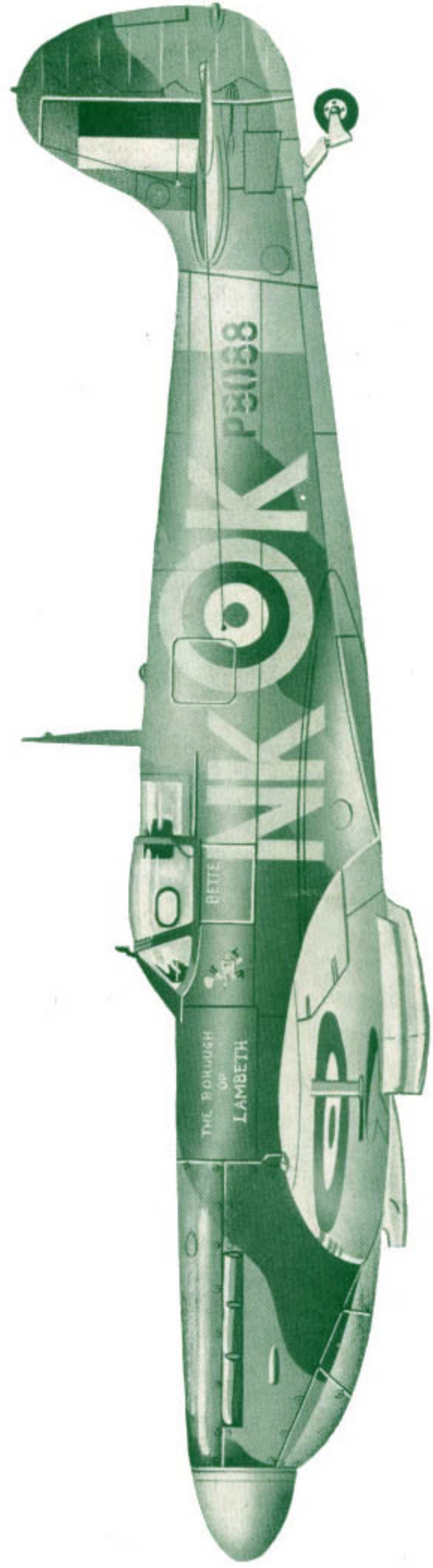


**PROFILE
PUBLICATIONS**

The
Supermarine
Spitfire
I & II

**NUMBER 41
TWO SHILLINGS**





A Spitfire IIA—believed P7665—of No. 65 (East India) Squadron which was equipped with Spitfires financed by the East Indian Fund for British War Services. (Photo: Imperial War Museum)

fuel tank under one wing and an oil tank under the other. The tanks were fitted flush-up against the wings just outboard of the undercarriage wheel wells between the inboard and three outboard machine guns in a fashion similar to that later employed for the long-range tanks on the Mosquito. Other experiments involving the installation of overload tanks were conducted with the Spitfire IIA, and in 1941/42 a few IIAs, each fitted with a 40-gallon long-range fuel tank under

the port wing (Type 343), served with Nos. 66, 118 and 152 Squadrons.

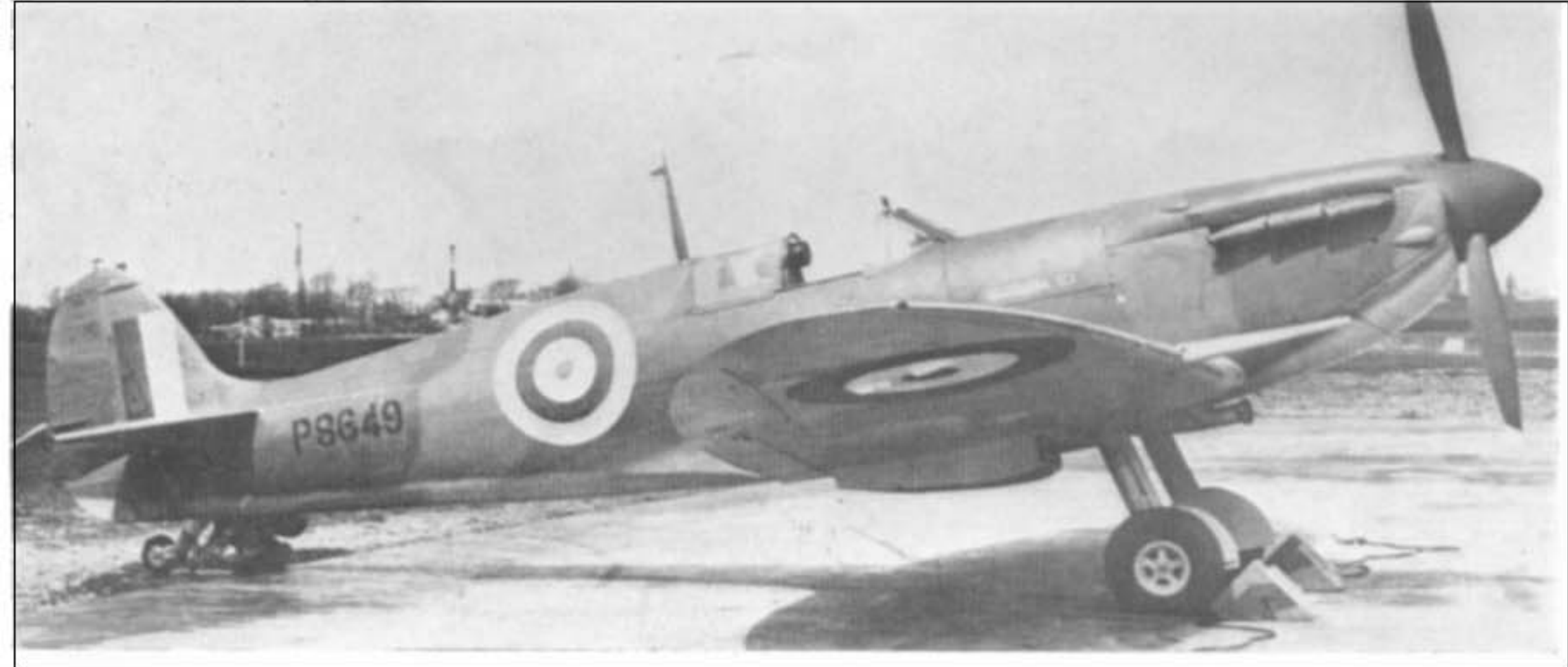
Production of the Spitfire II totalled 920 aircraft—all within the "P" serial range—of which 750 were built as Mk. IIA, and 170 as Mk. IIBs. A few surplus or salvaged Merlin XII engines were fitted to Mk. I airframes, thereby converting them to Mk. IIs. Before production of the Mk. II began Merlin XIIs were tested in Mk. Is K9788 and K9830 which, in effect, became prototypes of the Mk. II.

During 1942 a service modification of the Spitfire II to meet a requirement in an air-sea-rescue rôle appeared as the Spitfire IIC. This version was fitted with a small rack for two smoke bombs under the port wing inboard of the oil cooler and two flare chutes in the fuselage just aft of the cockpit, housing a small dinghy and a metal food container. The designation "C" was adopted because the "C" or universal wing, although then in general use (on the Spitfire VC), had not been fitted to Mk. II Spitfires and "C" was the logical means of distinguishing it from the existing



Spitfire IIA P9565 with a 40-gallon long-range fuel tank under the port wing (Type 343).

Below: Spitfire IIB P8649 "Bermuda III", one of four Spitfires IIBs presented to the R.A.F. by the Bermuda War Fund. (Photo: Imperial War Museum)



K5054 Prototype Spitfire in original and only colour scheme, Hendon New Type Park Number 2, Hendon 1936.

Spitfire Mk. I, K9834 modified as N.17 for attempt on the World's Speed Record powered by special Merlin III with + 27 lb. boost producing 2,160 h.p. at sea level. Subsequently rebuilt to Mk. II standard and camouflaged through which the gold stripes eventually appeared.



No. 19 Squadron, Red 'A' Flight, White 'B' Flight.



Spitfire Mk. I, No. 19 Squadron, Duxford, U.K., 1938. Note serial number under wings.

Spitfire Mk. I, No. 66 Squadron, Coltishall, U.K., 1939. Port undersurfaces black, stbd. side white or silver. Colour division was usually through the centre line of the fuselage though sometimes the wing only was black.



Spitfire Mk. I, No. 603 'City of Edinburgh' Squadron, R.Aux.A.F., Dyce, Hornchurch and Montrose during the Battle of Britain, 1940.



Spitfire Mk. I, No. 19 Squadron, Duxford, U.K., Battle of Britain, 1940.

Spitfire Mk. I, No. 610 'County of Chester' Squadron, R.Aux.A.F., Biggin Hill, U.K., Battle of Britain, 1940.



Spitfire Mk. II, No. 65 'East India' Squadron, Tangmere, U.K., 1941. Legend under cockpit reads East India Squadron.





P8131, a converted Spitfire IIA, redesignated IIC. No. 276 Squadron. (Photo: "The Aeroplane")

Mk. IIA and IIB versions with their "A" and "B" armament. Later, when rôle prefixes were introduced, Mk. IIC became A.S.R.II. About 50 Spitfire IIs were converted to IICs and the type served in the six A.S.R. squadrons controlled by Fighter Command, viz., Nos. 275, 276, 277, 278, 281 and 282.

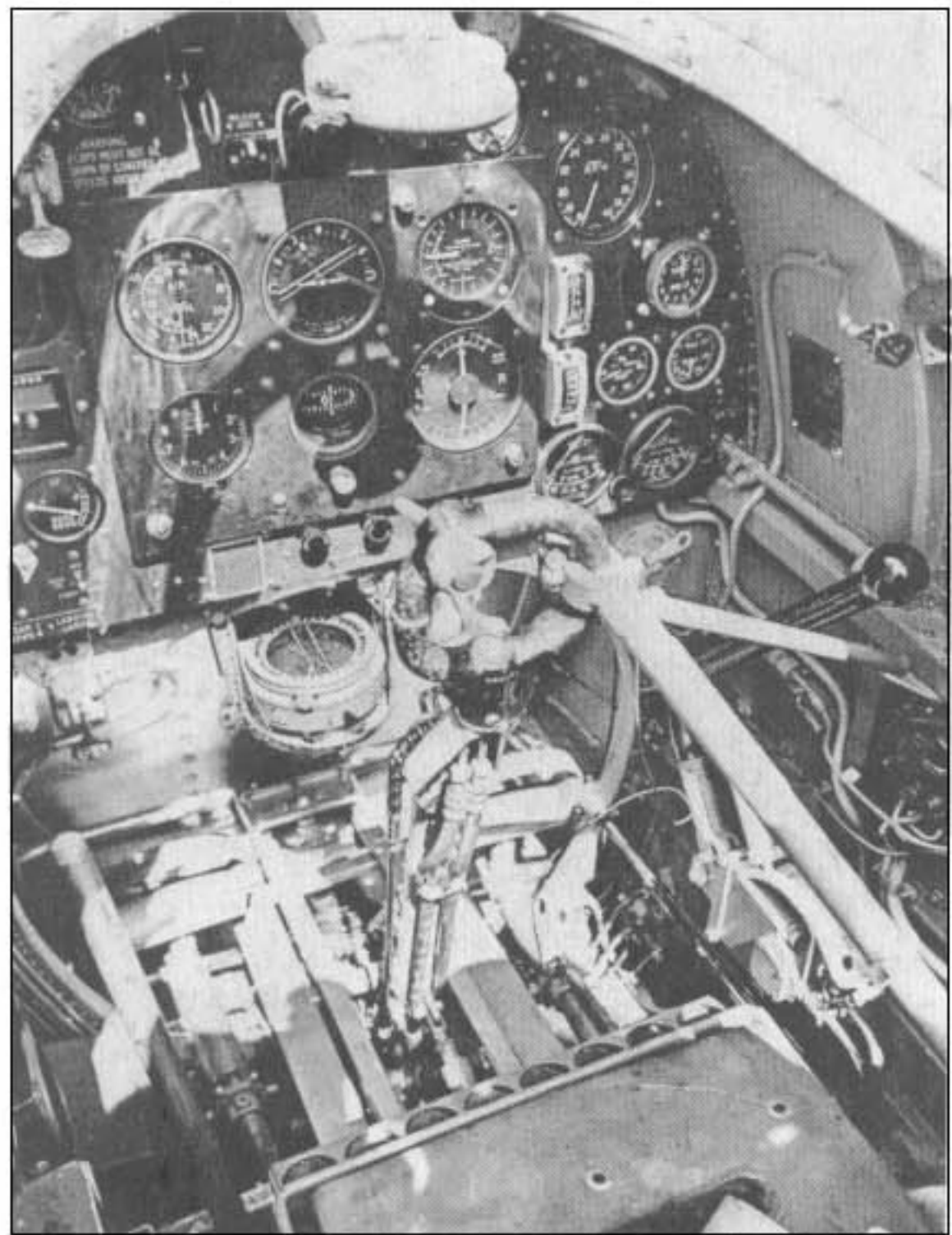
Not long after re-equipment of the squadrons of Fighter Command with Spitfire IIs had been completed, re-equipment with Mk. Vs began. Following their withdrawal from the squadrons, Mk. IIs continued to serve in various units chiefly at home and, at first, mainly in O.T.U.s. Late in the war Mk. IIs could be found in such units at the Central Gunnery School and Technical Training Command Communication Flight. Others were used by the Air Fighting Development Unit to form "Circuses" (i.e. instructional teams in air-fighting techniques) which were attached to various Groups of Bomber and Coastal Commands and also to 2nd T.A.F.

SPITFIRE HANDLING NOTES

In the air the Spitfire I, in comparison with other types of the period, was incredibly "light" in every way, as well as being exceptionally fast—so fast that, on a cross-country flight, the maps were, so to speak, left behind, the pilot arriving at a destination at least ten minutes before any mentally-calculated E.T.A. War-

Spitfire I cockpit.

(Photo: Imperial War Museum)



time ferry and test pilot, Mr. H. A. Taylor, writing of the Spitfire under the nom-de-plume "Indicator" in *Flight* in 1946 recalled that early production models of the Spitfire I had no engine-driven hydraulic pump and the undercarriage was operated by means of a long hand pump on the right. "Not only had one to change hands in order to select 'up' after take-off," he wrote, "but while flying with the left hand, this pump had to be worked vigorously and, with no previous experience of the type's very sensitive elevator control, departure was made in a series of fore-and-aft over-corrective pitchings. Later on, pilots learned to be very ambidextrous and to be in good control of muscular reflexes, so that the inevitable 'hunt' could be reduced to an amount which, at least, did not give them away to any watchers on the ground." Taylor went on to explain that in the early marks the throttle damper was not very effective unless tightened with a pair of pliers, it being necessary sometimes to stop pumping the undercarriage while changing hands yet again in order to deal with "the sudden extraordinary silence as the ivory-handled throttle vibrated quietly back".

Another little difficulty which occurred with many of the early Spitfires concerned the way in which the undercarriage selector would occasionally jam irrevocably in the half-way position when selecting "down". For one reason or another the "up lock" pins had become immovable, and it was necessary to take the weight off the retracted legs if any further landing progress was to be made. Since, of course, the only way of doing this was to invert the aircraft, Spitfires might occasionally be seen on their backs during the circuit. An alternative method of freeing the selector was to push the nose down violently, while, at the same time, giving the lever a sharp tug.

© P. J. R. Moyes, 1965.

SPECIFICATION

(Relates to Spitfire IA, figures in brackets relating to Mk.IIA).

Powerplant: One 1,030 (1,175)-h.p. Rolls-Royce Merlin III (XII) 12-cylinder 60° Vee liquid-cooled engine.

Dimensions: Span 36 ft. 10 in.; length (thrust line horizontal) 29 ft. 11 in.; height 8 ft. 10 in. (12 ft. 3 in. over airscrew disc); wing area (gross) 242 sq. ft.

Weight: Normal loaded 6,200 lb. (6,275 lb.).

Performance: Max. speed 362 m.p.h. (370 m.p.h.); rate of climb 2,530 ft./min. (2,600 ft./min.); combat range 395 mls.; ceiling 31,900 ft. (32,800 ft.).

Armament: Eight 0.303-in. Browning machine guns with 300 (350) r.p.g.

SPITFIRE SQUADRONS IN FIGHTER COMMAND ORDER OF BATTLE, 7th JULY 1940

No. 11 Group (H.Q. Uxbridge)

- 54 Sqn. Rochford.
- 64 Sqn. Kenley.
- 65 Sqn. Hornchurch.
- 74 Sqn. Hornchurch.
- 92 Sqn. Pembrey.
- 234 Sqn. St. Eval (1 section at Hullavington).
- 609 Sqn. Warmwell.
- 610 Sqn. Biggin Hill.

No. 12 Group (H.Q. Watnall)

- 19 Sqn. Duxford.
- 66 Sqn. Coltishall.
- 222 Sqn. (converting) Kirton-in-Lindsey.
- 266 Sqn. Digby.
- 611 Sqn. Digby.

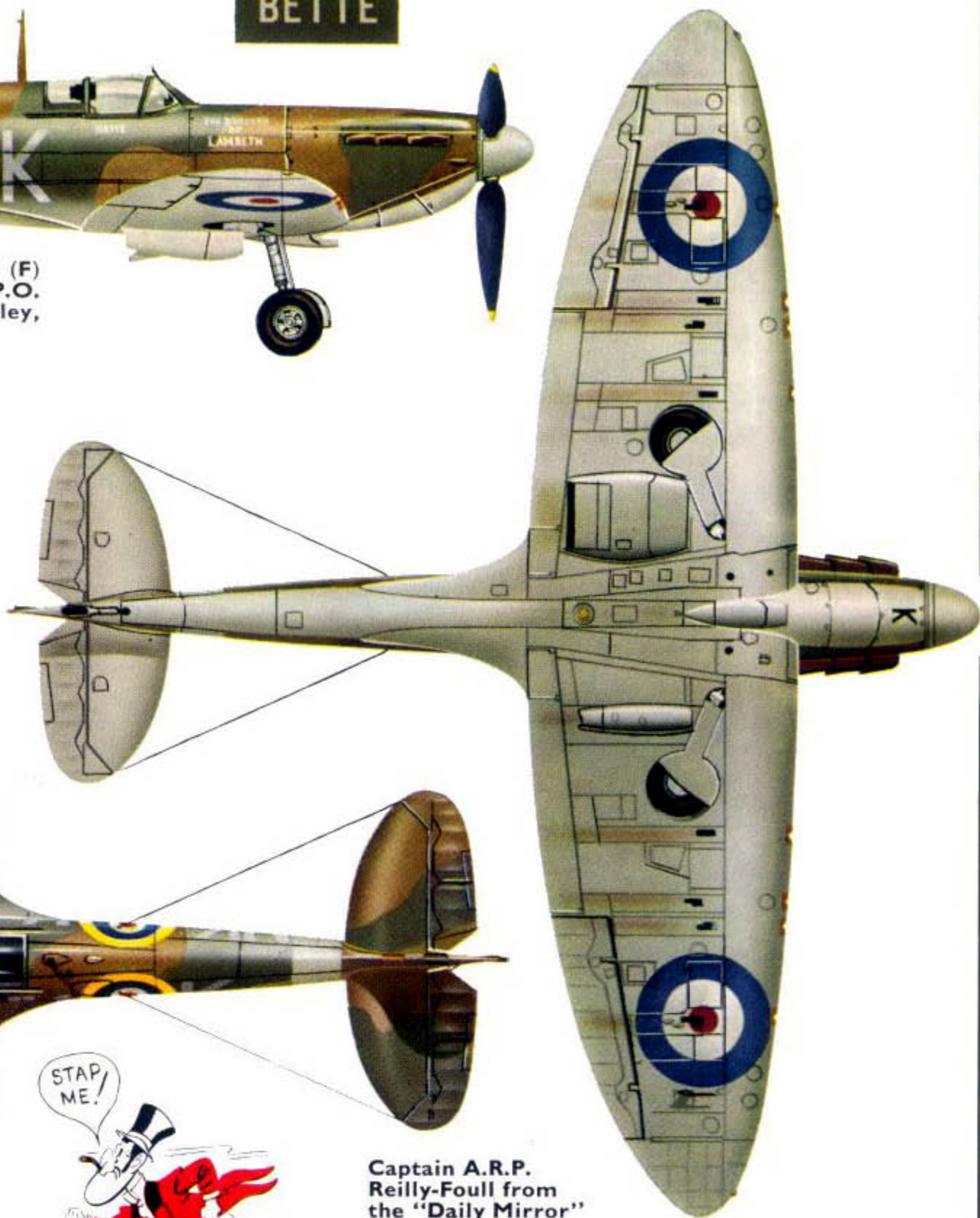
No. 13 Group (H.Q. Newcastle)

- 41 Sqn. Catterick.
- 72 Sqn. Acklington.
- 152 Sqn. Acklington.
- 602 Sqn. Drem.
- 603 Sqn. Dyce ("B" Flt. det. to Montrose).
- 616 Sqn. Leconfield.

BETTE



SPITFIRE IIA, P8088, of No. 118 (F) Squadron, 'A' Flight, flown by P.O. A. S. C. Lumsden. Stationed at Ibsley, Hants., May, 1941.



Captain A.R.P. Reilly-Foull from the "Daily Mirror" cartoon strip, "Just Jake".



THE BOROUGH OF LAMBETH

This Spitfire was presented to The Royal Air Force by the people of the Borough of Lambeth through public subscription.





The Supermarine Spitfire I & II

by Philip J. R. Moyes



Spitfire Is of No. 611 Squadron at Digby, 11th January 1940. The aircraft on the ground is K9999, the serial being painted in minute figures on its fin.

The Spitfire was a fighter *par excellence*. It was a thoroughbred through and through, combining as it did sheer perfection of line with handling qualities that were second to none. It was a fighter pilot's dream plane—fast, deadly and docile.

The Spitfire obtained its first battle successes against the sporadic tip-and-run raiders in the "phoney" war, but the supreme trial of the "Spit." came during the Battle of Britain. Then it was that, alongside the more numerous Hurricanes, the Spitfire Is and IIs won imperishable fame by smashing the awesome contrailing formations of *Luftwaffe* bombers and their fighter escorts until the onslaught faltered and ceased.

As the war progressed the Spitfire was continually modified and improved, and although the story of this development is outside the scope of this *Profile*, a few facts should, perhaps, be put on record. Most im-

portant of these are that the Spitfire remained a front-line fighter throughout the whole period of the war and, during that time, flew operationally on every front and took part in every major air action fought by the R.A.F. Other interesting facts concern production and performance: a total of 20,351 Spitfires was manufactured as well as 2,408 Seafires (the naval version of the Spitfire which was developed from the standard Mark VB Spitfire). From the advent of the prototype in 1936 to the Mark XXII in 1945, Spitfire speeds increased from 349.5 m.p.h. to 450 m.p.h., rate of climb from 2,500 feet per minute to 4,800 feet per minute and fire power from 4 lb. to 12 lb. per second.

ORIGIN

The Spitfire was the creation of that quiet, calm genius Reginald J. Mitchell who, beginning in 1925, had evolved a series of high-speed seaplanes as contenders in the Schneider Trophy Races,* culminating in the superb S6B* which, in 1931, won the trophy outright for Great Britain at an average speed of 340.8 m.p.h. (and which, two weeks later, raised the world's speed record to 407 m.p.h.). The immediate predecessor of the Spitfire, in so far as actual hardware was concerned, was the Supermarine Type 224 (K2890), a single-seat monoplane fighter built to meet the requirements of Air Ministry specification F.7/30, and having a cranked (inverted gull) wing, an open cockpit, a fixed "trousered" undercarriage, and a 600-h.p. Rolls-Royce Goshawk steam-cooled engine. The Type 224 was not a success, mainly because the

The Supermarine F.7/30, unofficially named "Spitfire".



*See *Profile Number 39*.

specification was too tightly drawn and consequently gave Mitchell very little scope.

Even before it flew Mitchell was dissatisfied with the Type 224 and started work on a new design as a private venture. The original basic design, although incorporating an enclosed cockpit and a retractable undercarriage, envisaged the use of the Goshawk engine, but two further developments resulted in extensive redesign: first came the advent of the sensational Rolls-Royce PV-12 liquid-cooled engine (later to become famous as the Merlin); and, secondly, the issue by the Air Ministry of specification F.5/34

calling for the installation of eight, instead of four, machine guns.

The Supermarine Type 300, as the final design was known, actually went far beyond F.5/34 and in January 1935, it was accepted by the Air Ministry for construction in prototype form to specification F.37/34, the latter being virtually written round the design for contractual purposes. The final mock-up conference was held at Woolston on 26th March 1935, and less than a year later (on 5th March 1936) the prototype Spitfire, K5054, powered by a 990-h.p. Rolls-Royce Merlin "C", took off on its maiden flight from Eastleigh airfield, Southampton, with J. "Mutt" Summers at the controls. Summers was chief test pilot for Vickers (Aviation) Ltd., which had acquired the entire share capital of the Supermarine Company in 1928.

STRUCTURE OF THE SPITFIRE

The Spitfire was in essence the smallest and neatest fighter which could be designed round the engine, pilot and eight-gun armament. An all-metal, stressed skin, low-wing, cantilever monoplane, it was characterised by its graceful elliptical wing (a design feature inspired by the similarly-shaped—but thicker in section—wing of the Heinkel He 70) the aerodynamic advantages of which far outweighed the production problems that it presented. The wing was thin (giving good high-speed handling qualities) and had, at 25 per cent of the chord, a single spar comprising tubular flanges and a plate web. Forward of the spar the wing was covered with heavy-gauge Alclad which formed, in conjunction with the spar web, a stiff, strong torsion box. Besides giving an excellent form to the nose portion of the wing this type of construction had very good anti-flutter characteristics. Aft of the spar, the thinner gauge skin was supported by girder ribs and a false spar, to which latter the split flaps and fabric-covered ailerons were attached.

The fuselage was built in three sections. The forward part, which formed the engine mounting, was of tubular construction. Aft of this was a monocoque

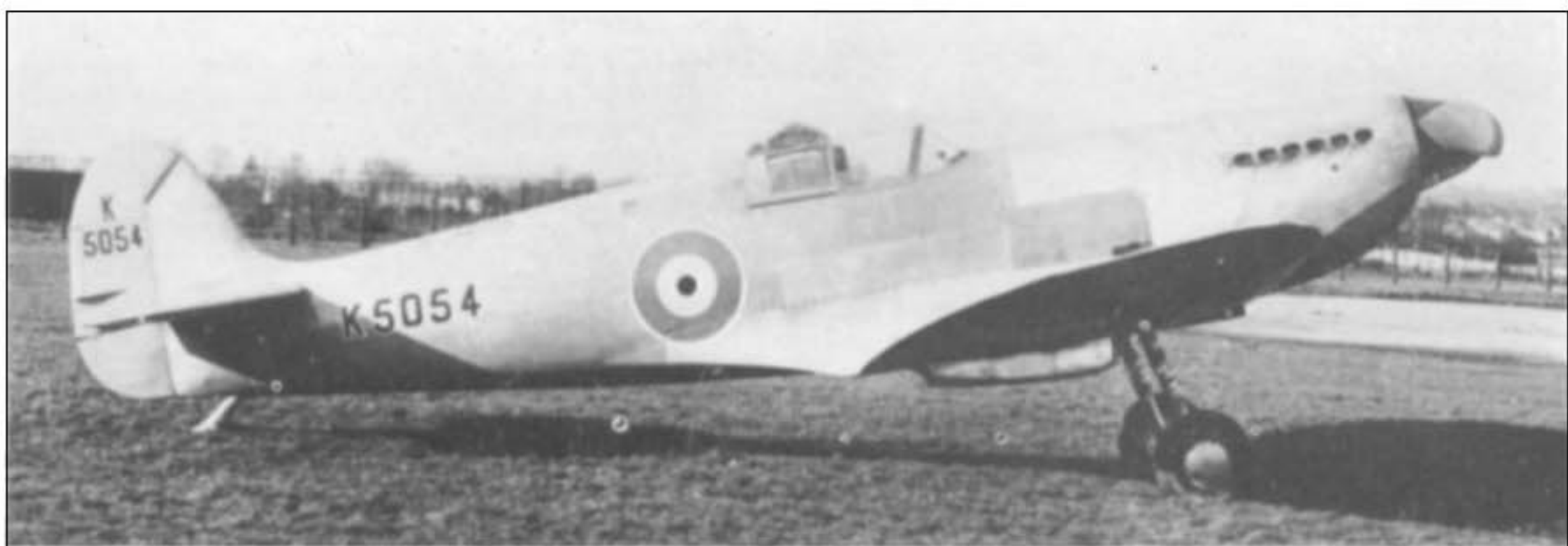


Above and below: Two of the many Supermarine F.7/30 development projects which preceded the Type 300 Spitfire. Both these projects had R-R Goshawk engines, four guns and carried four small bombs beneath the starboard wing.



The sleek Heinkel He 70 (actually the example used by R-R as a Merlin test-bed) and (below) the prototype Type 300 Spitfire whose design the German aircraft greatly influenced.





Above and below: *The prototype Type 300 Spitfire (K5054) with original fin and rudder. This aircraft was unpainted when first flown but was subsequently finished in a high-gloss pale blue—not cream or grey as has often been reported elsewhere.*

(Photos: Imperial War Museum)



section built up on transverse frames, the longitudinals being intercostal except for the four main longerons. The foremost frame of this portion formed a fireproof bulkhead and built into it was the centre portion of the main wing spar (there was no conventional wing centre-section, for the wings butted on to the fuselage side). The tail portion of the fuselage was likewise of monocoque construction and incorporated the fin. This whole section was detachable.

The tailplane was an all-metal structure while the elevator and rudder were metal framed with fabric covering.

PRODUCTION AND EARLY SERVICE

From the outset of its official trials at Martlesham Heath the Spitfire proved a winner and specification

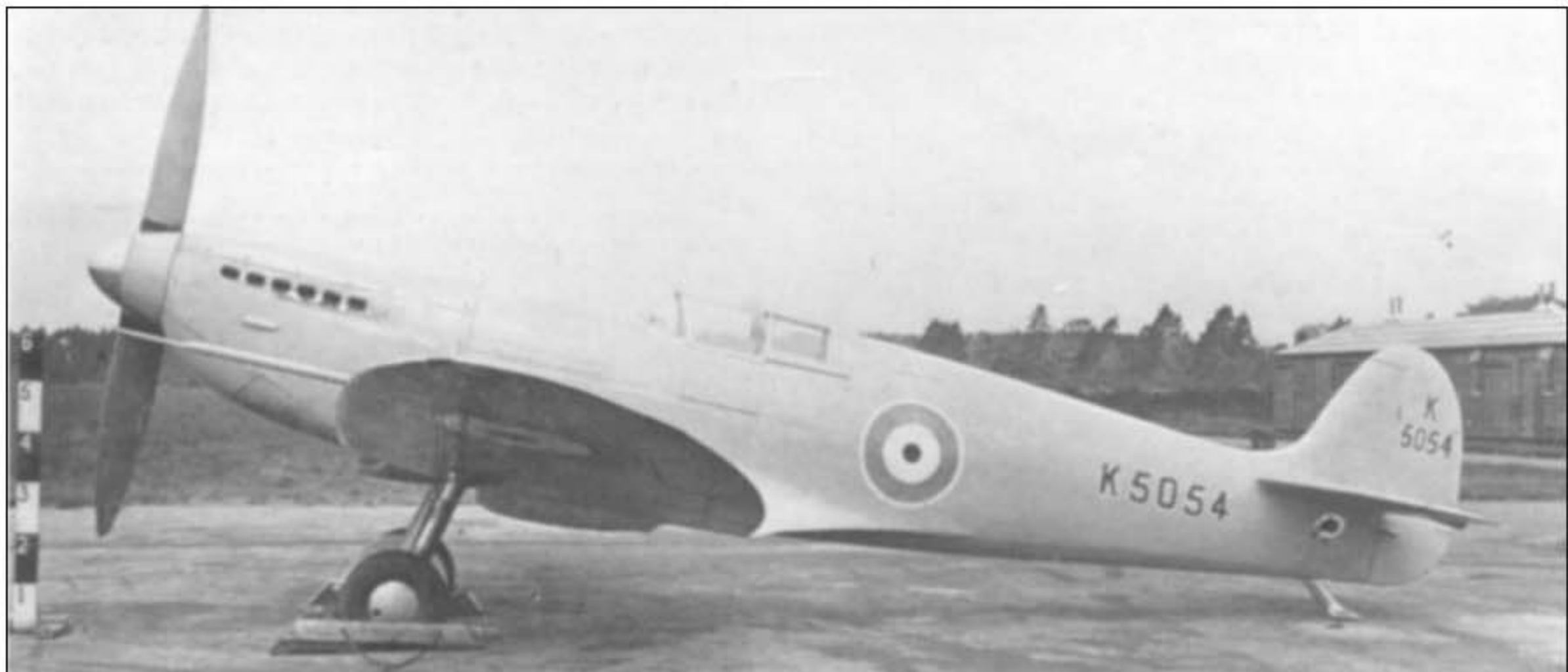
F.16/36 was drawn up to cover the further development and production of the fighter. On 3rd June 1936 (shortly after the name Spitfire had been officially adopted) the Air Ministry placed an initial order for 310 Spitfires. This presented Supermarine with a colossal task; they had never before received such a large order. However no time was lost in reorganising the Woolston Works on a production basis; the design and construction of jigs and tools in hitherto unheard of quantities was rapidly proceeded with, and the labour force expanded with men and women of all trades.

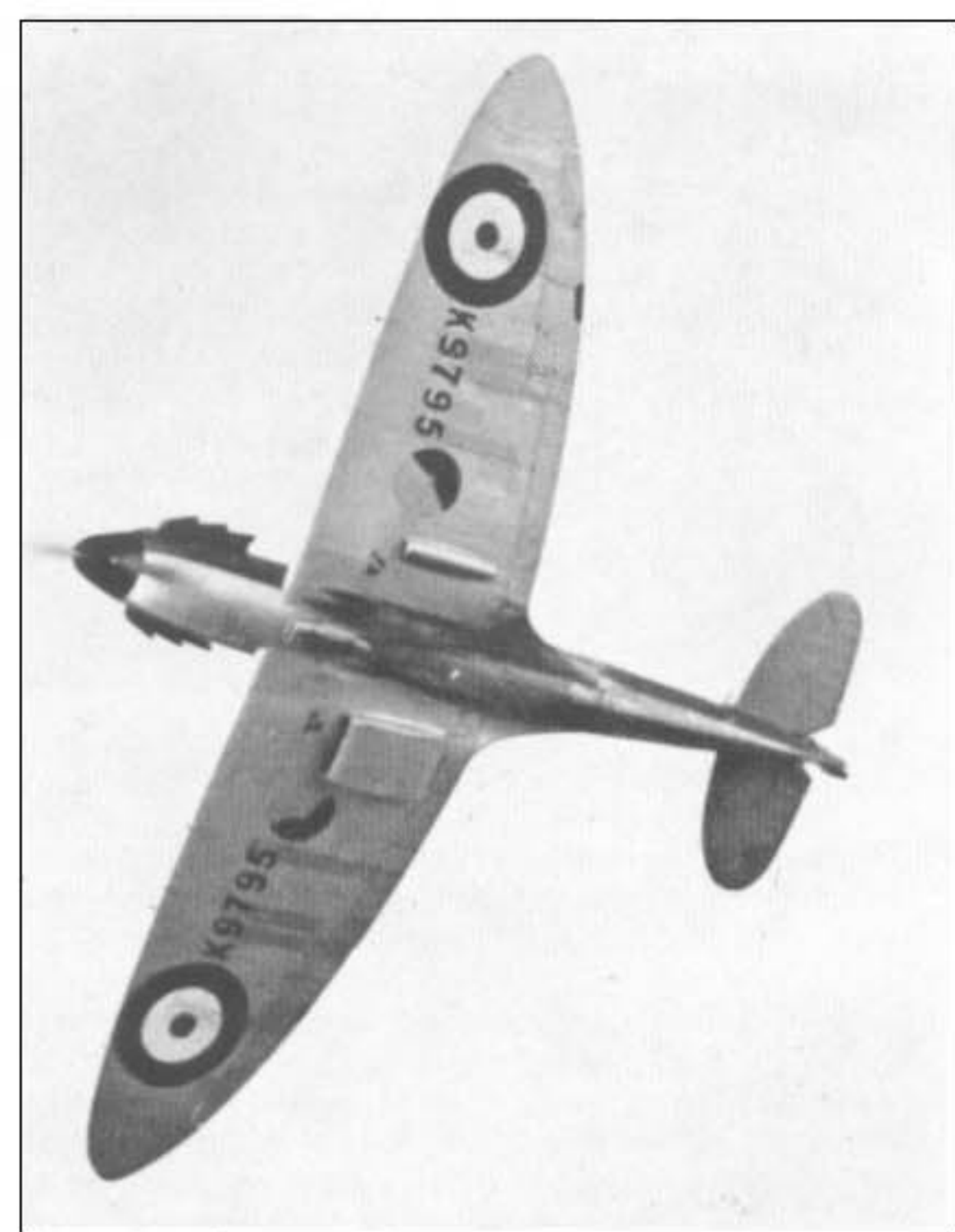
Production proper began in March 1937, and at first Supermarine undertook the construction of fuselages only, together with the assembly and testing of the aircraft. Later they built wings too. The rest of the construction was widely sub-contracted, the main sub-



Above right and below: *K5054 seen after its fin and rudder had been redesigned.*

(Photos: Imperial War Museum)





The ninth production Spitfire I, photographed while serving with No. 19 Squadron before the war.

(Photo: Imperial War Museum)

contractors in the early days (they were later joined by many other well-known firms) being General Aircraft Ltd. and Pobjoy Airmotors and Aircraft Ltd. (wings), Aero Engines Ltd. (ailerons and elevators), Singer Motors Ltd. (engine mountings), Folland Aircraft Ltd. (tail end), General Electric (wing tips), J. Samuel White & Co. Ltd. (fuselage frames), The Pressed Steel Co. Ltd. (wing leading-edge section), G. Beaton & Son Ltd. and Westland Aircraft Ltd. (wing ribs).

The initial Spitfire production contract was due for completion in March 1939, but early manufacturing problems delayed this until August. Meanwhile, in 1937 the original contract was followed by an order for a further 200 machines. Also in that year Reginald Mitchell, who had been seriously ill for many months, died at the early age of 42. He was succeeded as chief designer at Supermarine by Joseph Smith who was subsequently to be responsible for the development of the Spitfire through numerous marks and variants.

On 12th April 1938, the Nuffield Organisation was contracted to build 1,000 Spitfires at a new "shadow" factory planned for erection at Castle Bromwich, near Birmingham. In the following year further contracts

K5054 after being brought up to Mk. I standard, seen during pre-war night-flying trials. Because of its narrow-track undercarriage the Spitfire proved unsuitable for night operations except in bright moonlight.



were placed with Supermarine—on 29th April for 183 Spitfires, and on 9th August for 450—so that at the outbreak of war 2,143 Spitfires were already on order.

The first production Spitfire, K9787, was completed in July 1938, and both it and the second machine were retained for extensive handling trials. The third, K9789, was delivered on 4th August to No. 19 Squadron at Duxford, other Spitfires following at intervals until 19th December by which time the unit (which had previously flown Gauntlets) was completely re-equipped. With a view to obviating teething troubles, arrangements were made at Duxford for a programme of intensive flying to be done on K9789. Some 300 hours flying was completed within an extremely short period, and corrective action taken on a number of defects which came to light.

As production got into its stride, more squadrons were issued with Spitfires, and at the outbreak of war in September 1939, nine squadrons of the R.A.F.,† Nos. 19, 41, 54, 65, 66, 72, 74, 602 and 611 were fully armed with Spitfires and two more, Nos. 603 and 609, were in the process of conversion.

On 16th October 1939, Spitfires of Nos. 602 and 603 Squadrons engaged German bombers over the Firth of Forth and each squadron destroyed a Heinkel He 111, the honour of shooting down the first one going to No. 602. This was the first occasion when Spitfires fired their guns in action, and their victims (which fell into the sea) were the first enemy aircraft to be shot down over Great Britain since 1918. On 28th October 1939, Spitfires of the same two units shared in the destruction of a Heinkel He 111 which crash-landed close to the village of Humbie, on the Lammermuir Hills near Dalkeith. This was the first German aircraft to be brought down on British soil in W.W.II.

When the Battle of Britain began in early July 1940, there were 19 Spitfire squadrons in Fighter Command's order of battle and a list of these appears on page 12.

In outline, the early production Spitfire Is were similar to the prototype as originally completed,‡ but there were many detail differences. For example the semi-circular wheel fairing doors hinged to the bottom of the undercarriage leg fairings were deleted, the flush exhausts replaced by triple ejector exhausts and the tailskid replaced by a castoring tailwheel. A Merlin II rated at 1,030 h.p. was installed in the first 174 aircraft (K9787-K9960), and the Airscrew Company's Weybridge two-blade, fixed-pitch wooden airscrew (which was similar to the prototype's de Havilland two-blader) gave place, from the 78th aircraft onwards, to

†Until 1st September when they had been embodied in the R.A.F. some—those in the 600 series—had been Aux. A.F.

‡This qualification is necessary because the prototype was eventually brought up to Mk. I standard (and camouflaged).

The first Spitfire in service, K9789, undergoing maintenance at Duxford in 1938.



a three-blade, two-speed de Havilland airscrew; the latter increased the maximum speed by 5 m.p.h.—from 362 to 367 m.p.h. A domed cockpit hood was introduced during early 1939 and examples of both types of hood can be seen side-by-side in the 19-Squadron line-up below. Three somewhat later modifications were the introduction of (a) a redesigned aerial mast, (b) a bulletproof windscreen (made by fixing externally to the front of the windscreen a 1½-in. thick bulletproof panel), and (c) 6 mm. armour plate behind the pilot's head.

Standard armament of the Spitfire in what became known as the type "A" wing was eight .303-in. Browning guns with 300 rounds per gun. Although this was good for its time, the need for greater hitting power soon became apparent and towards this end, in June 1939, an early production Spitfire (*L1007*) was experimentally fitted with two 20 mm. Hispano can-

non, with 60 rounds each in drum-type magazines, in place of the four inboard Brownings. This aircraft became the prototype for the Spitfire IB (the "B" suffix indicated what eventually became known as the type "B" wing—the wing carrying four Browning guns and two Hispano cannon), 30 of which were delivered in the summer of 1940 to No. 19 Squadron for operational trials. In service the IBs were disliked owing to persistent cannon stoppages caused by unreliable feed and ejector mechanisms, and soon the aircraft were withdrawn.

From the 175th Spitfire I onwards, the Merlin III was installed. This powerplant, although of similar output to the Merlin II, had a standardised shaft for de Havilland or Rotol three-blade airscrews. The latter (two-position, metal) became available late in 1939 and 22 aircraft in the "N" serial range were specially fitted on the production line at Woolston for No. 19 Squadron which received the first of them on 1st November. By the end of the year these aircraft had been transferred to No. 54 Squadron. Between late June and early August 1940, all de Havilland airscrews on Spitfire Is at fighter stations were converted to constant speed units by de Havilland service engineers (except in the case of cannon-armed aircraft which received C.S. airscrews on production). The reason for this was that although the two-position airscrews fulfilled their original purpose of improving take-off, they were inadequate for climb and ceiling. The resulting improvement in performance did much to help smash the massive attacks of the *Luftwaffe* in the Battle of Britain.

A total of 1,583 Spitfire Is was built, including 50 by Westland. Before the outbreak of war several foreign governments planned to buy Spitfires, and export versions were designed for Estonia (Type 332), Greece (Type 335), Portugal (Type 336) and Turkey (Type 341). Foreign Office sanction to export these aircraft was withdrawn when war became imminent and only three were exported. They were *P9566*, *P9567* and *L1066*. They all went to Turkey, the last one having been originally consigned to Poland and diverted to Turkey after the Polish collapse.

Several experimental variants of the Spitfire I were produced and one which can be singled out for mention here was *R6722*, first of the Spitfire floatplanes. Originally a standard Spitfire airframe, *R6722* was

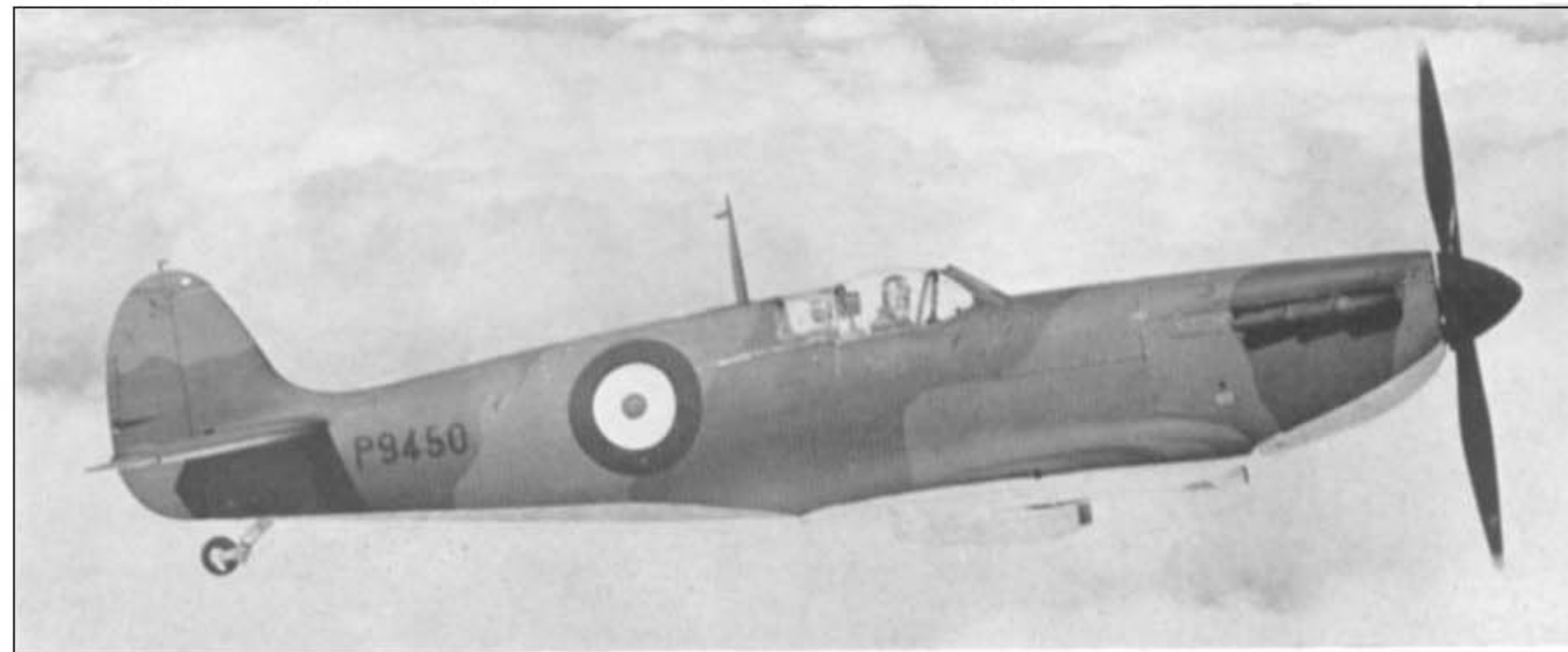


Trial installation of a de Havilland three-blade V.P. airscrew on K9793 early in 1939. (Photo: Imperial War Museum)



Spitfire Is of No. 19 Squadron at Duxford during a Press visit on 4th May 1939. (Photo: "The Aeroplane")

P9450, the 601st Spitfire on acceptance trials in the spring of 1940, flown by Supermarine test pilot George Pickering.





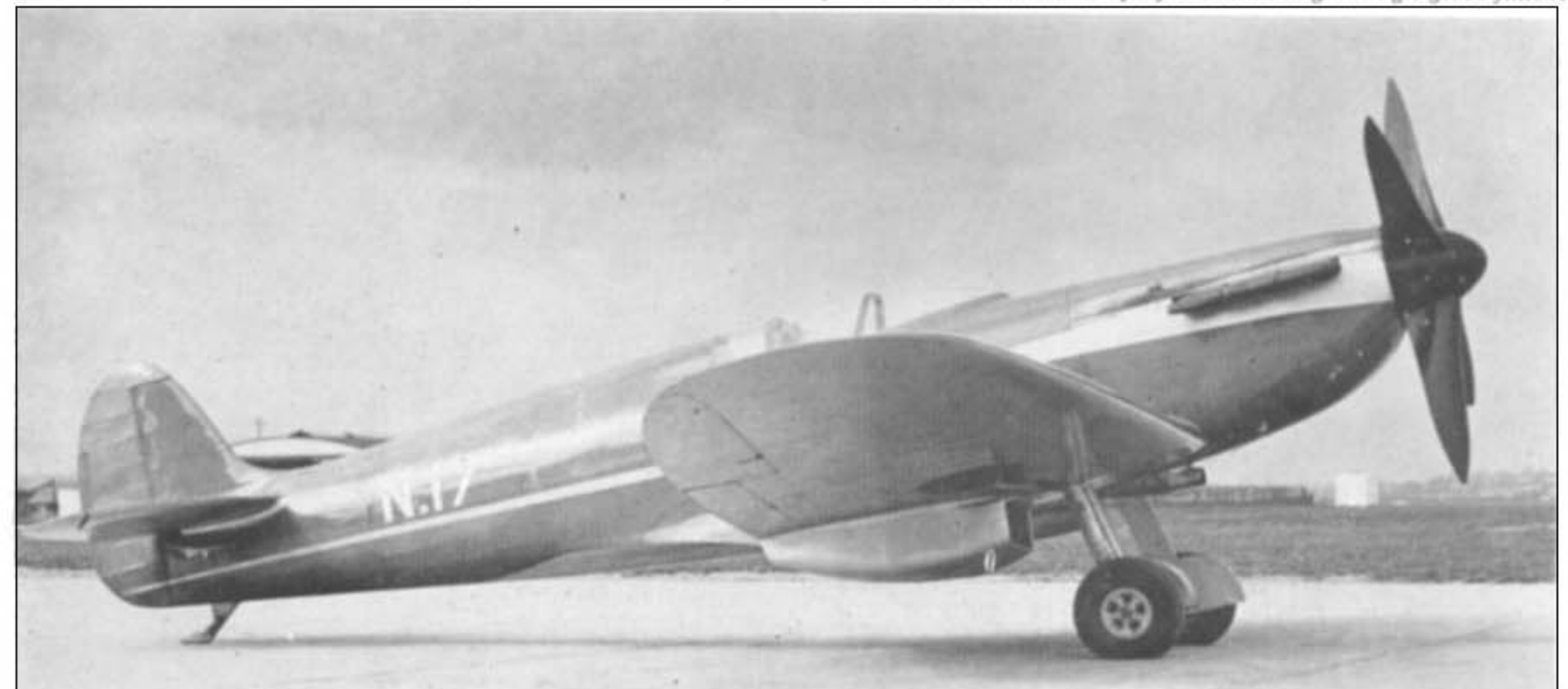
Above: Spitfire I P9386 of No. 19 Squadron being re-armed, September 1940.
 Below: One of the few air-to-air shots of Spitfires taken during "the Battle". Aircraft are from No. 610 (County of Chester) Squadron, and although their serials seem to have been censored, that of DW-K is known to have been N3029. (Photos: Imperial War Museum)

hurriedly fitted with a pair of Blackburn Roc floats during the Norwegian campaign; however it was never flown in this form (which was known as the Type 342) and after the Norwegian campaign it was reconverted to standard.

The 48th Spitfire airframe from the initial Supermarine batch, K9834, was completed to a special standard (Type 323) and renumbered N.17 for an attempt on the world air speed record in 1938. The windscreen was specially streamlined, wing span reduced by 3 ft. 2 in. to 33 ft. 8in., flush riveting was

used and a high-gloss finish applied. Further modifications were a larger radiator and oil cooler, and the replacement of the tailwheel by a skid. Powerplant was a strengthened Merlin III using 100-octane fuel, giving 2,160 h.p. and driving an Airscrew Company four-blade, fixed-pitch airscrew. It was hoped that N.17 or the Speed Spitfire as it became known would achieve 420 m.p.h., but before any attempt could be made, the world air speed record was raised to 463.92 m.p.h. by the Heinkel He 100 V8, this record being further increased very soon afterwards to

The Speed Spitfire, N17, seen at Eastleigh in 1939. This aircraft had a flush-riveted skin and a superfine blue and gold high-gloss finish.





Another view of the Speed Spitfire. During the war N.17 was converted to a P.R. aircraft and on D-Day Air-Cdre. J. N. Boothman flew it over the Normandy beaches.

469.22 m.p.h. by the Me 209 V1. Further work on N.17 as a potential record-breaker was abandoned and later, after being converted to approximately Mk. II standard, it became one of the first photographic-reconnaissance Spitfires.

SPITFIRE II

The Spitfire Mk. II (Type 329) was basically a Mk. I built exclusively at Castle Bromwich and powered by a 1,175-h.p. Merlin XII (fitted with a Coffman starter and running on 100-octane fuel) driving a Jablo Rotol three-blade C.S. airscrew. It incorporated Mk. I

refinements from initial production in the first half of 1940 and whereas the Mk. I had armour plating added in service, the Mk. II had it installed on production. There was 73 lb. of armour in all, some of it providing protection behind the pilot's seat and head, and the rest providing forward protection for the glycol header tank and the top fuel tank.

Deliveries of Spitfire IIs to the R.A.F. began in June 1940 (beginning with P7260 on 6th June) in time for the Battle of Britain, but it was not until the following winter that re-equipment of the squadrons flying the Mk. I began in earnest. By 1st April 1941, 650 Mk. IIs had left the Castle Bromwich factory and the change-over was complete, most of the Mk. Is being relegated to a training rôle at O.T.U.s.

The Spitfire II was used in Fighter Command's early offensive sweeps (*Rhubarbs*) over Europe, the first of these missions being flown by two aircraft of No. 66 Squadron operating from Biggin Hill on 20th December 1940.

The Spitfire was, of course, designed as home defence interceptor fighter. Its fuel capacity of 85 gallons only allowed for take-off, a climb to altitude, 1.65 hours cruising and 15 minutes combat at full bore. In an effort to increase its operational range and give it a distinctly offensive capability a number of experiments were conducted. One of these experiments—using a Spitfire IA—introduced an overload

Right and below: Spitfire IIA P8088 of No. 118 Squadron, Ibsley, May 1941. Named "The Borough of Lambeth" after its donors, this aircraft is the subject of the five-view drawing on page 2.

(Photos: Alec Lumsden).

