



THE HAWKER ASSOCIATION

NEWSLETTER NUMBER 18 - AUTUMN 2007

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EDITORIAL

Firstly a correction to NL.17 and an apology. Somehow I managed, between the Editorial and the AGM report, to promote Ambrose Barber from Chairman to President. A 'senior moment', perhaps; sorry.

I also made a pasting error. The last two paragraphs in 'An Unusual Occurrence at Upper Heyford' by Duncan Simpson should have been the last two paras. of 'Eric Rubython' by John Glasscock, to whom I offer my apologies.

Now that the nights are drawing in, why not write down some of your Hawker memories for the Newsletter. Don't worry if you think your literary skills aren't up to it; leave that to the Editor!

There are lots of outstanding subscriptions; see Membership List on last page. Please pay; it's a real pain **bolding** up your names on the list!

Finally, remember the Christmas Lunch on 12th December; always a very enjoyable occasion.

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PROGRAMME FOR 2007

Wednesday 10th October

"My Third Job in the Front Office" - **Chris Roberts**

Wednesday 14th November

"Fifty-three Years of Flying" - **Clive Rustin**

Wednesday 12th December

Christmas lunch. 12.30 for 1.00 pm.

PROGRAMME FOR 2008

Wednesday 9th January

Social gathering with annual quiz.

Wednesday 13th February

"The Future of Naval Aviation" - an RN Officer speaker.

Wednesday 12th March

"Flying Hawker Aircraft" - **Capt. Eric 'Winkle' Brown.**

Wednesday 9th April

Annual General Meeting and video.

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.

Clive Rustin is best known to Hawkers through his test flying work at RAE Bedford and the A&AEE. **'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!

The **Christmas Lunch** is again open to partners. Tickets at £15 will be available from Ken Batstone at meetings or on 01932 229938. Cheques payable to The Hawker Association, please

THE RAF HARRIER STORY

This excellent first hand account (see Newsletter No.12, Spring 2006) is still available from the Association. If you would like one, at £10 plus £1 post and packing, please call Barry Pegram on 01306 631125. Cheques payable to The Hawker Association, please

ASSOCIATION TIES

The handsome Association ties in red or blue with the Association logo diagonally across the blade cost just £7.50. You can buy them from **Harry Fraser-Mitchell** at meetings or by post (50p) from him at 16 Guernsey Drive, Fleet, Hampshire, GU51 2TG; cheques payable to The Hawker Association, please. Telephone him first on 01252 626996 to check availability.

HARRIER NEWS

Harriers in Afghanistan are providing even more effective close air support following the introduction of the BAES integrated Lockheed Martin Sniper pod targeting system which utilises laser, optical and infra-red sensors.

The MoD has awarded BAES a £34 million contract to provide supply chain support for Harrier GR9 avionics equipment until 2014. Known as the Harrier Component Support Package (HCSP), the contract supports seven major avionics equipments and the continued supply of more than 4,000 other components.

HAWK NEWS

BAES has been awarded a £74 million Hawk Integrated Operational Support (Hawk IOS) contract for maintenance and technical support for the RAF and RN Hawk fleet of more than 130 aircraft. The Hawk IOS will ensure that agreed levels of sorties can be carried out through to 2011 whilst reducing costs by £18 million. The three Hawk operating bases, RAF Valley, RAF Leeming and RNAS Culdrose will be directly supported by BAES personnel and its principal subcontractor, Babcock Defence Services. In addition a spares service will be provided to RAF Scampton for the Red Arrows and to MoD Boscombe Down.

A Memorandum of Understanding (MOU) has been signed by BAES and Hellenic Aerospace Industry (HAI) thus strengthening the position of Hawk in the competition for the Greek air force advanced jet trainer (AJT). The MOU would allow for the co-manufacture of Greek Hawk AJTs.

The United Arab Emirates (UAE) has short-listed the Hawk AJT in its quest to select a new fast jet trainer. BAES has proposed a buy of new AJT Hawks or a mixture of new Hawks with an upgrade of the UAE's existing fleet of Hawk Mk102s. An all new buy would be for about 50 aircraft. In December 2006 a successful demonstration and evaluation visit was made by a BAES team with an AJT Hawk.

By June seven Indian Air Force (IAF) Hawk AJTs had flown at Warton. They are the first of 24 to built at Brough. A further 42 will be built by Hindustan Aeronautics Ltd (HAL) in Bangalore. Three aircraft flying over 200 sorties will be used at Warton to train HAL test pilots and IAF QFIs. Maintenance technicians are also under training.

The 200th T-45 Goshawk has been handed over to the US Navy at St Louis. Goshawks are based at NAS Kingsville, Texas and NAS Meridian, Mississippi.

The final version of the F-18 radar simulator in the Royal Australian Air Force Hawk Mk127 was recently tested by BAES test pilot Nat Makepeace and RAAF officers at the Williamstown base.

The final batch of Hawks for the Royal Bahrain Air Force has been delivered. The Prince of Wales and the Duchess of Cornwall visited the Sheikh Issa Air Base where the Hawks were demonstrated and Prince Charles and the Crown Prince of Bahrain flew the Hawk simulator.

F-35 LIGHTNING II NEWS

The first Woodford/Samlesbury built fins for the STOVL Lightning II have been delivered to Lockheed Martin at Fort Worth.

A BAES team of engineers at Fort Worth is carrying out F-35 fuel system testing, analysis and reporting using the Lockheed Martin rig.

NEVILLE DUKE - AN APPRECIATION BY DAVID LOCKSPEISER

Neville Frederick Duke was born in Tonbridge, Kent, on 11 January 1922. He was educated at Judd School and being so close to the airfields of Kenley and Biggin Hill he very early developed a keen interest in flying. When after leaving school he became old enough, in June 1940 he joined the Royal Air Force. After completing his flying training at Ternhill he got his 'wings' and commission in February 1941, went on to an Operational Conversion Unit and was posted to No. 92 Squadron at Biggin Hill. The Wing Commander Flying was 'Sailor' Malan, the Squadron Commander Jamie Rankin. Other Fighter Command top scoring pilots on the squadron included Brian Kingcome, Tony Bartley, and 'Wimpy' Wade with whom he was to have a closer association later. During that spring and summer he learned a lot from them, survived the air battles over Northern France and gained invaluable experience, damaging three enemy aircraft and, on 25 June, claiming his first of two kills, all Messerschmitt Bf 109s.

In November Neville was posted to a very different theatre of operations; the Western Desert. He lived under canvas, with sand in everything, suffering flies, and poor sanitation and food, flying a very different aircraft, the Curtiss Tomahawk. This, he soon discovered, was inferior to the Bf 109 when fourteen of his squadron were lost and he was shot down twice. His score, however, started to rise when he shot down four and damaged others. The squadron then re-equipped with Kittyhawks. Neville, having established himself amongst the most successful pilots in the theatre with eight confirmed victories, was awarded his first DFC. He was then 'rested' for nine months as a fighter instructor in the Canal Zone before rejoining as a Flight Commander his old squadron, No.92, which had by then come out to the desert. At the end of his second tour he had shot down a total of nineteen enemy aircraft and was, in February 1943, awarded a bar to his DFC and an immediate DSO in March. After this intense period of fighting he was promoted to Squadron Leader and posted back to the Fighter School as the chief instructor.

In February 1944 he was posted to command No.145 Squadron in Italy, flying Spitfire MkVIII's, where he destroyed six more enemy fighters and was awarded a second bar to his DFC. On June 7, while on a strafing sortie, his aircraft was hit by ricochet or flak forcing him to return but an engine fire became too intense so he baled out, by chance over Lake Bracciano. His parachute jammed in the hood which he managed to get clear but, when in the water, one leg strap failed to release and he was nearly drowned when he was dragged along by his parachute. Eventually, having freed himself, he swam around for twenty minutes until two Italian boys paddled out and rescued him. Warmly welcomed by the peasant villagers he was found the following day by the advancing Americans and returned to his squadron where, on September 3, he shot down two Bf.109s, his final success. Neville was the highest scoring fighter pilot in the Mediterranean theatre where he shot down 26 aircraft plus three shared, three probables and six damaged, having flown 712 hours on 486 operational sorties.

In October 1944 Neville returned to England for the first time in three years; he was still only twenty-two years old. He held a permanent commission in the RAF but was at a bit of a loss as to what to do. He wanted a flying job and in January 1945 was seconded to Hawker Aircraft Ltd at Langley to help out as a production test pilot flying Tempests. Also seconded there was Frank Murphy who later joined Hawkers and became Chief Production Test Pilot. Whilst at Langley he met Gwen and they were later married near Windsor in March 1947. In January 1946 he attended No.4 Course at the Empire Test Pilots' School, then at Cranfield, which was interrupted by postings to the Meteor High Speed Flight at Tangmere, and to Farnborough, before completing the Course in March 1947. Neville then went to the A&AEE at Boscombe Down where he was involved in high speed and high Mach number research. Following an air display he gave in a Meteor at Prague he was awarded the Czech War Cross for his wartime service. In June 1948 he received the Air Force Cross for his work at Boscombe before leaving the RAF to continue test flying with Bill Humble's team at Hawkers. He did, however, maintain his link with the RAF by joining the Royal Auxiliary Air Force, flying at week-ends as CO of 615 Squadron at Biggin Hill whose Honorary Air Commodore was Winston Churchill.

Delivering Hawker Furies to Pakistan Neville established records from London to Rome, Cairo and Karachi. At Hawkers he was involved in the development of a series of jet fighters: the P.1040 (which became the N7/46 Sea Hawk), its swept wing derivative the P.1052, the all-swept P.1081 and the P.1067. Neville became Chief Test Pilot in April 1951, sadly following the death of 'Wimpy' Wade in the P.1081. The P.1067 was named Hunter and became synonymous with the name of Neville Duke. Well known to the many air forces that operated them, the Hunter was once colourfully described by an airshow commentator as "the most elegant gentleman's aerial gun

carriage." Neville was complimented by Winston Churchill for continuing with his Hunter display following the tragic accident of the de Havilland 110 at the 1952 SBAC flying display.

The next year, flying Hunter Mk.3 WB188, he regained for Britain the world speed record at 727 mph. This gave a great boost to national prestige but more significant from a fighter aircraft point of view was his breaking shortly afterwards of the 100 km closed circuit record at 709 mph which demonstrated agility as well as speed. Even more than a squadron commander in the air force a Chief Test Pilot, to have the respect of his pilots, has to be able to fly as well as, and preferably better than, any of them; that was unquestionably the case with Neville. He created a very happy team; the pilots all had the deepest respect for him and appreciated his dry sense of humour. There came a time when the Ministry was getting concerned about the number of greenhouse repair claims from people dotted along the south coast allegedly caused by sonic bangs so details of the date, time and place of all supersonic flights were requested. Neville had a book prepared and sent a note to all pilots asking them to enter their bangs (supersonic) in the 'bang book'.

Occasionally he would blur the line between the 'experimental' and 'production' pilots, getting everyone's opinion on a particular development. An example of this was the introduction of the extended wing leading edge intended to alleviate pitch-up when applying 'g' at altitude, creating for all a greater feeling of involvement. This was carried over to the social side of life with cricket matches and parties at 'Primeads', Nevill and Gwen's 16th century cottage on Dunsfold aerodrome, which Gwen had characteristically made really charming and where Jake, their amiable Alsation ambled around. An ex Boscombe Down test pilot, who retired as a very senior RAF officer, recently commenting on that period, said that the Hawker test pilot team was the "happiest and best to deal with"; an independent tribute to Neville's leadership.

Sailing was a hobby of Neville's and he dislocated a disc when lifting a battery out of his boat, his back suffering further when he made a forced landing in a Hunter at the unfortunately, but appropriately, named Thorny Island. For this he received a Queen's Commendation for valuable services in the air. Due to these back injuries he resigned from Hawkers in October 1956, and for his great contribution in pushing the boundaries of high speed flight he received the OBE.

Neville continued freelance flying. He formed Duke Aviation and became the personal pilot to Sir George Dowty, carried out flight testing, took jockeys to race meetings, performed consultancy work, wrote test reports for aeronautical journals, and more. In later years he owned several light aircraft in which he and Gwen were frequent visitors to airshows, rallies and aviation gatherings.

As a young RAF officer Neville was very sociable though always very modest but with failing hearing as he got older he became very shy and that is probably why he disliked cocktail party-type gatherings. He was, however, always ready to talk about aviation, particularly to the young whom he always encouraged. He gave great support to the Tangmere Military Aviation Museum of which he was Honorary President and where his record breaking Hunter is on display.

He received many national and international honours in addition to those for gallantry, being awarded the Royal Aero Club gold Medal, elected a Fellow of the Royal Aeronautical Society, made an Honorary Fellow of the Society of Experimental Test Pilots, and receiving the Air League Jeffery Quill Medal and the Award of Honour from the Guild of Air Pilots and Air Navigators for "his unique and incomparable record." His contribution to the nation in both war and peace made him a national hero to young and old; he was highly respected, unassuming and lived with unflagging enthusiasm for flying and aviation. His books included 'Sound Barrier', 'Test Pilot', 'The Crowded Sky' and 'The War Diaries of Neville Duke'. He flew throughout his life with over 12,000 hours in more than 250 aircraft types.

His flying was both highly skilful and determined and never were these qualities tested more than they were on his last flight on April 7, 2007, when he realised he was very ill indeed, thinking it to be a heart attack, but which was in fact a ruptured aortic aneurysm. He knew he had to, and did, get his wife safely back onto the ground, landing at Popham airfield. After landing he collapsed and was immediately taken to hospital but died several hours later. He was 85.

JOINT FORCE HARRIER OPERATIONS

Cdr Adrian Orchard, CO of 800 Naval Air Squadron based at Cottesmore, and pilot of the Royal Navy Historic Flight (RNHF) Sea Fury from Yeovilton, kindly found time on 11 July to drive south to Kingston to talk to the Association. Ambrose Barber introduced Adrian saying that he had joined the Royal Navy in 1986. By 1990 he was a Sea Harrier pilot flying from Ark Royal and with the Operational Evaluation Unit at the A&AEE, and became qualified as an Air Warfare Instructor. A Lt Cdr in 1999, he went to China Lake flying AV-8Bs and participating in the JSF programme. Back in the UK in 2002 he converted to the GR7 for the Joint Force Harrier (JFH) concept, attended Staff College in 2003 and was promoted to Commander becoming the CO of 800 NAS in 2006, serving in Kandahar, Afghanistan.

Adrian explained that although he would use Powerpoint there would be no words on the screen; unscripted, the talk would really be a slide show. He praised the Harrier concept and how the aircraft had been developed to the current GR9 which was still clearly based on the GRMk1. He believed that the GR9 was the most competent and capable air-ground aircraft that the UK has ever had; and the FA2 earned the same accolade in the air-air role. The JFH was part of the NATO rapid reaction force and would 'project power' deployed on carriers with twelve to fifteen aircraft per current ship. The two 65000 ton future carriers would take forty to fifty aircraft.

Today's threat to the carriers, which generally steam within fifty miles of the coast, is not from conventional warships but from innocent looking small vessels which could, for example, launch jet-ski mounted suicide bombers or other improvised means of attack, and from shore based threats. Hence the picture of a Steward with a gun and a Maintainer manning a Gattling gun on the look-out during a Suez Canal traverse. A picture of a Harrier engine being changed in the confines of the hangar deck brought forth a serious criticism; a GR7 engine change takes 36 hours vs 2.5 hours for an F-15. (Later Ralph Hooper explained that wing removal had been an expedient design feature on the P.1127 which was never expected to be more than an experimental machine, leading to new designs of production aircraft. The rest is history!). A picture of Indian Navy FRS51s illustrated 800 NAS's Middle East and Asian cruise with eight GR7As. It seems the Indian's vertical arrivals were rather abrupt and their launches marginal, or "scary", compared with the higher powered 7As. All very nostalgic for Adrian.

In Kandahar the job of the Harriers is to support the troops on the ground who are in small groups, always very close to the enemy with imminent death a constant threat. In contrast the air base, with its 12,000 people is well defended, now by the RAF Regiment, and relatively safe although subject to periodic attack by un-aimed 107 mm rockets. Around Kandahar the terrain is hot (55 dg C/120 deg F), high (3,300 ft asl) desert under clear blue skies with the Hindu Kush mountains in the distance and empty red desert to the south. Photos of towns showed how very difficult it is to identify accurately targets, where threats are lurking, as there are many similar looking compounds and streets. Harrier pilots use hand held gyro stabilised binoculars for spotting. The Harrier can carry a wide range of

ordnance ranging from none, where the noise of the fast and low aircraft is used to frighten, to the 1000 lb laser guided bomb (LGB) which now also incorporates GPS guidance, with rockets and low-yield weapons between. This range of weapons is an important factor as it is the aim not to kill people unless absolutely necessary. Essential real-time imaging is provided by the new Sniper pod using laser, optical and IR sensors.

The Harriers operate on the 'ground alert' system where the aircraft are held armed and fuelled, with their systems programmed, ready to go. The pilots are 'scrambled' by the traditional bell as well as by beepers and mobile 'phones, it taking about ten minutes from 'scramble' to target in response to an Army bid for top cover. This could be anything from convoy support to relief for a vehicle disabled by an improvised explosive device (IED). The situation could be urgent if the vehicle is burning, the smoke guiding more enemies to the scene. The job of the Harrier would be to clear the area around the vehicle of enemy forces while a rescue is mounted. Another task could be to look at 'the pattern of life'; to see if there are any deviations from the norm, in say a market place with very few stalls, which might indicate imminent enemy action. Familiarity with customary local behaviour is built up by experience.

Kandahar is a busy base with RAF Chinooks, Hercules transports, CIA anti-poppy Huey helicopters as well as the Harriers, protected by walls of containers. A 1.5 million ton high explosive store indicates a fairly long term commitment! A number of Predator unmanned air vehicles (UAVs) also operate from Kandahar, the USAF 'pilots' being in Las Vegas. A current shortcoming is tunnel vision leading to a lack of situational awareness of, for example, adjacent friendly aircraft. Adrian believes that this really represents the future for aerial warfare and that the JSF Lightning II may well be the last new manned fighter.

Turning to his second, perhaps favourite, mount Adrian showed some beautiful pictures of the RNHF Sea Fury recently repainted in authentic dark sea grey and sky replacing the Korean War livery which VR930 never wore. (see the September 'Aeroplane'). The RNHF now also has a two seat Sea Fury as well as a Sea Hawk. One remarkable photograph showed Adrian in the Sea Fury off Margate just after a seagull strike, the gull being broken into three parts. There was no shock and apart from blood all over the windscreen nothing appeared to be wrong. Adrian recovered to Manston, canopy open, looking round the side of the windscreen, where a large dent was found on the engine cowling. A quick fix with mallet and speed tape allowed return to Yeovilton. The tough Sea Fury shrugged off the bird strike whereas modern composite structures are not so forgiving.

Adrian flies his own light aircraft and has always been accompanied by his Springer Spaniel which likes to sleep on the back seat. Following the arrival of an Orchard baby he now, grudgingly, has to share the seat while Mrs Orchard sits in front. Baby and mother follow the Spaniel's example and fall asleep not long after take-off!

During question time Adrian regretted not having a gun on the GR9, the 25 mm Aden having been abandoned. His experience of the AV-8B GAU-12 gun showed it to be excellent. The RAF use rockets instead which have one advantage - visual impact; the enemy knows he's being fired at. Questioned on fuel supply he agreed that the logistics was a nightmare, the fuel coming in road tankers from Pakistan. As is the ancient Afghani custom, fuel is drawn off en route at various places as a kind of informal tax. The same 'rule' applies to all goods or livestock being transported. He noted that the Sea Harrier, at twenty five years, was the longest serving British naval aircraft and that the currently planned out-of-service date for the GR9 is 2018; that would be over thirty years from GR5 service entry. Adrian also had the highest praise for the Army who not only are under continuous threat but skilfully improvise and perform a wide range of tasks in helping to improve the life of the Afghan population. He would recommend that any business would do well to employ a young ex-army officer.

The vote of thanks for this outstanding talk was given by Mike Hoskins, well qualified for the task as he is both a retired Naval Officer and Harrier engineer.

ROYAL AIR FORCE MUSEUM VISIT

The annual outing this year, on September 20, was to the RAF Museum at Hendon. Some seventeen Members found their way there where Barry Pegram had arranged for guided tours of the Graham White Factory hangar, the Milestones of Flight display and the Department of Research and Information Services. The first houses an outstanding collection of World War I aircraft, either originals or true replicas, and engines. Sopwith types studied were a One-and-a-Half Strutter, a Triplane, a Pup and a Tabloid. In the second we saw a Camel, the ex-Dunsfold Hart, a Tempest V and a Harrier GRMk3 whose pilot was the first to report white flags over Stanley as the Argentines surrendered. Guides David Keen and Vernon Creek tailored the tour to suit Hawker interests and clearly enjoyed discussing detailed points with an enthusiastic party. We then moved on to the Dept. of Research where Senior Keeper Peter Elliott had laid out several interesting artefacts for our pleasure. Again, much enthusiasm was displayed in conversations with Peter. Perhaps the most fascinating was the little notebook used by Alcock and Brown to communicate in the noisy, open cockpit of the transatlantic Vimy. Also of great interest was the beautifully hand-written Sopwith Board Meeting Minutes book and a ledger listing Sopwith employees. A more modern item was a P.1129 brochure, Hawker's TSR.2 proposal. Afterwards members dispersed to view the rest of the exhibits which include a Typhoon, a Hart Trainer, a Tempest II and a Hurricane. The visit was undoubtedly a great success.

DAYDREAMS

Roy Whitehead has some flights of fancy. Like Roy, don't we all look skywards at the sound of a jet engine? Of course, but Roy gives his imagination full reign...

I should first explain that my career at Hawkers started in the Experimental Department at Canbury Park Road in Kingston. There, in 1947, a small group of us was involved in the firm's first primitive forays into what is now called flight test instrumentation (FTI) for our prototype and development aircraft. The Experimental Dept. moved to the Richmond Road factory at Ham in 1948. Eventually I became Chief Experimental Instrumentation Engineer, until in the late '70s the Design Department felt the need to take over responsibility for FTI and I joined Instrumentation and Electronics in a lesser capacity.

In 1989 I accepted the firm's offer of early retirement having worked for Hawkers and BAe for forty-two years, including my two years of RAF National Service. With my pension coupled with some voluntary redundancy pay I was able to move to Wiltshire and have lived happily in Wilton and Salisbury ever since.

Having been in the Salisbury area since late 1989 I have often been reminded of my days in the aircraft industry. After all, Boscombe Down is not far away to the northeast and Yeovilton only a few miles further away to the west. Over the years aircraft of the types I have been closely involved with, especially Hunters, Harriers and Hawks, have often passed overhead as reminders. At the sound of a jet engine I still turn my eyes to the sky.

There have been times in recent years when I've been outdoors minding my own business, sometimes with no other person within sight or sound, when I have had an uncanny impression that some of those aircraft up there know that I'm down here looking up at them!

For instance, in 1990 a Hunter, presumably loitering, waiting its turn to land, circled half a dozen times at about 2,000 ft overhead Wilton, just off the Boscombe Down runway approach path. Banking steeply in a very tight turn, the inner wing seemed to point, accusingly, straight at me all the while. I had the thought that the pilot was perhaps daydreaming and not quite in control, or else the Hunter knew I was down there. It is quite feasible that some of the instrumentation equipment fitted to that particular aircraft could date back to my time at Hawkers. Fanciful of course, but who knows?

In the early 2000s while walking across a car park in Yeovil, I experienced what I fancied to be a personal, close, low level, very tight formation flypast by four Sea Harriers, their engines strangely quiet. More recently, in 2006, a Hawk heading towards Boscombe Down and flying at only about 400 ft, without any obvious rhyme or reason, did a flick quarter roll to port, slicing the sky immediately overhead before quickly regaining level flight.

Then in March 2007 my wife, Pam, and I visited Michael's Wood, a Natural Burial Ground at Cholderton in north Wiltshire. We wanted to see if it might just be suitable for our last resting place. As we were having details of the large wooded area with clearings explained to us we came across the grave of a thirty year old woman who died in 2003. A small marker gave few details; she had been a helicopter pilot and keen cyclist but there were no details of how she came to die so very young. We were told that when her body was interred a military helicopter came up over the edge of the wood to as if to perform a low flypast in her honour. Cholderton is not all that far from the School of Army Flying at Middle Wallop, and much closer to Boscombe Down which is not as busy as in the past but is still in daily use.

While we were chatting to Vivienne who was showing us round we heard a high flying jet about half a mile away. We caught a glimpse through the trees of the very recognisable shape of one of the latest versions of the Harrier. I thought no more of it. Five minutes later it was back again, but this time much nearer and flying semi-jetborne, slowly, directly overhead. It was then I felt prompted to recount some of the 'daydreams' I had experienced. Vivienne reminded me that having noticed my tie with the Harrier motifs she had asked if I had worked at Boscombe Down. Then in her next sentence she used the word "uncanny". Another five minutes went by and there was a repeat performance. Could we now construe this as a confirmation that this is the place, for me at least? Pam says she would consider it too. All in good time we shall see.

Checking on the OS map No.184 I found that Michael's Wood (map reference 220430) is under the flight path to the main runway at Boscombe, just three miles from the threshold. Hardly surprising, then, that the Harrier was flying low and slow. As the A303 is only about 200 yards to the north there is also some traffic noise as, well as the occasional aircraft noise; but who cares? It's just a reminder that life goes reassuringly on, as it always has - for us, so far!

All right, so maybe I do have 'daydreams'. I have enjoyed my contacts with aircraft before, during and after my working life. I feel very privileged to have been involved; they have been happy days and I wouldn't have missed any of them for the world.

FROM EDO TO PROJECT OFFICE - Part 2

Ken Causer continues to recount the story of his early career with Hawkers...

Initially there was no drawing work for me to do in the Project Office so I was set to learn the current method for estimating the component drag properties of an aircraft. This I did under the friendly guidance of Ron Williams who set me the task of calculating the expected climb performance of his own pet project; Project X. This was in the early days of space exploration which was being vigorously conducted by the USA and Russia at great expense using large disposable rocket devices. In our comparatively impoverished state the UK was totally left out of the race, but Ron thought that a much cheaper method could be devised utilising a reusable first stage launcher. His idea was to use four DH Gyron Junior jet engines mounted around the sides of a large fuel tank supporting the final, much lighter, stage(s) of a rocket propelled pod. Upon separation the now empty first stage would parachute safely to earth to be reused.

It must have been at this time that Jim Berryman had to return to the drawing office and I was drafted in to fill his position helping John Fozard produce detailed drawings for a one sixth scale wind tunnel model of the P.1121. This was a very interesting job which led, amongst other things, to my association with George Woods who ran the Lofting Department, at that time situated across the river at Shellmex's Lensbury Club premises. Then began a flurry of interest in producing a comprehensive report on the expected stability and control properties of the huge new all-weather, all-purpose supersonic P.1121 fighter, so now I was given the job of assisting our stability and control man, Robin Balmer.

I soon discovered that the Project Office appeared to be to be very relaxed if work was not pressingly urgent, to the extent that we were allowed, and probably expected, to spend some time reading technical magazines and other documents not necessarily directly related to our current job, and this led, later on, to an unexpected development.

When we had completed the P.1121 stability and control work I was given the very interesting job of using a new analogue computer, made by Avro, to examine stability and control problems relating to hovering flight and Ralph Hooper's P.1127 VTOL project. The Avro computer, superficially in the shape of an upright piano, had been set up in the Project Office. I don't remember there being any keys but beneath where they would have been was a recorder with two moving 'pens' to trace the dynamic responses of a body to applied forces. The machine also had a green cathode ray tube, rather like an early TV, which was positioned at the centre of the upright part of the 'piano'. The screen displayed two spots of light which tracked steadily from left to right, rising and falling in unison with the recorder pens and leaving behind a momentary trace. With the aid of these it soon became apparent that in hovering flight the P.1127 was catastrophically unstable. Two knobs were provided for the 'pilot's' elevator and rudder control inputs and in an attempt to gain some control over the response to these I fastened a strip of cardboard to the knobs in the hope that it would be possible to counteract manually the divergent paths of the spots of light. In spite of much practice it was still not possible.

This was when, having tired of attempting to stabilise the hover, I took the opportunity to examine the Bristol Engines brochure covering their new jet engine, the BE 53. In a cut-away drawing of the engine could be seen a twin spool system and two pairs of exhaust nozzles for the separate cold and hot gas flows. I had not long before been told that this new engine had been based on an older 'normal' jet engine with a new low pressure compressor in front, and as I had just discovered that the instability of the P.1127 was directly the result of the engine's gyroscopic properties, the thought occurred to me that, perhaps, if Bristols had not begun to make the engine, it would be possible to 'opposite-hand' the new low pressure front end. I asked Robin if he knew whether Bristols had begun to 'cut metal' on the new engine and when I explained the reason behind my question he went straight to Bob Marsh, Head of the Project Office, who

immediately wrote to Bristols. In about a week's time the answer came back that it was indeed possible and that it would reduce the gyro couple to one quarter of its original level.

Very soon after this I left Hawkers and went to work for De Havillands in Canada where I stayed for four years working mainly on performance flight test analysis, evaluation and subsequent presentation in flight operating manuals. It was only after I returned to England and Hawkers that I discovered that the first tethered flight of the P.1127 had been made. In the Project Office, now situated in the refurbished factory at Ham, there was a small profile model of the P.1127, mounted on gimbals and carrying two flywheels mounted roughly where the engine would be on the real aircraft and these were driven by two electric motors that could be selected to run in the same or opposite sense. The model had been used, I was told, in several presentations to the Air Ministry and others in which the model's stability or lack of it could be demonstrated by just touching the model's wing tip. Whether my remarks to Robin four years earlier had played a part in developments I have no idea and am now sure I shall never know.

Editor's Note. In Newsletter No.6 Roy Whitehead gave more details of the origin of the P.1127 gyroscopic precession model mentioned by Ken.

FLIGHT TESTING THE EARLY JETS

Bobby Marsh wrote this article, from the Brooklands Museum archive, about his pioneering work at the A&AEE, Boscombe Down...

The function of the Aeroplane and Armament Experimental Establishment is to flight test military aircraft and their armament systems in order to approve them for use by the Services after the contractor has carried out his own development testing. The flight tests at the A&AEE include the functioning of the complete weapon system and the measurement of the aircraft's performance in its various configurations.

Prior to World War II, when based at RAF Martlesham Heath on the east coast and before they moved to Boscombe Down on Salisbury Plain, the unit was particularly involved in the comparative assessment of prototype aircraft submitted by contractors in response to Government specifications. Production orders were greatly influenced by the results of these trials hence a lot was at stake for the contractors. For example, if contractor A's aircraft was a few knots faster than contractor B's as measured by the A&AEE this could have a profound influence on who won the contract.

The performance flight tests were inevitably carried out in varying atmospheric conditions which had a marked effect on the observed results. Accordingly there was an agreed method of reducing the flight results to those achievable in an internationally recognised standard atmosphere. This universally accepted reduction method was based on laws peculiar to the internal combustion piston engine and was not appropriate to the turbo-jet engine. Consequently the advent of the prototype De Havilland Vampire and Gloster Meteor for evaluation at Boscombe called for the development of new methods of performance reduction and test techniques. This work was initiated by the small, select Research Section at Boscombe under Dr Cameron, in consultation with the 'boffins' at the Royal Aircraft Establishment at Farnborough.

To support some of the theory, flight measurements were required involving more parameters than those normally displayed to the pilot. In those days the flight instrument readings were recorded by the pilots and/or flight test observers by hand on a knee pad or a clip board. There was a need to carry a flight observer to obtain the required data so it was decided to modify the Meteor 1 prototype, EE212, at Boscombe using the space behind the cockpit designated for the ammunition for the four 20 mm cannon. This space was provided with an illuminated instrument panel, featuring mainly engine parameters, and a seat for the observer.

Having been involved with the flight test evaluation of the first jets at Boscombe, and being small in stature, I was elected to make the first flight in the observer's compartment. I recollect that entry was through the ammunition hatch in the fuselage centre section. The compartment was cramped and dark with only the light from the panel of instruments. The flight took place on August 9th 1945. The pilot was Squadron Leader KJ Sewell AFC DFM, known by us as Pop Sewell. (Pop Sewell played a leading role as an instructor in the early days of the Empire Teat Pilots' School at Boscombe and sadly lost his life flying a Pembroke aircraft at the School). Pop seemed to relish giving the 'civvy boffins' a robust ride on occasions, and this was no exception. The flight lasted half an hour and involved some fairly enthusiastic aerobatics. I recall blacking out under 'g' and for the first time in my four years flight testing at Boscombe I felt very air sick. I was extricated after the flight and I think Pop was a bit surprised to learn that the compartment was still 'clean'!

Having been involved in the flight testing of the first jets to arrive at Boscombe, I was privileged to be the 'boffin' on tropical trials which took place in November 1945 (probably as a treat after my flight in the Meteor!). We travelled out in the Boscombe converted Liberator bomber stopping off at Tripoli and Cairo. The accommodation in the Liberator was pretty 'Spartan', with flight durations of up to nine hours on a flask of coffee and the odd sandwich. On the return we had stocked up with loads of dates and tangerines picked off the trees which, combined with the North African chemical beer, completely overwhelmed the 'Elsan' by the rear access door. The HM Customs officer summoned to clear us at Boscombe thought better about inspecting the contents of our aircraft before we disembarked, so we unloaded our various 'souvenirs', including my live desert lizards, unhindered. It was a fitting end to an enjoyable and successful exercise with technical significance.

BURMESE SEA FURY INCIDENTS

David Lockspeiser writes that he and John Gale set off in September 1959 to visit the Hunter users of the Middle East and India, starting in Jordan...

The Jordanians were very sharp under the excellent leadership of Erik Bennet, an RAF exchange Squadron Leader. Flying in low level battle formation with them over the Dead Sea I saw minus 1100ft on my altimeter; unusual. The Lebanese didn't benefit from the same quality of RAF representation so were short on operating procedures as well as spares; there was more of a flying club atmosphere. I had been to Iraq the previous year to give an armament demonstration to King Fiesal. He was assassinated only a few weeks later - only eighteen, poor chap - when Khasim led a cruel Communist revolution; so we weren't going there. It wasn't until after another revolution in May 1963 that Alf Black (a great chap; does anyone know if he is still around?) and I went back in G-APUX and stayed to do conversion training.

We next visited our last port of call, we thought; John with the engineers and I with the pilots at Ambala and Poona, India. They had some problems but they were mostly interested in having spinning demo's. I remember staying in a hotel on Bombay which had a

large wrought iron arch above the entrance with a notice stating: "Dogs and South Africans Not Admitted." Also they had an alcohol ban (of all places to have one!). When I went to the bar before dinner, staffed by a barman and an armed policeman, I was told I could only have a drink if I got a permit from the police station stating that I was an alcoholic. So I accepted the challenge and eventually got a drink. The sad thing is I've lost this magnificent document; green and about half as large again as A4. It was while in India that we got the message from Stranks and JTL (John Lidbury) of problems with the Burmese Sea Furys. We managed to get a flight and bummed a ride on a BOAC crew bus to Palam airport, arriving at Rangoon some hours later. It was October 20th 1959.

The Burmese Air Force had grounded their Sea Furys after suffering a number of fatalities without any clue as to the cause of these seemingly mysterious accidents. Hawkers, I think, had an agent there but it was the Air Attache, Grp Capt Teddy Pippet, who gave us a full briefing and provided an enormous amount of help and hospitality over the whole period. He took us to see Clift, the CAS, and a senior staff officer, Saw Pru, who gave us carte blanche to do whatever was necessary to get the Furys airborne again. As it happened I knew Saw Pru as we had both been on the same RAF course at Leconfield in 1952.

We were driven out to the Air Force base at Hmawbi, discussed the accidents with the Squadron Commander, looked at the remains of a Fury, and got an engineer to translate the court of enquiry report on UB469. The accidents all had one thing in common; none of the pilots uttered a sound, let alone a word, and it seemed most likely that they were either dead or unconscious before the aircraft hit the ground. Most crashed in paddy fields and we were taken by Piaseki helicopter to UB464's crash site where there was no evidence at all, except from the large and vocal local farming community who pointed to an area of the paddy and said it was "down there." Two villagers said there was a bang, black smoke and a small fire; some said it was smoking when it crashed.

My diary note records, "I think it possible that petrol fumes from a loose pipe or filter started a fire - fumes and smoke entered the cockpit causing unconsciousness of pilot." Bristols had an engine rep. out there and we worked together on that assumption. On the fourth day John received a message to return to India as soon as he was able, to help with investigating a recent fatal Hunter accident there.

It seemed most likely that the cause of these Fury accidents was from carbon monoxide poisoning, and further evidence for that theory was the very poor state of servicing; oil and hydraulic leaks, missing panel fasteners and poor safety (not really an appropriate word) equipment. From the cockpit air intake in the starboard wing root, air passed an oil union which, if loose, could add to the problem. They did not use oxygen (didn't fly high enough - unquote) and some oxygen masks were attached with a safety pin. The senior engineering officer, a nice fellow, had a supernumerary job as messing officer, a task which he carried out with great diligence at the local meat and vegetable markets.

The pilots were clearly apprehensive about the thought of getting into the air again, augmented by another cause that I learned about with a certain amount of dismay. The pilots had consulted a Phongyi (soothsayer) who put the fear of hell into them by saying the accidents were caused by the ghosts of dead pilots. Some pilots showed interest in their aircraft, but little by most and least of all by the Squadron Commander who seemed to spend most of his time playing Mahjong.

The plan of action was to get the aircraft comprehensively serviced, not once, but twice using separate teams. The oxygen system was to be made operational and all other safety equipment carefully inspected. Rangoon University was contacted to get some evacuated flasks with which to take samples of cockpit air. This worked well and three enthusiastic, learned gents, with a PhD and MSc, from the chemistry department, arrived. It took them a bit longer than I had hoped so, before they returned, I did some flying on UB456 after the servicing programme had been carried out. When they did it was not only with evacuated flasks but also with crystals and CO sensitive paper with which I could decorate the cockpit. UB456 was the aircraft picked for the job, and also 454 when the professors who had really entered into the spirit of things, turned up again some days later, with even more evacuated flasks.

There was no change of colour on the paper or in the crystals and the results from the University of these tests which, with drop tanks fitted, consisted of a sightseeing tour of southern Burma, Rangoon, the Gulf of Martaban up country, and around the bay of Bengal, were that there was a very small amount of CO present, not dangerous, and the content did not vary between samples taken at the beginning, the middle or the end of the flight.

On the 26th I visited the War Office and persuaded them to lift the flying ban on four single- and one two-seater, which had all been fully serviced and which I had flown and cleared. As I feared this was not met with much enthusiasm at the squadron, to whom I gave a lecture, air and ground crew, explaining the cause of the accidents, stressing the importance of following procedures, both technical and operational, and trying to inject some confidence. I felt sorry for these lads who mostly came from a rural background and had only flown piston Provosts, as I recall, and had not had the benefit which we all have of being brought up with things mechanical, so, not surprisingly, they could be easily intimidated by an aircraft with the potency of the Fury. Earlier I had offered to fly the youngest pilot, who had ten hours on the Fury, in a T.20, but he was not keen. I'm sure he would have been had the leadership he experienced been different.

The Air Staff had, of course, been kept aware of all that was going on, and I submitted a report of recommendations which Teddy Pippet had typed for me, and which they said they would action. They did fly their Furys again and had a section of four airborne over Rangoon, but not all that long after they swapped fixed for rotary wings.

BOOK REVIEWS

The fourth 'British Secret Projects' book has just been published by Ian Allan (£24.99). By Chris Gibson this fascinating book covers 'Hypersonics, Ramjets and Missiles' and in its 192 well illustrated pages will be found details and GAs of many lesser known Kingston projects as well as a host of new historical information.

'Harrier II; Validating V/STOL', (£19.99) by Lon Nordeen and published by the Naval Institute Press, covers the complete history of the aircraft, not just technically, but also politically, thus elucidating the tortuous route by which the Marines, and the RAF, eventually got their advanced Harrier. Accuracy was enhanced by assistance to Lon from several Association Members who had been involved with the project.

Both books are available from Midland Counties Publications on 01455 254450.

NEWS OF MEMBERS

Sadly we record the death of Cora Stanbury earlier this year, Jim Griffin and Ralph Kuhn.

We welcome new Members Paul Barber, Charles Davis, Barry Elliot, Norman Hayler, Graham Roe and Chris Russell.

HAWKER ASSOCIATION MEMBERS - SEPTEMBER 2007

If you still owe 2007 subscriptions.

Please send your £5 cheques to Barry Pegram at 12 Becket Wood, Newdigate, Surrey, RH12 5AQ.

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COMMITTEE NEWS

Our Treasurer, Mike Hoskins, will be retiring from his post for personal reasons so we are looking for someone to work alongside him for a few months with a view to taking over some time next year. Mike will tell you that this is not an onerous task and brings with it the pleasure of attending our, most enjoyable, committee meetings at 11.00 am on the mornings of the Association meetings. Any Committee Member will tell you how much fun it is to take part in Committee business. Please give Mike a call on 01932 862933 to chat about the job.