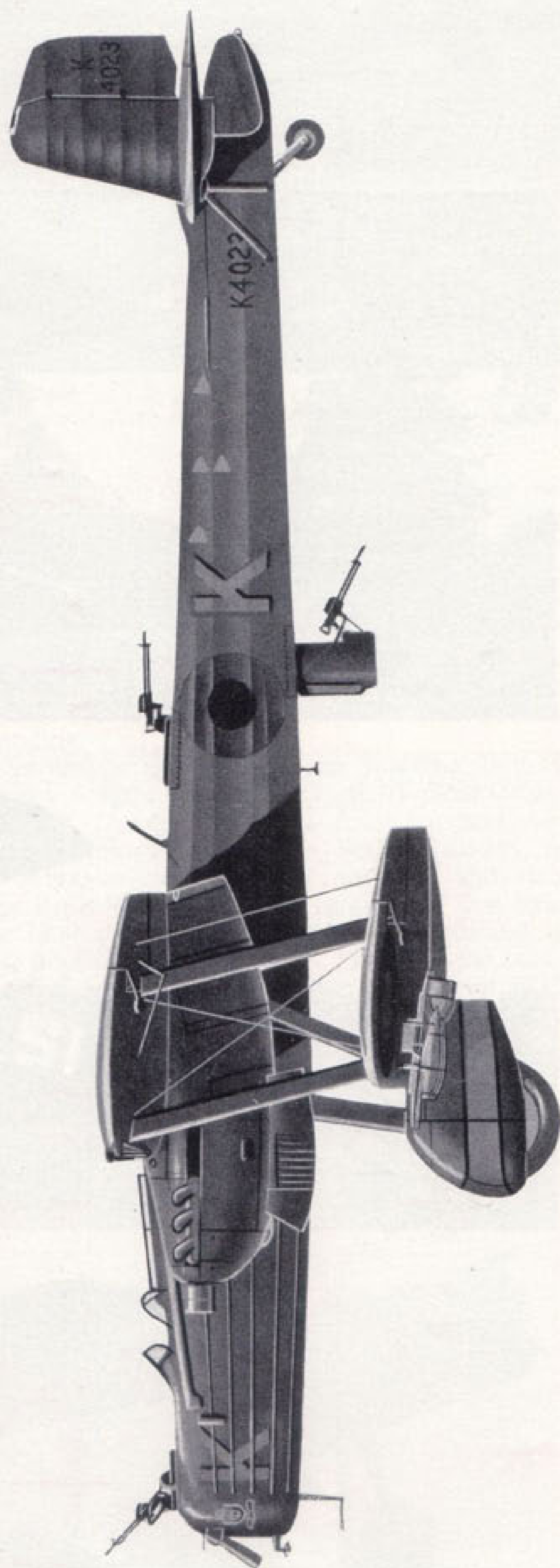


# PROFILE PUBLICATIONS

## The Handley Page Heyford

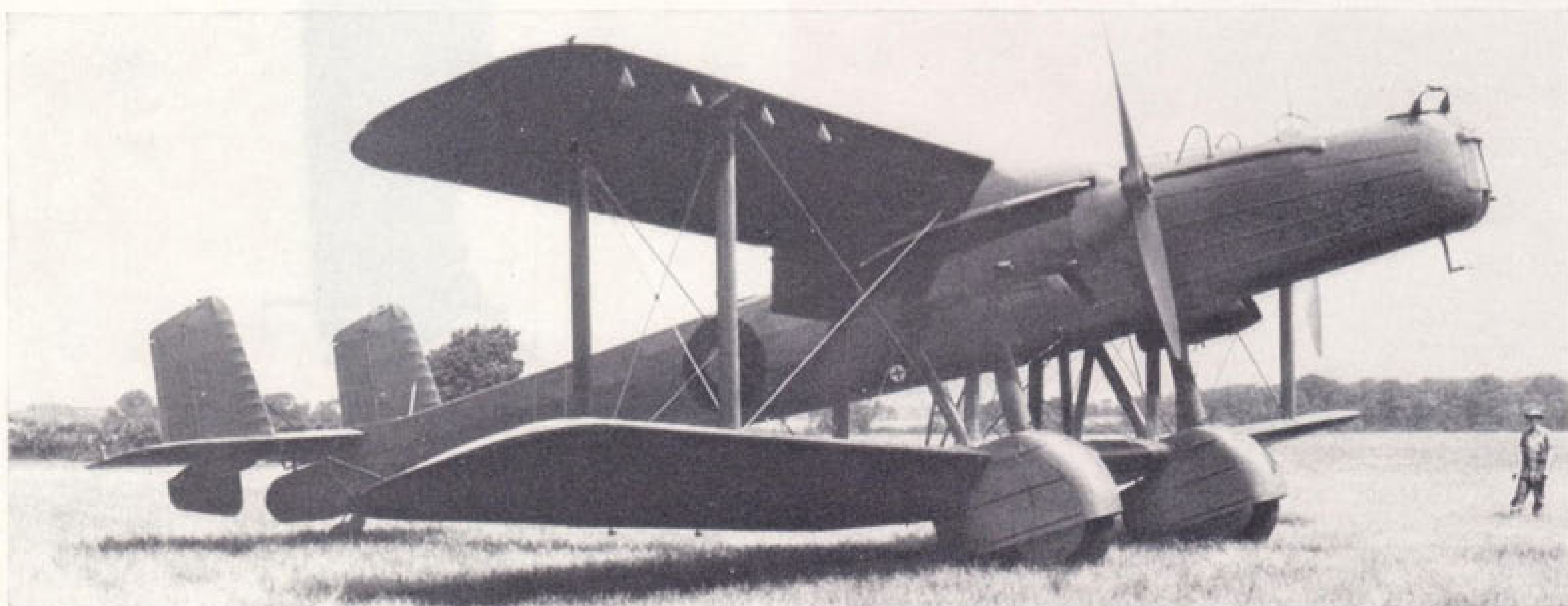
**NUMBER**

**182**





(Left) The H.P.38, J9130, as originally flown, seen at Radlett in June 1930 with S/Ldr. T. H. England at the controls. (Except where otherwise stated, all photographs in this Profile are courtesy "Flight International"). (Below, top to bottom): The H.P.38 at Radlett in June 1930 in company with an Hinaidi, its immediate lineal precursor. Maj. Cordes revs up the prototype's Kestrels for take-off at the R.A.F. Display, Hendon, 25th June 1932. Note the machine's modified exhausts ("ram's horn" type) and wheel spats. The first production H.P.50 Heyford, K3489, in original form 23rd June 1933 shortly before appearing at the Hendon Display.



# The Handley Page Heyford



by Philip J. R. Moyes

*A delightful study of two Heyford I's of No. 99 Squadron (K3502 'M' and K3492 'N') at Mildenhall, being prepared for a night raid during the 1935 Air Exercises. Note that crews are wearing electrically-heated flying suits and Heyfords are carrying reconnaissance flares beneath lower wing. (Photo: "Aeroplane")*

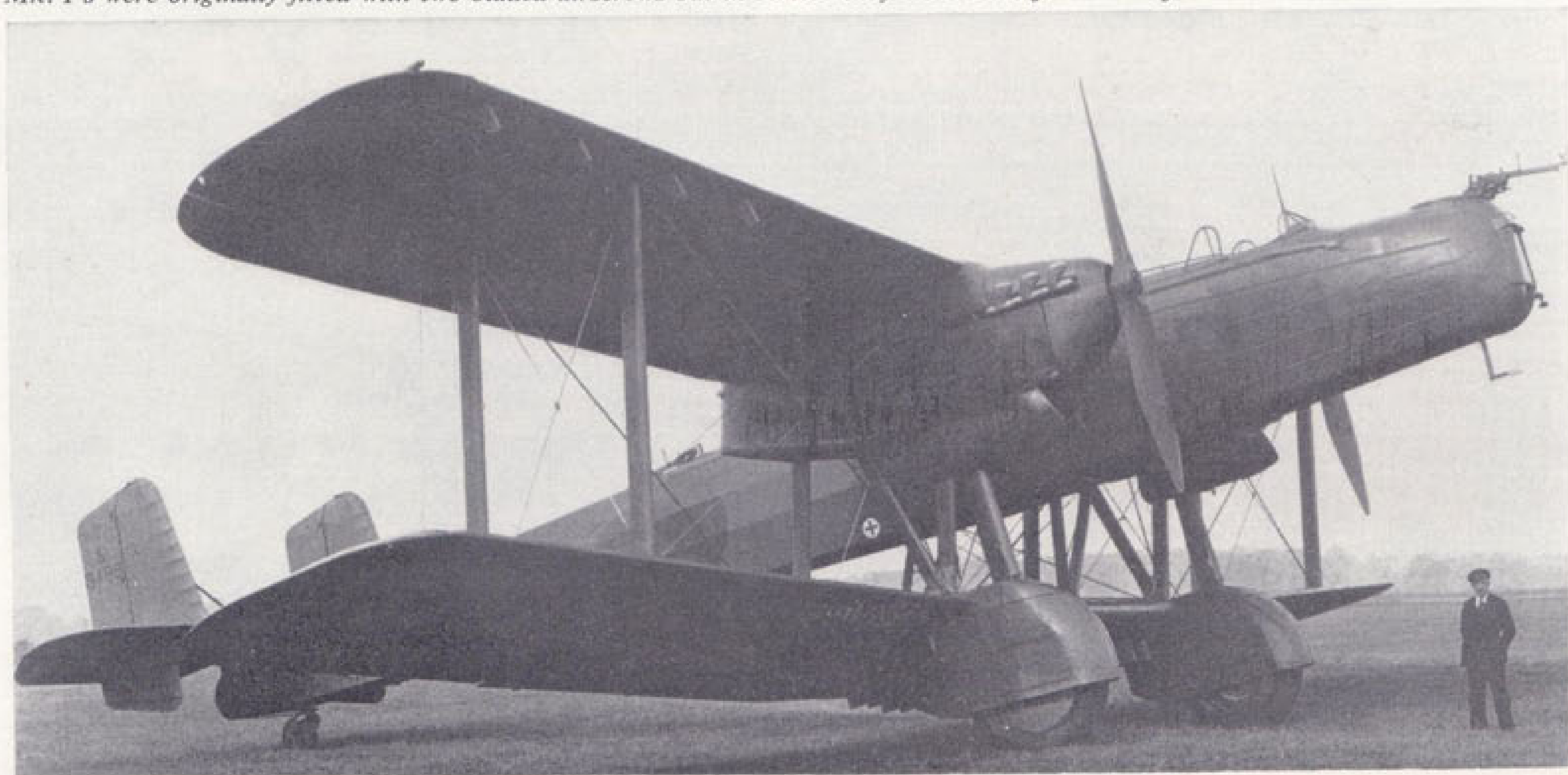
Last of the R.A.F.'s biplane heavy bombers, the Heyford was built to the same 1927 specification (B.19/27) as the Fairey Hendon, the first of the big monoplane bombers, but unlike the latter (whose production was long delayed) it was destined to serve with no less than eleven first-line squadrons. Compared with its predecessors, the Handley Page Hinair and the Vickers Virginia, the Heyford was a much cleaner-lined machine and it introduced many original features including a rotating and retractable ventral "dustbin" turret.

The Heyford was termed "express bomber" by Handley Page because not only could it carry a considerable load of bombs at high speed, but its arrangements for ground servicing were such that refuelling, re-arming and running adjustments could all be undertaken simultaneously in the shortest possible time. The makers claimed that the machine could be turned round after a 900 mile flight in the space of half-an-hour.

The arrangement of the fuselage abutting under the surface of the top wing gave the crew a field of vision hitherto unknown in a bomber and this, with the wide field of fire enjoyed by the gunners, combined in the Heyford some of the advantages of a monoplane with the manoeuvrability of a biplane. However, it meant that the pilot's cockpit was a long way from the ground. The pilot, in fact, sat 17 feet up, which meant that much practice was required to make a good landing.

The prototype of the Heyford was the H.P.38 which was designed by Mr. G. R. Volkert (then H.P.'s Chief Designer) and his team to meet Air Ministry Specification B.19/27. Serialled *J9130*, it had a fabric-covered all-metal airframe and two 550 h.p. Rolls-Royce Kestrel II engines; it first flew in June 1930 at Handley Page's then-new airfield at Radlett, piloted by S/Ldr. T. H. England, the company's chief test pilot. During the summer of 1932 *J9130* appeared in the New Types Park at the R.A.F.

*The first production Heyford, K3489, 25th November 1933, after modifications had been made to wheel spats and exhausts. Heyford Mk. I's were originally fitted with two-bladed airscrews but in service they were retro-fitted with four-bladers.*





*Big cloth bomber banking with ease. A splendid action study of the first production Heyford at rooftop height over Radlett airfield, 25th November 1933.*

Display, Hendon, and was also test flown together with the Fairey B.19/27 by pilots of several bomber squadrons, including Nos. 9 and 99. No. 99 considered the H.P. 38 "nice to fly and easy to handle but doubts were expressed concerning the strength of the undercarriage\*." The doubts were well-founded, for on 10th June, 1932, the H.P.'s undercarriage collapsed at Upper Heyford "for no apparent reason†" following a flying demonstration before the Air Member for Supply and Research and the A.O.C. Western Bombing Area. The machine was repaired only to be crashed on 8th July by a No. 10 Squadron pilot at the Armament Practice Camp at North Coates Fitties; it hit an embankment on the edge of the airfield, caught fire and was totally destroyed—fortunately

\* No. 99 Sqn.'s Operations Record Book.

† No. 9 Sqn.'s O.R.B.

K3503, the interim Heyford I/IA which served as the prototype Mk. II pictured at Radlett on 21st June 1934, shortly before appearing in that year's R.A.F. Display at Hendon. This aircraft was later converted to Mk. III standard and at some time served with No. 166 Squadron.

without causing injuries to personnel.

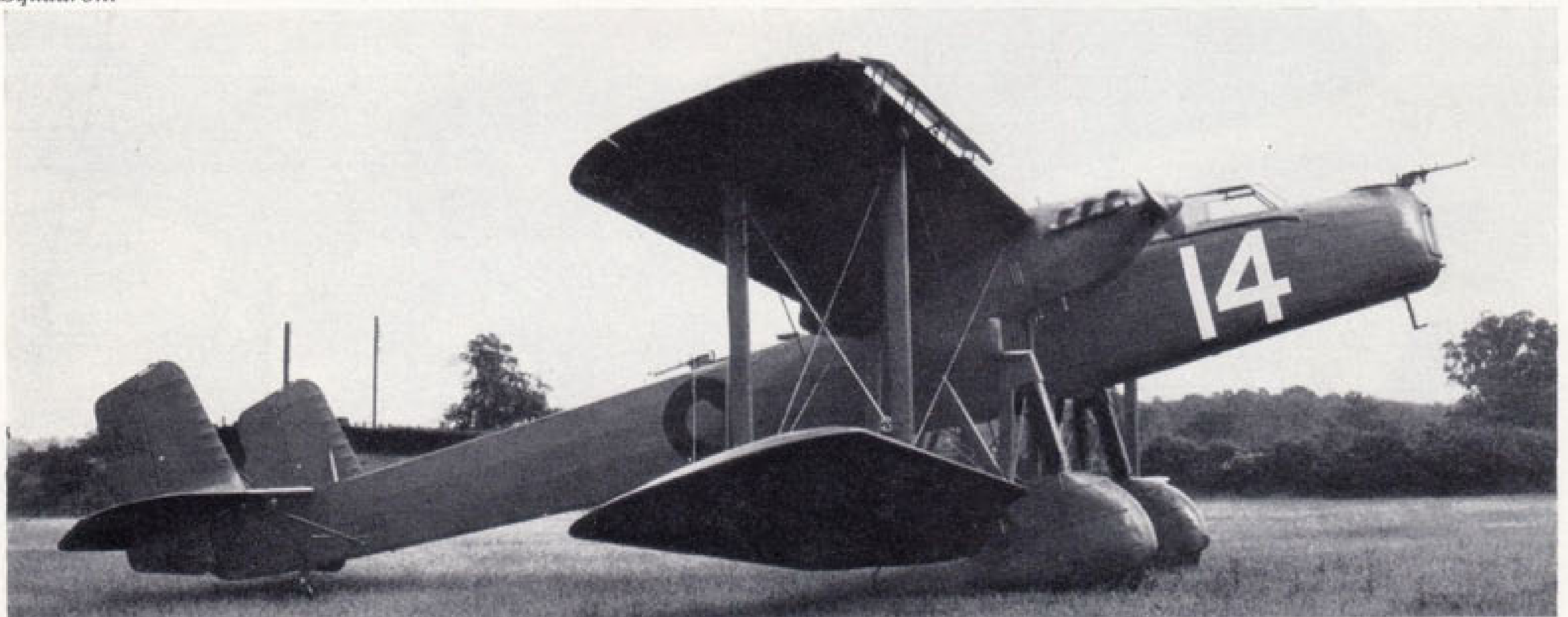
By this time the H.P.38 had been accepted by the Air Ministry and an order placed for a production version known as the H.P.50 (to B.23/32), eventually named Heyford after the bomber station at Upper Heyford, Oxfordshire. The production Mk. I incorporated various improvements. For example, the undercarriage was not only strengthened but now featured deeper spats which covered the lower part of the wheels. Smoother cowlings covered the two 575 h.p. Kestrel IIIS or IIIS-5 engines in the Mk. I, short "ram's horn" exhaust manifolds replaced the long exhausts of the H.P.38 and the underslung radiator beneath each engine was enclosed in a tunnel housing.

The fuselage of the Heyford was made in four main sections, joined together by bolts. The front, monocoque, portion was built up of duralumin formers and longerons covered with Alclad; the skin was reinforced by external stringers and the side of the rear half of the monocoque was reinforced by an internal diagonal member. The after sections of the fuselage were built up from steel tubular longerons and struts with tie-rod cross-bracing and were fabric-covered. The extreme end of the fuselage was faired off by an aluminium monocoque streamlined box, hinged to the main structure so as to allow access to the complete interior of the tail. The fuselage was carried over the bottom wing centre section by two metal vee struts.

The wings were of duralumin construction with fabric covering. They were equal in span and chord and the top wings were fitted with Handley Page automatic slots. Both sets of wings were in three sections, two outer and one centre section. The lower centre section was deep to accommodate the bombs and was suitably reinforced. The interplane struts were streamlined metal tubes.



*Another view of K3489 after modification.*



The tail unit was of the strut-braced monoplane type with twin-balanced rudders and strut-braced fins. It was metal-framed with fabric covering, and the angle of incidence of the tailplane was adjustable in flight.

The undercarriage comprised twin single units with wheels (Palmer, with pneumatically-operated brakes) faired into the lower wing. The telescopic oleo struts were hinged to the front interplane strut inside the engine mounting. Each wheel was carried on a fork, and the single telescopic strut allowed the wheel to rise and fall, together with its spat. The tailwheel was of the fully-castoring type and was fitted with a low-pressure tyre.

For normal operations the Heyford carried a crew of four comprising (1) pilot; (2) navigator, combining duties of bomb-aimer and front gunner; (3) wireless operator (who in a defensive action doubled as mid-upper gunner); and (4) rear gunner, normally located in the mid-upper gun position, but manning the ventral "dustbin" turret in a defensive action. The crew had quick and unimpeded access to one another, and were provided with intercommunication apparatus. Dual control could be fitted alongside the first pilot's seat, for instructional purposes; the extra set of controls was built up as a complete unit and could be installed within half-an-hour.

Entry into the Heyford was gained via a small trap door in the fuselage floor, above the trailing edge of the lower centre section. Steps, fitted on the vee struts which supported the fuselage from the lower wing, rendered access to the interior very easy. Aft of the trapdoor were the rear gunner's cockpit and the retractable "dustbin" turret, while ahead stretched the front fuselage with, first, a large stowage compartment, then navigation and wireless compartment, pilot's cockpit, and finally, in the extreme nose, the front gunner's compartment (see cutaway drawing below).

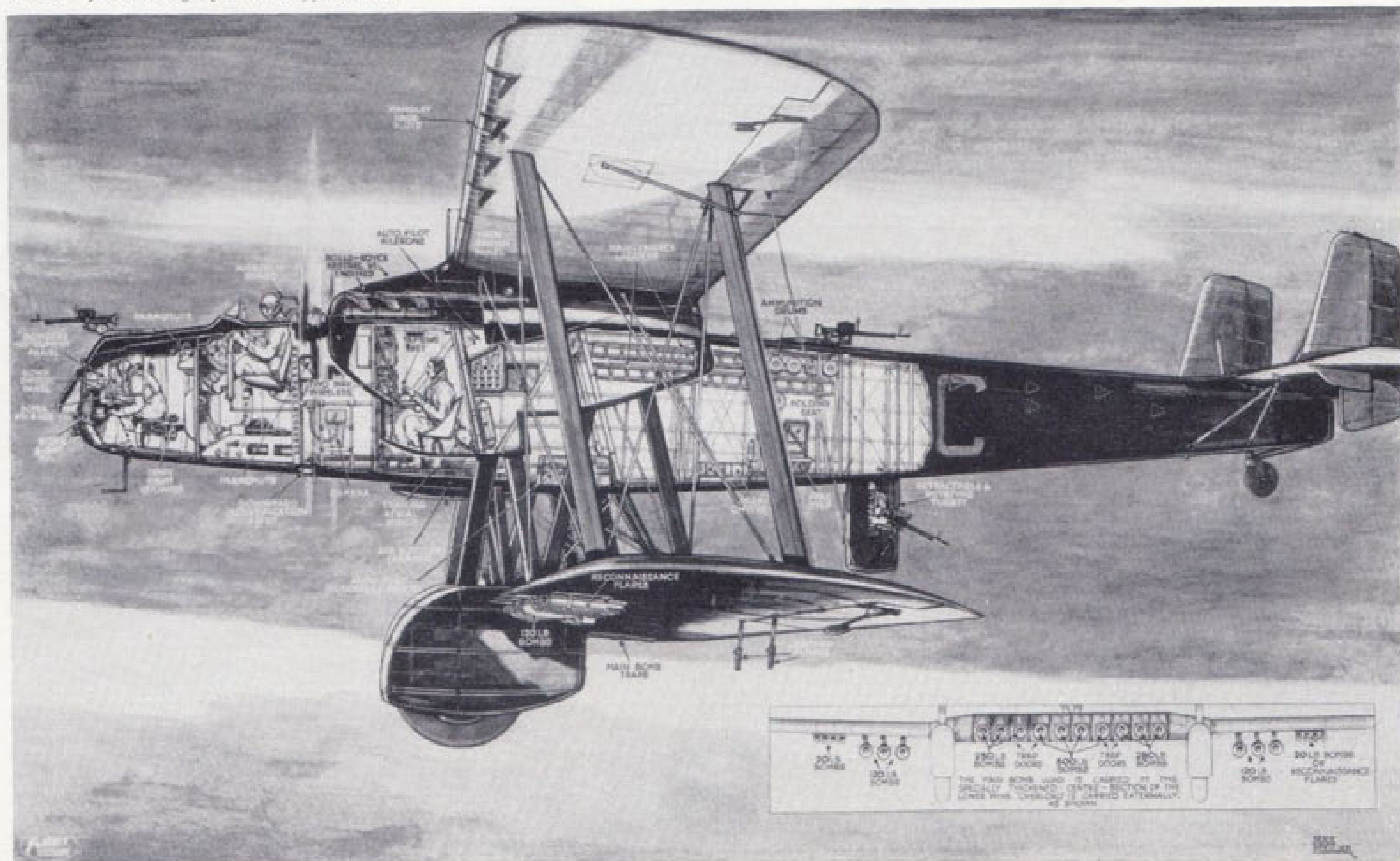
In the rear gunner's compartment there was a tip-up seat on the starboard side, ammunition drums on pegs, points for the electric heating of flying clothing, etc., and so forth. The floor of this compartment was slightly raised, and to the rear was the retractable gun turret, which was entered from the gunner's compartment and lowered by him. When in the "down" position the turret could be rotated through a considerable range. In the front of the gunner's cockpit was a large compartment used for stowing all manner of gear, but with ample gangway space. The floor was corrugated aluminium with wooden strips, for walking on, let into the corrugations.

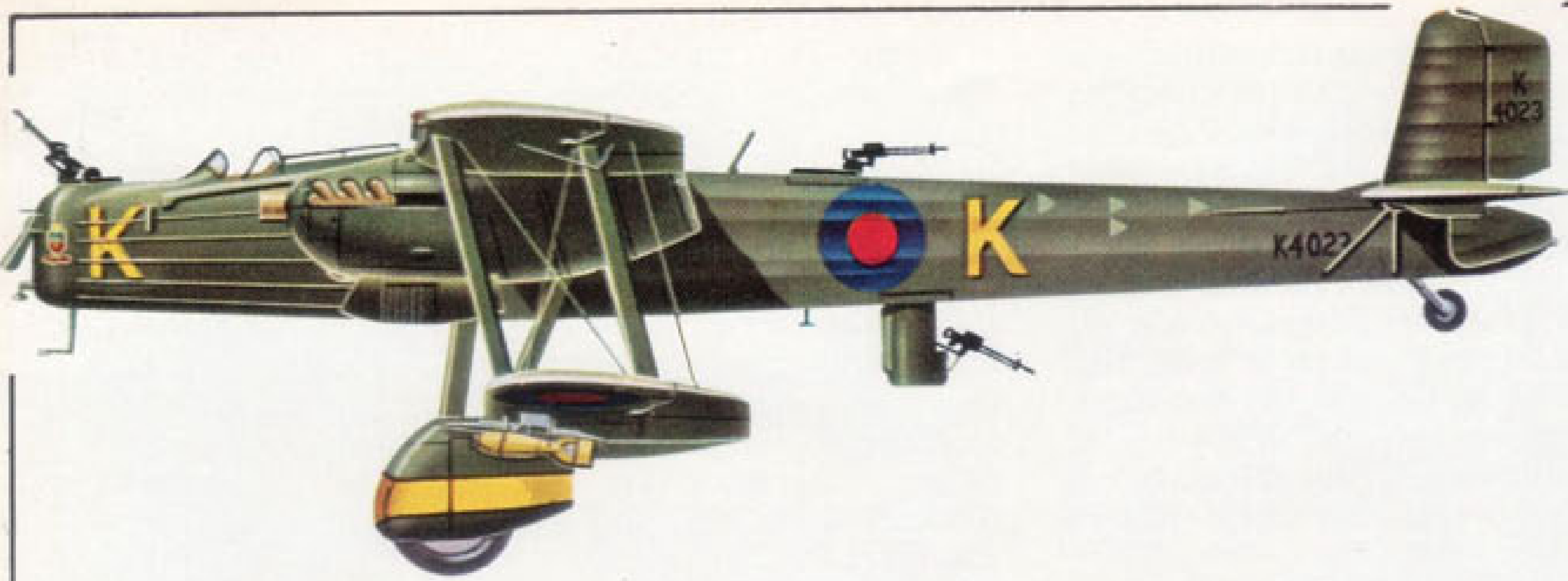
Immediately ahead of the plane of the front spars was the navigation and wireless compartment, with revolving seat and holding table on the port side. Forward of the table, and also on the port side, were shelves on tubular stanchions carrying the wireless equipment, the battery of which was placed on the floor under the set.

Separating the wireless compartment from the pilot's cockpit was a half bulkhead, on the port side. On the inner edge of this bulkhead was the very large tail-trimming wheel. On the starboard was a seat for the second pilot. This was designed in such a way that it folded flat against the wall, providing a free passageway to the nose. On the port side, just ahead of the bulkhead, was the seat for the first pilot. This was divided into two halves, the half nearest the outer wall being fixed, while the inner half hinged down to enable the pilot to get into his seat between the back rest, the rim of the tail-trimming wheel, and the engine-control pillar rising from the floor. Once in his place, the pilot raised the inner half of the seat which was provided with a catch.

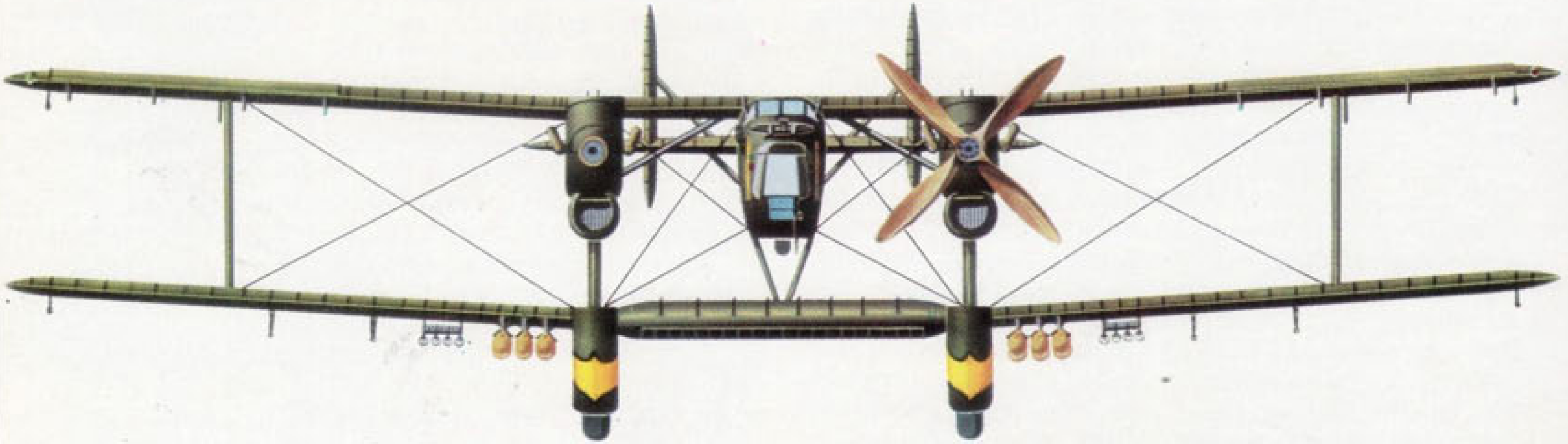
A bulkhead with a two-fold door on the starboard side divided the pilot's cockpit from the front gunner's cockpit. This was provided with a "piano stool"

*Cutaway drawing of the Heyford IA.*

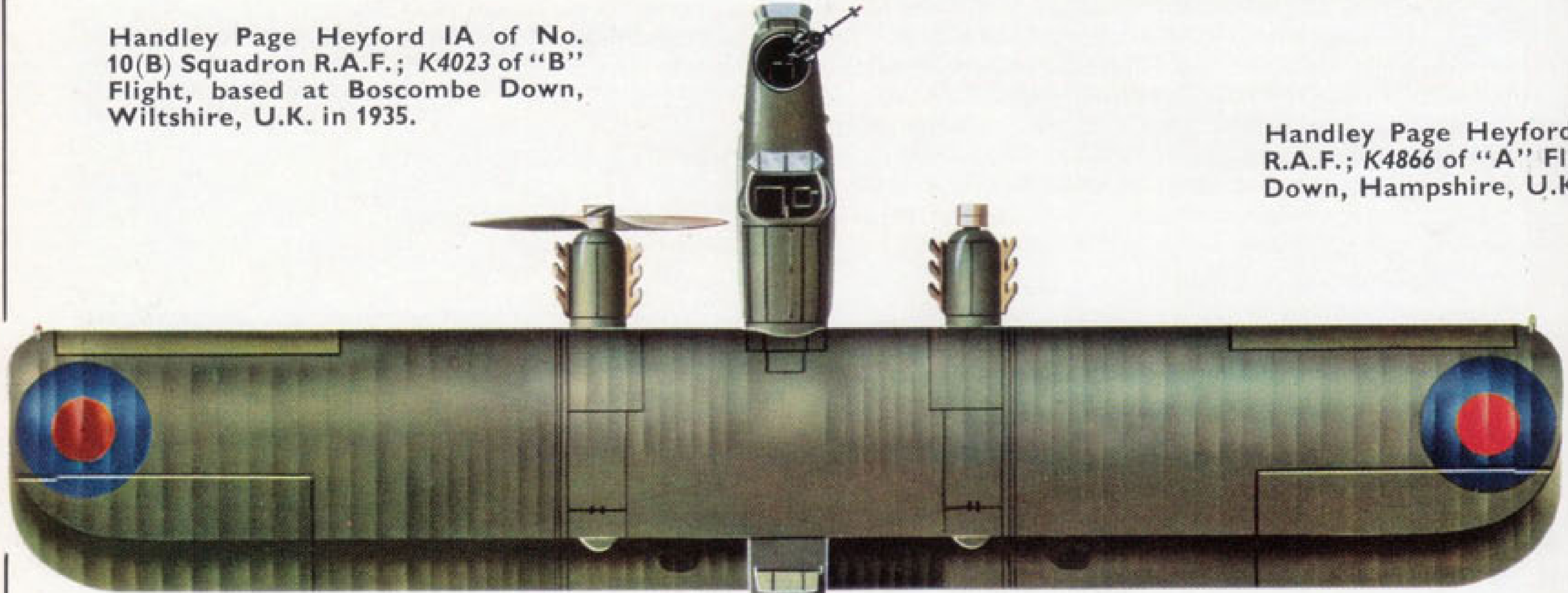




Handley Page Heyford IA of No. 10(B) Squadron R.A.F.; K4023 of "B" Flight, based at Boscombe Down, Wiltshire, U.K. in 1935.

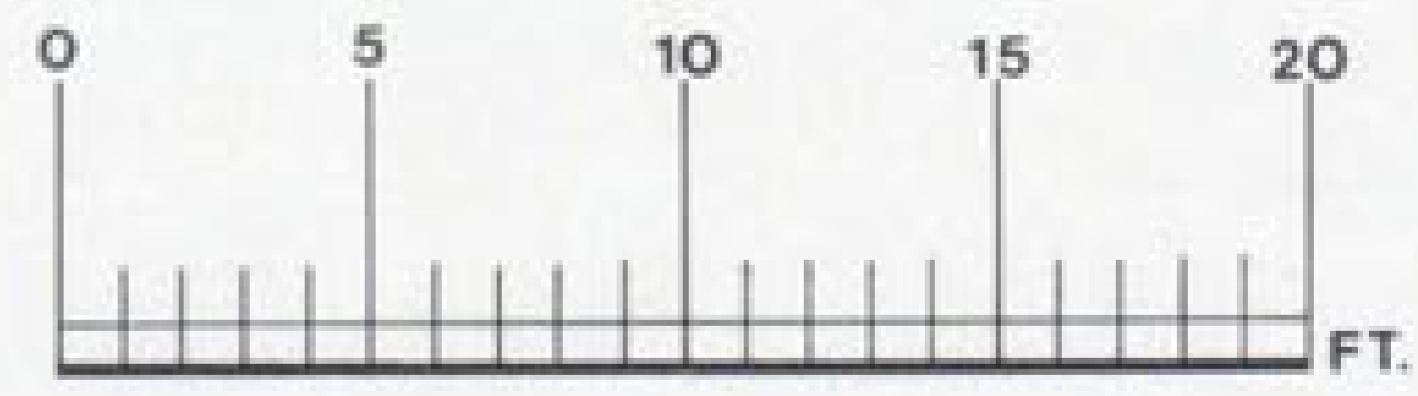


Handley Page Heyford II of No. 99 Squadron R.A.F.; K4866 of "A" Flight, based at Boscombe Down, Hampshire, U.K. in 1935.

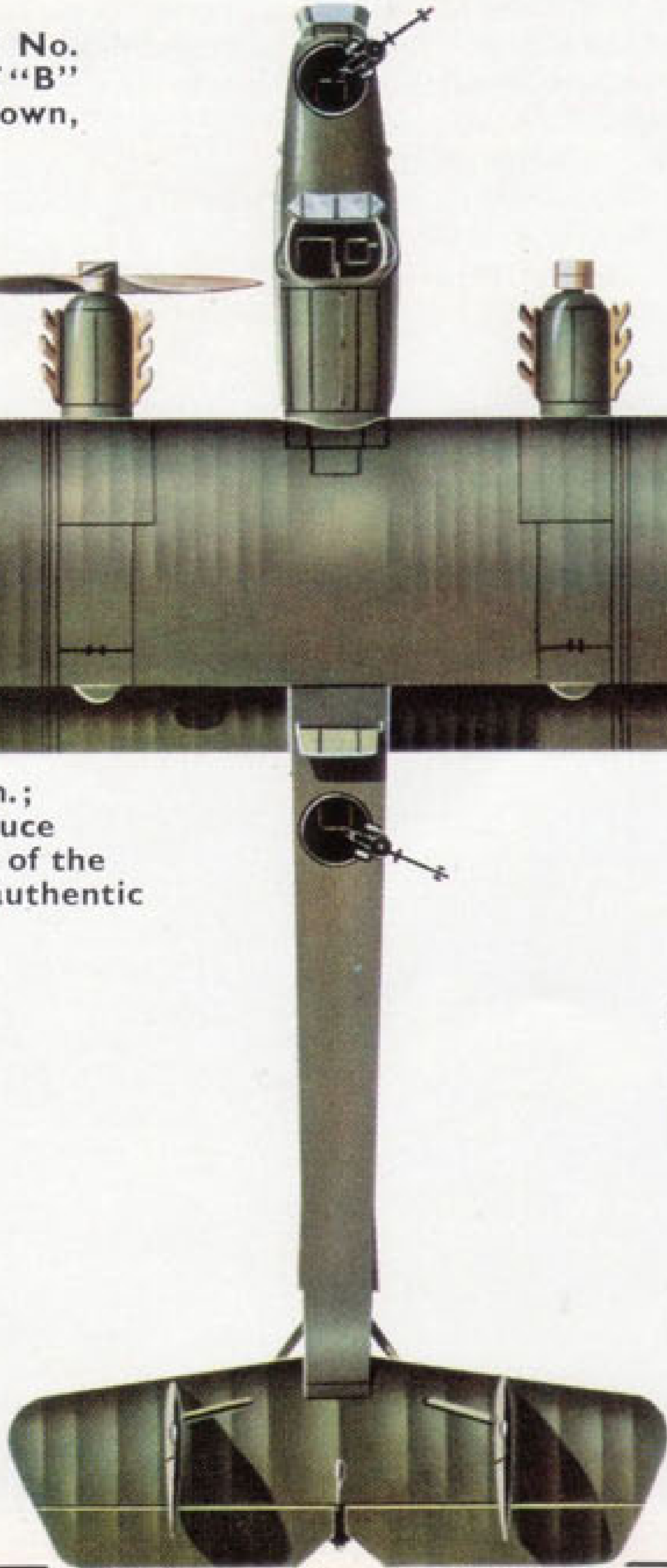


Handley Page Heyford II of No. 99 Squadron R.A.F.; K4866 of "A" Flight, based at Boscombe Down, Hampshire, U.K. in 1935.

The unofficial badge of No. 10(B) Sqn.; extensive research has failed to produce absolute confirmation of the colours of the shield, but this is believed to be an authentic representation.

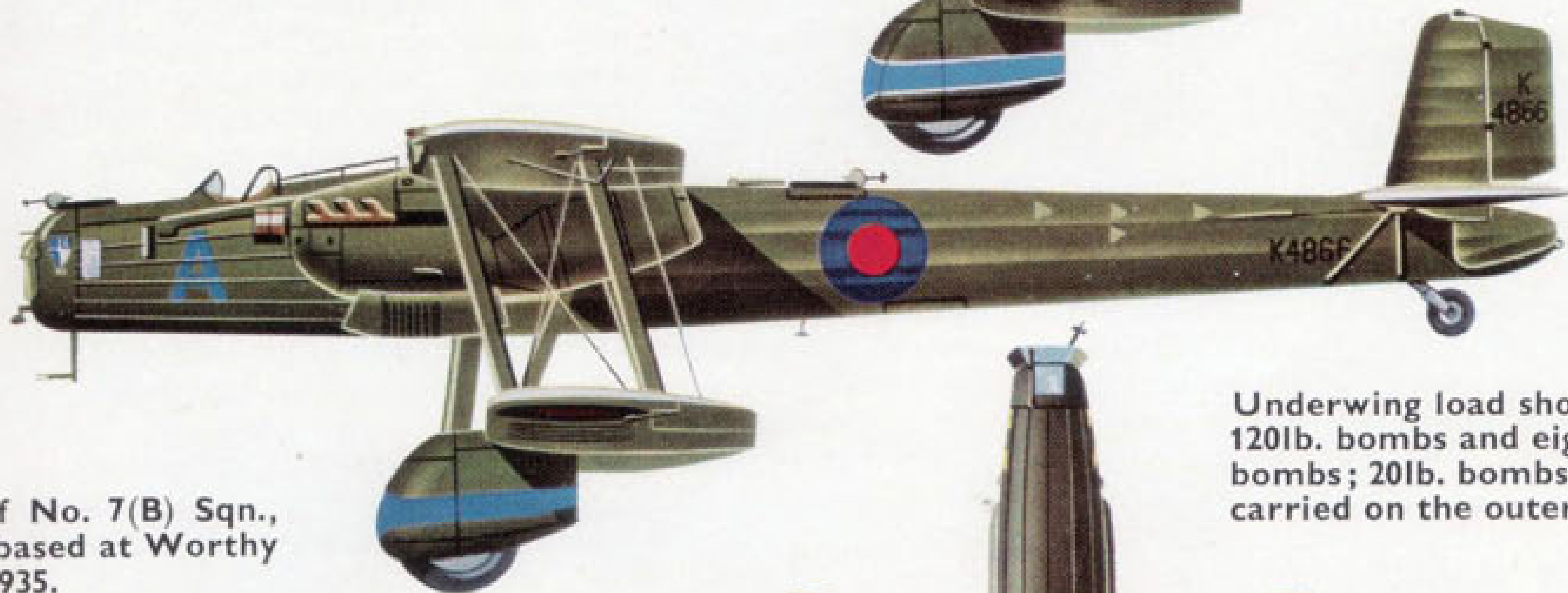
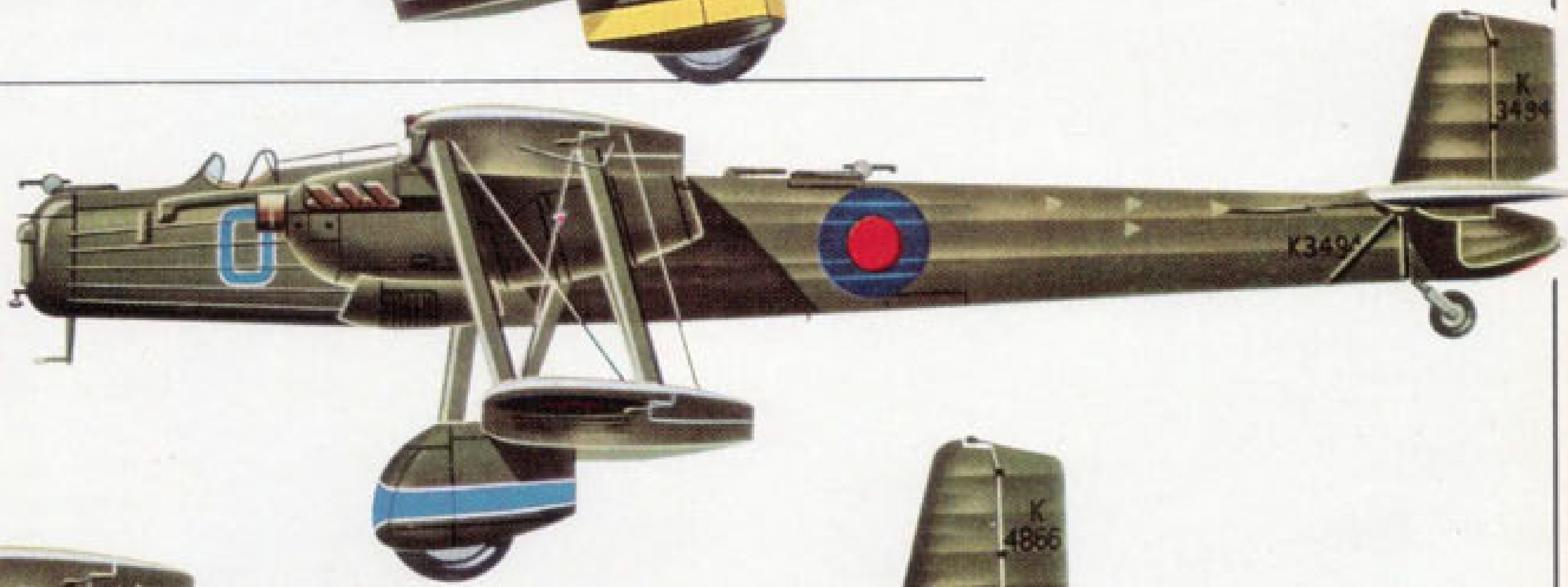


© JAMES GOULDING



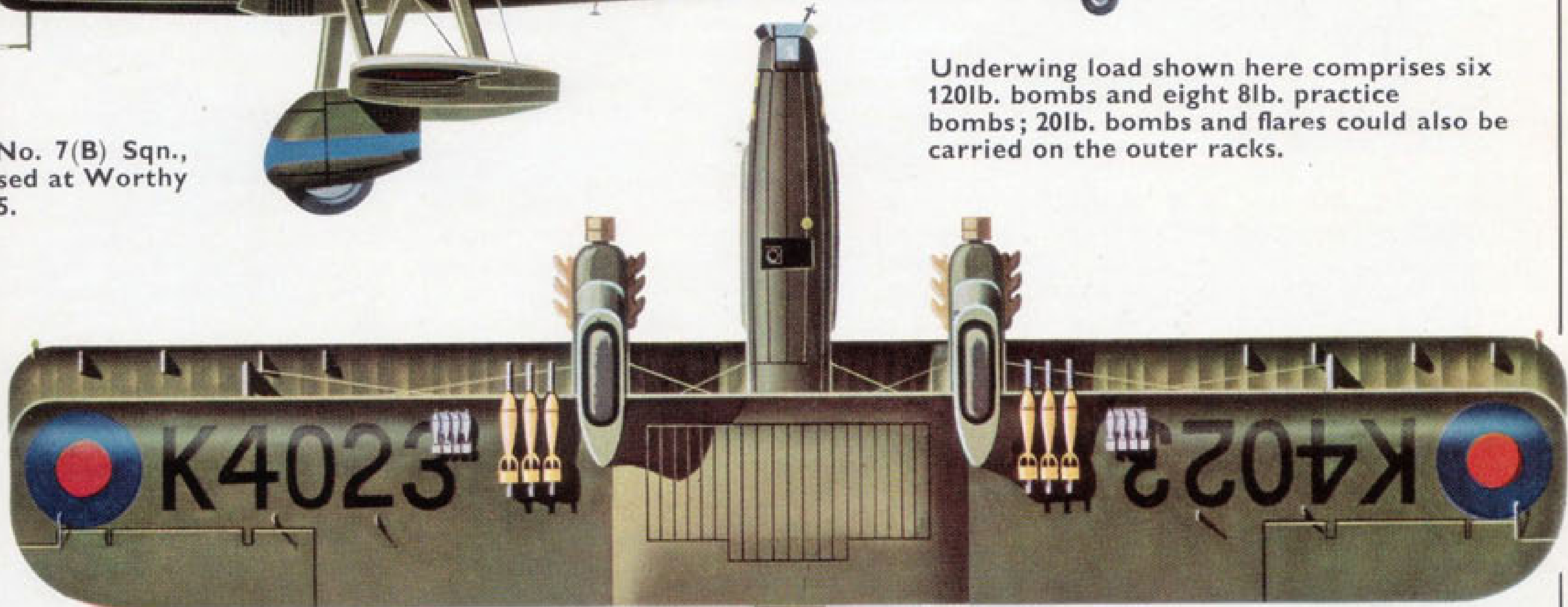


Handley Page Heyford I of No. 99(B) Sqn., R.A.F.; K3494 of "A" Flight, based at Upper Heyford, Oxfordshire, U.K. in March, 1934.



Handley Page Heyford II of No. 7(B) Sqn., "B" Flight, based at Worthy, Hampshire, U.K. in 1935.

Underwing load shown here comprises six 120lb. bombs and eight 8lb. practice bombs; 20lb. bombs and flares could also be carried on the outer racks.



**REPRESENTATIVE AIRCRAFT:**

No. 10(B) Sqn. - "A" Flight, machine letter and spat stripe, red. C, K4024, D, K4032, F, K4033.

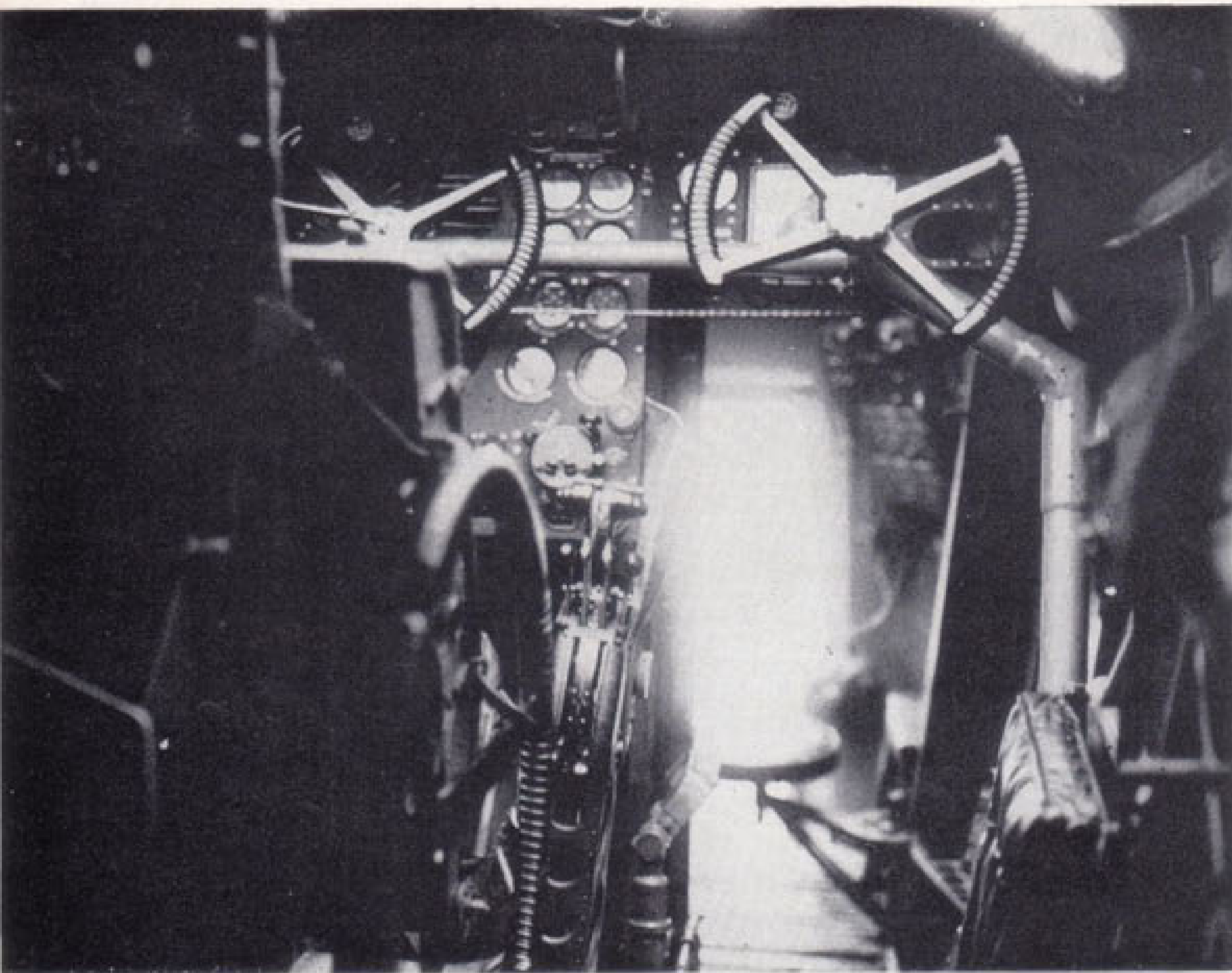
No. 99(B) Sqn. - "A" Flight, machine letter and spat stripe, blue. N, K3492, R, K3500.

"B" Flight, machine letter and spat stripe, yellow. T, K3491, U, K3493, X, K3499

No. 7(B) Sqn. - "B" Flight, machine letter and spat stripe, yellow. M, K4872.

The unofficial badge of No. 7(B) Sqn.





*Heyford cockpit. Note large tail-trimming wheel in foreground. (Photopress picture)*

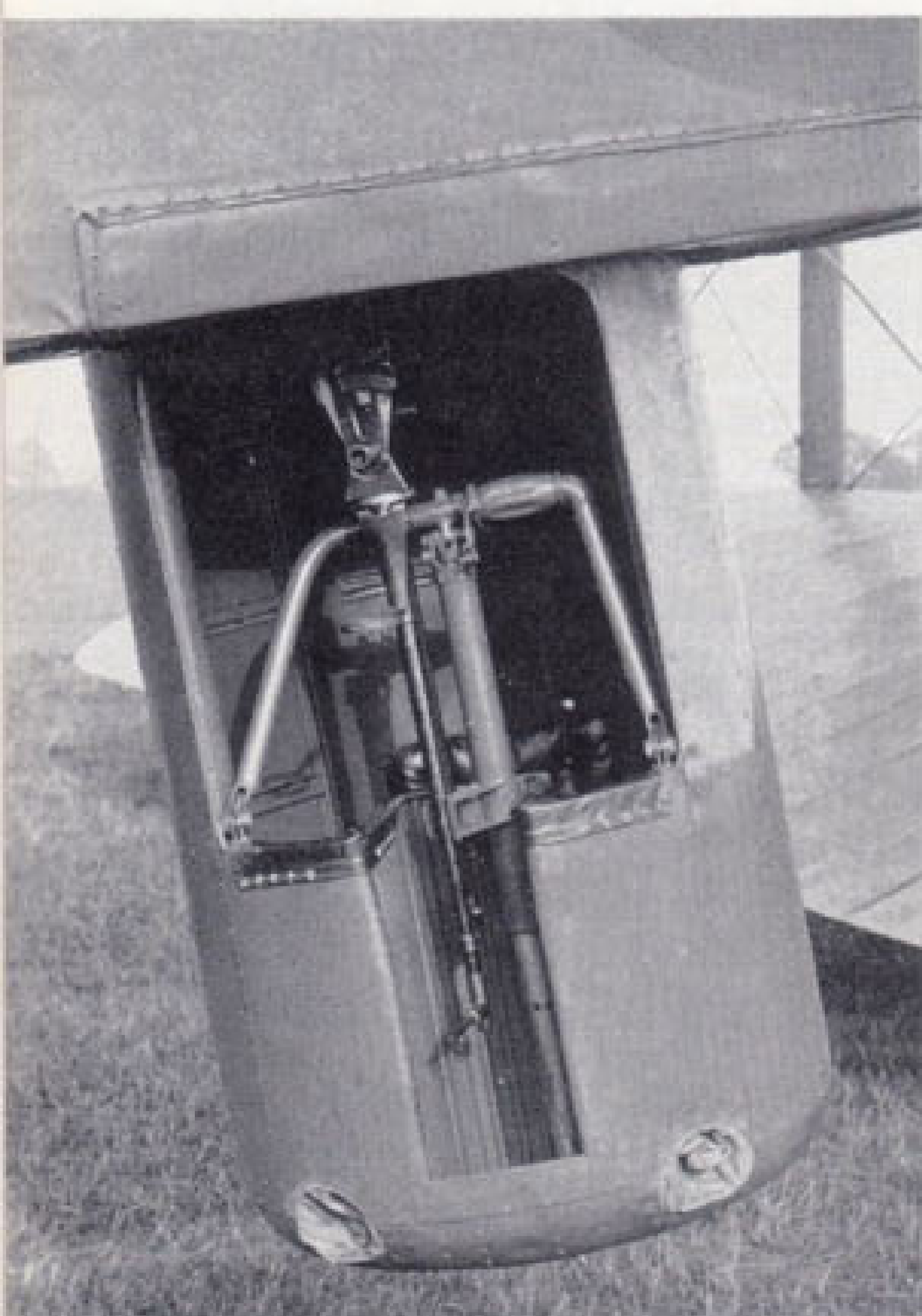
type of seat which folded away when not in use. Firing steps were provided at the sides of this compartment so that the gunner could stand up on them and fire in a downward direction. In the extreme nose of the fuselage was a large window, hinged along its upper edge and used for bomb-aiming. On the starboard side were the bomb selection switches, while on the rear wall of this compartment were stored ammunition drums and other equipment.

As mentioned earlier, particular attention was given by the Heyford's designers to rapid turn-round between sorties. A bomb loading arrangement was devised which enabled adjustment of the bombs on to the racks, fuse-setting and so forth to be done away

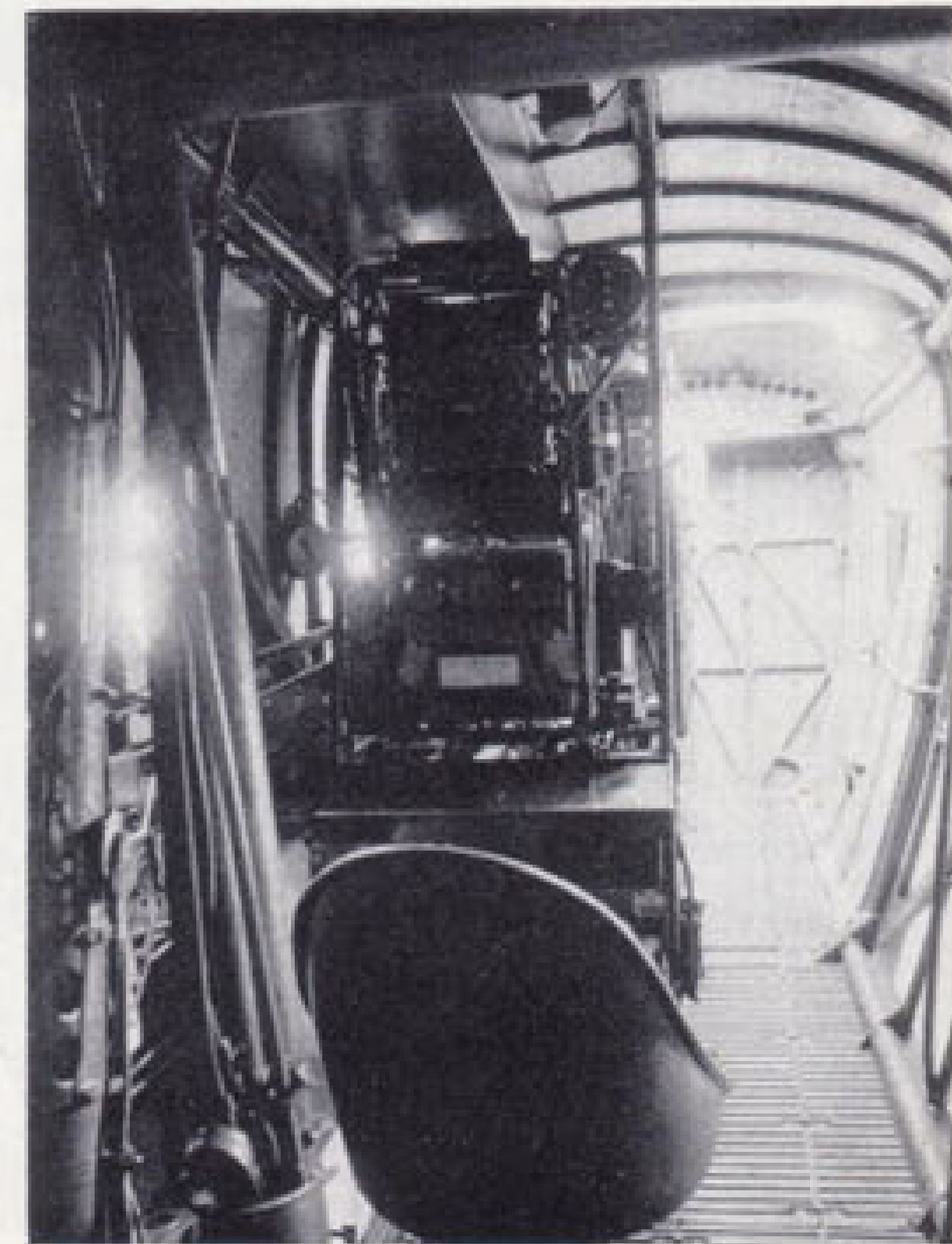
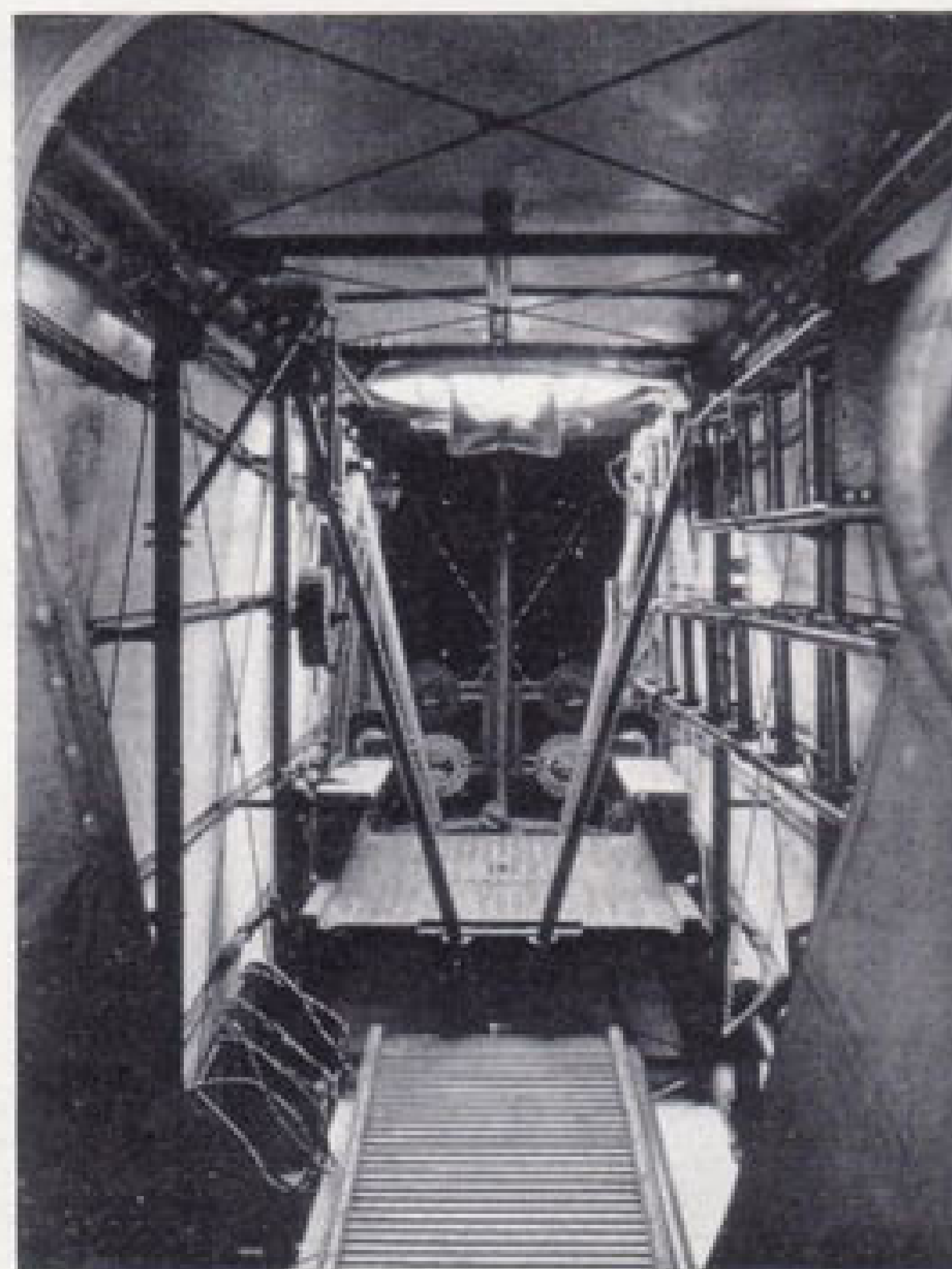
each wheel spat; the crank handles were not, of course, permanently fitted but could be shipped and unshipped in a few moments and carried from one engine to the other.

The high mounting rendered the engines somewhat inaccessible (although this did enable the armourers to reload the bomb bay in perfect safety while the engines were running) but light hook-on ladders helped the mechanics to overcome this difficulty. The ladders (which were stowed inside the fuselage when not in use) could be placed in position in a few seconds, and the side panels of the engine nacelles swung down to form working platforms.

The first production Heyford, K3489, made its



*(Left to right). The Heyford's "dustbin" turret, showing Lewis gun stowed vertically. Note fabric-covered stirrups for gunner's feet. Rear fuselage showing gun positions. Wireless compartment and, beyond, pilot's cockpit.*





maiden flight on 21st June, 1933, at Radlett, piloted by Major J. L. Cordes who had now succeeded S/Ldr. England as Handley Page's chief test pilot. This machine was rushed through the shops in order that it might be demonstrated, a few days later, at the S.B.A.C. Display at Hendon, and it did in fact fly at Hendon as programmed. After Service equipment had been installed, the machine underwent official performance tests at Martlesham Heath and was judged by the Air Ministry to be the most efficient large biplane ever tested up to that time.

Chosen as the first squadron to receive the Heyford was No. 99, appropriately at Upper Heyford; this unit had also been the first to get the Heyford's two immediate lineal predecessors, the Hyderabad and the Hinaidi. Delivery of Heyford Mk. Is to No. 99 began on 14th November, 1933, and re-equipment continued until the following March, by which time 10 (I.E.) and 3 (I.R.)\* were on strength.

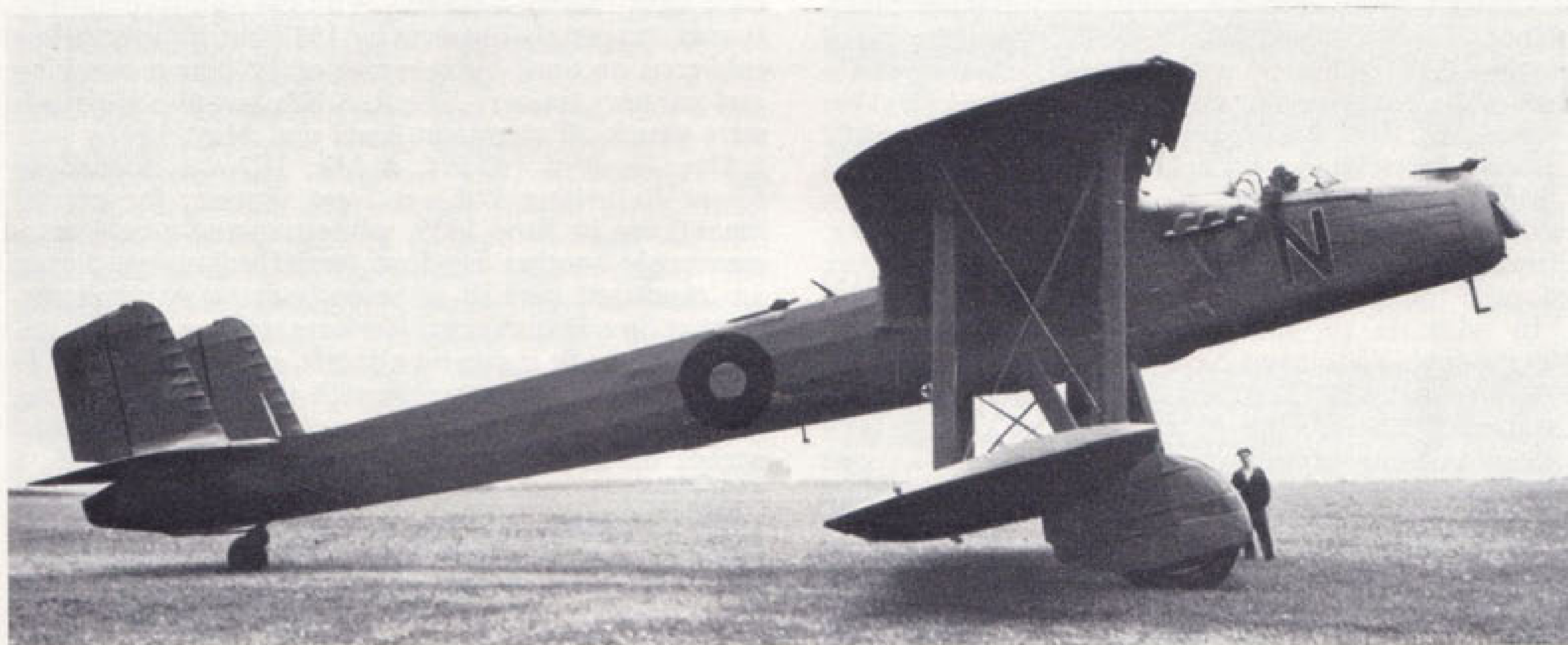
A sub-variant of the Heyford Mk. I was the Mk. IA which could only be distinguished from the original

\* I.E. = Initial Establishment and I.R. = Initial Reserve.

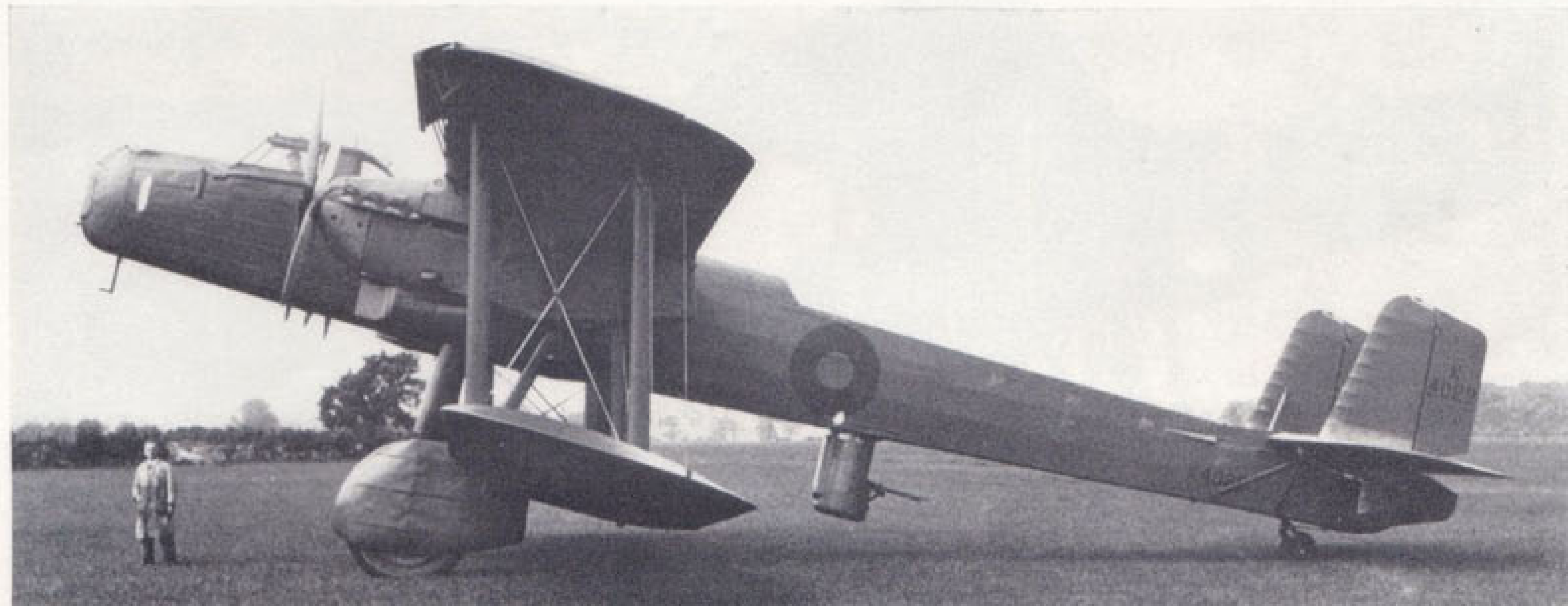


*Bombing-up a Heyford with the aid of special winches.*  
(Photo: via J. Gardiner)

version by the absence of the wind-driven generator on the IA. This latter mark had modified engine bearers and a motor-driven generator. As these alterations affected loading weights—important when arranging the bomb load—a suffix to cover them was given to the mark number. Following the Mk. IA came the Mk. II and Mk. III each powered by 640 h.p.



(Above) Mk. I, K3492 'N', of No. 99 Squadron. (Photo: "The Times"). (Right, and below) K4029, the intermediate Mk. IA/II seen at Radlett on 29th May 1935.





*Fine action study of K4029 at Radlett, 11th August 1935, piloted by Maj. Cordes.*

Kestrel VIs (de-rated in the case of the Mk. II but operating at full power in the Mk. III) and built to Specifications 28/34 and 27/35 respectively. Both types differed from its predecessor not only in the mark of Kestrel installed but also in having the engines in mountings raised eighteen inches and of smaller cross-sectional area. These modifications reduced the aircraft's weight, drag and fuel consumption and thereby improved its performance all round. A further change—but only in the Mk. III—was the installation of steam condensers in the leading edges of the top outer mainplanes. The prototype Mk. II, K3503 from the initial batch of Mk. Is, had an enclosed cockpit canopy with part of the front coaming cut away to improve view. An interim Mk. I/IA, K4029, also had a canopy fitted, while the mid-upper gunner was sheltered by a streamlined fairing which eliminated the adjustable windscreen normally fitted to the Heyford and reduced drag. However, neither the canopy nor the fairing were adopted for subsequent production aircraft.

In addition to serving with No. 99 Squadron, Heyfords also equipped Nos. 7, 9, 10, 38, 78, 97, 102, 148, 149 and 166 (Bomber) Squadrons and dates of use and allocations are given on page 12. Despite its rather ungainly appearance, the Heyford was well liked by its crews and was very easy to maintain. It had no tricks or vices and such was its manoeuvrability that it was looped on several occasions, including at least one air display when the spectators could hardly believe their eyes! In 1934, and again in 1936, Heyfords of No. 99 Squadron took part in the R.A.F. Display at Hendon. In 1936 four of No. 102 Squadron's Heyfords did the "skittle bombing" event at Hendon and five No. 102 squadron machines

joined five more from No. 99 Squadron in the finale "set piece"—a bombing attack on a dummy power station. At the Royal Review of the R.A.F. in July, 1935, Nos. 10 and 99 Squadrons' Heyfords led the mass flypast of aircraft at Duxford where H.M. King George V took the salute after having previously inspected his squadrons on the ground at Mildenhall. To return to No. 102 Squadron: on 12th December, 1936, this unit suffered what amounted in peace time to a major disaster when seven Heyfords *en route* from Aldergrove, Northern Ireland (where they had attended armament practice camp) to Finningley, Yorkshire, encountered dense fog and icing conditions over England. Only one aircraft managed to reach its destination, three crashed (one having first been abandoned by its crew when it became uncontrollable), and three made forced landings, albeit successful. Total casualties were three airmen killed, one seriously injured and two slightly injured.

By today's standards the Heyford had a comparatively short Service life, being superseded within the compass of six years by the monoplane bombers of the Expansion era—notably Whitleys and Wellingtons. It was completely obsolete by 1937 but it nevertheless soldiered on until the summer of 1940 as a bombing and gunnery trainer. The R.A.F.'s last two Heyfords were struck off charge in April and May, 1941.

One Heyford (K5184, a Mk. III) was loaned to Flight Refuelling Ltd., at Ford, Sussex, for experimental use in June 1939, while two-and-a-half years previously another Heyford (serial unknown) played an important part in some early radar experiments. At that time British scientists were striving to produce, on a scale to fit inside an aircraft, radar equipment to provide results comparable with those of the existing ground installations—which weighed tons and used aerials up to 240 feet high. By December, 1936, a small receiver was completed and fitted in a Heyford, and when used in conjunction with a ground transmitter, this set gave the first proof that echoes from one aircraft could be received in another. During early 1937 a transmitter was also installed in the Heyford. The emphasis at this time was still on producing equipment to detect other aircraft, but during test flights around Harwich it was noticed that echoes were received from the coastline and

*A Heyford III (K5188) photographed in November 1935. This particular machine later served with No. 102 Squadron and No. 4 Air Observers School, in turn, and was struck off charge 19th July 1940. (Photo: I.W.M.)*



(Right) A pleasing study of Heyford IA K4023 'K' of No. 10 Squadron, flying near North Coates Fitties, 1935. The clearance between propeller tips and fuselage was about four inches—note pilot's guard rail.

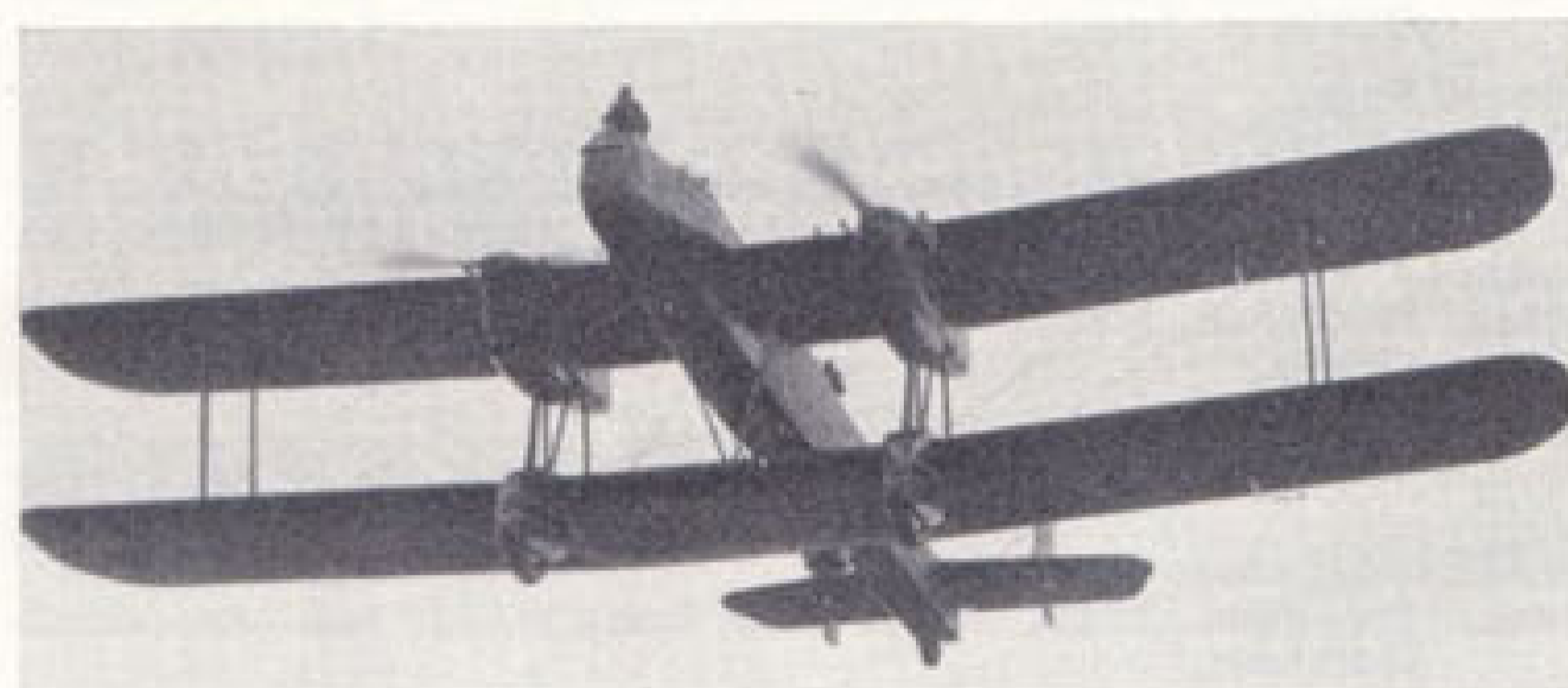
(Photo: Charles E. Brown)

harbour installations. Later in 1937 a more advanced set was installed in an Anson and with this ships were successfully intercepted at sea; thus was born air-to-surface vessel (A.S.V.) radar equipment which was to play a major rôle in Coastal Command's war against the U-boats in World War 2. A further experimental Heyford was the machine employed by the Royal Aircraft Establishment, Farnborough, for testing de-icing apparatus, and described by Air Commodore A. E. Clouston in his book *The Dangerous Skies*.<sup>\*</sup> A set of pipes, perforated with minute holes, was fitted along the leading edge and covered with a fine wire mesh, contoured to the shape of the wing. An anti-freeze mixture of glycol and alcohol was fed from a tank inside the aircraft to the pipes, from which the mixture escaped to ooze through the wire mesh and spread over the leading edge in flight. The mixture worked, although Clouston says he preferred an alternative system—"the clean, simple system"—of inflatable rubber de-icing shoes, which he had previously tested on a single-engined Northrop 2E<sup>†</sup> bomber.

<sup>\*</sup> First published by Cassel & Co., Ltd., 1954.

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The author wishes to acknowledge the kind assistance of Bruce Robertson, Esq. in helping to clarify the differences between the various Heyford marks.



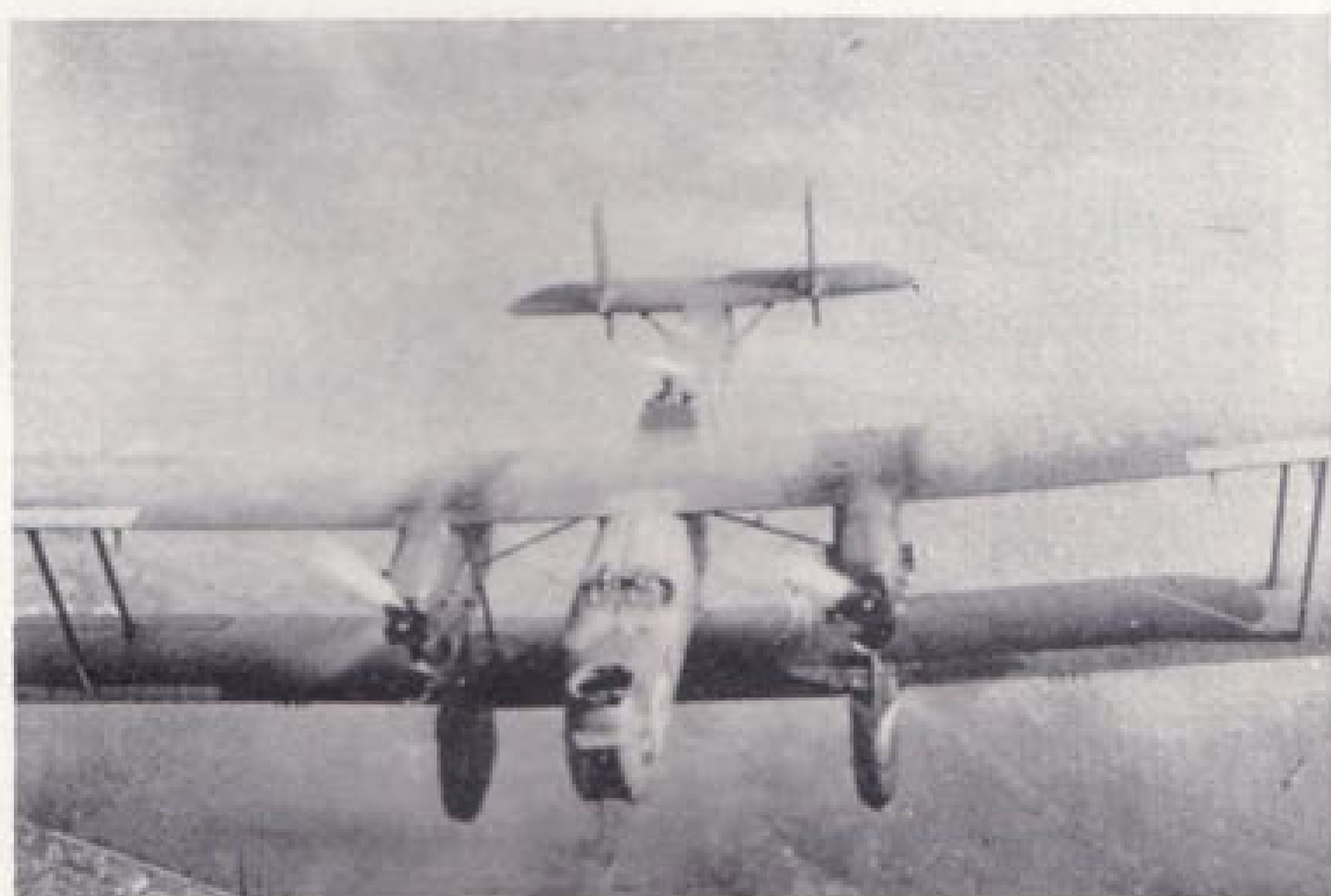
Heyford I's of No. 99 Squadron seen in flight, March 1934; (Above) K3500 'R'. (Photo: "Aeroplane"). (Below) K3493 'U'. Note raised windshield to protect mid-upper gunner from slip-stream.



PRODUCTION		
Serials	Type	Qty.
J9130	H.P.38 Prototype of Heyford	1
K3489-K3503	H.P.50 Heyford I	15

K3503 became prototype Mk. II and was later converted to Mk. III standard. K3492 was built—or converted—to Mk. II standard.

A Heyford II of No. 7 Squadron photographed in 1935. (Photo: Topical Press)



Serials	Type	Qty.
K4021-K4043	H.P.50 Heyford I/IA	23
K4863-K4878	H.P.50 Heyford II	16
K5180-K5199	H.P.50 Heyford III	20
K6857-K6906	H.P.50 Heyford III	50
Total		125

K4021 was non-standard and was converted to Mk. III. K4029 was intermediate Mk. IA/II and later converted to Mk. III.  
K5184 modified by Flight Refuelling Ltd.

### HEYFORD SQUADRONS

Summary of data contained in official unit records

#### No. 7 Sqn.

Began to receive Heyford IIs as replacements for Virginias in April 1935. 'B' Flt. became nucleus of No. 102 Sqn. and the new 'B' Flt. collected new Heyford IIIs from Handley Page. In March/April 1938 No. 7 Sqn. re-equipped with Whitleys.

Bases: Worthy Down, Hants. until September 1936 and thenceforth Finningley, Yorks.

#### No. 9 Sqn.

Re-equipped with Heyford IIIs in March/April 1936, its Virginias going to Andover to equip No. 214 Sqn. During 1938 Munich Crisis was brought up to full establishment of 12 I.E. and 4 I.R. On 31/1/39 received its first Wellington and in March 1939 all 16 Heyfords were allotted to Nos. 8 and 19 M.U.'s.

Bases: Aldergrove, Northern Ireland, until October 1936; Scampton, Lincs., October 1936 to March 1938 and thenceforth Stradishall, Suffolk.



A Heyford III (probably K5184) towing an early Hotspur glider over Camberley, Surrey, January 1941.

(Photo: I.W.M.)

#### No. 10 Sqn.

Between 3/8/33 and 14/11/33 received 12 Heyford IAs as replacements for its Virginias. On 16th September 1935 'B' Flt. became No. 97 Sqn. The new 'B' Flt. collected 6 new Heyford IIIs from Handley Page on 12/11/35. On 1/11/36 'B' Flt. became the nucleus of No. 78 Sqn. Between 9/3/37 and 25/6/37 No. 10 Sqn. re-armed with Whitleys.

Bases: Boscombe Down, Wilts. until January 1937 and thenceforth Dishforth, Yorks.

#### No. 38 Sqn.

Re-formed 16/9/35 from 'B' Flt. of No. 99 Sqn. and by 27/2/36 was completed up to establishment with Heyfords (10 I.E. and 3 I.R.). On 22/6/36 'B' Flt. was formed. Between 20/11/36 and 14/7/39 Sqn. was re-armed with 14 Hendon a/c.

Bases: Mildenhall, Suffolk until May, 1937 and thenceforth Marham, Suffolk.

#### No. 78 Sqn.

Re-formed 1/11/36 from 'B' Flt. of No. 10 (Heyford) Sqn. 'B' Flt. formed 1/4/37 with a/c which had been I.R. to 'A' Flt. Between 1/7/37 and 12/10/37 re-equipped with Whitleys.

Bases: Boscombe Down, Wilts. until January 1937 and thenceforth Dishforth, Yorks.

#### No. 97 Sqn.

Re-formed 16/9/35 from 'B' Flt. of No. 10 (Heyford) Sqn. Became part of an air observers' school 7/6/38 and a Group pool sqdn. (i.e. an Operational Training Unit) in March 1939. In July 1939 began to re-arm with Whitleys.

Bases: Catfoss, Yorks., September 1935; Boscombe Down, Wilts., September 1935 until February 1937 and thenceforth Leconfield, Yorks.

#### No. 99 Sqn.

Received its first Heyford 14/11/33; was then flying Hinaidis. Received its 2nd Heyford 21/12/33, 3rd Heyford on 15/12/33, 4th and 5th Heyfords on 5/1/34 and by 25/3/34 had full establishment of 10 I.E. and 3 I.R. Heyfords on strength. On 16/9/35 'B' Flt. became nucleus of No. 38 Sqn. and on 12/4/37 new 'B' Flt. became nucleus of No. 149 Sqn. On 10/10/38 No. 99 Sqn. received its first Wellington a/c and in November 1938 its Heyfords were transferred to No. 148 Sqn.

Bases: Upper Heyford, Oxon. until November 1934, and thenceforth Mildenhall, Suffolk.

#### No. 102 Sqn.

Re-formed 1/10/35 from 'B' Flt. of No. 7 (Heyford) Sqn. On 23/7/36 received last of seven additional Heyford IIIs. [On 12/12/36 seven a/c flying in formation from Aldergrove to Finningley encountered fog and ice accretion conditions over England. One a/c, pilot Sgt. Biddulph arrived Finningley safely. Heyford K4864 Sgt. Williams crashed at Gainsboro, Lincs. Heyford K5188, pilot F/O. Gyll-Murray, forced-landed 10 miles north of York. Returned to Finningley next day. Heyford K6900, pilot Sgt. V. C. Otter, crashed into hills at Hebden Bridge—3 killed—Sgt. D. G. Church, navigator, L.A.C. Clements, fitter, A.C.2 Bodenham, W/Op., Sgt. Otter seriously injured. Heyford K4874, pilot F/L. Villiers, became out of control owing to ice formation jamming the controls. F/L. Villiers, P/O. Tomlin, L.A.C. Keyes and A.C. McKan abandoned a/c by parachute, landing safely—F/L. Villiers and A.C. McKan sustained slight injuries. A/c crashed near Oldham, no damage to property. Heyford K4868, pilot S/L. Attwood (leader of formation and sqdn. commander), forced-landed at Disley, 14 miles south-east of Manchester. A/c and crew undamaged and proceeded to Finningley next day.] On 14/6/37 'B' Flt. became nucleus of No. 77 Sqn. On 7/7/37 No. 102 Sqn. had 13 Heyfords on strength. In October/November 1938 No. 102 Sqn. re-armed with Whitleys.

Bases: Worthy Down, Hants., October 1935 until September 1936; Finningley, Yorks., September 1936 until July 1937; Honington, Suffolk, July 1937 until July 1938; and thenceforth Driffield, Yorks.

#### No. 148 Sqn.

During Munich Crisis of September/October 1938 rôle of sqdn. was changed from "medium bomber" to "night bomber" and in November 1938 its Wellesley a/c were replaced by Heyford IIIs from No. 99 Sqn. In March 1939 No. 148 re-armed with Wellingtons.

Base: Stradishall, Suffolk.

#### No. 149 Sqn.

Re-formed 12/4/37 from 'B' Flt. of No. 99 (Heyford) Sqn. with 6 Heyford IIIs. In May 1937 returned 6 Heyford IIIs to No. 99 Sqn. and received 5 Heyford IAs from No. 10 Sqn. In August/September 1937 received 4 Heyford Is and IAs from No. 99 Sqn. Between 20/1/39 and 10/3/39

re-armed with Wellingtons, and between 30/1/39 and 29/6/39 Heyfords were delivered to Nos. 5 and 19 M.U.'s.

Base: Mildenhall, Suffolk.

#### No. 166 Sqn.

Re-formed 1/11/36 from 'A' Flt. of No. 97 (Heyford) Sqn. and equipped with Heyford IIIs. Ceased to be an operational unit on 7/6/38 on formation at its station of air observers' school (Nos. 97 and 166 Sqdns.). Began to re-equip with Whitleys in June 1939 and on 2/9/39 last Heyford transferred to No. 4 M.U.

Bases: Boscombe Down, Wilts. until January 1937 and thereafter Leconfield, Yorks.

### REPRESENTATIVE ALLOCATIONS

(Obtained from Official sources and including dates where known\*)

<b>Key</b>	<b>AOS</b>	=	Air Observers' School.
	<b>ASU</b>	=	Aircraft Storage Unit.
	<b>B &amp; GS</b>	=	Bombing and Gunnery School.
	<b>DTD</b>	=	Directorate of Technical Development.
	<b>C.Area</b>	=	Central Area of Air Defence of Great Britain.
	<b>W.Area</b>	=	Western Area of Air Defence of Great Britain.
	<b>FTS</b>	=	Flying Training School.
	<b>HP</b>	=	Handley Page Ltd.
	<b>MU</b>	=	Maintenance Unit.
	<b>SOC</b>	=	Struck off charge.
	<b>TOC</b>	=	Taken on charge.
<b>K3489</b>	(1st production H.P.50 Heyford Mk. I)	TOC	2/11/33, DTD 149 Sqn., DTD, SOC 23/1/39.
<b>K3490</b>	TOC	5/11/33, W.Area 11/34, HP 6.35, W.Area 1.36, 99 Sqn., 7 Sqn. 9/36, SOC 10/5/38.	
<b>K3493</b>	TOC	4/1/34, C.Area, HP 10/34, Cardington 2/35, 97 Sqn. 12/35, 19 MU, SOC 29/8/39.	
<b>K3499</b>	(sometime carried instructional airframe serial 1009M)	TOC	27/2/34, C.Area, W.Area 11/34, 38 Sqn., 97 Sqn. 2/37, SOC 26/11/37.
<b>K4022</b>	TOC	2/8/34, W.Area, 97 Sqn., 19 MU, SOC 29/8/39.	
<b>K4027</b>	TOC	13/9/34, W.Area, 10 Sqn., 97 Sqn., 19 MU, SOC 29/8/39.	
<b>K4029</b>	TOC	21/9/34, DTD, W.Area 10/34, C.Area 11.34, W.Area 11/34, 166 Sqn. 5/38, 19 MU 7/37, SOC 29/8/39.	
<b>K4041</b>	TOC	7/12/34, Cardington, W.Area 6/35, 38 Sqn., 10 Sqn. 1/37, 97 Sqn., 19 MU, 58 Sqn., 19 MU, SOC 4/12/39.	
<b>K4866</b>	TOC	9/4/35, W.Area, 3 Gp., 102 Sqn., 7 Sqn., 78 Sqn., 7 Sqn., 9 Sqn., 149 Sqn., SOC 2/12/38.	
<b>K4868</b>	TOC	25/4/35, W.Area, 3 Gp., 102 Sqn., 78 Sqn., 7 Sqn., 97 Sqn., 19 MU, SOC 29/8/39.	
<b>K4874</b>	TOC	31/5/35, W.Area, 3 Gp., 102 Sqn., 23 Gp., 5 FTS 12/36, SOC 3/37.	
<b>K4878</b>	TOC	26/6/35, Cardington, W.Area, 3 Gp. 12/35, 7 Sqn. 10/36, 78 Sqn., 7 Sqn., 149 Sqn., 19 MU, SOC 29/8/39.	
<b>K5180</b>	TOC	22/8/35, Cardington, 3 Gp. 15/12/36, 102 Sqn., 149 Sqn., 19 MU, SOC 29/8/39.	
<b>K5191</b>	TOC	23/10/35, Cardington, W.Area 20/1/36, 3 Gp., 99 Sqn., 149 Sqn., 99 Sqn., 149 Sqn., 99 Sqn. 31/5/37, 148 Sqn., 3 AOS 2/5/39, 23 MU 15/3/40, SOC 20/8/40.	
<b>K5193</b>	TOC	7/11/35, W.Area, 3 Gp., 10 Sqn., 78 Sqn. 1/11/36, 102 Sqn. 1/3/38, 4 AOS 2/5/39, SOC 20/7/40.	
<b>K6862</b>	TOC	3/2/36, W.Area, 3 Gp. 13/12/36, 38 Sqn., 9 Sqn. 8/4/37, 97 Sqn. 17/4/37, 78 Sqn. 24/5/37, 166 Sqn. 20/8/37, 19 MU 14/7/39, 4 B & GS 5/12/39, SOC 20/7/40.	
<b>K6906</b>	(last production H.P.50 Heyford Mk. III)	TOC	30/7/36, 2 ASU, 99 Sqn., 9 Sqn., 19 MU, 4 AOS, SOC 15/2/40.

\*Dates shown are not necessarily dates of actual movements, etc. but probably dates when these were officially authorised.

### SPECIFICATION

**Power Plant (Heyford Mk. I):**  
Two Rolls-Royce Kestrel IIIs or IIIs-5 twelve-cylinder vee liquid-cooled engines, each rated at 575 h.p. at 2,700 r.p.m. at 11,500 ft.

**Dimensions:**  
Span 75 ft. Length 58 ft. Height, tail down, 20 ft. 6 in. Wing chord 10 ft. Gap 10 ft. Tailplane span 25 ft. Tailplane chord (max.) 5 ft. 6 in. Elevator chord 2 ft. 6 in. Wing area (inc. ailerons) 1,470 sq. ft. Wheel track 18 ft.

**Weights (Heyford Mk. I):**  
Tare weight 10,080 lb. Fixed equipment 390 lb. Fuel (385 gall.) 2,970 lb. Oil (18 gall.) 175 lb. Reserve water (7 gall.) 70 lb. Military load 3,065 lb. All-up weight 16,750 lb.

**Performance (Heyford Mk. I):**  
Max. speed at 10,000 ft. 138 m.p.h.  
Max. speed at 12,500 ft. 142 m.p.h.  
Max. speed at 15,000 ft. 137 m.p.h.  
Service ceiling 21,000 ft.  
Range, cruising at 115 m.p.h. at 10,000 ft. 920 miles with a bomb load of 1,598 lb., or 400 miles with a bomb load of 3,143 lb.

**Armament:**  
Three free -303 in. Lewis machine guns, nose, mid-upper and "dustbin". Bomb loads that could be carried were as follows:

- 10 x 250 lb. and 8 x 20 lb.
- 4 x 500 lb. and 8 x 20 lb.
- 16 x 112 lb. and 8 x 20 lb.
- 6 x 250 lb. and 8 x 20 lb.