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# The biggebore with biggebore The TBM 940 has the most advanced cockpit in a turobproptom Horne takes one for a flight

**REVALIDATION COURSE** Matt Lane explains exactly what happens at the two-day AOPA seminars

CBM.

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# A CHANGING NEW WORLD

HAT DOES the UK leaving EASA mean for AOPA members? EASA's powers will revert to the CAA at the end of 2020, and there will be no amendments to UK legislation in the short term. However, from 1 January 2021 there will be no more EASA licences issued by the CAA. There has already been significant action by Flight Training Organisations to move their operations to other European states, the Netherlands and Ireland being favourites, so the issue of EASA licences for their students moving up the aviation career ladder is uninterrupted. Currently the cost of the skills test for a CPL (IR) in the UK is about \$800 compared with much lower fees in other parts of Europe, and I understand, about €65 in France for a similar test. The consequence of this lack of activity by the CAA will be a reduction of income for it. Life for the UK flight training industry is going to change, given that pilots want a qualification that provides an opportunity to easily work or travel in Europe. Without student pilots there is no aviation industry: there is less need for aeroplanes, schools, airfields and the list goes on. And for what licence? UK manufacturers will also continue to want access to the larger European market. They will not want the expense of having to get their products and designs certified more than once.

Government people are in Europe working on a Bilateral Aviation Safety Agreement (BASA) to facilitate the recognition of aviation safety standards and cooperation between the CAA and EASA. EASA already has some BASAs in place with countries such as the US and Canada covering technical standards in airworthiness certification, but not pilot licencing. There is currently no information available about those talks and certainly no representation from UK GA. The UK has always contributed to the expertise at EASA and whilst there are plans to gradually repatriate people, will they want to work at the CAA? It could be argued the UK has gone from being a big fish in a big pond, to being a small fish in a big pond. The continued availability of fuel, whether it be Avgas or MOGAS, is also going to be a challenge. AOPA is talking with the LAA CEO who has identified similar issues for their class of aircraft and the aim is to work together to find solutions. Finally, from 8 April 2020 the current exemption that allows GA pilots to selfdeclare their medical fitness expires. Currently pilots with a LAPL or PPL can self-declare their fitness to fly aircraft certified by EASA rather than having to gain a LAPL Medical Certificate, a Class 2 medical with an AME, or a LAPL Medical Certificate with their NHS GP. The advice from the CAA is to get a LAPL or Class 2 medical to continue flying EASA aircraft. The UK can't issue a further exemption at this time. However, AOPA is working with the CAA and the DfT to find a solution. On a positive note, the CAA is standing by its commitment to only regulate when it has to, and there is still a commitment from the government to make the UK the best place in the world for GA. AOPA has asked the DfT for a plan as to how this will be achieved. There has never been a more important time for those who want to maintain their rights and privileges to fly, whether in UK or European Airspace, to support the work of AOPA and other GA organisations working on your behalf.



Pauline Vahey Chairman, AOPA UK pauline@aopa.co.uk



EDITOR David Rawlings david.rawlings@aopa.co.uk

ART EDITOR Dan Payne dan.payne@aopa.co.uk

> **SUB EDITOR** Lucy Debenham

#### CONTRIBUTORS

Pauline Vahey, John Walker, Matt Lane, David Chambers, Malcolm Bird

#### **PUBLISHED BY**

AOPA UK 50a Cambridge Street, London, SW1V 4QQ +44 (0)20 7834 5631

#### ADVERTISING & SUBSCRIPTIONS

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#### **HEAD OF ADVERTISING**

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**WORKING FOR YOU** AOPA's David Chambers shares with us the latest news from the most recent Corporate Member Committee meeting, held at White Waltham.

**PPL CORNER** If you need to go on a refresher course, Matt Lane explains in depth what happens at AOPA's refresher seminars and how they can help you.

**HELP AND ADVICE** With all the news surrounding 100LL, Malcolm Bird looks into possible eventualities and what would be changing in the near future.

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**NEWS II** These news pages look into the world of alternative fuels, how you can help charity events and the latest addition to Aerobility's fleet.

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**CLASSIFIEDS** Find pages packed with aviationrelated listings, as well as opportunities for shares in aircraft, and reputable maintenance organisations.





## EDITOR'S MOMENT

It's a worrying time at the moment with health issues being top of the news agenda – so much so that some are looking back fondly on the days of omnipresent Brexit news!

If you're housebound for the foreseeable future then you're in luck as this issue includes AOPA's complete Flight Directory. So, if you promised yourself a Night Rating, an IMC or just to fly something new, head to page 21 and uncover a whole treasure trove of fun things to do with flying. You'll also be able to get your AOPA Wings Award. You might not be able to do it straight away, but get it booked in, because by the time we're allowed out again, it'll be summer and perfect weather for flying. Elsewhere in this issue Tom Horne gets behind the controls of the TBM 940 and is blown away by its bigjet handling, thanks to its autothrottle. So, if you're stuck indoors at least you have this issue to read. Stay safe!

**David Rawlings** Editor, AOPA Magazine UK david.rawlings@aopa.co.uk



April 2020 AOPA Aircraft Owner and Pilot



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## AOPA AFFAIRS

# CONSULTATIONS MEETING AND OTHER MATTERS OF INTEREST

S THE flying season begins, AOPA remains concerned that some pilots will continue to operate the way they have done for many years, but there are changes and this may lead individuals into conflict with the authorities in other states if you fail to comply with the rules on entry and exit.

As an example, flying to Europe means that we can no longer assume that we have the same freedom of movement that we once had. As we are no longer European citizens we no longer benefit from the European rules and therefore we need to comply with border and customs controls. Whilst you must complete a General Aviation Report for outbound and inbound flights, you cannot assume that you can just depart from any aerodrome in Europe because you will need to clear outbound via a customs-designated airport. This may add an additional en route stop to your flight. This will apply even if you plan to go from Germany to France. Before you depart you will need to check what the local customs and immigration procedures are and how much notice you will be required to give. You must also make sure that you carry the correct documentation for you, your passengers and your aircraft, as failure to do so may cause further problems.

I am informed that the UK is not looking to impose any unnecessary requirements for pilots wherever they are flying from. European pilots will still be able to fly into GA aerodromes where they operate an agreement with Border Force but the GAR must be used in and out of the UK.

#### AIRSPACE CHANGE ORGANISATION GROUP (ACOG)

I have a meeting with Mark Swan who is the head of this recentlyconstituted body which will be responsible for implementing changes to airspace as well as implementing new technology. Mark is keen for electronic conspicuity devices to be mandated for GA in the future. "Flying into Europe means that we can no longer assume that we have the same freedom of movement that we once did"

Sir Tim Anderson KCB DSO is the Chairman of the ACOG Steering Committee on which there will be two GA representatives (yet to be announced), and I hope the selected individuals are able to communicate with the community on ACOG developments. ACOG's first task is the re-drafting of the airspace master plan for southern England. Any changes to airspace have the potential to impact on GA.

#### PERMIT AIRCRAFT FOR TRAINING

It's clear from the discussion that the UK training industry is divided on the topic of using Permit Aircraft for ab initio training. From the consultation I carried out with our corporate members, I would say it was around 35 per cent for and 65 per cent not supportive. The main issue seems to be in respect of liabilities. The CAA is yet to give clear guidance on this matter. A good explanation as to why the LAPL is not promoted very much was given in relation to the fact that regardless of the number of hours it takes the individual to pass the course they still have to do a further 10 hours of solo flying before they can put passengers in the aircraft and this is seen as the main restriction.

#### **AVGAS 100LL**

The European body and its UK counterpart known as REACH has decided that by the end of 2020, TEL (tetraethyllead) should be banned from use. Although there will be an 18-month transition period, this is likely to be a problem for members with high performance/turbo-charged engines, as there appears to be no easy solution. I have forwarded this issue to Grant Shapps who tells me he's 'on it'. We will seek an extension to the deadline pending a replacement solution.

#### **SERA**

The UK has decided, for legal reasons, to implement in full the SERA requirements, which increases the visibility and distance from cloud, for aircraft transiting class D airspace. The DfT has seen the need to do this so the UK remains compliant with the existing legal framework – however AOPA has concerns over this decision.

The other matter that has raised its head is that of pilot self-declared medicals for those who wish to continue to fly EASA aircraft after 8 April 2020. This again is tied into the legal framework and complicated because of Brexit – the existing exemption would need EASA agreement to continue but currently our relationship with EASA is in limbo. Whilst we have suggested to the CAA to allow the practice to continue, limiting the activity to day-VFR in UK airspace, we are yet to receive a reply.

#### WINGLY

I recently had a conversation with Wingly regarding their summer Fly-In to the Isle of Wight and I have agreed to go along and update pilots on what to expect in the future as we continue to withdraw from Europe. I am sure that anyone would be welcome to attend even if you do not take part in cost-sharing flights. Watch this space.



MRollinson

Martin Robinson CEO, AOPA UK martin@aopa.co.uk

**RETAIL:** T: +44 (0)20 8207 3749 T: 0800 678 5153 email: sales@pooleys.com



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# HELPING YOU STAY FLYING

Welcome to the **AOPA COMMUNITY** section of the magazine, bringing you all the **NEWS AND INSIGHTS** from the world of AOPA...



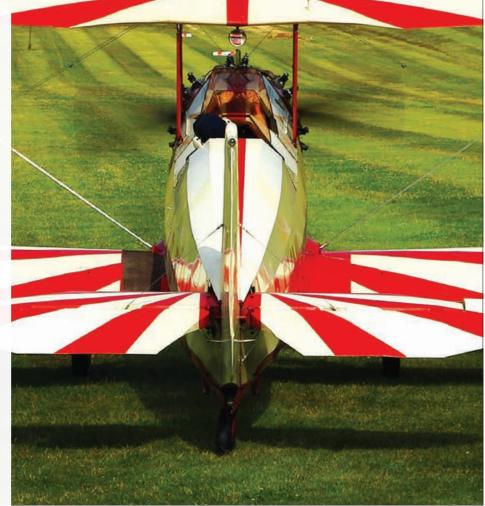
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WORDS David Chambers

# EASA, UK AIRFIELDS AND ENGINEERING UPDATES

Fourteen people attended the winter meeting of the Members Working Group held at AOPA UK offices in London, where many issues were discussed...

THE MEETING began with a CEO update. Many of the issues raised are reported elsewhere in this edition, but the nuances and detail explained by Martin Robinson provided more depth and insight than from a written article.

Topics covered included: •Future relationship between UK CAA and EASA and the consequences for private pilots, maintenance organisations and commercial flight schools. Some flight schools have already made arrangements to be directly supervised by EASA. •The large number of mostly commercial pilots (at least 5,000 of 20,000) who have already moved their state of licence issue (SOLI) to other EASA member states (mainly Austria or Ireland). This reduces the UK CAA's fee income and oversight. ·Use of Permit aircraft for ab-initio PPL training (CAA consultation in progress). ·Airspace Change Process Review, which will result in a major restructuring of national lower airspace (up to 7,000 feet). Philip Church will be AOPAs representative on this review group. ·AOPA has been asked to

comment on the Air Traffic Management Bill (currently going through parliament), and which includes a substantial section on drones.

There continues to be a wide scope of topics which directly impact GA pilots, in both short and long term, and it's important that there is an independent voice speaking "The Basic Instrument Rating is due to be passed into law soon, but scheduled to be available from September 2021, a delay of a year for no obvious reason"



There was good news about Wellesbourne from John Walker

up for the sector during this time of change. Widespread membership of AOPA is critical for supporting that.

#### **EASA UPDATE**

Nick Wilcock had previously circulated his report on Flight Crew Licensing. Several attendees highlighted the usefulness of both Nick's lobbying activities and his regular email updates.

Hot topics included: • Ongoing problems with delayed handling of licence revalidation and renewals, largely due to high staff churn rates at the CAA shared service centre.

•While it is hoped that Personal Medical Declarations could continue to be used to fly EASA aircraft after April 2020, this was not assured unless some legal mechanism can be found to continue the exemption.

•E-exams for PPL courses will be trialled with 10 DTOs from March and launched nationwide in June. An issue about the way to debrief students who pass with some wrong answers has been raised.

The Basic Instrument Rating is due to be passed into law soon but scheduled to be available from September 2021 – a delay of a year for no obvious reason.
EASA is now asking flying schools to assess the mental health of their students.

#### MAINTENANCE AND ENGINEERING

George Done noted that several long-standing members are retiring from the Maintenance Working Group and he is actively seeking fresh replacements. The group provides excellent information-sharing amongst maintenance organisations and the CAA also directly participates.

EASA Part M Light came into force on 20 March and LAMP (Light Aircraft Maintenance Program) will be phased out over the year following that.

George reported on his meeting with the DfT regarding ideas to recruit younger people into careers as licensed aircraft engineers. It was thought the licensing system put people off, as did the relatively low pay rates of around \$45 per hour. Ideas included raising the profile of maintainers, and setting up an apprentice-type scheme with day release for smaller maintenance organisations. It might also be useful to benchmark the UK with other EU countries as to how they recruit and keep licensed aircraft engineers.

#### **AIRFIELD STATUS**

John Walker, AOPA UK Board Member, member of the GAAC and APPG GA Airfields Working Group, circulated his update on UK Airfields at risk. The opportunity to question John directly about any one of these revealed his mastery of the detail.

In summary, there was positive news about Gamston and Wellesbourne, hope for Manston but disappointment at the closure of Old Sarum (although parachuting activities continue).

#### **GROWING MEMBERSHIP**

David Chambers had previously circulated a paper on AOPA UK Market Segmentation and Opportunities. He explained this was intended initially to identify and agree a small set of target groups, or market segments, to which AOPA UK relates.

The paper involved some analysis of available pilot licence statistics, which highlighted that the quality and value of data published by the CAA is quite poor. Nonetheless, it was established that around half of the PPLs issued are for those who subsequently gain CPLs.

Excluding those probable CPLs, new licences were split between PPL (46 per cent), NPPL (32 per cent) and LAPL (22 per cent) during 2016.

The number of active LAPL

pilots is difficult to assess because many are flying on Personal Medical Declarations and so are not reported in CAA statistics.

The number of private pilots gaining full instrument ratings remains very low, thought to be around 30–40 per year, with a further 20–30 gaining an EASA IR on the basis of a third-country one. Meanwhile the IR(R) remains comparatively popular with 286 ratings issued.

It was suggested that we should decide what statistics would be useful for the CAA to provide, and request them through a Freedom of Information request.

The paper also proposed a market segmentation of potential AOPA members, which was discussed and generally agreed by consensus.

A discussion ensued as to why people join AOPA. Although attendees did not represent the general mix of AOPA members overall, everyone told their individual stories and reasons for joining. In summary the top three were: my instructor/school told me to; participating in an AOPA project/activity; became an aircraft owner/part-owner.

There was useful discussion and debate about the topic, with a suggestion that a communications review is made that looks at what channels AOPA UK uses (or could use) to disseminate information.

#### UPCOMING MEETINGS

Dates and venues for upcoming meetings: 18 July – Earls Colne Airfield 17 October – White Waltham Welcome from 10:00 with the meeting starting promptly at 10:30. All pilots and aircraft owners are welcome to attend, with a first-year discount offered to any non-members who join at the meeting. Please let us know beforehand so we can plan adequate catering (free buffet lunch provided) and seating arrangements.

# AOPA FLYING INSTRUCTOR'S REFRESHER COURSES

For revalidation of an FI certificate, the holder shall fulfil two of the following three requirements:

1 At least 50 hours of flight instruction during certificate validity as FI, TRI, CTI, IRI, MI or Examiner;
2 Attend a Flight Instructor Refresher Seminar within the validity of the certificate; and
3 Pass an Assessment of Competence within the 12 months preceding the expiry of the certificate.

For at least each alternate subsequent revalidation, an assessment of competence must be undertaken. In the case of a renewal you should, within 12 months before renewal, attend a Flight Instructor Refresher Course and pass an assessment of competence.

#### **NEXT DATES**

The next dates for the courses are

#### 7–8 July 2020, 24–25 November 2020.

All courses are now run at the AOPA offices at 50a Cambridge Street, London SW1V 4QQ – only 5 minutes' walk from Victoria Station.



To register for a place on any of the seminars please call the AOPA office on 020 7834 5631 or join online at WWW.AOPA.CO.UK.

The seminars start at 1100 and end at 1800 each day to facilitate travel.

WORDS Matt Lane

# A GUIDE TO INSTRUCTOR REFRESHER COURSES

Matt Lane hosts Instructor Refresher Courses at AOPA's HQ in London – here he explains exactly what happens during the two days of these courses

ONE OF the options for Revalidation or Renewal of a Flight Instructor, Class Rating or Instrument Rating Instructor certificate is to attend an Instructor Refresher Course in accordance with EASA-part FCL 940.FI within the three year validity period of the certificate.

AOPA runs three of these two-day courses per year for members and also welcomes non-members. As Head of Training for the courses, while sitting in my hotel after day one of the March course, I thought readers might be interested to hear what is on offer and what you can expect!

During the two-day seminar, you will listen to and participate in training sessions and discussions on topical subjects relating to your flying and instructional skills. Experienced lecturers present and facilitate discussions, and the experience and input of other candidates will be shared. Throughout we emphasise Threat and Error Management techniques and considerations.

The course is designed to be an interactive and enjoyable two days, where we can refresh knowledge of current training issues, share best practice and network with our instructor colleagues from around the flight training industry. Many of the attendees will have various levels of experience, currency and qualifications but we can always learn from each other and in our experience everyone will go away having "During the course, candidates will also are allocated to syndicates and be required to consider a topical training issue and deliver a short presentation " had a worthwhile two days. Not all of the information given may be directly relevant to your particular instructional work, but I hope you will find it timely and useful and perhaps inspire you to further your instructional experience in some cases - my mantra on advice and training presentations is 'adopt/adapt/ discard' as appropriate to your circumstances, and I encourage you to think about how you might tailor some of the guidance and discussion to your particular operation when you leave. We also greatly appreciate feedback and discussion throughout the seminar and in the formal feedback form at the end.

There is no pass or fail and, on completion of the course, you will receive a Certificate of Attendance. For those revalidating by experience, we will sign your FI Certificate for a further three-year validity.

#### THE COURSE OBJECTIVES

AOPA Flight Instructor Refresher Courses are designed to provide you with the ability to:

•Comply with one of the required options for Instructor Revalidation or Renewal •Standardise and update your instructional ability in line with current teaching practices •Update your knowledge of both national rules and EASA-FCL and AIR-OPS requirements.

#### PROGRAMME

The two day programme runs from 10:00–17:30 on each

day. We find this fits well with travel times for those travelling in each day. There is a mixture of guest lectures, an interactive group syndicate exercise and plenty of time for breaks and refreshments.

Attendance at all of the timetabled events is mandatory to complete the course.

The content of the FI or IRI refresher course is selected from the following AMC1 FCL.940.FI guidance: (1) new or current rules or regulations, with emphasis on knowledge of Part-FCL and operational requirements (2) teaching and learning (3) instructional techniques (4) the role of the instructor (5) national regulations (as applicable) (6) human factors (7) flight safety, incident and accident prevention (8) airmanship (9) legal aspects and enforcement procedures (10) navigational skills including new or current radio navigation aids (11) teaching instrument flying (12) weather-related topics including methods of distribution. Our course is designed to meet with the latest CAA guidance on topical issues. **SYNDICATE** PRESENTATIONS

During the course, candidates will also be allocated to syndicates and are required to consider a topical training issue then deliver a short group presentation to all candidates. This is not a test and is designed to facilitate discussion through questions and sharing current thoughts. Topics will be drawn from issues such as:

• Use of GPS/GNSS during training

• Teaching Stalling and Spinning

• Teaching Threat and Error Management during the PPL • Sortie Management / Avoiding Infringements • Appropriate use of mobile device apps for Navigation • Teaching RNAV/PBN Approaches

Candidates will have time to prepare, discuss and decide format in their syndicates. Candidates are encouraged to bring any of their own training notes, manuals and pens/ notebooks that they might find useful.

#### **VENUE AND TRAVEL**

The courses are held at the Aircraft Owners and Pilots Association Headquarters, 50a Cambridge Street, London. The office is only a five minute walk from Victoria mainline station or coach station. Car parking is not available and private car travel is not recommended. There are several hotel and bed and breakfast establishments in the area, including Travelodge, Premier Inn and Holiday Inn Express budget hotel options. Early booking is recommended due to the demand and latebooking costs of London accommodation.

#### COSTS

The cost for attendance will be \$275. there is a discounted price of \$240 for AOPA Instructor Members. The price includes an excellent buffet lunch in a nearby hotel, tea/coffee and snacks throughout the day, but not accommodation or dinner.

If you are unable to attend and advise AOPA at least ten working days before the seminar commences, a full refund will be made. However, if you cancel less than ten but

more than two working days before the seminar starts, then there will be an administration charge of £15.

Cancellation in the last 48 hours before the seminar commences will incur a charge of \$50, which will be deducted from the refund, to cover food and printing costs. However, if the participant rebooks (at the time of cancellation) for a future seminar, then the deduction will be only £15.

#### **REQUIRED DOCUMENTS**

All attendees must bring: • Your licence (please bring all EASA and UK licences held). Personal flying logbook showing instructional experience required for revalidation (if required). • Photographic ID

• CAA Form SRG 1135 -Instructor Renewal Form completed, including hours flown.

If you have any queries about required paperwork or revalidation requirements please contact the AOPA office before the seminar, as it may be difficult to resolve on the day!

If your certificate has expired, you will be required to undertake both an Assessment of Competence and attend a seminar in order to renew your certificate, regardless of the instructional hours you may have logged during the period of validity of the certificate.

I hope this gives some idea of what goes on at one of our courses.

They are usually really enjoyable and a great opportunity to discuss flying and issues with fellow pilots and instructors - often life is so busy we don't get the chance to take a step back and have some reflection, and that is often one of the most appreciated parts of the two days for people. For more information and dates please get in touch with Mandy at the AOPA office: mandy@aopa.co.uk



















Tost GmbH Flugzeuggerätebau München Thalkirchner Straße 62 D-80337 München Tel. +49-(0) 89-544 599-0 info@tost.de Fax +49-(0) 89-544 599-70 www.tost.de

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WORDS Malcolm Bird IMAGES Jose Lebron

# WARNING – WHAT FUEL DO YOU USE?

If your aircraft is running on 100LL there is some worrying news afoot, and you may have to start exploring alternative sources. So, what are your options?

MANY OF our aircraft run on good ol' Avgas, 100LL. The LL stands for Low Lead, right, so all is good? Well, beware, the name was assigned years ago and was then considered ' 'Low' relative to the same octane-rated fuel it replaced. The lead referred to comes from TEL (tetraethyllead), an additive that enhances octane rating of the fuel, and also prevents degradation of the valve seats.

With increasing concern about the environment, TEL is now under the spotlight and plans are afoot within the EC to ban production from the end of 2020, with an 18-month period being considered to allow fuel stocks to pass through the system.

This concerning scenario may turn out to develop more slowly than suggested above, but if your aircraft typically runs on 100LL you should start thinking about its future operation on unleaded Avgas. The newer engines have valves and seats that are designed to obviate the need for TEL. Lycoming, for instance, has been ensuring that its newer engines will run on unleaded. Take a look at Lycoming's website and check out your engine. For those with Continental engines it is not quite so clear, so consult your maintenance organisation. The situation may be more serious with highercompression engines and those running with turbochargers or superchargers, because TEL also provides resistance to detonation ('pinking' or

'knocking') by enhancing the octane rating.

Many engines, however, can and do run on alternative fuels to 100LL. If you are Rotax powered, these engines prefer unleaded fuels and you are probably already using UL91 or even MoGas. But even the latter is problematic. Recent government announcements indicate that garage forecourts will be moving to fuel containing up to 10 per cent ethanol (E10). Those who use MoGas will need to check whether their aircraft engines and fuel systems are cleared for use of such levels of ethanol. This substance can attack the allovs in fuel lines and the rubber in seals etc. So it is not just about engine manufacturers ensuring that their engines keep pace - the whole aircraft fuel system needs to be considered.

It seems that there is no one solution that provides a simple replacement for 100LL, so at present we cannot expect a simple switch over to a new Avgas that is environmentally acceptable and universally engine-friendly.

The pressure to reduce emissions is gathering momentum and aviators are going to be involved. AOPA will be monitoring the situation and working with regulators and suppliers to find a sensible transition through this issue, so keep reading this corner.

#### SELF-DECLARING

It is likely that you have finally got your head around the Self-Declared Maintenance Programme (SDMP) and part



What will be fuelling the future of aviation?

"The pressure to reduce emissions is gathering momentum and aviators are going to be involved. " of this procedure is to review it annually. The review is necessary to ensure that the programme is working well and also to ensure that it meets any updated requirements. One such requirement under consideration and expected to be in the Minimum Inspection Programme soon, is an annual inspection to check any exhaust muffler and perform a carbon monoxide test in the cockpit.

The CAA has recently issued a Safety Notice covering Carbon Monoxide Contamination Minimisation & Detection in General Aviation Aircraft: http://publicapps.caa. co.uk/SN2020003

Provisions are in place to encourage the installation of carbon monoxide detection equipment as detailed in the above Safety Notice. It makes sense to follow any manufacturer's instructions on battery replacement, periodic testing or ultimate life of the equipment and these are tasks that should be considered for addition to the SDMP to make sure they don't get missed.

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#### General Aviation news from around the world



Like AOPA, the GAAC keep you flying



# LATEST FROM THE GAAC

The last 12 months has been a busy year for the GAAC, perhaps more than any other since its formation over 24 years ago...

#### by Charles Henry

THE DAY-to-day contact with the government, during the past year has, we believe, more than exemplified the importance of the GAAC in representing the interests of UK GA as a whole to the Government.

• The GAAC were appointed to two very important posts with the All Party Parliamentary Group on General Aviation set up under the last Government and Chaired by Grant Shapps, the Airfield Working Group and the Tax and Regulation Working Group. The Working Groups were Chaired by the Vice Chairman and Chairman of the GAAC.

• The GAAC led the representation of General Aviation matters to the Department for Transport's newly formed General Aviation Department. Liaison with this team is now on a fortnightly basis with additional discussions at senior level on the National Strategic Network, Airfield Safeguarding, Tax and Regulation, the deliberate obstruction of airfield operations, further town planning legislation and the use of compulsory purchase powers by local authorities. • Following this meeting under

• Following this meeting under the heading of the Strategic Network, the DfT has already indicated that it would fund a national survey similar to the Lober report of 2006 and the GAAC is helping to look for an organisation to undertake this important work.

• The GAAC were part of a delegation meeting with the Head of Planning and the

"The GAAC is helping to look for an organisation to undertake this important work"

Chief Planner at the Ministry of Housing, Communities and Local Government to discuss the "church bells" issue. In collaboration with the APPG, the GAAC put the case for airfields to be protected from complaints made by those moving to locations near them. • A 'Lunch and Learn' presentation is planned to be given to the DfT's GA team together with a further presentation on Safeguarding to the new Head of Domestic Air Safety. Discussions with the Airfield Team are on a fortnightly basis with updates being provided direct to Grant Shapps as the Secretary of State for Transport. Liaison with the newly appointed 'GA Champion' has already begun. • The GAAC have tried

wherever possible to influence the MoD's policy of automatically transferring airfields to Homes England and have already had some success at Henlow. The MOD policy will need to be challenged.

The GAAC has also been supporting airfields who have experienced Town Planning problems and other disruptions to their operations with a free advice service. During the last 12 months a considerable number of airfields have benefitted from this advice.

# FRIEDRICHSHAFEN POSTPONED TO 2021 DUE TO COVID-19

#### by David Rawlings

AERO FRIEDRICHSHAFEN has been postponed due the spread of coronavirus COVID-19. The organisation has taken the serious but necessary step: the aviation show AERO will not be held in the planned period of April 1 to 4, 2020, but will be postponed until a similar time next year – 14-17 April 2021.

"The current situation with the coronavirus has resulted in a nasty domino effect," says Klaus Wellmann, Managing Director of Messe Friedrichshafen. On Thursday, the same decision already had to be made for two additional events (Aqua-Fisch and IBO). "The industry members of the general aviation community also see the health and economic risks of the upcoming trade fair as too high. We share this assessment, but it is with a heavy heart that we now need to take this serious step together." Roland Bosch, head of Aero Friedrichshafen also expressed his concern: "Neither the calendar of Messe Friedrichshafen nor the events taking place within the industry would have allowed easy rescheduling to the summer or fall of this year. After considering all the pros and cons, we found that a date in 2021 would be the only reasonable and acceptable way forward for the entire industry."



AERO hasbeen postponed until April 2021

# CAMBRIDGE TO CELEBRATE 90 YEARS OF FLYING HISTORY

#### by Cat Vitebsky

CAMBRIDGE AERO Club can trace its history back to the dawn of aviation. Using Sir Arthur Marshall's very own de Havilland Gipsy Moth, instructors P Grey and F Wilkenson began training pilots at the original airfield in Fen Ditton in 1929. On gaining his instructor certificate in 1930 Arthur Marshall founded Marshall Flying School.

To celebrate this historic year Cambridge is offering



Cambridge Airport, where a Hercules flies with a C172

a scholarship of 10 hours pilot training to one lucky aspiring pilot!

Former students span the globe; from stunt pilots to test pilots, RAF and commercial pilots and those in the GA sector.

CAC would like to mark this year by gathering stories, memories, photos and film relating to Cambridge Aero Club and its history in Cambridge from the public.

Do you have an interesting background with Marshall of Cambridge and Cambridge Aero Club? If so, they ask that you get in touch as they would love to hear from you! reception@ cambridgeaeroclub.com

#### LOOK BACK... THIS MONTH 83 YEARS AGO



#### FIRST GROUND TEST OF JET ENGINE

On 12 April 1937 Sir Frank Whittle and his team fired up his prototype jet engine for the first time.

Although the engine worked, the test wasn't a complete success due to the fact that the engine wouldn't turn off at the flip of a switch. It appeared that there had been a leak that produced pools of gas which continued to burn even after the link to the source had been severed.

At that time, Whittle was competing with German physicist Hans von Ohain, who was also working on his jet engine. There has been lengthy of debate over the years as to who invented it first. Whittle was the first to patent his design, it seems von Ohain was the first to get a jet aircraft into the sky.

Ohain's He 178 became airborne in late August of 1939. The same year Whittle's W.1X engine was flight tested by the British Air Ministry and while it did become airborne it was only capable of short straight hops during taxiing tests. Two years later, Whittle's jet engine made its first official flight earning him a contract with General Electric and the glory of powering the Bell XP-59A Airacomet beginning in October of 1942.

#### AOPA NEWS HIGHLIGHTS

#### EBACE CANCELLED

The European Business Aviation Convention and Exhibition has been cancelled for 2020 and exhibitors and attendees will be getting full refunds. The show, sponsored by the European Business Aviation Association and the National Business Aviation Association, was scheduled for May 26-28 in Geneva but the uncertainty surrounding the staging of such events, and health and safety concerns made it untenable.

#### FIRST ATC TOWER CELEBRATES 100 YEARS

100 years ago, Croydon Airport was London's main airport. The UK Air Ministry commissioned the building, called "Aerodrome Control Tower", to be 'erected 15 feet' with "large windows to be placed on all four walls", this established the terminology and design which has been copied all over the world. Nats has launched a website to celebrate his milestone www.nats.aero/atc100

#### PISTON ENGINES BIGGEST SELLER IN 2019

At its year-end conference, GAMA announced that piston aircraft saw the biggest growth, stating that: "aircraft deliveries reached a value of \$26.8 billion, an increase compared to \$24.3 billion in 2018. The number of piston aircraft deliveries experienced the largest growth among the segments at 16.4 per cent." Biz- jet deliveries were at their highest since 2009. However, turboprop and helicopter deliveries decreased.

# FLYING ON HYDROGEN

A US-based firm is looking to alternative fuel supplies, and they're testing them in the UK

#### by AOPA News Team

A CALIFORNIA firm plans to begin test flights this month of a hydrogen-powered Piper here in the United Kingdom.

Back in August 2019 ZeroAvia flew a Piper Malibu with an experimental electrical powerplant. Founder and CEO Val Miftakhov said those proof-of-concept flights were powered by batteries, allowing the engineering team to validate power system components including the electric motor and computer controls. "Now, we're integrating the hydrogen part into that," Miftakhov said in a recent interview.

ZeroAvia is not alone contemplating hydrogen as a fuel for aviation's future, but the firm is further along than many, and may be alone, or at least among very few, going all-in on hydrogen for commercial air transportation.

Batteries weigh a lot more than a tank containing enough

"A £3-million grant from the government will fund a year-long programme"

hydrogen to produce the electricity required for a given amount of range, for one thing.

Miftakhov said the upcoming flight tests in the single-engine Piper testbed are a precursor to adapting the hydrogen fuel cell power system for use in aircraft with up to 20 seats. ZeroAvia hopes to have the concept proven at that scale in about three years, using compressed hydrogen to enable a range of 500 miles at that scale, then scale up to 50-seat aircraft in about five years time.

A £3-million grant from the government will fund a yearlong test programme based in Cranfield, England, where ZeroAvia is sharing the cost 50-50 with the government, and hopes to conclude the programme in September 2020 with a 200-mile demonstration flight on hydrogen power. The California-based test programme will proceed in parallel, though Miftakhov is less optimistic about the potential for federal support.

"We have to hope for sure," Miftakhov said. "The reality of the political environment in the US is such that the likelihood of getting that level of support is lower in the US than in Europe, especially in the UK."

In addition to much higher energy density, hydrogen has other advantages over batteries, including the lithiumbased batteries used on laptops, drones, electric cars, and aircraft, which combine fuel and oxidiser in a single package, so they are far more likely to create a catastrophic fire in the event they are compromised in a crash, he noted.



# FORMER MOD GLIDERS TO BE USED BY AEROBILITY

#### by AOPA News Team

THE MOD'S Defence Equipment and Support organisation has sold 63 decommissioned Vigilant T1 aircraft to Aerobility, a charity which provides flying experiences to those who might otherwise never get a chance to take to the skies. The first batch of 10 gliders will be modified and refurbished by GROB Aircraft SE – the original manufacturer and Design Authority – to meet civil certification standards. Aerobility's CEO

Mike Miller-Smith said: "Acquiring these aircraft will help us transform the lives of an even greater number



The decommissioned Vigilant T1 aircraft

"They will now be able to help about 2,600 people into the air every year"

of disabled people by giving them the unrivalled sense of freedom through the magic of flight. We are extremely grateful to the Ministry of Defence, Department for Transport and our various partners for supporting us in this ambitious project.

The remaining aircraft will be engineered and recertified in the UK, where the charity has identified an engineering partner in Southern Sailplanes. Hampshire-based

Aerobility will initially more

than double its fleet with eight Vigilants thanks to a grant from the DfT; meaning they will now be able to help about 2,600 people into the air every year.

Clive Walker, head of the Defence Equipment Sales Authority in DE&S, said: "I am very pleased to see the RAF Vigilant T1 gliders move on to a new lease of life, in particular supporting the excellent work of Aerobility in creating flying experiences and opportunities for those who might otherwise never get the chance to fly."

Aircraft that aren't used for flights will be refurbished and sold to generate revenue for the charity, pay for the ongoing costs of their fleet and help them branch out into other parts of the British Isles.

BE PART OF A WORLD RECORD ATTEMPT

#### by Andy Torkington

ELVINGTON IS hosting a unique charity event on the 9-10 June and the organisers are crying out for volunteers.

The aviation-related charity fundraising event includes a world record attempt and an overnight fly-in/camp at Elvington.

Extreme fundraiser Carl Thomas, from Manchester, is seeking to break the Guinness World Record and run a marathon whilst pulling a light aircraft to raise funds for the charity Ollie's Army and to raise awareness of Battens Disease. This is the third of Carl's extreme fundraising challenges, but by far, the biggest and the most challenging.

The event will receive national TV and press coverage and will be officially adjudicated as a Guinness World Record. Carl will do the hard work, but he he needs help.

I am asking the General Aviation Community to support this event and consider donating their time and a suitable light aircraft to this cause for this World Record Attempt.

As well as an aircraft(s) Carl is seeking support from pilots in relay, to steer and brake the aircraft during his attempt.

Negotiations are underway with Elvington Airfield regarding landing, parking, museum entry, onsite camping and overnight security and further details will be forthcoming.

If you'd like to support and be involved, feel free to message me with any direct questions or queries: ajt1973@hotmail.co.uk



Endurance athlete and extreme fundraiser, Carl Thomas

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## 34 COVER STORY TBM 940

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WORDS Thomas A. Horne (Copyright 2019, Aircraft Owners and Pilots

# Indext DeterminedIndext Determined

The **ultimate personal turboprop** gets big-jet automation with an autothrottle

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OU expect to see autothrottles gracing the cockpits of high-end turbofans, but a single-engine turboprop? Never. Well, don't look now, because there's a new TBM on the market – the TBM 940. And yes, it has an autothrottle system. Which means it's broken the mould and thrown down a challenge to other single-engine turboprop manufacturers. Will they rise to the challenge? We'll have to wait and see.

What's more, the TBM 940 has a new, automatic ice-protection system. This uses an industry-standard Goodrich ice-detection probe mounted on the vertical stabiliser. The probe vibrates at a high frequency; when ice accretes on the probe the change in this frequency triggers the ice-protection system into action, causing a message on the Crew Alerting System (CAS) and inflating the aeroplane's boots on a repeating cycle. No pilot action is necessary, although there's also a way of manually running the ice-protection components. It's another transport-category equipment item that's a first among GA turboprops.

The latest TBM 910s and 940s also retain what TBM calls its 'e-Copilot' to the standard equipment package, which began with 2017's TBM 910 and 930, and continues in today's 910 and 940 models (which replace the former TBM 900 and 930).

The e-Copilot has several functions that keep the aircraft within its design envelope by preventing stalls, over- and underspeeds, or excessive bank angles. Allow airspeed to rise near redline and the Garmin autopilot will automatically trim the aeroplane nose-up; allow it to drift near stall country and it will trim nose-down. Bank past 45 degrees, and roll servos bring you upright. "It's broken the mould and thrown down a challenge to other singleengine turboprop manufacturers" Fight the corrective inputs and the servos will fight back. To prevent accidents from hypoxia-induced incapacitation, upon sensing a cabin altitude above 11,500 feet, the aeroplane's Emergency Descent Mode (EDM) kicks in – the aeroplane turns 90 degrees, squawks 7700, and descends to 15,000 feet.

In case you were too task-loaded or inattentive, a comprehensive voice alert system - gone are the old warning beeps and horns - sounds off to get your attention: "use oxygen mask" if cabin altitude is above 10,000 feet, "landing gear" if the gear is up and either the power is at idle or flaps are extended, and "stall, stall" if airspeed gets too slow. If a stall is imminent and you somehow missed the verbal warning, an angle-of-attack sensor drives a stick shaker that physically vibrates the control column. Now that's hard to miss. Taken together, this is an



Bank past 45 degrees, and roll servos will bring you back to upright

The TBM family of turboprops are instantly recognisable

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impressive cohort of safetyenhancement and workloadreduction equipment. Together with the G3000 avionics suite (in the TBM 940; TBM 910s now have Garmin G1000NXi avionics), FlightStream 510 Wi-Fi/ Bluetooth tablet information exchange connectivity, ADS-B In and Out, FIS-B capability, and SurfaceWatch runway advisory callouts and depictions, you probably have one of the most featurerich panels on the general aviation market today. There's also a new, Mid-Continent MD302, two-screen attitude/ airspeed/altitude/heading backup display, powered

"Autothrottles adjust engine power to produce a selected airspeed" by its own battery pack and magnetometer. Having the latter allowed Daher to eliminate the old-school, glareshield-mounted magnetic compass.

#### **AUTOTHROTTLE BRIEFING**

Let's get this out of the way up front: both the TBM 910 and TBM 940 have e-Copilot (Garmin's Electronic Stability and underspeed Protection [ESP], plus EDM), stick shaker, and automatic ice protection. Only the TBM 940 comes with an autothrottle.

Autothrottles adjust engine power to produce a selected airspeed. In the TBM 940, inputs from a

TBM

variety of sources – such as current airspeed, angle of attack, throttle position, engine power output, density altitude, aircraft configuration, and more – are fed into software that in turn crunches algorithms that send commands to the 940's fuel control unit. These commands, in turn, increase or decrease power to meet a selected airspeed.

There are ways to activate and turn off the autothrottle, and other ways to select a desired airspeed. You can turn it on by pressing the AT button on the glareshield control panel or, when making a missed approach/ go-around, pressing the goaround (GA) button at the side of the power lever. You can turn it off by pressing the power lever's AT DISC button, or the yoke-mounted autopilot-trim disconnect (AP/TRIM DISC) button. You can select an airspeed using the SPD knob, also on the glareshield panel. To call up a set of pre-programmed airspeeds for climb, cruise or descent, rotate the knob's inner collar to the FMS position. Then you can use the Garmin GTC 580 touchscreen controllers on the subpanel to select the speed regimes you want. To select an airspeed

manually, move the inner collar until it points to the MAN (manual) position, then rotate the central knob until you see the airspeed you want at the top of the airspeed tape on the PFD.

#### **AUTOTHROTTLE FLYING**

I flew one of the first TBM 940s with Nicolas Chabbert, Senior Vice President of Daher's Aeroplane Business Unit. The aeroplane had just arrived from the factory in Tarbes, France, still bearing its French registration letters, and on its way to EAA AirVenture in Oshkosh. For the time being, it was based out of the TBM distribution and service center at the Pompano Beach Airpark in Florida.

There's no flipping through the pilot's operating handbook to find the right torque setting for the temperature and pressure altitude at hand. After engine start, we taxied to Pompano's Runway 15. It's worth mentioning that the TBM's start procedure is about as automated as it can get without being FADECequipped. After engaging the start switch, you wait for an NG (gas generator) speed of 13 per cent, then move the power lever forward to the Low Idle position. Lightoff comes next, followed

"To select an airspeed manually, move the inner collar until it points to the MAN position"

The 940 has instant ramp appeal by a rise in interstage turbine temperature (ITT). After NG reaches the 50 per cent mark the starter cuts out and the generator automatically comes on line. A new depiction on the MFD prioritises the engine gauge display based on first limit identification. This feature presents a single gauge - not the vertical array of multiple gauges – based on the most critical information needed for a given phase of operation. So, during the start the NG gauge appears first, and then is replaced by the ITT gauge as light-off begins. The result is less clutter, while the other gauges' information - torque and propeller speed, for example - are presented in smaller views nearby.

Pre-take-off checks complete, it's time for line-up and take-off - an autothrottle take-off. The first step is to arm the command bars by pressing the GA button, followed by pressing the NAV button on the glareshield

"Get on the brakes, push the power lever to 70 per cent torque and the autothrottle wakes up''

controller, then putting the speed knob in the FMS position (we'd selected a VY – 124 knot – climb speed in the climb profile earlier). Then press the AT button. Get on the brakes, push the power lever up to 70 per cent torque (now the torquemeter is prominent on the MFD), and the autothrottle wakes up, taking power to 100 per cent torque. After brake release, steer down the centreline, wait for 90 knots, and rotate into an aggressive climb to your selected altitude while following the flight-planned route.

That day, we flew out to the Everglades. For an en route climb, the speed knob was put in manual mode and we dialled in a 170-knot climb and then pressed the flightlevel change (FLC) button to activate it. Within 14 minutes we were leveling off at FL280 on autopilot, even in Florida's above-standard conditions. For a cruise demonstration,

the SPD knob was put into

FMS mode and we called up the cruise page on the GTC 580. There's a choice - maximum cruise, normal/ recommended cruise, longrange cruise, or a userselected cruise speed. We picked maximum cruise. And just like that, the autothrottle advanced power. This is one more advantage of autothrottle flying. There's no flipping through the pilot's operating handbook to find the right torque setting for the temperature and pressure altitude at hand. The autothrottle takes care of power management, no matter what cruise setting you select. For the record, our maximum cruise speed turned out to be 320 KTAS, burning 58 gph. With our 255 or so gallons of fuel remaining on board we could have flown from Pompano Beach to, say, Oshkosh - in no-wind conditions.

With the heat of the day, a line of build-ups came between us and Florida's east



With a range of 1,730 nm the 940 is perfect for channel hops and trips further afield

coast. We'd have to fly through some of the tamer ones to fly back to Pompano Beach, so a speed reduction was in order. In order to ride the bumps safely, we used manual speed control to slow the aeroplane to 160 knots. You can leave FMS mode at any time and go to MAN autothrottle speed selection (and back again) for just such eventualities. Just remember to select flight level change (FLC) to capture a manually selected airspeed.

Our aircraft had the optional Garmin GWX70 weather radar. with turbulence detection. XM and FIS-B datalink weather and meant we could see cell shapes, extent, and development in real time, plus you can overlay the radar on the MFD moving map for better situational awareness. This meant we could weave our way to an approach back to Pompano Beach, confident that we had a safe way of manoeuvring in cloud. While hand-flying without

autothrottle during our passage through a clear area, Chabbert asked me to "And get this: the 940's autothrottle honours airspeed limitations for flap and landing gear extension" nose the aeroplane up into a stall. Up went the nose, and down went the airspeed. Passing through 95 knots, the autothrottle added power to preserve airspeed. It was a demonstration of how the autothrottle works in the background, waiting to prevent any airspeed excursions. And get this: the 940's autothrottle honours airspeed limitations for flap and landing gear extension. Try to fly so you're on the way to exceeding the limits, and the autothrottle automatically dials back the power.

On autopilot and autothrottle, before intercepting the final approach course to Pompano Beach's RNAV GPS Runway 15 we manually set and FLCenabled a speed reduction to 170 knots and went to approach flaps. At the final approach fix, we lowered the gear, went to 110, then 85 knots and selected landing flaps. Down we went, punching off all the automation at minimums and landing.

There was pattern work after, and on one approach a look at an autothrottle goaround. Hand-flying or not, if you press the power lever's GA button the command bars rise to a climb attitude, the autothrottle spools up to take-off power, and up you go. Flaps approach, gear up, flaps up, press NAV for missed approach guidance, dial in 124 kt in Manual mode, and you're now doing a good 2,000 fpm to your missed approach altitude, which was set in the altitude selector before the descent. TBMs are fast, and can be easy to get behind them during distractions or when workload is high. The autothrottle makes sure that you fly target speeds efficiently, and without jockeying for the correct torque values. Together with its autopilot and e-Copilot, it has all the safety features you'd expect of such a great performer. Step-up pilots as well as old hands may be new to the idea of autothrottles, but once they log a couple hours they'll be hooked.

### TECH SPEC Daher-Socata TBM 940

#### PERFORMANCE

Engine: P&W PT6A-66D Cruising speed: 252 KTAS 467 kmh Power: 1,825 hp Max cruise speed: 330 KTAS 611 kmh Take-off distance: 2,380 ft 726 m Landing distance: 2,430 ft 741 m Service ceiling: 31,000 ft Time to climb to 31,000 ft: 18m 45s Range: 1,730 nm 3,204 km Seats: 6

#### WEIGHTS

Basic empty weight: 4,629 lb 2,097 kg MTOW: 7,394 lb 3,354 kg Payload: 1,403 lb 636 kg Fuel Capacity: 1,100 litres Max. ramp weight: 7,430 lb 3,370 kg

DIMENSIONS Wing span: 42.10 ft 12.833 m Length: 35.22 ft 10.736 m Height: 14.29 ft 4.355 m Wheelbase: 9.56 ft 2.914 m







The TBM 940's new autothrottle was a big hit with our author

/

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### CARRY YOUR KIT IN STYLE

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Product Flight Bag Maker Lightspeed

THE MARKHAM leather flight bag is handmade from full-grain, oiled South American cowhide that will become more supple with age and use. Thoughtfully designed to be both compact and functional, the Markham is perfect for the pilot who never knows what adventure waits at the end of the next runway.

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Made from cow hide

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## **DELVE INTO THE LIVES OF THE FEW**

Aviation historian Dilip Sarkar has had close relationships with the pilots of the Battle of Britain, and in this book he releases some of the correspondence he enjoyed over those years

Author Dilip Sarkar Publisher Pen and Sword

FASCINATED BY the Battle of Britain from an early age, as a young man Dilip Sarkar realised that recording and sharing The Few's memories was of paramount importance. At the time, back in the mid-1980s. membership of the Battle of Britain Fighter Association was well populated and the Honorary Secretary then, the Wing Commander Pat Hancock DFC, OBE, supported Sarkar's research by forwarding letters to individual pilots of interest.

Those members of The Few included a wide range of personalities, from famous airmen like Group Captain Peter Townsend and Air Marshal Sir Denis Crowley-Milling, to the 'also rans', as Battle of Britain Hurricane pilot Peter Fox famously described himself and peers. Indeed, it was Peter's 'also rans' that were of the greatest interest to Sarkar, who recognised that whilst many famous and distinguished pilots had either published personal memoirs or had biographies written about them, lesser lights had no platform to record and share their experiences. Those are what Sarkar was devoted to recording.

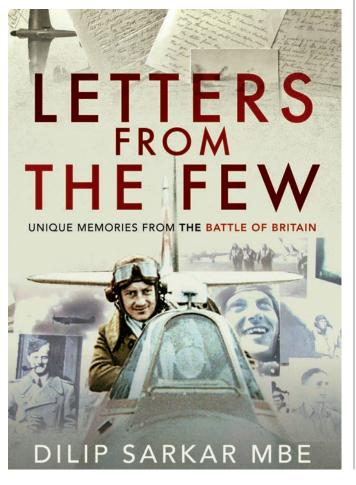
For many years, the author enjoyed prolific correspondence with The Few. These letters – hundreds of them – now represent a unique primary source. Over the years, Sarkar's published work has benefited enormously from his unique knowledge of the people involved through this very personal association, the memories collated providing his books with a real human touch. As The Few sadly fade away, it is only now that the significance of this correspondence is becoming truly apparent.

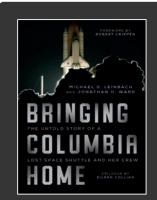
In *Letters From The Few*, Sarkar shares a small selection of his correspondence with Battle of Britain fighter pilots, providing us with an inspirational insight into the immeasurable value of this research and the personalities involved.

Sarkar is a best-selling author whose work is highly regarded globally. A noted expert on the Battle of Britain, he was made an MBE in 2003 for 'services to aviation history'; and he has worked on TV documentaries.

*Letters From The Few* will be published in August.

Where pen-and-sword.co.uk Price £25





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#### NASA'S HUNT

Author Michael Leinbach and Jonathan Ward Publisher Arcade

Bringing Columbia Home details the dramatic story of the search and recovery operation after the Columbia disaster. Author Mike Leinbach, Launch Director of the space-shuttle programme was a key leader in the recovery effort as NASA, FEMA, the FBI, the US Forest Service and many more agencies combed an area of rural Texas for every piece of the shuttle and crew they could find. Assisted by hundreds of volunteers, it became the largest ground search in US history.

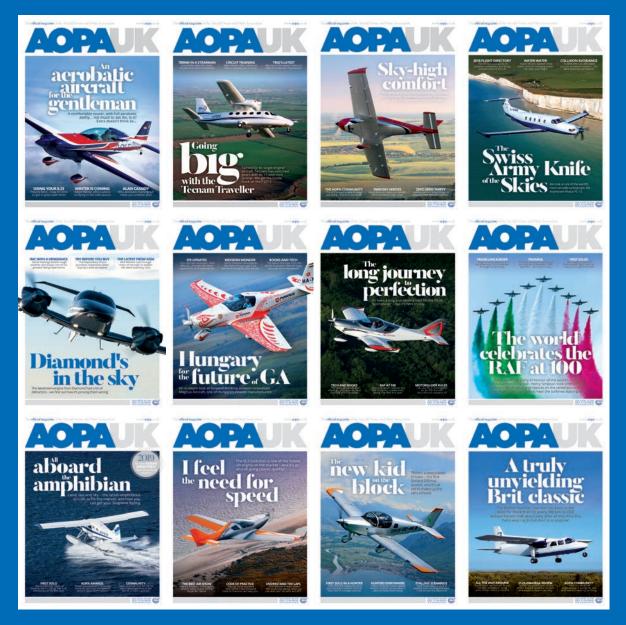
For the first time, here is the definitive inside story of the Columbia disaster and recovery and the inspiring message it ultimately holds. In the aftermath of tragedy, people and communities came together to help bring home the remains of the crew and nearly 40 per cent of the shuttle, an effort that was instrumental in piecing together what happened, so the programme could return to flight and complete the International Space Station.

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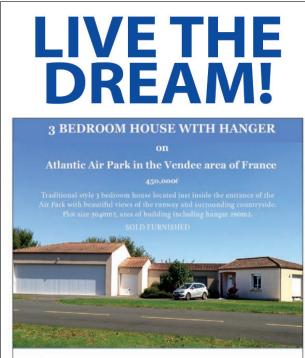
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