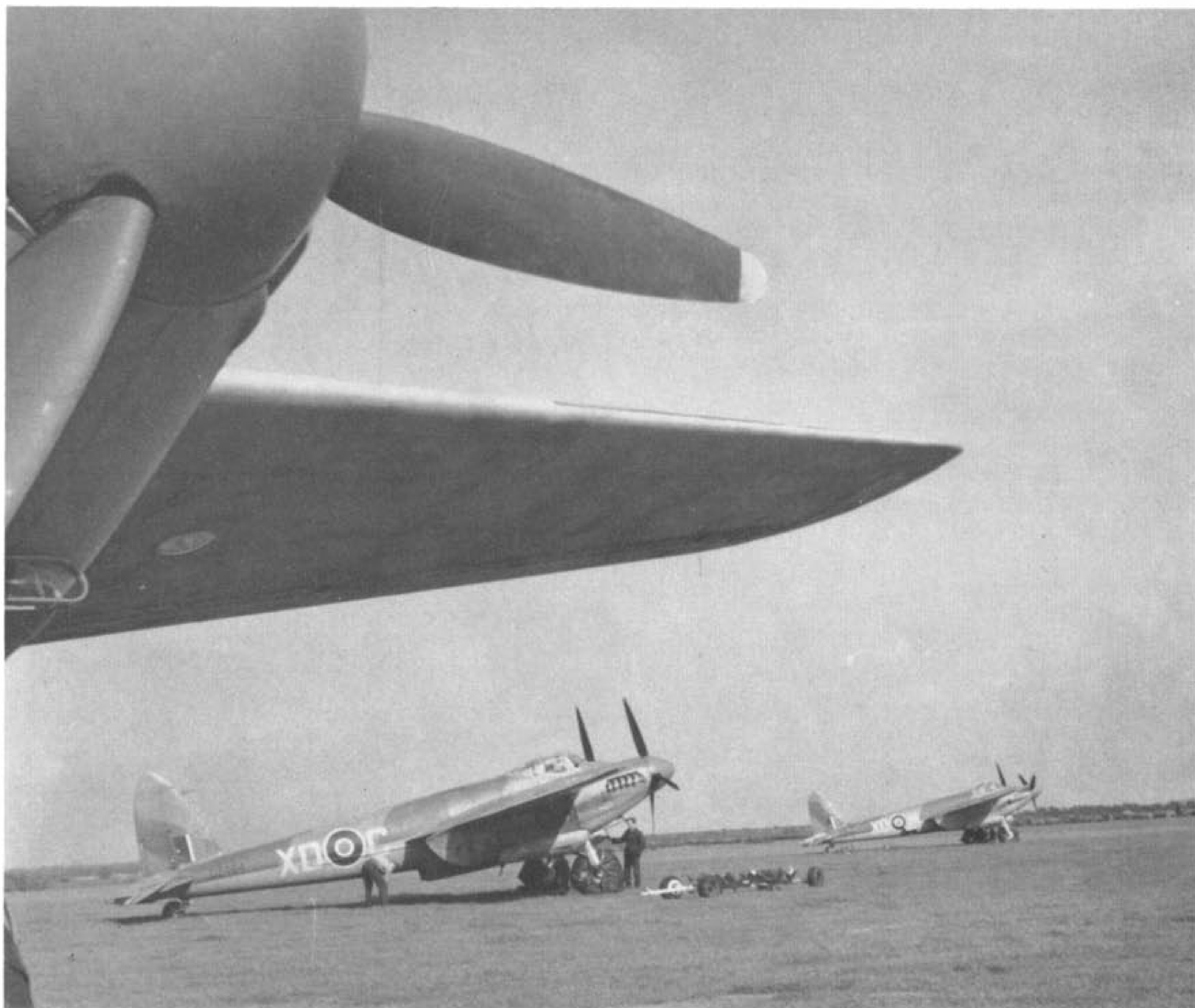


PROFILE

209

DE HAVILLAND MOSQUITO MK. IV





East Anglia, 1943, Mosquito B. Mk. IV Srs. iis of Bomber Command's No. 139 Squadron (code: XD) which was reformed at R.A.F. Station Horsham St. Faith, just north of Norwich (Norfolk) in June 1942. Note that C for Charlie has the later, ejector-type exhaust stubs in place of the conventional "shrouds" applied on the other (XD-M). This "Mossie" (R.A.F. serial: DZ464) took part in no fewer than 16 of No. 139 Squadron's famous day raids before it was shot down on May 21, 1943, while attacking the locomotive sheds at Orleans, an important communications junction in north-central France. (Photo: Imperial War Museum)

The de Havilland Mosquito IV by Michael J. F. Bowyer

"A BOMBER with fighter speed"—this has long been the aim of aircraft designers. Geoffrey de Havilland achieved some success in this direction in World War I with the D.H.4.* Hawkers memorable Hart* bomber emerged faster than the fighters of its day. The Bristol Blenheim,* it was hoped, would outpace defenders—which it did, until the advent of monoplane fighters. But the Mosquito, most versatile military aeroplane of all time, was the only one to live up to the dictum—"a bomber with fighter speed."

*See *Profile* Numbers 26, 57 and 93 respectively.

Front cover: *Classic lines of the D.H.98 Mosquito B. Mk. IV Srs. ii are shown to advantage in this skilful photograph taken in December 1942 by one of the pioneers of air-to-air portraits, Charles E. Brown. GB-J (DZ367) served with 105 Squadron, R.A.F. Bomber Command's first Mosquito "attack" squadron.*

THE IDEAS

Hardly had that spectacular twin-engine monoplane, the D.H.88 Comet racer, won the Mildenhall to Melbourne air race in 1934, when de Havilland laid plans to develop a high-speed, four-engine air liner based upon the successful racer. Yet it was to be 1937 before the elegant, four-engine D.H.91 Albatross became a reality—initially intended as a transatlantic mail plane.

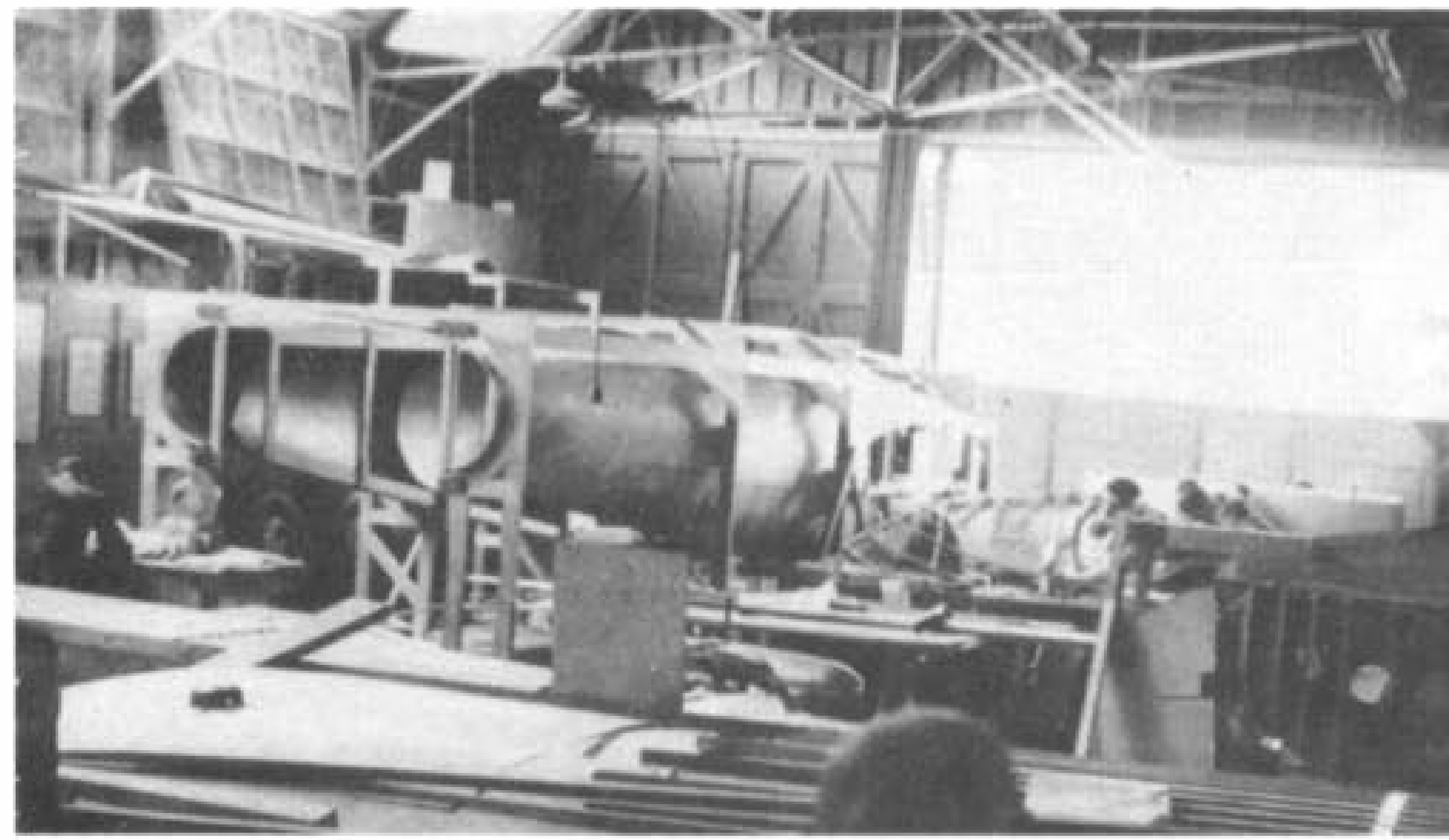
By then the European scene had taken on a grim appearance, and the British aircraft industry was engaged upon a massive re-armament scheme. De Havilland was making its contribution with the D.H.82A Tiger Moth**—wooden training biplanes. For a company with such strong traditions in the wooden light aircraft field this was hardly surprising, but de Havilland wanted to do much more. In World

**See *Profile* No. 132.

War I the firm had produced fighters, bombers and reconnaissance aircraft with some success; and now attention was once again diverted to operational rôles.

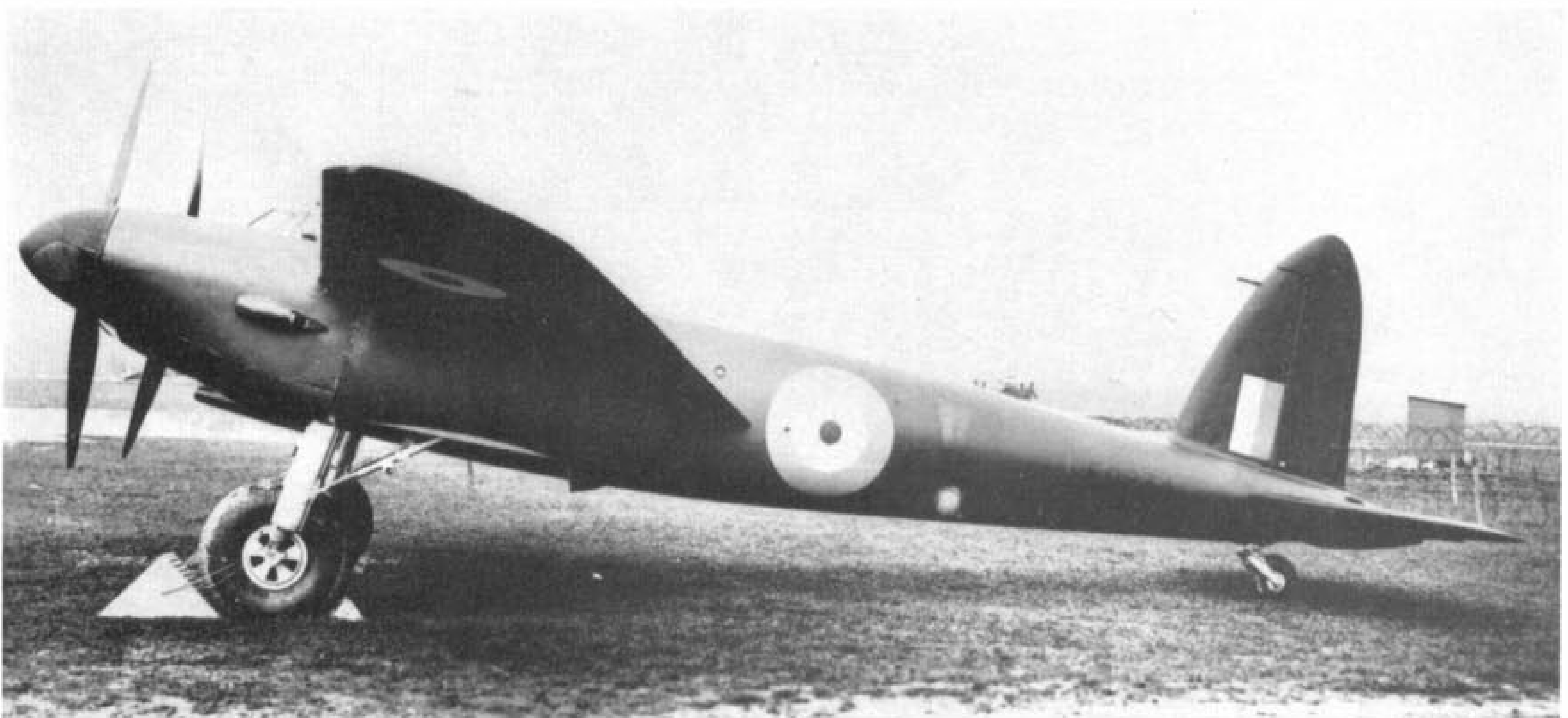
The arrival of Air Ministry Specification P.13/36 at Hatfield occasioned much interest, calling as it did for a medium bomber. The Specification required long range with the ability to fly fast to reduce time over enemy territory. The bomb load could be in tiers if needs be, but it had to be a load of 4,000 lb. for a range of 3,000 miles. The design was to permit fulfilment of the rôles of bomber, general reconnaissance and general purpose aircraft, and to be capable of withstanding operational conditions anywhere in the world.

These were tough requirements; but there was one point which attracted the thoughts of Captain de Havilland and his engineers—the medium bomber was to carry a heavy defensive armament.



A thoroughbred in the making, Salisbury Hall, near Hatfield (Hertfordshire), in June 1940. The wooden fuselage of the first prototype (W4050) takes shape. In the background, beyond the rear fuselage, are the two main wheels.

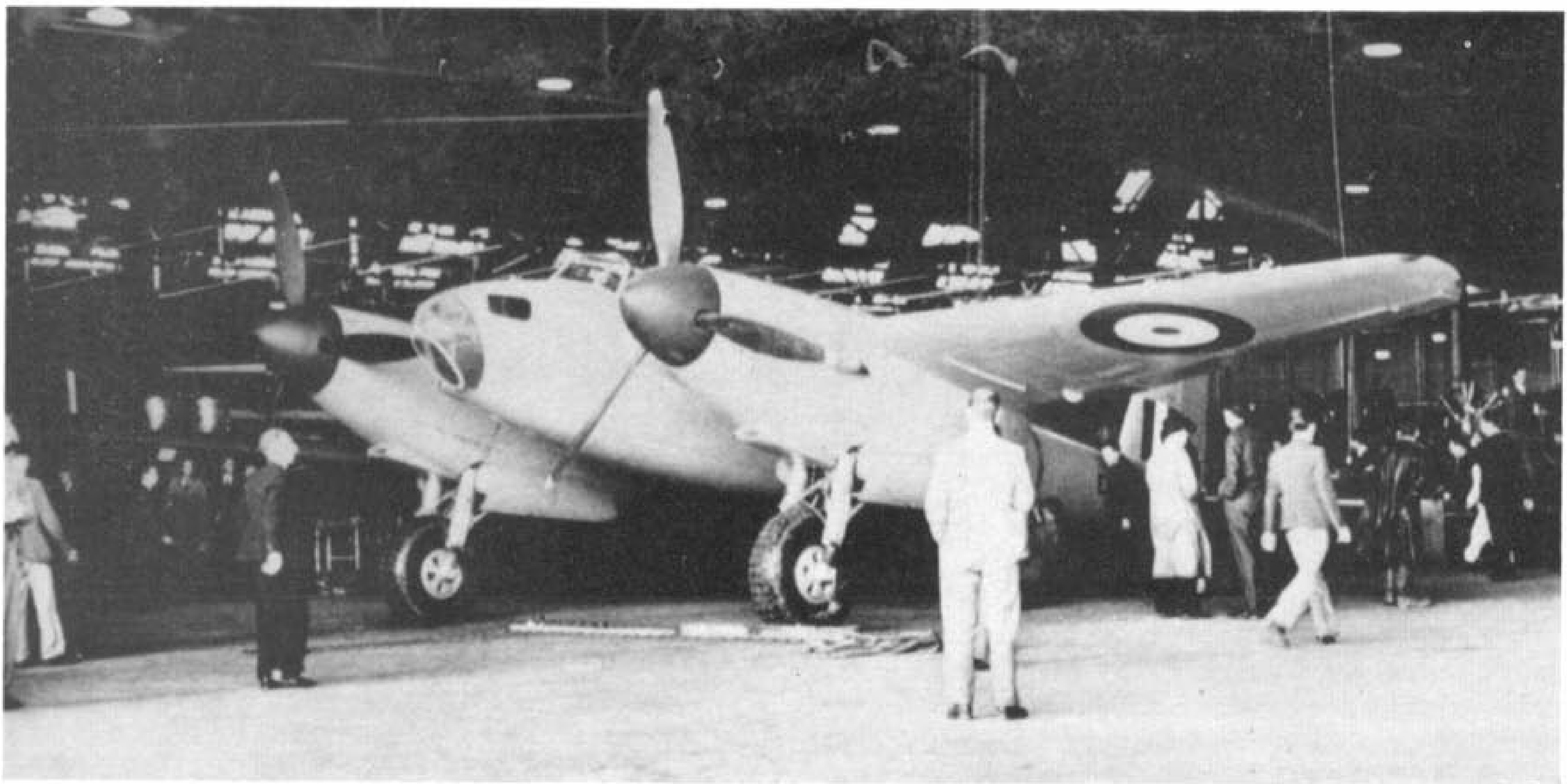
(Photo: Hawker Siddeley)



Above and below: Hatfield Aerodrome, winter 1940. Two pre-first flight photographs taken using "official" orthochromatic film which registers the all-yellow prototype as if it were painted "night fighter black." The main undercarriage doors have not yet been fitted and the prototype (W4050) wears on the rear fuselage the temporary manufacturer's registration E-0234 for experimental flying purposes.

(Photos: Imperial War Museum)



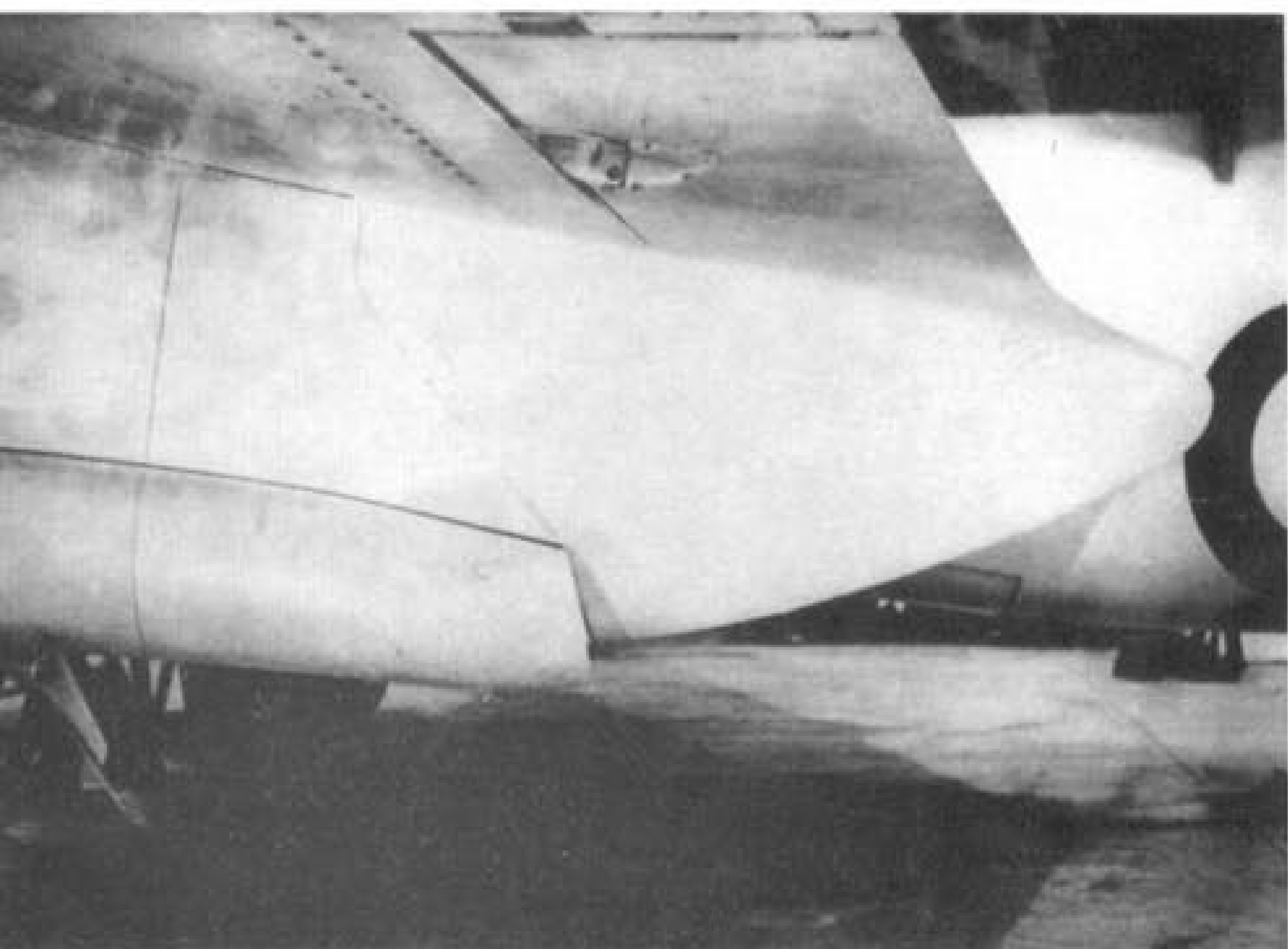


Photographed shortly afterwards, on November 21, 1940, the film faithfully records the all-yellow surfaces of the first prototype (E-0234) in a hangar at Hatfield. The undercarriage doors have been installed. The first flight was on November 24, 1940.
(Photo: via M. J. F. Bowyer)

Speed depended on aerodynamic cleanness and already de Havilland had designed a large aircraft with good payload, range and speed characteristics. Could this, suitably modified, answer the new Specification? It might—and more, it was a wooden aeroplane and wood would not be in such short supply as metal in time of war.

By 1938 favour had fallen on an Albatross bomber powered by two Rolls-Royce Merlins, although the Bristol Hercules or new Napier Sabre might do quite as well. De Havilland explained their proposition to Sir Wilfred Freeman and the Air Council in July 1938 and argued their case for wooden construction. At the same time they expressed their feelings that the multitude of requirements in Spec. P.13/36 would produce a mediocre aeroplane, let alone a medium bomber. Soon afterwards, they told the Air Ministry

Photographed in January 1941, prototype W4050 appears with one of several different fairings experimented with on the rear of the engine nacelle to improve the aerodynamic characteristics.
(Photo: Hawker Siddeley)



that if speed was paramount, then half the bomb load could be carried; while if the reverse was the case, then a slower aircraft must result. They based their ideas on the Albatross.

“A good aeroplane *could* be produced using Merlins, but to meet this particular specification double the power would be needed.”* In this very statement lay the origin of the Mosquito. If some of the defensive equipment could be dispensed with, the speed and height of operation would be much improved. Then a compromise bomber was planned at Hatfield, and met with general disapproval.

Within a few weeks the Munich crisis burst upon the world. At Hatfield it was decided that the best contribution the Company could make to national defence was a high-speed bomber from which all defensive armament was sacrificed for speed. This was quite contrary to official thinking and requirements. Now the idea was for a small aeroplane, not a development of the Albatross.

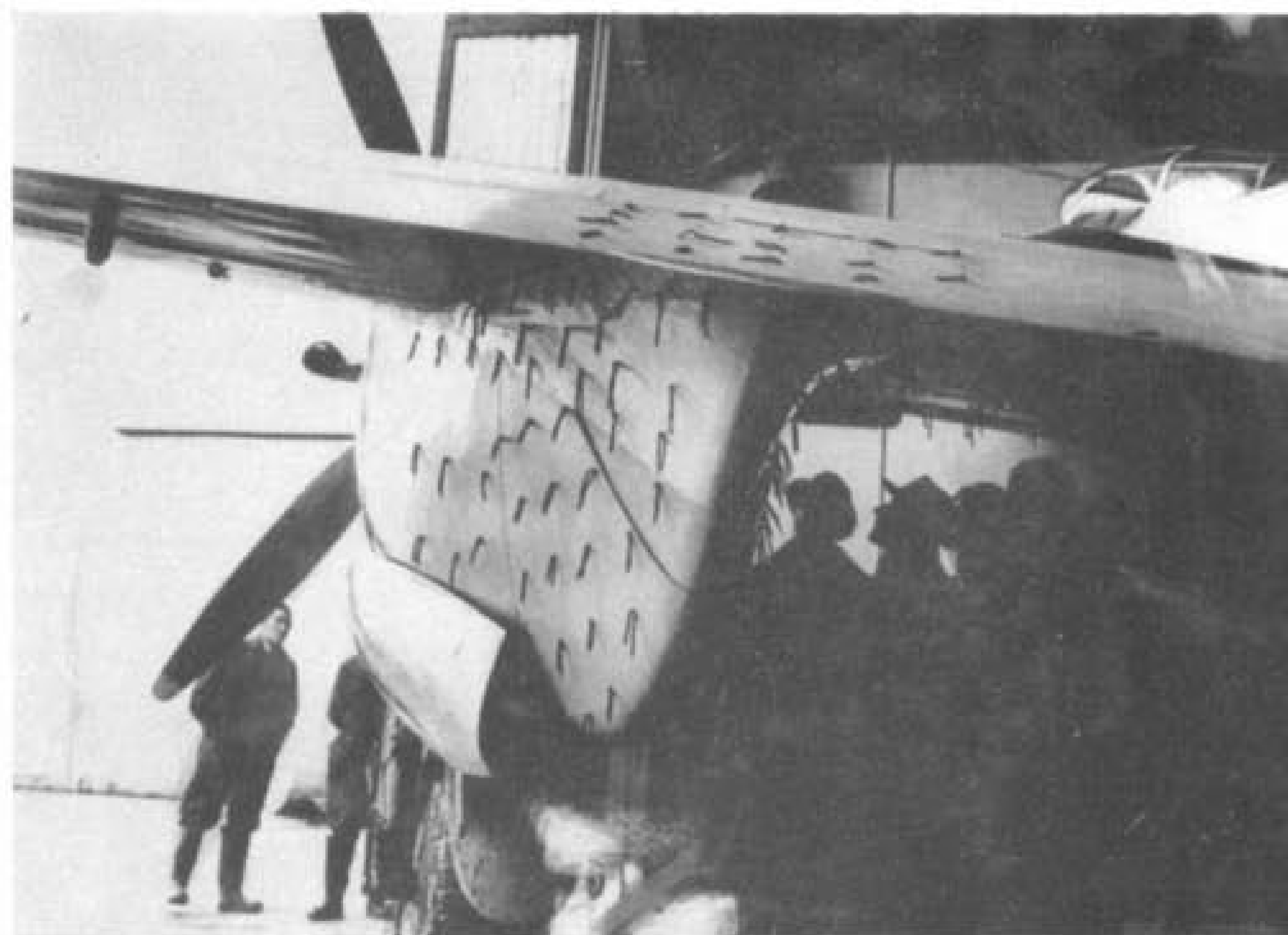
Meanwhile, the first de Havilland metal aeroplane was nearing completion. This was the D.H.95 Flamingo air liner. Possible adaptations to the bomber rôle were looked at and later discarded. De Havilland also examined a new specification for a bomber constructed of non-strategic materials from which stemmed the Armstrong Whitworth Albemarle, a not very successful aircraft.

Air Ministry interest in de Havilland's high-speed bomber was slight. It did not fit in with planning but, in 1939, the private venture went ahead. In a medium bomber, one-sixth of the loaded weight was given over to defensive armament and gunners. Unless the aircraft had a good performance, fighter escort might still be needed. The large bomber took longer to build and it needed to be manned by many men with specialist training. A small fast bomber with minimum

*Extract from a letter from de Havilland of July 27, 1938, quoted from *Mosquito*, Faber & Faber, London, 1967.

crew would be exposed to risk for only a short time over enemy territory, and could make more sorties and deliver more bombs. These arguments did not convince the Air Ministry who doubted the estimates, worried about the supply of Merlin engines and worried even more lest the Germans might produce interceptors faster than the proposed unarmed bomber. Right up to the start of World War II, these beliefs held.

When the war began de Havilland found its design staff unemployed, while the factory was building only wooden trainers. Some were not even its own design. Again Captain de Havilland went to the Ministry to discuss the unarmed high-speed bomber. Schemes soon revolved around a small aeroplane carrying a 1,000-lb. load for 1,500 miles. Much thought went into the possibility of fitting a defensive tail turret, but every time guns were added the performance was much affected. By November 1939, plans looked good for reconnaissance versions and even a fast fighter seemed a possibility using the basic airframe. That brilliant engineer, C. C. Walker, pressed the case



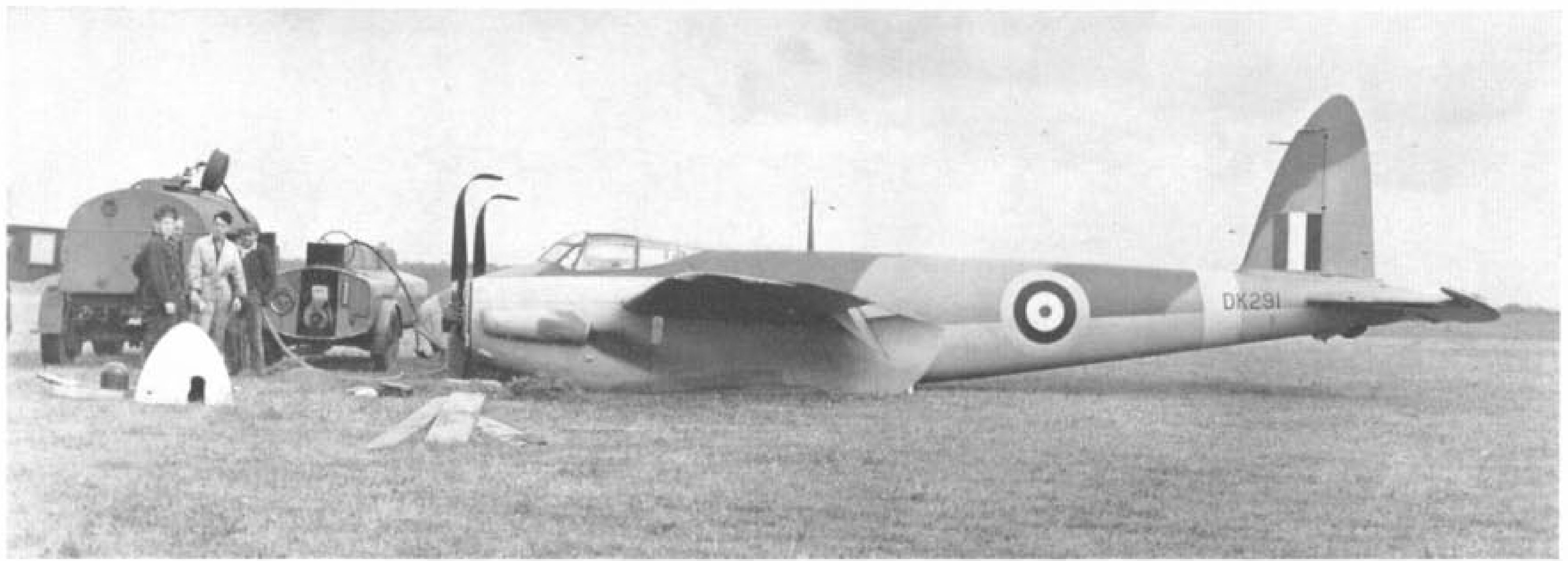
To trace the cause of buffeting experienced with the initial test flying programme, wool tufts were attached to the rear of the "short" nacelle on W4050, in December 1940, to provide physical evidence of the air flow path which was recorded on cine-camera film. (Photo: Hawker Siddeley)



The last of nine B. Mk. IV Srs. i Mosquitos (W4072) shows differences over the first prototype in the detail of the nacelles. Originally, this batch was known as PR/Bomber Conversion aircraft and this Srs. i served with No. 105 Squadron (code: GB-D) in 1942. Later that year it was transferred to No. 1655 Mosquito Training Unit and in 1943 joined No. 627 Squadron (code: AZ-Q). Returning from a raid on Frankfurt on January 9, 1944, Q for Queenie crashed off Bradwell-on-Sea (Essex). The official photographs record the date as being March 1942 and the powerplant as Merlin XXIs. At this period W4072 was being used to evaluate a new type of cavity windshield following normal snag tests. The colour scheme is dark green and dark earth with sky undersurfaces.

(Photos: Imperial War Museum)





A "Mossie" that got around—and "bent." A "long nacelle" B. Mk. IV Srs. ii (DK291) after a wheels-up landing at Hatfield on May 29, 1942. This was the eighth in the first batch of Srs. ii (DK284-303) and served successively with No. 105, 139, 105, B.D.U. (Feltwell), back to No. 139 and finally to No. 1655 M.T.U. where it ended its days in April 1945. Photograph clearly shows the ruse adopted in 1942 to confuse the enemy whereby unarmed Mosquitos were painted in "Fighter Command" colours—complete with sky blue band around the rear fuselage and sky spinners and sea grey medium undersurfaces. (Photo: Hawker Siddeley)



Above: A B. Mk. IV Srs. ii (DK328) of the second production batch (DK308-333) which was downed on its 13th sortie with No. 105 Squadron (as GB-V) on November 7, 1942. Both crew members, veterans of 2 Group, survived during the attack on shipping in the Gironde Estuary (south-west France) to become prisoners-of-war. (Photo: Hawker Siddeley)

Below: A fine study of a standard production B. Mk. IV Srs. ii (DK338), the third of the third batch (DK336-339) delivered between April and September 1942. It served with No. 105 Squadron (code: GB-O). On March 1, 1943, six Mosquitos of this squadron set out to bomb the giant Philips electrical plant at Eindhoven (Holland) but were prematurely recalled. On return DK338 crashed near Marham (Norfolk) and was destroyed. (Photo: via M. J. F. Bowyer)





The Soviets were interested in building Mosquitos under licence and DK296 was painted in Russian markings in August 1943. It had seen operational service with No. 105 Squadron, as GB-K and GB-O, flying 15 sorties. It was April 20, 1944, before it left for its new owners and it would be interesting to know what they made of it—some two years after they had first shown interest.

(Photo: Hawker Siddeley)

against a turret, and R. M. Clarkson argued along similar lines. Scare guns in nacelles might be a possibility. But the case for the unarmed bomber seemed watertight and even the addition of a third crew member spoilt the schemes.

Great emphasis was placed on the cleanness of a design whose wetted area was no greater than that of the Spitfire, despite its size. Two cases were considered for the Ministry, a three-man bomber and a two-seat reconnaissance aircraft.

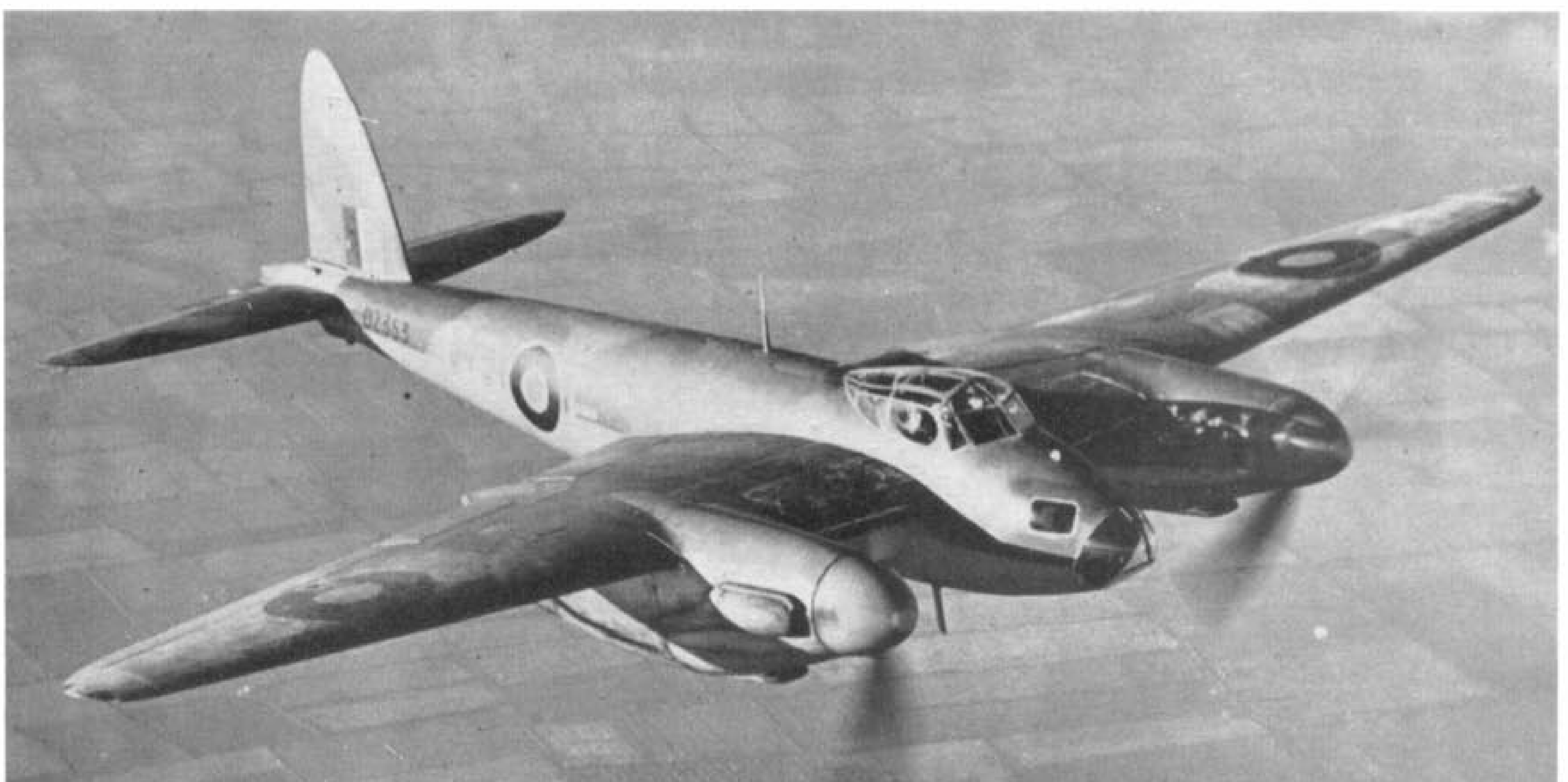
December 1939 was a month of decision. Ideas championed by Sir Wilfred Freeman led at last to the order of a prototype to test the validity of the Company's claims. The small design team was now housed at Salisbury Hall for safety from air attack. Here the final designs were formulated, and building of a

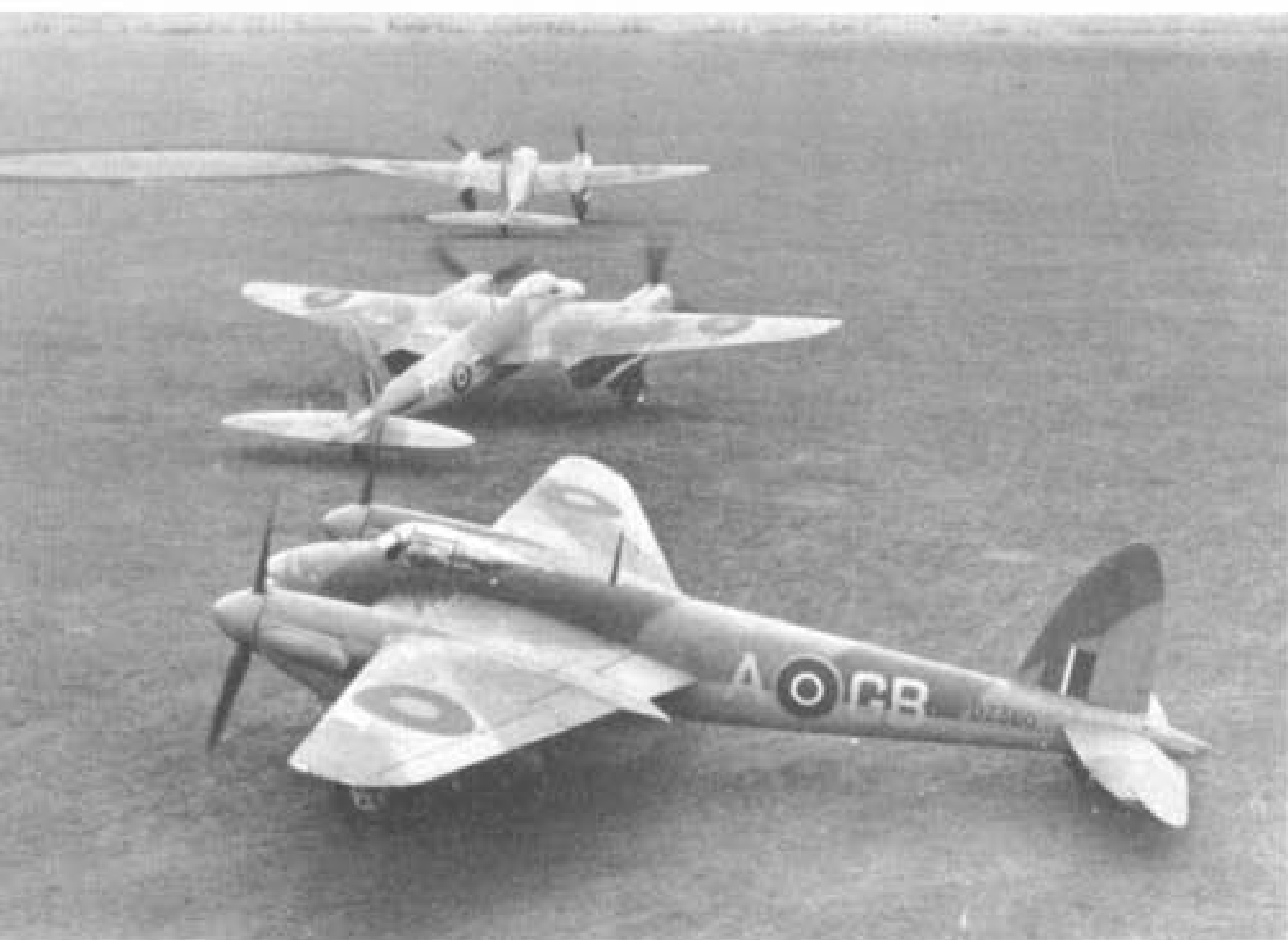
mock-up got under way. By March 1940, considerations by the Air Staff were concluded—it was decided to order 50 bomber-reconnaissance aircraft under Specification B.1/40. The unarmed wooden bomber was to become a reality.

The desperate situation in France during the summer of 1940 brought new worries. And how useful a fast long-range fighter would have been then. But now home defence was paramount and the needs of the Hurricane and Spitfire for every Merlin engine were obvious. Lord Beaverbrook, the recently appointed "overlord" Minister of Aircraft Production, three times ordered that work on the Mosquito should stop. Then there came the decision to concentrate production on five basic types, and to develop only aircraft that could soon be in service.

DZ353 joined No. 105 Squadron as GB-E in October 1942. It later served with No. 139 Squadron and became AZ-T of No. 627 Squadron at the end of 1943. It failed to return from Rennes (north-west France) marshalling yards on June 8, 1944, as AZ-B.

(Photo: Imperial War Museum)





Mosquitos of No. 105 Squadron taxi out in December 1942 at Marham. (Photo: Flight)



A line-up of No. 105's "Mossies" at Marham (Norfolk), DZ353 "E," DZ367 "J," DK336 "P," DZ378 "K," and DZ379 "H." (Photo: Flight)

The Mosquito was not among these. De Havilland pleaded for re-instatement and in desperation offered to supply 50 Mosquitos by July 1941. The Ministry of Aircraft Production then agreed—the work could proceed if it did not interfere with the serious work of building Tiger Moths and fitting them with bomb racks to repel an invasion.

Bombs arriving for GB-H DZ379.



(Photo: Flight)

Soon after, the order was given to proceed with a fighter prototype—it was fortunate that space had been left in the original design for four cannon in the belly of the aircraft.

During the Battle of Britain, production work got under way at Hatfield and elsewhere; wood working firms receiving sub-contracts for wings and tail units. The Hatfield factory was mercifully never bombed until October 3, 1940, when a Junkers Ju 88 of Stab.1/KG 77 raced across the aerodrome, its bombs killing 21 people and destroying unwittingly about 80% of the raw materials and progress on production aircraft.

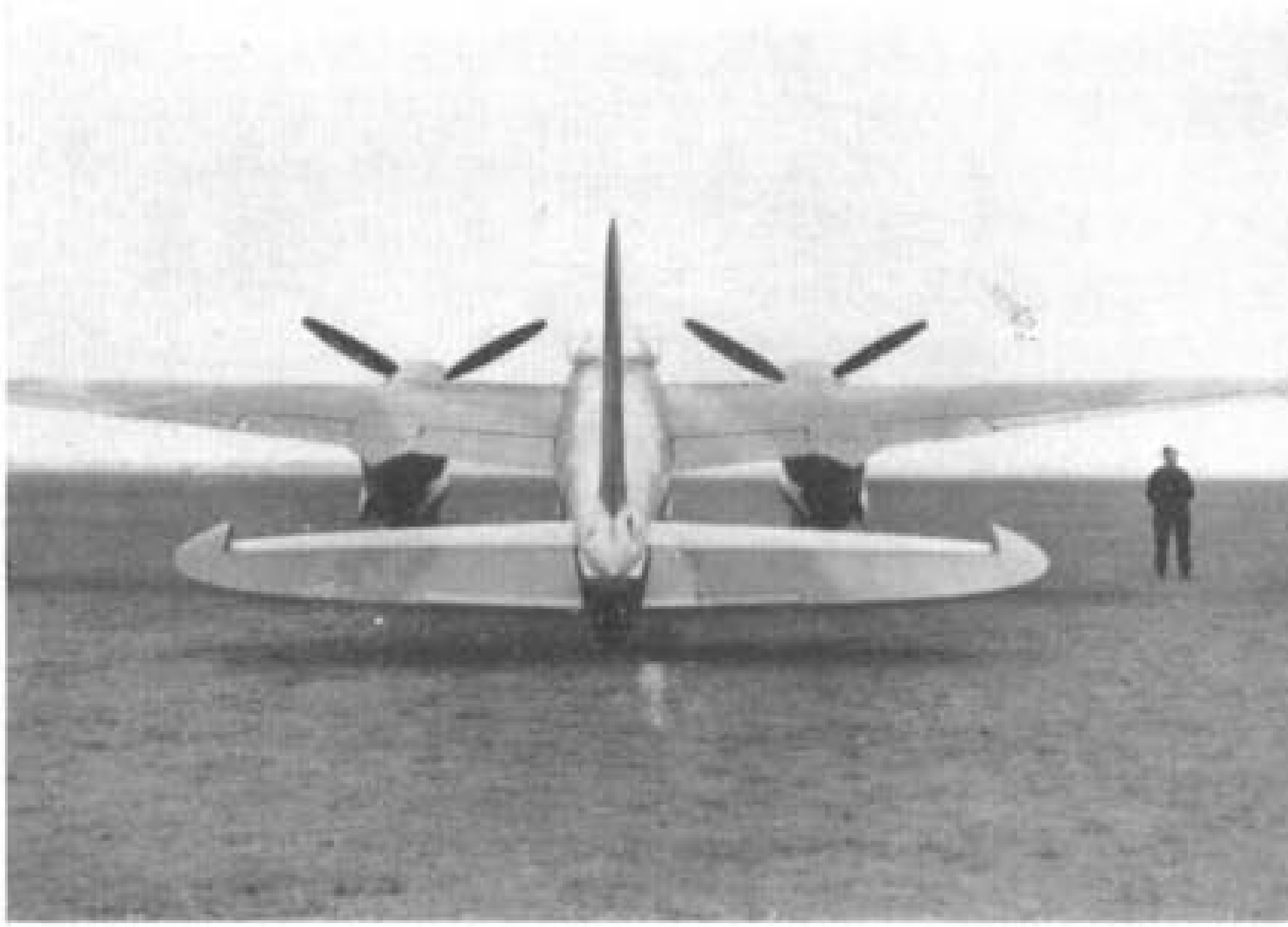
On November 3 the dismantled parts of the prototype Mosquito (W4050) arrived at Hatfield from Salisbury Hall and erection began. Taxying trials started on November 24 and next day Geoffrey de Havilland (the son), made the first flight of what was to become the fastest combat aeroplane in the world.

EARLY TRIALS

Initial trials proved most successful; officials at the flight test establishment at Boscombe Down, Wiltshire, were much impressed. The prototype handled well but, most important of all, its speed in full supercharger gear was found to be 388 m.p.h. at 22,000 ft. De Havilland drew attention to some trouble with buffeting, but this was to be put right by extending aft the length of the engine nacelles.

The first prototype (W4050) was principally built to test de Havilland's design and was in no sense a bomber, fighter or reconnaissance Mosquito. The first reconnaissance prototype (W4051) was ordered in January 1941, along with 19 more reconnaissance versions. These were Mosquito P.R. Mk. Is. The third Mosquito was the fighter prototype (W4052). No bombers had yet been ordered. It was not until July 1941 that the contract embraced any bomber production, which was disappointing.

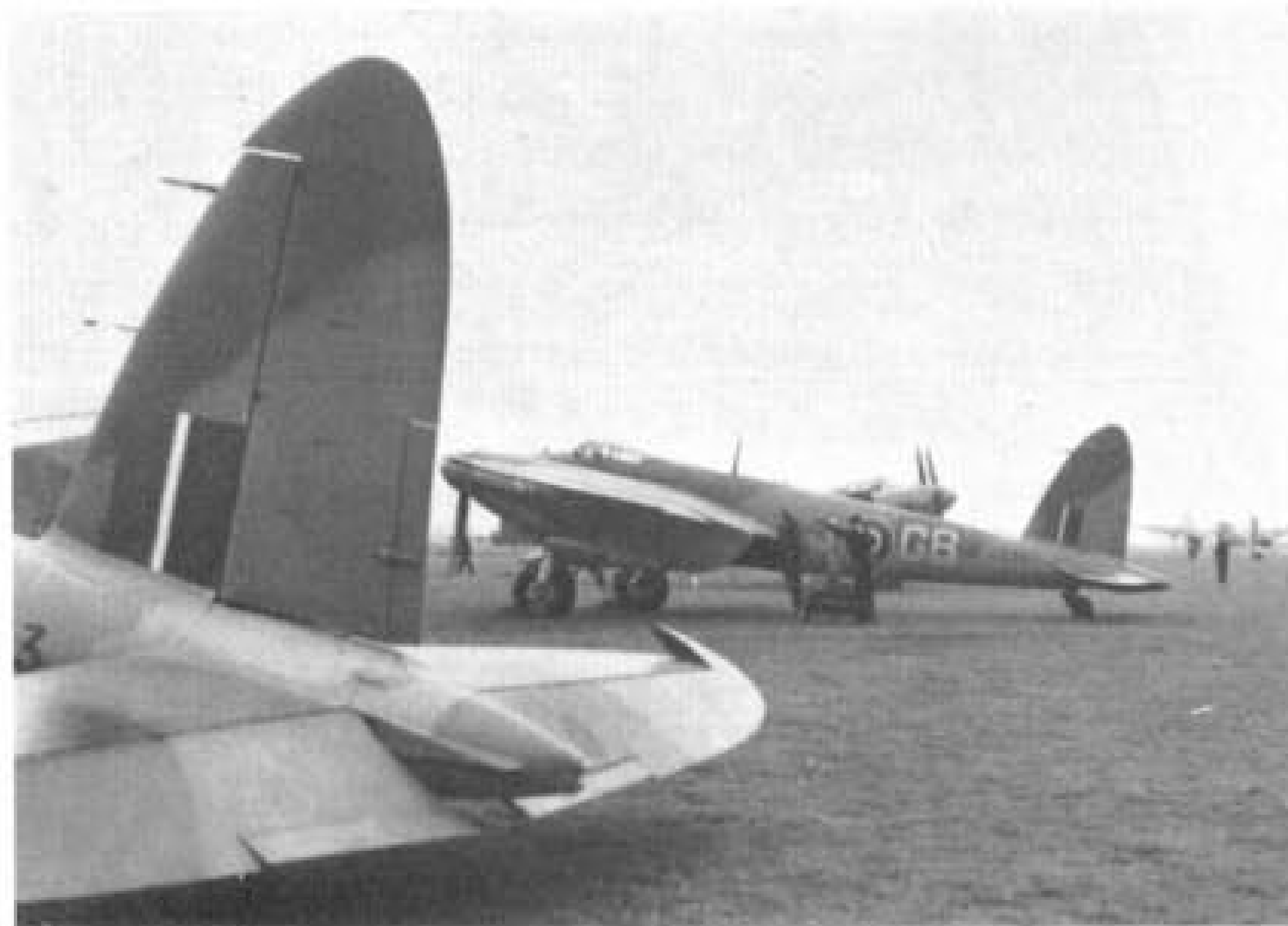
It was planned that the bomber would be the B. Mk. V for which W4057 was set aside as the prototype and which was first flown in September 1941. But seeing that the claims of speed and performance



Clearly visible in this rear view are the two cockpit side blisters which gave excellent view aft. (Photo: Flight)



Four 500 lb. bombs with short tails go aboard GB-J DZ367. (Photo: Flight)



Bombed-up, GB-J DZ367 is ready to go. (Photo: Flight)

were met by the aeroplane it was rather surprisingly ordered that nine of the reconnaissance Mosquitos should now be completed as bombers. This played havoc with the production schedules already altered by the decision to make some of the early airframes fighters. Thus it was that W4064 to W4072 were completed as PR/Bomber Conversion aircraft and redesignated B. Mk. IV Series i—not because they



With an aeroplane as individualistic and exciting as the Mosquito it was little wonder that emblems soon adorned the aircraft at Marham. Here an American in the R.A.F., F/O F. M. Fisher stands by Uncle Sam, one of the Mosquitos used by No. 105 Squadron in the daylight raid on Berlin, January 30, 1943. Note the "B for Berlin" bomb tally. The playing card motif was also carried by several other of the No. 105 Squadron aircraft. (Photo: Flight)

had short nacelles or anything like that, but to distinguish them from the first true bomber Mosquitos which were Mk. IVs Srs. ii, interim examples until the refined B. Mk. V was ready.

Little change was made to the Mosquito during its basic development. There was some experimentation with slightly enlarged tailplanes to alter stability, and ejector type exhausts were tried. The speed advantage the bomber would have was clearly slight—but it did seem to have the all-important edge over the enemy fighters. There were trials to see how many bombs the aircraft could carry, and of what weight. Two 1,000 lb. and two 500 lb. bombs were possibilities, also six 250 lb. or four 500 lb. One problem was that standard 500 lb. bombs would not fit into the bomb bay if the doors were closed. One of the D.H. team, C. T. Wilkins, hit on the idea of telescopic fins years before these became commonplace. An easier scheme was to shorten the vanes, and test drops were made from the bomber prototype (W4057). Eventually they were adopted and cleared for Service use, although their development and production partly delayed the Mosquito's operational career.

PRODUCTION

Apart from the PR/Bomber Conversions, Mosquito bombers did not figure in the production schedules until July 1941, when it was finally decided that the last nine P.R. Mk. Is would be built as bombers, and that the last 50 from the second Contract would be built as fully modified B. Mk. IV Srs. ii. On these it was still possible that some forward-firing guns would be fitted—just in case. Production was to start in January 1942, although it was actually April 1942 when the first two were delivered. B. Mk. IV Srs. i aircraft were built between October 1941 and February 1942, much later than need have been the case if the Air Ministry had accepted the D.H. estimates of performance.



Time for air test—before operations—on 105 Squadron.

(Photo: Imperial War Museum)



Above: The characteristic ground outline of the Mosquito, surely one of the most beautiful aircraft of all time, is well seen here.

(Photo: Imperial War Museum)

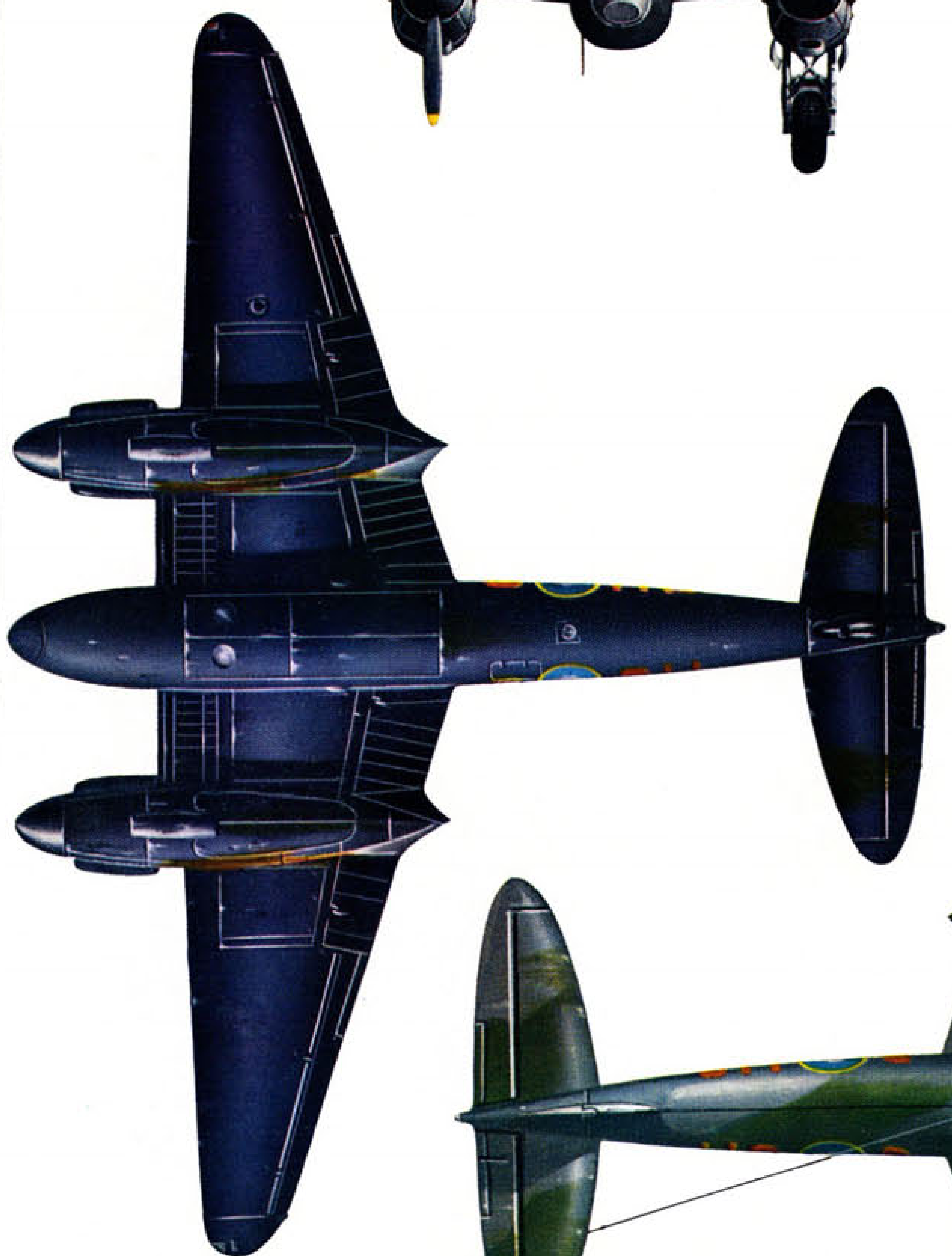
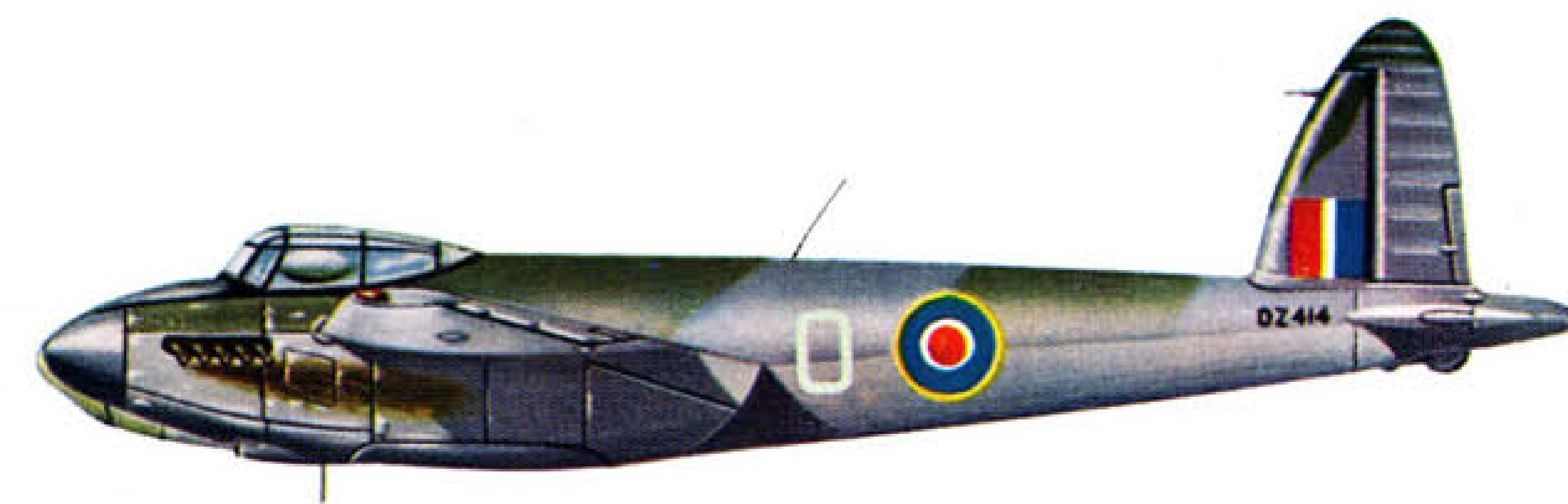
Below: Mosquito GB-E DZ353 makes a low pass across Marham in December 1942.

(Photo: Imperial War Museum)

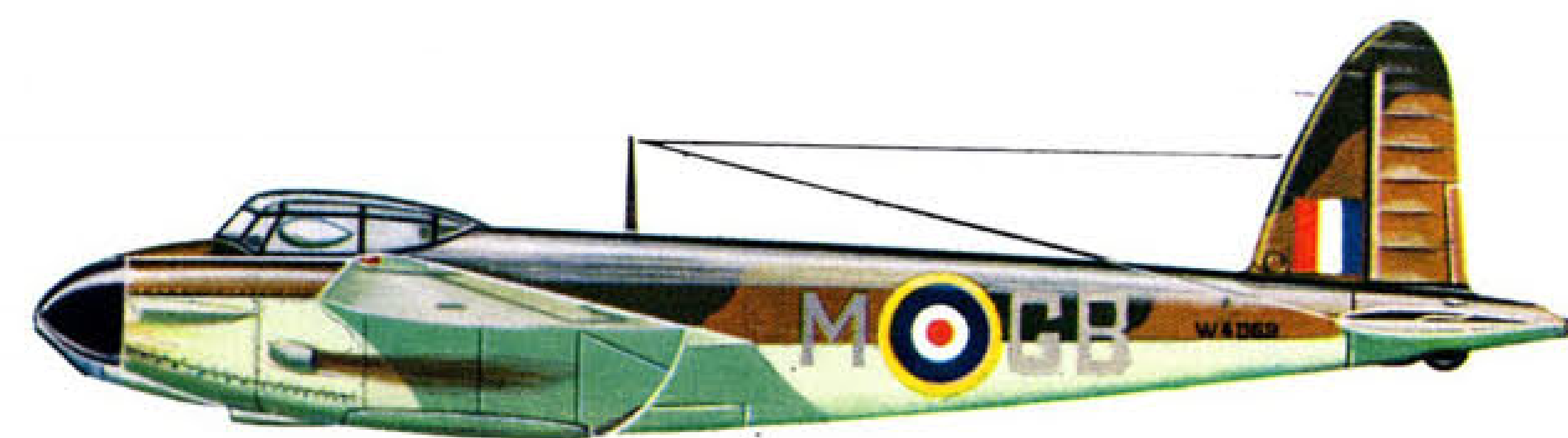




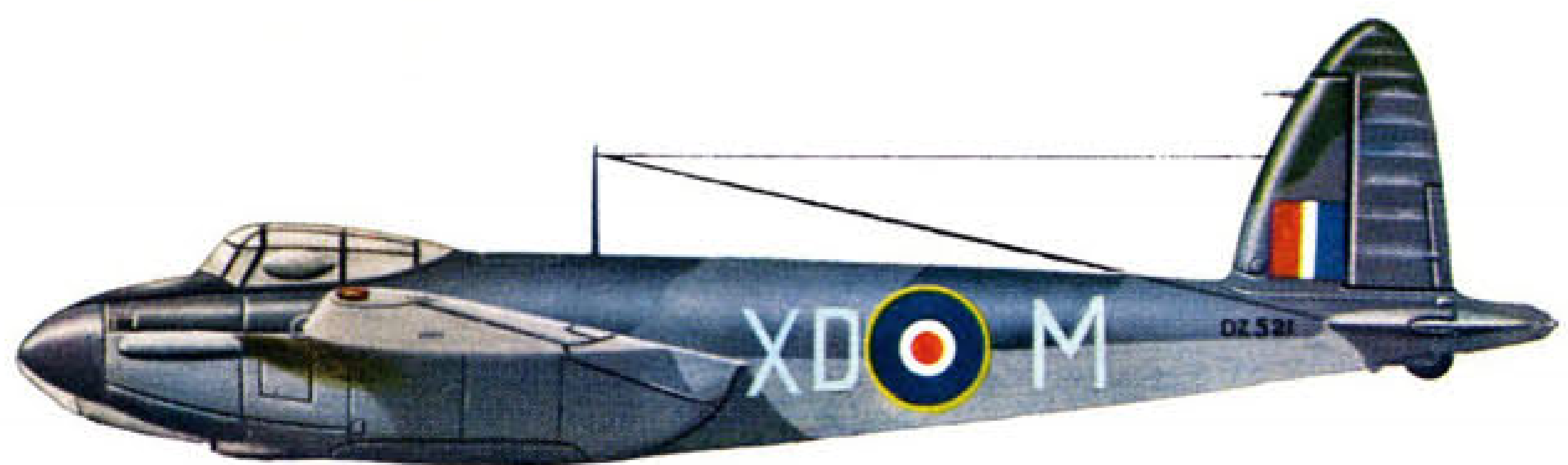
DZ414 of 138 Wing, the famous 'O Orange' as recorded at Cambridge 25 February, 1945 after major overhaul. It served with 105 Squadron, 109 Squadron, at various stations and later with 140 Wing. Note the extra nose glazing



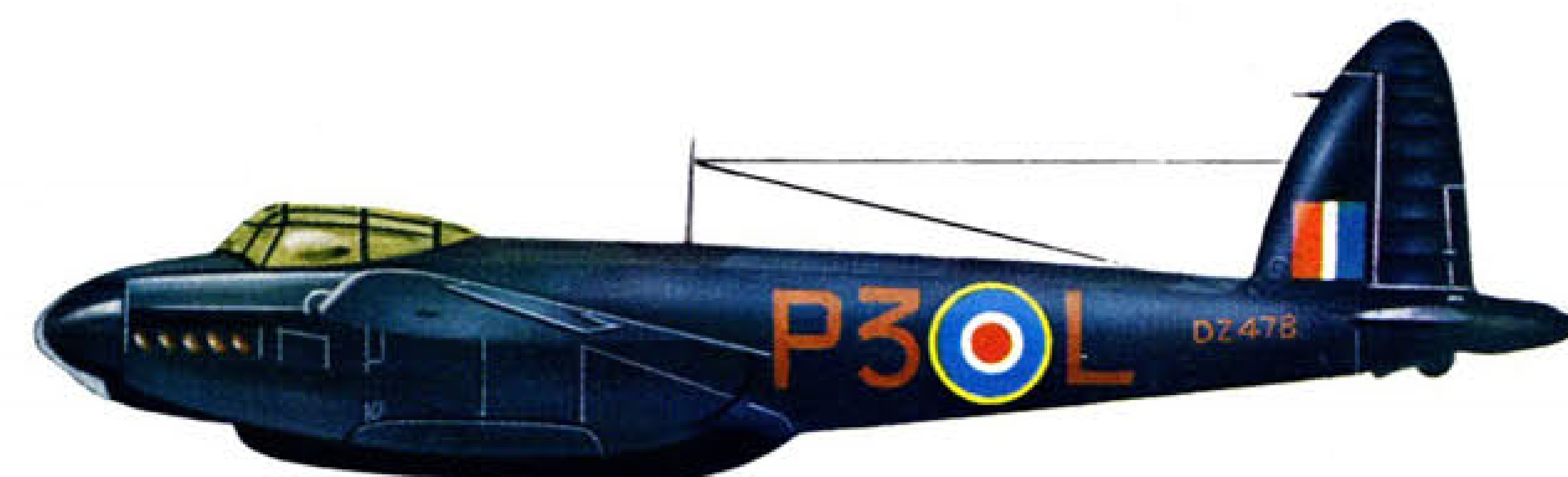
W4069 delivered to 105 Squadron 14 January, 1942 flew six operational sorties and was lost on 16 July, 1942. Aircraft was a PR/Bomber Conversion Type IV. As recorded in April, 1942



DZ521 of 139 Squadron as recorded at Wyton 4 December, 1943. Served with 139 Squadron 1 July, 1943, to 21 April, 1944 when it became M of 627 Squadron



DZ478 of 692 Squadron as seen at Graveley in February, 1944. Later used by 139 Squadron and 627 Squadron. Had operated by day with 139 Squadron



The selection of views show—DK331 'D Dog' of 109 Squadron as seen at Wyton in December, 1942. Flew some of the early *Oboe* sorties. During 1945 was used by the Navigational Training Unit for training pathfinder crews





Mosquitos DZ367 "J" and DZ353 "E" keep station as they often did during the 1942-3 year of operations.
 (Photo: via M. J. F. Bowyer)

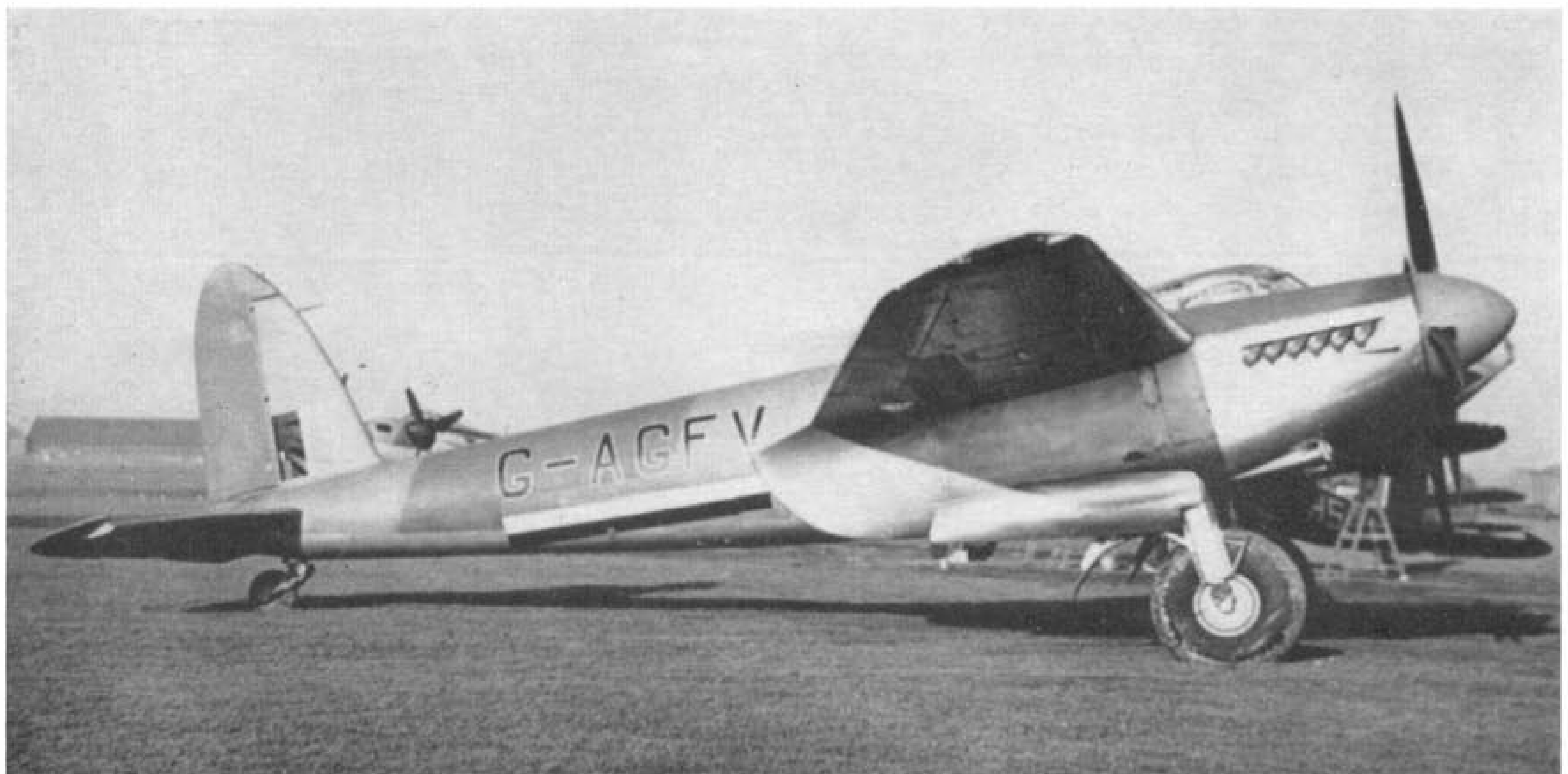
By this time there had been massive dispersal of Mosquito production. That raid on Hatfield of October 1940 had taught the D.H.'s a most important lesson—to disperse production as widely as possible so that it could never be totally eliminated. Only the bomber erection shops at Hatfield were really vulnerable, but fortuitously, the enemy never attacked them. Eventually over 400 firms were making important contributions to production, ranging in size from a group of seven persons to major sub-

contractors like Wrighton's and Gomme's of High Wycombe, now well known as the makers of G-Plan furniture.

THE PRINCIPAL RÔLE

On November 15, 1941, Geoffrey de Havilland presented No. 105 Squadron at Swanton Morley, with the first Mosquito bomber (W4064) to enter Royal Air Force service. In his inimitable style he threw the

Mosquito DZ411 passed to B.O.A.C. as G-AGFV on December 15, 1942, and served the airline until it crashed at Stockholm on July 4, 1944. It was the favourite B.O.A.C. "Mossie" because it was the fastest. Unshrouded multiple exhausts boosted its speed by 12 m.p.h.
 (Photo: Hawker Siddeley)



machine around the sky demonstrating to the Spitfire pilots gathered there that here was a bomber that handled just like a fighter, *the* fighter. Air gunners could see that if they were to be in on the act they must become navigators—and there was an obvious saving in crew training as had been forecast. There was at once tremendous enthusiasm for the strikingly beautiful bomber whose performance was quite shattering. It was asked: “Why have we waited so long?” Why indeed?

Range trials had to be carefully flown and there was consideration as to what tactics should be adopted,

Few Mk. IVs could be spared from operations for experimental work, but one was DK290/G—the “G” denoting permanent guard when not flying. It was the first to have unshrouded exhausts when trials with these were made to assess whether they increased speed. It was also used for bomb trials and at one time had a polished finish and wing root fillets. Stability tests were made with a 10-degree dihedral tailplane. The photograph shows Mosquito DZ290/G in April 1943, when it was at Boscombe Down carrying dummies of the Highball skip-bombs devised by Barnes Wallis to sink the Tirpitz. It ended its days at No. 10 School of Technical Training, Kirkham (Lancashire) as 4411M. (Photo: Imperial War Museum)

The 4,000-lb. bomb carrying prototype conversion (DZ594/G), seen below in November 1943, was, after many trials, used by No. 627 Squadron (code: AZ-X). It survived the war only to crash in June 1945. (Photo: Hawker Siddeley)



namely high-level cloud cover bombing or low-level strikes. An accident occurred which highlighted the need for a Mosquito repair organisation—it was always stressed how easy it was to repair a wooden aeroplane with a few tools and a pot of glue. Tactical trials showed that the Mosquito could outmanoeuvre a Spitfire and that the only way for it to catch the bomber was to dive upon it—impracticable if the bomber flew at its best operational height, 21,000 ft.

By April 1942, No. 105 Squadron had seven operational aircraft but no Mk. IVs. The R.A.F.'s Photographic Reconnaissance Unit (P.R.U.) had made a great success of the Mosquito and already flown some amazing flights. It had first call on production, which meant that some Mk. IVs were to be completed as reconnaissance aircraft.

No. 105 Squadron was convinced it had a winner, but R.A.F. Bomber Command was still sceptical. There was the constant fear that the bomber would lose its narrow margin of speed over the fighters. But its baptism of fire was near. It was decided to follow up the R.A.F.'s Thousand Bomber raid on Cologne at the end of May 1942, with lightning strikes by Mosquitos which would also photograph the results of the bombing. On May 31, single sorties left Horsham with five in all being despatched. One never returned; it had fallen to predicted *flak*. But Sqn. Ldr. Channer's low-level sortie had great bearing for the future. He was over enemy opposition before it could be brought into action.

The second Mosquito squadron, No. 139, reformed June 8, was also at Horsham; but it had to rely on No. 105 for aircraft, such was the supply position. Before the 1,000 Plan raid on Bremen, one of the "Mossies" (as they were affectionately dubbed) went into action making a low-level raid on Stade aerodrome. This was the start of round-the-clock raids by Mosquitos.

On July 2, three Mosquitos set off for the first low-level raid on Flensburg's U-boat yards. For the first time FW 190s intercepted, but they were not fast enough to catch up with the bombers. The theory



In 1943 the two Mosquito squadrons, Nos. 105 and 139, waged a personalized offensive against the railway system in the Occupied countries. Here they have bombed railway workshops in France. (Photo: via M. J. F. Bowyer)

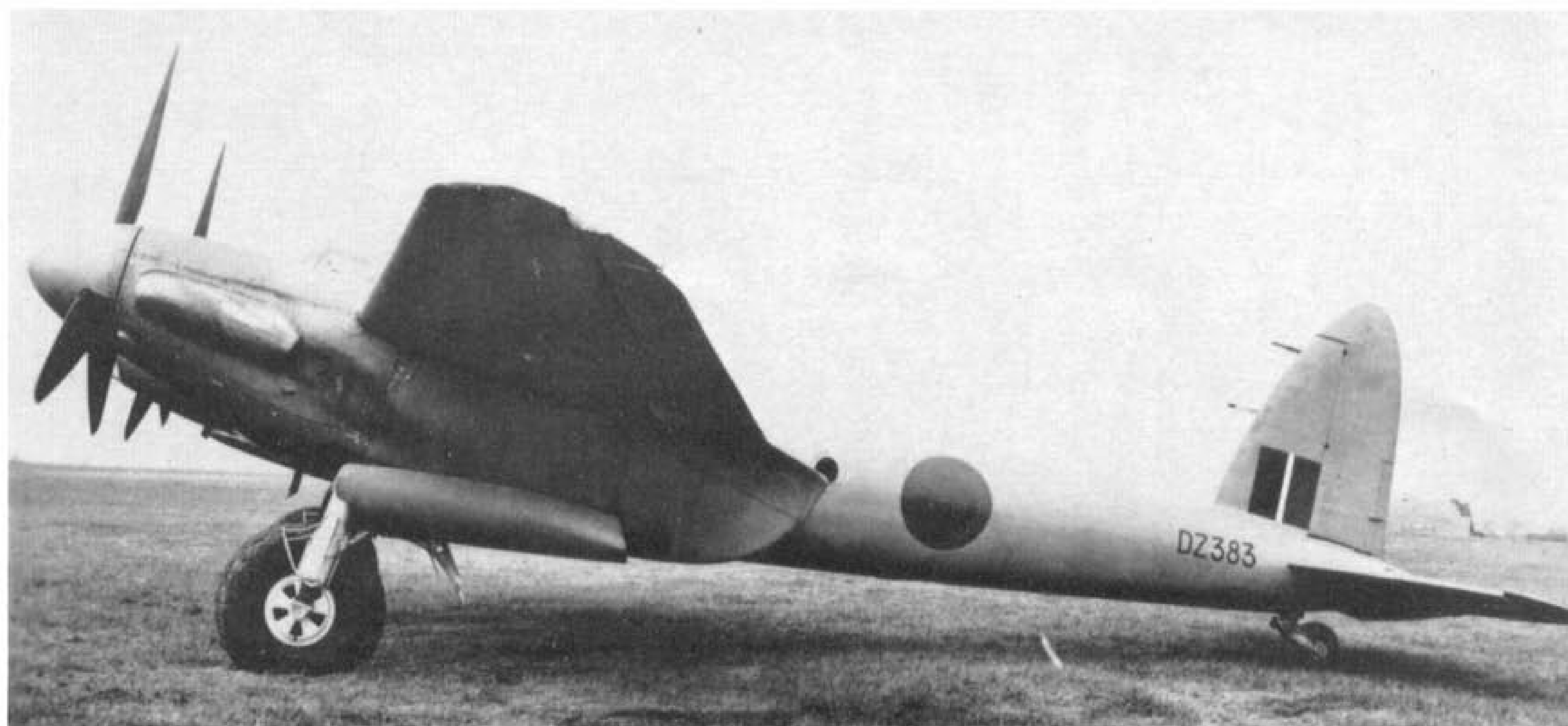
worked in practice, although the loss of two Mosquitos showed no room for complacency. Indeed, the speed advantage was only about 5 m.p.h. There were other dangers in low flying, too—one had to avoid the chimney pots and hope that there would be no bird strikes. However, even with relatively high losses, few of which were attributable to enemy fighter interception, the aircraft was clearly outstanding.

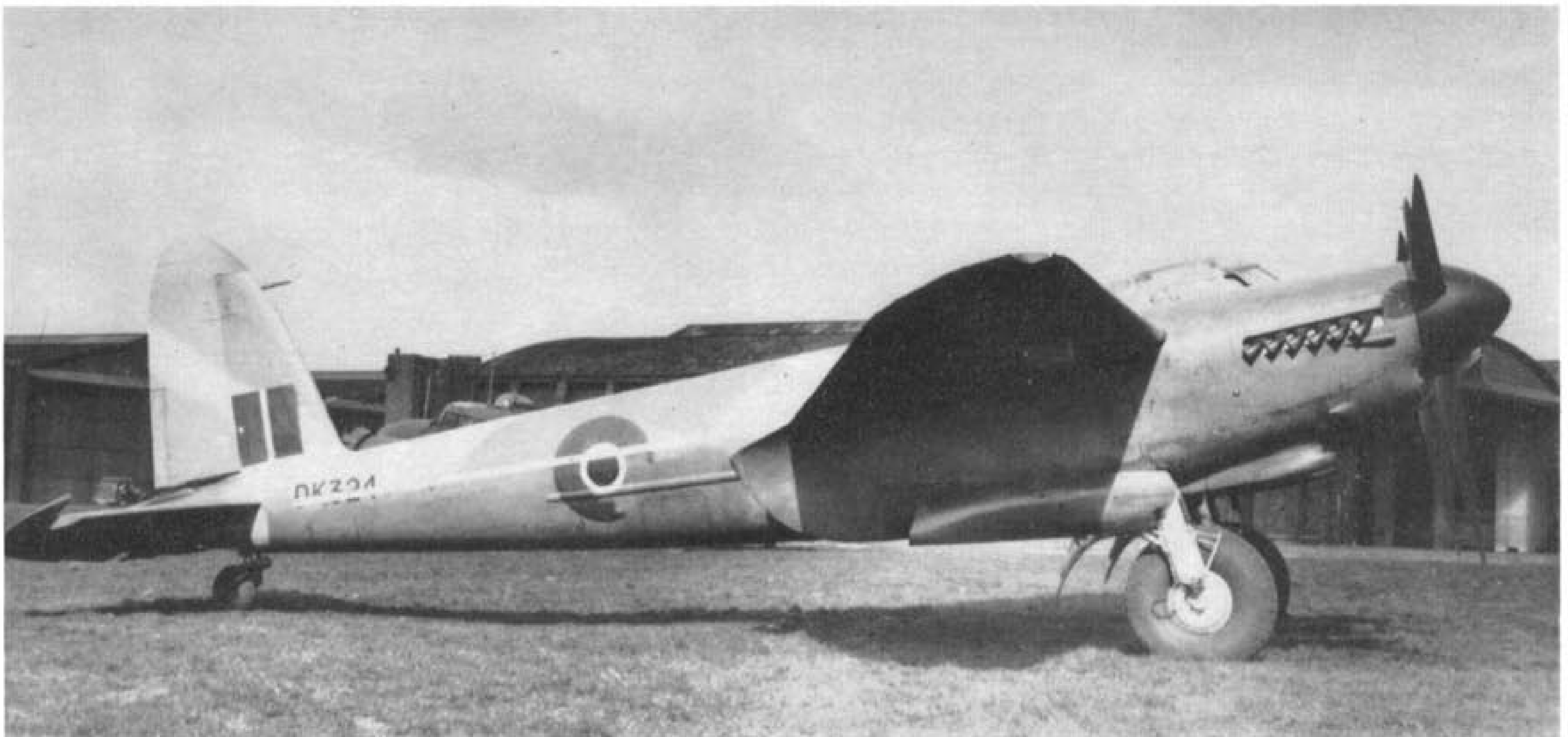
Some high-level, cloud-cover bombing followed and from time to time FW 190s engaged the bombers and tried some head-on attacks—they could not catch the Mosquitos by conventional interceptions.

Range being sufficient, the most audacious raid yet attempted was mounted on September 19 when six Mosquitos set out for a daylight raid on Berlin. There were interceptions by fighters and one Mosquito was shot down. But one (DK337), reached the city and bombed it on dead reckoning.

The most spectacular raid of the period was the bombing of Oslo in daylight by four of No. 105 Squadron which set out from Leuchars. Again FW 190s inter-

A P.R. Mk. IV wears the overall "PR blue" finish of such aircraft. At time of photographing in May 1943, it was used by No. 540 Squadron and later by 138 Wing as a photographic record aircraft and survived until late 1946. (Photo: Imperial War Museum)





This Mosquito (DK324) was one of the five PR Mk. VIIs built using Mk. IV airframes. It was also the first pre-production aircraft with Merlin 61 engines. After serving with No. 540 Squadron it went to No. 1409 Flight. Then it was modified to B. Mk. IX standard and used by No. 139 Squadron in 1944 and survived the war. (Photo: Imperial War Museum)

cepted and forced one, (DK325), to crash in Sweden. The rest roared over Oslo at roof top height to bomb the Gestapo headquarters. They raced home along a fjord with fighters following but unable to catch them.

Clearly the speed margin was slight and all sorts of ideas were attempted to improve it. Eventually the best proved to be the fitting of oval exhaust stubs in place of the shrouded variety which were kept for use in darkness or at dusk. Scare guns were again suggested for the nacelles, but discarded after trials.

Tactics were eventually evolved whereby the bomber force was divided into two. One half adopted the low-level form of approach while the remainder in the rear would part to climb, making a shallow dive just after the first sections had faced *flak* and completed their bombing runs. Dawn and dusk attacks had much to commend them, but flying over the sea in dark conditions was tricky and hazardous.

High-level Mosquito attacks petered out in September 1942, since the Mosquito had by then proven itself fast enough for low-level daylight penetrations of targets way beyond the fringe areas that 2 Group was principally engaged against. A long distance and particularly hazardous attack was that delivered against an armed raider in the Gironde Estuary on November 7. It called for a wave top attack and one Mosquito failed to return.

Ten Mosquitos were used on the famous raid on the two Philips factories at Eindhoven on December 6. So fast were they that the raid had to be specially planned to take account of this aspect. Their speed proved useful on the operations for two Mosquitos were able to head off a number of enemy fighters and outpace them.

On January 27 the target was the large Burmeister Wain ship-building yard at Copenhagen. So low was one of the bombers that its wing scraped telegraph wires. One of the combined low-level shallow-dive attacks took place on February 14, when the engine sheds at Tours were the target.

Versatility was ever the Mosquito's trade mark and where operations were concerned it was evident in the wide range of targets geographically speaking and by type. Naval stores at Rennes were hit on February 26, and on March 3 the molybdenum mine and washing plant at Knaben in Norway. Next came the railway sheds at Aulnoye and Le Mans, and on March 16 similar targets at Paderborn, which called for the deepest penetration of Germany yet made. One of the attackers was intercepted over Holland by three ducks. Bird strikes such as this were an ever-present hazard and caused some very unpleasant situations equally dangerous as those of the enemy fighters.

On March 23 a long journey took the Mosquitos to the locomotive works at Nantes, then the targets were switched to Tours and Ehrang. By this time the Mosquitos had very carefully delivered 2,000 tons of bombs, mainly on the targets—which was more than could be said at the time for many of the armed bombers.

Throughout April the attacks continued, Malines, Namur, Tours, Trier and Paderborn coming onto the operations orders. Every one was a carefully planned precision attack, none more so than the last raid of the series on the Schott glass factory and the Zeiss works at Jena at the end of May 1943.

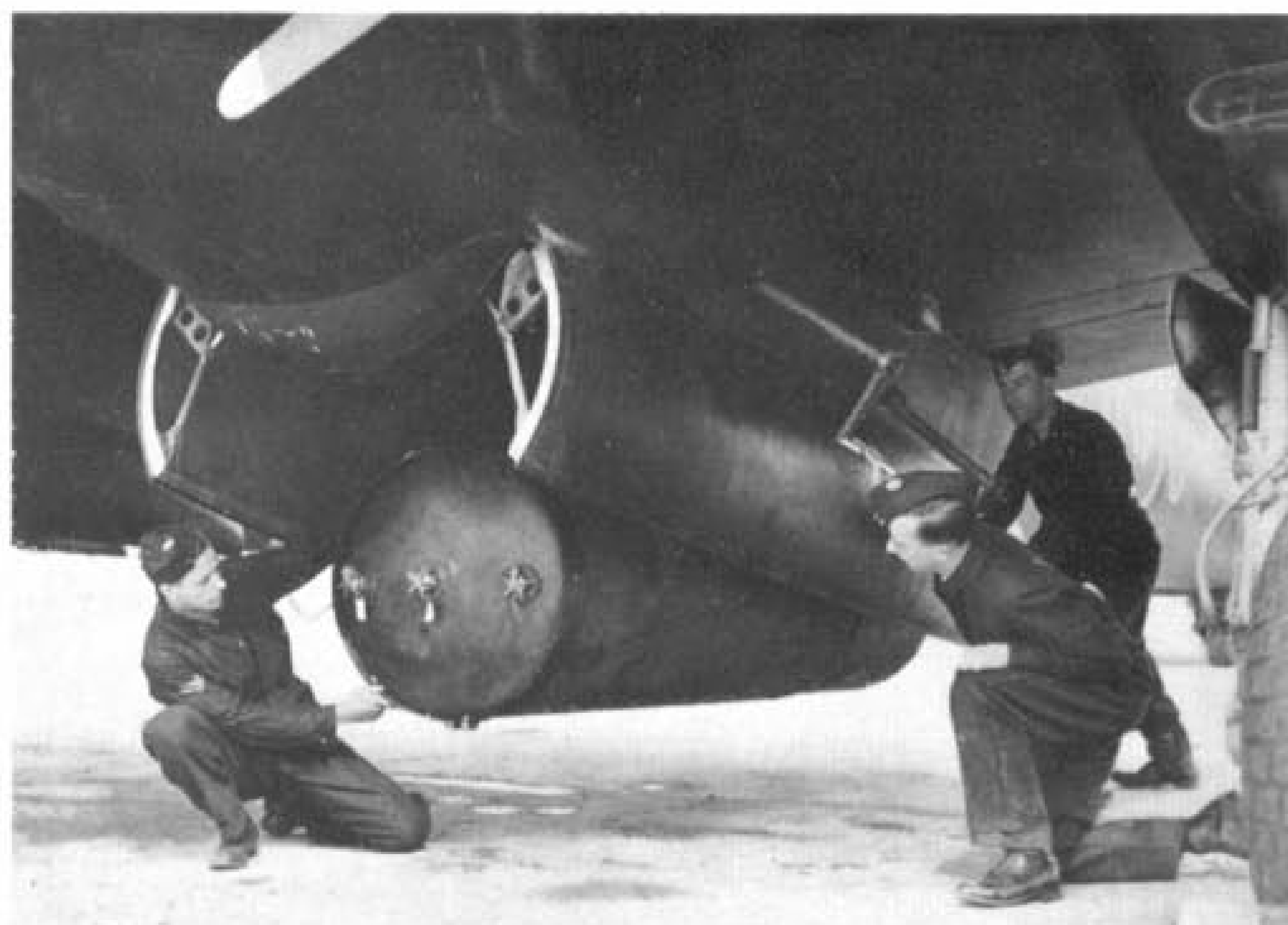
Towards the end of May 1943, the two day bomber squadrons, Nos. 105 and 139, maintained a continuous assault on the enemy ranging from Norway to the Gironde Estuary. The highlight was probably a two-stage attack on Berlin on January 30, 1943, when they silenced the broadcast voice of Hermann Goering in the morning and halted the chatter of Dr. Goebbels later. But behind the scenes there were other ideas afoot. If Berlin could be bombed in daylight, surely night attacks could be made in far greater security? Already Mosquito IVs were operating by night over Germany in perhaps their most exacting rôle.

To make its heavy attacks worthwhile, Bomber Command needed to achieve greater accuracy in 1942.

This was made possible by the invention of a blind bombing aid, *Oboe*, the range of which was limited by the height at which the aircraft carrying it could fly. Once again the Mosquito proved to be the ideal aircraft, fast and high flying, almost immune to interception. On December 20, 1942 six Mosquitos were directed to the power station at Lutterade and, using *Oboe*, placed some of their bombs very close to the aiming point. Thereafter Mosquitos were despatched to many targets in the industrial Ruhr, marking them for the following heavy bombers with ground or sky markers. These raids climaxed on March 5 when the great Krupps works at Essen was the target and successfully heavily hit for the first time. By mid-summer, the Mosquito Mk. IX with its two-stage Merlin engines had taken over this vital rôle.

There was plenty left for the Mk. IVs to do at night. When the squadrons of No. 2 Group passed from Bomber Command to the 2nd Tactical Air Force (2 T.A.F.) on June 1, 1943, the two Mosquito squadrons were retained by Bomber Command and swapped to night nuisance raids, much to the chagrin of the squadrons' personnel. Once more the Mk. IVs headed for Berlin. Another use to which they were put was the dropping of *Window*, the metallic strips designed to confuse German radar. Before long Mosquitos were making diversionary raids to draw-off enemy fighters from the main bomber stream. But already another new purpose had been decided upon for the Mk. IV night bombers.

In April 1943, de Havilland suggested the carrying of one 4,000 lb. bomb by the Mosquito. Orders were given for a Mk. IV Srs. II (DZ594) to be suitably modified for trials with the new weapon. It was at this time, too, that other Mk. IVs were busily engaged in dropping trials of another weapon, *Highball*, which



Above: A 4,000-lb. "cookie" goes aboard DZ637 of No. 692 Squadron (code: PB-C) at Graveley (Hertfordshire). Later the aircraft operated with No. 627 Squadron, and was reported missing on February 2, 1945.

was, in effect, a smaller version of Dr. Barnes Wallis's "skipping" bomb used by No. 617 Squadron against the German dams. Mosquitos, it was planned, should use a smaller version to "skip" the submarine and torpedo nets surrounding the *Tirpitz* and sink the battleship.

Trials with the 4,000 lb. bomb-carrying Mosquito took place during the summer and autumn of 1943. It was a heavy aeroplane and its stability was none too good. Nevertheless, by the end of the year it was flying at over 25,000 lb. all up weight—an increase of 4,000 lb. over the normal Mk. IV. However, for operational sorties the take-off weight of the new variant was set at

When a Mosquito PR Mk. IV (DK310) landed in Switzerland on August 24, 1942, it was interned and after negotiations flown by the Swiss authorities as HB-IMO. (Photo: via Werner Gysin Jnr., Basle, Switzerland)



22,570 lb. While initial development had been fast, the later stages were slow as stability was investigated and bomb winch troubles solved.

Thirty sets for the conversion of Mk. IVs to carry the 4,000 lb. bomb were ordered and the first two modified aircraft reached No. 692 Squadron at Graveley on February 4, 1944. On February 23 three of the 4,000 lb. conversion Mosquitos took off for Dusseldorf where the bombs were dropped. No. 627 Squadron also took part in the early operations until it was transferred to 5 Group for, in the main, pathfinder duties.

In March the Mk. XVI was introduced to No. 692 Squadron and the Mk. IVs started to be phased out—but not before they had added mine-laying to their repertoire. During night operations, no fewer than 35 Mk. IVs were lost over the period May 1943 to March 1945—about 0.5% of sorties flown. Some of these were by No. 627 Squadron which, between April 20, 1944 and late in the war, flew a large number of specialised marking and reconnaissance sorties for the special squadrons of 5 Group.

ON OTHER DUTIES

Twenty-seven Mosquito Mk. IVs were converted to photographic reconnaissance (PR) standard for use by No. 540 Squadron operating from Benson. Initially two other Mk. IV bombers were converted into PR aircraft to maintain the strength of the Photographic Reconnaissance Unit (PRU) and began operations in April 1942. Probably the best known PR sortie was that of Flt.Lt. Wooll (DK310), who set out on August 24, 1942 to photograph Adriatic ports. Near Venice, he encountered engine trouble, a rather unusual event because of the magnificent reliability of the Merlin engines. He was forced to land in Switzerland where DK310 was interned and later given the Swiss civil registration HB-IMO. It had an eventful life with the Swiss Government.

A line-up of No. 139 Squadron aircraft, DZ421 XD-G nearest.



Spectacular low-level raids were surely the most memorable of all the Mosquito's roles. On March 23, 1943, No. 139 Squadron made a long trip to the St. Joseph locomotive works at Nantes (western France). The timing of Mosquito attacks was very precise, requiring great skill from the crews. After their long flight No. 139 Squadron's crews managed to arrive dead on time—just as the shift was ending work. Witness from this dramatic photograph how unperturbed the workers are even as the bombs burst on the works in this surprise attack. And note just how low the raids were delivered.

(Photo: Crown copyright reserved)

Mk. IV Mosquitos gradually took over the vital PR duties from the Mk. Is in 1942 and were constantly used until the issue of the superior Mk. VIII and Mk. IX. One useful task in which Mk. IVs did pioneer work in the hands of No. 544 Squadron was that of night photography. It was autumn, 1943 before they were superseded, after they had done their share of unearthing the secrets of the missile development and test centre at Peenemunde.

For the Britain-Sweden mail run, B.O.A.C. needed a fast aeroplane that could avoid fighter interception and *flak*. Only the Mosquito fitted the requirement and, late in 1942, DZ411 was made available to the

(Photo: via M. J. F. Bowyer)





DZ515 of No. 139 Squadron in the summer of 1943.

(Photo: via M. J. F. Bowyer)

Corporation as G-AGFV for a period of trials. These led to some remarkable flights over a period of two years between Leuchars in Scotland and Bromma in southern Sweden. G-AGFV was the fastest of the B.O.A.C. Mosquitos.

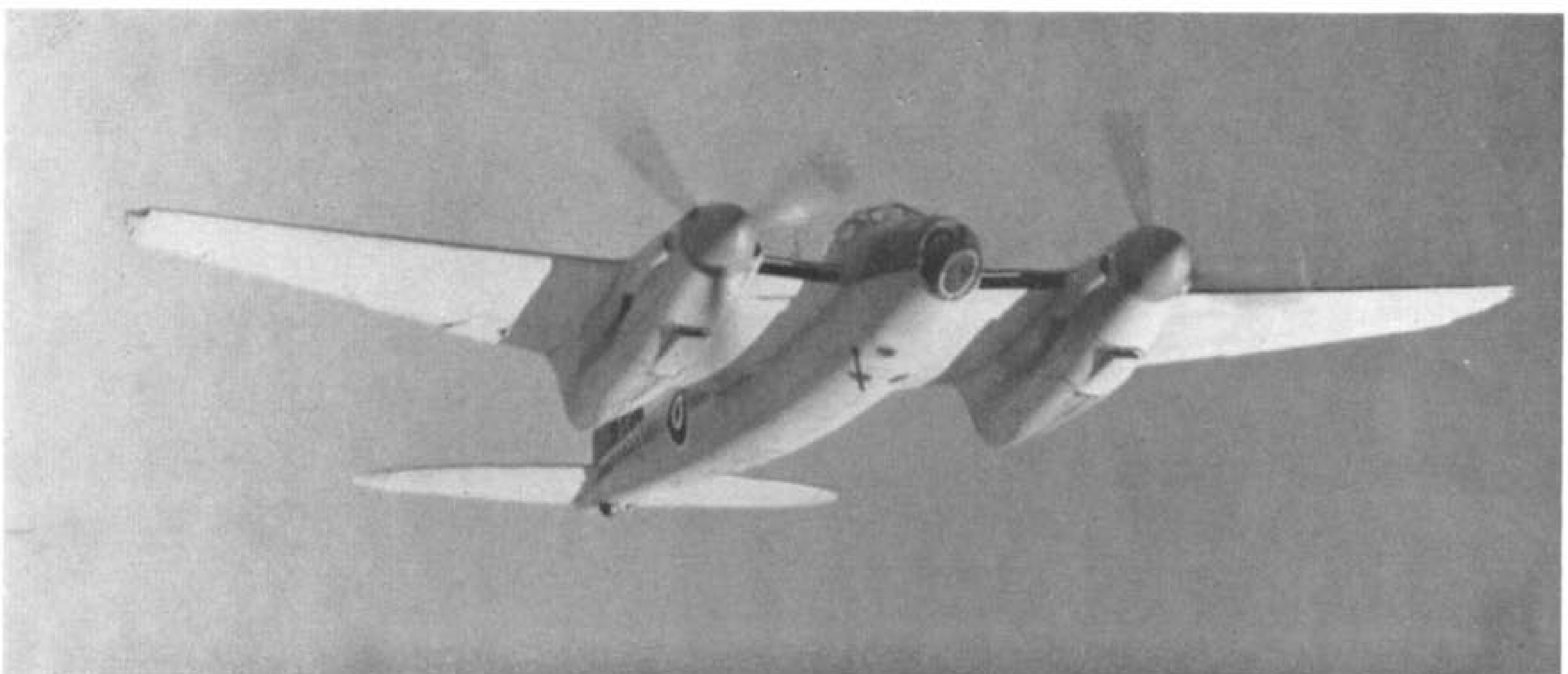
One of the most useful and quite un-sung duties the Mosquito Mk. IV performed was that of weather reconnaissance. It was necessary to know the weather conditions likely to prevail over enemy territory before major Bomber Command operations and, from July 1942, a handful of Mosquito Mk. IVs performed this task with No. 521 Squadron, flying from Bircham Newton. Very deep penetrations of enemy territory were made—to the Alps, Turin, Munich, Flensburg;

all on the PAMPA service. No. 521 Squadron came under R.A.F. Coastal Command until its disbandment on March 31, 1943. Thereafter it was 1409 Flight at Oakington, at half squadron strength, that flew these vital missions and used the Mk. IV until October 1943.

Of all the Mosquito IVs which served, probably none had such a varied career as DZ414, the famous "O for Orange". Wherever there was a special bombing raid it seemed to turn up to photograph the proceedings, whether it be made by Bomber Command or the Mosquitos of 2 TAF. It was DZ414 that bombed Berlin, which photographed the bombing of Nuremberg, watched over the evening raid on Jena, brought

Another view of GB-J (DZ367) which also appears on the cover of this Profile.

(Photo: John Yoxall)





Forerunner of the Mosquito was the D.H.88 Comet seen here at the 1951 Festival of Britain exhibition in London.

(Photo: M. J. F. Bowyer)

back vital film of the V-1 flying bomb sites, filmed the 1944 Normandy landings and ranged over the northern cities of Italy. These sorties took DZ414 over a distance of 20,000 miles almost in immunity from enemy interference. Often its bombs rained down upon pin-point targets in true Mosquito style, and, like so many of the other Mosquito IVs, stung the enemy hard wherever it concentrated.

CONSTRUCTIONAL DETAILS

The wing was an all-wood structure comprising two box spars with laminated spruce flanges and plywood webs, spruce and plywood compression ribs, span-wise spruce stringers and a plywood skin. A false leading edge built up of nose rib formers and a D-skin was attached to the front spar. The whole wing was screwed, glued and pinned, and covered with fabric over plywood. Slotted flaps were hydraulically operated.

The oval section all-wood fuselage was jig built in two vertical halves each fully fitted out before joining. Seven bulkheads built of two plywood skins and kept apart by spruce blocks carried the outer skin, which was a sandwich of balsa wood between two layers of plywood. Where the bulkheads were attached a ring of spruce replaced the balsa. Where attachments were made to the skin a bakelite plug was inserted into the balsa and a plywood flange was glued to the inner surface to distribute the load. The two halves of the fuselage were scarfed together with vee notches reinforced by ply inserts. After assembly the whole fuselage was covered with fabric. The underside of

the fuselage was cut out to accommodate the wing, attached to four large pick-up points, the cutaway being replaced after assembly.

An all-wood tail unit had plywood covered fixed portions with fabric-covered rudder and elevators. An interesting feature of the undercarriage was its rubber compression introduced to speed production and proven to be very effective. The undercarriage was retracted hydraulically and the brakes were hydraulic too. A Marstrand double tread, anti-shimmy tail-wheel was a feature adopted after considerable trouble in the prototype stage.

De Havilland three-bladed propellers were fitted. The radiators were placed inboard of the nacelles in the wing leading edge, the outlet being controlled by under-wing flaps and the efflux giving a small jet effect. Each radiator was divided into three parts, the outer forming the oil cooler, the middle the coolant radiator and the inboard section the cabin heater.

Fuel was carried in ten protected tanks, two in the fuselage between the wing spars, two on either side of the fuselage inboard of the nacelles and the out-board two tanks. An external tank could be carried beneath each outer mainplane, each one of 50 gallons capacity.

Series Editor: CHARLES W. CAIN

SPECIFICATION

Mosquito Mk. IV production by serial number

Mk. IV Series i : W4064-4072.

Mk. IV Series ii : DK284-303, DK308-333, DK336-339 (delivered between April and September 1942), DZ311-388, DZ404-442, DZ458-497, DZ515-559, DZ575-618, DZ630-652 (delivered between September 1942 and August 1943).

Within the above batches the following airframes were completed as different marks: P.R. Mk. VIII DZ342, 364, 404, 424; N.F. Mk. XV DZ366, 385, 409 and 417. DZ540 modified to P.R. Mk. XVI prototype. DZ434 became the prototype Mk. VI renumbered HJ662, and was replaced by another airframe which became DZ434.

Conversion to P.R. Mk. IV: DZ411, 419, 431, 438, 459, 466, 473, 480, 487, 494, 517, 523, 527, 532, 538, 544, 549, 553, 557, 576, 580, 584, 588, 592, 596, 600 and 604.

Conversion to 4,000 lb. bomb carriers: DZ534, 594, 599, 608, 611, 633, 634, 637-644, 647 and 650.

Dimensions, weights, performance

Wing span: 54 ft. 2 in.

Length overall: 40 ft. 9½ in.

Height: (tail up) 17 ft. 5 in.

(tail down to top of propeller disc) 15 ft. 3 in.

Wheel track: 16 ft. 4 in.

Wing area: 436.7 sq. ft.

Maximum fuselage width: 4 ft. 5 in.

Wing tip ground clearance: (light load) 9 ft. 3 in.

Loaded weight: 21,794 lb. (22,380 lb. overloaded).

Most Mk.IVs were powered by the Rolls-Royce Merlin 21, but some had the Mk. 23. There was little difference in performance. Figures varied amongst aircraft and were naturally affected by load. The following were typical figures:

Maximum speed: (FS gear) 17,000 lb. weight, 2,650 r.p.m., 7 lb. boost, 252 m.p.h. I.A.S.

Maximum speed: (MS gear) 17,000 lb. weight, 2,650 r.p.m., 7 lb. boost, 280 m.p.h. I.A.S.

Maximum speed: (MS gear) 18,000 lb. weight, 3,000 r.p.m., 9 lb. boost, 385 m.p.h. T.A.S.

Maximum ceiling with full load: 27,000 ft.

Recommended cruising speed at full load: 220 m.p.h. I.A.S.

Maximum fuel load: 539 Imperial gallons giving range of 1,220 miles at 20,000 ft. or 1,210 miles at 25,000 ft.

4,000 lb. conversion: Maximum permitted take-off weight, 22,570 lb.; target ceiling 25,000 ft.

Still air range: 1,430 miles with drop tanks.

Maximum operational radius: 535 miles.

Basis of some of the planning for the Mosquito was the D.H.91 Albatross whose fine lines are displayed here by R. M. A. Frobisher (G-AFDI), the airliner version of the transatlantic mailplane.

(Photo: Hawker Siddeley)

