



NEWSLETTER 41 - SPRING 2015

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EDITORIAL

This is called the Spring edition but it's really a bit early as the AGM and **membership renewal** notices have to go out with it. As I write, in February, I look out on a frosty garden scene - but at least the days are getting noticeably longer.

Amongst those whose deaths are noted are Kingston Chief Engineer Mike Hoskins, Ron Williams, project designer extraordinaire, responsible for the preliminary design which became the P.1182 Hawk and for numerous ASTOVL projects, and Harry Fraser-Mitchell, chief Hawk aerodynamicist.

Talk reports include Heinz Frick's 'Skyhook' story, a project which sounds like a missed opportunity, and Simon Howison's explanation of what BAE Systems is up to today which all sounds quite encouraging from a BAES pensioner's point of view. and don't miss the final part Dick Poole's ferry flight article. And thanks once again to Ken Batstone for organising the best Christmas lunch yet.

There must be many of you with interesting tales to tell, too. Please send them, short or long, to The Editor, Chris Farara, 24 Guildown Road, Guildford, Surrey, GU2 4EN, tel 01483 825955, e-mail cjfarara@ntlworld.com.

PROGRAMME FOR 2015

Wednesday 11 th February	"Brooklands, the Future" - Allan Winn
Wednesday 11 th March	"Some Test Flying Stories" - John Farley
Wednesday 8 th April	Annual general Meeting with video show.
Wednesday 13 th May	"First Loop to Red Arrows" - Chris Roberts
Wednesday 10 th June	Summer barbecue.
Wednesday 8 th July	My Life in Aircraft Design - Mike Salisbury
Wednesday 12 th August	Social and video.
tbd	Annual outing.
Wednesday 9 th September	Social and video.
Wednesday 14 th October	The Royal Navy Historic Flight - Lt Cdr Chris Goetke
Wednesday 11 th November	"Howard Pixton and the 1914 Schneider Trophy" - Philip Jarrett .
Wednesday 9 th December	Christmas Lunch.

Allan Winn is the Director of the Brooklands Museum. **John Farley** and **Chris Roberts** were Chief Test Pilots at Dunsfold, aerodynamicist **Mike Salisbury** was Head of Engineering at Kingston, **Chris Goetke** flies in the RN Historic Flight and **Phillip Jarrett** is a world renowned aviation historian. Unless stated otherwise, meetings are at 'YMCA Hawker', Kingston - the old Sports & Social Club - and start at 2.00 pm. Lunch and drinks are available beforehand, tea afterwards, and there is a large, free car park.

2014 CHRISTMAS LUNCH

Organiser Ken Batstone reports the event...

On Wednesday, 10th December, the 13th annual Hawker Association Christmas Lunch was held at YMCA Hawker, the old Hawker Sports & Social Club. Glasses of wine were served to Members on arrival and, after some socialising, lunch was served to the 55 attendees, slightly down on 2013. The layout of the tables was changed this year, resulting in much better table access and comfort; a great improvement.

Unlike previous years, most people opted for the prawn cocktail starter, rather than soup, before the traditional roast turkey with trimmings cooked just like Mum used to do it; perfectly. It was followed by a quite delightful Black Forest gateau and mince pies. One of the planned after-dinner speakers was unable to attend so our Chairman, Ambrose Barber, leapt into the breach and delivered an impromptu speech with some jokes he hoped would offend nobody present! This was followed by most interesting stories and amusing anecdotes from our President, Sir Colin Chandler. The details of these stories have been redacted (a current "in" word) for obvious reasons. After some toasts and then coffee, the afternoon finished with a Christmas raffle, the prizes being only slightly more "Christmassy" than usual.

On leaving almost everyone remarked on how they had enjoyed the afternoon and a significant number of people said it was the best Association Christmas Lunch they had attended. The only negative remark made was that the sun shining through the windows was too bright and too hot - in December! (Possible cures for this problem, which also adversely affects our talks, is under discussion with the YMCA management). The complimentary comments were passed on to the YMCA Staff in a letter, with an appreciative gratuity, thanking them for providing an excellent meal and an enjoyable afternoon.

In just over three months it will be time to start thinking about the Summer Barbecue, set on the Patio in warm sunshine with cool beer. Well, we can dream.

AIRCRAFT NEWS

F-35B - The UK has taken delivery of its first 3 F-35B Lightning II aircraft which, together with a number of military personnel, are stationed at Eglin AFB, Florida where RAF pilots are currently undergoing training. Delivery of the operational UK fleet is planned to start in 2015 after a two-year period of training in the US. The first land-based operational flights from the type's Main Operating Base at RAF Marham are expected in 2018 as are flight trials onboard the Queen Elizabeth Class aircraft carrier to provide a carrier strike capability by 2020. A UK test team including personnel from BAE Systems, has successfully completed initial aircraft handling trials for ASRAAM and Paveway IV weapons on the F-35B at Patuxent River Naval Air Station in Maryland. Marine Operational and Evaluation Squadron 22 (VMX-22) has received its first F-35Bs for operational testing at Edwards AFB, California.

HARRIER - Art Nalls's company, Nalls Aviation, has recently acquired a Harrier T8 two seat trainer, ZD993, which served in both the RAF and the Fleet Air Arm. It has the all black paint scheme from its days with 899 Squadron at RNAS Yeovilton and is in excellent condition. Art considered ferry-flying the T8 across the Atlantic but decided to dismantle the aircraft and ship it. The aircraft is still in the UK but when it is fully certificated in the United States Art will be offering flight training as well as air show performances.

HUNTER - A Hunter Mk58 operated by the Airborne Tactical Advantage Company (ATAC), who provide adversary and target aircraft for the US services out of Point Mugu NAS, crashed last October. TMk7 XL563, the first production aircraft, is now at the FAST Collection, Farnborough to be refurbished for static display.

TEMPEST - Tempest II MW763 (see NL 36) is being restored to flying condition by Weald Aviation at North Weald aerodrome.

P.1154 CANCELLATION

Dr Michael Pryce has pointed out that February 2nd was the 50th anniversary of the cancellation the P.1154 V/STOL fighter for the RAF; the RN variant was already gone in favour of Phantoms. It was a severe blow to Kingston at the time but out of the wreckage came success, the Harrier. Nobody with today's hindsight can doubt that we had a lucky escape for the P.1154 would have presented serious development problems and operational difficulties; and surely the USMC would never have bought it. Below are two parts of the statement made to the House of Commons by Prime Minister Harold Wilson fifty years ago.

"The House will recall the many statements, many changes of policy about replacements for the R.A.F. Hunter and the Royal Navy's Sea Vixen. In July, 1963 the project P1154 was going to meet both requirements. By November there was a wobble in policy. In February, 1964, this was all changed and the then Government decided to buy American Phantom aircraft as the Sea Vixen replacement. This was their decision. Meanwhile, the P1154 was to go on to provide a replacement for the Hunter when that was withdrawn from service. I have to tell the House that this is not a practicable proposition. ... The problem here is that on these present estimated requirements, and on the latest realistic estimate of the remaining life of the Hunter aircraft, the P1154 will not be in service in time to serve as a Hunter replacement."

"We have been urgently surveying the needs of our forces in the light of present revised estimates of commitments. We believe that there is an urgent need for an operational version of P1127, a successful aircraft which, in its present experimental form, is about to go to an American-German-R.A.F. squadron for evaluation by all three countries. As soon as it can be negotiated a contract will be placed for a limited development programme so that the R.A.F. can have, by the time they need it.....an aircraft which will in fact be first in the field, with vertical take-off for close support of our land forces. We shall see to close control of the cost of this scheme. We are also going into the question of further R and D on this, to see whether it can be boosted into something much more substantial".

MIKE HOSKINS

Ralph Hooper remembers Mike and his career at 'Hawkers' ...

Mike Hoskins joined Hawker Aircraft Ltd in the late 1950s working for Hamish Waugh in Dr Gabbay's Installations Dept. Until the reorganisation of the Design Department in 1969 Mike worked on nearly every system of the Hunter, P.1127, Kestrel and P.1127(RAF). Thereafter 'Installations' was split with Mike, now working for John Apted under Harold Tuffen, among those moving up to the main design floor to form the Mechanical Systems Office while the remainder joined Derek Thomas's Ground Test Engineering Dept.

When Harold Tuffen retired Mechanical Systems was combined with Electronic Systems to form the Systems Engineering Office under Stuart Taylor. On John Apted's retirement Mike became an Assistant to Stuart with Wilf Firth.

Subsequently Wilf joined Robin Balmer looking after Harrier activities and Stuart was promoted to Assistant Chief Engineer to Gordon Hudson with Mike then heading Systems Engineering. When Stuart was moved to the HQ at Weybridge Mike became Assistant Chief Engineer and, in 1986 when Gordon Hudson retired, Chief Engineer Kingston.

Within about a year the Weybridge Division of BAe ceased to exist, being replaced by the Military Aircraft Division headquartered at Warton. This was not an easy time for Mike in the last two years before his retirement.

Mike was a well liked character whose views on engineering matters always deserved attention. He was a prodigious reader, a skilled artist (as many of the pictures around his house attested), a keen gardener and enjoyed playing cards. In his last years he became deeply involved in the many problems arising from his wife Zac's long illness.

RON WILLIAMS

Roy Braybrook shares his personal memories of Ron ...

I worked literally alongside Ron in the Project Office for many years. While Ralph (Hooper) and John (Fozard) were bogged down with the Harrier and Sea Harrier, we toiled in friendly rivalry to produce The Next Big Thing. Ron taught me a lot about preliminary design and drag estimation. He was a great designer, but (like a lot of people) he had a bit of an obsession about Ed Heine mann's A-4, which I considered overrated, and the F-104, which obviously had the horizontal tail in the wrong place. He broadened his experience by working on detachment to the HSA Advanced Projects Group for a number of years on their supersonic transport studies. He also persisted with future projects much longer than I, taking part in the Anglo-US STOVVL studies that spawned the JSF programme. Ron had an incredible memory for past aircraft. He was a mine of information and was always generous in sharing it. He also had a unique talent for extracting information from photographs of rivals' products. He could see things in the shadows that I always missed. He was a great guy, and I am proud to have known and worked alongside him.

HARRY FRASER-MITCHELL

Some highlights in a long career...

Harry was born in 1929 and his early years were spent in India. After graduating in mechanical engineering with aeronautics he joined the RAE at Farnborough. After National Service he was posted to the National Physical Laboratory, which he wanted, but to the ship division, which he didn't. Being refused a transfer to aeronautics he resigned (unheard of!) and moved to Handley Page where he worked on the Victor and led the HP.115 slender delta aerodynamics team and eventually became chief aerodynamicist. When Handley Page closed because Sir Frederick would not bow to the Government's wish for the Company to join HSA or BAC, Harry moved to Hawker Siddeley, Kingston. In 1971 he was appointed head of aerodynamics (Hawk). Harry took early retirement in 1989 and lectured part-time at Kingston University until 2000. He remained active in the Handley Page and Hawker Associations of which he was a founding member, and supported the Royal Aeronautical Society, writing a definitive paper on the history of the Hawk. Fittingly his funeral at All Saints, Fleet, was marked by a Hawk flypast.

SKYHOOK

Members anticipated an interesting and entertaining afternoon when retired Dunsfold Chief Test Pilot, Heinz Frick, came to Kingston again, this time to talk about his invention: Skyhook. They were not to be disappointed.

In 1981 with Sea Harrier production coming to a close Heinz recognised that new ideas were needed to keep the project alive so he looked at ways to make the Sea Harrier cheaper and more combat effective. If equipment not actually needed for combat could be eliminated there would be large weight savings. Removing the undercarriage and its systems would save 1,300 lb which could be converted to extra fuel and/or weapons. However, this would require a new way of operating from ships.

Contemporary aircraft carriers were huge and expensive to procure and operate. USS Nimitz had a crew of 5,000! Even the UK Invincible class carriers displace 20,000 tons. Harriers had operated from much smaller ships but there had been difficulties, especially in bad weather, as only tyre-to-deck friction kept the aircraft on board. Rearming crews on deck had difficulties for similar reasons. Heinz reasoned that sets of weapons could be moved to the aircraft in the required relative positions on trestles and, crucially, that the Harrier could be retrieved directly from the hover. He found that the technologies needed were available so sought opinions in the Company. Test pilot Taylor Scott, a RN ex F-4 pilot, predictably thought it was a bad idea. John Fozard initially dismissed the idea but did listen to Heinz's arguments and agreed that relevant Kingston engineers should see Heinz's presentation; if the majority agreed that the concept was feasible then Foz would give the go-ahead.

In essence the Harrier would hover alongside the ship, a crane would pluck it from the air and lower it onto a cradle where it would be refuelled and rearmed. The crane would then pick up the aircraft, swing it overboard and release it into the hover to transition away. The go-ahead was given with Diggy Mottram coordinating.

Retrieval of the Harrier from the hover was the basic requirement for the concept to work. Heinz believed that the aircraft could be hovered accurately enough to keep the potential crane hook-up point within a 10 foot cube. Engineers disagreed so Foz said "Prove it!". A hover sight was needed and a simple fixed device using parallax from the pilots viewpoint was knocked up from bits of board. This would tell the pilot when he was the right distance from the crane and correctly positioned fore-and-aft and up-and-down.

Heinz arranged to borrow from the Fire Brigade a Simon Snorkel hydraulic turntable with an elevating platform to which the parallax sight was attached. At Dunsfold Heinz flew an FRS51 at a height of 50 ft for an initial assessment and confirmed that hovering inside the 10 foot cube 30 ft laterally from the sight was indeed straightforward. Later more thorough trials using Company demonstrator G-VTOL (now at the Brooklands Museum still bearing the Skyhook logo) proved that a positioning accuracy of +/- 2 ft was achieved over periods of tens of seconds, that aircraft relative velocity within the contact window was less than 1 ft/sec and that the 30 ft distance could be reduced to 25 ft. No autostabilisation was used and conditions were gusty with wind speeds up to 25 kn well off the aircraft axis. Three pilots took part.

Dowty-Boulton Paul were recruited to devise the ship-borne crane system applying their existing control technologies. The crane head, containing an inertial platform, was stabilised on earth axes when in position to retrieve the aircraft. As the crane moved the aircraft to its pre-armed trestle on board so the crane head became ship stabilised. Crane actuation was hydraulic with a triplex electronic control system. At the head of the crane was the docking unit consisting of four legs with stabilising pads, in the centre of which was an extending jack with a receptacle at its tip for receiving and locking on to a small pick-up probe on the top of the Harrier fuselage above its centre of gravity. With the aircraft hovering in the capture zone beneath the crane head the extending jack was lowered to lock onto the aircraft pick-up probe. The jack was then retracted pulling the aircraft up tight against the stabilising pads. The Pegasus would then be shut down and the aircraft swung aboard the ship. The launch procedure was essentially the reverse of the capture. Launch and recovery would be possible in sea state 6 conditions ensuring world-wide availability of 99% of time at sea for a 4,000 ton ship.

With the system thus defined a brochure was prepared and a presentation was given to the Ministry of Defence by John Fozard, Heinz and Diggy. Amongst the audience were two admirals and two captains, none of whom were really interested. When the vulnerability of aircraft carriers versus smaller ships was raised the Navy objected. Clearly the MoD had not been enthused!

Vosper-Thomeycroft (V-T) proposed a short, broad ship of large capacity with a 16,000 mile range running on cheap diesel, equipped with two Skyhooks and housing five aircraft. Still the Navy was not interested. V-T also proposed a mini escort carrier with eight Sea Harriers, two Skyhooks and a Ski Jump, which would of course need the undercarriage but would allow heavier loads to be launched and increased flexibility of operation. Again, no interest from the Navy. Schemes to utilise container ships and river barges with packaged systems also failed to find favour with the Navy.

An application to conventional carriers was conceived where Skyhooks could launch and recover aircraft from the open sides of hangar decks whilst the main deck was left clear for other operations. Guess what the RN reaction was.

At the time the USSR had M 1.3 swing-wing Tupolev Backfire bombers armed with 180 mile range Kitchen stand-off missiles. To protect a task force from attack would need continual fighter combat air patrols (CAP) which are very wasteful of the finite fuel supplies in the carrier. Small, economical, picket ships away from the task force carrying a pair of Sea Harriers on stand-by, and a Skyhook, could do the job effectively and economically. No interest.

How about using Skyhook equipped oil rigs to defend the UK from incoming hostile bombers? No thanks.

Anti-submarine applications? You must be joking!

The list of advantages bestowed by Skyhook is long; for instance: fully mobile base, long range fighter capability, increased productivity, rapid conversion of merchant vessels, low cost organic air power world-wide, Harrier capability maximised, large return for minimum outlay, and non-aviation applications too e.g. Skydrant to pick up oil from rigs. Referring specifically to Harrier and carriers: capability of operation from smaller ships, launch and recovery ship motion limits greatly increased with operation possible in hostile weather conditions, launch and recovery easier and safer for ship and pilot (hovering is easier than a VL), improved vertical performance due to lack of ground effects and exhaust ingestion, improved and relaxed engine handling and life due to reduced thermal shock, less fuel used for takeoff and landing, reduced ship manpower, reduced turn-round times, safer operations below deck, ideal for future PCB (plenum chamber burning) applications, heavy undercarriage optional.

Development would be low risk and low cost because no new technology was required, high value components were available off the shelf, the majority of development would be carried out on land, little development flying was required and only minor modifications were needed by Harrier family aircraft. In spite of all these advantages and benefits and a demonstration at the Farnborough SBAC show of the ease of launch and recovery, the idea sank without trace when British Aerospace declined to invest Company funds.

To end his fascinating talk, which contained facts not generally known, Heinz showed a video including the Dunsfold flight trials demonstrating to his rapt audience that the basic requirements for launch and recovery were well satisfied.

BAE SYSTEMS TODAY

Simon Howison came to Kingston on October 7th 2014 to brief Members on the current activities of BAE Systems, on whom we all depend for our pensions. Simon started his career at Smiths Industries as an electronics engineer working on Kingston's Hawk, Harrier and Sea Harrier as well as other types including the Jaguar, Tornado, Lynx and India's MiG 21. He came to work at Kingston's Avionic Systems in 1984 becoming Head of Avionics, Chief Systems Engineer, Project Manager Sea Harrier and Chief Engineer Harrier. After the move to Farnborough he went to Warton as Chief Engineer Tornado rising to Engineering Director BAE Systems Military Air Solutions covering Typhoon, Tornado upgrades, F-35 and UAVs. He retired from BAE Systems at the end of March 2014 and the views expressed in, and the content of, his talk are personal.

Simon started with some numbers: BAE Systems employs 84,000 worldwide (down from 108,000 in 2011) with 33,300 in the UK, 31,500 in the USA, 5,900 in Saudi Arabia, 4,700 in Australia, 55 in Oman and some 9,000 elsewhere. Sales in 2013 were £18.2 billion. £11 bn is spent annually with 2,500 suppliers. £50 m is spent annually on education and skills and BAE Systems works with many universities, more than 30 in the UK alone.

The speaker then looked at the market segments covered by the Company. These are Platforms and Services (P&S) UK 36%, P&S US 22%, P&S International 22%, Electronic Systems (ES) 13%, and Cyber and Intelligence (C&I) 7%. ES employs 13,000, mainly US based plus Rochester (was Marconi) in the UK. UK and US based C&I, providing secure government, commercial and financial activities, has 8,200 employees. P&S US has 21,300 employees providing engineering services to the USN and land vehicles to the US Army. P&S UK with 27,900 employees comprise Military Air & Information, Maritime, Munitions, Combat Vehicles and International.

Simon continued to cover all aspects of BAE Systems's business including Military Air & Information (MA&I) and Unmanned Aerial Systems (UAS) which, in the Editors opinion, are of the greatest interest to Members. This report will therefore concentrate on those topics. MA&I under Managing Director Chris Boardman employs 13,000 people organised in three directorates: Combat Air under Marl Kane, F-35 under Cliff Robson and Defence Information, Training and Services under Steve Timms.

The F-35 work is centred at Samlesbury for design, engineering and manufacture of the aft fuselage, empennage, mission systems, vehicle systems, autonomous logistics, crew escape and life support, fuel system, prognostics and health management, carrier integration and programme management. Some 1250 BAE Systems people are employed on the F-35: 1,100 at Samlesbury, Brough and Abbeywood, 150 in the US and 2 in Canada. Particular areas of expertise were crucial in gaining the F-35 contracts and are critical to the development, manufacture and support of the F-35: digital thread technology from design to manufacture, precision airframe engineering, lean manufacturing, systems modelling and simulation, electronics, STOVL expertise and in-service support.

Combat Air embraces the Typhoon, which, with production contracts for 719 aircraft, 250 of which are in service with the RAF and with the air forces of Germany, Italy, Spain, Austria and Saudi Arabia. The programme is managed by the Eurofighter GmbH consortium and involves 100,000 people in 400 companies across Europe. Typhoon is the largest European collaborative production programme with a BAE Systems workshare of 37.5% (EADS Germany 30%, EADS Spain 13%, Alenia Italy 19.5%). The UK built items are the front fuselage with cockpit and foreplanes, the upper centre fuselage spine, the fin and rudder, the flaps and the rear fuselage shared with Alenia. Considerable upgrade work is in hand covering radar developments and new weapons.

Defence Information, Training and Services covers the Hawk AJT advanced jet trainer and light combat aircraft, the Hawk T-X campaign for a replacement for the USAF T-38 trainer for which there is a requirement for 350 aircraft, and the Falcon secure internet for the battlespace. Also covered is the new Saudi Arabia training system requiring 22 Mk165 Hawk AJTs, 25 American-built Cirrus SR22 primary trainers and a managed training service, as well as Typhoon and Tornado support.

The primary MA&I site is Samlesbury where BAE Systems has made a huge investment in facilities over the last six years covering F-35 machining, F-35 assembly, advanced forming and fabrication, and materials engineering as well as supporting offices, welfare facilities and reception areas. The F-35 machining facility is highly automated utilising robotics and computer control to provide advanced machining capabilities producing complex titanium and aluminium components. The dedicated F-35 high-tech assembly facility allows advanced forming and fabrication processes making up to one aircraft set per day of rear fuselages, non-stop. The advanced forming and fabrication facility produces complex fabricated and assembled details for the Typhoon and F-35 using super plastic forming and diffusion bonding techniques. The materials engineering, support and test facility covers materials chemistry, composites, metallurgy, non-destructive testing, mechanical testing, and instrumentation.

Touching on safety, Simon said that BAE Systems had introduced a 'total safety culture' which has produced a massive reduction in accidents from 2,630 in 1996 to just 246 in 2013, putting MA&I at the top of the league with Boeing at the bottom having 20 times as many accidents.

Unmanned Aerial Systems (UASs) was Simon's final topic. BAE Systems had been in the field since 2001 and had invested in key technologies: airspace integration or ability to operate in airspace in use by manned aircraft, integrated vehicle health monitoring, assured communications for control and to maintain awareness of vehicle behaviour, survivability including stealthy airframe design, flight control and complex control law design, conformal air data systems, power plant integration and high levels of automation whilst retaining human control. Successful airspace integration had

been demonstrated in airways using an autonomous Jetstream (actually G-BWWW, the old Dunsfold based 'treble whisky') with a safety pilot; the ASTRAEA project.

The current project is the Taranis UCAS (Unmanned Combat Aircraft System) advanced technology demonstrator, jointly funded by the MoD, UK industry and led by BAES with the aim of demonstrating the feasibility and usefulness of UCAS. Taranis (a Celtic god of thunder) first flew in August 2013 and has completed the first two phases of the flight trials and will examine: propulsion integration (an Adour 951 embedded and hidden for infra-red and radar stealth), novel controls, low cost composite airframe, concealed weapons configuration, low radar cross section, embedded sensors and conformal air data system, secure communications, interactive mission systems and artificial intelligence. High levels of autonomy are to be demonstrated with mission demonstration aims of: auto taxi, take-off and transit, navigation to search area, ingress, search, target detection, target location, generation of attack profile, simulated attack, damage assessment, re-attack or continue search, egress and automatic landing and auto-taxi.

For the future the UK and French governments plan to invest £200m over a two year period with a £120m joint two year FCAS (Future Combat Air Systems) feasibility study already launched with an Arrangement signed by Government Ministers Hammond and Le Drian at the 2014 Farnborough Air Show. This will build on studies already conducted by BAES, Dassault, Rolls-Royce, Thales, Safran and Selex.

Simon's lecture was replete with information and this report gives but an idea of what was said in the speaker's inimitable and entertaining style.

FERRY FLIGHT OF Mk53 HAWKS TO INDONESIA - PART 2

Dick Poole continues his story...

Calcutta to Bangkok - 10 Jan 1981 (Duration 2hrs 20min)

After concluding our turn round at Calcutta we took off after lunch and headed for Bangkok. We climbed up to 39000ft over the Ganges delta and had a magnificent view of the many snakelike waterways that make up this crows foot delta. This must be one of the most spectacular sights in the world.

We flew on with the Burmese coastline to starboard. The flight test engineer was correct in his opinion that the fuel would not transfer from the port drop tank so we continued with an ever-increasing lateral asymmetry. We saw some towering cloudscapes on this leg and flew in a loose formation in order to cater for the turbulence that we could expect to encounter. Our arrival at Bangkok coincided with low cloud and rain and because we now had a significant asymmetry Chris elected not to carry out a formation landing. The monsoon type climate meant that the aircraft and airport dried out rapidly once the rain had stopped and we set about refuelling the aircraft.

The plan was to refuel the internal tanks only and then try to siphon half the fuel from the full drop tank to the empty one and we purchased some one-inch diameter clear plastic tube from a hardware store the following day for this purpose. We satisfied ourselves that we would be able to start the siphon off by cutting off a piece of our tube and transferring water from the washbasin to the bath in the very posh Bangkok Oriental Hotel. Much to the amusement of the others I was booked in as Captain Poole and a considerable amount of mickey taking followed this discovery.

The hotel is situated on the riverbank with tropical gardens, outdoor restaurant and large pool. In earlier days it was a favourite haunt of Ernest Hemmingway. As we enjoyed a refreshing beer in the gardens in the late afternoon we were joined by a number of colourful butterflies with wingspans of up to six inches. The following day we did some sight seeing by the traditional motorised rickshaw trikes, souvenir shopping and oriental feasting.

Next day was the third two-leg day and we set off early to prepare the aircraft. We had asked BA, the handling agency, if they could provide a container to receive the first of the siphoned fuel from Chris's aircraft to insure that it was not contaminated by the tube but when we reached the aircraft we found that we had unintentionally filled the empty drop tank and we had nowhere to siphon the fuel to. They were unable to find a suitable container but in the end it didn't matter because a horde of people descended on us from all directions with buckets and tins as they had heard that we were giving away paraffin. It transpired that these folks lived in a make shift camp just outside the aerodrome and used paraffin poured into tins with sand in the bottom as stoves for cooking. We allowed them to empty the 100gallon drop-tank that would not transfer, using our plastic hose as a siphon and everyone was happy.

Bangkok to Butterworth (Malaysia) - 12 Jan 1981 (Duration 1hr 25 min)

After an uneventful asymmetrically loaded take off we headed south-east to the military airfield called Butterworth located on the Malaysian mainland adjacent to the island of Penang. The initial part of the journey was over forests but ended over cultivation around Butterworth. Looking down on the airfield it was just like any RAF airfield, except for the palm trees, with cold war type ORPs and arrester barriers at each end of the runway. Air traffic control communications were by UHF radio.

We were met by the Senior RAF Officer seconded to the base who took us to the Officers Mess for refreshment and we then fuelled both aircraft to full internal fuel and replenished their oxygen supply before commencing the final leg of the journey.

Butterworth to Yogyakarta - 12 Jan 1981 (Duration 2hrs 25min)

This leg of our journey at around 40,000 ft took us down the west side of Malaysia to Singapore, down the eastern coast of Sumatra, then across the sea to the vicinity of Jakarta and finally east along the centre of Java to the combined civil and military airfield at Yogyakarta. The scenery on this leg over Java included a number of classically shaped volcanoes

that were fortunately dormant during our passage. The aircraft were parked in the military area of the airfield and we exited them into a very hot and humid atmosphere. Following the presentation of the aircraft documentation to the Indonesian reception committee we collected our personal kit and the ferry equipment and were taken to the Yogyakarta Sheraton Hotel where we were met by Bill Bedford. He informed us that we were invited to dinner with some of the Indonesian Air Force at a local restaurant and would not have much time to unpack and shower before we would be picked up.

Dusk was upon us as we were driven through the suburbs of Yogyakarta and we were glad for the air conditioning reducing the humidity level. Again we saw vegetation that people struggle to grow in pots at home that reached heights of 5 or 6 feet and some wonderfully colourful flowering trees and bushes.

The dinner consisted of a number of different spicy courses, tropical fruits and various alcoholic beverages and in the end tiredness from the two-leg journey and the humidity took its toll and I'm ashamed to admit I nodded off during the speeches. I was assured later that nobody actually noticed.

On the way to the airport the following morning we drove past two previous training aircraft types used by the Indonesian Air Force, the Vultee BT15 Valiant and the MIG 15 UTI. The former appeared to be displayed in a private garden and the latter was pole mounted near the entrance to the base. Base.

Return Trip Via Singapore

We only spent one night in Yogyakarta and then headed off to Singapore in the morning on a Garuda Airbus for a two-night stay in The Shang Ri La hotel, one of the most luxurious hotels in the world. Apart from the usual facilities you would expect in such an establishment it featured a tropical terraced garden, with a wonderful selection of tropical plants, built against the side of the hotel rising to several floors above ground level. Vegetation included various palms and six-foot tall mother-in-law tongues and bougainvillea shrubs. We spent a day looking at the city and shopping followed by a good oriental dinner in the hotel. During the shopping expedition I purchased a digital watch after some deliberation and much haggling. I was principally concerned about what to do if it stopped working soon after I got home. To allay my fears the shop owner showed me the guarantee booklet that gave the servicing address for Seiko Watches in England as Walnut Tree Close, Guildford, Surrey so I decided to buy.

The last leg of the journey home was made on a Singapore Airlines B747 and as Chris was required to fly again almost immediately we were allowed to travel first class. This was an extremely comfortable flight and the only time I have seen and smelt scrambled eggs and bacon being cooked on an aircraft by the crew. It was an excellent finale to a very interesting journey.

A HAWKER APPRENTICESHIP

Ted Henbery remembers life in the late 1940s and early '50s.....

In September 1947 I was about to leave Wandsworth Grammar School and had little idea of my future path and means of earning a living. There was minimum career guidance in those days and chatting to classmates gave little help. Some older friends had interests in motorcycles and this did spark my interest in engineering - and provided some excitement and danger!

A close friend, Viv Wagerfield, with whom I had been evacuated during the war, mentioned that he was applying for an apprenticeship at Hawker Aircraft Ltd in Kingston. This was on a direct rail line from Earlsfield so my father promptly followed suit on my behalf. WW2 had been an exciting time in the air and the scene was set for what turned out to be a very satisfying period ahead for me. Viv and I travelled to Kingston for our interviews in the Canbury Park Road board room and later were offered five year engineering apprenticeships.

Starting in October 1947 we experienced the main production departments such as fitters, machine shop, structures, inspection and processes, prior to journeying to Langley for final erection and flight testing; at that time the Sea Fury was in production. This completed the first four years of the apprenticeship. We were paid 22/6 (22 shillings, or 1 pound two shillings, and sixpence) a week rising to 54/6 (2 pounds 14 shillings and sixpence), quite a fair amount for those days.

The final year was spent in the detail planning department situated, close to the main works, in Cowleaze Road. It was here that the manufacture of the aircraft detail parts and tooling was decided and where the previous four years experience came in to play. During the five years we had one day a week leave to attend a Technical College, Wandsworth in our case, to gain ONC and HNC (Mech) qualifications.

It was whilst we were working at Cowleaze Road that on September 7th 1953 Neville Duke flew the Mk 3 Hunter along the south coast at an average speed of 727.6 mph to claim the world absolute speed record. Having completed the runs Duke flew at very low level and very high speed over the Kingston factory causing headlines and complaints in the local Surrey Comet newspaper the following week.

What a privilege it was to have such an exciting start to working life. Both Viv and I were deferred from National Service until late 1954 when we joined the RAF and did our 'square bashing' at Hednesford. Having completed our terms we returned to Hawker at Cowleaze Road. Eventually Viv became a flight engineer with BOAC and I remained in engineering working in ball bearing manufacture, lithography equipment, train and bus air conditioning and, finally to plan a Phillips-MEL mobile aircraft landing aid (MADGE - mobile airborne digital guidance equipment) for helicopters and Hawker vertical take-off aircraft; a full circle back to aviation. Sadly, Viv passed away in August 2014.

MEMBERSHIP NEWS

Sadly we record the deaths of Harry Fraser-Mitchell, Ron Williams, Peter Tews and Basil Lockwood-Goose.

We welcome new members Phillip Pratt and Ed Hui (sorry I missed you out - Editor).

MEMBERSHIP LIST FEBRUARY 2015.

Members who have not yet paid their subscriptions for 2014 - 2015 are in bold below. Please send cheques payable to The Hawker Association to Barry Pegram, 12 Becket Wood, Newdigate, Surrey, RH5 5AQ. If you are **leaving** please let him know by post or by telephone on 01306 631125. Thank you.

A: Roy Adolphus, Allan Abbott, Beryl Alexander, Ken Alexander, Peter Alexander, John Allen, Peter Amos, Terry Anstey, Steve Apted, John Arthur, Alan Auld, **Bryan Austin**, **B:** Brenda Bainbridge, Dick Baker, **Colin Balchin**, Ambrose Barber, Derek Barden, Peter Barker, Frank Barrett, Geoff Barratt, Graham Bass, **Donald Bateman**, Ken Batstone, Dennis Baxter, Colin Bedford, Peter Bedford, Anne Beer, **David Betteridge**, Brian Bickers, Guy Black, John Blackmore, Andy Bloomfield, Melvyn Bluck, Keith Bolland, Paul Boon, Betty Bore, Pat Bott, Steve Bott, Bob Bounden, Mike Bowery, Alan Boyd, Sally Bracher, Roy Braybrook, Laurie Bridges, Doug Britton, Arthur Brocklehurst, Eric Brown, Peter Brown, **Ron Bryan**, Christopher Budgen, **Maurice Budgen**, Roy Budgen, Reg Burrell, Robin Burton, Clive Bushrod, Barry Butcher, Dave Byford. **C:** Richard Cannon, Chris Carter, Tom Casey, Bob Catterson, Colin Chandler, Keith Chapman, Keith Chard, John Chitty, Martin Churms, Gerry Clapp, JF Clarke, John Cockerill, Hank Cole, Percy Collino, Nigel Cook, Brian Coombes, Jonathan Cooper, Paul Cope, Patricia Cosgrove, Ron Cosgrove, Nick Cox, Mike Craddock, Shirley Craig, Richard Cripps, Jane Cull (nee Nightingale), Russ Culley, Richard Curling, Richard Curtis. **D:** Clive Dalley, Andy Dalton, John Danse, Afandi Darlington, John Davie, Jo Davies, Ken Davies, Trevor Davies, Michael Davis, **Diana Dean**, Ralph Denning, Norman Deviel, Wilfred Dimsdale, Mike Diprose, Colin Dodds, Lambert Dopping-Heppenstal, **Cliff Douthwaite**, George Dow, Bill Downey, Brian Drew, **Peter Drye**, Gwen Duke, Chris Dunhill, Mike Dyke. **E:** John Eacott, Andy Edwards, **Dave Edwards**, Barry Elliot, Stephen Elliott, Tony Elliott, Eric Ellis, Celia Evans, Norman Evans, Roy Evans. **F:** Russ Fairchild, Ian Falconer, Mike Fantham, Chris Farara, John Farley, John Farrow, Max Fendt, Donna Ferguson, Ian Ferguson, Stan Field, Geoff Fieldus, Mike Finlay, Wilf Firth, Richard Fletcher, Colin Flint, Ted Forster, Dave Fowler, Mike Frain, Steve Franklin, Geoff French, Mike French, Heinz Frick, **John Friend**. **G:** Roy Gaff, David Gaitley, Mike Gane, John Gardner, Patricia Gardonio, Peter Gates, Sandie Gear, Tim Gedge, Mark Gerrard, Tony Gibbs, John Gilbert, John Glasscock, Pat Goodheart, John Gough, Andy Green, Ray Grout. **H:** Violet Hall, Douglas Hallway, Valerie Hanscomb, Liz Hargreaves, Simon Hargreaves, Bryan Harman, Guy Harris, Thelma Harris, Brian Harvie, David Hassard, David Hastie, Sandy Hay, Norman Hayler, Bob Head, Alan Heasman, Sheila Hemsley, Ted Henbery, Brian Hennegan, Jock Heron, Keith Hertenberg, **Frederick Hewitt**, Merlin Hibbs, Richard Hickey, Peter Hickman, Dennis Hills, Reg Hippolite, Keith Hobbs, Chris Hodson, Thelma Hodson, Derek Holden, Patricia Holt, Ralph Hooper, Linda Hopkins, Gerry Howard, Diane Howells, Terry Howes, Simon Howison, Miles Huckle, Ed Hui Gavin Hukin. **I:** Len Illston, Maive Impey, David Ince, Brian Indge. **J:** **Keith Jackman**, Barry Jackson, 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Edward Syradd, Laura Syradd. **T:** **Dominic Tait**, David Taylor, Stuart Taylor, Brian Tei, Joanna Terrell, Reginald Thompson, Geoff Tomlinson, Graham Tomlinson, Richard Townsend, John Tratt, Rod Tribick, Bert Turner, **Michael Turvey**. **U:** John Underhill. **V:** Roland Van Haeften. **W:** Terry Walker, **John Wallace**, David Ward, Harry Webb, Rob Welsh, Judith Westrop, Jan White, Mick White, Roy Whitehead, Peter Whitney, David Whittam, Annette Williams, Don Williams, John S Williams, Sally Williams, Geoff Wilshire, Colin Wilson, George Wilson, Paul Wilson, Dick Wise, Helen Woan, Kuo Wong, George Woods, **Alan Woolley**.