



THE HAWKER ASSOCIATION

NEWSLETTER NUMBER 19 - WINTER 2008

Published by The Hawker
Association for the Members.

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Website: www.hawkerassociation.org.uk

EDITORIAL

We are nearly five years old! It was on 21 March 2002 that the inaugural 'Committee' meeting was called by Barry Pegram and held at his home. It was all reported in Newsletter No. 1. However, it wasn't until 2003 that the Association really got moving with a full programme of meetings and talks by such 'Hawker' luminaries as John Glasscock, Ralph Hooper, John Farley and John Crampton. We now have 374 members with up to 60 attending meetings; not bad you might well say. However, we must look to the future and perhaps make some changes if the Association is not to fade away as our membership grows older. Please read the article below on the options for the Association's future and give us your views at the AGM, or if you can't attend, write to or e-mail me and I will present them.

By the way, my folder of contributions to the Newsletter is now empty. Please spend a little while writing about your time at 'Hawkers'. No draft too rough for me! Thanks to Betty Bore, Roy Whitehead, Norman De Viell and Ralph Hooper for their inputs.

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PROGRAMME FOR 2008

Wednesday 13th February	"The Future of Naval Aviation" - Cdre Jerry Stanford
Wednesday 12th March	"Flying Hawker Aircraft" - Capt. Eric 'Winkle' Brown.
Wednesday 9th April	Annual General Meeting and video.
Wednesday 14th May	"Personal Reflections on Hawker Thoroughbreds - Sea Hawk, Hunter and Harrier." AV-M George Black
Wednesday 11th June	Summer barbecue at the Hawker Centre.
Wednesday 9th July	tbd
Wednesday 13th August	Social gathering with video.
Wednesday 10th September	tbd
Wednesday 8th October	tbd
Wednesday 12th November	tbd
Wednesday 10th December	Christmas Lunch at the Hawker Centre.

Unless stated otherwise, meetings are at the Hawker Centre, 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.

Captain 'Winkle' Brown, the famous naval test pilot, needs no introduction; suffice it to say that he has flown 487 basic types (that excludes Marks) and had made 2407 deck landings! Read his book "Wings on my Sleeve"

RIVERSIDE SPECTACULAR

On 11 May a Thames-side Riverside Spectacular charity event, of interest to Members, is being held at the Brocas Field, Eton. The theme is, 'Events which contributed to our freedom.' Participants include the Sir Sydney Camm Memorial Trust, the Battle of Britain Memorial Flight, the Royal Navy Historic Flight, the Roll-Royce Enthusiasts Club, the Association of the Dunkirk Little Ships and the Royal Yacht Squadron, and possibly the Brooklands Museum. Watch out for publicity or try Google.

THE FUTURE OF THE HAWKER ASSOCIATION

The 21 March 2007 marks the fifth anniversary of the inaugural meeting of the Association Committee which, amongst other important things, set the rules for membership. They still stand, with one amendment, and in essence are:

1. Membership is open to anyone with an association by employment with the Hawker Companies, and to their widows or widowers.
2. Associate Membership may be offered, at the discretion of the Committee, to those who have rendered a service to the Association. (Covers speakers, visit hosts etc.)
3. Associateship may be offered, at the discretion of the Committee, to those who, whilst not actual employees of the 'Hawker' companies, worked closely with them. (Covers MoD, R-R, McAir etc)

The Chairman and the Committee have been considering the future of the Association whose Members are mostly retired and not getting any younger! Options for the future include: 1. No change - in which case the Association will gradually fade away. 2. Take steps to prolong the life of the Association without changing the membership rules. 3. Take steps to make the Association self-perpetuating by changing the membership rules.

The Committee considered Option 1 to be a non-starter because they don't want the Association to die. Option 2 requires the recruiting of younger members from BAES at Farnborough. A problem here is that all our meetings are daytime and mid-week so working members usually can't attend. Evening meetings would solve that problem but then our primary group, older and retired, don't like driving in the dark (or do they?), nor do our older speakers. Should we hold some evening meetings? Should they be held at Farnborough, say? Should we have a 'Newsletter only' membership grade? On retirement they would become full members. Option 3 could open up membership to anyone with an interest in the aims of the Association or it could be limited to certain interest groups;

HSA and BAe HQ people, for example. This option would change the 'family' feel of the Association; do we want this? This option could also cover a merger with another like-minded group, if there are any.

Please give this matter some serious thought and at the AGM present your views on what changes you would be happy with and how they could be implemented. The Committee really needs your help.

HARRIER NEWS

BAES Brough has delivered the final Harrier GR.9 replacement rear fuselages. The £20 million programme involved the manufacture of nine bare rear fuselages designed to be fitted retrospectively and which are now being held in RAF stores until in-service aircraft require rear fuselage replacement.

HAWK NEWS

The NATO Flying Training in Canada (NFTC) programme has achieved 50,000 Mk.115 Hawk flying hours in just seven years using 17 aircraft. Some other Hawk 'records' have also been set: the highest average flying rate per aircraft per year at 510 flying hours; the highest usage in year at 653 sorties; one third of the total 100 Series flying hours with only one sixth of the world fleet and they are 10,000 hours ahead of the next highest user, accrued in half the time other fleets have been active. More than 330 students have been trained in the seven years of operation. The NFTC is a training facility for pilots from around the world and is operated by Bombardier from Moose Jaw in Saskatchewan and Cold Lake in Alberta. The support contract between Bombardier and BAES has been extended to 2010.

The Red Arrows carried out a tour of the Middle and Far East from 11 November to 18 December with the Hawks in a revised livery; the white fuselage side stripe now has the words "ROYAL AIR FORCE" painted on it. The main stop-overs were in Dubai, for the Dubai Air Show, and Langkawi, Malaysia, for a major maritime air show called LIMA. Also visited were Jordan, Saudi Arabia, Abu Dhabi, Doha, Islamabad, Delhi and Kuala Lumpur. Since the Red Arrows was formed they have carried out 4,000 demonstrations in 53 countries.

The 2007 Hawk User Group (HUG) meeting was held in Cape town and attracted air and ground crew from 12 air forces. The objectives are to share experiences and so improve efficiencies and make savings through collaboration. Feedback to BAES will be used in planning Hawk developments.

Brough's runway is to be re-commissioned so that Hawks can be ferried on their maiden flights to Warton instead of being broken down after final assembly for transport by road. Production flight testing, painting, customer acceptance and delivery to the customer will remain Warton responsibilities.

The first Indian Hawk Mk.132s were ferried out to India in November. Acceptance of all 24 UK built aircraft is to be completed in March 2008.

BAES Brough has completed its 1,000th Hawk-family wing. They have been making Hawk wings for 30 years and Goshawk wings for 20 years. Doesn't that make you feel old?!

The first of 28 production Hawk Advanced Jet Trainers (AJT) for the RAF is in the final assembly stages at Brough. The two development aircraft are, in the words of BAES, "in the final phase of the development flying programme." The mission software to the production OFP5A standard has started qualification testing which is due to be completed early in 2008. Ex-Dunsfold test pilot, Paul Hopkins, is Project Director Hawk UK AJT.

BAES has received a £54 million contract for the final batch of the 221 T-45 Goshawks currently required by the US Navy. The contract calls for the delivery of ten T-45C Goshawk fuselages from Samlesbury, and ten sets of wings, air intakes and fins from Brough to Boeing at St Louis, Missouri, for final assembly. In addition a £500,000 contract for continuing integrated logistics support to Boeing was also received. BAES, Boeing and the US Navy are working together preparing plans to develop the Goshawk to meet future US Navy training needs. During 2008 support will be sought from the US Navy 'top brass' and from the US political system for funding.

A Hawk has been used to test BAES's Advanced Structural Health Monitoring System (AHMOS) installed in an underwing pod. An acoustic emission detection kit was able to pinpoint cracks in specifically designed dummy structures and to download a diagnosis when the aircraft landed. The objective is to avoid lengthy and expensive structural inspections which are often precautionary or find no faults requiring repairs.

The Finnish Air Force is buying 18 Swiss Air Force Hawk Mk.66s for some 40 million Euros, about the same as two new Hawks. The aircraft have been maintained in airworthy condition since their retirement in December 2002. The Swiss bought 20 Hawks but one (U-1256) was written off and the first (U-1251) is being preserved in the Dubendorf museum. Only 17% of the Mk.66 fleet flying hour life has been used and Finland expects to keep Hawks in service until 2025-2027, their own Mk.51/51As having undergone a structural life extension programme.

LIGHTNING II NEWS

The UK Ministry of Defence and the Aircraft Carrier Alliance (ACA) have signed an agreement for the Royal Navy's two 65,000 tonne aircraft carriers. The ACA consists of BAE Systems, Babcock, the Vosper Thornycroft Group, Thales and KBR.

The first, STOVL, F-35B was rolled out on 18 December and first flight is expected in March.

HUNTER NEWS

From RAF Scampton, Lincs, Hawker Hunter Aviation (HHA) operates twelve ex-Swiss Air Force Mk.58 single seat Hunters and two TMk8 two seat trainers. HHA also has an ex-German Air Force Sukhoi Su-22 and an ex-RAF Buccaneer. HHA, run by Managing Director Mat Poluski, a onetime management consultant in the City, employs five experienced former military pilots and eight full-time air engineering staff who are all senior ex-RAF NCOs. The Mk.58 Hunters retain their Swiss radar warning receivers and chaff and flare dispensers but HHA has fitted radar altimeters, upgraded communications equipment and a GPS-aided navigation suite compatible with the RAIDS rangeless instrumented debriefing system pod. An integral radar threat simulator is also to be installed. All the modifications and certification have been carried out by HHA. The aircraft are painted in the old standard RAF grey and green

camouflage scheme with pale grey undersides, and carry roundels and fin flashes in red and blue. The Mk.58s have been allocated serial numbers in the ZZ sequence. On the spines, in white, is the legend "www.hunterteam.com." AvP67 approval has been achieved, endorsing the company's maintenance and operating procedures to military standards, and allowing HHA to undertake UK MoD taskings.

FRA (Flight Refuelling Aviation) employs the Mk.58 Hunters as fast, agile targets to support the testing of the Sampson radar in the new Type 45 destroyers. Qinetiq uses an HHA TMk.8 at the Empire Test Pilots' School (ETPS) at Boscombe Down to demonstrate to students certain flight characteristics that fleet aircraft cannot manage (swept wing spinning? - Ed). Further opportunities for contract work are being pursued in the UK and with NATO countries, including trials support, fast jet pilot assessment, training, conversion and currency flying. To date the Hunter fleet has flown over 500 incident-free sorties with 99% serviceability, reflecting well on the reliability of the aircraft and the quality of HHA's engineers. The Mk.58s are all low-hours airframes, the fleet leader has half its airframe life remaining, so HHA look forward to another ten years of Hunter operations!

SEA HARRIER XZ439 UPDATE

During 2007 steady progress was made in getting Sea Harrier FA.2 XZ439 up to airshow standard. New radios, a GPS and Stencil ejection seat were amongst the major changes introduced, the latter requiring only minor machining to the rails. Engine runs revealed the usual sorts of minor problems which were duly resolved. Art Nalls himself managed some USMC simulator rides in preparation for the big day.

Art made the first flight from St Mary's Airport, Maryland, on 10 October 2007. The undercarriage was not retracted on this flight. A second flight on 11 October, however, did not end entirely happily. This time the undercarriage was retracted soon after take-off and after some 12 minutes a 'HYD 1' warning came up. Art selected undercarriage down but all indications were red - undercarriage not locked down - although the landing light was illuminated. In spite of positive and negative g manoeuvres the undercarriage indications remained 'unlocked'. After diverting to Patuxent River Naval Air Test Center (Pax River) Art carried out a gentle vertical landing on the VTOL grid but the nose gear and starboard outrigger collapsed and the nose fell violently to the ground.

In Art's own words, "The nose gear collapse caught me completely by surprise since the landing light was illuminated and we thought the gear was locked down despite the unsafe indication. I should have given it one more hard yank in the pattern. The fall was quite violent. I'm fortunate I didn't kill myself on the HUD since the harness was not locked (I've added that to the check list). My first thought was, 'I'm dead'. My second thought was, 'The seat will fire any second.' When it didn't I safed it and looked for fire; there was none. I thought I had broken my back so I wiggled my toes. They worked just fine. I didn't see any fuel seeping, no flames and the engine didn't sound bad. My next thought was to transmit that I was fine, so I transmitted that on the radio and secured the engine, the batteries, and started a manual egress. I took my time since my neck did ache and I didn't want to cause any damage to my spine. My first words were, 'These sumbitches almost land themselves!' The ground crew knew that if I could make a joke just after banging my own Harrier, we'd be OK."

Fortunately damage appeared to be minimal and replacements for the radome, nose gear doors, starboard air data probe and VHF aerial were despatched from the UK. The Sea Harrier was lifted onto its wheels for towing back to St Mary's by road for repairs. A hydraulic leak was found in a cracked hydraulic line that had been modified, apparently for flight test instrumentation, with a blue 'tee' piece that had been capped off. A new pipe is to be made and the hydraulic pump is being checked. During this enforced down-time the HUD will be removed and an EFIS (electronic flight instrument system) installed, the windscreen washer fluid tank will be removed as will redundant radar system items.

Art says, "We did quite a bit of good stuff in only two flights: cg acceptable with full internal fuel at 4g and 359 knots to hover; hover capability acceptable; pilot hover performance acceptable; short field performance very acceptable and safe from civilian airfield." He hopes to fly again in February or March.

HELP NEEDED FOR XZ439

Art Nalls is having problems with hydraulic lines. He can obtain the material and the bending jigs but the ends are the problem. Can anybody give a source for the male and female fittings and the proper tooling to make the ends, or a source of the ends? Please e-mail Art at <artnalls@earthlink.net> or tell the Editor.

LT. GEN. THOMAS H MILLER USMC

Lt.Gen. Miller died at the age of 84 on 27th November 2007 at his home in Arlington, Virginia.

Tom Miller will be remembered by many 'Hawker' people for the key role he played in getting the Harrier adopted by the US Marine Corps. A qualified test pilot, he was the first Marine to fly the Harrier, at Dunsfold, and was "the father of STOVL aviation in the USMC" overseeing the development of the concept for the rest of his career which culminated in his appointment as Head of Marine Corps Aviation.

BETTY BORE PRAISES BAE SYSTEMS PENSION FUND TRUSTEES

I thought some of you might like to know how BAE Systems Pension Fund Trustees handle things for the spouse when a pensioner dies. I have been very impressed by my contact with them since Cliff died.

Within days of notifying them I got a reply written in a very sensitive way. Of all the organisations I had to contact their reply was far and away the most helpful. It explained exactly what I had to do to obtain my spouse's pension. They also sent a comprehensive checklist of all that one might have to do after someone dies, together with a list of sources of information collated from experiences of bereaved pensioners. Because they had already paid Cliff's next month's pension into our bank account they had to ask for repayment, which was done very sympathetically with a request that if this might cause financial hardship I could contact them via their helpline.

Having got together the various documents they needed for me to claim my spouse's pension I took these over to the very pleasant new offices at the Farnborough Aerospace Centre which had a beautifully designed garden outside the entrance. There one of eight members of the pension team met me and copied what was needed, chatted about how much she enjoyed her job and got a coffee for me, too. Two days later I received confirmation of benefits with a clear explanation and the first payment was made shortly after that.

Thank you BAE Systems Pension Fund Trustees for your help and consideration.

Cliff always felt that working at Hawkers was fascinating and worthwhile. Thinking about it I realise that his colleagues shared the ability to focus very hard on aeronautical problems in order to solve them. Meeting many of these former colleagues at Hawker Association meetings I think this focusing ability has carried into retirement with many different forms, be it bird-watching, computing, family history, Brooklands Museum, or whatever. I was amused at the heartfelt affirmative response I got from two or three of the wives when I suggested this.

I wish the Hawker Association all the best for the future and hope to see you from time to time at the monthly meetings.

FIFTY-FIVE YEARS OF FLYING

On 14th November Clive Rustin came to Kingston to tell the Association all about his remarkable flying career. Starting in the University Air Squadron on Chipmunks he went solo in 1952 and as a National Service pilot flew the DH Vampire TMk11 at Middleton St George. Qualified on jets he went to the OCU at Pembrey to learn to fight. Thence to RAF Germany to fly DH Venoms where, on his last flight, he decided to apply for a permanent commission. After conversion to the Hunter he joined 56 Squadron and led their four aircraft aerobatic team. In Cyprus he practised air-ground weapon aiming and air-air gunnery against flag targets towed by Mosquitos and Meteors. Painted bullets were used which left a trace on the flag allowing the firing pilot to be identified. At 111 Squadron he flew with the Black Arrows Hawker Hunter team which pioneered large formation aerobatics and, before he joined them, developed a 22 aircraft loop. He took part in a 90 aircraft formation, 45 Hunters and 45 Javelins, at the SBAC display at Farnborough. From 'Treble One' Clive moved to Coltishall as the English Electric Lightning was introduced. In terms of performance this aircraft was a quantum leap from the Hunter, especially in acceleration and time-to-height. It was also missile armed with Firestreak and Red Top.

By 1960 he had graduated from the Empire Test Pilots School (ETPS), then at Farnborough, where, to Clive's delight, an array of aircraft of all categories was available. He learnt how to evaluate aircraft performance, stability and control and handling qualities, and to assess suitability for the intended operational role. During the course an important exercise was to devise, execute and report a flight test programme on a type new to the pilot, commenting on its fitness for purpose and noting any changes that were required. The course was very hard work with theory in the morning, flying in the afternoon and report writing in the evening. Nowadays graduates are awarded a degree.

His first posting as a test pilot (TP) was to the Royal Aircraft Establishment (RAE) Bedford. Here, typically, there would be some fourteen aircraft, including nine experimental types, to be flown by just four TPs; so, plenty of variety. Amongst those he flew were the Handley Page HP.115 slender 76.5 degree delta, the Avro 707C two-seat delta, the Short SB.5 with ground-adjustable wing sweep, the supersonic English Electric P.1 Lightning prototype, the BAC.221 ogee-winged conversion of a Fairey FD.2, the Short SC.1 lift-jet VTOL delta and the Hawker P.1127 vectored thrust V/STOL prototype, XP831.

Much of the flying on the HP.115, the P.1 and the BAC.221 was Concorde oriented. Opinion in the USA was that an ogee-winged aircraft, the Concorde configuration, would be unflyable but the BAC.221 proved them wrong. To achieve the nose-high attitude required for take-off it had a long Fairey Gannet nose leg and Lightning main legs because, with the FD.2 undercarriage, there would not have been enough elevator power to raise the nose. The other major programme was VTOL research. The SC.1 was powered by five Roll-Royce RB.108 engines, one for propulsion and four for lift, and was controlled via reaction controls. There were two aircraft, one with a fly-by-wire system, the other conventional. This fully autostabilised aircraft was a "dream to fly jetborne". Transition from wing-borne to jet-borne flight required lighting the lift engines which needed the intake gills to be opened. The drag caused the SC.1 to slow and descend which was only arrested when the lift engines lit and came up to speed. Simulated blind landing research was also carried out. With the P.1127/Kestrel Clive took part in carrier trials in HMS Bulwark and HMS Ark Royal. Further VTOL experience was gained on a visit to Dornier near Munich to test the Do.31 small hover rig in a joint trial with HSA Dunsfold pilots and engineers (including the Editor). DH/HSA Hatfield had been working on V/STOL transports, as had Dornier, so the two companies collaborated on the Dornier Do.31 testing. In France Clive flew the Breguet 941 STOL transport with its heavily flapped wing immersed in the slipstream from the propellers of four interconnected engines whose throttles were closed automatically on touchdown. It approached at 50 - 55 kn down an 8 deg slope and stopped in 100 metres; but it was mechanically very complex. The Hunting-Perceival 126 jet flap aircraft was another slow landing type flown at Bedford. Some 30% of the thrust went to the jet pipe, 60% to the flap and 10% to the reaction controls. The consequence was, throttled back to slow down jet flap lift was lost so although the 126 could fly at 60 kn it was in a descent so you had to accelerate to land. The HP.115 slender delta could be flown down to 35 kn but at less than 90 kn it sank, so again, you had to accelerate to land at 120 kn.

A DH Comet was used to develop a pilot's take-off director display allowing maximum performance to be achieved safely at increased all-up weights. This system was certified by the CAA. The Comet was shared with the Blind Flying Experimental Unit (BLEU) who 'owned' it so Aero Flight had to find a twin engined replacement. A Percival Sea Prince was located but the Ministry said they couldn't afford the capital outlay to buy it but they had on-charge a Vulcan which Aero Flight could borrow. The Vulcan cost £5,000 per flying hour; the Prince with two Leonides piston engines cost about £30 per hour to fly! With the directors installed the Vulcan gave airline pilots experience in using and assessing the system.

Work at the RAE involved several overseas trials including flying a two-seat Mirage IIIB 'flying simulator' equipped with a computer system making it handle like Concorde. In the USA Clive flew and assessed a B-25 simulating the HP.115 and a Bell helicopter simulating the SC.1. The latter was instantly tuneable; just land, adjust the computer in the pod, and go. Whilst in the States Clive 'flew' the 6 degrees of freedom NASA Ames simulator, and the Project Apollo Lunar landing and docking simulators. These 'flew' around inside a hangar on cables with counterweights, under computer control. He also visited Sweden to fly the SAAB Draaken and Viggen and was very impressed that such a small country found the money to develop such advanced fighters. To find out how airline pilots flew airliners he did a two week 'course' in Ireland with Aer Lingus on a Boeing 707. The highlight of this enjoyable exercise was flying the 707 at a local air show and doing a beat-up with, at the insistence of the Irish Captain, the never-exceed' bells ringing, followed by a steep pull-up and wing-over.

After leaving as O/C of Aero Flight, Clive spent some time with the Ministry Procurement Executive on air defence systems before being appointed O/C Avionics Research Flight at RAE Farnborough. Here it was the systems rather than the aeroplanes that were under test. There were three Hunters covering avionics, fly-by-wire, and Institute of Aviation Medicine (IAM) work, with a fourth for general duties. There was also a helicopter fleet supporting armament systems trials, and a Comet 3B. This rather overpowered aircraft had spectacular acceleration on take-off and to relieve the load on the experimental TPs a very knowledgeable engineer flew with them to deal with emergencies. Clive was the UK project pilot on the three-nation Canadair CL-44 tilt-wing V/STOL programme flown at Patuxent River, Maryland. Canada provided the aircraft, UK the avionics and USA the flight test instrumentation and base. Initial training was at Montreal. The aircraft was very successful but again was mechanically very complex as illustrated by the flying controls. For VTO the wing, with twin engines and large propellers attached, was rotated nose-up to point vertically, so yaw was controlled by the ailerons in the slipstream, roll by differential propeller pitch, and pitch by a pair of contra-rotating propellers at the tail. In conventional flight with the wing horizontal the ailerons controlled roll, twin rudders yaw, and elevators pitch, so during the transition the control functions had to smoothly transfer between the two alternatives. By the end of this posting Clive was O/C Flying at Farnborough when he got the opportunity to take a Comet 4 to Nellis Air Force Base, Nevada, for satellite navigation trials and fly along the Grand Canyon.

Next he was O/C 'A' Squadron, A&AEE, Boscombe Down. Here they were working on service release trials for Buccaneer, Harrier, Jaguar and Phantom developments and on initial service release trials for the Hawk. The objective was to set the limits to which the aircraft could be flown safely by the 'worst' service pilot; a relative term. Harrier trials included vectoring in forward flight (VIFF) and ship clearances for deck operations using HMS Ark Royal, well before the advent of the Ski Jump. Whilst attempting a minimum launch speed take-off at maximum take-off weight Clive experienced a bow-down launch during which his Harrier got so close to the water that it raised a bow wave for some considerable distance. The deck launch officer near the bows signals launch when he anticipates that the bow will be rising as the aircraft reaches the end of the flight deck; but on this occasion the bow stopped early and sank again! He also flew the Buccaneer (excellent above 300 kn), the Phantom (awe inspiring), the calibrated Javelin and the good, old Hunter again. He was forced to eject from a Jaguar when he experienced a departure, the 'g' oscillating from +6.5 to - 1.75. He was invited by Brian Trubshaw to fly the Concorde on an intake test sortie and was impressed to be flying at Mach 1.35 - 1.5...with two engines at idle! Clive's last flight with 'A' Squadron was the first service release flight from Boscombe with the Tornado, having flown 'previews' at Munich and Warton.

Clive's last posting in the RAF was as C/O Handling Squadron responsible for establishing operating procedures and writing 'Pilot's Notes'. He did a Lockheed Tristar conversion with British Airways as a part of this job.

On leaving the RAF he joined Ferranti who were involved in developing a fleet AEW (airborne early warning) airship. A Westinghouse radar would be housed inside the envelope which contained the accommodation for the crew who would fly 30 day sorties before refuelling. It would have a 'glass cockpit', computerised flight management system and vectored thrust engine pods. Clive flew airships for seven years. More variety came with flying Charles Church's Spitfire, being part of the Primary Trainer Team with John Farley, as well as flying Venoms and Vampires, all on the airshow circuit. He has been a consultant with the ETPS, set up and run the 600 member ETPS Association and hopes to return to flying soon with a Swedish Hunter owner. and for DH Aviation with their Venoms and Vampire.

The talk over, Clive took questions from the floor before Harry Fraser-Mitchell, who was an aerodynamicist on the HP.115, gave the vote of thanks for this most interesting and entertaining talk on an amazing career.

SEA HAWK AND CYGNET MEMORIES

Roy Whitehead recalls events from nearly sixty years ago...

It was sometime during 1948 or '49 that a few of us from Richmond Road were roped in for a couple of days to help man the Abbey Test Rig at the Hawker factory at Langley. The bare airframe of a Sea Hawk was fitted in the rig to undergo structural testing. There were probably about twenty of us, each allocated to a capstan on top of the huge rig. The capstans were connected, by means of a mass of rods, links and spreaders, to the wings and fuselage, the latter being firmly anchored to the base of the rig.

We were told how many quarter turns of the capstans to make, and when. We were also informed that it wasn't we who were applying the loads to the airframe; oh no, we were just "taking up slack". Quite rightly none of us believed a word of that statement. On the last day and after some hours of gradually applying the load there was an almighty bang and the whole rig seemed to jump a few inches. This, we were told, was because part of the airframe had failed at, I think, 110% of the design failure load. This seemed to please the stressmen present, as it hadn't broken at a loading below their calculated limit, which was, of course, their 100%.

The next thing that sticks in my memory is that, as we looked down at the now crippled airframe below us, we could see no obvious damage. But what we could just see were the lower legs of the then head of the stress office, Henry 'Roche' Rochefort, as he almost disappeared into the port jet pipe fairing. He had gone in, head first, to look for damage inside.

I remember my boss, 'Jumbo' Betteridge, telling me that once when he had visited 'Roche' at his home they had gone into the workshop at the bottom of his garden which 'Roche' had designed and built himself. Typically for the keen stressman that he was, so 'Jumbo' told me, the design of the roof structure was very much over the top and it looked as though it would certainly resist anything that the weather might throw at it, including a tornado; and possibly an avalanche!

While at Langley for those few days I spotted the dismantled parts of a tiny light aircraft on top of an office in one of the hangars. It looked like a rather large model and not long afterwards the parts turned up in the Experimental Department at Richmond Road. The aircraft was one of Sydney Camm's first designs, the Hawker Cygnet (G-EBMB), a lightweight two-seat biplane, one of two built in the early 1920s. They had been entered in some competitions and won prizes but for some reason the twin had been scrapped soon after.

In the late 1940s and early '50s the Royal Aeronautical Society held a number of garden parties and the bosses, bigwigs, pilots of the many aircraft firms, and their guests, would gather for a day of jollification and flying displays. Someone at Hawkers must have thought up the idea of resurrecting G-EBMB so that it could at least be taxied around to the delight of all and sundry. As a result it was given the once-over, covered with new fabric and finished with clear dope. The engine, a two cylinder Bristol Cherub, was given a bench check and its aluminium cowling was buffed up to a high polish. I think the original Palmer tyres were just about usable for trundling round the peri-track and lawns - which it proceeded to do.

However, there was a problem; as the whole aircraft weighed only 373 lb. empty it was hardly surprising that it really did want to fly. Without a Certificate of Airworthiness this was not allowed but enthusiasm got the better of the powers that be who decided to repeat the restoration, using all the correct procedures, and then apply for a C of A. The restored Cygnet was issued, not with a C of A, but with a lesser Permit to Fly which restricted flying to the vicinity of an airfield. No cross-country flying was allowed but this was no problem because the wings had been designed for easy folding and the machine would fit comfortably on the back of a lorry.

In the 1980s I saw G-EBMB at Hendon in the RAF Museum's Sir Sydney Camm Memorial exhibit and in 2006 it was transferred to the Museum's RAF Cosford site. However, my story doesn't end there. In the late 1990s I went on a visit, with other members of the Salisbury U3A, to the Shuttleworth Collection at Old Warden airfield. Our coach pulled up for a moment outside the gates and it was then I noticed an unmistakable and very familiar shape and colour amongst the aircraft on the flight line. My first thought was that surely G-EBMB hadn't been brought out of retirement?

Soon I was able to make a closer inspection and discovered that this one was a perfect replica, built in 1966. I would hardly have been able to tell the two apart had I not noticed the registration; the letters G-CAMM were proudly blazoned on its sides and wings, in honour of its designer. Incidentally, while checking the details for this account I was intrigued to find that I share my birth date, apart from the year of course, with Sir Sydney; August 5th. And there, I hasten to add, any similarity ends.

INFORMATION REQUESTS

Hunter enthusiast and author David Griffin writes as follows..."I am seeking answers to questions regarding **Hawker construction serial numbers** applied to the Hunter. I am aware of the construction numbers for the nose, centre fuselage, rear fuselage and wings. I am sure that there were others too. I know that 41-H was Kingston, S4/- was Coventry and HABL- was Blackpool. The questions are: What construction number is used to identify the aircraft definitively; is it the centre fuselage construction number? Do records still exist of the allocation of these serials and if so where might they be accessed? Was there a distinction with the 41-H numbers to show which airframes were constructed at Langley rather than Kingston? Is there a list of Hunters produced at Langley up to its closure?" If any member can help please contact David at <RAFOHunter@aol.com> or <AP4347@aol.com> copying your reply to the Editor.

Researching for a book, Paul Martell-Mead would like to talk to anyone who worked on the **P.1103, 1121, 1125 or 1129**. Please contact Paul at <paul@overscan.co.uk> copying your reply to the Editor.

. If you don't have e-mail please write to the Editor who will pass on your information.

ROYAL AERONAUTICAL SOCIETY AWARD FOR COMMITTEE MEMBER

Harry Fraser-Mitchell, who moved to Kingston when Handley Page closed down, has been presented with the Society's Bronze Specialist Award for his long and distinguished service in the aeronautical industry, for work on aerospace history and for preserving aeronautical records. The citation is summarised as follows:

Mr Fraser-Mitchell was assistant chief aerodynamicist for Hawker Siddeley Kingston, responsible for the aerodynamic development of the Hawk. He made major contributions to the study of aerospace history as Deputy Chairman of the Society's Historical

Group until 2005 and through the Handley Page Association. He has lectured widely and played a key part in preserving Handley Page historical records including cataloguing drawings and documents at the Imperial War Museum.

The Hawker Association congratulates him.

HAWKER PEOPLE NEWS

Sadly we have to report the death of two Members. Bob Martin, Chief Estimator at Kingston, with a forty-seven year career at Kingston, died on Christmas Day after a long illness. Kit Milford, senior aerodynamicist and air intake specialist, died on 22 November 2007 at the Princess Alice Hospice. Our sympathy and condolences go out to their family and friends.

We welcome Gwen Duke, Eric Ellis, David Hassard, Lynda Lucas and Buffy Milford.

MEMBERSHIP LIST JANUARY 2008

A: Mike Adams (a), Ken Alexander, Peter Alexander, John Allen, Martin Alton, Terry Ansty, Alma Apted, Steve Apted, John Arthur, Alan Auld, Bryan Austin, Mike Azzopardi. **B:** Brenda Bainbridge, Colin Balchin, Ambrose Barber, Paul Barber, Ray Barber, Derek Barden, Peter Barker, Geoff Barratt, Graham Bass, Ken Batstone, Dennis Baxter, Colin Bedford, Anne Beer, Guy Black (A), John Blackmore, Keith Bolland, Paul Boon, Betty Bore, Steve Bott, Pat Bott, Bob Bounden, Alan Boyd, Pat Boyden, Phil Boyden, Roy Braybrook, Clive Brewer, Laurie Bridges, Ian Brine, Doug Britton, Arthur Brocklehurst (a), Peter Brown, Christopher Budgen, MP Budgen, Roy Budgen, Reg Burrell, Robin Burton, Ron Bryan, **C:** Richard Cannon, Maurice Carlile, Chris Carter, Bob Catterson, Ken Causer, Jeremy Cawthorne, John Chacksfield, Colin Chandler, Keith Chapman, Keith Chard, Gerry Clapp, JF Clarke, John Cockerill, Hank Cole (a), Bob Coles, Percy Collino, Brian Coombes, David Cooper, Paul Cope, Patricia Cosgrove, Ron 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Gates, Sandie Gear, Tim Gedge (A), Mark Gerrard, Tony Gibbs, John Gilbert, John Glasscock, Pat Goodheart, Eric Goose, John Gough, Andy Green, Barry Grimsey. **H:** Douglas Halloway, Liz Hargreaves, Simon Hargreaves, Bryan Harman, Dawn Harris, Guy Harris, Thelma Harris, Brian Harvie, David Hassard (A), David Hastie, Norman Hayler, Eric Hayward, Bob Head, Sheila Hemsley, Jock Heron (A), Tony Herring (a), Keith Hertenberg (a), Frederick Hewitt, Merlin Hibbs, Richard Hickey, Peter Hickman, Vince Higbee (a), Reg Hippolite, Keith Hobbs, Chris Hodson, Gordon Hodson, Derek Holden, Doc Holliday, Ralph Hooper, Linda Hopkins, Paul Hopkins, Mike Hoskins, Gerry Howard, Dawn Howes, Terry Howes, Simon Howison, Gordon Hudson, Gavin Hukin. **I:** Pete l'Anson, Len Illston, Maive Impey, David Ince (A), Brian Indge. **J:** Keith Jackman, John Janes, Gordon Jefferson, Harry Johnson, John Johnson, Brian Jones, Ian Jordan, Trevor Jordan, Robin Jowit, Alf Justin. **K:** Brian Kent, Dennis Ketcher, Bill King, 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