# THE HAWKER ASSOCIATION

**NEWSLETTER NUMBER 20 - SPRING 2008** Published by The Hawker Association for the Members.

**Website:www.hawkerassociation.org.uk**

**EDITORIAL**

At the AGM the future of the Association was addressed by Members. The general feeling was that it's a very special Association and we should be careful not to dilute the Hawker-people aspect, but also must not let it die. The Committee will give a lot of thought to the conundrum but, meanwhile, do as our President said: all of us must seek out new potential members from old colleagues who have not yet joined. Working Members could also make the Association better known at BAES, Farnborough. If we all spread the word we will succeed.

My thanks to those who contributed to this Newsletter and to those who let me know that they enjoy each edition of the Newsletter. So, please continue to send me your memories of 'Hawkers'. It doesn't matter how rough your piece is; it's my job to sort it out. So please, get out your 'Biros' or settle at your keyboards then send them in.

**Write to**: The Editor, Chris Farara, at 24 Guildown Road, Guildford, Surrey, GU2 4EN.

Tel. 01483 825955; e-mail <cjfarara@ntlworld.com>

**PROGRAMME FOR 2008**

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| 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 - contact Ken Batstone for details: 01932 229938. |
| Wednesday 9th July | tbd |
| Wednesday 13th August | Social gathering with video. |
| Wednesday 10th September | Social if visit arranged for later in month. |
| Wednesday 8th October | "Airships - The Story of Lighter-than-Air Flight". **Brian Hussey**. |
| Wednesday 12th November | "Restoring and Operating Hawker Biplanes". **Guy Black** |
| 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. Among other things **George Black** was Field Commander for RAF Germany during Harrier I days, **Brian Hussey** is an airship enthusiast and **Guy Black** is the founder of the Historic Aircraft Collection (see NL.16, 'Restoring Hawker Biplanes').

**DUNSFOLD AND BROOKLANDS EVENTS**

Brooklands will celebrate the centenary of British Aviation - AV Roe flew his Roe 1 biplane at Brooklands in June 1908 - on Saturday 7 June with a display including the Vimy 'replica' flying, a new Roe 1 'replica' taxying and Museum aircraft ground running, as well as an exhibition of Roe artefacts, machines and a Triplane 'replica'. The Brooklands Aero-Auto Jumble is on Sunday 20 July and the annual 'Wings and Wheels' flying and motoring display will be at Dunsfold on Sunday 24 August. For more information go to www.brooklandsmuseum.com or telephone 01932 857381.

**MUSEUM FOR DUNSFOLD**

Jim McAllister, owner of Dunsfold Park, is submitting a planning application for the construction of a museum recognising the site's history. It is intended that the museum should house one of each of the aircraft that were constructed and flown from Dunsfold Aerodrome, a B-25 as flown by the Dutch from Dunsfold in WW 2, as well as other historical memorabilia. Mr McAllister has already acquired a Sea Harrier.

**V/STOL AWARD FOR RALPH HOOPER**

The American Institute of Aeronautics and Astronautics V/STOL Committee has selected Ralph Hooper to receive their prestigious FE Newbold award "For the conception and leadership of the design and development of the Hawker P.1127 and Harrier family of fixed-wing jet V/STOL combat aircraft.", to quote the citation.

Ralph was nominated by Peter Curtis (BAES) with official support from Michael Pryce, Mike Hirschberg, Phillip Payne (BAES) and Mike Turner, and unofficial help in writing the nomination from your Editor. The award will be presented at the International Powered Lift Conference dinner at the RAF Museum in July. Peter Curtis is chairman of the Conference Technical Committee and will be master of ceremonies throughout the conference.

The Association congratulates Ralph on his selection for this honour which, incidentally, was also given to Gordon Lewis, so now both aircraft and engine designers have been recognised.

**HONORARY DOCTORATE FOR JOHN FARLEY**

Congratulations to John Farley who has been awarded an Honorary Doctorate of Engineering by Kingston University. The Degree was conferred on John by the Vice-Chancellor, Professor Peter Scott, at a ceremony at the Barbican Centre on 31 January. John's earlier career will be familiar to Members. However, since retiring from test flying in 1999 (he flew 80 different types and was the first western test pilot to fly the Mig-29), he has participated at Lockheed Martin in the Joint Strike Fighter programme and runs the Schools Aerospace Challenge and the International Aerospace Summer School, both of which aim to motivate young people to take up careers in aeronautics and aviation.

**AIAA HONOURS DUNSFOLD**

Dunsfold Aerodrome has been selected as one of the 2008 Historic Aerospace Sites by the American Institute of Aeronautics and Astronautics Historic Aerospace Sites Committee (HASC) for its role in the development of the P.1127 and Harrier. It is intended in due course to mark the site with a bronze plaque. This recognition, announced by the HASC Chairman, Anthony M Springer, in February, has been achieved largely by the efforts of Hawker Association Member Michael Price and VSTOL historian Mike Hirschberg.

**JOHN DALE**

It is with great sadness that we record the death of John Dale in March at the age of 93. Appointed Bristol Engine's BS53 Development Engineer before the prototype engine was run in 1959 he was responsible for the development of the engine until his retirement as Chief Engineer Pegasus at Rolls-Royce. Under his guidance the thrust of the engine doubled with little change in size or weight. At the same time its life increased substantially. The success of the Harrier owes a great deal to the work of this outstanding engineer.

**EGGHEADS**

In March the Kingston Aviation Heritage Project team auditioned for the well-know television quiz "Eggheads" in which teams compete with a resident panel of experts. It is broadcast on BBC2 on weekday evenings at 6.00 pm. The team, originally five KAHP Trustees and one Hawker Association Member, is now made up from three of each: John Gough, Trevor Jordan and Les Palmer - Trustees; and Ken Batstone, David Cooper and Martin Pennell - Members. The audition consisted of a mock competition between the KAHP team and three other teams followed by individual televised team interviews about the team and its members. Should the team be selected to appear the main objective will be to give publicity to the Heritage Project. Progress will be covered in the Newsletter and on our Website.

**SEA HARRIER NEWS**

Sea Harrier FA2 XZ457, following a three-year restoration at the Boscombe Down Aviation Collection, has been transferred to Yeovilton for static display. First flying in December 1979 FRSMk1 XZ457 served with 800 Squadron in HMS Hermes and was the top scoring 'Shar' in the Falklands campaign, Lt CRW Morrell shooting down two A-4Qs and Lt Cdr AD Auld two Daggers. It was converted to FA2 standard in 1993 but caught fire in October 1995.

Sea Harrier FA2, ZA195, the first development aircraft, previously on display at the Farnborough Air Sciences Trust, has been moved to the Tangmere Military Aviation Museum. First flying as an FRSMk1 in September 1982 it served with 899 Squadron before returning to Dunsfold for conversion.

The Indian Navy is buying four surplus Sea Harrier airframes to use as spares sources.

**HAWK NEWS**

On 28 January the first Hawk to fly out from Brough's recommissioned runway was Company Demonstrator ZJ951 which had been at Brough for a systems upgrade bringing it up to a standard similar to the new generation RAF Hawk Mk128s. The following week Indian Hawk Mk132 HT022 became the first Brough built Hawk to fly from the site.

The first five Indian Air Force Hawk Mk132 aircraft entered service at Bidar AFS on 23 February. Training operations are to start in July. It is reported that India plans to order an additional 40 aircraft bringing their total buy to 106.

**JOINT STRIKE FIGHTER NEWS**

The first F-35B Lightning II STOVL aircraft, designated BF-1, was rolled out in December and moved from the Lockheed Martin assembly line at Fort Worth to the Flight Line for ground testing. The roll-out ceremony was attended by representatives from the RN, RAF, the USMC and the Italian Air Force and Navy. USMC Commandant, General James Conway, made a suitably stirring speech saying, "This generational leap in technology will enable us to operate a fleet of fighter/attack aircraft from the decks of ships, existing runways, or from unimproved surfaces at austere bases." Just like the Harrier, then.

First flight of the STOVL F-35B is likely to be delayed, according to BAE Systems "until later this year", while Pratt & Whitney investigate the cause of a recent turbine blade failure which occurred during ground running of the F-119 engine. This was the second turbine blade failure experienced by the engine. At the roll-out ceremony it was announced that when BF-1 does make its maiden flight ex-Dunsfold Chief Test Pilot Graham 'GT' Tomlinson will be at the controls after working with the Lockheed Martin team for several years.

**THE FIFTH ANNUAL GENERAL MEETING**

The Meeting was opened by the Chairman, Ambrose barber, as follows:

CHAIRMAN'S REPORT TO THE ANNUAL GENERAL MEETING

Welcome to you all and thank you for turning out in support of our fifth AGM and providing the potential votes essential to our election process this year.

Barry Pegram, our diligent honorary secretary, will touch upon some of the events of the last year but I think it fair to say that we've been able to pursue the Association's aims to most people's satisfaction. Membership numbers have remained healthy with a cheerful and active minority attending our monthly meetings which are, in effect, monthly reunions. At these we've managed to maintain a gratifyingly high standard of speaker. These continue to be reported in the excellent Newsletter which Chris Farara edits for us. His reports, your anecdotes, and occasional tributes to the life and work of passing colleagues, make valuable additions to our source of Hawker history for posterity.

But is this how the Association is going to end? It is not too soon to ask the question! You will have read in your latest Newsletter, No.19, that your Committee has felt that other alternatives could be envisaged. At the close of the AGM there is an opportunity for informal discussion when we would welcome your views on the Association's future.

For the moment it is right that we should record our appreciation of all those, particularly on the Committee, who have brought the Association thus far, through their varied contributions. In particular I would like to mention Percy Collino who is standing down after his move South. We shall miss you on the Committee, Percy! Thanks for all you've done, and to everyone else for their support.

SUMMARIES OF OTHER REPORTS

Barry Pegram, the Secretary noted that there had been some growth in the numbers of Members, especially amongst the ladies. He summarised the last year's meetings and noted that 'Winkle' Brown attracted the largest audience, 67. The visit to Hendon had been a particular success and Members had been given access to many precious artefacts. Also well supported had been the Summer Barbecue and Christmas Lunch.

Mike Hoskins, the Treasurer, pointed out that our finances were sound with more in the bank at the end of year than at the beginning, in spite of paying towards the Camm bust at the RAF Club, although sculptor Ambrose's generosity in doing the job at cost had helped. He also gave credit to Jan White and Ken Batstone whose door raffles raised £791, offsetting the room hire charge. Mike stated that this was his final performance as Treasurer and that Martin Pennell would, if elected, take over the office. The accounts were approved.

ELECTIONS

In the absence of other nominations the Chairman and all the Committee Members were re-elected except Percy Collino and Mike Hoskins who were retiring. Martin Pennell was elected Treasurer.

DISCUSSION

On the subject of visits Ambrose said that a September visit, with lunch, to the RAF Club in Piccadilly to see the Camm bust was proposed at about £20 per head. A show of hands indicated sufficient support for arrangements to be made.

Suggestions from the floor for visits included RAF Fighter Command HQ at Uxbridge, the RAF Museum at Cosford (although an overnight stop would probably be necessary) and Brooklands Museum on 7 June for the Centenary of British Aviation event.

With regard to the future of the Association there were some suggestions as to how to widen the membership. These include contacting Aircrew Associations for pilots of 'Hawker' types, contacting retirees via the BAES Pensions organisation (in hand), advertising in enthusiasts magazines, at the Brooklands Museum and at 'Wings & Wheels', by opening the Association BAe-wide and by recruiting current employees. The latter would require evening meetings not favoured by some retirees. It was said that the Association seemed unsure whether it was a club for pensioners or an aircraft society. It was pointed out that the subject of pensions is never addressed; this is covered by other groups and that the Association is a social organisation for those who worked at 'Hawkers'. The President, John Glasscock, said that the Hawker Association must not fade away. Perhaps it could unify with other groups and cast the net wider for members. (If BAES was to be involved in recruiting we needed to act before Mike Turner retires.) However, there is no crisis; member numbers are holding up well but **we should all fish around for new members; keep at it!** It was agreed that the Committee would seriously consider the future and should any changes to the Constitution be required report back to the Members at the next AGM.

After the AGM videos on the Mosquito and the Confederate Air Force were shown.

**THE FUTURE OF NAVAL AVIATION**

Commodore J H Stanford, BA, FRAeS, RN, Assistant Chief of Staff Carrier Strike and Aviation & Commodore Fleet Air Arm, came to Kingston on 13 February to talk about the future of aviation in the Royal Navy. Introduced by our Chairman, Ambrose told us that Jerry had joined the Royal Navy in 1977 who sponsored him through an honours degree in English and American Literature at Warwick University. From 1981 he served in HMS Hermes, gained his wings in 1985 and completed a number of shipborne tours flying Lynx helicopters. He held several commands including the Type 23 Frigate HMS Westminster on deployment to Sierra Leone, was promoted Captain in 2001 and was appointed Deputy Director (Operations) in the Defence Intelligence Staff. He commanded the brand new HMS Bulwark taking her from builder's yard to operational status. In 2006 he took command of RNAS Culdrose flying Merlin, Sea King, Jetstream and Hawk, was promoted Commodore and took up his present appointment. After the introduction Jerry started what he described as an informal 'Powerpoint' slide show with commentary.

He opened this entertaining and informative talk with a historical section introduced by a picture of the RN Historic Flight Sea Fury, currently grounded with an unserviceable Centaurus for which a replacement is being sought. The RNHF also has a two-seater on lease.

The beginning of British naval aviation, said Jerry, was almost a century ago in 1909 when a contract was placed for an airship. In World War I the Royal Naval Air Service (RNAS) operated independently until the Royal Air Force was formed by amalgamating the Army's Royal Flying Corps with the RNAS... on the auspicious date of 1 April 1918. Subsequently naval aviation remained in RAF hands until 1924 when the Fleet Air Arm (FAA) of the RAF was formed in which 70% of pilots were RN officers. In 1937 approval was given for the Admiralty to take over the administrative and operational control of all naval flying, the FAA, except Coastal Command; this was achieved on 28 May 1939.

The FAA's primary role in World War II was 'strike' as exemplified by the Swordfish of HMS Illustrious attacking Taranto harbour in 1940 and crippling the Italian fleet. This example was followed a year later by the Japanese at Pearl Harbour. To strike from the sea remained the primary role in Korea with Sea Furies, at Suez with Sea Hawks and in the 1960s and 70s with Buccaneers and Phantoms operating from Ark Royal. This, the Navy's last carrier, was decommissioned in 1978 together with her fixed wing aircraft which were handed over to the RAF. During the 'Cold War' the emphasis changed to defence; keeping the sea lanes open. For this role a new type of ship, a small through-deck cruiser for operating anti-submarine helicopters, was ordered; the Invincible class. They were also to operate the Sea Harrier in the fleet defence, strike and reconnaissance roles. The Falklands war required the fleet to go South and strike with RAF Harriers as well. This was, said Jerry, a wake-up call for the Navy.

Today the Invincibles are 30 years old and operate, once more, a strike force only, of Harrier GR7s and 9s, the very capable fleet defence Sea Harrier F/A2 having been withdrawn for defence budget reasons. The GR7s and 9s are flown by RN and RAF pilots from the Joint Force Harrier organisation. For airborne early warning (AEW) the 30 year old Sea King becomes the Mk 7 AEW when equipped with the Nimrod's Searchwater radar in an outrigger mounted radome, giving a 250 mile view and capable of tracking vehicles over land. Other helicopters in service include the small and fast, IR sensor equipped, Lynx armed with missiles and guns, the EH-101 Merlin, with fly-by-wire and carbon fibre, for maritime patrol, reconnaissance and support carrying 16 troops, as well as other versions of the Sea King which can carry 18 troops from a carrier to the shore 300 miles away.

In today's operations Royal Naval aviation faces many challenges from the environment: weather, waves, salt water, climates from tropical to Arctic; and from the need to deploy world-wide: UK, Falklands, Indian Ocean, Mediterranean, Caribbean (apprehending drug running), Afghanistan and so on. The RN Strike Wing constitutes one third of the Joint Force Harrier so operates in Kandahar, Afghanistan, at 3,000 ft and 40 degrees C where the Mk 9As come into their own with their Pegasus thrust uprated by 3,000 lb. The Sea Kings also operate in Afghanistan and Iraq.

As for the future, the Government is committed to enter into a contract for two new strike carriers, the CVFs 'Queen Elizabeth the Second' and 'Prince of Wales', names carefully chosen to make cancellation embarrassing! Design work is complete and entry into service is planned for 2014. These are large ships with a displacement of 60,000 tonnes, three times that of the Invincibles and about two thirds that of the USN nuclear carriers at 100,000 tonnes. They will carry 36 Joint Combat Aircraft (JCA) each, as opposed to 10 Harriers in the Invincibles. However, the manpower complement is the same as the Invincibles at 700. They will be powered by a low fuel consumption combination of diesels and gas turbines generating power for the electric final drive. A nuclear powered alternative was unaffordable at twice the cost.

The design is such that either STOVL or conventional naval aircraft could be accommodated. For STOVL the deck is axial with plenty of space each side for parking and manoeuvring, but should the need arise, because STOVL aircraft are not built or bought, an angled deck can be marked out and catapults and arrester gear installed in space allowed for in the design. The ships are to be built at five yards in fully equipped, 10,000 tonne 'super blocks' which are towed to Rosyth for assembly. The ship will be run by the RN and the aviation will be the responsibility of the RAF and the RN, the former providing land war expertise and the latter sea war expertise.

The favoured, STOVL, option is the Lockheed-Martin F-35B Lightning II, part of the Joint Strike Fighter programme, the first of which is due to fly in April this year, 2008. It meets the British JCA specification which Jerry paraphrased as "F-18 performance, Harrier utility and F-16 affordability." It has "affordable stealth" with attention paid to shape, materials, internal primary store carriage, and fuel cooling for IR signature reduction. The F-35B also embodies automatic recovery to the ship (as described by John Farley in Newsletter No.11, Ed.). Conventional aircraft alternatives are the Boeing F-18, the Dassault Rafale and a navalised BAES Typhoon. Ninety F-35Bs are required for the RAF and RN Joint Force.

New aircraft projects under consideration by the Navy include a new-build updated Lynx, a Merlin upgrade, an unmanned aerial vehicle (UAV) similar to the Predator but smaller and capable of remaining airborne for 24 hours, and the V-22 Osprey as a Sea King replacement

This concluded Jerry's talk after which he took many questions. Asked about the Sea Harrier F/A2s he said that some were in service at Culdrose where they are used, sometimes taxying, for training deck handlers, and some are in store at Shawbury. Questioned on the strength of the Navy Jerry replied that there were 35,000 RN personnel compared with 45,000 RAF and 100,000 in the Army.

The vote of thanks was given by Duncan Simpson who said that Sir Sydney had a soft spot the Royal Navy saying, "The Navy always treated us as if we were gentlemen."!

**FLYING HAWKER AIRCRAFT**

The Association was truly honoured to have as their speaker on 12 March Captain Eric 'Winkle' Brown CBE, DSC, AFC, MA, Hon FRAeS, RN. Bill Humble, Hawkers' Chief Test Pilot from 1941-1948 said, "In an era of outstanding test pilots 'Winkle' was simply the best." He flew 487 basic types (no Mks counted) and made 2407 fixed wing carrier landings, both world records. At the age of 89 'Winkle' is as spry and articulate as ever and made our meeting a very special occasion, talking mainly about flying Hawker aircraft.

The Hawker connection might have been even stronger, said 'Winkle', because in 1947, when he was flying at the RAE, Sydney Camm asked him if he would like to follow Bill Humble as Hawkers' CTP. He replied that regrettably he was too busy, because he admired Camm for his consistency in producing good designs; there were not many duds. 'Winkle' said that he had flown 17 Hawker types and that in this talk he would pick out the intriguing ones and say a bit about the German aircraft he had flown.

In 1939 he had flown the Fury II biplane at the Edinburgh University Air Squadron as a reward for coming top of his course. Initially named Hornet and built to a 1927 RAF Specification it was preceded by Bristol Mercury engined designs which were not successful. The Fury, with its closely cowled 525 hp Rolls-Royce Kestrel, its staggered, unequal span wings differing in chord, incidence and dihedral was a high performance "aerobatic gem". The MkI was the RAF's first fighter to exceed 200 mph at 207 mph while the MkII, with 640 hp, reached 223 mph. The High Speed Fury used by Rolls-Royce for engine development flight tests topped 231 mph. For a comparison 'Winkle' mentioned the Fiat CR.32, a contemporary biplane fighter. Used in the Spanish Civil War, it was 10 mph faster than the Fury I and was nice to fly but the Fury with its raised cockpit and better top wing position gave the pilot a superior view, very important for a fighter. "Was the Fury a great fighter?" asked 'Winkle'. Yes, but it was outstripped by Glosters' later Gladiator, the RAF's last biplane fighter, which was faster with smoother controls.

The Hurricane was another great aircraft without which there might now be no Great Britain because the Battle of Britain would have been lost. It had excellent harmony of controls with light ailerons and moderately light elevators and rudder. An important role was played by the 'Hurricat'. Supplies of food, fuel and arms, essential for our survival, came to Britain from the USA across the North Atlantic in convoys. The USA could protect the convoys for 1000 miles from her east coast, Britain could cover 1000 miles from her west coast but when in the middle 1000 miles the convoys were vulnerable to attacks by Focke-Wulf Kuriers and U-boats working together. The only defence against this dire threat were surface escorts; destroyers and corvettes equally vulnerable to U-boat attack. Based on a suggestion by Churchill, merchant ships were fitted with 70 ft catapult rails from which Hurricats could be launched from a rocket propelled trolley when a Kurier was sighted. After the engagement the fighter pilot would bale out close to a ship because the Hurricane had poor ditching characteristics. 'Winkle' did the launch trials of this successful project. The threat of interception kept the Kuriers away and the Hurricanes stood up well to the harsh conditions on 'deck'.

The Sea Hurricane had an arrester hook and operated from large carriers with 800 ft decks and also from 'escort' carriers with short decks, only 420 ft in the case of 'Audacity'. The large carriers had 8-18 arrester wires, escorts 6 but Audacity 3, the last of which was known as the 'For Christ's sake!' wire. During deck landing trials 'Winkle' found the Sea Hurricane to be very good except for the view and the bouncy undercarriage, both of which were fine for land based use but not up to the standards of aircraft designed specifically for naval shipborne use where deck landings are made without flare. Naval aircraft had undercarriages designed for an 18 ft per sec touchdown whereas the RAF landed fully stalled causing no bounce or float.

The German opponent was the Messersmitt Me 109E, "a pretty horrid aeroplane." It was faster than the Hurricane and had a better rate of climb but it was not a happy place for the pilot. He felt claustrophobic in the small cockpit with a poor rearward view. It also had poor control harmony and at 420 mph the elevator went solid causing the aircraft to fly into the ground, or sea, when diving to escape. It was nasty to land with its very narrow track undercarriage. Its only advantage was that it could be bunted into a dive without the engine cutting; it had direct fuel injection rather than the carburettor of the Merlin, a problem solved later by a lady scientist at the RAE with a special orifice plate; Miss Shilling's orifice. The Luftwaffe Me109 pilots had an advantage at the start of the Battle of Britain because, unlike the RAF pilots, they had already been 'blooded' (in the Spanish Civil War). However, in their place 'Winkle' would rather have been flying the Hurricane.

His favourite Camm aeroplane was the Tempest II which flew with Napier Sabre, Bristol Centaurus and Rolls-Royce Griffon engines. In production form it had the Centaurus. The Tempest V had the Sabre with its reliability problems but was used very successfully against the V1 flying bombs of which some 10,000 were launched against Britain. They flew at 400 mph at 1-2000 ft so were difficult to catch as no RAF fighter at the time could do 400 mph at low altitude. However, the use of high octane aromatic fuel was used to boost the speed for up to 5 min. Whilst flying performance levels in a Tempest V 'Winkle' suffered an engine seizure at 6000 ft over the Hog's Back near Guildford. As he descended through cloud he saw the engine cowl aglow and could smell burning rubber from his flying boots, so bailed out at 1200 ft. He landed in a duck pond, gathered his parachute and headed for the nearest shore to see a large black bull snorting and pawing on the bank. He turned 180 deg for the opposite bank...but the bull ran round the pond. So he was stuck and just had to wait for the emergency services, who on arrival hid behind a hedge! After 20 minutes he shouted, "Fetch the farmer!" who came and calmly took hold of the ring in the bull's nose and they walked quietly away together. The Tempest was a great aircraft with its thin wing; a delight. He considered the Tempest V to be one of the top three fighters of WW 2, after the Spitfire XIV and the Fw 190D which with its Jumo engine could achieve 454 mph against the Tempest's 445.

Next to "the wonderful Sea Fury"; an absolute delight, powerful, fast and beautiful to handle, "top notch." It was as wonderful a ground attack aircraft as it was an air combat fighter. It was successful in the Korean War operating safely off carriers, using RATOG (rocket assisted take-off) from short decks, when there was poor wind-over-deck or when the catapults were unserviceable. 'Winkle's' Sea Fury squadron worked up the first Royal Navy aerobatic team with four aircraft doing very demanding line-astern manoeuvres. During a visit to Sweden the King, who had a stiff neck, requested a low level display so 'Winkle' led his team beneath the middle span of a bridge in front of the palace. The Admiral was not pleased but the King invited the team to visit him - a very jolly and happy occasion.

The Sea Hawk was a beautiful aircraft; the Mk1 was not the best but later Mks were much improved. During development Bill Humble called 'Winkle' to report puzzling phenomena: vibration from the back end and snaking. Over at Farnborough they found solutions. An acorn fairing at the tailplane-fin junction fixed the vibration and new pen-nib shaped shields at the bifurcated jet pipes overcame the effect of unbalanced thrusts from the two exhausts. Another peculiar characteristic was a nose-down pitch at, on the Mk1, 0.8M followed by nose-up at 0.82M and above. On later Mks the speeds were higher. Although short of performance as a fighter the Sea Hawk was "magnificent" for ground attack, beautiful to fly with harmonised controls. It was a gentlemanly aircraft for jet tyros and excellent for formation aerobatics including take-offs. All pilots enjoyed flying the Sea Hawk.

'Winkle' touched only briefly on the well known Hunter which he said was "a joy in every way" as was the Hawk, a "nearly perfect" aircraft.

The roots of Concorde, said 'Winkle' were in the Farren (WS Farren, Director RAE) , mission to Germany, as the war finished, to get hold of advanced aeronautical technology ahead of the USA and USSR. In January 1945, a fluent German speaker, 'Winkle's' task was to fly German jet and rocket aircraft back to Britain. The Mission was also tasked with bringing scientists back to Britain; five were 'obtained' including Prof A Busemann, famous for his pioneering work on sweepback, and aerodynamicists Dr Karl Doetsch, Dr Dietrich Kuchemann. In the Autumn of 1947, Morien Morgan, Deputy Director RAE, called a meeting to discuss 'Winkle's' handling experiences of tailless aircraft. Also present were Phillip Hufton, Head of the Aero Dept Flight Section, Doetsch and Kuchemann, both now members of the Aero Dept. Morgan was exploring shapes for supersonic transport aircraft of possibly tailless configuration. Kuchemann spoke persuasively in favour of the slender delta but with reservations about low speed handling qualities as wind tunnel work in Germany had all been high speed. Consequently the Handley Page HP.115 low speed research aircraft was sponsored by Morgan's Supersonic Transport Aircraft Committee (SSTAC) to investigate this area which it did most thoroughly at RAE Bedford. 'Winkle' was in no doubt that Kuchemann's words were the initial inspiration for Concorde, "that most remarkable aircraft."

Next, to the contentious P.1154. 'Winkle' was anti the project believing that a VTOL aircraft would be out-performed by a conventional one, such as the Mach 2.5 F-4 Phantom. At a meeting with Hawkers John Fozard promoted the 1154 whilst Solly Zuckerman,

Chairman of the Defence Research Policy Committee, and 'Winkle' opposed it, the latter asking how he could justify a top speed of Mach 1.6 to naval pilots when their Grannies could fly at Mach 2.0 on Concorde? "Good point, 'Winkle'", said Camm!

'Winkle' mentioned that he had met Andy Green, the world land speed record holder at 763 mph/M1.016. Films show that at top speed a front wheel was 2 inches off the ground so that really was the maximum speed; any faster the car would have pitched up.

During question time 'Winkle' was asked his opinion of the Hawker Typhoon. He had to be tactful - it was probably the best WW2 ground attack aircraft; but the worst fighter. Of naval fighters the Grumman Martlet (Wildcat) was the RN's first purpose designed naval monoplane fighter so was superior to the Sea Hurricane in having a sting type hook, wing fold, floatation bags and a strong undercarriage; but performance was no better. The Wildcat's successor, the Grumman Hellcat, had a 19:1 kill ratio, the highest in the war. The RN operated the Vought Corsair from ships before the USN did, a problem being torque on approach which could roll you into the sea if you came in too low and had to open the throttle.

As to his nickname, it is a Fleet Air Arm tradition always to have a 'Winkle' serving, and he succeeded Lt Cdr Eugene 'Winkle' Esmond who was killed flying a Swordfish in the heroic attack on the German cruisers Scharnhorst, Gneisenau and Prinz Eugen. He also was of small stature, an attribute which helped 'Winkle' Brown survive five out of his eleven life-threatening crashes.

Barry Pegram gave the vote of thanks for this wonderful, wide ranging talk, particularly mentioning 'Winkle's' prodigious memory and his ability so thoroughly to answer many questions. This was an event to remember.

*Editor's note*. 'Winkle' Brown has written many books on his test flying experiences as well as his biographical memoir 'Wings on my Sleeve', recently reprinted in a soft covered edition by Phoenix. This book cannot be too highly recommended.

After the Meeting our Secretary received the following letter from Captain Brown:

"Dear Barry,

Thank you for your kind letter of 16th inst. and let me just say how much I enjoyed my afternoon with your Assoc. boys - there's something about Hawker products that makes them special.

And what a nice surprise from your Committee to be offered Honorary Membership of your splendid Association; of course I shall be honoured to accept and hope you will convey my deep appreciation of their thoughtful gesture.

I always think that for a lecturer the enjoyment of an occasion largely can be measured by the quality of the questions, and the Hawker boys are on the ball in that respect.

With sincere thanks.

Eric."

**REMEMBERING THE P.1083**

John Arthur recalls some time in the Drawing Office working on what could perhaps have been Britain's first supersonic fighter...

I joined Hawkers in August 1943 as a Pupil Apprentice and took early retirement in August 1988 as Head of Stress (Harrier). During those 45 years there were, of course, many highlights and projects, not all of which came to fruition. I would like to recall one such project of the early 1950s.

There were several 'supersonic' jet fighters flying at that time: the Supermarine Swift, the US North American F-86 Sabre, the Soviet MiG-15, and of course, our own P.1067 Hunter, for example. These aircraft, however, had one big shortcoming; they were only supersonic in a shallow dive. They were not 'Mach One' fighters in level flight.

In 1950 it had been decided that Hawkers, on a PV (private venture - company funded in today's parlance) basis, should do something about this state of affairs. In 1952-53 I was a designer-draughtsman in the Production Drawing Office in which a small team was formed, led by Bob Copland of model aircraft fame and later Chief Design Engineer, to scheme and produce drawings for a new 'thin wing' Hunter known as the P.1083. We were young and enthusiastic, spurred on by the goal of helping Hawkers to produce the World's first truly supersonic jet fighter.

The wing design incorporated 50 degrees of leading edge sweepback and a mean thickness:chord ratio of 7.5% compared with the P.1067 Hunter's 45 degrees and 8.5%. The leading edge portion of the new wing, forward of the front spar, made provision for internal fuel bags, an innovation not fitted to early Hunters. The increased sweepback meant that, during a high speed pull-out, a very much greater loading was applied to the rear spar/undercarriage girder than on the standard machine. I remember designing this component, assisted by a 'tame' stress-man, which required massive high tensile steel forgings for the booms. These forgings were produced and machined complete with integral wing attachment eyes. The completed spars were assembled in the wing build jig.

There were of course other tricky design problems, one of which was 'shoehorning' the main undercarriage into the very shallow wheel bays. However, solving such conundrums was our stock in trade and by and large I believe we were making good progress.

But then one morning we came into the office in which gloom pervaded. Bang! The project was stopped and scrapped. The precise reason for this I was not party to but it was rumoured that the firm was not prepared to put up the quarter of a million pounds needed to finish the project. And so a big opportunity was missed and the accolade for the first supersonic fighter went to the North American F-100 Super Sabre.

As a footnote I would say that the work on the P.1083 project was not completely wasted as the aforementioned wing fuel tank design was quickly modified and applied to later Marks of Hunter thus ensuring adequate range for successful future developments. What did Bob's team do next? I seem to remember we worked on the P.1101 two-seater Hunter which was produced as the TMk7; the one with the old 'Morris Minor' windscreen. But that is another story.

*Editor's Note*. The full and complex story of the P.1083, its engines and armament, all of which contributed to its delay and demise, can be found in "British Secret Projects, Jet Fighters Since 1950" by Tony Buttler, Midland Publishing, 2000. To summarise: initial discussions with the Director of Operational Requirements (DOR) took place in May 1950, Ministry go-ahead was given in December 1951, Specification F.119D was issued in April 1952 and wing build commenced in October. In June 1953 the DOR advised Hawker that the P.1083 was no longer required and the official cancellation was received on 13th July.

Serial number WN740 had been allocated to the prototype. After the cancellation Hawkers was authorised to use the front and centre fuselages and the tail unit in the P.1099, prototype of the FMk6 Hunter. The F-100 Super Sabre flew in May 1953 but the Mk6

Hunter and its variants sold in large numbers, world-wide. The more highly swept P.1083 would probably not have been so adaptable and as tolerant.

**THE FIRST HUNTER**

With the Hunter back in service in England in 2007 (see Newsletter No.19) it is interesting to look back fifty-six, yes, fifty-six years, to Neville Duke's maiden flight in the first Hunter. The following is taken from an account he wrote to mark the 21st anniversary of that flight...

"As it happened, the preliminaries leading up to that first flight proved more eventful than the flight itself. The prototype, WB188, had been taken by road from Hawker's Kingston on Thames factory the Aircraft and Armament Experimental Establishment at Boscombe Down, in Wiltshire, and there re-assembled. First came ground handling and taxying trials at speeds up to 100 knots on Boscombe's 3,000 yard long runway. The results were quite satisfactory and all was set for a run at take-off speed.

Conditions for the run were ideal. With the engine at full throttle, the brakes were released and the aircraft accelerated to 120 knots within about 1,000 yards and just became airborne. The throttle was immediately cut and the brakes intermittently applied from about 110 knots. But the brakes began to fade and the end of the runway came rapidly nearer. Soon, braking power was virtually lost but sufficient control remained to allow me to swing off the runway in time to avoid going into the rough stretch beyond. The brakes were billowing smoke and were subsequently found to be burnt out and useless. However, the run had been necessary; the handling characteristics at take-off speed had to be known before the actual flight.

Repairs were made and the Hunter's first flight took place in the early afternoon of July 20, 1951. It lasted forty-seven minutes and covered a speed range up to 350 knots (Mach 0.6) at heights up to 19,000 ft. A cross wind caused the Hunter to weathercock slightly on take-off but the tendency was checked, at first by the gentle use of brakes and later by the use of rudder.

Acceleration was rapid and rudder control became effective at approximately 50 knots IAS. (All figures quoted are indicated air speeds). The take-off run was smooth, with no shimmy or wheel vibration. Full up elevator was used during the initial run, and this called for a heavy pull-up force as speed increased.

The nose wheel came off the ground at approximately 100 knots and there was no tendency to pitch into the air. A constant attitude after the nose wheel came off was easily maintained. Incidence was kept low and the aircraft was allowed to fly itself off at approximately 140 - 150 knots. The unstick was clean and no pitching occurred. The forward view was good.

Immediately on unstick a lateral oscillation set up which could not be damped out with aileron; it was caused by lateral movement of the control column. The ailerons were light and effective at this speed and the control column oscillation had a correspondingly noticeable effect.

No sink occurred as the undercarriage was retracted - at approximately 160-170 knots - but the brakes had to be used to stop the airframe vibration set up by wheel spin. The undercarriage retracted with a positive action but the starboard undercarriage red light remained on and speed was therefore restricted to 350 knots. Undercarriage retraction caused no apparent change of trim.

Aileron and elevators had power controls but for the first flight the elevators were controlled manually by an emergency reversion system. For this reason the control was heavy and gave rise to some difficulty; the tailplane trim range was inadequate to deal with these heavy forces. But it was only a temporary difficulty; with the elevators under power control and a wider tailplane trim range the system was quite satisfactory.

The Hunter was put through the scheduled test programme, which included handling in level flight, slow speed handling with undercarriage and flaps in both down and up positions, engine handling and structure temperatures, and tailplane angles to trim.

Landing presented no serious problems. Speed was reduced on a long downwind leg and full negative tailplane incidence (-40 minutes) was required to trim the aircraft at 220-225 knots. The undercarriage was selected down at 200 knots and locked down in 12 seconds - the starboard leg, nose wheel and port leg in rapid succession - and with no noticeable yaw. The undercarriage lights were bright and clearly visible.

Full flap was selected at 180 knots but full negative tailplane incidence was insufficient to trim the aircraft, and at 150 knots left a pull force of some 10 lb to be applied to trim the aircraft. The lowering of the flaps was followed by a marked increase in the rate of descent which had to be checked by an increase in power. Flap operation, and the position and functioning of the flap lever and of the flap indicator, were all satisfactory.

Final approach was started at 150 knots and the Hunter crossed the end of the runway at 140 knots with the engine fully throttled back. Both hands were needed on the control column for hold-off - the 20 lb pull needed on the manually-operated elevators was too tiring for one hand.

After a 47 minute flight, touchdown at 115 knots was smooth and so was the landing run. The flaps had remained adequate for normal use throughout the approach, and no tendency to swing on the landing run was apparent.

Later flights confirmed the excellent handling characteristics which the Hunter revealed on the first, and a few minor modifications, including the addition of a small tailcone (at the trailing edge of the tailplane-fin junction. Ed) to help eliminate tail-end vibration at transonic speeds, allowed us to fly at speeds up to 700 mph within a month of the first flight, a tribute to the soundness of its design and construction. In less than a year it had been flown at supersonic speed in a dive and its sonic booms gave audible proof of its transonic capability during demonstrations at several SBAC Farnborough air displays."

Neville concluded his article by saying, "If, when the time comes, the Hunter needs an epitaph, a clue to the appropriate wording might be found in the 'Limitations' section of its Service Pilots' Notes. The epitaph would simply state: 'It had no Mach limitation.' "

**BOOK REVIEW - 'ABOVE THE REST'**

Hawker Association Member and aircraft photographer Geoffrey Lee's latest book is a concise history of the Eurofighter Typhoon project illustrated with some 350 outstanding colour photographs, mostly taken by the author. Well written and beautifully produced this large format, non-technical book will satisfy all Typhoon enthusiasts and the detail in the photographs will appeal to engineers. It is now fourteen years since the first development aircraft flew in March 1994. Type Acceptance for the two-seat Typhoon was in June 2003, for the single-seater December 2004. Today 53 aircraft have been delivered to the RAF who have two operational

squadrons - Nos 3(F) and 11(F) - so far. Germany, Spain Italy and Austria also have the aircraft in service. All this and much more, including the EAP, is covered in the book, available by mail order only from Ad Hoc Publications at just £20 plus £3.50 p&p (Phone 07776 134277).

**MEMBERSHIP NEWS**

We welcome new members Mike Bowery, Capt. Eric Brown, Paul Fairweather, Richard Hooke, Stanley Lawson and Martin Murray. Sadly we must record the deaths of John Dale and Arthur West; the Association sends condolences to their families and friends.

**MEMBERSHIP LIST APRIL 2008**

**A:** Mike Adams (a), Ken Alexander, Peter Alexander, John Allen, Martin Alton, Terry Ansty, Alma Apted (H), 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 Bollands, Paul Boon, Betty Bore, Pat Bott, Steve Bott, Bob Bounden, Alan Boyd, Pat Boyden, Phil Boyden, Roy Braybrook, Clive Brewer, Laurie Bridges, Ian Brine, Doug Britton, Arthur Brocklehurst (a), Capt. 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(Note: A = Associate Member, a = Associate, H = Honorary Member)