THE HAWKER ASSOCIATION

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EDITORIAL

We haven't heard of any Members catching Coronavirus so that is very good news indeed and shows how sensible we all are.

More than **EIGHTY** of you in **bold** on the back page have not paid your **suscriptions.** Please, please do.

As there are no talks or visits to report I have been able to include several pieces which have been in the queue for publication. I hope you enjoy them.

If you would like to write up some of your memories of Hawker life Coronavirus is giving the opportunity.

Contributions, please. to the editor, Chris Farara at cjfarara@ntlworld.com or 24 Guildown Road, Guildford, Surrey, GU2 4EN. Phone 01483 825955.

PROGRAMME FOR 2020

Due to the Coronavirus pandemic all events have been postponed until further notice. The situation is, however, being kept under review by the committee and things will return to normal as soon as feasible.

JOHN GLASSCOCK 1928 – 2020

Ambrose Barber remembers the Association's first President.

John Glasscock joined Hawker Aircraft Ltd in 1953 after a short-service commission in the RAF and was General Manager of Kingston and Dunsfold from 1963 to 1977. Always a steadfast supporter of the HA, his inaugural talk to us in 2003 was entitled 'Kingston, a Great Place to Work' and many in the audience must have reflected how that was in some measure due to his own collegiate style of management. A fair-minded and caring boss, he also served as a local JP. His relaxations included theatre-going with his wife Anne, playing bridge, squash and golf and he clearly enjoyed being in touch with old colleagues. He possessed an enviable facility for choosing the right words, whether wise or witty, when invited to speak in public even at short notice! John retired from the BAe Board in 1987 and this summer celebrated his 92nd birthday. He died peacefully in his sleep.

DAVID LOCKSPEISER

Nick Stroud points out that the National Aerospace Library has posted an audio lecture with David Lockspeiser on its website — https://www.aerosociety.com/news/audio-classic-lecture-the-boxer-utility-land-development-aircraft-by-david-lockspeiser-fraes/.

HARRIER T4N XW268

Stewart Griffiths is involved in the restoration, for static display, of Harrier T4N XW268 which is located at the City of Norwich Aviation Museum. The aircraft is privately owned with only Stewart and the owner involved in the restoration. The 50th Anniversary of XW268's first flight is on 5th November and Stewart asks if there might be any photographs of XW268 prior to its delivery to the RAF, or better still, photographs of its first flight? If anyone can help, please contact the editor. The project is covered at www.xw268.net and www.facebook.com/xw268.

RESTORED HUNTER IN BASINGSTOKE

Norman Long has reported that a Hunter is on display outside the premises of Centerprise International, at Chineham. The aircraft is a Danish F 51 (E408) restored by CAV Aircraft Services at Lee on Solent, painted in the colours of an Iraqi FGA 59. Previously it was the 'gate guardian' at RAF Sealand posing as FMk4 WT720.The aircraft commemorates the owner's father, Sq Ldr Arif Abdul Razzak, who flew Hunters in Iraq.

SEA FURY CRASH

On August 4th the Norwegian Historic Flight Sea Fury TMk20, WG655/G-INVN, suffered a forced landing near Duxford following engine failure. Both occupants received only minor injuries but the aircraft was seriously damaged. This is the second forced landing for WG655. In July 1990, when with the Royal Navy Historic Flight as G-CHFP, its Bristol Centaurus failed. After a successful touchdown it crashed into the only two trees in the field and was written off but was eventually rebuilt with a Pratt & Whitney R2800 by Sanders Aviation in the USA. The pilot was unhurt but the passenger was injured. This was one of the Sea Furies refurbished at Dunsfold, finished in red, for Deutsche Luftfahrt Beratungsdienst who used it as D-CACU for target towing.

FLYING A SPITFIRE SIMULATOR

Dick P oole reports

When Coronavirus lockdown eased a little, I was able to enjoy Spitfire simulator flight at the Boultbee Flight Academy at Goodwood. It is used for training pilots to fly the Boultbee Spitfires together with (very wealthy !) Spitfire owners. The simulator is unique in that the cockpit area is the fuselage of a real Spitfire Mk IX (MK392) from the firewall to aft of the full cockpit glazing. The cockpit is furnished with Spitfire components with all gauges being back driven. The computer-generated outside world is displayed on a hemispherical screen with a 220 degree field of view. When the hood is closed it definitely feels like being in a real aircraft.

The exercise started with a cockpit briefing including the handling of the engine and procedures for retracting the undercarriage and deploying the flaps. The instructors (qualified Spitfire pilots) have a standard flight profile for demonstration trips but after quizzing me about my flying experience gave me the opportunity to say what I would like to do. I replied that I was keen to try a landing so we agreed the following: commence flying at 240 mph at 2,500 feet and carry out general handling, speed reductions down to approach speeds, moderately steep turns, undercarriage and flap trim changes on deployment and retraction, and stall approaches; the sortie to end in a circuit, approach and landing.

Boultbee preparations for the fight include a very good briefing pack to enable the punter to recognise the relevant cockpit gauges and controls, the aerodrome circuit patterns and engine limitations. The engine controls were unfamiliar to me since the procedure for increasing engine power was to open the throttle to a predetermined supercharger boost shown on a boost gauge. (e.g. +6 for take-off) and then to use the propeller control lever to coarsen the pitch slightly if necessary to reduce the rpm to the allowable maximum. In the climb the throttle would be retarded to +4 boost and the propeller rpm reduced accordingly. The engine does have an automatic control system to limit the allowable boost available with altitude for most of the flight envelope.

The flight controls were light and well harmonised but I was surprised how restricted the view over the long nose was at cruise speeds ,say 250 mph. Approaching the stall the nose seemed quite high relative to the horizon before buffet was felt. I was left with the impression that a good lookout for the enemy would not leave much concentration available for activity within the cockpit.

After the planned general handling was completed in the Chichester area the instructors decided that I was as ready as I ever would be to attempt to fly the circuit and land. It should be noted that Goodwood is an all-grass aerodrome, its three runways being identified by white edge markers. I approached the upwind area of the downwind leg to Runway 32 at 240 mph and then descended to the circuit height of 1,200 ft and reduced speed to below 150 mph (-4 boost) to deploy the undercarriage and then to below 140 mph to lower the flaps fully. There is no intermediate setting

I was now approaching the end of the downwind leg about two miles beyond the intended touchdown point and turned on to a base leg angled at about 45 degrees to the runway heading. When wings were level, power was backed off and speed was reduced to about 100 mph in the descent. The propeller lever was then set to fully fine pitch, speed reduced to 90 mph and a curved approach to the runway heading was commenced. Speed was further reduced aiming to cross the fence at 85 mph and this is where it all went wrong for me. I was nervous about the airspeed bleeding off and needed to look inside. When I looked back the runway was truly obscured by the nose and a heavy landing off the runway ensued. I was mortified by this especially as I knew that a curved approach was required. I really momentarily felt that I was in an actual aircraft.

I'm determined to save up for another go to see if I can do better. It was a really good day and well worth the £200. A couple of years ago I flew in the rear cockpit of the Boultbee TMk 9 SM250 which was also a great experience, but I think I learned more about Spitfire flying on this simulator sortie.

HAWKER AIRCRAFT LTD IN THE 1950s - Part 2

Continued from Newsletter 54, Brian Buss remembers his often frustrating 13 months in the Hawker Experimental Drawing Office (EDO) at Canbury Park Road in the time of the P.1121, where he had been given the fin to design.

Sir Sydney Camm's office was across the corridor immediately behind the wall at the rear of my board, there being a door to the corridor to both the left and the right of me. During my second week Sir Sydney came in, leaned on my board and asked how I was doing. Immediately Frank Cross and Harry Tuffen sprang out of the office they shared and were beside us. Sir Sydney looked at my layout, consisting of a two spar design dictated by the steel forgings, and went into quite a rage. This was along the lines of: what was he paying me all this money for if I can only come up with a traditional design? I tried to point out the restrictions placed on the layout and the time lag that would result if new steel members were to be ordered at this stage, but he would not listen. I said I could easily produce a multi-spar design similar to the P.1121's wing but the rest of the aircraft would be made and waiting another year for its fin. Again he would not listen and all the time my two superiors stood there not saying a word.

At that point I left them to obtain a roll of paper from the drawing stores the other side of the DO in order to prepare another layout for Sir Sydney's approval. Little did I know that he thought that I had walked off and ignored him. We met face-to-face in the centre of the DO when I was returning to my board. He was beside himself, shouting "What the bloody hell do you think you are doing?" With our noses almost touching I shouted "If you will only get out of my bloody way I will do what you bloody well asked for." At that he stormed off as every draughtsman in the DO kept their heads well down. By the time I had reached my board my two superiors had returned to their office and closed the door. I went straight in and asked what the hell happens now? Unperturbed they suggested I carry on as before. I came out wondering just what kind of company I had joined.

I went home that night believing that I had blown it and would be given my notice next day to quit my new job; but it didn't come. Instead I found out that this was Sir Sydney's way of testing out a new boy. He never mentioned the incident again and would frequently come and lean on my board for a talk when he entered the DO. Once he suggested I accompany him next time he visited Boscombe Down, where all new prototypes were evaluated by the RAF, to see the new English Electric Lightning fighter, but it never happened.

It appeared to me that Sir Sydney had not kept pace with modern jet aircraft design and was obviously tolerated because of his name and past record. This seemed a great pity as he had been responsible for many of the RAF's biplanes in the 1930s culminating in the beautiful Hawker Fury, the Fury Monoplane and the Hurricane. Sir Sydney's attitude towards some of his draughtsmen is recorded succinctly in Roy Braybrook's 1984 book, 'Harrier and Sea Harrier'. Roy was working in the Project Office when I was at Hawker. He wrote, "Over the years, the in-house legend grew of Camm being not simply a great designer, but some kind of all-seeing monster, who strode through the design offices, tearing up drawings that displeased him, and demolishing their perpetrators with his acid sarcasm, more especially at the time of the full moon. He never actually tore any of my drawings up but I certainly was entertained by his sarcasm. I also heard that if anyone who had to endure this treatment did not stand up to him then he would never have anything more to do with them".

Why my two superiors could not have informed me beforehand of what I could expect, I do not know, so I had to find out the hard way; and I no longer had any respect for the pair. Many of the DO staff, I'm sure, resented my presence as I heard that they had never had an outsider appointed Section Leader. Furthermore I was the youngest at the time to hold this position. Many of the older draughtsmen showed their disapproval in the most childish ways. For example, the DO stores held long, thin flexible strips of wood, called drawing splines, and weights. These allowed complicated curves to be draw while the weights held the spline in place. I was using them continuously one day when I returned to my board to find them all missing. The stores said they had not been returned and were still out under my name. I searched the DO one lunch hour and found them hidden under the desk of an elderly draughtsman in Digger Fairey's section. When he returned I confronted him and asked if he knew what 'team spirit' meant as I had found little of it in this DO.

The structure of the Hawker set-up was itself out of date for the period. It had a Project Office where ideas for new aircraft were born and when it was decided to build a new design it was passed to the Experimental DO for detail design. Subsequently one or more prototypes were built by hand. If they proved to be acceptable the design was passed on to the Production DO and the aircraft turned out in quantity. This was OK when aircraft were simple in design and could be easily constructed. However, they had become complicated and their many different systems required integration from the start. Also, few of the production and maintenance lessons learned could be understood or incorporated by the Experimental DO. This led to much bitterness between the two DOs, time wasting and delays.

For these reasons I found the Experimental DO had no use for a loft layout. The story was that the Production DO next door gave the Experimental DO an ultimatum at the start of the P.1121; you either create a loft layout at Kingston or it would establish its own to assist in the deign and construction of major jigs and tools. As the design side would never permit the production side to dictate any part of its design, it agreed, but to me it had no idea how to use it. The loft layout was based in a building used by the film industry at Teddington and was managed by Tommy Wake who had no previous lofting experience. A pleasant individual but he did not have the personality to stand up to either Frank Cross or Harry Tuffen and nobody in the DO appeared to exploit the service that he could offer design draughtsmen. Perhaps, my two superiors did not or would not encourage it.

How had Hawker managed to design aircraft like the beautiful Seahawk and Hunter without a lofting facility? I discovered that after the Company produced a hand-built prototype production was contracted out to other companies who possessed a loft. For example, with the Hunter only the centre fuselage was produced at Kingston and this was completely circular therefore no complicated double-curvature sections were involved. Some in the Production DO said the circular frames were laid out in chalk on the shop floor. I could not believe what I was hearing as companies like DH had created a lofting facility way back. I know I wanted to gain experience in a large aircraft company but not one some fifteen years or more behind the rest. At this point I knew that I had to move job again but would not do so before twelve months was up as this might be detrimental to me if it was on my CV.

Tommy Wake was a great help to me. The thickness-to-chord ratio of the fin was similar, I believe, to the wing, 5.1% at the root tapering down to 3.8% at the tip, therefore Tommy could provide me with section shapes and ordinates wherever I requested. I soon had several 6ft x 4ft aluminum pull-off loft plates standing behind my board that I constantly used, much to the surprise of most others in the DO who gave me the impression they had never seen one before. By this time my two superiors almost ignored me. I just got on with my job without any supervision or direction whatsoever.

The time came when I had determined the basic design in spar, stiffener and rib layout and the accommodation of the powered control unit and jacks to operate the rudder. I now wanted assistance to determine the detail of the main components and to produce manufacturing drawings, so I approached Harry Tuffen. About a week later he came to me and said, "A junior from downstairs will be joining you on Monday next. I don't know what he's like, he looks a bit scruffy." Those were his exact words. Next Monday a young person reported to me named Eric Welbourne who was about 18 years of age. He had straight fair hair, was quietly spoken and dressed in a sports jacket and slacks he was far from scruffy. I asked what he had been up to at Hawker and he told me that for the last six months as part of his apprenticeship training in a DO he had been altering rivet pitch information on production and modification drawings. I could not believe my ears. In up-to-date aircraft companies the initial drawing would state that so many rivets are to be equally spaced between two known locations. The loft would determine their exact position for their holes to be drilled,

often via a jig; and that was the end of the story. It served no purpose whatsoever. It would be an utter waste of time to go back to the original drawing and insert their exact position and was another example of the antiquated methods then employed at Hawker.

Young Eric was, in the last year of his Higher National Certificate and was an extremely bright, intelligent and likeable person. I quickly realised how fortunate I was to have him join me. I got him to solve the problem of designing the forward spar joint where it had to change direction. It was one of the most complicated design problems within the fin. Here for the first time at Hawker could I see the start of a small team as Eric was as keen as mustard and I could see that I might have to look out for my own job. I had to ask myself why on earth had nobody spotted the potential of this lad before? Between us we soon had the problem solved and the design agreed with Rob Robbins in the Stress Office. As Eric demonstrated more of his ability with each passing day I started to be concerned about his future at Hawker as I was now convinced that he should be encouraged to seek a higher level of education that would open doors elsewhere. I eventually persuaded Eric to apply for a course at Cranfield and he was, I was pleased to see, accepted.

It became time to ask for more support and I once again approached Harry Tuffen. I imagined he thought he was responding to my request as he did in selecting Eric as I'm certain he had no idea how good Eric was until he handed in his notice because Tuffen never ever supervised us to find out. Another person, with no aircraft experience whatsoever, was allocated to me. Again a quiet person, in his twenties, whose name I cannot recall. However, he was a good draughtsman rather than a designer and he stuck to detailing the simple parts like ribs and cleats and soon picked up what had to be done.

Before the year was out the drawings for the manufacture of the prototype fin were about complete. The rudder had, funnily enough, been given to the Production DO to design as a honeycomb structure, yet the Hawker interest in my joining the Company was my past honeycomb experience. I was also told not to design the fin tip as it was to contain an aerial within it and so would be handled by the Electronic Section.

When it became certain that the Sandys defence white paper was really to herald the end of manned fighters for the RAF it was time to scan the technical vacancy columns of the national papers with more than a mere interest as it was obvious that the end of the P.1121 could be in sight. In one I noticed that Redifon Flight Simulators, part of Rediffusion required mechanical engineers at Gatwick Road on the Crawley Industrial Estate. I applied for the advertised post and was interviewed by Ken Wheeler who was in charge of the Control Loading Department. Up to this time the control loads experienced in an aircraft were simulated by means of springs, hydraulics or compressed air and therefore required mechanical designers whereas all other aircraft systems were simulated by electronics before the era of the silicon chip. Ken was particularly interested in my aircraft experience and an offer followed for a salary, I believe, of £1250, which I accepted.

As was to be expected there were no tears shed by my two superiors when I gave in my notice to leave Hawker on January 31st 1959. Eric and my other colleague were somewhat concerned but Eric's near term future was already known and I believe the other left shortly after me. Eric completed the two year course at Cranfield and became part of the technical team at the Royal Aeronautical Society preparing data sheets on structures for the use of aircraft designers world-wide. He remained a friend for life.

Shortly after I left, Hawker Aircraft decided to abandon all work on the P.1121 and I was more than pleased to have left this antiquated company when I did. I was, however, beginning to wonder whether I was some kind of jinx because my past record in the aircraft industry perhaps indicated this. First there was the Planet Satellite, then the Swift followed by the PR Vulcan, all of which were either abandoned or unsuccessful. Or perhaps it was because I had come to work on these projects at the tail end of things.

There was however one item of historical significance at Hawker that I experienced. I had reason to visit the Project Office quite frequently, not only to talk to John Fozard who was overseeing the P.1121 but also to nose around to see what else was being worked on. John, by the way was more interested in small twin engined transport projects at the time. However, in the office was Ralph Hooper who was working on his V/STOL strike aircraft design, the P.1127, which many years later evolved into the Harrier. In the DO Digger Fairey was attempting to lay out the fuselage structure and I recall him saying to me that it was difficult trying to join so many holes together. This was because the engine went in and out from the top, there were two large holes each side for the jet nozzles and a large hole for the centre line mounted undercarriage underneath. Little changed over the 60 years the design has been around.

Although not sad to leave Hawker as a firm on January 31st 1958, I was dejected because no longer was I part of a team designing a new aircraft. No longer could I go down to the shop floor to see the aircraft mock-up and to see parts of an actual prototype under construction including parts of one's own design. I had wanted working experience in a large aircraft design office and my 13 months had given me this, sometimes in unexpected ways.

DUNSFOLD AERODROME IN THE MID SIXTIES - THE WINTER OF (1962-63)

More of Roy Evans's Dunsfold Aerodrome reminiscences.

In late December 1962 we had a heavy fall of snow over the south of England and many of the local roads were in a terrible state as very few had been treated or ploughed. On the second day a Council lorry managed to get through the road into work from Dunsfold village, and workers in the back threw shovel loads of sand and salt across the surface. That night there was a hard frost and for over a month the surface resembled a ploughed field of solid cross ridges.

On the airfield there was, initially, only one snow plough available, a large blade fitted on the front of a fuel bowser. By the end of the third day three more bowsers and the two six wheel AECs had large blades, and the two smaller Bedfords had smaller slush blades with a rubber lower edge. The really heavy snow was tackled by the AECs although they couldn't cope with ice; it was a case of waiting for a thaw and this proved to be a big problem. The only

other bit of snow clearing kit was the ground staff's Nuffield tractor which, fitted with a front loader bucket, was ideal for clearing up packed snow left on corners by the ploughs; a very time-consuming task and very cold too as there was no cab. Outside factory working hours all the vehicles were at the Fire Service's disposal as there was nobody else on the airfield! Although the Company wanted a clear runway and access roads it was not prepared to fund the personnel so the job was on our shoulders. Whatever action we took the chances were that the 'armchair experts' threw in their criticisms the following morning or after the weekend.

It was decided that following a period of snow the duty watch would decide if it was serious enough to require clearing. Once the decision was made the first priority was the main access roads into the airfield, then the internal access roads to the car parks to ensure that the workers could at least get in to work. Next access would be cut between the hangars and the taxiway and then on to each end of the runway. The runway was left awaiting a decision from Air Traffic Control and the Pilots' Office. This was a mammoth task for our limited resources.

Only two men were allowed out on the ploughs at any one time as we had to maintain some fire cover always. When the two men working got too cold (there was no cab heating in the bowsers) they would return to the Station to be relieved by another two. During factory working hours at least one bowser driver and one Transport driver were delegated to man the bowsers and Ground Staff manned the tractor. During the period which lasted many, many weeks, there were more snow falls and freezing conditions.

It was at this time that the first P.1127, XP831, took off from a specially cleared section at the west end of the airfield and flew to HMS Ark Royal off Dorset for the first ever jet V/STOL carrier trials whilst most of southern England was covered in snow.

After that terrible period with snow it was decided that the airfield needed a boost to its snow clearing equipment. The Company would not pay for a dedicated snow plough but agreed to an in-house build (cheaper!) A vehicle was constructed using a small coach chassis minus its engine. Motive power was provided by a small diesel engine which was geared to drive the machine at about 10 mph. On the chassis was mounted an ex-Hunter Avon jet engine facing backwards and angled upwards at about 15 degrees taking the intake to about eight feet above the ground. The engine and intake were enclosed in a steel cage (dubbed the 'lion cage') and a full width cab with soundproofing, was fitted. A large tank for jet fuel was located immediately behind the cab above the engine. The jet exhaust was directed forward into steel ducting under the cab emerging as a 'T' shape close to the ground. At each end of the 'T' was on oval port roughly twelve inches by six, facing sideways, and across the width of the 'T' was a series of slots facing downwards. The hot exhaust gasses were therefore directed downwards and sideways in front of the slowly moving vehicle.

There were several months to wait before we had sufficient snow in which to test our blower but eventually it came. It always seemed to snow worse in the night when there was no other help. On this occasion the snow started on a Saturday night and by Monday morning many of the internal roads and the runway had frozen snow on them which is much more difficult to clear. By mid-morning the snow blower was finally driven onto the runway crewed by staff from the Production Hangar, the trip taking over thirty minutes, the Avon was fired up and it started to work.

Chief Test Pilot Bill Bedford came into the Fire Station and asked to be taken out to observe proceedings. I was detailed to drive him in our short wheelbase Land Rover so I drove to just past the engine running pens and stopped on the taxiway about 200 yards abeam of the blower operating on the runway. The CTP wanted to get closer so I drove onto the grass within 100 yards but he wanted to get closer still and he opened his side window, looking out. He then started giving me hand signals because of the noise and I approached the blower from the rear quarter. Eventually our vehicle was keeping pace parallel with the blower about 30 feet distant; too close, I thought. I held back just behind the snow and mist blast that was shooting across in front of us. The CTP suddenly shut his window and shouted "Forward!". I said "What?" so he repeated "Forward!" and waved his hand. I hesitated but he repeated the order and hand signal so I gripped the steering wheel tightly and floored the accelerator.

Almost immediately there was a massive thump on the nearside and several small bangs. I felt sudden pressure on my left side and arm and then we emerged from the cloud of snow and steam into brilliant sunshine with Bill sitting against me. He quickly moved back to his seat beside the window; his face was white and I guess mine was too. I drove back to the taxiway rather hastily then stopped. We both got out and inspected the vehicle's side; we'd gained a few dents caused by chunks of ice but luckily the nearside window was still intact. I tentatively asked Bill if he'd seen enough and emphasised that there was no need to repeat the sortie! The following day he put out a memo that the snow blower jet engine must not be started until the vehicle was on the main runway and all aircraft and vehicles must be kept well clear of this "infernal machine".

Editor's Note - The Avon's snow blower ducting was designed by Trevor Jordan of the Project Office. The machine itself is on display at the Brooklands Museum.

JOHN FARLEY AND THE AV-8A

Amongst John's papers was this transcription, in true Farley style….

I often tell people that my RAF instructor's course was more use to me in my professional career as a company test pilot than my ETPS course. That might seem a strange thing to say, but because of my particular background as an RAE apprentice, flying as a flight test observer and so on, I was ever so well educated about the job from many points of view, but when you come to be a company test pilot you are very often trying to convince other pilots how good the aeroplane is as part of selling it.

With the first US Marine Corps conversion we had no two-seater and no simulator The pilots were two staff officers who weren't even current aviators. We had to get them out in the aeroplane and let them do an evaluation; that's

more of an instructional job than a test flying technique. The USMC officers involved were Col Tom Miller, head of the Air Weapons Requirements Branch, and Lt Col Clarence 'Bud' Baker; both experienced test pilots from past tours. Of course the Corps was already well aware of what the Harrier could offer, but with the uprated Rolls- Royce Pegasus Mk103 engine now part of the package, though not yet flying, its interest became serious.

I then had to decide how to tackle this, because there was no textbook for it. I decided that I would get them to do one new manoeuvre in each sortie, but only one. The first sortie was going to be just a taxi session. Having taxied around, got confident in it, got used to the nosewheel steering, the brakes and so on, the next thing was to line up, rush down the runway with the nozzles aft, accelerating like they were going to do an ordinary take-off until they got to 60kt, then check the throttle, put the brakes on and stop. They came back, we talked about it, and then they went and did a vertical take-off on the next sortie. That was just a simple 'press-up'; as soon as they cleared the ground, they came back down again. After that it was a case of debriefing them; maybe they had let the Harrier creep forward, or they'd raised the nose, and making them go and repeat it, whatever 'it' was, until they got it right

After four or five goes they were ready for the next thing; go up, come to the hover, hold the height for 15 or 20 seconds, and come back down. If they got that right they went again, this time with a bit of bank to the side of the runway. It was a very progressive thing, and it worked fine. In this way the pilots built up to transitions, short take-offs and landings and so on. Operating out of Dunsfold both pilots made ten flights in the aircraft between 24 September and 3 October 1968, using Pegasus Mk101-powered Harrier GR1 XV742. A precautionary engine change caused very little disruption to the programme and did nothing to put the Marine Corps aviators off. They went back to the States and they sold the aeroplane to the Americans. We didn't; they bought it thanks to Tom Miller and 'Bud' Baker…

In January the next year, the US Navy, which is responsible for procuring Marine Corps aeroplanes, sent over a proper NPE (Navy Preliminary Evaluation) team to look at the aircraft; several test pilots, several flight test engineers, and the CO. I got the job of converting the pilots. I thought about this and I decided that I would play it by putting them in an office and just briefing them for two days on everything that we thought was wrong with the aeroplane. I could see when I did this that they were looking at each other, thinking, 'What's he on about?' I did not understand at the time that the Americans had something called the 'lying, cheating contractor', and they never expected to be told the truth; they always assumed that a contractor was trying to pull a fast one.

My thinking was that these pilots would have got some sort of pre-conceived idea of the tests that they wanted to carry out. They would have come having done their homework. I wanted to make sure that, in setting about trying to do what they wanted to do, they never came across an unexpected problem, because the first thing you do when you come across an unexpected problem is to tear up your test cards and write a lot of new ones based on the problem you've uncovered. I suppose I was just lucky in that I came up with what some people would have thought was a very naïve approach but which turned out to be perfect for the job. They just went through every one of their cards without ever having to stop, because whenever they experienced something they didn't like, they already knew about it.

The three pilots this time were Lt Tom Casey and Maj William Scheuren from the US Naval Air Test Center at NAS Patuxent River, Maryland, and Capt Mike Ripley of the USMC. Harrier GR1 XV741 was at their disposal, together with the sixth development batch aircraft XV281. All went home more than satisfied with the outcome of their ten flights, but their favorable reports back to those in higher authority would not in themselves guarantee procurement.

Further action was needed by us. I recognised an opportunity that presented itself on the back of the May 1969 Daily Mail Trans-Atlantic Air Race. The fastest time from the top of the Post Office Tower in central London to the Empire State Building in New York, six hours 11 minutes, was set by Boscombe Down-based Harrier test pilot Sqn Ldr Tom Lecky-Thomson. At the end of the race there were two Harriers in the USA; the one Tom had won the race with and a spare for the west-to-east race which Sqn Ldr Graham Williams did. I suggested to the company that we do a demonstration tour to support the efforts being made to finalise the contract with the Americans, and that's what happened. Tom and I did demonstrations in Washington for a week and then down at Naval Station Norfolk, Virginia.

When we got to Norfolk I was asked to do a demonstration at the airfield, but I said I wanted to do it from the hard standing next to a wall at the naval dockyard where aircraft carriers and destroyers were tied up. It was a strip wide enough to take aircraft like F-4s; they would be towed from the airfield and then craned on to the ships. I knew our host, Bob Thomas, commander of the NPE, so he trusted me and he gave us permission to use the strip. We were just talking about doing the demonstration when I looked out into the bay and off-shore was a brand new-looking ship with a helicopter platform on the back. 'What's that?', I asked. 'Oh, that's the USS La Salle'. I said I'd like to land on it in the demo but was told I couldn't, because the ship didn't have all the support kit on it. I said, 'Well, I don't need anything'.

To cut a long story short, I did one sortie out to La Salle, then in use as an amphibious transport dock vessel, landed on it and shut the aeroplane down. The ground crew, who had some drop tanks and rocket pods that we'd choppered out to the ship, slapped those on. I started up, took off again and landed back alongside the aircraft carrier with the VIPs all on the deck watching this operation. We were trying to put across the fact that the Harrier was totally independent of ground facilities. That was the first time I'd landed on a ship but a vertical landing is a vertical landing is a vertical landing, and it's a lot easier to do than the traditional way of going aboard a ship with a hook at high speed and smashing on to the deck.

A year later the USMC ordered an initial dozen AV-8As in Fiscal Year 1970. It eventually took 110, including eight two-seat TAV-8A trainers. To reduce costs and hasten availability, all were built by Hawker Siddeley in the UK and air-freighted across the Atlantic, even though the British manufacturer had signed a licence production agreement with McDonnell Douglas. This deal would come into its own, however, when the time came to develop the second generation Harrier.

BOOK REVIEWS

Hawker's Secret Cold War Airfield - Dunsfold, Home of the Hunter & Harrier

Published by Air Word - Pen & Sword Books, the title of this impressive book belies the contents which is far more comprehensive than is suggested. Author, Hawker Association member Christopher Budgen, who spent twenty one years working for British Aerospace at Dunsfold, following his father who was with Skyways and Hawker, and his great grandfather who worked at the adjacent Hawkins Farm from 1895, is well placed to write this detailed history of the origins and occupants of the aerodrome up to its closure by BAE Systems in 2000.

Rightly concentrating on the post-war life of Dunsfold Aerodrome the author outlines the acquisition of the land, the building of the infrastructure and its wartime use but soon moves on to the fascinating episode of Hawker's occupation and development of the site, and the Government machinations involved.

The occupant from 1946 was Skyways Ltd, a much larger operation than most would have thought, followed by Hawker from 1951. In 1952 Airwork started flying refurbished Spitfires from Dunsfold followed later by Attackers and Sabres, the company leaving in 1959. The author describes all these activities in some detail.

The bulk of the book records the Hawker work at Dunsfold, and also at Farnborough and Boscombe Down for the early jets, covering every type from the Sea Hawk and its derivatives, the Hunter, and Sea Fury and Hunter refurbishments. The take-over of Folland by Hawker Siddeley brought the Gnat to Dunsfold for final assembly and flight testing, the ejection seat trials Meteors together with technical and production staff. GQ also used Dunsfold for testing their parachutes which were towed along the runway by the Napier Railton car raced at Brooklands by John Cobb. The vertical take-off story from P.1127, through Kestrel to Harrier and AV-8A, via the P.1154 interlude, is followed by those of the Hawk, the Sea Harrier and the Harrier II.

Included in the narrative is the overall history of the company, its personalites and its products and contemporary political events as relevant to the aerodrome. There are numerous illuminating anecdotes, never previously published, which will enlighten and entertain the reader. The book will not only be of huge interest to those who worked at Dunsfold, including the reviewer, but also to all who value Britain's contribution to the world of military aviation. This comprehensively illustrated book is clearly the result of much original research and so is a valuable contribution to the database of recorded aeronautical history.

There are chapter by chapter notes on references and sources, a comprehensive index and a glossary of abbreviations. Appendices cover airborne data acquisition systems, and Attacker, Sabre and Sea Fury movements.

No Hawker enthusiast should be without this book so now is definitely the time to take up the special offer on the flyer that came with the last Newsletter.

The Aviation Historian Issue 32

Another great cover photograph, looking down on the RCAF's Golden Hawk Sabres inverted over Niagara Falls. Things that caught my interest inside included Keith Hayward on Shorts, post-war, Tony Buttler on Heinkel's He 31 1950s jet fighter project thwarted by the F-104G, the tri-rotor Cierva Air Horse, Britain's wartime anti-g suit developments and Chris Gibson on the outrageous Hawker "New Type of Military Aircraft" schemed in the Project Office by RC Abel in 1957.

The Aviation Historian Issue 33

The mighty Brabazon's tail fin graces the cover this time prefacing Keith Hayward's account of the Brabazon Committee's work to get Britain back into the post-war civil aircraft business. What else especially attracted me? The saga of the Spey Mirage IV for the RAF, and a detailed account of the development of the Hawker P.1040 - N7/46 and its subsequent life as the Snarler rocket boosted P.1072.

Both issues, of course, contain much more, always interesting, and sometimes quirky, pieces of well written and excellently illustrated aviation history.

MEMBERSHIP NEWS

Sadly we report the deaths of Ken Alexander, John Glasscock, Peter Hickman, Ian Jordan, Albert Magee, Peter Ryans, Ray Searle and Stuart Taylor. Although not a Member we note that Mike Oliver (Folland CTP at Dunsfold) has also died. We send our condolences to their families and friends.

We welcome new members Ian Dewar, Clive Dyche and Stephen Windmill'

MEMBERSHIP LIST - October 2020.

Subscriptions for 2020 - 2021 (£7) are overdue from those 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. If you have paid by BACS and this information has not yet reached Barry's records; apologies. (Martin Pennell please note).

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