

THE HAWKER ASSOCIATION

NEWSLETTER NUMBER 11 - WINTER 2005

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the Members. Contents © Hawker Association

EDITORIAL

Website: www.hawkerassociation.org.uk

Some of you are lucky to be reading this! The subscription reminder in the last Newsletter jogged a lot of memories but there are still a few of you out there who have not renewed. See enclosed note.

We are privileged to have a unique article in this issue, kindly written by John Farley. This is the first time the history of the VAAC Harrier and its work has been published. We also have Duncan Simpson's story of the first Harrier delivery and John Crampton's fascinating reminiscences of Sir Thomas Sopwith. Otherwise, it's "all my own work"! How about a few more pieces about your time with Hawkers for the next Newsletter?

Christmas is fast approaching so give yourselves a couple of treats. Firstly the Association Christmas Lunch on December 14. Tickets are just £15. Call **Percy Collino** on 020 8337 8143 then send him a cheque payable to The Hawker Association. Secondly, an Association tie or two. These are now available - see below.

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PROGRAMME FOR 2005

Wednesday 14th December

Christmas Lunch. Hawker Centre, 12.30 pm.

PROGRAMME FOR 2006

* = to be confirmed

Wednesday 11th January

Social and 'Hawker' quiz with Les Palmer.

Wednesday 8th February

"Competition Sailplanes" - **Afandi Darlington**.

Wednesday 8th March

"My Three Jobs in the Front Office" - **Chris Roberts**.

Wednesday 12th April

AGM

Wednesday 10th May

"The Kestrel Tripartite Evaluation Squadron" - **Air Cdr David Scrimgeour**.

Wednesday 14th June

Summer Barbecue - 1.00pm

Wednesday 12th July

*"Boeing Training in the UK" - Keith Hertenberg.

Wednesday 9th August

*Social with video.

Wednesday 13th September

*Social with video.

Thursday 21st September

Coach trip to the Fleet Air Arm Museum, Yeovilton.

Wednesday 11th October

*"The Royal Navy's Future Carrier" - Cdr P Lloyd.

Wednesday 8th November

*"A Life in Aviation" - Duncan Simpson.

Wednesday 13th December

Christmas Lunch - 12.30 pm.

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.

Afandi Darlington is an experienced aerodynamicist and expert competition glider pilot who has worked for BAe and Richard Noble. Currently he is a partner in Optimal Aerodynamics, a consultancy working on the Noble aircraft, now American owned and nearing completion in the USA. **Chris Roberts**, best known to us as a Chief Test Pilot at Dunsfold, had an earlier career in the RAF and a later one in civil aviation, hence the three front office jobs. **David Scrimgeour** was the CO of the Kestrel Evaluation Squadron so will talk to us from first hand experience.

ASSOCIATION TIES

These handsome ties in red or blue with the Association logo diagonally across the blade are now available for £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.

KINGSTON AVIATION HERITAGE MEMORIAL PROJECT

A Planning Application for the curved stainless steel column and Hunter model has been submitted to the Kingston Council. The memorial is to be sited at the Kingston side of the town bridge. If a positive result is announced in November, that will be a major achievement; but the project will come to nothing without money. Les Palmer is in charge of fund raising and now needs your help and support. Please call him on 01784 460418 or approach him at the next Meeting. If you want to see 'Hawkers' remembered, here is your opportunity to make sure it happens by helping with the fund raising admin. No helpers; no money; no memorial!

HAWKER PEOPLE NEWS

Dick Wise was awarded an OBE in the Queen's Birthday Honours List for services to UK business interests in the USA. It's good to see Dick's long term and conscientious work at Dunsfold and Kingston on Harrier projects bearing fruit in his subsequent career with BAe/BAES at Warton and in the USA.

Congratulations from your old colleagues, Dick!

Members will remember Peter Martin, the Hunter pilot and Sales Exec. of black eyepatch fame; sadly, he died this Summer. Our condolences to his relatives and many friends.

Our very best wishes to Ralph Hooper who underwent a hip replacement in October. I am very happy to report that the patient is doing well.

Geoff Lee has a new book out, "Horizons; the RAF in the 21st Century" (ISBN 0 946958 45 9), with 200 of his air-to-air colour photographs. It is an Ad Hoc publication (07776 134277) and costs £30.00.

THE LAST PEGASUS

The last of 1270 Bristol/Rolls-Royce Pegasus engines has been built at Filton, just like all its predecessors. To date they have accumulated over 1.8 million flying hours in the Harrier family which will continue in service for at least another decade so overhaul and modification work will contribute to R-R revenues for some time yet.

HMS INVINCIBLE RETIRES

On August 1st HMS Invincible, the World's first purpose built V/STOL carrier, sailed quietly into Portsmouth for the last time, for decommissioning.

How time flies! I (Ed.) still have vivid memories of going with John Fozard in May 1977, to witness the launching of Invincible from No.3 berth, Vickers Shipyard, Barrow-in-Furness. It was my first close look at a modern warship out of the water and, as an aeronautical engineer, was mightily impressed by the massive scale and heavy construction. John Farley took our Harrier two seater demonstrator, G-VTOL, to fly over the ship post launch on May 3rd, carrying commemorative covers organised by Trevor Jordan. Afterwards a group of HSA Kingston people went to an excellent restaurant (the Miller Howe) overlooking Lake Windermere to celebrate the importance of this launching in the story of the Harrier.

DUXFORD VISIT

A full coach load of Members and their guests visited the Imperial War Museum at Duxford Aerodrome on September 7th. We met in the car park of the Hawker Centre at Kingston and all who had booked set off on time, including our Chairman, Ambrose Barber, who had experienced a nerve-wracking traffic-ridden journey from Petersfield; he just made it! Our excellent driver got us to Duxford speedily and smoothly so we were all ready to go on arrival. Several Members started at the licenced cafe or restaurant for nourishment and a drink before spending the afternoon touring the five hangars. Not only were complete aircraft on display, but also projects under restoration could be examined and the enthusiastic staff questioned. Blessed with good weather, we were also lucky to see a bright blue Spitfire fly in, specially painted for a forthcoming celebration in Malta, to where it will fly with a Hurricane. This outstandingly enjoyable event was organised by Percy Collino who received a well deserved cheer on the way home. He is already working on next year's visit to the Fleet Air Arm Museum at Yeovilton.

TANGMERE HAWKER WEEKEND

Several Members met at the Tangmere Military Aircraft Museum on 17th July for their Hawker weekend. Apart from the pleasure of meeting old colleagues it was rather disappointing as there were no special Hawker displays or exhibits, although a Hurricane did make an appearance in the afternoon. However, as always, it was a pleasure to visit this excellent museum and admire Hunter WB188 in 'racing red'.

SETTING THE AGENDA FOR AEROSPACE

On 12th October Ralph Denning came up from Bristol, with Gordon Lewis, to talk to the Association about wartime German aeronautical research and development and its effects on post-war aviation. Ralph joined Bristol Engines in 1949 and stayed with them for 39 years, 20 years of which he spent as Chief Engineer Future Projects, having a major influence on powerplants for many types including Harrier and Concorde. Before joining Bristols he was with the Ministry of Aircraft Production (MAP) and during 1945-1947 was in Germany with the UK team assessing German wartime R&D.

The team was amazed by what they found; extensive wind tunnel facilities for low and high Mach number work, innovative aircraft designs and engine types, air-to-surface, surface-to-air, air-to-air and intercontinental missile projects. Clearly the end of the war had come just in time before these new aircraft and

weapons could be brought to the operational stage. The allies had put their efforts into fully developing what were really obsolescent types rather than looking to the future, so, had the war dragged on, they were in danger of being seriously outclassed.

In Germany academic institutes had always had a powerful influence on design and major research establishments staffed by expert scientists had been set up throughout the country. For example, the DVL in Berlin had a 9 ft wind tunnel, the AVA at Gottingen 2 tunnels, the LFA at Volkenrode 6 tunnels, ballistic tunnels and a high altitude engine testing facility, the LFM at Munich a 9 sq ft tunnel, at St Ozaal in the Italian Alps a sonic 26 ft tunnel was under construction and at Kochel in Bavaria 3 missile research tunnels for Mach 3.3, 4.4 and 10 were operational!

Ralph was mainly concerned with the Herman Goering Aeronautical Research Institute, LFA, at Volkenrode, near Brunswick, which was overrun by the US 9th Army in April 1945 and by July the MAP's 'Operation Surgeon', led by Roy Fedden, was under way. The facilities were hidden in 1,100 acres of woods with no visible roads, railways or power lines so, although reconnaissance photographs had been taken, its importance was not recognised.

Under Prof. Herman Blank the LFA had three divisions: 'A' for aerodynamics and structures, 'M' for engines and rockets, 'W' for weapons and ballistics. Working in 'A' was Dr A Busemann who at the 1935 Volta Congress had, unnoticed, given his paper on the significance of wing sweep. Boeing's Chief Aerodynamicist, George Schairer, visited the LFA in May and reported Busemann's work on sweepback, which led to the B-47. The NACA also quickly responded to this information with dropped body tests on swept wings demonstrating 30% drag reduction at Mach 1. However, the UK was slow to react.

The 'A' division had six advanced wind tunnels. A1 was a 2.5m low speed tunnel. Under test was an Arado swept crescent wing with underwing podded engines. This layout was also reported by Schairer and the wing planform was adopted by Handley Page. A2 was a 2.8m high speed (.82-.90M) closed return tunnel that could be run open for engine testing. The huge A3 8m low speed return tunnel consumed 15,000 hp. The A6 and A7 pair of high speed intermittent suck- and blow-down tunnels with a 1,000 cu m reservoir operated at .94M and Mach 2 to 4 respectively. The A9a open working section closed circuit .93M tunnel could also be used open return for jet engine and ramjet testing. The A9b closed working section 1.6M tunnel used two 4,500 kw motors which were taken to RAE Bedford for their 3 ft supersonic tunnel.

The LFA 'M' Institute was an engine development and test facility including an altitude testing chamber and combustion test rigs in the woods. Under test were the BMW 003 and Jumo 004 axial flow jet engines. The latter, of which prototype construction started in 1939, powered the Me262 twin jet fighter and the Ar234 high altitude reconnaissance bomber. Also in evidence was a gas turbine powered Panther tank.

The 'W' Weapons Institute was housed in dummy farm buildings with underground ballistics tunnels, including the 400m W1, and rocket research facilities. Nineteen guided missile projects were initiated in Germany, of which four became operational: the Ruhrstal SO 1400 radio controlled 'smart' bomb, the Henschel Hs 293 rocket propelled air-surface missile, the V-1 pulse jet propelled flying bomb, and the V-2 rocket propelled ballistic missile. There were 8 air-air weapons of which 2 were nearly operational, and the A9/A10 two stage ICBM project, a winged V-2 with a booster, to attack the USA. The Enzian SAM, based on the Me163 rocket fighter was in production but was stopped by allied bombing.

There were several operational jet aircraft types, the most successful being the Me 262 which originated from a 1938 (!) requirement, flew in 1942 and, after a year's delay for work on a fighter-bomber version, was in service in 1944 (1,433 built). The specification for the wooden Heinkel He 162 was issued in June 1944, the prototype flew in December and the first of 100 production aircraft was delivered in March 1945. The twin jet Arado Ar 234 was operational in 1944 and the four jet Junkers Ju 287 bomber was flying as a prototype in 1944. This aircraft had forward swept wings and was designed using the area rule principle.

Ralph showed a slide outlining the scope of German work on swept wings with 52 jet projects illustrated, several of which had reached the prototype stage with a few in production. Layouts included tailed and tail-less swept back, swept forward, delta, 'W', splayed, twin boom, with podded and buried engines. Particularly significant was the Jumo 004 powered Messerschmitt P.1101 with ground adjustable variable sweep wings and a 'pod and boom' fuselage. The incomplete prototype was taken to the USA where the Bell X-5 research aircraft was closely based on the Messerschmitt design but incorporated in-flight variable sweep. The 'pod and boom' layout was also adopted in the swept wing SAAB J-29 and the Yak-15 whilst German swept wing technology was capitalised on by North American in their F-86 Sabre and by Mikoyan in the MiG-15.

After the war several German scientists worked at RAE Farnborough including Drs Busemann and Kucheman, the latter developing wing planforms for Concorde utilising the work of the German delta pioneer, Dr Lippisch. Lippisch's work also influenced the design of the Vulcan.

In conclusion Ralph listed the technologies taken to a high level by Germany during the war: high speed aerodynamics, gas dynamics, rocket propulsion, axial flow gas turbines, ramjets, pulse jets and guided weapons.

Applications included swept and delta winged jet aircraft, cruise missiles, strategic rockets, guided bombs, air-to-surface and air-to-air guided missiles.

After question time Ralph Hooper gave the vote of thanks quoting Sydney Camm, on seeing the design of the swept wing Messerschmitt P.1101, as saying "Did you ever see anything so bloody useless?" His first swept wing aircraft, the P.1052, did not fly until November 1948 although Hawkers' first swept wing project, the P.1047, was drawn by Vivian Stanbury in 1945.

UNIFIED FLIGHT CONTROL © JF Farley

John Farley explains the contemporary significance of the RAE/DERA/QinetiQ's work on their VAAC Harrier TMk2 XW175 and the historical background to this success...

On the 16th of May 2005 Justin Paines, a QinetiQ civilian test pilot, pressed the 'coffee bar button' and thereafter everything happened exactly as intended and just like I had wanted it to for years. The 'coffee bar button' was in the rear cockpit of Harrier XW175 (the second two-seater ever to fly, way back in 1969) and the result of Justin pressing it was that 175 looked around, sniffed the air with its satellite navigation system, decided where Justin's coffee bar was located, took him to it and landed him safely, gently and of course vertically, on board HMS Invincible.

This first fully automatic recovery of a Harrier to a ship was the end of a journey on which RAE scientists embarked in 1952. Yes, that is correct. The journey started eight years before Bill Bedford broke his ankle and the doctors decided the only thing he was then fit to 'fly' was the first prototype P1127 tethered to the grid at Dunsfold. Just what were RAE (later to become DERA and now QinetiQ) scientists up to all that time ago that eventually led to the Invincible landing fifty three years later? Also why was I so keen for such a capability to be developed? I will try to explain.

By 1951 the senior management of RAE realised that the thrust of jet engines was increasing all the time and that one day an aircraft with a thrust greater than its weight would become possible. But how could the attitude of such an aircraft be controlled in the hover?

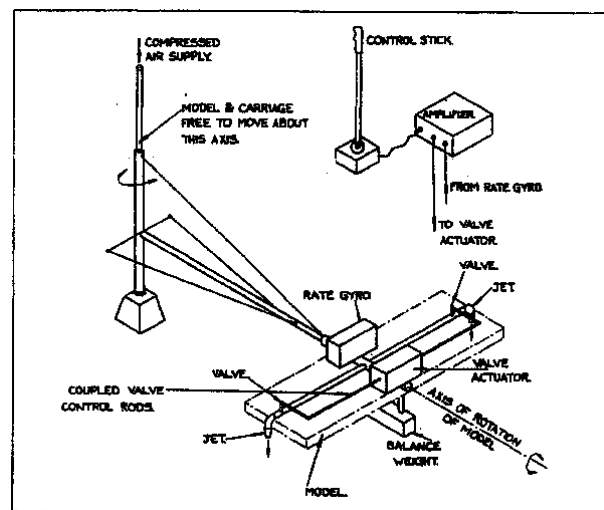
In an attempt to answer this question Dennis Higton, a former RAE apprentice who had joined the Aerodynamics Research Flight at Farnborough at the end of his apprenticeship in 1942, devised a rig to investigate the feasibility of controlling the attitude of a hovering aeroplane by means of small jets mounted in the nose, tail and wingtips. The layout he used is shown in RAE Tech Memo 286 of April 1952 in which Higton reported his work.

These early experiments showed that a reaction control system was indeed suitable and enabled Higton, working with colleague Roger Duddy, to draw up the specification for a full size piloted rig to be used by the RAE. This rig, which first hovered tethered under a safety gantry at Rolls-Royce Hucknall in 1953, flew free for the first time in 1954 and was known as the Flying Bedstead. From those early days the scientists of the Aerodynamics Research Flight at RAE - or simply Aero Flight as they were known - worked continuously to develop and improve the handling qualities of jet lift aircraft. After the Flying Bedstead they commissioned the Short SC1 which they operated from the new RAE research airfield at Thurleigh, near Bedford.

From the start the RAE approach to the control of jet VSTOL aircraft was to use a high degree of autostabilisation to make the handling as easy as possible for the pilot. Hawkers on the other hand favoured simplicity as a means of reducing the control system failure cases. Accordingly the initial Hawker P1127, Kestrel and Harrier aircraft could be flown without artificial aids, relying on the pilot to compensate for any inherent handling deficiencies.

With hindsight both teams were correct. The RAE approach was without doubt the ideal way ahead for the pilot but - and it was a big but - the electro-mechanical engineering reliability of automatics in those days was far from assured given the technology then available. Because of this, the Hawker approach of simplicity and reliance on the pilot to compensate was absolutely correct during the 1960s and enabled the Harrier to happen.

Once the Harrier went into service, there was a slow but continuous trend to add devices to it that made control easier and safer for the pilot at low speeds. Not surprisingly the RAE Aero Flight input into the development and certification of these aids was considerable and from 1964 onwards they were helped in this work by having their own P1127. By 1964 six P1127 aircraft had been flown at Dunsfold and naturally the later



aircraft incorporated lessons learned from the earlier ones. Because of this the standard of the original prototype, XP831, was by then looking fairly unrepresentative so the ministry allocated it to Aero Flight at Bedford. At that time I happened to be serving there as an RAF Flight Lieutenant and was fortunate enough to be given the job of collecting it from Dunsfold. Three years later, following the retirement of Bill Bedford, my luck continued and I took my uniform off and joined Dunsfold as their new junior test pilot.

Later in 1970 Dunsfold Chief Test Pilot, Hugh Merewether, asked me to represent him at a meeting being held at RAE Farnborough. Hugh explained that it appeared the RAE boffins had ideas for making life easier for jet VSTOL pilots and so he needed somebody to go and keep tabs on them. He pointed out that as a former RAE apprentice I was obviously the bloke for the job and anyway he had better things to do that afternoon. At that meeting it was clear to me that the eventual aim of the scientists was to hand over control of the aircraft to a computer leaving the pilot just to tell that computer what manoeuvre he wanted it to fly. If this happened it would mean the Harrier pilot's nozzle lever would no longer be needed because control of the nozzle angle – as well as everything else that the pilot hitherto controlled – would be left to the computer.

As I drove back to Dunsfold I was quite excited about what I had heard. After using my left hand to operate the nozzle lever and throttle for six years, it was clear to me that it was only a matter of time before I made a mistake and moved the wrong one with potentially disastrous results. Therefore I welcomed the boffins' ideas although I realised it might take a few years to turn them into reality (it actually took twenty nine!). Meanwhile the RAF had only two years experience with their Harriers and the provision of this single nozzle lever was seen as the simple masterpiece that had enabled VSTOL to happen. Rather naturally at Kingston and Dunsfold, any talk of removing the nozzle lever was as close to Harrier Heresy as you could get so care was needed when broaching the subject. Anyhow they were all so busy coping with the USMC decision to buy Harriers it was not reasonable to expect them to give serious consideration to futuristic ideas.

Time passed and I became increasingly frustrated that the RAE approach to specifying the modifications of a Harrier to start flight trials had turned out to be so conservative in that they were not intending to split the control of the four engine nozzles. I remember talking to Kingston aerodynamicist Robin Balmer about this in the mid seventies and suggesting that if we let a computer put the nozzles down on one side only, we could get rates of roll in low speed combat that would make any opposition's eyes water. Equally by putting down the front or rear pair we could pitch in a way nobody else could even dream about. It seemed so obvious to me that the Pegasus offered a ready made way to endow the aircraft with unmatched manoeuvrability. However, such ideas were viewed as too way out. Not surprisingly the Kingston design office and spiritual home of "Keep it simple, stupid" (and that is meant as a compliment not as a criticism) was not about to change horses in mid stream and take the lead in the brave new world of computer-based systems or fly-by-wire as they are called today.

My apologies - I digress. By 1982 the RAE programme, now called VAAC for Vectored thrust Aircraft Advanced flight Control, had laid the three key foundation stones needed for eventual success. The first of these was the choice of a two-seat aircraft for the programme. Had the team chosen to modify a single seat Harrier, they would only have been able to test tomorrow's ideas on today's Harrier pilots - hardly the best way to conduct open minded research. (NASA went this route with a modified Harrier and I suspect lived to regret their decision) The second was installing something termed the Independent Monitor (IM). The IM was essentially a special computer that was carried around in the test aircraft for many sorties during which time it was taught by the Harrier crew to recognise the safe limits of Harrier operation. It was then sealed and became the basis for the subsequent airworthiness certification of the aircraft as a research tool. When the trials proper started, the IM was thus able to keep an unblinking eye on what the (single channel) experimental equipment was attempting to do with the various Harrier controls. If it detected anything that looked like going outside what the human pilots had previously agreed was a limit, it instantly disengaged the experimental kit and handed the aircraft back to the safety pilot in the front seat. That way the safety pilot would always be left with a recoverable situation.

The third foundation stone was that by then two Bedford men, scientist Peter Nicholas and test pilot Flight Lieutenant Peter Bennett, had conceived the notion of something called Unified. To cut a long story short, this meant that if the pilot wanted the aircraft to go up then the stick had to be pulled back and to go down the stick was pushed forward. Sound familiar? Well yes, but Unified was conceived for use at any speed. Helicopter pilots raise or lower a lever called 'the collective' to go up or down in the hover while Harrier pilots use the engine throttle for the same thing. The aim of Unified was to allow the pilot to fly using the stick at any speed. You may prefer to think of it as eliminating the concept of a 'stalling speed'. When the pilot asked to fly slower than the stalling speed, the computer merely put the nozzles down and used the engine instead of the wings to support the weight. This of course was what human (superhuman?) Harrier pilots already did but only after special and expensive training. Unified enabled any fixed wing pilot to handle a Harrier in the circuit without extra training. Easy though Unified may appear, it was in actual fact far from straightforward to optimise and approve all the necessary software. After all, exactly how did various pilots want the aircraft to react to their demands at different speeds and so on?

In 1983 I turned into a pumpkin and retired from Harrier test flying but the VAAC team were kind enough to keep in touch with me and I was invited back in 1993 and again in 1999 to fly the aircraft and comment on how I thought they were getting on. In 1999 my safety pilot was one Squadron Leader Justin Paines. When I got out after our couple of sorties at Boscombe, I told him that I thought the team had cracked it and that Unified was the way ahead. Shortly after that, following a detailed and quantitative evaluation trial where the VAAC was flown by many test pilots including several from the USA (some of whom had never been in a Harrier before) the VAAC team was able to convince the US Joint Strike Fighter Programme Office that their ideas were indeed the way ahead.

Again there was much more to selling Unified to the US than my account might suggest. Justin Paines, who led the final test pilot push, was in no doubt that the opinion of Harrier squadron pilots on both sides of the Atlantic was bitterly divided. While some saw the attraction of Unified others were seriously opposed to it. The opposition even included senior BAE test pilots. As I saw it the opponents all had many years of successfully using the nozzle lever and arguably it was that skill that made them better pilots than those who had no such experience. It made them better in the circuit, better in the bar, and probably better in bed. As for the mistakes Harrier pilots had made over the years it was only lesser mortals, not people like them, who moved the wrong lever. Expecting such senior operators to vote for abolishing the nozzle lever was akin to expecting turkeys to vote for Christmas.

In the end I am glad to say that the VAAC team's arguments in favour of deskilling the process of flying jet VSTOL won the day, thus saving costly training as well as reducing the likelihood of accidents. The JSF will be in service for 50 years from now so many of its future pilots have yet to be conceived. Thankfully the aircraft is to be built with them in mind, not yesterday's nozzle lever men.

Finally what about my wish for a 'coffee bar button'? In many of the conversations I had with Harrier pilots about the controversial idea of Unified, I was at pains to point out that although I wanted to get rid of their beloved nozzle lever I was not a boffin's nark and against the operational pilot's point of view. In fact quite the reverse. I believed that while operational pilots were over the target (and being shot at on our behalf) their views about what they needed to do their job were paramount. However, once they turned their back on the target and their operational job was done, they should be able to press a 'coffee bar' button whereupon the aeroplane would then take them home safely, day or night, in any weather, regardless of whether they were exhausted, injured or (heaven forbid) it was just their day to make a mistake during their approach to land.

HARRIER - FIRST DELIVERY

In the last Newsletter Duncan Simpson recalled the first Hunter delivery to the RAF. Now he tells us the story of the first Harrier delivery...

The Harrier Conversion Team of the first four instructors selected by the RAF arrived at Dunsfold towards the end of April 1969. They were Sq Ldr Dick LeBrocq and Flt Lts Peter Dodworth, Bruce Latten and Richie Profit; all experienced Hunter pilots. After they had each completed a five hour conversion course to the Harrier at Dunsfold (organised and run by Duncan - Ed.) the first five aircraft were ready for delivery to RAF Wittering.

On the evening of May 16th I joined the Team for the ferry briefing. I was to fly as No.5. Next day we strapped-in and started up, all ready to go...except for me. I found that my 'electrics' refused to come on-line. I pressed the reset button many times but to no effect. However, it just so happened that our two chase Hunters were also ready for Wittering. So, determined not to be left behind, I ran over to the Hunter Mk9 affectionately known as 'Fred', strapped-in again, took off and arrived shortly after the Harriers.

This event must go down in history as one of the lowest key first deliveries to the RAF of any new type. We were met by a few ground staff who made the necessary arrangements to help us push the Harriers into the hangar. We then discovered that the furniture for the Operational Conversion Unit offices was all stacked outside the allocated building, so we just had to set about carrying in the chairs, desks and filing cabinets.

Thus did the Harrier join the Air Force; not just a new aeroplane but the start of a new concept of operations.

A FEW SOPWITH STORIES

John Crampton, who knew Sir Thomas well, has contributed the following anecdotes about the great man to whom we all owe so much...

Early in 1968 I was detailed off by the management to comply with a request from the Institute of Mechanical Engineers for someone from our Company to prepare and read a Paper on the history of both the Sopwith and Hawker Aircraft Companies. I expressed astonishment at the request and felt sure that I was not really the right bloke; I knew little or nothing about the histories. "Just the very man we want", said the Management, "no preconceived ideas!"

A few weeks before this, Bill Bedford and I had been asked to go to Dunsfold on a day that Sir Thomas Sopwith would be visiting. He wanted a run down on the P.1127. Bill and I did our stuff. I remember Sopwith on that occasion very clearly. He leant forward in his chair to catch every word we said - especially when Bill described flying the aeroplane.

Encouraged by this meeting I wrote a very carefully worded letter to Sir Thomas telling him of the daunting task I had been given and would he kindly guide my hand in drafting my Paper? And perhaps even more kindly read the Paper before I presented it to the Institute's audience to ensure I had not made too many howlers; hopefully no howlers at all? The day after posting this letter my telephone rang at midmorning. "Sopwith here. Got your letter. You'd better come to lunch. When?" The only day I could accept such an invitation during that period was the following day. "Thank you, sir," I said. "Tomorrow?" "Ooooooh hang on, tomorrow..." Then followed whisperings to, I presumed, Lady Sopwith, about this immediate acceptance. "Yers, all right. Know where we are?" "Yes, sir" "A quarter to one then." "Thank you, Sir." What follows are his answers to a few of my questions.

John Crampton. "Starting at the end of 1910 you had a couple of sheds in which you kept your aircraft at Brooklands and I assume you flew from that aerodrome as frequently as possible?" Thomas Sopwith. "Yers."

JC. "Do you remember any of the others who were also flying from there at the time?" This resulted in a period of deep thought; a characteristic when Sopwith was asked such a wide ranging question. Then TS: "Werl, there was a feller almost next to me who had a shed. He used to fly every now and then and whenever he turned up we all stopped what we were doing to watch the crash. The man could get off the ground and fly around but he had no idea how to land. He'd either stop the thing thirty feet up and so fall with a sickening crash before us all, or he'd fly it straight into the ground, in which case the accident took longer. We'd have to disentangle him from his wreckage and someone took him to Weybridge Hospital. Trouble was he always lost something in the crash: an arm, leg, hand, eye. In fact when the poor little bugger died he had only one of everything left."

JC. "In 1911 you went to America and took part very successfully in a number of flying competitions. While there you bought a Wright Flyer..." TS. "Yers." JC. "How would you sum up Wilbur and Orville Wright?" TS. "Two very quiet and serious Americans. Not given to any small talk and not given to suffering fools gladly, either. Bit like Camm - who came later."

JC. "Having studied pictures of your Howard Wright biplane the position of the undercarriage indicates that you flew with the Centre of Gravity rather far aft." TS. "Yers, and the longer you had the aeroplane the further aft the CG would go." JC. "Why?" TS. "Stands to reason." JC. "Not to me, sir." TS. "Werl, look where the engine is." JC. "Trailing edge of the wing centre section." TS. "Yers. Well those things threw out a gallon of oil an hour. And that went all over the tailplane." JC. "I see. Did you just renew the fabric or the whole structure?" TS. "The lot. The wood got soaked too."

I once asked Sir Thomas who gave the unusual names to his aircraft: Baby, Pup, Camel, Cuckoo, Dolphin, Snipe, Bulldog, Salamander, Gnu, and so on. "I have no idea." he said. This struck me as strange. Sir Thomas must have known, but he gave a direct answer to a straight question. It would have been very impertinent of me to say "Oh come on sir, you must know." So I didn't. I asked him again several years later and he snapped back at me "I've already told you. I do not know." It was the only time he spoke severely. Clearly something rankled him. I have since re-read that wonderful book by Harald Penrose, "British Aviation - The Great War and Armistice, 1915 - 1919". The answer is given in Appendix 5, page 605. Worth looking up.

[Editor's note. For those of you without this classic book, I have looked it up for you. Name types were specified in an official Government publication: TDI 538, later to become AP.547. Single seat, land or carrier based aircraft were to be named after reptiles (except snakes) or land birds (except birds of prey); multi-seaters after mammals (except felidae - the cat tribe); seaplanes after waterfowl or fishes. However, these rules do not appear to have been applied rigorously eg the Baby, Pup, Camel and Dolphin were all single seat land planes. I understand that the first three were unofficial nick-names derived from size and appearance, but a Dolphin is certainly not a reptile or land bird!]

The Paper on Sopwiths and Hawkers was passed by Sopwith and given to the Kingston upon Thames Branch of the IMechE on november 28th 1968. And that, I thought, would bring my association with Sopwith to an end. But no! On a number of occasions he would ask me to perform tasks for him. Nothing demanding. Rather along the lines of what follows - a brilliant account of a lunch party in 1977 that Sopwith gave to Robert Parke, editor of the American aircraft magazine "Flying".

To be continued in the next Newsletter (so, pay your subscriptions, please!)

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The Webmaster is Richard Cannon who would love to hear from you. Log-in and speak-up!