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General Aviation

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The journal of the Aircraft Owners and Pilots Association

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Editor and publisher: Pat Malone

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Head of Advertising, AOPA UK,
The British Light Aviation Centre
50a Cambridge Street, London SW1V 4QQ
+44 (0) 207 834 5631
+44 (0) 7742 605 338

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AOPA office:
The British Light Aviation Centre
50a Cambridge Street
London SW1V 4QQ
Telephone: 020 7834 5631
Fax: 020 7834 8623
E-mail: info@aopa.co.uk
Web: www.aopa.co.uk

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Concorde
Peter R March

Chairman's message

Progress with EASA on GA

Significant change to the way general aviation is to be regulated in the UK is under way, more so than at any time in the past several years. The Government's GA Red Tape Challenge has been the catalyst for this reorganisation, summarised within this issue of *General Aviation*. The CAA has produced a response document that mentions under 'Common Themes' the general dissatisfaction with EASA rules and the perception of "gold-plating", which makes the interview, also found within, of Patrick Ky, the recently appointed Executive Director of EASA, particularly pertinent. He clearly recognises that a new generation of leaders of the larger National Aviation Authorities, including our own UK CAA, are able and competent individuals backed by ample resources who will help establish a more constructive relationship that will also encompass a more proportionate approach to GA – a welcome sign.

An example of a more pragmatic approach may be the recently announced 5-year stay of execution for the IMC Rating. Patrick Ky's predecessor, Patrick Goudou, had decided to rule against this valuable national rating by allowing uniformity of European regulation to trump flight safety. The CAA has been rightly praised for successfully pursuing the safety case, but it should be recognised that without continued and persistent lobbying by AOPA UK, the CAA may not have taken up the cudgels, and the rating could have died a death. Another example of a fresh attitude within EASA comes from a meeting in November held between EASA staff, including Head of Rulemaking, Jules Kneepkens, and IAOPA Europe, including representatives from AOPA Germany, Sweden and the UK (Martin Robinson and myself). This concerned the Supplemental Inspection Documents, or SIDs, published by Cessna that apply to 100 and 200 Series aircraft manufactured before 1986. EASA and the UK CAA have been receiving enquiries about the correct application of these SIDs, which affect just over 1,000 aircraft in the UK and several times that in Europe. The inspections are initially visual, but can lead on to more expensive NDT in the event of corrosion or cracks etc. being spotted. Many of the aircraft owners affected are AOPA members in their own country. Queries have arisen as to the mandatory nature of the inspections, and, in line with the FAA, the UK CAA has issued an Information Notice (IN-2013/138) providing helpful guidance and underlining the advisory and non-mandatory aspect. EASA presented to the meeting a draft Safety Information Bulletin (SIB) along similar lines; the ensuing discussion was conducted in a most helpful and constructive manner. The SIB should be available for comment within the next couple of months.

The major difficulty, however, lies not with EASA, whose proposed regulatory action appears wholly proportionate, but with interpretation by the country NAAs. In Germany, for example, the SIDs are regarded by the regulatory authority (LBA) as mandatory. This has produced something akin to a climate of fear amongst owners of Cessna 152s, 172s, etc. because advertisements from some maintainers have appeared in the aviation press offering to carry out the inspections for completely disproportionate sums of money (€9,980 being one example). This is where IAOPA would opt for consistency from the NAAs that puts the SIDs at no more stringent a level than that of the FAA. However, as suggested in the interview with M Ky, it may be that in future NAAs are accorded a greater degree of flexibility in applying the rules. A bit of a conundrum! Although not apparently a serious problem in the UK, in considering the overall effect on the viability of general aviation at large we must look beyond our shores and act in unison with our AOPA colleagues in Europe – a reason why part of your subscription to AOPA goes towards IAOPA Europe.

On a brighter note, AOPA members I happen to meet at various aerodromes I fly into and elsewhere like to tell me that *General Aviation* is the best aviation magazine going, and, of course, I totally agree. We owe this widely held opinion to Pat Malone, our editor, whose journalistic skills have been long recognised by our readers, but more recently by The Guild of Air Pilots and Air Navigators with the 2012 Award for Aviation Journalism, presented at a ceremony in October. He is far too modest to proclaim this achievement himself, so I do it here. Well done, Pat!

George Done

Slashing red tape for GA

Too much red tape… excessive bureaucracy bearing down on a struggling industry… taxation driving flight training abroad… over-prescriptive and impractical regulation… any reader of *General Aviation* will recognise these phrases as being the mantra of AOPA in recent decades. But this time they are not coming from your Association – they are the words of government ministers, who profess an appetite to tackle them. These ministers are backed up by the CAA at the highest level, and it genuinely looks like we're finally getting some traction in trying to introduce proportionate, risk-based regulation for GA.

An unprecedented collection of the nabobs of the aviation sector gathered at the CAA in Kingsway on November 6th to promise GA that things are going to change for the better. They included CAA Chief Executive Andrew Haines, former Defence Minister and active pilot Sir Gerald Howarth MP, the new Aviation Minister Robert Goodwill MP, and most importantly, Grant Shapps MP – Minister Without Portfolio, general aviation pilot, aircraft owner and energetic promoter of GA. Never has our sector had as many men of influence saying so many necessary things out loud.

The promises come off the back of the Government's Red Tape Challenge, in which sectors of industry have been asked where they believe unnecessary bureaucracy can be cut. Grant Shapps is responsible for ensuring that a specific Red Tape Challenge was launched for general aviation – promoted with an interview in this magazine earlier this year – and it brought forth the greatest response of any such exercise, three times as many as for any other issue. Some 270 substantive points have been identified as requiring attention. Now we have reached the next stage – where and how these issues are to be addressed.

AOPA Chief Executive Martin Robinson says: "This is a fantastic opportunity and we absolutely need to make the best of it. I believe we've seen a sea change in official attitudes towards general aviation regulation, and we could be laying the foundation for a system that can revitalise the industry without affecting safety. As always, the devil is in the detail, but we're grabbing this excellent initiative with both hands."

Above: Grant Shapps MP – Minister Without Portfolio, general aviation pilot, aircraft owner and energetic promoter of GA

CAA Chief Executive Andrew Haines told the meeting that a team from the CAA, and another from the Department for Transport and the Cabinet Office, were working "to heroic timescales" on GA red tape. "General Aviation is not used to this level of ministerial support," he went on. "We are serious about this. We are committed to working to transform the way we regulate GA without compromising safety. We are looking at the way we interact with Europe in order to give maximum benefit to GA, and we believe this is a circle we are capable of squaring."

The new Aviation Minister Robert Goodwill MP, in post for only a few days, made it obvious that he was relying on Grant Shapps for guidance in general aviation matters – his brief covers not only aviation but other transport issues and he had pressing matters such as HS2 on his plate, not to mention roads, and Europe… but he did recognise that GA plays an important role in the UK economy and it needs room to breathe. "There must be scope for removing red tape and moving to risk-based, proportionate regulation and oversight," he said. "GA is an extremely important sector of UK civil aviation and it is right that we do everything possible to enable it to thrive. That includes making

Above: new Aviation Minister Robert Goodwill MP

Above: CAA Chief Executive Andrew Haines

Above: former Defence Minister and active pilot Sir Gerald Howarth MP

sure that, where appropriate, we ease the burden on what are often smaller operators and businesses who find navigating a complex regulatory framework particularly challenging. I welcome the time the GA community, and the associations in particular, have taken to respond to this challenge.

"I look forward to working with the representative bodies including the Light Aircraft Association, the Aircraft Owners and Pilots Association and the British Business and General Aviation Association in taking this forward. We will also continue working with other EU member states and EASA to ensure that EASA's stated aim of proportionate and risk-based regulation is embedded in its activity."

That same day he had provided to Parliament a briefing on the Red Tape Challenge for GA which made encouraging observations such as we have never seen at that level. The full text of the document is reproduced on pages 8 and 9 – note the penultimate paragraph:

"General aviation can and should contribute to the UK's economic success, whilst providing a safe environment for participants and the public. The Government's aim is therefore to make the UK the best country in the world for general aviation."

Heady stuff! Thanks to Andrew Haines, Grant Shapps, Robert Goodwill and their teams, it looks like all our birthdays have come at once. There were some cynical mutterings from industry at the Kingsway meeting, and GA will have to work hard to ensure that good intentions are not confounded. The plan to set up a GA unit at the CAA has cost implications which, given that only a small proportion of GA pays CAA fees, could prove challenging. The timetable is tight, and the approach a little ad hoc. Having the government choose its own industry representatives, accountable to no-one, gives pause for thought. As the only organisations that represents every facet of general aviation, AOPA will work to ensure that changes do not benefit one sector of the industry to the detriment of another. We don't want a repeat of the IMC fiasco at EASA's FCL.008.

Getting results

The new initiative comes after decades of unremitting pressure from AOPA on general aviation regulation at the CAA, the JAA and EASA, the success of which is attested by the fact that it's not just in Britain but right across Europe regulators are looking again at the way they deal with GA. (See our interview with EASA's new Executive Director Patrick Ky on page 10). International AOPA has repeatedly forced authorities to face up to the consequences of their actions. The European Road Map for General Aviation is one outcome. On Part M, FCL, ATO requirements and dozens more issues AOPA has fought for GA's interests every inch of the way. Campaigns like our successful battle to roll back the tide on the IMC rating are won at the cost of popularity with politicians and regulators, who sometimes prefer to appoint to their advisory panels volunteers who might be more sparing with the home truths. There have been many false dawns

Chief executive's diary:
All our birthdays?

Winter's coming, days are getting shorter, flying is tailing off… and paradoxically I'm feeling sunnier and more optimistic about the world of general aviation than I have for a long time. The spirit of change is afoot at EASA in Cologne, the CAA is trying to be more helpful to GA than ever in its history, the Government is making genuine moves to get its boot off the industry's windpipe, and if the Bank of England is to be believed, economic recovery is taking hold. The air is full of good intentions; as usual, we'll have to fight like cats to ensure deeds match words, but that's what we're here for.

We've got a mountain to climb. Few people really have a handle on what the recession has done to GA, but figures quoted in our interview with EASA's Executive Director Patrick Ky give a flavour. In 2006 there were 583 Robinson helicopters on the UK register… today there are 307. Think what that means for suppliers, maintainers, fuel companies, the lady who sells the £100 hamburger. Fixed-wing has suffered almost as much, and the flight to the less-regulated sector has continued to tear the heart out of some GA businesses. But there is hope! GA tailed the curve going into recession and it sure as hell won't lead the country out of it, but we are brimming with optimism!

My last CEO's diary brought us up to mid-September; then on September 17th we had the AOPA Flying Instructor Committee, chaired by Geoffrey Boot. My focus was on the future administration of Approved Training Organisations, which all Registered Facilities must become. There's a lot of extra work associated with ATOs – Safety Management Systems and so forth – and AOPA was invited to comment on the CAA's draft proposals. The Instructor Committee has experts, a number of whom have experience with SMS – and the CAA is fully aware of our position.

On September 19 we had the AOPA Executive Committee meeting, prior to the first Annual General Meeting to be held in our new headquarters facilities. The over-riding issue is for AOPA is the lower activity levels in GA, which are also having an impact on membership.

Then on September 25 I had a meeting with the FAA's representative from the Paris office. Among other things, we discussed US airman's certificates – as you see elsewhere in these pages, the deadline for change has been moved to April 2015. A couple of days later I was in Heidelberg to Chair the IAOPA Europe Regional Meeting – again, a subject well covered in these pages. On October 1 I went to a UK Border Agency meeting with John Murray, who's done fantastic work for AOPA on the online GAR, and representatives from AOPA Channel Islands, the LAA and PPL/IR. The discussion centred on UK BA prior notification requirements for GA operators using designation airports. It became very clear that the main issue is BA manpower; even though an airport may be designated, it may not be manned 24/7. UK BA were keen to keep the discussion open, and we agreed that a further meeting would be useful.

Next day I hosted a meeting at AOPA to consider the changes to the rules that will affect operators in banner towing – the CAA have been very helpful throughout on this. On October 3 I attended a discussion with BBGA at Gatwick looking at the future administration issues. The CAA are determined to improve the processing of licence applications – commencing with PDF documents that can be emailed back to the CAA along with the Course Completion certificate. There's a short explanation of the new regime in these pages. No longer will you need to submit PPL log books. Paul Chin is the CAA Hub Director dealing with the processing proposals, and AOPA supports the direction the CAA is moving in.

Next day I met with a couple of members who are affected by EASA FCL/US Airman certificate changes. The issue is mostly about FAR 91 operations, and IAOPA is committed to finding a workable solution. The extension to the 2014 deadline to April 2015 allows us more time for discussion with the authorities.

From October 9 to 14 I was at the AOPA summit, where I met the new AOPA US President and CEO Mark Baker. I believe that, with Mark's help, IAOPA will continue to make a difference. He's a very enthusiastic pilot and aircraft owner and I look forward to working with him. Other discussions included

in recent years, and AOPA will work to ensure that across Europe, good intentions are not confounded by bureaucratic inertia.

Grant Shapps, who had with him a copy of this magazine when he spoke at the CAA, characterised this Red Tape Challenge as a rare opportunity that had to be grasped. "Now is the time," he said. "We may never have such an opportunity again. The government really wants to cut red tape. Robert Goodwill is one hundred percent behind GA on this. We have Andrew Haines in this building, and he and his team have a real desire to see change." Shapps rehearsed the figure compiled by AOPA from a 2003 survey showing how much GA was worth to the country – £1.4 billion in turnover, 11,000 directly employed, 50,000 more owing their employment to GA – and said that our efforts should be directed towards creating more wealth and more jobs in the industry. While we still build wings and jet engines, GA manufacturing had dwindled to nothing. In the UK, GA was nonetheless about the same size as the film industry, which was garlanded with all manner of tax breaks and incentives. "Somehow GA is seen as being less important," he said. "We need to rectify that."

Andrew Haines too promised energetic action on behalf of GA. "We won't always get it right, so we welcome your challenge to ensure that we draw the line in the right place," he said. "You won't always get what you want, but there will be a good reason."

The CAA's intention is that GA should take more responsibility for its own safety oversight, and its Chairman Dame Deidre Hutton says it will work to enhance the commercial prospects of the sector. The CAA, she says, will be "seeking to identify projects which would support investment, jobs and the growth of the GA sector… potential projects could include those which support vibrant GA training or maintenance sectors, business jets or the development of new technologies for general aviation operations." The watchwords for the future will be deregulation, self-regulation, better value for money, and allowing the GA sector itself to take on more responsibilities for ensuring safety. The consultation launched in September on the deregulation for airworthiness purposes of single-seat microlights is just the start.

The Government's aim is therefore to make the UK the best country in the world for general aviation

Shapps's programme is hugely ambitious, but the need for change is certainly pressing. The figures quoted by the ministers were compiled by AOPA before five years of recession, four bad summers, increased taxation, rocketing fuel prices and the effects of EASA had made themselves felt. Since then, a difficult situation has become dire. In 2007, for example, there were 583 Robinson helicopters on the UK register; today there are 307. Other sectors are almost as badly hit, and the shock is felt right through the support chain. If the government's ambition to make the UK the world's top GA country is to be achieved, we have a long road ahead of us – but we've taken a big step. ■ ➔

a look at issues affecting the IAOPA, as well as an update on the World Assembly.

On October 21 I attended the annual Aerodrome Operators Association dinner to present the GA Aerodrome Award, which went to Gloucester Airport, Staverton. Tom Needham of the AOA is retiring, and we wish him well as he begins a career as a photographer. Tom has for many years been a leading light at AOA and it has been a pleasure working with him.

On October 23 we had another meeting with the Border Agency, a smaller GA group continuing the discussion. AOPA and PPL/IR member Vasa Babic agreed to lead the industry side of the proceedings, which was far more focussed. No decision has been reached yet but we appear to be moving in the right direction. I should add that if John Murray had not invested the amount of effort he has on establishing the eGAR, we may not be in as strong a position that we are in now. See www.aopa.co.uk for the latest news.

On October 29 Mike Barnard of the CAA spent several hours at AOPA discussing a number of current issues with me, and the next day I chaired the CAA's Electronic Conspicuity Working Group. This involves looking at how widespread application of electronic conspicuity may improve safety in Class G airspace. All GA groups are represented – John Brady (LAA), Pete Stratton (BGA), Geoff Weighell (BMAA) and Bob Darby (AOPA). The CAA's Kelly Hightower produced a first draft Options Paper which will be further refined over the next couple of months. There's industry-wide support for looking at this subject. The philosophy is that whatever is developed, it must be low-cost, lightweight and battery powered. There should be no mandate, but if it is expensive then purchase will become a no-brainer. More to come.

On November 1 I attended the Safety Regulation Finance Advisory Committee at Gatwick, where main discussion was about the costs involved in transferring aviation security requirements out of DfT and into the CAA. Some difficult discussions took place, mainly centering on the difference between the numbers used to produce the regulatory impact assessment and actual costs being put into cost-recovery. One item of interest is the fees charged to RTFs. From 2014-2015 RTF converting to ATO will pay £100, subject to using the CAA templates – it is £1,000 otherwise. From 2015 existing ATOs will be required to pay an annual fee of £430. This will include any audit costs. The CAA has also said there will be no additional site costs. AOPA has been lobbying the CAA about RTF/ATO issues, and further charges may come as a result of the Red Tape Challenge.

On November 4 I was at the Airspace Infringement Working Group meeting; sadly, 2013 looks as if it will be the second worst year on record for GA infringements. The CAA is continuing to look at ways to deal with infringements, one of which is the development of an online education course to be taken by those infringers where the incident did not impact other parties. More to follow. Next day I had a meeting at the DfT where AOPA, BBGA and the CAA were given a pre-brief on the Red Tape Challenge programme ahead of the official announcement. Next day came the unveiling of the next steps in the RTC at the CAA. AOPA is delighted that the Government is taking our concerns seriously. The programme is ambitious, but we fully support it.

November 7 found me in Cologne for a meeting with EASA to discuss Cessna SIDs: along with Dan Akerman of AOPA Sweden, Michael Erb of AOPA Germany and our own UK Chairman George Done. We had a very open discussion – EASA plan to hold a workshop early in 2014 to further flush out the issues. See George's column on page 4.

Next day I had another more detailed discussion with the CAA about the PPL application form - once again, I can only commend the work that has been done and I firmly believe it is all moving in the right direction. On November 11 the GA Strategic Forum met to discuss its role in the Red Tape Challenge, and the following day the ASICG, the high-level group that co-ordinates and directs other working working groups, was abuzz with the Red Tape Challenge... what a Christmas present to have! Martin Robinson

Martin Robinson

Left: Martin with new AOPA US President and CEO Mark Baker

Hope for the future

The question-and-answer session at the end brought out some surprising responses – the government really does seem to be ready to think the unthinkable. Grant Shapps at one point raised the possibility of removing GA from CAA oversight entirely.

Inevitably, the first question was – what about EASA? How much autonomy does Britain have, and how much of the red tape that's made in Cologne and Brussels can unilaterally be cut? Shapps and Goodwill were uncompromising: "We are the government!" Not only can we do much more to shape our own regulation – the saving of the IMC rating being a case in point – but the UK intends to lead Europe into a fundamental reappraisal of GA regulation under the 'REFIT' project. (See the accompanying text from the Parliamentary document).

Robert Goodwill said: "This is not Britain versus Europe – I was at a Council of Ministers meeting recently and found that most ministers feel the same way we do, including France and Germany."

Then there's the matter of money. David Learmount pointed out that GA in Britain was the most expensive in the world even before EASA. What could be done to reduce the burden of taxation on the industry?

Sucking of teeth here. "Look, we're running a deficit of £100 to £110 billion," said Shapps. "We've got it down from £160 billion, but that's how much we're borrowing over and above tax income, just to keep the government operating. Some people are experiencing real hardship, and tax breaks for general aviation are not on the agenda right now."

But a reduction in red tape could create real savings, Shapps added. "If you're an LAA flyer, or you're on the

Department for Transport

GENERAL AVIATION RED TAPE CHALLENGE

The Parliamentary Under Secretary of State for Transport (Robert Goodwill): I, together with my right hon. Friend the Member for Welwyn Hatfield, the Minister without Portfolio (Grant Shapps), wish to inform the House of the changes to the regulation of general aviation following the General Aviation Red Tape Challenge.

The General Aviation (GA) Red Tape Challenge ran from 11th April to 16th May 2013. It received nearly 500 responses, including 298 via e-mail, three times as many as any other theme to date. These responses identified many areas where improvements are needed and highlighted the need for a change in approach to regulating GA. As a result of this, the government is launching a substantial programme of reform that will help support a vibrant GA sector. The GA sector currently supports around 50,000 jobs in the UK and makes an overall economic contribution to the UK economy of £1.4 billion per annum. It could and should be able to contribute more.

The CAA, the independent regulator of civil aviation in the UK, recognises the need to create a culture change in the regulation of the GA sector. As part of this culture change the CAA is setting up a new GA unit within its current structure. This is firm recognition that general aviation requires different, and less onerous, regulation to that of commercial air transport. The CAA's GA unit will be dedicated to effective and proportionate regulation that supports and encourages growth of the GA sector. The unit will also work with government to identify potential funding for new technologies to support the sector. It will be fully set up within the CAA by April 2014.

The CAA has incorporated the findings of the GA Red Tape Challenge into its own internal review to produce a comprehensive GA Reform Programme. This will support a programme of deregulation and self-regulation for the GA sector. It will also remove complexity, look to deregulate where possible and where not, consider how to allow the GA sector to take on more responsibility and accountability for its own safety where possible and appropriate. This has already started with the launch in September 2013 of a consultation on deregulating for airworthiness purposes all UK-registered single-seat microlights. Starting in November, the CAA will lead a series of workshops with the GA sector to identify other areas that would benefit most from deregulation or self-regulation. These moves represent the start of an ambitious programme of work to follow.

The Government has successfully lobbied for an evaluation of the application of commercial aviation safety requirements to non-commercial aviation to be included in the EU Regulatory Fitness and Performance (REFIT) Programme and welcomes the European Aviation Safety Agency (EASA) Roadmap for General Aviation. Both the Government and the CAA will engage with the GA community over the coming months to identify priorities for reform and take these forward within the EU's reform programme.

N-register, you're experiencing lower costs because of less expensive regulation. Regulatory costs need to come right back."

Charles Henry of the General Aviation Awareness Council pointed out that since VAT was applied to professional flight training, many of Britain's major training organisations had decamped abroad. Thus jobs had been lost, business lost to the UK, tax revenues foregone. Shapps repeated that tax is not on the agenda.

"I was with the Prime Minister when he was asking why something he wanted had not been done, and he was told he had been countermanded by a 'higher authority' – the Treasury. We're in a difficult position, and I don't think the first priority is going to be aviation taxes. That doesn't mean we give up on it – but it's going to be a longer term issue. I agree with what you say but I don't want to raise expectations of early change."

Former MP Lembit Opik said GA had exacerbated its own problems by failing to speak with a unified voice, but Grant Shapps said he recognised that general aviation was a catch-all term for a hugely diverse activity encompassing everything from twin jets to the guy with the lawn mower engine on his back, and many of its components had little in common with each other. "This is now being driven forward by government," Shapps said. "We have ministers saying, 'we want this to be a bigger business'.

Sir Gerald Howarth concluded the Q and A session by harking back to the times he, Lembit Opik MP and Nigel Griffiths MP had formed the Parliamentary aviators group and had gone to Sir Roy McNulty seeking change. "Having had that experience, I think tonight marks a real milestone for general aviation. There has been a major shift in this building under Andrew Haines, and what Grant Shapps has done has given us all real hope for the future." ■

Full text of the Parliamentary paper setting out red tape plans for GA

The CAA will strengthen its engagement with the sector to improve consultative arrangements and ensure effective representation. The CAA is committed to being open and transparent in its engagement and collaboration with the GA community. It will work with a firm objective to support education and compliance rather than regulation and enforcement, using legal instruments and powers only as a last resort.

The CAA will involve the GA sector in the development of a new regulatory framework and its associated policies; there will be opportunities for the sector to challenge the CAA when it believes regulation is unduly burdensome; there will be more scrutiny of the CAA's fees and charges to provide greater transparency; and the CAA will improve the quality of information it provides.

From the responses to the Red Tape Challenge it is clear that regulatory complexity has led to misunderstandings. To address this, the CAA will run a 'myth-busting' initiative to clarify what exactly regulations require. For example, it will debunk the myth that the CAA requires all aircraft movements within the UK to be logged.

To facilitate the effective and timely implementation of these measures, the Government is appointing an independent 'Challenge Panel' including GA industry representatives. This panel will report directly to ministers. It will provide a 'critical friend' function to the CAA. The Challenge Panel will run initially for six months until April 2014. During this time the Panel will monitor and support the implementation of the CAA's deregulatory programme. It will also be asked to identify further opportunities to deregulate and to promote growth of the sector. It will provide to ministers an interim report in January and a final report in April.

We will task the Challenge Panel to propose ideas, and will also encourage the CAA and Government Departments such as the Department for Business Innovation and Skills and the Home Office, to consider where projects might support and encourage an innovative and dynamic GA sector. For example, how best to support a dynamic leisure and training sector, and how to remove outdated paperwork which serves little purpose.

In announcing these measures we are announcing the launch of a "right to reply" consultation by the CAA into its response to the GA Red Tape Challenge. This consultation will run until 6th December and is a good opportunity for the GA sector to make its own assessment of the CAA's detailed response. The responses to this consultation will be available to the Challenge Panel, which will be able to submit its own views on the CAA response within its January interim report. These reforms mark an important and significant step-change in the approach to GA regulation. The new regulatory regime will be founded on risk-based intervention, proportionate to the safety needs of informed participants whilst protecting uninvolved third parties and supporting and encouraging a flourishing GA sector. We will work closely with the General Aviation sector and the GA representative bodies in particular in taking this forward.

General Aviation can and should contribute to the UK's economic success, whilst providing a safe environment for participants and the public. The Government's aim is therefore to make the UK the best country in the world for General Aviation.

EASA: We can be flexible

EASA has a new Executive Director – will general aviation benefit?
***Pat Malone** meets Patrick Ky*

Patrick Ky is not Patrick Goudou. The new Executive Director of the European Aviation Safety Agency – EASA – is from a different generation, and his background, professional and personal, has little in common with that of his predecessor. Moreover, EASA is not made in his image; unlike Goudou he did not build it from the ground up, taking on its enemies and defending its interests with dogmatic and inflexible determination. And while he knows how far it has come, he sees more clearly how far it has to go.

When he talks about change at EASA it is with an insider's appreciation of his task. He has worked at the European Commission, he has run the SESAR project – the hugely ambitious modernisation effort for Europe's air traffic management – and he has worked in the DGAC, the French CAA, and in Eurocontrol. He knows that making change at EASA is not just like turning an oil tanker, it means turning a whole fleet of ships, not all of which are heading in the same direction, some of which are on a collision course – and all of them are buffeted by competing outside interests. In the post since September, he is still feeling his way on the bridge, but he talks encouragingly of doing things differently, and to general aviation, which has suffered intensely in recent years, he offers hope.

Above: EASA's new Executive Director Patrick Ky in his office in Cologne

He does not, however, talk of the revolution some of us would like to see. There is no thought of removing private aviation from EASA oversight. Instead, he speaks of knowing that lines are drawn in the wrong place, that regulation spills too far down the aviation food chain to the little people who can neither get the benefit nor bear the cost. He talks of more flexibility, perhaps allowing national authorities more leeway to make their own decisions. All very encouraging, and easy to say. Hard to do. Ky's accession to the hot seat at EASA gives us cause for optimism; in five years we may be burning him in effigy, but right now we wish him a fair wind.

"EASA is at the same time a young lady and an old lady," he said in an interview in his office in Cologne. "Young because it's established only ten years. Old because there are a lot of habits that have become part of the culture. How am I to be able to act against the bad habits? I don't know – I haven't yet tested the resistance of the Agency to change. Perhaps if you come back in a year the picture will be clearer. For now, I am looking to see whether the Agency is willing to change and to address new challenges.

"Ten years is a significant time, and if I find that the way of working is set in stone, it will be difficult for me. I believe the Agency comprehends the new needs and challenges that we face, and there is a degree of commitment to change. But the EU legal framework and staff regulations are very rigid…"

But the need for change is a given? "Certainly. As an Agency, we need to work as single entity. There are many different activities here, and when I ask questions I get a lot of different answers, some of which are incompatible. It is of the highest priority that we have a more consistent approach.

"Secondly, I am not dogmatic – I see a requirement to amend our touch to accommodate the needs of the market, and this is already changing. In the first ten years, the priority was to establish the Agency's technical and professional competence, and EASA did that in the face of quite strenuous opposition, particularly from Britain, France and Germany.

Happily, there is now a new generation of leaders in aviation in some European countries, and old attitudes are fading. Some of the leaders of national authorities are very impressive people. Andrew Haines at the UK CAA is one of them. Patrick Gandil of the DGAC is another – extremely competent, pragmatic, able people, backed up with the resources to do the job. On the other hand, some national authorities tell us that they simply don't have the resources to do the job, so introducing an element of regulatory flexibility that fits all 32 EASA countries is even more difficult than you'd imagine.

"But as the leadership is changing, so the type of relationship the Agency and the national authorities have with all our stakeholders is changing, too."

Four horsemen

He recognises that all is not well in GA. The four horsemen of the GA apocalypse are first, the recession – an unprecedented downturn has knocked the stuffing out of an industry that depends on discretionary spending. Second, the weather; only one of the last six summers has been good, three have been poor and two have been

complete washouts, with disastrous effects on the GA industry. Third, taxation – high fuel prices have been exacerbated by pressure to raise money to meet the government payroll, while the Inland Revenue has borne down on owners, driving many out of the market. Helicopters are particularly hard-hit; the number of Robinsons on the UK register has fallen from 583 in 2006 to 307 today, and the supply chain is reeling. But the fourth horseman is EASA, riding into the wreckage with shiny new ideas like the Approved Training Organisation regulations which threaten to burden our small flight training companies with paperwork and costs they cannot handle. Will a fourth horseman with Patrick Ky in the saddle be any different for GA than Patrick Goudou's mount?

At the lawmaking level, it will certainly make a better job. Under Goudou, EASA had a famously fractious relationship with the European Commission, but Patrick Ky is a former EC insider who knows how to push its buttons. "The EC has its own laws and obligations, and EASA has too," he said. "Sometimes they have not been synchronous, sometimes there has been conflict between the Agency and the Commission, but I believe we're in a good position to keep conflict to a minimum. We are also working to create a much better relationship with the member states. We have formed a group of leaders of national aviation authorities, just the top men, and so far we have 13. I sit on this group for EASA, the EC is also there, and we are chaired by Trafi, the Finnish CAA. The level of enthusiasm shows a willingness in this partnership to work together."

Will GA notice a difference too? With so many big fish to fry – EASA recently added air traffic management to its workload – is the small end of the industry not simply a nuisance that EASA could dispense with? Do we really need such a monolithic organisation to tell us which leg to put into our trousers first? Would it not be better for all if private aviation was removed from EASA's remit entirely?

"Complete removal, no," M Ky said. "A lot depends on definitions, what you call private, what you say is general aviation. I believe EASA is responsible for all aircraft, big and small, but that its approach should be more flexible than it currently is. We are already looking at Part 23 certification rules with a view to making them more performance-driven rather than prescriptive. We need to discuss continuing maintenance with the member states, to find out where they see our influence starting and stopping. At the end of the day, protection of the public is the goal.

"I am a private pilot, I know what the life of a private pilot is, and I know there is a need to be certain of your aircraft. If you own your aircraft, that's okay, but if you are renting an aircraft, you are entitled to know it has been maintained to a certain standard. There's a need for rules that say the same whether you are renting in Spain or in Poland. We need a homogenous system, but it's a matter of where you draw the line. You cannot exempt all of general aviation.

"In Europe, there needs to be common safety standards, but my personal opinion is that member states should be accorded a greater degree of flexibility in applying the rules. We can't forget that not all NAAs are like the UK CAA, with lots of expertise and resources. Some countries tell us they simply don't have the technical resources to do things like regulate GA.

"This concerns me. EASA relies on the UK CAA to provide technical expertise, but if you look at the Baltic states, some have a national authority of say 50 people and they have a real lack of resources.

"What do you do about business aviation? We have industry partners like Dassault and Pilatus who need EASA to assist them in their global export markets. If you build your own aircraft you need EASA to be on board, although the need is not as great. The real issue is where you draw the line. Right now, the EC is asking us to look at UAVs, and there the line seems to be drawn arbitrarily and incorrectly. A limit of 150 kilos doesn't make sense. It should perhaps be a function of kinetic energy… but where do you draw the line?"

One of the problems EASA faces, M Ky said, is knowing how best to reach general aviation. "We have EGAST, which is functioning quite well," he said. "But how do you disseminate specific information to such a diverse section of aviation? The FAA has devoted considerable resources to it and has had some success using social media and things like Youtube. I think we can do more to disseminate specific information at the training stage. But this is something for the member states, too."

Above: Patrick Goudou

What about relations with IAOPA, which were strained in the Goudou era. "I've known Michael Erb and Martin Robinson for many years, and I consider them not only to be work colleagues but personal friends," M Ky said. "Our relationship is excellent on a professional and personal level. We have spent a lot of time working together, with Michael Erb on technical problems at SESAR, with Martin on different projects. Relations with IAOPA are good, and that can only benefit both sides."

M Ky obtained his PPL in France and flew for seven years, not always doing

Keith Wilson

Left: 'EASA' Pup and 'Non-EASA' Bulldog – lines are drawn in the wrong place

more than the minimum to keep his licence current. "I was flying in the Paris area, but I love to fly where there is less air traffic control," he said. "I got nervous of so much ATC, but what stopped me flying was work – I simply couldn't afford the time. I can't see me getting the time to fly in this job, either."

He was aware of the new British government initiative on cutting red tape and had a copy of the DfT's red tape challenge document on his desk. "I've looked at it, but I haven't yet had a chance to discuss it with Andrew Haines. It seems like a very worthwhile objective, but a lot of the complexity in EASA rulemaking comes from member states in the first place. Everyone complains about the length of time it takes to make rules, but the member states are responsible for much of the delay. We have an Agency opinion which then goes to comitology, which is where the member states have their say. And at the end of the day, when they've all added their influence, they've added whole new levels of complexity. It's too easy to blame EASA. The EC, the states and EASA all share the responsibility. If you want us to be less complex and more generic, stop adding addendums and caveats."

Given that he has only had his feet under the table for two months, M Ky is able to defer questions on the 'REFIT' programme that seeks to discover whether European regulation is fit for purpose, and on hopes for the GA sub-committee of the Safety Standards Consultative Committee. But it is clear that he understands the need for a less dogmatic and more flexible EASA that is better able to differentiate between an A320 and a C150, and that gives more serious consideration to the cost burden of regulation on a GA industry that is sinking into the mud. His comments on renting aircraft will not please those who see activity relentlessly stampeding out of traditional GA and into the self-regulated sector and microlights, and blaming member states for some of the complexity of EASA regulation might raise a smile in his own legal department where some of these convoluted rules are written. But Patrick Ky is not Patrick Goudou, and that's a good start. We won't get everything we want… we won't even get everything we need, but at least we won't feel like we're talking to the wall, as we have done with EASA in the past. ■

Them and us

*While at EASA to interview the Executive Director, **Pat Malone** had a chance to talk to members of his GA team*

One of the tasks that is currently engaging EASA is the reappraisal of the Basic Regulation, the 'bible' handed to them by the European Commission when EASA was first set up. Everything EASA does follows the guidelines set down in the Basic Regulation, and since the first days of EASA, IAOPA has lobbied for changes to the Basic Regulation to make it less prescriptive and better-suited to the needs of GA*. Change is unlikely for three to four years – why should it take so long? Juan Anton, the Continuing Airworthiness Manager in the Rulemaking department, said there was a lot of planning to be done to ensure the changes had the intended effect, and the work involved not only EASA but the member states. And the wide scope of the review, where nothing is ruled out, makes it time-consuming.

Unfortunately some of the things that need to be changed – such as the requirement for all Registered Facilities for flight training to be approved and audited, and to pay for safety management systems and other paperwork which has never been found necessary in the past – are being imposed ahead of the review of the Basic Regulation, so the damage will be done before the problem is addressed.

One area where progress is being made is FAR Part 23, certification requirements for new aircraft, where EASA has been actively involved in the American-led global move to reduce the cost of getting a new design into the air. Boudewijn Deuss, EASA's Initial Airworthiness Rulemaking Officer, said it was recognised that the rules needed to be relaxed in order to help GA to survive. "The initial airworthiness side needs a cultural change, with more co-operation between the authorities and stakeholders," he said. "It's easier to harmonise intentions than to harmonise designs. Ultimately it is better to define what a simple aircraft is, then for the authority to define a safety standard and leave it to the designer to meet that standard. We need to separate the role of the authority from the role of the designer. We also need a more transparent certification process, with fewer surprises for manufacturers."

Calls for more flexibility are met with aggrieved responses about how flexible they already are. EASA rulemaking people seem defensive, which is understandable given the criticism they have faced over the last five years. From GA's side of the fence, that criticism is fully justified. Rules meant for commercial air transport have been forced on GA at far too low a level, and even with the grudging ameliorations we have seen in maintenance and elsewhere, many of the rules are hopelessly over-engineered for little aeroplanes. By UK standards, EASA is hamstrung by Napoleonic systems of rulemaking which decree that everything is illegal unless it is specifically permitted, as opposed to the British system where everything is legal unless it is specifically proscribed. The difference that makes to the requirement for bureaucratic involvement is incalculable. But the bureaucracy cannot be said to be nimble on its feet. Equipment certification processes mean that those who wait for official sanction have

antiquated aircraft – technological progress is too fast for most regulatory structures. If the iPad had to be certificated for aviation use, we wouldn't be using it for five years or more. EASA recognises that times have moved on.

"We must be more flexible on the adoption of technology," says Mr Deuss. "We cannot maintain these things within the rulemaking environment. Technological issues must be dealt with as a consensus within an acceptable level of risk. The process of change must allow for better communication with stakeholders."

How exactly does EASA choose who in general aviation it will communicate with? Helena Pietila, Rulemaking Officer for Flight Crew Licensing, said when they planned a working group they asked for bids to join them, and anyone could bid. Then they made choices on the basis of expertise. She cited FCL.008 as an example, the group which debated instrument qualifications including the UK IMC rating – a rating which, she said, was not accepted because there was no support for it. But EASA's selection led to a situation where a British delegate had views on the IMC rating which were not shared by virtually anybody else in Britain, and we'd subsequently had to expend enormous time and effort trying to save the rating. What steps were taken to ensure delegates were genuinely representative of GA? None.

Manfred Reichel, Project Certification Manager for General Aviation, said EASA received mixed messages from GA. "There is nothing general about general aviation," he said. "We have a stand at Aero (Friedrichshafen). One person comes up to me and says we must have more freedom, that this is too harsh, there is too much control. Another comes to me and says we are too lax, there should be psychological testing of pilots to see they are fit to be in the air…"

Doesn't that make it all the more important to consult with genuinely representative organisations who reflect their members' opinions and work for the greatest benefit to the maximum number?

Juan Anton talks about continuing airworthiness. "On one side we had the owners, who want more freedom. On the other side we have the unions of mechanics and the manufacturers' organisations saying the owner doesn't have a clue."

This one left me shaking my head. Of course the unions of mechanics are going to say you need more maintenance, I said. My aircraft cost less than my car, is slower than my car, lighter than my car, and my aircraft doesn't drive past school bus stops at high speed, yet it costs almost ten times more to maintain than my car, because of over-regulation. And you ask the mechanics how much maintenance I need?

"The rules do not oblige you to go to a CAMO for maintenance," Mr Anton said. "If you think you are competent, you may do the work." That doesn't address the issue – I don't personally maintain my car, either.

It's clear that general aviation is a long way down the list of priorities when the people who do the work are deliberating. First they please their employer, EASA, and the European Commission… then they have 32 member states to think about, and the big gorillas of the commercial market like Airbus and the major airlines, then the middle-ranking businesses, and finally, the 'stakeholders' at the bottom of the pond. Interestingly, the views of the European Parliament were never invoked in any discussion; democracy hasn't much of a voice when there's work to be done.

I asked about instances where member states already have discretion to issue authorisations for specific local needs, where under draft Article 4(8) (e) to the Aircrew Regulation they are required to 'justify' their decision to EASA. Why should sovereign states have to justify any action to bureaucrats outside their country? "It is a principle of the EU," Manfred Reichel said.

*IAOPA has submitted specific requests to the EC's Transport Commissioner Siim Kallas on changes to the Basic Regulation. These include removing the requirement for 'a high uniform level of safety', which supposes that a C150 should be subject to much the same safety regulation as an A380, and its replacement with a risk-based approach; less 'one size fits all' rulemaking across Europe and more national flexibility; a more appropriate definition of 'commercial aviation' which spares flight training, flying clubs and aerial work from rules aimed at airlines; a better definition of 'complex aircraft' which makes a less arbitrary distinction between types; and provision for member states to grant exemptions from some regulations if urgent operational circumstances require it and safety is not affected. ■

IMC rating reprieved – for now

The IMC rating has won a stay of execution – can we now save it? ***Nick Wilcock*** *reports*

Some good news at last! At their recent 'comitology' session, where proposed draft amendments to European Union regulations are discussed and voted upon, the European Commission presented its document D029683/01, the intent of which was to 'amend Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew'. Included in the document was an eleventh hour proposal to amend Article 4 of the regulation, incorporating a new paragraph 8, the effect of which was to allow *a Member State until 8 April 2019, to 'issue an authorisation to a pilot to exercise specified limited privileges to fly aeroplanes under IFR before the pilot complies with all of the requirements necessary for the issue of an IR'*.

In other words, assuming that the document was accepted, the UK could continue to issue IR(R)s to a pilot who had never previously held IMCr privileges. Fortunately the vote went in our favour and it now remains for the European Parliament to accept it so that it can become law. This is anticipated for early 2104; given that the EC vote was unanimous, there seems little doubt that this will now happen.

So how did this come about, I hear you wondering, given the previous intransigence we'd seen from EASA?

History

When the Basic Regulation first appeared, it was immediately obvious that it was totally inadequate regarding GA pilot licensing requirements for flight under IFR. Unlike the flexibility we'd known under JAR-FCL, the glazed-eyes €urocrats dreamed of united regulations across Europe and presumably, tomorrow the world. Anything else would be *strengstens verboten*. Nevertheless, a working group, termed FCL.008, was set up to address this shortcoming; regrettably the UK representatives did not include AOPA UK and it was soon obvious that their activity was concentrated more on other matters than it was on saving the UK IMCr with its long history of flight safety. As a result, AOPA UK's relationship with the FCL.008 group became rather fraught, particularly when it became obvious that the UK IMCr was being written off in favour of the only sub-ICAO aeroplane IR under consideration, the En-Route Instrument Rating. As originally drafted, the EIR was unacceptable to us as the proposal was too vague and had, we considered, failed to address certain vital safety issues. However, some other excellent work was conducted, particularly the draft proposals for reducing the theoretical knowledge and flight training requirements for what was to become the 'Competency-based Modular IR'. AOPA UK continued to lobby both the CAA and EASA to accept a 'Class 2 IR' or 'Basic IR' modelled on the UK IMCr, but to no avail. However, we were at least able to secure the retention of IMCr privileges for those who had held them before 8 Apr 2014, as the Instrument Rating (Restricted) to be included in UK-issued Part-FCL pilot licences.

Basic LAPL

Originally, the proposals for Part-FCL aeroplane licences included the 'Basic LAPL'. This was modelled on the French *brevet de base*, a licence which allows 15 year old pilots with only 20 hrs of experience to fly passengers within a 30 km radius of the aerodrome. Perhaps unsurprisingly, the Basic LAPL was rejected by the rest of Europe; however, when the Aircrew Regulation eventually appeared, it included a new paragraph 7 amendment to Article 4, which basically allowed the French to carry on doing what suited them best. I immediately asked whether a similar amendment could ensure the survival of the UK IMCr; however, this wasn't our preferred solution as we wished instead to see the restoration of the previous flexibility of JAR-FCL 1.175(b), since that would also provide a better solution for other Member States' specific IFR issues.

NPA 2011-16

When EASA's Notice of Proposed Amendment 2011-16, concerning 'Qualifications for Flying in IMC', appeared, I co-ordinated responses for both AOPA-UK and IAOPA Europe; others responded either individually or for their own organisations. Our responses had largely been agreed both with the CAA and other UK industry groups, so that as far as possible the UK would present a harmonised response to EASA. In addition to calling for the restoration of JAR-FCL flexibility, we also proposed amendments to the EIR and for the conversion of FAA IRs to the proposed C-bM IR. EASA accepted our proposals, with the exception of that which clearly concerned our members the most, the retention of the UK IMCr. It was evident that the FCL.008 group had completely underestimated the strength of opinion over

this. When I spoke with their chairman in Köln, he seemed very surprised; it seems that his group hadn't made him aware of the very high level of UK objection to the group's lack of support for retention of the UK IMCr.

CRD 2011-16

After considerable delay, towards the end of October 2012 EASA finally released its Comment Response Document, which included analysis of all the responses made to the NPA. Predictably, there was still no acceptable solution to our call for the retention of the UK IMCr; indeed it seemed that EASA considered its vision of European harmonisation to be more important than the proven levels of safety afforded by the UK IMCr. Nevertheless, we were aware that Andrew Haines, CAA Chief Executive, had made a strong commitment to the GA community for the retention of the UK IMCr and that the CAA was holding behind-the-scenes discussions in order to find a solution; he also knew that he had our support and that mutual trust would ensure that nothing would be leaked to the public domain as negotiations continued.

Comitology Session 16-18 Oct 2013

In the late summer, we became aware of the proposed 5-year concession for the IMCr which would be presented at the comitology session. Keeping our promise to the CAA, we revealed nothing until the proposal appeared in the public domain on the EC Comitology Register. Even then, it wasn't certain that a vote would be taken during the session. However, after discussions a vote was duly taken and the proposal was accepted.

The Future

This concession isn't perfect though; personally I think that the words *'before the pilot complies with'* (all of the requirements necessary for the issue of an instrument rating) should be changed to read 'without the pilot being required to comply with...'. I also consider that sub-para a. *'the Member State shall only issue these authorisations when justified by a specific local need which cannot be met by the ratings established under this Regulation'* is completely superfluous and that the requirement of sub-para d. for the Member State to 'justify' authorisations to EASA is unreasonable. Without wishing to sound too much like Nigel Farage, any such 'justification' to an unelected foreign organisation such as EASA is, to my mind, typical of €urocracy at its worst. Nevertheless, this concession is obviously very welcome but, as Andrew Haines wrote in the CAA's Press Release: *"We will continue to make the case for the permanent preservation for the benefit of future generations of pilots."* Within the 5-year period which we expect to be agreed by the European Parliament, we intend to work with the CAA towards greater regulatory flexibility within the Basic Regulation, less red tape and less EASA micro-management of the affairs of Member States, leading eventually to amendment of the Aircrew Regulation. When dealing with €urocrats, it is my firm belief that the UK needs a Churchill rather than a Chamberlain and we hope that the CAA will take a more robust stance with EASA than perhaps was the case in earlier times.

Implementation

There are a number of issues which will need to be resolved once the European Parliament has passed the amendment into law and we will work with the CAA to ensure that these can be sorted out pragmatically and expeditiously. We will continue to keep our members updated as and when more information becomes available, but we suggest that it would be unreasonable for people to bombard the CAA with *"So does that mean....."* type questions at this stage. The Authority is pretty busy with Part-FCL as it is, so please be patient and rest assured that AOPA UK will continue its efforts on your behalf to achieve a sound, secure future for the UK IMC Rating / Instrument Rating (Restricted) under European Law. ■

Service bulletins 'not mandatory' – EC

After a long campaign by AOPA, the European Commission has agreed that Service Bulletins, Service Letters, Service Instructions and other similar documents are not mandatory and member states cannot force aircraft owners and pilots to comply with them.

The news is particularly important in Sweden, where the aviation authority had decreed that all SBs and other manufacturers' notices had to be complied with. This led to a situation where, for example, aircraft had to be flown to qualified engineers every 30 days to have the door seals lubricated, leading to a dangerous swelling of the seals. Other countries imposed similar requirements.

Dan Akerman of AOPA Sweden reports that the Commission has confirmed that the Swedish authorities have no right to do this. Bizarrely, the Swedish national aviation authority has responded by removing the mandate from its website and claiming it never mandated compliance in the first place. Dan Akerman says:

"In the Basic Regulation 216/2008, article 20 (1) (j) EASA is given the authority to issue mandatory safety information in response to a safety problem, for example, Airworthiness Directives. This also means that EASA is the only entity allowed to do this. The Swedish NAA, Transportstyrelsen, (TS) however, issued in 2011 an ordinance AIR 3-2011 which stated that all Service Bulletins etc with recurring actions had to be included in the Aircraft Maintenance Program (AMP).

Above: door seal lubrication raised safety issues

"In other words, TS effectively issued a blanket AD-note making all SBs etc mandatory. By doing this the TS breached the Basic Regulation which is EU law, and when a national authority breaches the EU law, the Commission will step in. AOPA Sweden complained to the Commission in November 2012 and in September 2013 EASA, on behalf of the Commission ,visited Transportstyrelsen to find out what was going on.

"What really happened during this visit is unknown to us, but the result is that the ordinance 3-2011 is mysteriously no longer available on the TS homepage, and TS also states to the Commission that it has never, NEVER, demanded that all SBs etc be included in the AMP.

"They are not fooling anybody of course, and the bottom line is that the European Commission now supports the view that SBs etc are only recommendations, to be implemented at the aircraft owner's discretion. This is apparently valid for all aircraft regardless of size.

"It is also in line with the fact that only Airworthiness Directives, Airworthiness Limitations and Certification Maintenance Requirements are truly mandatory under the law and that the NAA who ultimately approves the AMP must do so in accordance with EU law and EASA regulations.

"Now we must think of how we can be refunded for unnecessary maintenance carried out and hours spent on searching for SBs etc maybe decades back. The NAAs have forced us to do costly maintenance without any foundation in law. Someone should be held liable." ■

Online licensing forms

By the time you read this, if they haven't already done so the CAA will be in the process of introducing online pilot licensing forms, starting with LAPL / PPL / FRTOL applications and UK to Part-FCL licence conversions, as these constitute the vast majority of the CAA Hub's licence production workload.

We've seen the prototypes and are very impressed. To complement the online application process, initially the PPL application process will require a single page A4 'course completion' certificate, which will eliminate any need for the submission of logbooks, Q X-C authorisation forms and the like. It can either be scanned and sent as an attachment to the online application form, or sent in hard copy if the ATO doesn't have a scanner.

The online application process itself promises to be very simple and should be idiot-proof, so there should be no applications delayed or returned because either the applicant or examiner overlooked an administrative requirement.

Later on, following further IT development, the forms will be able to 'auto-populate' with data derived from CAA reference numbers and will also allow the 'course completion' certificate to be completed online, once a suitable electronic authorisation process has been identified and tested. So applications should be able to be processed quicker, cost increases shouldn't be necessary, we'll be able to hug more trees in the rain forest and the national shortage of cyan printer ink should be alleviated! – *Nick Wilcock* ■

One-year stay of execution for some EASA licence changes

The European Commission has delayed by a year the requirement for holders of third country licences to obtain EASA equivalents. The move follows concerted lobbying by International AOPA on behalf of pilots who would have lost their jobs because EASA has not created equivalents to the licences they hold.

Following a vote at an International Meeting at the European Commission on October 17 the Aircrew Regulation was changed to read:

"Extension of derogation - validation requirements for non-commercial flights.

The derogation against the requirement to hold a Part-FCL licence or a European validation of a 3rd Country licence to fly 3rd country-registered aircraft based in the EU is to expire on 8th April 2014. The amendment to the regulation will extend the derogation to 8th April 2015."

This means pilots with certain types of licence for which EASA has no equivalent may continue to work while the Agency sorts itself out. For example, an FAA ATPL with a single-pilot endorsement for a Citation is able to do aerial work such as flying the owner, or ferrying aircraft. The existing rules say only that if the holder has 1500 hours of multi-crew experience, he or she can convert that to a European CPL/IR with single pilot privileges. So pilots with thousands of hours total time but relatively little multi-crew experience would have been put out of work. Pilots employed by companies with privately-operated corporate aircraft do not now require a Part-FCL validation until 8th April 2015, during which time it is hoped that the bilateral agreement on licensing currently being worked on will resolve the anomalies. ■

ETS exemption for private aircraft

The European Commission has listened to representations from AOPA and other aviation bodies and is introducing an exemption for small non-commercial operators of aircraft over 5.7 tonnes from emissions payments. IAOPA has been able to quantify and document the fact that the cost of administration and external audits will by far exceed the actual CO_2 payment for many small private operators. Yet in the existing regulation only small commercial operators were exempt.

Jacob Pedersen of AOPA Denmark reports that this has now been resolved with an exemption for non-commercial operators emitting less than 1,000 tons, and simplified procedures for those emitting less than 25,000 tons. The Commission now says that: "no enforcement shall be taken against non-commercial aircraft operators in respect of emissions from small aircraft operators emitting less than 1000 tonnes CO2 per annum. This is expected to reduce the number of aircraft operators regulated by member states by around 2,200 representing 0.2% of emissions. Alongside other measures being taken to simplify administration for small aircraft operators, this is a significant lightening of administrative tasks for aircraft operators and for member states' competent authorities, in line with the EU's better regulation agenda.

"As of 2013 small emitters emitting less than 25,000t – whether commercial or non-commercial – can use simplified procedures." This involves estimating rather than auditing emissions.

The concession is particularly important because under ETS legislation, only those with an AOC were able to engage in emissions trading. ■

Your office in London

If you haven't visited the AOPA offices in Victoria, London recently (or ever, for that matter) you won't have seen the new facilities we're got for you here. The basement has been refurbished as a meeting room-cum drop-in centre, and there's free wi-fi and free coffee… some members use the office as their London base, and you're welcome to come in any time we're open.

It's worth calling ahead to make sure we're not using the room for meetings – groups like the Executive Committee and the Instructors Committee now use the offices for their meetings, which saves us money on the rooms we used to pay for elsewhere. But most of the time, the basement is free. It can accommodate 25 people for seminars, 16 for meetings.

A big attraction in the basement is the flight simulator, complete with vibrating chairs, surround sound, 42-inch screen and full controls, situated in our newly refurbished basement, and it's available to hire from as little as £20 per half an hour. We've also got a growing library of aviation books, some of which are quite rare.

In conjunction with AFE, AOPA now runs the Pilot Store in London, where you can buy all the equipment you need – or whatever you need for Christmas to spoil the pilot in your life. The Pilot Store in London, on the ground floor of our offices at 50a Cambridge Street, (on the corner of Warwick Way, about five minutes walk from Victoria Station) prides itself on covering all the bases for GA pilots at London's only aviation retail outlet. The manager, Anton Claasen, says: "From PPL starter kits and training equipment for the aspiring pilot to navigation equipment, training literature, ATPL syllabuses, iPad accessories and much more. All pilots are welcome, but AOPA members are eligible for a 5% discount on everything, so don't forget to bring your membership card.

"For something completely different, why not commission a one of a kind oil painting of your own aircraft, or one that holds a special place in your memory? The Pilot Store has teamed up with award winning artist Alla Tkachuk to produce a series of original aircraft paintings which are for sale in our store,

and Alla can also be commissioned by aircraft owners and enthusiasts to paint something special for them."

So when you're next in London, visit you own office and help yourself to a coffee. We look forward to seeing you .

*The Pilot Store will be opening until 8pm every Wednesday until 18 December. The offices and shop will close for the Christmas period from December 21 and will open on Monday January 6. ■

Help AOPA by completing our survey

On behalf of international AOPA, AOPA Germany is hosting an online survey open to all pilots and aircraft operators to collect information about general aviation and establish definitively the nature of the problems faced by aircraft operators and pilots, while providing data on what GA is used for and with what frequency, and where the economic strengths of GA lie.

This information is especially important today because national and European aviation authorities, for reasons of data protection and lack of money, compile very few reliable statistics. Even the most basic information, such as the number of flight hours per year and class of aircraft, is not available for recent years.

Only when we have current and accurate information on GA can we, as an aviation association, effectively represent the interests of GA and, in particular, AOPA members.

Therefore, we would be very pleased if you can further support our work by competing the online questionnaire. We specifically assure you of absolute anonymity and strict compliance with data protection regulations.

We have prepared two separate surveys for pilots and aircraft operators. It will take only about 5 minutes to answer the questions. For aircraft operators with more than one aircraft we ask that you please complete the questionnaire for as many of your aircraft as possible.

Please also enter your name and email address if you wish to participate in any industry-monitoring in the future.

We will summarise and publish the results of this survey in a study. For the survey of pilots, click on
https://www.surveymonkey.com/s/V85WXM5
For the aircraft operators' survey it's
https://www.surveymonkey.com/s/5FM3SL9

CAP 804

Following some review work Nick Wilcock has been doing with the CAA's Barry Mooney, CAP 804 is now available in a 'searchable' format for downloading from the CAA website at http://www.caa.co.uk/application.aspx?catid=33&pagetype=65&appid=11&mode=detail&id=5000 (or if you break a finger inputting this, go via the link on www.aopa.co.uk)

This makes it much easier to hunt through the document for information, and it's hoped that in the coming months, this will form part of a bigger document portfolio linking all regulatory documents.

Penitent stool

Did you spot the error? In October's *General Aviation*, we wrote *'Without any evidence of a training needs analysis, EASA has decreed that 100 hours of theoretical knowledge training must be completed for LAPL and PPL courses.'* This was an error; whereas the exams for both the LAPL and PPL are the same, for the LAPL there is no mandatory theoretical knowledge requirement but for the PPL 100 hours is required. The logic of which is only clear to EASA's €urocrats.

Airborne conflict

*By **Martin Robinson***

Mostly, pilots get things right when flying most of the time, and while I don't wish to appear to be preaching to the converted, I need to remind members about some of the concerns currently vexing the CAA.

Back when I was learning to fly I remember my instructor telling me that the risk of collision with another aircraft was greater when flying within 1nm of an aerodrome than at any other point in the flight. The purpose of this comment was obviously to instill in me the need to be looking for other traffic, even more than normal, when close to an aerodrome.

The CAA is doing some work on GA-on-GA collision risks when flying near aerodromes. A lot of work has been done by the BGA on improving the visual conspicuity of gliders and light aircraft that are mainly built of composites. Every year the UK Airprox Board (UKAB) produces statistics that reveal how many aircraft got a little too close to each other, and while the vast majority were not serious airproxes, the figure seems to suggest that, on average, about 13% of GA-on-GA reported airproxes were avoided due to the intervention of a higher authority! "There, but for the grace of God…"

The other vexing issue for both the CAA and industry is the continuing high level of airspace infringements. A huge amount of work has been done on infringements, yet the overall levels remain high and 2013 looks like being the second-worst year on record (2009 being the worst).

So what can be done? More transponder mandatory zones? More controlled airspace – controlled VFR? In truth, we can all make sure we do things the right way. Proper self-briefings – do you understand the arrival and departure proceedings for the aerodromes you are operating to and from? Do you fully understand the airspace you intend to operate through, or close to? Notams provide you with the intelligence you need. This is about knowledge of your intended operating environment and how you may be interacting with other airspace users – and caring enough about your own airmanship to get it right!

When airborne, you need to maintain a good mental picture of what is going on around you – different aircraft will have different capabilities. However, use whatever you have to make your flight as safe as possible. If you have a radio, USE IT! That doesn't mean you have to talk at every opportunity, but maintaining a listening watch adds to your mental picture. If you have a transponder, USE IT, and turn it to ALT – the transponder really adds to the safety net. If you do not know how to use the transponder, seek assistance from an instructor.

If you become uncertain of your position when you are flying TALK TO SOMEONE. If you do not know which is the right ground station to speak to, talk to 121.5, MAKE A PAN CALL – DO NOT JUST BLUNDER ON. Take positive action to maintain the safety of your flight. REMEMBER, you are not the only one flying! If you haven't done a pan call, then practice on your next refresher training flight with an instructor.

Are you familiar with ATSOCAS? Do you know which service you need? If not, again get a briefing or fly with an instructor. The ASI website also has a lot of useful information. Getting the right ATSOCAS service is particularly important when operating in VMC.

Flying is enjoyable, particularly when it all goes to plan. The key word is 'PLAN' and the old cliché, 'FAILING TO PLAN' is to 'PLAN TO FAIL' is very true when it comes to flying.

So if you feel that you may be getting a little rusty, do some training – I guarantee you will see the benefits. But, most of all, enjoy safe flying! ■

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The beginning and the end

Peter R March

The first and last Concorde pilots meet on a doleful anniversary to compare notes. ***Pat Malone*** *listens in*

Ten years ago on November 26th British Airways Concorde G-BOAF landed at Filton, drawing to a close the first era of supersonic air transport. The captain on that day was Les Brodie, BA's Concorde training manager, who is sadly likely to hold the title of 'the last Concorde pilot' for all time, despite the sterling efforts of some – including Les himself, who tried along with the then BA CEO Rod Eddington to keep at least one Concorde airworthy.

The last landing came 34 years 8 months after the first take-off, at Toulouse on March 2, 1969, when the hand on the fabled Y-shaped yoke was that of André Turcat, chief Concorde test pilot of Sud Aviation. The first Concorde pilot and the last met at André Turcat's home in the south of France as the tenth anniversary of Concorde's demise approached to discuss the past, the present and the future of aviation. With them was Edgard Chillaud, former Chief Concorde Pilot of Air France.

The conversation covered not only the rise and fall of Concorde and the milestones in its history but great aircraft and test flights of the past, developments in pilot training, welcome and otherwise – and the certainty of supersonic transport in future.

André Turcat, still hale and hearty at 92, has flown very little for almost 30 years, although in his eighties he took the left seat in the Airbus A380 – an experience which seems to have made him yearn more than ever for Concorde. "Good aircraft, no emotion," he said of the big double-decker. Les Brodie, who retired from British Airways in 2004, flies a Citation out of Hawarden and owns a share in a Tiger Moth at White Waltham. Edgard Chillaud no longer flies. Asked why not, he says: " If you have been with Raquel Welch, when it's finished, it is finished."

André Turcat is much more than just the Concorde test pilot – if such a thing can

Top: Les Brodie eases Concorde down for her last landing, at Filton on November 26, 2003
Left: Edgard Chillaud, André Turcat and Les Brodie with one of André's Concorde models in his garden near Aix en Provence
Above: the Concorde accident – 'After the metal hit the tyre, there was no saving the aircraft'
Below: Les Brodie with his Tiger Moth

Far left: Concorde test pilot André Turcat, now 92, on the patio of his home in Provence
Left: André prepares to fly Concorde for the first time, March 2, 1969
Below: F-WTSS gets airborne from Toulouse at last, André at the controls
Bottom: Brian Trubshaw flies the British Concorde from Filton in April 1969

Peter R Marrch

properly be said. A professor of history of art and a renowned theologian, he lives in a beautiful secluded home with a wall of glass looking out over the imposing hills of Provence. A graduate of the École Polytechnique, the French primer for future greatness, he flew with the Free French air force from 1943 and served as a C-47 pilot during the Indochina War before being sent to EPNER, the French test pilots' school. Notable test work included taking the ramjet Griffon to Mach 2.19 in 1958 (see sidebar).

The last Concorde pilot, Les Brodie, switched from his first career as a Trainee Technician Apprentice with what was to become British Telecom when he was selected for the BEA/BOAC cadet training course at the College of Air Training Hamble in 1972. Reminiscing about March 2, 1969 Les remembered as a 19 year old driving his 1962 Austin Mini Seven to work listening on a transistor radio to Raymond Baxter's commentary about André's first Concorde take off, never dreaming that one day he too would fly Concorde. After graduating, Les flew Hawker Siddeley Tridents for BEA, but ten years on during the recession of the early 1980s Les joined two hundred other pilots and engineers to become cabin crew on B747s for a short time before returning to fly BA B737s out of Gatwick. In 1988, to his great surprise, he found himself in a fortunate position on the seniority list which enabled him to join Concorde Conversion Course No. 13, eventually becoming the fleet Training Co-pilot. In 1997 he left to get his command on the B777, before being appointed Training Manager on Concorde.

The contrast between the pioneering optimism of André's maiden take-off and the despondency of Les's final landing is clear. The step-change on the journey came, of course, on July 25, 2000, when Air France flight 4590 crashed at Gonesse, on the outskirts of Paris. Wherever the conversation wandered it came back to that event, after which everything changed.

Whatever has been said about the accident, the three pilots agreed that the crew did everything humanly possible to avert it. Les said: "I've re-enacted the crash in the simulator so many times with the BEA (French accident investigators) and the AAIB, and nobody could have done any better than they did. They faced an impossible situation. They dealt with what they knew, and did so very well, but fire was quickly destroying the aircraft. It took two minutes and forty seconds from the tyre bursting to the crash. The first minute was okay, but eventually the fire took out the hydraulics, the ailerons went to neutral and they were helpless."

What would he have done? "If I was that pilot, in the last two minutes of the flight I would have been thinking, 'I hope they find out what happened, put it right and keep flying'."

Edgard: "The crash was like a cold shower to us. Waking up in a cold shower. You ask yourself, how would you face something you've never been trained for, what would you do…? I was not happy with these insinuations about the crew. We were all very close, we knew each other's wives and families…"

André: "The tyre was always the *talon d'Achille* of Concorde. The airworthiness authorities concluded that Concorde was responsible because of the weakness of the wing, but it was not right. It was not necessary to put the Kevlar lining in the fuel tanks once the Michelin tyre had been adopted, because the problem had been fixed."

(The Michelin, made of a new compound using Kevlar that deformed only slightly on depressurisation and resisted disintegration, replaced the Dunlop tyre which had shattered on 57 occasions prior to Gonesse, where it was slashed by a sliver of metal lying on the tarmac.)

Les: "As soon as the metal hit the tyre, there was no saving the aircraft. Some people have put the blame on a missing spacer in the undercarriage, but all the tests carried out on one of the longest runways in France at Istres showed that if anything, it would have caused the aircraft to run to the right, not to the left as it did."

Les and Edgard were closely involved in the return of Concorde to service, while André was asked for his advice but had no direct involvement. "The work was being done by retired men, the people who had made the aircraft," André said. "They were the people who really knew about the construction. Every Concorde had been

made differently, so the Kevlar linings had to be made differently for each aircraft."

Edgard: "We went literally back to the drawing board. Concorde was designed in the pre-computer era, and we worked off these massive blueprints pinned up on boards."

Co-operation

One thing that changed fundamentally after the accident was the level of co-operation between the two Concorde operators. For small teams operating a unique aircraft, they were surprisingly distant from each other. Engineers had an *ad hoc* arrangement to pool parts, and there was an official disaster recovery scheme for the simulator in which they'd have recourse to the other's sim, but that was about it. They were competitors before they were friends.

In New York the BA crews stayed at the Warwick Hotel on West 54th St, while Air France stayed a few blocks away at the Mayflower on Central Park West, but rarely did they mingle. Eventually the British moved to a company-owned condominium on the East Side, but for the French the Mayflower was a home from home – they hot-bunked, always in the same rooms, coming and going at odd hours, leaving clothes and belongings behind so they only had to travel with a small valise.

Edgard describes how he got to know some of his British opposite numbers. "I was flying from Paris to New York when we had an HF failure. We knew the BA Concorde was a few miles ahead and asked them on the VHF for a relay to Gander. They were happy to oblige. I asked the captain's name, and it was Mussett. Then their co-pilot came back and said, Edgard… is that you? It was Richard Pike, whom I had met at Airbus. He suggested we go for a drink that evening in New York and gave me the address of a bar called Hurleys on West 48th St. So the whole crew went over there, and we met two or three times after that. We did form some strong friendships, and I went to Geoff Mussett's wedding.

"The British crews had a training arrangement at Stewart Airfield at Newburgh, just north of New York on the Hudson and I thought we could make use of it too, as we had the aircraft sitting in New York for eight hours. The BA guys offered to take me up there – they had a car in New York. They introduced me to the airfield manager, and we also used

Who rolled Concorde?

Les Brodie asked André Turcat whether he had ever harboured private fears during the development of Concorde that the project would come to nothing.

"When you were doing this extensive test programme in unknown technological territory, with everything so different and so special, were you always confident that you would end up with an airliner at the end of it?" he asked. "And when you flew it for the first time, did you ever wonder whether the public would accept this super-heated missile as a form of transport?"

"Yes, I always felt we would succeed," André said. "If the public accepts to fly at high altitude in a Boeing 707, why will it not accept in Concorde?" The technological problems, he added, were there to be solved.

Having flown nothing bigger than a Caravelle, André had no experience of heavy aircraft. "I wanted to know more about aircraft heavier than 50 tonnes, so I asked Air France to be trained on the 707," he said. "The guy who was training me, he failed an engine on take-off and that was not very tough. So then he failed two engines on take-off, and that was a little harder. And I said to him, I'm pleased we've done that and it was okay. And he said, so now we try a take-off, and we leave you with one engine! But the 707 would continue take off on one engine. And so I got my 707 type rating."

Was the early Concorde simulator any good? "Very good," said André. "In fact, we said that what we did for the first time on March 2 1969 was to fly the simulator for the first time. It was routine apart from the landing, which is difficult to replicate in the simulator."

While Concorde was the embodiment of the *entente cordiale*, relations were not always super-friendly. Throughout the development of Concorde, said André, BAC test pilot Brian Trubshaw never spoke a single word in French. "Language was always a problem," he went on. "When we had official meetings we always had an interpreter. I was speaking one day to a senior technical man at BAC and I could tell he was lying, so I said, 'you're lying!' The translator asked, do you want me to translate that? 'Yes!' And that would have been scandalous to a Frenchman, but this man didn't react, because he knew he was lying and so did I."

How close was the liaison between his

Right: André Turcat lands Concorde for the first time – the landing phase was difficult to prepare for in the simulator

team and Brian Trubshaw's in Bristol?

"There was some duplication, but mostly, there was good liaison and we shared the tasks," André said. "We did 5,000 hours of testing, more than that – there was five years of testing between the first flight and the airworthiness certificate in October 1975. That was too long, because of bad organisation between the two companies. The treaty had been signed in 1962 by diplomats who didn't think of practicalities. There were two heads for everything. We should have flown two years before we did.

"At the time, I agreed to be joint director of the test flight, but this was an illusion. We had aircraft in two places, two teams – after six months I said to them, don't be under any illusion that I can be joint director.

"Fortunately we had a good understanding, we shared tasks, we worked together. It had been agreed that we would do the first flight, we would do the first Mach 1 flight, and the first Mach 2 flight was to be British. But at Mach 1.6 Brian found a problem with the exhaust nozzle. He thought it was a transient thing and tried again, but it was something that had to be fixed. He called me and said, we have to make a modification in the design, we need a week or ten days.

"So I said, I am ready to stop testing. It was difficult with my Chairman to stop the programme, but I stopped for a week. Then Brian called me and said, I'm not sure it will be fixed in a week or ten days, so go ahead and good luck. So we were first past Mach 2, and I spent 53 minutes at Mach 2 as a demonstration to the world that we had made a good choice."

Les asked: "Is it true that the prototype flight deck became very hot in supercruise? We were fairly comfortable in the production aircraft apart from towards the end of the Barbados run that took half an hour longer than going to New York, but what was it like for you?"

André: "Yes, the air conditioning wasn't up to it and it got very hot and smelt of oil."

Les: "Did you turn the reheat off at Mach 1.7 as we did on line operations?"

André: "Yes, that was in the design of the operation. On climbout with reheat in operation we made a lot of smoke and the solution was a fuel additive. It worked well at Toulouse, but when I took it to the Paris Air Show for the first time I could not light two of the afterburners, so I had to demonstrate without them, and we reached Mach 1.3. The additive was at fault, so we got rid of it."

Les: "The reheats were tested to Mach 2. One captain – I won't name him – was making his announcement, saying, ladies and gentlemen, here we are at 50,000 feet, the aircraft is performing particularly well, in fact we're still accelerating to… oops!"

André: "The afterburners were designed to operate at Mach 2."

Les: "I heard a rumour that you once rolled a Concorde. Is this true?"

André: "I did not roll a Concorde. It can be done. I was going to try it on the last flight before I took it to Le Bourget for the show, but they put many people on the aircraft, engineers and people who had worked on Concorde but not flown in her, and I thought it better not to roll when it was full of people."

Les: "I've done it in the simulator. It's tricky to get right."

André: "I know a pilot who has done it. A barrel roll, with positive G all the way. I won't say who it was."

Stewart for Concorde training while in New York."

Les: "There was never any serious official attempt at integration until the accident, after which we got much closer. After the return to service, we met every month for safety discussions, and we shared information openly on an official basis. Together we solved a lot of mutual problems, after the crash… it should have been that way before."

A fundamental difference lay in the way the two airlines deployed their Concorde crews. Les Brodie: "It was BA policy that as a Captain or flight engineer you were on Concorde for life, but Air France rotated their people more. And BA retired you at 55, while at Air France it was 60. You had to have seven years left to make it worth training you, so BA Concorde pilots tended to start younger. It was a six-month training course that cost about a quarter of a million pounds, so the airline had to get their money's worth. Some people didn't want to go onto Concorde even when their turn came up – they thought it was a lot to

Left: Les Brodie demonstrates a point for fellow Concorde pilots Chillaud and Turcat

take on, at a late stage in their careers. And of course, some didn't pass the course."

On both sides, they were a tiny, elite group. At Air France there were 12 crews – captain, co-pilot and engineer – and about 80 or 90 cabin crew. BA had 20 captains, 20 engineers and 18 co-pilots.

Les: "Concorde crews were very popular with the passengers, people wanted to meet them, buy them drinks, and take them out for dinner…"

Edgard: "It gave you a warm feeling to be part of the Concorde family. For the French people, they didn't think it was an aircraft for a special elite, they thought it was an aircraft for all of France. That sentence, an aircraft for rich people, is not in the French vocabulary. Working people would come with their families on a Sunday to watch it take off. They hadn't worked on it, none of them flew on it, but they had a personal pride in it, as Frenchmen."

Les: "It was similar in the UK. There were a few complainers, but most Britons cherished the aircraft. I called it the Princess Diana of the skies – it was all part of what it meant to be British, it was something that was prominent all over the world that was loved and envied

Left: Concorde crews were stars, attracting the attention of the public in the same way as their aircraft did

Permanent fuel shortage

It was some time before the Concorde teams could build a fruitful working relationship with air traffic control, especially on the French side. Getting an expeditious taxi route to the runway for take off was vital. Les said: "Just taxiing, Concorde used 100 kilos of fuel a minute. When you've had to take on 1,400 kilos of fuel just to give yourself 14 minutes of taxi time, you can't afford to get stuck in a queue. When we asked to taxi past waiting aircraft it wasn't because we were arrogant or thought we were superior, it was because we were facing a critical fuel situation. At Heathrow, ATC understood that, as did most other pilots, but there was an element of tribalism and some were less happy with it than others. At Kennedy they were less accommodating and we had to join the queue, but some pilots would request that we went ahead of them solely so they could watch our departure. At busy times we had to put in 3,000 kilos just for taxiing."

Concorde generally used three Transatlantic tracks, Sierra Mike for westbound flights, Sierra November eastbound and Sierra Oscar as a spare that could be used in either direction but was somewhat longer. Departure times were almost identical, so if the French Concorde was delayed by ten minutes it would conflict with the British aircraft on the airway. Because fuel was always an issue, both aircraft needed the most efficient route – Sierra Mike – and it was important that air traffic controllers understood the situation.

Edgard was a UTA captain for 25 years before it was absorbed into Air France – he'd started out flying DC-4s in Tahiti. "In my first 35 years as an airline pilot I never met an air traffic controller," he said. "One day in London my British friends took me to an ATC centre and I discovered they were well aware of the conflict issue. I wondered whether our own ATC people knew of the problem too and started trying to find out.

"One day I was taking off to the east from de Gaulle and I wanted a very quick turn to the west, but the controller wouldn't give it to me. Eventually I said, 'we are not going to Moscow, you know'… and everybody laughed, but the controller was upset, so I asked her to call the Concorde desk at Air France. Two days later when I got back, I called her in to apologise, and arranged for her a simulator session to show her why we were always so very tense about minutes, even seconds saved in flight. And when she saw the fuel flow, it opened her eyes.

"They don't teach you that in air traffic control school. We invited other controllers to come to the simulator and gave them a real understanding of the fuel issues that Concorde faced. Others, we took on the flights around the Bay of Biscay. And as a result, things improved dramatically."

Les: "We would put the controllers in the simulator and among other things show them what happened when they put us into a holding pattern. As you turn at low speed, there's a dramatic increase in vortex drag and the fuel flow goes through the roof, and going once around the pattern can have a bad effect on your fuel situation. So they understood that it was much better to delay us by using vectors at higher speed."

Memories – André Turcat and Les Brodie pore over a poster of Concorde's flight deck

everywhere, that nobody else could match."

Ultimately, the sonic boom was one of the nails in Concorde's coffin, but according to the pilots the problem was amplified by politics. André Turcat says: "We had a B58 pilot, Colonel Parker, who was flying at Mach 2 across the United States. I asked him if this had been a problem. He said, 'we have frequently flown over Chicago and nobody has said anything, and now we are educating Detroit.'

"I flew over France from north to south at Mach 2 and 60,000 feet in Concorde with no protest. In the cities you don't hear it over the everyday noise. In the country you can hear it – we had observers placed everywhere and witnesses in different places to look at the reactions of the people. Nothing. And in supercruise, the noise is less than in the transonic zone.

"There were protests at the take-off noise of Concorde but the new generation of engines will be quieter. For noise abatement we would start a turn with 30 degrees of bank at 100 feet, but the airworthiness authorities said it was impossible. So we demonstrated to David P Davis of the CAA that it was easy and safe. He agreed that it was, but was worried because that morning he had

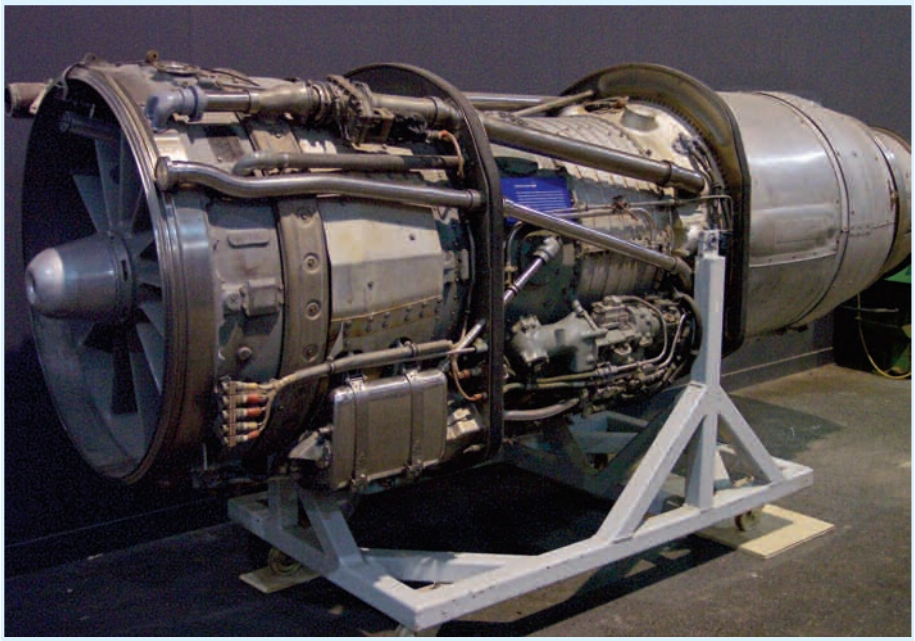
Below: Concorde flies over the Clifton Suspension Bridge en route to her last touchdown

Peter R March

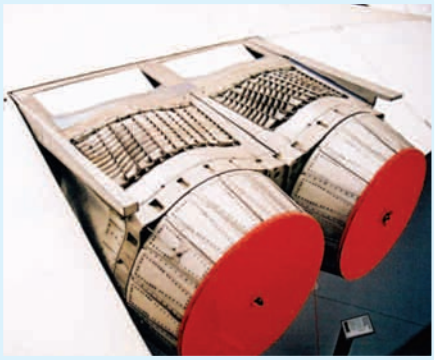
Olympus power

Concorde succeeded where the rest failed because of the engines. Edgard says: "I had Serge Dassault on one trip and I went back into the cabin to welcome him on board. I asked him why we didn't have a supersonic Falcon, and he smiled. 'I have people working on it,' he said. I said to him, I am retiring within one year, and would be pleased to join your group for free. But he said, 'We're going to stop it, because we haven't got the engine.'

Les Brodie adds: "When you look at the Russians and the Americans, it was the engine that they couldn't make work. We were lucky in having the Bristol Olympus with variable geometry intakes and exhaust, a truly extraordinary piece of technical genius where we got 50% of the thrust from the engine, 25% from the intake ramps and 25% from the exhausts. The Russians could reach Mach 2 only in permanent reheat, which made the aircraft unusable for all practical purposes."



Above: the Bristol Olympus engine was one of the keys to Concorde's success
Below: 25% of the thrust came from the engine's variable geometry intake ramps
Below right: exhaust nozzles (these are early models) added another 25%



While a future supersonic transport is bound to come, it's not clear how it will be powered. André says: "I don't think I can see a Mach 3 airliner yet. What we are doing now is the technological awakening – we're in a standby mode, learning what we need to know to do it. There are people working on the theory, and the wind tunnel tests, but as with Concorde, the engine is the key.

"There are studies of mixed turbojets and ramjets, hybrid rockets and ramjets, there are studies to explain it but it's a long way to go before it is put in an aircraft. When the economic problems we have are overcome and the money is available, it will be important to be able to do this.

"The centre of gravity of air transport has moved away from Europe to the Pacific, so for us the way is longer, and we need to be ready to respond with supersonic transport when the time comes."

signed a note saying we don't want any changes of configuration below 400 feet. So he was in a bad position."

Les Brodie: "We always explained to the passengers before take-off the series of noise reduction manoeuvres and power changes we would make. In the end we commenced the turn to fly over New York's Jamaica Bay at positive rate of climb and 15 feet. Then the auditors didn't like it, so we settled at 50 feet."

Concorde is grounded, some are neglected; Filton is closed, the Mayflower Hotel was demolished, Hurleys has been knocked down, and the men and women who made supersonic air travel a reality are not getting any younger by the day. But those who flew Concorde are convinced a new generation will take up the challenge. "Progress doesn't stop," says Les. And André Turcat adds: "People say to me, it was a dream. But I say, the dream is still there, it's still a dream…"

One day it will be real again.

When the pans boil over…

By modern standards, Concorde was a real handful for its crew. Edgard Chillaud had been a captain on the 747-400 and had been seconded to Airbus for four years, and when he returned to Air France he had no idea what was in store.

"I was 53 years old," he says. "I went into the office, and the lady looked at the books. 'Chillaud, Chillaud…' she said. 'Ah yes, you're number one for Concorde.' That was a good shock to have.

"But after the first training session in the simulator my co-pilot and I were feeling very uneasy. We didn't expect to face such difficulties at this stage in our careers. We went to our instructor, a charming man. The job is very different, we said… will we succeed?

'What did you have for breakfast?' he asked.

We told him. 'With hot milk?' he asked. Yes.

'You know how you boil the milk in the pan, and if you don't pay attention it boils over and makes a big mess everywhere?'

Yes, we said.

'Well, that's Concorde. You're the cook, you have forty pans of milk on the boil, and if you let one of them boil over you're in trouble – and you have to watch them for three hours and thirty minutes. So you see it's not such a big challenge'."

In the earliest days, British Airways observed the pilots' seniority structure when it came to Concorde, only to find that the new tricks were beyond many of the old dogs who had started out on propeller aircraft and had reached a point in their lives at which a whole new way of flying was almost beyond them. Concorde therefore became the province of younger men (and a woman). One pilot, Colin Morris, was only 36 when he qualified as a Concorde Captain.

Nonetheless, all three Concorde pilots concurred that seniority rather than apparent merit was the best and fairest way of advancing the careers of pilots. Edgard said: "Standards are uniformly high. In no other profession must you prove your ability every six months. If everyone meets or exceeds the required standard, then selection by seniority is the fairest way."

The pilots caution that basic flying skills seem to be atrophying as reliance on technology is taken to extremes. The multi-crew pilot's licence isn't quite enough. Les Brodie says: "There's a difference between operating an aircraft and controlling it. I used to say when I moved up to the Boeing 777 that you didn't have to fly the plane, it did the flying and you just managed the operation and the systems. But the time will come when all of a sudden you need the basic skills – you have to forget what the systems 'seem' to be telling you and instead keep a basic situational awareness and fly the aircraft.

"In the days of Concorde, if you ran into a problem the first thing you'd do is take the autopilot out. Today, if a problem arises the first thing you do is put the autopilot in. But when the equipment fails, you're going to have to take over, and that's always been the way.

"EASA is on the case on this – it fully recognises the problem and is making plans to deal with it."

Left: Edgard, André and Les on the tenth anniversary of Concorde's grounding

Mach 2 in the 1950s

Les Brodie was keen to know about André Turcat's test flying experience on the Nord 1500 Griffon, the extraordinary ramjet-powered delta that achieved Mach 2 in the 1950s. What was it like to fly?

Like the Concorde, sensitive in roll, said André. "I flew once with the BOAC chief pilot Jimmy Andrew," he said. "He was overcontrolling all the time. I said, 'hands off! And eventually he could fly it, but he could not land it. He was a gentleman – he said, 'André, you have a very fine aircraft, but I've been flying 707s for fifteen years and I can't change my ways.'"

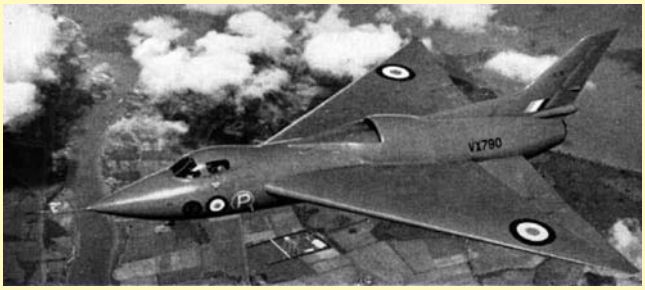
There was no simulator for the Griffon, but André had gained experience on a delta-winged glider with a descent rate of eight metres per second before taking the Griffon for its maiden flight in 1955. The first prototype had only its turbojet engine but reached Mach 1.7. The Griffon 2, with both turbojet and ramjet, flew in 1957 and André eventually reached a top speed of Mach 2.19 in 1958.

Previously, André said, he had gained some experience of delta-winged aircraft in England, flying the Avro 707, the tailless delta test-bed for the Vulcan on which André was checked out by Roly Falk. The Nord was more sensitive. "We started by making some jumps, and I thought the control surfaces were inadequate," André said. "But then I saw that the movements were my fault, not the aircraft, so I had to learn *not* to fly it."

The pioneering aircraft encountered many technical problems, including airframe heating and instability of the ramjet. André said: "I was unable to fly it above 60,000 feet because things like the ejector seat and the cockpit glass were not certified above that height. It was still climbing and accelerating at 0.2g, but I had to roll it over at 60,000 feet and come back down. We should have found a way to throttle the ramjet, but we did not."

Les commented that Concorde obtained ramjet-style propulsion from the intake ramps. André replied: "The Griffon had no moving parts in the intake. The turbojet and the ramjet were inside, and the ramjet wanted more air while the turbojet wanted less.

"We had a project for a Mach 3 twin but it came to nothing. At that time Dassault was the only company allowed to make supersonic fighters, which was a pity. But Mach 2 was too slow for the ramjet. We could have reached Mach 3 before the Lockheed SR71, but it was not to be."



Right: André had gained some experience of delta-winged aircraft in England, flying the Avro 707 Below: Edgard holds a model of the Nord 1500 Griffon in which André reached Mach 2 in 1958

Pilots' perils

Edgard Chillaud explained one of the unusual perils of being a Concorde pilot. "We had a well-known French actress on board and she was afraid of flying so I invited her into the cockpit to see the take-off and explain everything to her.

"I sat her down behind me and as we rotated she moved forward and gripped my arm so tightly through my uniform it was painful. I couldn't reach the undercarriage lever, so I nodded to my co-pilot to take the wheels up. And when I got home I had to explain to my wife how I got fingernail marks in my arm…"

The e-Go has landed...

... not to mention taken off. ***Mick Elborn*** *sees the first flights of a revolutionary unregulated aircraft*

e-Go takes off for its first extended flight with Keith Dennison aboard.
(Photo DP Photographics, Cambridge)
Below: elevators are on the canards, ailerons on the rear wings
Below right: pushing both pedals causes the rudders to open outwards, acting as an air-brake

e-Go, an aircraft designed and built in Britain, took flight for the first time at Tibenham on October 17 in a series of short hops, signalling that the serious job of flight testing had begun and theory was being put into practice.

e-Go represents true out-of-the-box thinking triggered by what might seem an innocuous entry in the Air Navigation Order (ANO) back in 2007, creating the Single Seat De-Regulated (SSDR) microlight class in the UK. At this time, to be an SSDR, the aircraft has to be designed to carry one person only with a maximum empty weight of 115 kg, a maximum wing loading without pilot and fuel of 10 kg per square metre, a stall speed of less than 35 kts and be flown day VFR privately. As an SDDR it then falls outside the need for any certification in the UK.

Soon after the ANO amendment, the LAA announced a competition for SSDR designs with entry classes for "cheap and easy-to-build" and "state-of-the-art". A small team, including Giotto Castelli and Tony Bishop, who became co-founders of e-Go aeroplanes, responded to the challenge by submitting a state-of-the-art winning entry. This was the e-Go, based on a concept long held by Giotto. As you can see from the photographs, it is an eye catching radical canard design. With a cruising speed of over 100kts and a range of about 300nm, the e-Go promises to be, in the words of Tony Bishop "a thrilling

personal aircraft".

After winning, there was immediate interest for the e-Go and so the serious business of building, flying and supplying it to others began. After several years of design, development and experimentation with various manufacturing processes, helped by a growing band of volunteers, a small company, e-Go Aeroplanes, was started in 2011 at Main Hall Farm near Cambridge. This attracted a small number of private investors to finance e-Go to prototype flight status. The material choice, substantially of composites, and construction techniques have much in common with F1 racing cars.

As you walk round the fully built aircraft you note that the pilot has a superb panoramic view from the reclined fixed seat, which is an integral part of the airframe. Rudder pedals adjust to suit pilot leg length and different seat cushion thickness allows for different pilot heights. Elevators are on the canard wings and ailerons are on the rear wings. There is a rudder on each of the rear fins but these only operate in one direction, outboard from the wing; the left rudder pedal only operates the left rudder and vice versa.

There are no flaps but operating both rudder pedals causes both rudders to open outwards, acting as an air-brake.

The wings and canards are demountable and the complete aircraft can be transported and stored in a purpose built e-Go trailer.

The thrust is provided by a fixed pitch Helix composite propeller driven through 2.5:1 reduction gearing and coupled to the British-designed and built Wankel engine by Rotron. e-Go aeroplanes are the only company for manned flight being supplied by Rotron. It features ECU controlled ignition and fuel injection with compensation for altitude. The miniscule engine produces an output power of 22 kW (30 hp) from a bare unit weighing 17 kg (37 lbs.) at 7,500 RPM continuous. It is expected that fuel consumption will be better than 60 mpg at 100 kts (7 l/hr).

The centrepiece of the flight deck is the MGL iEFIS® multi-function display. This links to the e-Go data acquisition system and Rotron e-Go ECU via a system wide CANbus implementation and provides checklists, flight instruments, engine monitoring and navigation. Once again e-Go aeroplanes have been innovative and are designing in an integrated e-Go Flight Simulator into the EFIS so you can fly the e-Go from the pilot seat while on the ground.

With a maximum all up mass of 243kg (563lbs) e-Go has a useful load of 128kg (282lbs). The surprisingly spacious cabin can accommodate a person up to 1.93m (6ft 4ins) with a body mass of 65kg to 110kg (143lbs. to 242lbs.) and the luggage area under the rear canopy can carry up to 15kg (33lbs).

I was fortunate enough to visit Tibenham on a perfect weather day for testing and see e-Go undertake its first extended flight test, flown by test pilot Keith Dennison, who has been Chief test pilot at BAE Systems and at Boscombe Down. He is also a display pilot for the Shuttleworth Collection.

Proving that e-Go will be a very capable short field aircraft, after a very short ground roll Keith was airborne and heading up to 4000 ft. It should be possible to operate e-Go from a good quality 300 metre grass strip.

These initial flights in the test series are, not unexpectedly, throwing up a number of points as Keith gradually expands the test envelope. When at a safe height within glide range of the airfield – the e-Go is expected to have a 16:1 glide ratio – Keith carried out a number of test manoeuvres, including stalls, at varying power settings. We could hear from the ground that the engine had a rough running band at low power settings and Keith returned to land after 35 minutes of flight, so that the e-Go team could recover the test data and investigate on the ground.

A second extended flight test was undertaken later in the day, after some ECU adjustments had been made. This flight was an hour in length and the results were still being interpreted as I had to leave Tibenham.

Customers, investors, volunteers,

Top left: all flight, engine and navigation data is presented on the MGL EFIS
Above left: flight data as it appears on the sophisticated EFIS multi-function display
Above: Chief Designer Giotto Castelli pre-flight checking the engine
Below: test pilot Keith Dennison

suppliers and press had the opportunity to see the first public display of e-Go in flight at Tibenham on 30 October showing e-Go are fully confident in their product and their target to start shipping the finished product in 2015. Speaking to Tony Bishop, co-Founder and Director, he tells me "e-Go will sell for £50,000 plus VAT. For this you will get a fully equipped, ready to fly, e-Go aircraft along with a comprehensive e-Go differences training package and first year support. We are going to encourage our e-Go owners to return to e-Go Aeroplanes in their first few years for their maintenance, so that we can learn how each e-Go is faring in use."

To legally fly e-Go in the UK the pilot must hold a valid Microlight Aircraft Class Rating and have undertaken 3 Axis microlight differences training. If you already hold a valid SEP Aircraft Class Rating or a Weight Shift Microlight Aircraft Class Rating on a UK or JAR/EASA FCL Pilot Licence then you will only need to undertake differences training on a 3 Axis microlight with an approved flight instructor and have this signed off in your log book. If you don't hold an SEP Aircraft Class Rating or 3 Axis Microlight Aircraft Class Rating then to add a Microlight Aircraft Class Rating to your licence you must undergo appropriate training and pass a General Flight Test.

If you don't hold a UK or JAR/EASA FCL Pilot Licence you will need to undertake training for a pilot's licence on a 3 Axis Microlight Aircraft, the most basic being a National Private Pilot Licence (NPPL), which will take a minimum of 25 hours flying plus ground examinations and radio licence if required.

As you will have noticed, e-Go is a canard design and has different flying characteristics to other 3 axis control systems. While there is no legal requirement for differences training on e-Go it is strongly advised that you complete the e-Go training module. In any case, your aircraft insurers may well insist that you do.

Beyond e-Go, there is the potential to build a larger aircraft with 2, 3 or even 4 seats. Obviously that takes it into a certified aircraft regime, as current regulations stand, so there needs to be a clear market. The first objective is to get a number of e-Go SSDR aircraft flying and gain experience over time.

At the time of writing, the CAA has launched a public consultation on their proposal to deregulate all single seat microlights. This would change from the SSDR's current 115 kg basic weight limit to a maximum all up weight of 300 kg (currently e-Go has a MAUM of 243 kg), and remove the wing loading limitation. e-Go aeroplanes are keen on this development and are part of the CAA working group reviewing the feedback from the consultation and panning for its implementation.

I think that the CAA have been very progressive in defining an SSDR class, and proposing to extend it, but have possibly let a genie out of the bag. They have done it while EASA have only left open the possibility for such deregulation. However if, as EASA say, that regulation is driven by data, primarily safety, if SSDR aircraft prove over time to be no less safe than certified aircraft dare we think that the class may be extended to other aircraft used for private flight? ■

Top: e-Go began with a series of short hops before progressing to longer flights Above: the first true flight lasted 35 minutes, the second rather longer This photo: e-Go should operate happily from as little as 300 metres of good grass. (Photo DP Photographics, Cambridge)

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AOPA Europe meets in Heidelberg

International AOPA held its 129th European Regional Meeting in Germany at the end of September, with 33 delegates from 14 countries attending to hear an assortment of reports containing good and bad news for general aviation. IAOPA Senior Vice President Martin Robinson told delegates there was to be good news on the instrument flying front, including on the UK's IMC rating, but he had agreed with the Chief Executive of the UK CAA Andrew Haines that details should not yet be made public because publicity could adversely affect negotiations that were still going on.

More good news: IAOPA has fought off EASA's damaging Dangerous Goods proposals, which would have made it illegal to carry a quart of oil or five litres of fuel in your aircraft – this no longer applies to aircraft under 2 tonnes. EASA has also abandoned the idea of flight time limitations for GA, and IAOPA has identified 30 points in the Single European Rules of the Air where national authorities may chose whether or not they enforce the regulations.

The less good news: some countries insist on interpreting EASA regulations in the most onerous and costly way, EASA is boycotting the Partnership Group it set up with the GA industry and national authorities, increased taxes are strangling flight training even before EASA's Approved Training Organisation requirements add more cost and bureaucracy, and economic recession continues to afflict our industry. But AOPA continues to fight on behalf of its members and continues to make progress on the most important issues. ■

Above: delegates from 13 countries attended the Regional Meeting of IAOPA Europe in Heidelberg

Priorities for the SSCC

IAOPA Europe has identified its top priorities for a new Safety Standards Consultative Committee which aims to put right some of the problems that EASA has created for general aviation. The European Commission supports the concept of a new strategy for GA, and one of the industry's main concerns is that there should be a 'quick fix' procedure in place. "GA is suffering," AOPA Germany's Managing Director Dr Michael Erb told the Regional Meeting. "We cannot wait three to five years for changes."

Dr Erb, who represents IAOPA on the new committee together with Jacob Pedersen of AOPA Denmark, said a prerequisite was to identify responsible managers to end buck-passing. "Trying to pursue a problem is very often like playing football against Barcelona," he said. "The Commission says it's the national authorities, they say it's EASA, EASA says it's the Commission – they play tiki-taka between Brussels, Cologne and the national capitals, and we're just running after the ball until we're exhausted. They have to identify to us people who are accountable."

Secondly, we need statistics. EASA has virtually none, so it is forced to regulate in the dark. IAOPA Europe is working on an online survey of GA safety and economics to provide EASA with some of the data it should have had years ago before it wrote its first regulation. Details of the survey appear in these pages, and we hope as many members as possible will fill it in.

Third on the priority list is the problems of Registered Training Facilities which EASA is demanding become 'Approved Training Organisations' with a much higher level of bureaucracy. This issue is being treated differently all over Europe, and many RFs cannot comply with the new paperwork requirements in time. Urgent changes need to be made to FCL regulation, particularly where national implementation is unhelpful and in the case of foreign licence validation. The division between complex and non-complex needs to be revisited, and the Part M regulations which have caused so much economic loss to GA must change. The definition of 'commercial' also needs to change, and the implementation of language proficiency requirements must be studied. The failure to enforce mandatory handling exemptions for GA is a priority, as is EASA's proposals for occurrence reporting, which includes such things as notifying the authorities every time a stall warning sounds.

The new Safety Standards Consultative Committee could be very useful to GA, Dr Erb said. "Our expectations are high, but we have to wait and see if something real is going to happen." ■

The beginning and the end

Peter R March

The first and last Concorde pilots meet on a doleful anniversary to compare notes. ***Pat Malone*** *listens in*

Ten years ago on November 26th British Airways Concorde G-BOAF landed at Filton, drawing to a close the first era of supersonic air transport. The captain on that day was Les Brodie, BA's Concorde training manager, who is sadly likely to hold the title of 'the last Concorde pilot' for all time, despite the sterling efforts of some – including Les himself, who tried along with the then BA CEO Rod Eddington to keep at least one Concorde airworthy.

The last landing came 34 years 8 months after the first take-off, at Toulouse on March 2, 1969, when the hand on the fabled Y-shaped yoke was that of André Turcat, chief Concorde test pilot of Sud Aviation. The first Concorde pilot and the last met at André Turcat's home in the south of France as the tenth anniversary of Concorde's demise approached to discuss the past, the present and the future of aviation. With them was Edgard Chillaud, former Chief Concorde Pilot of Air France.

The conversation covered not only the rise and fall of Concorde and the milestones in its history but great aircraft and test flights of the past, developments in pilot training, welcome and otherwise – and the certainty of supersonic transport in future.

André Turcat, still hale and hearty at 92, has flown very little for almost 30 years, although in his eighties he took the left seat in the Airbus A380 – an experience which seems to have made him yearn more than ever for Concorde. "Good aircraft, no emotion," he said of the big double-decker. Les Brodie, who retired from British Airways in 2004, flies a Citation out of Hawarden and owns a share in a Tiger Moth at White Waltham. Edgard Chillaud no longer flies. Asked why not, he says: " If you have been with Raquel Welch, when it's finished, it is finished."

André Turcat is much more than just the Concorde test pilot – if such a thing can

Top: Les Brodie eases Concorde down for her last landing, at Filton on November 26, 2003
Left: Edgard Chillaud, André Turcat and Les Brodie with one of André's Concorde models in his garden near Aix en Provence
Above: the Concorde accident – 'After the metal hit the tyre, there was no saving the aircraft'
Below: Les Brodie with his Tiger Moth

Far left: Concorde test pilot André Turcat, now 92, on the patio of his home in Provence
Left: André prepares to fly Concorde for the first time, March 2, 1969
Below: F-WTSS gets airborne from Toulouse at last, André at the controls
Bottom: Brian Trubshaw flies the British Concorde from Filton in April 1969

Peter R Marrch

properly be said. A professor of history of art and a renowned theologian, he lives in a beautiful secluded home with a wall of glass looking out over the imposing hills of Provence. A graduate of the École Polytechnique, the French primer for future greatness, he flew with the Free French air force from 1943 and served as a C-47 pilot during the Indochina War before being sent to EPNER, the French test pilots' school. Notable test work included taking the ramjet Griffon to Mach 2.19 in 1958 (see sidebar).

The last Concorde pilot, Les Brodie, switched from his first career as a Trainee Technician Apprentice with what was to become British Telecom when he was selected for the BEA/BOAC cadet training course at the College of Air Training Hamble in 1972. Reminiscing about March 2, 1969 Les remembered as a 19 year old driving his 1962 Austin Mini Seven to work listening on a transistor radio to Raymond Baxter's commentary about André's first Concorde take off, never dreaming that one day he too would fly Concorde. After graduating, Les flew Hawker Siddeley Tridents for BEA, but ten years on during the recession of the early 1980s Les joined two hundred other pilots and engineers to become cabin crew on B747s for a short time before returning to fly BA B737s out of Gatwick. In 1988, to his great surprise, he found himself in a fortunate position on the seniority list which enabled him to join Concorde Conversion Course No. 13, eventually becoming the fleet Training Co-pilot. In 1997 he left to get his command on the B777, before being appointed Training Manager on Concorde.

The contrast between the pioneering optimism of André's maiden take-off and the despondency of Les's final landing is clear. The step-change on the journey came, of course, on July 25, 2000, when Air France flight 4590 crashed at Gonesse, on the outskirts of Paris. Wherever the conversation wandered it came back to that event, after which everything changed.

Whatever has been said about the accident, the three pilots agreed that the crew did everything humanly possible to avert it. Les said: "I've re-enacted the crash in the simulator so many times with the BEA (French accident investigators) and the AAIB, and nobody could have done any better than they did. They faced an impossible situation. They dealt with what they knew, and did so very well, but fire was quickly destroying the aircraft. It took two minutes and forty seconds from the tyre bursting to the crash. The first minute was okay, but eventually the fire took out the hydraulics, the ailerons went to neutral and they were helpless."

What would he have done? "If I was that pilot, in the last two minutes of the flight I would have been thinking, 'I hope they find out what happened, put it right and keep flying'."

Edgard: "The crash was like a cold shower to us. Waking up in a cold shower. You ask yourself, how would you face something you've never been trained for, what would you do…? I was not happy with these insinuations about the crew. We were all very close, we knew each other's wives and families…"

André: "The tyre was always the *talon d'Achille* of Concorde. The airworthiness authorities concluded that Concorde was responsible because of the weakness of the wing, but it was not right. It was not necessary to put the Kevlar lining in the fuel tanks once the Michelin tyre had been adopted, because the problem had been fixed."

(The Michelin, made of a new compound using Kevlar that deformed only slightly on depressurisation and resisted disintegration, replaced the Dunlop tyre which had shattered on 57 occasions prior to Gonesse, where it was slashed by a sliver of metal lying on the tarmac.)

Les: "As soon as the metal hit the tyre, there was no saving the aircraft. Some people have put the blame on a missing spacer in the undercarriage, but all the tests carried out on one of the longest runways in France at Istres showed that if anything, it would have caused the aircraft to run to the right, not to the left as it did."

Les and Edgard were closely involved in the return of Concorde to service, while André was asked for his advice but had no direct involvement. "The work was being done by retired men, the people who had made the aircraft," André said. "They were the people who really knew about the construction. Every Concorde had been

made differently, so the Kevlar linings had to be made differently for each aircraft."

Edgard: "We went literally back to the drawing board. Concorde was designed in the pre-computer era, and we worked off these massive blueprints pinned up on boards."

Co-operation

One thing that changed fundamentally after the accident was the level of co-operation between the two Concorde operators. For small teams operating a unique aircraft, they were surprisingly distant from each other. Engineers had an *ad hoc* arrangement to pool parts, and there was an official disaster recovery scheme for the simulator in which they'd have recourse to the other's sim, but that was about it. They were competitors before they were friends.

In New York the BA crews stayed at the Warwick Hotel on West 54th St, while Air France stayed a few blocks away at the Mayflower on Central Park West, but rarely did they mingle. Eventually the British moved to a company-owned condominium on the East Side, but for the French the Mayflower was a home from home – they hot-bunked, always in the same rooms, coming and going at odd hours, leaving clothes and belongings behind so they only had to travel with a small valise.

Edgard describes how he got to know some of his British opposite numbers. "I was flying from Paris to New York when we had an HF failure. We knew the BA Concorde was a few miles ahead and asked them on the VHF for a relay to Gander. They were happy to oblige. I asked the captain's name, and it was Mussett. Then their co-pilot came back and said, Edgard… is that you? It was Richard Pike, whom I had met at Airbus. He suggested we go for a drink that evening in New York and gave me the address of a bar called Hurleys on West 48th St. So the whole crew went over there, and we met two or three times after that. We did form some strong friendships, and I went to Geoff Mussett's wedding.

"The British crews had a training arrangement at Stewart Airfield at Newburgh, just north of New York on the Hudson and I thought we could make use of it too, as we had the aircraft sitting in New York for eight hours. The BA guys offered to take me up there – they had a car in New York. They introduced me to the airfield manager, and we also used

Who rolled Concorde?

Les Brodie asked André Turcat whether he had ever harboured private fears during the development of Concorde that the project would come to nothing.

"When you were doing this extensive test programme in unknown technological territory, with everything so different and so special, were you always confident that you would end up with an airliner at the end of it?" he asked. "And when you flew it for the first time, did you ever wonder whether the public would accept this super-heated missile as a form of transport?"

"Yes, I always felt we would succeed," André said. "If the public accepts to fly at high altitude in a Boeing 707, why will it not accept in Concorde?" The technological problems, he added, were there to be solved.

Having flown nothing bigger than a Caravelle, André had no experience of heavy aircraft. "I wanted to know more about aircraft heavier than 50 tonnes, so I asked Air France to be trained on the 707," he said. "The guy who was training me, he failed an engine on take-off and that was not very tough. So then he failed two engines on take-off, and that was a little harder. And I said to him, I'm pleased we've done that and it was okay. And he said, so now we try a take-off, and we leave you with one engine! But the 707 would continue take off on one engine. And so I got my 707 type rating."

Was the early Concorde simulator any good? "Very good," said André. "In fact, we said that what we did for the first time on March 2 1969 was to fly the simulator for the first time. It was routine apart from the landing, which is difficult to replicate in the simulator."

While Concorde was the embodiment of the *entente cordiale*, relations were not always super-friendly. Throughout the development of Concorde, said André, BAC test pilot Brian Trubshaw never spoke a single word in French. "Language was always a problem," he went on. "When we had official meetings we always had an interpreter. I was speaking one day to a senior technical man at BAC and I could tell he was lying, so I said, 'you're lying!' The translator asked, do you want me to translate that? 'Yes!' And that would have been scandalous to a Frenchman, but this man didn't react, because he knew he was lying and so did I."

How close was the liaison between his

Right: André Turcat lands Concorde for the first time – the landing phase was difficult to prepare for in the simulator

team and Brian Trubshaw's in Bristol?

"There was some duplication, but mostly, there was good liaison and we shared the tasks," André said. "We did 5,000 hours of testing, more than that – there was five years of testing between the first flight and the airworthiness certificate in October 1975. That was too long, because of bad organisation between the two companies. The treaty had been signed in 1962 by diplomats who didn't think of practicalities. There were two heads for everything. We should have flown two years before we did.

"At the time, I agreed to be joint director of the test flight, but this was an illusion. We had aircraft in two places, two teams – after six months I said to them, don't be under any illusion that I can be joint director.

"Fortunately we had a good understanding, we shared tasks, we worked together. It had been agreed that we would do the first flight, we would do the first Mach 1 flight, and the first Mach 2 flight was to be British. But at Mach 1.6 Brian found a problem with the exhaust nozzle. He thought it was a transient thing and tried again, but it was something that had to be fixed. He called me and said, we have to make a modification in the design, we need a week or ten days.

"So I said, I am ready to stop testing. It was difficult with my Chairman to stop the programme, but I stopped for a week. Then Brian called me and said, I'm not sure it will be fixed in a week or ten days, so go ahead and good luck. So we were first past Mach 2, and I spent 53 minutes at Mach 2 as a demonstration to the world that we had made a good choice."

Les asked: "Is it true that the prototype flight deck became very hot in supercruise? We were fairly comfortable in the production aircraft apart from towards the end of the Barbados run that took half an hour longer than going to New York, but what was it like for you?"

André: "Yes, the air conditioning wasn't up to it and it got very hot and smelt of oil."

Les: "Did you turn the reheat off at Mach 1.7 as we did on line operations?"

André: "Yes, that was in the design of the operation. On climbout with reheat in operation we made a lot of smoke and the solution was a fuel additive. It worked well at Toulouse, but when I took it to the Paris Air Show for the first time I could not light two of the afterburners, so I had to demonstrate without them, and we reached Mach 1.3. The additive was at fault, so we got rid of it."

Les: "The reheats were tested to Mach 2. One captain – I won't name him – was making his announcement, saying, ladies and gentlemen, here we are at 50,000 feet, the aircraft is performing particularly well, in fact we're still accelerating to… oops!"

André: "The afterburners were designed to operate at Mach 2."

Les: "I heard a rumour that you once rolled a Concorde. Is this true?"

André: "I did not roll a Concorde. It can be done. I was going to try it on the last flight before I took it to Le Bourget for the show, but they put many people on the aircraft, engineers and people who had worked on Concorde but not flown in her, and I thought it better not to roll when it was full of people."

Les: "I've done it in the simulator. It's tricky to get right."

André: "I know a pilot who has done it. A barrel roll, with positive G all the way. I won't say who it was."

Stewart for Concorde training while in New York."

Les: "There was never any serious official attempt at integration until the accident, after which we got much closer. After the return to service, we met every month for safety discussions, and we shared information openly on an official basis. Together we solved a lot of mutual problems, after the crash… it should have been that way before."

A fundamental difference lay in the way the two airlines deployed their Concorde crews. Les Brodie: "It was BA policy that as a Captain or flight engineer you were on Concorde for life, but Air France rotated their people more. And BA retired you at 55, while at Air France it was 60. You had to have seven years left to make it worth training you, so BA Concorde pilots tended to start younger. It was a six-month training course that cost about a quarter of a million pounds, so the airline had to get their money's worth. Some people didn't want to go onto Concorde even when their turn came up – they thought it was a lot to

Left: Les Brodie demonstrates a point for fellow Concorde pilots Chillaud and Turcat

take on, at a late stage in their careers. And of course, some didn't pass the course."

On both sides, they were a tiny, elite group. At Air France there were 12 crews – captain, co-pilot and engineer – and about 80 or 90 cabin crew. BA had 20 captains, 20 engineers and 18 co-pilots.

Les: "Concorde crews were very popular with the passengers, people wanted to meet them, buy them drinks, and take them out for dinner…"

Edgard: "It gave you a warm feeling to be part of the Concorde family. For the French people, they didn't think it was an aircraft for a special elite, they thought it was an aircraft for all of France. That sentence, an aircraft for rich people, is not in the French vocabulary. Working people would come with their families on a Sunday to watch it take off. They hadn't worked on it, none of them flew on it, but they had a personal pride in it, as Frenchmen."

Les: "It was similar in the UK. There were a few complainers, but most Britons cherished the aircraft. I called it the Princess Diana of the skies – it was all part of what it meant to be British, it was something that was prominent all over the world that was loved and envied

Left: Concorde crews were stars, attracting the attention of the public in the same way as their aircraft did

Permanent fuel shortage

It was some time before the Concorde teams could build a fruitful working relationship with air traffic control, especially on the French side. Getting an expeditious taxi route to the runway for take off was vital. Les said: "Just taxiing, Concorde used 100 kilos of fuel a minute. When you've had to take on 1,400 kilos of fuel just to give yourself 14 minutes of taxi time, you can't afford to get stuck in a queue. When we asked to taxi past waiting aircraft it wasn't because we were arrogant or thought we were superior, it was because we were facing a critical fuel situation. At Heathrow, ATC understood that, as did most other pilots, but there was an element of tribalism and some were less happy with it than others. At Kennedy they were less accommodating and we had to join the queue, but some pilots would request that we went ahead of them solely so they could watch our departure. At busy times we had to put in 3,000 kilos just for taxiing."

Concorde generally used three Transatlantic tracks, Sierra Mike for westbound flights, Sierra November eastbound and Sierra Oscar as a spare that could be used in either direction but was somewhat longer. Departure times were almost identical, so if the French Concorde was delayed by ten minutes it would conflict with the British aircraft on the airway. Because fuel was always an issue, both aircraft needed the most efficient route – Sierra Mike – and it was important that air traffic controllers understood the situation.

Edgard was a UTA captain for 25 years before it was absorbed into Air France – he'd started out flying DC-4s in Tahiti. "In my first 35 years as an airline pilot I never met an air traffic controller," he said. "One day in London my British friends took me to an ATC centre and I discovered they were well aware of the conflict issue. I wondered whether our own ATC people knew of the problem too and started trying to find out.

"One day I was taking off to the east from de Gaulle and I wanted a very quick turn to the west, but the controller wouldn't give it to me. Eventually I said, 'we are not going to Moscow, you know'… and everybody laughed, but the controller was upset, so I asked her to call the Concorde desk at Air France. Two days later when I got back, I called her in to apologise, and arranged for her a simulator session to show her why we were always so very tense about minutes, even seconds saved in flight. And when she saw the fuel flow, it opened her eyes.

"They don't teach you that in air traffic control school. We invited other controllers to come to the simulator and gave them a real understanding of the fuel issues that Concorde faced. Others, we took on the flights around the Bay of Biscay. And as a result, things improved dramatically."

Les: "We would put the controllers in the simulator and among other things show them what happened when they put us into a holding pattern. As you turn at low speed, there's a dramatic increase in vortex drag and the fuel flow goes through the roof, and going once around the pattern can have a bad effect on your fuel situation. So they understood that it was much better to delay us by using vectors at higher speed."

Memories – André Turcat and Les Brodie pore over a poster of Concorde's flight deck

everywhere, that nobody else could match."

Ultimately, the sonic boom was one of the nails in Concorde's coffin, but according to the pilots the problem was amplified by politics. André Turcat says: "We had a B58 pilot, Colonel Parker, who was flying at Mach 2 across the United States. I asked him if this had been a problem. He said, 'we have frequently flown over Chicago and nobody has said anything, and now we are educating Detroit.'

"I flew over France from north to south at Mach 2 and 60,000 feet in Concorde with no protest. In the cities you don't hear it over the everyday noise. In the country you can hear it – we had observers placed everywhere and witnesses in different places to look at the reactions of the people. Nothing. And in supercruise, the noise is less than in the transonic zone.

"There were protests at the take-off noise of Concorde but the new generation of engines will be quieter. For noise abatement we would start a turn with 30 degrees of bank at 100 feet, but the airworthiness authorities said it was impossible. So we demonstrated to David P Davis of the CAA that it was easy and safe. He agreed that it was, but was worried because that morning he had

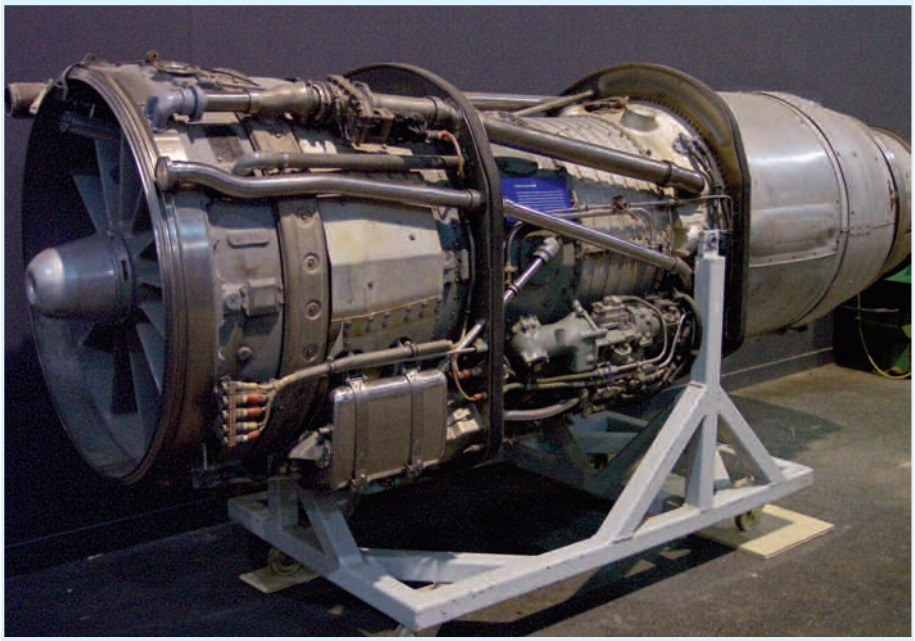
Below: Concorde flies over the Clifton Suspension Bridge en route to her last touchdown

Peter R March

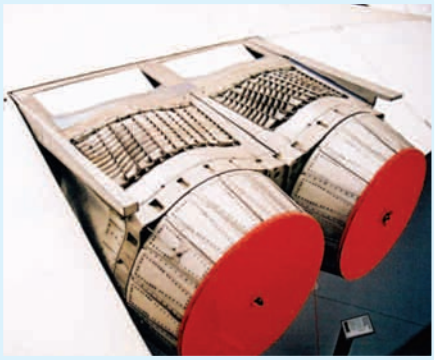
Olympus power

Concorde succeeded where the rest failed because of the engines. Edgard says: "I had Serge Dassault on one trip and I went back into the cabin to welcome him on board. I asked him why we didn't have a supersonic Falcon, and he smiled. 'I have people working on it,' he said. I said to him, I am retiring within one year, and would be pleased to join your group for free. But he said, 'We're going to stop it, because we haven't got the engine.'

Les Brodie adds: "When you look at the Russians and the Americans, it was the engine that they couldn't make work. We were lucky in having the Bristol Olympus with variable geometry intakes and exhaust, a truly extraordinary piece of technical genius where we got 50% of the thrust from the engine, 25% from the intake ramps and 25% from the exhausts. The Russians could reach Mach 2 only in permanent reheat, which made the aircraft unusable for all practical purposes."



Above: the Bristol Olympus engine was one of the keys to Concorde's success
Below: 25% of the thrust came from the engine's variable geometry intake ramps
Below right: exhaust nozzles (these are early models) added another 25%



While a future supersonic transport is bound to come, it's not clear how it will be powered. André says: "I don't think I can see a Mach 3 airliner yet. What we are doing now is the technological awakening – we're in a standby mode, learning what we need to know to do it. There are people working on the theory, and the wind tunnel tests, but as with Concorde, the engine is the key.

"There are studies of mixed turbojets and ramjets, hybrid rockets and ramjets, there are studies to explain it but it's a long way to go before it is put in an aircraft. When the economic problems we have are overcome and the money is available, it will be important to be able to do this.

"The centre of gravity of air transport has moved away from Europe to the Pacific, so for us the way is longer, and we need to be ready to respond with supersonic transport when the time comes."

signed a note saying we don't want any changes of configuration below 400 feet. So he was in a bad position."

Les Brodie: "We always explained to the passengers before take-off the series of noise reduction manoeuvres and power changes we would make. In the end we commenced the turn to fly over New York's Jamaica Bay at positive rate of climb and 15 feet. Then the auditors didn't like it, so we settled at 50 feet."

Concorde is grounded, some are neglected; Filton is closed, the Mayflower Hotel was demolished, Hurleys has been knocked down, and the men and women who made supersonic air travel a reality are not getting any younger by the day. But those who flew Concorde are convinced a new generation will take up the challenge. "Progress doesn't stop," says Les. And André Turcat adds: "People say to me, it was a dream. But I say, the dream is still there, it's still a dream…"

One day it will be real again.

When the pans boil over…

By modern standards, Concorde was a real handful for its crew. Edgard Chillaud had been a captain on the 747-400 and had been seconded to Airbus for four years, and when he returned to Air France he had no idea what was in store.

"I was 53 years old," he says. "I went into the office, and the lady looked at the books. 'Chillaud, Chillaud…' she said. 'Ah yes, you're number one for Concorde.' That was a good shock to have.

"But after the first training session in the simulator my co-pilot and I were feeling very uneasy. We didn't expect to face such difficulties at this stage in our careers. We went to our instructor, a charming man. The job is very different, we said… will we succeed?

'What did you have for breakfast?' he asked.

We told him. 'With hot milk?' he asked. Yes.

'You know how you boil the milk in the pan, and if you don't pay attention it boils over and makes a big mess everywhere?'

Yes, we said.

'Well, that's Concorde. You're the cook, you have forty pans of milk on the boil, and if you let one of them boil over you're in trouble – and you have to watch them for three hours and thirty minutes. So you see it's not such a big challenge'."

In the earliest days, British Airways observed the pilots' seniority structure when it came to Concorde, only to find that the new tricks were beyond many of the old dogs who had started out on propeller aircraft and had reached a point in their lives at which a whole new way of flying was almost beyond them. Concorde therefore became the province of younger men (and a woman). One pilot, Colin Morris, was only 36 when he qualified as a Concorde Captain.

Nonetheless, all three Concorde pilots concurred that seniority rather than apparent merit was the best and fairest way of advancing the careers of pilots. Edgard said: "Standards are uniformly high. In no other profession must you prove your ability every six months. If everyone meets or exceeds the required standard, then selection by seniority is the fairest way."

The pilots caution that basic flying skills seem to be atrophying as reliance on technology is taken to extremes. The multi-crew pilot's licence isn't quite enough. Les Brodie says: "There's a difference between operating an aircraft and controlling it. I used to say when I moved up to the Boeing 777 that you didn't have to fly the plane, it did the flying and you just managed the operation and the systems. But the time will come when all of a sudden you need the basic skills – you have to forget what the systems 'seem' to be telling you and instead keep a basic situational awareness and fly the aircraft.

"In the days of Concorde, if you ran into a problem the first thing you'd do is take the autopilot out. Today, if a problem arises the first thing you do is put the autopilot in. But when the equipment fails, you're going to have to take over, and that's always been the way.

"EASA is on the case on this – it fully recognises the problem and is making plans to deal with it."

Left: Edgard, André and Les on the tenth anniversary of Concorde's grounding

Mach 2 in the 1950s

Les Brodie was keen to know about André Turcat's test flying experience on the Nord 1500 Griffon, the extraordinary ramjet-powered delta that achieved Mach 2 in the 1950s. What was it like to fly?

Like the Concorde, sensitive in roll, said André. "I flew once with the BOAC chief pilot Jimmy Andrew," he said. "He was overcontrolling all the time. I said, 'hands off! And eventually he could fly it, but he could not land it. He was a gentleman – he said, 'André, you have a very fine aircraft, but I've been flying 707s for fifteen years and I can't change my ways.'"

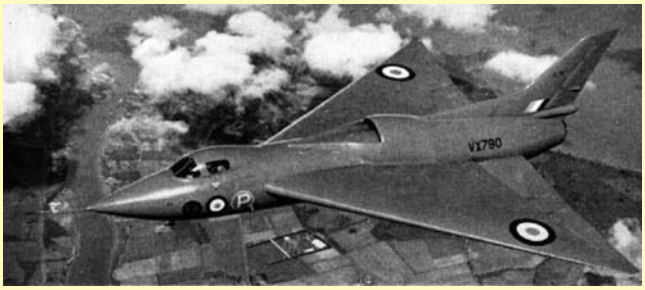
There was no simulator for the Griffon, but André had gained experience on a delta-winged glider with a descent rate of eight metres per second before taking the Griffon for its maiden flight in 1955. The first prototype had only its turbojet engine but reached Mach 1.7. The Griffon 2, with both turbojet and ramjet, flew in 1957 and André eventually reached a top speed of Mach 2.19 in 1958.

Previously, André said, he had gained some experience of delta-winged aircraft in England, flying the Avro 707, the tailless delta test-bed for the Vulcan on which André was checked out by Roly Falk. The Nord was more sensitive. "We started by making some jumps, and I thought the control surfaces were inadequate," André said. "But then I saw that the movements were my fault, not the aircraft, so I had to learn *not* to fly it."

The pioneering aircraft encountered many technical problems, including airframe heating and instability of the ramjet. André said: "I was unable to fly it above 60,000 feet because things like the ejector seat and the cockpit glass were not certified above that height. It was still climbing and accelerating at 0.2g, but I had to roll it over at 60,000 feet and come back down. We should have found a way to throttle the ramjet, but we did not."

Les commented that Concorde obtained ramjet-style propulsion from the intake ramps. André replied: "The Griffon had no moving parts in the intake. The turbojet and the ramjet were inside, and the ramjet wanted more air while the turbojet wanted less.

"We had a project for a Mach 3 twin but it came to nothing. At that time Dassault was the only company allowed to make supersonic fighters, which was a pity. But Mach 2 was too slow for the ramjet. We could have reached Mach 3 before the Lockheed SR71, but it was not to be."



Right: André had gained some experience of delta-winged aircraft in England, flying the Avro 707 Below: Edgard holds a model of the Nord 1500 Griffon in which André reached Mach 2 in 1958

Pilots' perils

Edgard Chillaud explained one of the unusual perils of being a Concorde pilot. "We had a well-known French actress on board and she was afraid of flying so I invited her into the cockpit to see the take-off and explain everything to her.

"I sat her down behind me and as we rotated she moved forward and gripped my arm so tightly through my uniform it was painful. I couldn't reach the undercarriage lever, so I nodded to my co-pilot to take the wheels up. And when I got home I had to explain to my wife how I got fingernail marks in my arm…"

The e-Go has landed...

... not to mention taken off. ***Mick Elborn*** *sees the first flights of a revolutionary unregulated aircraft*

e-Go takes off for its first extended flight with Keith Dennison aboard.
(Photo DP Photographics, Cambridge)
Below: elevators are on the canards, ailerons on the rear wings
Below right: pushing both pedals causes the rudders to open outwards, acting as an air-brake

e-Go, an aircraft designed and built in Britain, took flight for the first time at Tibenham on October 17 in a series of short hops, signalling that the serious job of flight testing had begun and theory was being put into practice.

e-Go represents true out-of-the-box thinking triggered by what might seem an innocuous entry in the Air Navigation Order (ANO) back in 2007, creating the Single Seat De-Regulated (SSDR) microlight class in the UK. At this time, to be an SSDR, the aircraft has to be designed to carry one person only with a maximum empty weight of 115 kg, a maximum wing loading without pilot and fuel of 10 kg per square metre, a stall speed of less than 35 kts and be flown day VFR privately. As an SDDR it then falls outside the need for any certification in the UK.

Soon after the ANO amendment, the LAA announced a competition for SSDR designs with entry classes for "cheap and easy-to-build" and "state-of-the-art". A small team, including Giotto Castelli and Tony Bishop, who became co-founders of e-Go aeroplanes, responded to the challenge by submitting a state-of-the-art winning entry. This was the e-Go, based on a concept long held by Giotto. As you can see from the photographs, it is an eye catching radical canard design. With a cruising speed of over 100kts and a range of about 300nm, the e-Go promises to be, in the words of Tony Bishop "a thrilling

personal aircraft".

After winning, there was immediate interest for the e-Go and so the serious business of building, flying and supplying it to others began. After several years of design, development and experimentation with various manufacturing processes, helped by a growing band of volunteers, a small company, e-Go Aeroplanes, was started in 2011 at Main Hall Farm near Cambridge. This attracted a small number of private investors to finance e-Go to prototype flight status. The material choice, substantially of composites, and construction techniques have much in common with F1 racing cars.

As you walk round the fully built aircraft you note that the pilot has a superb panoramic view from the reclined fixed seat, which is an integral part of the airframe. Rudder pedals adjust to suit pilot leg length and different seat cushion thickness allows for different pilot heights. Elevators are on the canard wings and ailerons are on the rear wings. There is a rudder on each of the rear fins but these only operate in one direction, outboard from the wing; the left rudder pedal only operates the left rudder and vice versa.

There are no flaps but operating both rudder pedals causes both rudders to open outwards, acting as an air-brake.

The wings and canards are demountable and the complete aircraft can be transported and stored in a purpose built e-Go trailer.

The thrust is provided by a fixed pitch Helix composite propeller driven through 2.5:1 reduction gearing and coupled to the British-designed and built Wankel engine by Rotron. e-Go aeroplanes are the only company for manned flight being supplied by Rotron. It features ECU controlled ignition and fuel injection with compensation for altitude. The miniscule engine produces an output power of 22 kW (30 hp) from a bare unit weighing 17 kg (37 lbs.) at 7,500 RPM continuous. It is expected that fuel consumption will be better than 60 mpg at 100 kts (7 l/hr).

The centrepiece of the flight deck is the MGL iEFIS® multi-function display. This links to the e-Go data acquisition system and Rotron e-Go ECU via a system wide CANbus implementation and provides checklists, flight instruments, engine monitoring and navigation. Once again e-Go aeroplanes have been innovative and are designing in an integrated e-Go Flight Simulator into the EFIS so you can fly the e-Go from the pilot seat while on the ground.

With a maximum all up mass of 243kg (563lbs) e-Go has a useful load of 128kg (282lbs). The surprisingly spacious cabin can accommodate a person up to 1.93m (6ft 4ins) with a body mass of 65kg to 110kg (143lbs. to 242lbs.) and the luggage area under the rear canopy can carry up to 15kg (33lbs).

I was fortunate enough to visit Tibenham on a perfect weather day for testing and see e-Go undertake its first extended flight test, flown by test pilot Keith Dennison, who has been Chief test pilot at BAE Systems and at Boscombe Down. He is also a display pilot for the Shuttleworth Collection.

Proving that e-Go will be a very capable short field aircraft, after a very short ground roll Keith was airborne and heading up to 4000 ft. It should be possible to operate e-Go from a good quality 300 metre grass strip.

These initial flights in the test series are, not unexpectedly, throwing up a number of points as Keith gradually expands the test envelope. When at a safe height within glide range of the airfield – the e-Go is expected to have a 16:1 glide ratio – Keith carried out a number of test manoeuvres, including stalls, at varying power settings. We could hear from the ground that the engine had a rough running band at low power settings and Keith returned to land after 35 minutes of flight, so that the e-Go team could recover the test data and investigate on the ground.

A second extended flight test was undertaken later in the day, after some ECU adjustments had been made. This flight was an hour in length and the results were still being interpreted as I had to leave Tibenham.

Customers, investors, volunteers,

Top left: all flight, engine and navigation data is presented on the MGL EFIS
Above left: flight data as it appears on the sophisticated EFIS multi-function display
Above: Chief Designer Giotto Castelli pre-flight checking the engine
Below: test pilot Keith Dennison

suppliers and press had the opportunity to see the first public display of e-Go in flight at Tibenham on 30 October showing e-Go are fully confident in their product and their target to start shipping the finished product in 2015. Speaking to Tony Bishop, co-Founder and Director, he tells me "e-Go will sell for £50,000 plus VAT. For this you will get a fully equipped, ready to fly, e-Go aircraft along with a comprehensive e-Go differences training package and first year support. We are going to encourage our e-Go owners to return to e-Go Aeroplanes in their first few years for their maintenance, so that we can learn how each e-Go is faring in use."

To legally fly e-Go in the UK the pilot must hold a valid Microlight Aircraft Class Rating and have undertaken 3 Axis microlight differences training. If you already hold a valid SEP Aircraft Class Rating or a Weight Shift Microlight Aircraft Class Rating on a UK or JAR/EASA FCL Pilot Licence then you will only need to undertake differences training on a 3 Axis microlight with an approved flight instructor and have this signed off in your log book. If you don't hold an SEP Aircraft Class Rating or 3 Axis Microlight Aircraft Class Rating then to add a Microlight Aircraft Class Rating to your licence you must undergo appropriate training and pass a General Flight Test.

If you don't hold a UK or JAR/EASA FCL Pilot Licence you will need to undertake training for a pilot's licence on a 3 Axis Microlight Aircraft, the most basic being a National Private Pilot Licence (NPPL), which will take a minimum of 25 hours flying plus ground examinations and radio licence if required.

As you will have noticed, e-Go is a canard design and has different flying characteristics to other 3 axis control systems. While there is no legal requirement for differences training on e-Go it is strongly advised that you complete the e-Go training module. In any case, your aircraft insurers may well insist that you do.

Beyond e-Go, there is the potential to build a larger aircraft with 2, 3 or even 4 seats. Obviously that takes it into a certified aircraft regime, as current regulations stand, so there needs to be a clear market. The first objective is to get a number of e-Go SSDR aircraft flying and gain experience over time.

At the time of writing, the CAA has launched a public consultation on their proposal to deregulate all single seat microlights. This would change from the SSDR's current 115 kg basic weight limit to a maximum all up weight of 300 kg (currently e-Go has a MAUM of 243 kg), and remove the wing loading limitation. e-Go aeroplanes are keen on this development and are part of the CAA working group reviewing the feedback from the consultation and panning for its implementation.

I think that the CAA have been very progressive in defining an SSDR class, and proposing to extend it, but have possibly let a genie out of the bag. They have done it while EASA have only left open the possibility for such deregulation. However if, as EASA say, that regulation is driven by data, primarily safety, if SSDR aircraft prove over time to be no less safe than certified aircraft dare we think that the class may be extended to other aircraft used for private flight? ■

Top: e-Go began with a series of short hops before progressing to longer flights Above: the first true flight lasted 35 minutes, the second rather longer This photo: e-Go should operate happily from as little as 300 metres of good grass. (Photo DP Photographics, Cambridge)

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AOPA Europe meets in Heidelberg

International AOPA held its 129th European Regional Meeting in Germany at the end of September, with 33 delegates from 14 countries attending to hear an assortment of reports containing good and bad news for general aviation. IAOPA Senior Vice President Martin Robinson told delegates there was to be good news on the instrument flying front, including on the UK's IMC rating, but he had agreed with the Chief Executive of the UK CAA Andrew Haines that details should not yet be made public because publicity could adversely affect negotiations that were still going on.

More good news: IAOPA has fought off EASA's damaging Dangerous Goods proposals, which would have made it illegal to carry a quart of oil or five litres of fuel in your aircraft – this no longer applies to aircraft under 2 tonnes. EASA has also abandoned the idea of flight time limitations for GA, and IAOPA has identified 30 points in the Single European Rules of the Air where national authorities may chose whether or not they enforce the regulations.

The less good news: some countries insist on interpreting EASA regulations in the most onerous and costly way, EASA is boycotting the Partnership Group it set up with the GA industry and national authorities, increased taxes are strangling flight training even before EASA's Approved Training Organisation requirements add more cost and bureaucracy, and economic recession continues to afflict our industry. But AOPA continues to fight on behalf of its members and continues to make progress on the most important issues. ■

Above: delegates from 13 countries attended the Regional Meeting of IAOPA Europe in Heidelberg

Priorities for the SSCC

IAOPA Europe has identified its top priorities for a new Safety Standards Consultative Committee which aims to put right some of the problems that EASA has created for general aviation. The European Commission supports the concept of a new strategy for GA, and one of the industry's main concerns is that there should be a 'quick fix' procedure in place. "GA is suffering," AOPA Germany's Managing Director Dr Michael Erb told the Regional Meeting. "We cannot wait three to five years for changes."

Dr Erb, who represents IAOPA on the new committee together with Jacob Pedersen of AOPA Denmark, said a prerequisite was to identify responsible managers to end buck-passing. "Trying to pursue a problem is very often like playing football against Barcelona," he said. "The Commission says it's the national authorities, they say it's EASA, EASA says it's the Commission – they play tiki-taka between Brussels, Cologne and the national capitals, and we're just running after the ball until we're exhausted. They have to identify to us people who are accountable."

Secondly, we need statistics. EASA has virtually none, so it is forced to regulate in the dark. IAOPA Europe is working on an online survey of GA safety and economics to provide EASA with some of the data it should have had years ago before it wrote its first regulation. Details of the survey appear in these pages, and we hope as many members as possible will fill it in.

Third on the priority list is the problems of Registered Training Facilities which EASA is demanding become 'Approved Training Organisations' with a much higher level of bureaucracy. This issue is being treated differently all over Europe, and many RFs cannot comply with the new paperwork requirements in time. Urgent changes need to be made to FCL regulation, particularly where national implementation is unhelpful and in the case of foreign licence validation. The division between complex and non-complex needs to be revisited, and the Part M regulations which have caused so much economic loss to GA must change. The definition of 'commercial' also needs to change, and the implementation of language proficiency requirements must be studied. The failure to enforce mandatory handling exemptions for GA is a priority, as is EASA's proposals for occurrence reporting, which includes such things as notifying the authorities every time a stall warning sounds.

The new Safety Standards Consultative Committee could be very useful to GA, Dr Erb said. "Our expectations are high, but we have to wait and see if something real is going to happen." ■

Political lobbying goes on

IAOPA Senior Vice President Martin Robinson reported that IAOPA's Brussels political lobbyist Lutz Dommel had moved on to a lucrative career with a bank, but he remains involved with AOPA Belgium. Lutz performed sterling work for IAOPA at the European Parliament, culminating in the hearing in Brussels attended by five MEPs and 85 interested GA parties. The EC's Aviation Commissioner Matthew Baldwin made a speech but did not stay for questions, which annoyed many participants and was not lost on the MEPs; similarly Filip Cornelis, the EC's head of aviation security, left quickly as he had more important things to do. Work was continuing to set up a Parliamentary 'Intergroup' dealing with general aviation, with the UK MEP Timothy Kirkhope being an important supporter.

Mr Robinson said that while the Lisbon Treaty was supposed to increase the powers of the European Parliament over the Commission, in fact there was a strong move towards 'delegated acts' which would give European states less room for manoeuvre in how they implemented rules. The 'comitology' process under which regulation was democratically reviewed would go. "Parliament can only say 'yes' or 'no' to a proposal from the Commission, and if they ignore it, within three months it becomes law anyway," he said. "Even after Lisbon it is not possible to send something back to the Commission saying we like 95 percent of this, but the other 5 percent needs to be changed. We will see a strengthening of the EC's powers in Europe, and member states will have less influence on the direction the EC wants to go." ■

Below: AOPA UK Chief Executive Martin Robinson with Craig Spence and Washington lobby chief Melissa Rudinger

Dangerous goods – GA wins an exemption

All of IAOPA's lobbying on the Dangerous Goods provisions of EASA's rules for non-commercial, non-complex operations has borne fruit, with aircraft under two tonnes being exempted from the requirement to obtain approvals. AOPA Denmark's Jacob Pederson, IAOPA's lead on non-complex ops, said the nonsensical provisions which would have prevented GA aircraft from even carrying a quart of engine oil or five litres of fuel have been finessed by EASA's decision. "The carriage of dangerous goods in aircraft below two tonnes is now left to your discretion," Jacob said. "It's important to do it the right way, but you no longer need an approval."

EASA has also abandoned the idea of flight time limitations for non-commercial, non-complex operations; they have been so swamped by the reaction to their flight time limitations proposals for the commercial world that they do not intend to case the net wider. Furthermore, it is now clearly stated in the rules that an AOC may switch between commercial and non-commercial ops, a very important change which cleared up some ambiguities in the rules and makes it possible for aircraft owners to gain from their aircraft being on an AOC, while still being able to fly it non-commercially with a PPL.

Mr Pedersen said it was also important that national AOPAs should be aware that under the Standardised European Rules of the Air, SERA, there were about 30 places where detailed implementation is left to national authorities. "Talk to your CAAs and make sure they make best use of this flexibility," he said. "For instance, under VMC requirements SERA says there is a 5k minimum unless your country decides otherwise. So there is no reason to depart from the current 1500 metre standard. Night VFR is allowed if your country decides it should be allowed. Many states think that if it's SERA, it's out of their hands. But this is not so. EASA has amended the regulations to give some exemptions from their own derogations, and we all need to take full advantage."

Europe eyes diabetes breakthrough

Douglas Cairns needs no introduction to AOPA members; his flying exploits, which include a round-the-world flight and a trip to the North Pole in a light twin, have been covered in these pages in recent years. Douglas is a diabetic and has been at the forefront of the campaign to allow people suffering from diabetes to fly – both to retain their commercial licences if they are professional pilots, and to train as private pilots.

Because of Douglas's work, and that of his small band of helpers, Britain has become a world leader in this field, and since last year the CAA has allowed insulin-dependent diabetics to fly commercially and privately. Douglas came to the Regional Meeting to explain to delegates how the campaign had succeeded, and to urge them to get their own national aviation authorities to follow suit.

Douglas paid tribute to CAA personnel, particularly those in the medical department, who he said had displayed a willingness to look at the facts and the medical evidence rather than shying away from change. This precedent gives hope to thousands of pilots at risk of losing their careers through diabetes, and thousands more who wish to become pilots but are currently debarred from the profession in most countries.

Cairns was an RAF pilot who was grounded when he developed diabetes and spent decades convincing doctors and regulators that most diabetics, if properly treated, can fly perfectly safely, professionally and otherwise. AOPA has helped his cause wherever possible, and medical opinion is swinging around to back him. He uses a small digital device, the size of a mobile phone, to measure blood sugar regularly, and in 12 years and 3,000 hours has never had a problem.

Douglas Cairns briefs the meeting on advances made by diabetic pilots in the UK

Apart from the USA, five countries now allow private flying for pilots with diabetes – South Africa, the UK, Canada, Australia and Israel. Until the UK allowed commercial flying, Canada was the only country where pilots were not grounded when they developed diabetes. There are now 560 pilots with diabetes flying in the USA, and 17 professional pilots with diabetes flying commercially in Canada.

Cairns thanked Martin Robinson, CEO of AOPA UK, who he said was instrumental in leading him along the correct path in his lobbying efforts. The CAA has filed a derogation with EASA to allow medicals to be issued to pilots with diabetes. EASA challenged the derogation but the UK dug in its heels and was allowed to continue. The Agency challenged the CAA's decision a second time, but the UK has affirmed it. It is open to EASA to challenge it again, but the signs are that it will not do so, partly because it is on extremely tricky ground with regard to discrimination laws. Ultimately, if authorities in other European countries refuse to follow the UK CAA's lead, it should be open to European diabetic pilots to obtain their licences through the UK CAA and use them anywhere in the world.

Douglas said that while it is theoretically possible now for commercial pilots who had lost their livelihoods because of the authorities' reaction to diabetes to resume their careers, none has yet got his or her job back. ■

Stopping 'accelerate-stop'

German aircraft operator Matthias Albrecht came to the Heidelberg meeting to record his thanks to IAOPA for its assistance in staving off EASA's proposals on accelerate-stop distances, which would have had a crippling effect on his business. Albrecht has an IT company which operates all over Germany and elsewhere, and uses a Mooney and a Piaggio Avanti to move staff around. The smallest airfield the company uses with the Avanti is 712 metres, but EASA's proposals would have required a minimum of 1450 metres, forcing his company to use single-engined aircraft to reach many markets. At the last moment EASA rescinded its proposal and exempted non-commercial twin turboprops from the requirements, allowing him to continue operating as he has always done.


Piaggio Avanti can resume operating from a 712 metre runway

Dr Michael Erb, Managing Director of AOPA Germany, thanked Herr Albrecht in turn for all the work he had done in lobbying local, national and European politicians to achieve a successful outcome.

New man at the top

Mark Baker, the new President of AOPA US, sent a letter via IAOPA Secretary General Craig Spence affirming his commitment to International AOPA and looking forward to the IAOPA World Assembly in China next year. Melissa Rudinger, Vice President of Regulatory Affairs at AOPA US, said Mark had been a passionate aviator since he was 16 years old and had owned over 90 aircraft in his time; he builds, fixes, buys and sells aircraft and flies jets and helicopters, but his favourite aircraft is a Cub on floats. Having taken over at AOPA US only in September, it was too much to expect him to leave the country for a European Regional Meeting so soon, but IAOPA Europe looks forward to welcoming him in the near future.


International AOPA's Secretary General Craig Spence came from AOPA US HQ

Do they mean us?

Apart from EASA and its pan-European problems, AOPAs from each country were asked to set out the most pressing issues facing them at home. For **AOPA Denmark**, Jacob Pedersen reported that all annual fees had been abolished – no more yearly fee to run a flight school, an airport, an instrument approach. Everything was now financed by a charge of €1 on every passenger on a commercial flight. On the downside, Denmark had adopted FCL in an inflexible way. For example, complex aircraft proficiency checks now had to be done on a simulator. But if you call the sim company they will sell you a week's course, probably far away from your home base, to do something you could previously do on your own aircraft in an hour. The only advice AOPA can give is to go to another country like the UK, which has derogated from this requirement.

Dr Michael Erb of **AOPA Germany** said the problems of Approved Training Organisations were compounded by the fact that authority over flight training schools rests with 16 independent state governments, and what's good for Hessen might not be good for Bavaria…

Blazej Krupa of **AOPA Poland** said tax increases on avgas were having a severe effect on flight training. They followed a European Court of Justice ruling that said only commercial air transport was exempt from the energy tax, whereas every country except Germany had previously said that only private pleasure flying should pay it. While holidaymakers on cheap flights benefit, he flight training industry staggers.

Daniel Affolter, President of **AOPA Switzerland**, said two thirds of tax revenue on avgas has to be reinvested in GA in Switzerland, but increasing costs mean people are giving up on flying. Main concerns in Switzerland are the possible closure of Dübendorf airfield near Zurich, and language proficiency requirements.

The acceptance of seaplanes in Greece is a success for **AOPA Hellas**; Anton Koutsoudakis reported that three companies are preparing to start operating seaplanes, while five private seaplanes, mostly ultralights on floats, had begun flying. There were positive reports from AOPAs in **Austria, Luxembourg, Sweden, Norway, Romania, Finland and Iceland**, where AOPA is fighting plans to turn over Reykavik airport to housing development.

For **AOPA UK**, Martin Robinson said British pilots face the same problems as in every other country – fuel issues and tax, change from Registered Facilities to ATOs, FCL implementation, CAA administration, handling charges and airport fees. He highlighted the commitment of the UK CAA to abolish 'gold plating' and urged AOPAs to ask their regulators why they could not make the same commitment.

The UK pilot population continued to shrink, he said. Five years ago some 3,500 PPLs were issued, but last year this was down to 2,500, and 60 percent of pilot fail to renew their licences after five years.

Frank Hoffman, IAOPA's representative at the International Civil Aviation Organisation in Montreal, reported that a GA Study Group had been set up at ICAO – a small earthquake which gives GA a much stronger voice on the international stage. The existence of the Study Group, which IAOPA had been working towards for years, means a different level of recognition for the industry, and it allows us to bring in our own experts to help bolster our own efforts and incentives. As Frank said, it didn't sound like much, but it was a major achievement. ■

Above: AOPAs in Luxembourg, Switzerland, Germany, the Netherlands and Poland sent representatives
Right: IAOPA's ICAO representative Frank Hoffman reported a small earthquake

Jepp's Mobile Flitedeck VFR

Tobias Baesch and Marcus Marth from Jeppesen gave delegates a demonstration of the company's Flitedeck VFR product for iPad, which was compiled with the assistance of AOPA members who participated in an online survey. Tobias Baesch, navigation portfolio manager, said there were many strong and agile competitors in the field, such as SkyDemon, and Jeppesen had thought long and hard about whether it should enter the market. It had ultimately decided to do so and had formed a small team of young people straight from university with all the key disciplines.

The demonstration showed a single-chart presentation which zoomed right down to airfield taxi presentation, with data appearing and disappearing as necessary. Tapping on screen produced relevant local data, while information such as notams and weather were presented in text format. IAOPA is considering linking with Jeppesen to provide discounts on certain products.

Talkdown at Humberside

AOPA member ***Roy Murray*** *was instrumental in talking down a passenger whose pilot died in flight. Here, he explains how it was done*

The newspapers have been full of rather breathless accounts of how non-flying passenger John Wildey was able to land a Cessna 172 at Humberside when the pilot became incapacitated, talked down successfully by a flying instructor despite a complete lack of previous flying experience. The flying instructor was AOPA member Roy Murray, CFI at the Frank Morgan School of Flying at Humberside, whose account of events is published here.

It's specious to suggest that we might learn something from this – the chances of any one of us having to deal with similar circumstances are vanishingly small, and in any case every such incident would have to be dealt with entirely on its merits – but it's interesting and educational to read the story in the words of one of the participants. And while there is some cause for celebration at the saving of one life, it should be remembered that the pilot died, probably before the aircraft landed, and our condolences are due to his family.

Roy Murray has been flying for over 30 years and has some 10,000 hours. Here's his report:

"I'm the proprietor and Chief Flying Instructor at the Frank Morgan School of Flying at Humberside International Airport. On Tuesday October 8 at 18.25 local I took a phone call at home from a club member asking me to ring ATC at Humberside airport. I contacted the airport, and they asked if I was available to help them with an incident. I asked them if it was urgent – I'd just got in and my tea was on the table – and they said, yes, can you get here as quickly as possible.

"I returned to the airport immediately and in record time, arriving at about 18.40. I was met by security and taken up to the radar room in the control tower, where I was met by the radar controller John Cameron. He quickly briefed me that we had a situation where he had talked a Sandtoft-based aircraft with an incapacitated pilot towards the Humberside overhead, and had launched an air-sea rescue Sea King from RAF Leconfield, across the Humber. The helicopter was keeping station with the aircraft, and the crew did a fantastic job of relaying its position and attitude.

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Passenger tells how he landed plane after pilot passed out

Kat Lay

A great-grandfather who landed a plane in the dark after the pilot fell ill said he was "just following instructions" from flight instructors who guided him through four attempts.

John Wildey, 77, from Rossington, Doncaster, was returning with a 75-year-old friend from a day trip to Skegness on Tuesday evening when the pilot passed out at the controls. He was later pronounced dead.

The men had planned to fly to Sandtoft Airfield, but the Cessna 172 had to make an emergency landing at Humberside Airport.

Mr Wildey said: "The dead pilot was a friend from Sandtoft Airfield. It was the first time I have flown with him. He just collapsed at the controls as I was sat in the passenger seat. I knew roughly where the controls are but that is all. He was fine when we set off. We flew to Skegness and landed and were on our way back to Sandtoft when it happened. He was just taken poorly. He said to me, 'Take control John', and then he fainted.

"I flew on for a bit and tried to shake him and talk to him but he didn't answer. Then I just put out a mayday call. I have read books on how to do it.

"All the people on the ground did their work. I didn't do anything. The controller was brilliant as were the two pilots who talked me down. It went dark outside and I couldn't see the instruments. There is a switch to light them up but I had no idea where it was.

"I knew I was near Hull but I didn't know which direction I was going or what height I was. I wasn't happy but I didn't panic." Describing the landing to BBC News, he said: "It was a right bump, two or three bumps. I suppose it was a controlled crash, really."

Roy Murray, an instructor, was called in by air traffic controllers after the mayday call at 6.20pm yesterday. It took an hour and five minutes to get the plane safely to the ground, with Mr Murray and Mark Watkin, another instructor, talking Mr Wildey down.

Mr Murray said: "I was talking to John and trying to help guide him down on the radar. We had an RAF Sea King flying in front, keeping him in tow and we had the assistance of the air traffic control who were giving us information such as his distance and speed." The dead pilot's family have requested anonymity.

Diverted plane lands safely at Humberside airport
Grimsby
Pilot loses consciousness and passenger takes over
20 miles
Sandtoft airfield
Lincoln
Skegness
Cessna 172 leaves Skegness

John Wildey, when he was in the RAF. He joined as ground crew in the Second World War and never flew an aircraft

If you can walk away, it's a good landing

Charles Bremner
Commentary

Non-pilot passengers have landed light aircraft quite a few times over the decades, thanks usually to skilled advice from the ground. But there is nothing mundane about an exercise which must rank among the most mentally challenging if the passenger-turned-pilot has never had a taste of the basics. The task was complicated by having to land after dark.

In normal flight, with a healthy pilot alongside, it takes an hour or two for a passenger to get the hang of flying straight and level and performing a few mild turns without losing or gaining height. Even with detailed instruction, neophyte flyers quickly lose the plot when it comes to turning and descending at the right speed and lining up with the runway.

John Wildey had a much greater challenge because of the stress. Panic is the biggest threat in a very unforgiving environment. He kept cool enough to press the radio push-to-talk button and converse with controllers while keeping the plane the right way up, which means doing as little as possible. The Cessna may have had a basic autopilot, which would have had to be switched off for the landing, the trickiest manoeuvre in non-aerobatic flying.

With no lights on, the passenger would not have been able to read the instruments as he held the control column and worked the push-pull knob on the dashboard that controls the Cessna's throttle, like a car accelerator. Roy Murray, the instructor who patiently talked him down, described how he sent the new pilot around three times after he came in too low and seemed to be heading for the ground. That required shoving the throttle back in, climbing not too steeply and then turning, before repeating the exercise, all without losing your bearings in the dark.

Amateur pilots often become disoriented at night because of the lack of visual references.

Mr Wildey did a remarkable job in keeping the Cessna in one piece and apparently not breaking the nose-wheel. Witnesses talked of the propeller striking the runway, but as pilots used to say: any landing that you can walk away from is a good one.

Cockpit instruments and controls
Airspeed indicator
Altimeter
Throttle
Radio
Control column

John Wildey yesterday and the Cessna before the fateful flight

Above: Newspapers were full of sometimes-confused stories of heroism

"I returned to the airport immediately and in record time, arriving at about 18.40. I was met by security and taken up to the radar room in the control tower, where I was met by the radar controller John Cameron. He quickly briefed me that we had a situation where he had talked a Sandtoft-based aircraft with an incapacitated pilot towards the Humberside overhead, and had launched an air-sea rescue Sea King from RAF Leconfield, across the Humber. The helicopter was keeping station with the aircraft, and the crew did a fantastic job of relaying its position and attitude.

"The controller John Cameron has a PPL, but it has lapsed. He had done well to get the aeroplane as far as he had, and in fact he did a wonderful job throughout. From what he said, a few things were clear to me – firstly, the aircraft seemed quite well trimmed, and secondly, the passenger who was flying was not a complete stranger to aviation. He was not totally overawed by the environment he found himself in, which meant he could still function to quite a high level. It transpired later that the pilot had collapsed, then regained consciousness enough to instruct the passenger to press the radio button and transmit a Mayday before collapsing again. The transponder had also been switched to 7700."

(The passenger, 77-year-old John Wildey, had been an office clerk during a 24-year career in the RAF and is an aviation enthusiast with experience of flying both in military and light aircraft, although he has never had a flying lesson.)

Roy continues: "I made contact with John Wildey, and after introducing myself I continued to make conversation to establish a relationship, while keeping the talk to a minimum. I cautioned him against over-controlling and told him not to worry, we would get him on the ground.

"We worked as a team, with the helicopter, John Wildey, John Cameron

and I all on the same frequency. John Wildey didn't answer the helicopter's transmissions, and sometimes he didn't answer mine, obviously because of stress, so I had to be very careful.

"I have a 172 on my fleet but they're all different, so I couldn't presume that the layout of the aircraft was the same as mine. Furthermore, John is a short fellow and he told me he couldn't reach the pedals, so I restricted my instructions to the yoke and the throttle. Even that gave me pause for thought, because the plunger-type throttle is next to the mixture and I didn't want any confusion there. But we made do with the minimum of controls – yoke and throttle.

"I started by asking John to make some gentle turns left and right, and the RAF Sea King confirmed that he was doing as instructed. John Cameron and I could also see the aircraft turning on the radar. I decided to bring him around onto the approach for runway 26, lined him up on the extended centreline and got him to reduce power slightly, but the sun was very low and it seemed it was getting in his eyes. There are no windows in the radar room but the radar is very good and gives you height and airspeed, from which you can extrapolate a rate of descent. It was clear that John was having difficulty in maintaining a reasonable approach and was aiming to touch down too far down runway 26.

"We decided to instruct him to go around. It wasn't until afterwards that I had time to sit down and think about the difficulties this posed – at the time, it was the only option open to us and we just had to get on with it. With the 172 at about 800 feet I talked to John about how to do this… climb, speed, attitude and so forth.

Right: Roy Murray, CFI at Frank Morgan School of Flying a Humberside

We saw his airspeed decreasing on the radar scanner and John did actually come very close to stalling the aeroplane in the climbing turn, with the stall-warning buzzer coming on. I told him to apply full power, and he told me he had recovered.

"By now it was getting seriously dark and we decided to put him on the approach for runway 20, which is the main fully-lit instrument runway. This gave him a crosswind approaching 10 knots, but it was the best option. John was handling the aeroplane quite well, and my confidence in his ability to achieve a landing was rising. To give him a little bit of confidence about flying at night, I thought it best to gave him a couple of attempts at the approach using the PAPIs (Pilot Approach Precision Indicators) so he could judge the approach angle.

"By this time it was pitch black, and John said he could no longer see the instruments, and he couldn't find a switch to turn the lights on. The cockpit light switches are across by the pilot's left knee, and to get to them John would have had to reach over past the pilot, and that could have caused loss of control. I told him not to worry, to forget hunting round the cockpit looking for switches or levers he was not familiar with and just think about the yoke and the throttle.

"We then positioned him on a long right hand downwind and set him up for an approximately two-mile final. I asked him to describe what lights he could see, and from his description of the PAPIs it was clear that the rate of descent was erratic. We let him continue down to about 500 feet and then told him to go around again, hoping to give him the sort of control and practice in climbing, turning and descending he was going to need for the landing.

"Next time round we were still monitoring his height and airspeed, but unfortunately he was far too fast, and diving towards the ground. We instructed him to go around, giving him one more practice approach. I knew the fourth attempt would have to be the last; it was getting too dark to continue. Even if he'd been able to put the cockpit instrument panel lights on, he wouldn't have been able to adjust his vision to the darkness, and he didn't need any further distraction.

"Once again we tracked him downwind and turned him gently onto a two-mile final. Once he was established on the centreline, I left the radar room and ran upstairs to the tower to try and get a visual sighting, but this was very difficult as he had no lights on except the beacon on the tail. I decided that we should continue this approach right down to the landing as the height, speed and angle of approach looked good. The helicopter, standing off slightly, confirmed the approach was steady and looked good.

"We requested that all the emergency services, including the airport vehicles, turn off their blue and orange lights, and as the silhouette of the aircraft passed the tower we dimmed the lights in the tower. As the aircraft passed the tower I could just about see that the approach was still looking reasonable. I told him to reduce throttle and pull gently back on the yoke to raise the nose in order to establish the aircraft in the flare for it to land, which he did with reasonable success. I then watched him flare, but it was too dark to see more than a shadow."

(John Wildey raised the nose, but not enough, wheelbarrowing the plane and hitting the tarmac so hard the front tyre burst. The aeroplane veered off the runway, but the burst tyre ensured it didn't travel far.)

Roy says: "Once the aircraft had come to a stop and the emergency services attended, I felt that my job had been done. We all shook hands in the tower, and while the pilot was taken out of the plane, John Wildey was taken to the fire station for a strong cup of tea. Unfortunately, there was nothing that could be done to revive the pilot.

"John Wildey came to see me some days later to thank me for saving his life. I told him it was fantastic that we had been able to help him. I was pleased to hear that he had already flown again with a friend from Sandtoft, so while the experience was traumatic, he's still enthusiastic about flying. He's a very, very lucky man, but a very competent man. He didn't panic, we kept him calm, and he did extremely well." ■

Houston, we have a problem with training

Captain Jim Lovell, commander of the star-crossed Apollo 13, has warned that increasing reliance on automation in aviation is reducing pilots' ability to respond to crises such as those which befell the Air France Airbus A330 off Brazil and the Asiana Airlines Boeing 777 at San Francisco.

Capt Lovell, in London to receive the Guild of Air Pilots and Air Navigators Award of Honour for his lifetime achievements in aviation and in space, said that reversion to basic flying skills had saved Apollo 13 after an oxygen tank explosion crippled the spaceship 200,000 miles from earth in 1970. When all seemed lost, he had 're-learned' to fly the spaceship using the thrusters and engine from the lunar landing module, even though it was still attached to the re-entry capsule and the change in the centre of gravity played havoc with the thrusters' effect. And he had navigated using an optical sextant to align the ship on the earth's terminator – the line between light and dark – and had fired the thrusters using his watch for timing.

"I had a lot of automatic things on Apollo 13," he said in an interview with *General Aviation*. "I had a guidance system, I had a computer… even though it was rudimentary, it was a good computer. I lost all that. Didn't have the power to keep it going.

"A pilot should get a feel for a plane – it becomes part of him, he hears the engine, he feels how the plane feels. The Air France plane was on autopilot and the autopilot stalled the plane. In the San Francisco accident, it looks like they relied on the autopilot.

"Automation has taken part of the ability of the pilot to control the aeroplane. I think that aviators these days have to go back and do a lot of hand flying really to be the final judge of controlling the aeroplane."

Capt Lovell was given the GAPAN Award of Honour by the Master, Judge Tudor Owen FRAeS, at a dinner in the Guildhall in London attended by price Andrew and some 500 Guild members and their guests. The citation for his award read:

"Forty four years ago pilot-explorers flew to the Moon in primitive spacecraft furnished with the computing power of a child's toy and navigation tools that Captain Cook would have recognised. They were the chosen champions of a human race that seems today to have lost the questing spirit that makes the impossible achievable. Their skill, ingenuity and courage will be remembered a thousand years from now, and in history their names will rank not only with the Wright Brothers but with Magellan and Christopher Columbus."

"Capt Lovell is the only man to have flown to the Moon twice and not landed on it. His exemplary abilities as an astronaut on Apollo 8 helped pave the way for Armstrong's small step, and as Commander of Apollo 13 his coolness under pressure gave us an immortal phrase known the world over: 'Houston, we have a problem.'"

A US Navy night fighter pilot flying the McDonnell F2H Banshee, Capt Lovell graduated at the top of his test pilot course and became a test pilot on the F4 Phantom programme before being accepted as an astronaut for the Gemini programme. He flew as pilot on Gemini 7 when it accomplished the first-ever space rendezvous in 1965, and as Command Pilot on Gemini 12 he docked with another spacecraft manually after a rendezvous radar failed – a significant achievement in the early days. In 1968 Lovell, Frank Borman and Bill Anders became the first humans to leave earth orbit when they flew around the Moon in Apollo 8, and Apollo 13 lifted off on April 11th 1970 to land Capt Lovell and Fred Haise on the Moon, with Jack Swigert to pilot the

Above: Jim Lovell (centre) with Guild Master Tudor Owen and the Duke of York
Below: The Guildhall in London played host to the GAPAN awards banquet

service module. An oxygen tank explosion two days later crippled the spacecraft, but early expectations that the loss of the three men was "90 percent certain" were confounded by the skills of the crew, operating under extreme pressure, aided by brilliant improvisation on the ground in Houston.

Capt Lovell said he preferred to remember Apollo 8, which accomplished all its goals, rather that Apollo 13, which failed to get him onto the Moon's surface. "It took me seven years to realise that Apollo 13 wasn't a failure," he said. "It showed what could still be accomplished when all else was lost, and showed people you should never give up."

He stayed with NASA for three years after Apollo 13 but left to make a fortune in the telecoms industry. "The space business was winding down, the telecoms business was storming ahead," he said. "I could have stayed in the Navy but if I came up for promotion to Admiral, and I was up against a guy who had done two tours in Vietnam while I was off in space – well, I would have chosen the other guy, too."

Captain Lovell laments the present state of space exploration and says he wouldn't advise anyone at the moment to become an astronaut. "We're putting maybe three people a year into space, and using Russian rockets at $60 or $70 million a time," he said. "If I was looking at it now, I'd ask myself how much time in space I was going to get, and go and do something else.

"But I'm still very much a space enthusiast – we have to rediscover the old spirit that said we could do whatever we wanted to do, and aim for Mars."

Other winners of Guild awards included Sgt Rachel Robinson, winchwoman on Rescue 169, the duty RAF search and rescue helicopter from A flight, 22 Squadron, based at Valley, who succeeded in rescuing a seriously-injured crewman from a French trawler in mountainous seas

Right: Winchwoman Rachel Robinson gets a special word of thanks from Prince Andrew Below: the Canadian crew of Rescue 912, who saved three men in a blizzard

50 miles off Milford Haven in March. Sgt Robinson made six separate attempts to retrieve the casualty, but on five occasions she was swept off the cluttered deck by seas which pitched the boat up and down 40 feet, or hoisted aloft unintentionally as the trawler plunged faster than the winch could pay out. The rescue was only successful when the Royal Navy hydrographic vessel HMS Echo and the RNLI lifeboat Angle moved into position to shield the trawler from the weather and give Sea King captain Flt Lt Taff Wilkins a visual clue on which to establish a stable hover. She was awarded the Master's Medal.

The Prince Philip Helicopter Rescue Award went to the crew of Rescue 912, an AW101 of 103 Squadron, Royal Canadian Air Force – Capt Aaron Noble, Capt Jonathon Groten, Sgt Bradley Hiscock, Master Warrant Officer Jeffrey Warden and Master Cpl Mark Vokey – who flew backwards in a blizzard through a series of narrow inlets to rescue three men who were icebound in a small boat. The Guild also recognised Lt Cdr Vincent Jansen of the US Coast Guard, who piloted an MT-60 rescue helicopter in driving rain, icing conditions, near-zero visibility and 20-foot seas to rescue four fishermen from a liferaft in the Gulf of Alaska. He too received the Master's Medal.

US Navy Lt Bryan Peterson received the Hugh Gordon-Burge Memorial Award for his role in saving a C-2A Greyhound with 15 passengers on take-off from the carrier USS John C. Stennis after a partial catapult failure. Sikorsky executive Nick Lappos, a former Vietnam Cobra pilot who was responsible for the flight test programme on the S76 and now drives advanced technology concepts for the company, was awarded the Sir Barnes

Wallis Medal. The British Helicopter Team won the Master's Commendation after taking the silver medal in the World Helicopter Championships in Moscow, while Sqn Ldr Simon Mellor was given the Johnston Memorial Trophy for his sustained contribution to the success of the RAF's Sentinel R1 programme. Peter Moxham was recognised with the Guild Sword of Honour for his lifetime contribution to international professional flying training, and the Derry and Richards Memorial Medal went to BAE Systems Experimental Test Pilot Peter Wilson, who has been closely involved in the development of the F35 Joint Strike Fighter. In the field of flight training, the Sir Alan Cobham Memorial Award went to Miriam Gardeazabal, aged 19, while the Central Flying School Guild Award was given to RAF Search and Rescue Training Unit at Valley. The Pike Trophy went to Andy Dunstan, the CSE instructor and examiner who has amassed 17,500 instructional hours in 20,000 hours of flying and holds every possible instructor qualification, together with several as an examiner. The Guild Award for Aviation Journalism went to Patrick Malone, editor of this journal. ■

Briefings

SkyDemon for iPhone

SkyDemon 3, the first version of the flight planning software to add iPhone support, is now available for iPad, Android and PC – and, of course, iPhone. While the smaller screen of the iPhone is less suitable for a full-featured planning and navigation app, SkyDemon has put a lot of effort, onto customising virtually the entire user interface to run perfectly on iPhone. So you can simply log in with your SkyDemon subscription and go flying – all your existing routes, logs and other data will be available in the SkyDemon cloud.

A new real-time fuel prices feature is the first social feature in SkyDemon. The idea is that whenever you fill up with fuel, you let SkyDemon know how much you paid. Fuel prices can then be overlaid on the SkyDemon chart, meaning every subscriber can instantly see how much fuel costs across Europe and worldwide. Already, hundreds of fuel prices have been reported across many different countries and currencies. In addition, if you specify that your aircraft can accept UL91 fuel, you'll then see the cheapest UL91 prices on the map where available.

They've also introduced information bubbles on the map next to take-off and landing airfields, and touching them takes you to the information screen for that airfield. You can start a 30-day trial SkyDemon subscription at www.skydemon.aero/start

GA occurrence reports

GASCo is promoting the benefits of GA occurrence reports, which not enough pilots are aware of. These can be filed with the CAA so others can learn from potential problems you may find. A recent example is the case of a PA28 being repaired after slight hangar damage. Quite separately from this damage, engineers discovered that the internal skin, the outboard rib and the mass balance were all heavily corroded with little remaining structural integrity on the rib where the mass balance is riveted. This is vital information for other owners and engineers, and was promulgated by the CAA through their online 'Monthly Listing of New General Aviation Occurrences'.

GASCo aims to make the GA community more aware of this important safety resource and is now routinely publishing selected reports in its monthly email safety newsletter, *Flight Safety Extra* (free to anyone who wants it) and its website www.gasco.org.uk

Breitling backs Vic Norman

Breitling has extended its sponsorship of Vic Norman's AeroSuperBatics Ltd to November 2016, and the formation wingwalkers will thus continue to perform all over the world.

'It's great news,' says Vic, the company's founder and chief pilot. 'Thanks to Breitling's support and its passion for aviation we've already had an amazing twelve months displaying at the end of last year in China and at the beginning of this in Australia.'

The team's Stearmans are wintering in the Middle East, with displays booked in Abu Dhabi and in Bahrain in January.

Painting, planes and charity

Renowned artist Alla Tkachuk is exhibiting some of her aviation work at the AOPA offices in Victoria and is inviting commissions from anyone who wants their own aircraft painted. Alla, whose commissions have included portraits of Prince Charles, the Royal Ballet principal dancers and founders and the Royal Opera singers, has been fascinated by aviation ever since as a young girl in the Soviet Union she flew to see her grandmother in the Urals in the Antonov An-2. "It was a fascinating tin box and I flew strapped to the walls," she says. "The spectacular views of the mountains, cliffs and deep green forests below set my love for flying."

Alla, a trained engineer as well as an artist, founded a charity called MASK, Mobile Art School in Kenya, which benefits from the proceeds of her paintings. She goes there regularly, and her love of aviation was reignited by flights over the Rift Valley, when she was allowed to handle the controls. "There was a dark cloud in front of us at one point, and the pilot told me to 'go around the rain…' I did. It was very special."

Alla is planning a fundraising flight from London to Nairobi with an AOPA member to raise funds for the East Africa national art competition for youth that she launched there – the Saatchi Gallery in London has just had their first exhibition.

To commission Alla, or to buy her artworks, please email on alla.tkachuk@yahoo.co.uk , or call 07957 734313.

Gatwick airspace consultation

NATS and Gatwick Airport have started a joint consultation on proposed airspace changes over southern England as a first step in a wider programme of change aimed at delivering the CAA's Future Airspace Strategy. While the consultation is primarily of interest to people living in areas affected by airport noise, AOPA is obviously keeping a close eye on developments.

European legislation requires all member states to revise airspace and maximise the use of new technologies which allow for extremely accurate flying, both in terms of position and time. Change is therefore inevitable, and the focus of this consultation is on how best to make that change.

Proposed changes focus on the airspace supporting Gatwick from ground level up, and to the airspace supporting London City above 4,000ft. Later stages will address proposals for airspace supporting other parts of the London airports network, to be complete by 2020.

The effect of these proposals will be less noise – aircraft will climb higher, more quickly on departure and stay higher for longer on arrival. Flight paths will eventually change – some areas will be overflown more than today, others less. There is a possibility of including 'respite routes' to provide predictable relief from noise for people living below flight paths. The intention is also to make less use of stacks and put new route structures over the sea where possible. The benefits include fuel savings and lower CO_2 emissions.

The London Airspace Consultation (LAC) runs to 21 January 2014 and is available online at www.londonairspaceconsultation.co.uk

From Cape Town by Stearman

Tracey Curtis-Taylor has left Cape Town in her Stearman in an attempt to recreate Lady Mary Heath's pioneering 1928 flight from South Africa to England in a Moth. Tracey aims to arrive in Goodwood on December 18th.

Tracey, a commercial pilot and instructor, is covering some 7,500 miles in 35 legs over six weeks. Like Lady Mary, she will face the geographical and meteorological hazards of Africa in an open cockpit biplane, but unlike Lady Mary, her main problems are likely to be political unrest.

In her day Lady Mary Heath was one of the most famous women in the world. She spent two years as a dispatch rider and ambulance driver during the First World War, pioneered women's athletics in Britain and was the UK's first woman commercial pilot. She qualified for a private licence, but the International Commission for Air Navigation revoked women's rights to earn a commercial licence in 1924. Lady Mary fought the ban, which was rescinded in 1926. He 1928 feat made her the first persona, male or female, to fly solo from South Africa to England. She was also the first woman to parachute from a plane.

Tracey's flight is being made into a documentary by Nylon Films, due to be aired next year. You can follow her progress on www.capetowntogoodwood.com

London's Premier Pilot Shop. . .

...has now been open for two months. The Pilot Store is located at 50a Cambridge Street London SW1V 4QQ, and if that's a familiar address to you, it's the head office of AOPA UK.

There is an extensive range of products, provided by AFE, from PPL Starter kits to Sennheiser Zulu Headsets, navigation equipment, a wide range of books for aviation enthusiasts and much much more...

However, if you're unable to visit the shop you can make your purchases online.

A PC flight simulator has been set up in our newly refurbished basement where you can practice flying most aircraft.

Also in our basement is a self-contained seminar/meeting room which can accommodate up to 25 people for seminars and 16 people for meetings.

Both the shop and the meeting room are 'win wins' for AOPA members as not only do they get 5% discount on shop purchases but all profits from the shop and meeting room are ploughed back into your association.

We look forward to seeing you, so when you're next in town pay us a visit, there's free flowing coffee and WIFI available.

You can find us at the corner of Cambridge Street and Warwick Way.

From Victoria Station take the exit adjacent to platform one, which will bring you out onto Bridge Place, then follow red arrows on the map.

Letters to the Editor

Safeguarding

Sir,

Firstly, let me congratulate you all on a superb magazine. It is now my favourite flying magazine, overtaking all the glossy ones which are now just pages of advertisements and articles of less interest than they used to be.

I want to comment on the article 'Helping Ourselves' by John Walker in the October 2013 issue. One paragraph raised my hackles, which was about safeguarding. I am the Secretary of the Flying Farmers Association and as a group we have about 300 airfields on our database – probably the biggest collection of private unlicensed airfields in the world. That besides, I am facing problems with a windfarm at my own airfield and when I turn to authorities like the CAA, GAAC and AOPA for assistance and advice the first question is: "Have you safeguarded the strip?"

Have you tried to safeguard an airstrip with your local LPA? By the way, the official term is non-official safeguarding, as only the very major airports can safeguard, which then gives them protection. Non-official safeguarding only makes you a statutory consultee to a planning application for development within so many kilometres. The theory is that you get alerted to any development which might affect you.

I have tried for 3 years to non-official safeguard. I have written to the Head of Planning twice with no response. I have tried to do it through my local Councillor twice and I have tried through three different case officers handling local turbines and a large proposed windfarm within my circuit. The nearest I got was a comment following a telephone call to say that I have been put on their radar, as she called it, and will be notified of any developments. Since then 3 more turbines have been proposed within my circuit with no notification being made!

I believe the problem is that LPAs have no idea what an unlicensed strip is, nor how to deal with it. Hence they prefer to ignore them. Developers are supposed to 'address all aviation issues before applying for planning permission', but that is totally ignored as well. Yet when a development goes to appeal, the government inspector takes aviation safety very seriously – the first person throughout the whole planning procedure that does.

I did a survey throughout our membership to gauge feelings on non-official safeguarding. Only 2 had done it and they run more commercial airfields. The vast majority said they would rather keep a low profile for various reasons, mainly because they didn't trust the LPAs as to where 'coming out' would end up – an excuse for rating, planning permission issues etc. Other responses were that they had tried and failed and others just didn't see what good it would do.

Personally, as a private strip operator, I can understand where they are all coming from as I have encountered complete apathy from my LPA. Now, they have a record of my strip (although it still isn't non-official safeguarded), so they have the ammunition to rate the strip or the hangar or both if they so wish. They could even try to restrict my operations, like no flying at weekends!

The answer is not safeguarding. It is the developer that should be responsible for approaching the strip owners. It is they who are wanting to make the change, not the airstrip owner who, as in my case, have been established for 43 years. The developer of the windfarm proposed in my circuit actually knocked on my door one day and announced that an anemometer mast was being erected that very day on my climb out track and his actual words were "we thought we'd better inform you as we didn't want you to knock it down with your aeroplane!" So much for 'addressing all aviation issues before applying for planning' as I had no idea that a mast had even been applied for. You might say that non-official safeguarding would have prevented that. I say that in reality, it probably wouldn't have!

Paul Stephens
Malton, North Yorkshire

John Walker replies:

Mr Stephens has correctly stated that there are two types of safeguarding; the 'official' variety covering the larger licensed aerodromes with substantial Commercial Air Transport movements and the 'non-official' category covering other aerodromes and aviation activity sites. Under the terms of the Town and Country Planning (Safeguarded aerodromes, technical sites and military explosives storage areas) Direction 2002, where a site is officially safeguarded the Local Planning Authority (LPA) have a duty to consult with the aerodrome owner or operator on any relevant planning application within the safeguarded area. This duty to consult does not apply to non-official safeguarded sites. However, in the still valid Government DfT/ODPM Circular 1/2003 providing advice to LPAs on this topic including the Direction in Annex 1, in Annex 2 under the heading 'Other civil aerodromes' is the statement that:

"Operators of licensed aerodromes which are not officially safeguarded, and operators of unlicensed aerodromes and sites for other aviation activities (for example gliding or parachuting) should take steps to protect their locations from the effects of possible adverse development by establishing an agreed consultation procedure between themselves and the LPA or authorities. One method, recommended by the CAA to aerodrome licensees, is to lodge a non-official safeguarding map with the LPA or authorities. LPAs are asked to respond sympathetically to requests for non-official safeguarding. The general advice in this Annex is applicable to non-officially as well as to officially safeguarded aerodromes, but the requirements of the Direction at Annex 1 will not apply."

I know of several unlicensed aerodromes who have successfully entered into safeguarding arrangements with their LPAs. Unfortunately, as Mr Stephens has found, there is a disparity between LPAs on how they respond to non-official safeguarding requests in the same manner as the disparity between how these authorities deal with aerodrome planning issues. It is a little surprising, given the controversy surrounding wind farm and telecom mast planning applications, that some LPAs do not use aerodrome safeguarding as a means to confine developments of this nature to certain areas within their territory. Clearly, if an LPA consistently ignores a request for non-official safeguarding and then gives planning consent without prior consultation to a development adversely affecting the site in question, then the LPA at the very least is open to scrutiny by the Local Government Ombudsman (LGO) who can recommend sanctions (including financial penalties) where appropriate. LGO recommendations are not subject to appeal, except on points of law, and are normally accepted in full by LPAs. The anemometer mentioned by Mr Stephens is a case in point.

Irrespective of the benefits of safeguarding, I would recommend aerodrome owners / operators review on a regular basis the websites of the relevant LPAs in their area for planning applications

whose approval might adversely affect the operation of their site. The websites in question provide a means of obtaining the details of the application and commenting on them as well.
John

Online GAR

Sir
I was disappointed that Roy Harford (*General Aviation*, October 2013) coupled his frustration of dealing with the Border Force at Lydd with criticism of the new online GAR facility. Any new system like this will take time to bed in. Take my experience for example. I was an early user and discovered a minor flaw – I contacted AOPA – received a grateful email in reply and the issue was resolved.

The system, as it now is, is a tremendous improvement over what went before. The ability to file GARs on line – and cancel them if need be – through an iPad by means of the official Border Agency App gives the flexibility that a GA pilot needs. With aircraft details, crew names and passport information being retained it could not be simpler to use.

I don't know which third party App that Roy refers to but if he follows the instructions on the AOPA website and looks for the iPhone – not iPad – App 'UK Border Force GAR' he will find that this works well on the iPad. If, however, he wants to continue to use the web-based form he doesn't need to look for a scanner – just take a photograph of the form with the iPad and email it.

Credit where credit is due and congratulations to those concerned. Whatever did we do before tablets came along?
Angus Clark
Hope Valley, Derbyshire

Saving the IMC

Sir,
Thank God for common sense.

My IMC has saved me and my crew on two occasions when even turning back was not an option.

Let's hope that loads of UK PPL holders now get the rating to increase their skills and then try to make EASA see sense.
Bruce Chapman
Reigate, Surrey

Flying in Madeira

Sir,
Most internet search engines list Funchal as No 4 in the top 10 scariest airports in the world. How would you like to LPMA in your logbook as PIC? Easy. Call Felepe Menezes on his mobile (966077503). He's the CFI at Aeroclube Madeira www.aeroclubedamadeira.com. Click on Google translate to read it in English. They are keen to encourage visiting pilots to fly with them.

You will need your licence, logbook and photo ID to gain access via the crew entry. Remember this is an international airport so there is some bureaucracy but it is minimal.

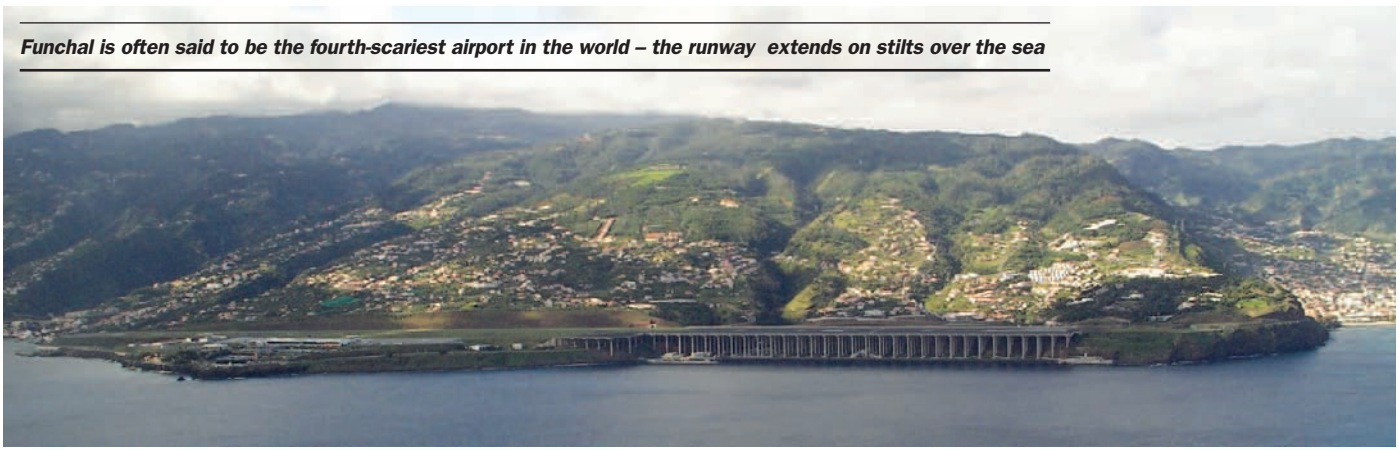
Use the Aerobus from virtually any hotel – it's €8 return and will have you at the airport in 30mins. Both are fixed undercarriage but the TB10 has VPP. The PA28 is rather ancient with Hershey bar wings, push-pull throttle, mixture and carb heat controls. There's also a door window winder in the ceiling for the trim!

If you want to fly round the island it's all over water at 1000ft flying alongside towering cliffs. Lifejackets are mandatory and flight time around 50mins, bit like the Isle of Wight but with virtually nowhere to land if the engine coughs! It's a ditch-near-a-boat jobbie.

The scenery is great and Felepe will be assessing you as whether to let you do the landing. Then there's the call: Clear to land, descend from 1000ft to line up for 05 at 500ft. It must be like landing on an aircraft carrier, the runway starts as an overhang above a road, PAPIs 3 white and 1 red, Vref 90kts and one stage of flaps till above the runway start, then full flaps and land. You are then led back to the parking area by a Follow Me car.

Cost - approx €200/hr, which is plenty time for a round island experience and a landing you'll dine out on.

Try it next time you visit Madeira
Robert Hill
Earls Colne, Essex ■



Funchal is often said to be the fourth-scariest airport in the world – the runway extends on stilts over the sea

Buying a future for Perranporth

Perranporth airfield is seeking to protect itself with a piecemeal sale to GA people, as ***Pat Malone*** *reports*

Pilots at closure-threatened Perranporth in Cornwall are attempting to raise enough money to buy the airfield by attracting shareholders to take a significant financial stake in order to guarantee its future.

There are genuine fears that it will fall into the hands of property developers, wind turbine importers or solar farm owners. As one of only three GA airfields in Cornwall – and the only one with a tarmac runway – it is a precious asset to all of general aviation and its closure would be a serious setback.

The airfield was sold by previous owners Tony Arthur, Vanda Arthur, Richard Seth-Smith and Nina Seth-Smith in 2008, but not to the highest bidder – instead, they took a lower price from local pilot John George, who intended to keep the airfield open for GA. John George had started a mobile phone business and built it into JAG Communications, a successful enterprise which eventually had in the order of 100 shops and 600 employees. He learned to fly at Bodmin, lived on Guernsey and commuted to his offices in Cornwall in an increasingly sophisticated series of aircraft – latterly a Cessna Citation Mustang.

But recession pegged the company back and various pressures resulted in shop closures and employee redundancies. The airfield was put up for sale, but in a buyer's market, it stuck.

John George wanted to sell to someone who would keep Perranporth open as an airfield, but he wasn't in a position to pick and choose. Eventually a potential buyer emerged, but demanded vacant possession with unknown plans in mind. The airfield comprises 350 acres on the Cornish coast, and although a property developer would have to overcome several obstacles, the heavy hitters in the construction industry seem to have little trouble in finessing the

Top: Perranporth aerodrome, perched on the rocky cliffs of Cornwall
Right: many structures at Perranporth date from wartime and some are scheduled

planning system.

In September John George gave Perranporth Flying Club a few days notice to quit. The situation pitted old friends against each other, with Tony Arthur, who had continued to run the field after selling it to John George, and other pilots determined that it should remain a GA airfield. Legal action was threatened and the notice to quit was suspended, but the situation remains precarious.

Perranporth stands out as a GA oasis in a county that is not exactly blessed with them – Bodmin and Perranporth are all that's left. It had a distinguished war record in which it played host to British, Canadian, Czech, Australian, Free French and Polish Spitfires, Typhoons and Hurribombers. In 1944 the Fleet Air Arm took over with Avengers and Swordfish. In the mid-1950s it was bought by Ernest Milner-Haig, who invited the Cornwall Gliding Club to transfer to Perranporth from St Merryn. Perranporth became a mecca for gliding until Milner-Haig's death, then passed through several hands until Tony and Vanda Arthur and Richard and Nina Seth-Smith bought it in 1999. Over the next nine years they put the flying school on a sound financial footing, established a cafe and engineering facility and fought for planning permission for new hangars, and built them before selling in 2008 when Richard Seth Smith decided to retire. They had also invited the Cornish Parachute Club onto the airfield. In those pre-recession days they had 37 serious would-be buyers, but they were adamant from the start that they would only sell to someone who intended to maintain it as a GA airfield and was able to do so. While some bidders were offering much more money, they sold to John George.

Obstacles to development include the wartime construction that remains on the airfield – blast pens for fighters, pillboxes, underground bunkers, some of which are scheduled by English Heritage. The airfield is part of an Area of Outstanding Natural Beauty and incorporates a Site of Special Scientific Interest in one corner because of the unique nature of its flora. It is also part of the Heritage Coast.

One potential buyer who would keep Perranporth as an airfield was said to be the Spitfire Heritage Trust, but their plans to raise the money from beneficiaries apparently ran into the sand. There was talk of rich Russian buyers, but that too faded away.

Left: gliders at Perranporth in 1972 - in its heyday, the airfield was second only to Lasham

Lower left: a painting of Perranporth airfield in wartime

Below: getting permission for the new hangar took years and cost a fortune

Bottom right: Tony Arthur with the memorial dedicated to all the squadrons who flew from Perranporth

"The last thing in the world we want to do is to fight John, and we fully understand the problems he faces," Tony Arthur says. "But every airfield that's lost is a blow to all of us, and John always understood that if it came to a choice between our friendship and keeping the airfield going, it would have to be the airfield. We want to do something for John, but not at the cost of the airfield. "At the Flying Club's Tuesday meeting we agreed unanimously to fight for the airfield, and the possibility was raised that we could sell shares in the airfield, both to our members and further afield. We might be able to sell enough shares in Perranporth Airfield Ltd to allow John to satisfy his immediate needs and retain some shares, perhaps to sell at a more propitious time.

"The shares would remain in escrow until a deal was completed, which means that if a satisfactory deal is not concluded, everyone gets their money back.

"We have begun the process of researching this possibility, but we need legal and financial advice, information from people who may have done something similar, and pledges of support. Initially we thought we'd need 100 people putting up £10,000 each – that would be enough to negotiate with John over the remainder. We've got in the region of 40 people to commit, but we know we're not yet halfway there. If we went for fewer people with larger sums of money, there would be a requirement to make an economic return, whereas some people can invest a £10,000 sum - and indeed even smaller amounts might be considered - on the basis of an emotional attachment to aviation and to Perranporth. It would be enough to know the airfield would be there when you wanted it."

A significant amount of work has been done recently at Perranporth, with planning permission obtained for a hangar extension, as well as an equipment building, and an extension to the cafe, which has recently been refurbished in its present form. "It's very much a going concern," Tony says. "The flying club has no debt, and that's a rare situation to be in these days. We're still researching the legalities, but time is not on our side and if the airfield is to be saved we need to move ahead quickly. The closure of Perranporth would be a loss to every one of us, so we're appealing to anyone who is in a position to help to pledge support, either financial or professional"

Tony Arthur can be contacted on t.arthur@perranporthairfield.com ■

BOOK Reviews

From Auster to Apache

The history of 656 Squadron RAF/AAC 1942 – 2012

Pen & Sword, £25.

300 pages, a generous helping of pictures, some in colour

You'd have to have been there, got the T-shirt and known the chaps concerned to get the best out of this book; enjoyment would be much enhanced if you knew the people who got up to these shenanigans, but the book's a good read for the stranger. As you can deduce from the title, 656 Squadron started with Austers out spotting for the artillery in 1942 and today they're equipped with the Apache, travelling wherever in the world Apaches can be put to good use. In between they've had adventures in almost every quarter of the globe and in an array of interesting aircraft. Europe, India and Burma during the war, Malaysia and Indonesia after it – the squadron dropped more than 230 million leaflets on Malaya, surely an act of littering rarely surpassed in aviation history – Brunei and Borneo in the sixties; in 1964 they re-equipped with Scout helicopters and Beaver fixed-wings and the Sioux helicopter was added the following year. Hong Kong occupied 656 up to 1977, during which time they traded up to the Gazelle, then we're off to Rhodesia, the Falklands in the eighties, followed by Bosnia, Croatia and Kosovo – wherever the action was 656 was in the middle of it, and along the way it managed to put personnel into Northern Ireland, Iraq and every other hotspot. In 2001 it became the first squadron to be equipped with the Apache, which it took to Afghanistan and Libya. Some of the operational detail is fascinating, and if you were part of it, you'd want this book. – *Evan Wilkinson*

Piper Cherokee:

A Family History

By Ron Smith

Published by Amberley Publishing at £14.99. ISBN 978-1-4456-0850-1. Paperback, 96 pp, with approximately 180 illustrations, mostly in colour.

This slim volume tells the story of the Piper Cherokee (PA-28 and PA-32) family, one of the most successful light aircraft designs ever, surpassed in overall production numbers only by the Cessna 172 series. The first Cherokee model, the PA28-150, of which the prototype first flew in 1960, spawned a large family of aircraft that ranged widely in performance and sophistication. In the 1950s, Piper was already achieving success with the Tri-Pacer, a four seat and tricycle gear development of the Cub. Cessna countered this with the world-beating Cessna 172 that employed stressed skin construction, making the Piper rag and tube equivalent appear old-fashioned. Piper were already producing a retractable gear stressed skin structure aircraft, the PA24 Comanche, as a competitor to the Beech Bonanza, so a less complex and simpler to produce design was embarked upon that offered payload and performance figures that would compete directly with the Cessna 172. As well as employing aluminium alloy skins with minimal ribs and stringers like the Cessna, the introduction of the stabilator, laminar flow wing section, and proper (i.e. oil and gas, not rubber based) oleo legs for all three undercarriage legs represented a significant advance at that time.

The history of the development of the Cherokee and its many variants is admirably dealt with in this book. The author, who has written several other books on aviation subjects, has the knack of covering a lot of ground with the minimum of effort, making what could be a rather tedious topic quite an easy and thoroughly informative read. It is natural to assume that the numbers indicating horsepower attached after PA-28 are also sequential in time, but in fact the lowest numbered and highly ubiquitous PA28-140 was actually a development of the PA28-150, being designed specifically for the training market. Over 10,000 of the 140s were produced overall, reaching a maximum rate of production of 4 per day in 1967.

The author provides the background to the design changes and the subsequent aircraft that were developed from the original basic design. Thus, well known types within the extended family such as the Archer, Arrow, Cherokee Six, Dakota, Lance, Saratoga, and Warrior are described. Also covered is the production of many of these models by South American manufacturers in Argentina, Brazil, Chile and Colombia. The Chilean company made use of components of the Piper models to design and make a racy-looking military trainer, the Pillan, which was exhibited at Farnborough in 1992. Further chapters cover pilot/ownership details, comparative safety highlights and specials, which include a PA28-160 tail-dragger and a Cherokee 180 on floats.

This is a handy little book and as a long standing part-owner of a Piper Cherokee 140 myself, it is certainly one for my bookshelf. – *George Done*

The Aircraft Book:

'The definitive visual history'

Dorling Kindersley

320 pages, lavishly illustrated £25

Educational publishers Dorling Kindersley have come up with an absolute corker here, taking the reader from Montgolfier to the A380 and stopping at every worthwhile or interesting model along the way, fixed-wing or helicopter, treating each one with a photograph and a paragraph of pertinent text. There are more than 800

aircraft in this coffee-table style book, and I defy anyone to find they've omitted an aircraft that ought to feature in a book that sets out to be a definitive history of aviation.

Consultant on this book was Philip Whiteman, who as well as being editor of *Pilot* magazine and owner of a J3 Cub is an engineer to trade – so the matter of what makes these aircraft tick is not neglected. Indeed, there are sections devoted to engines, piston, turbine and 'other'. The book is broken down into sections for each decade, with special treatment given to significant manufacturers from de Havilland to Boeing via Lockheed and Airbus. And while the contributions of all important Americans since the Brothers Wright is properly recognised, the book is not as US-centric as some; Cayley, Lilienthal, Bleriot and Pilcher get due recognition as well as Chanute, Beachey and dozens more great Americans.

All of life is here; with so much to squeeze in, there's a lot of detail left out, but in general I think the authors have done a sterling job of encapsulating aviation in this comprehensive, high-quality publication. It'll go on my bookshelf as a worthy companion to James Gilbert's *Great Planes*. – *Keith Hayley*

From Borneo to Lockerbie

Memoirs of an RAF Helicopter Pilot

By Geoffrey Leeming

Pen & Sword, £19,99
210 pages, 12 pages of b&w plates

What astounded me about Geoffrey Leeming's memoirs was just how someone with such an thinly-disguised disdain for authority could not only make a career in the RAF, but meet with some success. At almost every turn he rubs his superiors up the wrong way, yet he winds up as commander of the Search & Rescue Training Unit at RAF Valley. Who knows how far he could have gone, had he only mastered the art of managing upwards – his chapter heading 'Against all sods' gives the flavour. Once, miffed at being tasked for a VIP flight when he should have been on SAR standby, he dumped an Air Marshal by the side of the road and flew off on a shout.

After a brief false start on Valiants, Leeming transferred into helicopters and flew the venerable old Whirlwind in the jungles of Borneo, but for most of his service life was spent in Search and Rescue, and here the tales he tells are sometimes little short of staggering. It's amazing what you can do with a single-engined Whirlwind in the Cairngorms on a dark night in sixty knots of driving snow and a blind fog. Stories of sea rescues against daunting odds and mountain rescues so difficult they had to swing his winchman in towards the hill tumble over each other.

One of Leeming's last operations was the Lockerbie bombing, where his crew was tasked with recovering bodies, and he vividly describes the scenes and the emotions of that harrowing time.

Leeming has a fluent pen and his stories are well told. The book is timely now that this work is falling into the hands of private companies… one wonders whether a salaried man would take the same risks with himself and his crew. – *Pat Malone*

Mustang: The Inspiration

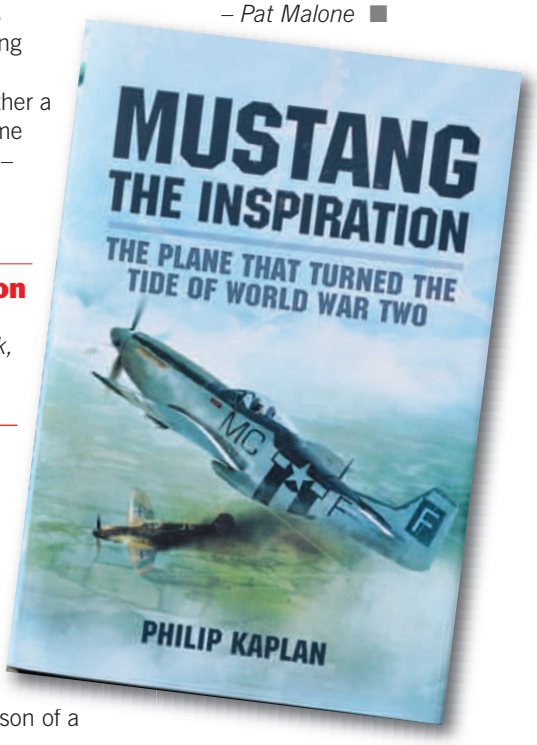
By Philip Kaplan

Pen & Sword, £19.99 Hardback, 183 pages, 17 pages of b&w plates

You experts probably knew this, but it came as a shock to me – the Mustang, correctly described here as the plane that turned the tide of World War Two, was actually designed by a German! North American's chief designer when the British came knocking in 1940 was Edgar Schmued, the son of a dentist from Zweibrücken who had worked as a mechanic in the Austro-Hungarian Flying Service during the First World War and emigrated to the USA in 1930. He was given a couple of weeks by Dutch Kindelberger to come up with the best fighter in the world, and he did.

The story of Göring saying he knew the jig was up when he saw Mustangs over Berlin may or may not be apocryphal but the contribution of the aircraft to the ultimate Allied victory cannot be underestimated. The story of the Mustang's marriage to the Merlin is well-known (even by me) and this book ranges over every development and upgrade – the Twin Mustang sounds like a real handful – and the operational experiences of those who flew the aircraft to the limit. I also learned something new about the Tuskegee Airmen, which was not so much a far-sighted instance of racial integration as a response from a lawsuit by a black student who couldn't possibly, they thought, be accepted into a white unit – so they had to set up an all-black one. There's a picture of the Mustang Ferocious Frankie, which I've had the privilege of flying in with Alister Kay; on low-risk occasions I neglect to mention that it has only one stick. This is a valuable, fact-packed but very readable compendium of Mustang lore, well worth a place on the bookshelf.

– *Pat Malone* ■



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Taking the High Road

*300-hour PPL **Bob Darby** mixes AOPA business with pleasure, sampling the delights of flying in Scotland*

I had a meeting in Edinburgh in the first week of June. This seemed like a good excuse to fly myself there, rather than drive or use public transport. It was also a chance to meet up with my friend Steve, who now lives in Inverness, as well as maybe to do the unique beach landing at Barra in the Outer Hebrides.

I departed Fairoaks at 11:30. The routing was initially at 2000 to 3000ft via Cranfield, to Otringham VOR/DME (unserviceable on the day, that I flew but still a useful reference when talking to ATC), then FL85 up the east coast to St Abbs Head and past the Bass Rock, followed by a gentle descent to 2500ft to cross the Firth of Forth to land at Fife. I received service from Farnborough, Farnborough North, Cranfield, Waddington, Durham and finally Scottish. Despite the NOTAMs about exercises over the North Sea, there was very little radio traffic. The only controlled area was transit of Newcastle airspace. Visibility was excellent all day, with only a slight headwind, and Fife was reasonably easy to find. Total time was 3hr 40. I parked at Fife and took a taxi to Glenrothes town centre and an express bus to Edinburgh centre.

I was visiting Edinburgh on behalf of AOPA for a meeting with Eurocontrol, the FAA and others about technical and operational requirements for an ADS-B development intended for use by general aviation aircraft called 'Traffic Situation Awareness with Alerts' (TSAA). The meeting was hosted by Trig avionics, who clearly have an interest in being a leader in offering such a capability in Europe, as well as the USA. (More about TSAA in the accompanying sidebar.)

Such meetings, while they generate vigorous discussion about technical and operational matters, are not exclusively work! Martin Gray, the Chief Technical Officer of Trig, represented Scotland magnificently by attending the meeting in full Scottish dress and organising a visit to the Scottish Malt Whisky Society for "single cask" tasting. The SMWS is an organisation which has the aim to find high-quality and interesting whisky and to buy entire single casks, which are then bottled for sale to members. Whereas single malts are blended from several casks of the same age in order to offer a consistent flavour, the flavour of whisky from single casks is unique to each cask, being strongly influenced by the previous contents, be it sherry, port, bourbon or whatever else. The SMWS therefore has the enviable task of visiting various distilleries and conducting tastings before buying a cask. Somebody has to do it!

We sampled four whiskies ranging from 16 to 33 years and up to 58% proof. Some of the descriptions were intriguing – such as *"…very ashy, like a distant erupted volcano, soon followed by various*

Top: fairweather cumulus over Skye – with snow on the Cuillins even in June
Right: an unmistakeable landmark – or seamark – Bass Rock in the Firth of Forth

Top: en route to Scotland, passing abeam RAF Wittering near Peterborough
This photo: Barra from the air – we landed in the tyre tracks of a Twin Otter
Below: Bob Darby and PA-28 on the 'apron' at Barra with Flybe Twotter
Bottom: our PA-28 parked on the tidal 'airfield' at Barra
Below right: Steve on Barra with the well-equipped control tower and café on the beach

lemon aromas…" and "…an interesting battle between the saltiness of pork scratchings and the sweetness of a crystallised orange…" Being hitherto a whisky drinker only rarely, this opened a new door for me. My personal preference was a smoky whisky. (I didn't fly that day.)

After a cloudy start, the weather on the second meeting day turned out beautifully. We had hoped to finish a little early in order to make an evening flight over the Firth of Forth and nearby areas, but the meeting finished late, so this was not possible.

It was raining the next morning. I was planning to meet up with Steve in Inverness and to fly together to Barra for the beach landing. I took the bus and taxi back to Fife airfield and found the aircraft battery discharged. Fortunately, the airfield staff were very helpful (thanks Jim and all) and got the aircraft started with the help of jump leads connected to the airfield Land Rover.

Once started, an hour later than intended, I routed direct to Inverness. At Fife it was very grey with a cloudbase of about 1200ft, so I did an initial climb in IMC to 5000 to get above the clouds, then VFR on top. The clouds started breaking from Aviemore onwards. At Inverness, it was almost clear sky. Transit time 1hr 10.

Steve met me there and we set off directly over the mountains to Barra. There was no time to waste because the beach landing is constrained by the state of the tide – we had to get there and take off again by 1500 local time. Heading south west from Inverness over the mountains, we again encountered some patchy cloud so climbed above it to 9000. Over the sea, the cloud reduced to almost nothing. We approached Barra and landed on 33. It was somewhat difficult to see exactly where the runways are but, fortunately, a Flybe Twin Otter had landed just before us, so we followed his tyre tracks. Steve took photos of the approach and landing. Transit time 1hr 30.

Barra has a well-equipped control tower and café. It's a beautiful spot, with firm white sand, and could have been the West Indies but for the sea temperature. We

took off about 30 minutes after arrival and routed back via Tiree, Oban and the Great Glen, passing Ben Nevis at about the same level as the summit. Transit time 1hr 50. I stayed overnight in Inverness.

Indemnity

The next day was Saturday. As it was rather cloudy in the morning, I didn't rush to get up. When I started calling PPR phone numbers I found to my surprise that Highlands and Islands Airports, which operates many of the fields I had intended to land at, (1) does not open many of the fields at the weekend, and (2) requires an "out of hours indemnity" for landing when the field is shut. Even though the office for dealing with this is at Inverness they were (guess what) closed at the weekend. (Pooleys please note this, and mention it in your guide.)

At Inverness airport I refuelled up to the top. As a result of the PPR/indemnity problem, I changed plans and flew down the Great Glen again but only as far as Oban (operated by Argyll and Bute Council) which was open. Oban is a nicely equipped airfield with modern buildings and a 1264m hard runway, just on the edge of Ardmucknish Bay on Loch Linnhe and therefore quite easy to spot. Transit time 1hr 10.

After a taxi ride to Oban I booked into a B&B and wandered along the water's edge to sit in the sunshine and enjoy some freshly caught haddock, cooked in the open air. Oban is a very attractive and lively port, with boat trips to many of the islands that we had flown over the day before.

Sunday started with a very good "full Scottish" breakfast and a taxi ride back to Oban airport. I was ready for departure by 0945. Routing was direct Campbeltown, Isle of Man, Shawbury, Oxford, Compton, and home to Fairoaks. I filed an airborne flight plan for the section from Campbeltown to Oxford at FL95. This went through several areas of controlled airspace, but there were no difficulties. Again, it was a beautiful VFR day with only a slight haze. The air was once more wonderfully stable and, with careful trimming, the aircraft was steady at the chosen altitude. After leaving the coast at Campbeltown, the next land was Castle

Top: we flew past Ben Nevis at the same level as the summit
This photo: Oban airfield, free of Highlands and Islands indemnity and hours problems
Inset: the Warrior on the ground at Oban airport

Kennedy on the left and the coast of N Ireland on the right. That was followed by the Isle of Man, which had a cone of cloud above Snaefell – a bit like the twirly ice cream on an ice cream cornet. Following that, I crossed the coast of North Wales just to the east of Llandudno. From the coast, the cloud started building up again until from Shawbury it was almost solid cloud cover, but I was in stable air well above it. Once near Brize Norton, I started the descent to Compton and then made a low level transit for the final 20 minutes back home. There were a few slight changes of height at ATCO request during the flight but otherwise the route was as planned. Once again, I received excellent service from Scottish until the North Wales coast, then Shawbury followed by Brize, who handed me on to Farnborough LARS. Beautiful still air above the clouds (cloud tops 3500ft) but bumpy and unpleasant below (cloud base about 2000). Transit time 4hr.

Observations

Fortunately, and perhaps largely due to the cold spring weather, the Scottish secret weapon of the midge was not at all present – although perhaps they don't fly as high as I did.

For the long haul across the Irish Sea, in very stable air, it was interesting to play with the trim and power settings to see the effects. It was noticeable that only very tiny changes to either had an effect, even though it took some minutes to show itself.

Overall consumption for a PA28-161 was a bit over 27 litres per hour for 13h20m logged time; much better than

Top left: into the Great Glen – approaching Loch Lochy from the west
Left: the lovely grass airstrip of Glenforsa on the Isle of Mull
Below: the road bridge between Skye and the mainland at Kyle of Lochalsh

Left: an ice cream cone of cloud off Snaefell on the isle of Man
Bottom: Halfpenny Green (or Wolverhampton International) glimpsed on the flight south

the typical flying school rule-of-thumb of 32-36 litres per hour. For most of the time, I was flying at about 2400rpm giving between 100-105kt IAS and leaning the mixture above 3000ft. Much of the flying was at 6000 to 9500 feet.

Near Fairoaks, just under the southern edge of the London CTR, the airspace is complex and heavily restricted. What a pleasure it is to fly in the open airspace of Scotland, with almost no altitude restrictions.

Bob Darby worked for 21 years on many technical aspects of aviation communications , navigation and surveillance, and initiated the Eurocontrol work on ADS-B. He has recently retired from Eurocontrol and, as a 300hr PPL, is now contributing to the TSAA standards on behalf of AOPA from the viewpoint of a GA pilot. ■

Traffic Situation Awareness with Alerts (TSAA) and ADS-B

Traffic Situation Awareness with Alerts (TSAA) is an ADS-B application which will give a traffic picture of nearby aircraft on a cockpit display, with the additional facility of alerts about aircraft whose projected trajectory will bring them too close to one's own aircraft. The FAA is sponsoring work on this so as to give GA pilots the possibility of significant added value if equipping with ADS-B. Part of the idea is to encourage earlier take-up of ADS-B, well before the FAA-mandated date of 2020, when all aircraft in FAA airspace will have to equip.

ADS-B is the once-per-second broadcast by an aircraft of its position, based on GPS, for use by any ground or airborne recipient. Although initially seen simply as a replacement to radar surveillance, the range of ADS-B applications has grown hugely and some of the most interesting are classed as "airborne surveillance applications", enabling cockpit situation awareness of other aircraft as well as "spacing" or "interval management" tasks, which support a variety of tactical operations. For GA aircraft mainly flying in uncontrolled airspace, traffic situation awareness is potentially of the greatest benefit.

The operational concepts and technical standards for ADS-B applications are developed by a joint EUROCAE/RTCA Working Group. (These are European and US aviation standards organisations.) The WG brings together Eurocontrol, the FAA, research organisations, certification experts, avionics and airframe manufacturers, pilots and controllers and others and has delivered eleven ADS-B application and equipment standards in the past seven years, several of which are now flying in commercial aircraft and delivering financial benefits to the operating airlines. These standards are also frequently used by EASA for certification purposes.

The challenge is to develop a standard that can be met by equipment affordable for GA, which is at the same time compatible and interoperable with similar equipment carried on commercial aircraft. Achieving this depends particularly on the availability of affordable (for GA) GPS components. Recent focus on the argument of *safety* for all aircraft rather than the extremely stringent standards required for air transport aircraft *separation*, has opened the door for lower cost GPS equipment to perhaps be acceptable.

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