"Bristol" .Flyer

August 2020

"Bristol" at War, 1940-1945

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*The "**Bristol.Flyer**" is a privately produced and published electronic journal which focuses on the history of the British & Colonial Aeroplane Company, the Bristol Aeroplane Company and the people who worked there between 1910 and 1977, when it became part of British Aerospace.*

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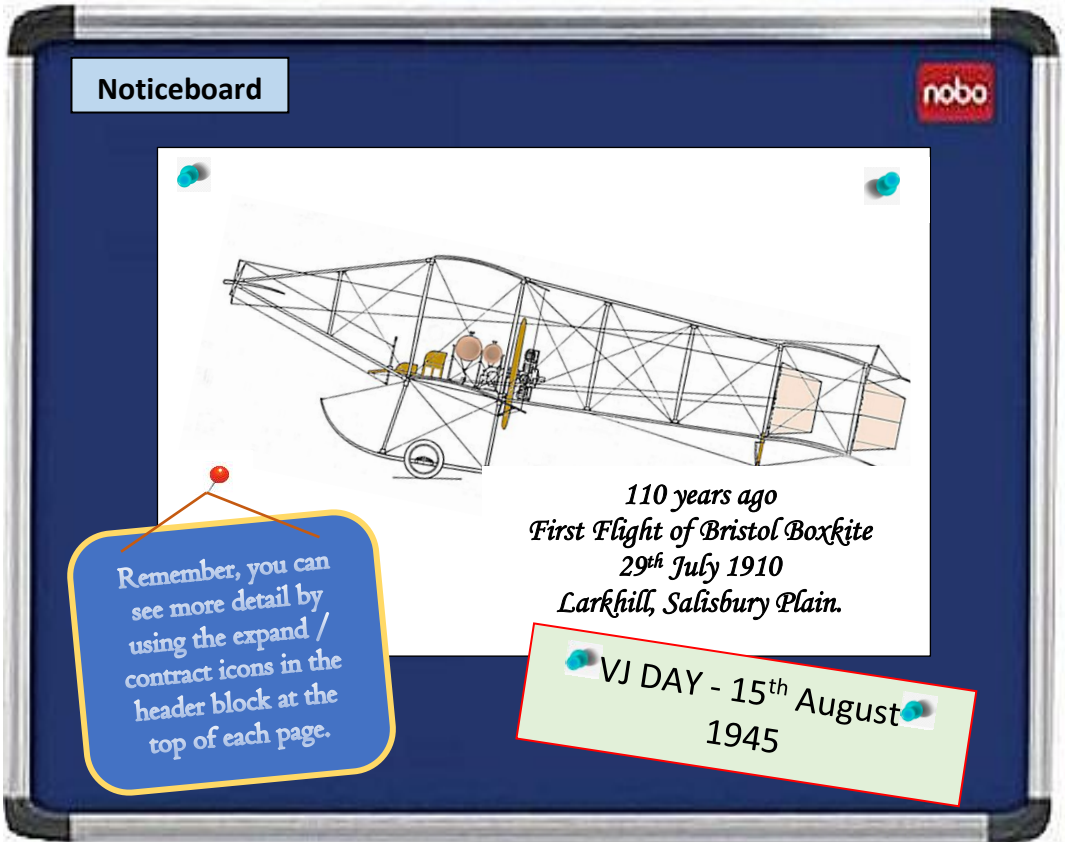

Please note:

Bristol.Flyer ***has no connection with Aerospace Bristol.***

Mutterings from the Editor.

Welcome aboard the August 2020 issue of the *Bristol.Flyer*.

The story of the many tens of thousands of people who have worked in and around the Filton Works and Aerodrome, their innovations and the products they built, is a fascinating one which began in February 1910.

This issue of Bristol.Flyer carries on from where the first isse left off and covers "Bristol" activities between May 1940 and August 1945. It will not look into the Battle of Britain period in any depth or the daylight raid of 25th September 1940. These will be the subject for the next issue in September, which will also include the exploits of Filton's own 501 Squadron.

The cover picture is one of a series taken in the Filton works in early 1942 and shows male shop-floor operators having lunch in the Works Canteen. At one time, there were at least fourteen different canteens at Filton for different types of personnel working different shift patterns. In this issue of the Flyer, I will take the opportuntiy to show you some more of these photographs covering the wide range of tasks undertaken by the various sites during the Second World War.

In addition, I will also include some memories from "them wot was there", all people known to me since I joined the company in September 1968.

Recruitment and training were carried on throughout the war with a large number of ladies being recruited to do almost the full range of jobs carried out by the men. Under war conditions, many tasks were taken from the dangers of Filton and placed in a wide variety of premises including swimmimg pools, cinemas, motor garages and even the zoo. I will also include some images of the Ministry of Aircraft Production shadow factory at Old Mixon, close by Weston-super-Mare, where a large number of Beaufighters were built under mainly BAC Filton management.

Although a dangerous and challenging time, many people recall wartime with genuine warmth as a period when everyone was working for a common cause; they felt they were contributing to something important, something greater than themselves. The novelist Neville Shute wrote that, whilst there are still people who remember feeling valued in war, another is very likely – I hope we are now long past that point.

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"I was there …"

The Recollections of David Pepperell
13th Battalion, Bristol Home Guard, Filton.

I met David in January 1983 when I joined the charity organisation of which he was a senior member and past Branch Chairman. As I got to know him, I learnt about a few of his wartime exploits when he was an apprentice architectural draughtsman in the BAC Works Engineers Department – affectionately known as Works and Bricks.

David's home was in Belvedere Road in Westbury Park and he started his wartime adventures as a messenger in the Air Raid Precaution Wardens' post in Blenheim Road, only a short distance away. He had already registered for the armed forces, but was told that he was in a reserved occupation – in an aircraft factory - and would not be called up. He was one of a group of about 20 draughtsmen who worked in the part of the original former Canteen at Filton. David also joined the Land Defence Volunteers as soon as he could – later the Home Guard of Dad's Army fame – but was told he couldn't belong to both organisations, ARP and LDV. He chose the Home Guard and, looking at his overly serious picture above, perhaps you can see a real-life Private Pike looking out at you!

David's first memories of military life were being drilled behind the main canteen at Filton, in the day's before they were issued with uniforms and only had khaki armbands emblazoned with "Home Guard". He said that, in the absence of rifles, they used to drill with broomsticks and also mentioned a couple of other draughtsmen who were "in it" with him – Peter Parker and Ken Brice. Apparently, these two were made Lance Corporals a few months before David, he thought perhaps because they had been in the OTC at school?

He recalled all the members of the 13th Battalion were BAC employees who were expected to defend the factory. They were all equipped with full army kit, even down to their own tin hats. I can remember two of my uncles who were in the armed forces explaining the term "spit and polish", David was no different and talked of competitions for the shiniest boots and brightest "Brasso-ed" buttons. He said that some of the later issues of uniform smelled of chlorine which, they were told, made them resistant to gas. He also talked about rubberised canvas capes which could also be used as ground sheets, should the need arise.

David wrote some notes in about 1999. "*Training took place two or three times a week with one night a week on guard duty. At first, guard duty comprised patrolling the nearby railway lines from Filton to Stoke Gifford, this was done in a section of about six men under an NCO. We were issued ten rounds of ammo each, "not a lot if we had met a party of Germans!" We slept, when off patrol, in the Old Vicarage, halfway down Filton Hill. There were wooden bunks with two grey army blankets, one of which was often used as a pillow. I found these to be very rough and prickly so, after a while, I used a towel to cover the 'pillow'. The lights were kept on all night, and there were always a few card games going, so it was often a fitful sleep. Meals were taken in the canteen and it seemed strange to be eating there at 11pm and again at 7.30am.*

We had several huts for lectures and training, and stores in various locations around the works. Our training continued both at work and occasionally on the ranges at Pilning, facing the Bristol Channel. Here we fired some live ammunition under the guidance of regular NCOs. We were introduced to machine guns and automatic weapons as well as rifles on the ranges. When we were on target duty we had to go to the butts, behind earth banks where we could raise and lower the targets, and indicate how the shots were going. We were bussed down to Pilning on Sunday mornings and home again about one o'clock. Besides regular drill, we had lectures,

training films, and courses on poison gas precautions, camouflage, tactics and weapon training, including hand grenades and bayonets. Some men always kept their rifles with them, day and night. One night in the main assembly shop, a private was showing his mate how the rifle worked, and put a bullet up the spout and fired it. The shot went out through the metal roof of the building, which had to be patched as it let out light in the blackout. There was quite a fuss about this, as it created a potentially dangerous situation.

One summer evening whilst on guard duty in one of the huts overlooking the airfield with Sergeant Peter Parker in charge, we shared the accommodation with some members of another battalion. One of their corporals was cleaning a Vickers M/c gun, and when he had re-assembled it, he thought he ought to test it. So he pointed it down at the empty airfield and let off a few rounds to make sure that it worked OK. Within a matter of about 5 minutes a jeep arrived in a tearing hurry and one of the regular army sergeants from the Airfield defence force came storming into the hut to know who the blazes had been loosing off ammo at the airfield. Apparently the CO., Lt Col. McBennett, the fiery Black Watch Officer in charge of the airfield was furious. He and the corporal concerned went off together and I never saw them again!

One weekend, there was an exercise when units of the regular army were supposed to act as the enemy, and try to break into the works. I was stationed, with others, at what was known as the observation tower. This was a tall concrete structure with an observation platform at the top. We spent a whole day in the warm sunshine looking out for the 'enemy', but I never saw them. I know that by the time we were sent off home, my arms and elbows were aching through resting them on the parapet for long periods, while holding binoculars. It must have been on this, or perhaps, another occasion when we had started the exercise on a Friday evening, and gone on right through to Sunday mid-day, that I really felt exhausted. On my way home I climbed to the top deck of the bus and sat down and before the conductor had come for my fare, I was fast asleep, and had dropped my money on the floor.

On another occasion we were the 'enemy', and had to find our way into another battalion's defences. About one hundred of our battalion were taken by buses a few miles from the works, about nine o'clock at night, to some area that I did know at all, and divided into small parties. I later learned that it was a part of Downend, which some of my fellow Home Guard knew well. As a corporal, I was given a squad of five or six men and told to patrol a certain area, and report if there was any sign of activity by the other side. We crept quietly along a number of the roads and eventually returned to the command post, and I was able to report that I had seen nothing. However the defenders had spotted us and I found that my squad was one man short. The defending Home Guard had taken the last man in the patrol and were now obviously questioning the prisoner. I believe, that in fact, he was well treated, and after some time was allowed to go home, with the proviso that he did not re-join us. There were umpires on each side to see fair play and assess the success or otherwise of the defence of the area. I was not court marshalled or anything over losing the man, in fact I think the officers thought it was rather funny, but I felt rather humiliated. About midnight we were given a meal of bread and hot soup from large Thermos flasks, which the quartermasters had brought from the canteen. It was good and much appreciated. The exercise did, of course, provide several lessons for us and for the defenders.

One of the defending officers was a good friend of mine from the Royal West of England Academy School of Architecture, Lt Robertson. He had joined the Home Guard at the outset, and was very keen. He later became a paratroop officer and was killed at Arnhem.

There was usually plenty of humour mixed with the serious work. We enjoyed each other's company and soon became a very close knit body of potential fighting men. One Lance Corporal, a fellow called 'Dumper', often kept us amused on guard duties with dubious stories. He was a good card player, and often played well into the night if anyone would join him, and they usually did. The favourite game was pontoon, and on one occasion when he had trumped someone's ace, the injured party exclaimed, "I hope you bloody well get toothache!"

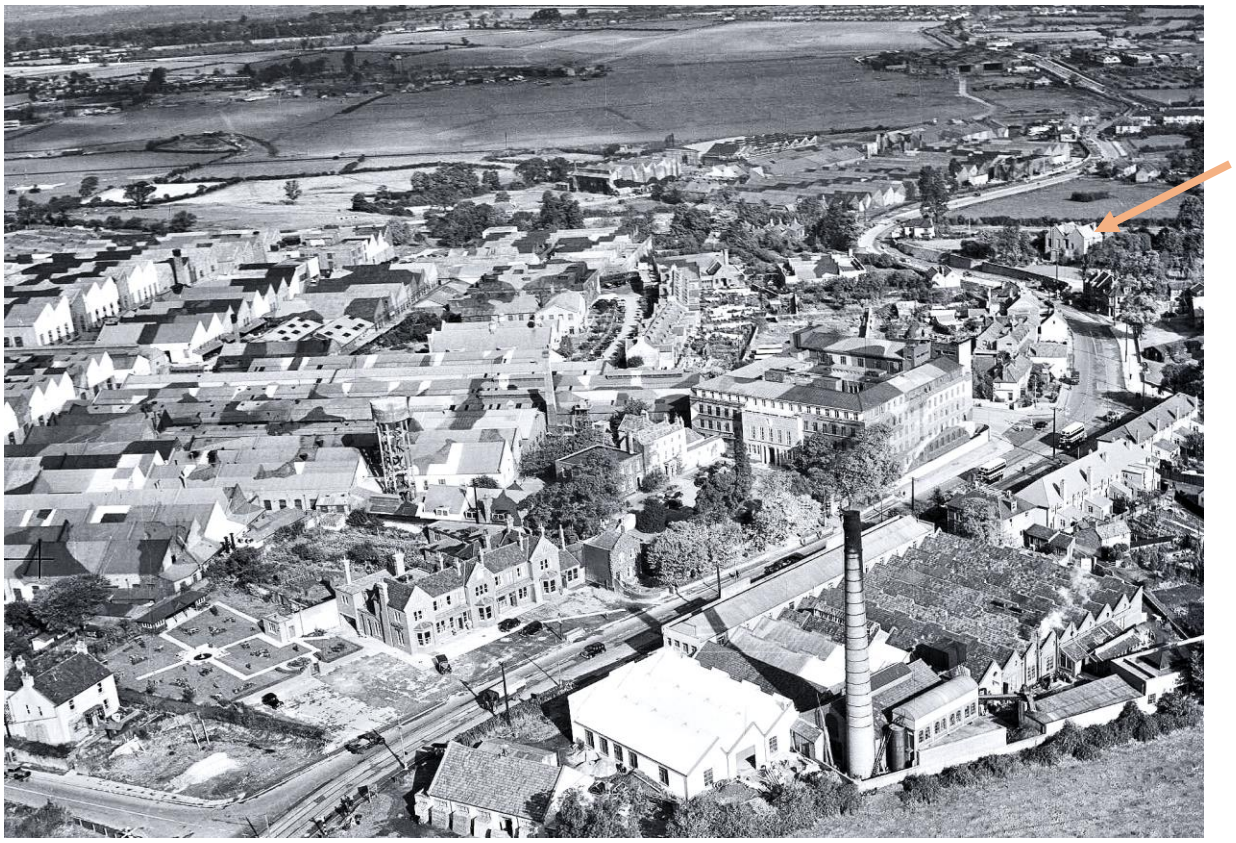
Immediately 'Dumper' retorted as he took out his top set of false teeth, "Oi can't!" This, of course, set the whole hut full of fellows into peals of laughter.

Before we were really organised with sleeping arrangements when on guard, some of us slept on metal stretchers on the floor of the office. This building was originally the works canteen, and soon after settling in the dark, we heard scrabbling noises on the floor around us. On switching on a torch, we found the place was infested with huge cockroaches. We finished the night with the stretchers on the tops of the desks!

Not all the NCO's were popular, particularly those who tried to be too officious. One, Sergeant Smith, had been a soldier in the First World War, and had medals to prove it. He was taking a platoon for drill one day, marching them up and down a road several times, performing several drill formations, shouting commands, 'left turn, right turn, left wheel, right wheel, about turn' etc. He would let us go some way, and then with his best parade voice, call us back just before we got out of earshot. This drill went on for about half an hour, and most of us felt that that was long enough without a break. So, when we were marching towards him and he gave such a great shout that his false teeth flew out of his mouth, and landed on the road in front of the nearest men, we kept on marching! Meanwhile, he was unable to give a loud order to halt, but was scrabbling in front of the marching column, trying desperately to pick up the teeth, and get out of the way."

David's first wife died in the mid-1990s whilst living opposite the pier entrance in Clevedon. Much to the surprise of many who knew him, he married an old friend, an American lady, and went to live in Boston, Massachusetts. We never saw him again; he passed away in July 2003, but at least we have the part of his story spent at Filton.

Below: the Filton site just after the Second World with the buildings still showing their camouflage paint. The Old Vicarage on Filton Hill referred to by David is arrowed.



Wartime Workforce Photographs.

In 1942, a series of photographs was taken of various “Bristol” occupied sites as well as a series taken at Filton. These are interesting because not only do they show the conditions but also the large number of ladies doing a wide range of roles. My total collection of wartime factory images numbers well over 100 but I will not be able to show them all here due to restrictions on the file size of the edition of the Flyer if it is to be sent out via email.

The first photograph should show as many smiling faces as possible despite the fact that these are all men – which is odd because most of the working place images are of ladies. Many older readers will recall the BBC Radio programme “Workers’ Playtime” which was broadcast several times a week from 1941 to 1964 from works canteens “somewhere in England”.
It is said that the first programme was sent out live from the Filton Canteen and, although I have not been able to prove this, the BBC had a strong base in Bristol. There is a concert from Bath at YouTube https://www.youtube.com/watch?v=Q9L7JG89ym8

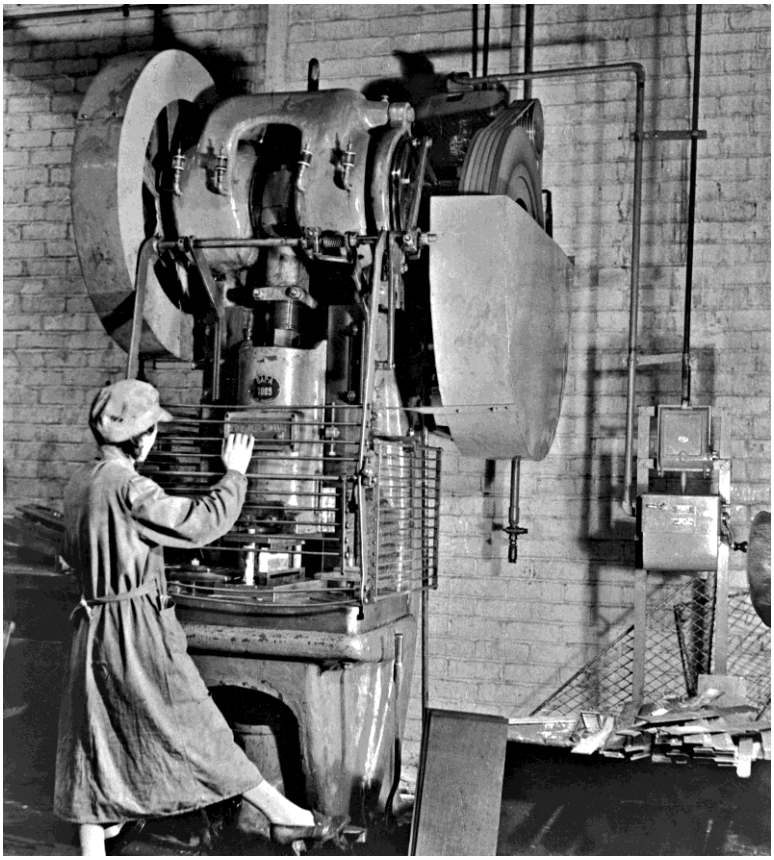
When researching for details, I found that the first producer was a chap called Bill Gates and that before the Radio Times would let me look at the contents of the Saturday Daily Service, I was warned that “*This historical record contains material which some might find offensive*”.

The Main Canteen and the ladies who worked there.

The main Print Room – location unknown – the calendar in the background says 1939, but the month is not visible. Below, Loft Draughtsmen are seen in the North Bristol Baths, date not known c.1942.

Brazing small parts was a skilled job.

Final assembly of engine exhaust collector rings, although for which of the Bristol engines Is not recorded.

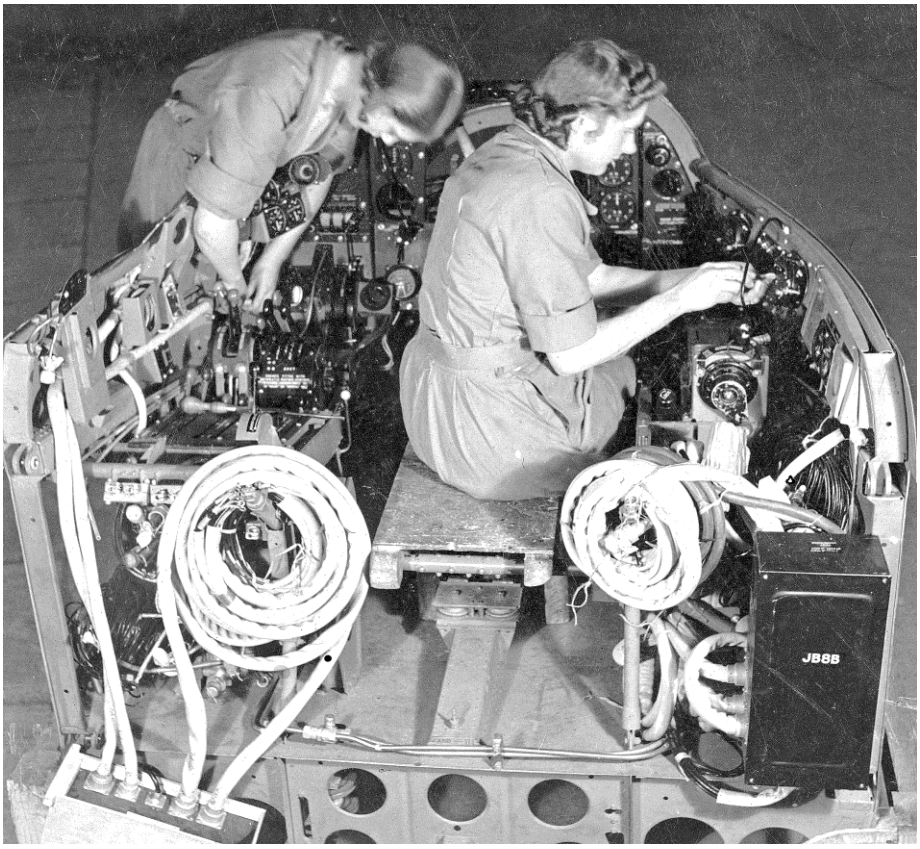


Driving a foot-operated Brake Press must have been a lot less elegant than this lady is suggesting and not without its hazards.

Three lady fitters working on the installation of a Taurus engine on the Beaufort assembly line.

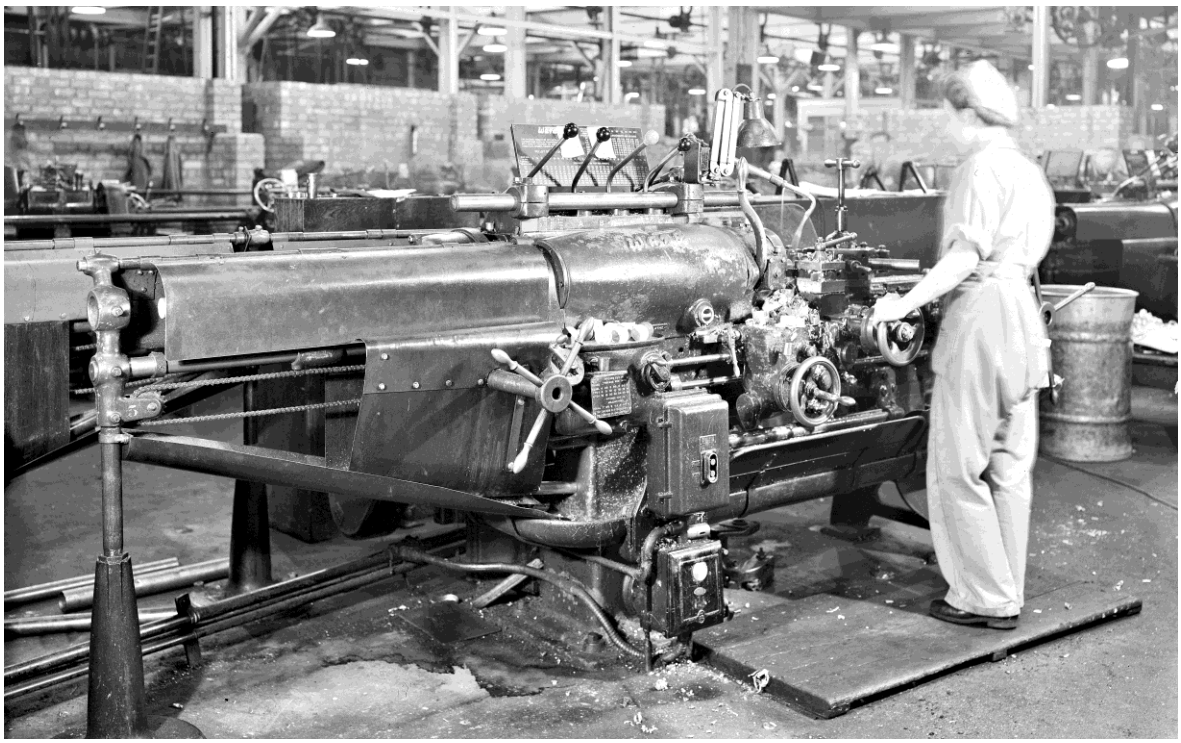
In January 2019, Bill Morgan and I went to visit the lady on the right – Peggy Banfield, then aged 98. She remembered the lady in the middle as Jessie, but couldn't remember the name of the third lady.

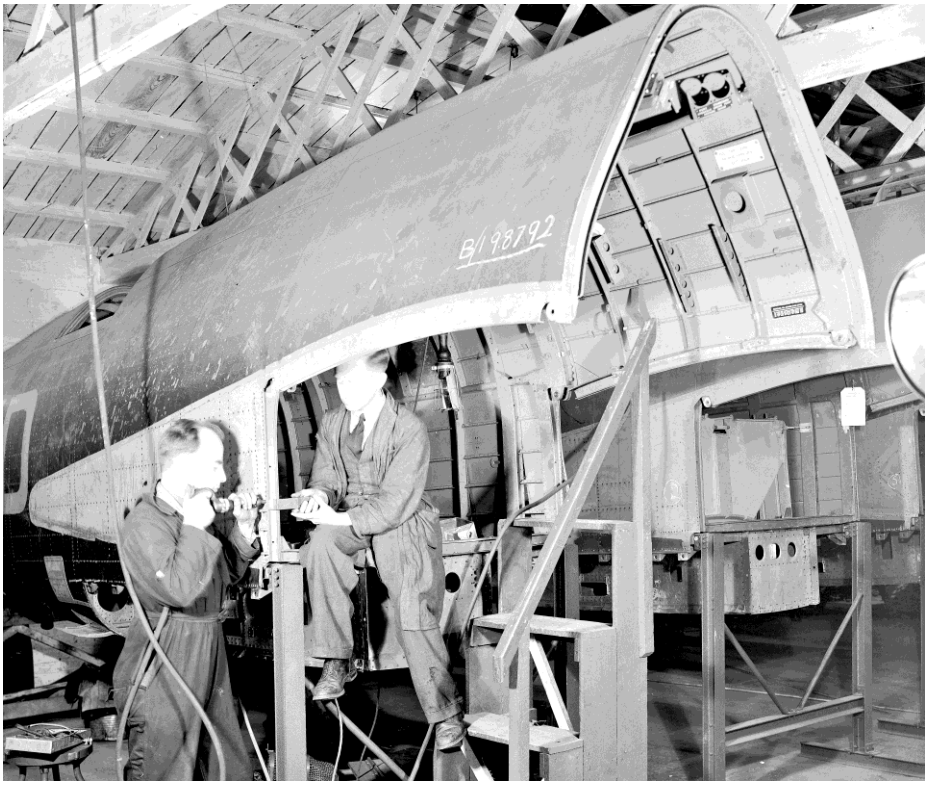
Peg was an engine fitter on both Beaufort and Beaufighter, mainly installing "pipes and cables". Her memories were mainly about the people and their antics – for instance, being a small lady, she had her own ladder for accessing the airframes. During an air raid warning, "somebody pinched me ladder and I had to jump down off the aircraft – never found out who it was".



Two lady airframe fitters working in the cockpit of a Beaufort Mark 1.

Below: A small lady operating a large Ware lathe. Neither date or what she was making are recorded..





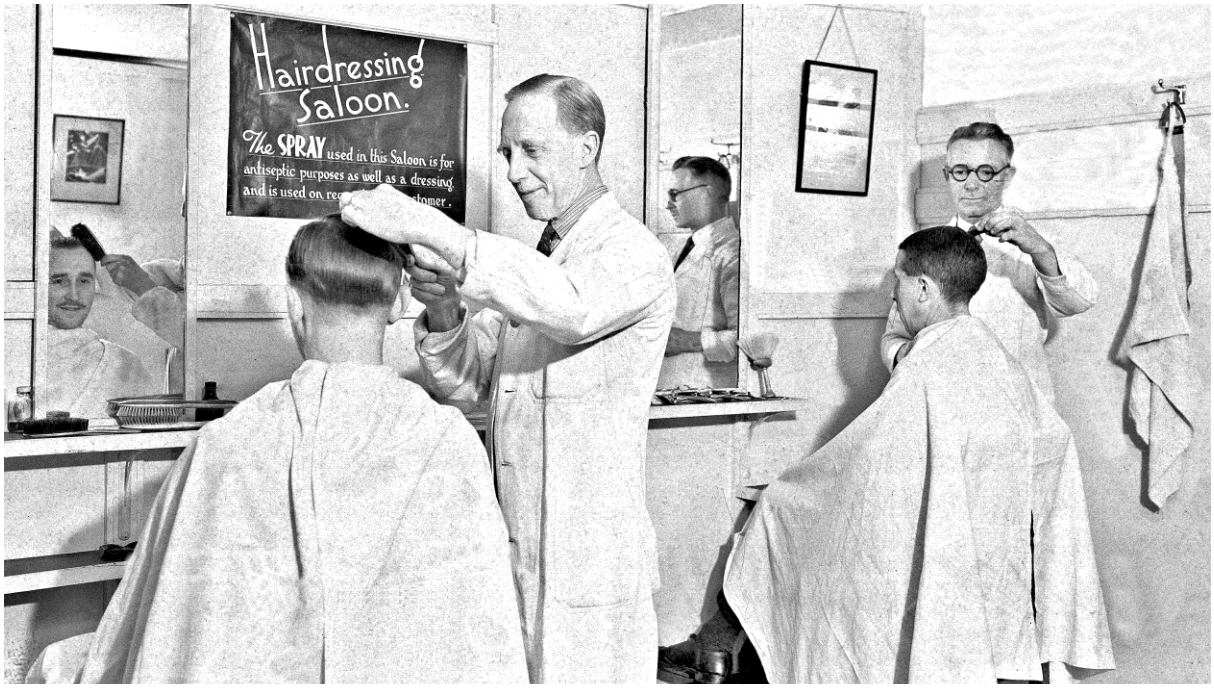
Reduce to Produce -

Above, ladies salvaging reusable Beaufighter VIF cockpit parts; Beaufighter V8468 was from No.3 Ferry Pilots Pool, Hawarden near Chester, which struck trees in forced landing.

This is likely to be the rear fuselage from the same aircraft, but there are no markings to prove this.

The location of these images could be Filton or Chittening.

Chittening was a "Bristol" site near Pilning which took in damaged aircraft and reduced them into component parts. These would then be salvaged for future use or broken up for scrap if too badly damaged. The vehicle below is an RAF "Queen Mary"; the aircraft behind V8166 (Beaufighter F.Mk.VI) in both pictures is a Beaufort (fuselage only?).



The Aircraft Drawing Office was situated in Filton House as was the barbers, who were in the basement but there was no ladies hairdresser. The entrance of the main Canteen had a Company shop where basic commodities could be had; this was to help ladies who were on the 7:30 am – 7:30 pm shift who couldn't easily get to the shops.
Most employees seemed to think Filton was a happy place to work and that they were treated well by the "Management" and that they were safe despite there being a war going on. Many people met their partners in the factory and there was a number of what were called "Filton Families" – several generations of the same family in the factory at one time. This still went on in 1990 (as I know from personal experience) and it still goes on in 2020.

Training during the Second World War.

Training of shop floor operators, both male and female, carried on right through the Second World War. Although at first sight these photographs have little to do with training, it must be remembered that the factory was a proscribed site and photographs were only permitted under very restricted circumstances.

Presumably, one of those times was when distinguished guests were entertained. In this case, a visit from Queen Mary, late wife of King George V and grand-mother of our present Queen, is seen just inside Gate 25, the Fire Station Gate. In the background of the top picture is the prototype Bristol Beaufighter, R2052, which first flew on 17th July 1939.

Queen Mary lived at nearby Badminton House during wartime and visited Filton several times for what were called "workforce morale-boosting purposes". Here, she is seen visiting the training workshops of the Engine Division. The floor seems to have been carefully swept to prevent the Royal shoes and tootsies being cut by vicious low-flying swarf.

In the lower picture, lady trainees greet a visibly apprehensive Queen accompanied by Filton Works Manager R. S. Brown (to her right).

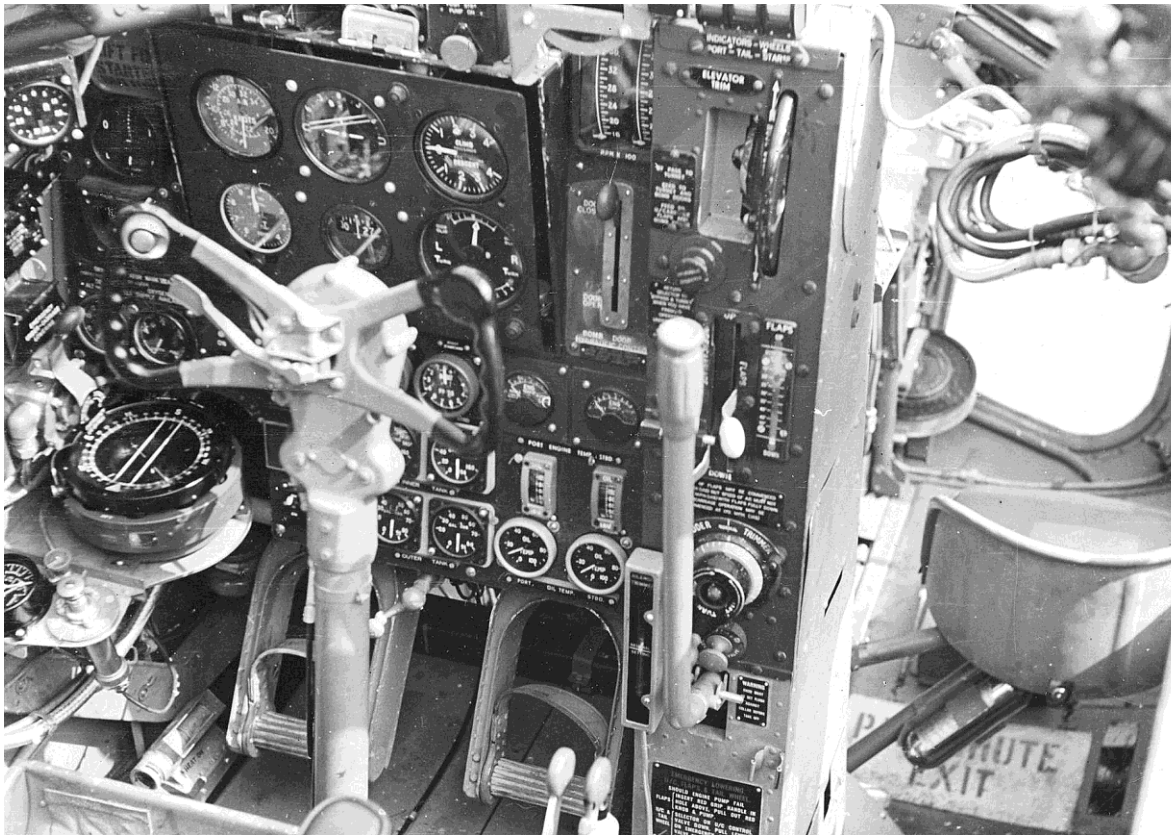
The actual date is not known but circa late-1939.

The Bristol Type 152 Beaufort.

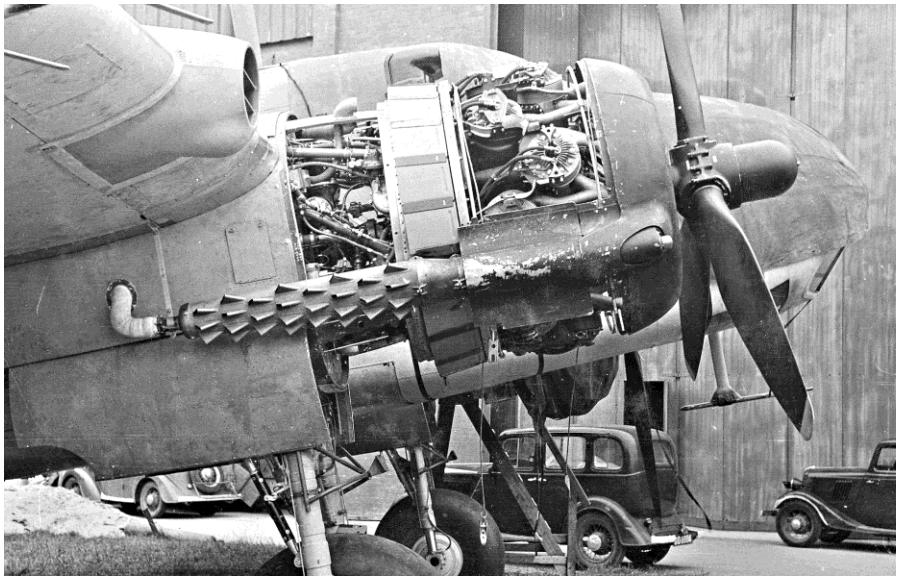
The Beaufort was the company's response to a Specification issued in 1935 for a land-based twin-engined torpedo bomber and general reconnaissance aeroplane, but the design combined both requirements into a single airframe to Specification 10/36. It was also the last design of Frank Barnwell, first flying on 15th October 1938, eleven weeks after his untimely death on 2nd August 1938. The Air Staff were very keen to get the aircraft in production at Filton as soon as the Blenheim had been shipped away to the Shadow Factories (see Bristol.Flyer for June 2020).

The original proposal was for the Beaufort to have been powered by a pair of Bristol Perseus VI but the estimated performance would have been slower than a Blenheim Mk.IV, so the twin-row Taurus engine then under development was substituted. At the time of the decision, the Taurus had not been cleared for production but, at the end of 1937, the Taurus III engine was identified as the standard powerplant. This was later changed to the Taurus VI, XII or XVI which had power outputs of 1,130 hp. Engine power problems seemed to dog the Beaufort throughout its life. At the same time – to add to Bristol's production problems – a Bristol B.IV Mark ! dorsal turret was specified, to be built by the Bristol Armaments Division.

The Air Ministry was adamant that the fuselage had to accommodate four crew and much attention was given to the front end so that both pilot and navigator had the best views possible. The picture left shows work being done on the wooden mock-up to ensure the top line of the nose would allow the Navigator sufficient room without impinging on the pilot's line of sight, as had happened in the Blenheim Mk.IV. The second production Beaufort L4442 is seen below.



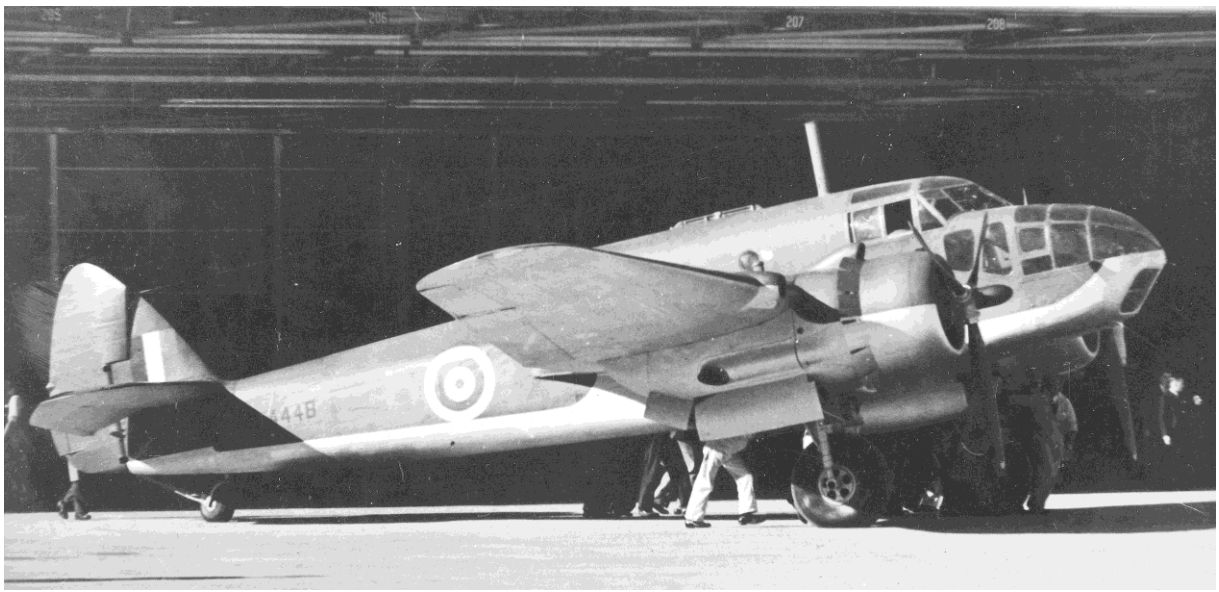
Above: the Beaufort's tidy cockpit showing the Navigators access and position in front of the pilot



Another innovation sported by the Beaufort were flame suppressing exhausts. Rather odd looking but important for aircraft whose missions would be at night and especially over the sea. The units slotted into the normal exhaust outlet port.

Early in 1939, the Australian Government chose the Beaufort for local manufacture and, due to the lack of a suitably skilled workforce, a group of about 80 skilled Australian railway workers came to Filton for intensive training, before becoming key workers in the Australian plants. Two assembly factories were built at Mascot, near Sydney, and Fishermen's Bend near Melbourne, using components made in the railway workshops of New South Wales, Victoria and South Australia. The eighth Filton-built aircraft L4448, was shipped out to Australia along with 20 sets of components which could not be immediately fabricated locally, mainly engines, turrets, forgings, extrusions and special materials.

Later in 1939, the Australian Government decided to locally manufacture the Pratt and Whitney Twin Wasp engine for their own aircraft. By the summer of 1940, the Twin Wasp had been successfully installed in L4448 (below) and the aircraft was designated the Beaufort II; there was also a proposal for a RR Merlin XX version, the Beaufort III, which was never built. Beaufort I N1110 was converted at Filton into a Mk.II, which flew in November 1940. The converted L4448 (below) flew in Mascot in May 1941 and the first



Filton-built Beaufort II (AW244) flew in September 1941. 90 Beaufort I aircraft destined for RAF use in the Far East were cancelled and 90 Australian-built Beaufort V re-equipped Numbers 36 and 100 Squadrons at Singapore. 1014 Beaufort I aircraft were built and 1,115 later marks with P&W engines; 1429 Beauforts were built at Filton and Banwell, 700 aircraft were built in Australia; production ceased at the end of 1944. The last batch of 250 UK aircraft were assembled at Banwell with the last 121 machines being built as dual-control trainers. A few "C" transport variants were built with the turret removed and the top line of the fuselage carried further aft before being swept down into the normal springing point of the fin.

An elegant aircraft, the Beaufort is perhaps rather an unsung hero but it certainly saw a lot of action over home waters, the Mediterranean and in the Far East. It tangled with the German battleships Scharnhorst (twice), Prinz Eugen and Gneisenau, and bombed the German submarine pens at L'Orient. In the Mediterranean, it operated against Axis shipping from Malta and in the Far East, against Japanese transports in the Soloman Islands, New Guinea and Timor.

Beauforts were retired from RAF service at the end of 1944 and at the end of the war by the Australians. Bill Morgan has told me the last operation against the Japanese was flown by Beauforts – presumably of the Australian variety.

No details known, too good to leave out.

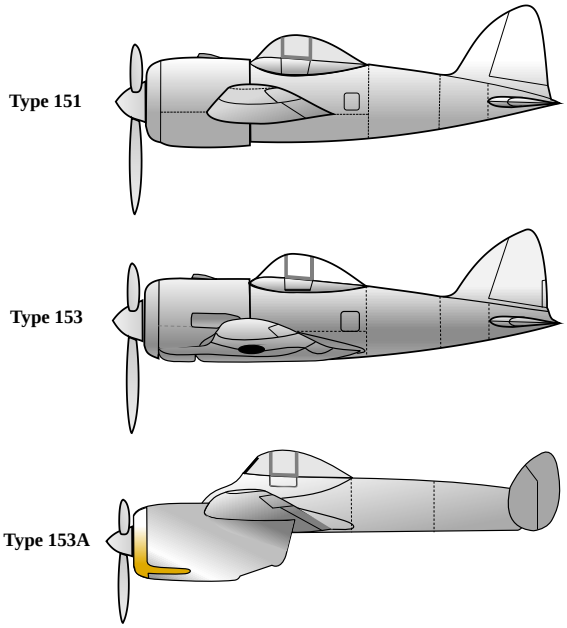
The Bristol Type 156 Beaufighter.

The ultimate WW2 British battlewagon, the aircraft was originally dubbed the Bristol Beaufort-Fighter because it used components from the Beaufort, namely the wings, tail unit and landing gear. Powered by a pair of mighty Bristol Hercules engines, it was meant as a quick and dirty stopgap by Leslie Frises' forward-looking design team, after a few years of messing around with a variety of designs.

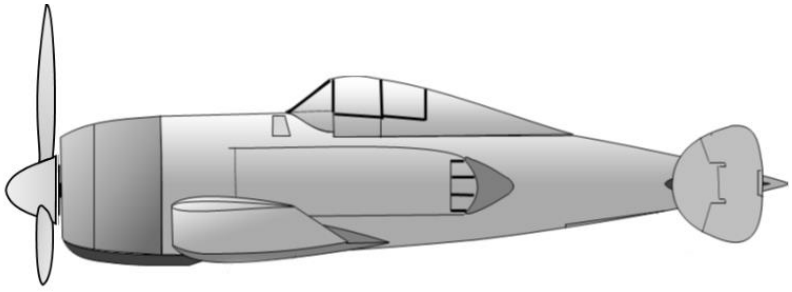
When the final aircraft emerged and entered service, quick it certainly was and very dirty, with attitude, if you were on the receiving end – it was called the "ten-gun terror" or "Whispering Death" by the Japanese. At this time, I will only consider it in the context of design and manufacture, perhaps in a future Flyer I will cover it in more depth – it is certainly a story worth telling.

The Type 155 twin-engined multi-purpose bomber to Specification B.18/38 design appeared in the summer of 1938, just before Barnwell's death and was based on the Beaufort, except the Type 155 had a nosewheel – no drawing is known to survive. After Barnwell's demise, the Air Ministry became focussed on the Armstrong Whitworth Albemarle – which has often been wrongly said/believed/interpreted to be a discontinued Filton project.

Barnwell had also turned his attention to the Ministry's requirement for a cannon-armed fighter to Specification F37/35, which in turn stemmed from Specification 35/35. This was the Bristol Type 151 (right) with a speed of 440 mph although in military form – the single-engined Type 153 - its speed was reduced to a mere 357 mph. There was also a twin-engined version, the Type 153A. These were followed by two more Specifications – F11/37 (two Hercules engines) and F.18/37 (single-engine, Bristol Centaurs, RR Vulture or Napier Sabre, below). However, these thoughts were thrown into disarray by the Munich Crisis and the RAF having no modern fighters with cannon armament and long-range and/or night defence capability. Then, along comes Bristol and presents a potential stopgap as already related – the rest, as they say, is history.



F.18.37
Bristol Centaurus
powered.



All images drawn by
Duncan Greenman 2020

The prototype unarmed Type 156 Beaufighter on the apron at Filton in July 1939.

The initial design was accepted by the Air Ministry "with enthusiasm" only a few days after the first flight of the Beaufort and four prototypes were ordered immediately in November 1938. By January 1939, there were three proposals:

- The basic fighter, Type 156 to Specification F.17/39;
- a three crew bomber, Type 157 (Beaufighter Bomber) to Specification B.19/38;
- an improved fighter version with a slimmer fuselage, Type 158 (Sports Model).

Because so much of the airframe was inherited from the Beaufort, only 2,100 new drawings were needed and, after a very rapid design period, the first aircraft R2052 tasted the air beneath its wings on 17th July 1939. A lot more work – and a lot more drawings – were required before the first production aircraft was handed to the RAF in April 1940, right at the beginning of the Battle of Britain, for which it was too late to join in. In July 1939, the Air Ministry issued an order for 300 Beaufighter to Specification F.17/39 (which included the four prototypes) with de Havilland non-feathering airscrews and the capability of having a Rolls-Royce Merlin or Griffon installed in place of the Hercules.

The handling of the Beaufighter had been satisfactory straight out of the box, but a few modifications were made before production started. The first aircraft pictured above was unarmed and it and the second aircraft R2053 had armament fitted before delivery to the RAF. When the third prototype R2054 was sent to Boscombe Down with full operational equipment in June 1940, its Hercules III engines could only manage a top speed of 309 mph at 15,000 feet. This led the men from the Ministry to prefer the Griffon engine but, with the Battle of Britain under way in anger, fortunately common sense prevailed and maximum production rates won out over ultimate performance. Also, to test if production finish quality improved performance, R2060 had a special finish with all the already flush rivets and panel joints covered in a filler to give a flush finish. Other "leaks" were sealed with tape, but the resulting overall improvement in speed was a mere 10 mph, suggesting build quality had only a small effect on the overall performance of the aircraft.

However, the Beaufighter had one big advantage - it could accommodate the improved Mark IV Airborne Interception radar, which was too bulky for smaller aircraft such as the Blenheim, which had proved the concept when fitted with AI Mark III. Thus, the Beaufighter Mk.1F aircraft started to spout aerials in various parts but the results were a great success in action. By now, production Beaufighters from the 51st onwards, had a ferocious armament of 2 Browning machine guns in the port wing, 4 in the starboard wing and four cannon in the nose, under the pilot.

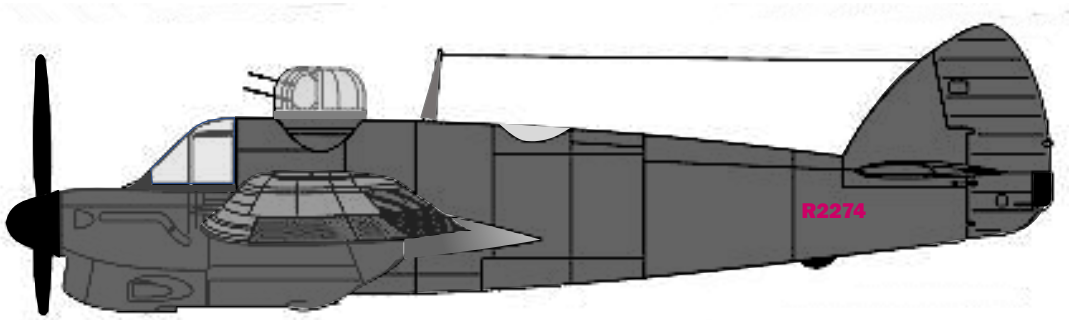
To try to reduce a persistent low frequency longitudinal instability present in all Beaufighters, R2268 was fitted with a wide twin-finned tailplane; in addition R2057 was given a tail plane with a 12° dihedral. The twin fin tailplane is shown below but was not carried forward into production. The tail dihedral made the aircraft too stable for a fighter aircraft so it was not adopted for Mk.1F machines, but it will reappear later in our story.

In the First World War, there was a concern that the primary engine choice for the Fighter - the Rolls-Royce Falcon – might run into availability problems due to enemy action; a similar concern arose in the Second Word War regarding the supply of Hercules engines. As the bombing offensive against England intensified in 1940, the Air Ministry decided that the RR Merlin XX would fill the need.

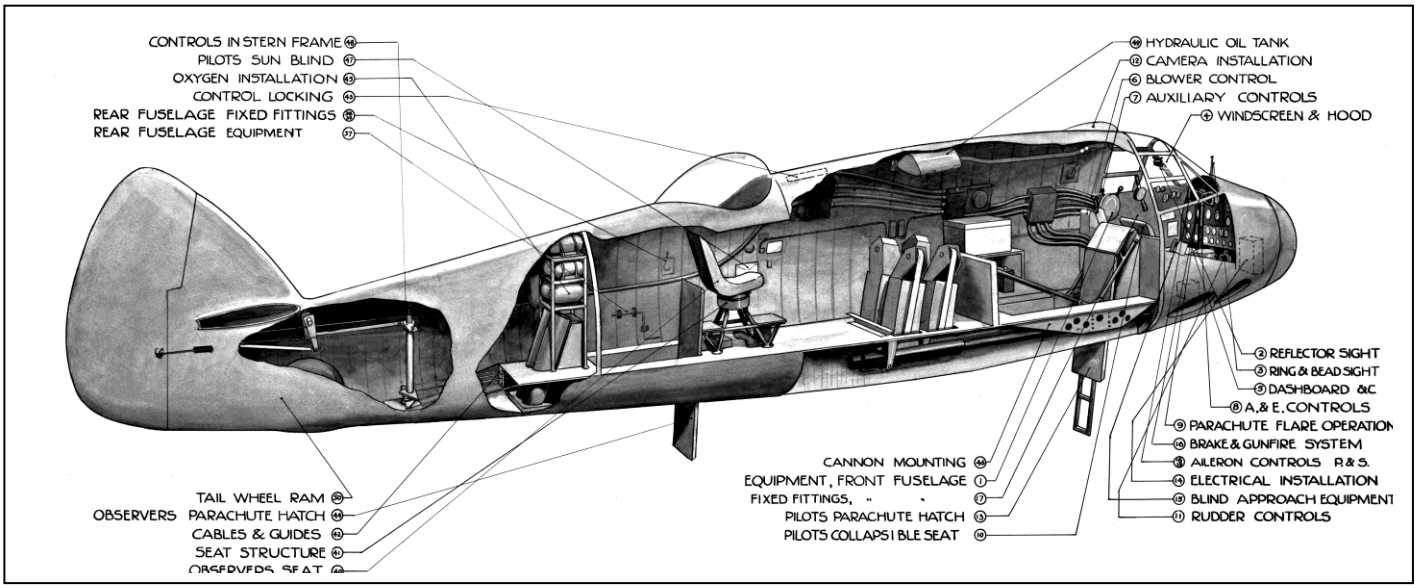
The bombing raid on Filton on 25th September 1940 emphasised the real possibility of enemy action disrupting the supply of Bristol aero-machinery. Only a relatively small amount of disruption was caused by the raid and only a few machines were lost – both engines and aircraft. (This raid will be dealt with in detail in the September Flyer). In addition, during 1941, the priority for the use of the Hercules engine lay with the newly-introduced Short Stirling bomber so, having lost the choice of the Griffon, the Merlin XX-powered Beaufighter became a necessary reality.

The first RR powered Beaufighter II R2270 was flown from Filton on 22nd March 1941 but, at least in my view, it was not a good looking aircraft, the two large slab-sided engine cowlings reminding me of a small man carrying two large heavy suitcases! There was a Beaufighter Mark III (R2054) with Hercules III engines but, when flown at Boscombe Down in June 1940, the performance at full operational weight at 15,000 feet was inferior to the Griffon-engined Mark IV, represented by Mark IIF T3177 with Griffon engines. This Mark IV version would have been even worse in appearance to the Mark IIF! But it turned out that the Beaufighter IIF were not popular in service. Although they were slightly faster at altitude, the crews

missed the reassuring punch of the Hercules at take-off, especially at night. As the Merlin XX became increasingly required for the new Avro Lancaster bomber, some Beaufighters were delivered by road without engines to prevent congestion at Filton; the aircraft were finally delivered from Whitchurch (Bristol) and RAF Colerne, near Bath. In all, some 450 Beaufighter IIF aircraft were built, all at Filton.
Two Merlin-engined machines (R2274 below and R2306) were modified to incorporate the 4-gun turret of the Boulton-Paul Defiant installed behind the pilot, with a transparent fairing being placed over the observers cupola. This was not successful as the turret got in the way of the pilot's escape hatch; there was also the problem of the deafening crash of the guns just above the driver.



Duncan Greenman © 2020.

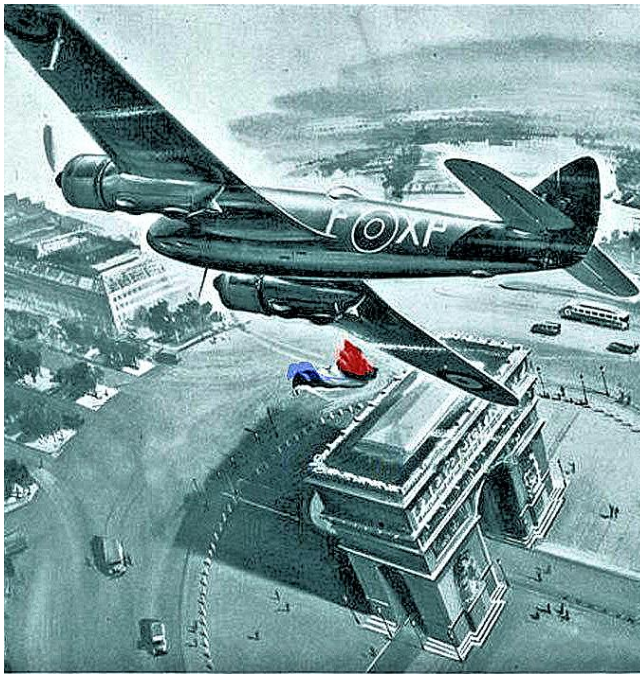


This impression of the interior of the Beaufighter shows the space behind the pilot where the turret would have fitted, obviously impeding the pilot's escape. The four large items just aft of the pilot's escape hatch in front of the Observer's station are the feed mechanisms for the underfloor cannon – the noise must have been immense when firing the cannon, even without the addition of a 4-gun turret.

Once the German attention had been focussed on invading Russia in June 1941, Beaufighters started to make a nuisance of themselves over France and Belgium and were increasingly operated from Malta in company with Beauforts over the Mediterranean. No. 272 Squadron shows that they destroyed 49 enemy aircraft and damaged another 42 over the notorious "Bomb Alley" approaching Malta.

By the spring of 1942, the older Mark IC (Coastal Command) machines had been replaced by the Beaufighter VIC with 1600 hp Hercules engines – a gain of 200 hp over the Mark IC. These aircraft went looking for U-boats and their top cover of very-long-range Focke-Wulf Condors.

One particular Fairey Aviation-built Beaufighter 1C T4800 ND-C made a particularly daring sortie on 12th June 1942, flown by Flt Lt Gatward and his navigator, Sgt Gilbert Fern of No. 236 Squadron RAF.



From Wikipedia:

"*Prior to the raid Gatward and Fern obtained a Tricolor from Portsmouth Harbour and had it cut into two. Each section was weighted with iron and they tested dropping them from a hangar roof to see how they unfurled. The flags were then installed on their Beaufighter Mk IC (code ND-C, serial T4800).* (DCG: so why does the image opposite, from a 1942 Bristol company advert, give the wrong codes?) *One section was to be draped over the Arc de Triomphe, the other over the* (German Naval) *Ministry.*

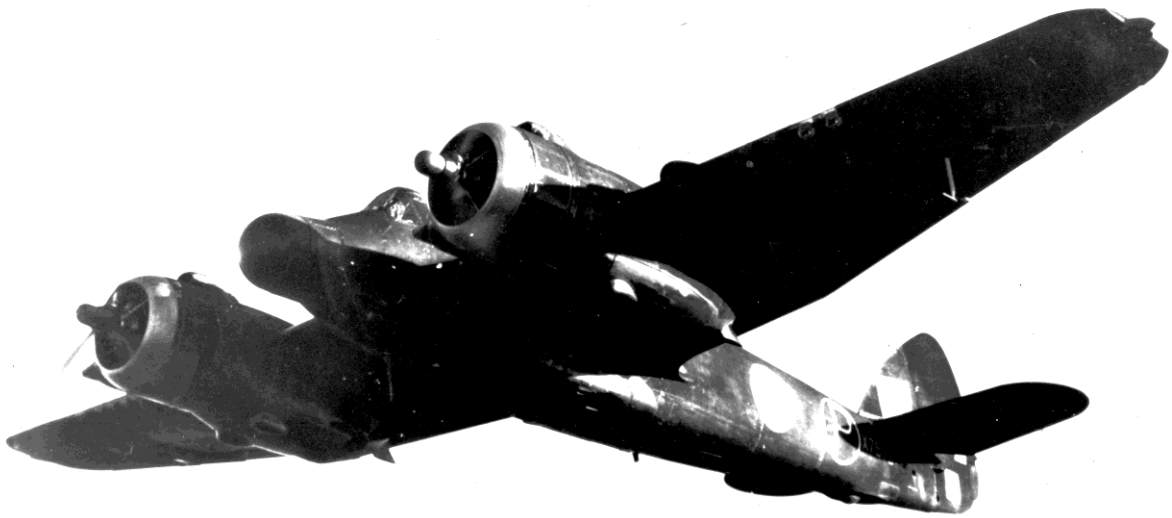
They first attempted the raid on 13 May but encountered poor weather after crossing the French coast. They were under orders to return if this happened.

On 12 June 1942, Gatward and Fern took off again at 11:29 hours from Thorney Island *in heavy rain. Initial weather conditions of ten tenths cloud at 2,000 feet with heavy precipitation were encountered and the aircraft set course for the target at 11:31 hours. Crossing the French coast a few miles eastward of* Fécamp *at 11:58 hours, the cloud cover thinned out and by the time they reached* Rouen *there was bright sunshine. With excellent visibility the aircraft*

passed over the suburbs of Paris at a very low altitude and some light flak was encountered for the first time. They circled the Eiffel Tower at 12:27 hours. During this low-level flying they suffered a bird strike in their starboard engine radiator but managed to fly on. At approximately 12:28 hours they banked to port and headed towards the Champs-Élysées.

The intelligence information about the time of the parade was incorrect so there were no German soldiers to strafe, but Fern released the first Tricolor down the flare chute over the Arc de Triomphe. Gatward then attacked the Ministre de la Marine in the Place de la Concorde, and strafed the building with 20 mm cannon shells, scattering German sentries. Fern, then dropped the second part of the Tricolor.

Gatward then turned for home at 12:30 hours and landed at RAF Northolt at 13:53 hours. Later intelligence confirmed that the parade had been assembling at the time of the attack but had to be abandoned due to the confusion following Gatward's raid. Gatward was awarded an immediate Distinguished Flying Cross (DFC) for his actions that day and Fern received the Distinguished Flying Medal (DFM)."



The image above – a rather poor original which has defied all my efforts to clarify - shows the thimble nose associated with the A.I. Mk.VII radar. The aircraft is painted in the "dirty night" paint scheme which renders the aircraft's tail number invisible in its hiding place just under the leading edge of the horizontal tail surface. The vague image seems to suggest the aircraft might be X7579, a Beaufighter IF built at Weston in the sequence X7540-X7589, although test flights were made from Filton.

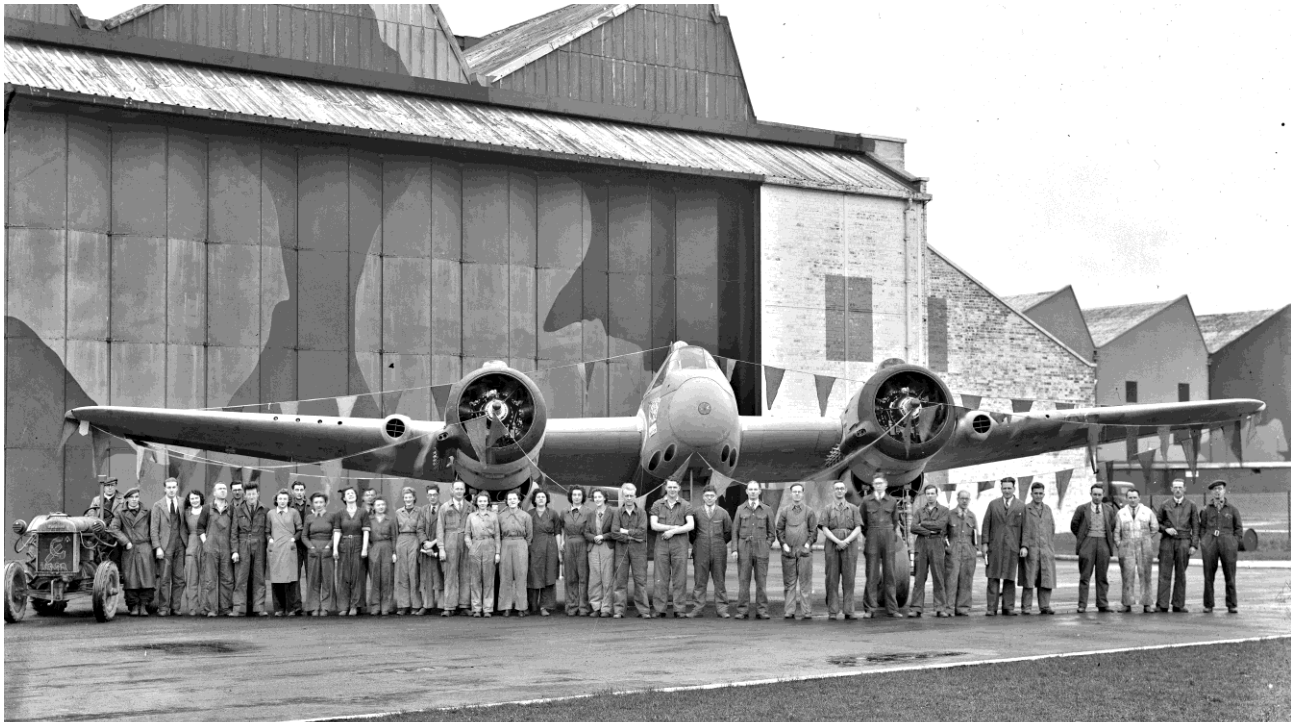
Once it had finished the IIF machines, Filton got on with building 668 VIF machines. Many more Beaufighters of all marks were produced by shadow factories, including 500 by Fairey Aviation (Stockport), 360 by Rootes Securities (Speke and Blythe Bridge) and 3235 at Weston-super-Mare; 364 TF.21 were also built in Australia for RAAF use.

Beaufighter production at the Ministry of Aircraft Production Shadow Factory at Weston-super-Mare.

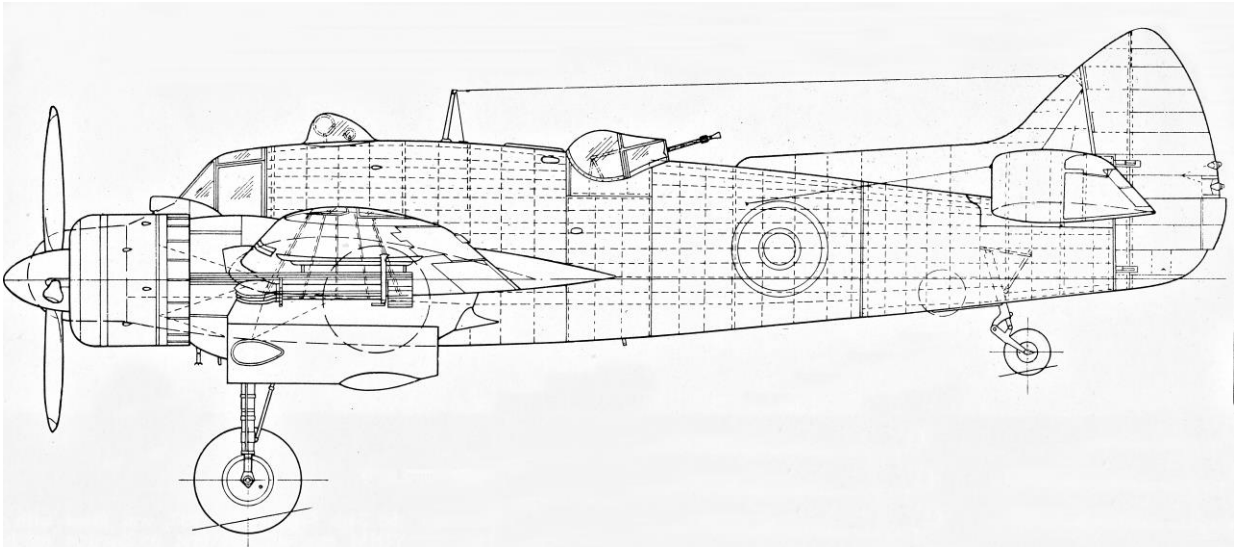
Although owned by MAP, this unit was managed by Bristol Aeroplane Company staff mainly seconded from Filton, which gave a close relationship with the "home" company - it became the key supplier of Beaufighters. As such, I am treating the factory as if it were an extension of Filton; after the war, Bristol retained the site. The first aircraft assembled at Old Mixon, as the site was known locally, were Beaufighter IF as below with X7646 engine nacelles in the foreground.

Old Mixon's first aircraft flew on 20th February 1941 although when production started has not been discovered. The factory's 1000th Beaufighter was rolled out on 2nd January 1943, a Mk.VIC, JL762. (see next page).

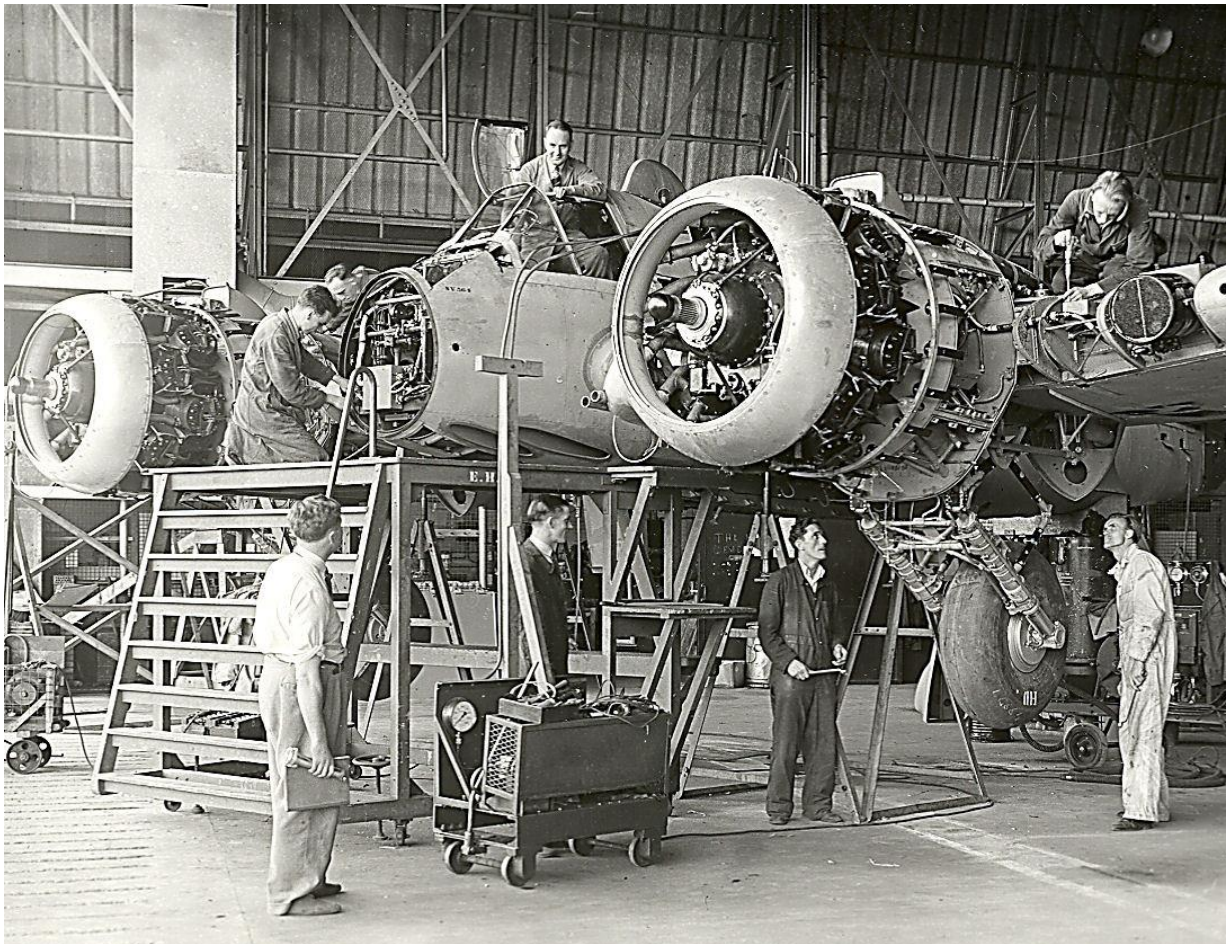
There are a couple of things that are especially interesting in the next picture. There is a poster beneath the aircraft's cockpit which I have been able to take from another picture and clarify, see left. Spirits were indeed high on the shop floor and, if you look carefully, you can see "JL762" written across the underside of the lead aircraft on the poster, which then reads "JL762 is our 1000th aircraft". The second item is the faint "hammer-and-sickle" motif painted on the radiator of the tractor on the extreme left. It is said that the operator of the vehicle painted this in honour of the Russian defence of their homeland which shifted Nazi attention away from the Western Allies' activities. The Battle of Stalingrad started on 17th July 1942 and is reckoned to have been a turning point in the war.



The last version of the aircraft produced was the Beaufighter TF.X, of which the majority – some 2095 aircraft plus 163 similar Mark XIC - were built at Weston, peaking at a build rate of 87 a month. The image below shows the dorsal fin fitted to most TF.X, the dihedral tail and rear-facing observers machine gun.



Bristol Type 156 Beaufighter TF.X – © Duncan Greenman 2020



An unknown Beaufighter TF.X or XIC under construction at Old Mixon, the date is not recorded.

The last Weston built, and the last Beaufighter, was SR919 which was a TT.10 Target Tug converted from a TF.X. Seen here at Filton with other Bristol products is an ex-TF.X, NT913, by then converted to a target tug. SR914 was the last aircraft in service, being retired from Seletar, Singapore in mid-1960.

✝ In Remembrance ✝

When a Beau goes in,
Into the drink,
It makes you think,
Because, you see, they always sink
But nobody says "Poor lad"
Or goes about looking sad
Because, you see, it's war,
It's the unalterable law.

Although it's perfectly certain
The pilot's gone for a Burton
And the observer too
It's nothing to do with you
And if they both should go
To a land where falls no rain nor hail
nor driven snow —
Here, there, or anywhere,
Do you suppose they care?

You shouldn't cry
Or say a prayer or sigh.
In the cold sea, in the dark,
It isn't a lark
But it isn't Original Sin —
It's just a Beau going in.

Gavin Ewart 1916-1995

https://www.youtube.com/watch?v=b4XPIjsW3Rc
https://www.youtube.com/watch?v=vsUdbzQCm_Y
https://www.youtube.com/watch?v=PM3HTl6oSSU

Buckinghams, Brigands and Buckmasters.

We have already seen the proposed Type 157 Beaufighter bomber that was not followed up in 1939 but, with the Blenheims rapidly heading for obsolescence, the Air Staff issued Spec B.7/40 for a Blenheim replacement two-seat light bomber and based on the Beaufighter. In addition, the Air Staff expected the same aircraft to be capable of operating in close-support fighter and high-level bomber modes as well.

The Type 160 had already been allocated to the final mark of Blenheim – called the Blenheim V or Bisley, of which 942 were built by Rootes Securities but none at Filton – so, the new aircraft became the Type 161. The RAF top brass were learning fast through the summer of 1940 about what new aircraft were going to be needed urgently and several revised specifications were issued. I have a copy of B.2/41 in my AiRchive and it might be interesting to quote it.

Air Ministry Specification B.2/41.

Dated 11/8/41.
Issued on 20/8/41 to Bristol.

Requirements.
Design and construction of an aircraft derived from the Beaufighter. A mock-up of the aircraft shall be available for preliminary inspection within two months from receipt of the order. As many components as possible from this type shall be interchangeable with the Beaufighter. AGS (Aircraft General Standard), SBAC and BSI standard parts are to be used as far as possible.

Performance.
The maximum speed shall be not less than 370 mph at 20,000 ft. The cruising speed at 15,000 ft at the maximum weak mixture cruising power, shall be not less than 300 mph when carrying a . bomb load of not less than 2,000 lb. When carrying the above load, the range at 15,000 ft shall be not less than1,000 miles at maximum weak mixture cruising power, after an allowance of 50 minutes at this power. As much auxiliary tankage as possible shall be provided.
An all-up weight of not less than 29,500 lb shall be used when defining the strength of the aeroplane. The structure must have an ultimate factor of not less than 2.0 under any normal acceleration between 0 and 3.5g inclusive for the full range of speed up to 1.3 times the maximum equivalent air speed in level flight.

The aeroplane shall be fitted with two Centaurus engines. Provision is to be made for carburettor air cleaners for tropical use and these cleaners shall be suitable for use in conjunction with alternate hot and cold air intakes.

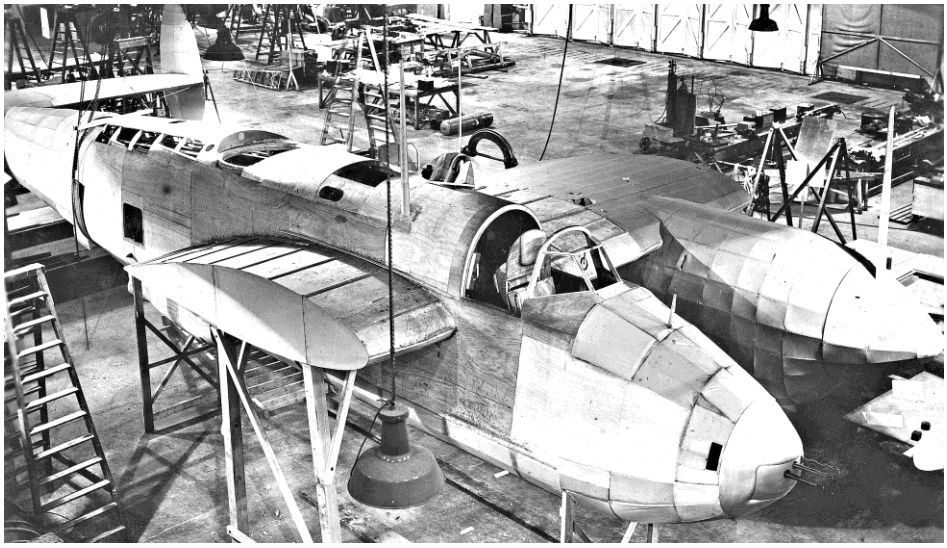
Paste de-icing will be used for airscrews and on mainplane and tail unit. The combined Dunlop de-icer and armoured leading edge is required on the mainplane of the second prototype. Pilot's windscreen to have a hot air sandwich.

Crew: Pilot, Air Observer and W/T Operator / Air Gunner with parachutes and "M" Type dinghy.

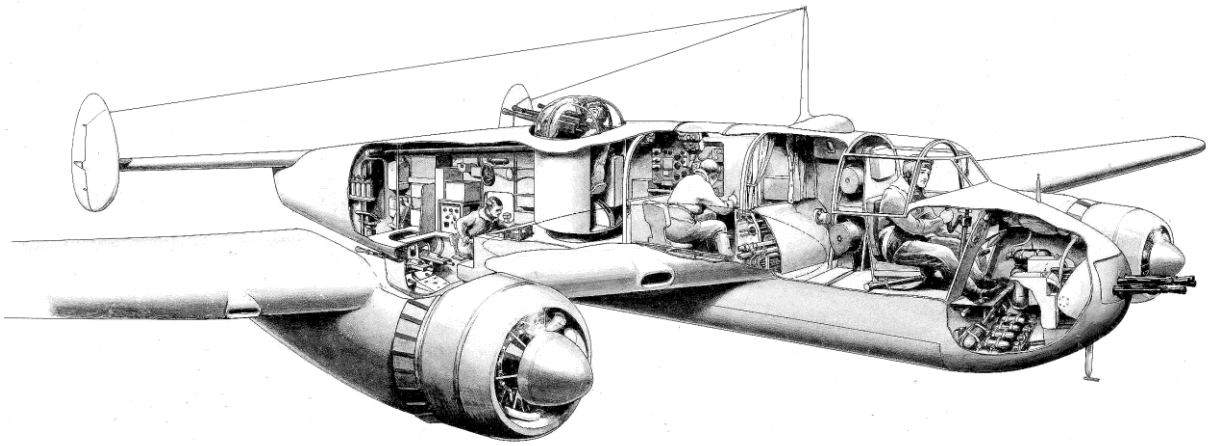
Armament: 4 Browning guns and Sight with 4,000 rounds of ammunition,2 Browning guns and Sight with 1,000 rounds of ammunition. 4x 500 lb bombs or 1x 1,000lb bombs, or 1x torpedo.

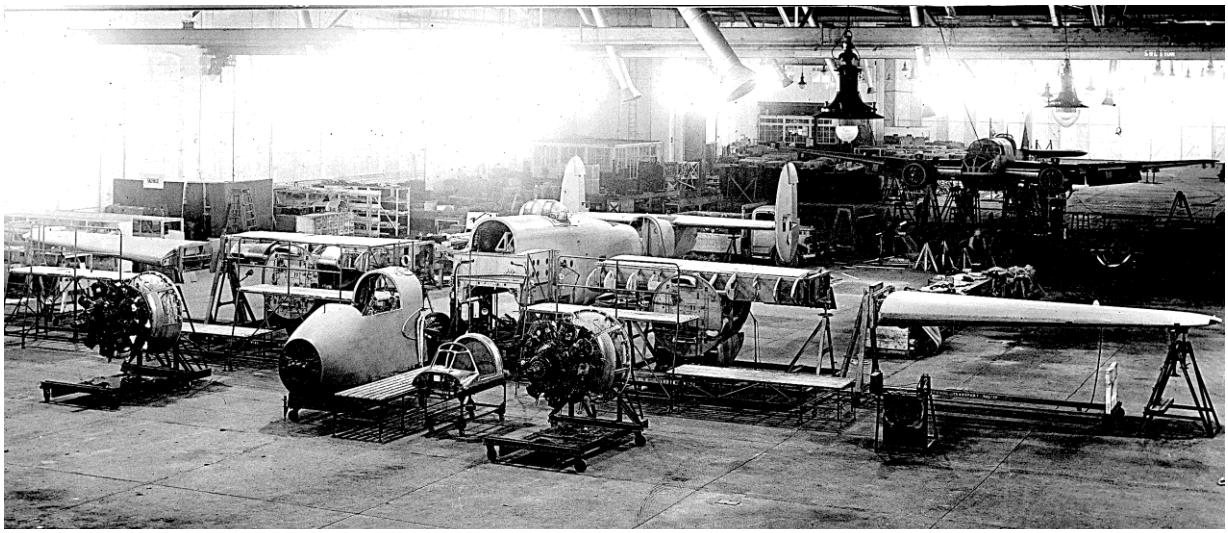
Signals: T.1154/R.1155, TR.9F or TR,1226, R 1124A/1125A, DF set with R.1155, IFF.(R.3003).

Notes: A new design, Type 162, provisionally named Beaumont (B.7/40) was revised and submitted as Type 163.Named Buckingham, Contract no. ACFT/236 was placed for four prototypes in July 1941. Specification B.2/41 was cancelled and Specification Buckingham I/P1 issued on 4/2/1942. The first prototype, DX249, was flown on 4/2/43, the second DX255, flew soon after followed by DX259 and DX266. The first production Buckingham B.1 bomber flew on 12/2/44.

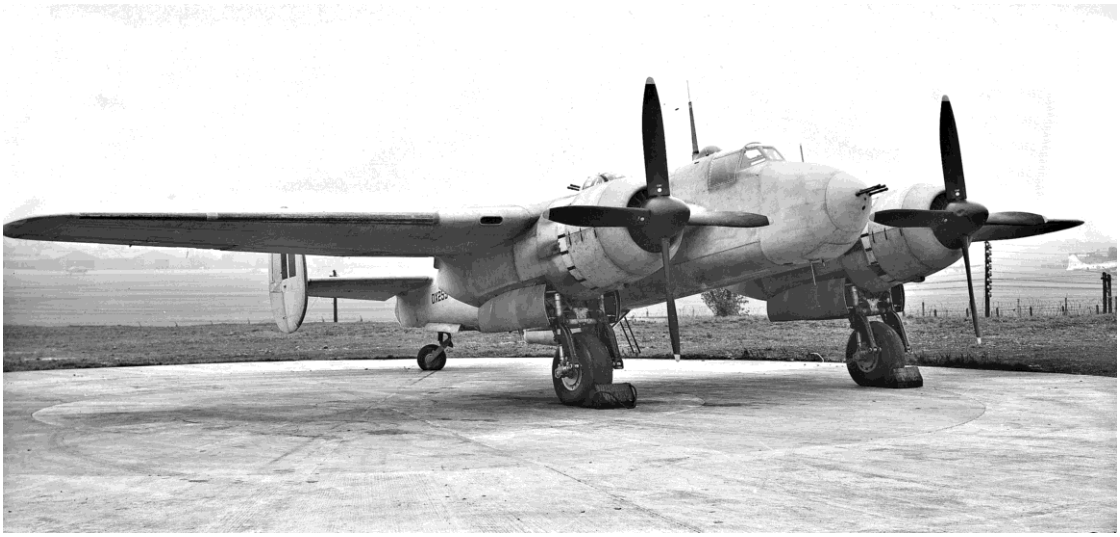


The Buckingham wooden mock-up required by the specification and, below middle, an interesting company artists impression of the interior, which clearly shows the Beaufighter ancestry.





The first Buckingham DX249, in build at Filton – behind is a Beaufort, date unknown c. late-1942.

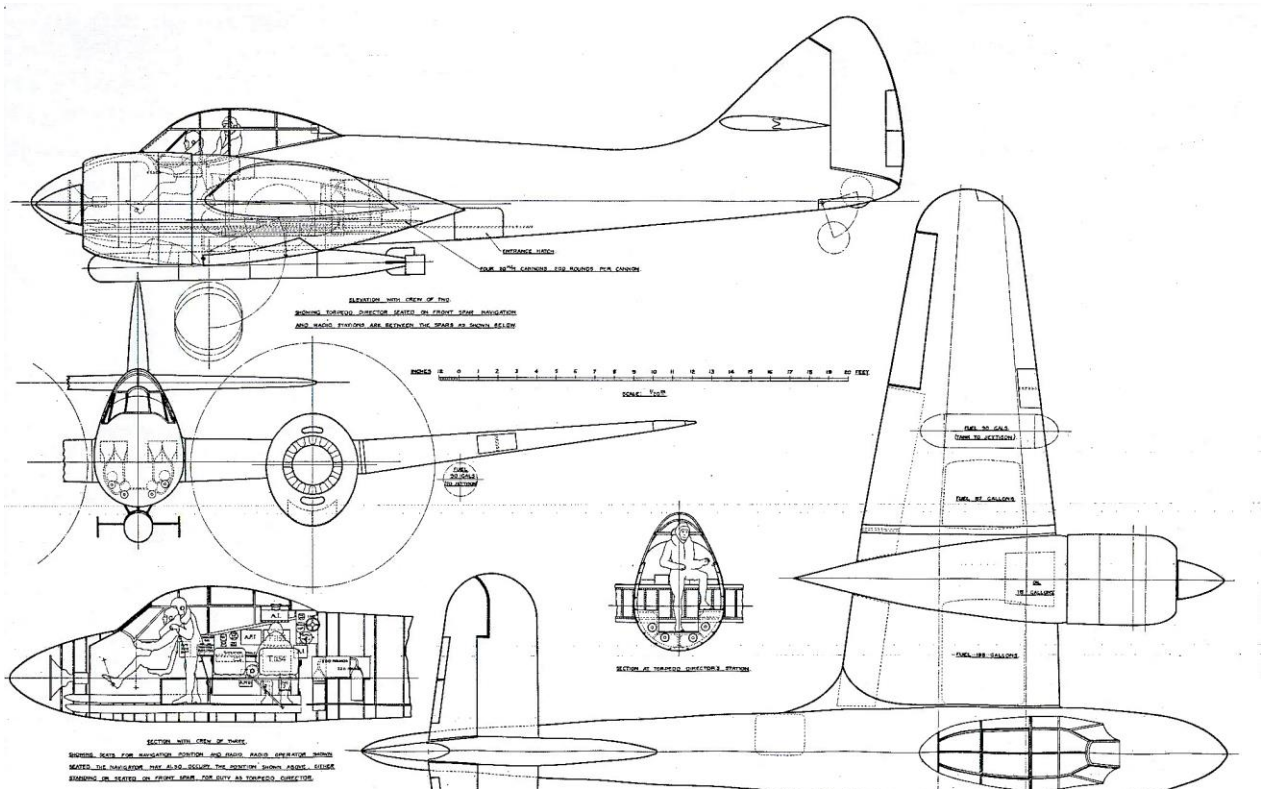


DX255, the second armed prototype – the fastest fully armed bomber of its day at 355 mph - and below, KV370 without nose machine guns. When hostilities ceased, there were unarmed conversions to passenger-carrying communications versions, the C.1 and C.2.

A row of Buckinghams in the Filton production shops, c.early-1943.

However, the Buckingham was not the end of Specifications for successors to the Beaufighter. In July 1942, there was a proposal for a Buckingham Mk.II which would have carried two torpedoes, but the low altitude performance of the Centaurus was not good enough. In addition, the torpedo dropping role required good coordination between the crew members, so a single cabin location, with good visibility for the crew was deemed essential.

On 15th September, Specification S.7/42 became H.7/42, also with two Hercules XVII engines - my AiRchive has a drawing of the original proposal. If you expand the image, the notes become legible.



Air Ministry Specification H.7/42.

Dated 3/12/42.
Issued on 10/12/42 to Bristol.

Requirements.

To meet Operational Requirement OR.117, the design and construction of a torpedo carrying aeroplane derived from the Beaufighter is required. Alternative duties are required as a long range day fighter, high speed torpedo attack aircraft and dive bomber.

Performance.

The best possible performance at sea level and the maximum speed is not to be less than 300 knots this height. The SAR (Still Air Range) is not to be less than 1500 n. miles at most economical cruising speed when carrying the torpedo load for the full range. Auxiliary tankage for reinforcing the range is required. The aircraft must have a high degree of manoeuvrability at sea level when carrying a torpedo. At 200 knots the controls and particularly the rudder should be light and accurate. Quick and positive aileron control at all speeds is important. Dive brakes are required

for limiting the ultimate speed in a sustained dive and reducing speed during a short dive at low altitude. In a sustained dive at angles greater than 60 degrees from the horizontal the diving speed must not exceed 300 knots. For the short dive it is required to reduce speed from 300 knots to 200 knots within 30 seconds during a descent from 2,000 ft to 200 ft.

Engines: Two Hercules XVII

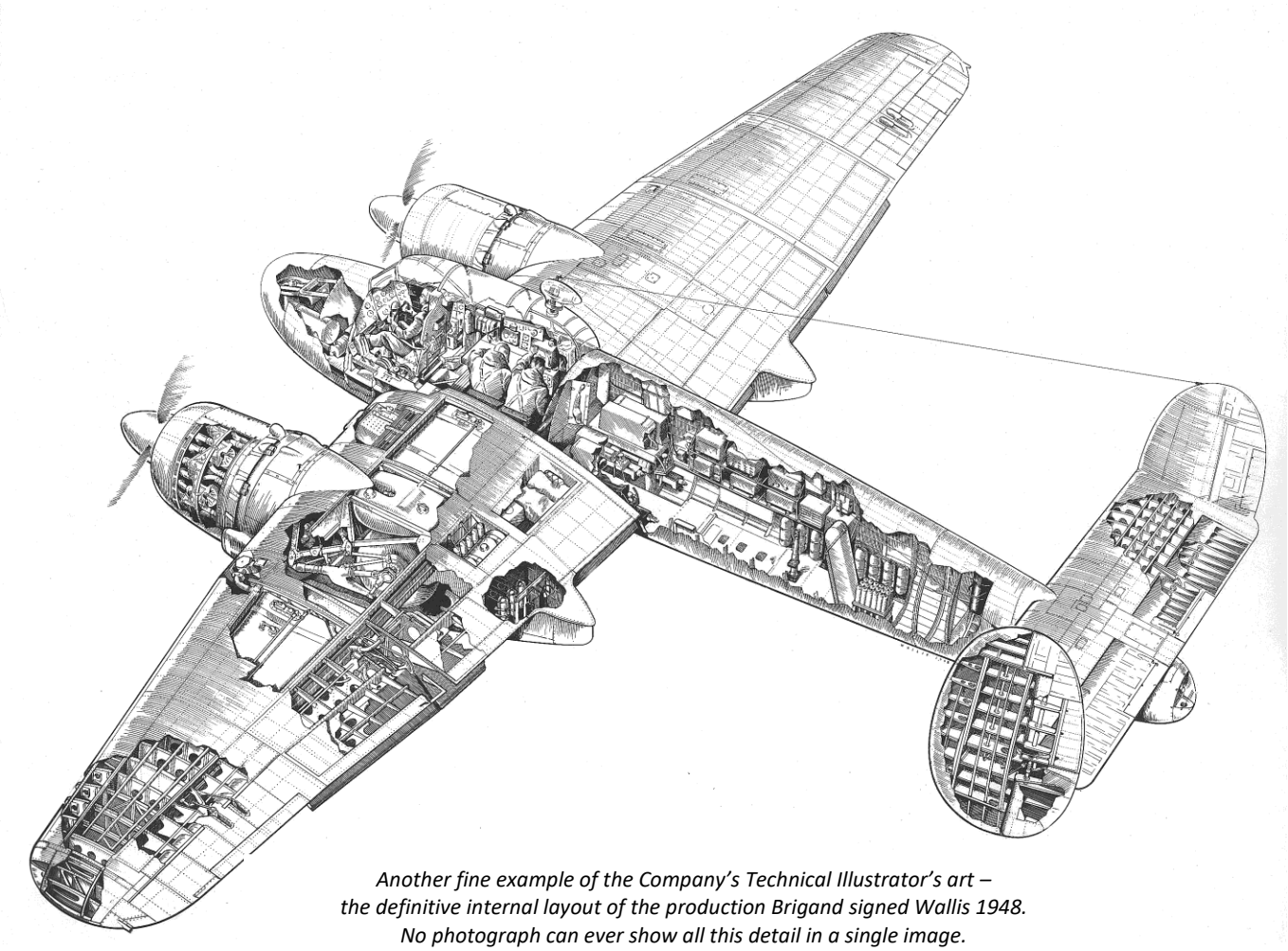
Crew: One pilot, one navigator/torpedo operator, one wireless/ASV operator.

Armament: Four 20 mm guns with 800 rounds of ammunition. One 18" or 21" British or 22.4" US torpedo. Four x 600lb AS bombs.

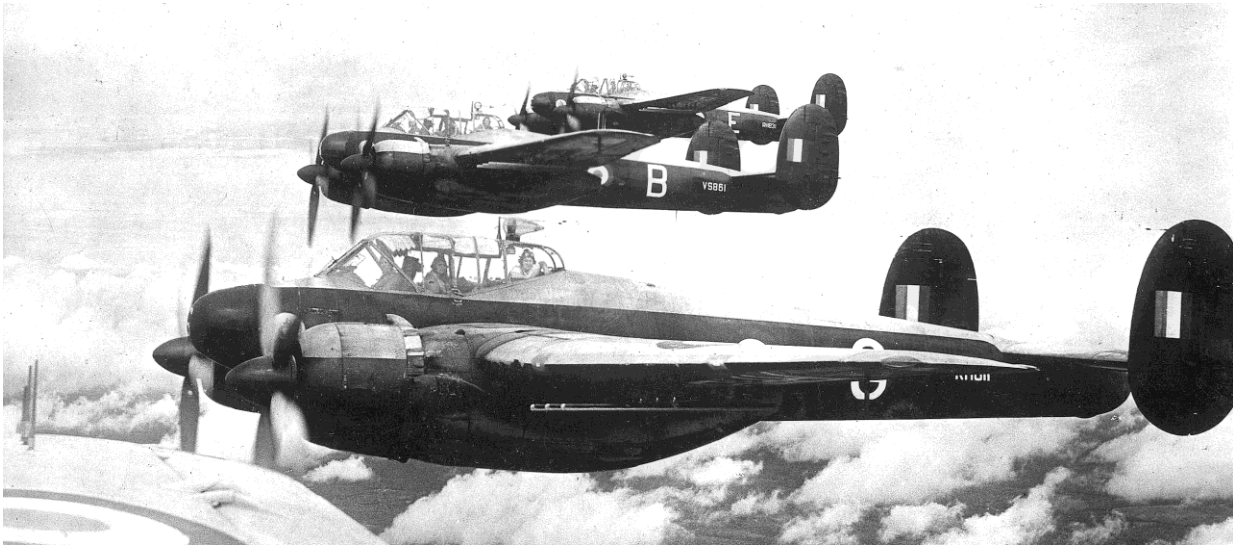
Radio: T.1154-R1155,, TR1143, T3040-R3039, R.3100 or R.3039, R.3135.

Notes: Superseded by Specification Brigand TF MkI/PI. AS Bristol Type 164, four prototypes were formally ordered on 12/4/43, MX988, MX991,MX994 and MX997 to Contract no. SB.25383. The first prototype Brigand MX988 was flown on 4/12/44 with Centaurus VII engines. The other prototypes were MX991, MX994 and TX374 which replaced MX997.

The third prototype MX994 under construction with MX991, the second prototype in the background with a circled P on the fuselage. Lurking further in the background would seem to be the prototype Brabazon Mk.I, but surely this cannot be as the image seems to date from just after the first Brigand flew in December 1944. Therefore, it would seem that it is the Brabazon wooden mock-up in the background.



Another fine example of the Company's Technical Illustrator's art –
the definitive internal layout of the production Brigand signed Wallis 1948.
No photograph can ever show all this detail in a single image.

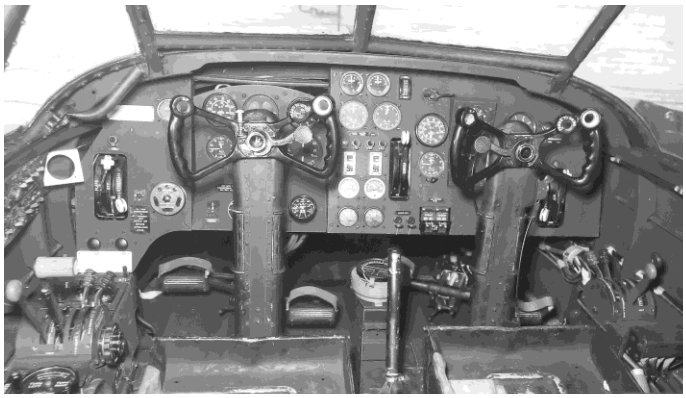


Three Brigands on a sortie showing the normal flight positions of the crew;
the aircraft are RH811 (V), VS861 (B) and RH831 (E).

Chief Aircraft Designer Leslie Frise's team eventually prepared six schemes being:

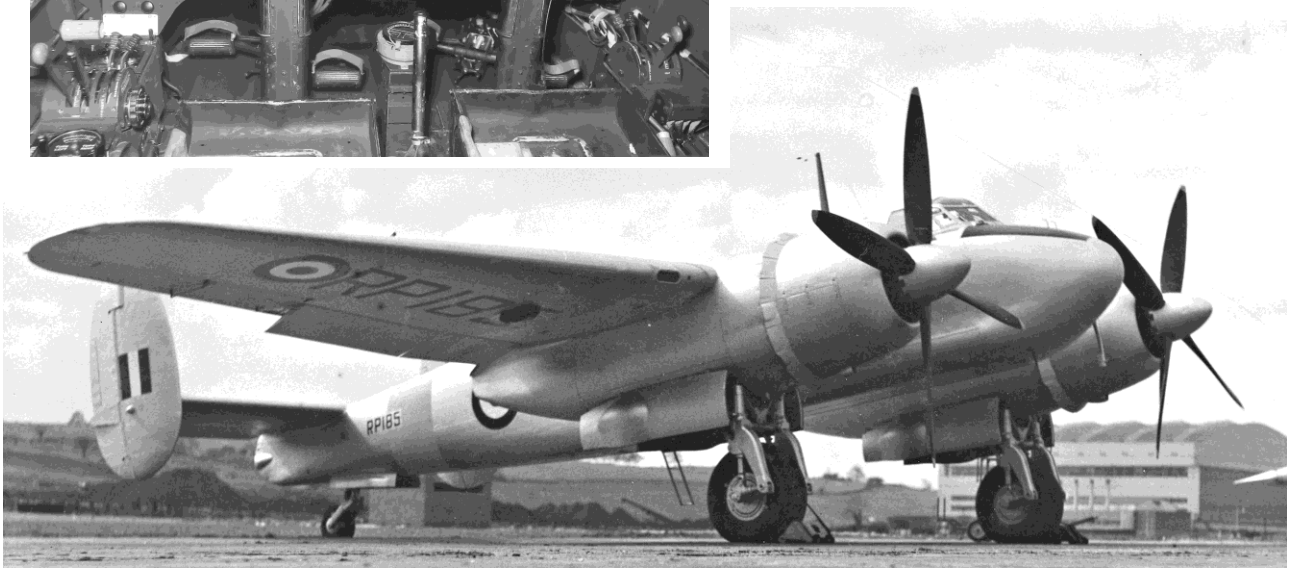
- Type 161/162 (1940) - Beaumont bomber derivative of the Beaufighter to Spec B.7/40 with either Hercules (Mark I) or Merlin (Mark II); not pursued.
- Type 163 (1941) - Buckingham B.1 and C.1; 2400 hp Centaurus IV, Vii or XI powered.
- Type 164 (1942) - Brigand all marks except trainer; 2500 hp Centaurus 57 powered.
- Type 165 (1943) - Brigand trainer; 2500 hp Centaurus 57 powered.
- Type 166 (1943) - Trainer conversion of Type 163; 2400 hp Centaurus VII powered.

The Brigand Trainer with dual-control was never developed and in August 1943, the company submitted a dual-control version of the Buckingham. This was achieved by simply substituting a wider forward fuselage with room for two pilots side-by-side and all armament and protection removed. Two partly completed machines (TJ714 and TJ717) were converted on the production line to the first two Buckmaster, TJ714 flying for the first time on 27th October 1944.



Production:

Type 163 - 123
Type 164 - 147
Type 166 - 112 Total - 382



With the end of the war in the Far East on VJ Day, 15th August 1945, the need for the three types was truncated and, conveniently, this brings us to the end of this issue of the Flyer marking VJ Day 2020.
The next issue is due out on the 25th September, to commemorate the 80th anniversary of the air raid on the Filton site. It will catch up with 501 Squadron as well as looking at the broader wartime situation in September 1940.

If you are reading someone else's copy, you can get your own by emailing me on bristol.flyer@btinternet.com, and saying "Yes please" - you must be able to receive email; there is no charge, which means it's free and it won't cost you a penny either!

"Whispering Death" closes in on Tokyo . . . !

Timor . . . Banda Island . . . New Guinea . . . Mindanao and Leyte in the Philippines . . . stepping-stones in the south-west Pacific leading to the Nippon lair. Day by day, reports show the powerful part played by the irrepressible Beaufighter in maintaining a relentless pressure towards the more northerly objective. "Whispering Death" comes nearer to the homeland of those who thus christened the Beaufighter; with the forceful addition of rockets to serve as its visiting card. "The fitting of rockets to the powerfully armed Beaufighters makes them the most formidable aircraft in the south-west Pacific . . ." states a report from the Melbourne correspondent of the London "Times"—a statement all the more remarkable when it is remembered that the Beaufighter has been a front-line aircraft for a far longer time than most in both western and eastern phases of the war.

"Bristol"

. . to the forefront on the world's skyways . . . in war and in peace

THE BRISTOL AEROPLANE COMPANY LIMITED

HERCULES

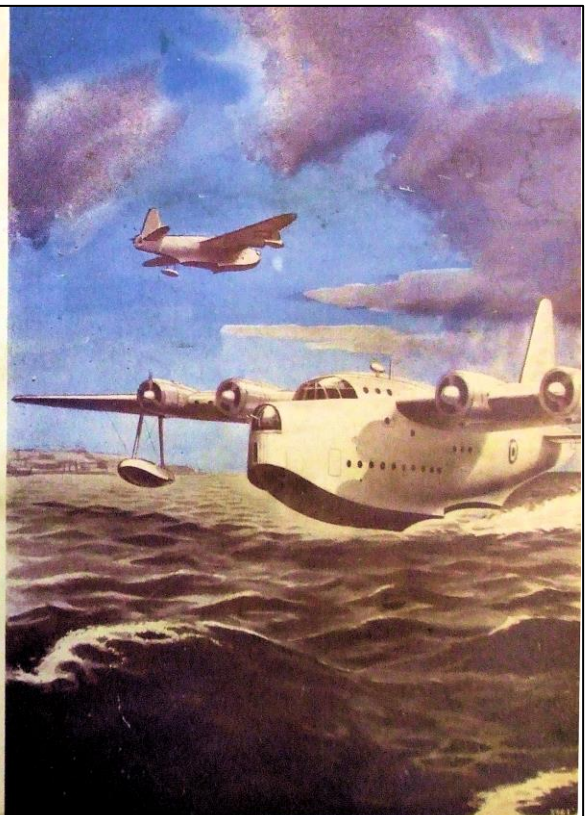
Parade of Britain's air power

No. 6 . . . **Sunderland**

The "Sunderland"—virtually a military version of the "Empire" Flying Boat—has been in continuous service since the outbreak of war. Apart from normal patrol, reconnaissance, convoy protection, and anti-submarine activity, many outstanding and unusual feats have distinguished its war-time record. The "Sunderland" has sunk and damaged many U-boats; rescued hundreds of survivors of torpedoed ships; brought to safety hundreds of persons during evacuation from Norway, Greece and Crete. "Bristol" engines have always been associated with the "Sunderland," and the latest of this famous series of Flying-Boats—"Sunderland IV"—is powered by "Bristol" Hercules sleeve valve engines.

"Bristol"

The single sleeve-valve principle was pioneered & developed by "Bristol"



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