OCTOBER 2020 ISSUE 41

AIR PILOT

INSIDE

REMEMBERING 'THE QUEEN OF THE SKIES'

THE RETURN OF THE FLY-IN

WHAT IF THE BATTLE OF BRITAIN HAD BEEN LOST?

THE HONOURABLE COMPANY OF AIR PILOTS

incorporating Air Navigators

PATRON:
His Royal Highness
The Prince Philip
Duke of Edinburgh KG KT

GRAND MASTER:
His Royal Highness
The Prince Andrew
Duke of York KG GCVO

MASTER:
Captain John P Towell FRAeS

CLERK:
Paul J Tacon BA FCIS

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A Livery Company of the City of London.

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DIARY

All physical events have been postponed until further notice. Some meetings will take place through video-conferencing. For the latest situation please visit the calendar page of the Company's website:

https://www.airpilots.org/members-pages/company-calendar/

Guidelines for submissions to Air Pilot

Please submit contributions as follows:

- *Text in word document, including your name below the title of the piece;*
- *No embedded photos;*
- *All images to be sent as jpeg files with a file size of at least 2 MB;*
- *More than 2 images to be sent via a Dropbox file, rather than an e-mail attachment.*

NEW DEPUTY EDITOR FOR *AIR PILOT*

Steve Bridgewater, the new Deputy Editor of *Air Pilot*, has been a member of the Company since 2008 and became a Liveryman in 2018. He was a founder committee member of the Guild Young Members (now Young Air Pilots) and remains a passionate exponent of 'youth in aerospace'.

Steve has worked in aviation journalism for the last two decades, on the editorial teams of GA magazines *Today's Pilot, Pilot, Go Flying* and *Loop*, and has also edited *Aeroplane Monthly, Jets Monthly* and *Air Action*. He has written books and bookazines, and his writing and photography have been shortlisted for the International Aerospace Journalist of the Year Awards and Aerospace Media Awards on nine occasions.

Steve has also worked for Pooleys and as the Commercial Director of Air Atlantique Classic Flight. He lives in Derbyshire with his wife, Nia, and two dogs.

Cover photo: British Airways 747-400 in BOAC heritage livery in formation with the Company's Affiliated Unit The Red Arrows during the Royal International Air Tattoo, July 2019

A MESSAGE FROM YOUR EDITOR...

Every glimmer of hope that shone in the last couple of months seems to have been extinguished as countries loosened, then re-tightened, travel restrictions, and declining Covid-infection curves zoomed back up. The implications for airlines, airports and manufacturers are obvious, and pressure from them on governments and the finance sector may bring some reliefs which will ensure their survival, albeit in shrunken and less-profitable condition.

Behind these big players, however, stand countless organisations and individuals whose financial survival in any meaningful sense is much less certain, and it is essential that their plight is not forgotten. They range from small engineering sub-contractors to air display pilots and organisers, and they are all vital and indispensable members of the aviation community. It is admirable that some of the large airlines have devised ways to keep so many of their aircrew on some form of retention, albeit on heavily reduced pay and little or no flying, but that is of no comfort to the other workers whose jobs are deemed easier to turn 'on and off' with the fluctuations of industry fortunes and are now redundant. Nor is it of comfort to those who were still in training for what just a few months ago looked like bright and secure future careers, but whose progress has been brought to a sudden halt, with no apparent prospect of jobs to move into.

It was heartening, therefore, for the Court of the Company to hear at its most recent meeting of an offshore training organisation which had taken the generous decision to complete the training, through to frozen ATPL status, of students who had been sponsored by one of those failed airlines, at no cost to those students. It doesn't guarantee that those newly qualified pilots will have jobs tomorrow, but it does help maintain the flow of the pilot supply chain despite the Covid-19 interruption – a virus does not stop the regular departures from the profession through age, illness and other factors. Nobody knows how many pilots will be required by the industry as (hopefully) it recovers, or how soon, but it will need pilots of all seniorities and experience – and for that, initiatives like this training gesture and the simulator-based currency opportunities reported on in the August issue are not only welcome, but crucial. We can only hope that more individuals and companies can find ways to help especially the younger members of the community through this crisis, and that the Company can find ways of suitably acknowledging their generosity.

Allan Winn - Editor

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NEWS ROUNDUP

THE RETURN OF FLY-INS

BY WARDEN RICHIE PIPER, CHAIRMAN, AIR PILOTS FLYING CLUB

This year has certainly been rather different, and I am sure you do not want to hear more tales of doom! However, I thought you might like to hear of one small step in the right direction that the Air Pilots Flying Club (APFC) has recently made.

The APFC committee has been very active in planning a good programme for the year and also regularly met online to monitor the situation - first cancelling the Pre-Season and Freddy Stringer lunches and also a initiative of an Open Day to introduce the Flying Club to other Air Pilots. Then the early fly-ins were cancelled. The committee was not only considering the risk to members but also ensuring we were compliant with government regulations and guidance, and maintaining the high standards of the Air Pilots.

The reintroduction of recreational flying gave a glimmer of hope, but it was not until dual/instructional flying was permitted and other relaxations were made that the committee decided to restart fly-ins. In these considerations, the Master and Clerk were also consulted. However, it was decided to change the planned programme to use airfields with plenty of space and good Covid procedures. Thus on 11th August 16 aircraft flew into Popham, on a very hot day co-ordinated by Assistant John Denyer and Kate his wife.

The high turn out (possibly a Club record) showed the pent-up demand for members to meet up at an airfield. The Master flew with Malcolm Ward in Tiger Moth 'FM (a film star that played Thunderbird 6) which was joined by two further Tigers, Steve Bohill-Smith in 'OBX and Past Master Colin Cox and his son Dan in 'ZH, with whom I flew in formation in my Cub. The range of aircraft included Bolkow, Bulldog and Jodels through to Mike Wratten's Bonanza. During the day Steve took his local pub landlord for a flight in 'OBX, the Master providing the "Armstrong" starter!

The outside picnic area at Popham is supported by a catering wagon with the usual one-way system and contactless payments. The staff even cleansed the milk container after every use. Thus a relaxed picnic was enjoyed together with lots of soft drinks to hydrate on a baking day. It was good to see everyone chatting after only having met on Zoom for so long. I even managed to sell a few Club caps in aid of our gliding scholarships.

Thank you to everyone who came along, including those who drove. A further fly-in scheduled for Bembridge fell victim to weather, and those planned for September and beyond were cancelled after Covid-19 restrictions were tightened.□

(Above) The Master hand-swings the prop of G-AOBX's Gipsy Major

(Left) An impressive line up at Popham including a Scottish Aviation Bulldog, Bolkow Bo 209 Monsun, Europa and Tiger Moth

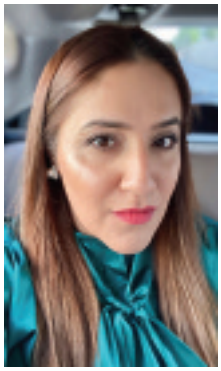
ACADEMIC BURSARY AWARDS 2020

BY LIVERYMAN CLIVE ROSE,
CHAIRMAN BURSARY SELECTION PANEL

Applications were invited for the awards in February 2020. In March the Covid-19 pandemic started to take over and consideration was given to cancelling the awards for this year. However it was realised that with lockdown, candidates would actually have more time than usual to prepare their entries so it was decided to continue, with interviews to be held 'virtually' via Zoom in July.

In the event fewer applications than usual were received, there being six valid applications compared with 15 in 2019 and 13 in 2018.

The panel consisted of: Clive Rose, chairman; Robin Keegan; Rick Thomas; Elizabeth Walkinshaw; and Samantha Waller. Of the six entries, four were interviewed and three awards were made to Afsheen Faiz, Rami Sleem and Gary McAllister.



Afsheen Faiz is an Assistant Director, Air Traffic Services for the Pakistan Civil Aviation Authority. She is studying for the MSc in Air Safety Management. She previously gained a BSc with Honours in Management and Marketing at Manchester University. She gained a special commendation for her handling of an armed attack on Jinnah International Airport. She has a clear understanding of the limited resources of the Pakistan authorities, and is determined within these constraints to prioritise safety investments and increase safety to the greatest possible extent. Unlike many candidates, she is realistic in her ambitions and does not expect to become a CEO.

Rami Sleem is a Quality Systems Engineer for MASCO – Middle East Airlines in Beirut. He is also an instructor in training policy and regulations. He is studying for the MSc in Air Transport Management. He previously obtained a degree in Industrial Engineering at the Lebanese American University and studied Systems Engineering Management at University College London (UCL). His ambition is to become CEO of an airline and to this end he is taking modules in Airline Operational Regulatory Compliance, Safety Risk Management and Airline Strategy and Business Planning. He is finding these courses extremely useful in furthering his aims.

Gary McAllister is a Shift Leader and Engineer with Jet2, responsible for maintaining airworthiness of company aircraft. He was previously with British Airways. He is studying for the MSc in Aircraft Maintenance Management. This was his second application for a Bursary, having applied unsuccessfully last year. Interestingly, he says that undertaking the course has significantly altered his outlook on his intended career path. Whereas previously he was intent on progressing within the engineering and maintenance fields, he now sees a much wider array of possible roles. He would ideally like a leadership role in research and production of new aircraft with sustainable technologies leading to lower emissions and costs.

INTER-LIVERY CLAY PIGEON SHOOT

The Honourable Company's team of Liverymen Andy Bunn (Captain), Paul Smiddy, Ian McKenzie, and Freeman Peter Bailey came 45th out of 85 teams who competed at the 26th Inter-Livery Clay Pigeon Shoot held on 9th September at the Holland & Holland shooting grounds in west London. The team's best individual placing was joint 12th out of 340, and the event raised over £5,000 for charities. Any member interested in joining the team for the next event on 12th May 2021 should contact Andy Bunn. *(andy@andybunn.net)*

MoD SPACE DIRECTORATE BECOMES AN AFFILIATED UNIT

BY LIVERYMAN JOHN TURNER, DAA

Space-based navigation, communications, timing and monitoring systems are an increasingly integral part of the aviation safety environment. Aviation and other sectors, including national infrastructure resilience, are ever-more critically dependent on those capabilities and many of us will have an interest in the propulsion, materials and operational aspects of the rapidly expanding space sector. As part of that expansion, space-launch sites and operations are now spreading around the globe, including to the UK, so manned aviation will need increasingly to integrate safely and effectively not only with unmanned atmospheric aviation but also with space operations.

An article in the previous issue of Air Pilot, drafted by the group's ninth member Donagh McCullagh, introduced our Space Working Group (SWG) and described in full its objectives and the areas it intends to cover. One of its objectives is: "To assist closer collaboration/dialogue between the defence and private sectors in space research."

Space Directorate, UK MoD

For the military, Space has become a fifth key operational domain alongside Air, Land, Sea and Cyber; examples of satellites displaying space-based weapon characteristics leave little doubt over the increasing importance and urgency of this move. In the UK, Air Vice-Marshal (AVM) Harvey Smyth OBE DFC MA RAF took up the new post of Director Space, Ministry of Defence in February. The Directorate aims to bring coherency across the UK within the MoD, UK government, allies and partners and across the space sector.

One of the SWG's initial actions was to establish working relationships with those involved in space activities, and AVM Smyth was the first to be approached. He was very keen to engage with the Air Pilots and nominated his Head of Cyber and Space Policy and Head of Space Capability – both one-star appointments – as principal points of contact for the SWG. It was quickly clear that both parties could benefit from a close and on-going relationship, with the SWG gaining insight and information while providing the Space Directorate with an independent and impartial sounding board and a respected conduit to the wider civilian commercial, business and general aviation communities. In recognition of this opportunity, the Court approved Company affiliation with the Space Directorate on 17th July and, marking the start of our relationship, on 28th July AVM Smyth attended a SWG meeting and gave a highly informative presentation, outlining the role of the Space Directorate and its focus for the next six months and beyond. □

GAZETTE

APPROVED BY THE COURT 10th SEPTEMBER 2020

ADMISSIONS

As Upper Freeman

Timothy Shane BATEMAN (OS)
Timothy Clark GIBSON
Angus MacLEOD (AUS)
Richard David STROOKMAN

As Freeman

Saadeg Jaffa ALDOULAH (NA)
Sean Colin JACOB
James KETCHELL
Ian Patrick McFALL (NA)
Bote SHA (NA)

As Associate

Harrison ARCHER
Suzannah Jane McKEE
Swale SMITH

ACKNOWLEDGED BY THE COURT 10th SEPTEMBER 2020

REGRADE

To Livery

David EDWARDS

To Upper Freeman

David BATCHELDER
Nicholas LOWE
Trevor SLACK (HK)
Nathan THOMPSON (AUS)

To Freeman

Andrew HADFIELD
Adrian OLIVER
Philipp SCHARTAU
Caitlin STEPHENSON (AUS)
Wayne ZILKO (AUS)

DECEASED

Frederick BIGELOW (NA)
John MYERS

RESIGNATIONS

Paul BEATH-KELHAM (NA)
Francois-Charles BOUCHARD (HK)
Christopher BROWN (NA)
Derek CLARKE (OS)
Kelly COOKE
John EDWARDS
Mervyn FOWLER
David FOX (NA)
Matthew HONNOR
James INNES
Malcolm LEIGH
David MacNEIL (NA)
Colin McHATTIE
Jean-Claude PIERI (NA)
Campbell PRITCHETT (NA)
Joanne SHUTER
William SPENCE
Colin STAGG

MASTER'S MESSAGE

Captain John Towell

The August edition of *Air Pilot* has attracted many positive comments, and the Court is very grateful to the new Hon Editor, Allan Winn, who stepped in at short notice and got off to a flying start with his first edition. I am delighted to welcome Liveryman Steve Bridgewater to the editorial team to work alongside Allan as Deputy Editor. Steve has worked in aerospace, marketing and journalism for 20 years. He has had work published in many different aviation magazines and was a founder committee member of the Guild Young Members. Air Pilots are very fortunate to have such a strong editorial team. Allan and Steve will always be keen to hear from members with ideas about contributions for *Air Pilot* – Allan, ***editor@airpilots.org***; Steve, ***deputyeditor@airpilots.org***.

Monday 5th October 2020 is the 90th anniversary of the R101 disaster which had a significant impact on the Guild of Air Pilots and Air Navigators (GAPAN). The Master, Sir Sefton Brancker; the Deputy Master, Squadron Leader Ernest Johnston; and two other GAPAN members were killed in the HM Airship R101 crash at Beauvais. The Guild had been formed just a year earlier in 1929, and was already influential in several areas including air safety, licensing and pensions but in the months following the accident there were fears that the organisation might collapse. Fortunately, the Guild was founded on sound principles and, with great resilience and a strong sense of purpose, it recovered to later flourish. From those early days GAPAN embraced diversity: the first lady member, Miss Winifred Spooner, and Honorary member Miss Amy Johnson both joined the Guild in 1930. Over the years GAPAN evolved into the Honourable Company of Air Pilots that we know today, the largest London Livery Company, with a world-wide reach. In 2020 the Air Pilots embraces diversity with a clear and simple membership statement: "We welcome any pilots of any background as members."

The R.101 was an experimental platform paid for by Parliament, built by a government agency and controlled by the Air Ministry. Political forces pushed too far by insisting that the ship should be operated as a fully capable commercial vessel even though technical faults existed, and flight trials had not tested flight at full speed, on all engines or in bad weather. It is interesting that organisations like NASA look way back to earlier times for safety lessons which are relevant today. Its case study from 2007 summarised: *"The R101 Airship story is one of political leadership spurring investment in new technology, but at the same time driving that new technology to a premature implementation and subsequent disaster."* Development in aviation has been rapid as boundaries are pushed, especially in times of conflict. Learning from accidents has helped to improve safety in our modern mature systems. In 2020, as airlines struggle for survival, forced change and animosity have created deep conflicts in some organisations. Many are challenged emotionally and financially in new ways and this has introduced significant new risk in commercial aviation. It is imperative that operators, employees and regulators manage and mitigate these risks to the best of their ability.

Airline development was especially rapid after WW2 with the jet engine leading to higher speeds and operational altitudes. The more reliable modern aircraft and engines, along with better regulation and higher operational standards changed the commercial aviation industry out of all

The Master flies in to Brooklands

recognition. Just 40 years after R101, BOAC took delivery of its first Pratt & Whitney JT9D-powered Boeing 747-136, G-AWNA, on 22nd April 1970. It is a great tribute to the designers of the 747 that later versions of the type were still in service 50 years later. The seismic shock of Covid-19 is, however, bringing forward the retirement of many aircraft: the Brtish Airways fleet of 32 747-436s is just one sad example. Others have written in this edition about the 747, an aircraft that I see as one of the all-time greats - but I am biased, as the Jumbo played such a large part in my life! The performance, handling, comfort and engineering redundancy were outstanding. I still cannot comprehend how a company that designed the wonderful 747 flight control system dropped the ball with the 737 Max! My first line-training trip on the 747 was around the world in 10 days via Bombay, Hong Kong, Tokyo, Osaka, Anchorage and home to LHR. My second landing was the offset IGS approach to Hong Kong Kai Tak Runway 13 in poor visibility. From sighting the runway shortly before I started the turn to touchdown all seemed to happen quite quickly. What a great aircraft: I was hooked!

For obvious reasons, every Air Pilots visit planned for this year was cancelled and this is very disappointing. In each case the decision to cancel was left until the closing date of the visit in the hope that things might have improved but, alas, it was not to be! I know how much our visits are appreciated and on behalf of all Air Pilots I would like to express my thanks to the members of the visits team who put in a great deal of effort to create such an interesting and varied programme of 15 visits for 2020. Looking forward to 2021, we all hope for an easing of restrictions which will allow a return to normal social engagement, and that some of the events planned for this year might be possible next year. The visits team will not publish a schedule until there is more clarity around what might be sensible and allowable.

I would also like to praise the leadership of the Air Pilots Flying Club for the great work they do organising events and for the great support they give to young people, especially with their scholarships. It is a great shame that their planned barbeque and end-of-season lunches have also fallen victim to the dreaded Covid-19.

Alan Joyce, the CEO of Qantas, stated in August that it is unlikely to restart its international travel network before July 2021, despite government hopes that a vaccine will be available to all Australians in early 2021. Following the recent outbreak of the virus in Auckland, Air New Zealand domestic operations were significantly reduced. The North American region cannot see any likely options for a visit.

The Master has happy 747 memories

When quarantine restrictions and insurance difficulties are considered, there seems little prospect of a regional visit in my term. Bearing this in mind we are making alternative arrangements for the presentation of the awards that the Master normally makes during his visit.

It will not surprise anybody that The Guildhall is unable to support a function like the T&A in October, but there is a possibility that an award presentation ceremony for limited numbers might be viable on 18th February 2021. No decision will be made until much closer to the date.

The Installation in March was the last Livery event in the City, and the last Air Pilots or Livery event I attended until the flying club event at Popham in August. I am fortunate and grateful to have had the support of so many members of the Company through this difficult period. Many people have suggested that because of the unique circumstances I should serve another year as Master. Serving another year would, however, disrupt the progression of the Immediate Past Master, the Master Elect (ME) and the Wardens and would also deny a Court Assistant the opportunity to advance to Warden. Other factors also needed consideration and whilst making my decision IPM Malcolm White, ME Nick Goodwyn, the Clerk Paul Tacon and my wife Linda have given me their unconditional support. I will not be seeking Court approval to extend my term so the Warden election process will proceed normally, and I will hand over to ME Nick Goodwyn as planned at the Installation on 15th March 2021. □

Linda's support has been unconditional

FROM THE DESK OF THE DIRECTOR AVIATION AFFAIRS

By Liveryman John Turner

Covid-19 has brought new ways of working. 'Lockdown' measures have forced us to meet online and allowed representatives from all the Regions to attend our Technical Committee meetings. Similarly, it was natural for members of our new Space Working Group, despite the diversity of their occupations and schedules spread across three continents, to collaborate frequently by Zoom and email. What had been less obvious was that, without the expectation of physical meetings, networking with other agencies in the sector became easier. To paraphrase the proverb, perhaps there is some silver in the lining of even this horrid cloud.

To ensure that we embed these benefits in the future, I am reviewing the Technical Committee (TC) and Working Groups (WG) terms of reference. It is now over five years since they were approved and it has become apparent that one TC chair and one vice-chair is sufficient and, from a public relations and communications perspective, internal and external perceptions could be heightened by emphasising the International nature of the Technical Committee forum. There is also scope to improve the Coordination Panel's composition and methodology. As originally envisaged, our 'Working Groups' would be temporary constructs, created to resolve and report an 'Air Pilots position' on a specific topic before disbanding. In many instances that was sufficient, but several projects shifted from action to over-watch. We also need enduring groups, each to focus on a specific sector and keep our membership informed of developments. As the Space Group demonstrates, this is especially effective with a small international group of interested individuals with diverse backgrounds.

The DAA with the BAE Systems Mantis UAV, his last "first flight"

Drones

The need for the Air Pilots to focus on Drones/Remotely Piloted Aircraft Systems (RPAS) is not new. In fact, Upper Freeman Neil Hunter briefed the Technical and Safety Committee on the subject some 13 years ago. Neil continues to be involved in unmanned systems and he is now a welcome addition to our Drone Focus Group, which is led by Ian Davies. As yet the Group has to agree detailed objectives and scope and it would benefit from some additional members, especially where this could incorporate perspectives from the Regions. You do not need to be an 'expert' in the field, but you do need to be 'interested.' So, if you have an interest in joining the group please let me know.

Airspace

Covid-19 has exposed inefficiencies in current airspace. With air traffic at only 30%-40% of normal levels, flight distances in Britain and Europe have reduced by an average of 30 miles (50km) with an overall route saving amounting to some 30,000 miles each day. On Edinburgh-Gatwick flights, 357 flight miles have reduced to 322 (with an average 304kg, or 12%, fuel saving); with Frankfurt-Heathrow 410 flight miles reduced to 380; and Brussels-Dublin 482 flight miles reduced to between 402 and 412. It is self-evident that these savings occur because reduced traffic density permits more direct routing, but that begs the question of what savings might be possible even at full capacity, or how the additional pressure of increasing numbers of urban air mobility flying machines and unmanned vehicles can be absorbed in the future.

An Airbus and Boeing collaboration warns that air traffic management technology must be significantly modernised to manage the countless new small aircraft that will occupy future airspace. They hope to prompt FAA and others into corrective action. The UK's Airspace Change Organising Group identifies as one of the main drivers for modernisation "…to secure the efficient use of airspace by enabling greater integration of GA and business jet operations with commercial air transport", and in this context they see airspace integration as the deployment of

innovative solutions to create a sustainable and equitable air traffic environment.

It may not have seemed the most exciting subject area in the past, but as demands intensify for increased access to airspace by increasing numbers and types of user, coupled with commercial and environmental imperatives of more efficient routing to reduce costs and emissions, airspace and its modernisation will become an area of intense debate.

It is not difficult to imagination that innovative solutions to future airspace management may even include the relegation of an aircraft captain's authority just as TCAS did from air traffic controllers. We urgently need an up to date, informed, and clear voice in the airspace modernisation arena. If you'd be interested in playing a part in a new Airspace Focus Group, please let me know.

Keeping everyone up to date

In an attempt to communicate the work of our technical groups more broadly, we are introducing some new pages to our website. Pages for the Space Group will be available by the time you read this and pages for other groups will follow. In time, there will be a public page for every Group that outlines its objectives and scope of coverage and, within the members only area, far more detailed information such as group members, recent activities and updates.

None of the above precludes any member from suggesting other areas that would benefit from the attention of a group of us working together. I can't promise we will take up every suggestion but I'm very happy to discuss. Again, please feel free to get in touch. *(daa@airpilots.org)* □

SPACE WORKING GROUP REPORT

NEW ZEALAND SPACE INITIATIVES

By Liveryman Mike Zaytsoff, NZ Region Technical Committee Chair

On 13th June, just before sunset, the New Zealand-American company Rocket Lab successfully launched its 12th mission, deploying multiple satellites for various users. This mission brings Rocket Lab's total up to 53 satellites deployed, which is impressive considering its first launch only occurred in 2017. It's even more impressive when one considers that New Zealand, with a total population of only 5 million people, is only the 13th country in the world to put a satellite into orbit. The launch was originally scheduled for 27th March but was pushed back to 11th June due to a countrywide lockdown to combat Covid-19. The launch had to be delayed again for two days due to high winds at the launch site, perched atop the bluffs of Mahia Peninsula on New Zealand's North Island.

One of the satellites carried on this mission, called the ANDESITE, is a joint venture by NASA and the University of Boston in Massachusetts. It will study the Earth's magnetic field, which will no doubt be important to our Magnetic-to-True Air Pilots Working Group. It will also study how electrical currents from the earth influence "space weather". Space weather is particularly important to pilots because it can lead to unsafe radiation levels on over-the-top polar routes. Space weather can also interfere with HF radio communications. Therefore it is important we monitor and understand it, lest a flight crew lose communications at a critical point of an ocean crossing.

A unique feature of the ANDESITE is that it contains eight sub-satellites that will deploy from the main satellite. A limitation of earlier satellites designed to study the earth's magnetic field was that they lacked the ability to take readings from multiple points over the earth simultaneously. The eight sub-satellites of the ANDESITE are designed to alleviate this shortcoming.

Another of the satellites carried on this mission is the M2 Pathfinder. This satellite is a joint venture by the Royal Australian Air Force and the University of New South Wales Canberra Space Program. Its purpose is to advance Australia's expertise with secure communications platforms, and data collection during extreme meteorological events, both of which directly impact the ability of Air Pilots to do their jobs.

Rocket Lab strives to provide greater access to space by giving clients the ability to launch smaller satellites into orbit using a more cost-effective launch vehicle. A unique feature of the company's Electron rockets is they do not contribute to the debris layer hazard orbiting the earth that is made up of derelict parts from previous rockets. All components that detach from the Electron rocket in the process of a launch are guided back towards earth where they incinerate on re-entry into the atmosphere.

Rocket Lab's ELaNa 19, during launch

REGIONAL REPORTS
New Zealand Region
A PERSONAL VIEW

By Liveryman Allan Boyce, Chairman, NZ Region

I am in my office watching the rain pelt down and wondering about the effects of the massive drought that has impacted the North Island of NZ and, in particular, the City of Auckland. This was predicted in 2013, but very little planning was undertaken to cater for the expansion of the area, let alone the possibility that the drought was predicted to last several years. The CEO of Auckland Council 'Watercare' has fallen on his sword by resigning, and the Board members are fighting one another and looking for somebody else to blame. The Chairperson does not even live in Auckland, and is unable to come to the city due to the blockade.

This is all good entertainment for the populace, and makes a change from thinking about the Covid-19 pandemic, and the impact it is having on us in so many ways. After over 100 days of having no community spread, the virus has reared up and caused the government to lock down the whole Auckland area again. This is one third of the "team of five million" as the PM calls us, and 40+% of GDP. While the official reason of the cause of infection has not been divulged, the experts and opposition MPs are pointing to a breach of border security. The rest of the country is at a lesser level of restrictions than Auckland.

SECURING BORDERS

This demonstrates just how hard it is to completely close the borders in a secure way. We are an isolated island nation (next stop is the penguins) so, on paper, it should be easier than for most to secure our borders. The virus has ravaged our Pacific Island and NZ Maori population (including a former Prime Minister of the Cook Islands). Through genomic tracking we know we have both the UK strain and the US strain from Kiwis returning to NZ.

The media is having a field day attacking the government on testing at the border and quarantine facilities, with daily reports of further botch ups. The credibility of the government has been compromised, after three months of it being able to control the news in content, image and timing. This was scary stuff. It is refreshing to see the media carrying out its 'fourth estate' function, and pointing out the gap between the government's rhetoric and cold reality. Similar events to these, probably have occurred, or will occur in the other Regions.

LITTLE FLYING

Aviation-wise, very little is actually flying except agricultural aircraft (hooray). The national carrier, having expanded up to 70% of its pre-Covid internal capacity is now down to 5%. Its opposition has shut completely. International services are almost non-existent. Life for those international pilots who are still flying is not glamourous, with strict quarantine at stopovers and regular Covid tests. The tourist industry helicopters and sight-seeing fixed-wing aircraft are not flying nearly as much since the current lockdown, as most NZ tourists were from Auckland.

We have a new Director of Civil Aviation who happily stated at a meeting three weeks ago: "I have no aviation experience". She is a career civil servant, and appears to have very strong "people skills". We are "living in interesting times".

Meanwhile, the Regional Committee is meeting by Zoom regularly, and is planning activities normally associated with the Master's visit. If by a large amount of good fortune, the Master makes it to NZ, we can alter the dates of the activities to fit his schedule. Our next technical evening is 'on hold' again. We hope to be out of lockdown and to be permitted to lay a wreath at the Auckland Museum Cenotaph for Battle of Britain commemorations as usual.

The Committee has discussed at length a mentoring programme using ideas from a Zoom meeting with the Master, the Clark, the DAA and the Regional Chairs and Administrators some months back.

We look forward to getting released from lockdown soon, and pondering what the 'new normal' may look like. □

REGIONAL REPORTS
Australia Region
By Liveryman Rob Dicker, Chairman, Australian Region

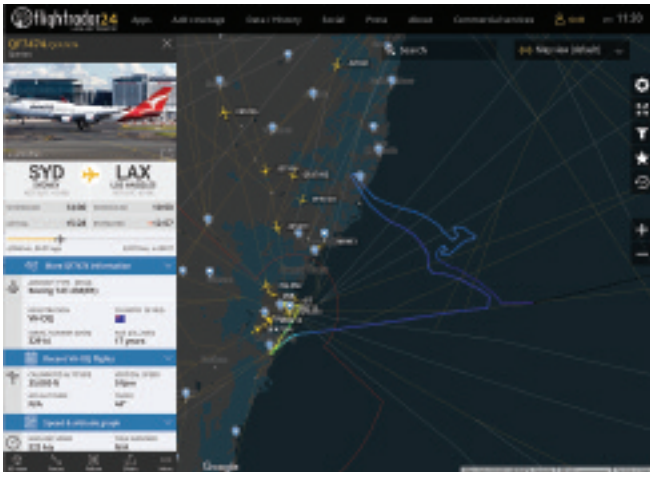
The last time I wrote for *Air Pilot* I commented on the fact that, in relation to Covid-19, Australia appeared to have fared relatively well in controlling the virus, compared to the rest of the world. New Zealand had eliminated community transmission of the virus to the point that its citizens could attend rugby matches as normal! There was even talk of a travel 'bubble' between the two countries.

Then, in July, a second wave of virus spread hit Melbourne and an outbreak, of unknown source, popped up in Auckland, so now it is almost impossible to travel between Australian States let alone across the Tasman. Meanwhile our international borders remain closed to non-citizens and, because of the dearth of flights, even citizens are finding it difficult to return home. In addition, return travellers must quarantine for 14 days in designated hotels, at their expense.

Little wonder that the Covid wrecking ball that is battering aviation continues wreaking its devastation, with Qantas announcing a further 2,500 redundancies. Meanwhile the buyout of Virgin Australia is now completed, resulting in the removal of four aircraft types from its fleet, along with the attendant aircrew, and the loss of 3,000 jobs in total. The training of international student pilots, which sustains much of general aviation, continues for the moment but there are obvious concerns for how long.

Covid has also led to the retirement of the Boeing 747-400 from the Qantas fleet, six months ahead of schedule.

A precision piece of flying for Qantas' last 747 service departure from Sydney



The first 747, a 200 series, joined the Qantas fleet in August 1971 and the last 747 scheduled flight with a QF flight number departed Sydney as QF7474 on 22 July 2020, concluding a 49-year history with the company.

The flight made several passes over Sydney harbour before tracking south to Shellharbour airport for a flypast of her sister aircraft, VH-OJA, the first and record breaking B747-400 to join the Qantas fleet, now housed at the Historical Aircraft Restoration Society (HARS). QF7474 then departed for Los Angeles, and ultimately Victorville, via a somewhat circuitous route that traced out the pattern of a 'Flying Kangaroo' off the east coast of Australia.

With many other airlines announcing the retirement of their B747 fleets and Boeing announcing the closure of the B747 line in 2022 it looks like we are seeing the beginning of the end of an era of large, four engined airliners, dominated by this iconic aircraft.

Notwithstanding the current environment, at the end of June we concluded our 2020 Scholarship programme with the award of six scholarships to young aspiring professional pilots. Four scholarships assist these pilots attain their ATPL qualifications, one provides a Multi Crew Cooperation course while another assists the recipient achieve an instrument rating. All these scholarships are provided with the support of our industry partners, as well as our Education Trust, and underline our commitment to supporting up-and-coming pilots in Australia.

Given the current restrictions on gatherings in most States there have been virtually no face-to-face events but we are still maintaining contact with members through phone and on-line video conferencing. In this regard our young members hosted their first 'Virtual Fly-In' in August and will continue with a line-up of speakers through, at least, to the end of the year. These fly-ins are timed at a participant-friendly time for most of the regions and I'm sure many of the guest speakers will be of interest to the wider Air Pilots audience, so keep an eye out for them.

We look forward to catching up with members through some of these on-line meetings. In the meantime, keep your distance and stay healthy and safe! □

YAP UPDATE

By Will Wright, Chairman, Young Air Pilots

The Master's message in this edition of Air Pilot starts with news of the 'flying start' the Hon Editor, Allan Winn, has made in his first few months in the post. As part of my role as Chair of the Young Air Pilots (YAP), I 'met' Allan over Zoom with the view to persuading him that more content from the younger members of the company would be a good thing. Fortunately, our aims and objectives aligned very well and there was very little in the way of persuasion required. In fact, I was slightly overwhelmed with the vision the Hon Editor has for the publication and I am very excited for its future. Needless to say, we came to the decision that it would be fruitful to provide the magazine with regular updates on all the good things that have happened during this uncertain time.

The summer period since the lockdown eased has been an interesting time for all involved in the activities of young members. The good weather and taste of some level of freedom meant that many of us were able to get out of the house and return to some semblance of 'normal' life. This, however, did not stop the continuation of our momentum in developing the main pillars of work. The mentoring programme has seen a change in process that means we now have added oversight and ability to pair, in the most effective way, a new group of mentors with potential mentees. Our mentoring guidelines have been updated and each new mentor has attended a training session with the Master Elect, Nick Goodwyn, on the merits of mentoring, what it is and what it isn't. I feel that this will give prospective mentees access to the very best advice and insight from across the Company to help them achieve their personal goals. If anyone would like to enquire about being either a mentor or a mentee then please do send your query to the new dedicated email address: *mentoring@airpilots.org*.

INFORMAL MENTORING

We have also recognised the place of informal mentoring from within the Company, and attempted to give opportunities for relationships to be built. I believe this has been a particularly important activity to rebuild because it is something we, as Air Pilots, do so well and have been starved of the chance to do so for so long. One such opportunity was the 'Support' part of the recent training day 'The New Normal'. Following the well-received 'Framing', 'Options' and 'Preparation' sessions, we allowed time for break-outs and informal conversations to be had in a relaxed, if slightly foreign, online setting.

The feedback I received from this event has been tremendous and we are looking forward to the next training day, entitled 'Level Up', to be held both online and at Air Pilots House, albeit by the time this issue makes print it will have been and gone. I hope you didn't miss out, but if you did, the sessions are to be recorded and placed online. They will join the growing library of Virtual Coffee Mornings and training days that have been stored for Company members to take advantage of.

The importance of outreach and professional relationships has not gone unnoticed and networking is very much a skill to be practised. We have, therefore, looked to build closer bonds with our counterparts in the Air League and the Royal Aeronautical Society (RAeS) as well as several universities and University Air Squadrons with the view to encouraging our membership to make more professional connections. We have made a number of presentations in recent months so that we may help, in any way we can, the aviation community through this period of uncertainty. The highlight of this was an advice session I facilitated with Assistant Zoë Gell and Liveryman Kat Hodge to the subscribers of Resilient Pilot (*www.resilientpilot.com*). We were able to provide some real, valuable insight into how we have framed certain challenges in our flying careers to date and where others may want to consider focussing their energies to overcome their own personal challenges in today's climate.

Overall, we have made a significant amount of progress in a relatively short period of time across all activities and I, for one, am so encouraged by the future of the Young Air Pilots within the Honourable Company. So, until the next update, I look forward to 'seeing' or seeing you at one of the virtual or in-person events, training days and fly-ins etc that will continue to go ahead even in this most trying of times. Blue skies and tailwinds. □

REGIONAL REPORTS
North America Region
ABBOTSFORD TIME CAPSULE OPENED

By Liveryman Alistair Beaton, Chairman, North America Region

Abbotsford was incorporated as a village in 1892 and as a City in 1995. It is located on the traditional, ancestral lands and unceded territory of the Stólönation. Abbotsford is located on the US/Canada border about 40 miles (65km) east of Vancouver, and is known as the Raspberry Capital of Canada.

It is also the location of the Canadian International Airshow, better known locally as the Abbotsford International Airshow.

The Royal Canadian Air Force purchased land immediately adjacent to the US border in 1940 and constructed Abbotsford Airport in 1943. The runway layout is triangular, typical of military aerodromes of that era. The same year the British Commonwealth Air Training Plan commenced operations at Abbotsford with No 24 Elementary Flying Training School, and later No 5 Operational Conversion Unit was based at Abbotsford.

Following the Second World War Abbotsford Airport was mostly used for general aviation and as a secondary airport for Vancouver International Airport. Today Abbotsford has developed into a significant regional, and to some extent International, airport, while retaining its role as a training ground for general aviation.

Liveryman Dr Steven Stewart opens the capsule

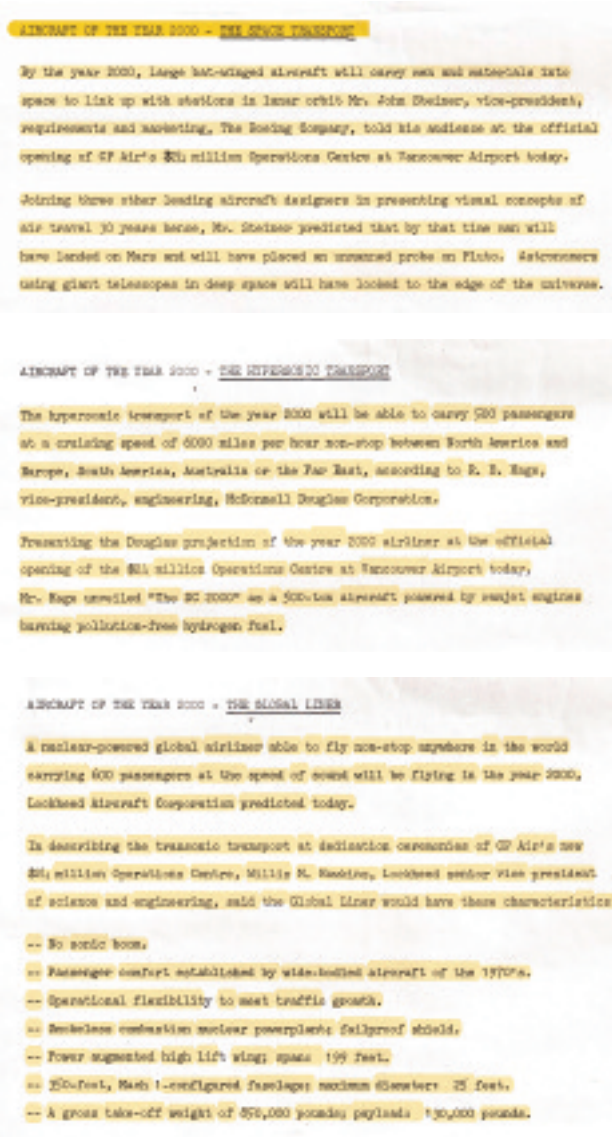
Since 1962, the Airport has hosted the Abbotsford International Airshow, held on the second weekend in August each year. Abbotsford Flying Club was, and still is, the main driving force and organizer behind the Abbotsford Airshow. Perhaps of interest to Air Pilots in particular, AFC is proud to have our Patron, HRH The Prince Phillip as a member!

In 1970, when then-Prime Minister Pierre Elliot Trudeau declared Abbotsford Airshow as Canada's International Airshow, it was decided to construct a cairn made up of stones from (I believe) 27 countries and therein store a time capsule, to be opened on 7th August 2020.

Our Liveryman Dr Steven Stewart did the honour of opening the cairn and the time capsule and reading some of the contents contained therein.

Additional materials will now be added to the capsule, to be opened again in 2070. □

The capsule reveals some 1970 predictions...



AIRCRAFT OF THE YEAR 2000 - THE SPACE TRANSPORT

By the year 2000, large bat-winged aircraft will carry men and materials into space to link up with stations in lunar orbit Mr. John Steiner, vice-president, requirements and marketing, The Boeing Company, told his audience at the official opening of CP Air's $5½ million Operations Centre at Vancouver Airport today.

Joining three other leading aircraft designers in presenting visual concepts of air travel 30 years hence, Mr. Steiner predicted that by that time man will have landed on Mars and will have placed an unmanned probe on Pluto. Astronomers using giant telescopes in deep space will have looked to the edge of the universe.

AIRCRAFT OF THE YEAR 2000 - THE HYPERSONIC TRANSPORT

The hypersonic transport of the year 2000 will be able to carry 500 passengers at a cruising speed of 6000 miles per hour non-stop between North America and Europe, South America, Australia or the Far East, according to R. E. Rage, vice-president, engineering, McDonnell Douglas Corporation.

Presenting the Douglas projection of the year 2000 airliner at the official opening of the $5½ million Operations Centre at Vancouver Airport today, Mr. Rage unveiled "The DC 2000" as a 500-ton aircraft powered by ramjet engines burning pollution-free hydrogen fuel.

AIRCRAFT OF THE YEAR 2000 - THE GLOBAL LINER

A nuclear-powered global airliner able to fly non-stop anywhere in the world carrying 600 passengers at the speed of sound will be flying in the year 2000, Lockheed Aircraft Corporation predicted today.

In describing the transonic transport at dedication ceremonies of CP Air's new $5½ million Operations Centre, Willis M. Hawkins, Lockheed senior vice president of science and engineering, said the Global Liner would have these characteristics

-- No sonic boom.
-- Passenger comfort established by wide-bodied aircraft of the 1970's.
-- Operational flexibility to meet traffic growth.
-- Smokeless combustion nuclear powerplant; fallout shield.
-- Power augmented high lift wing; span: 199 feet.
-- 250-foot, Mach 1-configured fuselage; maximum diameter: 25 feet.
-- A gross take-off weight of 850,000 pounds; payload: 130,000 pounds.

MEMBER PROFILE

IT'S NEVER TOO LATE TO LEARN TO FLY

By Freeman Dr Tony Flinn

As a new member of the Honourable Company of Air Pilots, I thought members might be interested in my slightly less-conventional route travelled to get to this point, as a private pilot.

Like many boys, I was always interested in aircraft and had a collection of about 50 Airfix models hanging from my bedroom ceiling. How the ceiling didn't fall in I'll never know. My early boyish dreams of becoming a pilot were dashed when the careers officer at school rudely laughed at my suggestion - expectations at state schools in the early 1970s were never great…

Nevertheless (and despite the distractions of golf) I went to university and gained a BSc and a PhD, both in chemistry. By that time my eyes had deteriorated, and the University Air Squadron wasn't interested in me.

I have had a varied technical and commercial career, eventually starting up a number of businesses. All the while I was pursuing several racquet and fitness sports and golf, the mainstay of my leisure time. A mid-life crisis when 42 saw me getting into triathlons and fell-running. In 2003, with a programme of triathlons booked into my diary, I was out training one evening. As I was travelling down a hill on my pushbike, a car pulled out at the bottom: I couldn't stop, and ended up with 20 broken bones, brain haemorrhage, collapsed lung and complete spinal cord Injury at T4. The latter permanent injury means that I am paralysed from the mid-chest down and will never walk, or even stand, again.

I pursued arms-only rowing competitively for a few years and dinghy sailing until graduating to larger boats. We owned a 12m (40ft) cruising yacht based initially at Hartlepool, but later at Kip on the Clyde.

I sold (and left) one company but was getting bored until I was head-hunted for a job in north Lincolnshire. After moving further south, the thought of the additional driving back up to Scotland to sail wasn't very appealing, so I decided to learn to fly (at the age of 56). Initially learning with Aerobility at Tatenhill, I then progressed to Sandtoft in north Lincs, where I purchased a mature Piper PA-28-181 Archer II which enables me to fly independently.

To get on board, I transfer sideways onto the trailing edge

Tony Flinn and wife Rosi "Somewhere over France"

of the wing, then shuffle up into the P1 seat. A rudder control is attached to the P2 foot controls and braking is achieved using the handbrake with the assistance of an extension lead.

I gained my PPL in 2016 and Instrument Rating in 2019 (age 60). For a few years I flew up to Oban in order to sail on the yacht in the most splendid environment imaginable.

I have been an active member of the Rotary Club since 2010 and am current President of the UK section of the International Fellowship of Flying Rotarians, as well as current UK IFFR Flyer of the Year.

The IFFR has 1,700 members worldwide and aims to foster good fellowship through an interest in aviation. Since joining IFFR I have flown several times to France, to Switzerland and The Netherlands, and logged 400+ hours flying as PIC. □

Tony and trusty Piper Archer

THE BATTLE OF BRITAIN - AFTER 80 YEARS, HOW IMPORTANT IS IT?

By Dr Michael A Fopp

To accompany his 2020 Tymms Lecture, Past Master Fopp speculates on the implications had the Allies not won the Battle of Britain in 1940

Great battles seem to be remembered more for their result than the circumstances which led to them, or what would have happened if the result had been reversed. Waterloo was a great victory for Wellington, but was a close-run thing and circumstances weighed heavily against a British victory until the very last moments when von Blücher's Prussians arrived on the scene. Nelson's victory at Trafalgar was a happy coincidence of mistakes by the French and Spanish admirals coupled with meteorological conditions in favour of the Allies. The Falklands War was preceded by weak foreign policy and the withdrawal of strategic assets, resulting in the Argentine generals seeking to bolster their opinion polls with positive action to regain nationalistic territory.

The result of this is that battles, like those which took place in the summer of 1940, are given an importance which, sometimes, overshadows what actually happened. The Battle of Britain was unique in many ways: the first battle fought solely in the air; the first battle given a name before it started; the first air battle observed by the civilian population from the ground, and the first battle declared to be won before it ended. New research from the RAF Benevolent Fund has come up with the extraordinary finding that nearly half of the British public do not even know what the Battle of Britain was. So, for those of us who do know, we probably remember it today, 80 years on, as an historic victory. But was that victory, or even the battle itself, a foregone conclusion?

Hitler published *Mein Kampf* in 1925. For anyone who managed to read through that disgraceful tome it would have been clear exactly what his intentions for the future were. The 1929 Wall Street Crash helped his perverted regime into power and by 1933 he had been appointed Chancellor of Germany. The rest of Europe, and indeed the world, was totally averse to a repetition of the 'War to end all Wars' of 1914-18. As a result Europe in particular studiously ignored Germany's incorporation, in 1935, of the Saar region of France; Benito Mussolini's invasion of Ethiopia in 1935; Hitler's re-occupation of the Rhineland in 1936; his assistance to Franco during the Spanish Civil War and his annexation of Austria in 1938. France and Britain, eager to avoid war at almost any price, looked on in 1939 when, in spite of the 1938 Munich Agreement Hitler occupied Czechoslovakia. Only at this point did France and Great Britain enter into a pact to support Poland if she too were to be invaded. This was to no avail for, following the Nazi-Soviet non-aggression pact, on 1st September 1939 Poland was invaded. Thus, Europe's mollification of Germany following the Treaty of Versailles of 1919 resulted in a Second World War a mere 20 years later.

NAIVE HOPES

With Norway, Denmark, Belgium, Luxembourg and the Netherlands naïvely hoping to retain their declared neutrality, Hitler advanced towards his goal clearly defined back in 1925, of Lebensraum or 'living space'. Yet still France and Great Britain paused throughout what became known as 'The Phoney War'. All this changed when those neutral countries were invaded by Germany in April and May 1940. When the French signed an armistice in June Britain was on her own, with only 20 miles between her and an all-conquering foe.

This was made all the worse by France, at its own request, entering into a collaboration agreement with Germany immediately following its capitulation.

Everything was set for an accommodation to be made between Hitler and the United Kingdom, including all aspects relating to the British Empire. A sizeable proportion of the UK population, and the rest of the world, did not want to be embroiled in yet another full-blown World War. Some could see the inherent danger to mankind of Hitler and his perverted, psychopathic, racist, cold-blooded views.

To the great good fortune of the world Great Britain, unlike any other country, had made adequate preparations and was sufficiently aware of the danger of fascism that she could, and did, resist. In spite of Hitler's regular "last appeal to reason" rhetoric, Churchill encouraged Britain to carry on alone with his famous speech: "… I have nothing to offer but blood, toil, tears and sweat."

The Observer Corps in action spotting for the enemy over London

History tells us the Battle of Britain was a David-and-Goliath few months of valiant struggle against overwhelming odds by 3,000 young men forever known, thereafter, as 'The Few'. They were undoubtedly aided in their task by great men and women who ensured they had the political, military and life experience to do the job - men like Churchill, Park, Dowding, Tizard, Beaverbrook, and Watson-Watt, to name only the most prominent. However, ordinary people were as much a part of stopping the Germans in their tracks as either 'The Few' or the great and good. These civilians carried on with their everyday jobs whilst also acting as fire watchers, ARP wardens, rescue workers, auxiliary police and fireman, telephone engineers, and a whole host of occupations which were essential to keep Britain functioning. Recent events with the Covid-19 pandemic have drawn parallels with this period, rightfully pointing out that the important people in society are often those who carry out the mundane, the necessary, the low-paid and the really fundamental jobs for the greater good. So it was in 1940.

WHAT MIGHT HAVE HAPPENED?

In this 80th year I have reflected on what might have happened had we taken a different course. Had we taken the 'soft option' of finding an accommodation with Hitler, what might have been the result? History already tells us that part of our victory during the Battle of Britain was a direct result of the mistakes made by the enemy rather than by the successes made by us. Hitler's great delusion was that the British people had the same world view as he did. He believed there was a chance that Britain would join him in his enterprise to create a fascist Europe and, eventually, combine militarily to defeat communism, particularly the Soviet Union. He gave Britain a second chance by halting the advance of the Wehrmacht some miles from Dunkirk allowing the evacuation of the British Expeditionary Force and over 140,000 French, Belgian, Polish and Dutch soldiers. The 'miracle at Dunkirk' was a political soundbite: in reality it was the greatest retreat of the British armed forces in history, made possible by the ineptitude of the enemy's leader. Hitler had also created a cadre of sycophantic senior subordinates: chief among them at that time was Hermann Göring who, wanting his own slice of the limelight, encouraged defective intelligence reporting which, in turn, led to his over-optimistic assurances to anyone who would listen regarding the Luftwaffe's prowess. Had he taken the time to examine the state of his air force, which had been in almost continuous combat for three months, instead of enjoying and plundering the treasures of Paris, he would have realised that his force was tired, undersupplied and overstretched. However, in a vainglorious attempt to attract the same sort of public adulation as was being heaped on his leader, he assured Hitler and the general staff that the Luftwaffe could attain air supremacy over the English Channel and thereby facilitate a seaborne invasion of Britain. Once the Battle of Britain started in earnest a mixture of defective intelligence by the Germans, including their ignorance of the British early warning systems (which caused mayhem to Luftwaffe attacking formations and resulted in unacceptable losses amongst bomber crews), and their over-confidence, were all compounded by serious mistakes being made in their high command. Göring's orders to his fighter pilots to change their tactics were literally fatal to many, and Hitler's personal edict that retaliation bombing of cities should take priority over defeating the Royal Air Force was a strategic blunder. He was not helped when, in June, his ally Mussolini, having declared war on Britain and France because he thought victory was assured, then sought help when the Italian soldiers in North Africa were found to be wanting and needed support from the Wehrmacht. These errors greatly assisted Great Britain and were markers for the sort of ineptitude which would lead to the ultimate defeat of the Third Reich.

HITLER COMPROMISED

So, with Britain standing alone, Hitler's ultimate goal was severely compromised. Had not the Royal Air Force been successful in 1940 German soldiers would not have had to be deployed to North Africa. The gateway through the British Empire to the oil-rich Middle East would have been

A scene from the movie It Happened Here *made in 1964 with Wehrmacht soldiers parade in front of Parliament.*

Speculation in fiction about how the world would have looked had Britain sought an armistice or the Battle of Britain had been lost.

opened, and the natural resources so necessary to the Nazi war machine would have been freely available to both Germany and her allies, Italy and Japan. The lack of these natural resources not only affected Germany but was the main reason why Japan attacked the United States and, simultaneously, China, Burma, Malaya and the other Southeast Asia countries rich in the commodities it so desperately needed.

As Britain stood fast and remained the only upholder of freedom in Europe, it provided succour to countries like Greece, Yugoslavia, Libya, Tunisia and the resistance movements within occupied Europe. All of this affected Germany's ability to wage war. In the case of Greece and the Balkans the requirement to deploy Wehrmacht troops in support of Italy delayed the German invasion of the Soviet Union by six crucial weeks. The reason the Wehrmacht was stopped at Moscow and Leningrad was primarily its reaching these two far-off objectives just as the Russian winter set in.

Britain standing alone also set an example to the free world, particularly when it became self-evident that Nazism was a cruel, totalitarian, racist regime led by psychopathic evil men bent on world domination. In spite of this it took Japan's attack on Pearl Harbor to bring an unprepared United States into the war. However, the war's ultimate result was thereafter never in doubt. The combination of Britain's sustained productivity in both armaments and food (she grew 91% of her food requirement) and the USA's prodigious capacity for manufacture, coupled with the doggedness of the two peoples, was decisive. The fact that Britain had held on alone for over two years meant there was also a launch point from which to deliver an invasion of occupied Europe leading to the eventual defeat of Hitler.

IMPLICATIONS OF ACCOMMODATION

All this is now well documented, but had Britain accepted an accommodation what would the world have looked like today? Europe would have been over-run and the Soviets would have been pushed back to the un-industrialised agricultural wasteland of Eastern Russia. Germany would have taken back her lost colonies and occupied those in the Middle East and Africa previously controlled by the occupied countries of Western Europe. Japan would have continued its belligerence in China and taken what it wanted without hindrance from the old British, Dutch and French colonial empires of Southeast Asia. The United States would have preserved its isolationism and tried its best to be all things to all men and avoid the confrontation spilling onto its shores. However, Germany's technical and scientific prowess would have provided the means of expansion and funding to develop the most atrocious of weapons. Many are, perhaps, unthinkable or unbelievable as they were never developed and the regime that would have made them possible did not survive. But we do know that Germany was advanced in nuclear fission (Otto Hahn was 'the father of nuclear chemistry') and had on the drawing board designs for strategic bombers capable of reaching the Eastern seaboard of the USA and, of course, it did successfully develop a ballistic missile and a whole host of other unmanned guided weapons.

In fiction there are a number of alternative histories, based in many cases on fact, which point to what the world would look like had the Third Reich fulfilled the wish of its founder of lasting for 1,000 years. Books such as *Fatherland* by Robert Harris, *SS-GB* by Len Deighton, *Dominion* by C J Sansom and *The Man In The High Castle* by Philip K Dick are but four that paint a vivid picture of what might have happened if Britain had not stood against Germany in 1940. A timeline following a capitulation before Dunkirk would be something like this.

HOW THE SPOILS WOULD HAVE BEEN DIVIDED

In October 1940 Italy would have successfully invaded Greece and Albania. In November 1940 Germany and Italy would invade Romania and the invasion of the Soviet Union in 1941 would have been successful. The Soviet Union would have been partitioned with the industrialised areas controlled by the Germans and the population forcefully consigned to the steppes of the East. Twenty-seven million Soviets died in World War II. It is hard to contemplate what the figure would have been if this alternative had become reality. Italy would occupy Egypt and the Suez Canal, and the Axis would then have the door to the Middle East oil fields. By 1943 Germany, Italy and Japan would have occupied the European colonies in Africa, Southeast Asia, India and possibly even Australia and

New Zealand. Unless the United States accommodated Hitler's ideology in some shape or form it would continue to be his enemy and some accounts give a scenario where the atom bomb is not an American weapon but is dropped on New York by the Germans resulting in a US surrender. The USA is then partitioned with a central unoccupied zone: the Japanese controlling the West Coast and the Germans controlling the East.

Whilst the above may be speculation, with hindsight we know what a narrow margin there was between success and failure for those who stood against Hitler in 1940. We know the mistakes that were made, by both sides; we know the weapons development capabilities of all parties; and we know the ideological and physical actions taken by the Nazi regime. In other words, the speculation can be considered plausible. Which is why, 80 years on, we must recognise the Battle of Britain as a turning point in World War II. It was Hitler's first defeat. It was a beacon to the free world that Nazi Germany could be stopped. It was an example to the occupied countries that there was hope. When the war was over it also illustrated that, in keeping the world free of the Nazi tyranny, Britain had contained a malevolent and evil regime whose Holocaust, whilst dreadful in the extreme, had as victims a fraction of other populations which would have been overrun by these madmen.

FORGETTING THE DETAIL

In answer to the question posed in the title of this article: "Is the Battle of Britain still important?" it should be put in perspective. Three thousand young men of RAF Fighter Command, between the months of July and October 1940 as Churchill put it, were "... turning the tide of the world war by their prowess and by their devotion." In today's age of political correctness, anti-military sentiment, cultural sensitivity and a "wokeness" which would rather paint over disagreeable history, it is often easier to ignore the detail of the past. Historians, museum curators and writers do this in the name of social cohesion, international relations, and to avoid offending current partners. However, I believe it is important that the historical narrative is not diluted by a lack of detail. There is a worrying trend by those who interpret history to minimise the facts so as not to over-complicate the story. But in the case of the Battle of Britain the details are important. It was getting the detail right that led to victory.

Forgetting the lessons of the past by sanitising them for the present leads to ignorance which can be dangerous. From the RAF Benevolent Fund's research, apparently 18-24 year olds are the most confused with 12% thinking The Battle of Britain happened in World War I; 9% believed it was part of the Civil War between Scotland and England in 1646; 6% a Viking invasion and a further 3%, the 2019 General

310 Czech Sqn at Duxford on 1st September 1940. Seated pilot in RAF uniform in centre is Flt Lt J Jefferies DFC, Flight commander of the original unit. Behind is Hurricane P3143, NN-D.

Election! Almost one third of this age group had no idea whatsoever. Of the 58% of the public who expressed knowledge of the Battle, almost half were unaware it took place in 1940 and three quarters did not know how long it lasted. The youngsters had difficulty identifying The Few and, in general, it was concluded that the overall knowledge by the public of the Battle of Britain is declining at an exponential rate. However, there is hope because those surveyed by the Benevolent Fund expressed a desire to learn more about historic events.

In a mere 20 years we shall celebrate the centenary of that moment in history when we took a national course of action which made the world a better place. A course of action from which a lesson was learned, as Margaret Thatcher would put it 43 years after the Battle of Britain: "Dictators can be deterred, they can be crushed - but they can never be appeased". If there is any warning from history it is that using the past to inform the future, particularly through the proper commemoration of anniversaries, makes for better decision-making and judgement by politicians, and greater understanding of our place in the world by individuals. The Few were role models for a generation: let us not allow the detail of their achievements to fade, lest we face the risk that future generations will not have their example to follow. □

The Man in the High Castle *speculates this distribution of the world between the Axis Powers*

BOEING'S HEAVYWEIGHT CHAMPION OF THE WORLD

By the Editors and distinguished 747 pilots

As major airlines bring forward the retirement of their 747 fleets, we speak to a number of HCAP members who had the privilege to fly the iconic 'Queen of the Skies'

In July, British Airways (BA) announced that it would be retiring all 31 of its Boeing 747 aircraft, and Qantas flew its last 747 passenger service. Virgin had already parked its remaining 747s, and Lufthansa started retiring not only its 747s, but some of their one-time apparent successor Airbus A380s. This leaves only around 100 passenger and 300 freighter 747s nominally still operating (although many of those are parked), out of 1,572 747s originally built. For the passenger aircraft, at least, it was the beginning of the end of a very special era in aviation history.

The airlines had always planned to retire their 747 fleets over the coming years but this has been accelerated as a result of the impact the Covid-19 pandemic has had on the aviation sector. The fuel-hungry aircraft are now being replaced by the likes of the Airbus A350 and Boeing 787, which are around 25% more fuel-efficient than the 747.

The -100 began nearly 50 years of BOAC/BA 747 service

MILITARY ORIGINS

By the mid-1960s, Boeing had already cornered a significant proportion of the new 'jetliner' market. While other manufacturers focused their attention of flying ever faster the team at Seattle realised the future was not in speed - it was in size. What would ultimately become the Boeing 747 began with a USAF requirement for an outsized cargo transporter. Although the contract was ultimately awarded to the Lockheed C-5 Galaxy, Boeing's project research would not be wasted.

Even before the USAF contract was let, the charismatic and forward-thinking Juan Trippe, President of Pan American World Airways, had approached Boeing to request an aircraft twice the size of the 707s then in service. With passenger numbers rising at a startling rate, airport congestion was worsening by the month. Trippe thought this could be addressed by a large new aircraft.

With a significant expression of interest from its most important and loyal customer, Boeing transferred Joe Sutter from Boeing's 737 development team in 1965 to begin the studies for a new airliner, dubbed the 747. After discussions with Pan Am and other airlines the aircraft was designed to have a dual role, enabling it to be used for either passengers or freight. Some airlines still considered supersonic aircraft to be the future and felt the 'shelf-life' of

a 747 would be limited, so the fact that the aircraft could also be used as a freighter would doubtless win the hearts of the accountants.

In April 1966, during a Seattle banquet to mark Boeing's 50th anniversary, Trippe signed off $525 million (around £4.2 billion in 2020) for 25 airframes, predicting that the 747 would be "... a great weapon for peace, competing with intercontinental missiles for mankind's destiny."

UPPER DECK

The original design called for a double-decker fuselage with eight-abreast seating and two aisles on the lower deck, and seven-across seating with two aisles on the upper deck. However, concern over evacuation routes and restrictions on the cargo-carrying capability resulted in a rethink in early 1966 and a wider single deck being incorporated.

In order to facilitate a hinged cargo door in the nose, the cockpit needed to sit atop the forward fuselage and the distinctive 747 'bulge' was born. This meant one common design could be used for passenger and cargo versions of the aircraft but designers were initially at a loss as to what to do with the space behind the cockpit area. It was initially specified as a lounge area, with no permanent seating, but over the years has been used as a First Class area or (especially after the upper deck was stretched for the -300 and -400 series) simply an extension of the standard seating capacity.

An aircraft the size of the 747 would need four very powerful engines and Boeing began to look at the option of using high-bypass turbofans. These produced double the power of earlier turbojets and Boeing, Pan Am and Pratt & Whitney joined forces to create the JT9D engine specifically for the 747. In order to operate from existing runways around the globe, the 747 needed to have a take-off and landing performance similar to its contemporaries, despite its bulk and weight. As such, the design benefited from leading edge flaps running almost the entire length of the wing as well as complex slotted flaps along the rear that increased wing area by 21% and lift by 90% when fully deployed.

The first 747 was delivered to Pan Am in January 1970 and made its maiden sortie between New York and London on 22nd January. When it entered service the initial versions of the 747 were some two and a half times the size of the 707 and the aircraft held the passenger capacity record for 37 years. Crowds gathered at Heathrow to watch the new leviathan of the air land for the first time; soon they would have further reason to cheer as BOAC took delivery of the first British 747 in April of the same year.

Considered by many to be the definitive Jumbo, the 747-400 variant had a new glass cockpit which reduced the crew required from three to two. Since the 1980s, Boeing has proposed several 'stretched' 747 projects but it was not until 2004 that the '747 Advanced' programme was given the go-ahead. A combination of new engine technology and aerodynamic modifications meant the resulting 747-8I – which first flew on 8th February, 2010 – is 30% quieter, 17% more fuel-efficient and has 13% lower seat-mile costs than the 747-400. The 747-8F freight version entered service in 2012.

FIRST-HAND EXPERIENCES

We asked a number of HCAP members for the benefit of their experience.

Liveryman Steve Bohill-Smith spent 34 years with BA and was a 747 TRI/TRE. He describes the type's flying characteristics as "beautiful" but points out that: "Your eye height is over 9m (30ft) above the ground [so] taxiing needs a little care and judgement. Rotation rates on take-off need some thought as the rear underside of the fuselage can be as close as a metre from the concrete. Outboard engine failures need to be handled with care with rudder application correctly applied to keep straight, and the wings have to be kept level when landing in a cross wind because of possible outer-engine pod strikes."

Phil Hogge

Liveryman Phil Hogge was BA's 747 Flight Training Manager from 1981 to 1986, and then its Chief Pilot until 1991. He concurs that the cockpit's height above the ground was the type's biggest problem. "This made it a little difficult to judge the flare until you got used to it" he says. "The high eye line also made it difficult to judge your speed when taxying (we used the INS groundspeed readout to help you keep the speed down). The 747's one and only real handling vice came if you taxied too fast around a corner in the wet, or on an icy surface. The nose wheel would 'skate' and you would carry straight on, this was because the wing and body gear carried most of the weight, leaving little on the nose wheel."

Another Past Master to fly the 747 was Chris Hodgkinson (left), who concurs that the sheer size of the 747 took some getting used to. "Compared with the VC10 it was more difficult to fly but not necessarily more complicated. Once you got used to the size, it was no problem" says Chris. "The position of the flight deck in relation to the nose leg meant when taxying you had to overshoot where you thought you needed to turn to avoid putting wheels on the grass. We did the full course on the simulator and then I did 17 landings at Prestwick before the first trip. By the time of the 747-400, I'd been flying the Classic for 12 years, so all we did was the ground course and six landings down the route, and then it was straight back into the left-hand seat" he says.

The aeroplane also handled well at slow speeds, Steve Bohill-Smith commenting that the stall warnings in a nose- high attitude include: "… a reduction in airflow over the cockpit, the ASI read-out turns red, there's buffet, a stick shaker, and aural warnings." Recovery is straightforward, he says. "The pitch attitude is lowered, power is increased and the nose-up pitching moment due to the under-slung engines is resisted. I remember a stall speed of just 117kt."

TEST FLYING

After leaving BA, Steve Bohill-Smith was invited to help set up the pilot training department for a newly formed company in the Far East and persuaded some other ex-trainers to join him to form the training nucleus for Oasis Hong Kong Airlines.

As part of this he found himself conducting the air tests on newly acquired 747-400s. "I had been involved in flying some air tests over the years on other various types" he recalls "but this was my first on the 747-400. "The flight time for a full air test was around five hours and involved a lot of homework and planning and the production of a 70-page folder which went through the functions and system checks, which were carefully worked out so as not to waste time in an orderly and convenient flight profile."

"The Boeing 747-400 must be the safest aircraft in service in the world. I have experienced engine failures on aircraft with two and three engines, but never on one with four.

Each system had to be meticulously tested and the parameters noted. A third pilot and an observer were carried for this purpose. Arming doors and checking control surfaces and fuel dump were in their brief.

"The pre-flight set up of the Flight Management Computer, performance calculations, oil and hydraulic quantities and fuel load were all checked. Brakes and stabiliser operation with a progressive introduction of hydraulic power to note control column feel and movement rates was completed. Also checked were the stabiliser and trim cut outs, take off configuration warnings, stall warning systems with shakers, EGPWS test advisories and cautions, all before starting the engines. After start the maximum motoring N2, initial time to light up and the maximum EGTs were noted.

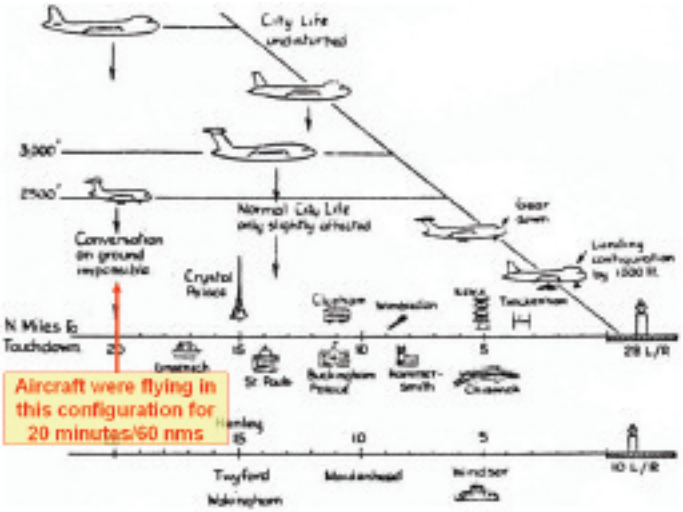
Three-engine take-offs can require lots of rudder!

"During the flight, landing gear and flap retraction were timed, over-speed warnings were explored with a maximum indicated Mach Number of 0.92 at FL350 and fuel jettison was tested."

Among the most notable parts of the test was the 'mask drop' when the cabin altitude exceeded 14,000ft. "This test was quite something to see" says Steve, "but it is not appreciated by the ground engineers as they have to repack over 400 of them!"

During the test the engine relight envelope was also explored and this was combined with the two-engines-out-on-one-side performance climb test. With two engines at Max Continuous Power wings level, a climb is performed over five minutes and the altitude noted every 30 seconds.

Returning to base, the aircraft would typically undertake a three-engined auto approach and go-around from 200ft. After landing the spoilers, reverse and brakes were all tested and a rejected take off from above 85kt completed the flying. Shutdown on the stand was done by using the fire handles and the times for run-down recorded. □



Steeper, faster approaches were not always just for noise-reduction, as Hugh Dibley explains

Phil Hogge used to brief new pilots that the 747 had "…no unusual stall characteristics [and] unlike the T-tailed types such as the VC10, it has no deep stall characteristics whatsoever. In fact, to my knowledge, it has never even been stalled clean. In the clean configuration, it has a large and stately buffet which becomes so uncomfortable that the test pilots used the maximum acceptable buffet to define the stall speed clean. I think a pilot would have to be very ham-fisted to stall it clean! In every other configuration it has a normal buffet, a gentle nose drop and no tendency to drop a wing unless it is in a sideslip."

The early 747s were prone to engine problems but Chris recalls few notable events. "There was a standing joke when you were doing a six-month check on the Classic: 'We'll do an unusual approach – on four engines!' The typical case was you'd get a surge at the top of the descent and have to close the engine down but in the whole of my time I shut down only three engines, and two of those were precautionary, all on Classics.

"The worst was on my seventh trip out of Delhi for Hong Kong: we got to 700ft and BANG! There was no way we were going on to Hong Kong on three engines. While we worked out how much fuel we needed to dump we contacted the Company and were told there was no spare engine in Delhi, so we didn't dump any fuel, and went on to Bombay where they had an engine. That got fitted overnight, but then there was a monsoon in Hong Kong, and we weren't going to fly into that, so we ended up getting there 48 hours late."

COMPLICATIONS

Engine problems weren't all that early 747 pilots had to contend with, as Phil Hogge recalls just how complex the aircraft could seem to new recruits: "When Joe Sutter and his team designed the 747 in the late 1960s, it was a leap in the dark – it was literally twice the size of any other airliner. Therefore, they designed it with more redundancy in its systems than any other aircraft ever had before. You have four engines; it can fly on two. You have four independent hydraulic systems, each with an engine-driven pump and a pneumatically-driven back-up pump which will automatically take over if the engine driven pump fails. You have a pneumatic gallery across the aircraft, powered by bleed air from the engines, that powers both the leading edge flaps AND the air driven back-up hydraulic pumps. You have hydraulically-powered controls, horizontal

Qantas says "Goodbye" to 49 years of the Jumbo in traditional style with an arch of water provided by the airport fire crew

stabiliser, spoilers, trailing edge flaps and landing gear as well as primary and secondary wheel brakes. If the gear fails to come down, you have an electrically-driven free-fall system – and the aircraft can be landed on either the wing gear or the body gear if one or the other fails on this alternate system. You also have electrically-driven alternate flap lowering systems for both the leading edge and trailing edge flaps. All this redundancy means there are a lot of drills divided into four categories: emergency, alternate, non-normal and normal. There is a lot to get your minds round and for this reason the simulator syllabus is lengthy, some 12 details in all."

Phil also recalls that: "One area that required precision flying was the departure at high take-off weights. During flap retraction the margin between the minimum speed and the flap-limiting speed for the configuration could be fairly small with something like 7kt to play with.".

Liveryman Hugh Dibley remembers problems with the system of bleed air valves. "Early in the aircraft's career crew were told to have these valves open for take-off" says Hugh, "but it was later found that having these closed reduced starting problems and the procedures were changed. This did, however, mean that the Flight Engineer had to re-open them after engine start.

"However, November 1974, a Lufthansa 747-130 crashed after taking off from Nairobi with leading-edge slats retracted because the bleed valves had not been re-opened after engine start. This was the first fatal Boeing 747 accident but around the same time a BOAC jet taxied out with bleed valves closed. The mistake was noticed, the event reported and cross-checking added to the checklist.

"Some years earlier a BOAC 747 had taken off with only the outboard leading-edge slats extended and inboard slats retracted. This was not covered by the take-off warning system (TOWS) and it turned out that the circuit breakers were still pulled after a landing-light bulb replacement. The

DISPLAYING THE JUMBO

Among Steve Bohill-Smith's many claims to fame is that he is one of very few people ever to hold a Display Authorisation for the 747. Flying with Oasis, he realised that the aircraft had generally finished its crew training duties by 14:00 each day but there were no landing slots available at Gatwick until 17:00. He therefore suggested to the airline's management that "…we could appear at a few airshows in the summer on our way back to Gatwick. This would generate publicity and reach into the press, radio and TV. I approached the HK management and the CAA. We worked up a simple display in the simulator where we could practise various failures at low level, for example engine failure on the inside of a turn. The display needed to be approved by the CAA but at first not below 500ft.

"The first display crew consisted of TRI/TRE Chris Humphrey, SFO Webster Siu as safety pilot and me. It took place at Southend just along the Thames estuary. You could not miss the display centre as it was positioned at the longest pier in the UK. After our display the CAA inspector called. He said that a 747 at low level sells itself and it looked spectacular. He then said he had only one comment to make: 'You were too high'! He agreed to give me a display authorisation to 200ft over a runway and to 300ft at an off-airfield site such as off the coast.

"The Biggin Hill Air Festival was scheduled for the next weekend and this went very well with a huge crowd on the airfield. The coastal show at Eastbourne was to be held the following week. We were on between the Spitfire and the Eurofighter Typhoon. We arrived from the Seaford VOR from the west and appeared to the surprised crowd from behind Beachy Head and over the famous lighthouse. That was one of the highlights of my flying career." □

Steve Bohill-Smith (top) surprises the Eastbourne crowd as he pops the 747 into view from behind Beachy Head

incident was reported and Boeing was requested to include slats on the TOWS. That change only came after the Lufthansa accident at Nairobi."

Hugh (left) also recalls that BA's early 747-136 had triple autopilots, with red deviation lights added to warn when the crew departed the localiser or glideslope below 500ft. The UK CAA required the airline to conduct 3,000 autolands before it would certify the fleet for low visibility operations and each airframe had an 'autoland book' on board that needed to be completed. "There were three self-carbonating copies" remembers Hugh, "the top sheet went to the CAA, second to BOAC Ops Engineering, and the third remained in the book. Fleet Manager Doug Redrup's edict was that the first landing be made by the Captain, the second by the FO and third by autopilot. All landings back at LHR were to be autolands. Autoland line operations

A VERY SPECIAL DELIVERY

In his autobiography *Dancing the Skies and Falling with Style*, Liveryman Calvin Shields, recalls one particularly memorable sector during his time as a BA 747 Captain. "I received a note asking me to call Ops and was told: 'Your wife went into labour in the crew shop. I'm sorry, we were going to put you on Concorde home, but we couldn't find you. You've missed that flight, so I suggest we stick to your schedule. It will be the quickest way home'. He asked if I was OK to fly and a reassured him I was, but asked him to load an extra 5 tonnes of fuel for our flight home.

'I briefed the trainee Captain on the way to the aircraft and told him to: "Ignore everything I've taught you so far.", I'm going to fly home as fast as I can," he smiled.

"The weather forecast for the crossing was good and all the passengers had checked in, so it looked like we would be on time. The sun was setting behind us casting long shadows in front as we crossed the coast of Newfoundland. I was flying almost as fast as I could go. At 40° west I contacted the ship-to-shore radio at Portishead and asked for a telephone patch to the hospital. The operator explained to the baffled nurse that I was calling from over the Atlantic.

"Hello, hello are you receiving me? I'm calling from an aeroplane over the Atlantic. How is my wife, Lucy doing? Over." The line was heavy with static. "Over? It's not over yet." Came the confused reply. "Your wife is doing fine. She's dilated 4cm." "Fantastic. Thanks. OK…" I ended the call.

"I had no idea what she was talking about so I called the stewardess and asked if she could come to the flight deck to explain. "It's the dilation of the cervix," the pretty little blonde said, leaning against the back of my chair, "birth normally occurs at about 10cm."

"More power," I muttered, and pushed the thrust levers a little further forward.

We nudged Mach 0.88. The fuel consumption was off the clock, the wings were vibrating slightly, and I could almost imagine them glowing cherry red with the friction.

"At 10° further east I called again. "How's it going? Over." "Ovaries? Did you say ovaries?" The nurse said. "I can't hear you very well. All's fine, she's dilated 5cm." More power, the speed was creeping up. I was sweating. The stewardess had told the upper deck passengers that the Captain's wife was having a baby, and they were rooting for me.

"At 20° west, dilation was 6 cm. I signed off with Portishead. The operator had been monitoring my calls. "Best of luck, I've worn out my carpet pacing up and down all night." He said. Above Wales we were handed over to London Control. I checked in; it was a female air traffic controller. "I've always wanted to say this." I explained to her, "my wife's having a baby, can you give me a direct?" "No problem," came the reply. "Turn onto a heading of one-zero-zero, you should be number one."

"There was very little traffic at that time of the morning, but out of the ether, a voice crackled over the radio. Someone had recognised me. "You're not trying that 'my wife's having a baby' routine, again are you?" I laughed. We landed and taxied to the stand where a BA car waited. The trainee Captain shut the aircraft down and, to tumultuous applause, I rushed from the flight deck, flew down the stairs and drove off to the hospital. The 747 had played its part in yet another important mission." □

began in April 1971 with Cat 2 authorised with DH 100ft/RVR 400m in 1972. Cat3a (with DH 30ft/RVR 275m) followed in 1973.

FLIGHT ENGINEERS

On the 'Classic', 747 pilots had a flight engineer to help with all of these systems. Phil Hogge used to tell new pilots: "For those of you who haven't flown with flight engineers before, I cannot sing their praises too highly. Not only are they qualified to work on the aircraft and its systems, but they are an integrated member of the flight deck team – they read the checklists and are qualified to monitor all aspects of the navigation and flight path – so use your engineer. They keep pilots out of trouble in the air but are very good at leading pilots astray when on the ground. You have been warned!"

Cabin crew were equally adept at leading pilots astray, but Hugh Dibley remembers a time when poor industrial relations led to the introduction of a grossly fuel-inefficient procedure. "In 1987-88, BA 747 crews were instructed to fly from Bombay to London as quickly as possible so as to avoid installing crew bunks," he remembers. "Bunks could be demanded by the cabin crew if the flight times regularly exceeded their industrial hours limit (which was less than that for the flight crew). However, these bunks would have lost the company 25 economy seats and fares through to Hong Kong or Sydney, at a cost of about £25,000 [around £70,000 today - Ed] at the time."

THE FUTURE?

All of our interviewees were unanimous in their love for the Queen of the Skies, although Chris Hodgkinson qualified his statement by saying: "I certainly loved the 747-400: Mr Boeing did a good job and the -100/200 problems were ironed out. But I loved the Vickers VC10 more. The 747 wasn't as intimate an aircraft: it had a much bigger cabin crew – 16 or 17 compared with six on the VC10. So you didn't get the same rapport – you could always tell what sort of Chief Steward you had by how you got served in the cockpit."

Philip Hogge sums up his experience by pointing out that: "The two jet types I had previously flown were the VC10 and the Boeing 707, both excellent in their way but not as magnificent as the 747. It was not just its size that made it so. In contrast to the various earlier types of jet transport, which all had some handling vices, the 747 had none. It was a really wonderful aircraft to fly - and all the more remarkable when one remembers how long ago it was designed. Joe Sutter and his team got it absolutely right." □

HONG KONG TRADER

Over almost 30 years Past Master Colin Cox (left) flew all variants of the 747 except the original -100 version. He recalls: "My acquaintance with what became known affectionately as 'The Queen of the Skies' began with Cathay Pacific Airways in Hong King in October 1984." At that time Cathay had just eight 747s in its fleet, but 124 would pass through the airline over the years in various guises.

Of those, one particular airframe has a very important link to British Airways. Acquired in September 1980 and registered G-KILO it was the only pure freighter operated by the British flag carrier (and had the distinction of being the first 747 powered by Rolls-Royce engines) but just 18 months later a financial restructuring resulted in the closure of BA's cargo division. The airline is haunted to this day by the expression: "There is no money in freight." Cathay Pacific certainly didn't see things that way and acquired G-KILO in March 1982. It was re-registered as VR-HVY ('Very Heavy') and named *Hong Kong Trader.*

Many people remember the first 747s as having a spiral staircase up to the upper deck, and the rarefied atmosphere of First Class. The freighter version, too, had a staircase to the upper deck, but this was more akin to a retractable loft ladder. How tales of broken legs never manifested themselves we will never know, other than for the reason that crew did treat the ladder with the utmost respect! However, flying the freighter was fun! No passengers to molly-coddle, tea-breaks whenever you wanted and tea brewed exactly how you liked it.

The US$51million (at the time, approximately £32million) Cathay paid for the *Hong Kong Trader* proved to be money extremely well spent, serving her masters well until coming to the end of her service life at Kemble in Gloucestershire in 2008. During VR-HVY's time in Cathay however one notable event saw a brief change of ownership between 1st January and 2nd March 1991, at the time of the First Gulf War. The UK Ministry of Defence (MoD) required a heavy lift

Hong Kong Trader's anonymous Gulf War 'white tail' livery

capability to transport a composite armour for tanks to be delivered to Dhahran in Saudi Arabia. The Government approached British Airways for the use of their 747 Freighter only to be told that they didn't have one. They suggested to the MoD "Try Cathay!"

A deal was agreed to 'lend' VR-HVY to the RAF. The aircraft was painted all white (for politically and commercially expedient reasons) and the operation was conducted under a military callsign (Ascot 888), such a number being extremely lucky when it comes to Chinese superstition. We routed from Stansted, down through the Med and the Red Sea and then into Dhahran from the south west over Riyadh. With airspace over Riyadh at night lit up like fireflies, we joined in with every light switched on that we had available, arranging to land in Dhahran as dawn broke. We certainly didn't want to find ourselves being at the receiving end of a 'friendly' air-to-air missile.

That one iconic 747 freighter, delivered to Cathay in 1982, was the forerunner of many more of the marque to join that airline's cargo division. At the time of writing Cathay still operates 20 freighter versions of the aircraft, comprising six 747-467ERFs (Extended Range Freighter) and fourteen 747-867s (the Dash 8). This latter aircraft with its GEnx-2B67 engines, each capable of developing 66,500lb of take-off thrust, has a maximum take-off weight of 449.0t and can carry 134.0t of payload over 4,000 nm. [Compare that with the 46,500lb thrust, 333.4t MTOW and 80t payload over 4,000nm for the 747-100SF – Ed] Whilst the passenger version of the 747 is destined to be consigned to history, the Jumbo is going to be with us for quite a while yet. □

Profiles from the Hong Kong Region
FLOATPLANE & FLYING BOAT 'CHALLENGES'

By Liveryman Captain Locky Lawford

I have been asked many times: "Have you had any scary moments whilst flying aeroplanes?" My answer is a resounding "YES" - and nine out of ten times have been when flying floatplanes and flying boats.

The significant difference between the two is that a floatplane is an aircraft with floats stuck on the bottom instead of wheels and a flying boat is an aircraft with its fuselage made from the hull of a boat. I was fortunate enough to fly both types early on in my career, so let me tell you a little bit about a couple of instances when I managed to scare myself.

I started out in 1997, when I was 20 years old and had no real idea of what lay ahead of me…

My career kicked off with Alligator Airways, flying a Lake Buccaneer 'amphibious' aircraft in Kununurra, Western Australia. The reason why I was chosen was because at that time I was skinny, light in weight and my boss thought he could get an extra jerrycan of boat fuel on board the aircraft. The Lake Buccaneer first flew in the 1950s and as the name implies, was designed to operate on lakes and not from the open ocean. The Lake Buccaneer was neither a good aeroplane nor a good boat, and since I operated it outside its design envelope on the open ocean, I had some very big scares in this aircraft. Once you get below flying speed and hit the swell, it starts to porpoise and that's where it starts to get very messy.

I also flew the Cessna 206 and the de Havilland Beaver on floats: these two float planes were a delight to fly. I later went on to fly both of these aircraft in the Whitsunday Islands, operating out to the Great Barrier Reef and Whitehaven Beach. There was no better way to begin an early morning than to get the old Pratt & Whitney R-985 radial engine slowly starting up with a gentle push off the dock, with my usual breakfast in hand - iced coffee and mud cake.

In 2000, I was fortunate enough to secure a job back in my hometown of Darwin flying the majestic Grumman Mallard, built in 1947. I flew both the radial and turbine-engined versions of this amphibious flying boat before they were all converted to turbine power. You could virtually turn the turbine Mallard on a dime in the water. There are no performance charts for operating on the water - it's the old 'mark one eyeball' method… You can get in there but the challenge is getting back out! Many times I would back the plane as far up the creek as I dared and then power up, get up on "the step", power off a little and then do a 90° turn into a bigger creek system, then max power for the take-off. Once finally airborne, I would turn to my co-pilot and say: "Wow, we got away with that one…"

On 'ocean operations' I have completed landings and take offs in some seriously rough water, where my headset was quite literally ripped off from us bouncing in the heavy swell, which at times even resulted in some buckling of the hull. As with 'creek operations', we would sometimes have to take off from inside a small bay by powering up, getting up on the step, doing a 180° turn while hanging on and then max power into wind and getting airborne before hitting the heavy swell of the waves further out. All this time we were avoiding the reef system, buoys and boats. One time I nearly hit a whale whilst up on the step - I only saw it as it breached in front of me. I had a fish strike while coming into land - it came straight up out of the water and hit the right-hand leading edge of the wing; we could see the scales of the fish on the wing after shutting

down. Can you imagine writing that one up that for the report to the authorities?!

I flew floatplanes and flying boats for eight years and loved every moment of it. In 2004 I secured a job in Hong Kong on large-cabin, long-range Gulfstream and Bombardier aircraft. I have enjoyed all the challenges and rewards involved with flying a corporate jet worldwide for the past 17 years and hope to be able to continue this for some time to come.

However I still, and always will, miss the raw hands-on flying involved with operating the Grumman Mallard on and off the water. □

HUMAN FACTORS & SAFETY MANAGEMENT

By Liveryman Valerie Stait

I have been flying worldwide for 25 years, and have 14,000 hours and an MSc in Aviation Human Factors. I currently work in two roles, flying long haul on the Boeing 777 and in risk assessment for Flight Operations, using my human factors skills in safety management and incident investigation. I am also a Liveryman and Director of Technical and Safety for the HCAP Hong Kong region. In previous airlines, I was part of the crisis management team and taught security to air crew.

I am currently working on ways to implement the latest science behind safety management to better understand and increase safety in aviation. This a pretty 'nerdy' role, involving a lot of academic reading and then working out how to implement it in the real world in a way people can understand and use practically. There is a large education element as our understanding of safety evolves way beyond Swiss cheese and root causes to concepts such as such as systems thinking, curiosity in place of blame and building in enough capacity to keep functioning under pressure. This can be quite a large leap for some, so can require careful thought as to how best to get a concept across. The job also involves working with other airlines and from time to time people in other safety-critical industries who have some great ideas to bring across to aviation.

I started flying when I went on a week's gliding course and didn't come home for two years! I talked my way into a job on the gliding field, driving the winch for the summer courses and worked my way up from the grass roots of aviation, towing gliders and instructing along the way. I believe persistence and not being afraid to get your hands dirty were key to my success. When not flying, I divide my time between my boat in Hong Kong and my farmhouse near Toulouse. □

Using local prison labour to get a Bristol out of a hole…

FLYING FREIGHTERS OVER NEW GUINEA

By Former Liveryman Ron Austin (Bristol Freighter Captain 1963-1966)

Flying Bristol Freighters into the remote jungle airstrips of New Guinea in the 1960s posed some unique challenges to Trans Australia Airlines pilots.

The introduction of Bristol Type 170 Freighters into Pakistan was a political decision of the British Government. In 1948 the Pakistan Air Force had ordered a batch of Bristol Brigand fighters from England and then cancelled the order. The British demanded compensation and substituted the order with Bristol Freighters. These strange aircraft were unwanted, but the contract was completed, and the aircraft apparently did provide satisfactory service to the Pakistan Air Force.

In total 71 Bristol Freighters, Mark 21s and 31s, were ferried from England to the Pakistan Air Force. The majority were used for general operational flying, but many were converted for special projects. Some were modified for VIP travel, five of them were fitted with equipment to spray plagues of locusts and several aircraft were modified, in 1953, to carry two 4,000lb (1,815kg) bombs. These special 'bomber' aircraft had been fitted with under-wing hard points to carry the bombs and had clear plastic panels built into the bottoms of the large front clamshell doors, presumably for use with a bomb sight.

BIGGER AIRCRAFT NEEDED

Early in 1959 the Australian Federal Government had made a decision to replace Qantas with the domestic airline Trans-Australia Airlines (TAA) to be the carrier responsible for passenger and freight flights within New Guinea. At that time the largest aircraft Qantas was using in New Guinea was the Douglas DC-3. TAA soon realised that an aircraft larger than a DC-3 was needed to move the heavy cargo expected to be delivered to New Guinea.

Ansett Airlines, operating as Mandated Airlines (MAL), was also flying in New Guinea in opposition to Qantas. It was decided that TAA and MAL, as potential competing freight carriers in New Guinea, would make a joint purchase from

Pakistan of surplus Bristol Freighter aircraft.

Australian crews flew three aircraft for MAL and four for TAA to Australia in 1961. After arrival, selected aircraft were serviced by their respective airlines including some upgrade modifications to improve the overall safety of the proposed operation. One major change made by TAA was the removal and replacement of the Bristol brakes. Originally the aircraft were fitted with typically English, unreliable, air-activated bag brakes which had already failed dangerously during a training flight at Mangalore airport, shortly after their arrival in Australia. TAA replaced them with Douglas DC-6 hydraulic brakes.

The aircraft for TAA were registered in Australia as VH-TBA, VH-TBB, VH-TBC and VH-TBD. The airline planned to use the first two in New Guinea and to retain the other two in Australia for replacement parts. When all necessary modification work was completed, the aircraft were flown to Lae to commence the freight operation - VH-TBB in June 1961, and VH-TBA in September 1961.

ONE-WAY STRIPS

Later the two Bristols were based in Madang, as this town was the centre of the freight transfer into the interior of New Guinea. The advantage of the airport at Madang was its being adjacent to a cargo wharf and closest to the airstrips in the Highlands. It had a single runway used for all departures and arrivals and was sealed with bitumen. Most of the other landing strips used by us in the Highlands were either loose dirt or grass, which was very slippery when wet. Many strips were one-way operations: you land uphill and then take off in the reverse direction, downhill.

The TAA pilots required to fly the Bristol in New Guinea usually completed a ground theory course in Australia before their posting. The in-flight training for the endorsement was conducted in Madang by experienced pilots who were soon to complete their own postings and return to Australia. These experienced pilots taught us not only to find our way around the hills of the un-mapped Highlands but also how to survive this different aviation environment while flying in the extremely dangerous mix of mountains, rocks and cloud. At that time there were no survey maps available of the highland interior, so we had to draw our own maps for navigation.

During my introductory training flights in New Guinea we did a landing at Wau grass strip that has a slope of 8% and requires a special landing technique. After landing we learned to increase the engine power immediately on touchdown to maintain our rolling inertia up the slope to the top of the grass field. We then swung the tail around until the aircraft was facing across the slope. The local natives would then duck in under the engines with the wheel chocks, fit them tightly against the fronts and backs of the wheels and only then could we stop the engines.

PARKING PROBLEMS

My instructor told me the story of the Bristol Company demonstrator aircraft which had been flown to New Guinea in 1947 to carry out assessment flights for Qantas, including landings in Wau[1] On this occasion, after landing the aircraft was parked facing up the slope; importantly, not 'across the slope parking' as used by other aircraft. After stopping, chocks were fitted under the wheels and then the parking brake was applied. However, the parking brake failed and the chocks were not enough to prevent the aircraft running backwards down the hill with the personnel still on board. The engineer and one other jumped clear but the rest were carried down the hill and over a 6m (20ft) drop at the bottom; no one was injured. He said: "Now it is used as a Boi [workers'] house".

Those pilots converted to fly the Bristol soon appreciated the suitability of this aircraft to carry freight: it was easy to load and unload, and the power/weight ratio was superior to the DC-3's, making it much safer in marginal conditions.

The large Bristol Hercules sleeve-valve engines were powerful and rather more complex to handle than the DC-3's Pratt & Whitney engines. The first flight of the day required a very long idling period to raise the temperature of the thick engine oil to a satisfactory viscosity. To start the engines at the high-altitude strips, the priming of the fuel system was radically different to the procedure used to start at sea level.

After each refuelling, to check the fuel quantity, the co-pilot would climb past the radio rack behind the crew seats, through a hatch and out on top of the fuselage. From here it was a dangerous walk along the tops of the wings to reach the fuel caps and check the quantity of petrol with the dipstick. When looking into the large wing tanks the amount of fuel in the bottom always seemed tiny. Fortunately, this check was only necessary at Madang, the uncertainty of landing in bad weather in the Highlands meaning we always carried return fuel. The First Officers were in real danger of slipping off the wing or the fuselage top – but this was in 1963, and such actions would not be allowed with today's Health and Safety requirements.

The Bristol's large load capacity was required because the New Guinea Administration intended to construct a road suitable for trucks, from Lae to Goroka and Mount Hagen, located in the centre of the Whagi valley in the Highlands. This was a very major undertaking. This project needed trucks, bridge girders, bulldozers, tractors, graders and similar gear which could only reach the Highlands in an aircraft as large as the Bristol.

Some of the heavy freight items flown into the Highlands included complete Caterpillar D4 tractors. Another item was a road grader, stripped of its engine but complete with the blade still attached, to enable the unit to be unloaded with our portable ramps at destination. When carrying trucks as cargo, the wheels were often removed, and they were rolled in on their brake drums. This reduced the height of the truck to enable it to be moved far enough into the hull, below the wing structure, to be able to shut the door. Our cargo staff became quite versatile at finding solutions to loading difficulties.

Other non-government contracts were also planned, one being to move the components of a completely new tea factory from the Madang wharf to the town of Mount Hagen, located in the Highlands at an elevation of 5,500ft.

MADE TO FIT

We discovered that the order for the tea factory, to the manufacturers in England, included the specification that every component must be designed to fit inside a Bristol Freighter. When loading this factory, we found that each of the large round condensers fitted into the hull almost like a cork in a bottle.

Our engineers coped very well keeping the Bristols flying with the absolute minimum of equipment. Most daily maintenance was done in the heat of the sun, without any cover for shade. A partial solution to this was to keep their spanners in a bucket of water while working in the open.

The Freighter's square hold could take a complete bulldozer, but still needed careful packing

Completion of the road to Mount Hagen did reduce the quantity of air freight required to be carried from Madang into Goroka, Mount Hagen, Minj, Banz, Baiyer River and the other major towns. We seemed to have created a rod for our own backs by lifting all that heavy gear into the highlands. The transport system could now run without the assistance of the Bristol Freighters, and in 1967, after 5 years of intensive work, TAA decided to remove the Bristol aircraft from New Guinea and sell them to Air Express in Australia. Of our two Madang-based aircraft, VH-TBB continued flying and VH-TBA was stripped for spares in Brisbane. □

[1] *Balus, The Aeroplane in Papua New Guinea, Volume 1, The Early Years; James Sinclair; 1986; Robert Brown & Associates; P78*

Wabag Airfield: typical of the up-country unpaved strips that the Bristols used

FROM THE ARCHIVES

DISASTER AND RECOVERY 1930-1931

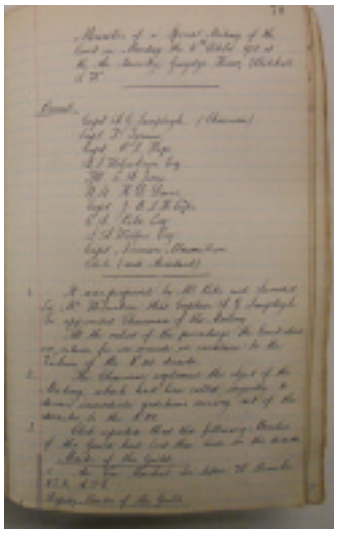
By Hon. Archivist Past Master Peter Buggé

Since this issue of *Air Pilot* is scheduled to be published on the 90th anniversary of the loss of the airship R101 the Editor asked whether there are any items connected with that event in the archives. While there are copies in one of the cabinets of various technical books, papers and biographies related directly or indirectly to the R101 disaster and the four Guild members who died, significant material can also be found in the Members Register and in the first Minute Book. In the latter are the minutes of a Special Court Meeting that was held on the evening of 6th October 1930 following the loss of the airship R101 in France the day before. Among those who died on the hillside at Allonne near Beauvais were the Master, Sir Sefton Brancker; the Deputy Master, Ernest Johnston; Assistant Noel Atherston; and Honorary Member Maurice Giblett. After Captain A G Lamplugh had been elected Chairman the Court stood in silence for one minute to remember all those who had died. The minute of the meeting records that Captain Hope, Mr Pike, Mr Walters, Mr Wilcockson, Captain McMullin and Captain Cordes had notified the Clerk of their intention to attend the memorial service which was to take place at St Paul's Cathedral on 10th October while the coffins lay in state in Westminster Hall. The service would be attended by HRH The Prince of Wales and The Lord Mayor of the City of London.

The loss of R101 shocked the nation, and contemporary film reports ***(https://www.britishpathe.com/video/the-nation-bows-its-head)*** of the procession through London on 11th October taking the coffins from Westminster Hall to Euston station for the journey by train to Bedford show huge crowds lining the route. The queues to file past the coffins in Westminster Hall had stretched for two miles (3.2km). The coffins were taken from Bedford to Cardington for burial where they lie in a single memorial tomb in the churchyard, from the far end of which the huge airship sheds can still be seen today.

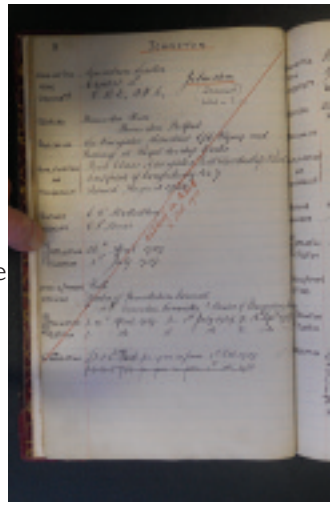
FRENCH MEMORIALS

In France, the site of the accident is marked by two memorials, one a small cairn on the hillside where the airship actually struck the ground. This is a 15-minute walk along a track from the D927 in Allonne; the cairn is not far from the top of the hill. The other is a large memorial erected jointly by Great Britain and France, having been funded by public subscription and is at the side of the D1001 close to its junction with D927. The best way to see it is by using Google Street View as the passing traffic makes a visit in person rather dangerous: it is looking sadly unloved at the moment, a bit overgrown and in need of a clean.



Extracts from the Minutes book

The Register of members, perhaps unexpectedly, provides some personal touches. The page recording Sir Sefton Brancker's Honorary Membership is hand-written by Ernest Johnston in his customary blue ink as are the next three entries, for Lord Sempill, Sir Arthur Whitten-Brown and Rev Donald Robins (the Guild's first Chaplain). This suggests that Johnston initiated the Register, as he did with so much of the early work to establish the Guild. Across the entry is scribed a diagonal line in red ink from bottom left to top right corner and, I think in the hand of the Clerk, Lawrie Wingfield, the words: *'Killed in R101. 5 Oct 1930'*. Ninety years later, the sorrow for the personal loss and the horror of what happened seem to jump out from the page.



The entry for Ernest Johnston is similarly annotated but there is more detail in the original entry than there is for Brancker, perhaps reflecting the work he did to bring the Guild into being and also that the entry was written by Lawrie Wingfield. His professional qualifications are shown as: *'Air Navigator. Assistant O/C Flying and Training at Royal Airship Works. First Class Navigator. First Class Airship Pilot. Certificate of Competency No 7 issued August 1923'*.

Lt Cdr Noel Grabowsky-Atherstone was the First Officer on R101 and held 1st Class Airship Pilot Certificate No 7 dated 9th June 1928 and 2nd Class Air Navigator Licence No 43. He was an Assistant to the Court. Again, the entry has a red line across it and written, but in a different hand to that on the pages for Brancker and Johnston, are the words: *'Deceased R101 Oct 1930'*.

Maurice Giblett was an Honorary Member who had been proposed for membership by Captain Lamplugh and seconded by Ernest Johnston. He was Superintendent Airship Service Division and a distinguished meteorologist who was creating a network of wireless-relayed weather information (the forerunner of METARS and TAFS perhaps) at the time of his death. The page is, like the others, annotated with a diagonal red line but this time the words in the same hand as on the page for Atherstone read just: *'R101 Oct 1930'*. It is as though by the time the fourth page was reached it was almost too much to bear to annotate it.

QUICK RECOVERY

The Court quickly took action to recover from the loss of the Master and Deputy Master by agreeing at an Extraordinary Court Meeting on 29th October to co-opt Captain the Rt Hon F E Guest MP, who had been Secretary of State for Air in 1921-2, to join the Court as an Assistant. He was installed as Deputy Master at the AGM on 24th November 1930 and became Master two years later, that position having been temporarily left vacant in tribute to Sir Sefton Brancker. Meanwhile the Annual Dinner, a date for which had not been fixed because HRH The Prince of Wales had not yet indicated when he would be free to attend, was now indefinitely postponed. The question of a suitable Memorial to those who had lost their lives had been considered at the meeting on 6th October when *'…it was thought desirable to raise a Memorial Fund which would preferably be used to endow a School of Pilotage'* , but on 29th October the Court agreed to cooperate with the Royal Aeronautical Society and other aeronautical bodies in the matter of a memorial. In time a biography of Sir Sefton Brancker, based partly on his own memoirs which covered his life until 1918, was written by Assistant Norman MacMillan and published in 1935: the proceeds formed the basis of what is now the Air Pilots Benevolent Fund. In memory of Ernest Johnston, the Johnston Memorial Trophy was instituted with the approval of Mrs Johnston and first awarded in 1931 to Sir Francis Chichester, later a Warden of the Court, for his flight across the Tasman Sea in a de Havilland Gipsy Moth via Norfolk Island and Lord Howe Island.

Memorials at the crash site (above) and on the nearby roadside (below)

At the Court meeting on 20th October normal business resumed with the election of a number of new members. Matters concerning medical examinations, the requirements for issue of the 'A' licence (today's PPL), the exemption of pilots from jury service and the accounts were dealt with and the Clerk was instructed to purchase a typewriter for £14 *'or less if possible'*. The date for the AGM was set for 17th November at the RAeS at 6.00pm but this was later put back to 24th. It is at this meeting on 20th October that the subject of instructors' and examiners' qualifications was first raised. The Court accepted that it was impractical to try and prevent anyone with an 'A' licence from teaching a friend to fly and the best solution was rather that all examiners should be suitably qualified. Following discussion with the Director of Civil Aviation, now Lt Col Shelmerdine, the Court meeting on 13th July 1931 established the Guild Panel of Examiners under the chairmanship of R A de Haga Haig, and for the next 30 or more years an instructor needed a satisfactory flight test with one of the Panel to validate his or her licence to instruct.

So the business of the Court continued, and the Guild grew in numbers and stature within aviation. We still remember Sir Sefton Brancker with a Scholarship named after him, and Ernest Johnston with a Memorial Trophy, initially awarded for a feat of navigation and now for outstanding performance in the operation of airborne or space systems, manned or unmanned. What would Ernest Johnston have thought of that? □

BOOK REVIEW

SKY TALK - Stories from Flying's Golden Age

By Liveryman Phil Hogge

Reviewed by PM Chris Hodgkinson

Published by Burnt Ash (www.BurntAsh.eu) £30

If you don't know what long range flying was like from the '60s to the end of the century, you could do very much worse than read this book, which is sub-titled *Stories from flying's Golden Age*. That was an age which many of us had the good fortune and pleasure to enjoy.

Liveryman Philip Hogge was on the first course at Hamble, the flying school near Southampton founded by BEA and BOAC in 1960, when it appeared that there would not be enough pilots leaving the military for the two corporations.

At the age of about nine Phil 'discovered' aeroplanes when a light aircraft made a forced landing in a field near where he lived in Devon. After a gliding course and a RAF Flying Scholarship with Yvonne Pope as his instructor, came Hamble and then joining BOAC. Here, he completed a Flight Navigators' course on Britannias before moving as a pilot to VC10s, 707s and finally the mighty 747. Before the introduction of the ubiquitous INS (Inertial Navigation System) all co-pilots on VC10s and 707s were dual qualified as pilot/navigators. During his time as a co-pilot he became a navigation instructor and then a pilot instructor. After gaining his command on VC10s, he became a training captain before being appointed Flight Training Manager on 707s. There then followed a succession of management appointments culminating as General Manager Flight Operational Services.

All his short stories are based on his many experiences and the many characters he knew during his long career. He could have chosen, as at least two of his erstwhile colleagues have done, to write their stories 'warts and all' with real names. Instead, each of the stories is based on at least one and sometimes two or more real incidents but with fictional names, although I'm sure I knew who one or two of the characters were in real life. The stories vary enormously, ranging from a rather unpleasant and gory incident at Piarco Airport, Port of Spain; the difficulties of navigating in bad weather using what would now be seen as old-fashioned aids; carrying a small elephant that broke free and many other entertaining tales featuring the pilots and cabin crew away from home. In all his stories he has used the real locations we all knew, and he has taken great care to ensure technical accuracy and to set them in the correct historical context.

The book is very well written and features many pictures of the relevant aircraft, locations, BOAC advertisements and even the paper uniform dresses that the girls wore in the late '60s.

Last, but certainly not least, we are most appreciative of the fact that Phil has generously offered to donate all his royalties towards the Honourable Company's charity which supports our flying scholarships. □

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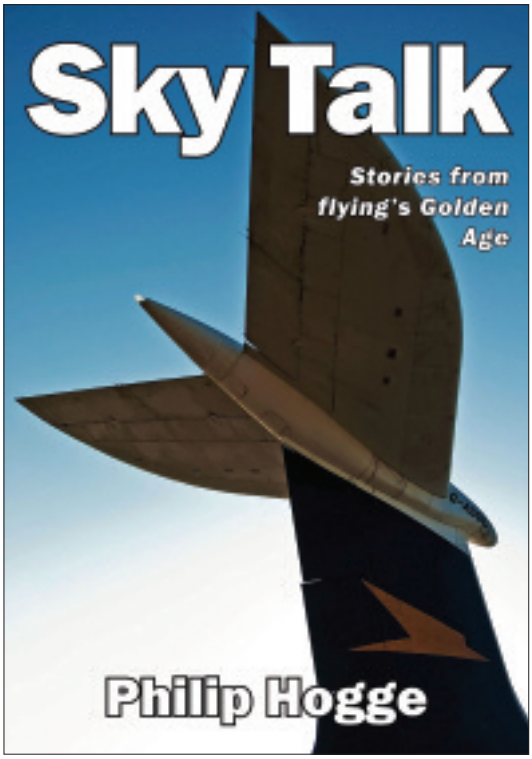

INTO THE OVERSHOOT

A round-up of less-formal items which have caught the Editor's eye

MOTH BACK IN BUSINESS

Liveryman David-John Gibbs and Upper Freeman Glen Fricker with a Tiger Moth operated by Classic Wings at Duxford, on Saturday 3rd August, the first day that IWM Duxford was open to the public after lockdown. Both DJ and Glen are part-time instructors with Classic Wings, and Glen had just given DJ his start-of-season check ride (usually flown in April) before starting a reduced programme of operations for 2020.
(Photo: Stuart Etheridge)

FOR SALE: THE ONLY AIRWORTHY TWIN MUSTANG

Following a 10 year, 200,000 man-hour restoration the prototype North American F-82 Twin Mustang has gone up for sale. It is the only flying example of the F-82 out of 272 built for the USAAF in the late 1940s. Created as a long-range fighter to escort the latest generation of bombers, the Twin Mustang was based on the famous P-51D. Having two fuselages offered the capacity for extra fuel, the reliability of two engines and, crucially, the ability to carry a crew of two to reduce fatigue. The prototype XP-82 has flown just 25 hours since restoration by Tom Reilly. The only deviations from the original design are the addition of a GPS and ADS-B transponder. The asking price is a cool US$12 million - but in an era of social distancing, could this perhaps be the ideal two-seater?
(Photo: Steve Bridgewater)

UNIQUE CIVILIAN COUPÉ ON DISPLAY

Liveryman Peter Greenyer's Shipping & Airlines Ltd provided its unique Civilian Coupé for a very rare air display appearance at the Shuttleworth Collection's 'Drive In' airshow on 6th September. Built by the Civilian Aircraft Co Ltd in Yorkshire in 1931, G-ABNT was the third of five Coupés produced and is the sole survivor. In 1937, the aircraft was dismantled and stored in a warehouse until it was sold in 1975 and restored.

The aircraft is powered by a 100hp (75kW) Armstrong Siddeley Genet Major five-cylinder radial engine. Just two examples of the engine are thought to still be operational: one on the Coupé and one on Shuttleworth's Southern Martlet, so it was a treat to see both take to the skies, in formation for the first time, at the event.
(Photo: Steve Bridgewater)