set up a website (www.welshwave.co.uk) giving details and photos of our activities, including a 1991 S&G article by Vic Carr about wave from Sleep.

Keith Field

Southdown (Parham)

THE AIRFIELD has been given over to aqua sports as I imagine they have in many other parts of the country. We have a brand-new pond outside the clubhouse but the goldfish have yet to arrive. The lecture programme has been a useful substitute for real flying, and one of the best was on the subject of GPS and loggers. Phil Kirk, supported by Julian Hitchcock, provided a plain man's guide to getting the most out of the system. They also provided hardware and software, plus a superb meal to accompany their unlimited enthusiasm. Between warm fronts and associated troughs, Joan Snape was able to complete her Bronze. John Gowdy took his PPL shortly after his 17th birthday, and became the youngest tug pilot we have ever had. He is still in the sixth form at Collyers School, Horsham, and hopes

for a career in aviation. Alan Irving has left temporarily to work on an oil rig in the North Sea as a newly-qualified geologist. We wish him well and hope to see him here on dry land - just as soon as it reappears.

Peter Holloway

Staffordshire (Seighford)

DESPITE the heavy rain (and very wet field), we have continued flying. The weekend *ab initio* courses have been very successful. The enthusiasm shown by those involved is an example to us all - thanks to Ian Davies for his instructing and bad-weather lectures and Lee Featherstone for driving the winch. The condition of the airfield has, to date, prevented us from utilising the tug. Hence, most pilots have been content with flying circuits off the winch launch or completing their annual checks. However, there have been regular visits to Sleep (Shropshire) in search of wave. We are looking forward to the Annual Awards Dinner in early February.

Paul (Barney) Crump

Stratford on Avon (Snitterfield)

NIGEL Spedding has taken over from Martyn Davies as secretary and joins the committee. A series of mid-week lectures on navigation, theory of flight, meteorology, field landings and wave has been set up by CFI Peter Fanshawe and instructors to prepare for the season. We have managed to keep flying most days through the very wet conditions using our well-proven system of a single cable brought to the launchpoint by Land Rover. Somewhat slower than twin cables but it utilises the hard-standing concrete runway stub, thus protecting the grass areas for spring/summer glass ships. Well done to David Ireland on first solos after a 30-year break. Our website is at www.gbutler.demon.co.uk/soagc

Harry Williams

Surrey & Hants (Lasham)

WE HAVE improved the fleet, which has done more soaring courses and competitions, and more badges than for years. We are reducing types while increasing numbers to eliminate bottlenecks to progression. We have sold our Junior and the DG 101, bought one ASW 19 and intend to get another. We justified this by improving the use of the fleet and increasing numbers on unlimited flying deals. More people wanting to hire for courses, competitions and extra flying contributed, too. Thanks to an anonymous donor, who wrote "Just a gesture of appreciation for the club. I've had a great year." The money will go towards some decent tow-out gear. Our glider "reservations" trial last year produced positive feedback. It was not perfect, but it proved that there are alternatives to the dreaded ballot.

John Simmonds

The Soaring Centre (Husbands Bosworth)

WELCOME to our new CFI, Mike Cater, and thanks to outgoing CFI Martin Chamberlain for all his hard work. The annual home-made hot air balloon competition was again a success, with very artistic entries. Well done to those who won trophies at the annual dinner in January. The new winter hard standing for the winch is progressing well. The Midland Regionals is over-subscribed but you can still enter our August task week! New club schemes include a weekend booking system for single-seaters, and one hour's free flying after ten hours airborne.

Siobhan Hindley

Trent Valley (Kirtton in Lindsey)

IF YOU think the UK weather has been poor, spare a thought for Ray Parkin and Mark Eurland, who went to Australia and encountered floods. We are well down on launches this winter but are just waiting for some flying weather. We are all looking forward to February when we will play with the BGA's Duo Discus. Bob Kmita has done a great job of rebuilding our K-13 trailer.

John Kitchen

Club news

Y Ulster (Bellarena)

MARTIN Earle did well to pack his Silver five into the short daylight hours of December; wave to 4,000ft relieved the tedium of a sometimes turbulent ridge bash. Clubhouse alterations (more space for kitchen and briefings) will be done before our nine-day Easter camp. Treasurer Ron Lapsley's decision to halve the aerotow fee in December/January was warmly supported.

Bob Rodwell

Vale of White Horse (Sandhill Farm)

NOW WE have a larger pool of potential CFIs, Frank Davies has stepped down from this role. We thank him for his hard work over the last two years, which has been much appreciated, and wish him well in his flying at Hus Bos. At the December AGM Ed Fogglin retired as Chairman, a post he has held to good effect for several years, to take over as CFI. Our new Chairperson is Clare Knock and we look forward to her stewardship.

Graham Turner

Vectis (Bembridge)

RUTH Freelove flew the first one-hour leg of her Bronze before weather and gliding proved totally incompatible last autumn, with only two flying days since the arrival of our replacement tug. With the enforced lay-off, pilots

ran out of currency, and the days were used for check flights and tug pilot acclimatisation to the new aircraft.

Peter Seago

Vintage Glider Club

OUR 28TH International Rally (see October-November, p38) was a great success. It was also the first time any Japanese gliders have been seen outside their homeland: these were built in the 1950s (the Americans ordered all Japanese gliders to be burnt in 1945). Also taking part for the first time were an entry from Finland (a K-2b) and an Italian glider (the CAT 20, a copy of a H17a). The 29th Rally will be at Zbraslavice in the Czech Republic from July 31-August 11, 2001. Our Rendez-Vous rally will be from July 22-29 at Zwickau, former East Germany. Updates from 01491 839245.

Chris Willis

Welland (Lyveden)

AT OUR November dinner dance, awards went to: Streb (The 267 cup); Lisa Shepherd (The Ray Clark trophy for duration); Mike King (Best in wood); Dave Chisholm (The *ab initio* cup); Howard Barnard (CFI's Shield); and Peter Pearson (Chairman's Cup). The Club Ladder was won by Dick Short. John Heath was given the notorious rigging pin trophy for a trip of 1km in the Nimbus, and another on to a K-7 wing! Alan Bushnell got the John Deere award for ploughing with a K-7. A refresher course was held at Upwood for both clubs' instructors. New road signs will make us easier to find.

Jane Cooper

Wolds (Pocklington)

RUMOURS that we have fitted floats to our fleet and have a submersible winch are an exaggeration, though we are considering establishing the UK's first gliding and sailing club. A Christmas kids' party, organised by Andy Atherton, was a huge success. Members have begun organising weathermen, task-setters, briefings and multiple retrieve crews for the season. Inter-club League captains Colin Wiles and Simon Barker add: "We are convinced that in this endeavour, never before will so few be remembered for doing so little, and winding up so many – but we are willing to try."

Ged McCann

Wrekin (Cosford)

MIKE Osborne organised the annual expedition to Llewini. On his one day away, Mick Davis climbed to 21,000ft. That's gliding! At the November AGM, awards went to: Dave Voigts (50km and fastest progress to Silver); Noel Hawley (first hour off the winch); Dennis

Maddocks (best flight); Trevor Barnes (most successful competition pilot); Simon Blacker (engineering feat); Aerotow 2000 team (flight with a difference); Chris Kyle (most improved pilot); Mike Gagg (member of the year); and Niall O'Sullivan (posthumous award for most progressive pilot, non-instructor – collected by Niall's brother Aaron.) Adrian Cooper has soloed. Dennis Maddocks and Bob Russon are Assistant Instructors.

Sheila Russon

Wyvern (Upavon)

THE RESILIENT winter crew are flying on those rare occasions when the rain stops. The Army Gliding Association is planning to sell the LS 7. The club's priority is to get both winches fully serviceable. We have the usual programme of Army *ab initio* courses planned for next season. Thanks go to our team of inspectors working to get the fleet through C of As. The tailplane and aileron of K-21 EKG look almost as good as new after Roy Gaunt replaced the gelcoat. Moving the Christmas dinner back to the Upavon Officers' Mess proved popular. At the dinner, the chairman presented awards to Roy Gaunt (Chairman's Challenge Trophy), Carol Jenkins (CFI's Trophy), Bruce Hudson (Aquila Cup), Brian Penfold (Mike's Mug), Wern Stroud (Merit Cup) and Ken Marsden (Barry Perks Trophy).

Gavin Deane

York Gliding Centre (Rufforth)

THIS YEAR the club celebrates its 40th anniversary and the airfield's 60th. Last autumn's floods did not stop us flying. Indeed, Tockwith fire brigade brought 15,000 gallons of floodwater to dump here as we are so well drained! Well done to Nick Jeffery and Anthony Hollings on Bronze with Cross-country Endorsement, and to Kevin Moon on Bronze. At the December AGM Richard Smith, chairman, Howard McDermott-Row, secretary, and Paul Hepworth, treasurer, were elected, with Les Hey, Pete Ramsden and Tony Lee. I continue as CFI. Finances remain healthy despite the demise of motorglider PPL training over the past 18 months.

Mike Cohler

Yorkshire (Sutton Bank)

CONGRATULATIONS to those presented with trophies at November's Dinner Dance: Andy Wright (Private Ladder and Height Trophies), Dean Crosby (Dick Stoddart Trophy), Derek Taylor and Paul Foster (Distance Trophy), Steve Ball (Silver Distance Trophy), John Russell (Most Improved Trophy) and Sam St Pierre (Speed Round Triangle). Kelly Janski has her Bronze.

Marian Stanley

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Obituaries

Ray Brown (1931-2000) – Cotswold

ONE DAY in 1973 when I was a mere 15 years old I walked round the corner from my home in Cirencester to see this curious chap with a glider trailer parked outside his house. I introduced myself to Ray Brown, who proceeded to answer all my questions about gliding. Ray took me to the Cotswold GC at Aston Down, which I joined. I never looked back. Ray remained in contact with the club right up to his death. He hadn't flown for several years due to poor health, but, despite difficulties in getting around, he retained his inspector's ticket. A gifted craftsman, he was self-employed as a model-maker, woodworker and glider repairer. More than once we held up the Cirencester traffic as we manoeuvred a K-7 wing or K-6E fuselage into his workshop. Ray was a very kind and easy-going friend, easily distracted by things he enjoyed doing more than making a living: he once took 13 months to frame a picture for my parents! He achieved Silver in 1975 and a Diamond height at Aboyne, missing his 300km by a whisker in the club Skylark 3F on the best UK gliding day I've ever seen: May 31, 1975. He particularly enjoyed flying friends in his K-2b, and was frustrated when rule changes in the mid-1980s effectively stopped him. He loved the competition scene, crewing over many years. A very keen photographer, he always took rolls of film at comps, covering most of the gliders and competitors. His aerial shot of the grid at the Open Class Nationals was used in the August-September 2000 issue of *S&G* (p41). Probably his most spectacular gliding photograph was of the Nimbus 2B flown by Ralph Jones at Euroglide in 1974 on final glide to Nympsfield. Among Ray's thousands of photographs are many which contribute to the history of the Cotswold GC and of competitions over the past 30 years. Some will no doubt be permanently on show at Aston Down as part of his legacy as a good and much-missed friend of gliding.

Paul Gentil

Roy Lunn (1937-2000) – Dukeries

IT IS WITH deep sorrow and regret that I report the death in October of friend and club member Roy Lunn, after a short but brave battle against cancer. Roy was always the gentleman: a kind and helpful member of the club. A dedicated committee member and treasurer, he was also an excellent draughtsman, who helped design the new cutting gear for our winch. Although Roy came to gliding later in life, he loved the sport – particularly his flights in his Mini Nimbus. He flew this aircraft right up until shortly before his death. Roy's

death was met with great sadness by all who knew him. Our deepest sympathies go to wife Sheila and family.
Dave Urpeth

Ken 'Mac' Mackenzie (1932-2000) – Cleveland

ON SATURDAY, December 2, at the age of 68, Mac passed away – in the hangar, sitting aboard "his" winch. Ironically, Mac had a lifetime's involvement with all things mechanical. He left the REME as a Captain, then worked as Engineering Manager for a bus company. About ten years ago, he was re-introduced to gliding by his family, who bought him a flight as an (early) retirement present. Mac was in his element – ground equipment to tinker with, and flying too! Although he lovingly tended all the MT, his real baby was the Skylaunch winch, known (affectionately) by his wife Agnes as "Mrs X" – his other 'wench' (*sic*). Mac (seen below) was a very active club member, achieving Silver Badge with Gold Height, and owning a share in the



recently-restored Bijave. At the club's AGM only the week before he passed on, he was awarded the CFI's trophy (*Club News*, p55). With typical modesty, he said he did not deserve the honour. A selfless man, and a great friend to all, Mac's departure will be keenly felt. Our heartfelt sympathies go to Agnes and all his family.
Polly Whitehead

George Nelson MBE (1925-2000) – Angus

GEORGE, a Chartered Electrical Engineer, was awarded the MBE in 1990 for 50 years' service to the electricity industry. As a young man he joined the Air Training Corps, then the RAF, hoping to become a pilot, but was demobbed in 1949 because the end of World War Two meant the RAF suspended pilot training. Undaunted, he spent his demob money on a PPL at Southend. Anyone who met George will be aware of the incredible mental treasure chest of aviation knowledge and statistics he accumulated during his lifetime. He had more "types flown" in his logbook than anyone else I know. George

maintained his link with the ATC as a gliding instructor, which he continued to do until the mid-1980s when compelled to stop by age regulations. He then joined Angus GC as an assistant instructor, and served on our committee. George always greeted you with a big smile and he will be sadly missed. Our condolences go to his wife Margaret, their children Michael, Susan and Sheila and their grandchildren Chloe, Emma and Kirsty.
Les Joiner

Frank Poyner (1920-2000) – Bowland Forest, Carlton Moor, Yorkshire

FRANK served in flying crew (1940-46) on a multitude of aircraft, including Hudsons and Sunderlands; he developed a love of flying and enjoyed the comradeship, especially as part of a Commonwealth crew. He then became a chartered mechanical engineer, surviving what was initially thought to be terminal cancer in 1963. With less family responsibility, he took up gliding, joining Bowland Forest, soloing at 64 and gaining Bronze at 65. Frank visited many clubs throughout these isles and was a country member, along with me, at Carlton Moor and Sutton Bank. He developed new cancers in 1998 and 1999, but continued to fly and one day had chemotherapy in the morning and the K-8 out in the afternoon, I think I know what did him best! Frank never gave up, smiled at the world – and the club were marvellous, sending him a card signed by all the members on his 80th birthday. Recently he wrote in *S&G* under the pseudonym "Old Bill" on why people go gliding (February-March 2000, p9). On the club's golden anniversary last July, Carol and Val gave him a cuddle, and then Bob and Frank took to the skies, with huge grins on their boyish faces.

Tom Poyner

Peter Ward (1925-2000) – Needwood Forest

PETER Arthur Ward always had an interest in aviation. A Whitworth Scholar, he worked for Rolls Royce at home and abroad. A keen watercolour artist, Peter was a member right back in the Burton & Derby GC days. A real gentleman, Peter never had a harsh word for anyone – even when a farmer tipped his glider into a ditch! When the club was looking to buy Marchington, Peter made a substantial, interest-free loan to the club to assist despite having recently retired: thus assuring the club's future. We were shocked and saddened when Peter, having always previously been fit and healthy, succumbed to leukaemia. Our club and, indeed, our movement are the poorer for his passing.

Grant Williams & Ray Steward

DIAMOND BADGE			
591	Andrew Carter	Cairngorm (Milfield)	6/8/00
592	Marjorie Hardwick	Booker (Aboyne)	4/10/00

Diamond goal			
2-2765	John Clark	Black Mountains	29/8/00
2-2766	Richard Holt	Deeside (Bicester)	21/7/00
2-2767	Barry Kerby	Stratford	20/8/00
2-2768	Richard Starey	Booker	3/9/00
2-2769	Andy Mason	Four Counties	30/8/00
2-2770	Pete Dixon	Four Counties	3/9/00
2-2771	Bryan Searle	Aquila (Tocumwal)	8/2/00
2-2772	Keith Chandler	615 VGS (Minden)	14/9/00
2-2773	Mike Tomlinson	Black Mountains	30/8/00
2-2774	Steve Turner	Cambridge	30/7/00

Diamond height			
3-1516	Andrew Carter	Cairngorm (Milfield)	6/8/00
3-1517	Peter Whitmore	Cambridge (Minden)	24/3/99
3-1518	John Denne	Booker (Aboyne)	4/10/00
3-1519	David Weekes	Oxford (Aboyne)	4/10/00
3-1520	Marjorie Hardwick	Booker (Aboyne)	4/10/00
3-1521	Patrick Orr	Booker (Aboyne)	4/10/00
3-1522	William Stephen	Borders	3/10/00
3-1523	Vernon Brown	Soaring Ctr (Cairngorm)	4/10/00
3-1524	Dennis Heslop	Ess & Sulf (Aboyne)	24/10/00
3-1525	Chris Skeate	Lasham (Aboyne)	15/10/00

GOLD BADGE			
2148	John Clark	Black Mountains	29/8/00
2149	Richard Holt	Deeside (Bicester)	21/7/00
2150	Richard Starey	Booker	15/10/00
2151	Ian Busby	Booker (Aboyne)	4/10/00

BGA Certificates

2152	Michael Edwards	P'boro & Spalding (Aboyne)	15/10
2153	Dennis Heslop	Ess & Sulf (Aboyne)	24/10/00
2154	George Goodenough	Burn (Aboyne)	22/10/00
2155	Tony Curley	Soaring Ctr (Aboyne)	27/10/00
2156	David Heath	Booker (Aboyne)	15/10/00

Gold distance			
John Clark	Black Mountains	29/8/00	
Richard Holt	Deeside (Bicester)	21/7/00	
Alexander Marshall	Booker	22/8/00	
Richard Starey	Booker	3/9/00	
Andy Mason	Four Counties	30/8/00	
Pete Dixon	Four Counties	3/9/00	
Nigel Maxey	Southdown (Bicester)	18/7/00	
Keith Chandler	615 VGS (Minden)	14/9/00	
Steve Turner	Cambridge	30/7/00	

Gold height			
Peter Whitmore	Cambridge (Minden)	24/3/99	
Richard Starey	Booker	15/10/00	
Peter Startup	Devon&S'set (Denbigh)	4/10/00	
Ian Busby	Booker (Aboyne)	4/10/00	
Michael Edwards	P'boro & Spalding (Aboyne)	15/10	
Dennis Heslop	Ess & Sulf (Aboyne)	24/10/00	
George Goodenough	Burn (Aboyne)	22/10/00	
Simon Walker	OXford (Cairngorm)	4/10/00	
Guy Glover	Soaring Ctr (Aboyne)	24/10/00	
John Russell	Yorkshire	4/10/00	
Tony Curley	Soaring Ctr (Aboyne)	27/10/00	

Peter Waugh	Portsmouth Naval (Aboyne)	24/10/00
David Heath	Booker (Aboyne)	15/10/00

SILVER BADGE			
10840	Douglas Knox	Lasham	3/9/00
10841	Simon Smith	Surrey Hills	29/8/00
10842	Jason Haines	London	3/9/00
10843	Gerald Pybus	P'boro & Spalding	12/8/00
10844	David Hook	London	10/8/00
10845	Bernard Silke	Ulster	19/8/00
10846	Neil Parramore	Booker	15/8/00
10847	Julian Schmidlawand	Anglia	10/9/00
10848	Paul Bateman	Vectis	11/9/00
10849	Sue Heard	Deeside	4/10/00
10850	Christopher Lear	Bannerdown	19/7/00
10851	Christopher Beaumont	P'boro & Spalding	20/8/00
10852	Simon Barker	Wolds	20/8/00
10853	Alexandra Large	Bannerdown	29/5/00
10854	Adrian Noble	Bicester	3/9/00
10855	Simon Lucas	Cotswold	26/10/00
10856	Chris James	Southdown	11/8/00
10857	Trevor Duligall	Midland	22/9/00

UK CROSS-COUNTRY DIPLOMA			
Pt 1	Gerald Pybus	P'boro & Spalding	12/8/00
Pt 1	Bernard Silke	Ulster	19/8/00
Pt 1	Paul Bramley	Lasham	15/8/00
Pt 2	Nigel Maxey	Southdown	20/7/00
Pt 1	Ross Charlton	Surrey Hills	21/7/00
Pt 1	Ian Banham	Lasham	30/7/00
Pt 1	Breckon Stoddart	Burn	4/8/00
Pt 1	Chris James	Southdown	11/8/00

Help to make your club safer

IF YOU are involved in helping your club to operate, now is a good time to find out more about the Club Safety Review initiative from the BGA safety committee.

One of the biggest hurdles in persuading people to think about safety is getting them to believe it applies to them! Whether an international airline, a small soaring group or something in between, all flying operations should be subject to a periodic review of safety – complacency creeps in everywhere. More than 150 accidents or incidents were reported in the last BGA year. Many directly related to problems at the airfield.

Accidents are expensive, both in human terms and financially, and we all know that just because a club has not experienced an accident recently, it does not necessarily mean everything is as safe as it could be. In fact, if we are honest, most of us perceive 'problems' on our airfields, but probably put up with them. It's better to find the holes in the operation and fill them before somebody gets hurt – but who will do it?

The BGA office can provide copies of the latest edition of the Club Safety Review *aide memoire*. Using a list of most of the myriad of detailed points that make up the average gliding operation to look for specific listed items is a bit more reliable, and therefore more effective, than just hoping to spot the problems.

In a safety review, it's probably easiest to divide the operation into three – people, equipment and operating environment – to

keep focused on where problems may be lurking. It's quite likely that on its own, one particular 'difficulty' may not present a real problem. But link it to two more potential difficulties, using your imagination to develop a plausible scenario, and you could discover a problem waiting for an opportunity!

I should add that not all the items on the *aide memoire* apply to all operations, but at least the opportunity is there for the point to be addressed and not just ignored or overlooked.

People – the real weak link?

Clearly, pilot training and flying standards are key to a safe operation and it's really down to the CFI, supported by the BGA Instructors Committee network, to stay on top of the situation. Clubs use a number of systems to maintain or improve the quality of the flying and individual flying skills: record cards, currency requirements, instructor refresher training and meetings, field landing training, cross-country briefings – the list goes on. Having seen the outcome of safety reviews at their clubs, some chairmen have either been surprised at the way initiatives that they thought were ongoing have fallen by the wayside, or by the limited training support that their club provides for their members.

The right tools for the job?

There are numerous bits of equipment at any gliding club which fall outside formal

BGA inspection requirements. Impact cushions, weak link systems, audio varios in club gliders, winch guillotines, aerotow ropes and canopy cleaning materials are just some of the more obvious among the possibly lower profile but just as important points listed. Few of the points raised are mandatory (for Heaven's sake, do they need to be?), but experience again has shown that potential problems do exist because nobody feels responsible for either looking after existing kit, or the kit is not available. Energy absorbent cushions are not necessarily high on any pilots 'must have' list before leaping into the air, so there tends not to be a revolt from the members if these relatively inexpensive gems that could keep people out of wheel-chairs are not available. The fact that they are missing is only noticed when it's too late! The bottom line is that if your club members are putting up with flying around with dirty canopies because the materials are too expensive or no-one can be bothered to obtain them, what other problems exist for exactly the same reasons?

"It's always been like that..."

Some accidents are directly related to the operating environment – the size, shape, surface or surrounds of the site can be a problem. Again, most of us get used to our own site's peculiarities and work around the problems – there often isn't any choice. A hill that causes curlover in a particular wind direction has probably been doing so

Salutary Soaring: a close shave in the Highlands

IT HADN'T been a very good season – maybe the rewards of flying were no longer paying for all the effort. Perhaps after 42 years it was time to give up. I'd go to Barry and Mo Meeks' wave camp at Feshiebridge, Scotland, one more time, and then decide.

Talking this over with an old friend, he said: "Do you want to climb into a box and pull the lid shut?"

On that visit, a serious mistake got me into a situation that could easily have been fatal. A launch in rough conditions was followed by a smooth wave climb to 7,500ft or so, but it seemed impossible to get any higher. Searching for some more lift I noticed a nice, fat lenticular quite close. That should be working on its leading edge, surely? No, not on the edge – but perhaps in the cloud itself? Bad mistake! Nothing but sink – still very smooth, so I had no problems flying on limited panel through the cloud. Down to 3,500ft: I wonder what cloudbase is?

"About 4,000ft," says someone on the



radio. "Not here it isn't," I reply, a bit desperately. The tops of the hills here are about 3,000ft.

Well, better to go this way than slowly rot away in some retirement home. I wonder what Inverness Infirmary is like? How will my wife cope without me? (Pretty well, probably.) What about work? Come off it, no-one's indispensable. Stop the introspection and fly the thing! Let's see, the GPS shows 20km to Feshie. Let's head that way while I've still got some height.

In the event, I broke cloud at 300ft over a hill, perhaps 600ft from the valley floor.

There was just time to suss out a possible landing area. No damage, not even to undercarriage doors. A textbook approach and landing. Wonderful how one can do this almost without conscious thought. No more problems – or so I thought.

Having no idea of where I was, I called any other glider, and was answered by Bill Morecraft, who asked for my GPS position and relayed it to Feshie for me. The landing site was beautiful, a flat grassy area by the Dulnain river, 10 miles north of Feshie. The only access was an extremely rough track, part of which was constructed by General Wade in 1745 (and has not had much maintenance since). It was – just – negotiable by four-wheel drive.

The retrieve was horrendous; it took two days and about 20 people. Barry at one point considered calling out the mountain rescue people. Without food or shelter you can get into serious trouble with the cold. The cockpit thermometer indicated 9°C by 15.30hrs; I had planned to walk the five or six miles to Aviemore if no one had turned

for millions of years and a safety review isn't going to change that. But there may be something that could be done to reduce the difficulties, or even remove a less permanent hazard that has been lived with for years, like a fence or a tree. It's a bit like seeing the wood for the trees in so far as it will take a really objective look at the site followed by an honest appraisal to pick up any existing or potential problems.

• How can the club dissuade pilots from trying to drop in short over the tall crop on the threshold?

• Can an old fence be removed or lowered during flying to reduce the risk of gliders hitting it?

• Is it worth repairing the holes on the grass runway rather than trying to teach people to avoid them?

• Could we adjust the runway direction to avoid over flying tall hazards outside the airfield?

• In the meantime, do all our pilots know about these problems?

These are just some of the questions that have been raised, considered and resolved following a safety review. Just because "it's always been like that" doesn't necessarily mean it couldn't be changed for the better.

The real difficulty, it has to be said, is actually doing something about problems – identifying them and coming up with bright ideas is relatively straightforward.

Pete Stratten

Apologies in advance to professional quality assurance or Health and Safety people – this article only aims to briefly explain the reasoning behind the BGA club safety review initiative while raising its profile. Detailed health and safety issues are best discussed by those in the know – see also the new BGA Operations Manual

up by 17.00. The whole experience had an odd effect on me; I found it very difficult to make any decisions for a day or two, so that Barry had to mastermind the whole retrieve.

Not altogether a pleasant couple of days, but I learned a lot from them.

Firstly, the instrument part of CBSIFTCBE should include having the GPS set to a track between two points where you know there is no high ground.

Second, you have to keep pushing upwind, and just because the air is dead smooth it doesn't mean it's calm. Back home when there's a strong wind, it's normally rough; it's easy to fool yourself smooth air means no wind.

Third, a bad scare can make your brain freeze up; I didn't know where I was until Bill reminded me about the GPS.

Finally, perhaps it might be a good idea to carry some light survival gear, like the Aosta gliders do.

I am very sorry my stupid error caused such a lot of trouble and worry to so many people.

And what about climbing into that box? No, not just yet.

Accident/incident summaries

by Dave Wright

AIRCRAFT Ref	Type	BGA No	Damage	DATE Time	Place	PILOT(S) Age	Injury	P1 Hours
115	Puchacz	3630	Minor	22-Jul-00 1830	Aboyne	40	None	25
The visiting pilot was briefed and then flew a good check flight, including use of the wheelbrake. Flying solo, he made a normal landing, rolled to the end of the runway as instructed but then ran off the end of the runway and down a 20ft bank into a fence. He had been using the trimmer and not the brake lever.								
116	K-8	3118	Write off	19-Jul-00 2040	Parham	38	Serious	61
This accident occurred during a launch off a powerful winch. The glider became airborne quickly and rotated into a normal climb. At 50ft it pitched down and impacted the ground almost vertically, seriously injuring the pilot. It is concluded that the elevator final drive became disconnected as the tail struck the ground during the launch.								
117	K-13	2610	Minor	13-Aug-00 18.15	Challock	58 14	Minor Minor	2,727 0
After some upper air work the instructor talked the new student around the circuit. During the approach the student maintained 50kts well but at about 15ft pitched up sharply. P1 took over but could not prevent a very heavy landing on the nose skid. The glider bounced back into the air then groundlooped.								
118	Discus B	4800	Minor	03-Aug-00 18.20	Pewsey	72	None	455
During a cross-country flight the pilot had to make a field landing. He chose a field and, finding no more lift nearby, started his circuit from 600ft and made a normal landing. During the ground run the right wing caught in the 1ft high linseed crop, causing a groundloop that damaged both wingtips.								
119	ASW 20FL	2635	Substantial	12-Aug-00 15.00	Newport Pagnell	39	None	340
On a cross-country flight the pilot became low so selected a suitable field from 1,500ft. He noticed that adjacent fields had power lines marked by posts but could see none in his landing field. At about 20ft on the approach the glider hit cables and was brought down. The cables just missed the pilot and lodged in the rear of the cockpit.								
120	K-13 x2	2567	Substantial x2	24-Aug-00 19.15	Booker	69 42	None None	2,881 0
The aerotow combination launched while a second glider was in the circuit. This glider then landed normally on the clear landing area. Meanwhile P1 in the aerotowed glider had released to simulate a rope break. P2 chose to land across the normal landing area. P1 did not see the other glider because of the low sun and the two collided on the ground.								
121	ASW 19	4580	Minor	26-Jul-00 16.49	Tibbenham	56	None	75
The pilot decided to land on the grass nearer to the overnight parking area. He lowered the undercarriage at the high key point but forgot to lock the safety catch. On finals he mistakenly used the undercarriage lever instead of the airbrake, not checking visually. He made a gentle landing on the grass, causing minor damage to the fuselage.								
122	ASW 20L	2350	Substantial	16-Aug-00 17.00	Dunstable	52	None	51
As the wing tip runner released the wing the pilot was initially slow to respond and allowed it to drop. He applied full opposite aileron which resulted in the other wing dropping and starting a swing. He pulled off and braked hard as the glider crossed a gully, impacting nose down. Roll control was reduced by neutral rather than negative flap.								
123	Ventus CT	3472	Minor	11-Aug-00 13.16	Dunstable	44	None	185
The glider was being launched from behind a ridge which meant the pilot could not see the tug. As the launch started the tug pilot turned 30 degrees right to take-off more into wind. Seeing this the glider pilot tried to re-align but in doing so caught his right wing on the ground, causing a ground loop despite a quick release.								
124	Std Cirrus	4408	Minor	15-Aug-00	Nr Camphill	82	None	195
Returning after a soaring flight the pilot encountered sink so diverted to a ridge where there were some clouds. He selected a field, but then made a final turn in a bowl and encountered heavy sink. He had to make a very hurried landing in a relatively clear area. He landed, wheel up, in a field of large stones, damaging the fuselage.								
125	Astir CS	2162	Minor	12-Aug-00	Aboyne	61	None	146
After a local soaring flight the pilot encountered severe sink on the way back to the airfield. During the resulting rushed approach he forgot to lower the undercarriage and damaged the fuselage on the runway.								
126	K-8B	1456	Substantial	17-Aug-00	Burn	71	None	65
The pilot misjudged his approach and became too low and slow. The glider just cleared the boundary fence but the pilot found he was too slow to round out and made a heavy landing, causing substantial damage.								
127	Pegase	3737	Substantial	27-Aug-00 15.15	Winslow, Bucks	42	None	86
During a cross-country flight the pilot made a late field selection and landed in a field of standing crop. The ensuing groundloop broke the fuselage.								
128	Nimbus 2C	2645	Minor	29-Jul-00	Welland	43	None	700
The experienced, Standard Class pilot was making a cross-country flight in a borrowed open class glider. He had to land out so chose an area of common land with grass of 12-18 inches. Only late in the flare did he notice a slight cross slope and, just as the mainwheel touched, the left wing caught in a clump of thistles, causing a groundloop.								
129	PW-5	4440	Substantial	11-Aug-00 14.30	Charterhall	69	Minor	275
The pilot decided to do a short cross-country rather than local soaring so as to improve his flying. He became low, returned to the airfield but then managed to thermal away. Later he got low again, selected a field, then tried to thermal away again. This time he failed so had to land in a cornfield and groundlooped.								
130	ASW 20FL	2721	Write off	21-Jul-00 12.15	Camphill	61	Serious	956
The glider was seen to climb rapidly at the start of the winch launch. At about 100ft it rolled rapidly to the left, probably due to a wing stalling, and dived into the ground, seriously injuring the pilot and writing off the glider. The pilot believes the high rotation rate, which he failed to stop, may have been due to a slipping trimmer.								
131	LS-4	4393	Substantial	22-Jul-00 16.00	Nr Aston Down	52	None	561
The pilot was flying in an Inter-club contest in very marginal soaring weather. After a low-level flight he had to make a hurried field landing after hitting strong sink before reaching his selected field. The glider landed in an uphill sloping field with insufficient speed to round out and landed very heavily.								

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Accident/incident summaries (continued from p61)

AIRCRAFT Ref Type	BGA No	Damage	DATE Time	Place	PILOT(S) Age	Injury	P1 Hours
132 K-13	JJC	Write off	12-Aug-00 14.05	Kitson Field	50 14	Serious Serious	
While training for a non-standard circuit from a downwind leg that was low over the landing area. Witnesses considered the glider was going to land downwind, but instead, it was seen to pull up and turn left. Too slow and low to complete the turn it crashed into an adjacent field. Both pilots were seriously injured.							
133 Not Known	4556	Substantial	24-Aug-00	Booker	42	None	3,000
On the hot calm day the glider was positioned at the edge of the airfield, in a patch of bumpy, long grass, for the longest possible aerotow run. At the start of the take-off the wing dropped and caught in the grass. The pilot picked it up but it dropped again until the glider rotated, breaking the tail. The cable release went under the cushion.							
134 K-7	3382	Minor	03-Aug-00	Nene Valley	38 18	None None	263 0
P2 turned finals rather fast and P1 prompted him to reduce. As a result the glider became a little high so P2 fully opened the brakes but failed to maintain speed. With more prompting the student closed the brakes and regained speed. As the glider flared the brakes were closed and it ballooned. P1 took over but could not stop a heavy landing.							
135 Discus B	3322	Minor	27-Aug-00 16.00	Southam Warks	18	None	79
During a competition cross-country the pilot had to make a field landing. He chose a seemingly good field and made a normal landing. The surface turned out to be very rough and the flexing wings caught in the lines of lying straw, causing a ground loop.							
136 IS 30	3180	Substantial	30-Aug-00 11.59	Llantisilio	51 59	None None	220 94
P2 was flying the winch launch with P1 following through on the controls. After a longer than normal ground run the glider took off and gently climbed to about 10ft when the airspeed reduced rapidly. P1 took control but the glider landed heavily. The winch driver, hearing the engine over-revving, thought the cable had failed and had cut the power.							
137 Kestrel 19	2902	Minor	12-Aug-00 14.30	Tibenham	41	None	79
This was the pilot's first flight on type so she had a flight in a flapped two seater and a briefing as well as sitting in the glider to ensure she could operate the controls. At height she checked the operation of the brakes, flaps and gear. But, on finals she was unable to pull open the brakes, landed fast and heavy then overshot into a field.							
138 Slingsby T-21B 711		Substantial	12-Aug-00 13.00	Chipping	64	None None	1,221 0
The instructor flying the T-21 glider was very experienced, but used to higher performance gliders. He pulled off at 800ft because of the excessive winch launch speed and attempted to reach a local ridge. Finding it out of range he turned back to the airfield. He turned final, into a 10kt wind, at about 250ft but undershot into a barbed-wire fence.							
139 SZD Junior		Minor	Aug-00	Incident Report			None
During a very busy day on the airfield a glider was being returned to the launch point. As the driver passed close to a parked glider they momentarily forgot the substantial roll bar fitted to the tractor. The bar hit the wingtip causing minor damage to the aileron.							
140 Carmain 15WR	1593	Minor	16-Apr-00 18.40	Husbands Bosworth	67	None	1,538
After a two-hour soaring flight the pilot returned to the airfield at speed. He found that the duty runway was congested so changed direction to approach the airfield over a quarry. With open airbrakes the pilot was distracted by looking into the quarry and as a result undershot into the boundary fence.							
141 Dart 17R	1313	Minor	10-Aug-00 13.00	Nr Abergavenny	47	None	310
On a cross-country flight the pilot became low so selected a suitable field from a good height and, after finding no lift around it, decided to land. As he touched down he spotted a wire fence across the field so groundlooped to avoid it. One wing went over the fence and the canopy went under it, trapping the pilot. He summoned help by mobile.							
142 SZD Pirat		Write off	Aug-00	Incident Report		None	
While towing the glider in a trailer on the motorway at 50mph they were overtaken by a lorry which caused some mild weaving. The driver accelerated to about 55mph to try to stabilise it. At this stage they were overtaken by another lorry which increased the oscillation across 2 lanes and then jack-knifed, destroying the car and trailer.							
143 K-21	2888	Minor	03-Sep-00 16.16	Cranwell		None	1.7
After two good check flights in the crosswind conditions, the pilot was cleared for a solo flight, his 5th. After a normal circuit the pilot found he was a little high so opened the brakes. At about 100ft he closed them but allowed the speed to fall and he misjudged the flare, bounced and landed heavily. More pre-solo landing training was required.							
144 SZD 55	3689	None	Apr-00	Incident Report		None	200
The pilot was distracted while rigging his glider. On the aerotow he noticed the main pin safety pins hanging on his camera mount. He landed promptly. In future he will use a checklist during rigging and ensure a duplicate rigging check as required by his club procedures.							
145 SZD 55	3689	Minor	29-Apr-00 15.02	Rattlesden	41	None	178
During the start of the winch launch run the glider hit a pothole in the runway surface. This, combined with the acceleration on the belly hook and pilot input, resulted in the tailwheel coming down very hard, possibly on the lip of another hole. The tailwheel was destroyed but the launch continued normally and the glider landed safely.							
146 K-13		None	Feb-00	Incident Report	43 56	None None	830 0
During an upper air exercise training flight a loud bang was heard from behind the back seat and the airbrake lever moved back. P1 took control and pushed the lever closed. However the left airbrake was still one third extended. P1 flew a high, straight in approach and landed safely. The aileron/airbrake bellcrank support bracket had broken.							
147 Twin Aero II	3013	Minor	31-Aug-00 19.30	Gransden Lodge	44 42	None None	173 1
This was a check flight for an early solo pilot. After a satisfactory launch and a well planned circuit and approach P2 failed to round out and P1 took control too late to prevent a heavy landing on the nose wheel.							
148 LAK 12		Substantial	Sep-00	Incident Report	65	None	963
While moving the glider out of the hangar to the launch point the right wingtip struck the drainpipe of another hangar. The result was substantial damage to both wings of the glider and damage to the owner's car.							

Accident/incident summaries (continued from p62)

AIRCRAFT Ref Type	BGA No	Damage	DATE Time	Place Incident Report	PILOT(S) Age	Injury	P1 Hours
149 PA25 Pawnee Tug		Minor	Sep-00		35	None	566

After a 150-hour check the Pawnee tug was returned to service with work on a faulty wheel-brake "deferred" until the annual check. Subsequently, a pilot landed the tug and upon braking it swerved into the car park as the brake failed completely on one side. The pilot applied full rudder to no effect as the tailwheel steering was disconnected.

150 LS-8 None Sep-00 Incident Report None
This experienced competition pilot had a soaring flight, after having received a briefing and signed the club's Flying Order Book, made a fast, low dangerous circuit and landing. He was debriefed accordingly. He later made excessively steep launches then did a downwind beat up - against club rules and common sense. His membership was terminated.

151 K-7 1979 Write off 10-Sep-00 Lyveden 37 None 127
16.12 55 Serious 0
As the glider accelerated on the winch launch the left wing went down. P1 took control but could not lift the wing so released. By this time the glider had become airborne and continued to rotate left until the left wing struck the ground, causing the glider to cartwheel in. The glider wing had picked up the other winch cable.

152 Phoebus 1570 Substantial x2 10-Sep-00 Sackville Farm None 63
& K-8 12.00 49 None 33
The Phoebus pilot was on his 2nd flight on type and had climbed well and was enjoying slow turns and settling in. Meanwhile, a K-8 had climbed quickly in the same strong lift and its pilot lost sight of the other glider, leading to a collision. Both gliders lost 8ft of wing. The pilots, with no chutes, just recovered from spins and field landed.

153 Marianne 4179 Substantial 27-Sep-00 Nr Denbigh 44 None 921
12.30 56 Minor 105
After a ridge briefing the experienced, visiting pilot flew as P1 and attempted soar the local ridge. After finding lift he suddenly experience strong sink and became too low to return to the airfield. He chose a small field ahead rather than flying into the valley towards larger fields. In still more sink the glider undershot into a hedge.

154 Puchacz 3832 Minor 30-Sep-00 Rivar Hill 41 None 600
16.30 67 None 86
On a winch check flight P2 flew a normal lift off and initial shallow climb to about 40ft then waited for the speed to increase after a winch power reduction. It did not so he released the cable. As P1 took control and landed ahead the winch chute flew above the glider then fell on to it. It is possible there was a winch rev-limiter problem.

155 Not Known Minor Sep-00 Incident Report None 214
After a safe field landing the pilot was disconnecting the batteries when the canopy was caught by a very strong gust of wind. The canopy mounting bracket was broken but the canopy itself was undamaged.

156 Std Libelle 1657 Minor 27-Sep-00 Aboyne 67 None 1,019
14.30
The visiting pilot landed on the runway with the wheel up, causing damage to the fuselage and the winch release hook.

157 Fox - Minor 08-Sep-00 Saltby 47 None 1,331
11.00
During a high-speed and high-g recovery from an incorrectly-flown aerobatic manoeuvre the left airbrake paddle cap lifted and bent the airbrake pushrod and fitting. This resulted in the airbrake remaining 6mm proud of the wing. The pilot aborted the aerobatic programme and landed safely.

158 Ventus C 3533 None 30-Sep-00 Yeovilton 62 None 360
14.00
The glider was lined up for the auto-tow launch and the cable was attached as the wings were held level, both by inexperienced club members. As the launch started the signaller, who was the duty instructor, noticed that the tail dolly was still attached and signalled to abort the launch. The pilot landed normally, straight ahead.

158 Junior Minor Sep-00 Camphill 45 None 43
The pilot encountered a strong wind gradient on the approach. The glider ballooned and he over-corrected, causing the glider to hit the ground nose first, causing minor damage to the fuselage gelcoat.

160 Nimbus 4DT 4808 Write off 31-Jul-00 Spain Fatal
1800 Serious
Fatal accident to BGA registered glider in Spain. Structural failure in flight due to loss of control in strong thermic conditions. One occupant parachuted to safety but the second failed to clear the glider and was killed.

161 ASW 22 - Write off 04-Aug-00 Spain Fatal
Fatal accident to a BGA-registered glider in Spain. Glider flew into a mountain. Only initial information available.

162 Puchacz JRF Minor 18-Sep-00 Camphill 58 None 1305
1800 15 None 0
P1 allowed P2 to complete the landing off a full airbrake approach, guarding the controls. The P2 did not fully round out and landed firmly, with a little drift, followed by a very short ground run. This glider had a modified hydraulic wheel brake, actuated by full airbrake and had landed with the wheel locked, which damaged the w/c frame.

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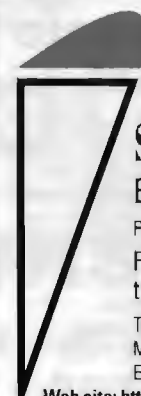
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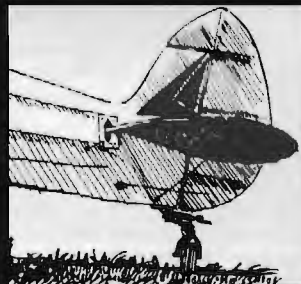
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