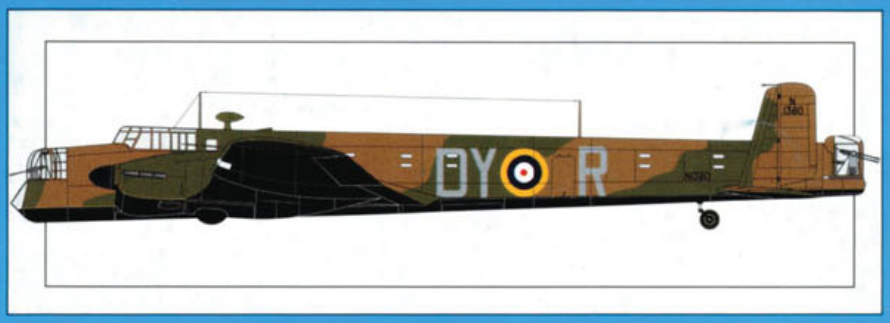
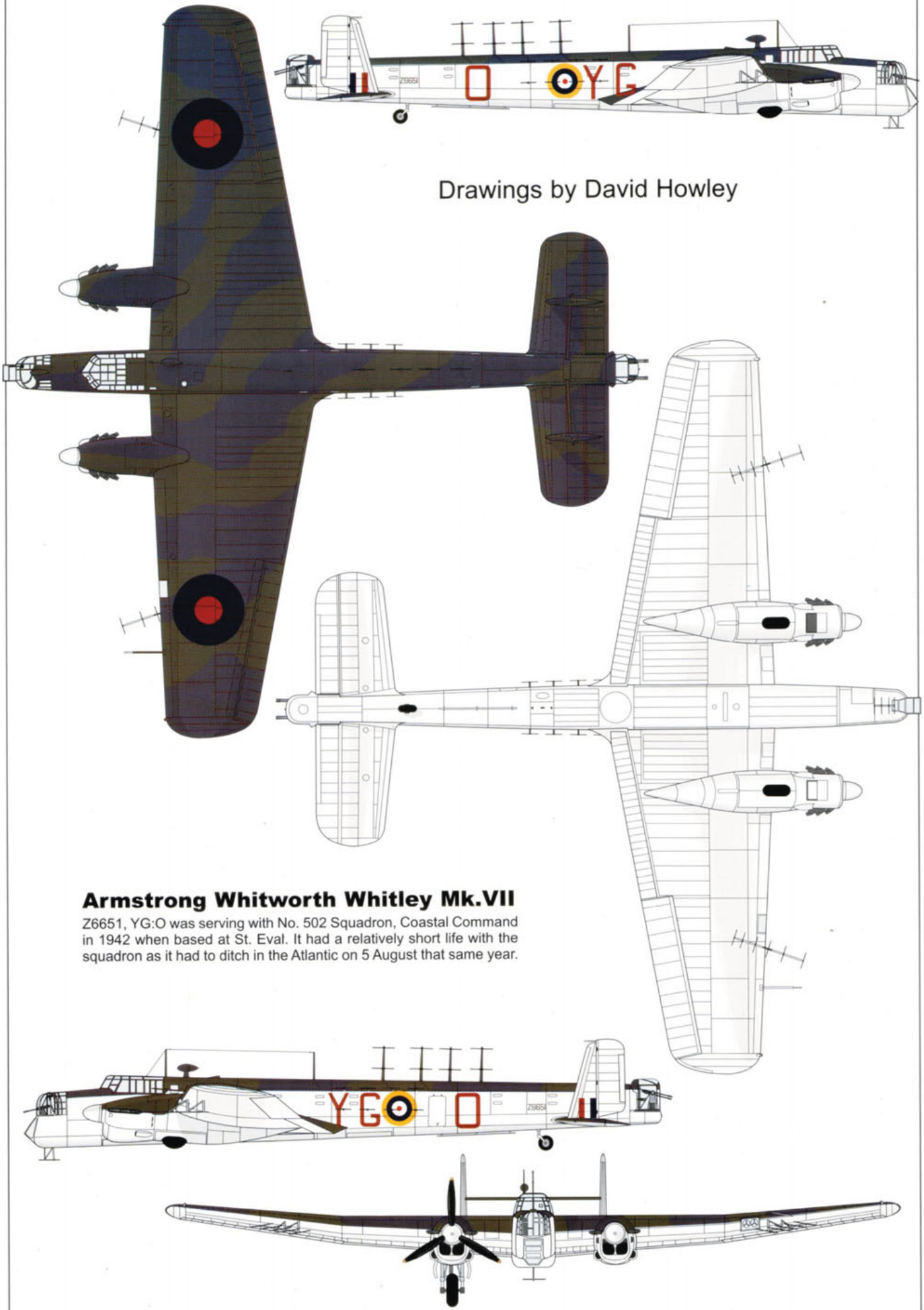


WARPAINT SERIES No. 21

Armstrong Whitworth WHITLEY

BY KEN WIXEY

Armstrong Whitworth Whitley Mk.V Z6743 of No. 77 Squadron, being serviced at RAF Middleton St. George before setting out on a raid over Germany. No.77 Squadron was one of six that formed No. 4 Group based at airfields in the York area early in World War 2. Z6743 went missing over Aachen on the night of 10 July 1941.



Drawings by David Howley

Armstrong Whitworth Whitley Mk.VII

Z6651, YG:O was serving with No. 502 Squadron, Coastal Command in 1942 when based at St. Eval. It had a relatively short life with the squadron as it had to ditch in the Atlantic on 5 August that same year.

By Ken Wixey

Armstrong Whitworth WHITLEY

DESTINED to play an important part in RAF Bomber Command's bombing offensive against Germany during the early years of World War 2, the Armstrong Whitworth Whitley was one of three 'strategic' bomber types with which Britain went to war in September 1939. Its partners were the Handley Page Hampden and Vickers Armstrong Wellington, both originally intended as day bombers to replace older aircraft in RAF medium bomber squadrons. They were conceived two years earlier to the Whitley, which was designed from the outset as a heavy night bomber to replace ageing Vickers Virginia and Handley Page Heyford biplanes and the RAF's first monoplane night bomber, the Fairey Hendon with its fixed undercarriage.

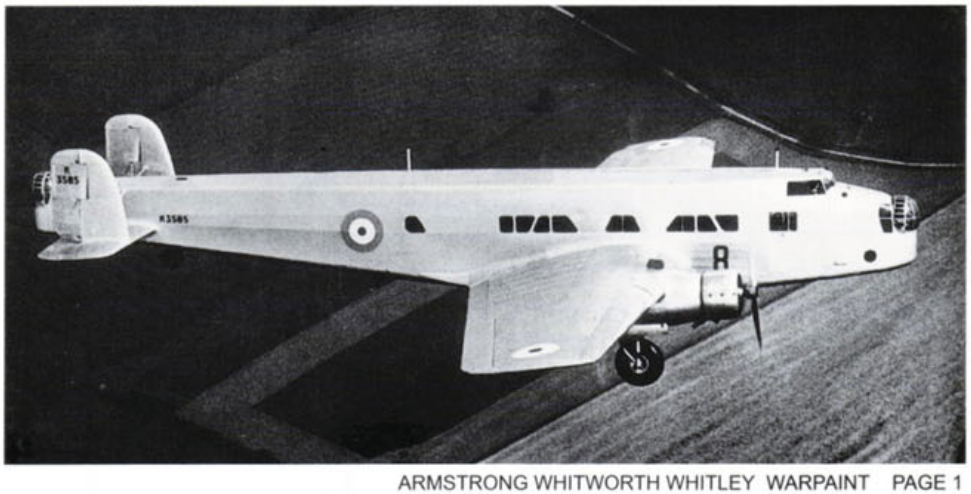
Most successful of this trio of early World War 2 British bombers was the Wellington, but nevertheless Whitleys carried out the first leaflet ('Nickel') raids over Germany's homeland, made the first bombing attacks on mainland Germany, were first to cross the Alps and attack targets in Italy and among the first RAF bombers to drop bombs on Berlin.

Whitleys also joined RAF Coastal Command in its fight against the U-boats, helped to develop Britain's airborne forces and assisted in re-supplying Malta, flying as BOAC transports manned by civilian crews. These additional roles probably justified the Whitley's continuing front-line RAF service for some considerable time after its capability as a bomber had passed. Nevertheless the Whitley had been planned as a heavy night bomber and this function was undertaken with relative success during the early war years as will be seen.

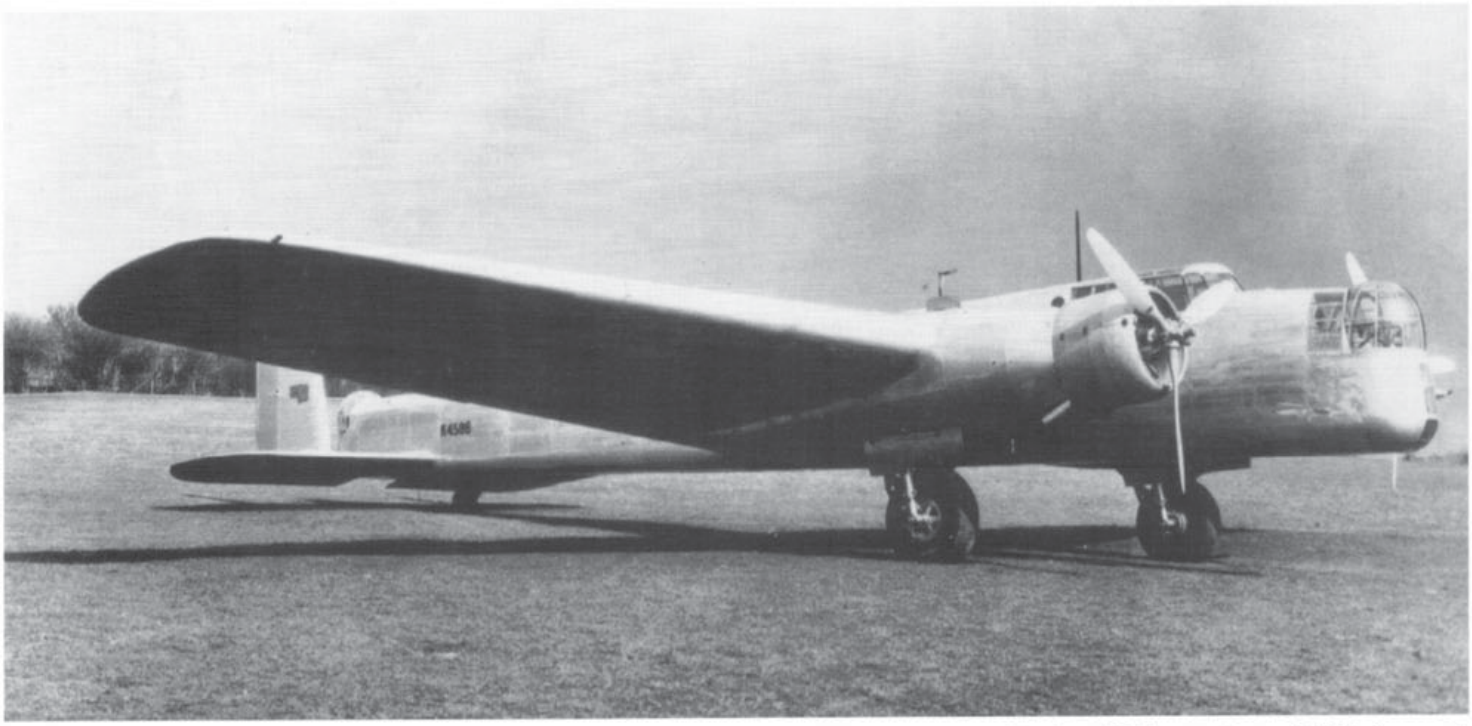
The characteristic 'sit' of the Whitley can be seen in this picture of two aircraft of No. 78 Squadron. Both machines Z6743 EY:V and Z6625 EY:L crashed after returning from raids over Germany shortly after the picture was taken in 1941. (Hulton)

POLITICAL RESTRAINT

Like some other British warplane designs of the 1930s the Whitley was a victim, not only of political restraint but more importantly of the rapid technological advances being made in aviation during that period. To understand the policies and ideas which affected the Whitley's development, it should be realised that, although ordered in 1934, it was considered obsolete for the heavy bomber role by 1937. By then the more sophisticated Avro Manchester, Handley Page Halifax and Short Stirling heavy bombers were anticipated, which would leave the Whitley outdated even for the medium bomber role. So why, despite the Whitley's failure to completely fulfil the requirements of a heavy night bomber in 1940 (partly a result of rapid technological advancements in the industry), did



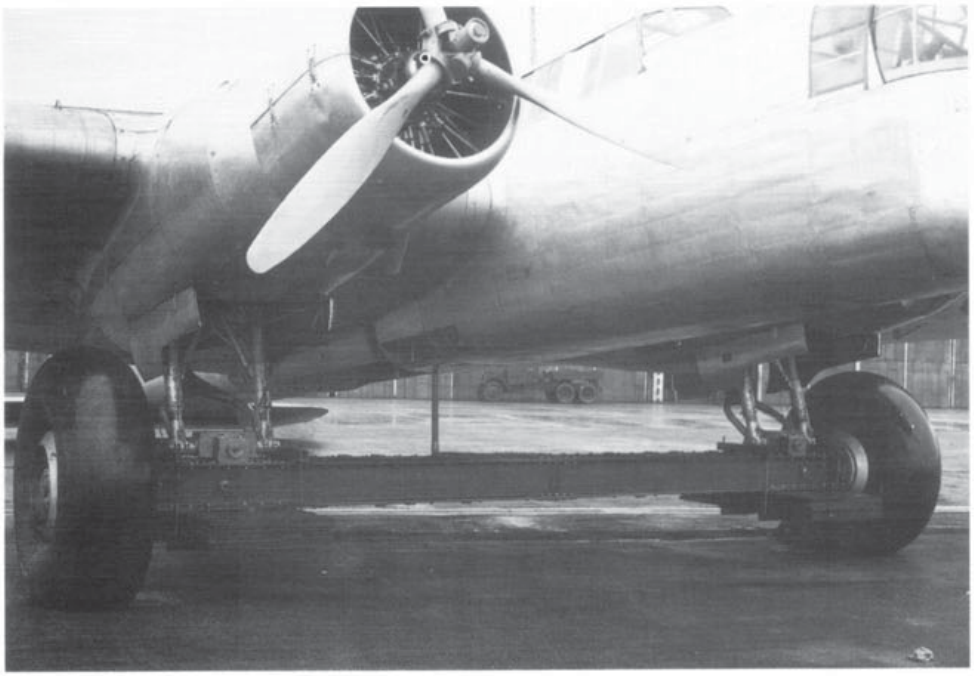
In this air-to-air picture of the single prototype of the AW.23, K3585, the aircraft has its undercarriage lowered. The close relationship to the Whitley that followed, can be seen in the wing and tail unit shape. Although it did not enter production it formed the basis for the John Lloyd's Whitley design. (Author)

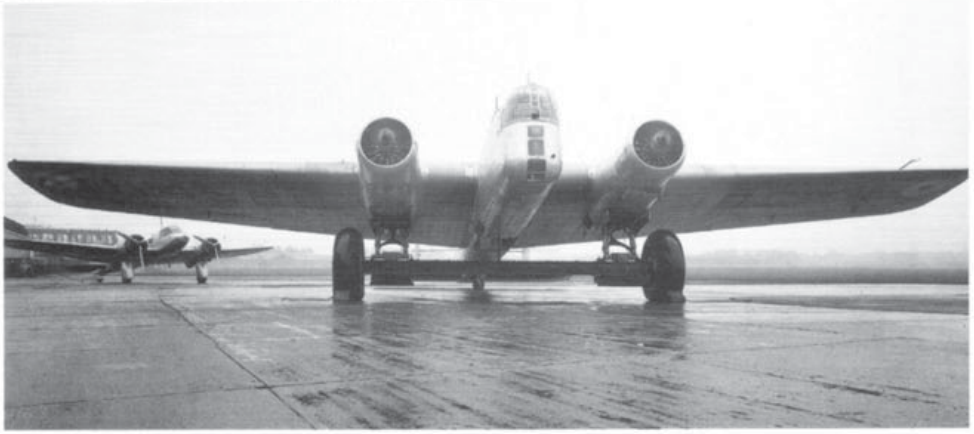


The first Whitley prototype, K4586, in overall natural metal finish and fitted with Armstrong Siddeley Tiger IX engines. It first flew on 17 March 1936. The first few Whitleys had no dihedral on the outer wing panels, as can be seen in this picture, these were only fitted to later production aircraft. (Armstrong Whitworth)

production total 1,812 aircraft, six times over and above the original planned number of Whitley bombers?

The answer lay in the Whitley's original concept plus a number of unforeseen political and industrial problems. Firstly the Whitley had been designed in answer to a request for an aircraft which could carry a 2,500 lb bomb load over a distance of 1,250 miles and at an altitude of 15,000 ft. But by 1936 plans had already been laid for an aircraft capable of carrying an 8,000 lb bomb load for 3,000 miles. This would obviously make the Whitley all but obsolescent and production of the aircraft was expected to be stopped in favour of a forthcoming generation of new heavy bombers. Thus of the 320 Whitleys on order, 120 were officially cancelled, the remaining 200 machines to be built and delivered by the end of March 1939. However, although at the time it was thought Armstrong Whitworth would be unable to set up efficient quantity production of a new bomber design quickly enough, the main reason for the delay was due to production of replacement new bombers being constantly deferred. As a consequence Whitley production continued and did not end until three years after the original date set for completion.





Another aspect was the effect of the 1932 Geneva Disarmament Conference, which limited the weight of new bombing aircraft to 6,000 lbs. Britain was in favour of the proposals and the Air Ministry was obliged to comply. Specification B.9/32 was issued but greatly handicapped Handley Page and Vickers designers, despite a later relaxation to 6,500 lbs. The B.9/32 plans were elevated to prototype construction and resulted in the Hampden and Wellington respectively. This farcical situation was evident when attention was given to the need for a new heavy night bomber for the RAF, as the term 'heavy' was strictly relative and the Geneva limits on tare weights remained.

Members of the Air Staff were faced with a number of rather bizarre ideas to overcome the problem. One visualised a dual purpose B.9/32 design with interchangeable wings and tail unit; with a larger wing it could fly at a heavier gross weight, but still retain the wing loading necessary for low landing speeds. Another scheme suggested that the Vickers Vildebeest biplane should be used as

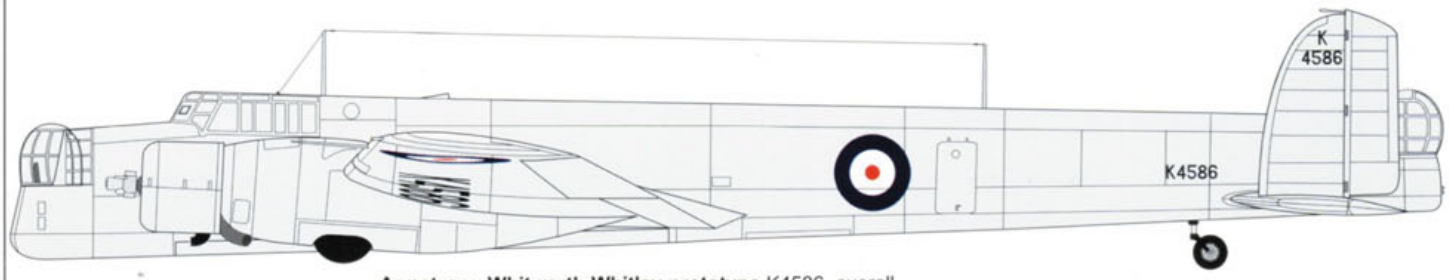
Because most Bomber Command airfields had all-grass surfaces at the beginning of the war experiments were carried out at RAE Farnborough to see what effect the all-up-weight of the Whitley would have on wet and muddy surfaces. The second prototype K4586 was fitted with oversize wheels and tyres and the additional loaded weight simulated by a massive beam between the undercarriage legs. Taxi trials were carried out and it was proved that the Whitley's normal undercarriage would be sufficiently robust to operate from existing airfields until concrete runways could be laid.(RAE)

Armstrong Whitworth Whitley camouflage and markings

Drawings by David Howley

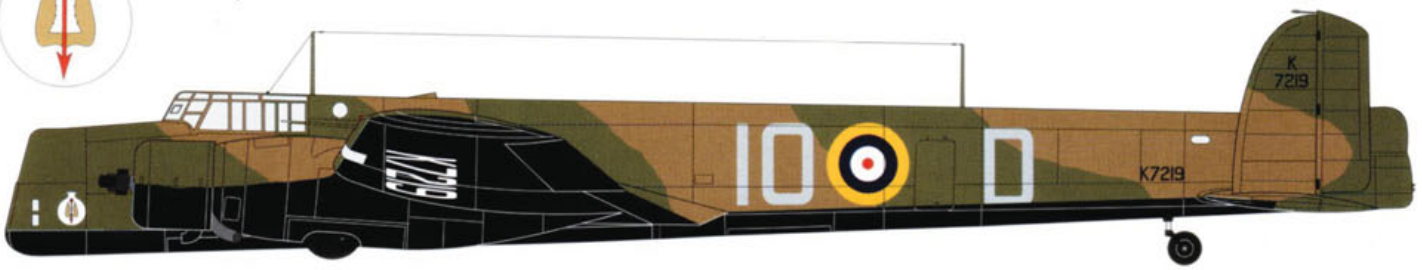
ARMSTRONG WHITWORTH WHITLEY COLOUR KEY

Black | White | Yellow | R. Red | R. Blue | Dk. Earth | Dk. Green | Medium Sea Grey | Ex. Dk. Sea Grey | Dk. Slate Grey | Azure Blue



Armstrong Whitworth Whitley prototype K4586, overall natural metal. Serials in black.

Squadron badge of No. 10 Squadron

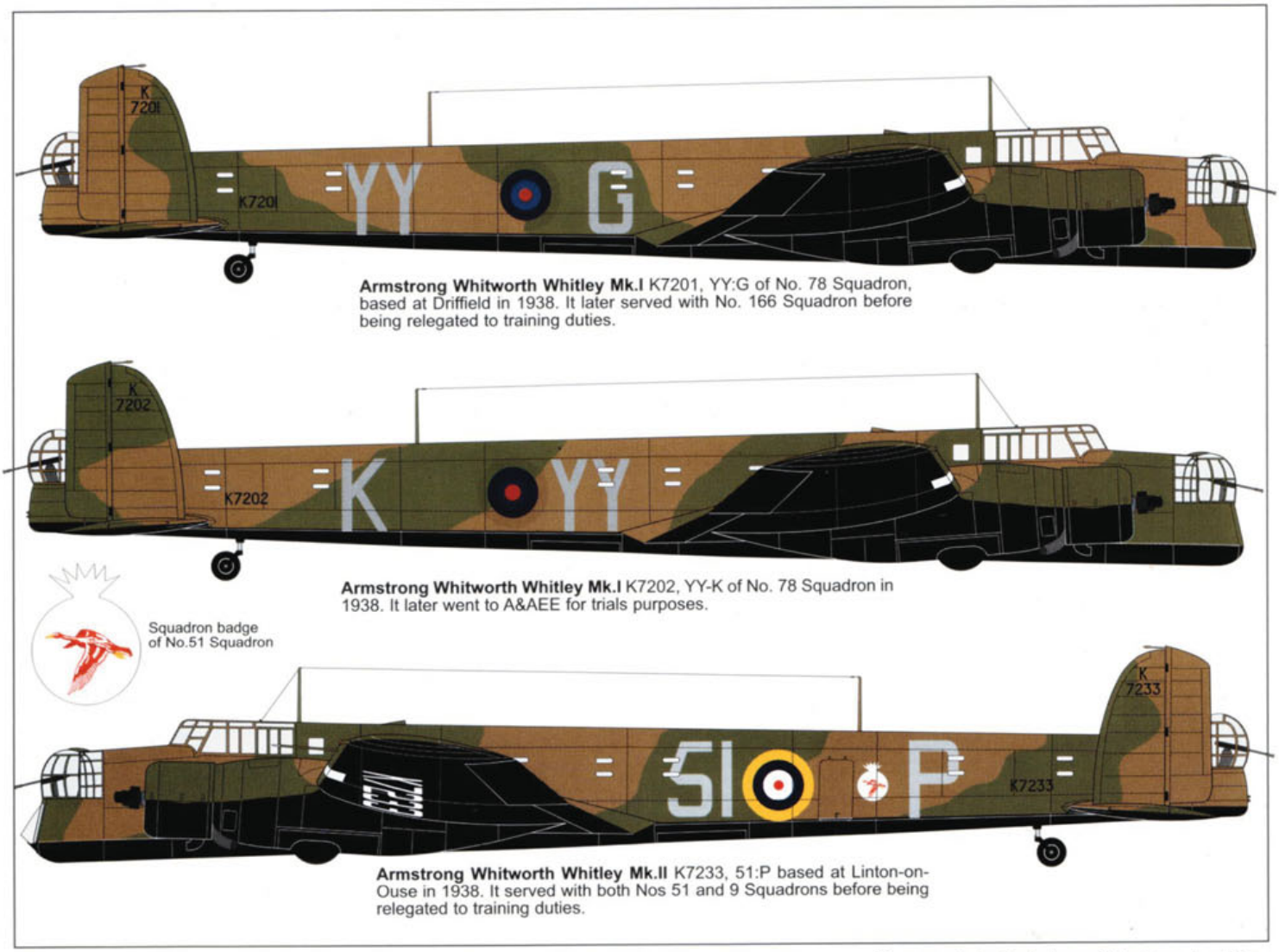


Armstrong Whitworth Whitley Mk.I K7219, 10:D of No. 10 Squadron in 1937 when based at Dishforth. Grenade surround to squadron badge on nose.

Armstrong Whitworth Whitley Mk.I K7188, K of No. 10 Squadron, 1937. Underwing serials on this and above in white.

Armstrong Whitworth Whitley Mk.I K7190. PB-F of No. 10 Squadron in 1938 after the change to pre-war codes.

Armstrong Whitworth Whitley Mk.I K7200, 78:V of No. 78 Squadron when based at Dishforth in early 1938.



Armstrong Whitworth Whitley Mk.I K7201, YY:G of No. 78 Squadron, based at Driffield in 1938. It later served with No. 166 Squadron before being relegated to training duties.

Armstrong Whitworth Whitley Mk.I K7202, YY-K of No. 78 Squadron in 1938. It later went to A&AEE for trials purposes.

Squadron badge of No.51 Squadron

Armstrong Whitworth Whitley Mk.II K7233, 51:P based at Linton-on-Ouse in 1938. It served with both Nos 51 and 9 Squadrons before being relegated to training duties.

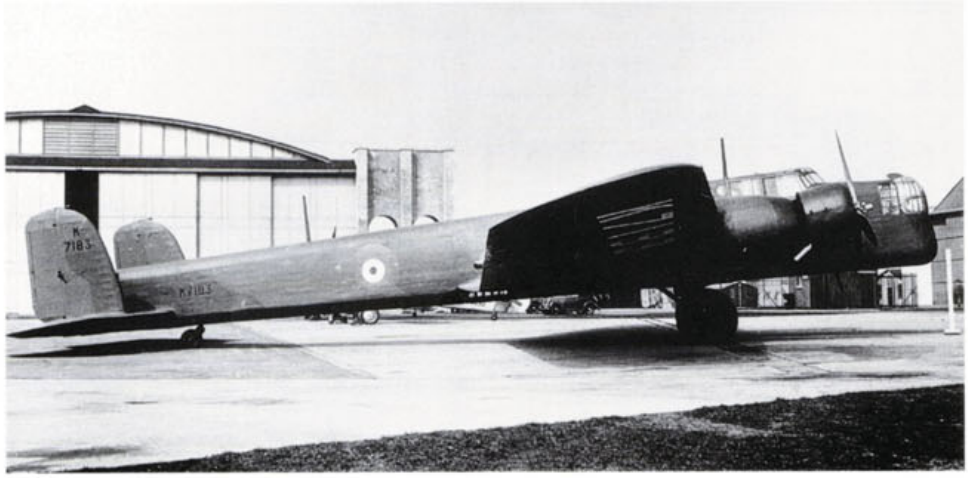
a stop-gap night bomber and indeed one Vildebeest was painted in standard Nivo night finish and evaluated by No. 7 Squadron. Certainly the biplane's tare weight was satisfactory in regard to the Geneva limitations and its slow landing speed was ideal; but with a top speed of 140 mph it could manage a bomb load of only 1,500 lbs over a maximum range of 660 miles at an altitude of a mere 6,500 ft.

In the event Britain finally abandoned the Geneva tare weight limitations in June 1934 and preparations immediately started to provide a practical specification for a new heavy night bomber which would, if sufficient cloud cover was available, be capable of daylight bombing.

SPECIFICATION ISSUED

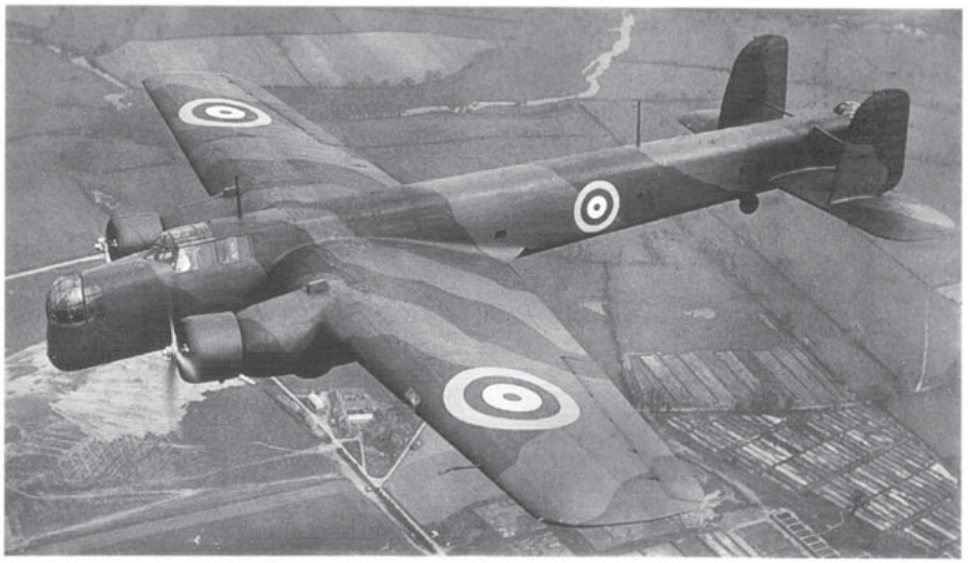
During July, Air Ministry Specification B.4/34 was issued and submitted to Armstrong Whitworth, Fairey Aviation, Handley Page and Vickers (Aviation). Wing span was limited to 100 ft, the maximum that would pass through RAF hangar doors, and a bomb load of 2,500 lbs was expected to be carried (one 1,500 lb or two 1,000lb, or a number of smaller bombs) over a range of 1,250 miles, with a top speed of 225 mph at 15,000 ft. The necessary defensive armament should comprise gun positions in the nose, tail and amidships, whilst the crew of five was to include two pilots (one doubling as navigator), two gunners and a radio operator, doubling as a gunner.

The four companies met the Air Ministry in August 1934 and some alterations to the specification were made, including a reduc-



Right top: The second Whitley prototype K4587, after its RAE trials with the heavy duty undercarriage seen at the next stage in its modification programme. Here, trials were conducted on giving dihedral to the outer wing panels for added stability. (RAE) Right: In standard contemporary camouflage, the first production Whitley, K7183, still retained the Tiger IX engines. Note the serial number in white under the wing and the lack of dihedral on the outer wing panels (MAP)

Right: Two pictures of the ninth production Whitley Mk.I K7191 with Tiger IX engines displaying the contemporary RAF Dark Green and Dark Earth upper surface camouflage scheme adopted for heavy bombers before the war. It is interesting to see that Type A1 roundels were displayed above the wings. The aircraft later served with Nos. 10 and 166 Squadrons. (MAP)

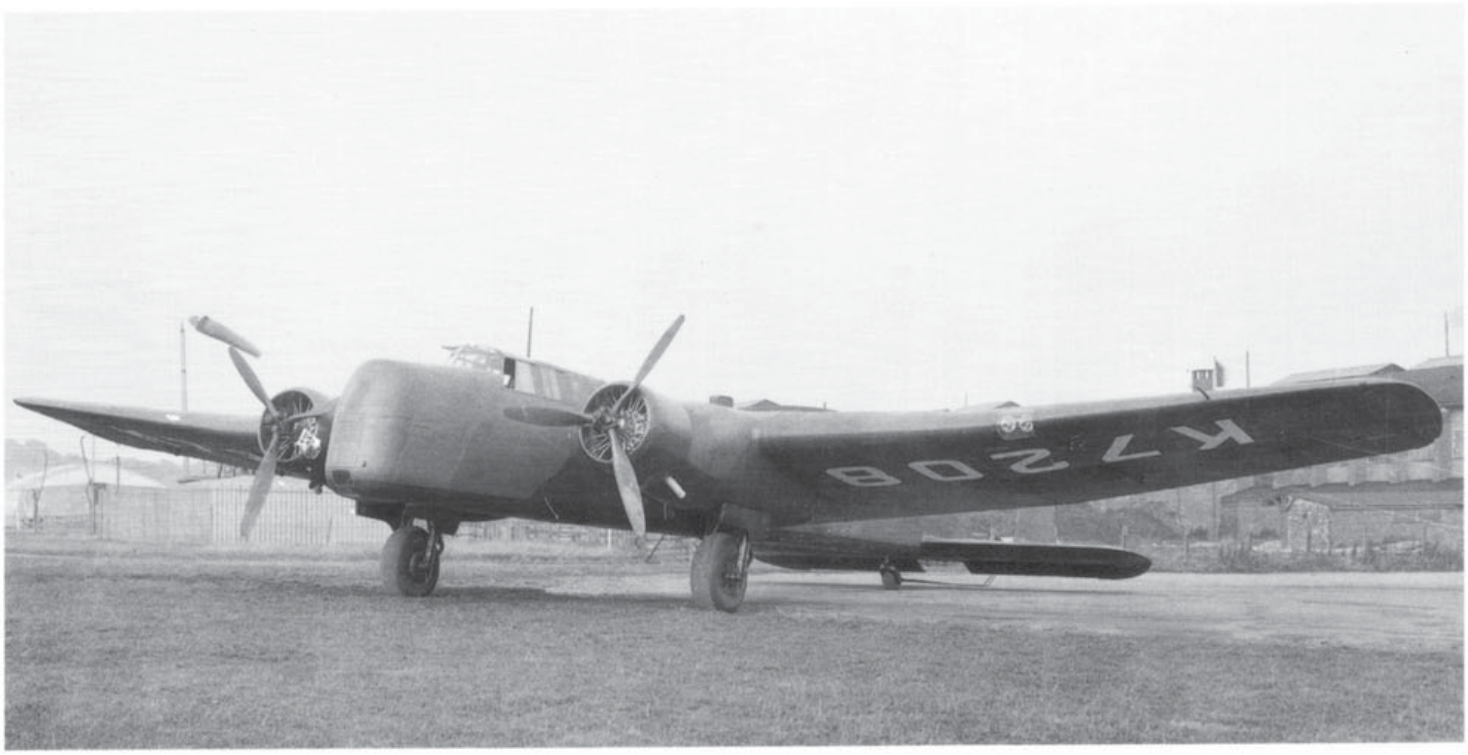


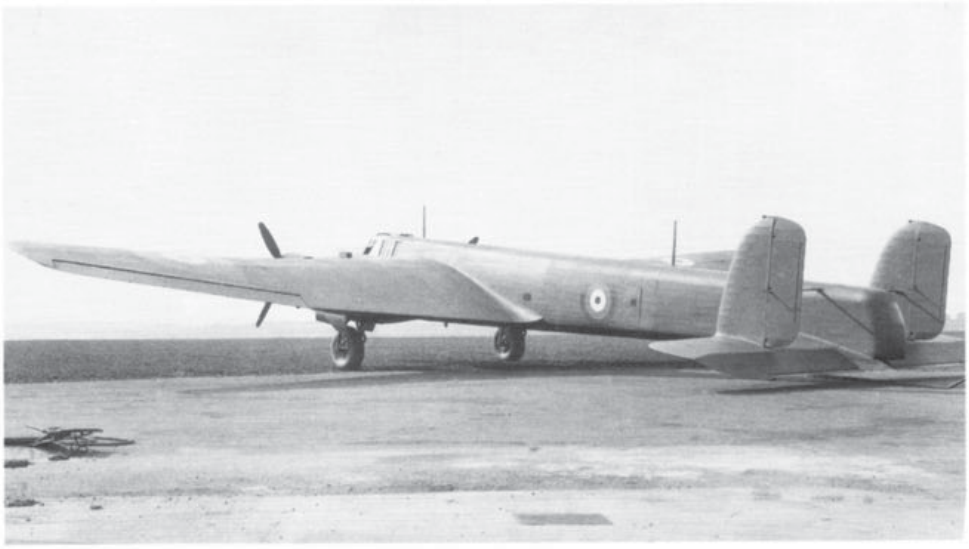
tion in the maximum speed to 205 mph, stipulated rate of climb reduced and deletion of the requirement to carry 1,500 lb and 1,000 lb bombs. No agreement on costing could be made and consequently the Air Ministry dispensed with its normal practice of ordering prototypes from competing manufacturers. Due to pressing demands for RAF expansion, the Air Staff, desperately needing a new heavy bomber, discarded the Fairey and Handley Page designs and, unwilling to rely on the then untried geodetic construction methods of Vicker's designer Dr Barnes Wallis (proved successful later in his Wellesley and Wellington bombers), Armstrong Whitworth was given the contract on 14 September 1934 to produce two prototypes of their AW.38 twin-engined bomber design. It was named Whitley after its birth place, Whitley Abbey, near Coventry, where the aircraft was designed and built, although much of this work was transferred in due course to Armstrong Whitworth's new site at Baginton airfield.

Ancestry of the Whitley can be traced to the AW.23 twin-engined bomber-transport built to Air Ministry Specification C.26/31. Flown initially on 4 June 1935, this aircraft, K3585, was powered by two 700 hp Armstrong Siddeley Tiger VI radial engines and 24 troops could be carried with alternative arrangements for the bombing role. This class of aircraft had been in the RAF's inventory for some time, having proved particularly useful in showing Britain's presence in India and the Middle East during the 1920s and 1930s. Despite prominence of the word bomber in the category of bomber-transport, the type was designed primarily as a transport with facilities to carry and drop bombs only if necessary. In this respect the AW.23 formed only a basic framework for a heavy bomber, but it did contain a number of features which could be incorporated in such a design such as a patented method of light alloy wing construction, retractable undercarriage and manually operated turrets mounted in the nose and tail positions.

Designer of the AW.23 was John Lloyd, chief designer at Armstrong Whitworth, who had already drawn up plans for a projected pure bomber version of the AW.23 intended for the Czech Air Force designated AW.30. With a revised fuselage and reduction in

A temporary shortage of gun turrets resulted in some early production Whitleys having the nose and tail positions faired over. This Whitley Mk.II, K7244, LT:G of No. 7 Squadron is seen at the time of the Munich crisis. It later went on to serve with No. 9 Bombing and Gunnery School but crashed on 19 Febrary 1941. (MAP)





Above and left: Whitley Mk.I K7208, after its arrival at Rolls Royce, Hucknall, in late 1937 where two Armstrong Siddeley Tiger IX radials were replaced by Rolls Royce Merlin IIs. The nose and tail turrets have been superseded by fairings, a legacy of earlier modifications to permit a gross operating weight of 33,000 lbs. (Rolls Royce)

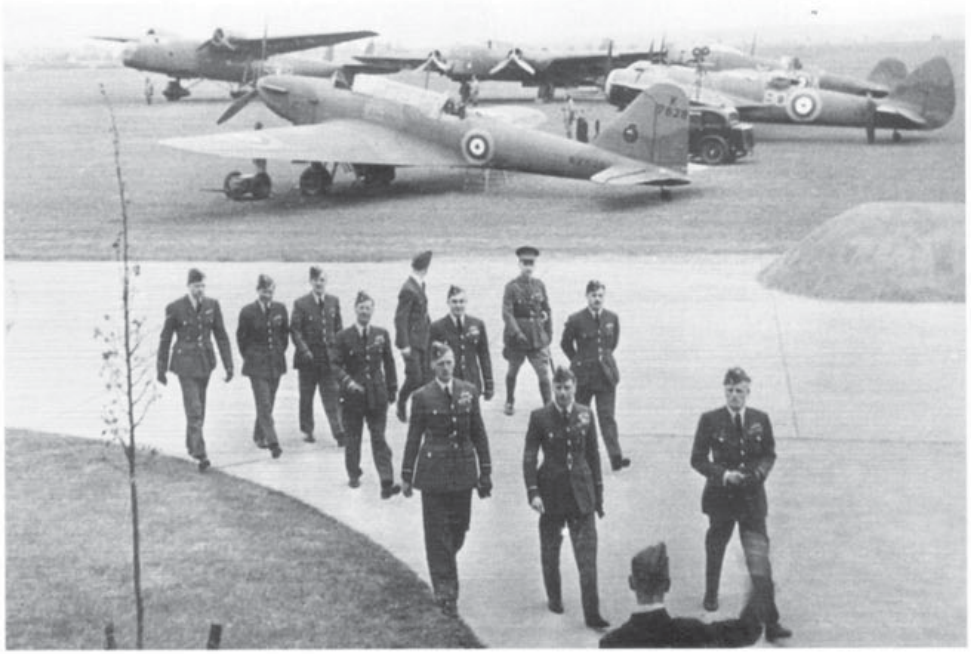
gross weight to 18,650 lbs, this design undoubtedly helped in forming a basis for the AW.38 Whitley project. Indeed the Air Ministry had suggested to the company that John Lloyd's AW.30 design should be adapted to suit RAF requirements. Initially, to speed up development, most of the design responsibility for the AW.38 was left to Armstrong Whitworth, but it was stated that prototype testing would have to be completed before production began. However, a political change revealing the growing threat of another war in Europe resulted in a British re-armament programme including expansion of the RAF. Scheme C, one of a number successfully fulfilled, directed there be an increase in the number of RAF bomber squadrons from 41 to 68 by March 1937. To achieve this the Air Ministry gained Cabinet approval to order new aircraft types 'off the drawing board'. Thus when Armstrong Whitworth received an order for 80 Whitleys on 23 August 1935, it was the first to benefit from this new arrangement.

During the following year expansion continued under Scheme F and a second contract was signed on 13 May 1936 for another 240 of the new bombers, the first prototype, K4586, having by then started its initial test flights.

CONSTRUCTION DETAILS

When it emerged, the Whitley prototype was not exactly an aesthetically pleasing aircraft, being a mid-wing monoplane possessing an extremely thick section cantilever wing of low aspect ratio which, like the rest of the aircraft, was quite angular in appearance. The empennage featured a wide tailplane mounted low on the rear fuselage, partly curved vertical tail surfaces being located mid-span on each tailplane and strut-braced to the upper fuselage.

The wings and tail unit were very similar to those on the earlier AW.23 transport,



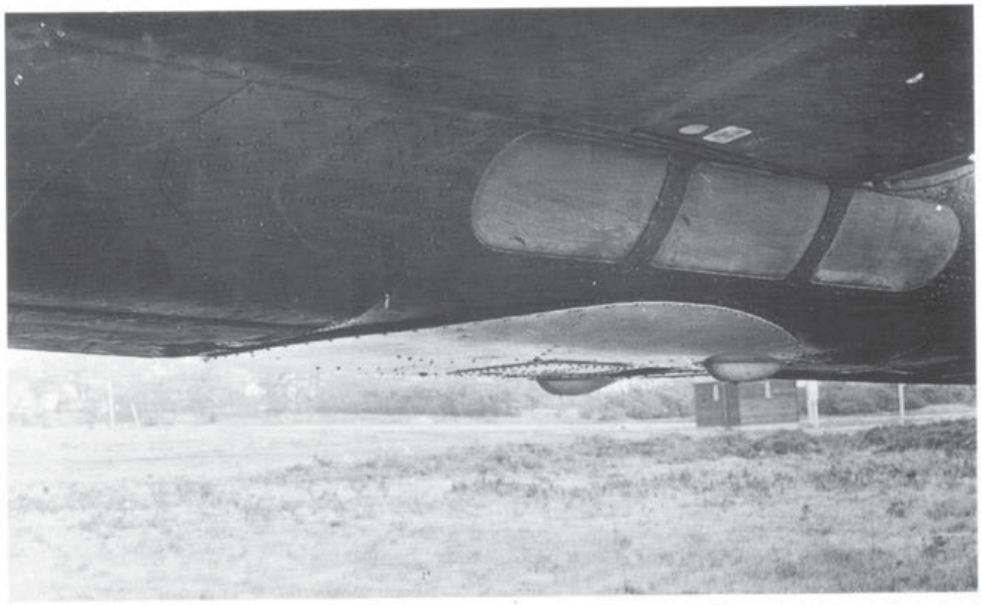
King George VI's visit to RAF Harwell in May 1938 was the ocassion for RAF Bomber Command to display its contemporary front line aircraft. A Fairey Battle is in the foreground, followed by a Blenheim Mk.I, a Wellesley, a Whitley Mk.III and a Handley Page Harrow, all formed up in a semi-circle for inspection. (Mrs M. Hunt)

although the Whitley's wing had slightly less span and chord. This wing was the result of an innovative form of construction developed and patented by Amstrong Whitworth for the AW.23 and continued in the Whitley. It employed light alloy (little used for aircraft manufacture before the mid-1930s), the torsion box incorporating front and rear web spars corrugated vertically, upper and lower sheets corrugated spanwise and internal bracing by steel struts instead of the conventional ribs. Unstressed alloy covered the entire torsion box and built-on leading edge, whilst aft of the rear spar was fabric-covered.

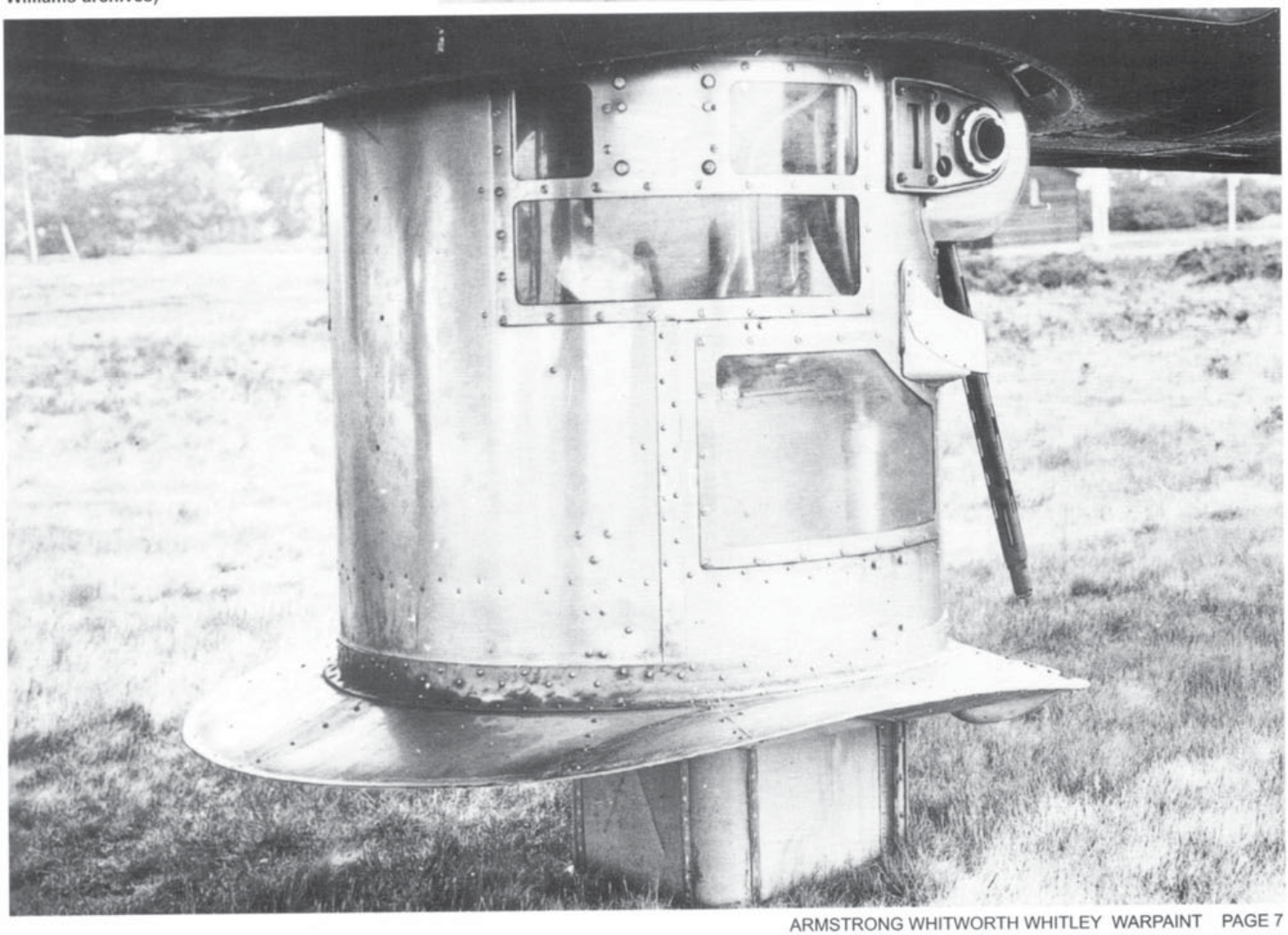
Flaps were not in vogue at the time of the Whitley's initial design stage, and in order to allow the lowest possible approach speed and landing run, the wing was given an 8.5 degree angle of incidence. This was responsible for the characteristic nose-down attitude of the Whitley in flight, plus the deepened nose of the fuselage. Even before the prototype flew, hydraulically-operated split flaps, with a maximum deflection of 60 degrees had been incorporated into the design and stretched from the Frise-type ailerons to the fuselage along the wing trailing edges.

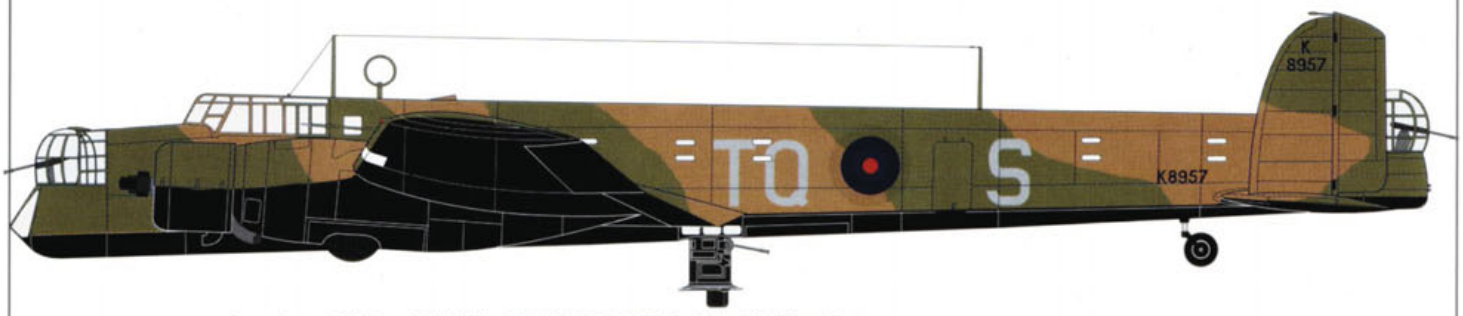
The Whitley's fuselage also broke with Armstrong Whitworth's tradition of tubular steel construction, favoured since the famous all-metal Siskin III, and instead featured a light alloy monocoque structure covered by Alclad sheet, which was flush-riveted to longitudinal stringers supported by curved open-section framing. Actually the Whitley did not possess flat sides to the fuselage as is often thought, the only real 'slab-sided' part being in the area of the rear turret. Most of the fuselage featured relatively curved sides formed by the alloy frames and, in cross-section, resembled a barrel rather than an oblong with rounded corners!. Built in three sections the fuselage consisted a nose section bolted to two large frames fixed to the centre-section spars, a middle section stretching from the centre-section to the tailplane spar, and a rear section containing the tailplane centre-section and the rear gun turret.

Power chosen for the new AW.38 Whitley comprised a pair of 795 hp Armstrong Siddeley Tiger IX 14-cylinder, two-row, air-cooled radial engines driving three-bladed de Havilland controllable pitch propellers. The engines were enclosed by long chord NACA cowlings with exhaust collector rings at the rear. The main undercarriage featured Lockheed actuating jacks, shock absorbing legs, and Dunlop wheels which retracted forward into the engine nacelles. Part of each main wheel projected through the undercarriage doors and minimised damage



Right and below: The only known pictures showing the Fraser Nash FN 17 ventral turret first fitted to the Whitley Mk.II. This had two .303 Browning machine guns with 1,000 rounds per gun. It was retracted in flight as shown. As might be supposed this large external structure caused the Whitley's top speed to drop by some five per cent and it was soon abandoned. The hole remaining was used as an exit for parachute troops when the earlier versions of the Whitley were used for this purpose. (Ray Williams archives)

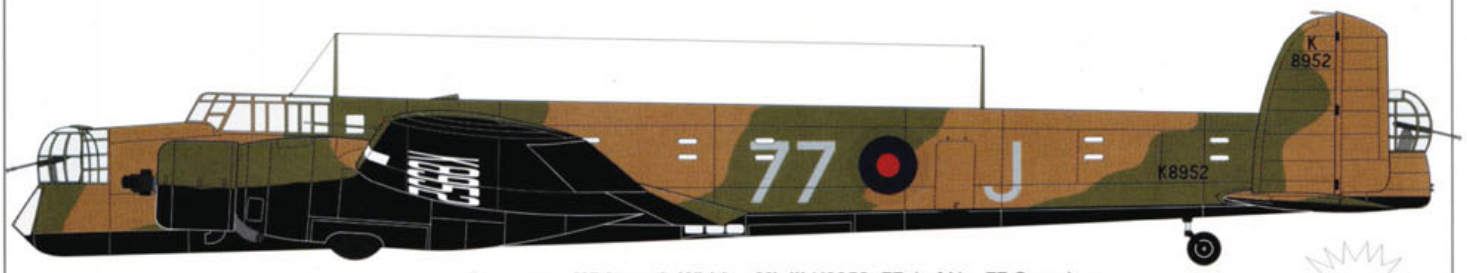




Armstrong Whitworth Whitley Mk.III K8957. TQ:S of No. 102 Squadron based at Driffield during the Munich crisis in 1938. FN 17 turret shown in extended postion.

Armstrong Whitworth Whitley Mk.III K8945, 102:V based at Driffield in 1938.

Armstrong Whitworth Whitley Mk.IV K9026, PB:O of No. 10 Squadron showing both Munich crisis period codes and underwing serials in white.



Armstrong Whitworth Whitley Mk.III K8952, 77:J of No. 77 Squadron, Driffield, 20 February 1939.

Squadron badge of No. 58 Squadron

Armstrong Whitworth Whitley Mk.III K8967, BW:D of No. 58 Squadron based at Linton-on-Ouse 1939.

Armstrong Whitworth Whitley Mk.V N1372, KN:O of No. 77 Squadron in early 1939.

Whitley Mk.III, K8985, belonging to No.102 Squadron was forced to land in Belgium after a navigation error, whilst on a leaflet raid over Germany on the night of 9 September 1939. It was interned by the Belgian Air Force and was given Belgian markings. It is seen at Nivelles airfield retaining its original squadron serial and codes. (A.W.Hall collection)

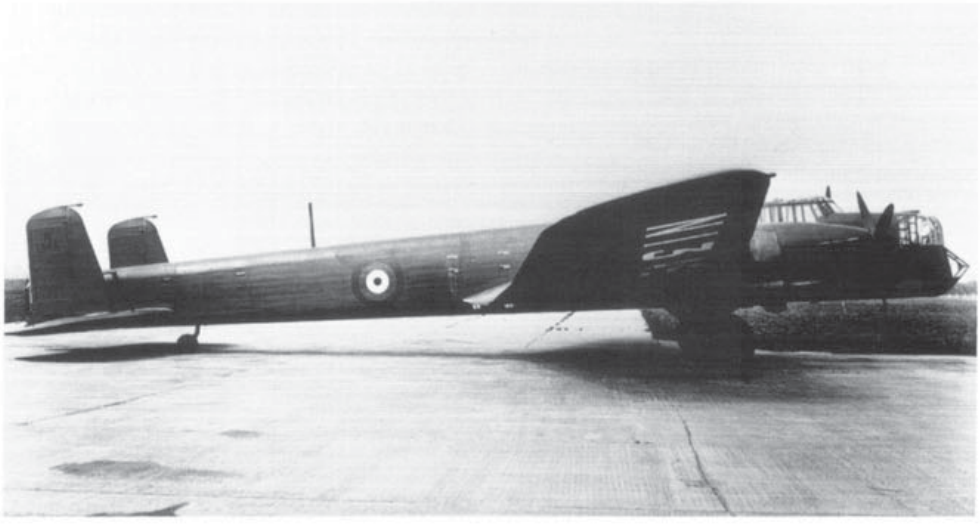
in the event of a wheels-up landing. A fixed swivelling, self-centering tail wheel was fitted.

Two contoured tanks in the wing leading edges, outboard of the engine nacelles, each carried 182 Imperial gallons of fuel, whilst a third tank of 154 Imperial gallon capacity was housed in the fuselage above the wing centre-section.

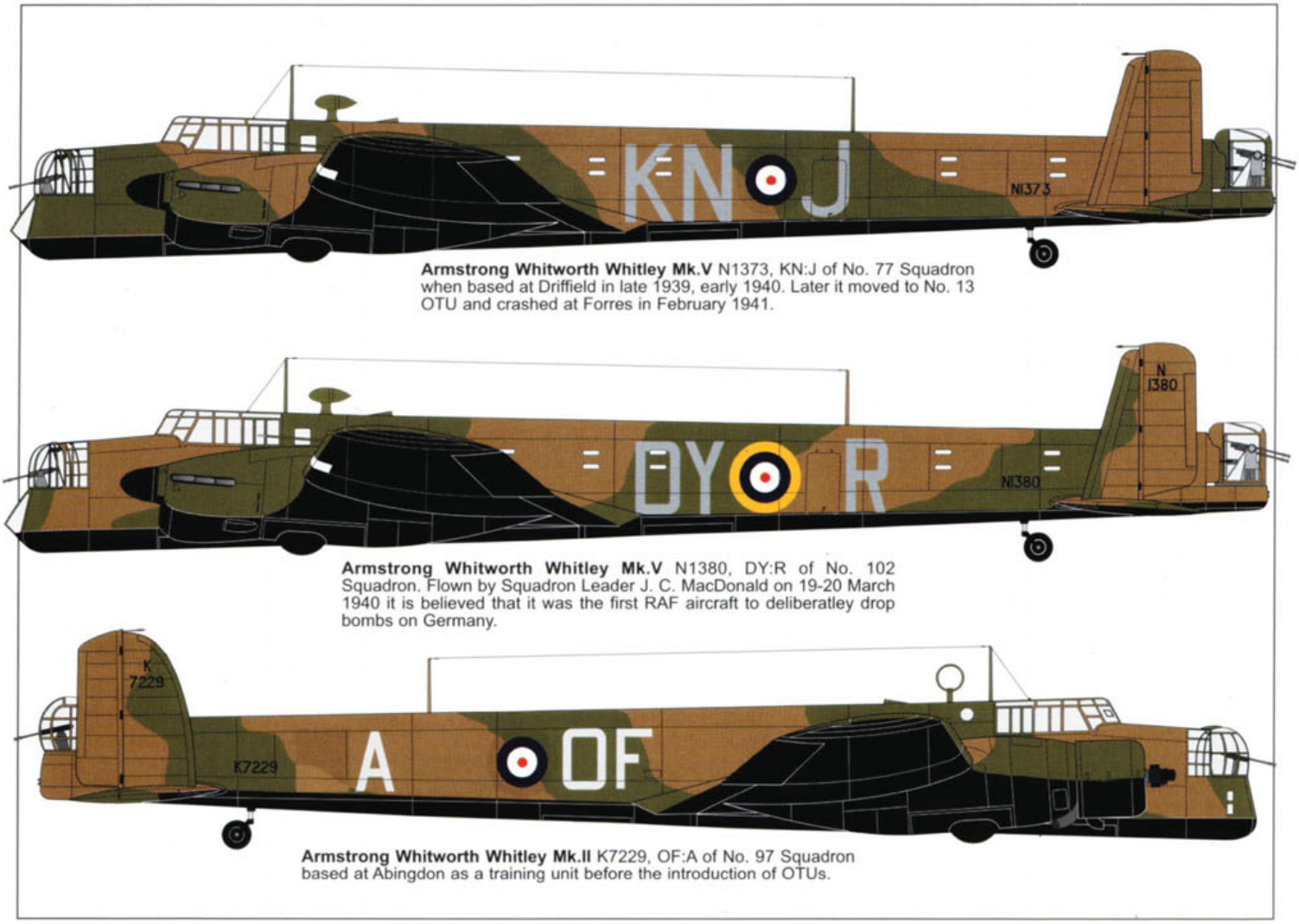
Defensive armament consisted initially of a single .303 in Vickers machine gun in each of the nose and tail turrets, both Armstrong Whitworth designed and built. These perspex covered cupolas were rotated by means of the gunner's feet, gun elevation and depression depended mainly on his relative posture.

The Whitley's armament would later be increased by the fitting of a Fraser-Nash FN17 ventral turret in Mk.II aircraft, but first production machines did not feature this addition. It was in fact little used in the later marks of Whitley, but provision for it remained structurally. Bombs were carried in a lengthy bay extending from below the cockpit to the wing trailing edge, the immense depth of the wing permitted additional bomb bays to be incorporated inboard and outboard of the nacelles, aft of the rear spars. This enabled the Whitley to carry six 250 lb or 12 112 lb bombs in the wings as well as its 2,000 lb load in the fuselage. Of mixed wood and metal construction the bomb bay doors were pushed open by the weight of released bombs and reclosed, to be held thus, by means of an elastic bungee. As an alternative, auxiliary fuel tanks could be hung in the bomb bay having a total capacity of 132 Imperial gallons. There was also a separate bay for stowage of reconnaissance flares further aft in the fuselage.

As planned, a crew of five was carried, including two pilots, the second of which acted as the navigator and was provided with a seat which could move backwards and swivel to allow use of the chart table located behind the first pilot. In the nose was a front gunner/bomb aimer, access to the front turret being by way of the cockpit and through an opening on the right beneath the instrument panel. In the earlier Whitleys bomb-aiming was by means of windows mounted vertically in the 'chin', with hinged top panes which



Top right: Whitley Mk.V N1345 had an exceedingly long life. It is seen in August 1939 before being delivered to A&AEE for experimental work. Later it joined No. 10 Bombing and Gunnery School, No. 9 Observers School and No. 7 Air Gunnery School. The aircraft was finally struck off charge on 21 May 1945. (MAP). Right: Whitley Mk.IV K9025, fitted with two Rolls Royce Merlin IVs. The changes made on this version including the extended glazed nose for the bomb aimer are apparent. (Author)



Armstrong Whitworth Whitley Mk.V N1373, KN:J of No. 77 Squadron when based at Driffield in late 1939, early 1940. Later it moved to No. 13 OTU and crashed at Forres in February 1941.

Armstrong Whitworth Whitley Mk.V N1380, DY:R of No. 102 Squadron. Flown by Squadron Leader J. C. MacDonald on 19-20 March 1940 it is believed that it was the first RAF aircraft to deliberatley drop bombs on Germany.

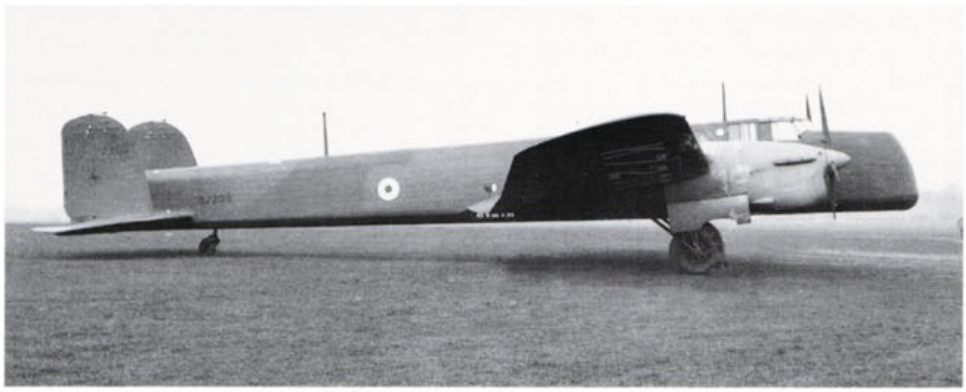
Armstrong Whitworth Whitley Mk.II K7229, OF:A of No. 97 Squadron based at Abingdon as a training unit before the introduction of OTUs.

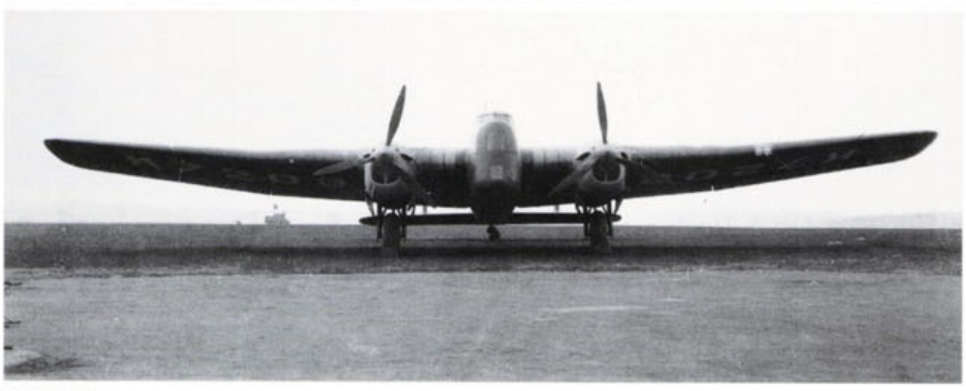
opened outwards to provide a clearer field of view downwards for the bomb-aimer. The wireless operator sat in the forward fuselage just behind the cockpit and, in those Whitleys where a ventral FN17 was fitted, manned it as a gunner when required. The tail gunner kept lonely vigil in a turret at the extreme rear of the fuselage. Entry for the crew was by way of a door in the rear port side of the fuselage, followed by a lengthy clamber over a catwalk fitted above the bomb-bay and through the wing torsion box where it joined the fuselage.

FIRST TEST FLIGHTS

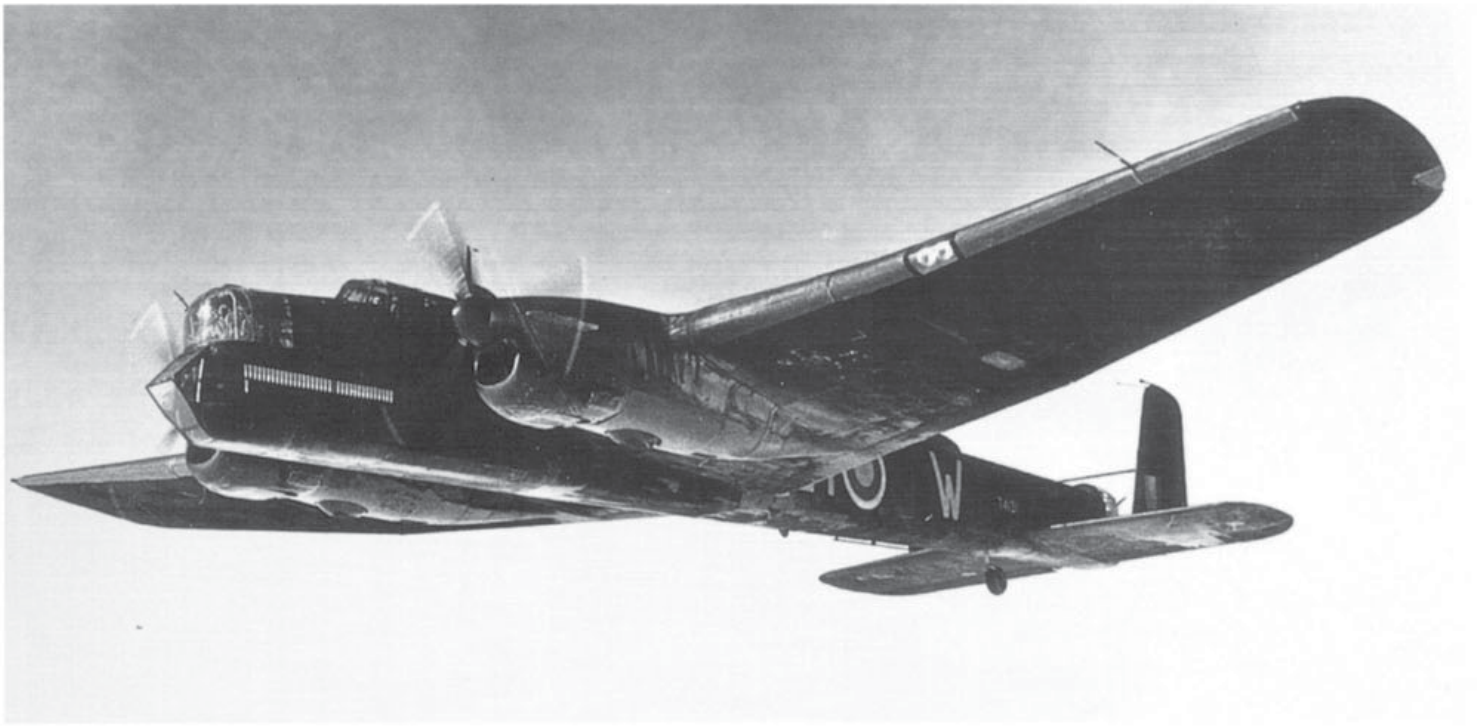
The first of the Whitley prototypes, K4586, made its maiden flight from Baginton on 17 March 1936 flown by Alan Campbell-Orde, then Armstrong Whitworth's chief test pilot. On 27 June, at that year's annual RAF Hendon Pageant, K4586 made its first public appearance in the new types park. The following test programme, although showing no real problems, nevertheless revealed that in spite of being an improvement over the other types it was intended to replace, the Whitley's performance figures left something to be desired in a new bomber destined for RAF service in the late 1930s. During tests at the Aircraft and Armament Experimental Establishment (A&AEE) Martlesham Heath, K4586 only achieved a maximum speed of 192 mph at 7,000 ft (full throttle height of its Tiger IX engines) and 183.5 mph at 16,500 ft. Gross weight was 21,094 lbs, some 1,000lb below the original design maximum and it took 15 minutes to climb to 10,000 ft, while the service ceiling was 19,200 ft. A cruising speed of 160 mph would enable the new bomber to carry a maximum bomb load for 1,500 miles, although extra fuel tanks in the bomb bay could extend the range to 1,900 miles. This meant a reduced bomb load and longer take-off run assuming a 14-hour mission at a cruising speed of 135 mph.

When the second prototype, K4587, first flew on 24 February 1937, piloted by Charles Turner-Hughes, who had succeeded Campbell-Orde as chief test pilot, it had





Top right: Whitley K7208 which served as the prototype for the installation of Merlin engines seen, with the cowlings left in primer, after the installation had been carried out at Hucknall. Right: The same aircraft seen from the front. This view adequately illustrates the massive depth of the aircraft's wing when compared to the engine installation (Rolls Royce)



The eighth production Whitley V, N1352, went first to No.78 Squadron and later No. 77 Squadron. It was forced to ditch on the night of 18-19 April 1940 while returning from a raid on Trondheim, Norway. (Author)

been fitted with uprated Armstrong Siddeley Tiger XI engines producing 935 hp, which raised the maximum speed to 205 mph as required in the Air Ministry Specification.

The Whitley was reported to be easy to land thanks to its high angle of wing incidence and subsequent use of split flaps, and was therefore popular with night flying crews later. Its touch down speed was only 63 mph, landing run 1,275 ft, measured from a 50 ft screen, with a 630 ft run when using wheel brakes. Take-off distance required was less than 900 ft at around 70 mph with a normal loaded weight of 21,660 lbs.

Shortly after the second prototype Whitley flew delivery of production Whitleys began, just three years after the issue of Specification B.3/34, two and a half years after go-ahead for the prototypes had been agreed and two years after the first instruction to proceed with production was given. Orders for Whitleys now amounted to 320, a figure it was thought would be final due to newer types of bomber under development in accordance with Specification B.13/36 which became available in early 1939. It was also anticipated that all 320 Whitleys ordered would be with the RAF by the end of March 1939, but in a revised estimate it was anticipated that only 200 aircraft could be delivered in the time.

The row of bombs painted on the fuselage nose of Whitley Mk.V T4131, EY:W of No. 78 Squadron indicates that it has flown its fair share of raids over Germany up to that time in 1941. Rather unusually the aircraft is painted black overall.

NEW CONTRACTS

A change of contract received by Armstrong Whitworth on 30 April 1937 cancelled 120 of the 320 Whitleys ordered. By the time the 200th aircraft had been delivered in August 1939, production was once again under way to fulfil new Whitley contracts for an updated Mk.V version. This began with the 201st

ARMSTRONG WHITWORTH WHITLEY UNITS, HISTORY and REPRESENTATIVE AIRCRAFT

SQUADRONS

Squadron	Mark/s	Dates	Code/s*	Example Serial/s
7	II	Mar-Dec 38	LT*	K7253/LT-L
	III	Nov 38- May 39	LT*	K8962
10	I	Mar 37-May 39		K7185/10-H
	IV	Mar 39-May 40	PB*/ZA	K9020/PB-L
	V	Mar 40-Dec 41	ZA	P4952/ZA-R
51	II	Feb 38-Dec 39	UT*/MH	K7228/UT-T
	III	Aug 38-Dec 39		K8984/UT-N
	IV	Nov 39-May 40		K9043/MH-G
	V	May 40-Nov 42		T4323/MH-N
53	V	Feb-May 43	none	P5061
	VII	Feb-May 43		LA795
58	I	Oct-Dec 37	BW*/GE	K7210
	II	Oct 37-May 39		K7219/D
	III	May 39-Mar 40		K8990/BW-L
	V	Mar 40-Dec 42		N1428/GE-B
	VII	May 42-Jan 43		Z9374/GE-E
77	III	Nov 38-Oct 39	ZL*/KN	K8977/ZL-P
	V	Sep 39-Oct 42		T4200/KN-N
78	I		ED*?/YY*/EY	K7201/YY-G
	II			K7261
	IVA			K9049
	V			N1350/EY-T
97	II	Feb 39-Apr 40	OF	K7229/OF-A
	III	Feb 39-Apr 40		K8954
102	III	Oct 38-Jan 40	TQ*/DY	K8950/TQ-H
	V	Nov 39-Feb 42		P4936/DY-S
138	V	Aug 41-Oct 42	NF	BD504/NF-F
161	V	Feb-Dec 42	MA	Z9224/MA-P
166	I	Jun 39-Apr 44	AS	K7184/AS-A
	III	Dec 39-Apr 40		K8957
295	V	Aug 42-Nov 43	PX	EB298/PX-K
296	V	Jun 42-Mar 43	XH	BD422/XH-P
297	V	Feb 42-Feb 44	QA	Z9431/QA-R
298	V	Aug-Oct 42	none	EB287
502	V	Oct 40-Feb 42	YG	P5050/YG-H
	VII	Feb 42-Feb 43		BD692/YG-A
612	V	Nov 40-Dec 41	WL	T4321/WL-D
	VII	Jun 41-Jun 43		BD622/WL-U
734 (RN)	VII	Feb 44-Feb 46	W0	LA794/WO-Y

** = pre war allocation*

OPERATIONAL TRAINING UNITS

Unit	Mark/s	Dates	Code/s	Example/Serials
1(C) OTU	V	Jun-Sep 41	TN?	P5051
3 (C) OTU	V	Jun 41-Jul 43	KG/JB	T4147/KG-M
	VII	Aug 41-Aug 43		Z6962
10 OTU	II	Apr 40-Aug 42	JL/RK/UY	K7219
	III	Apr 40-Nov 42	ZG	K9013/ZG-X
	IV	Apr 40-Jan 42		K9033
	V	Apr 40-Jun 44		AD703/RK-A
	VII			Z9368/JL-S
19 OTU	III	May 40-Apr 41	UO/XF/ZV	K8954
	IV	May 40-Oct 43		K9109/XF-K
	V	May 40-Oct 44		LA846/ZV-C
24 OTU	III	Mar 42-1943	FB/TY/UF	K8946
	V	Mar 42-Jul 44		BD366/UF-T
42 OTU	V	Nov 42-Dec 44	GM?	P4941/M
81 OTU	V	Sep 42-Apr 45	EZ/JB/KG	Z6676/EZ-S

NUMBERED FLIGHTS

Flight No.	Mark	Duty/Role	Example/Serial
419 Flt	V	Spec Duties	P5025
1419 Flt	V	Spec Duties	P5029
1473 Flt	V	Spec Duties	BD286
1478 Flt	V	Signals	BD203
1481 Flt	V	TT	T4176/O
1483 Flt	V	TT	Z9168
1484 Flt	V	TT	Z6640/Y
1485 Flt	V	TT	Z9310
1501 Flt	III/V	BAT	K8994
1502 Flt	V	BAT	N1471/A

TRAINING UNITS

Unit	Mark/s	Example/Serial
1 AAS	II/III/IV	K7219
7 AGS	I/II/III/IV/V	K9014/T
7 B&GS	I/II/III/IV/V	K7188/7G
8 AGS	II/III/V	K8999
8 AOS	III	K8974
9 AGS	II/III/IV/V	P5024
9 AOS	III	K7242
9 B&GS	II/III/V	T4153
9 0AFU	II/III/IV/V	K8941

Continued on top of next page

WHITLEY UNITS Continued

10 AGS	III	K7223
10AOS	II/III	K8997
10 B&GS	III/V	K7229

MISCELLANEOUS TRAINING, TEST AND DEVELOPMENT UNITS

Unit	Mark/s	Example Serial
A&AEE	various	K7183
AFE	V	N1435
AFEE	V	Z6997
AFTDU	V	LA88
BATDU	V	P4944
1 BAT Flt	III	K8936
2 BAT Flt	III	K8938
CCDU	V/VII	Z6626
CCTDU	V/VII	T4281
CFS	IV	K9050
CGS	V	N1363
CLE	V	N1422
CLS	III/V	K7231/R
ECFS	IV	K9030
4 FPP	V	T4225
301 FTU	V	Z9132
HGCU	V	BD502
21 HGCU	V	BD661/25
HGTU	V	BD508
OADU	V	Z9297
ORTU	V	BD504
PTS	II/III/V	P4970
No 1 PTS	II/III/V	K7222/71
RAE	various	T4149/G
RAF College	II/III	K7249
SD Flt	V	N1500
Sig Dev Unit	V	BD203
1 Sig Sch	II	K7219
TCDU	V	N1370
TFU	V	Z6762

STATION AND COMMUNICATIONS FLIGHTS

Unit	Mark	Example/Serial
Stn Flt Eastchurch	II	K7217
Stn Flt Abingdon	V	N1507
MAC Comm Unit	V	BD203

MANUFACTURERS

Name	Mark	Example/Serial
Airspeed	V	BD443
Armstrong Whitworth	various	P5104
DH Propellors	V	P4949
Flight Refuelling Ltd	V	Z6472
General Aircraft	V	EB303
Rolls-Royce	V	P5100
Rotol	V	Z6955

CIVIL USERS

Name	Mark	Example/Serial
BOAC	V	G-AGCK (ex BD384)

MINOR USERS (usually only one or two aircraft)

Unit	Example/Serial
24 Sqn	Z6804
44 Sqn	Z6878
49 Sqn	K8990
61 Sqn	K8959
83 Sqn	N1388
86 Sqn	EB330
106 Sqn	K8979
109 Sqn	P5047
139 Sqn	BD203
144 Sqn	N1436
29 OTU	T4210
83 OTU	K8994

Whitley V N1412 formerly a No. 78 Squadron aircraft, judging by the not so faint markings on the fuselage, which have been overpainted with the codes of No. 19 Operational Training Unit. This aircraft belly landed on approach to its home base at Kinloss on the 9 December 1942 and was written off. (MAP)

machine, so that all the first Whitleys built included examples of the Mk.I, II, III, IV and IVA.

When the first production Whitley Is appeared they were devoid of any wing dihedral, but outer wing panels soon incorporated a four degree upward sweep for improved all-round stability. This modification was carried out retrospectively on all those early production Whitleys without dihedral.

A shortage of gun turrets in the early stages resulted in a number of Whitley Mk.Is flying with nose and tail turrets covered with metal fairings. Subsequently turrets were fitted by Airwork Ltd, the first 12 Whitley Mk.Is retaining the AW.13 (nose) and AW.12 (tail) turrets with their single pedestal-mounted Lewis guns and 220 rounds of ammunition per gun, but following aircraft had a hydraulicly-operated Fraser-Nash nose turret and AW.15 or 38 tail turret, each armed with a Vickers gas-operated machine gun. Normal bomb load for the Whitley was 1,500 lbs but this was raised later to a maximum 4,220 lbs with four 500 lb bombs in the fuselage, six 250 lb in the inner wing cells and six 120 lb in the outer wing cells. If two 66 Imperial gallon auxiliary fuel tanks were carried in the bomb bay substituting two bombs, the bomb load was reduced to 3,220 lbs.

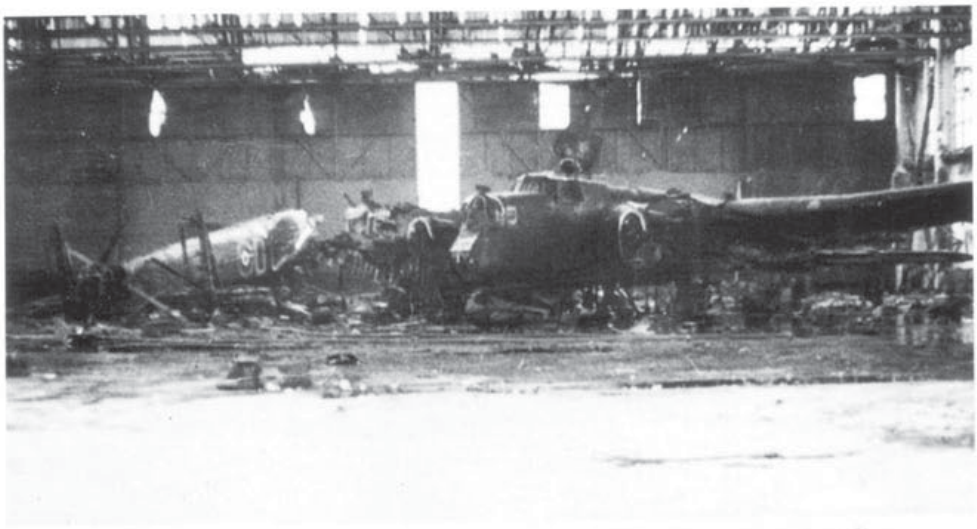
EARLY PRODUCTION WHITLEYS

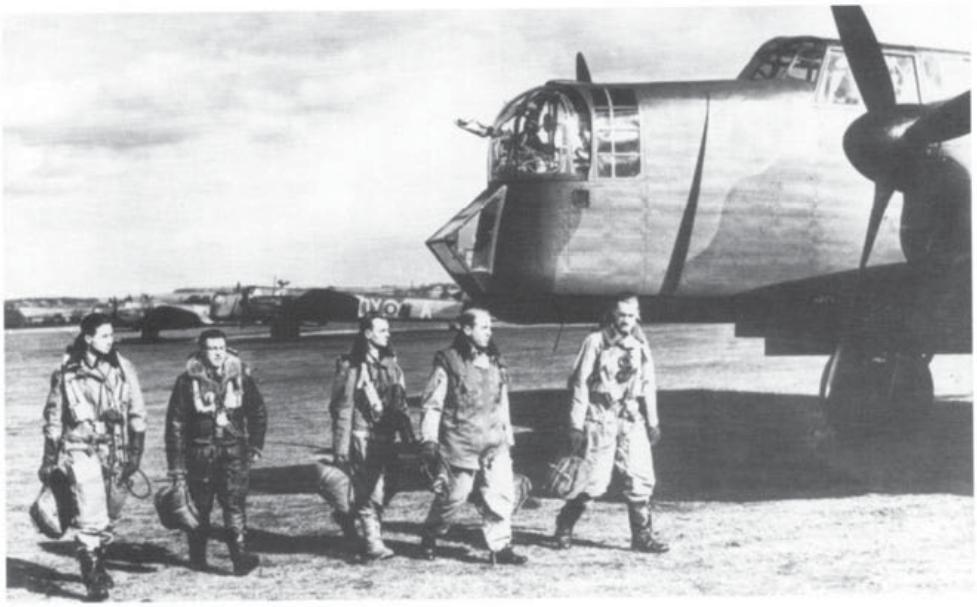
Following the completion of 34 Whitley Mk.Is (K7183 to K7216) production began of the Whitley Mk.II with Tiger VIII engines rated at 845 hp for take-off and 780 hp at 14,250 ft; it was also the first engine in RAF service to have a two-speed supercharger. The previously mentioned FN17 retractable ventral turret was first introduced on the Whitley Mk.II mounting twin .303 in Browning machine guns with 1,000 rpg, but this turret was not always fitted in squadron service.

With a 3,500 lb bomb load (four 500lb in the bomb bay and six 250 lb in wing cells) the Whitley Mk.II possessed a 26,500 lb overload weight, but its performance was similar to the Mk.I except for a small improvement in speed and ceiling, although the range was reduced.

After 46 Mk.IIs had been built (K7217 to K7262), Armstrong Whitworth switched to Mk. III production, 80 being delivered by March 1939. This version was built to Specification B.20/36 and had its original Armstrong Whitworth nose turret replaced by a power-operated Fraser-Nash type.

The old AWA.38 tail turret was retained and the ventral FN17 type fitted as required, but although widening the Whitley's field of fire, as it was rotatable through 360 degrees, this 'dustbin' turret was a hindrance. It weighed about half a ton and when lowered created an unacceptable drag factor. Thus, although provision was made for it in





Left: Although the Luftwaffe suffered a defeat at the hands of RAF Fighter Command when they raided north-east England on 15 September 1940 during the Battle of Britain, Bomber Command did not do so well as this picture shows. One of the raid's objectives was the No. 4 Group base at Driffield where a hangar full of Whitleys was hit causing several losses. (MAP) Lower left: The crew of a No. 102 Squadron Whitley Mk.V prepare to board their aircraft before a raid over Germany in 1940. Note the power operated Fraser Nash front turret with its single .303 machine gun. (Author)

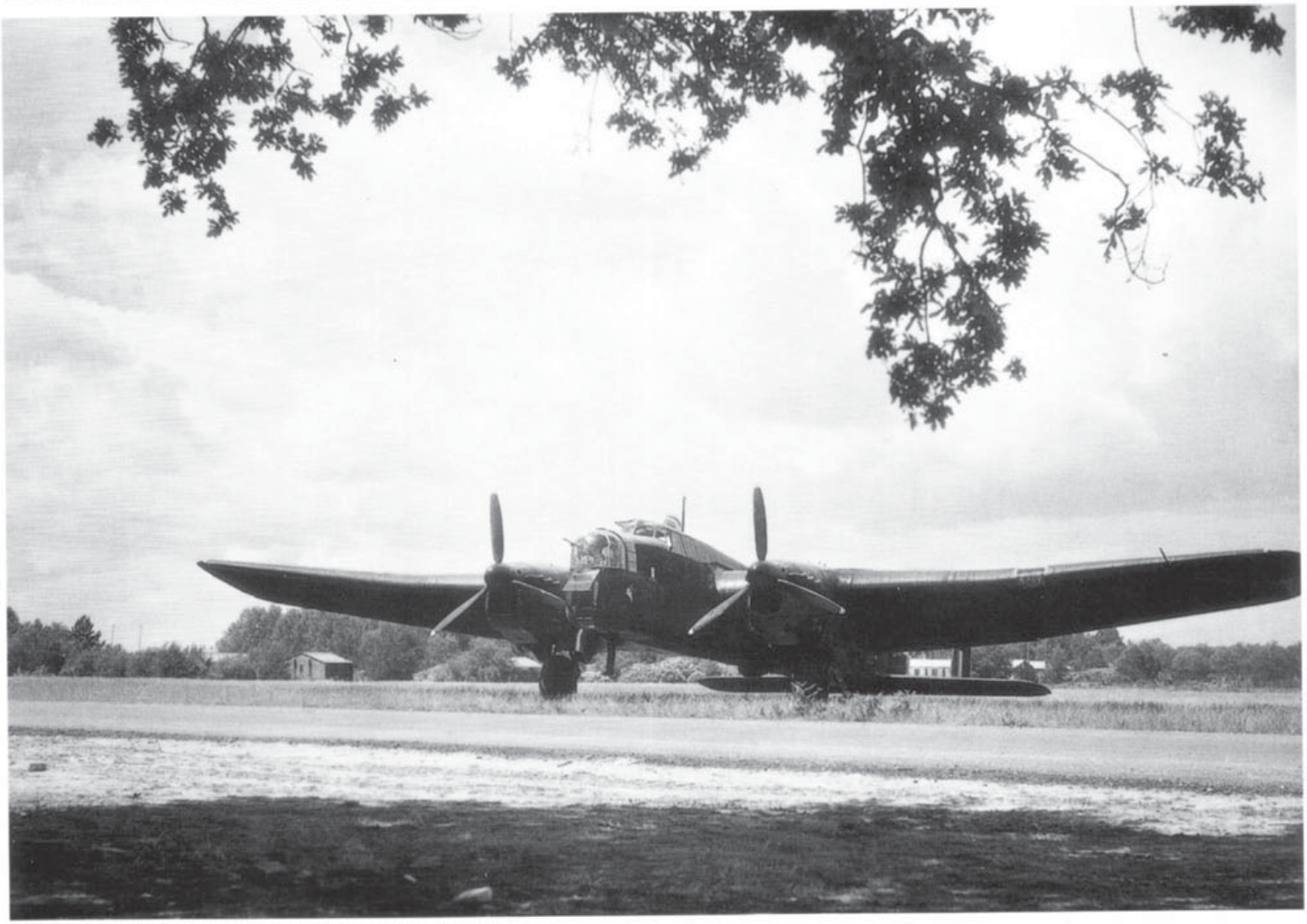
Whitley airframes, most, with the exception of the Mk.IIIs, had a large blanking plate fitted over the aperture.

In some Whitleys the ventral turret well was used for dropping paratroops through the open hatch as will be seen later. Other updates on Mk. IIIs included extra dihedral on the outer wing panels, improved navigational equipment and conversion of the bomb bay to carry two 2,000 lb bombs as well as the six 250 lb in the wing cells, making a total bomb load of 5,500 lbs. Tare and maximum overload weights were as for the Mk.II and with its Tiger VIII engines the Mk.III's performance was the same as a Mk. II.

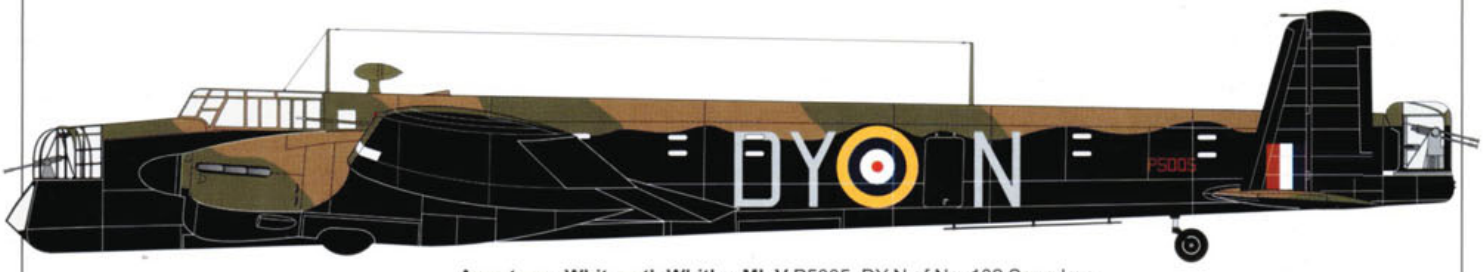
MERLIN POWER

By then no Armstrong Siddeley engine capable of producing 1,000 hp was available and Armstrong Whitworth looked for another source to provide a suitable power plant. A

The calm of an English bomber airfield during a summer's day. Although not positively identified, this Whitley Mk.V may belong to one of the Parachute Training Units because of the Pegasus badge on the nose. (IWM)



Armstrong Whitworth Whitley Mk.V N1428, GE:B of No. 58 Squadron, Linton-on-Ouse in June 1940. After operational service it served as a training aircraft until struck off charge in April 1945.

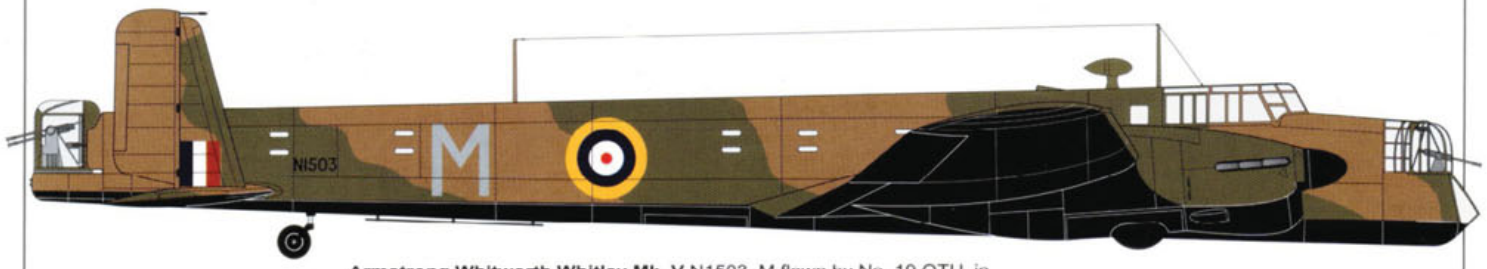


Armstrong Whitworth Whitley Mk.V P5005, DY:N of No. 102 Squadron, November 1940. Plt.Offr.Leonard Cheshire (later Group Captain VC) flew this aircraft on a number of raids over enemy territory.

Armstrong Whitworth Whitley Mk.V P4938, KN:C of No. 77 Squadron seen at Cranwell late 1940.

Armstrong Whitworth Whitley Mk. V T4321, WL:P of No. 612 Squadron, Coastal Command. It crashed on Rona Island on 24 April 1941, was later recovered and served with No. 10 OTU.

Armstrong Whitworth Whitley Mk.V N1412, ZV:O of No. 19 OTU in 1941. Traces of previous No. 78 Squadron codes can be seen.

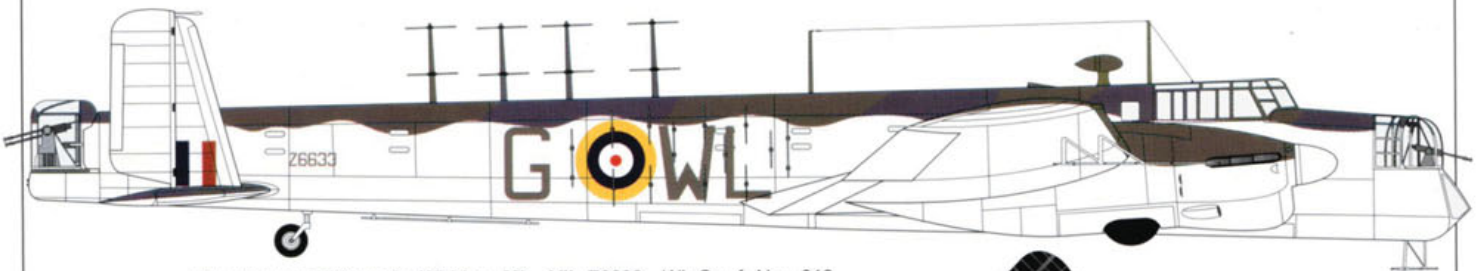


Armstrong Whitworth Whitley Mk. V N1503, M flown by No. 19 OTU in 1940 and 1941. It became a Maintenance airframe in May 1941.

Armstrong Whitworth Whitley Mk.V Z9226, ZA:K of No. 10 Squadron in 1941 painted black overall. It was lost over Dusseldorf on 28 December 1941.

Armstrong Whitworth Whitley Mk.V T4284, ZG:E of No. 10 OTU. Formerly GE:B with No.51 Squadron in 1942.

Armstrong Whitworth Whitley Mk.V Z9217, MH:F of No. 51 Squadron in Temperate Sea Scheme, Coastal Command 1942.

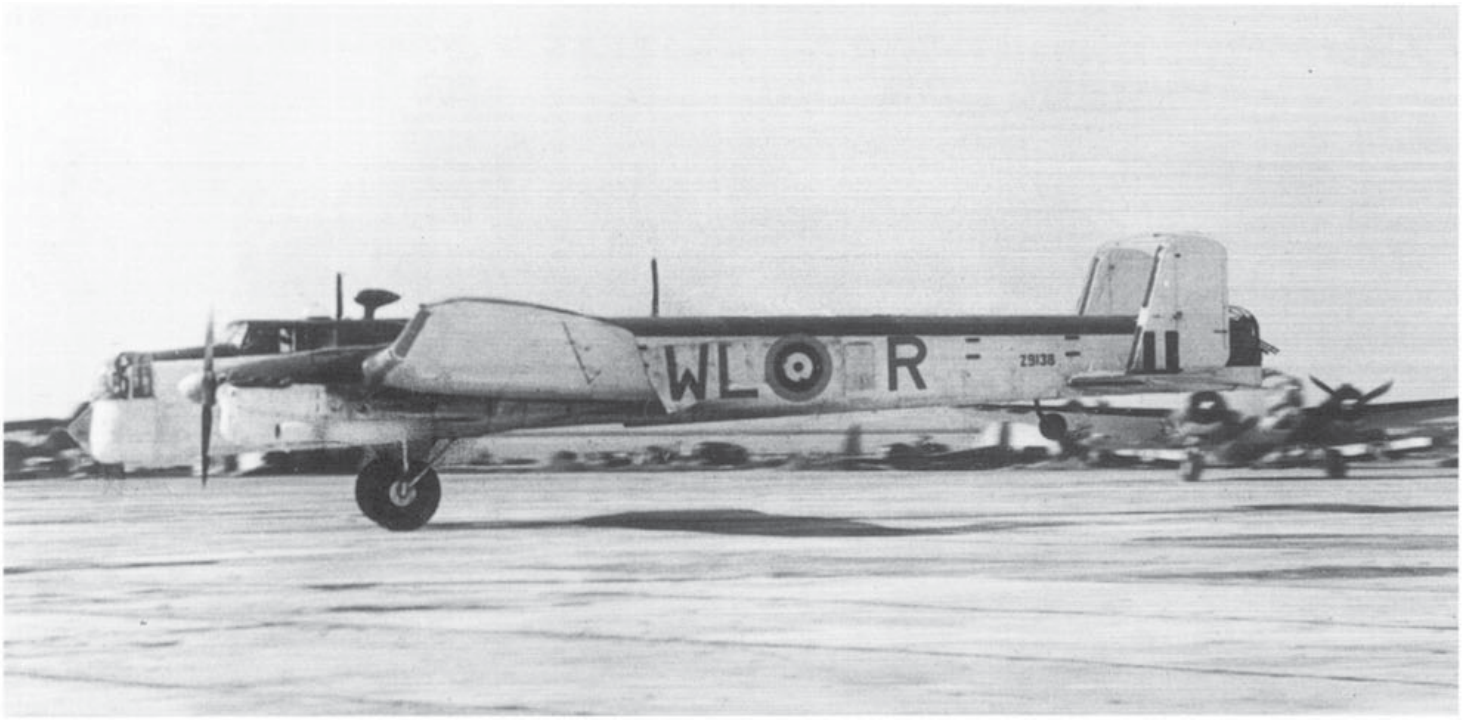


Armstrong Whitworth Whitley Mk. VII Z6633, WL:G of No. 612 Squadron Coastal Command in 1942. This aircraft has a non-standard aerial array on the fuselage side.

1936 project had two Bristol Pegasus XX radials fitted, but this never came to fruition, but a more successful result was forthcoming from Rolls Royce.

Adoption of the Rolls Royce Merlin at the end of 1937 resulted in Whitley Mk.I, K7208, being loaned to Rolls Royce at Hucknall where on 11 February 1938, it made its first flight powered by a pair of Merlin II engines. During April and May1938 this Whitley was tested at A&AEE with nose and tail turrets replaced by fairings. It achieved a top speed of 239 mph at 16,000 ft at a weight of 20,000 lbs. Two more Whitley Mk.Is became Merlin test beds (K7209 and K7211) serving as prototypes for the Whitley Mk.IV, which had two 12-cylinder, liquid-cooled Merlin IVs installed rated at 1,030 hp for take-off and driving three-bladed Rotol constant-speed propellers. The top speed had now risen to 245 mph at 16,000 ft, cruising speed was 220 mph at 15,000 ft, an altitude attained in 16 minutes, while normal cruising range was 1,250 miles with a maximum of 1,800 with

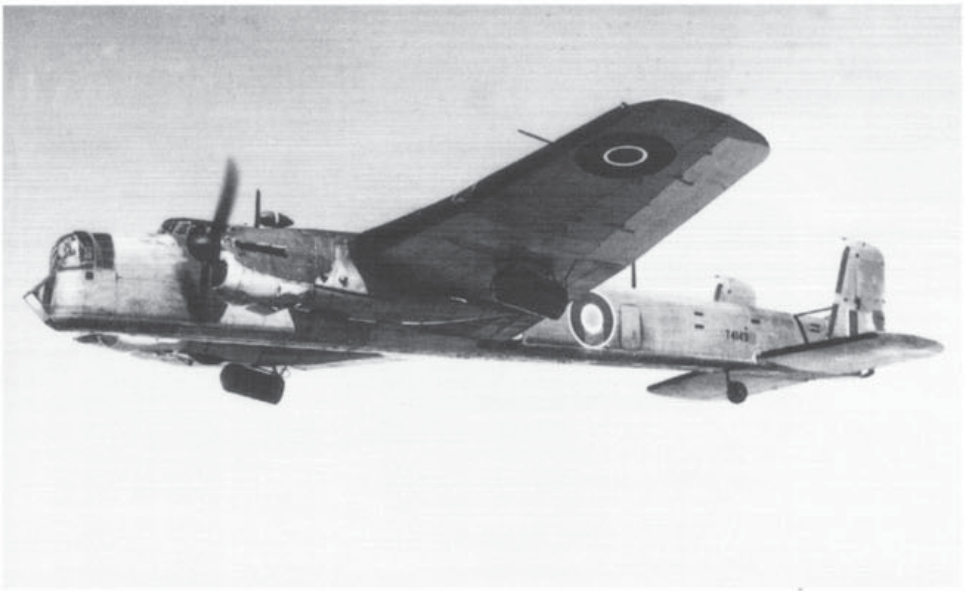
Under surfaces of two Whitleys showing the original spacing (K7188, Mk.III) and later spacing (N1352, Mk.V) with the short-lived underwing roundels.



Above: Whitley Mk.VII Z9138 belonged to No. 612 Squadron based in Iceland. It does not appear to have ASV radar aerials though this may be as the result of censorship. Right: Whitley Mk.V T4149 was employed on rocket assisted take-off trials (RATOG) by RAE Farnborough in 1943. The canisters can be clearly seen under the wings. (MAP)

extra tankage.

Another important step in defensive armament was made with the Whitley Mk.IV; the manually operated tail turret was superseded by a new Fraser-Nash power-operated turret housing four .303in Browning machine guns. Fuel tankage was also improved with the installation of an extra two 93 Imperial gallon wing tanks which brought the total normal fuel capacity up to 705 Imperial gallons. The Mk.IV bomb-aimer's lot was also improved, the old hinged bomb-aiming panel being replaced by the familiar plexiglass 'chin' extension.

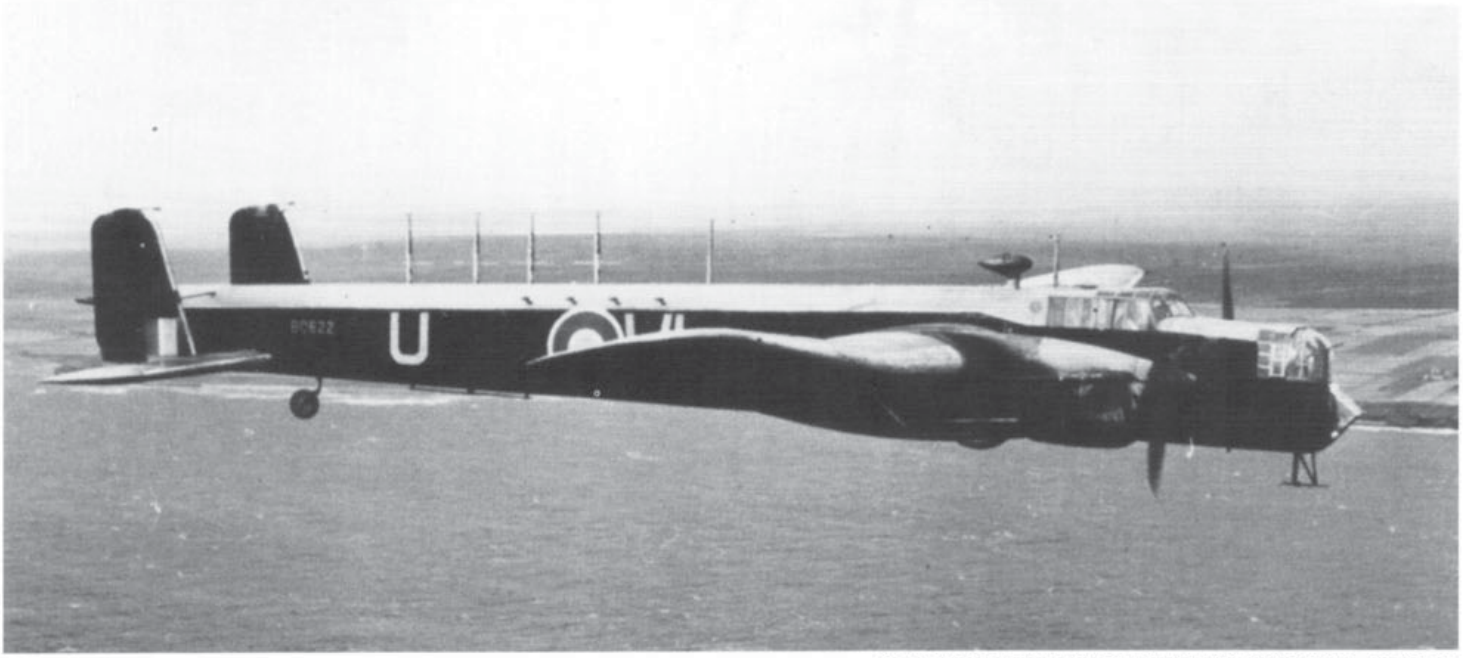


Indicating the hasty change of role for certain Whitleys this one still retains its Bomber Command colour scheme. Whitley Mk.VII, BD622, then of No. 612 Squadron, has the full ASV radar display on the rear fuselage and under the nose. (MAP)

Production of the Whitley IV totalled 44 (K9016 to K9048), an original order for 40 aircraft being completed with seven Mk.IVAs (K9049 to K9055), which had uprated 1,145 hp Rolls Royce Merlin Xs fitted giving increased performance at height..

MOST PROLIFIC VERSION

During 1938 a large production order for



ARMSTRONG WHITWORTH WHITLEY PRODUCTION LIST

Contract	Date	Mark	Quantity	Serial Nos
-	14 Sep 34	Prototype	2	K4586-K4587
421118/35	23 Aug 35	I	34	K7183-K7216
421118/35		II	46	K7217-K7262
522438/36	13 May 36	III	80	K8936-K9015
522438/36		IV	33	K9016-K9048
522438/36		IVA	7	K9049-K9055
Cancelled			(120)	K9056-K9175
75147/38	3 May 38	V	148	N1345-N1394; N1405-N1444; N1459-N1508; N1521-N1528
75147/38	29 Nov 38	V	164	P4930-P4974; P4980-P5029; P5040-P5065; P5070-P5112
38599/39	17 Nov 39	V	150	T4130-T4179; T4200-T4239; T4260-T4299; T320-T4339
106962/40	16 Jun 40	V	279	Z6461-Z6510; Z6552-Z6586; Z6624-Z6673; Z6720-Z6764; Z6793-Z6842; Z6862-Z6881; Z6931-Z6959
		VII	10	Z6960-Z6969
		V	12	Z6970-Z6980; Z9119
		VII	5	Z9120-Z9124
		V	10	Z9125-Z9134
		VII	5	Z9135-Z9139
		V	31	Z9140-Z9168; Z9188-Z9189
		VII	10	Z9190-Z9199
		V	86	Z9200-Z9232; Z9274-Z9323; Z9361-Z9363
		VII	20	Z9364-Z9383
		V	68	Z9384-Z9390; Z9419-Z9443; Z9461-Z9490; Z9510-Z9515
		VII	14	Z9516-Z9529
		V	50	AD665-AD714
106962/40	16 Oct 40	V	157	BD189-BD238; BD252-BD296; BD346-BD395; BD411-BD422
		VII	12	BD423-BD434;
		V	62	BD435-BD445; BD493-BD512; BD530-BD560
		VII	20	BD561-BD574; BD620-BD625
		V	30	BD626-BD639; BD659-BD674
		VII	19	BD675-BD693
		VII	1	EB282
106962/40	5 Aug 41	V	31	EB283-EB313
		VII	10	EB327-EB336
		V	39	EB337-EB367; EB384-EB391
		VII	10	EB392-EB401
		V	9	EB402-EB410
106962/40	19 Mar 42	V	31	LA763-LA793
		VII	10	LA794-LA794; LA813-LA817
		V	109	LA818-LA856; LA868-LA899; LA914-LA951

Total Production: **1,814 aircraft comprising:**

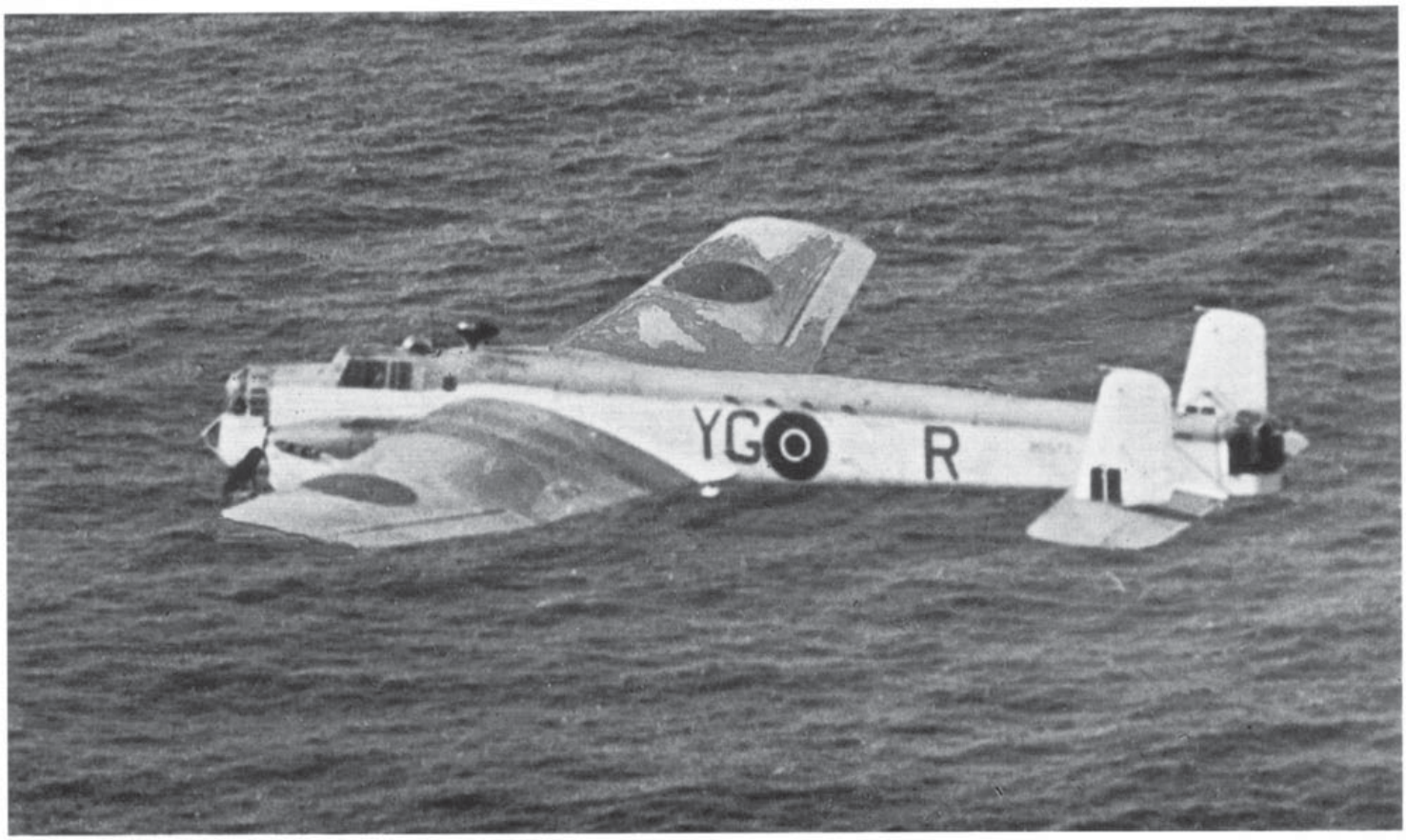
Prototype	**2**
Mk I	**34**
Mk II	**46**
Mk III	**80**
Mk IV	**33**
Mk IVA	**7**
Mk V	**1466**
Mk VII	**146**

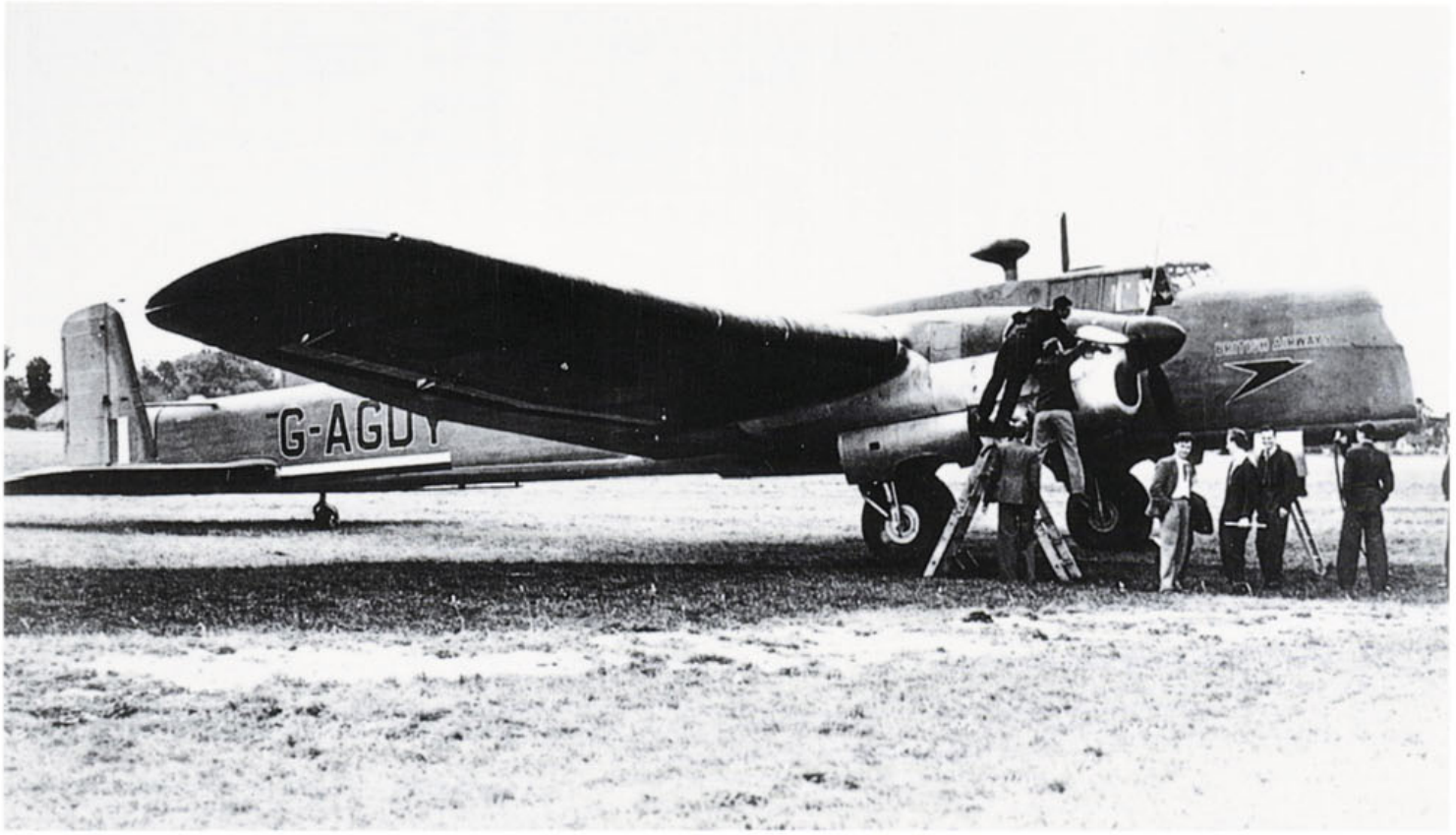
312 Whitley Mk.Vs was placed (N1345 to N1528 and P4930 to P5112), the first aircraft, N1345, being classed as the prototype. This variant, AWA Type 207, also had Rolls Royce Merlin X engines installed, while other improvements included straight leading edges to the fins, a 1ft 3in extension at the tail end of the fuselage to provide the rear gunner with a better field of fire, rubber de-icing boots installed along the wing leading edges and a further increase in fuel capacity to 837 Imperial gallons. The direction finding loop featured a streamlined fairing on this version and a ventral radio aerial was added.

Maximum bomb load was 7,000 lbs but only two 2,000 lb bombs could be carried in the bomb bay as an alternative to four 500 lb bombs. Six 250 lb bombs could still be conveyed in the inner wing cells, but the outer cells were not used and a maximum load seldom carried. The Whitley V was eventually given clearance to operate at a gross weight of up to 33,550 lbs.

The Whitley V was the most prolifically-built variant with 1,466 being delivered between August 1939 and July 1943, production reaching its peak in 1942 when 12 Whitley Vs a week were being built. This complied with Air Ministry Scheme L, an emergency plan to produce 12,000 various types of aircraft for the RAF by 1 April 1940. Thus in addition to the original contract for 312 Mk.Vs, a further order for 150 was placed in 1939 (T4130 to T4339) and with the start of World War 2 additional contracts for another 1,004 Mk.Vs were issued in serial block ranges Z6461 to Z9515, AD665 to AD714, BD189 to BD674, EB283

An example of what the wartime censor could do to perfectly good photographs. This Whitley Mk.VII belonging to No. 502 Squadron has had the ASV aerials painted out rather crudely though the ones on the side of the fuselage have not been deleted. (IWM)





One of 15 Whitley Mk.Vs allocated to British Overseas Airways in 1942 as civil transports. G-AGDY (ex-RAF BD386) is shown here. The nose and tail have been faired over, wartime civil registrations applied and a BOAC logo placed beneath the cockpit along with the Speedbird insignia. (MAP)

to EB410 and LA763 to LA951.

COASTAL COMMAND

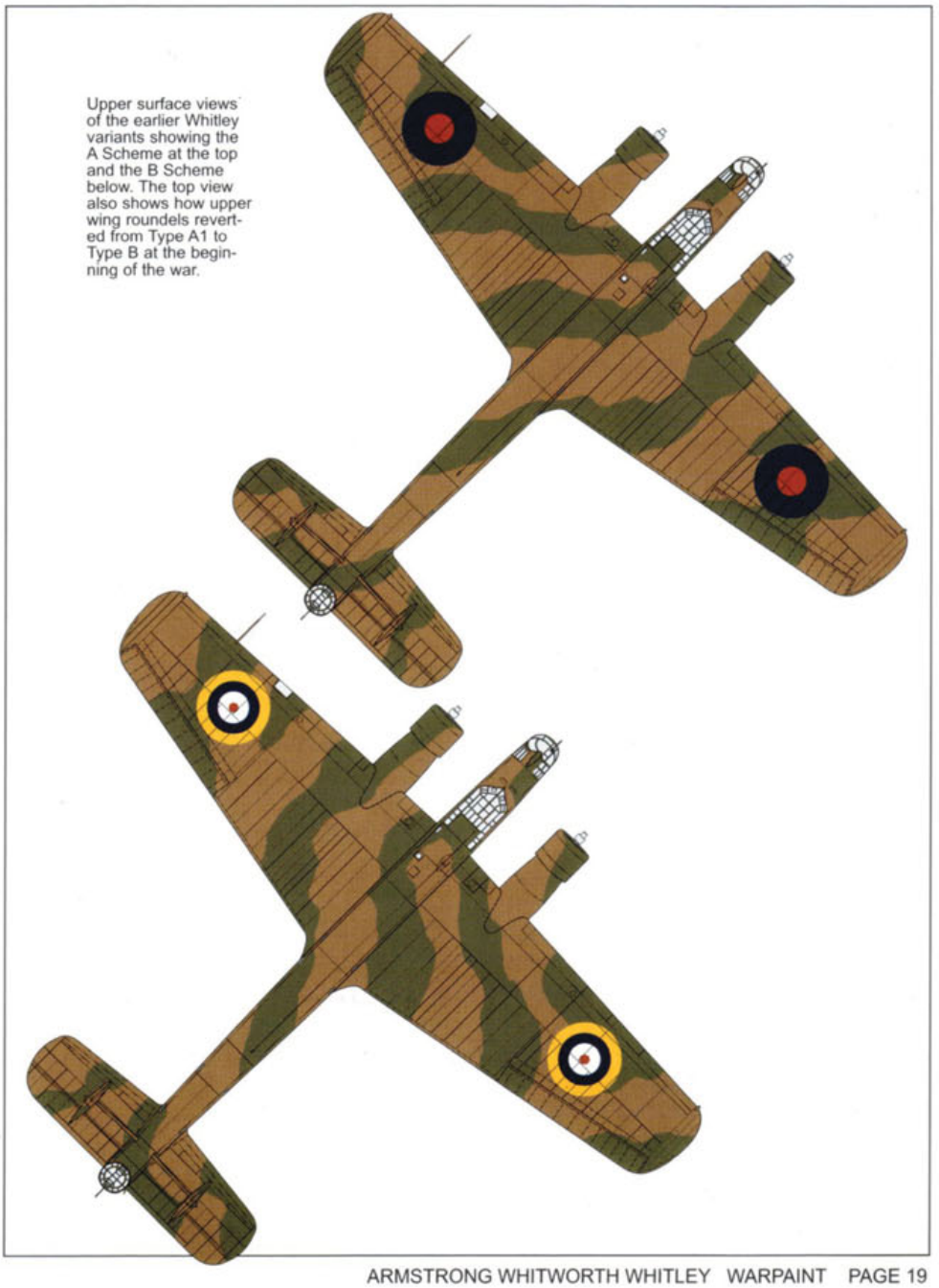
The Whitley V was also progenitor of the Mk.VII produced for RAF Coastal Command, to which service Whitleys had first been introduced during September 1939, when No. 58 Squadron was temporarily transferred from Bomber to Coastal Command. Based at Boscombe Down with Whitley Mk.Vs, this unit flew anti-submarine patrols over the English Channel, returning to Bomber Command in 1940.

No. 58 Squadron was transferred to Coastal Command on a permanent basis in April 1942, but soon changed its Whitleys for Handley Page Halifaxes.

It was a Whitley from No. 77 Squadron, also temporarily transferred to Coastal and based at Chivenor, that bombed and sank U-705 in the Bay of Biscay on 3 September 1941.

Other squadrons to change role on a permanent basis to Coastal Command included No. 502 in the autumn of 1940 when based at Aldergrove, Northern Ireland and exchanging their Ansons for Whitley Mk.Vs. No.612 Squadron followed in March 1941 when they operated from Reykjavik, Iceland, with the Whitley Mk.V. Both of these squadrons were to replace their original aircraft complement with the Whitley VII.

Meanwhile one of Coastal Command's Whitley Mk.VIIs, Z9190:YG-B, operating from Chivenor, Devon, used its ASV radar and depth charges to track and destroy U-206 in the Bay of Biscay. This was the first



Upper surface views of the earlier Whitley variants showing the A Scheme at the top and the B Scheme below. The top view also shows how upper wing roundels reverted from Type A1 to Type B at the beginning of the war.

A No. 295 Squadron Whitley Mk.V dropping a stick of parachutes with supply cannisters and troops intermixed during an October 1942 training exercise near Netheravon. (IWM)

occasion that a Coastal Command aircraft had successfully sunk a U-boat without naval assistance. Whitley Mk. VIIs also replaced the earlier Whitley Mk. Vs of No. 612 Squadron at Reykjavik, while No. 53 Squadron flew Whitley Mk. VIIs for the first six months of 1943. In the summer of that year the Mk.VIIs ended their Coastal Command careers when No. 612 Squadron switched to Wellington Mk. VIIIs.

The Whitley commended itself for oceanic patrol duties in the first instance by nature of its range and endurance. But in order to further enhance these qualities the Mk.VII was developed for pure maritime reconnaissance duties. Powered by the same Merlin X engines the Mk.VII was in reality a revamped Mk.V Whitley, the prototype being a converted Mk.V, P4949. In addition a number of Mk.Vs were converted to Mk.VII standard. The differences between the two consisted of extra fuel tanks in the bomb bay and rear fuselage which increased the fuel capacity to 1,100 Imperial gallons and resulted in an extended patrol range of 2,300 miles. Other differences included the installation of long-range ASV Mk.II air-to-surface radar with its resulting dorsal aerials and extra crew member to act as radar operator. Gross weight of the Mk.VII was 33,950 lbs and this, together with the drag-inducing ASV aerials, reduced the top speed to 215 mph at 16,400 ft and the cruising speed to 195 mph at 15,000 ft. A total of 146 Whitley Mk.VIIs were built within the serial ranges Z6960 to Z9529, BD423 to BD693, EB282 to EB401 and LA794 to LA817.

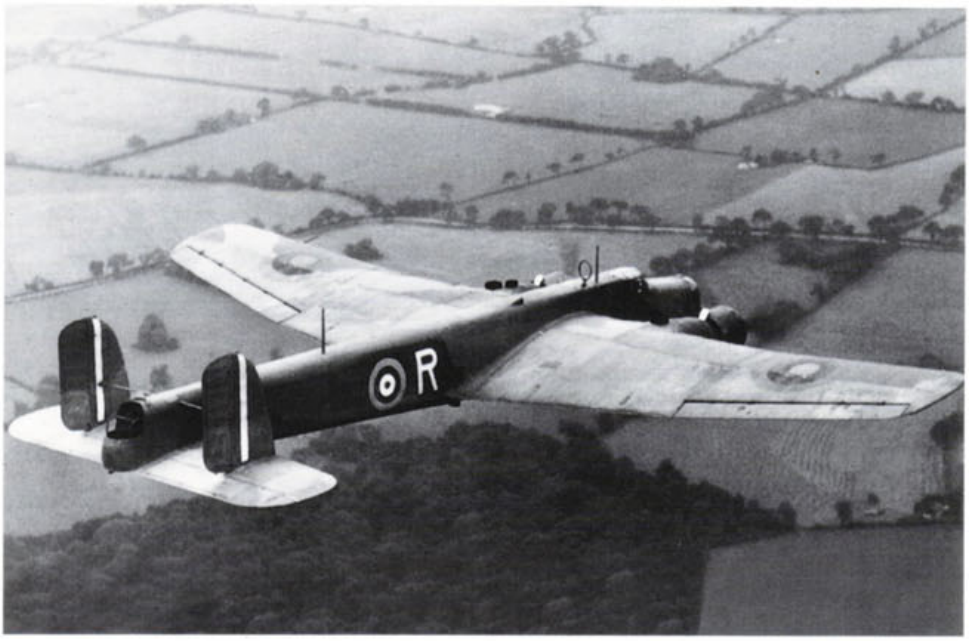
NIGHT BOMBER OFFENSIVE

Meanwhile Merlin-engined Whitleys had entered service with Bomber Command on 9 March 1937 when the second production aircraft, K7184, arrived at Dishforth, Yorkshire, for No. 10 Squadron to replace Handley Page Heyfords, the change being completed by mid-June.

Next to be equipped with Whitleys was

A training jump from a Whitley Mk.III. The troops are exiting the aircraft from the space made available by the removal of the FN 17 turret under the fuselage. (IWM)

The tail turret of this Whitley III has been removed and used by the early parachute training units as a jumping off platform from which troops could leave the aircraft without hitting the tail unit. The aircraft is believed to belong to the Parachute Training School, Ringway, Manchester in 1942. (MAP)



No. 78 Squadron also Dishforth-based while No. 58 Squadron at Linton-on-Ouse received eight Mk.I and four Mk.II Whitleys, the former being replaced by the Mk.II shortly afterwards.

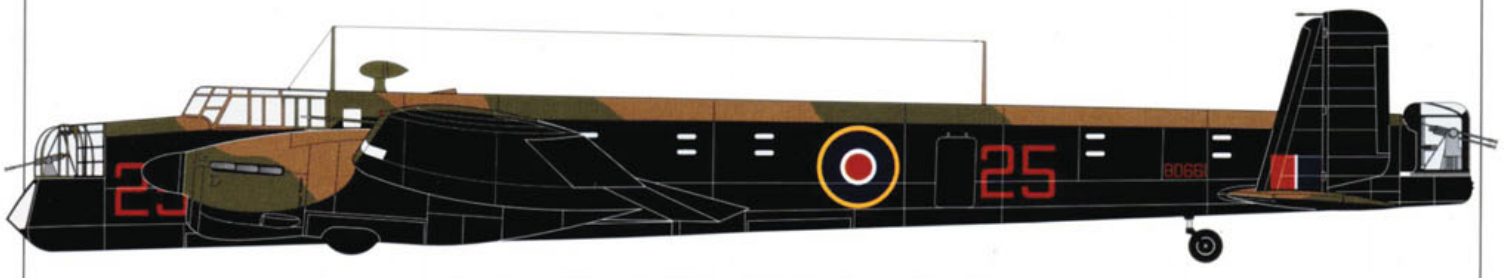
This variant also went to Nos. 51 and 7 Squadrons and when No. 51, together with Nos. 102 and 77 Squadrons received Whitley Mk.IIIs, its replaced Mk.IIs went to No. 97 Squadron.

Merlin-engined Whitleys entered service in May 1939 when No. 10 Squadron was the first to receive Mk.IVs, this version also going to Nos. 51 and 78 Squadrons at about the same time. Interestingly No. 78 Squadron was unique in having operated all seven versions of Whitley produced. The first Whitley Mk.Vs arrived with No. 78 Squadron in August 1939, but by October ten of these had been transferred to No. 77 Squadron which, together with Nos.10, 51, 58 and 102 Squadrons became fully equipped with the Mk. V during the opening months of World War 2. This most extensively built Whitley variant would later be operating with 15 Bomber Command squadrons.

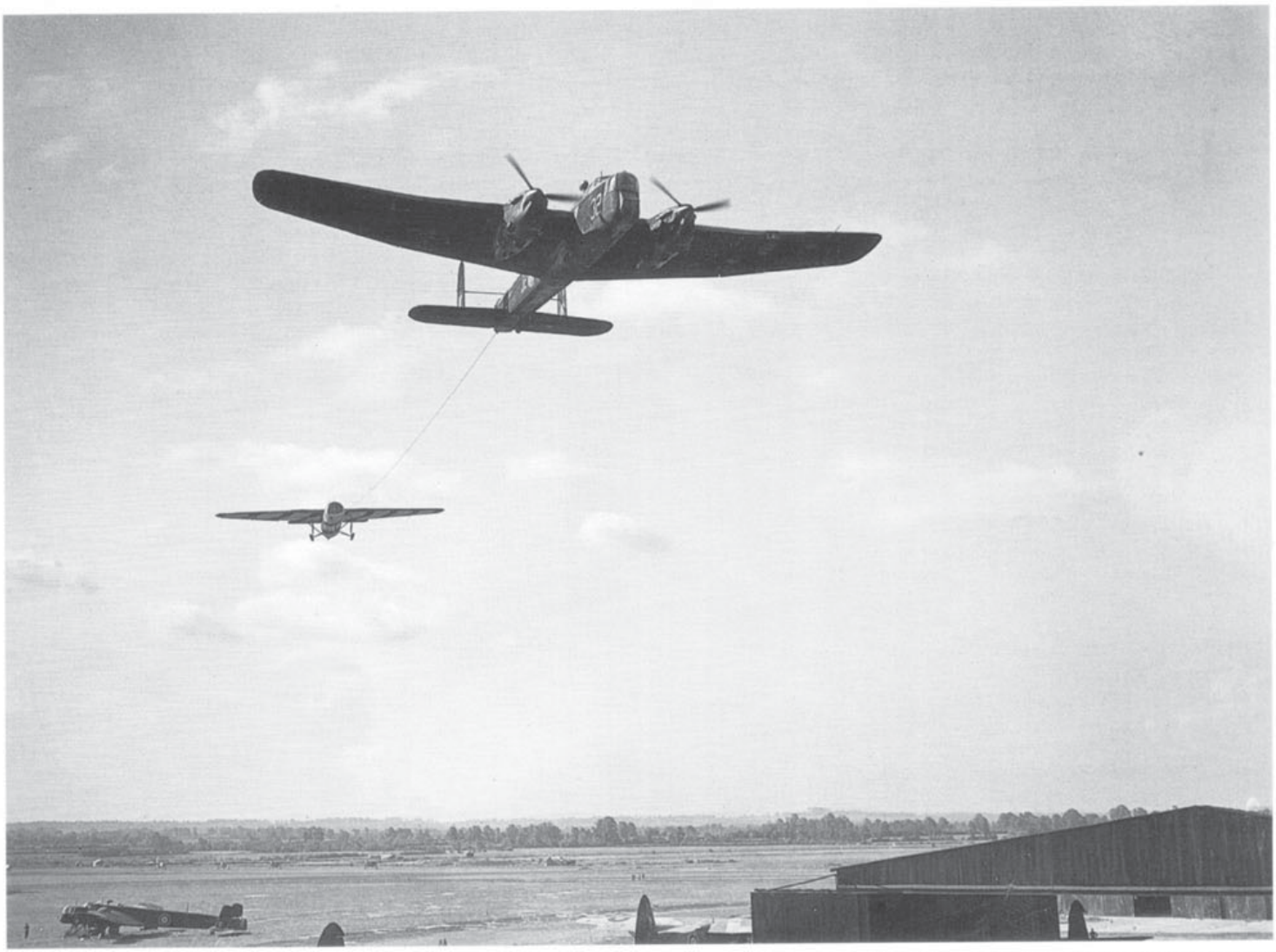
On the outbreak of war there were 32 Mk.I, 43 Mk.II, 76 Mk.II, 33 Mk.IV, seven Mk.IVA and five Whitley Mk.Vs in service, the majority of which flew with No. 4 Group which had its headquarters at Linton-on-Ouse. However, only five of the nine units involved were considered operational in the night bombing role. These were Nos. 10, 51, 58, 77 and 102 Squadrons because No. 7

Paratroops under training and their Whitley aircraft preparing for a mass drop at Netheravon during 1943. Interestingly these Whitley Mk.Vs retained both the nose and tail turrets with full armament. (IWM)

Armstrong Whitworth Whitley Mk. V Z9478, RK:B of No. 10 OTU 1942. The aircraft was written off in a landing accident at Abingdon on 7 December 1942.



Armstrong Whitworth Whitley Mk.V BD661, 25 of the Glider Training Unit, Brize Norton in 1943.



The Whitley was utilised as a glider towing aircraft for training purposes as it is thought unlikely that many saw action. This picture illustrates one of the airfields, possibly Brize Norton, with the Whitley having an Airspeed Horsa in tow. (IWM)

Squadron had already changed to Handley Page Hampdens, No. 78 was in the process of converting from the Mk. I to the Mk.IV and Nos. 97 and 166 Squadrons formed the Groop Pool unit later merging to become No. 10 Operational Training Unit.

No. 4 Group had ten Whitley Mk. IIIs operational on 3 September 1939, the first night of the war, when aircraft from Nos. 51 and 58 Squadrons took off from Leconfield on a reconnaissance mission over the Ruhr. They also dropped 6,000,000 leaflets weighing some 13 tons which were dropped over Bremen, Hamburg and the Ruhr on the return journey.

These leaflet raids continued for a time in compliance with the British government's directive in which the dropping of bombs on German mainland territory was forbidden.

The Luftwaffe seaplane base at Hornum on the island of Sylt received the first British bombs of the war to fall on German territory on the night of 19-20 March 1940 when Whitleys from Nos 10, 51, 77 and 102 Squadrons attacked the base accompanied by 20 Hampdens from No. 5 Group. One Whitley failed to return from this raid.

Two months later on the night of 10-11 May, Whitleys from Nos 77 and 102 Squadrons attacked roads, railways and bridges in Germany in an effort to disrupt the military supply routes from Germany into Holland. This was the first time that British bombs fell on mainland Germany and was followed by a second night of raids on a larger scale against rail targets near Munchen Gladbach. Three days later the political restrictions on Bomber Command were lifted and the RAF was free to launch an increasingly fierce bombing offensive against Germany.

For the next two years Whitleys were an active element in the RAF's nocturnal forays against Germany and when Italy entered the war, the type was soon in action against the new enemy. This began on the night of 11-12 June 1940 when Whitleys from Nos. 10, 51, 58, 77 and 102 Squadrons flew across the Alps to attack Turin and Genoa, this being the first bombing raid on Italy.

The final Whitley operation by Bomber Command took place on the night of 29-30 April 1942 when the target was Ostend. Ironically this was a year before production of the Whitley Mk.V bomber was terminated. Later some Whitleys from OTUs were used to make up the numbers on the first RAF 1,000 bomber raids and No. 38 Group sent some of its Whitleys on a few Nickel sorties.

PARACHUTE TRAINING

The Whitley was chosen for a very different role after Prime Minister Winston Churchill let it be known at the War Office on 6 June 1940 that Britain should possess a corps of at least 5,000 parachute troops. He insisted they should be selected and trained starting that summer. Until that time little attention had been given to airborne forces on a large scale in Britain although it was known that developments in this field were well advanced in Germany and the Soviet Union.

To find a suitable RAF aircraft for the training of these paratroops was not easy. No aircraft was available in sufficient numbers for training use or such a specialised operation. It was decided the best option was to adapt the Whitley and six Mk.IIs were prepared. Thus on 19 June, only a fortnight after Churchill's directive, a Central Landing School was established at Manchester's Ringway airfield complete with 1,000 RAF training-type parachutes.

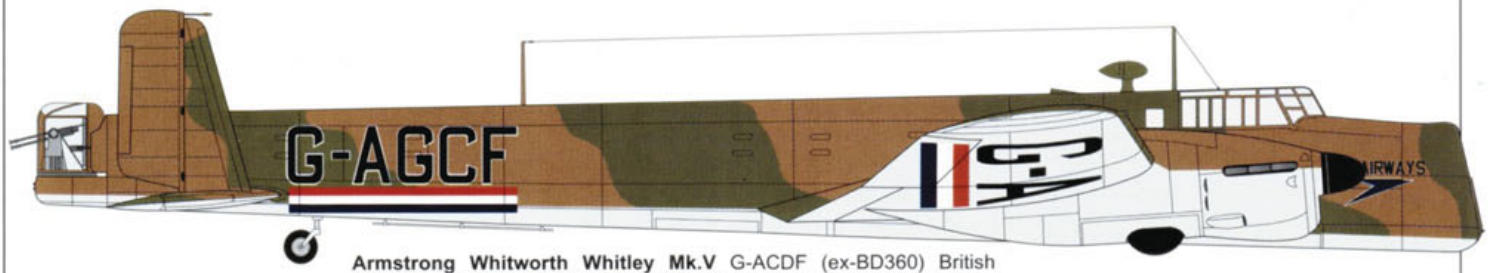
Two alternative exits for paratroops would be provided in the Whitley, one through a circular hatch fitted with split doors and located in the fuselage floor which was formerly the position for the ventral turret, and the other from a platform at the extreme end of the fuselage which replaced the rear gun turret.

By early June 1940 the six Whitleys had been modified and on 13 July the first drops were made over Tatton Park which had been requisitioned as a drop-zone. RAF parachute instructors made the first trials, six leaving the fuselage by the hatch and two 'pull-offs' from the tail platform.

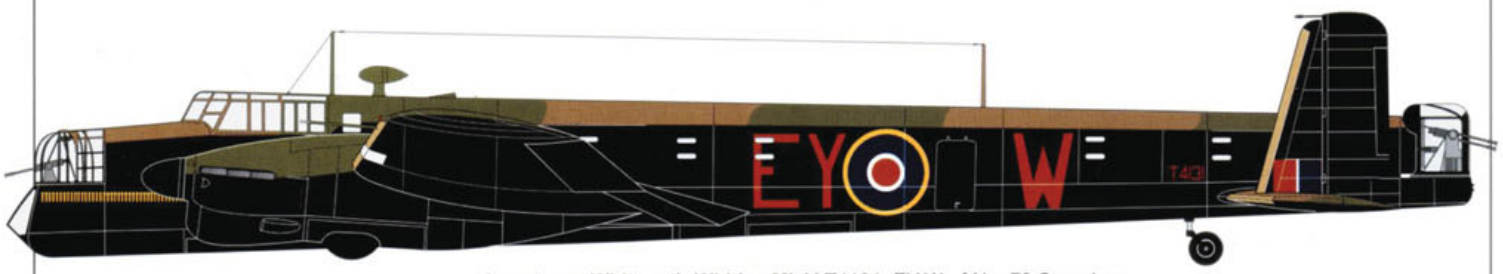
Actual student parachute training began on 22 July and although a few descents were initially made as 'pull-offs' from the tail by each trainee, this method of exit was soon relinquished in favour of the former 'dustbin' turret hatch. Static lines which opened

Armstrong Whitworth Whitley Mk.VII BD622,WL:U of No. 612 Squadron in 1942. This aircraft appears in the interim colours used by Coastal Command squadrons after Whitleys were transfered from Bomber Command.

Armstrong Whitworth Whitley Mk.VII EB392 YG:R of No. 502 Squadron when based at RAF Aldergrove, Northern Ireland in 1942.

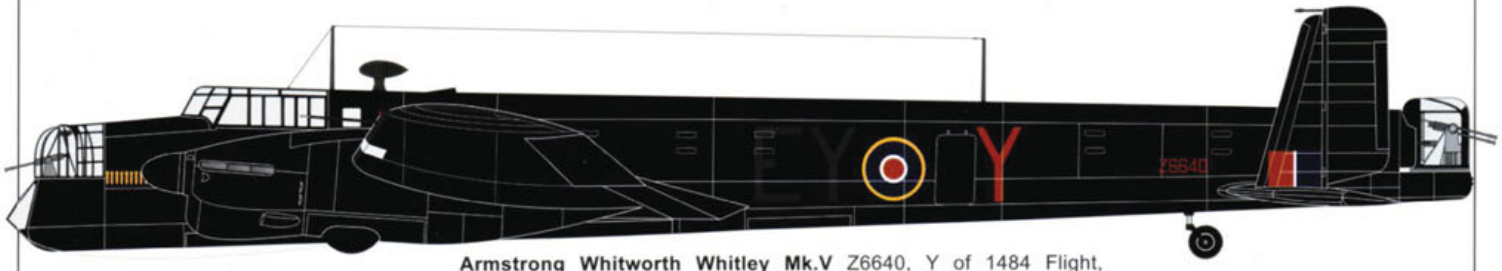


Armstrong Whitworth Whitley Mk.V G-ACDF (ex-BD360) British Overseas Airways Corporation in 1942. Note that the rear turret has been retained on this aircraft.



Armstrong Whitworth Whitley Mk.V T4131, EY:W of No. 78 Squadron between 1942 and 43. There are 34 mission markings on the nose.

Armstrong Whitworth Whitley Mk.V T4149, A&AEE Boscombe Down, 1943. Used for rocket assisted take-off trials, note underwing cannisters.



Armstrong Whitworth Whitley Mk.V Z6640, Y of 1484 Flight, Middleton-St.-George (previously EY:R of No. 78 Squadron) 29 mission markings on nose, 1942-43.

ARMSTRONG WHITWORTH WHITLEY MAINTENANCE SERIALS

'M' SERIAL	ORIGINAL
1702M	K7186
1780M	K7192
1889M	K7202
1890M	K8208
1926M	K8955
1927M	K8939
1928M	K7215
2181M	K7183
2332M	P5088
2474M	K7245
2600M	K8208
3045M	N1444
3053M	N1349
3057M	N1471
3058M	T4210
3067M	N1503
3093M	K7198
3120M	K8971
3121M	K7236
3142M	K8983
3287M	K7223
3293M	K8951
3294M	K8992
3295M	K7214
3296M	K9049
3297M	K7213
3298M	K7235
3302M	K9023
3335M	K7224
3336M	K7256
3337M	K7248
3338M	K7009
3339M	K7249
3340M	K8949
3341M	K9011
3342M	K8954
3343M	K8959
3381M	K7193
3382M	K7201
3391M	T4271
3392M	N1409
3393M	N1381
3407M	K7234
3418M	N1466
3445M	K8962
3446M	K8979
3451M	Z9480
3469M	N1346
3650M	B1407
4070M	K4586
4112M	K8953
4113M	K8980
4114M	K7218
4292M	BD440
4293M	BD551
4657M	T4284

parachutes automatically then became the standard dropping system, but in the Whitley, which could accommodate ten paratroops, five ahead and five aft of the floor hatch, a serious problem arose.

Those men carried aft of the exit faced the slipstream on jumping, which often caused them to somersault and the parachute to malfunction. Consequently Whitleys were involved in several tragedies when parachutes failed to open with fatal results. Yet in spite of an in-depth investigation into the matter it remained unsolved for some time, although Whitleys continued to carry airborne troops until replaced by a more suitable aircraft like the Handley Page Halifax.

It was soon realised that Churchill's objective of 5,000 paratroops would never be met in time using Whitleys as the main transport aircraft. Bomber Command still controlled the troop-carrying Whitleys, which by then had included all previous bomber versions, and it was obvious that with a maximum of ten troops in each aircraft, if the whole Whitley force of No.4 Group was used, it could only drop up to 700 paratroops at any one time.

This quickly resulted in a decision to develop troop-carrying gliders like the Airspeed Horsa and to employ Whitleys as the towing aircraft.

Before this was sufficiently developed Whitleys were used to carry British troops into action. In its troop-carrying configuration the Whitley Mk.V in addition to ten paratroops, conveyed 2,500 lbs of supply packs in the bomb bay and inner wing cells, the gross weight being 31,448 lbs.

AIRBORNE TROOPS IN ACTION

The first parachute assault from Whitleys was on the night of 10-11 February 1941 by aircraft from No. 78 Squadron. After a month of special training and preparation, on 7 February eight of the squadron's Whitleys flew to Malta carrying 37 men of the SAS. The objective of this not altogether successful operation, known as 'Colossus', was the aqueduct at Tragino (Acquedetto Pugliese), in Italy, the intention being to destroy it and cut off water supplies to the whole of southern Italy.

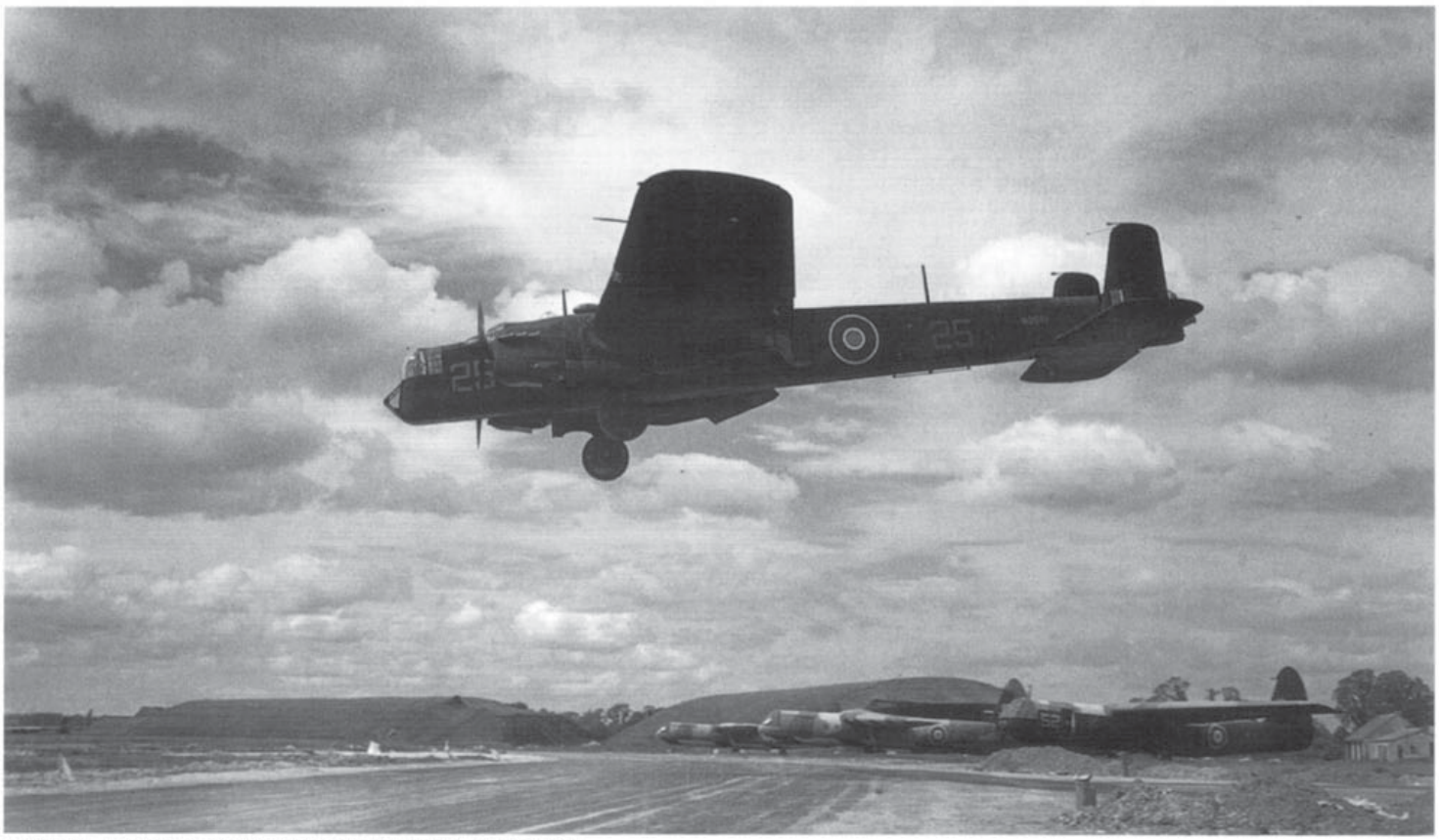
Twelve months later, Whitleys from No. 51 Squadron, led by Squadron Leader P. C. Pickard, took part in Operation Biting, the famous airborne troops raid on the German radar station at Bruneval on the French coast near Le Havre. This took place on the night of 27 February 1942 when a dozen Whitleys dropped their paratroops exactly on time at the chosen spot. This operation was an outstanding success, resulting in the capture of valuable radar components and the destruction of the station, before the troops returned home with the help of the Royal Navy.

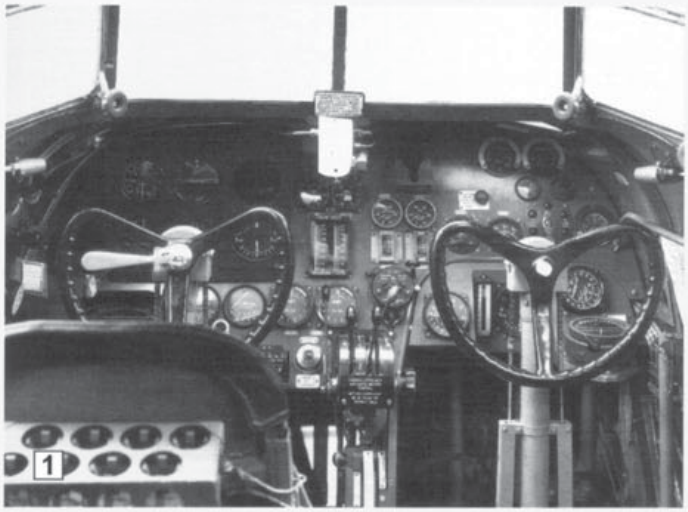
Whitleys also flew with Nos 138 and 161 Special Duties Squadrons, carrying and dropping agents over German occupied territory. Known as 'lambs' these agents normally made their first practice drop from a Whitley at Ringway, now known as No.1 Parachute Training School.

GLIDER TUGS

With the expansion of British airborne forces more special units were formed, the first being No. 296 Glider Exercise Squadron in January 1942 equipped with Airspeed Horsa and General Aircraft Hotspur gliders, towed by Whitleys and Hawker Hector biplanes respectively. This unit was based at Netheravon and was joined by Whitley-equipped No. 297 Parachute Exercise Squadron, both squadrons moving

Whitley Mk.V BD661:25, which was in use as a gider tug training aircraft in 1943 seen landing at Brize Norton with a handful of Airspeed Horsas in the background. (IWM)

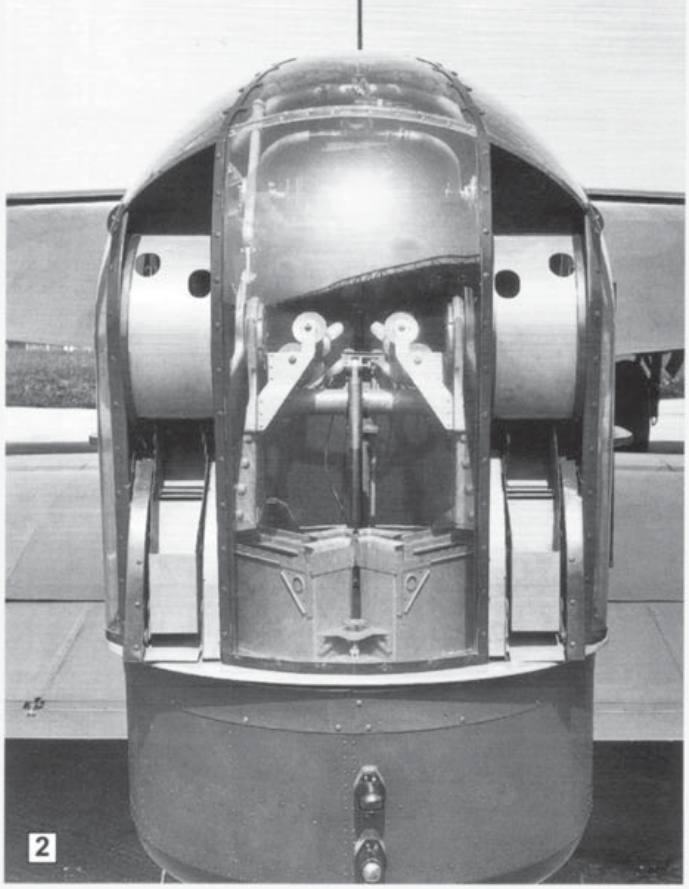


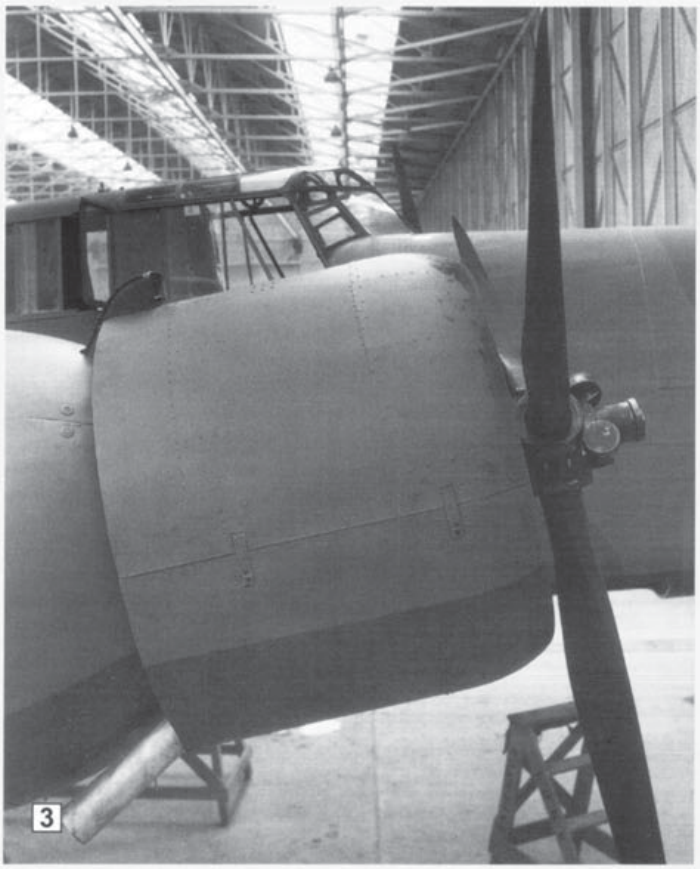


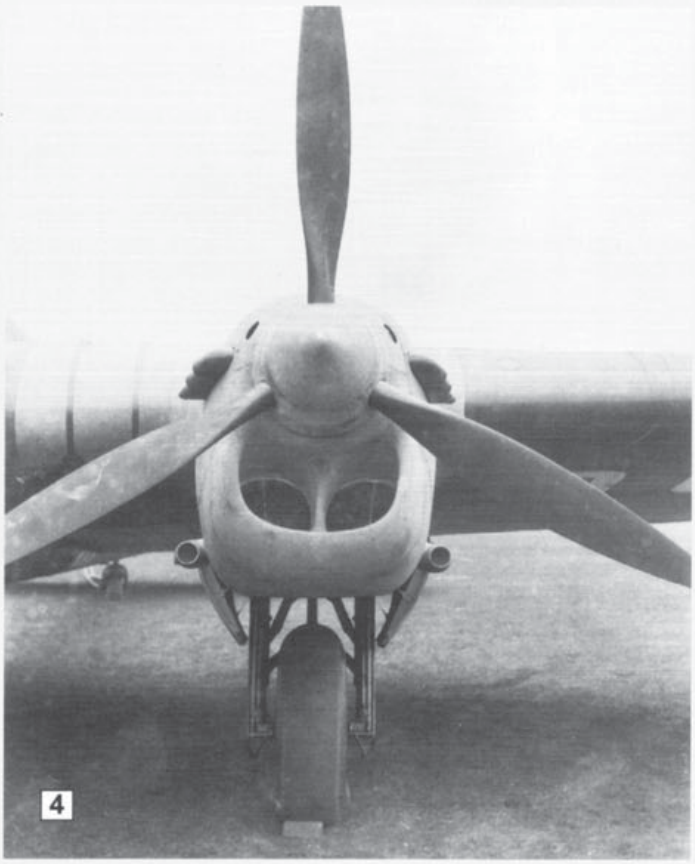
Armstrong Whitworth Whitley in detail

Pictures from the Ray Williams collection

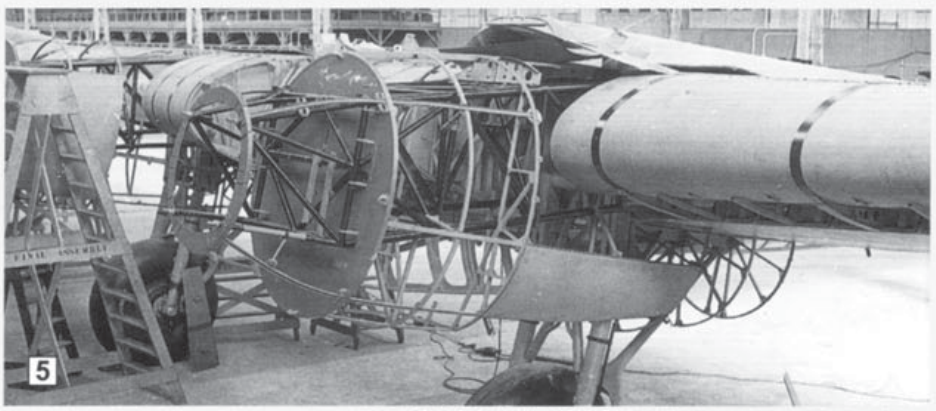
More in-detail pictures on centre spread plans



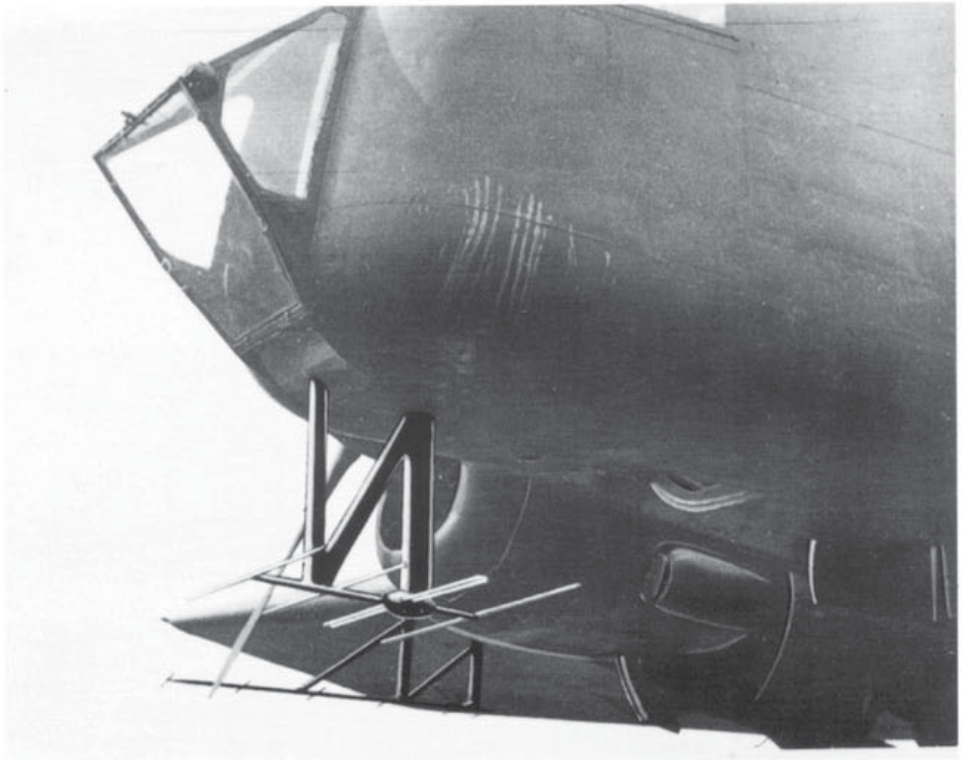


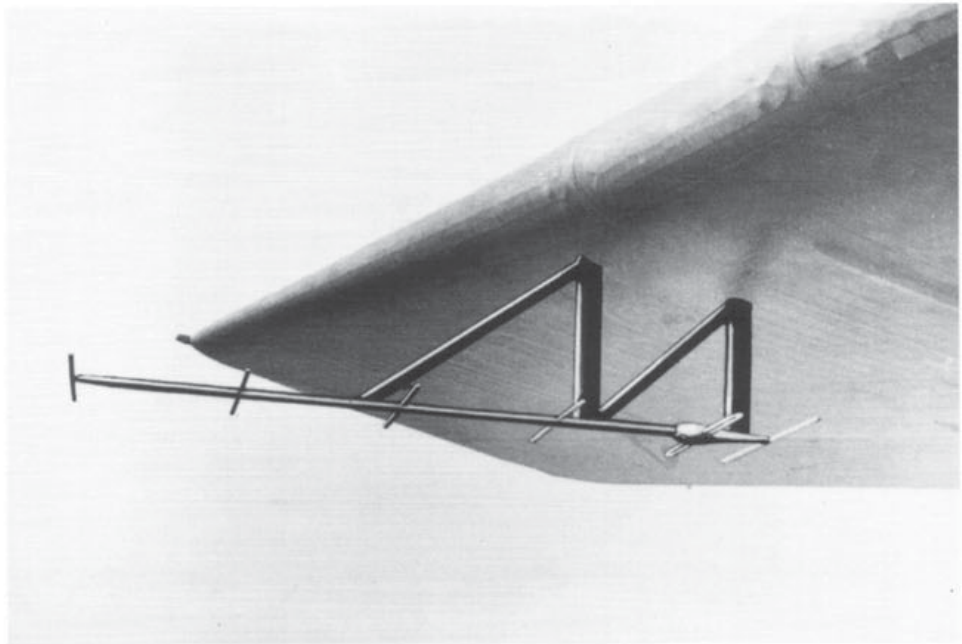


1. The cockpit instrument panel of the Whitley Mk.I. Two pilot's postions were included, the right hand one normally being occupied by the Observer. 2. A view from dead astern of the four-gun Fraser Nash power-operated rear turret showing the ammunition boxes in the fore-ground and chutes to eject spent cartridge cases to each side. 3.The exterior of one of the two Armstrong Siddeley Tiger IX engines that were fitted to the Whitley Mk.I and capable of producing 795 hp. A de Havilland three-bladed controllable pitch propellor was fitted to each. 4. The installation of the Merlin II on the prototype K7208 was left in primer for some of the early trial flights. 5. A Whitley V during construction. Two leading edge fuel tanks were installed one having 182 and the other 95 Imperial gallons capacity. (Ray Williams Collection)



Whitley Mk.VII Z6633 of No. 612 Squadron showing the aerial array associated with ASV radar. Variants, as in this case, were frequently made during the experimental period that saw the early sets coming into service. The side of fuselage aerials appear to be differently placed than standard. (MAP)





to Hurn in May 1942. Later that year No. 295 Squadron was formed at Netheravon with Whitleys to increase the strength of No. 38 Group.

The Whitley's glider tug career began in 1941, Mk.Vs being used for this purpose. Some aircraft initially flew minus the rear turret, but this proved unsatisfactory and in any case for operational reasons it was considered prudent to retain the rear armament. Thus the standard Whitley Mk.V glider tug was fitted with a free-floating towing yoke. This was attached round the rear fuselage beneath the turret base and incorporated a Mk.IVA Malcolm release hook.

Towing trials were undertaken at the RAE Farnborough and these included tests with twin-tows of two gliders, but normally the operational intent was for the Whitley to tow one Horsa glider at a time.

During 1942 all three Whitley units of No. 38 Group took turns in towing Hotspur training gliders with seats for seven troops, on a weekly basis between Britain and Northern Ireland as a benefit for Irishmen of the Airborne Division travelling to and from leave.

In the event and by the time British Airborne Forces had been fully trained for action, the Whitley had been replaced as an operational glider tug and troop carrier by the Handley Page Halifax and Armstrong Whitworth Albermarle, the reason being that the Halifax was the only available aircraft suitable for towing the latest and much larger General Aircraft Hamilcar glider. Thereafter until 1944 Whitleys maintained a support role towing Horsa gliders at No. 21

Above, left and right: Three close up pictures showing the individual aerials on the nose, rear fuselage and wings making up the early ASV radar that appeared on Whitleys and other Coastal Command aircraft starting in 1942. (RAF Museum)

Heavy Glider Conversion Unit, Brize Norton.

CIVIL DUTIES

Yet another role undertaken by the Whitley was as a civil freighter with the wartime BOAC. Fifteen production Mk.Vs were allotted to this task, the conversion being undertaken by Armstrong Whitworth by having the gun turrets removed and replaced by fairings and the bomb bays altered to carry auxiliary fuel tanks thus increasing the range to 2,500 miles.

These civil Whitleys carried full registrations and were flown by BOAC crews with one of the conversions being relegated to training duties. Initially they flew a regular Britain to West Africa route but between April and August 1942 switched to extensive night supply flights from Gibraltar to besieged Malta. Whitleys were not ideal for this task and were later replaced by transport versions of the Lockheed Hudson.

The BOAC Whitleys were also assigned the very hazardous nocturnal run between Leuchars and Stockholm, but once again proved to be rather inadequate for the task.

During 1943 12 BOAC Whitleys were returned to the RAF (two were not 'civilianised) and one was written off in an accident at Gibraltar.

BRAVERY AND FORTITUDE

Much has been written about the bravery and fortitude of RAF bomber crews on their nightly forays over enemy territory in World War 2, most of it associated with four-engined aircraft and the actual bombing campaign. But equal courage was shown by Whitley crews on those early reconnaissance flights when no bombs were allowed to be dropped - only propaganda leaflets.

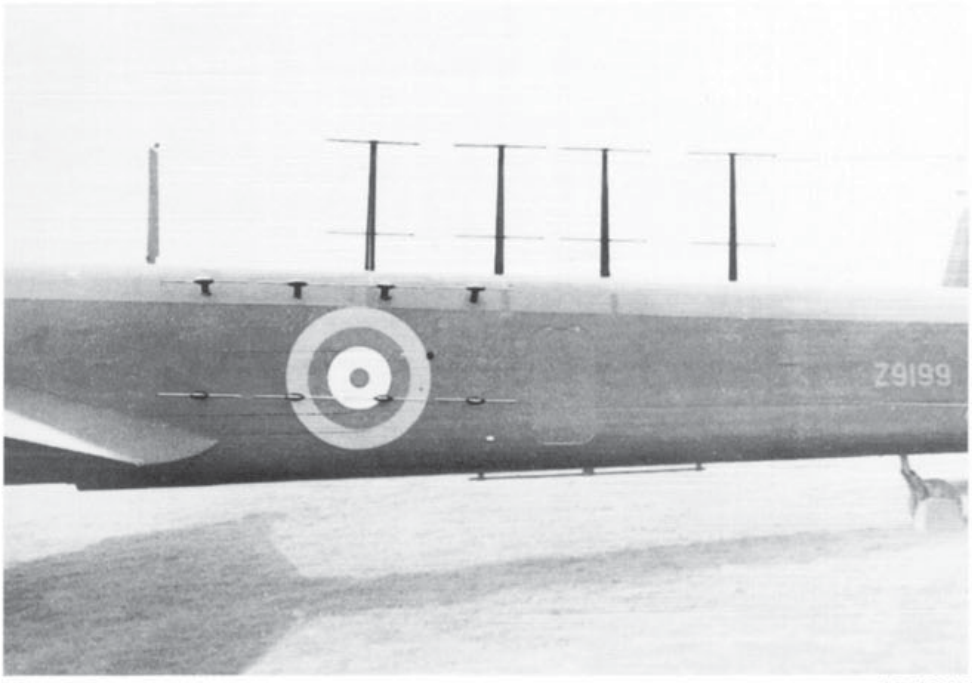
On the first night of the war as Whitley Mk.IIIs from Nos. 51 and 58 Squadrons took off from Leconfield heading for north-west Germany, they were led by Squadron Leader J. J. A. Sutton of No. 58 Squadron in Whitley Mk.III K8973:K with Whitleys K8938, K8941 and K8982 of No. 51 Squadron and K8964, K8969, K8990, K9006, K9009:M and K9013:W of No. 58 Squadron.

The leaflets were in bundles tied with string which was cut before their release through either the flare chute or ventral turret where fitted. Leaflet raids were conducted consecutively on the first seven nights of the war, a further seven followed during September and on the night of 1-2 October 1939, three Whitley Mk.IVs of No.10 Squadron dropped leaflets on Berlin, this being the first Bomber Command sortie over the German capital.

As one Whitley arrived over Berlin at 22,500 ft the oxygen supply failed, causing two of the crew to collapse. The rear turret's mechanism had frozen, preventing the gunner from opening his door and leaving the co-pilot to assist the two unconscious crewmen. One he dragged forward to connect up with the oxygen supply that was still working, before managing to drop two-thirds of the leaflets and then collapsing himself. Fortunately the pilot managed to bring his aircraft down to 9,000ft by which time everyone had recovered. The timing and navigation on this mission was remarkable for its day, the three Whitleys involved leaving at three-minute intervals and arriving back exactly three minutes apart.

The difficulties experienced by those early Whitley crews as they flew over Germany night after night, dropping their paper loads, is a monument to human determination and endurance. For example on the night of 27-28 October 1939, weather over the targets of Dusseldorf and Frankfurt was appalling. It was so bad that an official report afterwards referred to the sheer amazement caused 'when it was realised that aircraft in such a condition of icing up could still be controlled'. In those Whitleys using the ventral turret to discharge leaflets it was found impossible to lower the turret owing to the intense cold, the temperature being between minus 22 and 32 degrees Celsius.

One Whitley's starboard engine caught fire and was switched off as the aircraft



Armstrong Whitworth Whitley Specification

WHITLEY Mk.III

Power plant
Two Armstrong Siddeley Tiger VIII 14-cylinder twin row radial engines driving De Havilland three-bladed controllable pitch propellors
Fuel Capacity
519 Imperial gallons contained in a centre fuselage tank and wing leading edge tanks outboard of engines. Auxiliary tanks carried an additional 132 Imp gal.
Performance
Max speed (normal weight) 193 mph at 14,250 ft
Cruising speed (overload weight) 164 mph at 15,000 ft
Range with maximum bomb load 630 miles
Range with maximum fuel and 2,500 lb bomb load 1,190 miles
Climb time to 15,000 ft 44 minutes
Rate of climb 800 ft/min
Service ceiling 17,000 ft
Weights
Empty 16,234 lbs
Maximum take-off (overload) 26,500 lbs
Dimensions
Span 84ft
Length 69 ft 4 ins
Height (tail up) 15 ft 0 ins
Height (tail down) 12 ft 9 ins
Undercarriage track 18 ft 10 ins
Wing area 1,232 sq ft.
Dihedral four degrees on outer wing panels
Armament
Fraser Nash power operated nose turret containing one .303 Vickers GO machine gun with six magazines.
Armstrong Whitworth AW 38 tail turret containing one .303 Vickers GO machine gun with six magazines.
Fraser Nash FN 17 retractable ventral turret containing two .303 Browning Mk.II machine guns with 1,000 rounds per gun.
Bomb load
Provision in bomb bay for up to two 2,000 lb bombs.
Provision in wing cells for six 250 lb bombs and six 112 lb or six 120 lb bombs
Maximum bomb load 5,500 lbs

WHITLEY Mk.V

Power plant
Two Rolls Royce Merlin X 12-cylinder liquid-cooled Vee engines fitted with two-speed superchargers rated at 1,145 hp for take off and 1,101 hp at 17,750 ft driving Rotol three-bladed variable pitch propellors.
Fuel capacity
155 Imperial gallons in a centre fuselage tank with 182 Imp gal in each outer wing tank and 95 gal in each inner wing tank. Provision for two 66 Imp gal auxiliary tanks. Total capacity 837 Imp gal.
Performance
Maximum speed (normal weight) 230 mph at 16,400 ft.
Cruising speed (overload weight) 175 mph at 15,000ft.
Range with 7,000 lb bomb load 755 miles
Range with 3,750 lb bomb load 1,630 miles
Climb time to 15,000 ft 16 minutes
Rate of climb 900 ft/min
Service ceiling 20,000 ft.
Weights
Empty 19,350 lbs.
Maximum take-off (overload) 33,500 lbs.
Dimensions
Span 84 ft 0 ins
Length 72 ft 6 ins
Height (tail up) 15 ft
Height (tail down) 12 ft 9 ins
Undercarriage track 18 ft 10 ins
Wing area 1,232 sq ft
Dihedral four degrees on outer wing panels
Armament
Fraser Nash power-operated nose turret containing one .303 in Vickers GO machine gun with six magazines
Fraser Nash power-operated tail turret containing four .303 Browning machine guns (1,000 rounds per gun).
Ammunition reserve 10 magazines and 4,000 rounds.
Bomb load
Provision in bomb bay for two 2,000 lb or four 250 lb bombs.
Provision in wing cells for 12 x 250 lb bombs.
Maximum bomb load 7,000 lbs.

flew through thick cloud with ice some six inches thick on the wings. The Whitley dived to 7,000ft before pulling out, thanks to the strenuous efforts of both pilots, who then found that the rudder and elevators were immovable. A radio message was sent advising of the situation, but as the instruments were thick with ice the wireles operator could not tell if he was transmitting or not. After levelling out the Whitley was still losing height at 2,000ft per minute, the port engine having by now also stopped. This was no surprise as there was four inches of ice protruding from inside the cowling!. The leading edges of the propellers and the windscreen were also thickly coated with ice so the pilot ordered his crew to bale out but there was no reply from either the front or rear gunners as both had been knocked unconscious during the initial dive, and the order to abandon the aircraft was cancelled. By then the Whitley was in a shallow high speed dive, and the pilot opened the top hatch to try and see where they were, the co-pilot, who was at the controls peering from an open side window. They suddenly emerged some 200ft over a forest, skimmed the tree tops and crash-landed in a field, the Whitley ending up with its port wing against a tree on the far side. None of the crew was injured and they stayed overnight inside the aircraft. Next morning they realised they were in France and were quickly made welcome by the local populace.

The crew of another Whitley managed to drop their load of leaflets although oxygen starvation forced the navigator and wireless operator to lie on the floor every few minutes to rest. Heating in the cockpit was non-existant, and everyone was frozen, the pilot and navigator butting their heads on a hard surface to experience an alternative feeling to that of frostbite and lack of oxygen. Descending to 8,000ft while homeward bound did not solve the icing problem, windows becoming coated over, lumps of ice from the propeller blades striking both sides of the nose and continuous movement of the controls being necessary to prevent freezing up. Nevertheless, this gallant crew brought their Whitley safely back to base.

WHITLEYS FOR RESEARCH

Like many other types of aircraft the Whitley had its share of experimental and research programmes. During 1937 Whitley prototype K4586 flew to RAE Farnborough for experiments to determine the requirements for hard surface runways on RAF bomber airfields. The Whitley was operational from grass at a weight of 22,000lbs but the new heavy bombers then in the design stage were expected to weigh upwards of 40,000 lbs and possibly exceed a gross of 53,000 lbs. Investigation of this problem was undertaken at Farnborough by fixing a heavy steel beam between the Whitley's main undercarriage legs, extra large Dunlop wheels and tyres having been fitted and the wheel track increased from 18ft 10in to 24 ft. These experiments were non-flying, and at an initial weight of 24,000 lbs the Whitley taxied under its own power. Extra steel members could be added to the beam bringing the total weight up to 40,000 lbs and in December 1939 K4586 was taxied at that figure. Similar trials followed at Odiham and Stradishall and, despite six inch wheels tracks being created by the Whitley, it was decided that RAF bombers weighing 40,000 lbs gross could operate from grass runways with few potential problems. Even so by September 1939 hard runways had been laid at nine Bomber Command airfields and when the war ended in 1945 there were 450 British airfields incorporating tarmac or concrete runways.

Another aspect of Whitley research involved a projected wooden wing version. This came about after Armstrong Whitworth realised that there could be a possible shortage of light metals for aircraft production and plans for such an eventuality appeared in the design office. An all-wooden wing of identical dimensions to the standard metal Whitley wing was drawn up, the only metal used being steel tube for the torsion box internal bracing. This wooden Whitley wing, built and tested under static conditions, would result in a larger bomb load and increased fuel capacity if adopted. But the need to produce wooden wings for Whitleys never arose and the idea was abandoned.

In order to compete with the high-powered Rolls Royce Merlin liquid-cooled and Bristol radial air-cooled engines, Armstrong Siddeley designed a 21-cylinder air cooled radial with the cylinders arranged in three rows and in line with each other, each line having an overhead camshaft. Named Deerhound, this very compact engine was tested in 1936 and produced 1,115 hp, it being expected that further improvements would increase this to 1,500 hp. To accommodate this powerplant Armstrong Whitworth initially came up with the AW.39 design, an update of the Whitley with an exceptionally thick wing in which a pair of Deerhound engines would be buried. It was heavier than the Whitley, with a Boulton Paul dorsal turret and a 5,000 lb bomb load. A cruising speed of 230 mph was envisaged at 15,000ft with a range of 1,500 miles. In the event this design was dropped and a standard Whitley bomber, the 27th production Mk.II, K7243, served as the testbed.

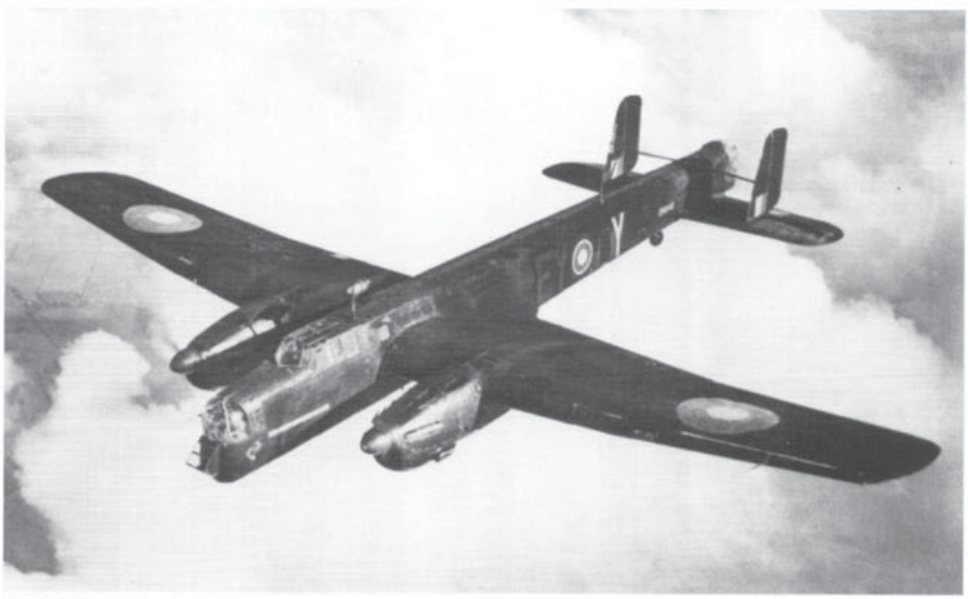
With twin Deerhound engines installed this Whitley took off from Baginton in the first week of January 1939 with Charles Turner-Hughes at the controls. The Deerhound's output was increased in development stages to 1,350 hp, but it was plagued by persistent overheating problems caused partly by a reverse-flow cooling system whereby air entered the cowling at the rear of the engine by way of a frontal scoop. Cylinder finning was also poor, and a modified cylinder was under development when, in early March 1940, K7243 crashed with fatal results owing to its RAF pilot inadvertently winding the tail trim fully back. With this accident the Deerhound engine's future was bleak and any further development was abandoned.

With the exception of Mk. Vs, all Whitleys were declared obsolete in 1944, the Mk.Vs being similarly classed in 1945, although the last Mk.V built, LA951 survived until 1947 after being retained by Amstrong Whitworth to tow their AW.52 tailless glider. It is sad that no Whitley has survived for, despite lacking glamour and limelight, this grand old aircraft helped to lay the foundation upon which the RAF's awesome night bombing offensive during World War 2 was built.

Arnstrong Whitworth Whitley kits and accessories

Scale	Type	Manufacturer	Reference	Remarks
1:72	Armstrong Whitworth Whitley V	Frog	-	Only available on second hand market
1:72	Armstrong Whitworth Whitley V	Modelcraft	72030	Complete kit
1:72	Armstrong Whitworth Whitley VII	Modelcraft	72031	Complete kit
1:72	Armstrong Whitworth Whitley	Airwaves	2160	Parts to make up various Whitley variants with cockpit accessories

Whitley tailpiece. Showing a legacy of operational flying with No. 78 Squadron, at the time this picture was taken Z6640 was in use as a training aircraft with No 1484 Flight. (Author)



Squadron badge of
No. 10 Squadron

Armstrong Whitworth Whitley Mk.I K7195, 10:F of No. 10 Squadron based at Dishforth in 1937.

Armstrong Whitworth Whitley Mk.II K7244, LT:G of No. 7 Squadron based at Finningley in 1938. Crashed at Abersoch Bay when with No.9 BGS on 19 February 1941.

Armstrong Whitworth Whitley Mk.III K8979, MH:B of No. 51 Squadron at Linton-on-Ouse. It later became a Maintenance airframe in December 1942 after serving with No. 58 Squadron and various training units.

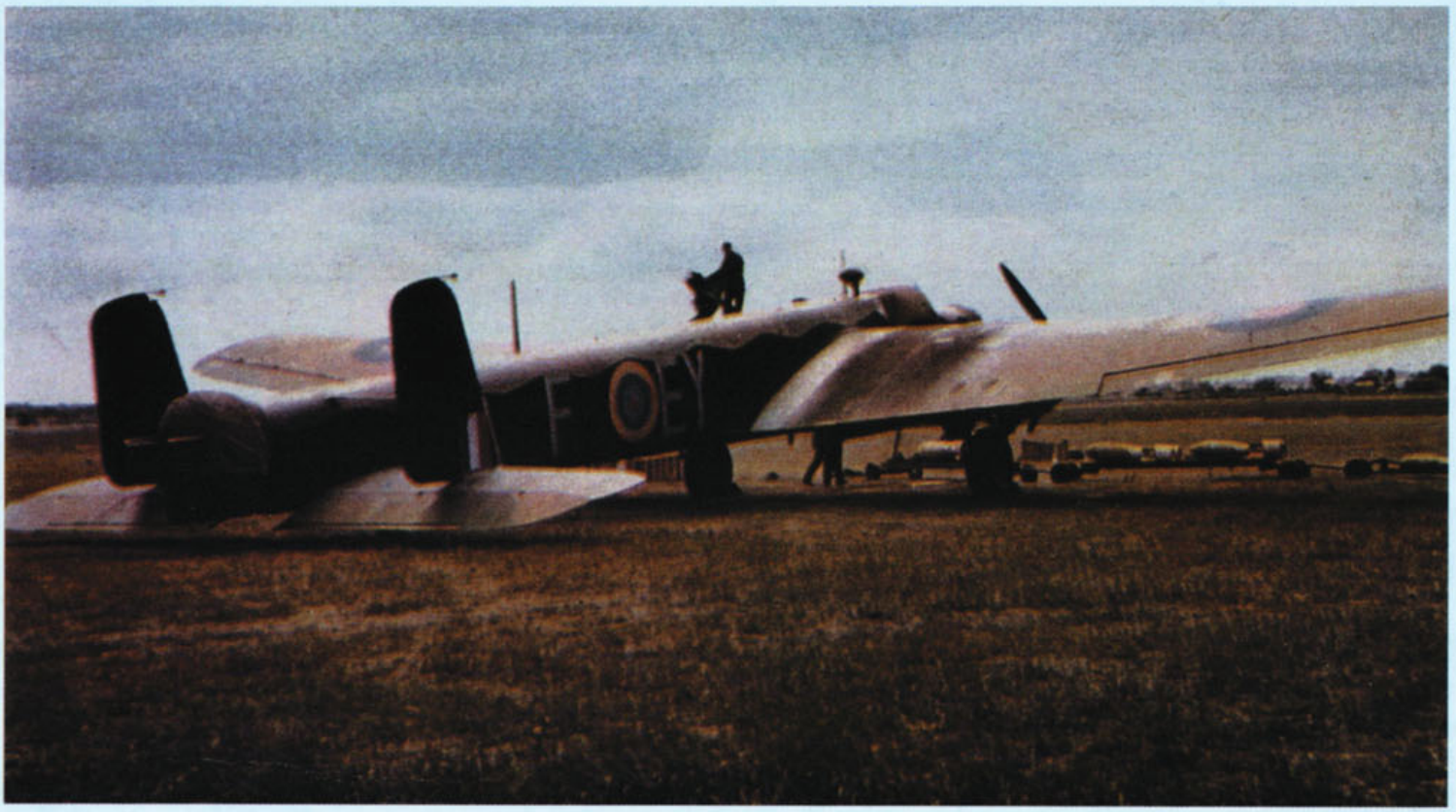
Armstrong Whitworth Whitley Mk.V P5018, ZA:Q of No. 10 Squadron, Leeming, April-May 1941 for operations over Norway and Denmark.

Armstrong Whitworth Whitley Mk.V Z9466, ZG:Q of No. 10 OTU, Abingdon, 1942. Crashed when landing at Stanton Harcourt, June 1944.

Armstrong Whitworth Whitley Mk.VII Z9138, WL:R of No. 612 Squadron, Coastal Command, Chivenor, 1943.

Above: Members of the Parachute Regiment under training. The Whitley, coded PX:O, seen in the background, belonged to No. 295 Squadron and was used for parachute jump training until 1943 when based at Netheravon, jumps taking place over Salisbury Plain. Each paratrooper was equipped with a main and stand-by chute in case of accident (IWM)

Below: Six weeks after this picture was taken the Whitley Mk.V Z6577 , EY-F shown, failed to return out of a force of 29 that attempted to bomb rail targets in the vicinity of Cologne on the night of 16-17 August 1941. Losses of Whitleys were high mostly due to the fact that operationally they could not fly higher than 15,000 ft with a full bomb load.



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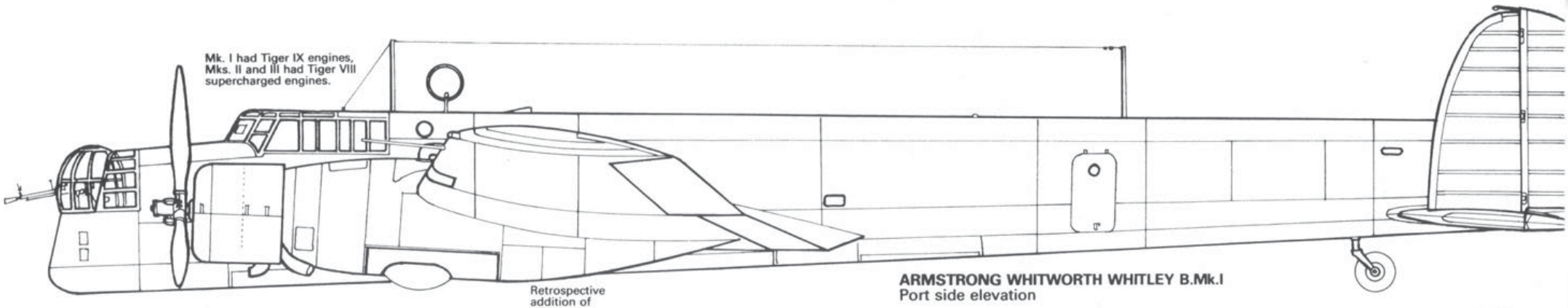
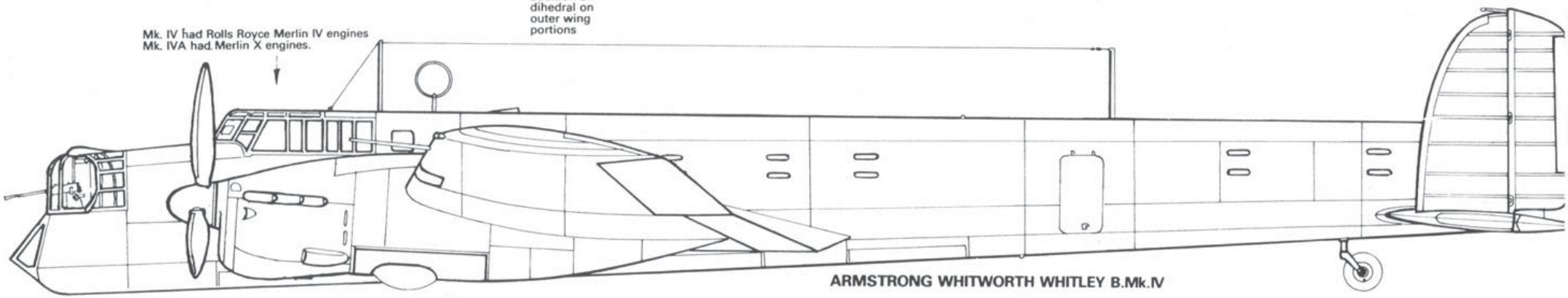
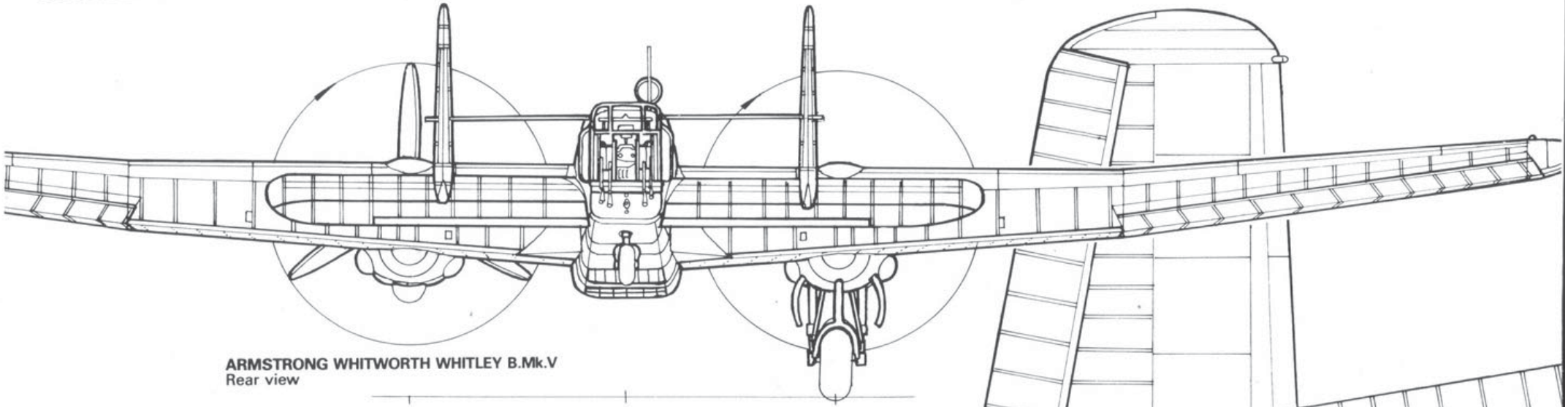


ARMSTRONG WHITWORTH WHITLEY B.Mk.I
Port side elevation



ARMSTRONG WHITWORTH WHITLEY B.Mk.IV

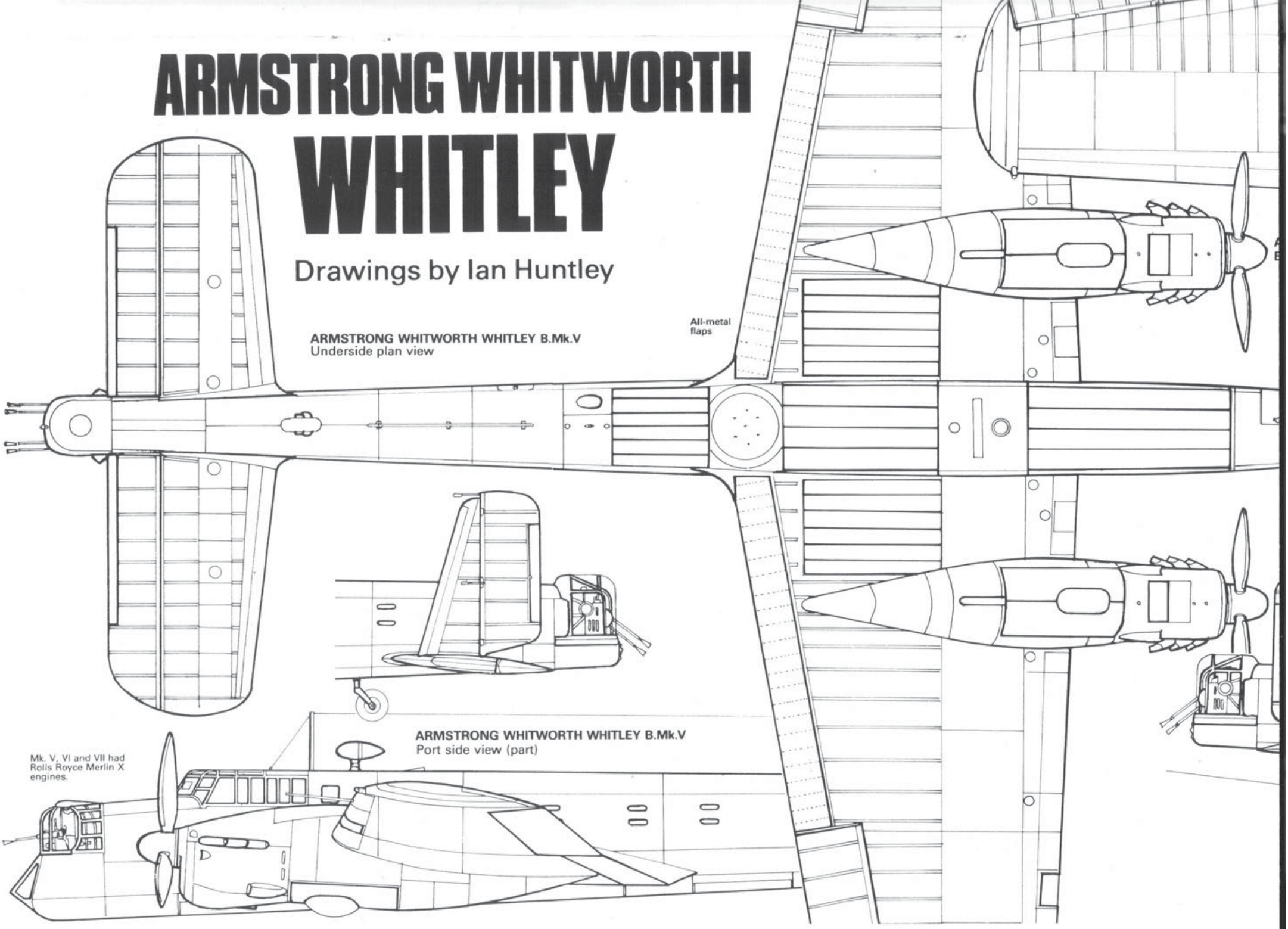


ARMSTRONG WHITWORTH WHITLEY B.Mk.V
Rear view

ARMSTRONG WHITWORTH

ARMSTRONG WHITWORTH WHITLEY

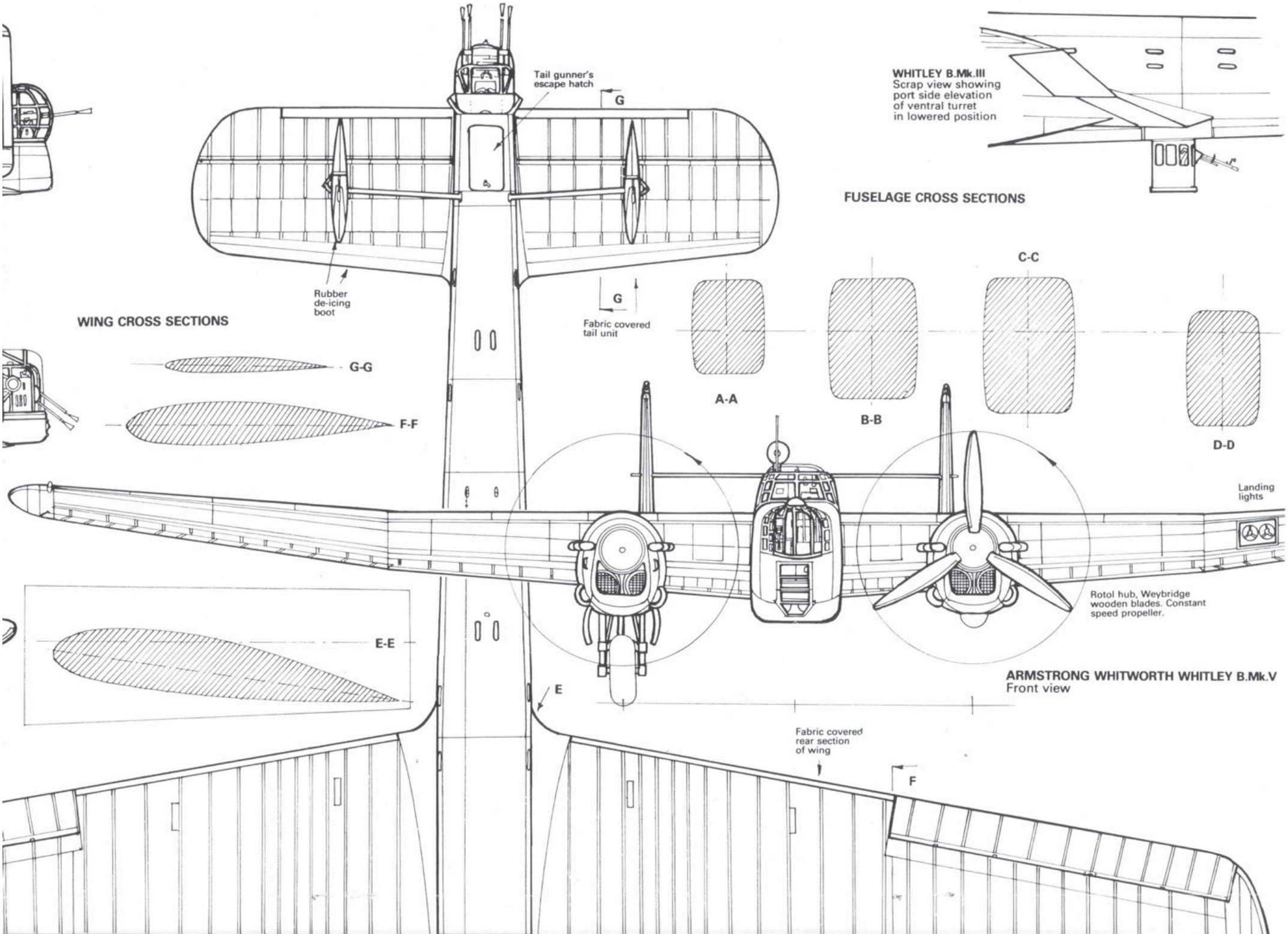
Drawings by Ian Huntley



ARMSTRONG WHITWORTH WHITLEY B.Mk.V
Underside plan view

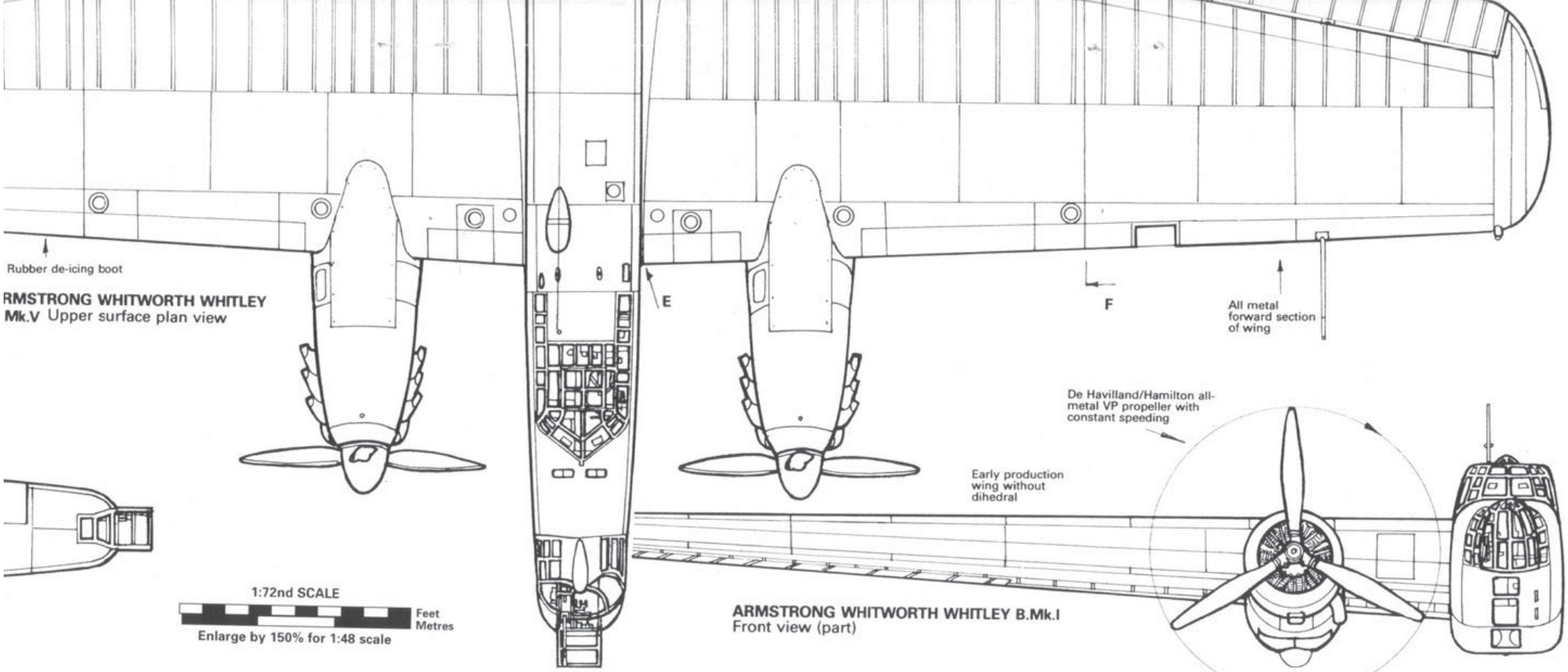
ARMSTRONG WHITWORTH WHITLEY B.Mk.V
Port side view (part)

Mk. V, VI and VII had Rolls Royce Merlin X engines.



WHITLEY B.Mk.III
Scrap view showing port side elevation of ventral turret in lowered position

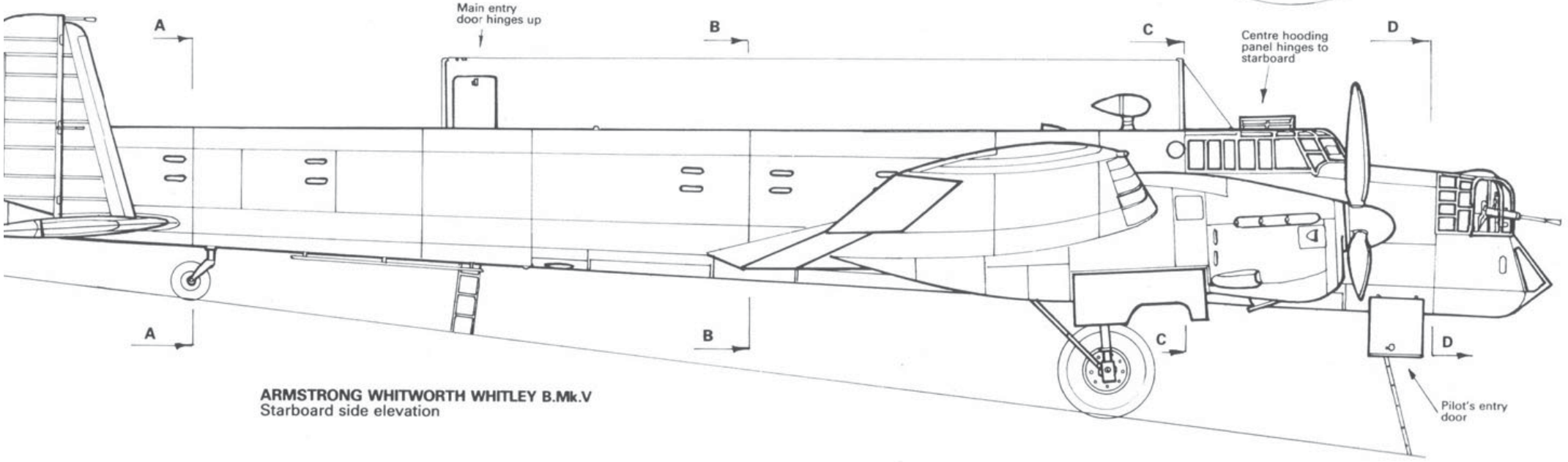
ARMSTRONG WHITWORTH WHITLEY B.Mk.V
Front view



RMSTRONG WHITWORTH WHITLEY
Mk.V Upper surface plan view

1:72nd SCALE
Feet
Metres
Enlarge by 150% for 1:48 scale

ARMSTRONG WHITWORTH WHITLEY B.Mk.I
Front view (part)



ARMSTRONG WHITWORTH WHITLEY B.Mk.V
Starboard side elevation

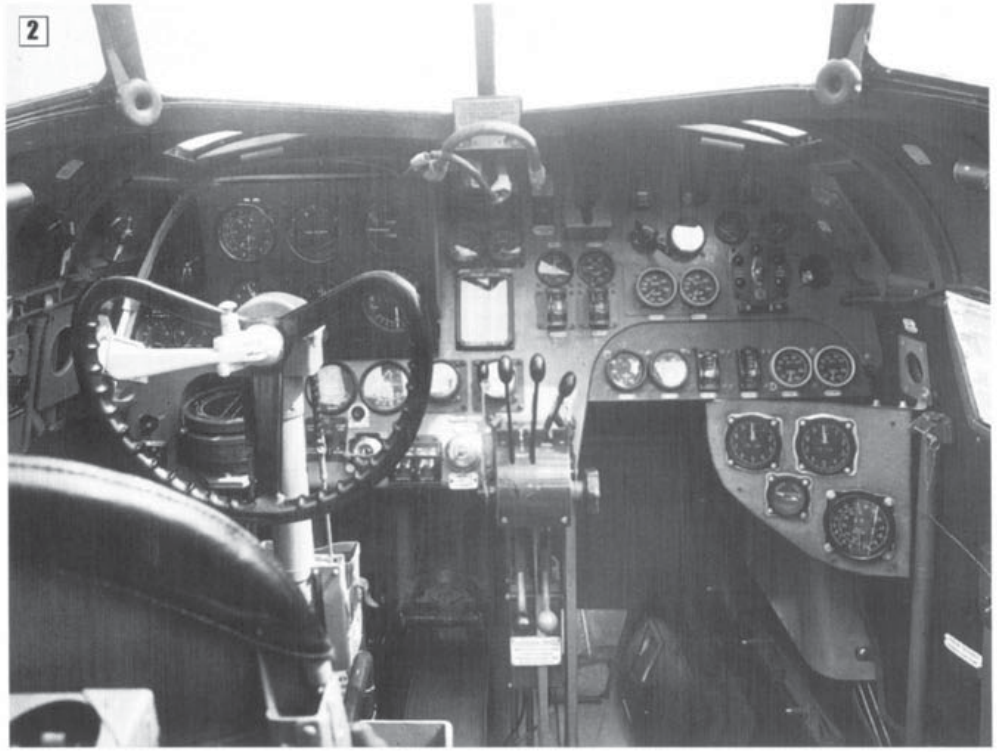
1

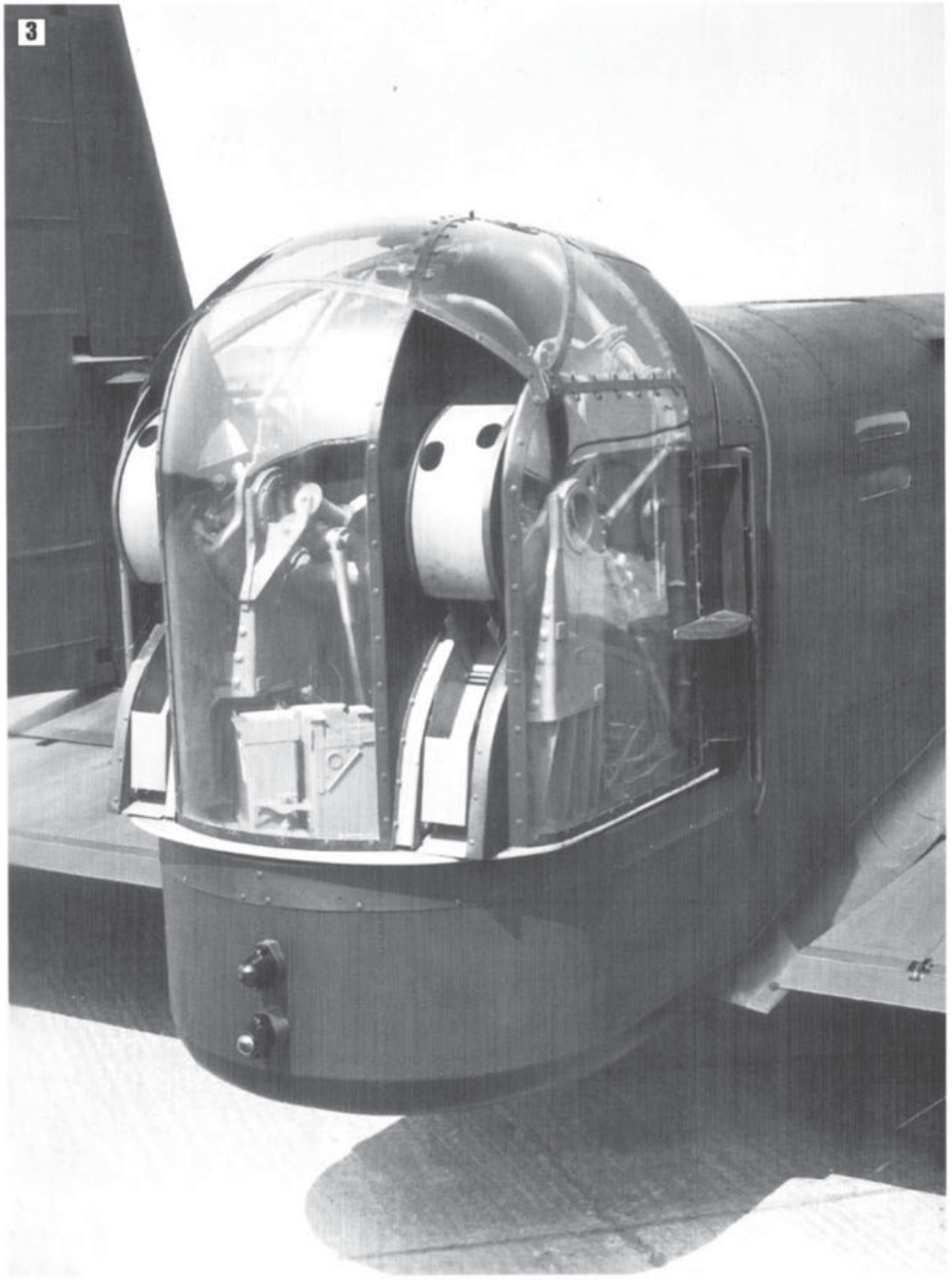
Armstrong Whitworth

WHITLEY

A collection of detail and general interest pictures

In detail pictures from the Ray Williams archives





1. This colour picture was obviously taken at the same time as that on the front cover. It features Whitley Mk.V,Z6743, of No. 77 Squadron being serviced at RAF Middleton St.George in 1941. Of special interest are the types of clothing worn by the aircrew. Sidcot suite, thick knee-high boots and Mae Wests were standard for that time in the war. 2. The instrument panel and front cockpit of a Whitley Mk.V. Compare this to the cockpit picture of the Mk.I on page 25 and it will be seen that there is very little difference apart from the single pilot seat.Several instruments including two altimeters are duplicated on the right hand side of the panel with the full blind flying instruments in front of the pilot. Engine, fuel, oil and temperature guages are top right. 3. A three-quarter view of the Whitley Mk.V's rear Fraser Nash power-operated four-gun turret. The .303 Browning machine guns have been removed but the ammunition boxes and the cartridge ejection chutes can be seen . Just behing the turret on the upper fuselage is the gunner's escape hatch.

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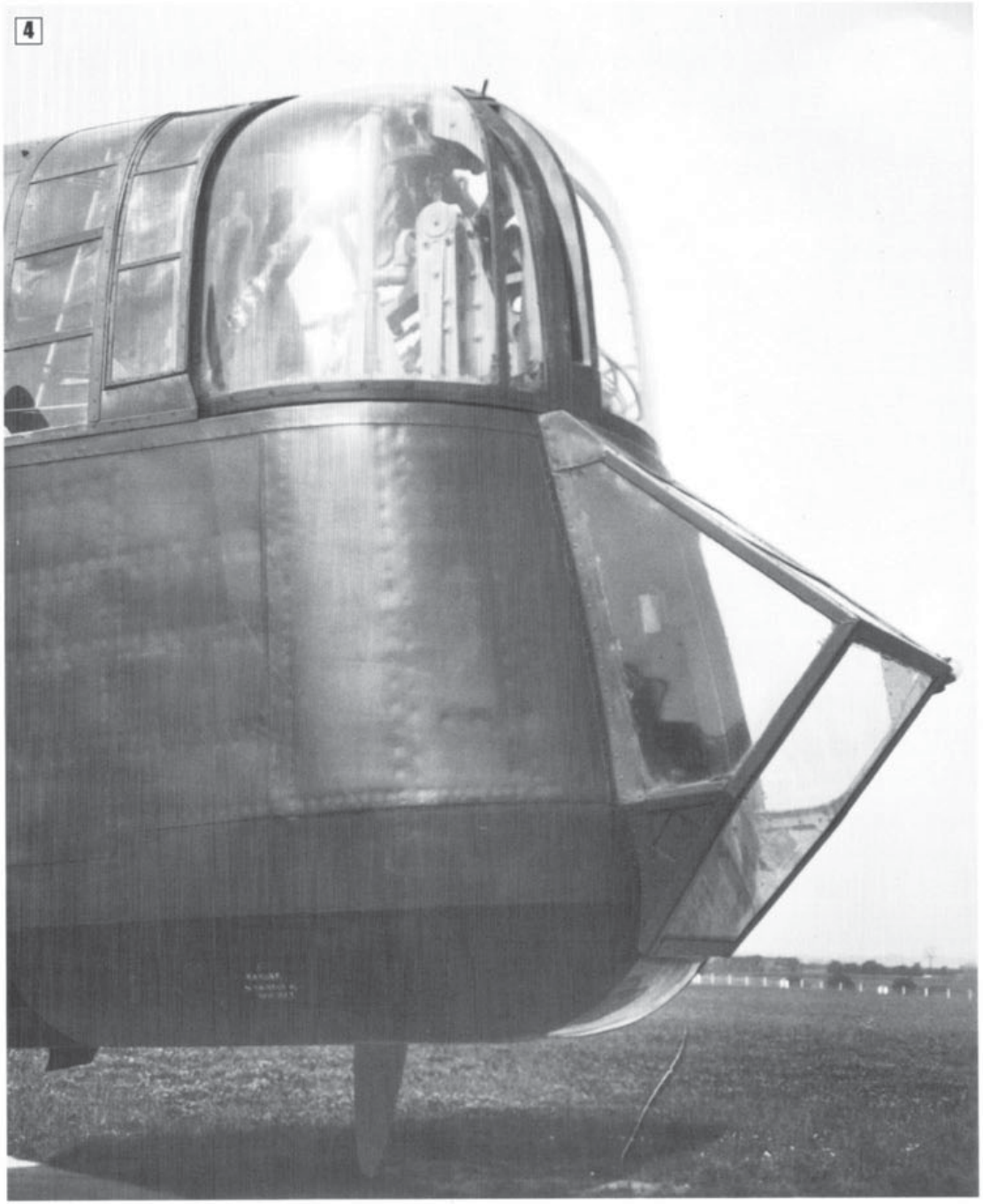

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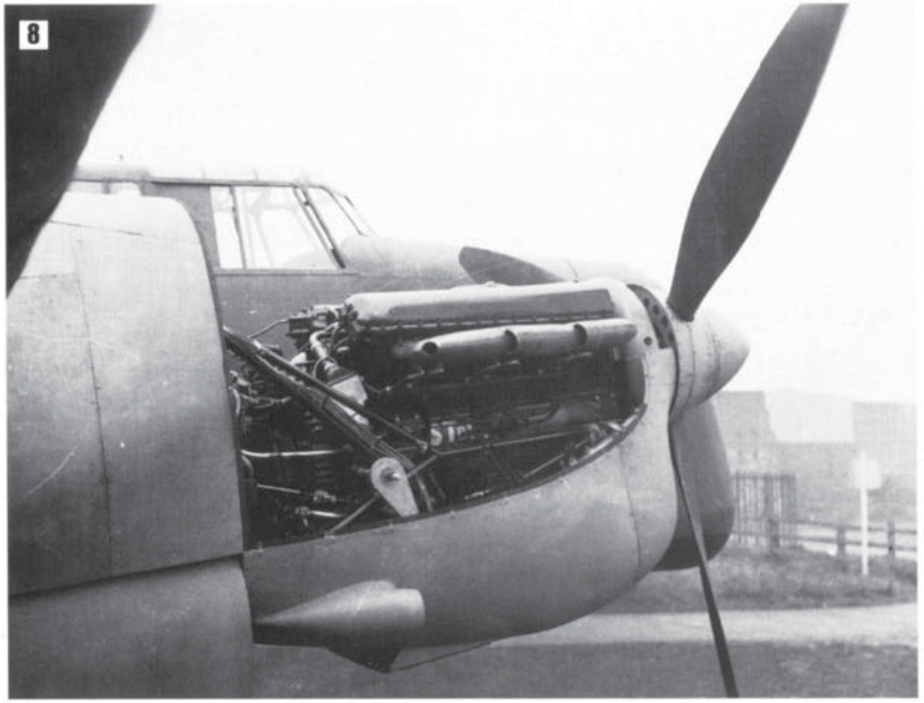

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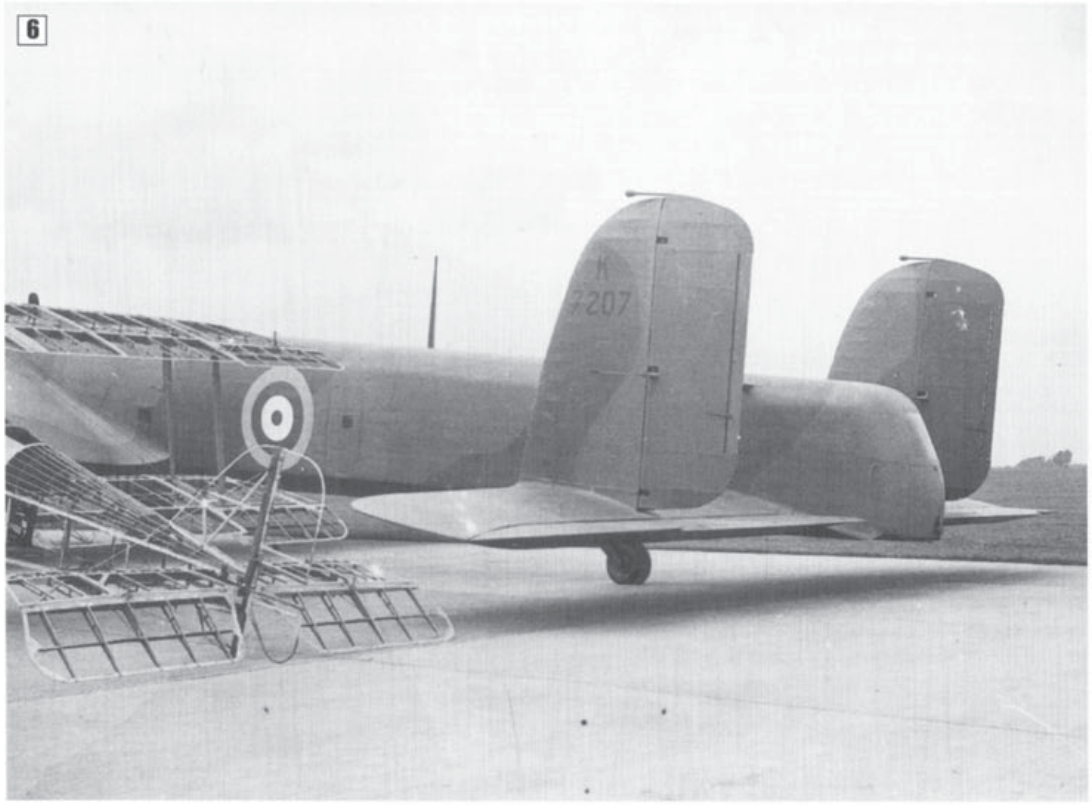
4. The nose of the Whitley Mk.V showing the detail of the front turret but without its single nachine gun fitted. The bomb aimer's panel is also well illustrated. 5. These two Whitley Mk. Vs are from No. 77 Squadron in 1940. (Author) 6. A comparision in tails. The Whitley Mk.I was one of those that had the front and rear turrets faired over because of the pre-war lack of gun turrets. The aircraft in the foreground is an SE.5A. (Author) 7,8 and 9. Three views of K7208, the prototype Whitley used for the installation of Merlin II engines. The aircraft flew with these left in primer finish. (Rolls Royce). 10. Parachutists leaving a Whitley Mk.III. (Author) 11. Whitley Mk.VII LA794, was one of the last ten to be built.

6



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