



THE HAWKER ASSOCIATION

NEWSLETTER 44 - Spring 2016

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EDITORIAL

Enclosed with this Newsletter is your **subscription renewal form** and the AGM notice. Please return your subscription form together with a £5 cheque payable to the Hawker Association to Secretary Barry Pegram, not to the editor, right away before you forget! There are still several outstanding subs for 2014 -15 as shown in **bold** on the membership list at the back.

Please come to the AGM and participate in the determining the future course of your Association. Your presence will be valued by the hard-working Committee as will your suggestions for talk topics and outings and your comments on the Christmas lunch, Summer barbecue, the 2015 outing and the programme of talks.

Richard Cannon conscientiously keeps our website up-to-date. Please refer to it for the latest news on members, meetings etc. Also let him know if you spot any problems with using the site.

Don't forget that your Editor always needs your memories of your time at 'Hawkers' - go on, get scribbling. And a belated happy new year!

Correction - in NL.43 I wrote that Ian Rushforth described for us the operation of the Bunker system - it was in fact Stephen Pendlebury on the day as Ian had other commitments. Ed.

PROGRAMME FOR 2016

Wednesday 9 th March	Aviation Art, and Life in the RAF - Graham Cooke , Guild of Aviation Artists.
Wednesday 13 th April	Annual General Meeting and video.
Wednesday 11 th May	Operation Allied Force, Combat Operations in the GR7 - Mark Zanker
Wednesday 8 th June	Summer barbecue
Wednesday 13 th July	UK F-35B Lightning - Gp Capt Ian 'Cab' Townsend.
Wednesday 10 th August	Social and video
Wednesday 14 th September	Social and video
Wednesday 12 th October	Title tbd - Gp Capt Peter Bedford.
Wednesday 9 th November	So What Have We Done Since 1866? - Sir Donald Spiers.
Wednesday 14 th December	Christmas lunch

Graham Cooke is a well known aviation artist, **Mark Zanker** is an experienced Harrier GR3-GR7 pilot/QWI and Red Arrows pilot, **Ian Townsend** is Group Captain Lightning responsible for the introduction into service of the F-35B, **Peter Bedford** is Bill Bedford's son with a long and varied RAF career including air transport and **Sir Donald Spiers** was Controller of Aircraft in the MoD and President of the Royal Aeronautical Society. Unless stated otherwise, meetings are at the 'YMCA 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.

2015 CHRISTMAS LUNCH

Ken Batstone reports...

On Wednesday December 9th 2015, the 13th annual Christmas lunch was again held in the YMCA Hawker Centre. Attendance was very good, with 53 members and guests, just one less than in 2014, arriving by 12.30pm. This sustained number of diners is very pleasing as it shows that the YMCA is providing the food and ambience to make an enjoyable event and that the strength and relevance of the Hawker Association continues.

On arrival members and guests enjoyed a glass of wine and social intercourse before taking their seats for the meal. It was announced to be slightly different from the publicised menu; the starter was prawn cocktail with soup as the option, rather than the other way round, and the dessert was not Christmas pudding (gasps of shock horror! No, not really) but a fruit slice with cream with the option of carrot or lemon cake. The food was excellent in both quality and quantity, for which the YMCA kitchen staff were congratulated.

After lunch coffee was provided and the speeches commenced with our Chairman, Ambrose Barber saying a few words and noting how the years leading up to this our 13th Lunch had flashed by and then introducing John Glasscock, our past President. John regaled us with memories of the very good old days but said he had some difficulty in choosing a joke to tell - so he told the other one!

Afterwards, many people said how much they had enjoyed the afternoon. A criticism was that there had been no facility for hanging up outer coats on arrival, a valid comment which will be followed up by the Committee. This year, due to the photo displays erected in front of the windows, there were no complaints about glare from the very welcome bright sunshine outside. The YMCA was thanked verbally and financially for providing another enjoyable Christmas lunch.

KINGSTON AVIATION CENTENARY PROJECT - REVIEW OF

Joint Project Leaders David Hassard and Bill Downey, and Treasurer/Volunteer Co-ordinator Mike French write...

Summary 1,300 website page-views per month; continuing growth of “Hawker People” image archive; 285 visitors to our two-day exhibition; 1,000 attendees at 28 illustrated talks; 52 “100 years ago” newsletters now circulated to over 600 individuals. All achieved by a small band of unpaid volunteers. Funds topped up by donations at talks and exhibitions are sufficient to keep the project running

Review For a project originally planned and funded for just a year it is perhaps surprising that we are still going strong and have had a fourth busy year. This is all thanks to our dedicated volunteers and to the interest and support shown by so many organisations, people local to Kingston, people who worked in Kingston’s aviation industry and aviation enthusiasts worldwide

Bill Downey continues to develop our **website** which is one of the main legacies of the project. We have had 43,000 page-views since it started three years ago and it generates a steady flow of diverse enquiries from all over the world which we try to answer or at least recommend where the answer might be found. Bill has been updating the “Photo Galleries” on the website with face recognition software so that you can read individual’s names by placing the cursor over the face. It also has a name search feature. Do try this. *If you know any names not yet marked on these photos do send that information to billdowney@sky.com* The website only holds a small selection of the hundreds of “Sopwith and Hawker People” digital images Bill is accumulating. A full set of these face-identified images will eventually be accessible at the Kingston History Centre in the Guildhall and in the Sopwith-Hawker Archives at the Brooklands Museum. *Bill would be delighted to receive digital scans of any photographs you might have of Sopwith/Hawker/BAe employees especially those taken in the workplace. It is important to pass on any information you know about the picture; the event in question, any names of people in the photograph, the date however approximate and any index numbers on the back of the photograph which may help us pinpoint a date. Please send photos even if you don’t know any names as our face recognition software may throw up some matches*

We held one **exhibition** this year, thanks again to the BalletBoyz Dance Company for allowing us to use their refurbished Sopwith factory building in Kingston. Thanks also to our volunteer stewards. We focused our publicity on local residents and were delighted to welcome 285 people over the two days including 60 children.

Although we have yet to advertise or promote our illustrated **talks and lectures**, demand continues by word of mouth. This year 1,027 people have attended 28 talks, bringing the total over the four years to 5,200. Many of these talks were to Local Historical Societies, Probus and Rotary Clubs and lately U3A groups. In keeping with our main aim, most talks are local but Chris Farara started the year with talks to the Loughborough and Brough branches of the Royal Aeronautical Society and David Hassard did the same at the Yeovilton Branch. Some more unusual audiences this year included a Mother’s Union, a Day Centre, the Metropolitan Police Military History Society, the Kettner Lunch Group at the National Liberal Club, the Aircrew Association, the London Society of Air Britain and a Technology Conference at the National Archives. We maintain a strong link with Tiffin School, were back for the third year at a local primary school and were invited to another to talk about engineering as a career. *We already have 11 talks booked for 2016 but if you have connections with clubs, organisations or schools, within say 15 miles of Kingston, who would be really interested in our talks you should encourage them to contact David Hassard via hassards@talktalk.net.*

At our talks and exhibitions over the years we have given away more than 7,000 copies of the “Designed and Built in Kingston” fold-out **brochure** which was originally generously sponsored by BAE Systems. *If you would like one of these brochures whilst stocks last, or know someone who would really appreciate one, send a stamped addressed envelope to the Kingston Aviation Centenary Project, c/o 20 Tangmere Grove, Kingston upon Thames, Surrey, KT2 5GT. (Standard long narrow DL size envelope 11cm x 22cm or A5) If you would like to include a small donation, cheques should be made payable to “Aviation Centenary Project*

There have been 51 more “100 years ago” **e-newsletters** this year and the circulation list has grown to 628. This experiment in “real time” history telling would be impossible without generous access to unique private collections, the Brooklands Museum library and archives and all the other archives and photograph collections being plundered especially the National Archives at Kew, the RAF Museum, the Kingston History Centre and this year the Fleet Air Arm Museum. Stuart Leslie has donated an invaluable 46 volume set of Cross and Cockade aviation journals and we have been able to purchase several rare but essential reference books all of which will eventually be lodged in the Brooklands Museum. David Hassard intends to continue with this detailed research into the history of the Sopwith Aviation Company and to share the hidden treasure of information and photographs through the newsletters and on the website.

If you know of others who would like to receive these newsletters they can sign up via the website or by sending their e-mail address to hassards@talktalk.net.

Our project is also working with the **Kingston Borough** Library and Heritage Services on several activities including an update to the "Kingston Aviation Heritage Trail", a plan to get the Hawker factory time clock donated by Mike Frain installed and working in the Kingston History Centre and a plan to get Martin Alton's large "Hurricanes over Kingston 1946" painting on permanent public display in the Borough.

The project **bank balance** remains sufficiently healthy to continue with the project. Income in the year was £985 in donations from individuals and organisations and £62 from advertising on our website. Outgoings were £1543 of which the project running expenses came to £623. The rest was mostly once-off expenditure: £260 on equipment and software and £660 on digital images, reference books and research material. The regular project running expenses include website fees, printing and publicity. *A painless way to help top up our funds is to go via the Amazon advert at the bottom of our website home page when buying from them. If enough of us do this their small commissions could cover our annual website fees.*

If you have not looked at our website recently, do visit www.kingstonaviation.org

If you would like to get in touch with us about any of the above you can do so via the website or directly to David Hassard at hassards@talktalk.net

AIRCRAFT NEWS

Sea Fury - Go to

<<http://www.meiermotors.com/index.php/projekte/hawker-seafury-d-cace/hawker-seafury-restaurierung>> to see the marvellous job that Meier Motors are doing in restoring red Sea Fury D-CACE. Make sure you see all 6 pages. It was originally converted at Dunsfold in 1963.

Sea Harrier - INS Viraat (HMS Hermes), which has completed a service life of 56 years, was retired after getting a grand farewell at the International Fleet Review at Visakhapatnam in February 2016. Sea Harriers did much appreciated demonstrations including hovers close to the beach.

The Sea Harriers, currently based at INS Hansa, Goa, have been carrying out regular flights along with Mig-29Ks but mounting maintenance costs and the small fleet of only seven aircraft in service means the Navy cannot keep them in the operational fleet for much longer and they may well be retired with Viraat. The Ministry of Defence will make the decision.

Under the Limited Upgrade Sea Harrier (LUSH) programme some 15 aircraft were fitted with the Israeli Elta EL/M-2032 radar and Rafael Derby BVRAAM missiles (Beyond Visual Range Air to Air Missiles). Since then the Navy has lost a number of aircraft and, due to the lack of spares, some were cannibalised to keep the others airworthy.

The Navy has ordered carrier-qualified Mig-29ks and Hawk Mk 132 advanced jet trainers. The Migs will fly from the 14 deg ski-jump equipped 45,400 ton carrier INS Vikramaditya, a Soviet Kiev class ship launched in 1987 as the Baku, renamed Admiral Gorshkov in the Russian navy in 1996, sold to India in 2004 and in-service in 2013. Described as a STOBAR ship, Short Take-Off But Arrested Landing, the Mig 29ks make hold-back ski jump take-offs and tail hook arrested landings on the angled deck. INS Viraat was not capable of supporting STOBAR operations. In 2018 a new indigenous 40,000 ton carrier, INS Vikrant, is expected to enter service.

(Information via Bob Bounden - thanks, Bob.)

UK F-35B PROGRESS

Under CO Wg Cdr Jim Beck, the RAF's No.17 (Reserve) Test and Evaluation Squadron (No.17(R)TES), the Black Knights, is based at Edwards Air Force Base, California, as part of the F-35 Joint Operational Test Team (JOTT) which also embodies the USAF's 31st Test and Evaluation squadron and the USMC VMX-22 Operational and Evaluation Squadron, the Argonauts. No.17(R)TES is made up from specially selected RAF and RN personnel. The decision to advance from low rate initial production to full rate production depends on the results of the JOTT test programme in which No.17(R)TES has a 10% share.

All the UK flying and training is done under UK sovereign jurisdiction using UK engineering documents under UK military flying regulations. All maintenance and servicing is carried out by the squadron engineering personnel. Earlier UK flying in the F-35 Integrated Test Force at NAS Patuxent River and with the USMC at, for example, MCAS Beaufort with VMFAT-501, had been under US regulations.

Much of the UK effort is looking at mission capabilities and tactics and writing the UK tactics manuals and also developing interoperability procedures for use with the Typhoon. With Lockheed Martin advice the engineering publications are also prepared based on the work done by the engineering group. The ACURL (Australia, Canada and UK programming Laboratory) at Eglin has 40 people to reprogramme mission data software to suit UK needs. The squadron will remain long term in the US to maximise the capabilities of the UK F-35B over its life.

The first UK front line squadron will form at MCAS Beaufort in 2016 and move to RAF Marham in 2018 as No.617 Squadron, the Dambusters. Land based initial operational clearance is planned for 2018 with shipboard clearance for HMS Queen Elizabeth in 2020. The first weapons to be cleared will be the Paveway IV LGB and the AIM-120C-5 AMRAAM.

THE ROYAL NAVY HISTORIC FLIGHT

On November 11th Lt Simon Wilson came up from Yeovilton at very short notice to talk to a large Association audience about the Royal Navy Historic Flight (RNHF), replacing the CO, Lt Cdr Chris Gotke, who had unexpected and urgent duties to perform. Simon is an enthusiastic pilot. He first flew with his father, who was a Flying Instructor, at the age of six, went solo on his 17th birthday and gained his PPL soon afterwards. He joined the Royal Navy as a pilot in 2002, completed flying training and joined the maritime Lynx community becoming a Qualified Helicopter Instructor (QHI). Simon has flown everything from weight shift microlights, through many different general aviation aeroplanes, to vintage aircraft. He has his own aircraft and has flown over 80 different aircraft types and Mk's, of which some 30 are taildraggers. He is the RNHF Swordfish display pilot.

The RNHF was formed in 1972. The current establishment, under the CO, is Chief Engineer Howard Read (Warrant Officer retired), Display Manager Katie Campbell (Lt Cdr rtd), six maintainers and one QA/Logistics man; four volunteer pilots, four volunteer observers, two volunteer aircrewmen and two pilots under training (all RN serving personnel). A volunteer display pilot must have 2000 flying hours, be a current Naval pilot from a front line squadron, hold a Certificate of Competence, be available for three display seasons because of the cost of training and flying (50 - 75 hrs per year) and be enthusiastic. Initial tail-dragger training is in the Flight's Chipmunk and Texan (USN Harvard).

The prime function of the RNHF is 'visibility' - keeping the Royal Navy in the public eye (RNITPE). This is done through participating in air displays, flypasts, memorials, reunions and special events, totalling about thirty appearances per year. As an aside Simon mentioned that audience sizes for air displays are second only to premier league football matches. Flying routines are dynamic but the need to conserve airframe life means that aerobatics are minimised, the maximum normal acceleration is limited to 4g and speeds are kept well below the type's never exceed value. This is fine because what audiences want is the opportunity to photograph the aircraft in various attitudes and configurations.

The Flight's aircraft at present include three Swordfish: W5856, a recently refurbished Mk I; LS326, a Mk II awaiting an engine, and NF 389, a Mk III in need of refurbishment but at present used as a source of spares. The only other flying Swordfish is in Canada. Hawker Sea Fury FB 11, VR930 was refurbished by BAe in 1998, suffered from Centaurus engine problems and is not expected to fly again until 2017. Hawker Sea Hawk Mk 6, WV908 awaits the resources being allocated to review and decide the way forward with the aircraft with the intention of returning her to flight.

Hawker Sea Fury TMk20 is a civil registered aircraft owned by the Fly Navy Heritage Trust (FNHT) and loaned to the Royal Navy Historic Flight to operate. It is used for displays. It is not really suitable for pilot training as the view from the rear cockpit makes landing from there very difficult. In service the TMk20 was used for gunnery training, not conversion training. The aircraft suffered an engine failure during a display at Culdrose Airshow in 2014 but was saved by Chris Gotke who made a dead-stick landing but there was some damage due to a main leg collapse.

A de Havilland Sea Vixen is owned and operated by the Fly Navy Heritage Trust with support from Navy Command. Unlike the Sea Fury TMk 20, it is not part of the flight. Through the FNHT a Chipmunk, Provost and Harvard are available to participate in RNHF activities, primarily for pilot training, as is Seafire

Cost is a major concern. The aircraft are rare and spares are not always readily available and are expensive. The RNHF is not fully funded by the MoD so the shortfall is made up through grants from the FNHT. The FNHT coordinate gathering funds through fund raising activities, donations (both corporate and private) and run a Supporters Group.

To close Simon showed a video of the Swordfish raid on Taranto from HMS Illustrious, which took place on the 11th November 1940, so Simon's talk was on the anniversary day. Taranto harbour was seriously damaged, one old and two new dreadnoughts were destroyed, oil depots and hangars were put out of action, all for the loss of only two Swordfish out of the 24 that took part in the attack in two waves.

Frank Rainsborough thanked Simon for his excellent talk and for driving all the way from Yeovilton (and back again in the afternoon.)

Editors note: It is clear that the RNHF needs a lot of support to keep their aircraft airworthy, which include Hawker types, flying. The Sea Fury was our last and finest piston engined fighter and the Sea Hawk our first jet fighter. So, may I encourage you to visit the web site <http://www.fnht.co.uk> where you can see an excellent short film and find out about the Fly Navy Heritage Trust and see how you can support the RNHF through the FNHT. Also, the February issue of 'Aeroplane' has several articles about the RNHF.

FLYING HARRIERS IN THE RAF

In the RAF Mark Zanker flew Harrier GR3s, GR5s and GR7s as well as Hawks with the Red Arrows, so he is a true 'Hawker' man. He flew time-to-height record holder ZD402 and was a Qualified Weapons Instructor. After retirement he became a commercial pilot and is a Boeing 747 Captain with Cathay Pacific. Now he remembers flying Harriers...

I joined the RAF in 1991 and after Officer Training at Cranwell and 3 years of flying training I was posted to 54(F) Sqn at RAF Coltishall, flying the Jaguar GR1. I really enjoyed that first tour as a young, single junior pilot and I assumed that my career path would continue as a Jaguar pilot/instructor and eventually as a flight commander. In 1987 that was all to change after 2 friends of mine were tragically killed in a mid-air collision over Otterburn training range in Northumberland. These two 3(F) Sqn Harrier GR3 pilots had been flying a simulated low level attack against a mock military target in difficult conditions. Somehow, during the final 60 seconds of the attack, they lost sight of each other. Fixated on the task of dropping their practice bombs on the target they actually converged together and collided at the point of weapon release. The accident hit me quite hard. I knew how risky it was to fly a fast jet close to the ground but I knew both of these men really well. It was the first time that I had experienced the loss of a close friend.

What happened over the next couple of weeks could easily fill another article and so I will leave the details for another time. Suffice to say that the RAF Harrier Force was now short of two experienced pilots and they needed to fill the gap quickly. I was coming to the end of my first tour, I had always expressed a desire to fly the Harrier (who wouldn't?) and being single, I had no domestic "baggage" to contend with. On Wednesday 11th November 1987 my boss called me into his office and the conversation went something like this: Boss – "Would you like to fly the Harrier?" Me – "Yes." Boss – "Can you start on Monday?" Me – "Yes."

And so it was that I came to be a Harrier pilot and in the summer of 1988 I began a posting to RAF Gütersloh in Germany to fly the mighty Harrier GR3 on 3(F) Sqn. I didn't know it then but it turned out that my timing was perfect. Had these events occurred 2 years later I would never have had the chance to fly the GR3 and I would never have experienced flying in West Germany, during the Cold War. The political and military landscape was to change dramatically a few years later with the destruction of the Berlin Wall.

I arrived in Germany just as the Squadron was getting ready to deploy to "the field" for a 2 week training exercise. The Harrier Force did this a few times each year in order to practice its war mission. On this occasion our field site was a small wooded copse in Bergen Hohne military range, a couple of miles from the site of Belsen Concentration Camp. I went there by road and the Squadron pilots flew the aircraft in later that day.

The following day I was to fly an arrival "check" with the Squadron Qualified Flying Instructor, Steve Fox. I remember it vividly. The aircraft, a two seat T4, sitting under a camouflaged net against the tree line. After starting the thing up I taxied along a dirt track towards a wide gate. On the other side of the gate was a main road. As we approached the gate a RAF Policeman closed the road to traffic and we taxied on to it and along for a hundred yards or so to a place where an air traffic controller stood with a day-glo flag. The pre-take off checks were completed and I did a slam on the Pegasus engine to check the RPM acceleration time was within limits. The nice lady with the flag lowered it to signal that the flaps were in the correct take off position, I selected full power and off we went. As soon as we had gone the road was re-opened and the German locals could continue to go about their business. Operating the Harrier from these makeshift sites was an awesome experience. It was a pure team effort to get the whole show up and running. The Royal Engineers would go in a few days before us and lay metal matting for us to taxi, take off and land on. The RAF Regiment would defend our position and the Squadron would operate its Harriers in as close to a war time stance as was possible. The aircraft would take off from a road or a metal mat strip and vertically land back onto a metal 'Mexe' pad. The idea was that we would be deployed close to the front-line (or the front-line would come to us) and so sortie times were short. On some days we would fly six 30 minute flights. It was exhilarating stuff but exhausting too. For the engineers it was challenging as well. On more than one occasion I've seen them do an engine change during the night in one of the hides and have the aircraft ready to fly again the next day. And of course that meant putting the aircraft into a cradle so that the whole wing could be removed. This was all done outside, in a field with minimal lighting.

At that time the RAF still had a flight of Harriers stationed in Belize (formerly British Honduras) to provide a deterrent to neighbouring Guatemala, who staked a claim on the country. Pilots were rotated through every six weeks or so and I was lucky enough to be chosen at the end of 1988. We would fly a sortie in the morning and go to the beach in the afternoon, or vice versa. There were three weapons ranges there and we could drop or fire all our types of air to ground weapons (There are tight restrictions on live weapon usage in Europe and so it is rare for pilots to get to drop them during peacetime). Belize has the second largest barrier reef in the world, the locals are very friendly, '151' rum flows freely and we could fly as low as we dared. Have I given you the picture? It was the best kept secret in the RAF.

In 1989 we began to convert to the Harrier GR5 (airframe conversion to GR7 standard began in 1991). If the GR3 was a Morgan, the GR5 was a modern day Aston Martin. It was bigger, could carry more kit, fly further and was more accurate too. Unlike the GR3 the cockpit was modern, roomy and it had a larger head up display (HUD). The Pegasus engine now had a digital engine control system (DECS) so more accel checks, and more thrust. Much of its structure was carbon fibre and as with most modern aircraft it had a few teething problems. The designers had used Kapton insulated wiring for the electrics throughout the airframe and this was to cause problems. (Google it).

In late July 1991 I flew a local sortie in a GR7. After I landed I made a comment to the engineers about a minor problem with the navigation system. Apart from that it seemed like a good jet and the aircraft was prepped to go again. My colleague took the same aircraft on its next flight. Flying with another Harrier, he climbed above the German countryside to

do some air combat manoeuvring. During the sortie something catastrophic happened and the pilot had no idea what it was. Suddenly all the warning lights came on in the cockpit followed by a total loss of all instrumentation and radios. If that wasn't bad enough the engine wound down and he found he had no control over it at all. - he was in a GR7 glider in a steady descent towards the ground. He pointed it at a wooded area and at a few thousand feet above the ground ejected and landed safely but the jet was destroyed. The investigation that followed quickly came to the conclusion that there had been a fire caused by a break down in the Kapton wiring insulation. The fleet was grounded for 6 weeks whilst a fix was found and we all went on leave.

In 1992 my tour on 3(F) Sqn came to an end and I was posted to 233 OCU at RAF Wittering. The Operational Conversion Unit was the Harrier flying school. By now I was a Qualified Weapons Instructor (QWI) and I would teach weapons and tactics. The OCU was split into two flights. Students would spend the first half of the course assigned to B Flight. Here they learnt the basics of how to fly the Harrier. It is no understatement to say that the Harrier is almost certainly the most difficult aircraft in the world to fly. The vectored thrust engine means that there are as many ways to land the aircraft as there are days in a month and on B Flight they learnt them all. On A Flight we taught how to use the aircraft as a weapon and we trained each pilot on how to drop bombs, fire rockets and use the air-to-air Sidewinder missile. RAF Wittering is only a few minutes by Harrier from the Wash and the Holbeach and Wainfleet weapon ranges.

On September 1st 1993 I was programmed to fly ZD402* to Holbeach range to drop eight 3kg practice bombs. The target was at the centre of a 150ft radius circle marked out by white oil drums on the marsh flats. A long line of oil drums led up to the target along the precise attack direction. Next to the bombing target was a strafe target for firing guns and further off the coast were a couple of small rusting ships, grounded on the sand banks and also used as bombing targets. Harrier students would spend a lot of time flying around Holbeach range during their conversion course. By the end of the course each pilot could hit the centre of the target with a 3kg practice bomb at a closing speed of 760ft/second. For those of you familiar with the movie Star Wars this is a similar feat to Luke Skywalker destroying the Death Star in his X Wing fighter. The following day I flew ZD402 again to Holbeach, this time for Close Air Support training (directed on to targets by a ground based Forward Air Controller).

We also taught the techniques and tactics of low level tactical formation flying and how to use the navigation and targeting systems and the complex self defence system too. It was a busy and challenging course but immense fun. The end of the course was marked by a 1 week deployment to another airfield in the UK for the final sorties before graduation. On these sorties each student would have to bring together all of the skills he had been taught in order to plan and lead another aircraft to attack a number of simulated military targets. We would often spend the week at either RAF Leuchars or RAF Lossiemouth for these phases, which were known as Exercise Tartan. It was there that we fully embraced the mantra of 'work hard and play hard'.

Each day we would send a team out into the Scottish Highlands to set up the targets. These would be full size inflatable Soviet tanks that at 500 miles an hour looked just like the real thing, if you could find them. It added a level of realism to each sortie and gave an enormous amount of satisfaction at the end of a successful attack. Not only did the pilots have to navigate to the target, often in challenging Scottish weather, but they also had to fend off attacks from a third aggressor Harrier flown by one of the staff pilots, and known as 'the Bounce'. At that time we had an interesting mix of aircraft on the OCU, which included the GR5 and GR7 and a couple of GR3s and T4s. The two seat Harrier T10 had not yet entered service. The students would fly the GR5/7 and the staff would 'bounce' in the GR3 or T4. On January 27th 1997 I got to fly ZD402 for a third and final time during a deployment to Leuchars. My log book lists this flight as a pairs SAP or simulated attack profile. I flew the aircraft as the number 2 to a student on one of his final course sorties. My job was to be a good wingman, keep a good look out, stay in formation and destroy the target. Of course I fulfilled all of those requirements and I even bought a few pints in the bar that night too.

At the end of 1993 I started a 3 year tour of duty flying the Hawk, which involved a lot of swanning about the world in a red flying suit. In 1996 I returned to the Harrier and spent a year at RAF Laarbruch, Germany, 3 months on HMS Invincible off the coast of Kuwait and the remaining 2 years of my RAF career on 1(F) Sqn, back at RAF Wittering. It was with 1(F) Sqn that I flew 40 missions over Kosovo in 1999. But I'll leave those adventures for another article.

Whilst it is sad to see the aircraft sent to an early retirement I can rejoice in the fact that I was fortunate and privileged to have been one of a small group of pilots who got to experience the awesomeness of the British Harrier. There never was and never will be a machine quite like it.

* When I flew ZD402 it had been converted to a GR7. This modification included a FLIR in the nose and a larger HUD and made the aircraft fully night attack capable. I was not aware at that time that ZD402 was a record breaker.

BOOK REVIEWS

Hawker P.1103 & P.1121 - Camm's Last Fighter Projects by Paul Martel-Mead and Barrie Hygate. This very well written book not only tells the story of these two projects in considerable detail based on diligent research into original documents and interviews with survivors from the period but also gives an insight into the workings of Camm, his Project Office, the Hawker and HSA management, the engine companies and the various Ministry departments involved. The reader feels that the writer, mainly Paul Martel-Mead, has a good technical grasp of his subject and an understanding of the company and government politics of the day. Long-lost photographs of the mock-up, intake model and prototype under construction have been included as have many original Hawker project drawings augmented by the nowadays essential artists impressions of what might have been. Also, Barrie Hygate has contributed several clear general arrangement and cockpit drawings. The development problems of the de Havilland Gyron supersonic turbojet are described as are those of the alternative Olympus and Conway engines. Closely related projects also covered are the P.1116, P.1122, P.1123 and the P.1129, the troubled gestation of the latter making fascinating reading. A comprehensive technical description of the P.1121, its avionics, engines and weapons are included and an appendix covers the wind tunnel models, intake models and systems test rigs. Model kits available on the market are described in another appendix. This handsome soft-cover book is published by Blue Envoy Press (ISBN 978-0-956195159) and with a cover price of £11.99 and is well worth every penny.

X-Planes of Europe II - Military Prototype Aircraft from the Golden Age 1945 - 1974, by Tony Buttler. A beautifully produced book in which the author presents concise development histories of 29 British, French, Italian, Spanish and Yugoslav aircraft. Every chapter is fascinating and the author has researched original documents, as well as reliable secondary sources, thus giving much new information. Of particular interest to Members will be the chapters on the Hawker P.1052 and P.1081 prototypes and the contemporary Supermarine Types 510 and 535. Rarities like the Hispano HA-300 and the Yugoslav Ikarus projects will surprise the reader. The photographs alone are worth the price of this 288 page hardcover book published by Hikoki (ISBN 9781902 109480) at £34.95. Tony's equally good first volume covering research aircraft of the period was reviewed in NL.34.

Hawker Hurricane Survivors - A Complete Catalogue of Every Existing Hurricane Worldwide, by Gordon Riley. Surely a labour of love, this 225 page profusely illustrated and beautifully presented book appears to be exactly what it says on the cover. The Editor only read the eight page chapter on PZ865, 'The Last of the Many', which gives a very detailed history of the aircraft from build to today. The number of pilots who flew her surprised him. If this chapter is representative of the rest of the book then it is surely excellent. Published by Grub Street (ISBN-13: 9-781-909808-34-8) it is very good value for the Hurricane enthusiast at £25.

In his review of **The Aviation Historian Issue 13** the Editor said that Portuguese Hurricanes were used in the film 'Battle of Britain' - he was confused; the film was 'Angels One Five'. **TAH Issue 14**, unusually, does not contain specifically Hawker articles but Members will find most interesting Prof Keith Hayward's story of the Vickers 1000 and its cancellation, Philip Jarrett's account of Cody's and Roe's pioneering work and Nico Braas's history of Fokker's Mach Trainer. There are 13 other feature articles as well as regular book reviews, letters and curiosities, all illustrated with high quality photographs and art work. Go to www.theaviationhistorian.com to subscribe to Nick Stroud's first class quarterly.

MEMBERSHIP NEWS

We welcome new Members Daphne Gaitley, Mick Jeffries, Tony New, and Rosemary Wills.

Sadly we record the deaths of David Betteridge and Mike Newell. We send our sympathy and condolences to family and friends.

MEMBERSHIP LIST - FEBRUARY 2016

Subscriptions for **2016 - 2017** are now due; please pay using the enclosed slip. **Members who have not yet paid their subscriptions for 2015 - 2016 are in bold below.** Please send cheques payable to The Hawker Association to Barry Pegram, 12 Becket Wood, Newdigate, Surrey, RH5 5AQ. If you are **leaving** please let him know by post or by telephone on 01306 631125. Thank you.

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