Research Notes on the

Hawker Hurricane

Compiled by John Griffin

Part 1/2

Version 1.0 – 7 June 2026

Scan of the original binder housed in the John Griffin Library,
1 Canadian Air Division

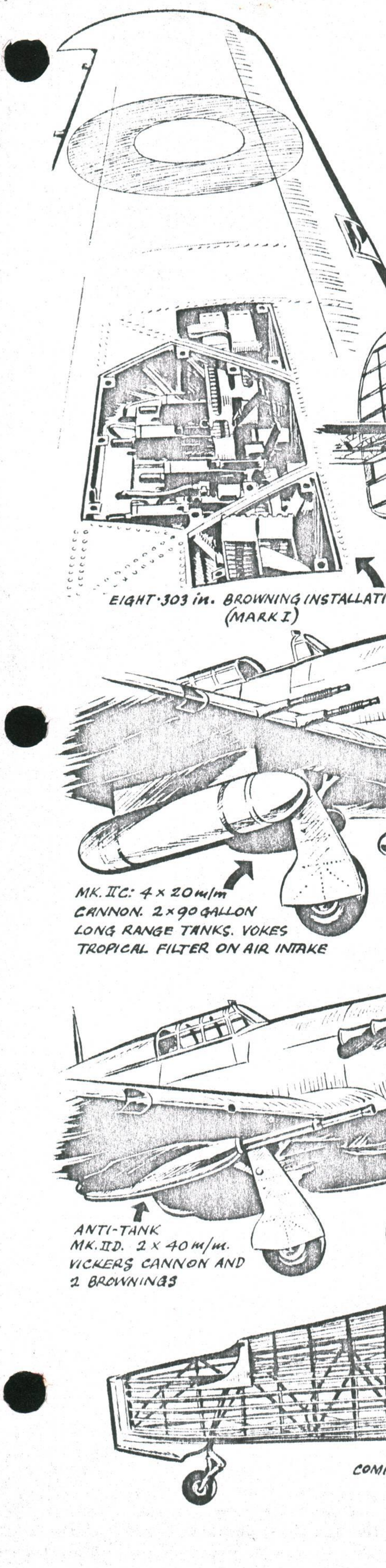
All pages were reproduced in the original order. Some pages especially those magazine clippings that were not adhered to backing pages may have irrelevant page backs included. Please send any feedback on this document to nathan@rcaf.info.

Scan by Nathan Kachur of https://RCAF.info
taken June 2026

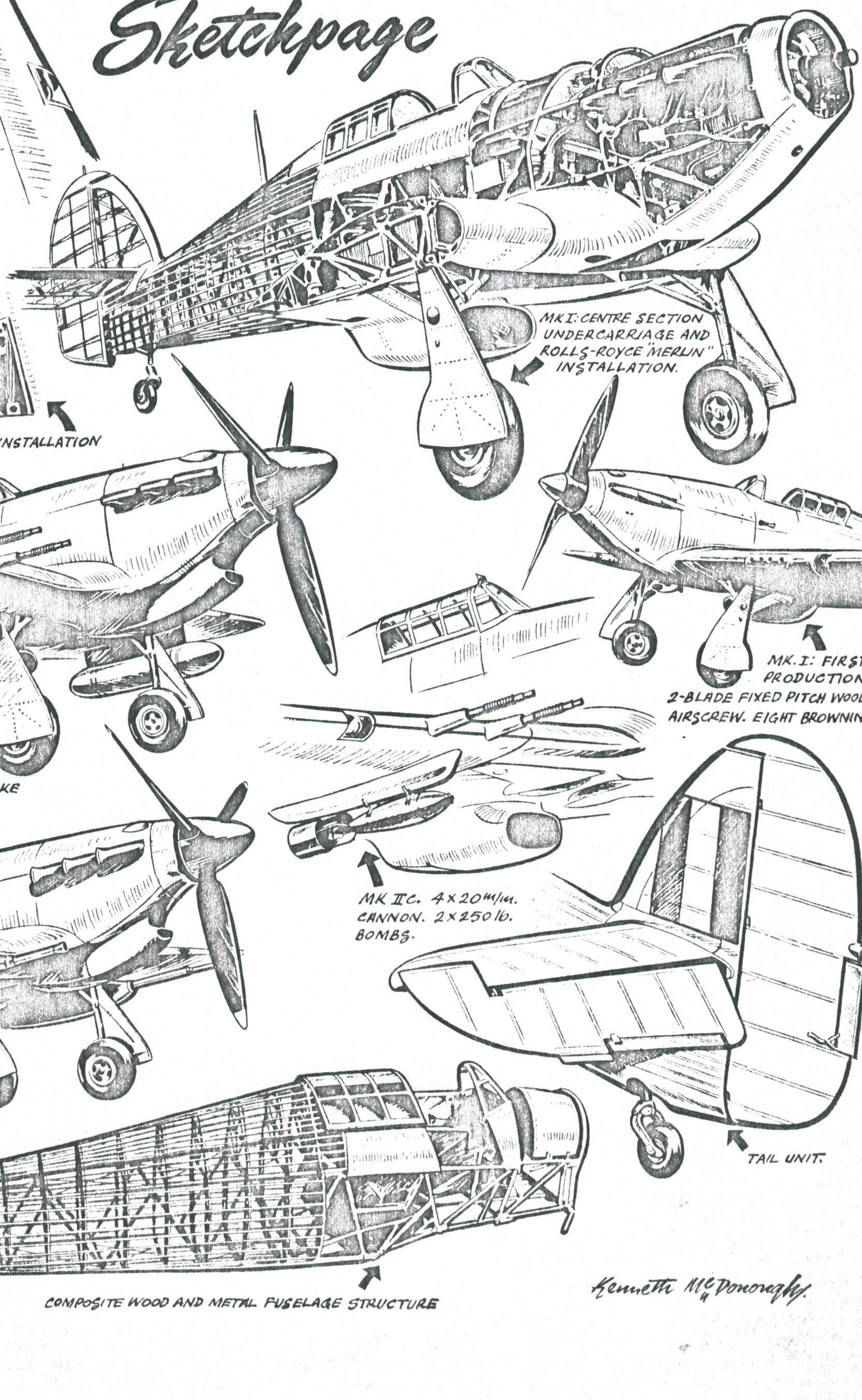
Some portions of this document may be copyrighted, those rights may reserved.

Hawker Hurricane

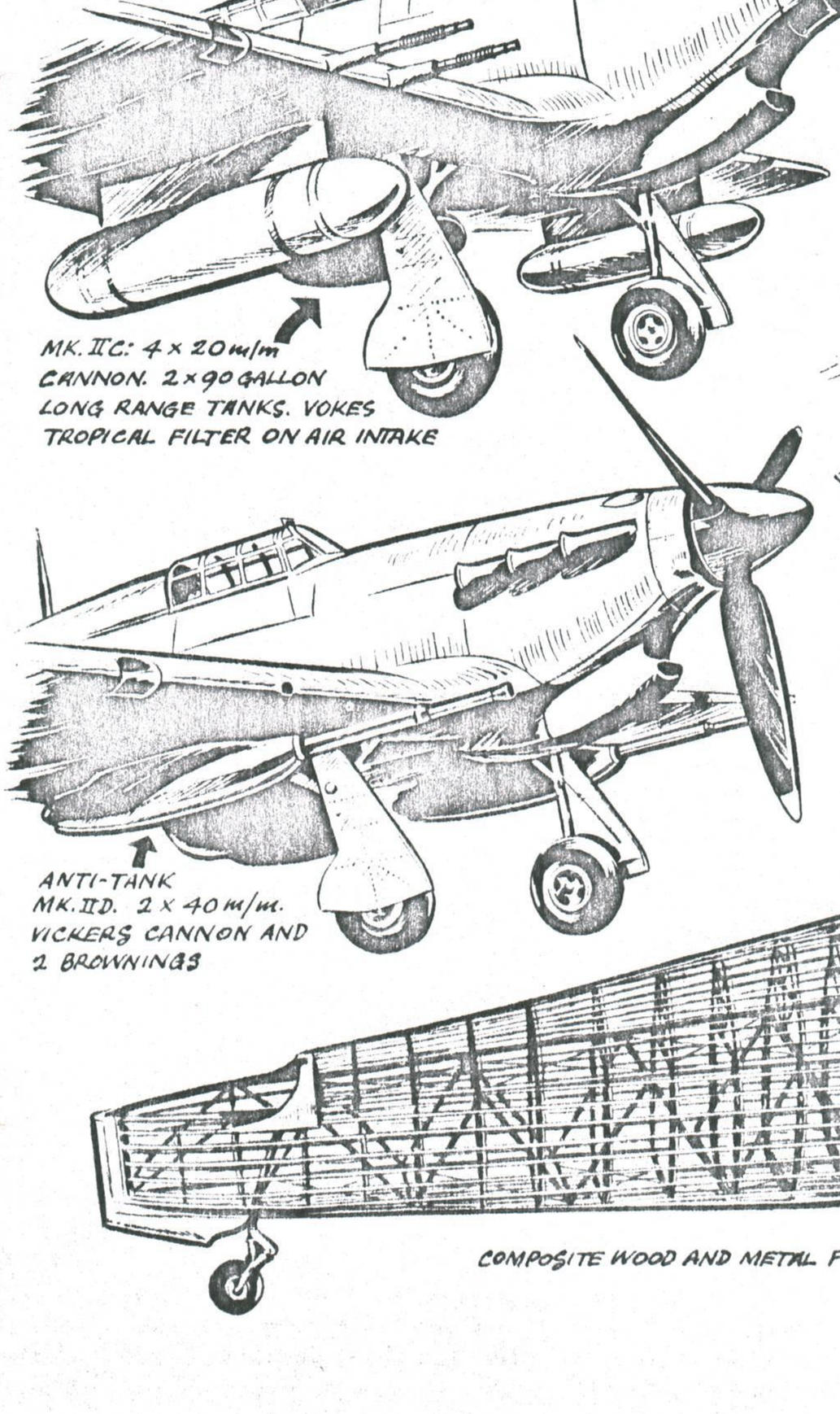
HAWKER HURRICANE Sketchpage



EIGHT·303 in. BROWNING INSTALLATION (MARK I)



MK I: CENTRE SECTION UNDERCARRIAGE AND ROLLS-ROYCE "MERLIN" INSTALLATION.



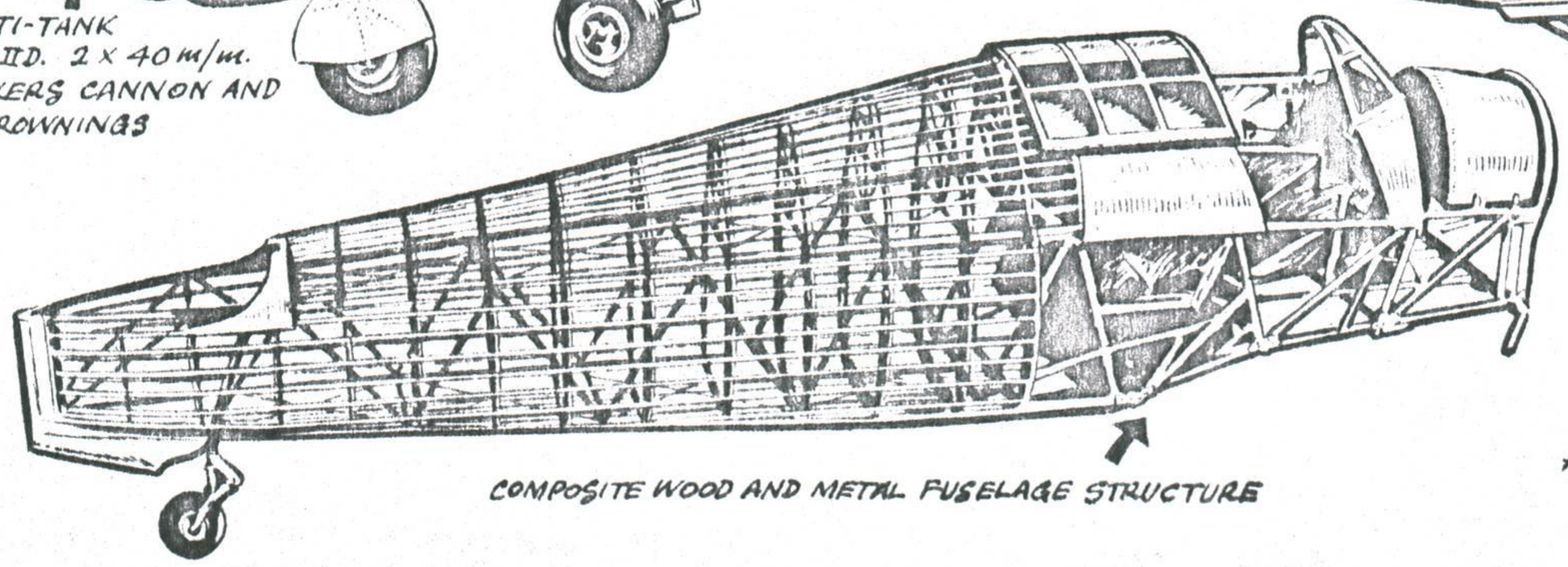
MK. IIC: 4 x 20 m/m CANNON. 2 x 90 GALLON LONG RANGE TANKS. VOKES TROPICAL FILTER ON AIR INTAKE

MK. I: FIRST PRODUCTION 2-BLADE FIXED PITCH WOODEN AIRSCREW. EIGHT BROWNINGS.

ANTI-TANK MK.IID. 2 x 40 m/m. VICKERS CANNON AND 2 BROWNINGS

MK IIC. 4 x 20 m/m. CANNON. 2 x 250 lb. BOMBS.

TAIL UNIT.



COMPOSITE WOOD AND METAL FUSELAGE STRUCTURE

Kenneth McDonough.

Photo
Ingmar Wilkene
from
J. Ellis



Hurricane I #312

Delta #675

Vancouver 1939

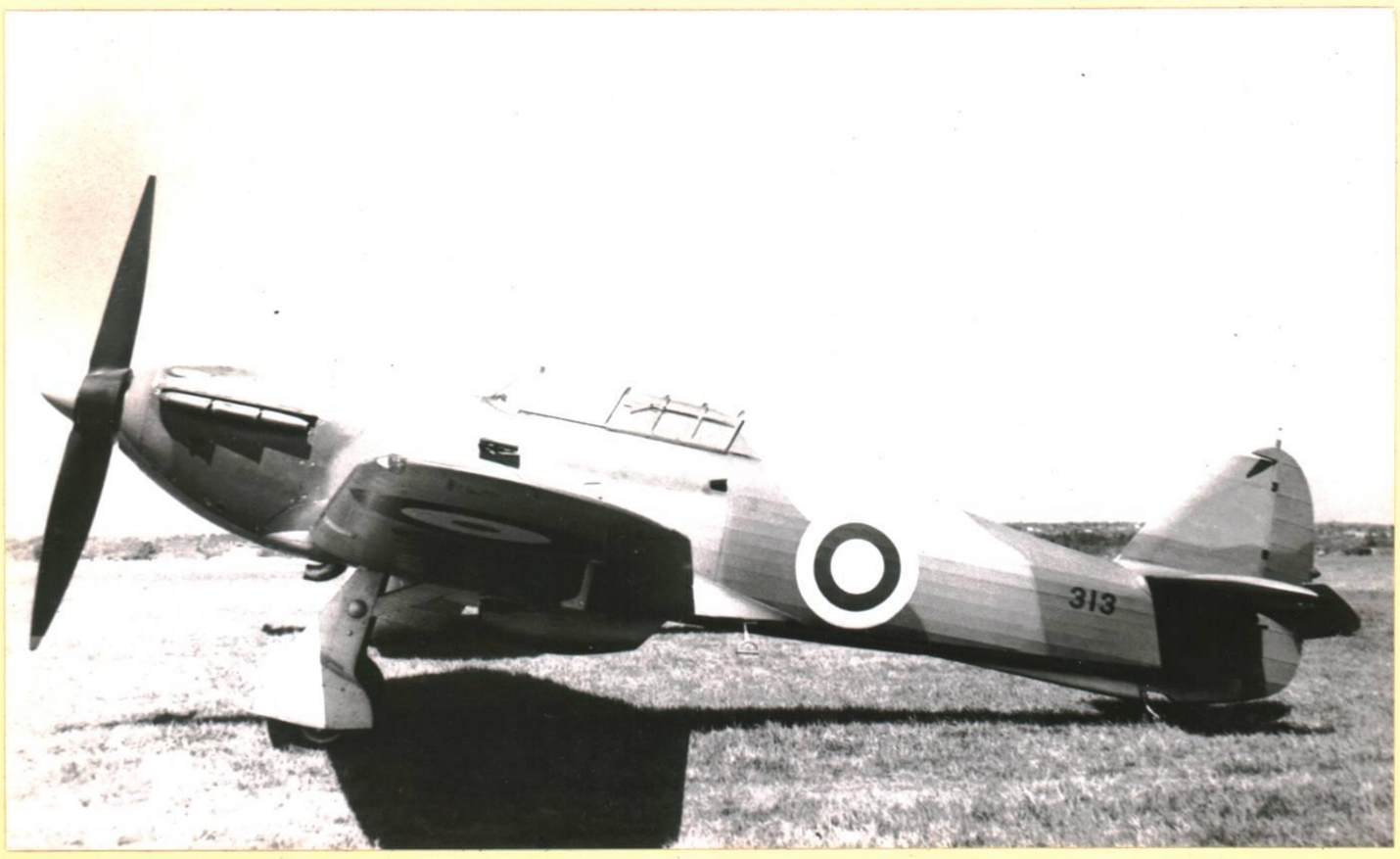
Photo
J. McNulty



See Book III

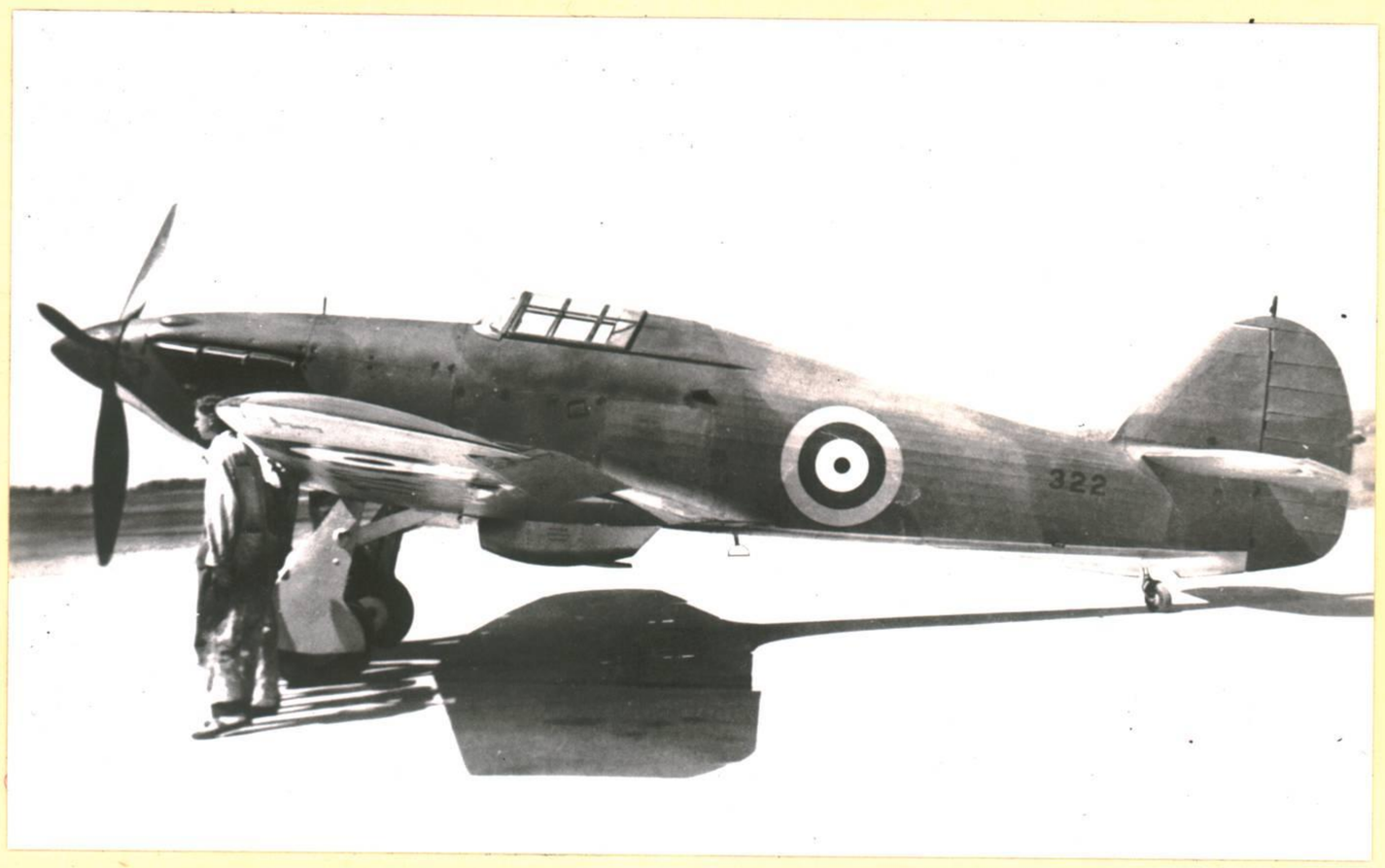
Hurricane I # 313

Vancouver 1939



T.O.S. 2/3/39
Overseas 25/5/40

Merlin II



T.O.S. 22/5/39
Overseas 25/5/40

Merlin II

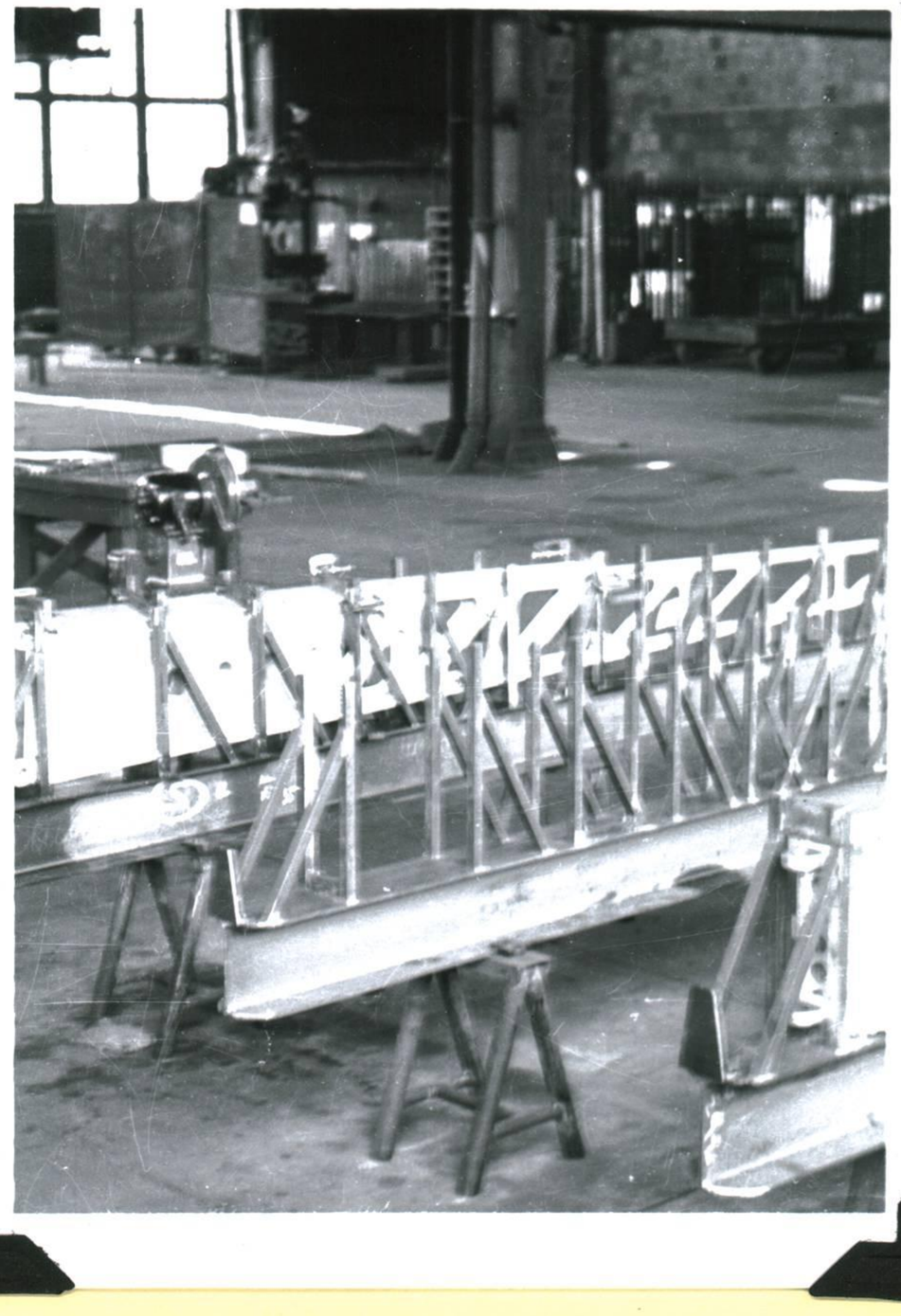


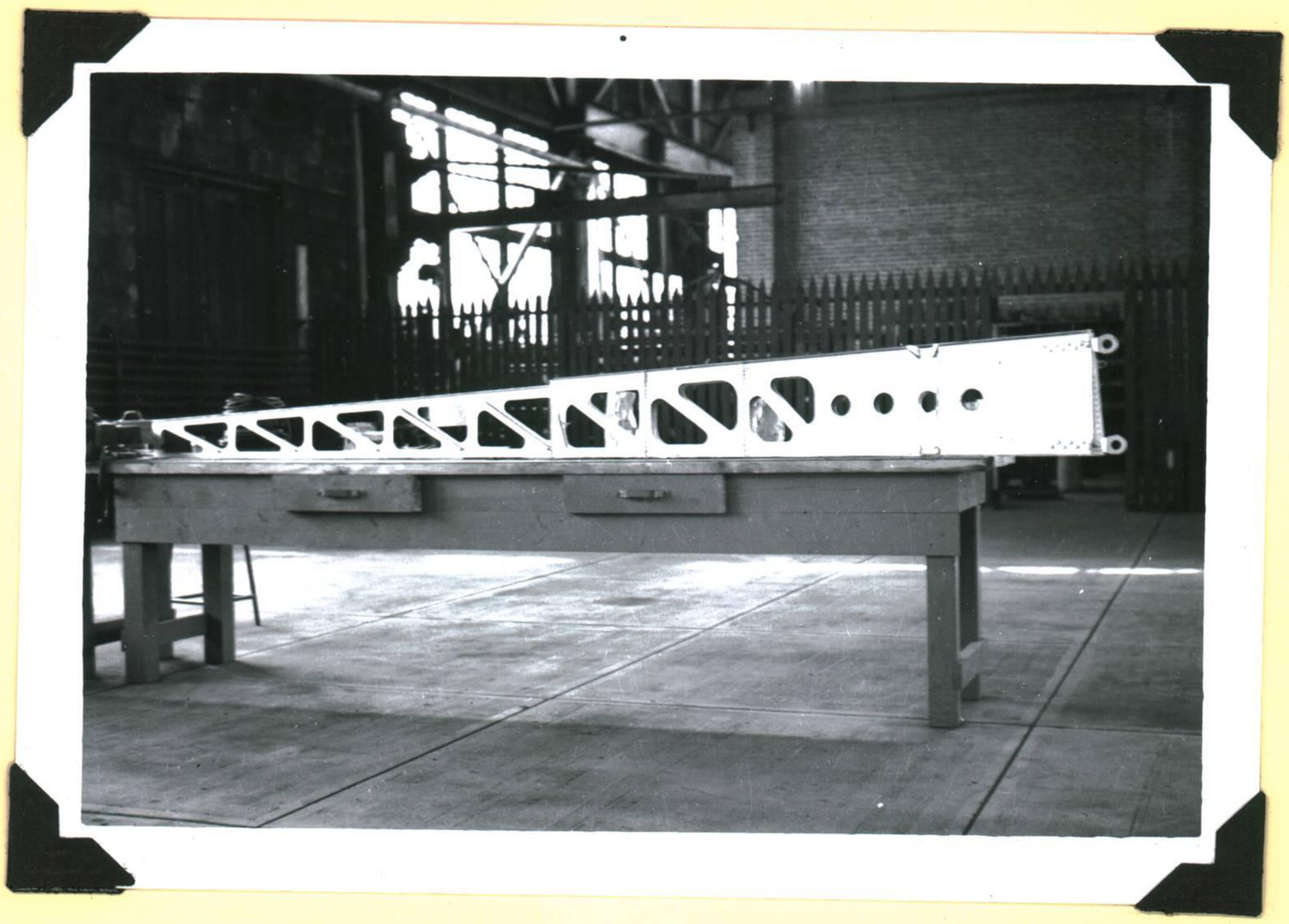
Hurricane I #315

PL 145

Photos

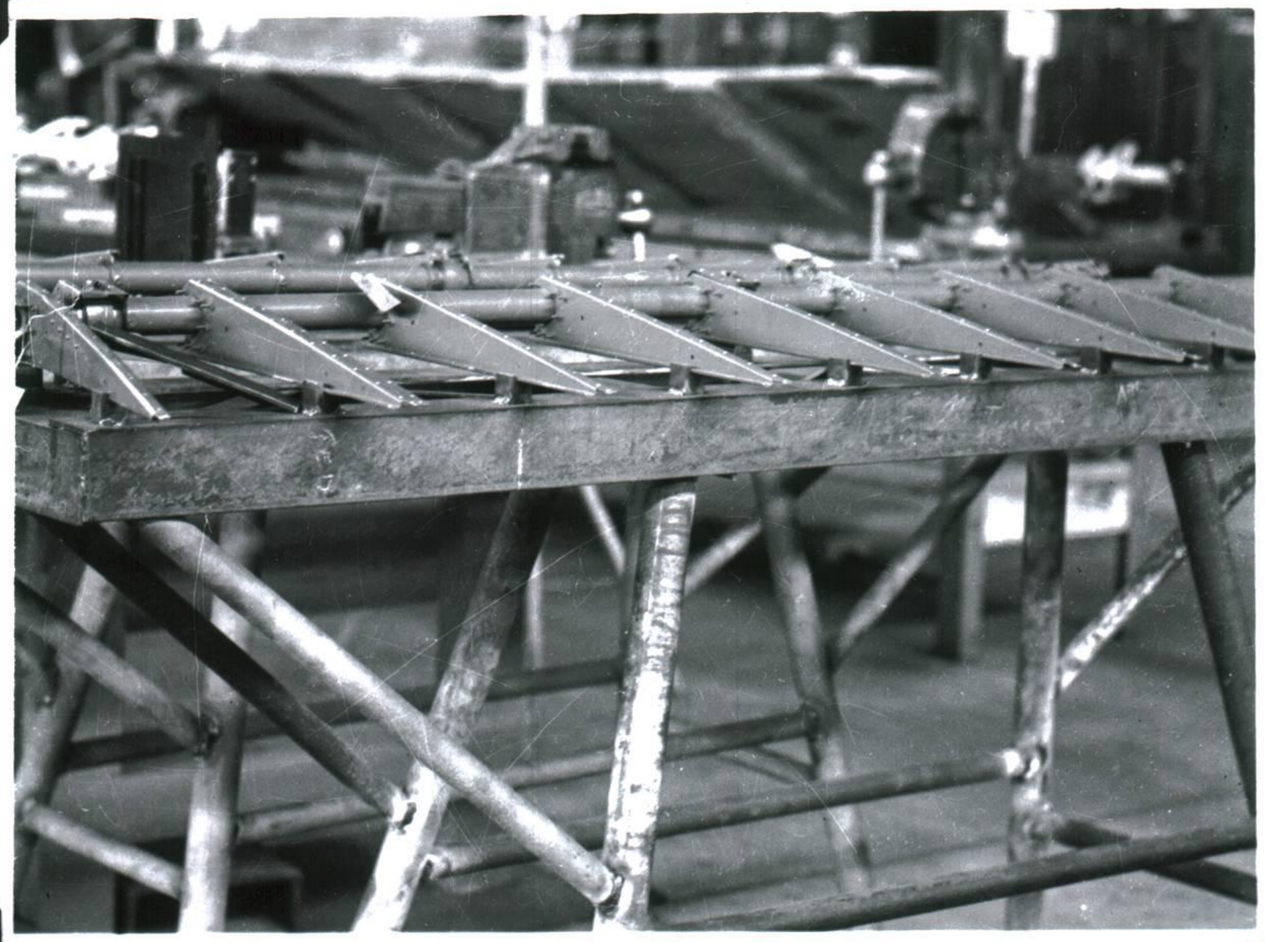
Fred Szuder

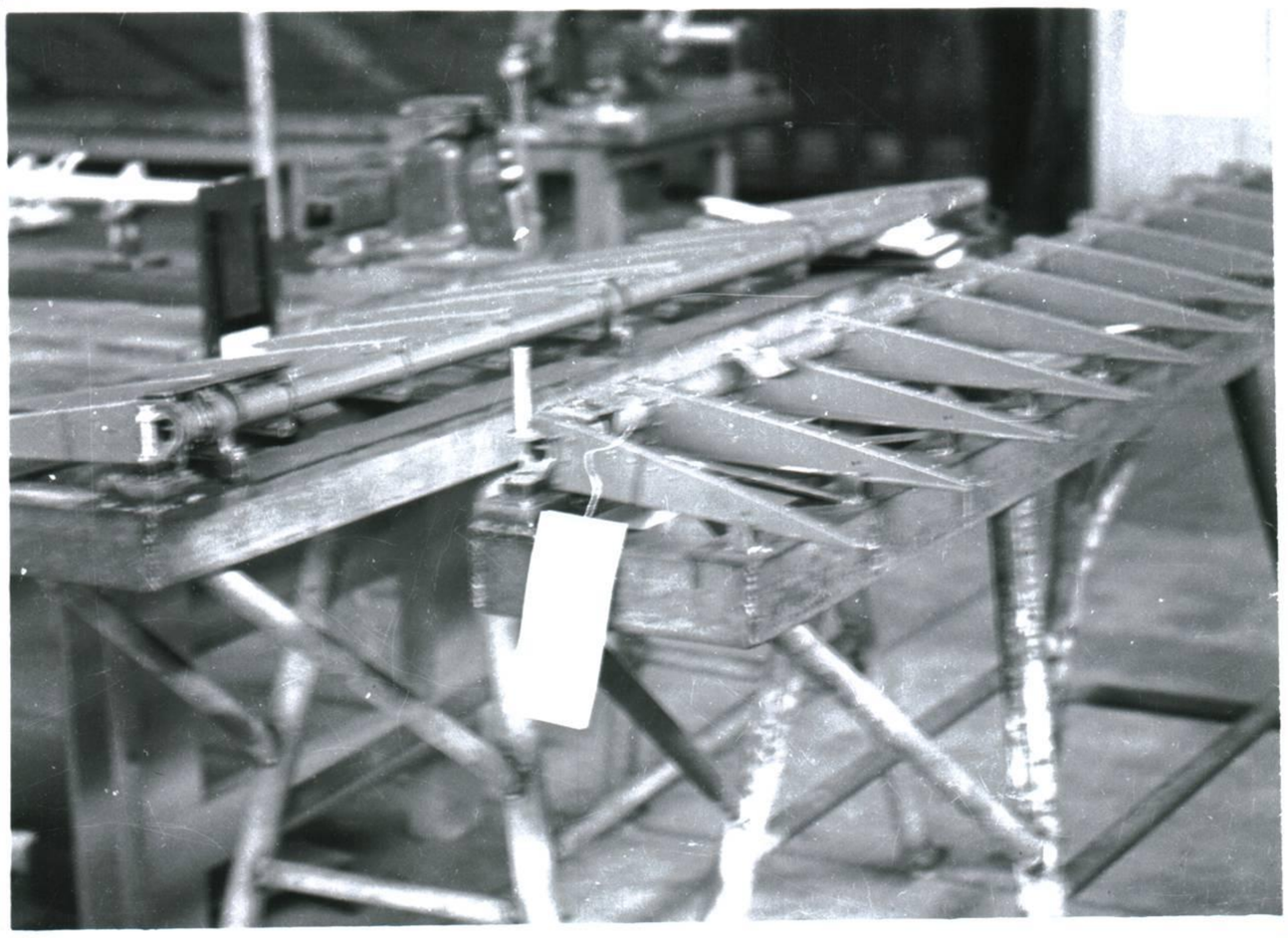




Hawker Hurricane - Can Can. Ft Wm 1939.

Photos
Fred Szudar





Hawker Hurricane - Can Can H. Wm 1939.



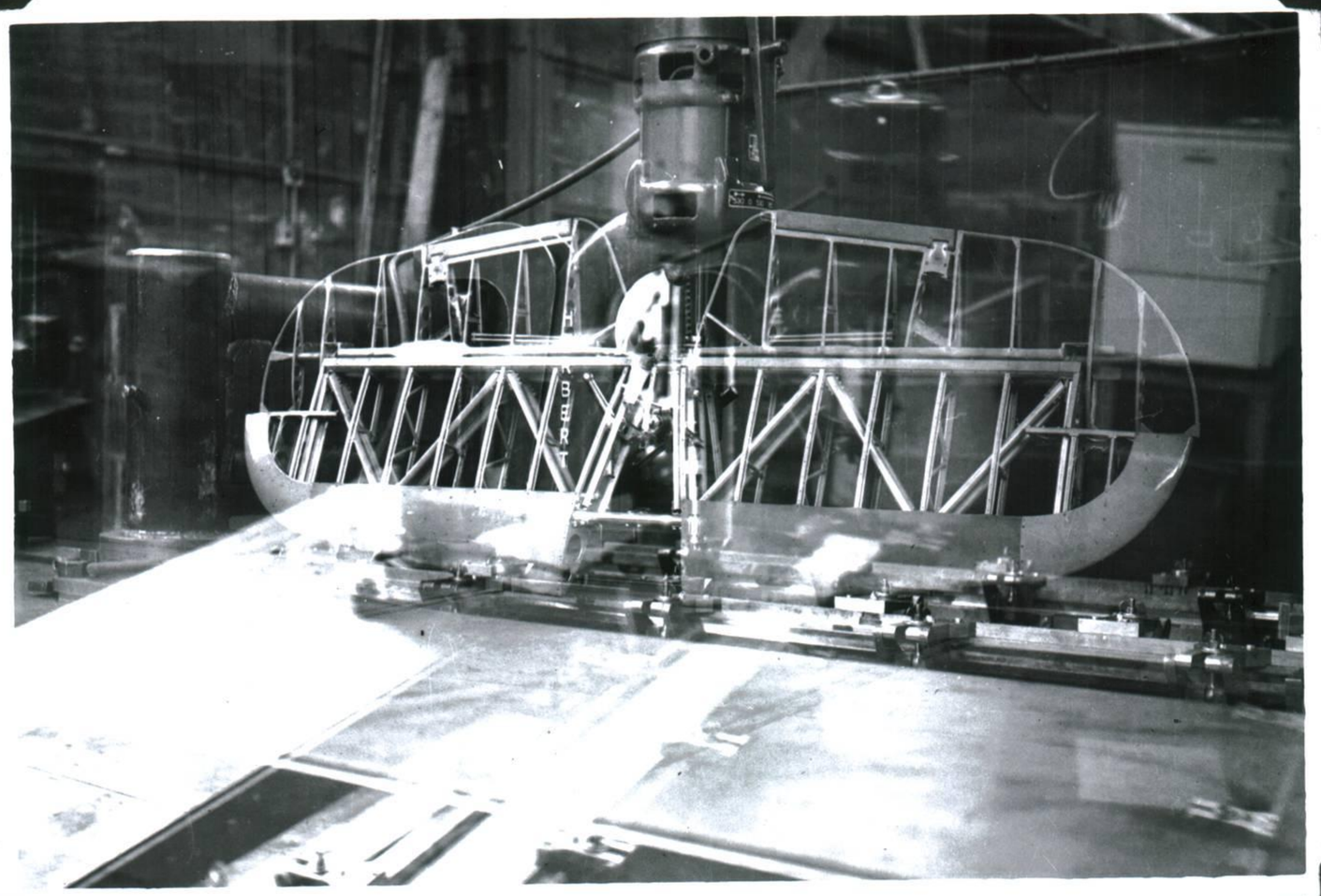




Photos
Fred Sauder

Canadian Car & Foundry — Fort William - 1939.

Photos :-
Fred Sauder



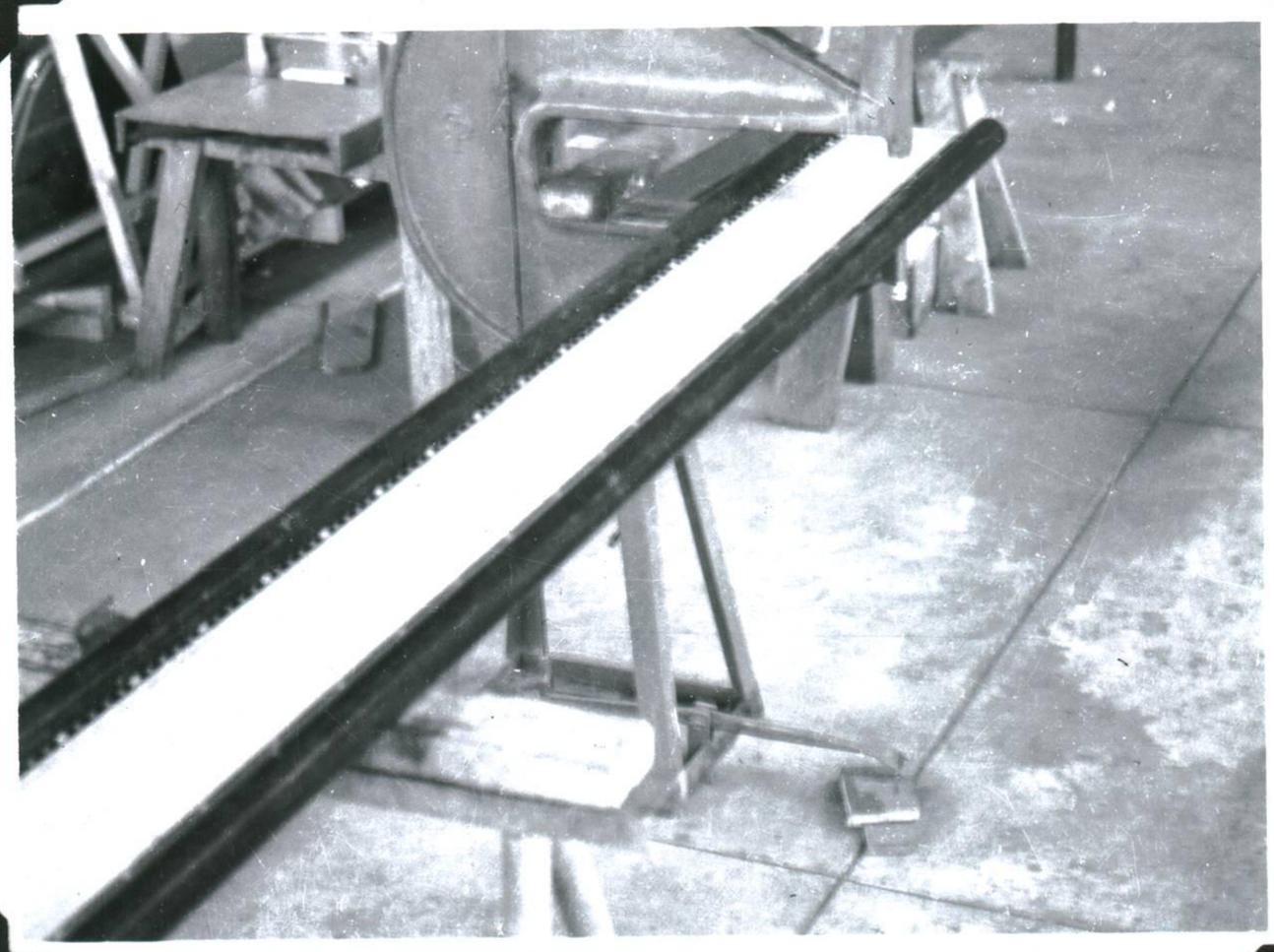
Hurricane Tail Unit

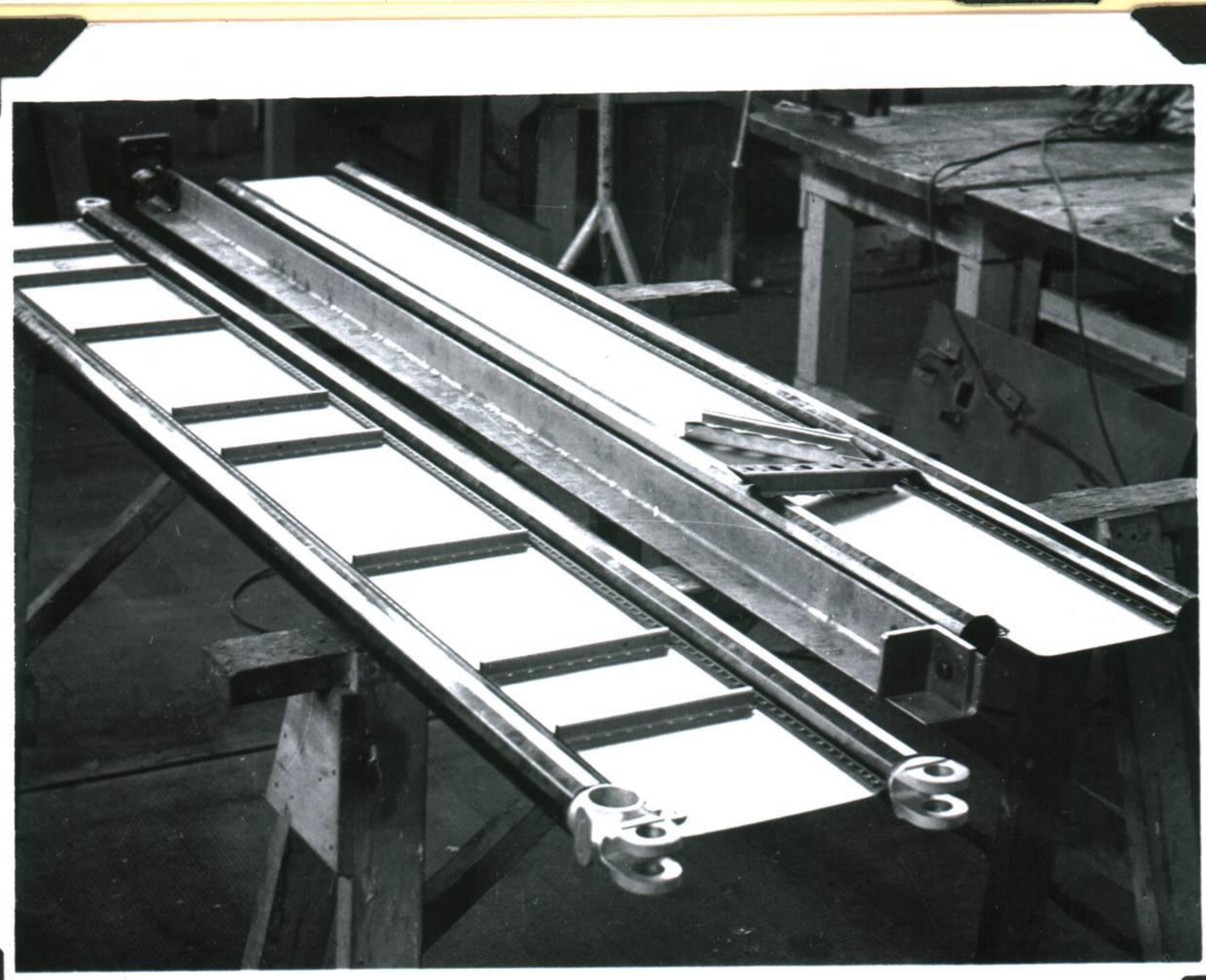


Can Car - Ft Wm 1939.

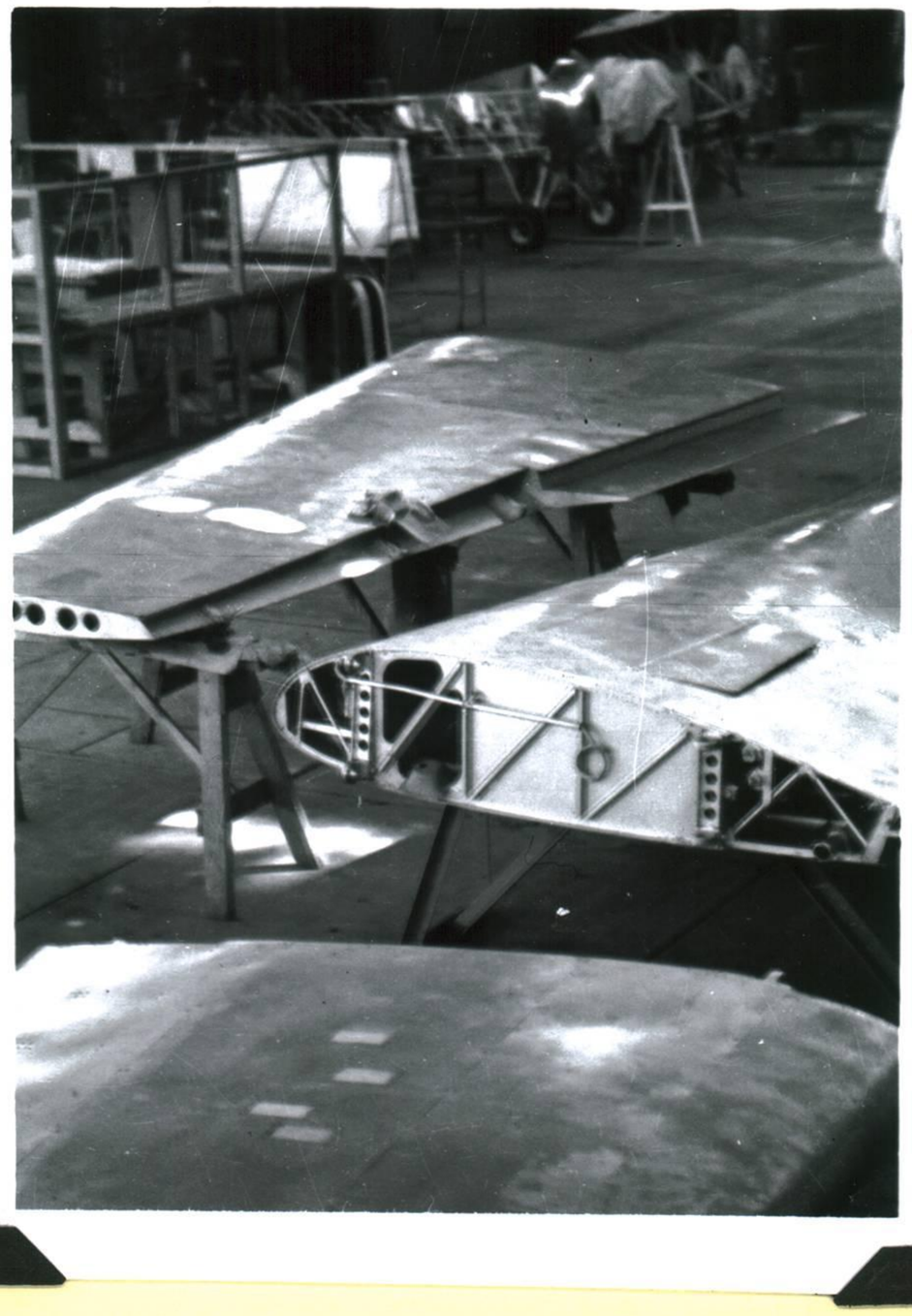
Photos :- Fred Sauder

Hurricane spars





H Wm.
1939.

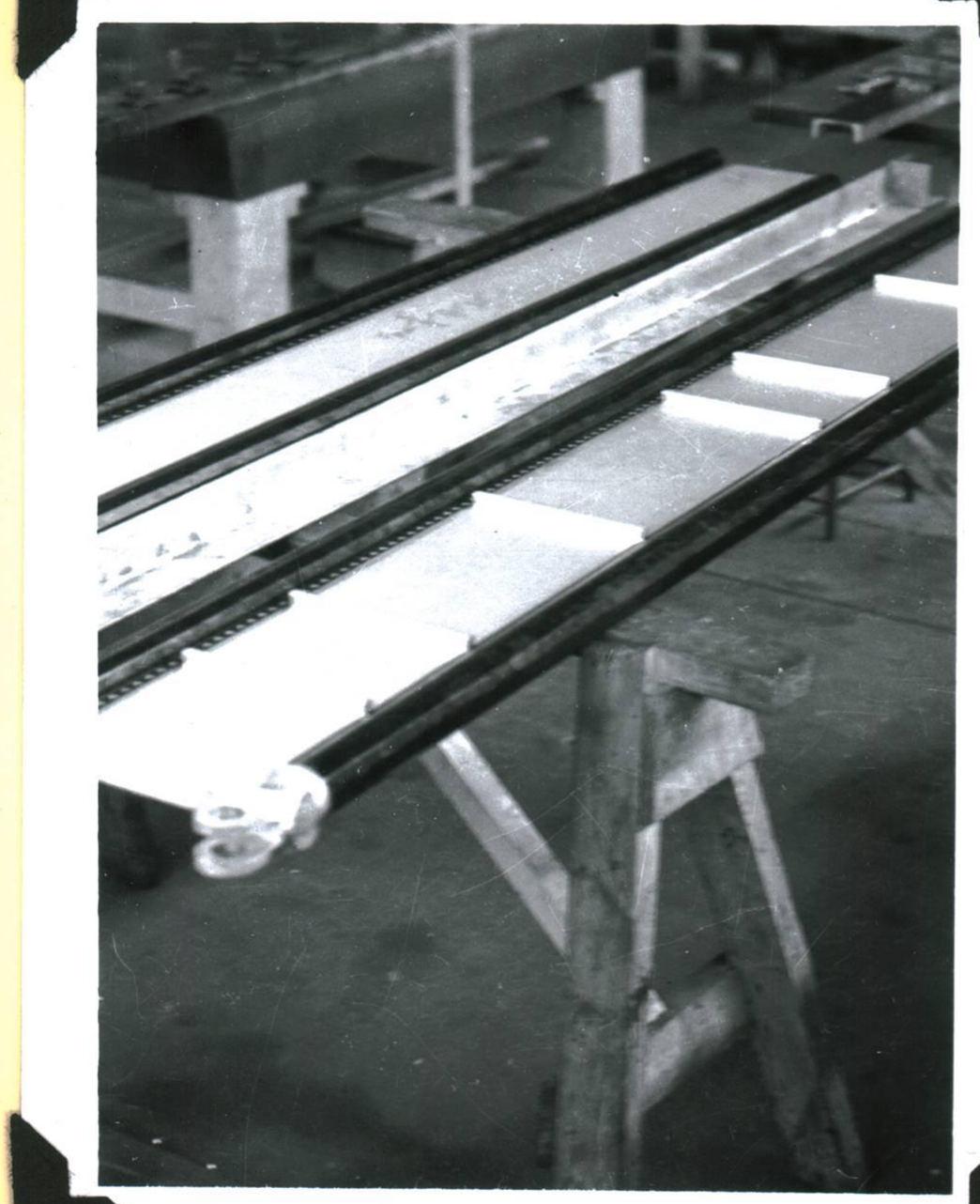




Hurricane Wings

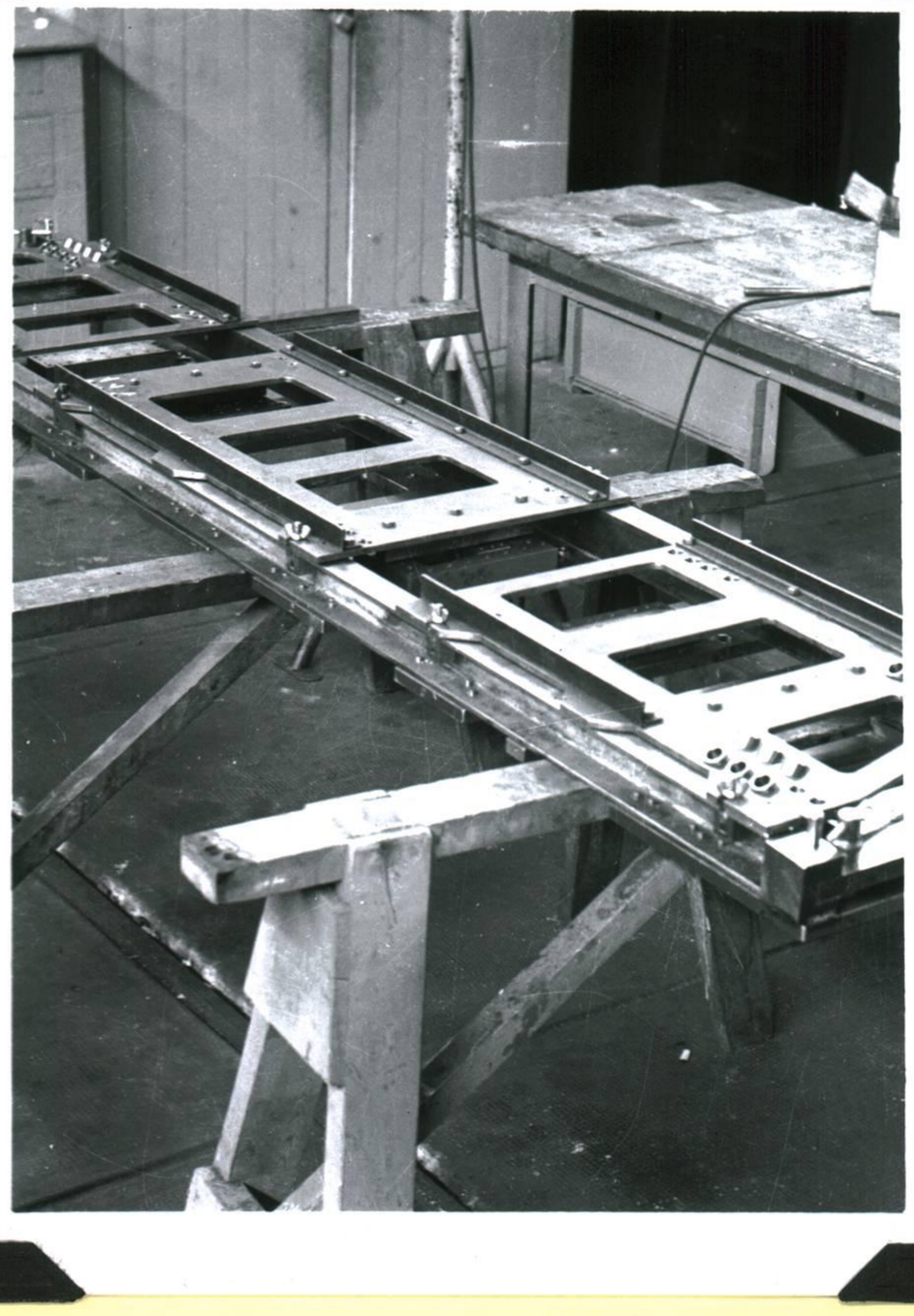
Photos : Fred Sander

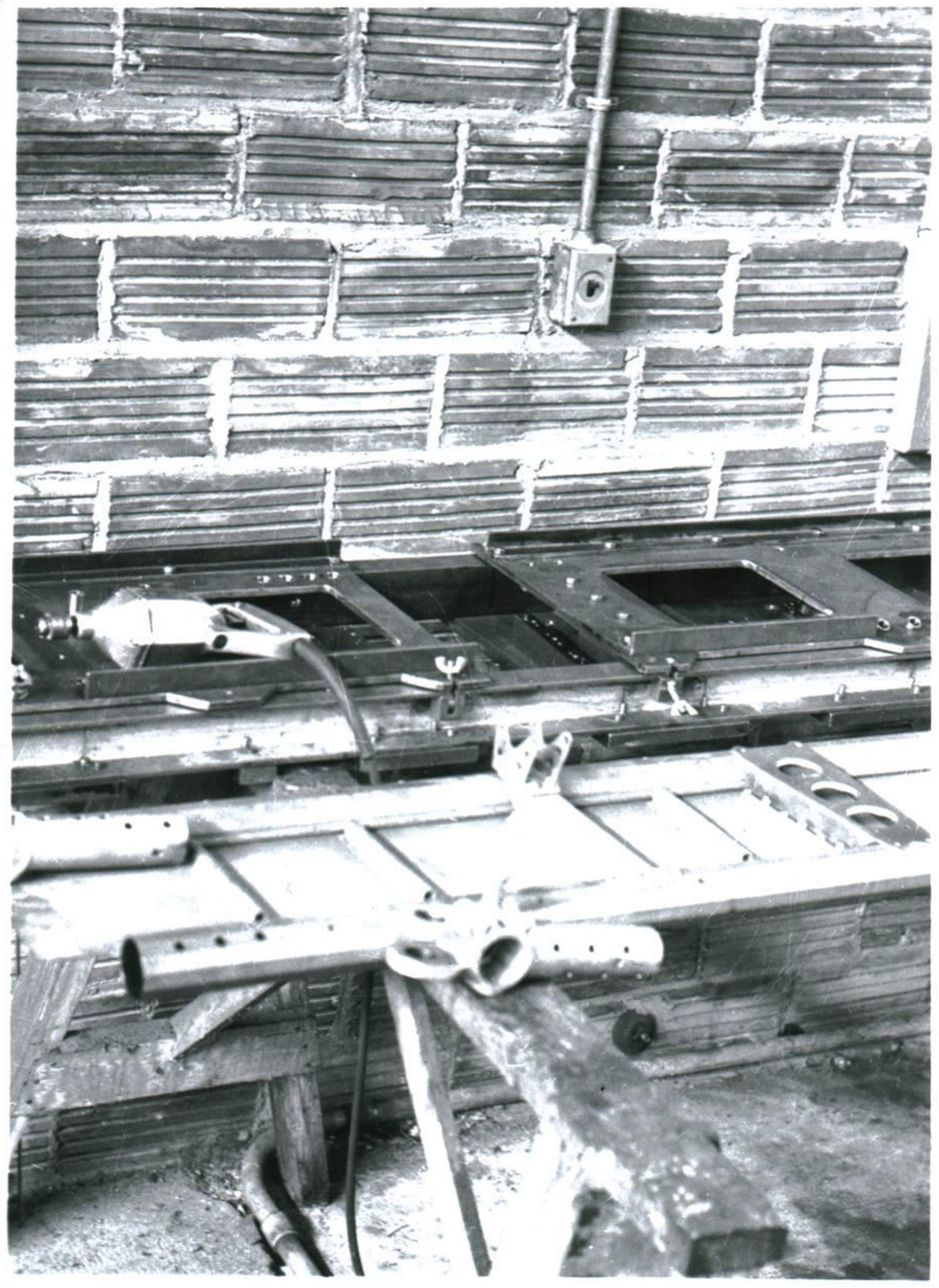




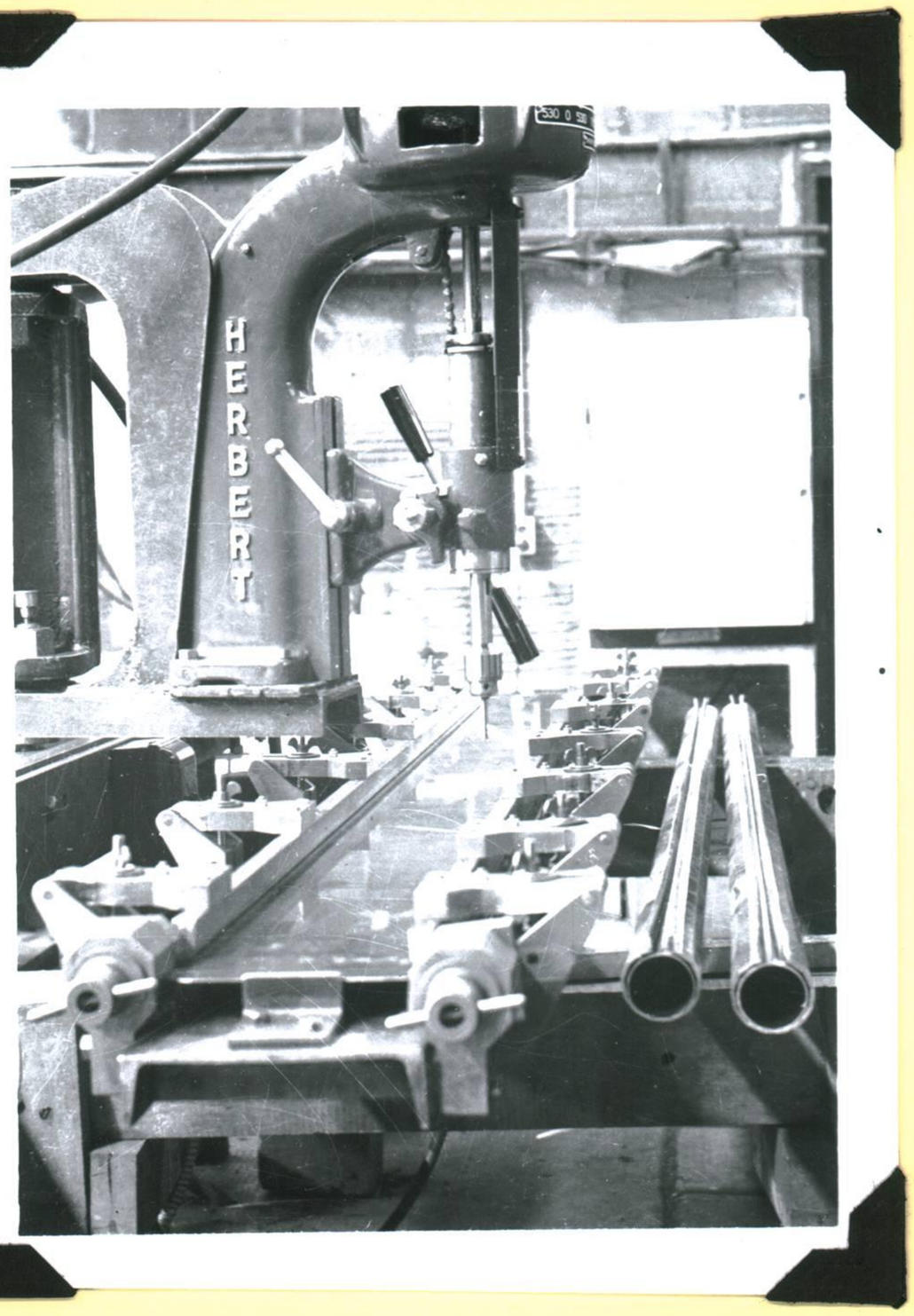
Hurricane Wing Spar

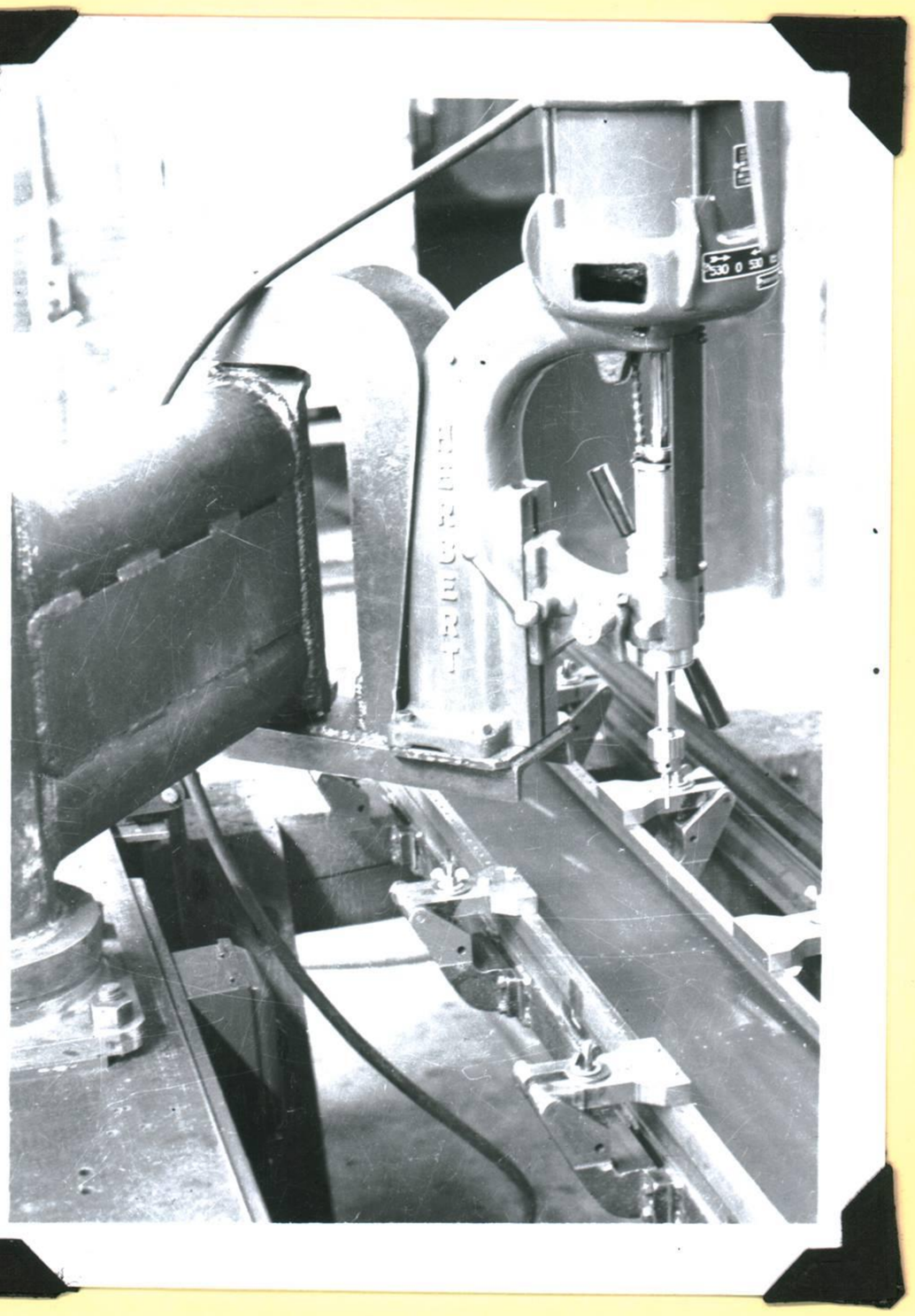
Can Can Ft. Wm
1939.





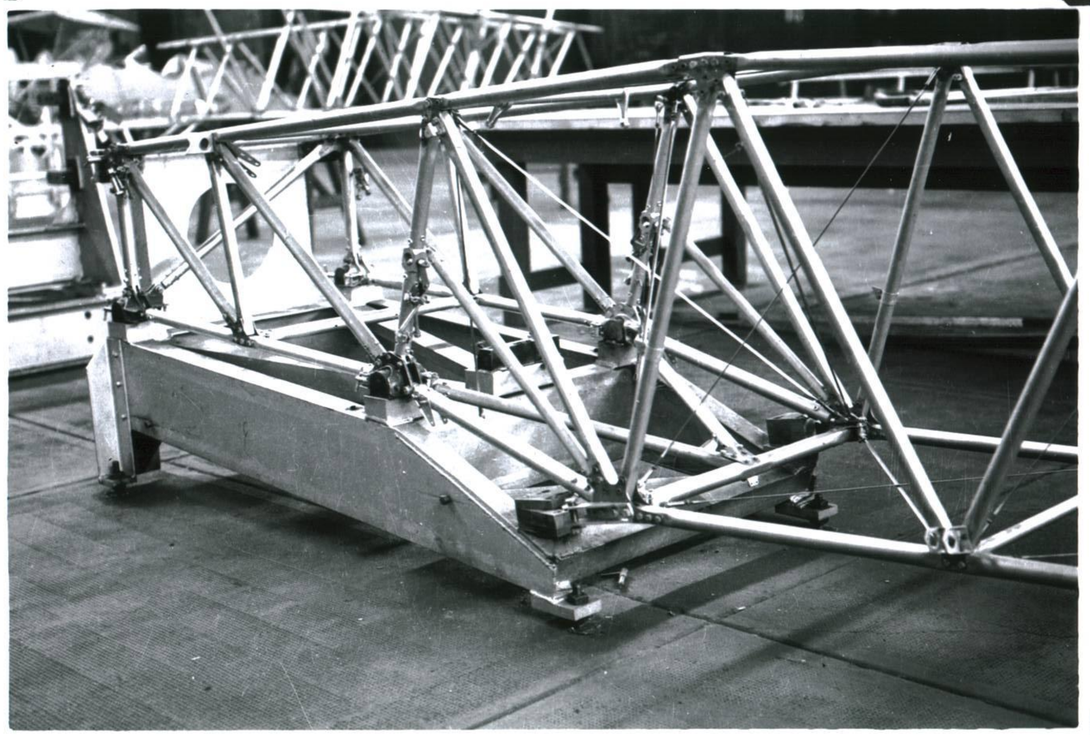
Hurricane Wing spar Photos : Fred Saurer

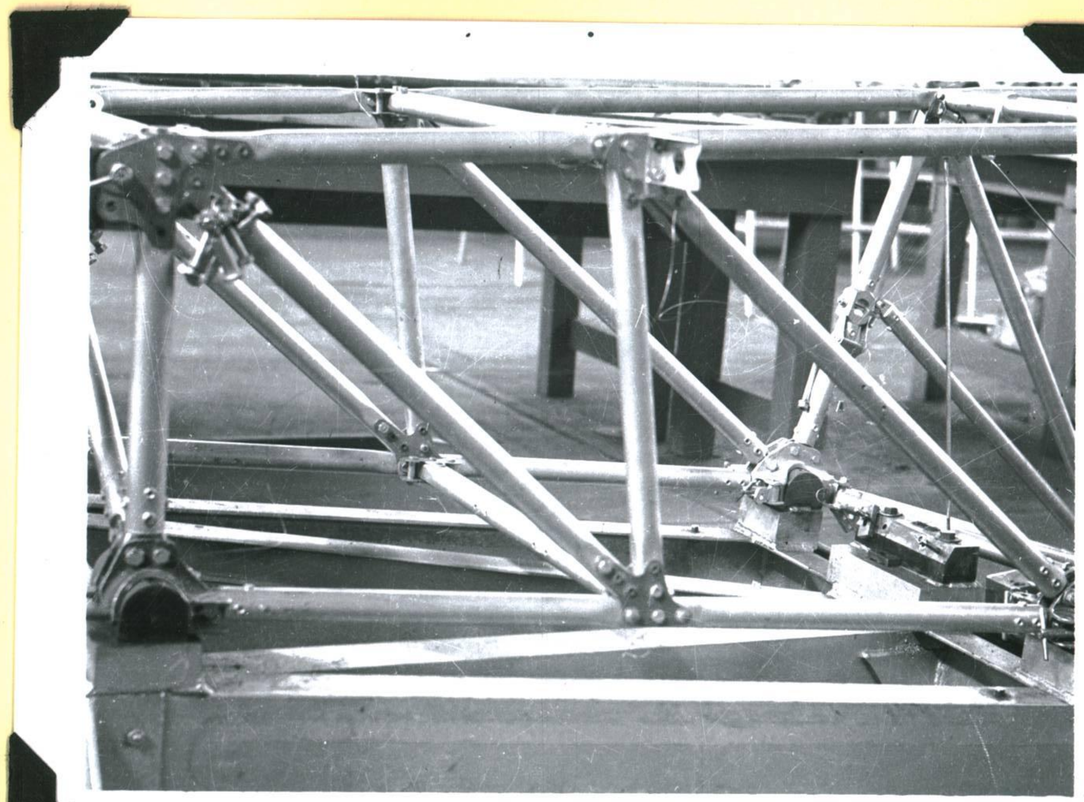




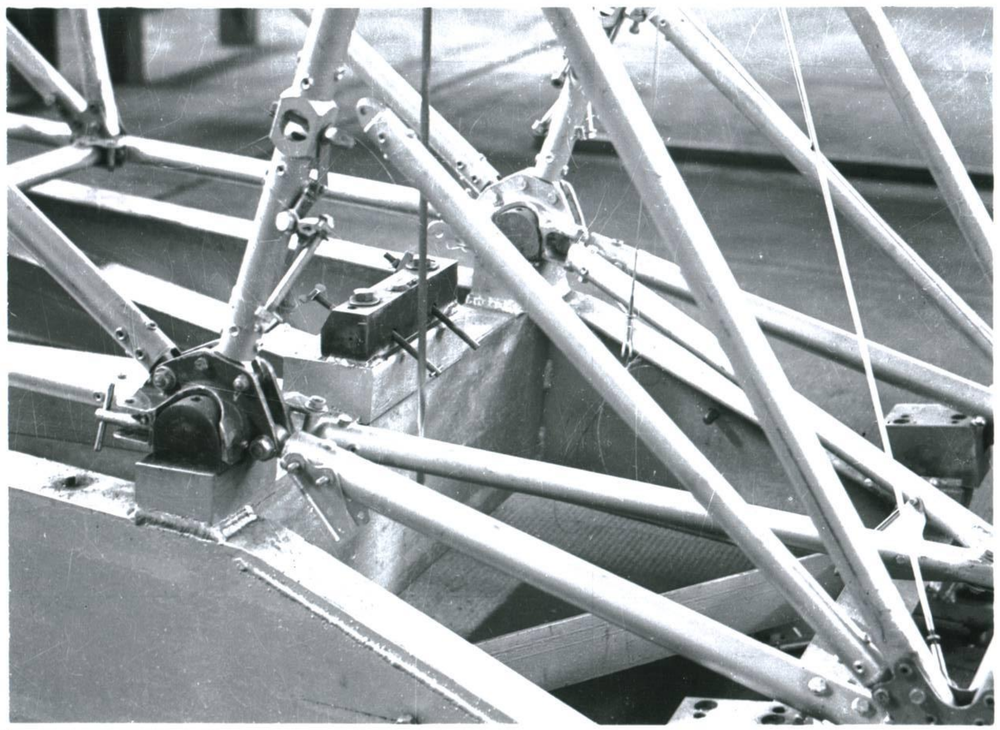
Car Can Ft Wm 1939

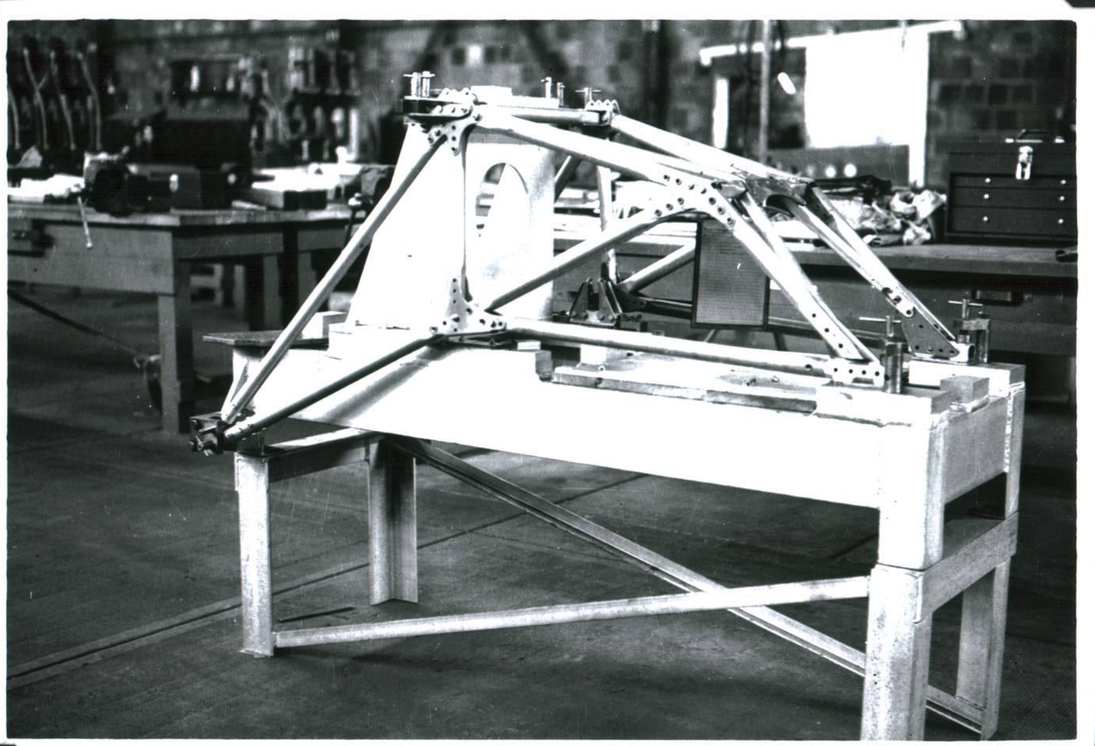
Photos :- Fred Sauder





Hurricane Structure



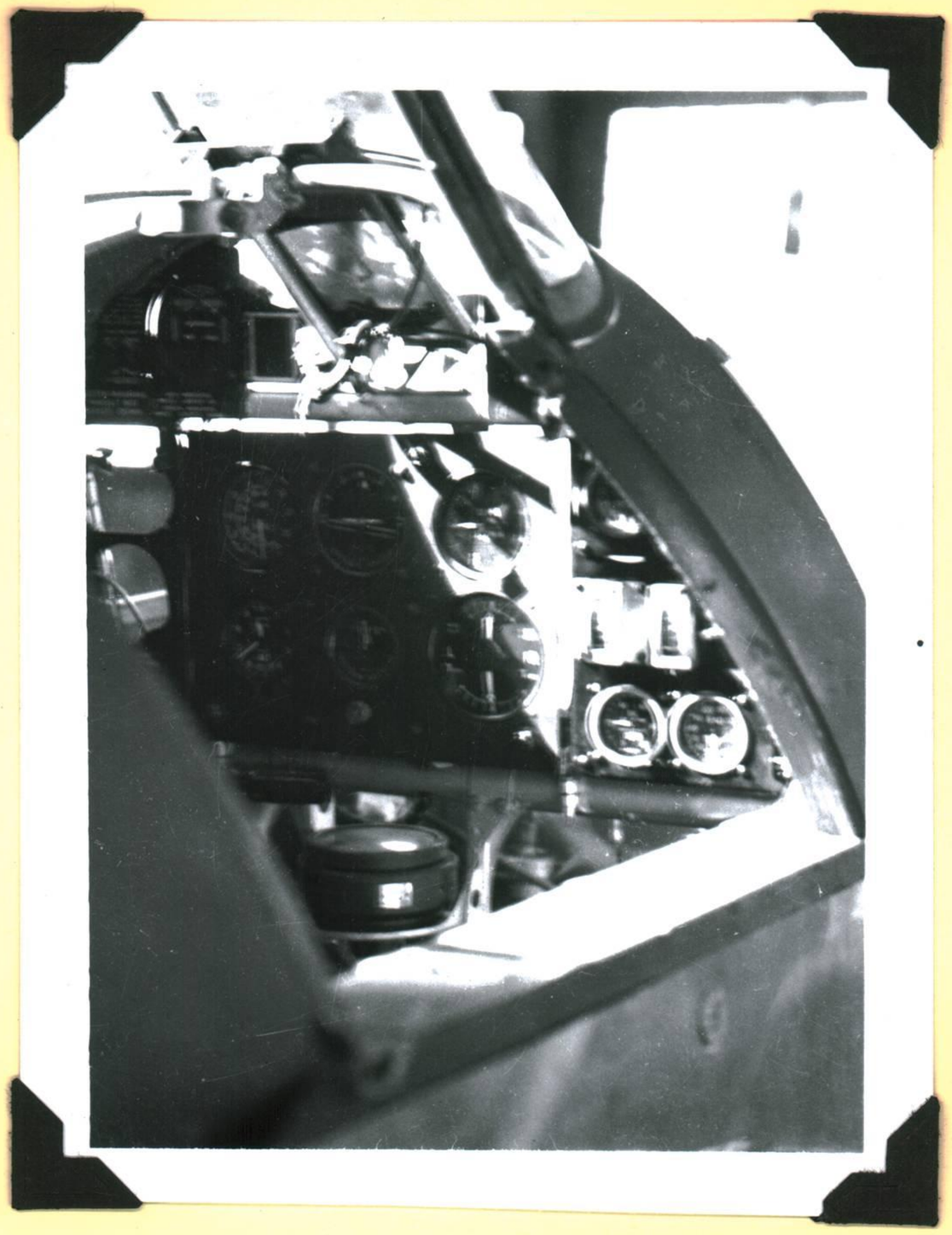


Can Can - Italy - Lt Wm 1939.

Hurricane engine mount.



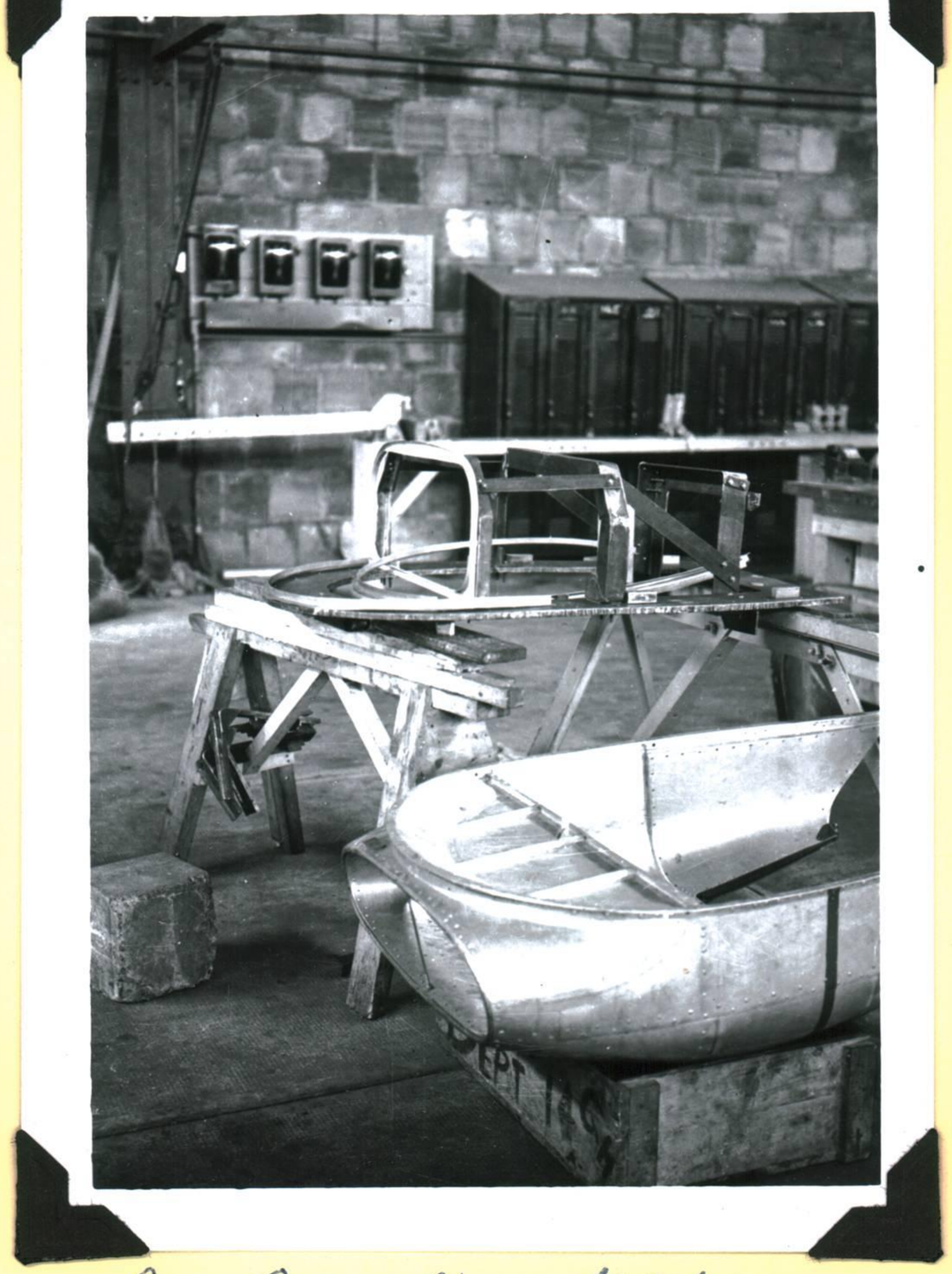
Hurricane



Photos :- Fred Sander

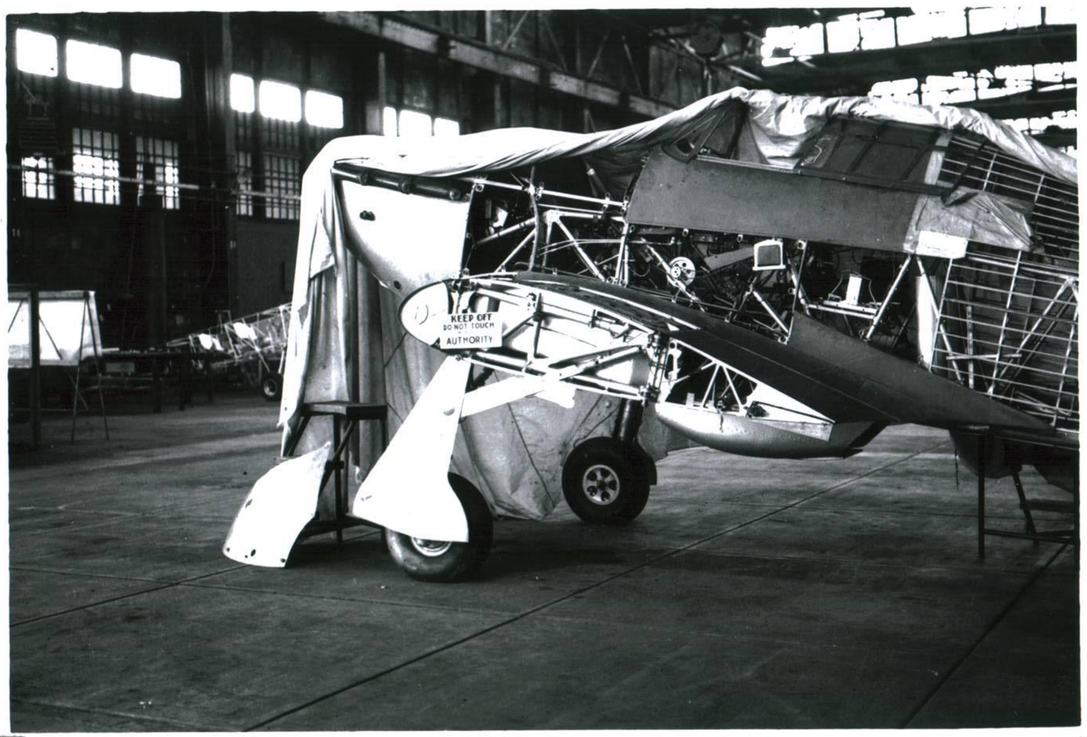


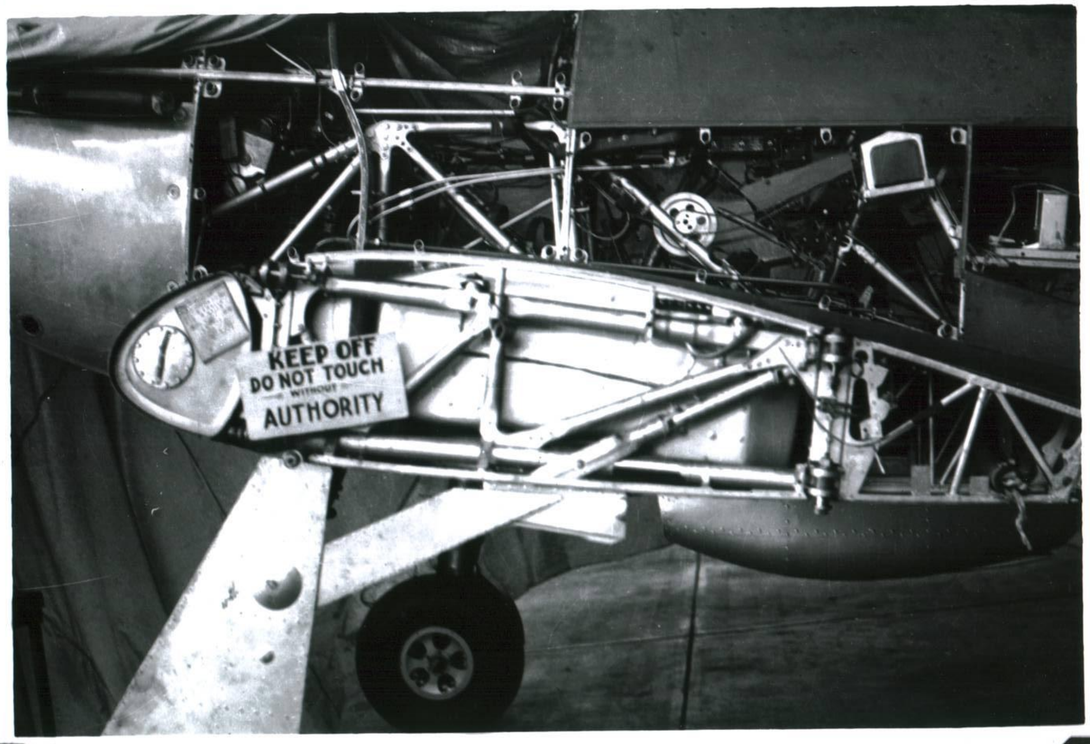
Tank Construction

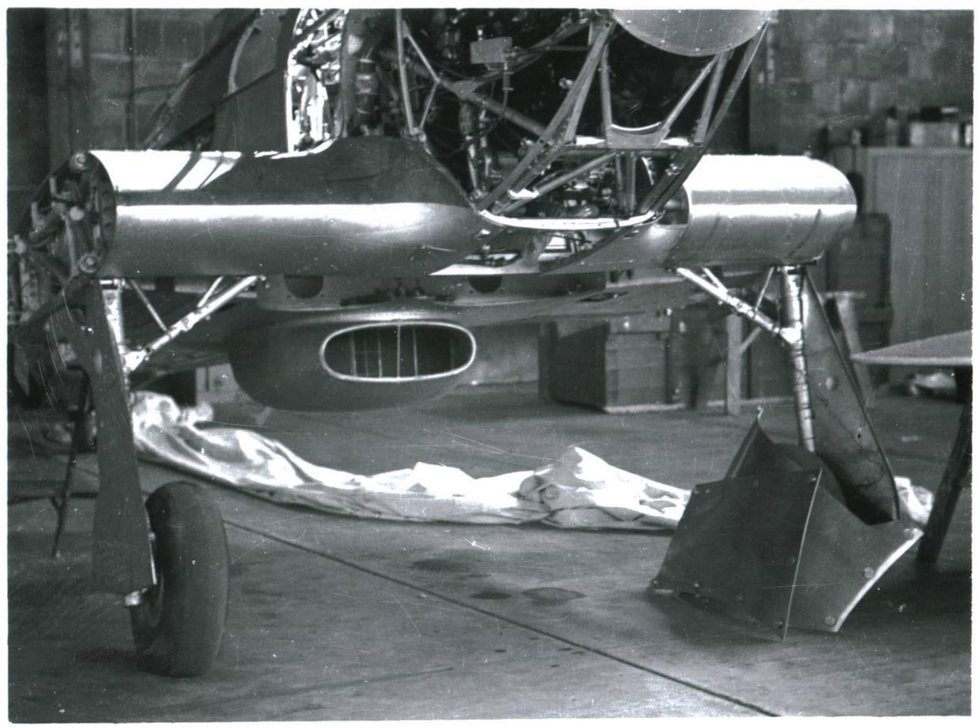


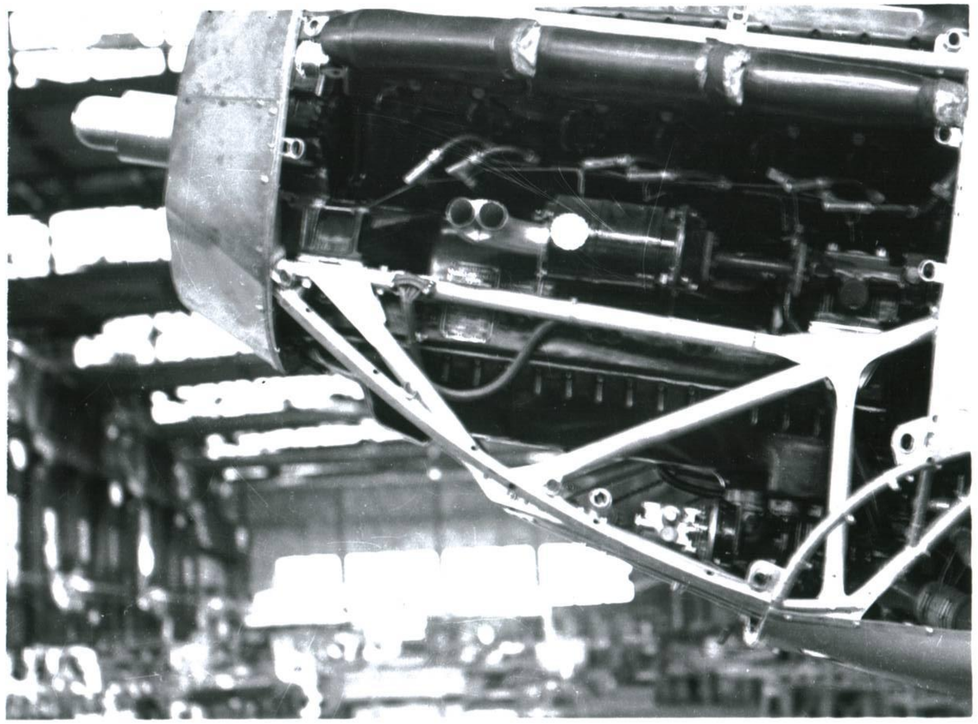
Can Can + Foley — Ft Wm 1939.

Photos :- Fred Sauder



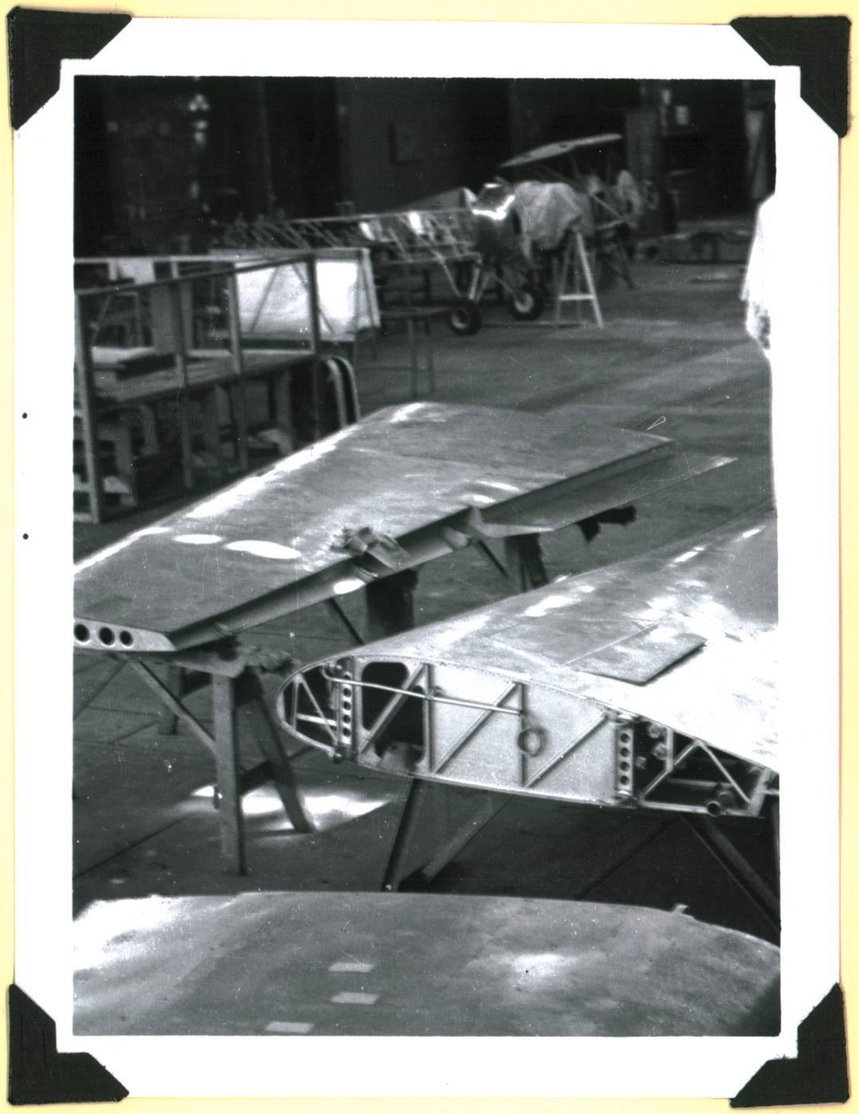


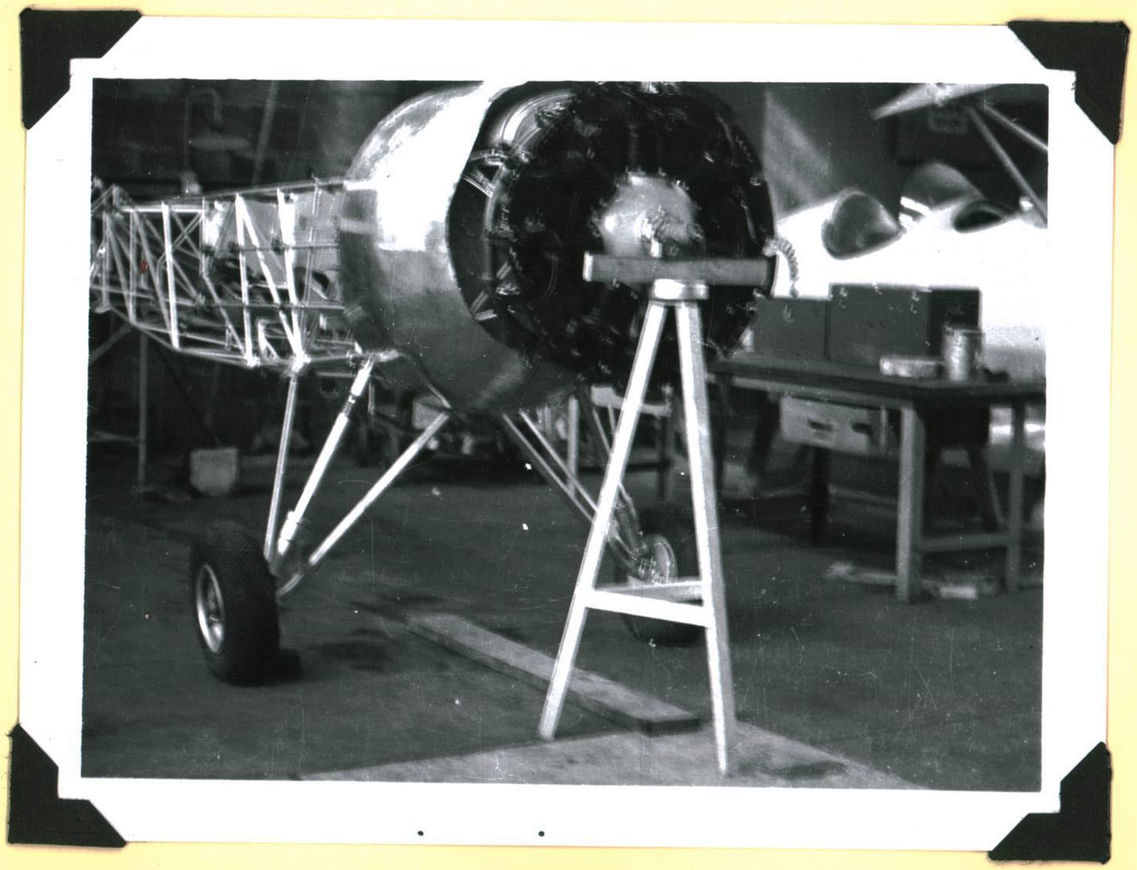




Can Car & Factory Ft. Wm 1939.

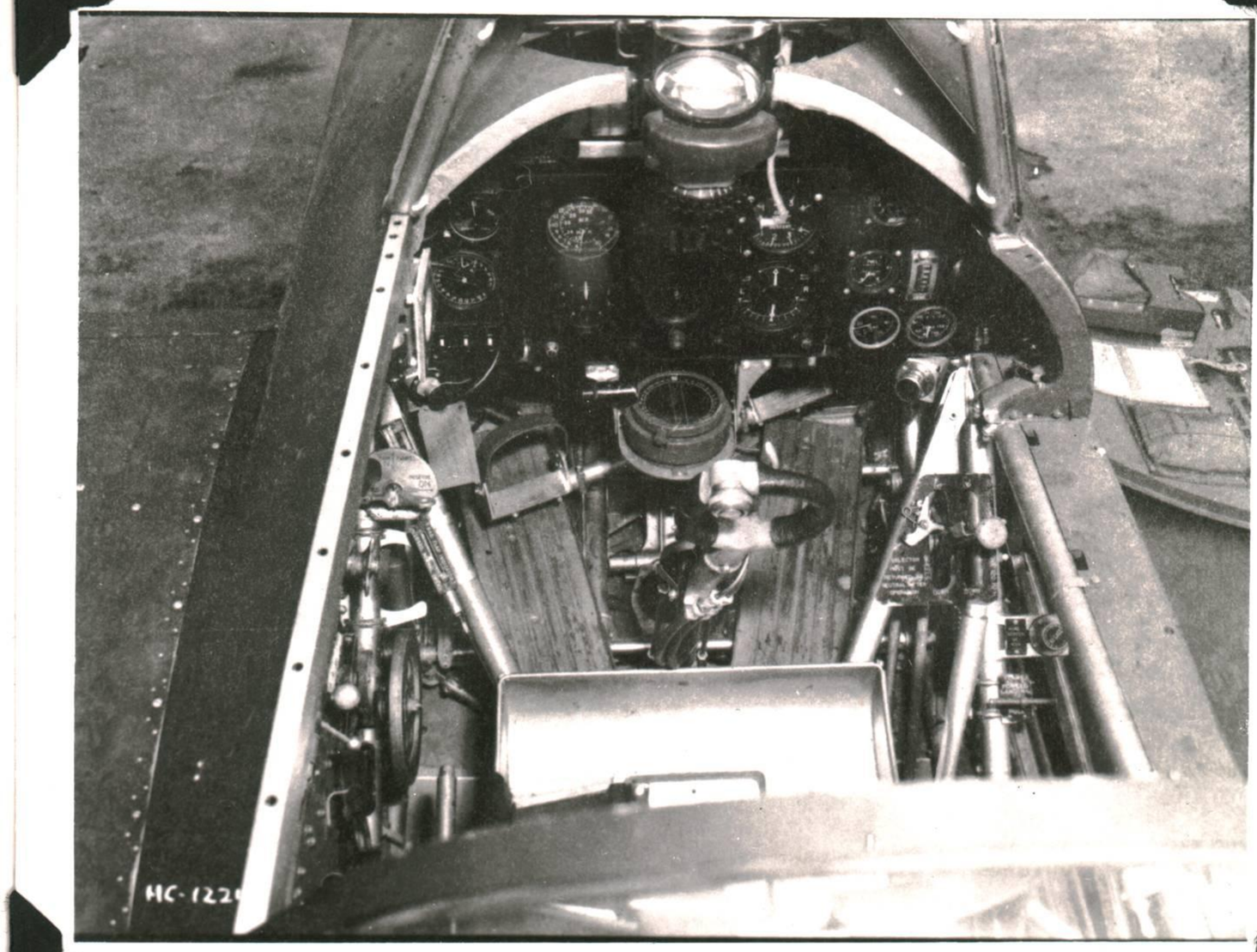






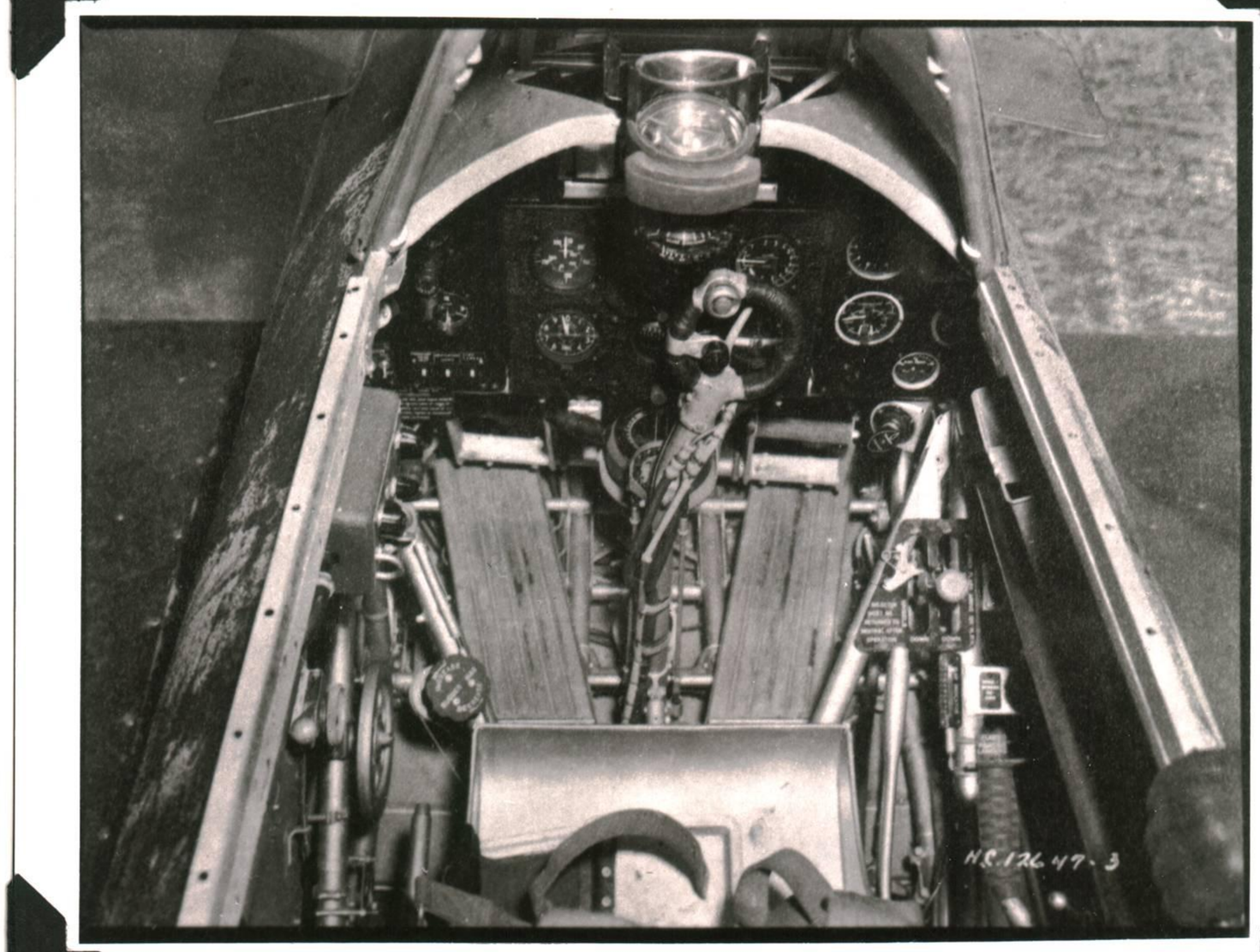
Photos by Fred Sauder

Curtiss Wright Aeronautical Corp.
Airplane Division
St. Louis, Mo.
1939.



Hurricane XII

Rockcliffe
29 Apr. 42



Hurricane XII

Rockcliffe
16 Sept 42



Hawker Hurricane AG665

NMS&T 4196

C.C.F. HAWKER HURRICANE PRODUCTION

HURRICANE MK. I	P5170 – P5209		40
	T9519 – T9538		20
	Z6983 – Z7162		100
			160
HURRICANE MK. X	AE958 – AE977		20
	AF945 – AG344	31 TO RCAF	300
	AG665 – AG684		20
	AM270 – AM369		100
? —	AP138 – AP163		26
			466
SEA HURRICANE MK. XII A	BW835 – BW884	ALL TO RCAF	50
HURRICANE MK. XI C	BW885 – BX134		150
HURRICANE MK. XII	JS219 – JS371		155
	JS374 – JS420		47
	JS421 – JS468		48
			248
HURRICANE MK. XII A	PJ660 – PJ695		36
	PJ711 – PJ758		48
	PJ779 – PJ813		35
	PJ842 – PJ872		31
	5376 – 5775	149 FREE ISSUE	401
			551

TOTAL	MK. I	160		
	MK. X	466		
SEA	MK. XII A	50	149	
	MK. XI C	150	26	
	MK. XII	248	175	
	MK. XII A	551		
		1625		
		175		
		1450		

Fred Shortt.

HURRICANES IN RCAF SERVICE

Compiled by F/L HA Halliday, 1.2.67

NO.1 (Later 401) Squadron (Letters YO)

A Siskin unit. Began to equip with Hurricanes at Vancouver as they were delivered by sea and uncrated. Aircrews flew a Delta to accustom themselves to low-wing monoplanes before flying the Hurricane. Re-equipment began Feb 1939. Aircraft arriving were Nos.310-320, 323, 325-329.

Moved overseas, spring 1940, under S/L E.A.McNab. For details of actions in Battle of Britain see "The RCAF Overseas - the First Four Years". Squadron destroyed 30 enemy aircraft. Three pilots killed.

Squadron re-designated No.401, 1 March 1941

Bases : Calgary - 31 Aug 38 - 9 Sep 39 (detachment at Vancouver, 16 Feb - 8 Jun 39)
St.Hubert - 10 Sep - 5 Nov 39
Dartmouth - 6 Nov 39 to 8 Jun 40
Middle Wallop - 21 Jun - 3 Jul 40.
Croyden - 4 Jul - 16 Aug 40
Northolt - 17 Aug - 10 Oct 40
Prestwick - 11 Oct - 8 Dec 40
Castletown - 9 Dec 40 - 10 Feb 41
Driffield - 11 Feb - 28 Feb 41
Digby - 1 Mar - 19 Oct 41

Squadron ceased flying Hurricanes, 7 Sep 41

No.118

A veteran squadron, flying Goblins. On 15 Aug 41 the unit diary recorded testing 3 Hurricanes. Many references thereafter to such testing, but apparently none taken on strength until Jan 42. By then the Goblins had been replaced by Kittyhawks.

No.11 8 operated a flight of Hurricanes from Jan 42 onwards. In June the squadron moved to the west coast and left its Hurricanes behind.

The following is a list, taken at random between Jan-Jun 42 of seriels of Hurricanes flown. Too many to be on strength, and obviously includes many merely tested. List probably incomplete : BW 841, P3394, W9279, BW 837, ~~7853,~~ V6799, V6610, V7253, W9313, V7498, W9311, W9187, W9498, V9182, W1498, BW835, BW842, BW843, Z4569, V6756, Z4852, BW884, BW846, BW845, BW876, BW881

No.123 (Army Co-Operation) Squadron

At Debert, N.S. Acquired two Hurricanes in Nov 42. Flew them with Harvards, Lysanders, Ansons, and later Bolingbrokes. Serials BW884 and BW836. In Feb 43 BW 835 was added.

On 16 July 43 an accident occured with 842 (when taken on strength ?). Aircraft caught fire in air and crashed. P/O J. Hunter rescued by P/O B.H. Cavendish RAAF.

No Hurricanes on strength at end of July 1943.

Squadron began picking up Mk.12s from Scoudouc 12 Aug 43. By end of August they had six (5710. 5716, 5711, 5723, 5726, 5693. Another added September 43 (5636)

Squadron sent overseas in November 1943 and became No. 439. (see below)

No.125 (F) Squadron

Formed at Sydney, N.S. 20 Apr 42 as a Hurricane unit. By 27 May 42 they had 13 Hurricanes. These included 1352, 1354, 1356, all delivered by 26 May, and 1362, 1353, 1357, 1356, 1359, and 1360, all delivered on 27 May. The first Commanding Officer was S/L R.W. Norris.

Squadron moved to Torbay, 9 June 1942. The first fatal accident occured on 27 Aug 42 when Hurricane 1360 crashed, killing Sgt. Ruggles.

The squadron began to move back to Sydney on 15 June 43 and the move was complete by 25 June. The squadron stayed there until December 43 when it was sent overseas and renumbered 441.

The squadron diary or operations record book (ORB) refers to Mk.1, 2, and 12 Hurricanes (I gather that the squadrons often referred to Mk.12s, incorrectly, as Mk.2s). The first Mk.2 (or 12s) began to arrive in the late summer of 1942. As of 1 Sep 42 No.125 had nine Mk.1s and two Mk.2a. By 1 Nov 42 it was seven of each and by 30 Nov 42 it was five Mk.1s and nine Mk.2s. As of 31 Jan 43 the squadron had one Mk.1 (serial 1362) and nine Mk.2s. Typical Mk.2 serials taken at randon from the Jan 43 ORB are ~~5493~~, 5484, 5482, 5495, 5486, 5493, 5490, 5502, 5501.

No.126 (F) Squadron (letters BV)

Formed at Dartmouth, N.S. 20 April 1942 with F/L A.M.Yuile as first CO. On 27 Apr 42 received first aircraft - BW835, BW836, BW844, BW846, BW881 (Obviously formed with aircraft left behind by No.118 Squadron)

By end of May the squadron had eight Hurricanes and four Harvards. Later the strength increased to 13-15 Hurricanes plus 2-4 Harvards (strength varied slightly from month to month)

Squadron moved to Gander 15 July 42, move completed by 29th.

Squadron returned to Dartmouth, June 1943.

Disbanded, 30 May 1944.

See photo REA 253-48 for view of BV-T and BV-A.

No.127 (F) Squadron (Letters TF)

Formed 4 July 1942 at Dartmouth. By end of the month it had 13 Hurricanes, 3 Harvards including BW 853, BW 861, BW 844, BW868, BW839, BW851, BW883, BW836, BW867.

Moved to Gander, 20 Aug 42, returned to Dartmouth 24 Jul 43, Ceased operations 23 Dec 43, moved overseas, became No.443.

December 43 ORB records flights by following Hurricanes, the last on strength of the unit : 5683, 5724, 5658, 5679, 5729, 5654, 5655, 5680, 5629, 5695, 5704, 5638.

No.128 (F) Squadron

Formed at Sydney, N.S. 1 May 42 but no personnel posted to it until 7 Jun 42. First Hurricanes alloted on 13 Jun 42 (Nos.1354 to 1356, 1370, 1373). No 1351 alloted 15 Jun 42. Nos.1371 and 1374 alloted 22 Jun 42. No.1361 alloted 28 Jun 42.

Squadron moved to Torbay 24-26 Jun 43 (rotating with No.125 Sqn). Disbanded 15 March 1944.

Flew Mk.1 Hurricanes until June 43. The first Mk.12s were delivered 18 Dec 42 (Nos.5488, 5637, 5639).

No.129 (F) Squadron

Formed at Dartmouth, 27 Aug 42. Fifteen Sea Hurricanes taken on strength 29 Aug 42 (BW836 and 837, BW 839, BW843 and 844, BW846 and 847, BW851, BW861, BW863, BW868 and 869, BW881, BW883 and 884).

Squadron moved to Goose Bay, 8 Apr 43.

Hurricane Mk.2s (12s?) received 23 Jan 43 and by end of April 1943 all Mk.1s were gone. (As was normal with these units, the squadron also maintained a few Harvards on strength).

Aircraft were marked with numeral 2 and a letter (i.e. 2-D, 2-K).

Squadron moved to Bagotville, 26 Oct 43, then to Dartmouth, 30 Dec 43. Then moved to Gander, 1 Jun 44, where it disbanded, 30 Sep 44.

No.130 (F) Squadron

Formed 1 May 42 at Mont Joli with Kittyhawks, the squadron later moved to Bagotville, where it began to receive Hurricanes on 19 Sep 42. By the end of the month there were seven on strength (5455, 5466, 5462, 5468, 5469,5467 and two later ones whose serials do not appear in the September ORB). By end of Oct 42 the squadron had nine Hurricanes, three Harvards and one Lysander. All Kittyhawks gone.

Move to Goose Bay 24-26 October 1943. Disbanded 15 Mar 44.

No.133 (F) Squadron

Formed at Lethbridge 3 Jun 42 with Hurricanes and Harvards but diary does not begin until 1 Jul 42. Following aircraft listed in July: 5393, 5382, 5385, 5386, 5389, 5388, 5398 "March of Dimes", 5395, 5394, 5397, 5399, 5401, ~~5393~~, 5396. By end of July squadron had 24 Hurricanes.

Moved to Boundary Bay, B.C. 5 Oct 42; to Tofino, 1 Jul 43; to Sea Island, 10 Mar 44.

Received 13 Kittyhawks from No.163 Squadron, 11 March 44. 15 Hurricanes transferred to No.135 Sqn, 12 Mar 44 (5377, 5397, 5378, 5385, 5393, 5382, 5503, 5425, .5379, 5584, 5395, 5388, 5578, 5401, 5586, 5590, 5384.

No.135 (F) Squadron

Formed 15 Jun 42 at Mossbank, Sask. Began to receive Harvards on 27.June. On 8 July received three Hurricanes on loan from Lethbridge. Shortly afterwards began to receive Hurricanes directly from Fort William.

Moved to Patricia Bay 4 Oct 42; to Annette Island, 14-15 Aug 43, to Terrace, B.C. 17 Nov 43.

Aircraft sent to storage Mar 44 and personnel moved to Patricia Bay, 12 Mar 44, after picking up No.133's aircraft.

Squadron converted to Kittyhawks, 6-10 May 44

No.163 (Army Co-operation) Squadron

Received two Hurricanes Jun 43 while at Sea Island. By end of July there were 6 on strength (5590, 5584, 5585, 5586, 5587, 5588). Squadron also had 10 Harvards, one Crane at end of July.

At 30 Nov 43 the squadron had five Hurricanes, 15 Kittyhawks, 3 Harvards, 1 Crane. All Hurricanes flown out early in December, delivered to Tofinio, Patricia Bay.

No.1 Operational Training Unit, Bagotville

Operated Hurricanes 25 Aug 42 until disbandment 31 Jan 45. Peak strength was summer 1943 to fall 44 when there were 60-70 aircraft in use at any one time.

No.402 Squadron (Letters AE)

Went overseas as No.112 (Army Co-operation) Sqn with Lysanders. Redesignated a fighter sqn 13 Dec 40, at which time it was at Digby. Redesignated No.2(F) Sqn 20 Dec 40, then renumbered 402, 1 Mar 41.

Hurricanes V7722, 7744, 7745, 7746 delivered 12 Dec 40. V6787, 7498, 7349, W9175, T9521 delivered 16.12.40. P3021, 3086, 3788, V6698, W9135 to 9138 delivered 21 Dec 40. P3273 delivered 24 Dec 40.

Squadron moved to Martlesham Heath (23 Jun 41), Ayr (10 Jul 41), Southend, Essex (19 Aug 41), Warmwell, Dorset (6 Nov 41), Colerne, Wilts (4 Mar 42). In last move the Hurricanes left behind as squadron went on to convert to Spitfires.

Operational casualties : Z3424 (shot down 27.8.41 five miles NW of Gris Nez), Z5001 (collided with Spitfire 27.8.41), Z5005 (missing 27.9.41), Z3421 (shot down by flak, 13.10.41), BE472 (missing 11.11.41), BE483 (shot down by fighters W.of Cherbourg, 2.1.42).

Hurricane Victories : 26.6.41 - Sgt. G.D. Robertson, one JU.88 damaged (Z2409); 18.9.41 - Sgt. G. McClusky, one ME.109 destroyed (Z3341), F/L R.E. Morrow, one ME.109 probably destroyed (BD765), Sgt.G.D.Robertson, one ME.109 probably destroyed (BD707), P/O H.W.Pentland, one ME.109 damaged (Z3237); 18.9.41 - Sgt.K.B. Handley, one ME.109 damaged (Z5054); 27.9.41 - S/L V.B.Corbett on BD765, together with Sgt.G.McClusky on Z3237 destroyed a ME.109, F/O F.W.Kelly and Sgt McClusky damaged a '109 (Kelly on Z3263), F/L H.S.Crease on Z3421 and P/O L.S. Ford on Z3237 share a '109 damaged; 17.9.41 - F/O F.W.Kelly on Z3395 probably

destroyed a ME.109; one ME.109 probably destroyed, same date (17.9.41) by the following four pilots: F/O F.B.Foster (Z3066), P/O S.Q.Graham (Z5005), Sgt.B.P. O'Neil (Z3403), Sgt R.J. Emberg (Z3349). One 17 Feb 42 FS R.J. Emberg destroyed a ME.109 on BE471.

Last Hurricane sorties by No.402 were flown on 28 Feb 42 by BE484, BE 485, BE687, BE417, BE489, BE502, BE486.

No.417 Squadronron (Letters AN)

Operated Hurricane Is and IIb aircraft 6 Sep to Oct 42. Operted IIc's from 18 Sep 42 to 14 Jan 43.

Bases: Sandur, Egypt, 5 Sep - 9 Oct 42
Idku, Egypt, 10 Oct 42 - 25 Jan 43

Following Victories by Hurricanes : 26 Sep 42 - FS M.H.G. Leguerrier - one JU.88 destroyed. 4 Dec 42 - F/L W.H. Pentland and Warrant Officer H.G.Conn - one JU.88 damaged.

Serials (Sep 42 listing only) : Z5306, BG707, BH131, BM968, BN353, BD779, BP541 and 396, HL893, 835, 901, 782, 850, 900, 891, 736, 809, 901.

No.438 Squadron (Letters F3)

Bases: Digby 21-24 Nov 43; Wellingore,Lincs. 24 Nov 43 to 9 Jan 44; Ayr 9 Jan - 18 Mar 44, Hurn, Hants. 18 Mar - 3 Apr 44; Funtington 3 Apr - 19 Apr 44. Hurn - 19 Apr -

Squadron received six aircraft 22 Nov 43 and by 31 Dec 43 it had 18 Hurricane IVs. All but one transferred elsewhere on 10 Apr 44, and the last one left early in May. Used for training only.

No.439 Squadron (Letters 5V)

Received two Hurricanes IVs 6 Jan 44 while at Wellingore, Lincs. Squadron moved to Ayr 8 Jan 44, Hurn 18 Mar 44.

Squadron had nine Hurricanes at end of March, but three left soon after, and on 11 Apr 44 five more were transferred, leaving one - LD570 - as a drogue aircraft. Last Hurricane disposed of sometime in June.

Flew no operational sorties, used for training only.

LO594 crashed 18 Mar 44. LD972 hit by a P-47, 21 Mar 44.

No.440 Squadron (letters I8)

Began receiving Hurricane IVs 16 Feb 44 while at Ayr, Scotland. Typhoons issued in same month. By end of month unit had 5 Typhoons, 11 Hurricanes. As of 2 Apr 44 there were still 11 Hurricanes on strength, but all were disposed of by the end of April with the exception of one, retained until May as a drogue ship.

Squadron moved to Hurn, 18 Mar 44, Funtington 2 April, and back to Hurn 19 Apr 44.

Hurricanes used in training only.

Ingwold Wikene 4 Mar 1967

THE HURRICANE IN THE RCAF

Without a doubt the name of the Hurricane will be forever linked to the "Battle of Britain" during 1940, where together with the Spitfire it added one of the most glorious chapters to the history of the RAF. During tis battle the Hurricane shot down more enemy aircraft than did all the other air or ground defences combined. Later it was to carry the brunt of the fighting in Malta, in the Western Desert and in Burma until the Spitfire became available in quantity. In 1941 it was the first to make fighter sweeps over the mainland and was the first fighter to carry bombs into action. Later it pioneered the use of rocket-projectiles on fighters and as the Mk.IID was the only fighter to carry twin 40 mm. cannon as a tank buster in the Western Desert. The Hurricane was the first RAF fighter to fly faster than 300 mph. and the first to carry eight machine guns.

The origin of the Hurricane began in October, 1933 when the design of a "FURY MONOPLANE" powered by a Rolls-Royce Goshawk engine was started. In January, 1934 it was decided to use the Rolls-Royce P.V.12 engine which was later to become the famous "MERLIN". At the same time the name was changed to "INTERCEPTOR MONOPLANE". The first prototype (K5083) was ordered on 21 February, 1935 and the first flight was made on 6 November, 1935. The HURRICANE as it was now called was successful from the start and in June, 1936 an order for 600 was placed and in November, 1938 this was increased to 1,000. On October 12, 1937 the first production Hurricane Mk.I (L1547) made its first flight, this model differed from the prototype in having a 1,030 hp. Merlin engine, a modified cockpit canopy, ejector exhuast pipes and a redesigned undercarriage fairing. In January 1938 a fin fairing was added beneath the rear fuselage to assist in recovery from a spin. The first Mk.Is had a two-bladed Watts wooden propellor, this was later replaced by a deHaviland two-position three-blade metal airscrew and finally by deHaviland or Rotol constant-speed propellors which greatly improved the performance. Also the early production Hurricanes had fabric-covered wings, later models starting with Mk.I (N2422) had stressed-skin metal covered wings.

At the outbreak of war 497 Hurricanes had been delivered to RAF Fighter Command and by August 7, 1940 a total of 2,309 aircraft had been delivered. The Hurricane firstentered service with No. 111 Squadron at Northolt in December, 1937 and a little later with No. 3 Squadron at Kenley. In February, 1938 a Hurricane established a high speed record of 408 mph., this flight was made at night at a height of 17,000 ft. and with the benifit of a strong tail wind. The Hurricane went along with the Advanced Air Striking Force to France after the war started, serving with Nos. 1, 73, 85 and 87 Squadrons. It was a Hurricane from No. 1 Squadron that shot down the first enemy aircraft by RAF fighters on the Western Front on the 30th of October, 1939.

While the Mk.I was fighting the war, the prototype Mk.II made its first flight June 11, 1940. This model had the improved Merlin XX instead of the Merlin III of the later Mk.Is. The first of these were delivered in August, 1940, Mk.IIAs followed in 1941 by by the Mk.IIB which carried twelve .303 calibre machine guns. Meanwhile during 1939 experiments were carried out with the installation of 20 mm cannon and on May 24, 1939 Hurricane L1750 had flown with two of these mounted in the wings. The production version carried four 20 mm cannon and was designated Mk.IIC, the first was sent to the RAF for trials in October, 1940. Several modifications were carried out in 1940 and 1941, these included self-sealing fuel tanks, tropicalization (including Volkes filter below nose) for work in the desert, the addition of two 45-gallon under wing tanks and later two 90-gallon under wing tanks. Later the Hurricane was converted as a fighter-bomber, at first carrying two 250 lb. bombs and later, two 500 lb. bombs. These Hurribombers first went into action on October, 1941, No. 402 (RCAF) Squadron was one of the first to use this version. During June, 1941 the Mk.IID mounting two 40 mm. Vickers "S" cannon went into action in the Western Desert as a tank buster, and in September, 1943 the Hurry was carrying rocket-projectiles and was in action over Netherlands attacking the lock gates of the canals. The last production version of the Hurricane in England was the MkIV which first appeared on the 14th of March, 1943.

This model had a "Universal armament wing" and could mount two 40 mm. cannon, or eight rocket-projectiles, or two 500 lb. bombs or long-range tanks. It was used primarily for low-level attacks and carried much additional armour.

In action it served on all fronts, in the fall of 1939 they were in France, in May and June, 1940 in Norway, in August, 1940 they were at Malta and by October, 1940 in the Western Desert. During the autumn of 1941 two RAF squadrons were sent to Russia, and at the end of 1941 they were at Singapore, and continued to serve in the Burma area until the end of the war. The last Hurricane to see service in the RAF was Mk. IV flying with No. 6 Squadron in Palestine until October, 1946.

Not only was the Hurricane supplied to the RAF, but to foreign air forces as well, these being Australia, Belgium, Canada, Egypt, Finland, India, Iran, Ireland, New Zealand, Portugal, Rumania, Russia, Turkey and Yugo-Slavia. Belgium, Canada and Yugo-Slavia obtained licences to manufacture it, but only Canada was able to go into full scale production, a total of 1,451 aircraft being built. In Belgium production was interuppted by the German invasion after only one aircraft was completed. It is not known if any of the Yugo-Slav Hurricanes were completed before the German invasion of that country. During 1941 it went into service with the Royal Navy Fleet Air Arm as the Sea Hurricane. These aircraft were conversions of existing land based fighters, some were earlier models obtained from the RAF, veterans of the "Battle of Britain". Modified for service on catapult armed merchant ships and aircraft carriers the Sea Hurricane saw considerable service at sea protecting the convoys from enemy aircraft.

Designed and built by the Hawker Aircraft Ltd. and sub-contracted by Gloster Aircraft Co., Ltd. in England, a total of 12,780 hurricanes were built, 10,030 by Hawker and 2,750 by Gloster. Adding to this total the 1,451 Hurries built in Canada by the Canadian Car and Foundry Co, gives a grand total of 14,231 Hurricanes built during the war.

THE HURRICANE BUILT IN CANADA

During late 1938 as the war clouds gathered over Europe, concern was felt for the safety of Britain's aircraft factories and early in 1939 an Air Ministry Specification was drawn up for the Canadian Department of National Defence; thereafter a contract was placed with the Canadian Car and Foundry Co. Ltd. of Montreal by the Air Ministry who released a pattern aircraft (L1848) on 2nd March, 1939. The first of forty aircraft ordered under this contract, the later Mk.I version and built at the Fort William plant, reached Britain only a year later. An indication of the high standard of organization in Canada as well as in Britain, for drawings of every component, jig and tool were committed to microfilm and sent in duplicate to the Canadian company. From 1940 onwards production of the Hurricane amounted to 1,451 aircraft built under contract for the RAF placed by M.A.P. and under contracts with the Canadian Department of Munitions and Supply for the RCAF. Ministry of Aircraft Production

The first Canadian built Hurricanes were the later Mk.I version fitted with the Merlin III engine and the three-bladed deHaviland Hamilton Hydromatic propellor instead of the Merlin II and the Watts wooden two-blade prop as on the earlier Mk.I. The main production aircraft starting with the Mk.X had the American Packard built Merlin 28 and fitted with the American Hamilton Hydromatic three-bladed propellor. The Mks. XI and XII were the same as the Mk.X, the Mk.XIIA had the Packard Merlin 29 engine but otherwise similar to the other versions.

Most of the Canadian built Hurricanes were supplied to the rapidly expanding RCAF fighter force which began operations in Britain during 1940 and to the Home Defence squadrons in Canada during 1942. Several of the Canadian built aircraft that were sent to the RAF were later sent on to Russia where the four cannon versions of the Hurricane were very popular and a few of the Sea Hurricane conversions of the Mk.Xs and XIIs were turned over to the U.S. Navy and saw action during the landings in Algeria in November, 1942.

The following is a list of the RAF serial Numbers of the Canadian built Hurricanes
Mk.I; P5170 - P5209
Mk.X; AE958 - AE977, AF945 - AG344, AG665 - AG684, AM271 - AM369, BW835 - BW884
Mk.XI; BW885 - BX134
MK.XII; JS219 - JS371, JS374 - JS420, JS421 - JS468
Mk.XIIA; PJ660 - PJ695, PJ711 - PJ758, PJ779 - PJ813, PJ842 - PJ872

IN RCAF SERVICE

During the fall of 1938 the Canadian government ordered twenty Hawker Hurricanes from the British Air Minstry and the first of these were released immediately. Shipped to Montreal and transported across Canada, they were assembled at Vancouver, B.C., the first six being completed by the end of February, 1939. All twenty of these aircraft which were the earlier Mk.I version with the Merlin II engine and two-bladed Watts wooden propellor, were allocated to No.1 Fighter Squadron which had moved from Calgary to train on the new fighter. During training in the west two aircraft were lost. on March 2 while taking off at Sea Island airport, Hurricane No. 312 swerved out of control and crashed into a Ford tri-motor transport belonging to Yukon Southern Air Lines, the Hurricane was completely destroyed and the Ford badly damaged, fortunately no one was killed; the Hurricane pilot suffered minor injuries. However on June 8 the pilot of No. 317 was not so lucky, while on a routine training flight near Mission, B.C. his engine quit and unable to make a forced landing in this area he baled out but his parachute failed to open. Later in summer the squadron moved back to Calgary and during September moved east first to Ottawa and then to St. Hubert where it remained for several weeks aquiring new personnel and aircraft. On November 3, 1939 the squadron began its move to Dartmouth, N.S., here they remained until June, 1940 when the squadron was shipped overseas. including this a/c which were returned to UK

No. 1 "Caribou" later No. 401 "Ram" Squadron.

This was the first RCAF squadron to go into action, equipt with Canadian built Hurricanes, No. 1 arrived in England during June, 1940. Based originally at Middle Wallop in Hampshire the squadron moved to Croydon early in July for operational training. On August 17 No. 1 moved to Northolt and became operational, but did not see any action until August 26. A raiding force of 25-30 Dornier 215s was attacked by the Canadians, in this their first battle with the Luftwaffe, the Canadian pilots destroyed three Do.215s and damaged another four. However the squadron lost one Hurricane destroyed and two damaged. For eight weeks No. 1 took part in the "Battle of Britain" and during this time had destroyed 31 enemy aircraft, probably destroyed 8 more, also 35 more were credited as damaged. During this action the Canadians lost 16 Hurricanes, but only 3 pilots were killed in action, 10 were wounded and 3 made successful escapes by parachute.

On October 11, 1940 No. 1 Squadron moved to Prestwick in Scotland for a rest and to take on new personnel and aircraft. Later on during December the squadron moved to Castletown in Northern Scotland until the 10th of February, 1941. By February 11 it was based at Driffield back in England until Feb. 28 and by March 1 until October 19 was at Digby. After the return to England the squadron began converting to the Spitfire and by September 7 ceased flying the Hurricane. On March 1, 1941 the squadron was renumbered and became No. 401, code letters were YO and some of the serial numbers carried are listed below;

Mk.I Hurricanes in Canada; (No code letters) (You should not show RAF numbers because they did not appear on the aircraft)

RCAF	RAF	RCAF	RAF
310	L1759	320	L1883
311	L1760	321	L1884
312	L1761	322	L1885

313	L1762	323	L1886
314	L1763	324	L1887
315	L1878	325	L1888
316	L1879	326	L1890
317	L1880	327	L2021
318	L1881	328	L2022
319	L1882	329	L2023

Mk.Xs (Canadaian built) overseas;

RAF numbers	AE960 (W)	AF991	AG110
	AE966 (A)	AF992	AG112
	AE974 (C)	AG108	AG667 (L)
	AF990	AG109	AG670

Gloster Mk.I P3080 (C) Hawker Mk.IIA Z3658 (N)

No. 1 Squadron Victory Scoreboard

S/L E.H. McNab DFC & bar	5½	F/O R.L. Edwards	1
F/O B.D. Russel DFC & bar	5½	F/O T.B. Little	1
F/L G.R. McGregor DFC & bar	5	F/O P.B. Lochnan	1
F/O B.E. Christmas	2 1/3	F/O H.DeM. Molson	1
F/O O.J. Peterson	2 1/2	F/O P.B. Pitcher	1
F/O J.W. Kerwin	2	F/O R. Smither	1
F/O A.D. Nesbitt DFC & bar	2	F/O A.M. Yuille	1

No. 2 Squadron later No. 402 "Winnipeg Bears" Squadron

Went overseas as No, 112 "City of Winnipeg" (Army Co-operation) Squadron flying Lysanders, was redesignated as a fighter squadron on 13 December, 1940 at which time it was based at Digby. On the 20th it was renumbered as No. 2 (Fighter) squadron and then renumbered as 402 on March 1, 1941. No. 2 began operations by flying patrols over convoys on the east coast of Britain and made a few scrambles after reported raiders, but had very few contacts with the enemy. On April 15, the squadron, now known as No. 402 began making fighter sweeps and flew bomber-escorts over Northern France operating from airfields at Martlesham Heath during June, Ayr in July and Southend, Essex during August. After November 1, while at Warmwell, Dorset. the Hurricanes were converted to fighter-bombers and began low-level attacks on enemy installations on the mainland. The squadron continued to engage in this role until February, 1942 when it moved to Colerne Wilts. leaving the Hurries behind and converted to the Spitfire V becoming a fighter squadron again.

During operations the squadron lost six aircraft, three shot down, one in collision with a Spitfire and two missing. As mentioned before No. 402 did not see much action with the Luftwaffe, so when the conversion to fighter-bombers was made its targets were then found on the ground. In the air action only 3 enemy planes were shot down 5 damaged and 4 probably destroyed. Sgt. G. McClusky made 402s first kill, on September 18, 1941 he shot down a Me.109 and on the 27th he shared another Me.109 destroyed with S/L V.B. Corbett. The third enemy plane shot down was scored by F/S R.J. Emberg on the 17th of February, 1942, another Me.109. ✓

The squadron code letters were AE and below are listed some of the serial numbers of the Hurricanes flown by No. 402.

Mk.I	P3021 (X)	W9136	Z5005	BE472
	P3086	W9137	Z5053(B)	BE473
	P3273	W9138	Z5054	BE477 (S)
Mk.IIA	P3788	W9175	BD707	BE478
	T9521	F.IIB Z2409	BD712	BE479

V6698	Z3066		BD764	BE483
V6787	Z3237		BD765	BE484
V7349	Z3263	FB.IIB	BE221	BE485 (W)
V7498	Z3341		BE417 (K)	BE486
V7722	Z3395		BE419	BE488
V7744	Z3403		BE424	BE489
V7745	Z3421		BE426	BE492
V7746	Z3424		BE470	BE502
W9135	Z5001		BE471	BE687

No. 417 "City of Windsor" Squadron

Originally a Spitfire squadron in Britain, was posted to Eygpt during May, 1942 leaving the Spitfires behind. Arriving in Eygpt in early June the squadron did'nt receive aircraft until September 6, these were Mk.Is and IIBs which they flew until October, on the 18th of September they received Mk.IIC Hurricanes and these were flown until the 14th of January, 1943. Operations began on the 13th of September from Sandur, an airfield near the city of Suez on the Suez Canal, their first duties were flying patrols over the city and along the canal. During October 417 was moved to another airfield at Idku near Rosetta on the Nile Delta. Here they flew patrols over Rosetta and Alexandria, where as at Suez very few enemy planes were encountered. Over Suez three Junkers Ju.88s were interceptedon September 26, but only one of these was shot down, F/S J.H.G. Leguerrier was the pilot who scored No. 417s first victory. On patrol over the Nile Delta during October, one Me.109F was attacked but it escaped, and on December 4th. a Ju.88 was attacked but only claimed as damaged. This was the only action the Hurricanes of 417 were to see, for in early January were replaced by the Spitfire V and the squadron getting ready to move out into the Western Desert.

The code letters for No. 417 were AN and some of the serial numbers of their aircraft are listed below;

Mk.IIBs	Z5306	BP541	HL843 (C)
	BD779 (B)	BP590 (R)	HL850
Mk.IICs	BG707	HL736	HL891 (N)
	BM968	HL782	HL893
	BN353	HL809	HL900
	BP396	HL835 (A)	HL901

No. 438 "Wildcat" Squadron

Formerly No. 118 Squadron in Canada began training on Hurricane Mk.IVs (rocket-projectile versions) at Digby in England during November 21-24, 1943. But on the 24th moveed to Wellingore, Lancs. where they remained until January 9th, 1944, moved again to Ayr, Scotland Jan. 9 - Mar. 18. From March 18 to April 3 at Hurn, Hants. and during April 3 until April 19 at Funtington, and on April 19 moved back to Hurn.

On the 22nd of November, 1943 the squadron received six Hurricanes and by December had 18 on strength. By early May all the Hurricanes were disposed of and the squadron was now operating the Typhoon, the Hurricanes had only been used for training purposes.

Squadron Code letters were F3, one serial number and identification letter are listed below;

Mk.IV LD973 (O)

No. 439 "Westmount" Squadron

Was formerly No. 123 Squadron in Canada and transferred overseas during November, 43. While based at Wellingore, Lincs. the squadron received two Hurricane IVs on January 8, 1944. On the 8th of January the squadron moved to Ayr and on the 18th of March was at Hurn. At the end of March it had nine Hurricanes on strength, but by the 11th of April only one was left. It was disposed of sometime in June, having served as a drogue aircraft when the squadron began flying Typhoons.

The Code letters for No. 439 were 5V and a few of the serial numbers of their Hurricanes listed below.

LD570 LD594 LD972

No. 440 "Beaver" or "City of Ottawa" Squadron

This was formerly No. 111 Squadron in Canada moved overseas during December, 1943. On February 16, 1944 the squadron began receiving Hurricane IVs as well as Typhoons while at Ayr. The squadron moved to Hurn on 18 March, then to Funtington on the 2nd of April and back to Hurn on the 19th. Until the end of April No. 440 had 11 Hurricanes on strength, but at this time all but one of these were disposed of, this one being used as a drogue aircraft.

The code letters for No. 440 were I8, serial numbers not known.

Although only used operationally by three RCAF squadrons overseas the Hurricane was flown by many Canadians serving in the RAF. Some of the top Canadian "Aces" such as V.C. "Woody" Woodward DFC & bar, M.H. "Hilly" Brown DFC & bar, W.L. McKnight DFC & bar, P.S. Turner DFC & bar, R.A. "Butch" Barton DFC & bar and C.G. Keefer DSO & bar, DFC & bar plus many others gained all or most of their earlier victories while flying this aircraft during the "Battle of Britain", at Malta, in Greece, in the Western Desert and in South-East Asia. In the RAF, No. 242 Squadron was known as the "Canadian" Squadron and this unit contained many Canadians that saw much of the earlier fighting, first in France and later during the Battle of Britain.

On the Home Front, Canadian built Hurricanes were supplied to ~~eleven~~ ten squadrons during 1942 where it shared in the Air Defence of Canada with the Kittyhawk squadrons. Serving mostly in Eastern Air Command where seven squadrons were based, the Hurricanes were the main Air Defence aircraft for this area. Only ~~three~~ two Hurricane squadrons served in Western Air Command, the main Air Defence being maintained by the Kittyhawk squadrons one of which formerly flew Hurricanes and Kittyhawks but disposed of the former before moving west. However towards the end of the war thses western Hurricane units were equipped with later model Kittyhawks.

No. 118 (Fighter) Squadron

Was formerly an Army-Co-operation unit flying Lysanders and Goblins. On August 15, 1941 the squadron began testing Hurricanes and for the rest of the year engaged in this role, no Hurricanes were taken on strength until January, 1942. From this date on until June, No. 118 operated a flight of Hurricanes as wellas a flight of Kittyhawks at Dartmouth, N.S. During June the squadron moved west with the Kittyhawks leaving the Hurries behind.

The code letters of No. 118 Squadron were RE and some of the serial numbers of aircraft on strength and only tested are listed below. It will be noted from the serial numbers that some of the aircraft flown were of English manufacture, apparently some of the English Hurricanes were also flown in Canada.

Mk.I	P3394	W9187	MR XII A BW841
IIAs	V6610	W9279	BW842
	V6756	W9311	BW843

Many of these in doubt check list attached.

V6799		W9313	BW845
V7253		W9498	BW846
V7498	IIBs	Z4569	BW876
V9182		Z4852	BW881
W1498	XII A Xs	BW835	BW884
		BW837	

No. 123 (Army Co-operation) Squadron

Based at Debert, N.S. No. 123 Squadron aquired two Hurricanes in November, 1942, in February, 1943 another one was obtained, later another one was added but this one crashed on July 16, 1943. The squadron flew these Hurries together with a mixed bag of aircraft including Lysanders, Harvards, Ansons and Bolingbrokes. By the end of July, 1943 the above Hurricanes were disposed of, but on the 12th of August the squadron began receiving Mk.XIIs from Scoudouc, N.B. A total of seven aircraft of this version were on strength by the end of September. During November the squadron was sent overseas and became No. 439 Squadron.

The code letters for No. 123 are not known but serial numbers of aircraft used are listed below, some of these are machine left behind by No. 118 Squadron.

No squadron codes were issued to be worn on 123 Squad a/c

VD was assigned

XII A Mk.Xs	BW835	Mk.XIIs	5636 Q		5716
	BW836		5693		5723 N
	BW842 (crashed)		5710 K		5726
	BW884		5711		

No. 125 (Fighter) Squadron

Formed at Sydney, N.S. on April 20, 1942 as a Hurricane unit under command of R.W. Norris. By the 27th of May they had 13 Hurries on strength. The squadron moved to Torbay, Newfoundland on the 9th of June, here on the 27th of August the first fatal accident, when Hurricane No. 1360 crashed killing Sgt. Ruggles. On the 15th of June, 1943 the squadron moved back to Sydney, the move being completed by the 25th. The squadron remained there until December when it was sent overseas and became No. 441 Squadron.

Serial Numbers of 125 Squadron's aircraft are listed below, squadron code letters not known.

No Squad codes were issued to be applied to 125 Sqd a/c

TA was assigned

Mk.Xs I	1352	1357	Mk.XIIs	5482	5493
	1353	1359		5484	5495
	1354	1360		5486	5501
	1356	1362		5490	5502

No. 126(Fighter) Squadron

Formed on the 20th April, 1942 at Dartmouth, N.S. with F/L A.M. Yuile as Commanding Officer. First aircraft received on the 27th of April, some from No.118 Squadron. By end of May the squadron had eight Hurricanes and four Harvards, later the strength was 13 - 15 Hurries and 2 - 4 Harvards. On the 15th of July the squadron began moving to Gander, Newfoundland move completed by the 29th. During June, 1943 No. 126 moved back to Dartmouth and remained there until it was disbanded on the 30th of May, 1944.

The code letters for No. 126 were BV and a few of the serial numbers were;

Mk.Xs XII A	BW835	BW844	BW859 (A)
	BW836	BW846	BW881
		BW850 (T)	

No. 127 (Fighter) Squadron

Formed at Dartmouth on July 4, 1942 and by the end of the month had 13 Hurricanes

and 3 Harvards on strength. On the 20th of August the squadron moved to Gander remaining there until the 24th of July, 1943 when it moved back back to Dartmouth. Here the squadron remained until the 23rd of December when the squadron was moved overseas and became No. 443 Squadron. Shortly before moving overseas it was under the command of S/L H.W. McLeod DFC & bar, a veteran fighter ace with a score of 13 victories.

The code letters for No. 127 were TF and some of the serial numbers carried by their were;

Mk.Xs	BW836	BW861	5654	5683
	BW839	BW867	5655	5695
	BW844	BW868	5658	5704
	BW851	BW883	5679	5724
	BW853	Mk.XIIs 5629	5680	5729
		5638		

No. 128 (Fighter) Squadron

Formed at Sydney on the 1st of May, 1942 but did not receive their Hurricanes until the 13th of June. The squadron moved to Torbay during the 24th and 26th of June, 1943 (rotating with No. 125 Squadron) and by the 15th of March, 1944 was disbanded. No. 128 flew Mk.Xs until June, 1943, first Mk.XIIs were received on the 18th of December, 1942.

Code letters for No. 128 are ~~not known~~, some of their Hurricane serial numbers were;

Mk.Xs	1351	1361	1373	Mk.XIIs 5488
	1354	1370	1374	5637
	1356	1371		5639

No. 129 (Fighter) Squadron

Was formed at Dartmouth on the 27th of August, 1942 when 15 Sea Hurricanes were taken on strength, these were Mk.X conversions. On the 23rd of January, 1943 the squadron began receiving Mk.XII Hurries and by the end of April all the Mk.Xs were gone. During April, 1943 the squadron moved to Goose Bay, Labrador, October 26th to Bagotville, Que., December 30th to Dartmouth and on the 1st of June, 1944 to Gander where it was disbanded on the 30th of September, 1944.

Arcraft of No. 129 Squadron were marked with the numeral 2 and a letter (i.e. 2-D, 2-K), serial numbers of the Mk.X Hurricanes used were;

	BW836	BW844	BW846	BW881
	BW837	BW847	BW863	BW883
	BW839	BW851	BW868	BW884
	BW843	BW861	BW869	

No. 130 (Fighter) Squadron

Formed on the 1st of May, 1942 at Mt. Joli, Que. with Kittyhawks, the squadron later moved to Bagotville where it began to receive Hurricanes on the 19th of September. By the end of the month there were 7 on stength and by the end of October No. 130 had 9 Hurricanes, 3 Harvards and 1 Lysander, all the Kittyhawks were gone. During October, 1943 the squadron moved to Goose Bay and by the 15th of March, 1944 it was disbanded.

No Code letters for No. 130 ~~are not known~~, some of the serial numbers of some of their aircraft were;

Mk.XIs (?)	5455	5466 Z	5468	
	5462 D	5467 G	5469	

No. 133 (Fighter) Squadron

Formed at Lethbridge, Alberta on the 3rd of June, 1942 with Hurricanes and Harvards and by the end of the month had 24 Hurricanes on strength. It moved to Boundary Bay, B.C. on October 5, 1942, to Tofino on Vancouver Island on the 1st of July, 1943 and then to Sea Island on the 10th of March, 1944. On the 11th of March the squadron began converting to the Kittyhawk and on the 12th transferred 15 Hurricanes to No. 135 Squadron.

Code letters for No. 133 Squadron are not known, some of the serial numbers of their Hurricanes were; FN

Mk.XIs (?)	5377 S	5386		5396		5503
	5378 W	5388		5397		5578
	5379	5389 M		5398 L		5584
	5382	5394 J		5399		5586
	5384 P	5395	Mk.XIIs (?)	5401 E		5590
	5385	5393		5425		

No. 135 (Fighter) Squadron

Formed on the 15th of June, 1942 at Mossbank, Sask., began receiving Harvards on the 27th of this month and on the 8th of July received three Hurricanes on loan from No. 133 Squadron at Lethbridge. Shortly afterwards the squadron began receiving Hurricanes directly from the Fort William plant. By October 4 the squadron had moved to Patricia Bay, B.C., during August 14 - 15, 1943 moved to Annette Island, Alaska and then moved to Terrace, B.C. on the 12th of November. Some time during March, 1944, the Hurricanes were placed in storage and the personnel moved to Patricia Bay on the 12th after picking up No. 133's aircraft at Sea Island. They used these aircraft for about only two months and then began converting to the Kittyhawk during 6th to 10th of May.

Below are listed some of the serial numbers of No. 135's Hurricanes received from No. 133 Squadron.

MK XII	5377	5384	5388	5578	Code XP assigned but not worn
	5378	5393	5401	5584	
	5379	5395	5425	5586	
	5382	5397	5503	5590	
		5385			

No. 163 (Army Co-operation) Squadron

This squadron received two Hurricanes in June, 1943 while at Sea Island and by the end of July there were six on strength as well as 10 Harvards and one Crane. By the end of November the squadron was using 5 Hurricanes, 15 Kittyhawks, 3 Harvards and 1 Crane. Early in December all Hurricanes were flown out and delivered to Tofino and Patricia Bay.

The serial numbers of the six Hurricanes operated by No. 163 Squadron were;

MK XII	5584	5586	5588	No code assigned
	5585	5587	5590	

No. 1 (Fighter) O.T.U.

Formed at Bagotville, Quebec and operated Hurricanes from the 25th of August, 1942 until it was disbanded on the 31st of January, 1945. Top strength was from the summer of 1943 to the fall of 1944 when there were some 60 -70 aircraft in use at any one time.

Code for 1 OTU after Jan 1943 UY

No. 8 (Mosquito) O.T.U.

This unit at Greenwood, N.S. operated a few Hurricanes during 1944.

No codes assigned

RCAF HURRICANE TECHNICAL DATA

	Mk. I	Mk. I	Mk. I
Manufacturer	Hawker	Gloster	Canadian Car & Found.
Dimensions;			
Wing span	40 ft. 0 in.	40 ft. 0 in.	40 ft. 0 in.
Wing area (sq. ft.)	258	258	258
Length	31 ft. 4 in.	31 ft. 4 in.	31 ft. 4 in.
Height	13 ft. 2 in.	12 ft. 11½ in.	12 ft. 11½ in.
Weights; (lbs.)			
Empty	4,743	4,982	4,982
Gross	6,218	6,447	6,499
Performance;			
Top speed	310 mph.	324 mph.	323 mph.
Cruising speed	190 "	190 "	190 "
Landing speed	60 - 75 "	60 - 75 "	60 - 75 "
Climb (ft. per min.)	2,400	2,500	2,500
Ceiling	33,400 ft.	34,200 ft.	34,200
Range	525 miles	505 mi.	505 mi.
Armament;			
.303 Brownings	8	8	8
Power Plant;			
Rolls-Royce	Merlin II	Merlin III	Merlin III
Horsepower	1,030	1,030	1,030

	Mk.IIA	Mk.F.IIB	Mk.FBIIB
Manufacturer	Hawker	Hawker	Hawker
Dimensions;			
Wing span	40 ft. 0 in.	40 ft. 0 in.	40 ft. 0 in.
Wing area	257.6 sq. ft.	257.6 sq. ft.	257.6 sq. ft.
Length	32 ft. 2 in.	32 ft. 2¼ in.	32 ft. 2¼ in.
Height	13 ft. 1 in.	13 ft. 1 in.	13 ft. 1 in.
Weights;			
Empty (lbs.)	5,454	5,467	5,467
Gross (lbs.)	7,014	7,233	7,733
Performance;			
Top speed -	340 mph.	327 mph.	280 mph.
Cruising speed	190 "	177 "	177 "
Landing speed	60 - 75 "	60 - 75 mph.	60 - 75 "
Climb	2,500 ft./min.	3,000 ft./min.	2,600 ft./min.
Ceiling	41,000 ft.	36,000 ft.	36,000 ft.
Range (normal)	730 mi.	465 mi.	465 mi.
(With 2 - 44 gal)		935 "	
(" 2 - 90 ")		1,080 "	
Armament;			
.303 Brownings	8	12	10 or 12
250 lb. bombs			2
Power Plant;			
Rolls Royce	Merlin XX	Merlin XX	Merlin XX
Horsepower	1,300	1,300	1,300

	Mk.IIC (Tropical)	Mk.IV	Mks. X, XI, XII & XIIA
[illegible]facturer	Hawker	Hawker	Canadian Car & Foundry
Dimensions;			
Wing span	40 ft. 0 in.	40 ft. 0 in.	40 ft. 0 in.
Wing area	257.6 sq. ft.	257.6 sq. ft.	257.6 sq. ft.
Length	32 ft. 2¼ in.	32 ft. 2¼ in.	31 ft. 5 in.
Height	13 " 1 "	13 " 1 "	13 " 3 "
Weights; (lbs.)			
Empty	5,785	6,150	5,590
Gross	7,707	8,462	7,440
Performance;			
Top speed	320 mph.	275 mph.	335 mph.
Cruising speed	188 "	186 "	190 "
Landing speed	60 - 75 "	60 - 80 "	75 "
Climb	2,400 ft./min.	2,500 ft./min.	2,500 ft./min.
Ceiling	33,200 ft.	35,600 ft.	41,000 ft.
Range	426 mi.	420 mi.	700 mi.
Armament;			
.303 Brownings			8 - 12
.50 "		2 and	or
20 mm. Hispano	4	4 or	4
40 mm. Vickers "S"		2	
250 lb. bombs		2 or	
Rockets		8	
Power Plant;			
Rolls-Royce	Merlin XX	Merlin 26 or 27	Merlin 28, (XIIA) 29
[illegible]ackard			
[illegible]orsepower	1,300	1,620	1,150

Regarding 118 Squadron.

There is no reference to many of these Hurricanes in any RCAF records which makes me wonder where they came from.

MkI P3394

MkI V6610
V6756
V6799
V7253
V7498
} Not on charge

V9182 is a Lockhead Hudson ~~so perhaps this is~~ W9182

W1498 is a Blenheim

MkI W9187
W9279
W9311
W9313
W9498
} Not on charge

MkIIB Z4569
Z4852

The MkXIIA BW837, 38, 41, 42, 43, 45, 46, 76, 81, 84 were all on strength and make sense.

I would suggest you leave out all but the "BW" series until some future date when they can be confirmed.

Canadian Hurricane Production

MK I	P5170 - P5209	40		
X	AE958 - AE977	340		See Page 167
	AF945 - AG344		AG111	HK - G
	AG665 - AG684			
X	AM271 - AM369	149		
	BW835 - BW884			
XI	BW885 - BX134	150		
XII	JS219 JS371	248		
	JS374 - JS420			
	JS421 - JS468			
XIIA	PJ660 - PJ695	150		(see Hurricane)
	PJ711 - PJ758			
	PJ779 - PJ813			
	PJ842 - PJ872			

J. A. GRIFFIN
39 GRANTBROOK ST.
WILLOWDALE - ONTARIO

16 South Summer Street,
Pimlico,
DUBLIN 8,
Ireland.

29th. November 1965

National Headquarters,
The Canadian Aviation Historical Society,
P.O. Box 224,
Willowdale,
ONTARIO,
CANADA.

Dear Sir's,

Just a few lines to say that up to the present date I have not received No. 3 of Vol. 3, The C.A.H.S. Journal. and I would appreciate it very much if you look after this for me.

Kindly let me have renewal form for membership to cover the year 1966.

Enclosed print of Canadian built Hawker Hurricane F. Mk.1, of the Irish Air Corps, serial 93 ex P5176. This aeroplane was impressed in July 1942, after a forced-landing in Ireland, and was on charge to 1st. Fighter Squadron, I.A.C., and operated from Rineanna, Co. Clare, and Baldonnel, Co. Dublin, Ireland, until finally scrapped in August 1946. It was later purchased as scrap, and broken up by Messrs A. Feldman and Sons, Ltd., Mill Street, Dublin. The print may be published under the form - Copyright, Stationery Office, DUBLIN.

My C.A.H.S. membership No.253.

Yours faithfully,

Philip Conran

Philip Conran.



osed.

HAWKER SEA HURRICANE MK. XIIA

WORLD WAR II COLOUR SCHEMES BY ALLAN BOTTING

BW850 IN NO. 126 (FIGHTER) SQUADRON R.C.A.F. DURING 1942

THE COLOUR SCHEME IS UNUSUAL BECOUSE THE AIRCRAFT WAS FINISHED IN F.A.A. CAMOUFAGE OF TEMPERATE SEA SCHEME. RCAF HURRICANES WERE USUALLY FINISHED IN TEMPERATE LAND SCHEME CAMOUFLAGE (DARK GREEN & DARK EARTH)

THIS AIRCRAFT WAS BUILT BY CANADIAN CAR AND FOUNDRY FOR THE ROYAL NAVY. FIFTY AIRCRAFT OF THIS MARK WERE PRODUCED, ALL OF WHICH SERVED WITH R.C.A.F. SQUADRONS IN CANADA.

COLOUR CODE *

DSG - DARK SLATE GREY
EDSG - EXTRA DARK SEA GREY
SK - SKY (DUCK EGG BLUE)
BL - BLACK
DB - DARK BLUE
LG - LIGHT GREY
Y - YELLOW
DBR - ROUNDEL RED (DARK BRICK RED)
W - WHITE
NM - NATURAL METAL

*DSG - DARK SLATE GREY (OFFICIAL TERM FOR GREY-GREEN) ALL COLOURS MATT FINISH

BONDING MARK BL
DSG
H.F. AERIAL
WHITE LIGHT
REAR VIEW MIRROR
PACKARD MERLIN 29 ENGINE
FIN FLASH
DBR
W
DB
EDSG
DSG
EDSG
DSG
EDSG
W
BV O T
BW850
DSG
NM
ARRESTOR HOOK
36" A1. ROUNDEL
RADIATOR SHUTTOR
SK
NM
SK
BL
Y
ALL UNDERSURFACES SK
LANDING LIGHT
EIGHT .303 BROWNING M.G.'S IN TOTAL
CARBURETTOR AIR INTAKE
NOTE SHORTER LENGTH SPINNER
EDSG
FABRIC COVERED AILERONS
DSG
FIXED TRIM TAB
EDSG
DSG
MACHINE GUN ACCESS PANEL
TRIM TAB
METAL LANDING FLAPS
METAL LEADING EDGE
DSG
EDSG
DSG
I.F.F. AERIAL
EDSG
EDSG
DSG
EDSG
WHITE LIGHT
EJECTOR EXHAUST MANIFOLD
DSG
FABRIC COVERED WOODEN STRINGERS
DSG
DSG
FABRIC COVERED METAL FRAME
EDSG
EDSG
SPENT SHELL OUTLETS
36" A. ROUNDEL
DBR
W
DB
ALL METAL WING
54" B. ROUNDEL
DB
DBR
DSG
EDSG
FABRIC COVERED METAL FRAME
EDSG
'ROYAL NAVY' PAINTED OVER WITH DARK GREEN
EDSG
FLUSH 'DZUS' FASTENERS
EDSG
DSG
EDSG
DSG
Y
DB
BV O T
ROYAL NAVY
BW850
TAB
DSG
W
STARTING HANDLE SHAFT
DBR
W
SERIAL 'BW850' BL
SK
NON-RETRACTING TAIL WHEEL
CODE LETTERS LG
RADIATOR
12ft. HAMILTON-STANDARD HYROMATIC PROPELLOR
RED LIGHT
GREEN LIGHT
LANDING LIGHT
PITOT TUBE
WHEEL COVER SK
NM
MACHINE GUN PORTS USUALLY TAPED OVER, THEN MARKED 'LOADED'
1 2 3 4 5 FEET

MAY 67



Hurricane #5623 — Visiting a/c to Saint John N.B. #1 (C.A.C.) — 18 Mar 1944 — AH67-2 A-678



#5623 (under nose) — AH67-21 A679

July 8, 1963

Hawker Hurricanes in R. C. A. F.

Deliveries Commenced Oct. 1938

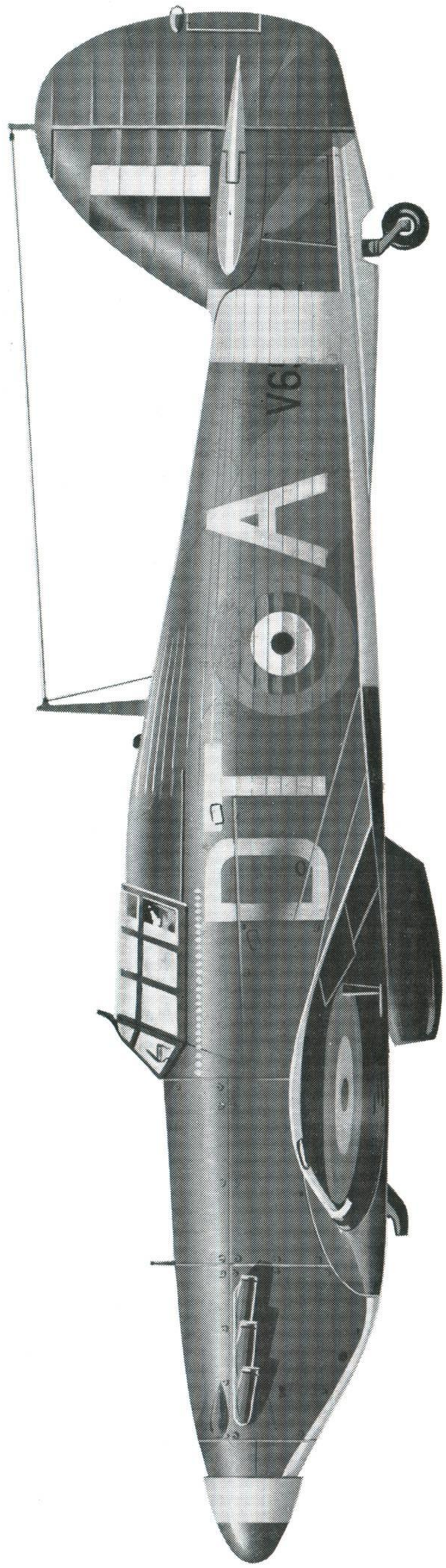
	RAF Serial	RCAF Serial	
	L1759	310	
	L1760	311	
	L1761	312	
	L1762	313	
	L1763	314	
	L1878	315	
	L1879	316	
	L1880	317	
	L1881	318	
	L1882	319	
	L1883	320	
	L1884	321	(Returned to UK - slip wing)
	L1885	322	
	L1886	323	
	L1887	324	
	L1888	325	
	L1890	326	
	L2021	327	
	L2022	328	
	L2023	329	
Delivered 2/3/39	L1848		Pattern aircraft
Delivered 28/9/39	L2144		Sample for Canadian production

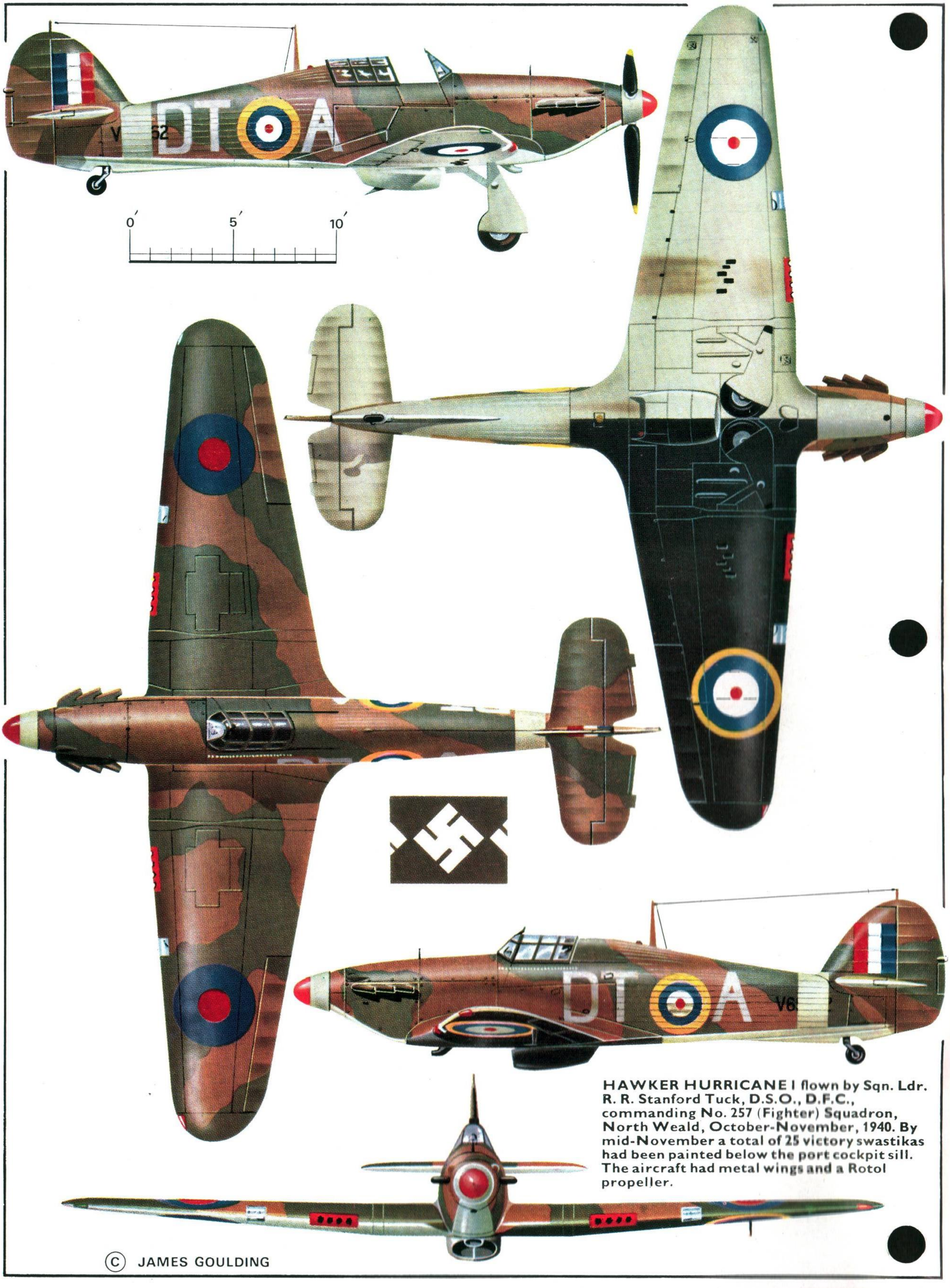
PROFILE PUBLICATIONS

The Hawker Hurricane I

NUMBER 111

TWO SHILLINGS





HAWKER HURRICANE I flown by Sqn. Ldr. R. R. Stanford Tuck, D.S.O., D.F.C., commanding No. 257 (Fighter) Squadron, North Weald, October-November, 1940. By mid-November a total of 25 victory swastikas had been painted below the port cockpit sill. The aircraft had metal wings and a Rotol propeller.

© JAMES GOULDING

The Hawker Hurricane I



by Francis K. Mason

Sqdn. Ldr. R. R. Stanford Tuck, D.S.O., D.F.C., in Hurricane I, V6962, *leading Sgt. Barnes* (V6873, *aircraft* DT-0) *and Plt. Off. Pniak* (V7137, *aircraft* DT-G) *of No. 257 Squadron in a take-off from North Weald in November 1940. Tuck's aircraft is the subject of the general arrangement drawings opposite. It was on 11th November 1940 that No. 257 Squadron rose to intercept the sole major raid upon Britain by the Belgian-based* Corpo Aereo Italiano—*though Tuck himself was absent on leave at that time.*
(Photo: Imperial War Museum, Neg. No. CH1928)

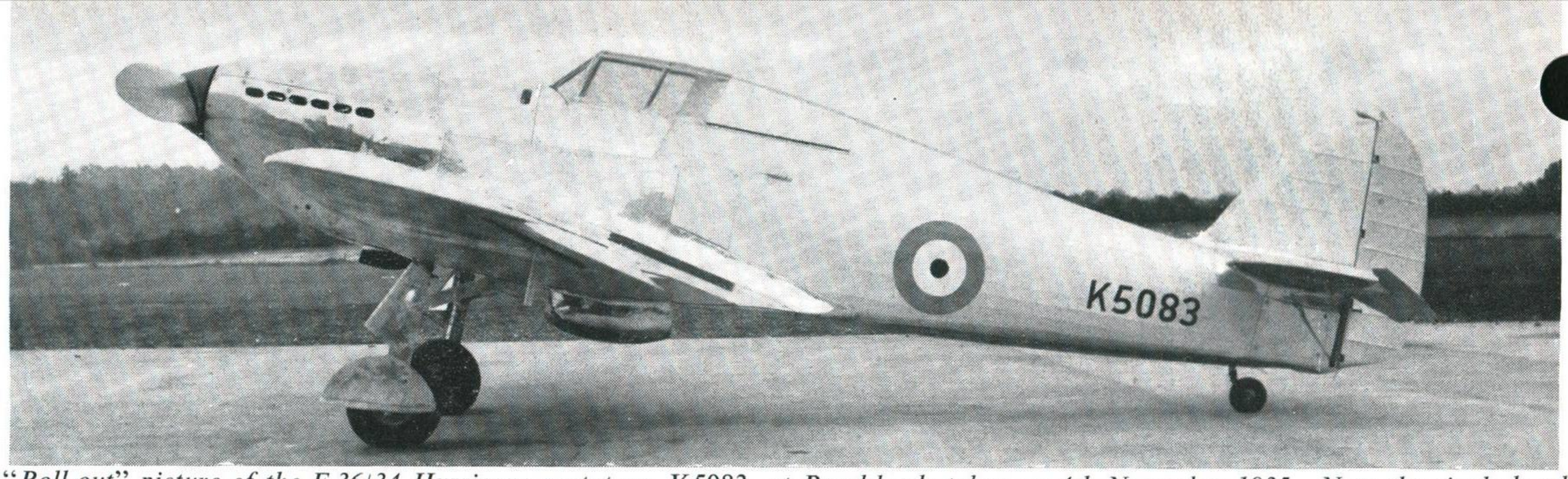
Kenley, 4th September 1940. Nine Hurricanes took off from Kenley at 13.05-13.10 hrs. to patrol base and Croydon at 8,000 feet. They were flying Squadron Vic formation when they sighted twenty Bf 110s about to attack Brooklands aerodrome. Leader turned the formation ninety degrees to starboard and in shallow Vic dived to the attack out of the sun from about 12,000 feet. Flt.Lt. Cambridge, leading the formation, attacked an enemy aircraft from the beam and above expending all his ammunition in one long burst and saw the target's port engine catch fire. Blue One followed it down and saw it crash in flames in a field. Blue Two (Plt.Off. Samolinski) attacked another and observed a fire in the cockpit, after which the enemy aircraft turned and went into a dive. Green Two (Sgt. Dredge) attacked a Bf 110 from thirty degrees above and to the rear, giving a ten-second burst while closing from 300 down to 25 yards. Both engines caught fire and a red glow was observed in the cockpit; the enemy was seen to dive straight down and burst into flames (confirmed by Red One). Green Three (Plt.Off. Novak), after attacking a Bf 110, observed smoke coming from the fuselage, after which the enemy dived and crashed. Red One (Flt.Lt. Wedgewood) succeeded in getting on the tail of a Bf 110 and fired a ten-second burst from 250 yards to point blank range. The enemy caught fire, climbed steeply for a second before falling to crash in a wood. Red Two (Plt.Off. Corkett) attacked a Bf 110 which was flying on the starboard side of the enemy Vic; after two bursts the enemy broke formation, climbed 500 feet, turned over on to its back and dived straight down and exploded in a field. Red Three (Sgt. Kee) delivered a head-on attack on a Bf 110 from slightly below and from 250 yards closing to 50 yards, firing 1-2 second bursts. Small pieces ripped off the fuselage and tail. Blue Three (Sgt. Innes) and Green One (Fg.Off. Watts) silenced the rear gunners of two Bf 110s. Nine Hurricanes landed at Kenley 13.55 hrs. Our losses: Nil. Enemy casualties: Six Bf 110s destroyed; one damaged.
. . . Squadron Operations Record Book, No. 253 (Fighter) Squadron.

When Adolf Hitler was hatching his first tangible plots for political supremacy in 1933, the World was stirring in uneasy slumber. Nothing was more abhorrent to the "peaceful" nations than military preparation, while economic chaos was still only a few months past. But the Disarmament Conference had proved to be the prototype of subsequent fiascos, and even Britain had at last lost faith in her arbitrary Ten Year Rule. And yet there was scarcely a politician in London who would trade his popular image for a conviction that he should support increased expenditure on the Nation's defence.

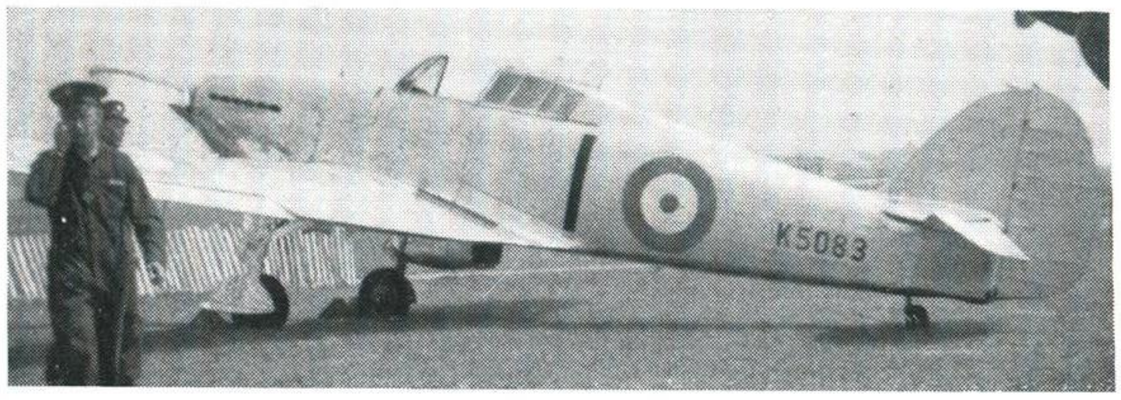
Britain's air defence was vested in a small number of fighter squadrons equipped with biplanes whose capabilities were realised by a few as having reached their zenith and which could not be bettered without fundamental and very costly advances in technology. Not that the direction which these advances should take were not recognised, but the adoption of the monoplane fighter was the prejudicial *bête noire* of an age-old generation of Air Staff officers whose military apprenticeship had been served on horseback or in dreadnoughts, who quite likely believed that the Schneider Trophy was awarded to the winner of a French horse race—yet who ruled the roost in Whitehall.

History has recorded that it was the liaison that existed between Officers of middle rank and the industrial technicians that brought about the necessary advance in technology to sire the R.A.F.'s monoplane fighters. Technical civil servants of moderate seniority encouraged Camm and Mitchell to discuss their ideas—Britain in 1933 held deep-rooted suspicions of Churchills and Beaverbrooks.

The earliest recorded discussions about a "Fury Monoplane" were held between Sydney Camm and



"Roll-out" picture of the F.36/34 Hurricane prototype, K5083, *at Brooklands taken on 4th November 1935. Note the single hood stiffener, the short radiator-bath, the mainwheel "D"-doors, the tailplane strut and the absence of radio installation and mast.*
(Photo: Hawker Aircraft Limited, Neg. No. 52K)



K5083 *in the Experimental Aircraft Park, Hendon, 1936. Note the display number "1" on fuselage.*
(Photo: via John W. Caler)

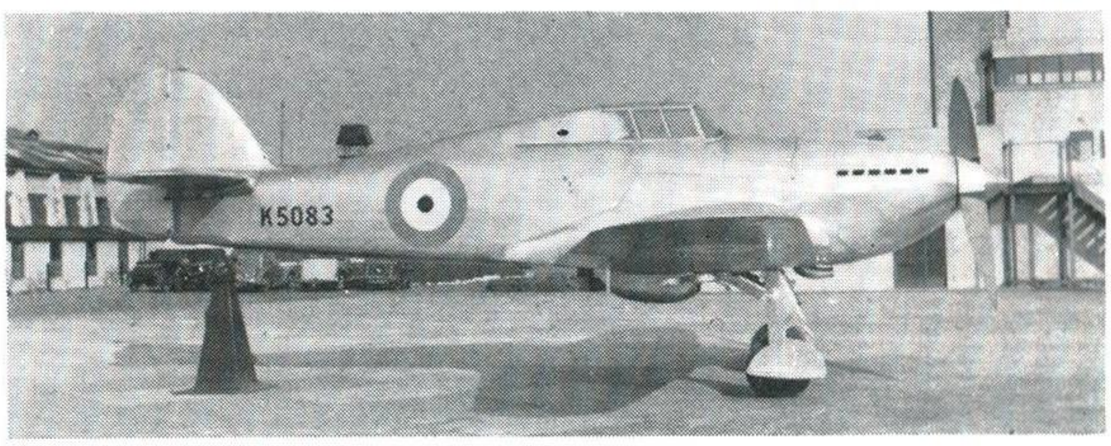
Major Buchanan of the D.T.D. in August 1933, yet it was not until late the following year that an officially-sponsored Specification, F.36/34, was issued to cover R.A.F. demands. It was the result of discussions with Sqdn. Ldr. R. S. Sorley (later Air Marshal Sir Ralph Sorley, K.C.B., O.B.E., D.S.C., D.F.C.) that Camm and Mitchell packed the wings of their fighters with eight free-firing machine guns in place of the traditional pair of nose-mounted synchronised guns. Only when the prototypes were well advanced and their potentialities obvious were any efforts made to organise the haphazard expansion of British air defences, for large production contracts for biplane fighters were still being awarded !

The prototype Hurricane, *K5083*, was manufactured at Kingston (originally mocked-up with fuselage-mounted Vickers guns) during 1935 was moved to Brooklands on 23rd October for final assembly and first flown by Flt. Lt. P. W. S. ("George") Bulman on 6th November.

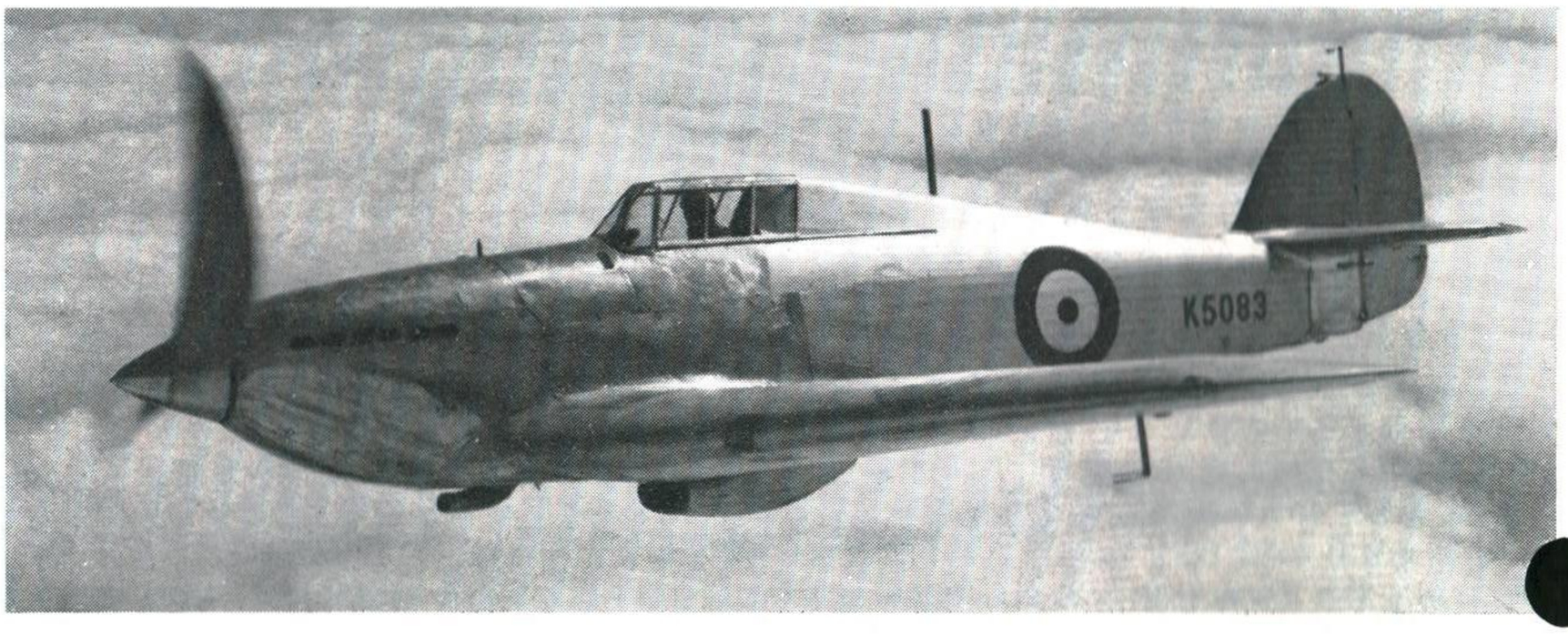
All went well for the first few flights within the rather severe limitations imposed upon the new Merlin "C" engine. After all, it *was* a new engine—intended to develop over 1,000 h.p., yet developed from the 600 h.p. Rolls-Royce Kestrel of nearly ten years' standing. In fact, when *K5083* first flew, the Merlin C had not even achieved full flight certification (and had actually failed to do so some months before). Moreover that first Hurricane engine (No. 11) suffered partial failure in the air on December 16th, fortunately without damage to the prototype.

However in four months and ten flying hours Bulman covered all important regions of the flight envelope and the aircraft was delivered to Martlesham Heath for its initial service handling trials, which were conducted under the direction of Sqdn. Ldr. D. F. Anderson, D.F.C., A.F.C. Despite considerable troubles with the engine (supercharger bearing failure, broken valve springs and automatic boost control capsules collapsing, necessitating two engine changes in one week), the aircraft emerged from the trials with enthusiastic reports. Performance figures achieved included a maximum level speed of 315 m.p.h. at 16,200 feet and a climb to 15,000 feet from take-off in 5·7 minutes. Landing flaps, which at that time extended across the underside of the fuselage, bestowed a stalling speed of 57 m.p.h.—only marginally greater than that of the Gladiator biplane. The undercarriage, whose retraction proved something of a novelty, was complimented for its robustness, though the D-doors covering the wheels suffered damage while taxying over rough ground and were eventually removed.

As development of the Merlin progressed in 1936, confidence in the new fighter mounted, and, in the absence of official support, the Directors of Hawker Aircraft authorised the transfer of design drawings to



Above: K5083 *ballasted for initial Service trials in 1936, seen at Brooklands after addition of wireless equipment and extra hood stiffener.*
(Photo: Hawker Aircraft Limited, Neg. No. 87K)



Right: *In-flight view of* K5083 *after removal of the tailplane strut, installation of armament (note ring-and-bead sight), addition of wireless mast and adoption of production-type convergent-divergent radiator fairing. These modifications were carried out for the 1937 Martlesham Heath Full Service Trials.*



The first production Hurricane I, L1547. The film used caused the yellow outer ring of the fuselage roundel to appear darker than the blue, and the serial number on the rear fuselage is almost invisible. Note the early "kidney" exhaust stubs and the flight instrument venturi below the windscreen.

(Photo: Hawker Aircraft Limited, Neg. No. 32/2)

the Production Design Office and tooling for the series manufacture of 1,000 airframes, commencing in March that year. Justification for this venture materialised in June with an Air Ministry contract for 600 aircraft—now officially named Hurricane—yet it is interesting to reflect that the three months separating those two actions may have been vital to Britain, for when one records that Hurricane production in 1940 was running at a total of about 100 machines per month, the extra 300 machines in effect provided strength for an entire Group in Fighter Command !

Further Martlesham Heath trials were held during the latter half of 1936 and again in 1937; further troubles with the Merlin C led to the decision to abandon this version in the fighter context (most Merlin I's thereafter being allocated to the less rigorously-used Fairey Battle and Hawker Henley). The decision to replace the Merlin I with the Merlin II however imposed severe delays and resulted in production design of completely new nose contours. This in turn delayed production deliveries by about six months, Flt. Lt. Philip Lucas piloting the first production Hurricane I on 12th October 1937. Events moved quickly thereafter and within six weeks sufficient Hurricanes were delivered to Northolt to equip one flight of No. 111 (Fighter) Squadron, commanded by Sqd. Ldr. John Gillan.

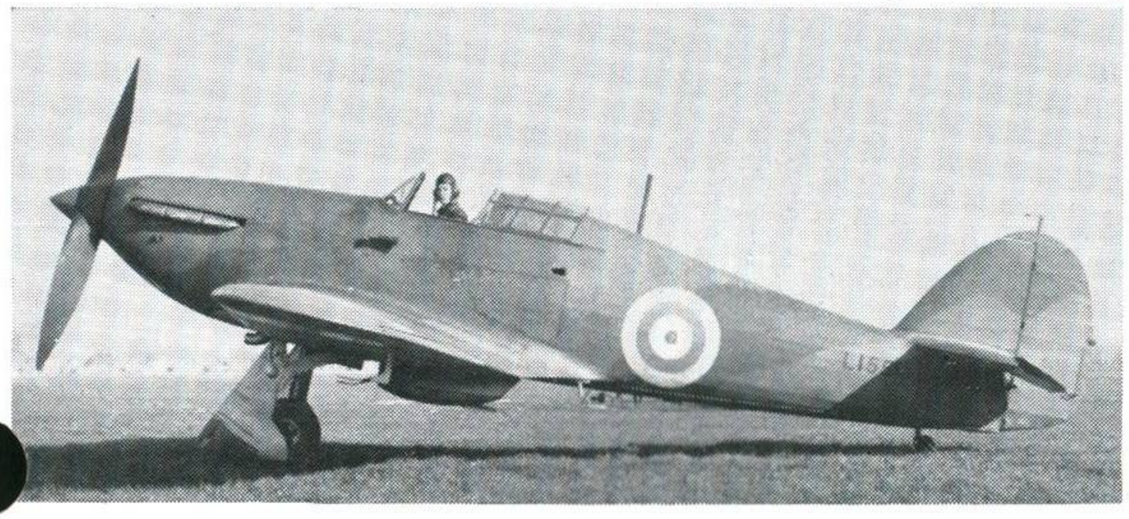
INTO THE R.A.F. AND THE HEADLINES

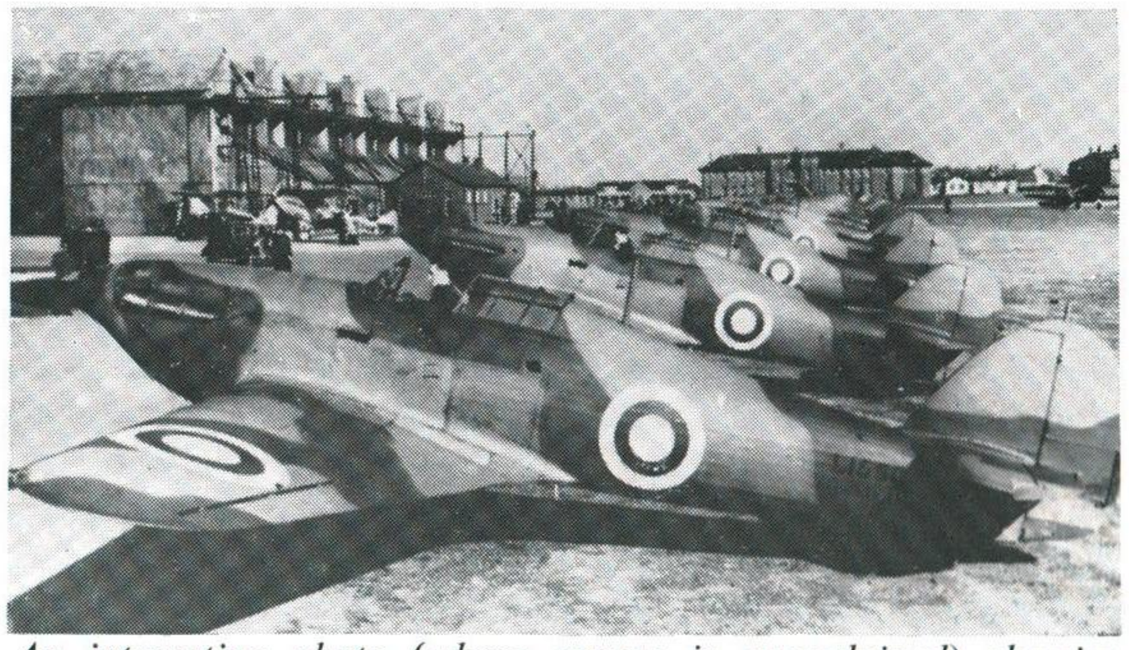
Over the past two years years much had been made of the forthcoming introduction of monoplane fighters to the R.A.F.'s new Fighter Command. By February 1938 No. 111 Squadron had received sixteen Hurricanes and its C.O. determined to draw the public's attention to his new fighters' performance capabilities, and in flying from Turnhouse (Edinburgh) to Northolt (London)—a distance of 327 miles—at an average ground speed of 408·75 miles per hour, succeeded in not only providing exciting breakfast literature the following day, but acquiring the nickname "Downwind" Gillan for all time.

Two more squadrons received Hurricanes before

A 111 Squadron Hurricane of early 1938 vintage.

(Photo: Flight, Neg. No. 16109)





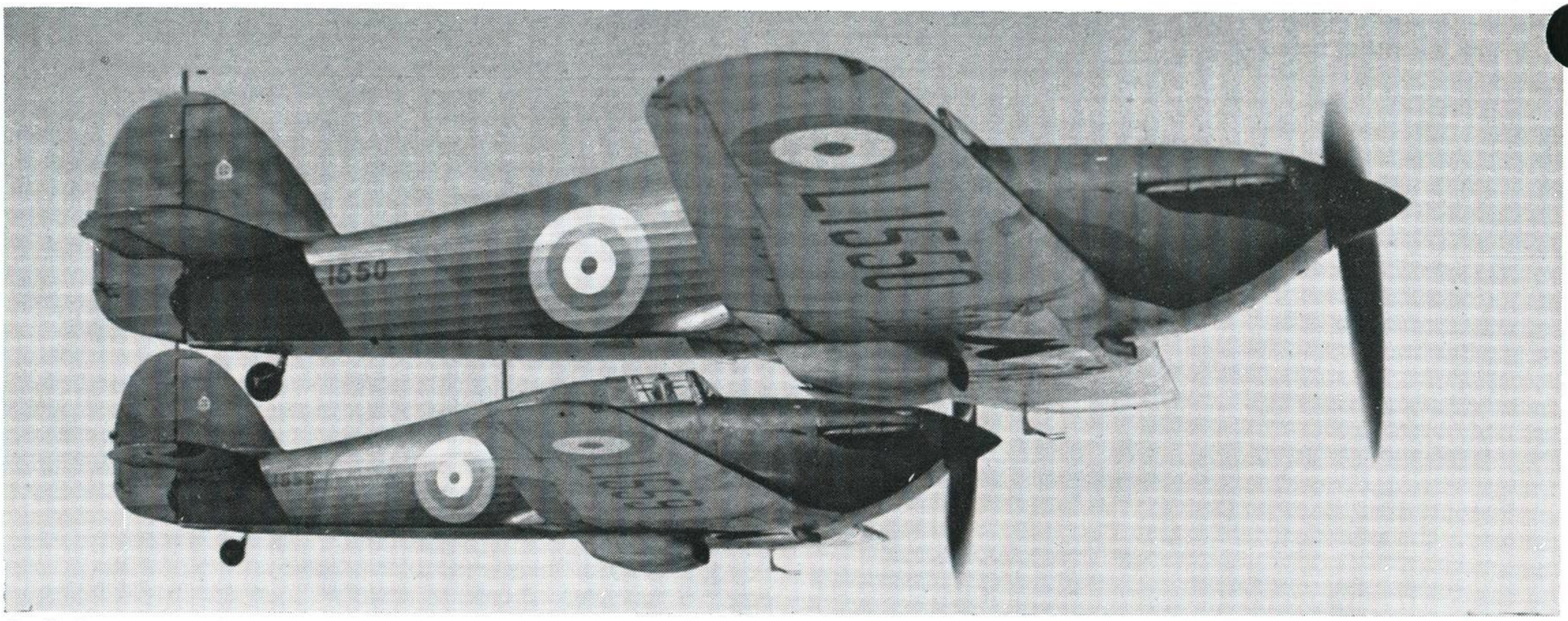
An interesting photo (whose source is unexplained) showing Hurricanes of No. 111 (Fighter) Squadron lined up at Northolt in January 1938. Squadron badges have not yet been applied to the fins, and "A" and "B" camouflage schemes are visible along the line. In the left background can be seen a Gauntlet and Hart G-ABMR, the latter aircraft then used for ferrying Company pilots and air-to-air photography, and still flying in 1966.

(Photo: U.S. Navy Department, Neg. No. 80-CF-4927/1, courtesey of Naval Aviation News)

the Munich Crisis of Autumn 1938; No. 3 Squadron, at Biggin Hill, received its aircraft in time to spend the summer months working up, but No. 56 was still listed as non-operational in September that year. Meanwhile a number of modifications had been introduced as a result of early experience with Service aircraft; spinning trials at Farnborough and Martlesham had shown that the rudder was shielded in the spin with the result that recovery was slow, and a ventral fin was added to assist the air-flow around the bottom of the rudder. The tailwheel had been fixed on production aircraft and this was now neatly faired within the underfin. Some trouble had been experienced with exhaust flashing—especially during night flying—and the first of a series of modified exhaust stub designs were introduced, culminating in ejector stubs which were said to impart some small component of thrust.

Other alterations to the Hurricane I design were of greater significance. The fabric-covered wing had been an expedient adopted to accelerate production and had, basically, been patterned from the traditional Hawker biplanes. The Kingston office had however been at work on a stressed-skin metal wing and this was ready for flight trials before the end of 1938. It was not however introduced into the production lines until well on into 1939, many of the older L-Series aircraft being retro-fitted.

Altitude performance of the "old wooden-bladers" was something of a disappointment, especially in comparison with the known benefits of variable-pitch Hamilton-screwed fighters which, after all, had



In-flight picture of 111 Squadron Hurricanes, 1938. Note fin badges. (Photo: Flight, Neg. No. 15586S)

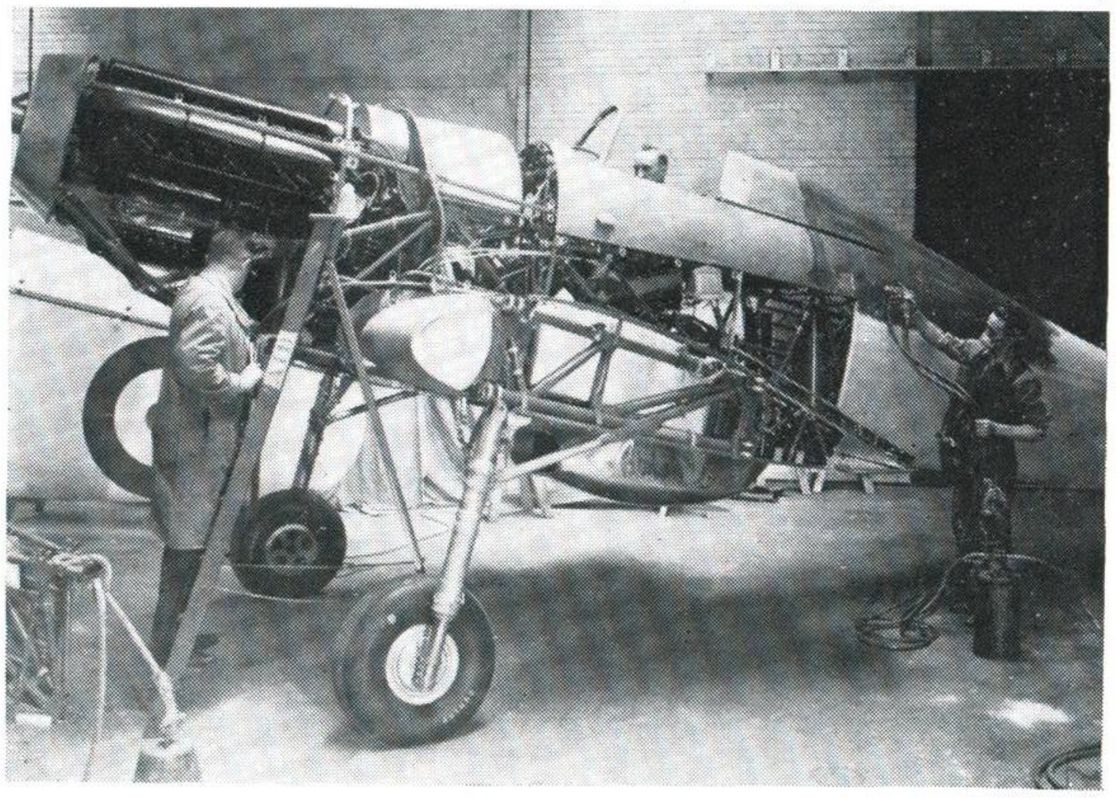
been flying in America for some years. De Havilland had secured British manufacturing rights on this propeller and an early Hurricane I, *L1562*, was so fitted for trials in 1938. Parallel with this development was the all-British Rotol design which was in many respects superior. Whereas the D.H.-Hamilton, by virtue of variable pitch, bestowed good altitude performance, the Rotol went further in providing "constant speeding", thereby considerably reducing engine wear during dives. The Rotol design—



Going aboard a No. 111 Squadron Hurricane at about the time of the Munich Crisis; just visible are the newly introduced ejector exhaust manifolds on the left, and the red-and-blue fuselage roundel on the right. (Photo: F. K. Mason collection)

A somewhat over-posed picture of an early Hurricane in the finishing shop. It does however illustrate the relative positions of glycol header tank, leading edge oil tank, and fuselage and wing fuel tanks, as well as the marked increase in structural complication that accompanied the introduction of the first monoplane fighters.

(Photo: Topical Press Agency Ltd., Neg. No. T5090)



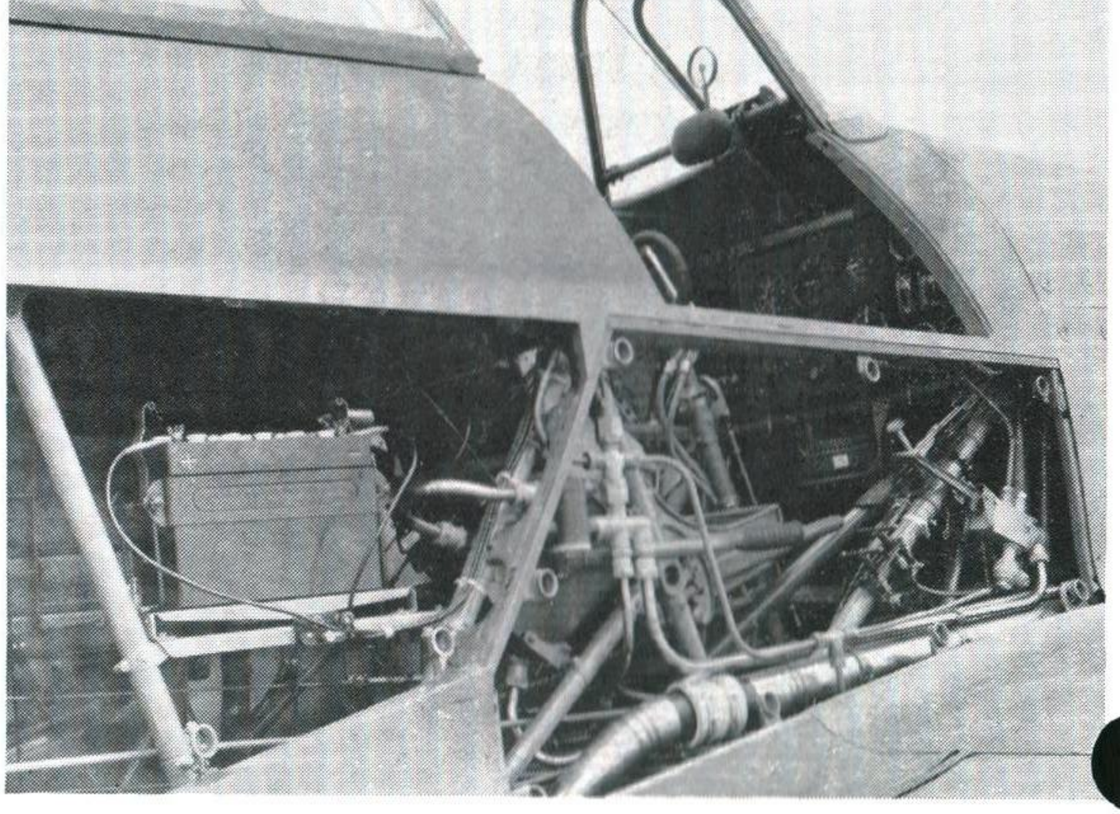
developed from the Hele-Shaw of the nineteen-twenties—came to fruition at about the outbreak of War in 1939 and undoubtedly provided the Hurricane with a much-needed performance restorative during the Battle of Britain.

Many other trials were conducted on pre-War Hurricanes, including slotted wings on *L1696*, pure water cooling in *L1856*, twin 20 mm. guns in *L1750*, and dazzle paint on *L1582*. None of these experiments led to adoption *per se*, but provided useful experience, benefitting later developments.

While the R.A.F. accelerated its introduction of the Hurricane, the British Government had sanctioned limited export of the fighter to nations with favourable sympathies. Throughout the nineteen-thirties Hawker had fostered thriving business in Yugoslavia with Furies and Hinds; at the first opportunity, an ex-R.A.F. machine was sent to Belgrade for evaluation and was followed by an order for twenty-four Mark I's. Later still, production licences were awarded to the P.S.F.A.Z. Rogozarski plant at Belgrade for the manufacture of forty aircraft, and

Intimate view of Hurricane midships. Noteworthy among all the plumbing are the flap and undercarriage operating levers—in those days on the starboard side of the cockpit—and hydraulic hand-pump. Warning notices state "Buzzer warning, wheels not locked down; red (lights) indicate wheels locked up, green indicate wheels locked down", another quaint reminder that retractable undercarriages were still new to the R.A.F. in 1938! Other characteristics of a by-gone age are the ring back-sight on crash-pad and the injunction not to lower wheels or flaps at speeds in excess of 120 m.p.h.

(Photo: Flight, Neg. No. 15712S)



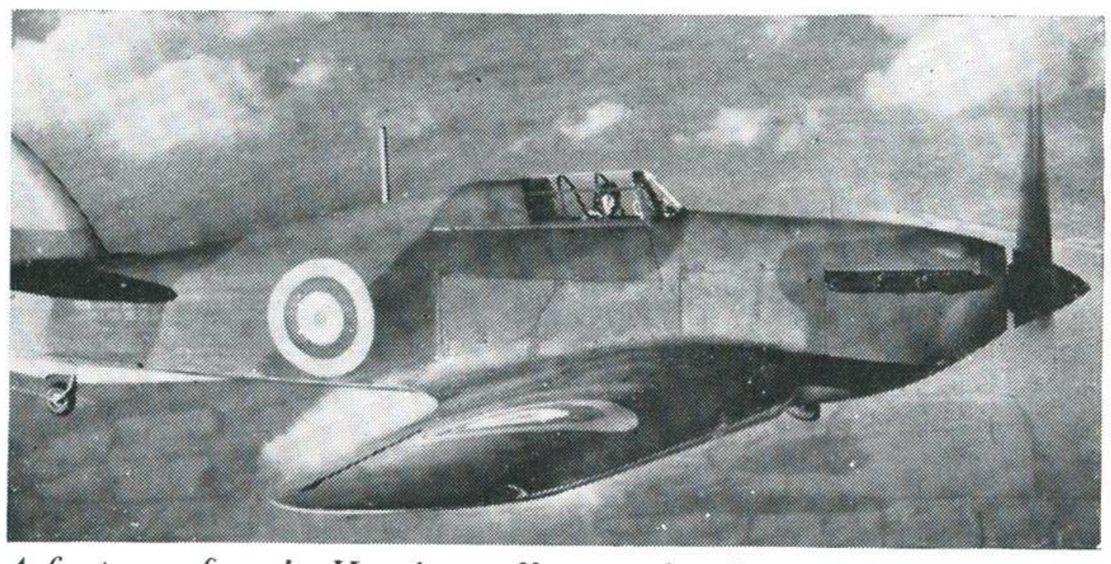


No. 111(F) Squadron Hurricane I's at Northolt in July 1938 displaying varigated unit numerals aft of the fuselage roundels. The C.O.'s aircraft, fourth from the camera (L1555), *carried plain white numerals.* (Photo: via W. Richards)

sixty at the *Fabrika Aeroplana I Hidroplana* factory at Zemun. Fewer than twenty of these indigenous aeroplanes had however been delivered to the R.Y.A.F. when the *Luftwaffe* launched its attack on 6th April 1941. One such aircraft deserves particular mention here, for, fearful of a disruption in the supply of Merlins, the Ikarus plant at Zemun carried out a conversion of one Hurricane to be powered by a 1,050 h.p. Daimler-Benz DB601A, but, though this version drew praise from the Yugoslav pilots, there was no time to effect series production of the variant.

South Africa was the next overseas country to negotiate purchase of Hurricanes and a number of ex-R.A.F. aircraft was shipped out in December 1938 for assembly at Durban and subsequent issue to No. 1 Squadron, S.A.A.F. at Pretoria.

Also in December 1938, Rumania placed an order for twelve Hurricanes and although these were in transit at the time of the outbreak of War, it is not known whether they ever took part in hostilities. Persia's order for eighteen Hurricane I's was also affected by the outbreak of War, only two aircraft (*L2079* in 1939 and *P3720* in 1940) being shipped; the remainder was cancelled and their place taken by



A feature of early Hurricane I's was the thrust tolerance on the propeller shaft which resulted in a considerable "gap" between airscrew and nose cowling. On later aircraft a flanged plate was fitted on the nose thereby concealing the space. Note that this aircraft is one of the early machines fitted with the ventral fin, introduced in mid-1938. (Photo: F. K. Mason collection)

Mark II's after the War. Poland ordered one Hurricane for evaluation, with an option on a further nine; records show that only the first, *L2048*, arrived at Stettin, and although the option on the nine was taken up, the consignment was diverted to Gibraltar and the Middle East.

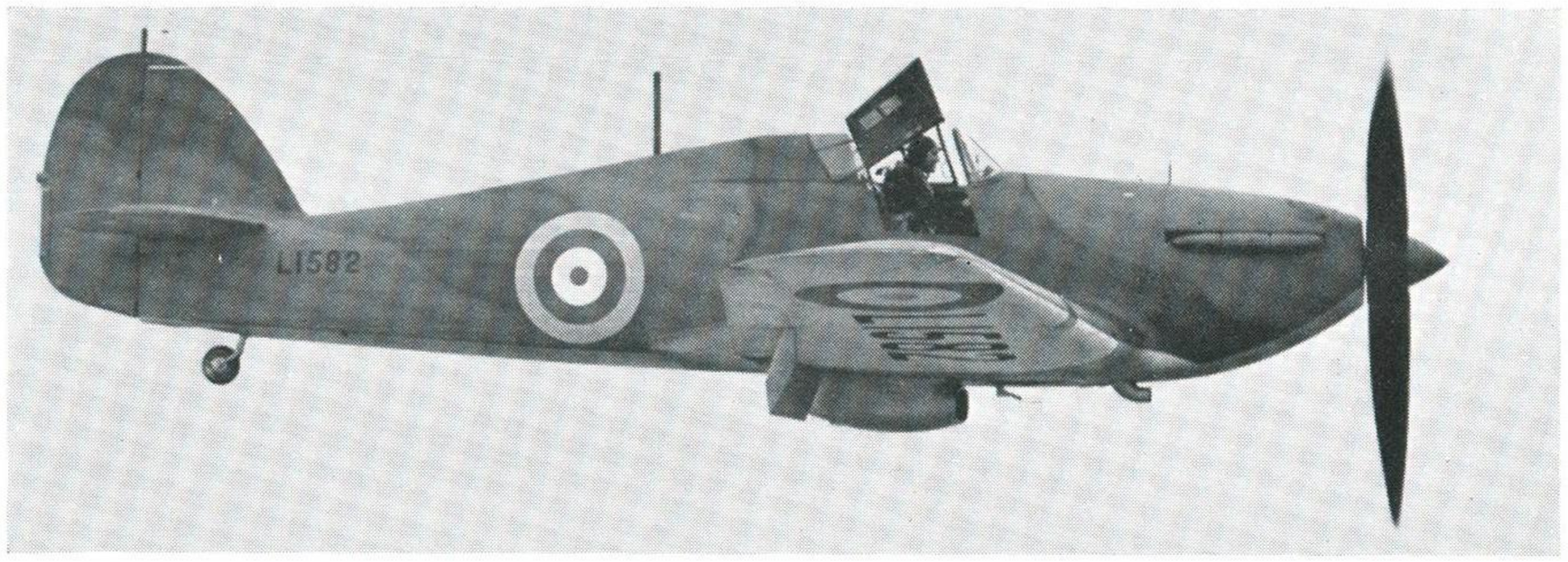
Turkey was more fortunate in that all fifteen Hurricanes on its contract were shipped and received, despite a passage through the Mediterranean during the first two months of the War.

Belgium's Hurricane programme was substantial for, apart from an order for 20 parent-built Mark I's (ex-R.A.F. contract), licences to build a further eighty were awarded to Avions Fairey (*Société Anonyme Belge*). The licence aircraft were to be armed with four 12·65 mm. Colt Browning guns, but in the event only two such aircraft were completed before the German invasion of May 1940. A further fifteen Hawker-built aircraft were at that time on the strength of the *2ème Escadrille* of the *1ère Group* of the *2ème Regiment de Chasse* at Diest. It was probably this squadron that was encountered by Adolf Galland on 12th May 1940 near Liège and Tirlemont.* By all accounts the Belgian pilots were overwhelmed principally on account of their lack of experience on the type in the face of an enemy flushed with many recent victories.

The most far-reaching plans for Hurricane production overseas were those that resulted in large numbers being built at the Fort Williams Works of the Canadian Car and Foundry Company. It is interesting to record that detailed plans for Commonwealth production of British aircraft did not feature in any of the Government Expansion Schemes promulgated in 1935-37, and only academically in

One of many development Hurricanes, L1562 (*the sixteenth production aircraft*) *was used for flight trials of the D.H. Hamilton 2-pitch 3-blade metal propeller in 1938.* (Photo: F. K. Mason collection)





An exciting and somewhat draughty situation came about during a routine test flight in this early Hurricane. The cockpit break-out panel came adrift, wrenching up the canopy. Rather naturally, full flap has been selected to reduce speed and hence the pilot's discomfort.



Among the first Hurricanes to go to France shortly after the declaration of war were those of No. 1 (Fighter) Squadron. Shown here landing at Vassincourt, these early "expeditionary" aircraft were characterised by vertical rudder stripes and deletion of squadron code letters—the individual letter being retained.

(Photo: Imperial War Museum Neg. No. C1241)

1938. The Canadian Hurricane plan was almost entirely a commercially-sponsored (though officially endorsed) project; it was motivated by a belief that Hurricane factories were almost certainly within bombing range of Germany. After the writing on the wall at Munich, Hawker directors completed the preliminary plans to swell production capacity for the Hurricane by opening up a Canadian plant. To begin with a number of sample and pattern aircraft was shipped to Canada together with complete sets of microfilmed drawings; later twenty-two of the original L-Series Hurricanes were sent as initial development aircraft on which to establish training schedules. So well laid were these plans that Canadian-assembled Hurricane I's were arriving in the United Kingdom in time to participate in the Battle of Britain. All told, 160 Canadian Hurricane I's (*P5170-P5209*, *T9519-T9538*, *Z6983-Z7017*, *Z7049-Z7093*, *Z7143-Z7162*) came to be built before redesignation to the Mark X.

THE WAR—PHONEY FOR SOME

By 3rd September 1939 a total of 497 Hurricanes had been completed—all by Hawker Aircraft Limited—out of orders thus far placed for 3,500 aircraft (the first Gloster-built aircraft, *P2535*, was not flown until 20th October). Altogether eighteen R.A.F. squadrons had taken delivery of Hurricanes, of which four were auxiliary units; but only fourteen were classed as fully established and operational. 315 Hurricanes were listed at first line strength with a further 107 awaiting final modification clearance; what has seldom been recorded was the astonishing range of different standards of preparation—estimated at twenty-seven. Metal and fabric wings, Watts, D.H. and Rotol propellers, ring and bead sights, reflector sights, Merlin II's and III's—such was the confusing jumble of standards that groundcrews of one Hurricane squadron often expressed themselves at a loss when faced with servicing visiting aircraft from another !

At the outbreak of War, from the squadrons of monoplane fighters available for combat, Spitfires were steadfastly retained for home defence. On the

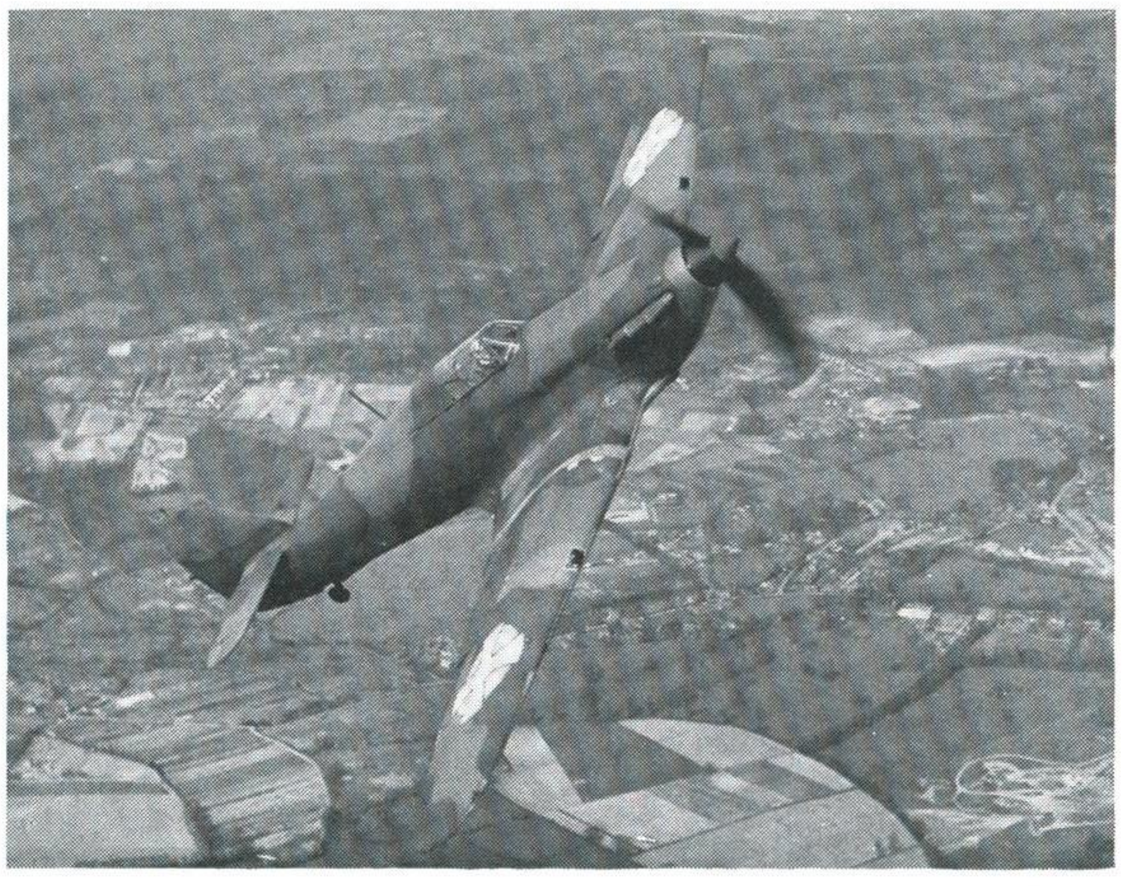
Despite the obvious urgency for expansion of the R.A.F. in the last months before the outbreak of World War II, the British Government did nevertheless sanction the export of Hurricanes to "sympathetic" nations. In this picture Philip Lucas is shown flying one of the aircraft ordered by Yugoslavia; prior to delivery, markings were only applied above and below the wings.

(Photo: Flight Neg. No. 17048S)



Two photos of Hurricanes of No. 85 (Fighter) Squadron illustrating the distinctive hexagon fin marking of the unit. The hexagons of "A" Flight "sat on a sharp end", while those of "B" Flight "sat on a flat". Both A and B Camouflage schemes are visible, and the absence of serial numbers is merely attributable to the wartime censor. The photos were taken in France during the winter of 1939-40.

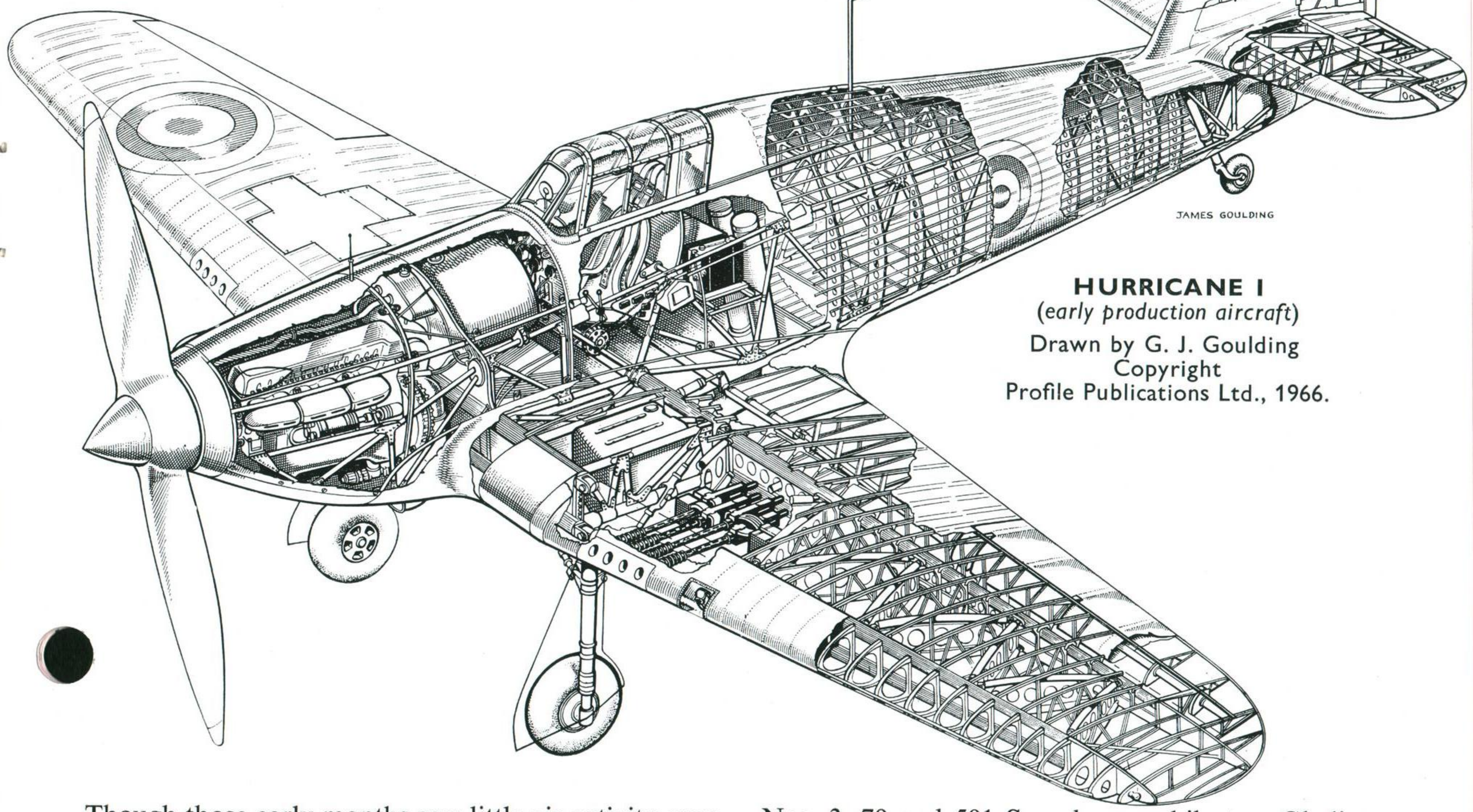
(Photos: Imperial War Museum Neg. Nos. C1156 & F2344C)





other hand, to meet treaty obligations as well as operational requirements, Hurricanes were sent to France—chosen as much for their length of in-service experience as for their undercarriage combatibility with anticipated field conditions.

Four Hurricane squadrons flew to France in the opening weeks of World War II, Nos. 1 and 73 accompanying the Advanced Air Striking Force, and Nos. 85 and 87 providing cover for the British Expeditionary Force with the Air Component.



JAMES GOULDING

HURRICANE I
(*early production aircraft*)
Drawn by G. J. Goulding
Copyright
Profile Publications Ltd., 1966.

Though those early months saw little air activity over the Western Front, the Hurricane squadrons won occasional successes against the *Luftwaffe*, but achieved something far more important: they acquired that absolutely vital tactical experience on which two years' air fighting by the R.A.F. was to be based.

The Hurricane pilots of those "phoney" months prior to the débâcle of May 1940 were key men—though at the time they little realised their own importance. "Boy" Mould (who shot down No. 1 Squadron's first victim near Toul on 30th October 1939), "Cobber" Kain of No. 73, Johnny Walker, "Prosser" Hanks, Paul Ritchie, "Ginger" Lacey; these were the pilots who, by their baptism across the Channel, brought back the experience that proved the strength of Fighter Command in the Battle of Britain.

When the blow fell upon the Low Countries on 10th May 1940, the responsibility for bomber escort fell upon the four Hurricane squadrons who then found their relative inactivity transformed into feverish and continuous battle, usually against heavy odds. Some idea of the transformation may be judged from No. 1 Squadron's battle claims which, for the period between the time of its arival in France in 1939 and 9th May 1940, were 26 enemy aircraft destroyed for the loss of 1 pilot, and 114 enemy aircraft destroyed for the loss of 3 pilots during the following fortnight. Such a record (even allowing for a small "enthusiasm" factor) has probably never been equalled, and supported No. 1's motto—"First in All".

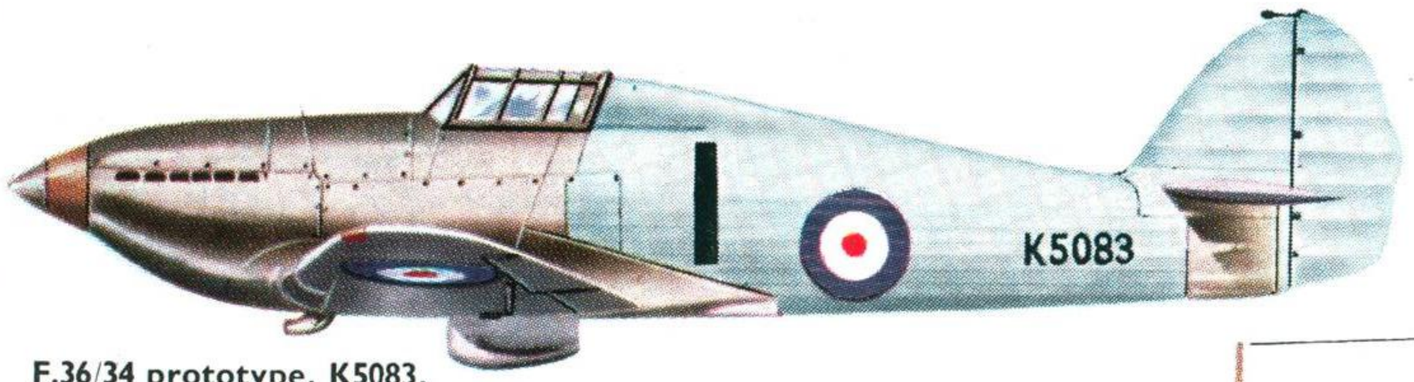
The pressure on the B.E.F. brought reinforcements from Britain, and again Hurricanes were sent—Nos. 3, 79 and 501 Squadrons, while two Gladiator squadrons also received a number of Hurricanes.

The issue in France was not long in doubt as the British forces withdrew to the sea and the great evacuation through Dunkirk commenced. At this point home-based squadrons were thrown into the battle, among them Nos. 32, 213, 229 and 242 with Hurricanes—as well now as Spitfires.

As the remnants of half a dozen hard-pressed Hurricane squadrons sought to extricate themselves from France in June, excursions elsewhere were afoot which conspired to further drain Britain's priceless fighter resources. After the rape of Poland, Nazi Germany invaded Denmark, and on 8th April 1940 went on to attack Norway. Immediate R.A.F. reaction was to send a Gladiator squadron to central Norway—an expedition not blessed with outstanding success due to necessarily haphazard preparation* —but as operations moved northwards better schemes were completed for the return of the Gladiator squadron and the despatch of a Hurricane squadron, No. 46, to Narvik on 26th May.

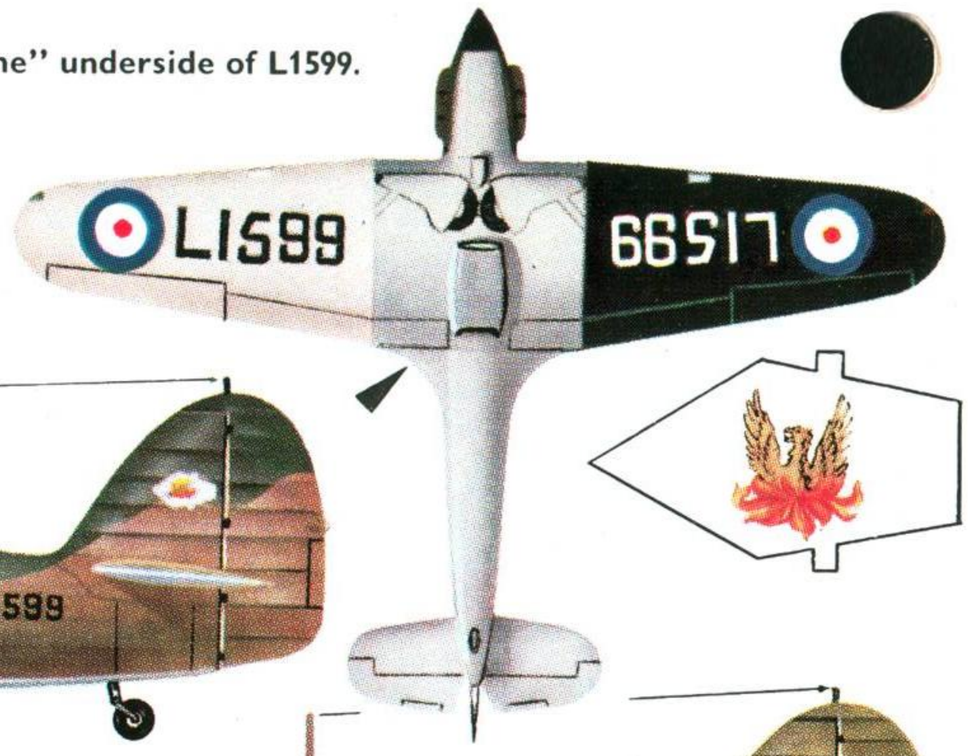
Commanded by Sqdn. Ldr. K. B. B. Cross†, No. 46 Squadron, with its elderly Hurricane I's, was shipped to Narvik aboard H.M.S. *Glorious* and landed nearby at Bardufoss. Several enemy aircraft were destroyed over or near the port, and on 28th May Plt. Off. MacGregor shot down a Ju 88 over Tjelbotn, and two Do 26's were destroyed whilst disembarking

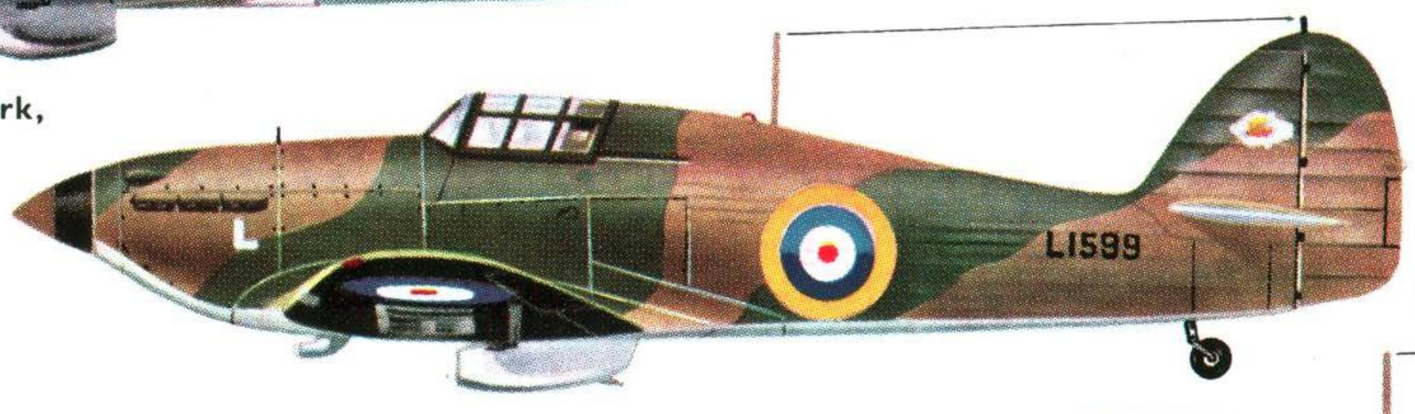
continued on page 12



F.36/34 prototype, K5083, experimental aeroplane park, Hendon, 1936, Watts propeller.

"3-tone" underside of L1599.





Hurricane I, L1599, No. 56(F) Squadron, 1938. Watts Propeller.



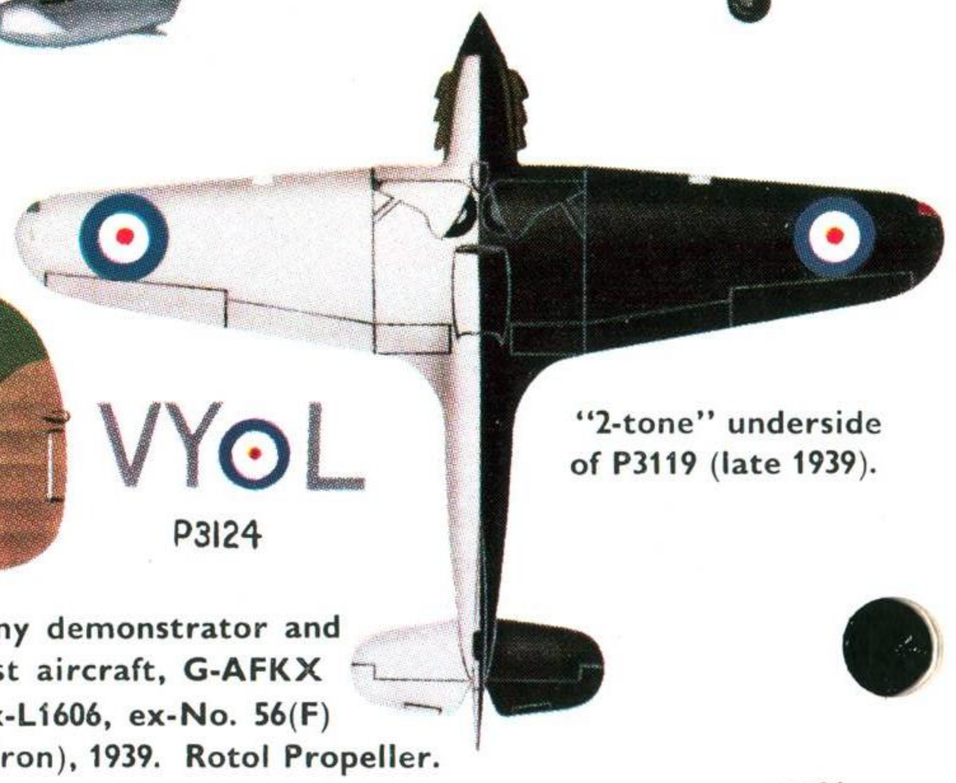
Hurricane I, L1584, of No. 111(F) Squadron, Northolt, displayed at Villacoublay, France. July 1938. Aircraft Watts Propeller.



Hurricane I, P3119 of No. 85(F) Squadron, Air Component, France, 1939. Squadron Commander's aircraft, "B" Flt. tail marking. Watts Propeller.

Fuselage and tail markings of "A" Flt. aircraft, No. 85(F) Squadron.

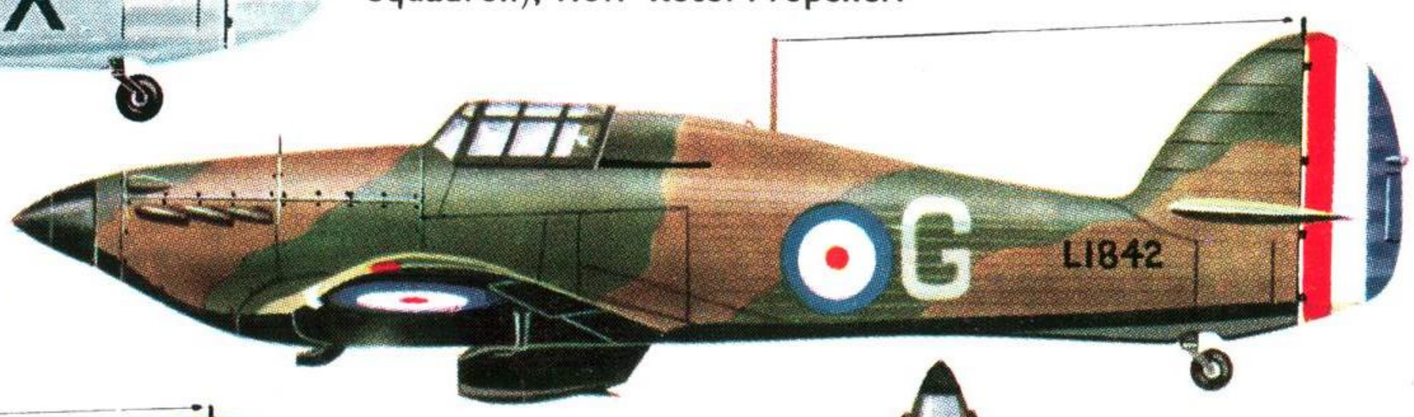




"2-tone" underside of P3119 (late 1939).



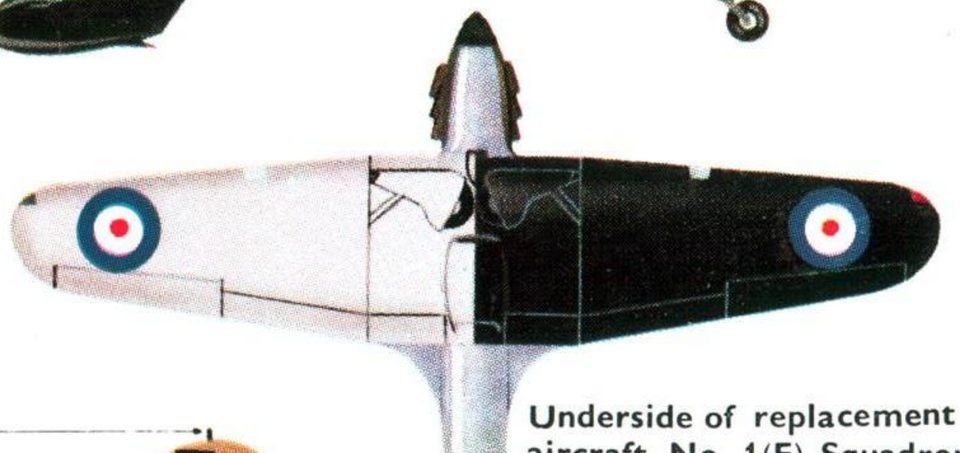
Company demonstrator and test aircraft, G-AFKX (ex-L1606, ex-No. 56(F) Squadron), 1939. Rotol Propeller.



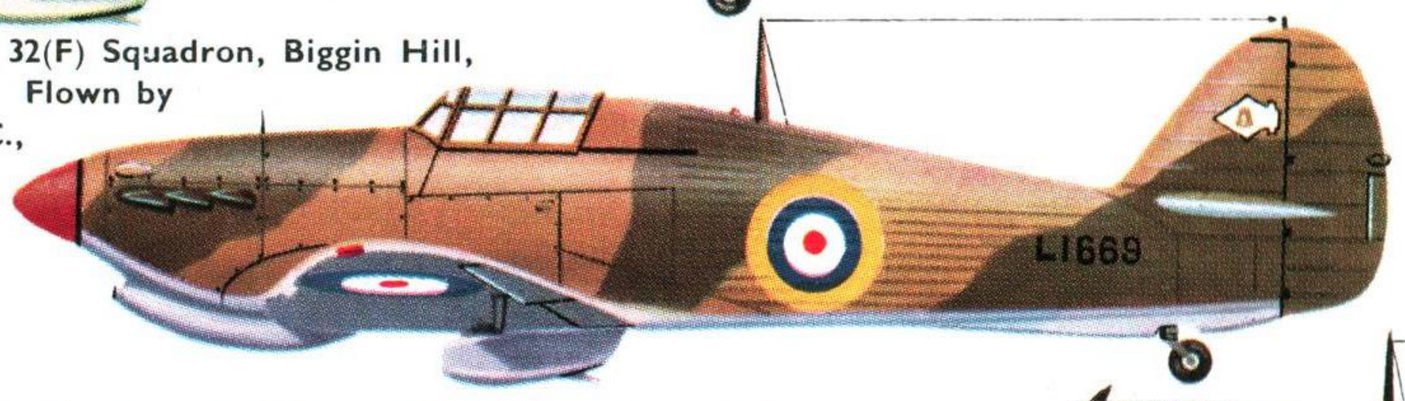
Hurricane I, L1842, of No. 1(F) Squadron, Vassincourt, France, September 1939. Flown by Plt. Off. P. W. O. ("Boy") Mould, shot down Do 17, Toul, 30.10.39 (first squadron victory of W.W.2). Destroyed in crash landing, Vassincourt, 23.11.39 (Sgt. Plt. Clowes safe). Watts Propeller.



Hurricane I, N2532, of No. 32(F) Squadron, Biggin Hill, Battle of Britain, July 1940. Flown by Sqdn. Ldr. J. Worrall, D.F.C., damaged four Bf 109E's during convoy escort, Dover, 18.00 hours, 20.7.1940. Rotol Propeller.

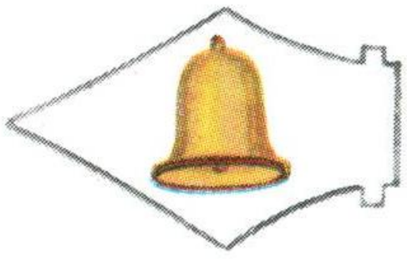


Underside of replacement aircraft, No. 1(F) Squadron, France. Typical aircraft was N2358. Grey "Z" well aft of roundel. D.H. Propeller.



"Collie's Battleship". First Hurricane I, L1669, in Middle East, 1939. Colour scheme applied 1940, No. 80(F) Sqdn. As flown by Fg. Off. M. T. St. J. Pattle. D.H. Propeller.

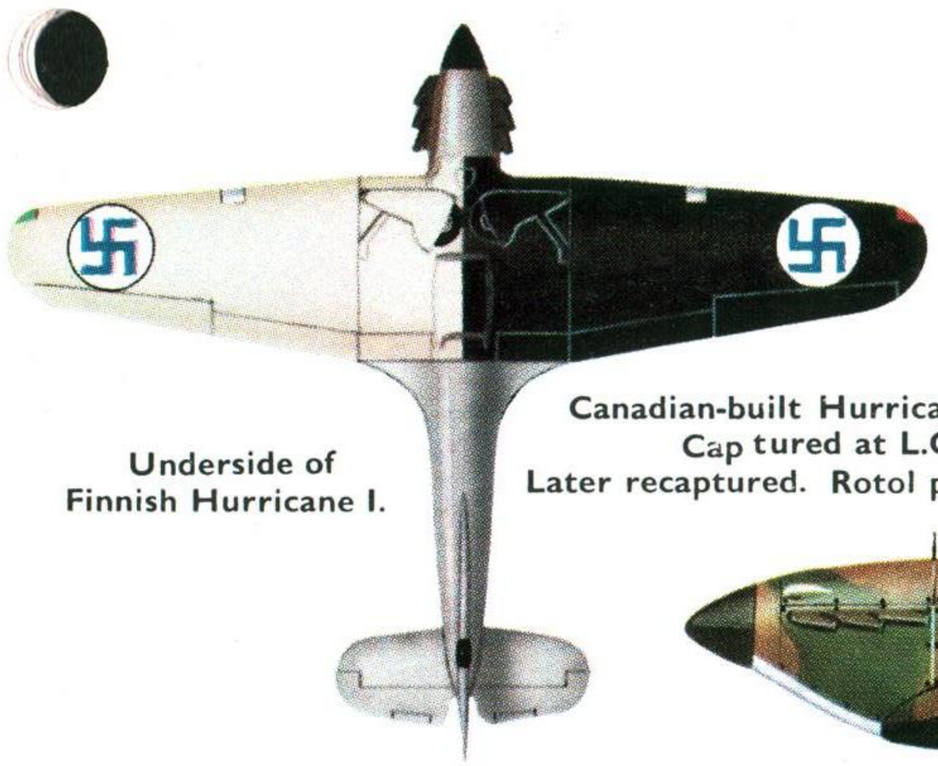




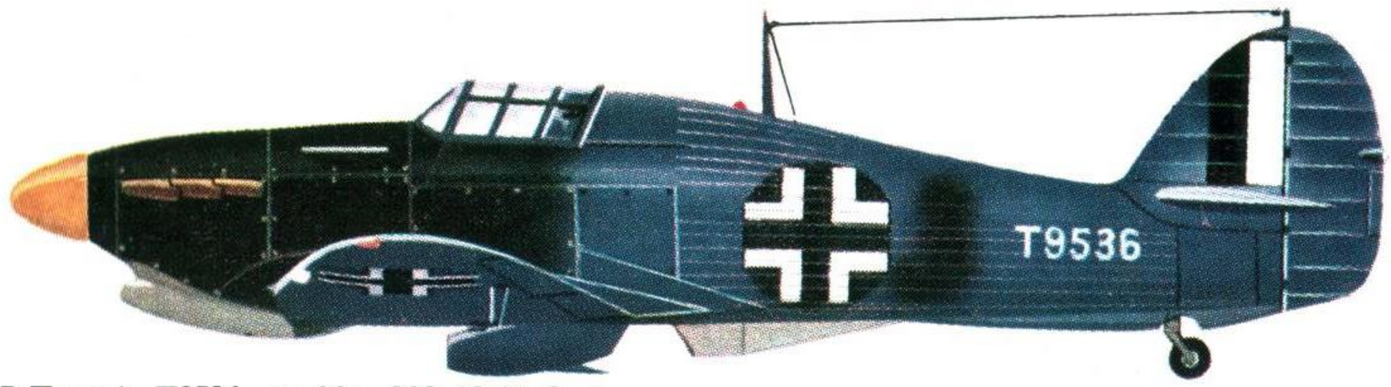
No. 80(F) Sqdn. fin marking.

Hurricane I, No. 213(F) Sqdn., Famagusta, Cyprus, 1941. Night defence duties. Rotol propeller

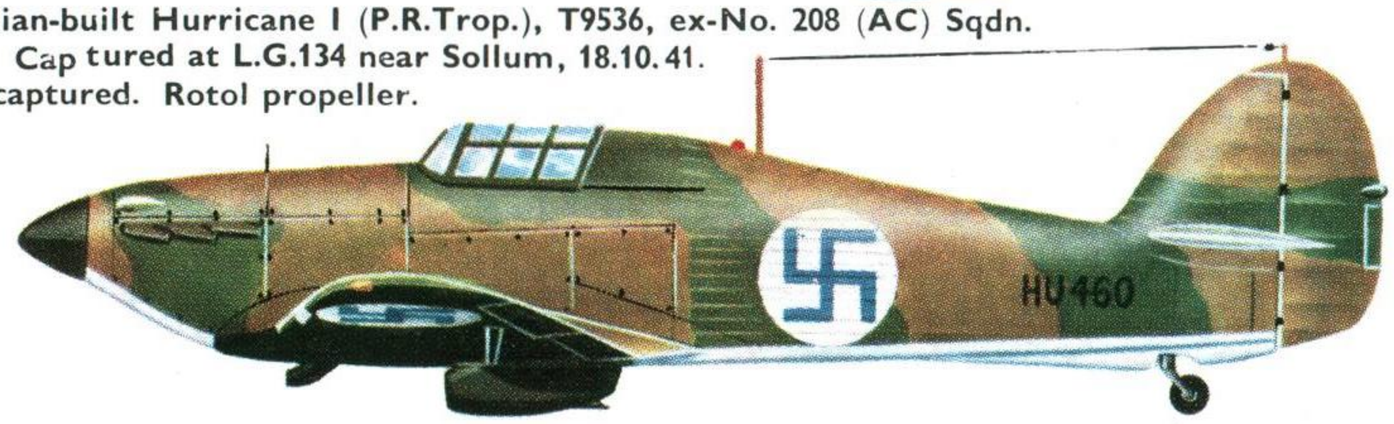
© JAMES GOULDING



Underside of
Finnish Hurricane I.

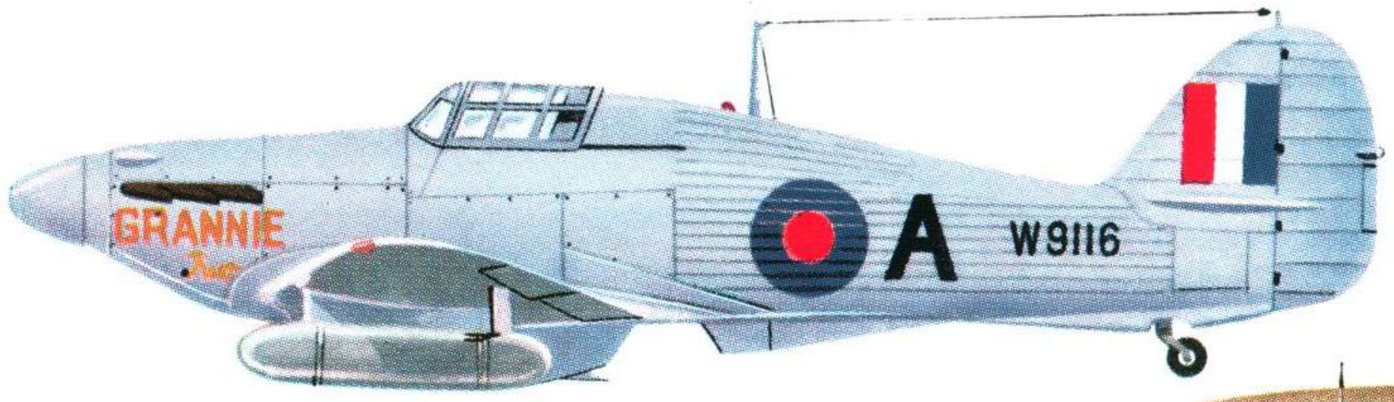


Canadian-built Hurricane I (P.R.Trop.), T9536, ex-No. 208 (AC) Sqdn.
Cap tured at L.G.134 near Sollum, 18.10.41.
Later recaptured. Rotol propeller.



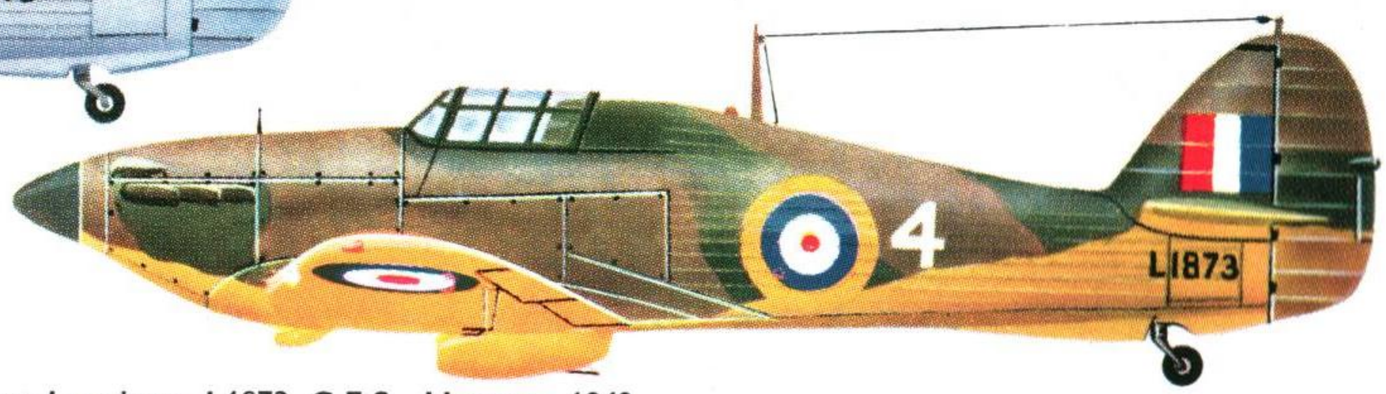


South Africa.

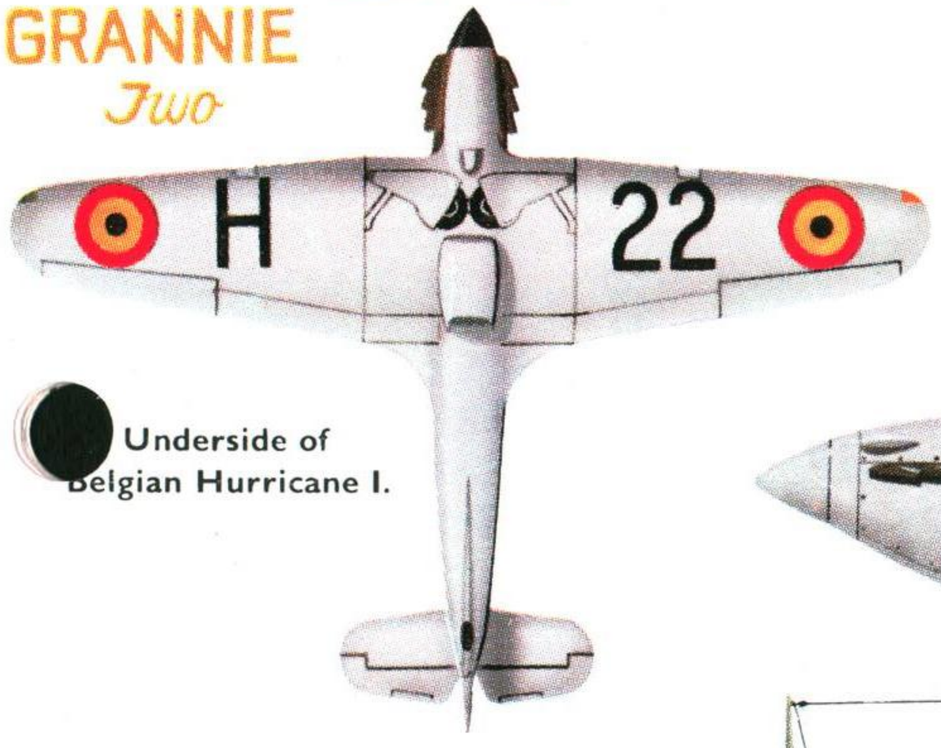


Finnish Hurricane I in delivery scheme,
winter 1940. D.H. prop.

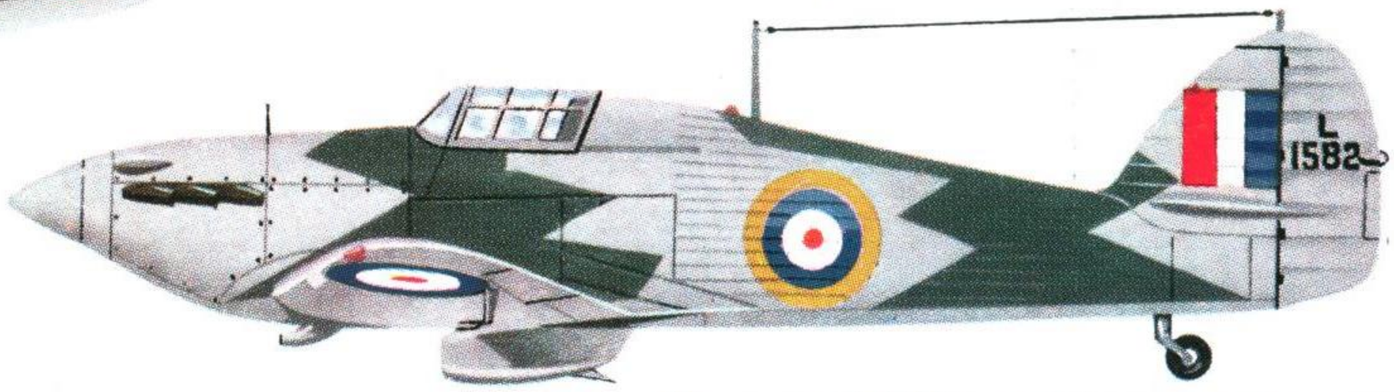
Hurricane I (P.R.), W.9116, No. 2 P.R.U., Heliopolis, June 1941.
Lost over Benghazi, 3.10.41. No guns; three 14-in. cameras
in rear fuselage. Rotol prop.



Hurricane I trainer, L1873. C.F.S., Upavon, 1940.



Underside of
Belgian Hurricane I.



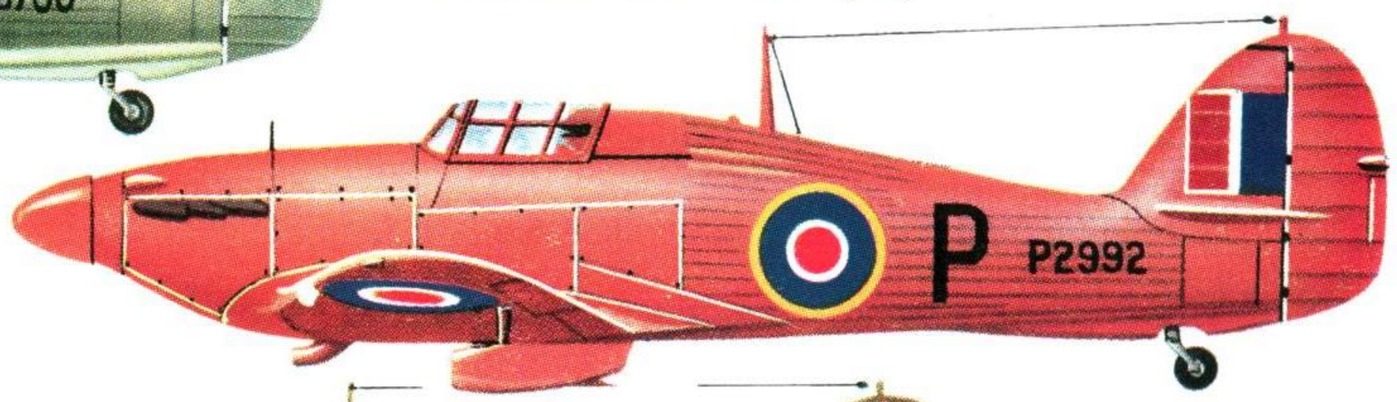
Persia.

Hurricane I, L1582, used for over-sea experimental colour
schemes, Brooklands and Farnborough, 1940. Dazzle scheme
later extended to undersides.



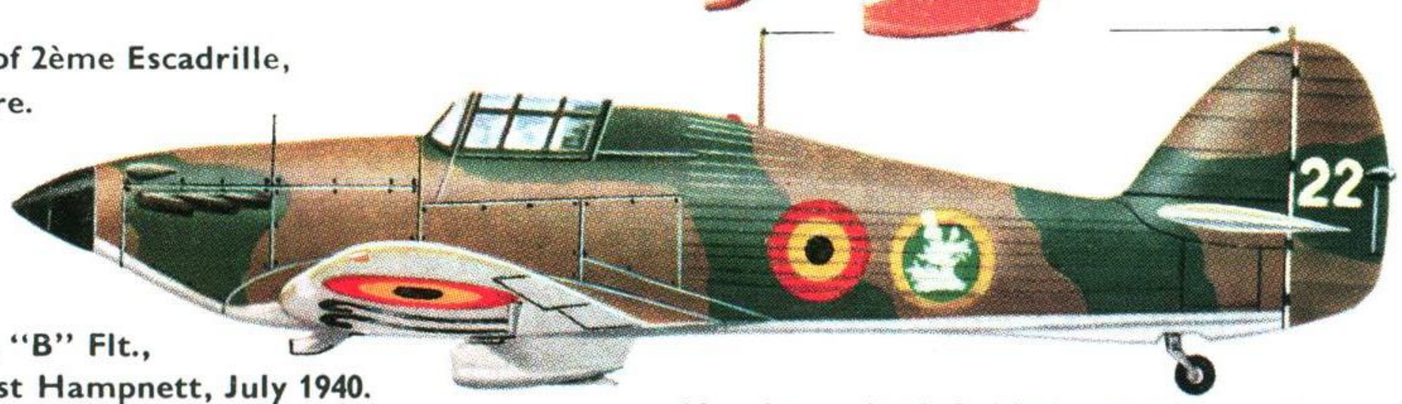
Sea Hurricane Mk.IA, V6700, Lee-on-Solent;
converted from Mk.I. Rotol prop.

Hurricane I, P2992, of No 527 (Calibration) Sqdn., Hornchurch,
1943. Used for gun calibration, Thames forts, and Type I radar
at Stoke Holy Cross, Orby and High Street. Doped with
high-reflectivity paint. Rotol prop.





Fuselage emblem of 2ème Escadrille,
Avi.Belge Militaire.



Rumania.

Hurricane I, P3221, of No. 145 (F) Sqdn., "B" Flt.,
flown by Sqdn. Ldr. A. H. Boyd from West Hampnett, July 1940.
Special "blister" hood; not approved by Air
Ministry. (Courtesy of Eric Marsden, Esq.).

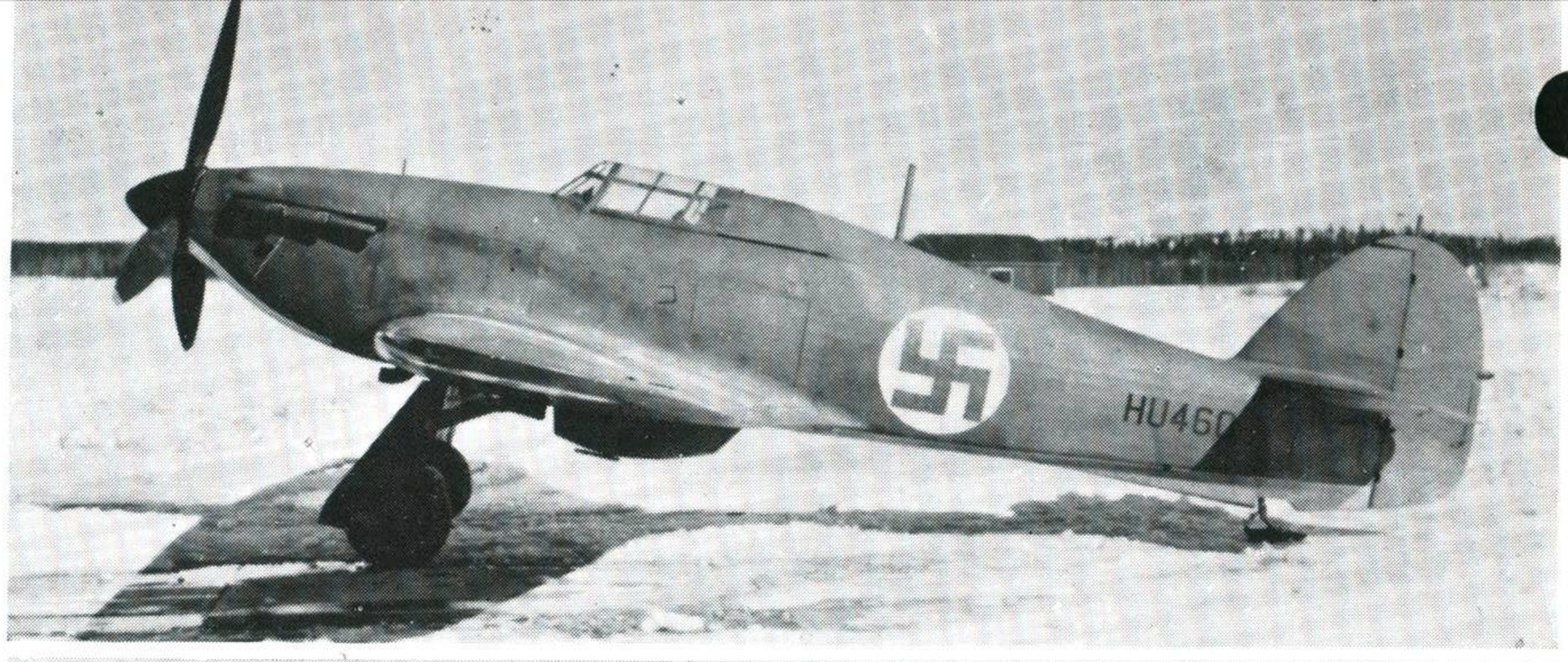


Hurricane I of Avi.Belge Militaire, 2ème.
Escadrille, 1ère Group, 2 ème Regiment de
Chasse, Diest, Belgium 1940.

Poland
(one aircraft only).

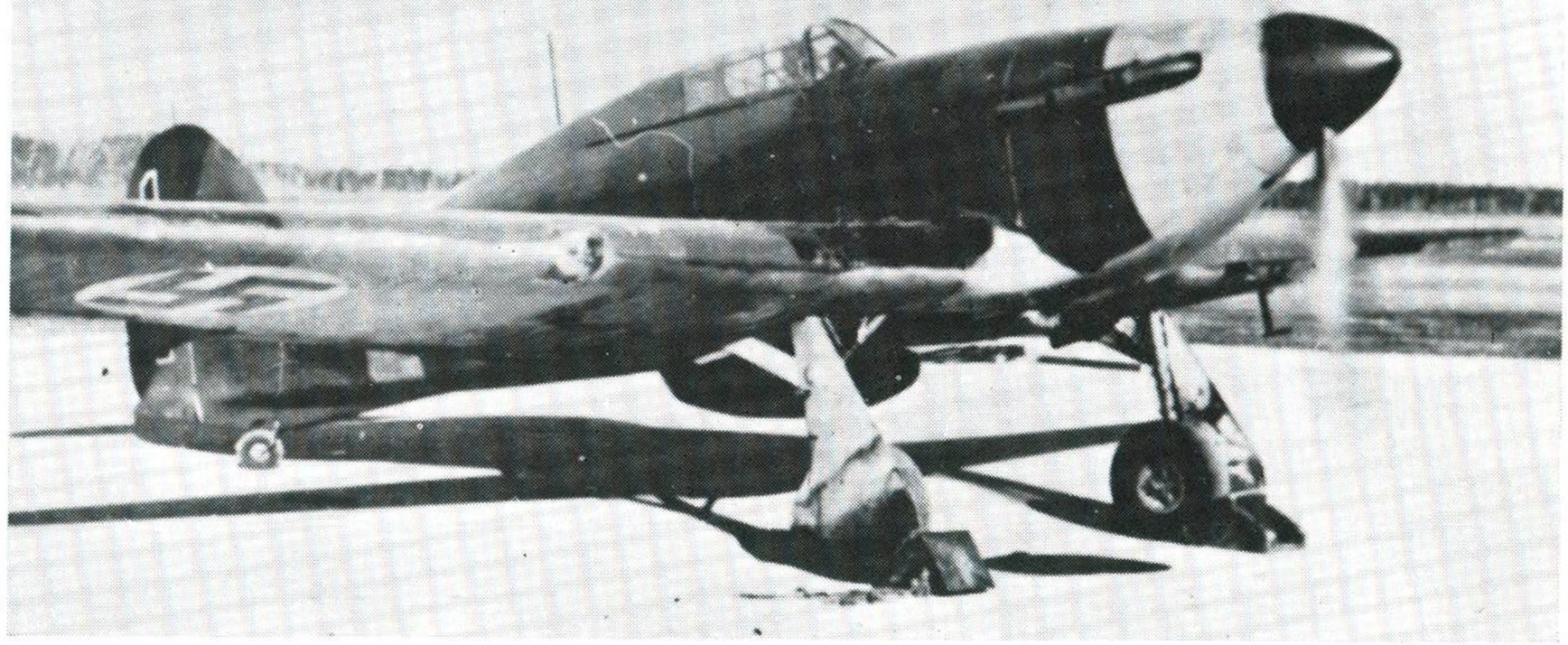
Eire.

Yugoslavia.



Participants in the Russo-Finnish war of 1939-40 were Hurricane I's exported from Maintenance Units in the U.K. in 1940. The camouflage schemes were standard A or B above, black under port wing, white under starboard and silver under fuselage. The Finnish swastika was applied over the R.A.F. roundels above and below the wings and fuselage and HU (Hurricane) serial applied in the Finnish convention. The tailwheel was replaced by a snowshoe tail skid.

(Photo: via Mikko Leutola)



Pictured here, it is believed for the first time, is a Finnish Hurricane I in Continuation War colours; these included black/green camouflage, yellow nose, yellow fuselage band and wing tips and black spinner. The numeral "1" on the rudder is unexplained.

(Photo: via C. Shores)

troops at Rombaksfjord.

R. A. F. participation was however "too little, too late" to influence events in Norway, and on 7th June the Squadron was ordered to destroy its aircraft and return to the United Kingdom. Cross pleaded to be allowed to call for volunteers to return home with his Hurricanes aboard H.M.S. *Glorious*, and although the feat of "landing-on" was new to the pilots, ten Hurricanes and ten Gladiators successfully embarked for the homeward voyage. The following day, however, *Glorious* ran in with the German warships *Scharnhorst* and *Gneisenau* and within two hours the great carrier had disappeared beneath the waves, taking with her all the Hurricanes and Gladiators; only Sqdn. Ldr. Cross and Flt. Lt. Jameson of No. 46 Squadron survived from the R.A.F. contingent, to be picked up after three days on a raft in Arctic seas.

THE FEW IN BATTLE

The Battle of Britain was almost lost before it opened. The R.A.F. had lost 477 fighters in France and over Dunkirk; another 198 had succumbed in Norway, at sea and the home front since 1939. One-fifth of its peacetime professional pilots were already dead or *hors de combat*. Yet by supreme efforts in training, expansion and reorganisation, almost all the necessary fifty-two squadrons calculated for the marginal defence of Britain were ready when the first waves of German bombers were launched against these shores. But fifty per cent. of the pilots facing them had never heard a shot fired in anger.

Hurricanes of No. 145 Squadron fired the first shots of the Battle of Britain proper, which is recorded as having opened on 8th August 1940 (though the planned German assault was delayed until the 13th). Later on the same day Hurricanes of Nos. 43, 145, 238 and 601 Squadrons intercepted raids on the South Coast by escorted Ju 87's, destroying eight enemy aircraft but losing three of their own number. At the same time an attack on a convoy in the Thames estuary was met by Hurricanes of Nos. 32, 56, 85, 151, 501 and 605 Squadrons, this time shooting down six of the enemy for the loss of six.

On that day, 8th August, the strength and disposition of R.A.F. Fighter Command was as follows:

AIRCRAFT	SQUADRON	BASE	SERVICEABLE STRENGTH
No. 10 Group (South-West Area)			
Hurricanes	No. 87 (F)	Exeter	20
Hurricanes	No. 213 (F)	Exeter	20
Hurricanes	No. 238 (F)	Middle Wallop	19
Spitfires	No. 92 (F)	Pembrey	18
Spitfires	No. 152 (F)	Warmwell	17
Spitfires	No. 234 (F)	St. Eval	20
Spitfires	No. 608	Middle Wallop	16
Blenheims	No. 604	Middle Wallop	12
Gladiators	No. 247 (F) (One Flight only)	Roborough	8
No. 11 Group (South-East Area)			
Hurricanes	No. 1 (F)	Northolt	18



G-AFKX (previously L1606 of No. 56 (Fighter) Squadron) was used extensively by Hawkers for flight development of the Rotol constant speed propeller during 1939. It was originally purchased from the Air Ministry as a demonstration aircraft but soon after the outbreak of war was camouflaged and acquired diminutive pale grey registration letters.

(Photo: Hawker Aircraft Limited Neg. No. 54P)

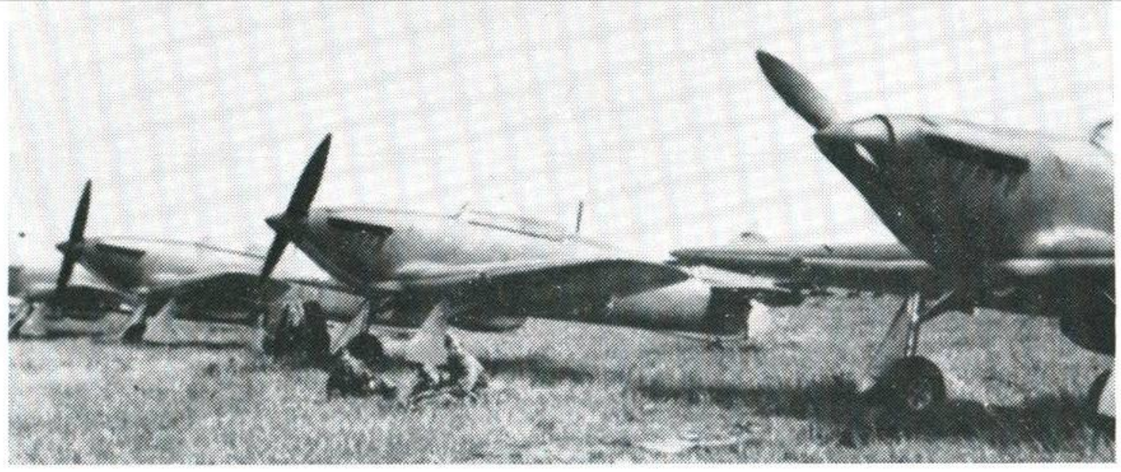
Hurricanes	No. 17 (F)	Debden	19
Hurricanes	No. 32 (F)	Biggin Hill	17
Hurricanes	No. 43 (F)	Tangmere	19
Hurricanes	No. 56 (F)	Rochford	22
Hurricanes	No. 85 (F)	Martlesham	21
Hurricanes	No. 111 (F)	Croydon	18
Hurricanes	No. 145 (F)	Westhampnett	16
Hurricanes	No. 151 (F)	North Weald	19
Hurricanes	No. 257 (F)	Northolt	18
Hurricanes	No. 501	Gravesend	19
Hurricanes	No. 601	Tangmere	16
Hurricanes	No. 615	Kenley	16
Spitfires	No. 41 (F)	Hornchurch	17
Spitfires	No. 54 (F)	Hornchurch	18
Spitfires	No. 64 (F)	Kenley	15
Spitfires	No. 65 (F)	Hornchurch	18
Spitfires	No. 74 (F)	Hornchurch	17
Spitfires	No. 610	Biggin Hill	15
Blenheims	No. 25 (F)	Martlesham	15
Blenheims	No. 600	Manston	13
No. 12 Group (Midlands)			
Hurricanes	No. 46 (F)	Digby	18
Hurricanes	No. 73 (F)	Church Fenton	15
Hurricanes	No. 229 (F)	Wittering	19
Hurricanes	No. 242 (F)	Coltishall	18
Hurricanes	No. 249 (F)	Church Fenton	17
Spitfires	No. 19 (F)	Duxford	19
Spitfires	No. 66 (F)	Coltishall	17
Spitfires	No. 222 (F)	Kirton	17
Spitfires	No. 266 (F)	Wittering	17
Spitfires	No. 611	Digby	17
Spitfires	No. 616	Leconfield	16
Blenheims	No. 23 (F)	Collyweston	15
Blenheims	No. 29 (F)	Digby	14
Defiants	No. 264 (F)	Kirton and Ringway	14
No. 13 Group (The North)			
Hurricanes	No. 3 (F)	Wick	20
Hurricanes	No. 232 (F)	Turnhouse	19
Hurricanes	No. 232 (F) (One Flight only)	Sumburgh	6
Hurricanes	No. 245 (F)	Aldergrove	20
Hurricanes	No. 253 (F)	Turnhouse	20
Hurricanes	No. 504	Castletown	19
Hurricanes	No. 605	Drem	20
Hurricanes	No. 607	Usworth	19
Spitfires	No. 72 (F)	Acklington	16
Spitfires	No. 79 (F)	Acklington	17
Spitfires	No. 603	Dyce & Montrose	14
Blenheims	No. 219 (F)	Catterick	13
Defiants	No. 141 (F)	Prestwick	12

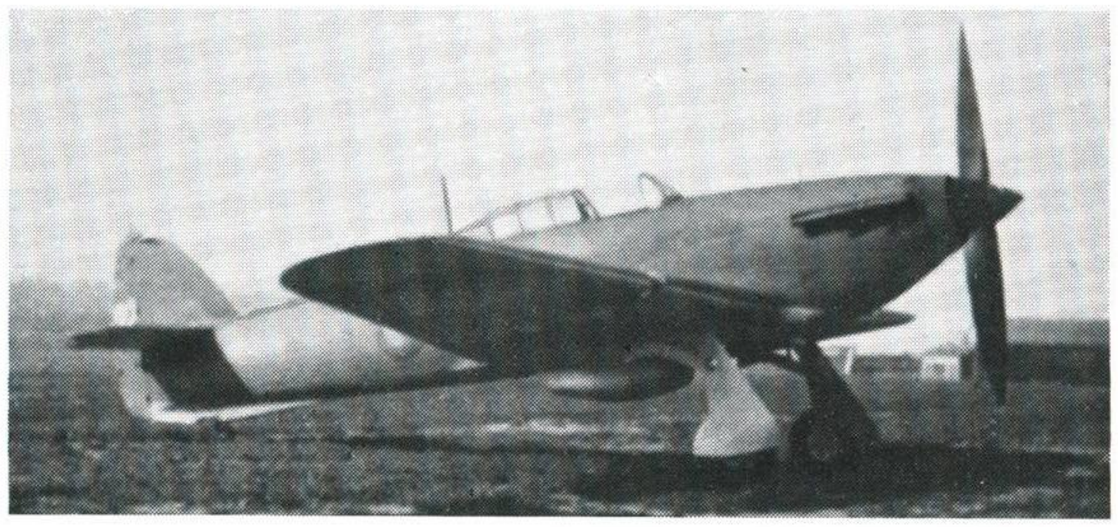
From this table it can be seen to what extent reliance was placed upon the Hurricane. On account of its known performance inferiority to the Spitfire and Bf 109E it was, where possible, committed to the interception of enemy bomber formations, while Spitfires tackled the escorting fighters (if any). Often however this planned division of our fighter force could not be achieved, and in instances where Hurricanes attacked escorted bombers they seldom emerged unscathed.

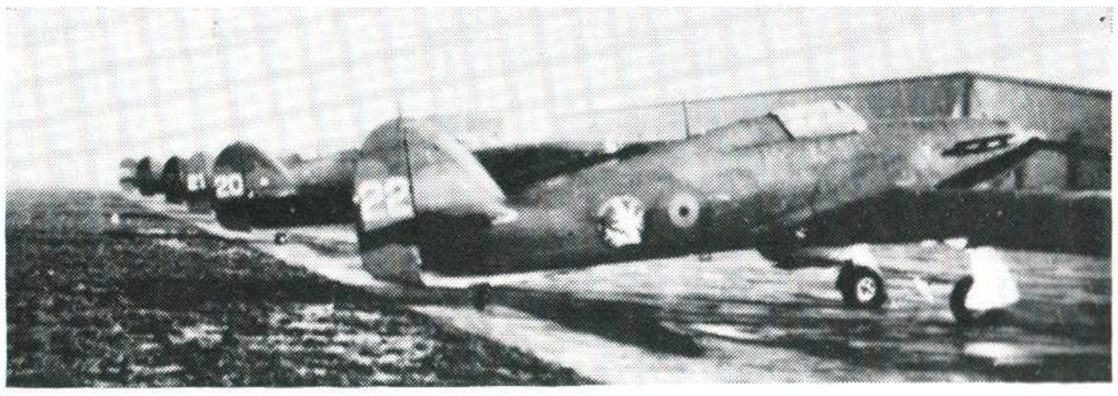
Perhaps the exception to this was the apparent failure of the much vaunted Bf 110 upon which the *Luftwaffe* relied as a long range escort fighter. There were numerous instances during 1940 when Hurricanes split to attack both bombers and the escorting 110's and met with equal success against both.

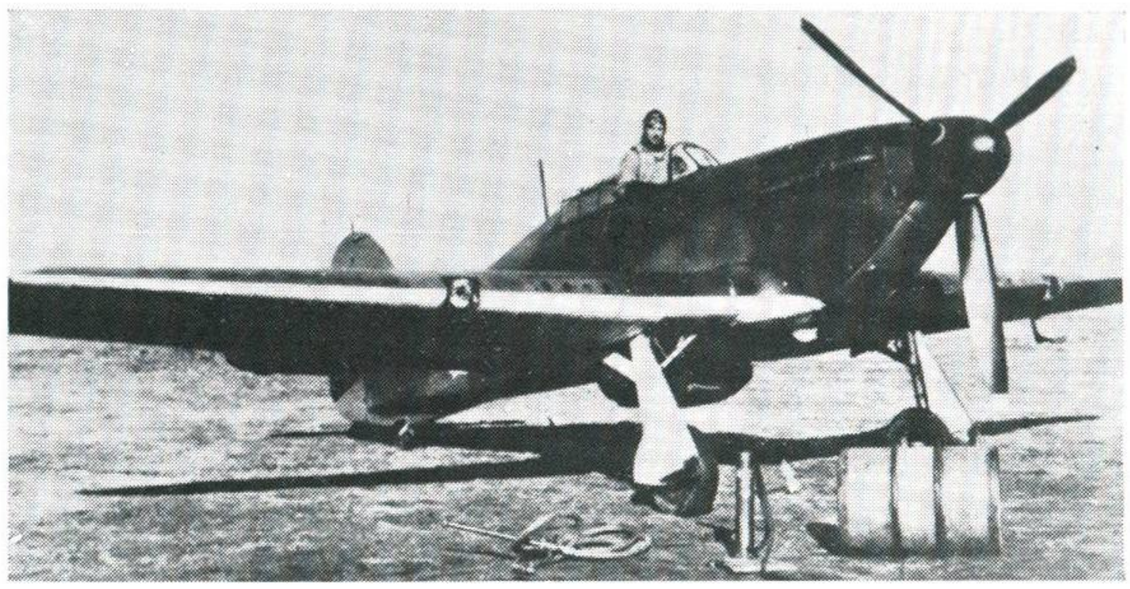
The air actions of 15th August were outstanding for the defences. All three enemy air fleets were flown against Britain, *Luftflotte 5* operating against the North East in a belief that all defending fighters had been drawn off to meet the cross-Channel threat. A force of about fifty Ju 88's ran into No. 73 Squadron whose pilots shot down half a dozen without loss. Further south, raid after raid was reported by radar, so that almost every Hurricane squadron flew into battle. This was the day that justified the Hurricane, for this was Germany's heaviest attack yet and the Hurricane was committed to fight exactly as it had been intended—from home bases, on all fronts—and was not lacking.

On the following day the weight of attacks was maintained and in meeting one of these a Hurricane pilot's gallantry earned the Victoria Cross—the only such award ever made to a Fighter Command pilot. Flt. Lt. J. B. Nicholson of No. 249 Squadron was leading a section to intercept a formation of Bf 109's







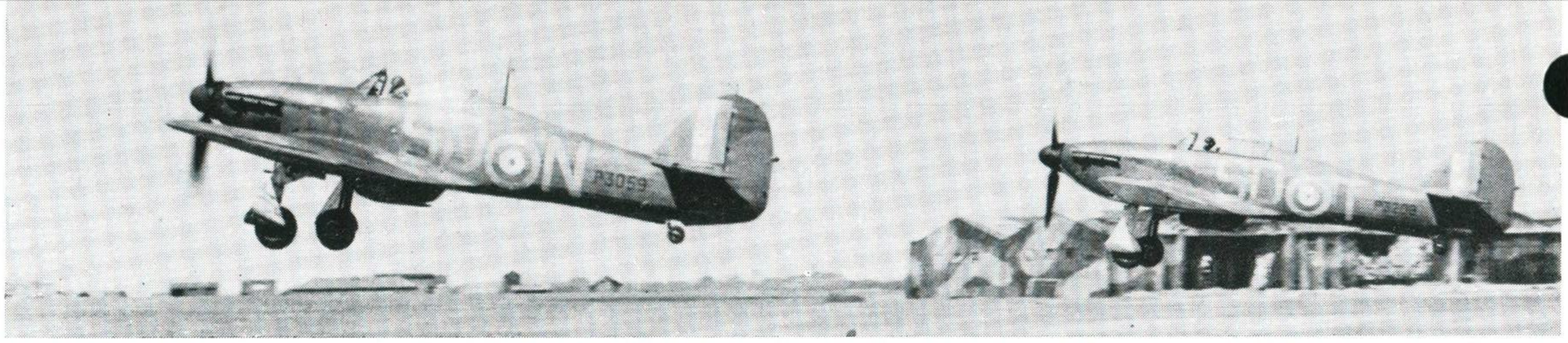


The Belgian Hurricane I's based at Schaffen at the time of the German invasion of May 1940 were almost certainly all British-built, though two licence-built aircraft are known to have been completed. These photographs are interesting in showing individual exhaust stubs (six per side) on some aircraft, but scarcely visible under the wings are the individual aircraft numbers (e.g. H under starboard wing and 22 under port, in five-foot deep characters). It is not known for certain whether the thistle emblem was carried by the 2 ème Escadrille *in combat.*

(Photos: Major M. C. Terlinden, Avi. Belge Militaire)

over Southampton when he was bounced by a number of Bf 110's. Nicholson's aircraft was hit by four shells, two of which struck the pilot and a third ignited the forward fuel tank. As Nicholson prepared to abandon the blazing Hurricane, he caught sight of a 110 which had evidently overshot. Remaining long enough in his cockpit, the badly wounded pilot brought his sights to bear and, firing a long burst, destroyed the enemy. Nicholson baled out and survived—despite being fired on by an over-enthuiastic member of the local defence force.

Space does not permit a detailed account of the course of the Battle of Britain, nor even of the Hurricane's part. However the attack upon the Hurricane's home factory at Brooklands on 4th September (the subject of the combat report at the beginning of the narrative) is interesting in several respects. In looking more closely at the enemy force involved, it is almost certain that the enemy formation was part of *Erprobungsgruppe 210* based at Valenciennes/Denain, an experimental unit charged



P3059 *and* P3208 *of No. 501 (County of Gloucester) Squadron scrambling from Gravesend on 15th August 1940. Despite camouflage the hangers in the background had suffered hits by German bombs a day or so earlier.*
(Photo: Imperial War Museum Neg. No. HU3093)

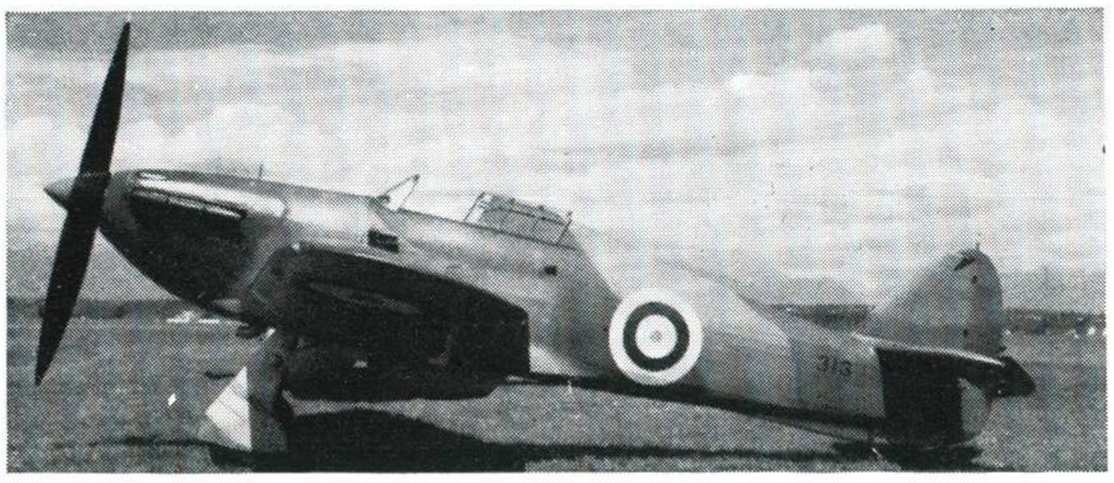
with the task of developing the Bf 110 as a bomber; the outstanding success of the Hurricane squadrons on this occasion was therefore almost certainly attributable to a lack of familiarity with heavily-laden aircraft on the part of the German crews. On the other hand it is intersting to observe that the Brooklands factory was likely to have been the "briefed" target, that an important experimental unit was sent against it, and, despite Fighter Command's growing air superiority, that *Erpr.Gr.210's* crews penetrated to their target, apparently without previous interception.

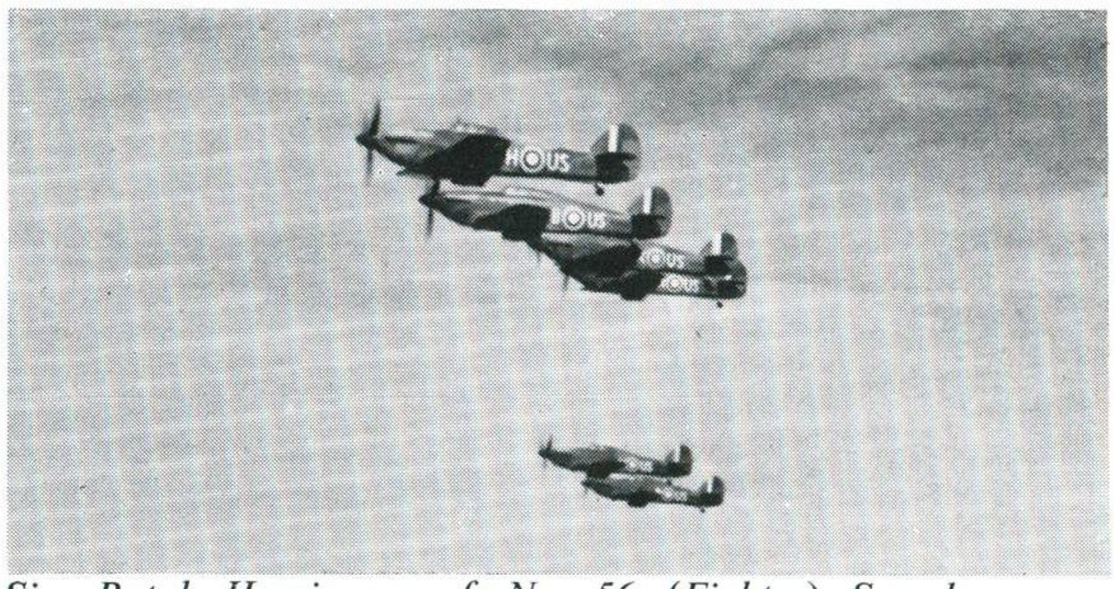
By November 1940 the Battle of Britain as such—that is, the daylight assault intended to so weaken this country as to pave the way to invasion—was over. One final episode remained to be written, and one that—like the opening combat—involved the Hurricane I.

With the arrival of autumn, the Italian Air Force joined the *Luftwaffe* in Belgium and commenced working up for operations against Britain. During the first ten days of November several R.A.F. pilots reported having seen a number of Italian aircraft, but on the 11th of the month, radar in East Anglia reported the approach of a largish force of "bandits" and forthwith four Hurricane squadrons, Nos. 17, 46, 249 and 257, scrambled to intercept the raid. Perhaps something of a sign of the times, the action that followed was not numerically so one-sided as had been commonplace two months previously. Ten Fiat B.R.20's, escorted by about forty C.R.42's and some Bf 109Es, were met by something like thirty Hurricanes. Full and accurate figures for enemy aircraft shot down are not available for this one action, but claims by No. 257 Squadron give some indication of the one-sided nature of the fight: four B.R.20's, three C.R.42's and a Bf 109 destroyed. (Flt. Lt. Blatchford, leading the Squadron in Sqdn. Ldr. Stanford Tuck's absence on leave, ran out of ammunition but went on to "mill" the top wing of a C.R.42 with his propeller.) None of the intercepting aircraft was lost, and the *Corpo Aereo Italiano* never mounted another raid in strength against these islands.

Notwithstanding the mounting daylight superiority

A rare photo of one of the original Hurricane I's shipped to Canada for training purposes in October 1938. 313 (*previously* L1762) *is seen here on a Canadian airfield and still retains the instrument venturi on the fuselage side.*
(Photo: via John W. Caler)





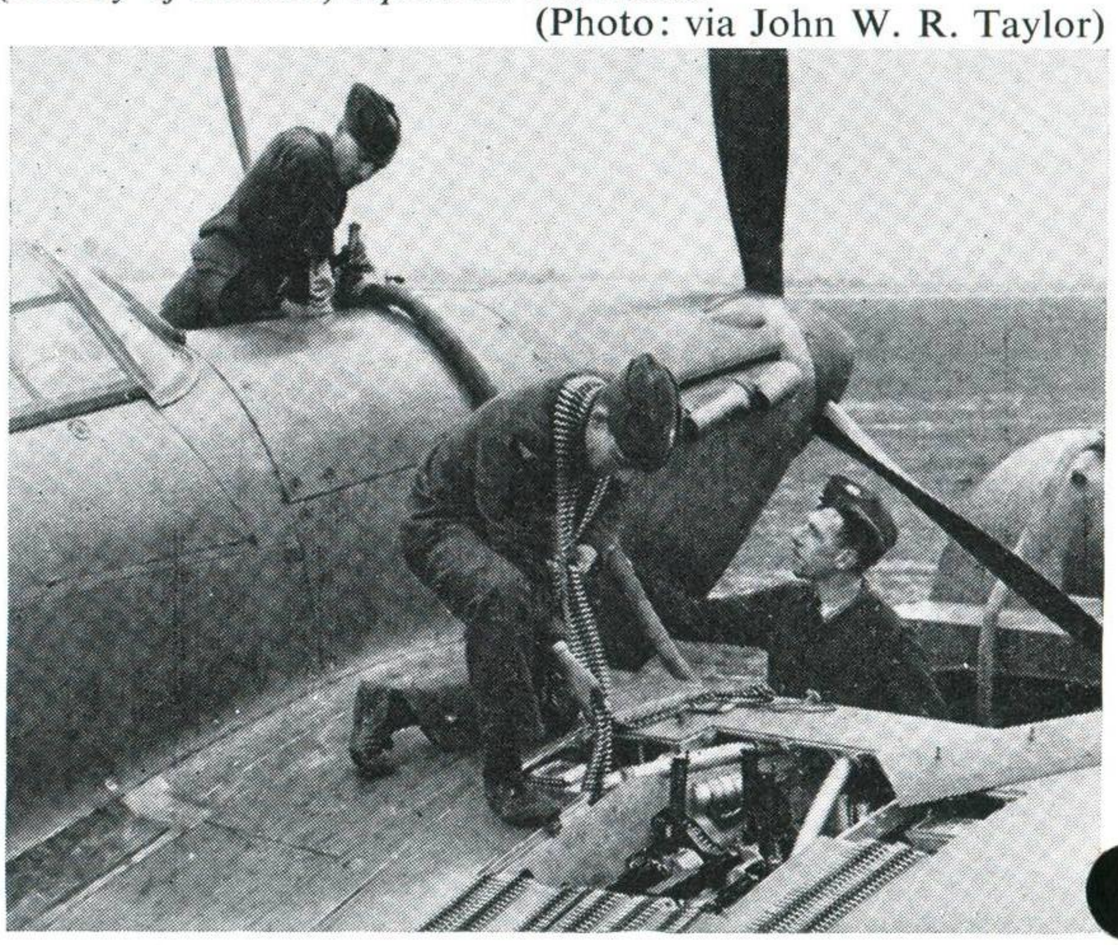
Six Rotol Hurricanes of No. 56 (Fighter) Squadron over Southern England during the summer of 1940. The leading aircraft, US-H, *was already an old aircraft—the thirty-fifth aircraft of the first production batch,* L1581.
(Photo: Associated British Picture Corporation Ltd.)

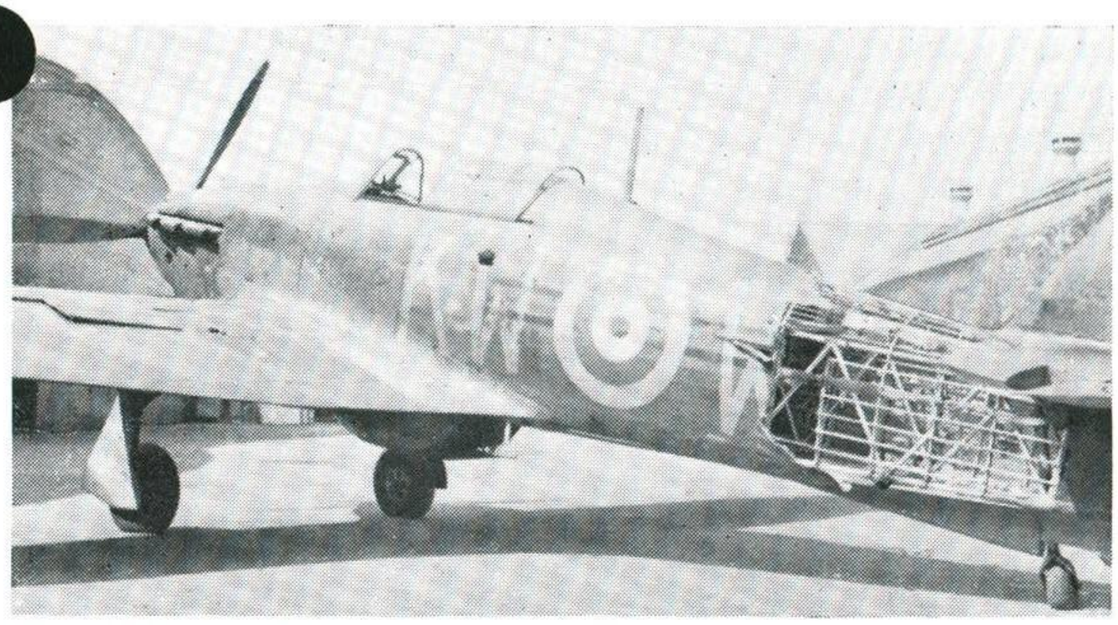
of Fighter Command in Northern Europe in late 1940, the Hurricane I's day was spent, and its place was taken by the Mark II. Night defence by the older aircraft continued for some months, but success (what little there was) was limited to moonlit nights, and so unreliable were communications during those early *Blitz* raids that there was little headway made in preventing heavy damage being done to English cities.

IN WARMER CLIMES

For obvious reasons R.A.F. units overseas were equipped with the latest fighters many months after the first home-based squadrons. This at least held true until late in 1941, and even so tropically-equipped fighters invariably paid dearly in performance in gaining relative immunity from the destructive effects of dust and sand. Though the metropolitan R.A.F. received its first Hurricanes before the end of 1937, the first operational Hurricane I's did not feature in strength returns in the Middle East until mid-1940.

Intimate view showing the refuelling and re-arming of a No. 601 (County of London) Squadron Hurricane.
(Photo: via John W. R. Taylor)





The ability of the Hurricane to withstand severe battle damage is well illustrated by this picture of a 615 (County of Surrey) Squadron aircraft which landed at Kenley after being hit in the rear fuselage by cannon shells and in the wing by machine gun fire. (Photo: F. K. Mason collection)

It was however the knowledge of the effects of dust and sand that resulted in an old Hurricane I, *L1669*, being sent out to Khartoum in 1939 to test the efficiency of a carburettor air filter. When war with Italy broke out on June 10th/11th 1940, this old aircraft was the only airworthy Hurricane available in North Africa, and, on orders from Air Commodore R. Collishaw, *L1669* was flown from landing ground to landing ground in an effort to deceive the *Regia Aeronautica* into believing that a greater number of modern fighters were present in the theatre. Whether the ruse was effective (or even noticed) is not apparent; certainly enemy air activity was light in the opening months of the fight with Italy.

It is not generally known that in fact Hurricanes were being flown from England to Egypt *before* Italy's entry into the war. Small groups were ferried via France (already on the way to partition), Tunisia, Malta and Egypt. Casualties among those early aircraft were high as, despite the use of extra fuel tanks, the pilots were operating at extreme range and were little versed in range flying. It is interesting that at the time of the initial desultory attacks upon Malta in June 1940, Hurricanes were in fact staging through the island. The first four such fighters to join the defending Sea Gladiators actually returned to Malta from North Africa. Later No. 261 Squadron was formed to embrace the defending Hurricanes on the island, though most of the Hurricane I's had by then given way to Mark II's.

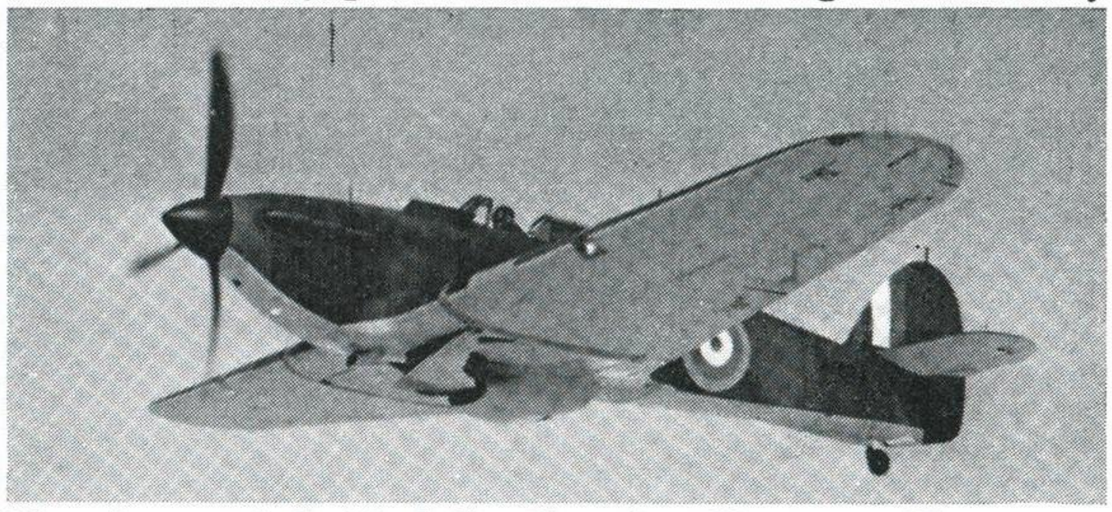
The first Hurricane squadron established in the Middle East was No. 274 formed in the Canal Zone in September 1940. Unfortunately some of the aircraft, (shipped out from Britain at the height of the Battle when they could least be spared, surviving a tortuous sea journey through the Mediterranean) were found to be useless for day operations as they lacked filters; other temperate Hurricanes were flown up from Takoradi and were virtually worn out on arrival at Abu Sueir. The squadron was not fully operational until 11th November.

This was the operational and administrative environment surrounding the build-up of British forces in the Middle East. Little wonder that setback followed setback in those early months. By the end of 1940 three squadrons were flying Hurricane I's, Nos. 73 (late of France and the Battle of Britain), 208 (Army co-operation) and 274.

When the Greek campaign opened at the end of 1940 three Gladiator squadrons (Nos. 33, 80 and 112) were sent to support the British Expeditionary Force but, as these aircraft were expected to be of little value if faced by the *Luftwaffe*, Hurricanes were sent to replace them, being first issued to No. 80 Squadron in February 1941; by the end of that month Nos. 33 and 80 together flew sixteen Hurricanes in addition to a few remaining Gladiators. As soon as Germany attacked in the Balkans and Greece became threatened through Yugoslavia, No. 208 Squadron, with Hurricanes and Lysanders, was sent to reinforce the R.A.F. contingent.

During the final days in Greece the Hurricanes were constantly in action and by 19th April there were, spread among the four squadrons, only twenty-two of the fighters airworthy. Sqd. Ldr. M. T. St. J. Pattle, by then promoted to command No. 33 Squadron, so added to his own personal score of enemy aircraft that by the time of his death on 20th April, he had shot down more than 30 enemy aircraft —of which he accounted for twenty-four while fighting in Greece.

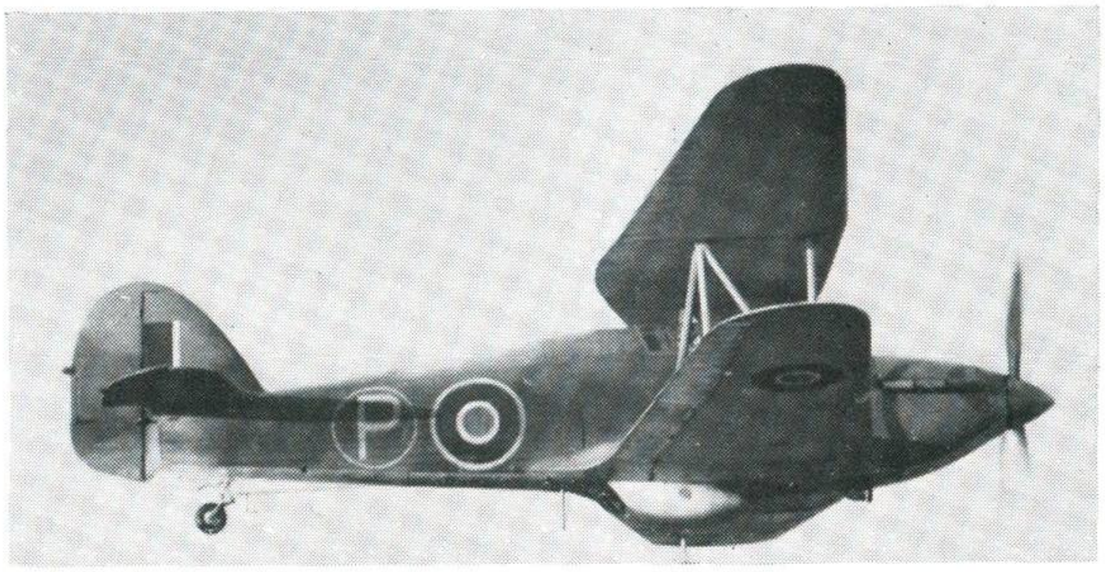
Brilliant intelligence and anticipatory action by the



Though not strictly Mark I's, Canadian Hurricane X's were so designated to identify aircraft powered by Packard-built Merlin 28s, but were generally similar to metal-wing 8-gun Mark I's. A minor difference, evident in this photo, was the canting-up of the exhaust-shield (normally mounted horizontally on British-built Hurricanes).
(Photo: Courtesy of the National Film Board of Canada, Neg. No. WRM-635)

Canadian Hurricanes started to arrive in the United Kingdom during the Battle of Britain. The aircraft below, P5170*—seen here at the Fort William plant of the Canadian Car and Foundry Company—was the first Canadian-assembled Hurricane and first flew on 9th January 1940.* (Photo: Courtesy of the National Film Board of Canada, Neg. No. WRM-620)





One of the original batch of Hurricanes, L1884, *shipped to Canada in 1938 to become R.C.A.F.* No. 321, *later returned to the U.K. and was used by Hill and Sons Ltd. for slip-wing experiments. It was intended that the greater lift available would enable Hurricanes to operate from very small fields and that, once airborne, the top wing would be jettisoned. The ingenious idea was not adopted by the R.A.F.*
(Photo: via James Hall, D.F.C.)

Luftwaffe during the closing stages in Greece wrought havoc with the fighters struggling to cover the evacuation and on several occasions the Hurricanes were caught on the ground between sorties. On the 25th almost all the remaining fighters were bombed at Argos, only seven aircraft subsequently being withdrawn to Crete.

In Crete the story was much the same. No. 208, now without any aircraft, was withdrawn, leaving about a dozen pilots from the other three squadrons to fly a motley collection of Hurricanes, Sea Gladiators, Fulmars and Buffaloes. Despite constant attempts to send reinforcements of Hurricanes to the island, the *Luftwaffe* overwhelmed the defences and the surviving pilots returned to North Africa at the beginning of June.

Meanwhile a slow build-up of Hurricane squadrons had been taking place in Egypt. The Takoradi route was now established and almost all Hurricanes now arriving were equipped for the tropics.

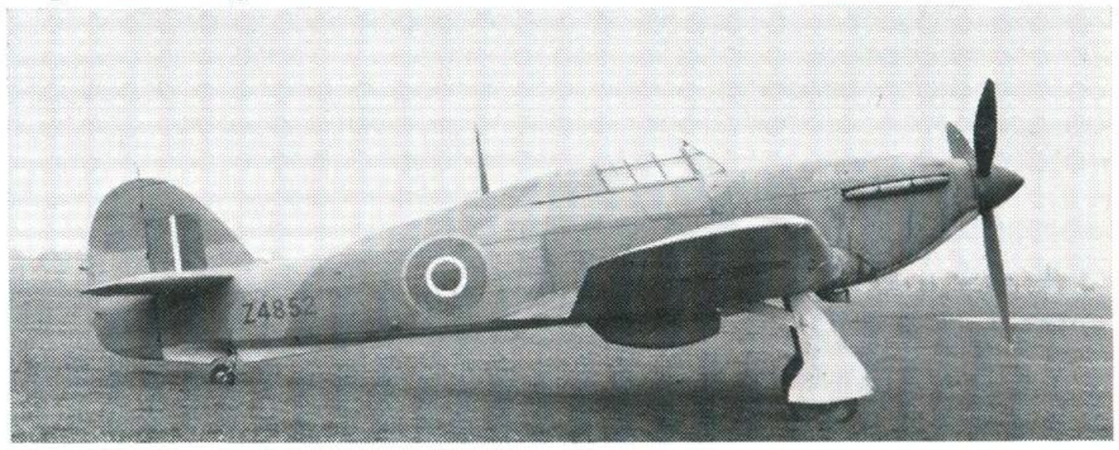
Further outlying campaigns were however delaying the build-up in the Western Desert. When the R.A.F. base at Habbaniyah was threatened by rebellious Iraqi forces, No. 94 Squadron, newly arrived from Aden and under orders to re-equip with Hurricanes, was sent to help in the defence of the garrison. One flight had however received Hurricanes and, equipped with long range tanks, performed valuable reconnaissance over northern Iraq, providing the vital information that modern *Luftwaffe* aircraft (including Bf 110's of II/ZG76) were staging through Mosul on their way to support the Iraqis. As far as is known however the only German aircraft destroyed by 94 Squadron in Iraq were shot down by Gladiators, the Hurricanes being used solely for reconnaissance.

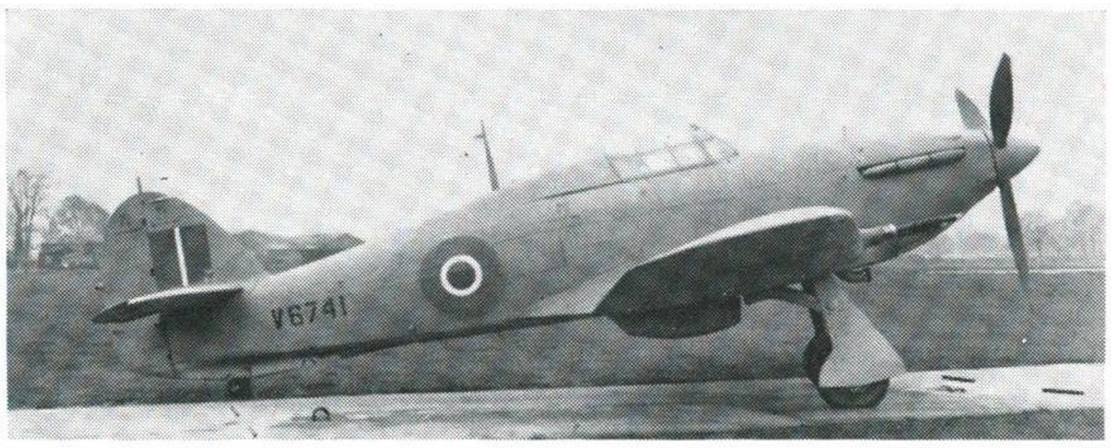
Following the collapse of the Iraqi revolt, three Hurricane squadrons (Nos. 80, 208 and 260) joined in the campaign to neutralise the Vichy regime in Syria and despite a spirited action by Dewoitines and Moranes, the inevitable armistice was signed on 14th July 1941. Subsequent reports showed that the fact that long-range ground-strafing Hurricanes could reach any Vichy base was a major contribution to the decision to surrender.

The arrival of the *Luftwaffe*, equipped with late vintage fighters, in North Africa, brought an end to the Hurricane I's combat value in mid-1941, though No. 208 Squadron continued to fly a variety of photo and fighter reconnaissance versions on well-covered low level sorties for another year. But the cumbersome filters and low-powered Merlin III's bestowed too great a handicap on the old Hurricanes and most were withdrawn for use by No. 4 Flying Training School and other units in the Canal Zone. Others performed the tedious duties associated with weather reporting until they, in turn, were superseded by Hurricane II's.

THE FAR EAST

Nowhere and at no time was the Hurricane I placed at so great a disadvantage as in the Far East at the beginning of the War with Japan in December 1941. After all, by European standards it was already obsolete as an operational fighter, yet it was pitted against the best and latest, albeit carrier-based, Japanese fighter—The Mitsubishi Zero-Sen. Without







As the Battle of Britain drew to a close the delivery to the R.A.F. of Hurricane II's commenced and the surplus of Mark I's was allocated to numerous first line duties apart from metropolitan day defence. Perhaps most widely used were the Sea Hurricanes. Broadly speaking the main versions which had originated from the Mark I were the Sea Hurricane IA, with eight machine guns, catapult spools and no arrester hook, and the Sea Hurricane IC, with four 20-mm. Hispano guns, catapult spools and arrester hook (top two pictures, British Official Photos, Neg. Nos. 12194C and 12193C). *The Sea Hurricane IB* (third picture, Admiralty Neg. No. A18870) *was an arrester-hooked version of the IA, this No. 801 Squadron aircraft being refuelled aboard H.M.S.* Argus. *Sea Hurricanes IA were developed early in 1941 for convoy defence, being mounted on Catapult Aircraft Merchantmen (CAM-Ships)* V6756 *is shown here aboard S.S.* Empire Tide *in August 1941.*
(Photo: The Admiralty, Neg. No. A9421)



ursuing all the reasons which placed the Hurricane at this disadvantage—"too little, too late" sums it up—suffice to say that when the Japanese fell upon the Malayan peninsular, not one modern British fighter existed within a thousand miles, the air defence of Singapore being the responsibility of R.A.F. and R.A.A.F. Buffaloes.

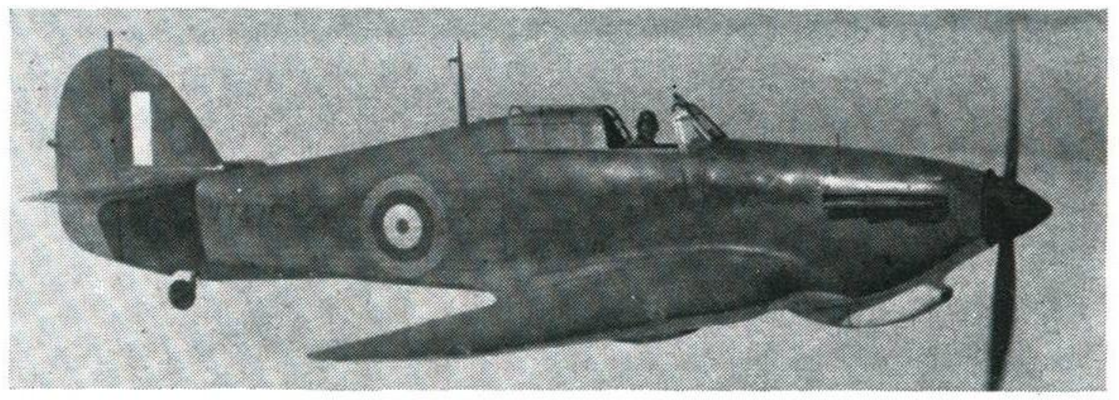
Hurricane I's and IIA Series I's arrived at Singapore on 3rd January 1942 having been diverted from the Middle East, but after putting up a spirited but ineffectual defence, were withdrawn to be thrown into the defence of Palembang and Batavia.

Though no regularly-established squadron of Hurricane I's operated from the islands in the East Indies until No. 605 Squadron flew in to Palembang from H.M.S. *Indomitable* with thirty-three Hurricane I's and IIA's, a number of the older version were among those flown by Dutch pilots and No. 232 Squadron based at Tjilitan and Bandoeng in February 1942, though there is no record of Dutch markings ever having been applied to the British fighters.

After the loss of Singapore, twenty-four other Hurricane I's had been delivered to Tjililitan for use by Dutch pilots under Captain Terluin, and although these were reinforced from time to time, their number was steadily worn down by the tremendous pressure of the Japanese. By the end of the month, almost the entire fighter force had been destroyed—ground losses at Tasikmalaja and Ngoro in heavy raids accounting for almost the last Hurricane. One such aircraft later appeared in Australia, though whether this was a battle veteran has not been determined.

The Hurricane's record in Burma was much the same in outcome, yet operated to better effect—principally due to the less sophisticated enemy aircraft opposing it. Actually most of the Hurricane I's, rushed into Burma in January 1942, were flown in support of, rather than by, an autonomous R.A.F.

p. 7 * *Recounted in his book "THE FIRST AND THE LAST" (Methuen, London, 1955), pp. 44-45.*
p. 9 * *See THE GLOSTER GLADIATOR, PROFILE No 98.*
p. 9 † *Later Air Marshal Sir Kenneth Cross, K.C.B. C.B.E., D.F.C.*



Of all the Hurricane I's which were eventually shipped to the Far East only one is believed to have reached Australia in flying condition, presumably after the fall of Singapore. As far as is known, this aircraft, V7476 was never allotted an Australian serial. (Photo: via A. Shennan)

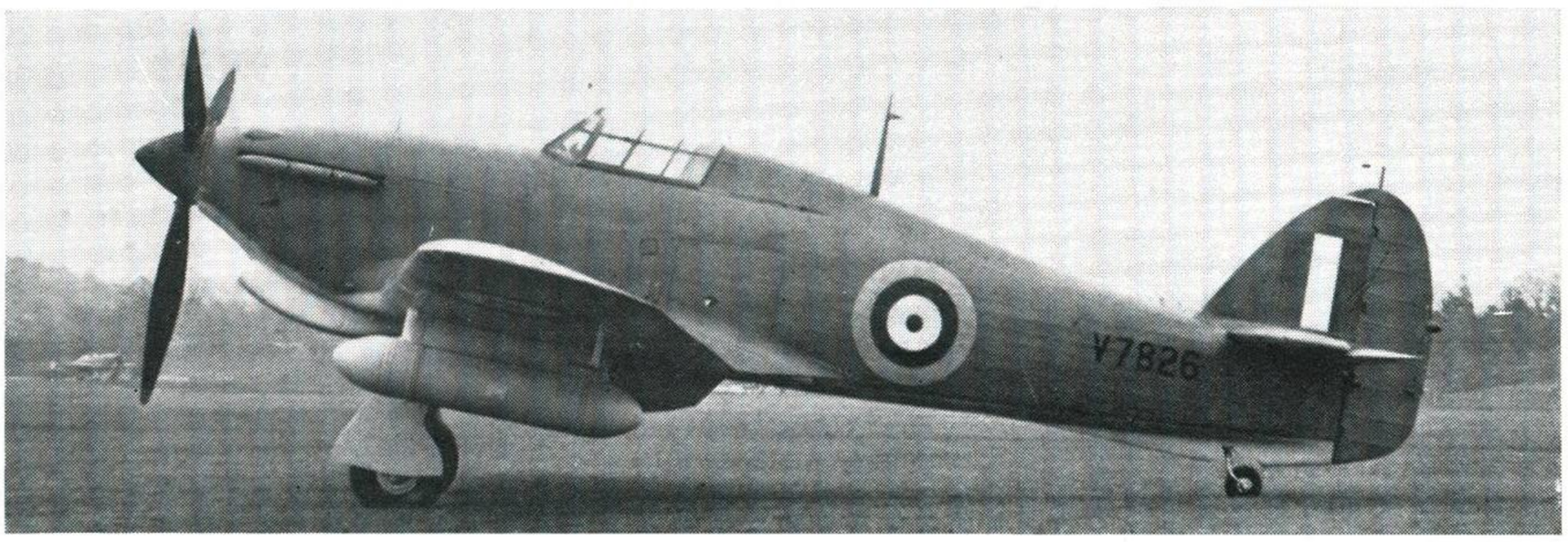
squadron—No. 67—simply because the pressure on pilots and groundcrews was so great as to prevent conversion from Buffaloes during the early retreat. In the event, by the time No. 67 Squadron had withdrawn to the Mandalay area, it was operating an assortment of three Buffaloes, four Curtiss P-40's and about twenty Hurricane I's. When sheer exhaustion of men and machines prevented further combat, the Squadron was withdrawn to Akyab for complete re-equipping and the old Hurricanes were relegated to training duties in India.

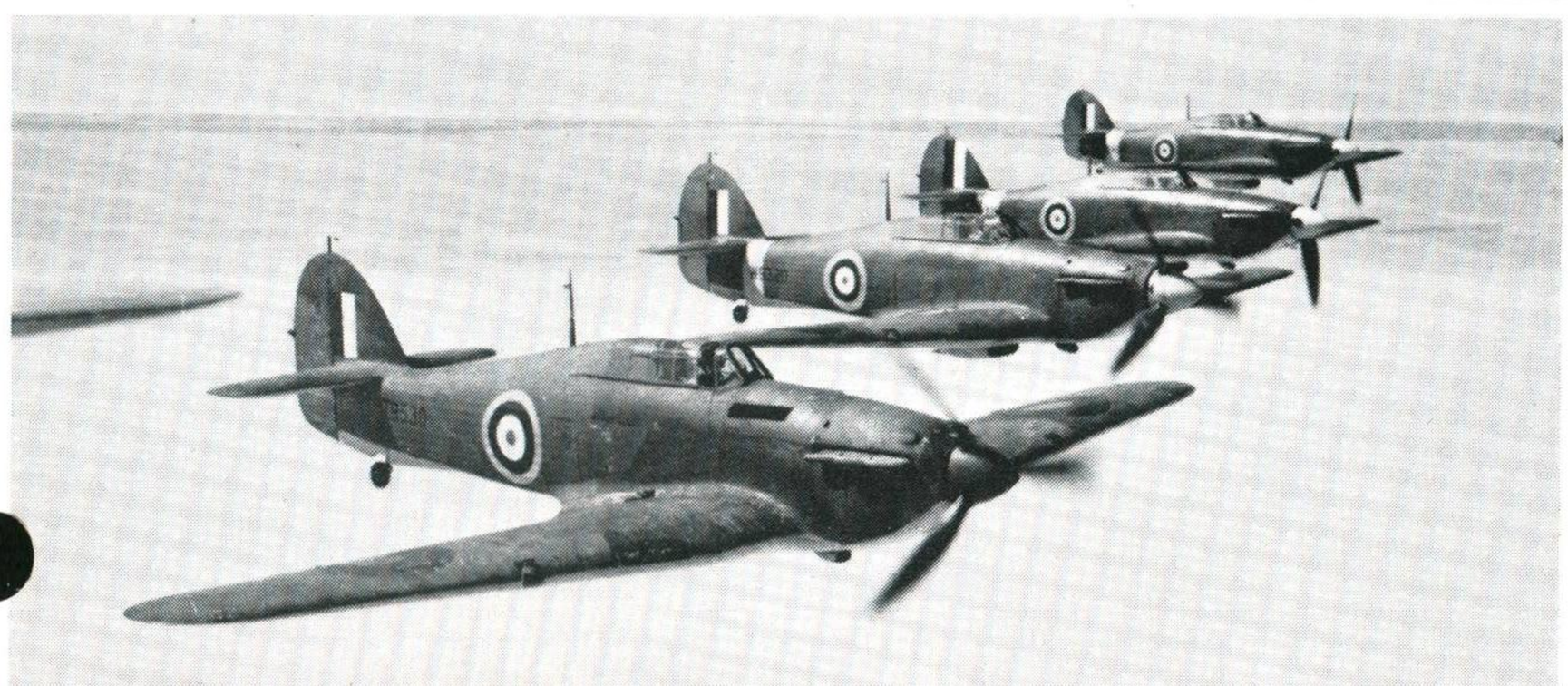
It was thus with the Hurricane I, rather than the Spitfire, that Britain fought with her back to the wall during the first two years of the War. True, other fighters—some older, some newer—swelled the strength returns here and there; but Hurricanes went to France and Belgium, Norway and Finland, North, East and South Africa and Greece, Iraq and Syria, Singapore and Burma, and in all those theatres the moral was the same . . . . too little, too late !

© *Francis K. Mason, 1966.*

REPRESENTATIVE AIRCRAFT IN R.A.F. SERVICE

No. 1 (Fighter) Squadron, Vassincourt, France, 10/39: *L1685* (destroyed enemy aircraft, 2/2/40), *N2326*, *P2546*; Northolt, 7/40: *P3044* (missing, 3/9/40), *P3047* (shot down, 15/8/40), *P3172* (shot down, 11/8/40), *P3276* (destroyed Bf 109E, Tonbridge, 1/9/40), *P3395* (ditto), *P3406* (ditto), *P3471* (shot down, 19/7/40), *P3782* (missing, 3/9/40), *V7256* (destroyed Bf 109E, Tonbridge, 1/9/40); Kenley, 1941: *V6932*, *W9151*.
No. 3 (Fighter) Squadron, Biggin Hill, 1938-39: *L1928* (crashed, 29/8/39, pilot safe), *L1973*; Croydon, 1940: *P3143* ("Z").
No. 6 (Figher) Squadron, Helwan, Egypt, 1942: *P3067*, *P3967*, *Z4350*.
No. 17 (Fighter) Squadron, Martlesham Heath, 8/40: *P3467*, *P3482*.
No. 29 (Fighter) Squadron, 1940: *L2080–L2084*, *L2086–L2091*, *L2092* (damaged by enemy action).



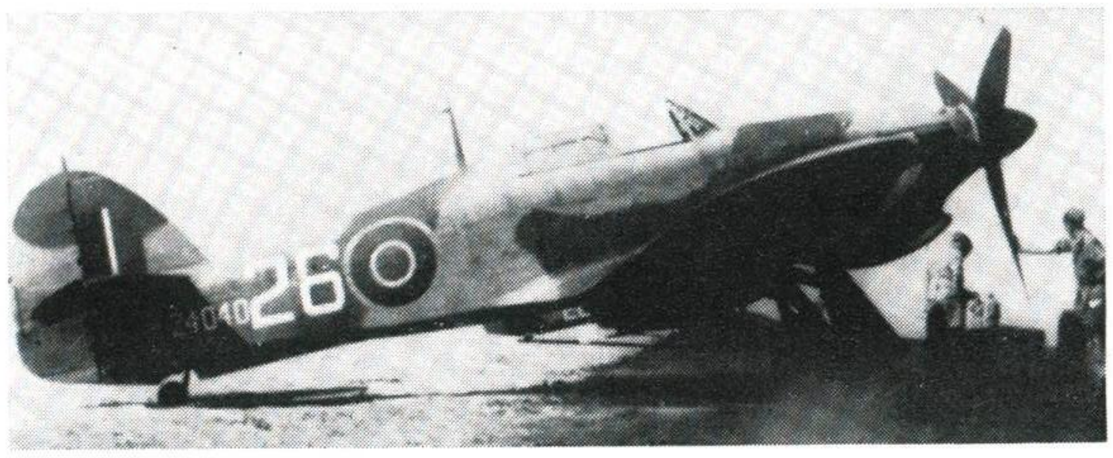


Left: *Later Hurricane I's reaching the Middle East in May 1941 were equipped with 44-gallon long-range tanks and carburettor filters.*
(Photo: Hawker Siddeley Aviation Ltd.)

Below: *Early Hurricanes sent to the Middle East during the second half of 1940 were often despatched without tropical sand filters over carburettor intakes with the result that engine lives were extremely short. This section of Hurricanes is interesting in that it shows one of the rarely pictured T-series Canadian Hurricanes; the serial number, chalked on rudder and wing suggests that this aircraft was assembled at Takoradi on arrival direct from Canada; there is also reason to believe that as all these aircraft* (T9530, W9320, W9349 *and* Z4095) *were written off simultaneously at Abu Sueir the picture may have been taken during the tortuous flight across Africa. Chalked on each muzzle port patch are the words* GUNS COCKED.
(Photo: The Imperial War Museum Neg. No. CM849)

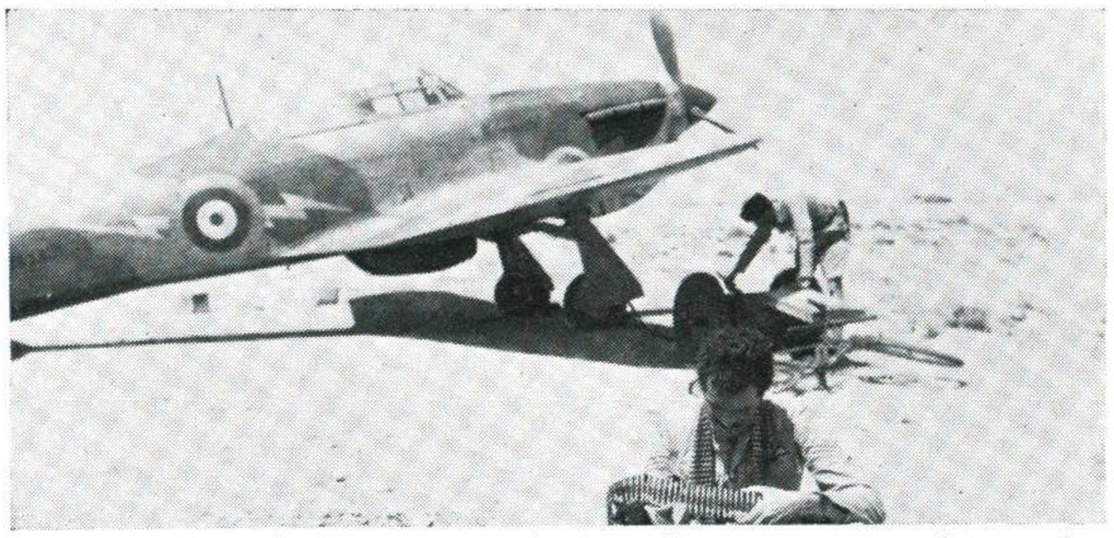


After the day Battle came the Blitz, and Hurricane I's were issued to night fighter squadrons (rather than Spitfires which were less popular at night, especially when landing)
(Photo: Imperial War Museum Neg. No. CH2250)



Hurricane I's, relegated to training duties with No. 71 O.T.U. in North Africa in 1943-44, carried large white numerals and serials on the rear fuselage. (Photo: F. K. Mason collection)

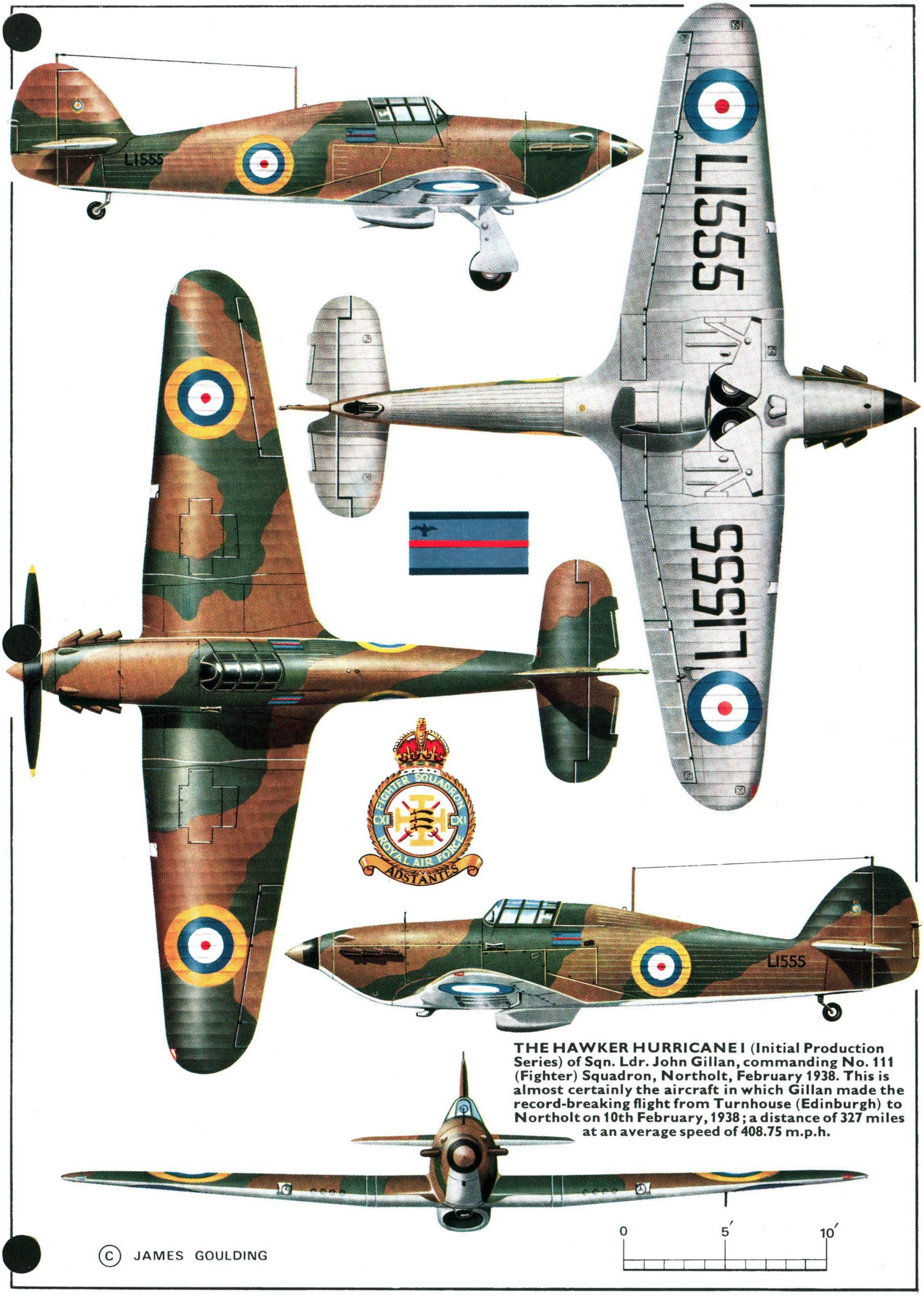
No. 32 (Fighter) Squadron, Biggin Hill, 1940: *L1596*, *L2063*, *N2406* (P/O Blackford destroyed Bf 109E, 22/5/40), *N2459* (P/O Grice destroyed Bf 109E, 22/5/40, and another 20/7/40), *N2527* (P/O Daw destroyed Bf 109E, 22/5/40), *N2532* (S/L Worrall damaged three Bf 109Es, 20/7/40), *N2582* (P/O Humpherson destroyed Bf 109E, 22/5/40), *N2670* (shot down, 20/7/40), *P2755* (F/L Jeff destroyed Bf 109E, 22/5/40), *P3112* (F/O Humpherson destroyed Ju 87, 20/7/40), *R4081*; Acklington, 10/40: *V6724*, *V7425*.
No. 43 (Fighter) Squadron, Wick, 1940: *L2066*, *N2618*, *P3140*, *V7257*; 1941: *Z4513* (''*U*'').
No. 46 (Fighter) Squadron, Bardufoss, Norway, 1940: *L1793*, *L1794*, *L1798*, *L1804*, *L1806*, *L1812*, *L1814*, *L1815*, *L1816*, *L1853* (P/O McGregor shot down Ju 88, Tjelbotn, Norway, 28/5/40), *L1892*, *L1961*, *L1980*, *L1988*, *N2543*, *N2632*, *N2633*, *P2652* (all these aircraft lost either in Norway or in H.M.S. *Glorious* on the return voyage); Digby, 1940: *P3024*: *V7443* (missing, 10/2/41).
No. 56 (Fighter) Squadron, 1938-40: *L1597*, *L1606* (later *G-AFKX*), *L1998*, *N2386*, *P2857* (''*H*''), *P3866*, *V7176* (''*P*'').
No. 71 (Fighter) Squadron, 1941: *V6814* (''*C*''), *V6919* (''T'').
No. 73 (Fighter) Squadron, Caen, France, 9/39: *L1633*; Le Mans, France, 6/40: *L2076*, *P2571* (''*X*''); Debden and Hornchurch, 10/40: *P2815*, *V6857* (shot down, 11/10/40), *V7504*; Bu Amoud and Mersa Matruh, 1941: *V7351* (destroyed Bf 109E over Tobruk, 22/4/41), *T9536*, *Z4190* (missing, 26/6/41), *AS987*, *AS990*.
No. 74 (Fighter) Squadron, temporary charge, 1939: *L1581*.
No. 79 (Fighter) Squadron, Biggin Hill, 1939, and Merville, France, 1940: *L1709*, *N2671*. *P3122*.
No. 80 (Fighter) Squadron: *P2864*.
No. 85 (Fighter) Squadron, Air Component, France, 1939: *L1644*, *L1834*, *P3119* (''*X*''), *P3124* (''*L*''); 1940: *P3407*, *V6611* (''*U*''), *V6730* (''*O*'')
No. 87 (Fighter) Squadron, 1939-40: *L1777*, *L1832*, *P2798* (''A''), *P3755* (''*Z*''), *V6960* (''*E*''), *V7646* (''*R*'').
No. 95 (Maritime Reconnaissance) Squadron (Fighter Flight), Freetown, West Africa, 1942: *Z4257* (collided with DC-2, 7/9/42).
No. 98 (Bomber) Squadron, Kaldadarnes, Iceland, 7/41: *Z4607* (crashed, 23/9/41), *Z4702*.
No. 111 (Fighter) Squadron, Northolt, 1938: *L1555* (flown by Sqdn. Ldr. Gillan from Turnhouse to Northolt, 2/38, at record speed); *L1607* (comparative trials with Defiant, 10/39); *L1822* (F/O Ferris shot down four Bf 110s, 18/5/40), *L2051* (shot down by Bf 109E 18/5/40), *L1830* (crash, 24/4/40), *L1973* (F/O Dutton shot down He 111, 8/3/40), *N2340* (S/L Broadhurst shot down He 111, 29/11/39), *P2885* (shot down, 5/6/40), *P2886* (shot down, 13/3/41), *R4183* (shot down, 15/8/40), *P3944* (missing, 15/8/40), *V6538*, *V7400*, W9112.
No. 116 (Fighter) Squadron: *P3213*.
No. 145 (Fighter) Squadron, 1940: *P3143* (''*Z*''), *N2583*, *N2713*.
No. 151 (Fighter) Squadron, 1940: *L1724*, *L1850*, *P3065* (''*G*'').
No. 208 (Army Co-operation) Squadron, 1941-42: *N2626*; *P2638* (Trop. P.R.Mk.I, shot down by 3 Bf 109Fs, 24/7/42); *P3826* (Tac R.Mk.I, Gambut. 1/41); *T9536* (abandoned near Sollum, 18/10/41; recaptured, 5/42); *V7772* (Tmimi, 1/42); *W9328* (Trop. Tac R. Mk.I, Antelat, 1/42); *Z4231* (3-camera P.R.Mk.I); *Z4775* (long range aircraft, Gaza and Ramleh, Palestine, 6/41).
No. 213 (Fighter) Squadron, Wittering, 1940: *L1770*, *L2062*; Famagusta, Cyprus, 6/41: *W9270* (''*A*''), *W9290* (''*B*''), *W9349* (''*E*''), *Z4089* (''*U*''), *Z4205* (crashed, 29/12/41).
No. 239 (Fighter) Squadron: *P2949*, *P2956*.
No. 245 (Fighter) Squadron, 1940: *P2884*, *P3165*, *P3152*.
No. 249 (Fighter) Squadron, 1940; the following aircraft in action over Brooklands, 4/9/40: *N2440*, *P2863*, *R4229*, *V6559*, *V6610* (crashed, 7/9/40), *V6614*, *V6625*, *V6635*, *V7313*; Boscombe Down, 8/40: *P3576* (shot down by Bf 110 over Southampton, 16/8/40. Bf 110 also destroyed; Flt.Lt. Nicholson awarded V.C.), *P3616* (shot down in above combat; P/O King killed).
No. 253 (Fighter) Squadron, 1940; the following aircraft in action over Brooklands, 4/9/40: *N2588*, *P3032*, *R2686*, *V6637*.
No. 257 (Fighter) Squadron, North Weald, 11/40: *P2835* (P/O Mortim[illegible] destroyed B.R.20, 11/11/40), *R4094* (missing, 8/8/40), *R4188* (Sgt. Luc[illegible] destroyed C.R.42, 11/11/40), *P3578* (shot down, 3/9/40), *P3708* (P/O Henderson shot down (but safe) after destroying two Bf 110s, Clacton, 31/8/40), *V7296* (P/O Pniak destroyed B.R.20, 11/11/40), *V7298* (shot down, 12/10/40), *V7607* (P/O Davey destroyed B.R.20, 11/11/40), *V6680* (P/O Kay destroyed B.R.20, 11/11/40), *V6864* (P/O North destroyed B.R.20, 11/11/40), *V7186* (crashed, 1/1/41).
No. 267 Squadron, Heliopolis, 4/42: *Z4700*.
No. 274 (Fighter) Squadron, Middle East, 1940: *N2498*, *P2651*, *P3980*, *W9269*, *Z4097*; 1941: *V7820* (destroyed at Mersa Matruh, 12/5/41).
No. 303 Polish (Kościuszko) Squadron, 1940: *P3069* (''C'').
No. 310 Czech Squadron, 1941: *V6737* (''*R*'').
No. 335 Hellenic Squadron, Middle East 1942: *W5155*, *Z4007* (Fuqa, 10/42), *Z4233* (Bardia, 2/42), *Z4604* (Aqir, Palestine; crashed, 15/11/41), *Z4652* (missing, 14/3/42).
No. 401 Squadron, R.C.A.F.: *P3080* (''C'').
No. 402 Squadron, R.C.A.F.: *P3021* (''*X*'').
No. 451 Squadron, R.A.A.F., 1941: *Z4231* (Trop, P.R.Mk.I).
No. 501 (County of Gloucester) Squadron, A.A.F., Tangmere, 1/40: *L1659*, *L2124*; Anglure, France, 1940: *N2329*, *P2714* (''*F*''), *P3397*, *V6799* (''*X*''), *V7230* (''*F*''); Battle of Britain: *P3083* (''*E*'').
No. 504 (County of Nottingham) Squadron, A.A.F., Debden and Martlesham Heath, 1939-40: *L1639*, *L1913* (Intercepted raiders over London, 15/9/40) *N2471*, *P2725* (Sgt. Holmes rammed He 111, 15/9/40), *P3388*, *R4178*, *V6695*.
No. 527 (Calibration) Squadron: *P2992* (''*P*'').
No. 601 (County of London) Squadron, A.A.F., 1940: *P2673* (''*N*''), *V6808* (''*D*''), *V7238*.
No. 605 (County of Warwick) Squadron, A.A.F., Drem, 1940: *L2117*, *N2352*, *Z4969*.
No. 607 (County of Durham) Squadron, A.A.F., 1940: P2874 (''*F*'').
No. 610 (County of Chester) Squadron, A.A.F., 1940: *L2115*, *L2117–L2123*.
No. 616 (South Yorkshire) Squadron, A.A.F.: *L2098*, *L2101*, *L2103*.
No. 680 (Photo Reconnaissance) Squadron, Middle East, 1943–44: *P2915*, *V6747*, *W9242*, *Z4604*.
No. 2 Photo Reconnaissance Unit, Middle East 1941: *W9116* (3-camera P.R. Mk.I; missing over Benghazi, 3/10/41), *V7423*, *Z4182*.
No. 1413 Meteorological Flight, Lydda, Palestine, 1944: *W9155* (Met. (Trop.) Mk. I).
No. 1510 Flight: *N2460*.
Operation Training Units: No. 55, *N2520*; No. 56: *L2006*; No. 59: *N2555*; No. 71: *Z4855*.
Other R.A.F. Units: *L1683* (Northolt Station Flight); *V7338* (Silloth Stn. Flt.); *L1742* (No. 5 (P) A.F.U.); *N2365* (No. 9 (P) A.F.U.); *V6796* (No. 15 (P) A.F.U.); *P3715* (No. 17 (P) A.F.U.); *L2098* (No. 55 O.C.U., Aston Down, 11/40).
Trials Aircraft: *L1547* (performance and handling, H.A.L.); *L1582* (experimental colour schemes, H.A.L.); *L1669* (first tropical aircraft, A. & A.E.E., and Middle East, 1939-40); *L1696* (slotted wings); *L1750* (trials with two 20 mm. guns under wings); *L1856* (Merlin XII); *P3269* (prot[illegible] type Hurricane II; Merlin XX; tests with rear view hood); *P38[illegible]* (trial 12-gun wing); *W9314* (trial 4-cannon wing); *V7504* (catapult trials, Speke).



No. 208 (Army Co-operation) Squadron was something of a prodigy amongst desert Hurricane units, for this squadron was the first to operate photo reconnaissance and fighter reconnaissance sorties, was one of very few squadrons to display unit insignia on the fuselage (No. 73 Squadron was another) and painted "sand and spaghetti" schemes on the nose and wing leading edges to confuse Italian gunners during low level attacks. This Hurricane P.R.Mk. I (Trop), P2638—a very early aircraft—continued flying until returning from a lone unarmed sortie over the desert on 24th July 1942, was attacked and shot down by three Bf 109F's near Burg el Arab.
(Photo: Imperial War Museum, Neg. No. CM868)

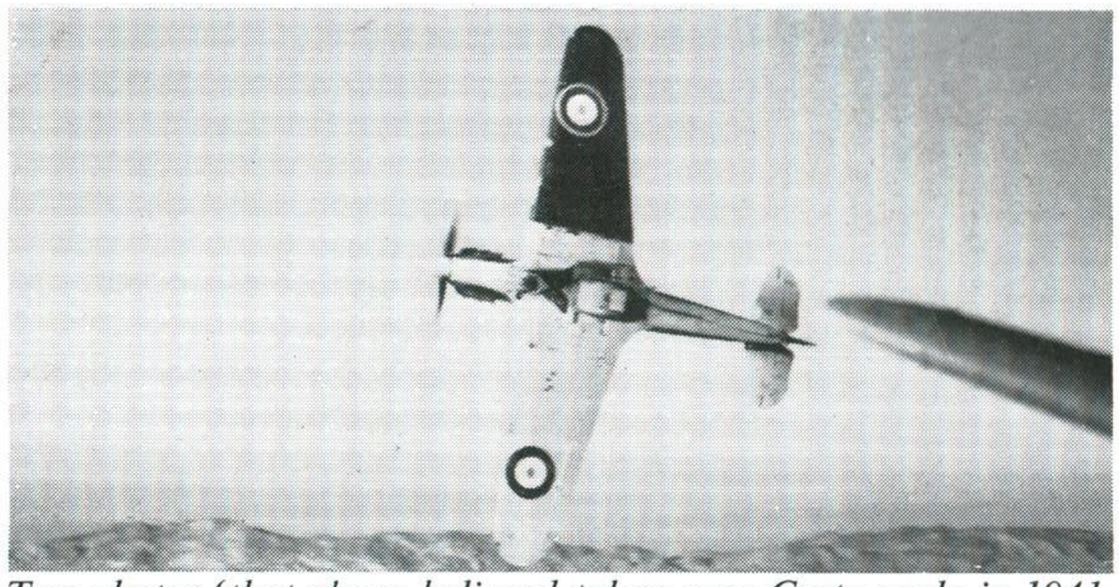
A Hurricane I of No. 1 Squadron, S.A.A.F. operating on the Sudan/Eritrea border in 1941; this aircraft, almost certainly BG997, *displays certain major components cannibalised from much earlier production batches.*
(Photo: Imperial War Museum, Neg. No. CM710)





THE HAWKER HURRICANE I (Initial Production Series) of Sqn. Ldr. John Gillan, commanding No. 111 (Fighter) Squadron, Northolt, February 1938. This is almost certainly the aircraft in which Gillan made the record-breaking flight from Turnhouse (Edinburgh) to Northolt on 10th February, 1938; a distance of 327 miles at an average speed of 408.75 m.p.h.

© JAMES GOULDING



Two photos (that above believed taken over Crete early in 1941, that below over Cyprus) showing variations in the underside, black-and-white demarcation. Other aircraft were geometrically divided down the centreline.

(Photos: Imperial War Museum, Neg. Nos. CM131 (left) and CM1405)



Conversions to Sea Hurricane IA: *N2599, P2970, P3090, V6700, V6801, V6802, V7049, V9313.*

Conversions to Mark IIs (later serials in brackets): *P2682 (DG641), P2970 (DR372), R4081 (DR358), R4218 (BV155*; serviced with 73 Sqdn., El Adem, 2/42), *V6535 (DG630*, served with 208 Sqdn., Burg el Arab, 11/21), *V6538 (DR371), V6785 (BV157), W9191 (DR345).*

Aircraft sold or supplied abroad. To South Africa: *L1708, L1710, L1711*; To Yugoslavia, 1939 (Yugoslav nos. in brackets): *L1751 (1-205), L1752 (2-206), L1837 (3-291), L1838 (4-292), L1839 (5-293), L1840 (6-294), L1858 (7-312), L1859 (8-313), L1860 (9-314), L1861 (10-315), L1862 (11-316), L1863 (12-317)*; To Rumania, 1939: *L2077, L2078, L2085, L2093–L2097, L2104, L2112–L2114.* To Canada (Canadian nos. in brackets): *L1759 (310) L1760 (311), L1761 (312), L1762 (313), L1763 (314), L1878 (315), L1879 (316), L1880 (317), L1881 (318), L1882 (319), L1883 (320), L1884 (321*; later Hillson F.H.40 Slip-wing Hurricane), *L1885–L1890 (322–326), L2021–L2023 (327–329)*; To Belgium (Belgian nos. in brackets): *L1918–L1920 (1–3), L1993–L1997 (4–8) L2040–L2044 (9–13), L2105–L2111 (14–20)*; To Poland, 1939: *L2048 (N2322–N2324, N2327, N2349, N2392–N2395* shipped but diverted to Middle East); Persia, 1939: *L2079.* Yugoslavia, 1940: *N2718–N2729.* Eire (Irish nos. in brackets): *P2968* (107), *V7173 (109), V7540 (105), Z4037 (106), P3416 (108).*

PRODUCTION AND SERVICE ALLOCATION

The Hawker F.35/34 Hurricane Prototype: One prototype, *K5083*, built in 1935 under Contract No. 357483/34 to Spec. F.36/34. Merlin C engine. First flight by Flt. Lt. Bulman on 6th November 1935.

The Hawker Hurricane I. Hawker-built.

(i) First production batch, 600 aircraft, *L1547–L2146.* Merlin II engine and Watts 2-blade propellers. Spec. 15/36. Contract 527112/36.

(ii) Second production batch, 300 aircraft. *N2318–N2367, N2380–N2409, N2422–N2441, N2453–N2502, N2520–N2559, N2582–N2632, N2645–N2729.* Merlin III and Rotol or D.H. 3-blade propellers. Spec. 15/36 (Part 2). Contract 751458/38.

(iii) Third production batch, 500 aircraft. *P3265–P3279, P3300–P3324, P3345–P3364, P3380–P3429, P3448–P3492, P3515–P3554, P3574–P3623, P3640–P3684, P3700–P3739, P3755–P3789, P3802–P3836, P3845–P3903, P3920–P3944 P3960–P3983.* Spec. 15/36 (Part 3). Contract 962371/38.

(iv) Replacement batches, 44 aircraft. *P8809–P8818, R2680–R2689* (replacing Belgian deliveries from Contract 527112/36); *T9519–T9538* (production transferred to Canada); *W6667–W6670* (replacing Yugoslav and Rumanian deliveries from Contract 527112/36).

(v) Fourth production batch, 500 aircraft. *V7200–V7209, V7221–V7260, V7276–V7318, V7337–V7386, V7400–V7446, V7461–V7510, V7533–V7572, V7588–V7627, V7644–V7690, V7705–V7737, V7741–V7780, V7795–V7838, V7851–V7862, AS987–AS990.* Contract 62305/39. (195 further aircraft cancelled).

The Hawker Hurricane I. Gloster-built.

(i) First production batch, 500 aircraft. *P2535–P2584, P2614–P2653, P2672–P2701, P2713–P2732, P2751–P2770, P2792–P2836, P2854–P2888, P2900–P2924, P2946–P2995, P3020–P3069, P3080–P3124, P3140–P3179, P3200–P3234, P3250–P3264.* Merlin II and Watts propellers up to *P2681:* Merlin III and Rotol propellers after. Spec. 15/36 (Part 3). Contract 19773/39/C.23a.

(ii) Second production batch, 100 aircraft. *R4074–R4123, R4171–R4200, R4213–R4232.* Merlin III. Contract 19773/39/C.23a.

(iii) Third production batch, 500 aircraft. *V6553–V6580, V6600–V6649, V6665–V6704, V6722–V6761, V6776–V6825, V6840–V6889, V6913–V6962, V6979–V7028, V7042–V7081, V7099–V7138, V7156–V7195.* Contract 857/30/40/C.23a (Part 1).

(iv) Fourth production batch, 200 aircraft. *W9110–W9159, W9170–W9209, W9215–W9244, W9260–W9279, W9290–W9329, W9340–W9359.* (Part 2).

(v) Fifth production batch, 550 aircraft. *Z4022–Z4071, Z4085–Z4119, Z4161–Z4205, Z4223–Z4272, Z4308–Z4327, Z4347–Z4391, Z4415–Z4434, Z4482–Z4516, Z4532–Z4581, Z4603–Z4652, Z4686–Z4720, Z4760–Z4809, Z4832–Z4876, Z4920–Z4939.* (Part 3).

The Hawker Hurricane I. Canadian Car and Foundry-built.

(i) First production batch, 40 aircraft. *P5170–P5209.* Later redesignated Canadian Mark X.

(ii) Second production batch, 100 aircraft. *Z6983–Z7017, Z7049–Z7093, Z7143–Z7162.*

COMBAT PERFORMANCE—TURNING RADIUS

Much has been written of the relative manoeuvrability of the four principal Battle of Britain fighters. Published here for the first time are the comparative turning radii attainable, resolved to a combat altitude of 10,000 feet—the most common area of combat chosen by Hurricane pilots in 1940 . . . . if and when the choice was theirs. True airspeed 300 m.p.h.

	$C_{L_{max.}}$	$\frac{1}{2}\rho v^2$	Wing loading at half-fuel weight	Available g	Turning Radius
Hurricane I	1.0	170	22 lb./sq. ft.	7·5	800 feet
Spitfire I	1·0	170	24 lb./sq. ft.	7·0	880 feet
Bf 109E	1·0	170	25 lb./sq. ft.	8·1	750 feet
Bf 110C	1·0	170	32 lb./sq. ft.	5·2	1,210 feet

SPECIFICATION

	Prototype K5083	Mark I (Early)	Mark I (Late)	Sea Hurricane IA
Powerplant	Rolls-Royce Merlin C, 1,025 b.h.p. at 3,000 r.p.m. at 11,000 feet, driving 11 ft. 6 in. dia. Watts 2-blade wood propeller.	Rolls-Royce Merlin II, 1,030 b.h.p. at 3,000 r.p.m. at 16,250 feet, driving 11 ft. 3 in. dia. Watts 2-blade wood propeller.	Rolls-Royce Merlin III, 1,029 b.h.p. at 3,000 r.p.m. at 16,250 feet, driving 10 ft. 9 in. dia. Rotol or 10 ft. 8 in. dia. D.H. 3-blade constant speed propellers.	
Armament	Eight forward-firing Browning 0·303-inch machine guns in wings firing outboard of propeller arc, harmonised to converge at 650 yards; this was reduced by 1939 A.M.O. to 400 yards in September 1939, and further reduced to 200 yards range in May 1940; most aircraft loaded with approximately 14 seconds' ammunition supply.			
Dimensions:				
Wing span	40 ft. 0 in.	40 ft. 0 in.	40 ft. 0 in.	40 ft. 0 in.
Length	31 ft. 6 in.	31 ft. 4 in.	31 ft. 4 in.	31 ft. 3½ in.
Height	15 ft. 6 in.	13 ft. 4½ in.	13 ft. 1½ in.	13 ft. 1 in.
Wing Area	—	258·0 sq. ft.	258·0 sq. ft.	258·0 sq. ft.
Loadings:				
Wing loading (at A.U.W.)	22 lb./sq. ft.	22·1 lb./sq. ft.	24·1 lb./sq. ft.	24·1 lb./sq. ft.
Power loading (at A.U.W.)	5·5 lb./b.h.p.	6.0 lb./b.h.p.	6·0 lb./b.h.p.	6·0 lb./b.h.p.
Weights:				
Tare...	4,129 lb.	4,743 lb.	4,982 lb.	—
Loaded	5,672 lb.	6,218 lb.	6,447 lb.	6,589 lb.
Performance:				
Max. Speed at sea level ...	270 m.p.h.	260 m.p.h.	280 m.p.h.	265 m.p.h.
Max. Speed at 10,000 ft. ...	300 m.p.h.	308 m.p.h.	312 m.p.h.	309 m.p.h.
Max. Speed at 20,000 ft. ...	312 m.p.h.	322 m.p.h.	328 m.p.h.	318 m.p.h.
Time to:—				
5,000 ft.	2 min. 20 sec.	4 min. 15 sec.	1 min. 50 sec.	2 min. 30 sec.
10,000 ft.	4 min. 45 sec.	2min. 55 sec.	3 min. 40 sec.	5 min. 20 sec.
20,000 ft.	10 min. 10 sec.	10 min. 35 sec.	8 min. 30 sec.	11 min. 13 sec.
30,000 ft.	22 min. 30 sec.	22 min. 45 sec.	17 min. 40 sec.	20 min. 45 sec.
Max. Range (no reserve)	525 miles	525 miles	505 miles	490 miles
Service Ceiling	33,600 feet	33,400 feet	34,200 feet	32,000 feet
Stalling Speed (no flaps) ...	59 m.p.h.	60 m.p.h.	62 m.p.h.	61 m.p.h.

PRINTED IN ENGLAND © Profile Publications Ltd., P.O. Box 26, 1a North Street, Leatherhead, Surrey, England by George Falkner & Sons Ltd., for McCorquodale City Printing Division, London. U.S. 2nd Class Mailing Rates applied for.

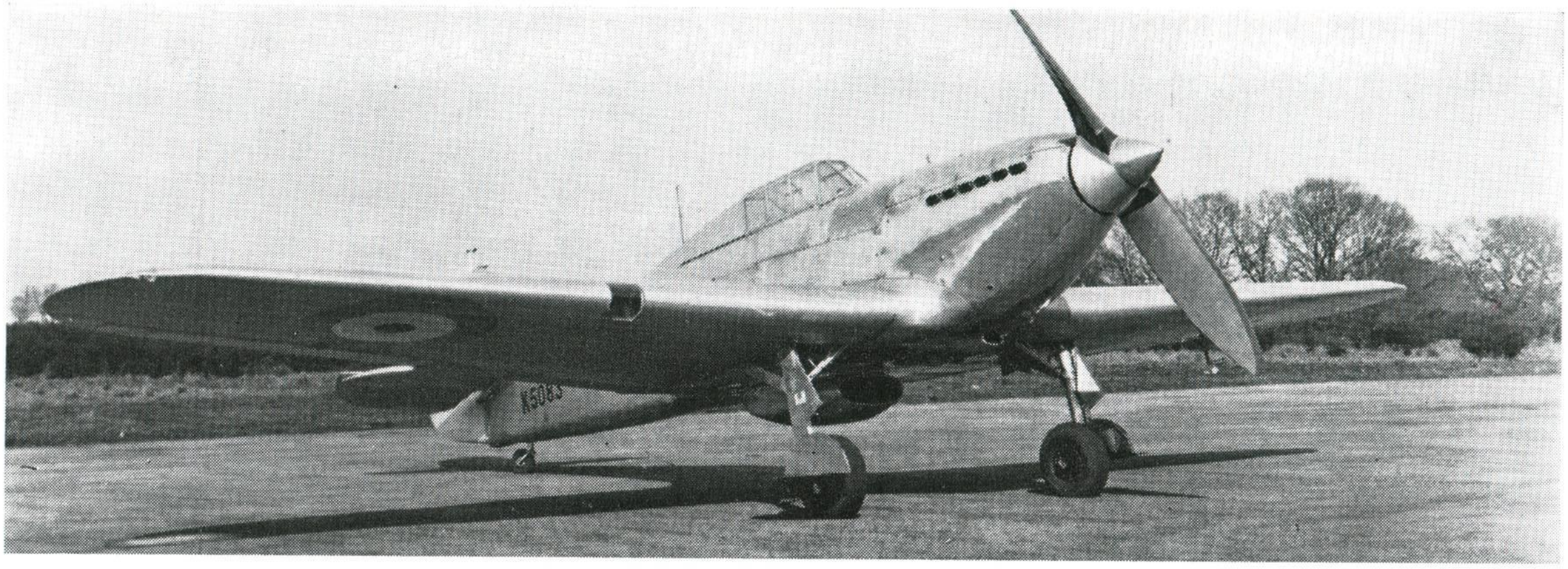
Camouflage & Markings

RAF Northern Europe 1936-45

Hawker Hurricane



Number 3
6s. (30n.p.)



The Hawker F36/34 'High Speed Monoplane', photographed at a later stage in its test programme. The 8in. high serial, K5083, is in black. 50in. diameter Type A under wing roundels. (Official)

The Hawker Hurricane Fighters

WHEN Sidney Camm's F.36/34 Specification 'High Speed Monoplane' made its maiden flight from Brooklands on 6th November, 1935, the end of the 'biplane Scout' era was in sight. Successive improvements in the design of biplane fighters had been made, and the Gloster Gladiator, then still some eighteen months from squadron service, represented the ultimate development of the small, dog-fighting biplane which was born in the 1914–18 war.

Camm's previous design, the Fury, although still a biplane, was developed to a different concept—that of the fast-climbing interceptor. The new Hawker monoplane represented the new approach to the future fighter—the fast-climbing interceptor with a heavy armament load.

Closely allied to the Fury in construction, the new monoplane fighter, later to receive the name 'Hurricane', was also finished in the familiar manner of the biplanes of the years between the wars.

Bearing the serial number K5083, the F.36/34 prototype was resplendent with highly-polished metal plated areas and Aluminium (silver)-sprayed fabric. At the time of its first flight and during initial flight trials, the fighter carried Type A fuselage roundels of the standard pre-war size of five ring widths of 5in. each, the overall diameter being 25 inches. The upper wing roundels were 50in. diameter Type A, as were those under the wings. Black 8in. high serial numbers were carried on the rear fuselage.

During one of the accasions when K5083 was back in the workshops for modifications the opportunity was taken to enlarge the fuselage roundel to 35in., as the existing roundel was rather inconspicuous at longer distances. When the new prototype made its first public appearance at the 1936 Hendon Pageant, the numeral 'I' approximately 42in. high was painted in black on the fuselage forward of the roundel.

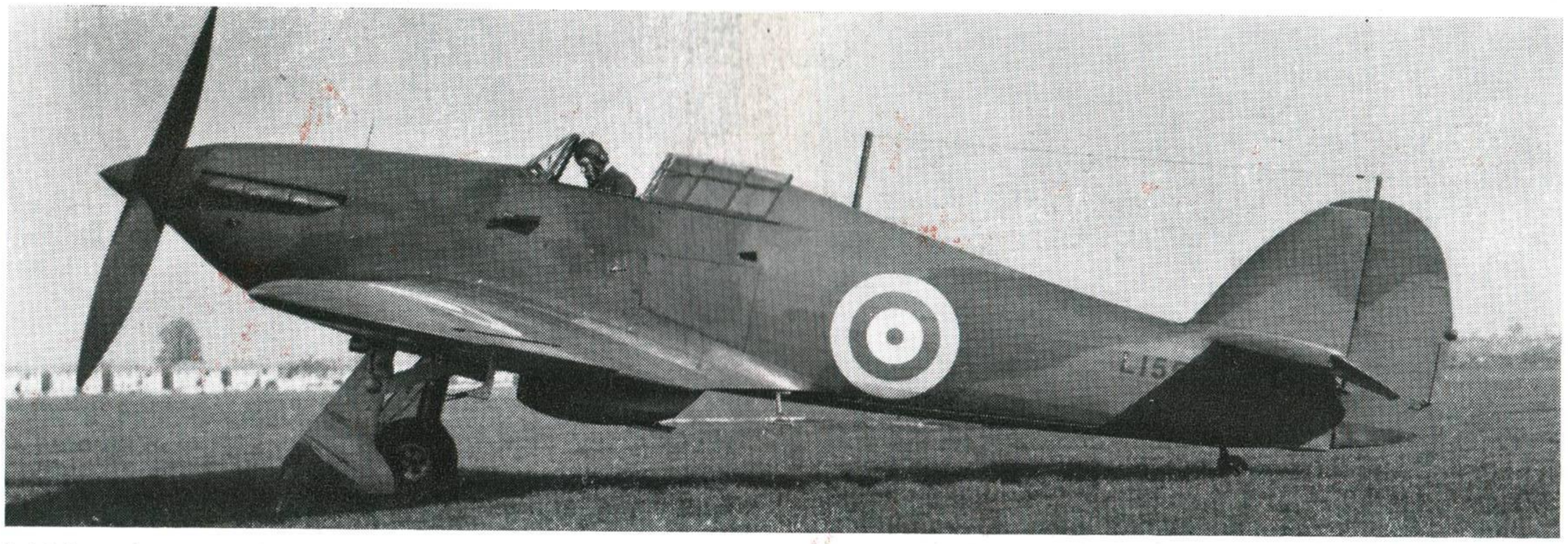
About the time when the Hurricane prototype was undergoing its early flight development programme, the Air Staff was engaged in much discussion about the markings to be adopted with the introduction of camouflage finish on the new types ordered under the Expansion Scheme. They were also concerned with the formulating of policy to be adopted with regard to the marking of the Squadron number and the aircraft individual identification letter in both peace and war. The adequate identification of a particular Flight was also one of the necessary requirements. Several suggestions were made regarding the markings in peace time, such as the marking of the Squadron number and aircraft letter in the Flight colour (which was often adopted), or the adoption of a detachable panel on a particular aircraft type being painted in the Flight colour. The latter scheme was not used.

But in 1936 international affairs began to take on a more serious aspect, and the subject of the markings of the Royal Air Force aircraft in war occupied much discussion time.

Although none of the new types ordered for the R.A.F. re-equipment under the Expansion Scheme had not yet flown in their production form, the Royal Aircraft Establishment at Farnborough was engaged in developing suitable camouflage colours for future production aircraft. One of these colours was a grey suitable for the painting of code letters in place of the Squadron number to hide the unit identity.

This new colour was known at the R.A.E. Farnborough as Sea Grey, Medium or Sea Grey (Medium), and was proved in tests on a camouflaged aircraft to be sufficiently visible for use with code and aircraft letters. It was adopted for future use and given the D.T.D. Stores Reference Number 33B/157. In later years the colour became known as Sea Grey Medium or, more in line with its related greys Dark Sea Grey and Extra Dark Sea Grey, as Medium Sea Grey. But this was 1936, and Europe was still enjoying an uneasy peace. Such war emergency plans were only being laid purely in the event of a deterioration of the international scene.

Hawker's monoplane fighter, named 'Hurricane', on 27th June, 1936, was adopted for service with the Royal Air Force. On 8th September, 1937, the first production Hurricane I, L1547, left the production



Initial production colour scheme. L1551 in A-scheme camouflage pattern. 35in. Type A.I fuselage roundels, and 6in. high serial letters and numbers. Under surfaces all-Aluminium, with 45in. Type A roundels and 30in. high serials. (Flight)

line at Kingston and was taken to Brooklands for final assembly and flight test.

Finished in the newly-adopted camouflage colours of Dark Green and Dark Earth on the upper surfaces, L1547 made its maiden flight on 12th October, 1937. As Europe was still at peace the full war-standard camouflage had not yet been applied, and the under surfaces were painted in the standard pre-war finish of Aluminium overall. 45in. Type A roundels were painted under each wing tip, 4ft. 9in. inboard of each tip centred between the aileron gap and the leading edge of the wing, and underwing serial letters and numerals were carried. As on many inter-war Aluminium-painted, single-engined aircraft, these were 30in. high.

In order to make the upper surface roundels sufficiently visible in peace time, a Yellow outer ring was used with the normal roundels, producing what was known as the Type A.1. The upper surface Type A.1. roundel consisted of seven 7in. ring widths to produce a roundel of 49in. diameter overall, which was centred 80in. inboard of the wing tip. The fuselage roundel consisted of seven 5in. ring widths, evolved by adding two additional ring widths to the standard 25in. diameter inter-war fighter roundel. The total diameter was 35 inches.

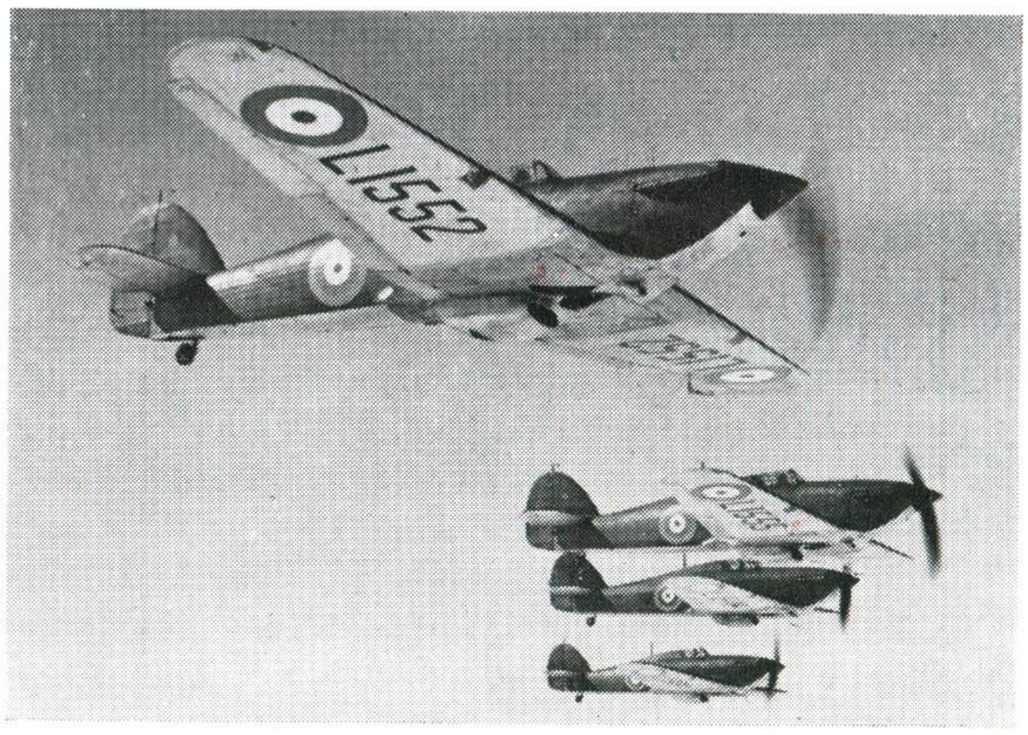
Because the rear fuselage of the Hurricane was fabric-covered, the roundel was centred on the intersection of side former number 5 and the 5th stringer up from the bottom centre line, thus providing a solid base for the instrument describing the circles.

For some unknown reason the serial letter and numerals on the initial production batches of Hurricane Is were only 6in. high. The standard size had for many years remained 8in. high, and this size of letter and numeral was subsequently re-instated on production Hurricanes in later years.

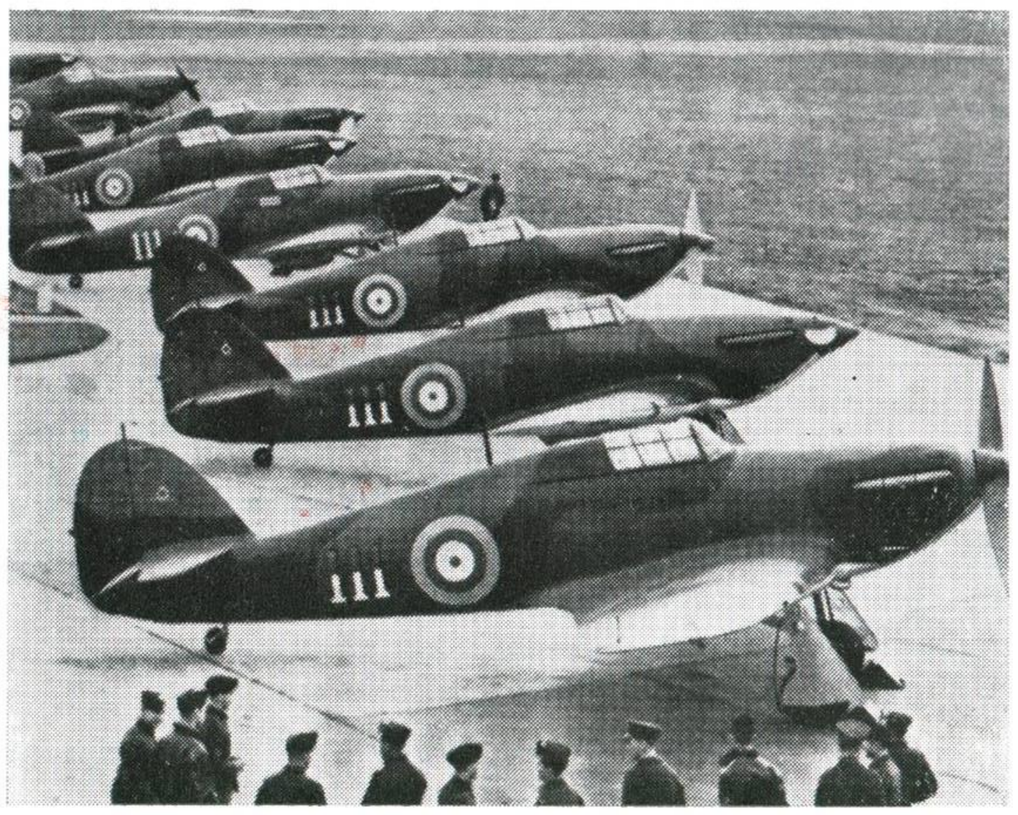
The camouflage patterns were produced in both A and B schemes, usually painted alternatively on aircraft leaving the production line. A scheme was often painted on the first aircraft of a particular batch, B scheme on the second, and so on. The first production Hurricane I, L1547, thus had an A scheme camouflage pattern.

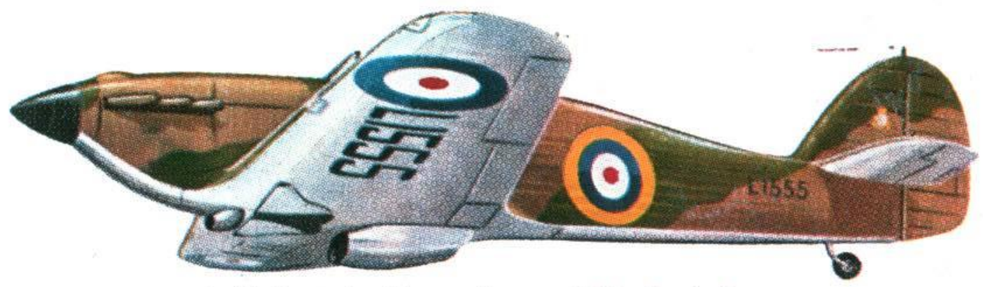
Hurricane Is entered service with No. 111(F) Squadron at Northolt in December, 1937, and initially did not carry any Squadron numbers, crests or aircraft letters. Shortly after the Squadron received its full complement of Hurricanes, the Squadron crest was added on both sides of the fin of each aircraft. By July, 1938, the Hurricanes carried the Squadron number aft of the roundel on each side of the fuselage. The Squadron Leader's aircraft, L1555, carried the numerals in white, whilst the other aircraft had the

Hurricane Mk. Is of No. 111(F) Squadron. L1552 in the foreground, is the sixth production aircraft and L1555, next to it, is Sqdn. Ldr. John Gillan's 'Turnhouse to Northolt' aircraft. Underwing Type A roundels are 45in. diameter, and serials are 30in. high. The Squadron crest is on the fin of the first three Hurricanes.

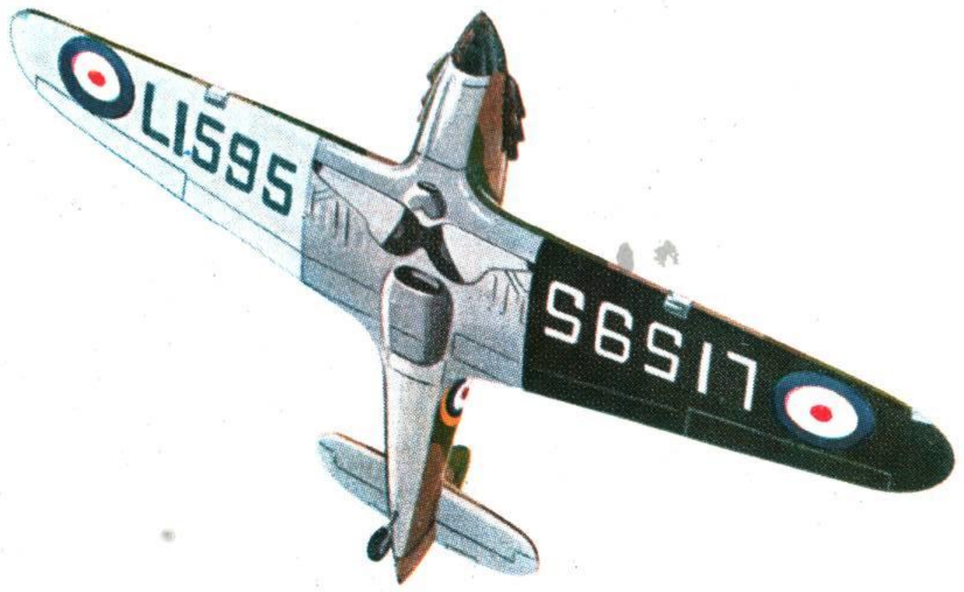


Hurricane Is of No. 111(F) Squadron at Northolt in July 1938. The first three aircraft are probably from A Flight, with the upper part of the Squadron number in Red. Sqdn. Ldr. J. Gillan's Hurricane is the fourth aircraft.





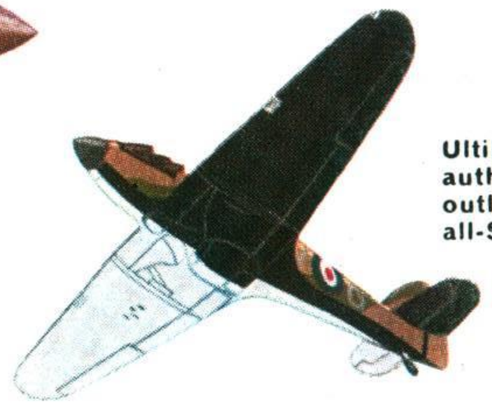
Initial production scheme, 1938. Dark Green and Dark Earth upper surfaces. All Aluminium under surfaces. 35in. dia. fuselage roundels. L1555, Sqdn. Ldr. J. Gillan's Hurricane.



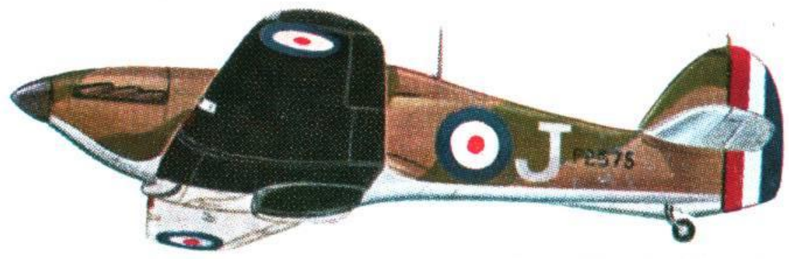
Initial 'black and white' scheme, early 1938. Deliveries to Nos. 3, 56 and 111(F) Squadron.



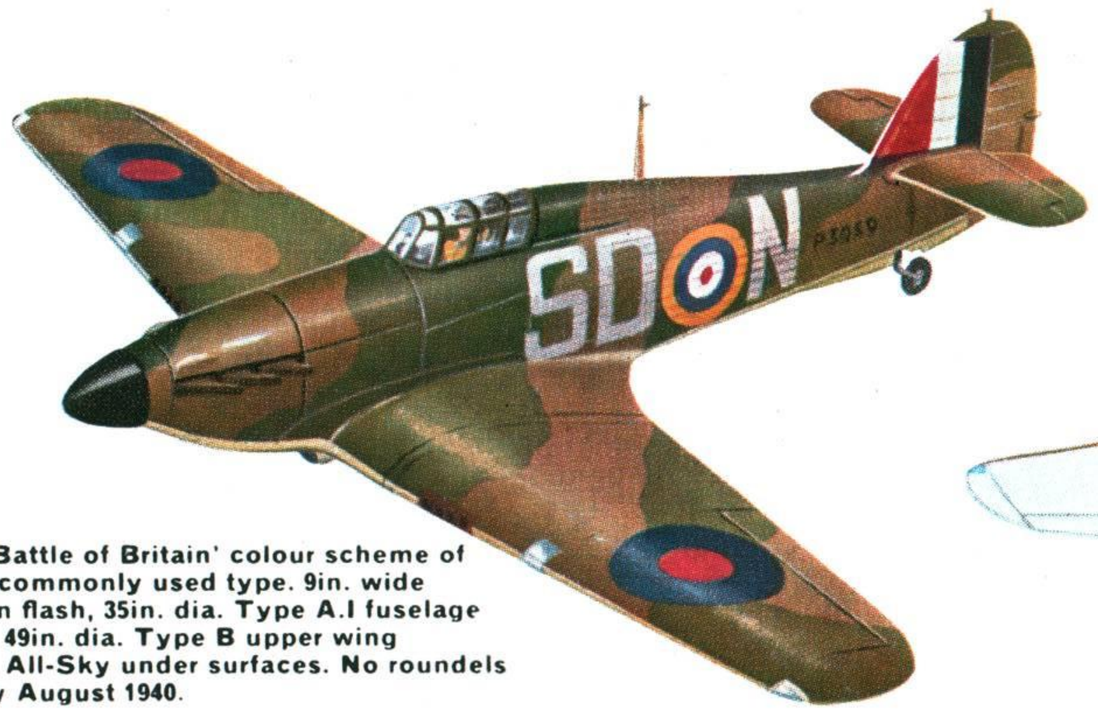
Typical Hurricane colour scheme during the Munich Crisis. Type B roundels converted from existing Type A.I roundels. Port wing Night, but rest of under surface variable (see text). 1938.



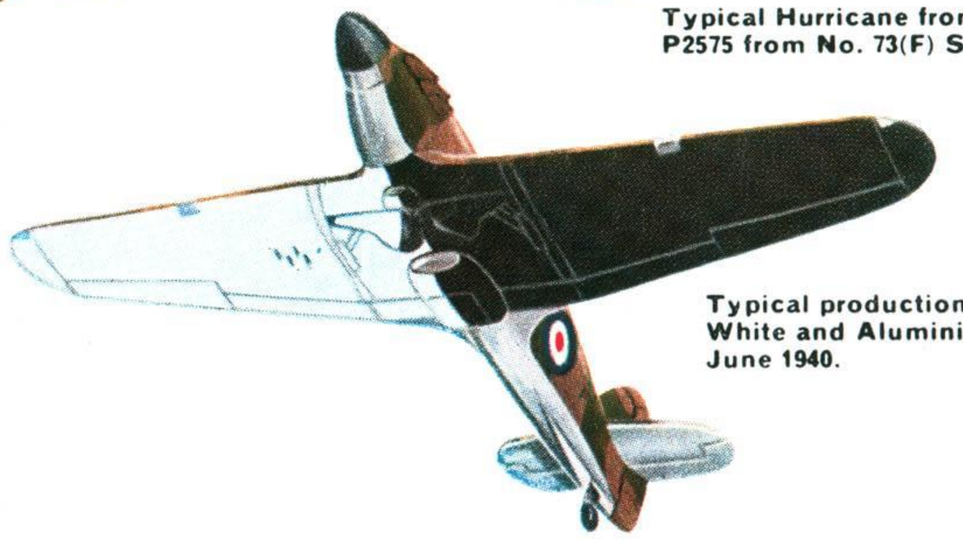
Ultimate 'black and white' scheme. Roundels authorised from 15th May, 1940, with Yellow outlining on 'black wing'. Replaced by all-Sky under surfaces from 6th June 1940.



Typical Hurricane from No. 67 Wing in France. P2575 from No. 73(F) Squadron. Early 1940.



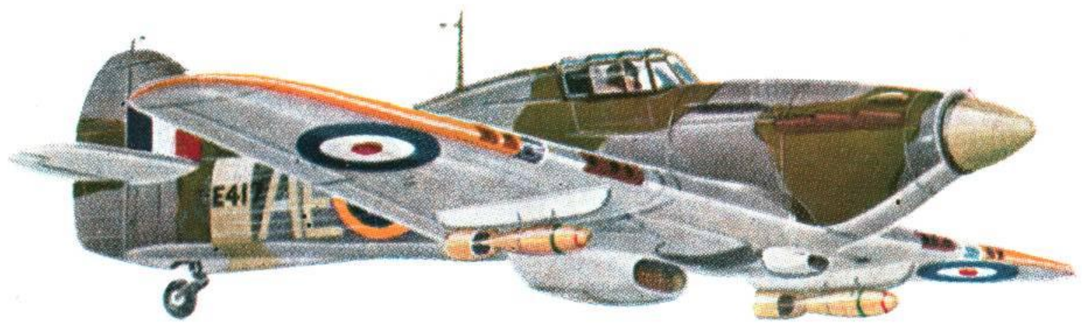
Typical 'Battle of Britain' colour scheme of the most commonly used type. 9in. wide bars on fin flash, 35in. dia. Type A.I fuselage roundels. 49in. dia. Type B upper wing roundels. All-Sky under surfaces. No roundels until early August 1940.



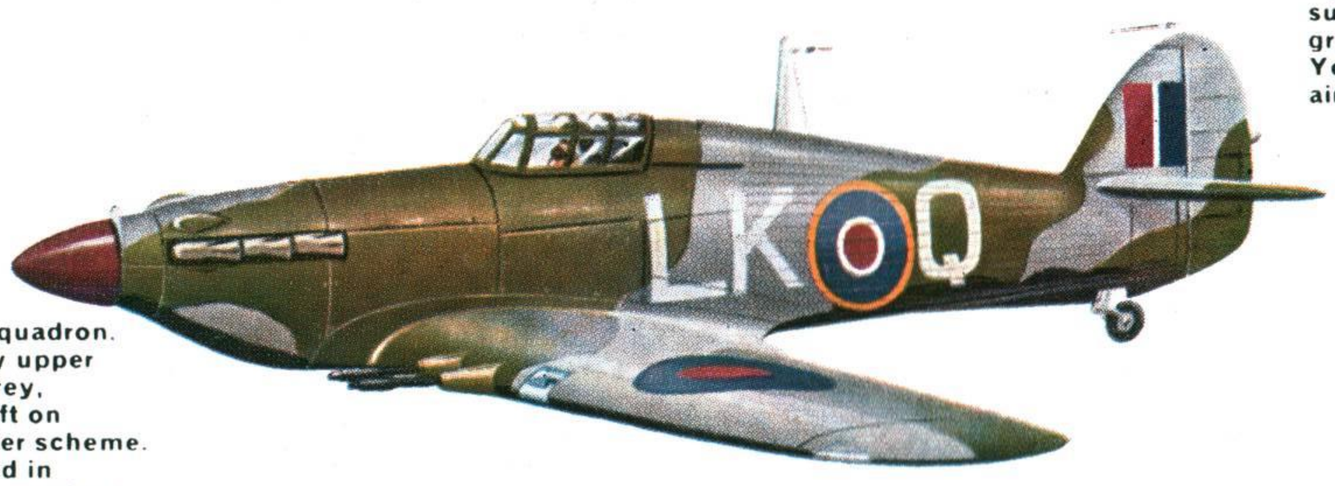
Typical production under surface of Night, White and Aluminium. Early 1939 to early June 1940.



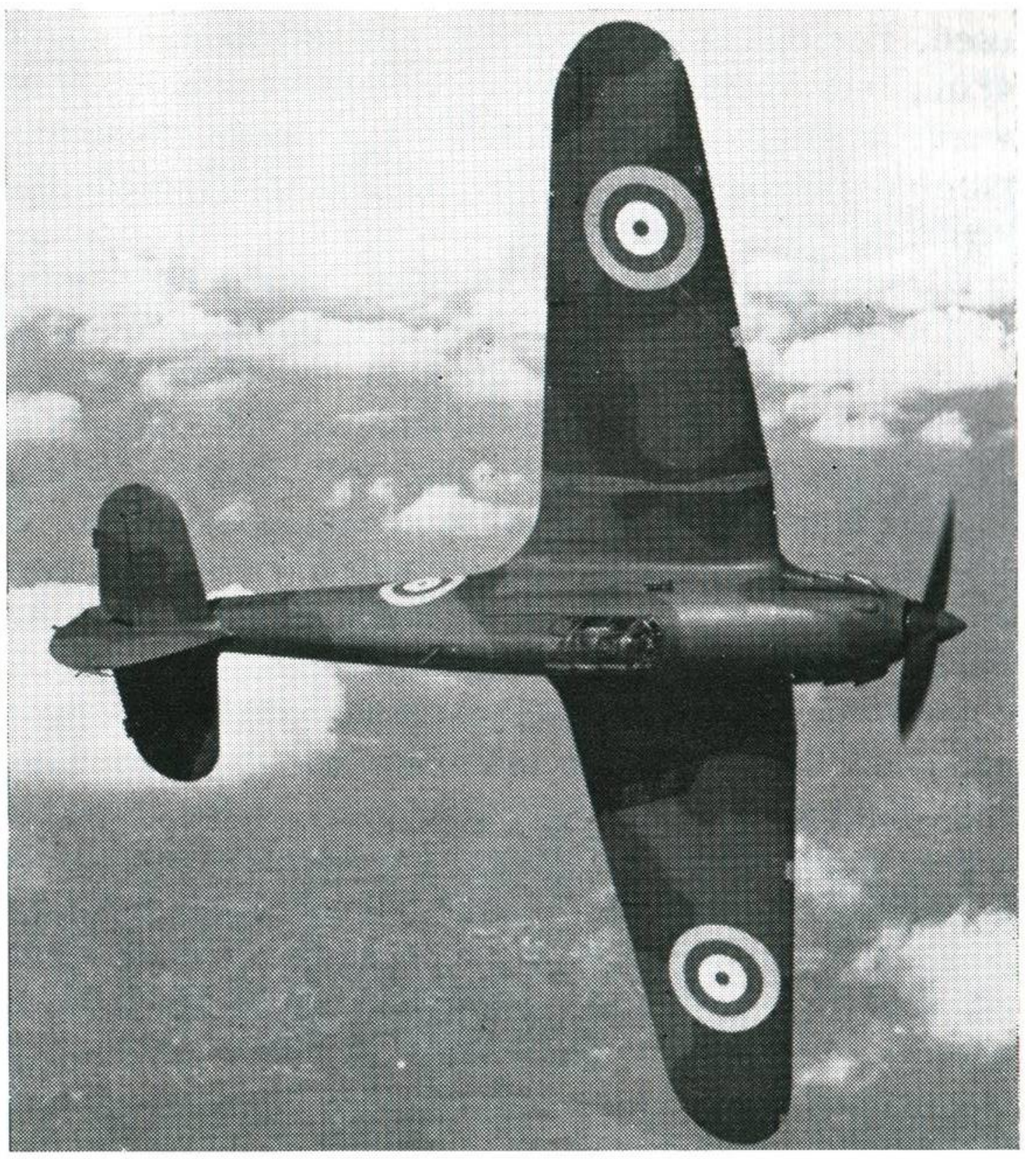
Fighter Command scheme introduced 27th Nov. 1940 Black port wing in washable paint. Sky spinner and 18in. rear fuselage band. Black removed from port wing on 22nd April 1941.



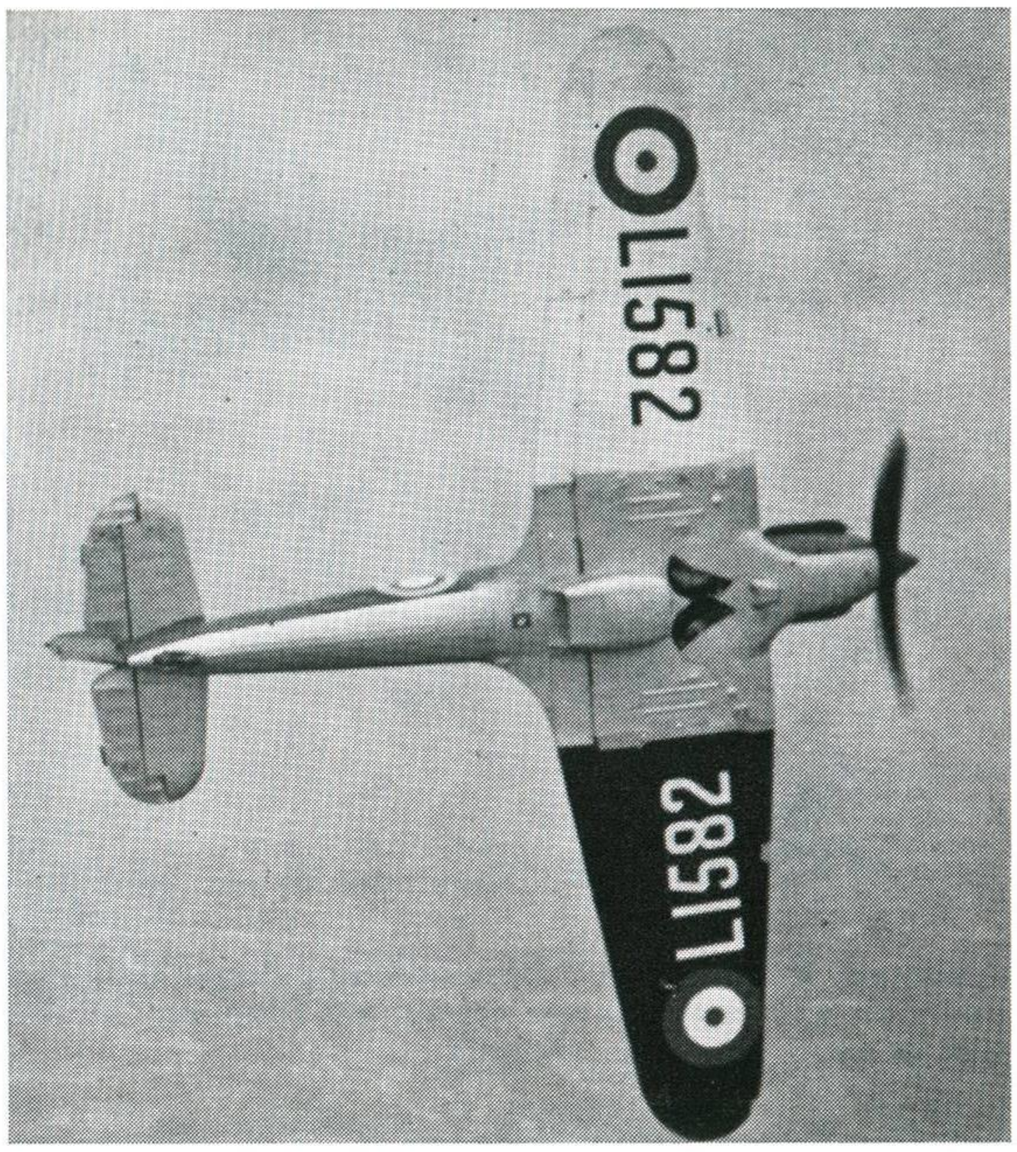
Typical 'Hurribomber' in late 1941. Upper surfaces in Dark and Ocean Grey or mixed grey. Medium Sea Grey under surfaces. Yellow leading edge strip. Sky codes and aircraft letters.



Hurricane IIC intruder of No. 87 Squadron. Dark Green and Medium Sea Grey upper surfaces. Night under surfaces. Grey, probably Sky Grey code letters left on aircraft from 'all-black' night fighter scheme. Subsequently changed to Dull Red in accordance with standard intruder markings. Sept. 1942.



Standard initial production colour scheme. B scheme camouflage pattern. Upper wing roundels are 49in. Type A.1. The wing/centre section gap fairings are as yet unpainted in top coat colours, being in Cerrus grey primer. Under surfaces all-Aluminium. Hurricane I, L1648 (Flight).



A Hurricane Mk. I of the batch with the experimental under surface scheme. Early 1938. (*Aeroplane*)

upper part of the numerals in the Flight colour, with the lower part white.

After about 25 Hurricane Mk.Is had been completed a batch was produced with a revised under surface paint scheme. The reason for the change is not known with confidence, but it was most likely for experimental purposes to be tested at Squadron level. The scheme introduced the 'black and white' under surface finish for the first time, and pre-dated the adopted standard scheme of this type by several months.

The under surfaces were painted as follows—under fuselage, centre section and tail unit, Aluminium. Port wing Night (black), with White serial numbers 30in. high. Starboard wing White, with 'black' serial number of the same height. 45in. diameter Type A roundels under the wing tips. The roundels and serial numbers were in the same size and positions as on the initial production under surface scheme.

It cannot be confirmed how many Hurricane Is were produced with this under surface finish, but L1576 to L1599 were certainly painted in this manner. Hurricanes in this serial range were mainly in service with Nos. 3, 56 and 111(F) Squadrons. After this batch had been completed the under surface finish reverted to the original all-Aluminium scheme, with 30in. high serials and roundels.

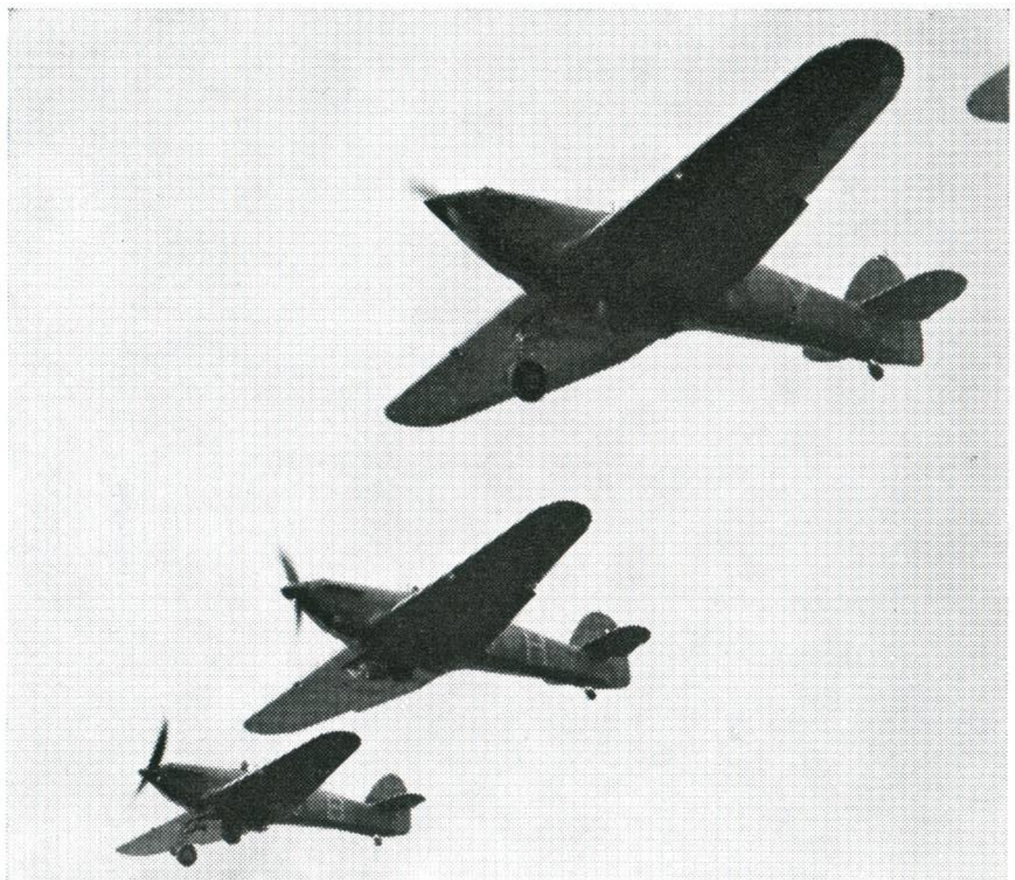
In August, 1938, the war clouds were gathering in Europe, and it seemed that hostilities would break out at any moment. In international affairs intense diplomatic activity surrounded the crisis over Czechoslovakia. In view of the gravity of the situation, which has since become known as the 'Munich Crisis', the Air Staff put into effect the decisions taken during 1936 and 1937 regarding camouflage in wartime. All operational aircraft operating over land were to be painted in a disruptive scheme of Dark Green and Dark Earth. Squadron numbers would be replaced by two code letters, and these, and the aircraft letter, would be painted in Medium Sea Grey, stores reference 33B/157.

The under surfaces of fighter and Army co-operation aircraft were to be changed to a new scheme. During the tense days of the Munich crisis it is probable that all markings changes were ordered by Command signals or telegrams. The intention behind the new under surface scheme seems to have been to divide the aeroplane into equal halves of black and white—port side black and starboard white. The wording of the official directive was ambiguous on the exact painting of the under surfaces and, consequently, there were many interpretations. The most importance seems to have been attached to painting the wing area black and white, but both the Service and the aircraft industry were undecided about the rest of the undersides.

Attempts to clarify the situation seem to have added to the confusion. The eventual standard under surface scheme of all-Aluminium, with equally-divided Night (black) and White wings, used on all the major single-engined fighters on production lines at different factories, seems to have stemmed from correspondence aimed at clarification of the 'Black and White' scheme.

In an official reply, the extent of the black and white area under the fuselage was given as between the trailing edge of the wing and the leading edge. In effect, the black and white wings were to be divided on the aircraft centre line, with the rest Aluminium. But this interpretation was apparently in error, for the Air Ministry Order issued in early 1939 extended this area to the entire length of the fuselage underside.

This was a period of intense flying training, and although units were careful to paint on the new upper surface markings on their aircraft, in accordance with instructions, the under surfaces were subject to



Hurricane Is, early 1939. Equally divided Night and White under sides. Foreground aircraft has a White, or Aluminium aileron on the port wing. (Flight)

varying degrees of completion, as and when aircraft became available.

Hurricanes were, of course, already painted in Dark Green and Dark Earth in A and B–scheme patterns, and the only change to the existing upper surface paint scheme consisted of the conversion of the Type A.I. roundels on fuselage and wings into Type B, and the substitution of Squadron numbers and existing aircraft letters, where used, by grey Squadron code and aircraft letters.

Conversion of the roundels was carried out for the most part by using the existing Blue ring as a marker and extending the Red centre to 2/5ths of the Blue diameter. The rest of the Blue was then filled in and the Yellow outer ring overpainted in the appropriate camouflage colour to complete the pattern.

The fuselage Type B roundel was now generally 25in. in diameter, with the Red centre spot of 10in. The upper wing Type B roundel was 35in. diameter, with a Red centre of 14in. The code letters varied somewhat in size, but those of 30in. were commonly used. The official requirement was for code letters of 48in., but where space was insufficient smaller sizes were permitted. Squadron crests were generally painted out, as were serial numbers, although the serial numbers did remain on many Hurricanes.

It was the under surfaces that showed the widest variation on Hurricanes. On operational aircraft at least, the port wing was painted in Night (black), usually to the centre line of the aircraft. On most Hurricanes the starboard wing was painted White. Many retained the original Aluminium finish on all under surfaces, with the exception of the Night-painted port wing and centre section, and White on the equivalent area of the starboard side.

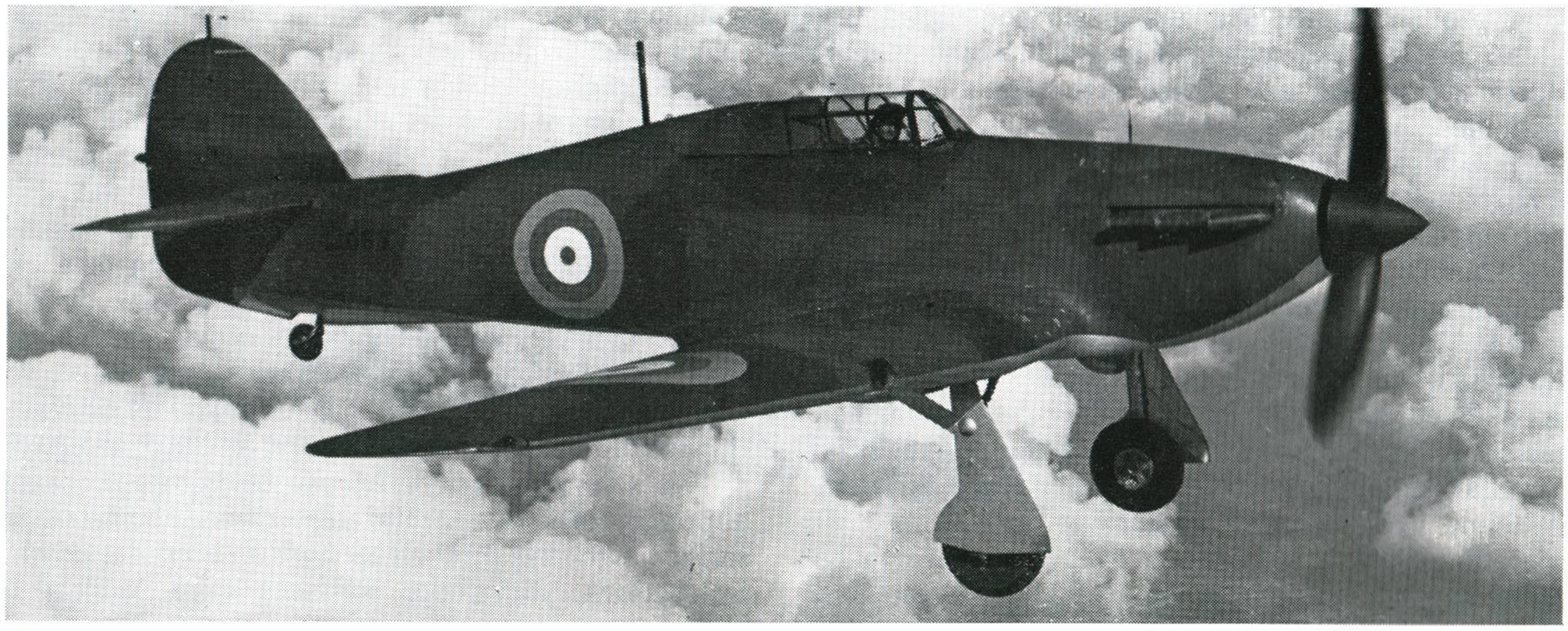
Others retained the original finish, with roundel and serial on the starboard side, but had the port wing side painted Night. There were cases of the movable areas, such as ailerons, flaps and elevators remaining Aluminium, whilst the rest of the aeroplane was painted Night and White. Some had a White aileron on the Night-painted wing, and a Night-finished aileron on the starboard wing. And there were many Hurricanes painted in equally-divided Night and White sides.

There was some indecision about the use of roundels on undersides. Where these were used generally, only the starboard wing was adorned. These roundels were either retained in their original Type A form (45in. diameter), converted from Type A to Type B using the same diameter, repainted as Type B in a smaller size, or painted out in Night, leaving just a large black spot. But, it was more common for roundels to be completely painted out in White or Aluminium on the starboard wing.

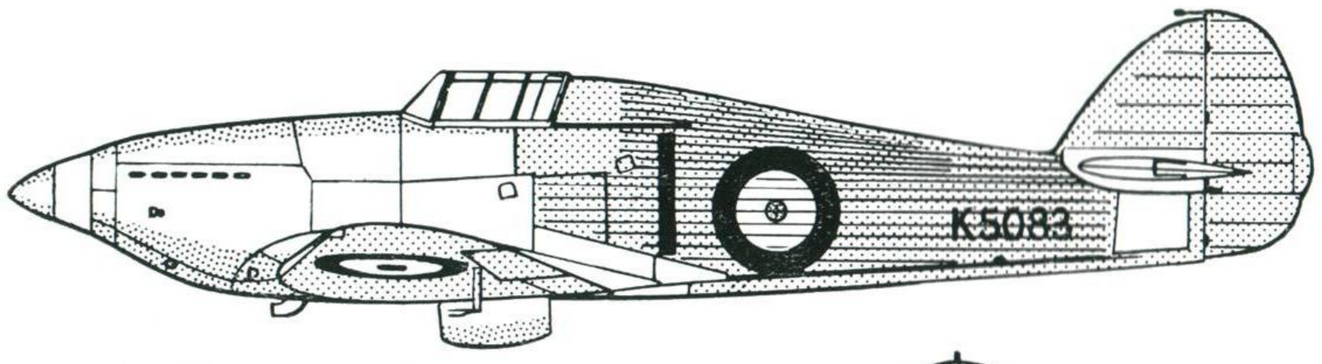
During the Munich crisis period and the early part of 1939, it is not possible to say that there was a standard under surface scheme, so varied were the permutations. But gradually the anomalies disappeared and the simple division between Night-painted port side and White-painted starboard side became the standard finish.

In order to clarify the markings situation the Air Ministry published A.M. Order No.A 154/39, amended by A 298/39, dated 27th April, 1939. This

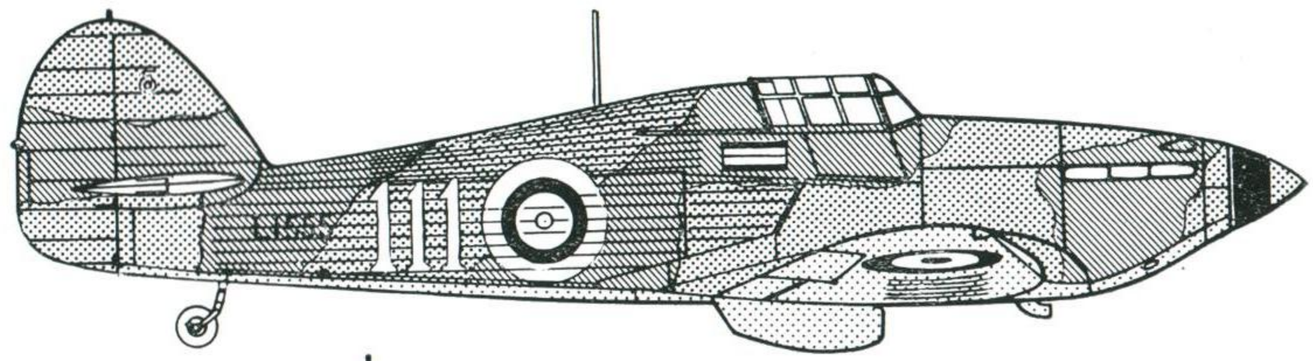
Hurricane Mk. I of the Station Flight Northolt. The serial number, L1683, shows that the under surfaces returned to all-Aluminium finish after completion of the initial batch with Night, White and Aluminium under surfaces. (*Cyril Peckham*)



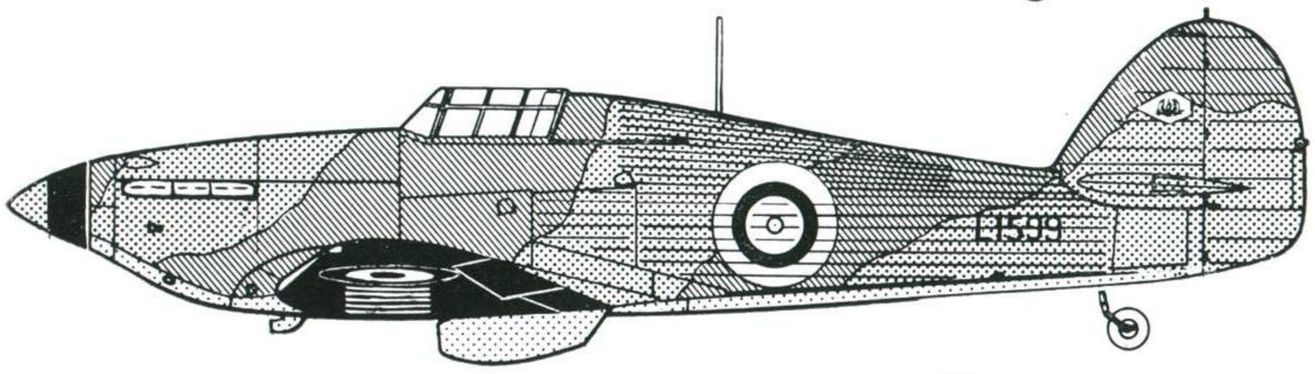
ALL UPPER SURFACE COLOURS ARE DARK GREEN AND DARK EARTH, EXCEPT ON PROTOTYPE AND CIVIL HURRICANE.



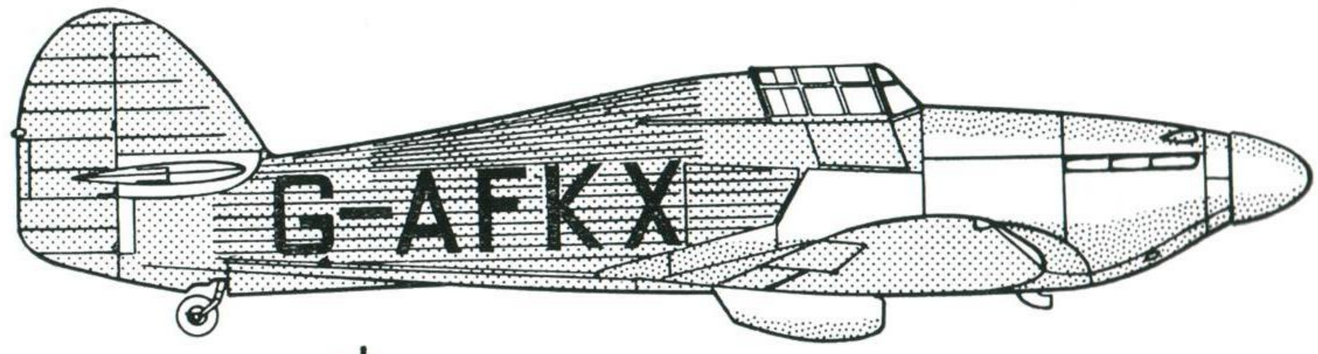
Hawker F36/34 prototype. All-Aluminium over fabric areas, polished metal panelling. Markings as shown at Hendon Air Pageant in 1936. 35in. diameter Type A fuselage roundel. Numeral '1' in black, approximately 42in. high. 8in. serial in black.



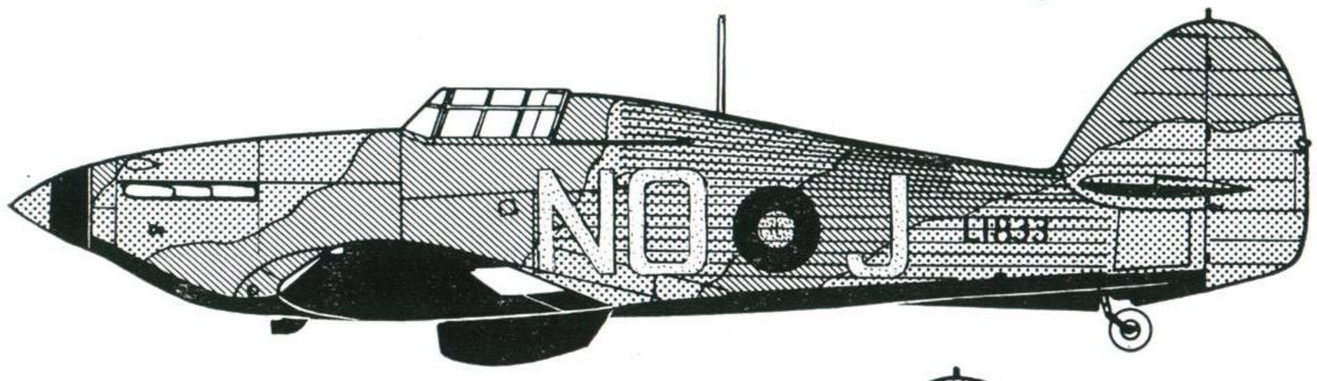
Initial production delivery scheme, from October 1937. LI555 shown is Sqdn. Ldr. J. Gillan's aircraft, with numerals '111' in White and Sqdn. Ldr's. pennant on side. July 1938. Dark Green/ Dark Earth/Aluminium. 35in. diameter Type A.1. roundels on fuselage sides. 49in. diameter Type A.1. upper wing roundels., 45in. diameter Type A under wings, with 30in. high serial letters and numbers. 6in. high rear fuselage serials.



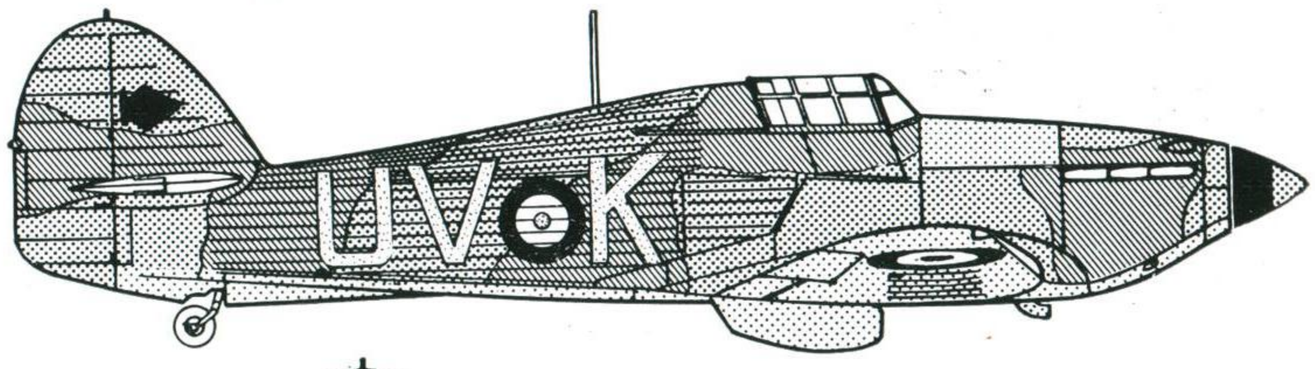
Special batch with Night, White and Aluminium under surfaces. Black serial on White wing; White serial on Night wing. 1938. Aircraft 'C' of No. 56(F) Squadron shown. L1599. Squadron badge on fin.



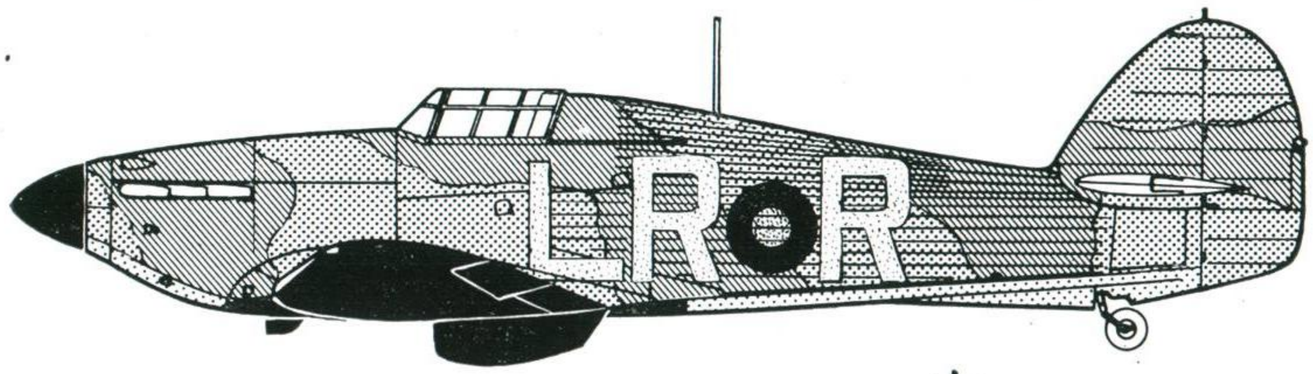
Civil Hurricane, flown by Hawkers to test Rotol constant-speed propeller with rounded spinner. 1939.



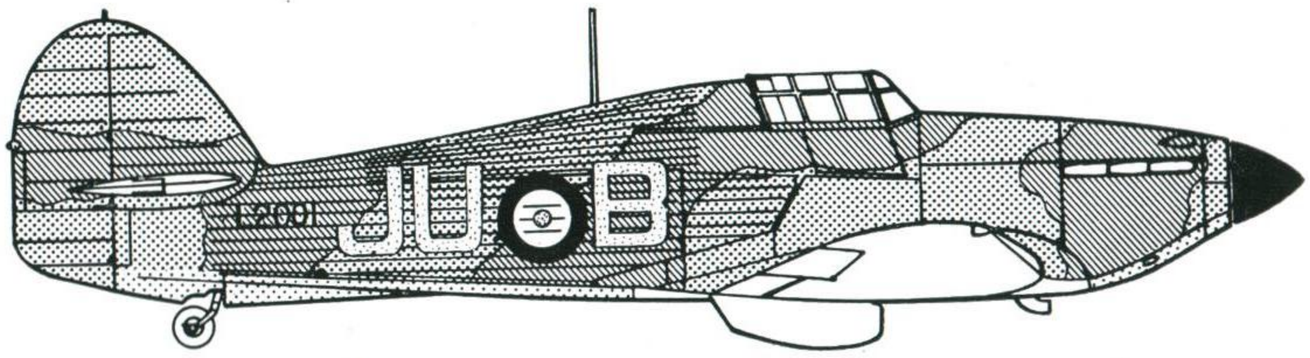
War emergency colour scheme introduced during the Munich Crisis, Sept. 1938. 25in. diameter Type B fuselage roundels converted from existing Type A.1. roundel. Under surfaces variable. Medium Sea Grey (stores ref. 33B/157) code letters specified.



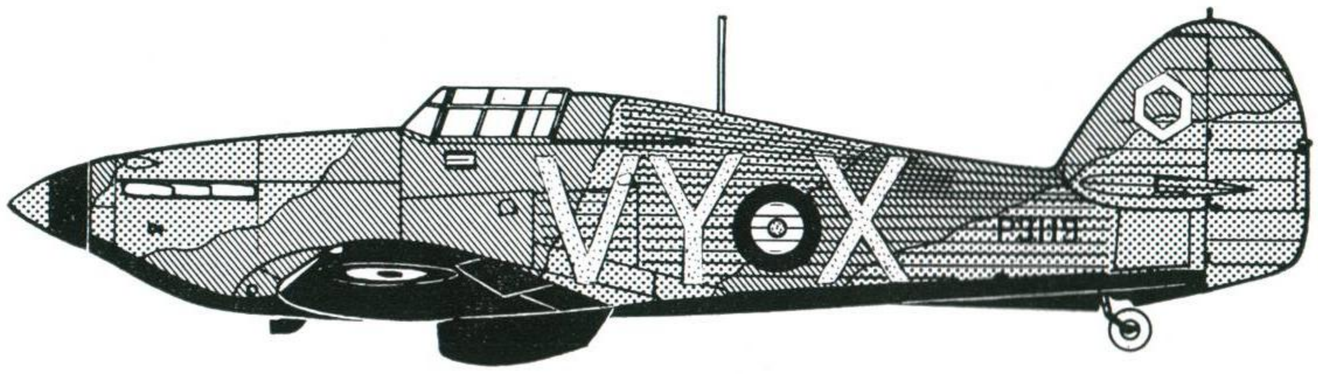
Typical colour scheme anomaly during early 1939. Roundels only partially converted to specified type, but subsequently completed as Type B. Under surfaces mainly still in initial delivery scheme of Aluminium overall. Under wing serial and roundel on starboard wing. Port wing Night. Squadron badge painted out in Night. No. 17 (F) Squadron, L1975.



L1990 of No. 56(F) Squadron, 1939, another typical colour scheme of the period. 25in. diameter Type B fuselage roundels., 35in. diameter upper wing Type B roundels. Approximately 36in. high code and aircraft letters in Medium Sea Grey. Under surfaces White, Night and Aluminium.



Hurricane I, L2001, of No. 111(F) Squadron. Introduction of the Type A fuselage roundel after 21st November, 1939. Usually converted from existing Type A.1. roundel to produce a diameter of 25in. 'JU' forward of roundel on port side.



Hurricane I, P3119, of No. 87(F) Squadron, 60 Wing, Air Component of B.E.F. France, 1939-1940. Equally-divided Night and White under surfaces. Roundels under wing.

laid down specific colour schemes for the various types of aircraft in Royal Air Force service. For fighters the upper surface scheme was Dark Green and Dark Earth in A and B scheme patterns, with Type B roundels in fuselage and upper wing positions. Grey code and aircraft letters were to be carried.

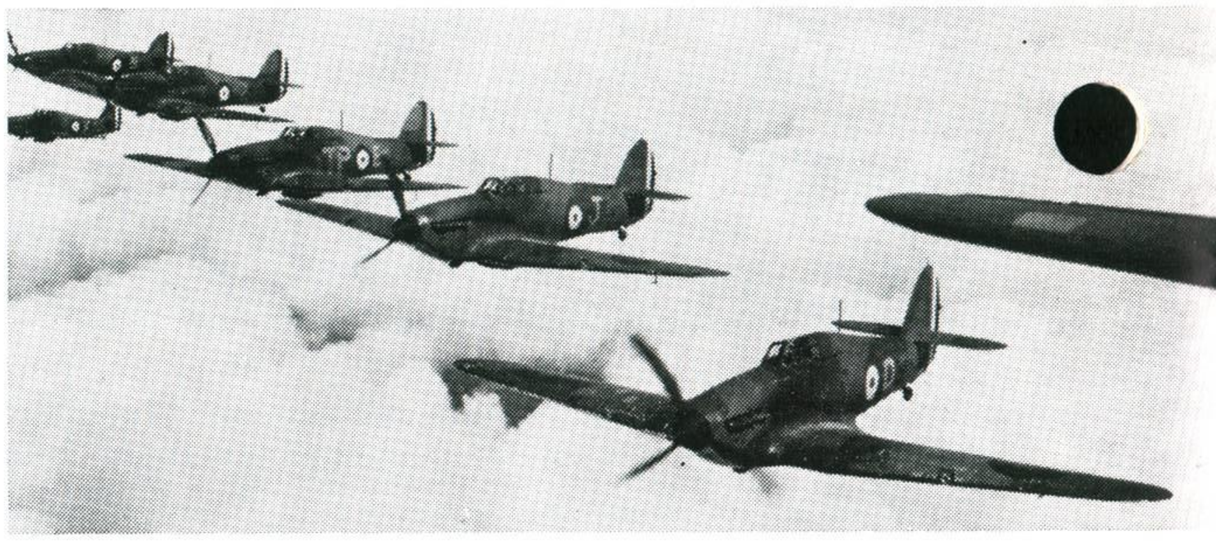
Black and White Scheme

Under surfaces were to be black and white, equally divided down the aircraft centre line—port side to be black. No under wing roundels were to be carried. In a footnote about the underside scheme, the finish was specified as being 'the lower surface of the starboard plane and half the under surface of the fuselage is to be painted white .The corresponding port side is to be painted black'. This again could have been misinterpreted as no mention was made of the finish to be applied to the tailplane and elevator undersides, but it became generally understood to mean that one half of the aeroplane was black and the other white. This eventually became the accepted standard finish on service Hurricanes.

Following the all-Aluminium under surface scheme, the standard underside finish of new production Hurricanes was that applied to all single-engined fighters being delivered during 1939 and up to June, 1940. In this scheme, the forward fuselage up to the wing leading edge, the fuselage aft of the wing trailing edge, the tailplane and elevators were painted Aluminium. The port wing into the aircraft centre line was Night and the corresponding starboard side White.

After delivery the majority of new Hurricanes were painted in the equally-divided black and white scheme, although there were cases where the factory finish was retained. Apart from a complete change of Squadron code letters, no changes were made to general markings and colour schemes when the Hurricane Squadrons went to war on 3rd September, 1939.

Owing to the Hurricane's rugged construction, ease of maintenance and repair in the field, and its docile landing and take-off characteristics, coupled with a wide track undercarriage, it was selected to go to France as the principal R.A.F. fighter. Two Hurricane Squadrons, Nos. I and 73, formed 67



Hurricane Mk. Is of No. 72(F) Squadron, 67 Wing, over France early in 1940. Only one aircraft has the code letters 'TP', all the others having been removed. The under surface colour scheme of each aircraft is the standard production scheme of Night, White and Aluminium. (I.W.M.)

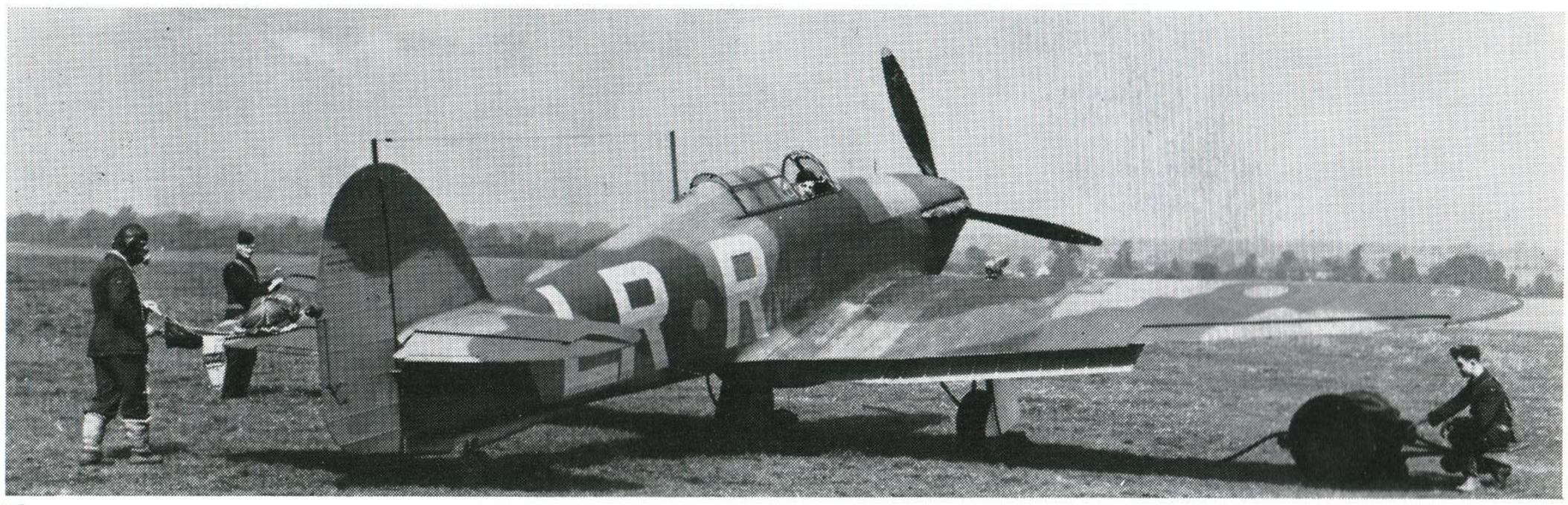
Wing of the advanced Air Striking Force, while two more, Nos. 85 and 87, formed 60 Wing of the Air Component of the British Expeditionary Forces.

While the two squadrons of No. 60 Wing had their Hurricanes painted in the standard colour scheme and markings of Home-based fighters, those of No. 67 Wing differed considerably. It was probably because Nos. 1 and 73 Squadrons were operating in close proximity to French fighter squadrons, that these units painted Red, White and Blue stripes over the entire height of the rudders of their Hurricanes, in a similar manner to the standard French National markings.

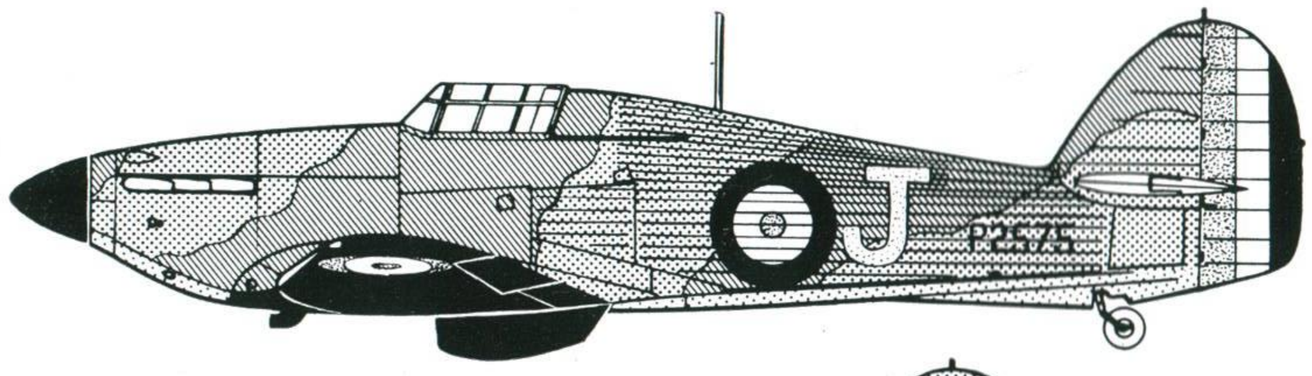
As the French squadrons were not familiar with the use of code letters, and there could have been cause for error in aircraft identification, both Hurricane Squadrons removed their Squadron identification letters, leaving just the grey painted aircraft letter aft of the roundel. The decision to adopt these special changes in markings seems to have been made at 67 Wing headquarters to suit local circumstances. Although their aircraft carried standard markings, No. 85 Squadron received the White hexagon marking originally carried during the 1914–18 war. A Flight carried the marking on the fin with the point of the hexagon uppermost, while B Flight carried the marking in the same position with the flat side uppermost.

In accordance with A.M. Telegram X.119, sent to all Commands on 2nd September, 1939, which stated that all R.A.F. aircraft which had to fly over France

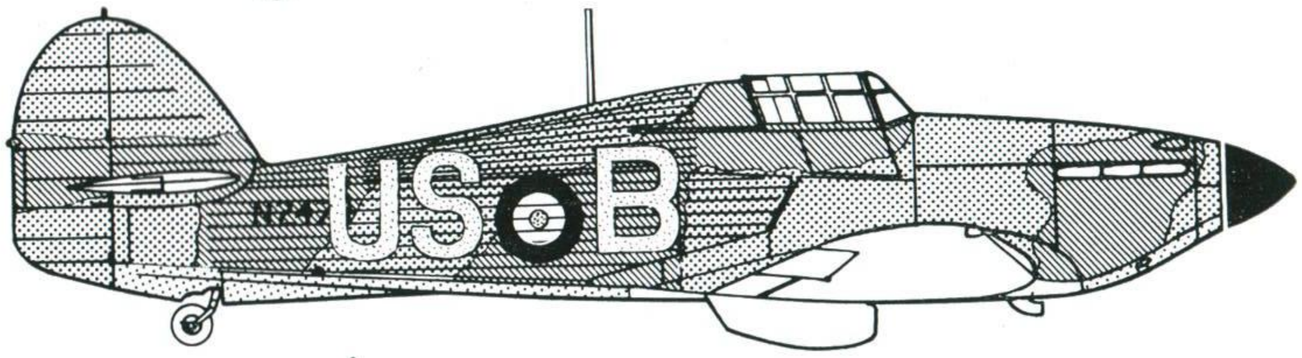
Hurricane I of No. 56(F) Squadron, L1909. 25in. Type B fuselage roundels converted from initial production 35in. Type A.I roundels. Upper surface roundels converted to 35in. Type B from 49in. Type A.I. Medium Sea Grey code and aircraft letters. Under surfaces Night, White and Aluminium. (Flight)



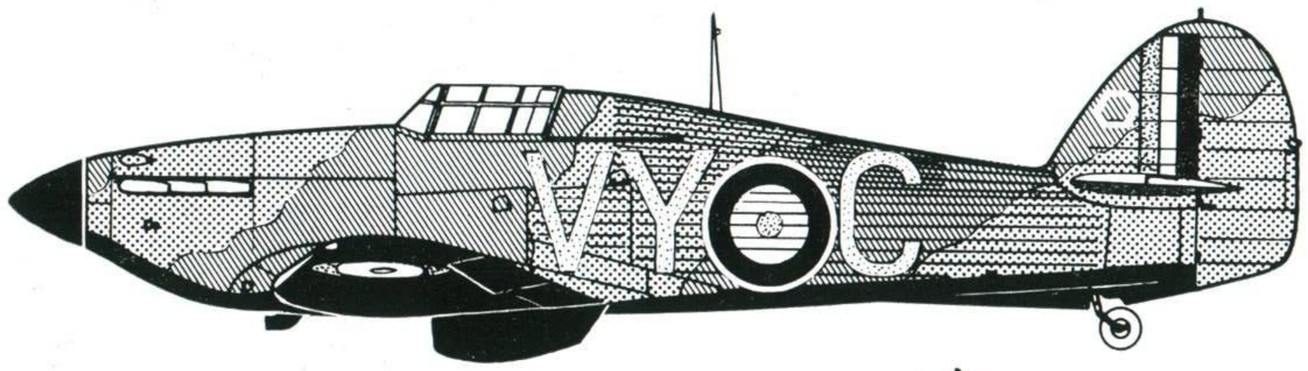
ALL UPPER SURFACE COLOURS ARE DARK GREEN AND DARK EARTH.



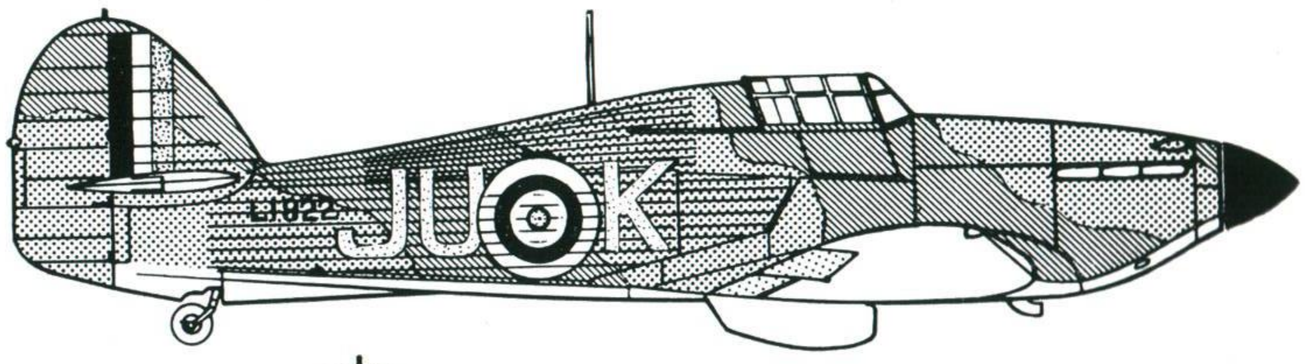
Hurricane I, P2575, of No. 73(F) Squadron, 67 Wing, Advanced Striking Force, France, 1939-1940. Under surfaces Night, White and Aluminium. Under wing Type A roundels. 35in. diameter Type A fuselage roundels. 'J' in Medium Sea Grey (33b/157) aft of roundel on each side.



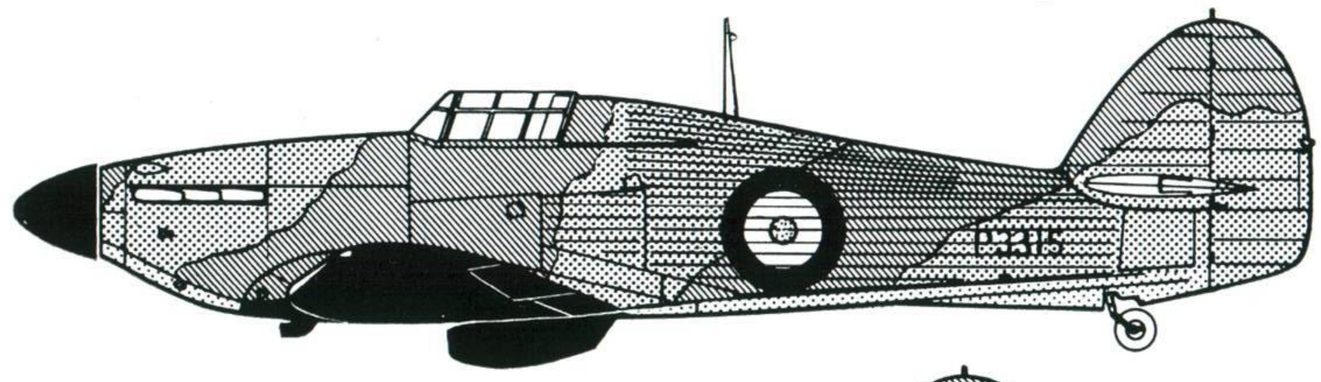
Standard Service colour scheme from 21st November, 1939, but under surfaces subject to variation. Type B fuselage roundels converted to Type A by introduction of the White ring. Upper wing roundel Type B. Under surfaces generally either equal division of Night and White, or Aluminium with Night and White wings. N2479 of No. 56 Squadron. 'US' forward of roundel on port side.



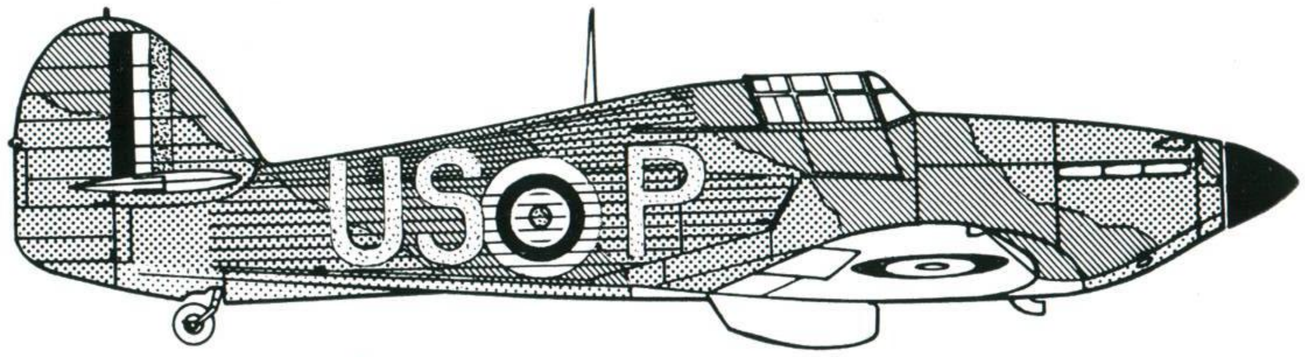
Introduction of fin stripes and Yellow outer ring to existing roundels on fuselage. Notified by signal X.485 to all Commands on 1st May, 1940. VY-C of No. 85(F) Squadron in France, has a narrow Yellow band to the 35in. diameter roundel, and the fin stripes are approximately 6in. wide.



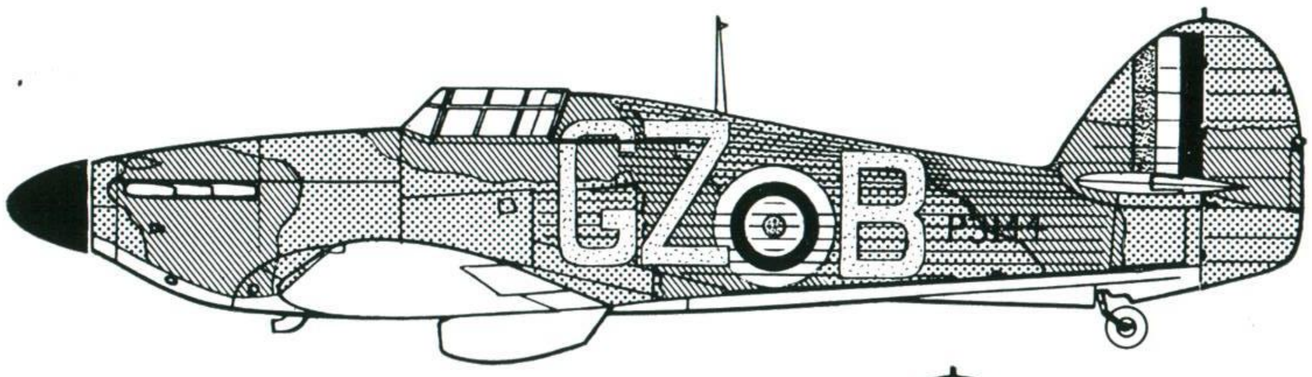
L1822 of No. 111(F) Squadron. Type A fuselage roundel of 25in. diameter, converted into Type A.1. by the addition of a Yellow outer ring, increasing the diameter to 35in. The last two numerals of the serial were painted in a small size in grey, under the nose just behind the spinner. 6in. serial letters and numerals on fuselage sides.



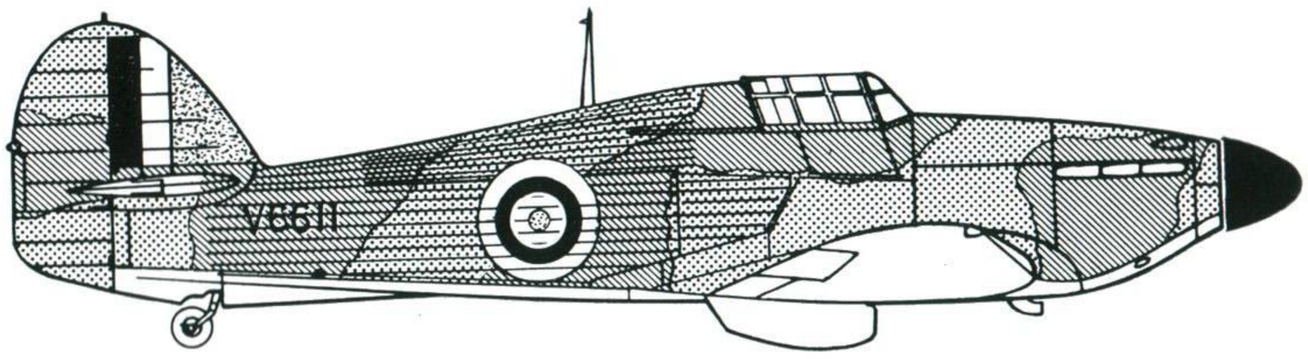
Standard production Hurricane. End of 1939 until soon after 6th June, 1940. 35 in. diameter Type A fuselage roundels, 49in. Type B upper wing roundels. Night, White and Aluminium under surfaces, without roundels. 6in. high serial on rear fuselage sides. A and B scheme camouflage patterns. P3315 (A scheme) illustrated.



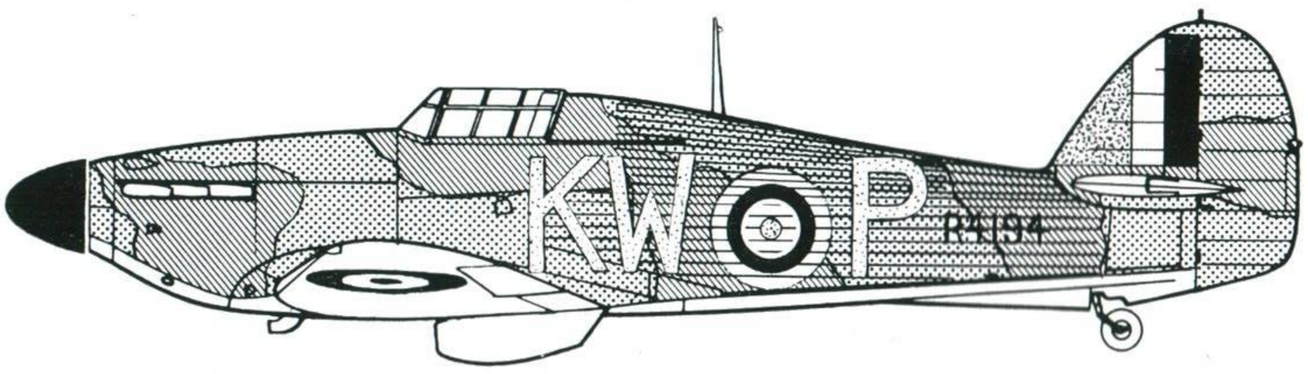
Roundels ordered to be painted on under surfaces by the sending of signal X479 4/6 on 15th May, 1940. Roundels added in anticipation of combat over France. Yellow outline to roundel on Night painted port wing.



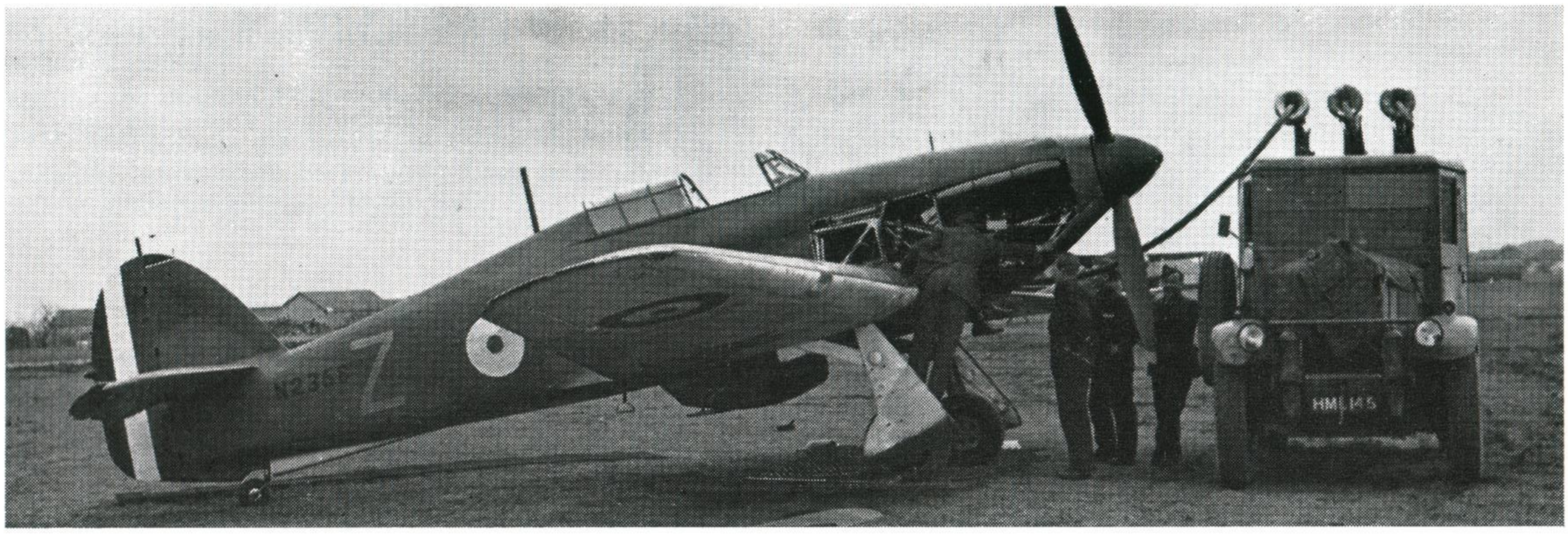
Sky under surfaces applied, as and when supplies permitted, as soon as possible after 6th June, 1940. Colour variations due to unofficial mixes pending supplies of true shade. No under wing roundels. GZ-B, P3144, of No. 32(F) Squadron. Code and aircraft letters approximately 40in. high, the largest used on Hurricanes, and the nearest to the official size of 48in. Fin stripes 7in. wide.



Standard production Hurricane after 6th June, 1940. 35in. Type A.1. fuselage roundel, 49in. Type B upper wing roundel. Fin flash consisting of Blue and White bars of 9in. width, with the rest of fin Red. A and B scheme camouflage patterns. V6611 illustrated. No under wing roundels until early August.



Standard production Hurricane, but with under wing roundels added during early August. R4194 of No. 615 Squadron. The under wing roundels were probably added by the M.U. before delivery to No. 615 Squadron on 15th August, 1940.



Hurricane I, N2358, of No. 73(F) Squadron in France. 35in. diameter Type A fuselage roundel. Approximately 30in. high aircraft letter 'Z' in Medium Sea Grey. B scheme camouflage. Under surfaces are Night, White and Aluminium. (I.W.M.)

had to carry under wing Type A roundels, all the Hurricane Squadrons in France had their aircraft painted with these markings.

The early months of the war provided little opportunity for combat under various conditions, and little chance to test the effectiveness of camouflage and markings. The expected heavy bombing raids did not materialise, and instead only sporadic interceptions of enemy reconnaissance and mine-laying aircraft were made. The only bombing attack in any strength was made on ships of the Royal Navy at Rosyth.

Aircraft recognition had not reached the refined level of efficiency of the later war years, and mistakes, especially in poor weather conditions, were bound to occur. It was, therefore, imperative that the National markings should be recognisable without spoiling the general camouflage effectiveness.

In October, 1939, a tragic incident occurred which proved that the national markings were not sufficiently visible, when a coastal reconnaissance aircraft of the Royal Air Force was shot down by fighters. The Red and Blue roundels were, apparently, too inconspicuous, and consequently the Air Ministry sent a telegram—A 949/32—to all Commands on 30th October ordering the upper surface roundels to be changed to Red, White and Blue Type A.

Further telegrams were sent on the 5th and 10th of November ordering all British aircraft, except fighters and night bombers, to carry Type A roundels under the wings. These telegrams, hurriedly despatched, seem to have caused some confusion and doubts regarding the use of upper wing Type A roundels. There is no evidence that such roundels were ever applied to fighter aircraft. Certainly they did appear on the upper wing surfaces of coastal reconnaissance aeroplanes. Type A roundels became generally used on fuselage sides and under the wings of all classes of aircraft, except those stated earlier.

In order to clarify the situation regarding roundels and camouflage schemes in general, Commands were notified on 21st November, in advance of an Amendment to the existing Air Ministry Order, of the correct camouflage schemes and markings for various classes of aircraft. This Amendment directed that Type A roundels would only be carried on the wing upper surfaces of general reconnaissance aircraft, all others retaining the Type B form. Type A roundels would be carried on the fuselage position on all types, and under the wings of all types except fighters and night bombers.

Another less important clarification was the removal of all underwing serial letters and numerals, those on the rear fuselage sides remaining. As a general rule these continued to be 8in. high, as they had been since the early 1920s. Underwing serials had largely disappeared from use by then.

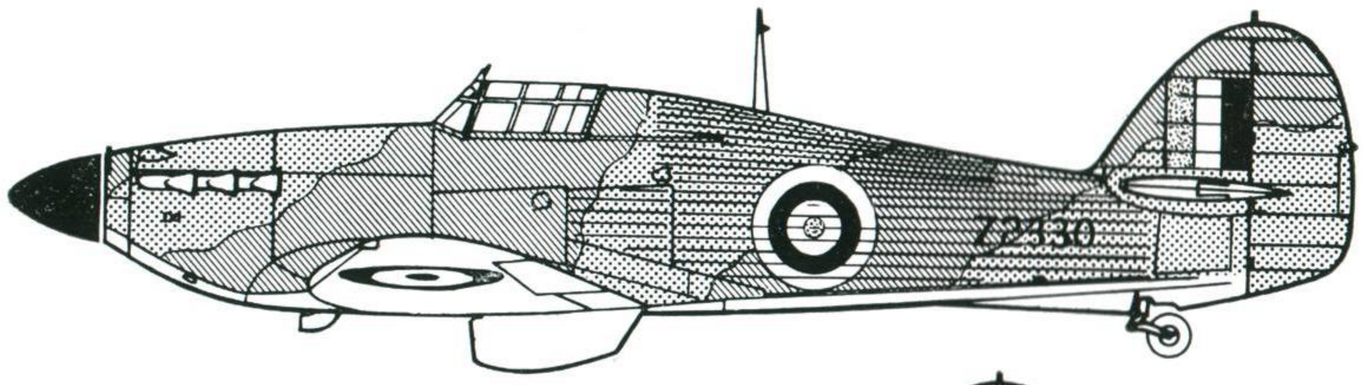
In most instances on Service Hurricanes conversion of the Type B roundels, usually of 25in. diameter, was accomplished by adding a White ring of 15in. diameter, with the Red centre reduced to 5in. New production Hurricanes produced after the Air Ministry Order Amendment had a larger Type A fuselage roundel of five ring widths of 7in., and a total diameter of 35in. In this instance the White ring diameter was 21in. and the Red centre spot 7in. Upper wing roundels on production Hurricanes at this period were 49in. diameter Type B, with a Red centre spot diameter of 19.6in. All other camouflage and markings remained as before, including the unusually small 6in. serials on the fuselage.

The reversion to Type A fuselage roundels also applied to the Hurricanes in France, which also retained the similar roundels under the wings in accordance with the earlier Air Ministry directive issued on 2nd September, 1939.

As a result of increased combat experience during the early months of 1940, especially in France, it was

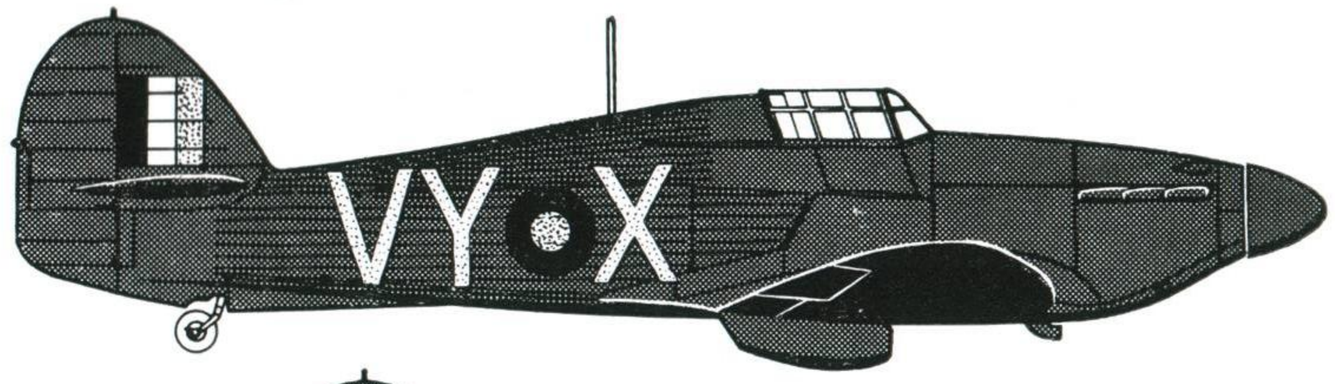
Hurricane I, P2545, of No. 73(F) Squadron. This aircraft previously served with No. 1 Squadron, also of 67 Wing, in France. (I.W.M.)



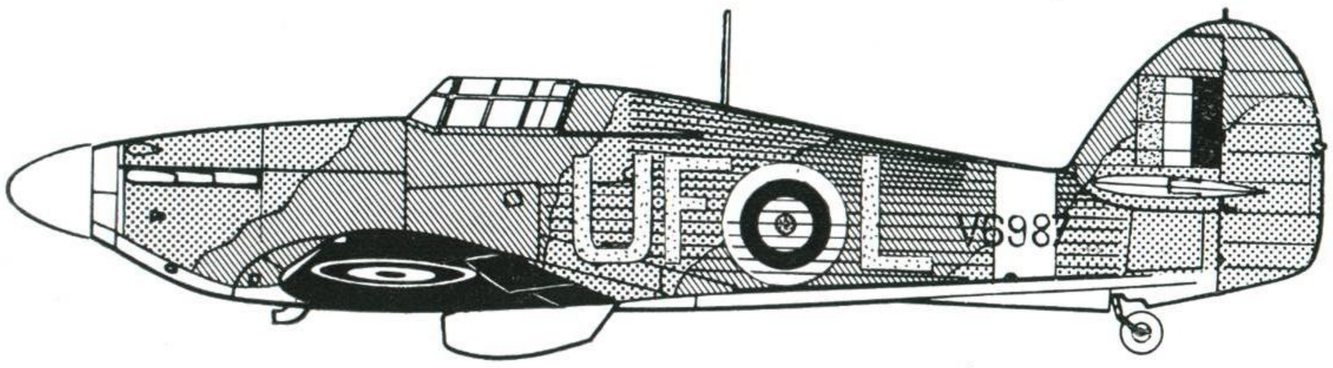


ALL UPPER SURFACE COLOURS ARE DARK GREEN AND DARK EARTH.

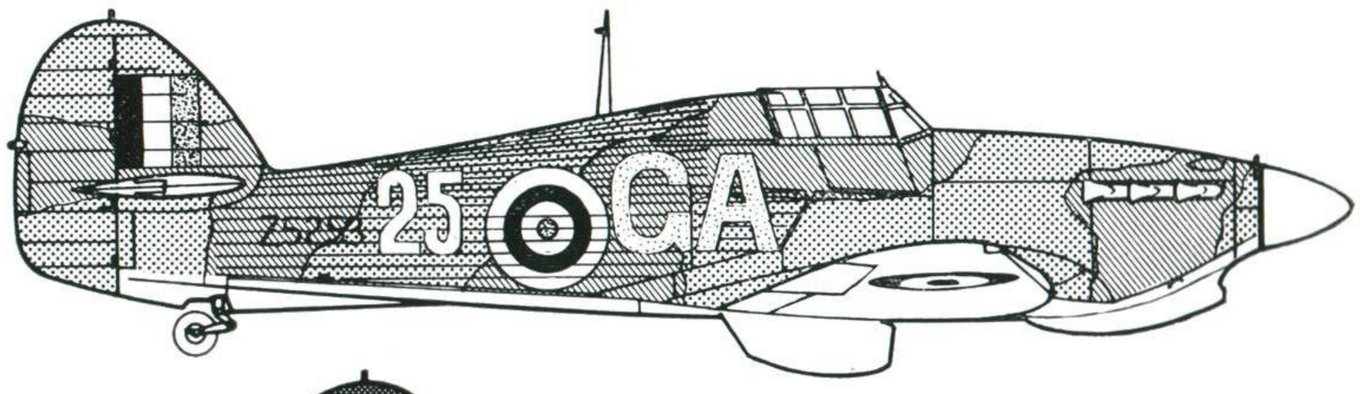
Standard late 'Battle of Britain' production finish. Dark Green/Dark Earth/Sky. 35in. diameter Type A.1. fuselage roundels. Standard 27in. by 24in. fin flash. 8in. black serial. Hurricane IIA, Z2330.



Hurricane I, Night fighter finish, 1940. Special Night (R.D.M.2) finish. Roundels converted to Type B. Medium Sea Grey code and aircraft letters. Serials on rear fuselage in Red, where used.



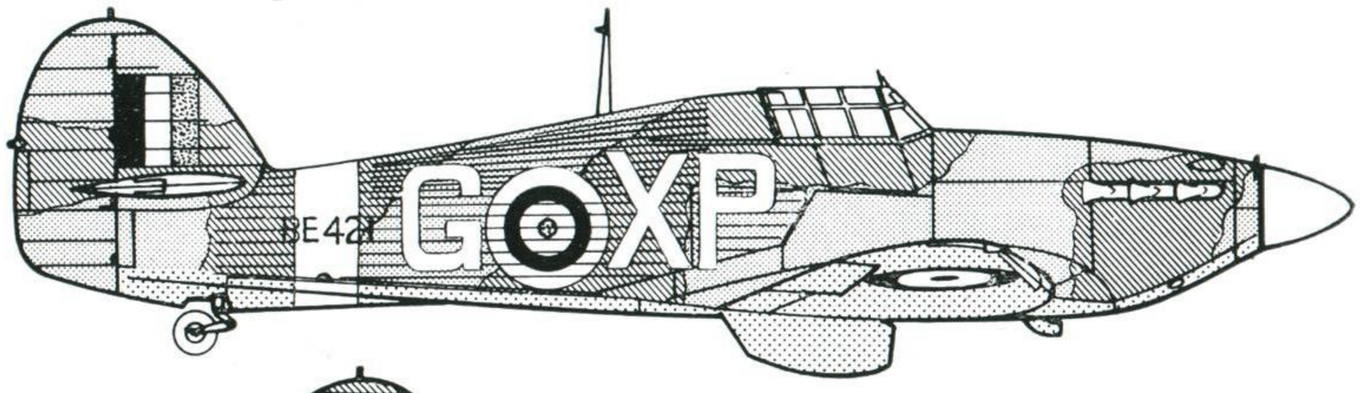
Black port wing re-introduced on 27th November, 1940. Sky spinner and 18in. rear fuselage band, promulgated at the same time. Yellow outer ring to roundel on black wing. Standard basic colour scheme. V6987 of No. 601(F) Squadron shown. Sky extended over fuselage nose of this aircraft. Black port wing scheme removed on 22nd April, 1941.



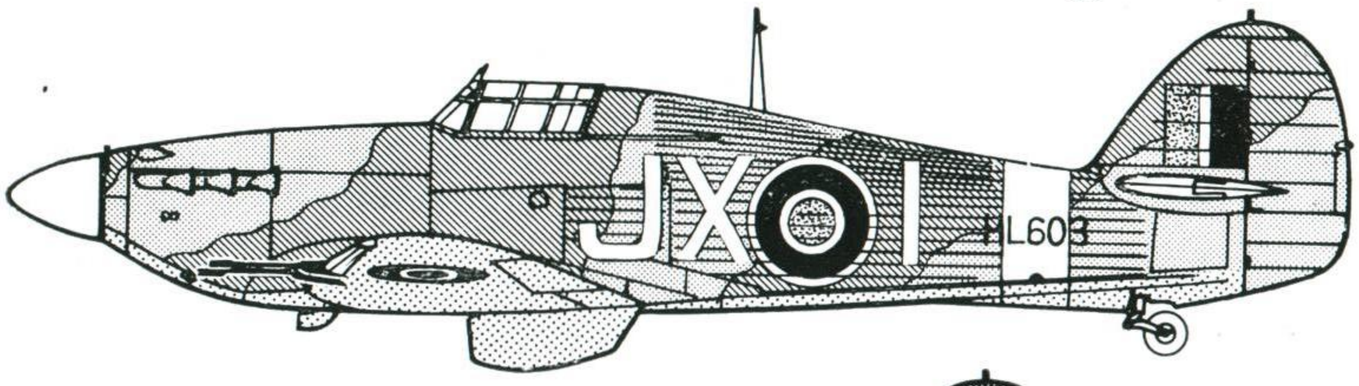
Z5253 of No. 134(F) Squadron, 151 Wing, Vaenga, Russia, in Sept-Nov. 1941. Dark Green/Dark Earth/Sky. Sky spinner, but no rear fuselage band. Standard national markings. First letter of the squadron code (GQ) followed by aircraft letter in Medium Sea Grey. Russian call letter in White.



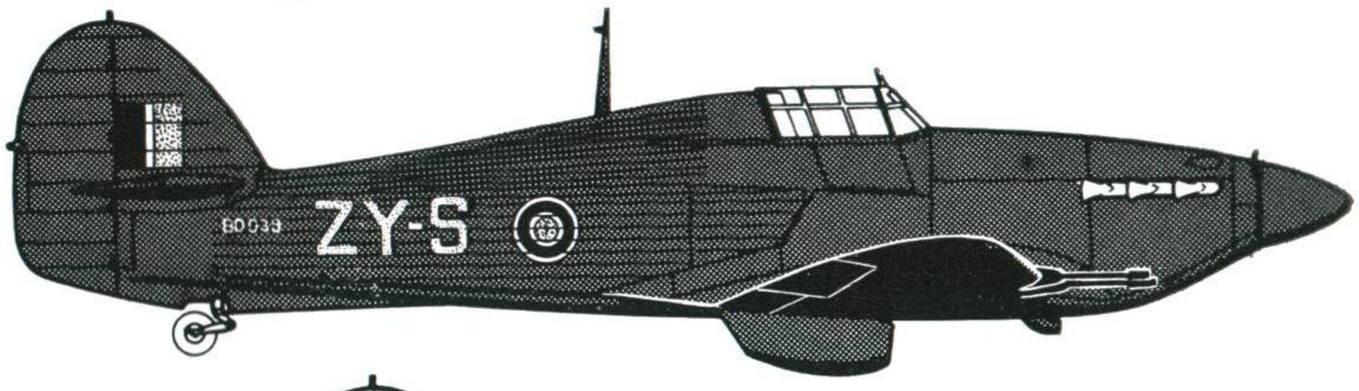
Hurricane IIC night fighter of No. 87 Squadron, early 1942. Smooth Night finish. Code letters probably Sky Grey. Red serial. Sqdn. Ldr. D. G. Smallwood's aircraft, BE500. Red spinner.



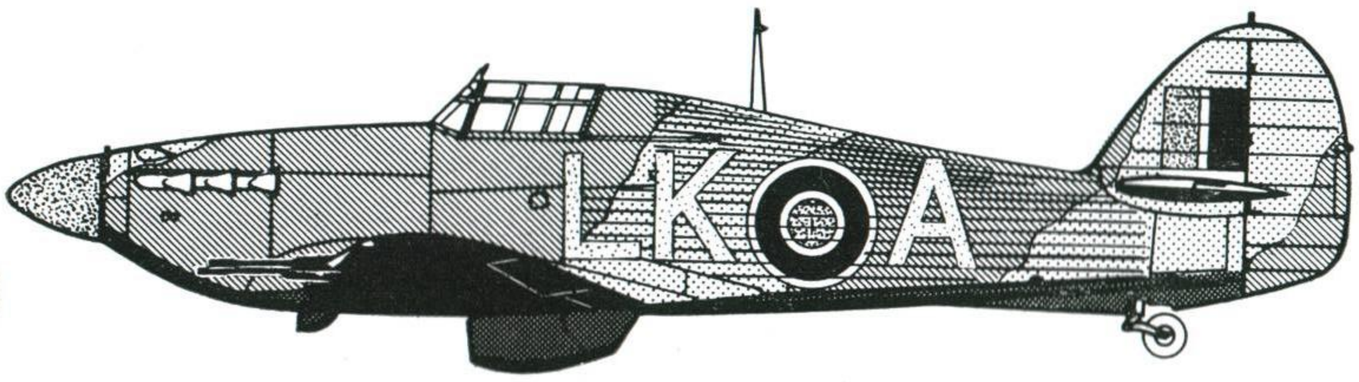
Change to new day fighter colour scheme from 15th August, 1941. Ocean Grey or Mixed Grey, and Dark Green, with Medium Sea Grey under surfaces. Sky code and aircraft letters. Yellow strip along wing leading edge.



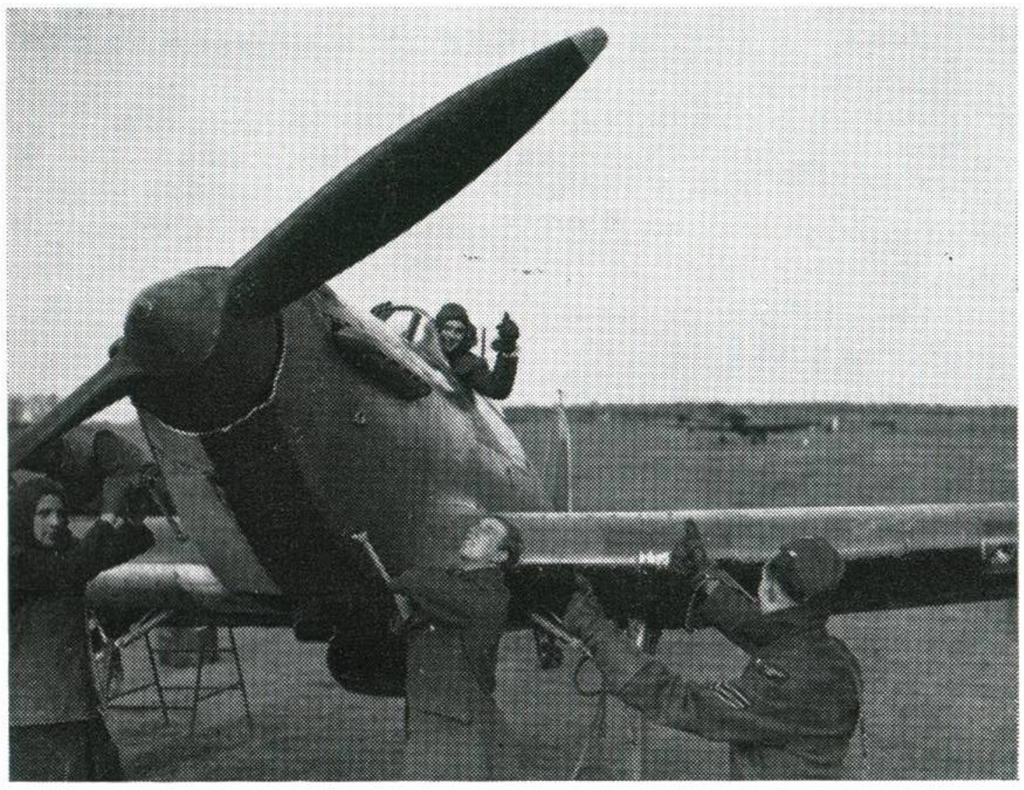
Introduction of the Type C and C.1. roundel, and 24in. x 24in. standard fin flash, mid-May, 1942. Hurricane IIC, HL602, of No. 1(F) Squadron. Colour scheme on this aircraft Dark Green and probably Mixed Grey upper surfaces. Medium Sea Grey under surfaces. Sky spinner, rear fuselage band, code and aircraft letters.



Hurricane IIC, BD929, of No. 247 Squadron. Experimental night fighter finish, with 18in. diameter Type C.1. fuselage roundels and 18in. x 18in. fin flash. 15in. code letters in Dull Red. Special Night finish, but possibly also Nivo or Dark Green overall.



Intruder camouflage adaption of the original Smooth Night finish. Medium Sea Grey and Dark Green painted over the Night finish on upper surfaces. Code letters originally left in existing colour, but eventually painted Dull Red.



Hurricane I of 67 Wing, either No. 1 or 73(F) Squadron. Equally-divided Night and White under surfaces. (I.W.M.)

apparent that British National markings were still not adequate. Consequently, on 1st May, 1954, the Air Ministry sent signal X 485 notifying all Commands that new changes to markings would be made.

The revised markings were the addition of a Yellow ring outlining the existing Type A fuselage roundel and the painting on the fin of Red, White and Blue stripes of, officially, the same width as the fuselage roundel rings. The Yellow ring was to be the same ring width as those of the existing roundel, thus converting it in effect to a Type A.I. Where the additional ring would make the roundel too large, squadrons were permitted to repaint the roundel in a smaller size, but if too much work was involved a narrow ring could be used.

As the majority of existing squadron Hurricanes had 25in. Type A fuselage roundels, the additional 5in. wide ring of Yellow increased the overall diameter to 35in., the original size. Owing to the fairly high replacement rate, late production Hurricanes with Type A fuselage roundels of 35in. diameter were being delivered through M.Us to squadrons. When the full width Yellow ring was used in this instance, the overall diameter increased to 49in., but in some instances, as on No. 85 Squadron in France, a narrow ring of approximately 3in. width was used.

Some squadrons initially used fin stripes of similar width to those of the rings. For example Nos. 85 and 56 Squadrons used 5in. wide stripes. No. 87 Squadron used 7in. wide stripes of Blue and White to match their 49in. roundels, but painted the entire forward portion of the fin Red. The 5in. wide stripes proved to be too indistinct and were replaced by broader types. The most universally used form, presumably designed by Hawker Aircraft Ltd., for the use of both the aircraft industry and the R.A.F., consisted of 9in. wide Blue and White bands, with the entire forward portion of the fin Red.

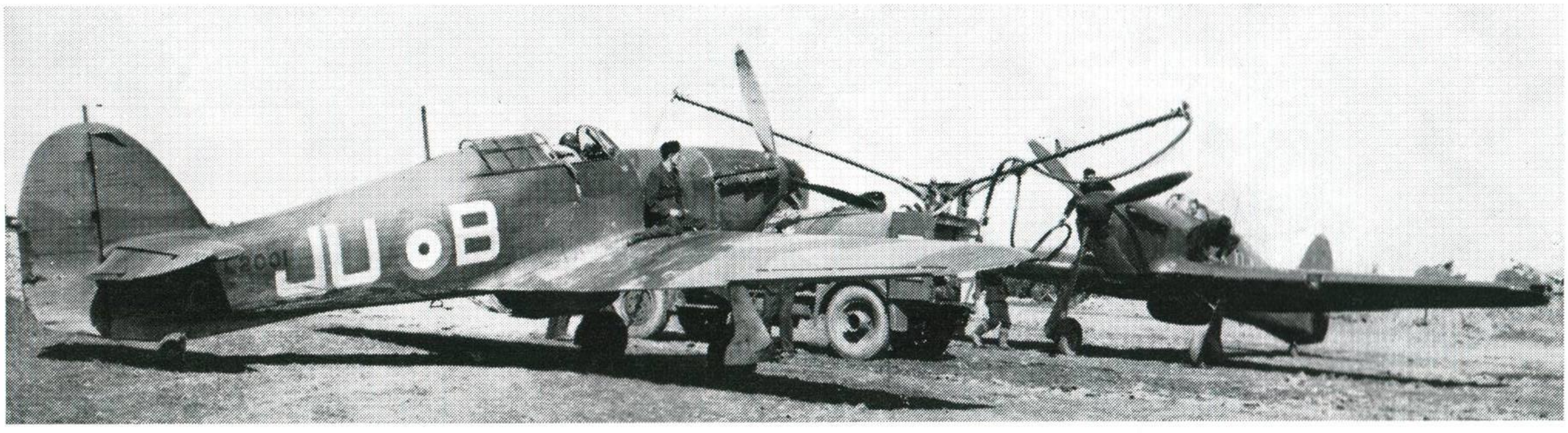
The 'black and white' underside scheme was still in use at this time, and new research shows that signal X479 4/6 was sent on 15th May ordering that underwing roundels should be painted under the wing tips, and the one on the 'black' port wing should be outlined in a narrow band of Yellow, but not carried over ailerons or hinges. These were presumably added to give additional proof of identity during the hectic combats covering the British withdrawal from the Continent. Roundels under the wing tips only remained in use for a very brief period, for on 6th June, 1940, it was ordered that the under surfaces of fighters would be painted overall in Sky.

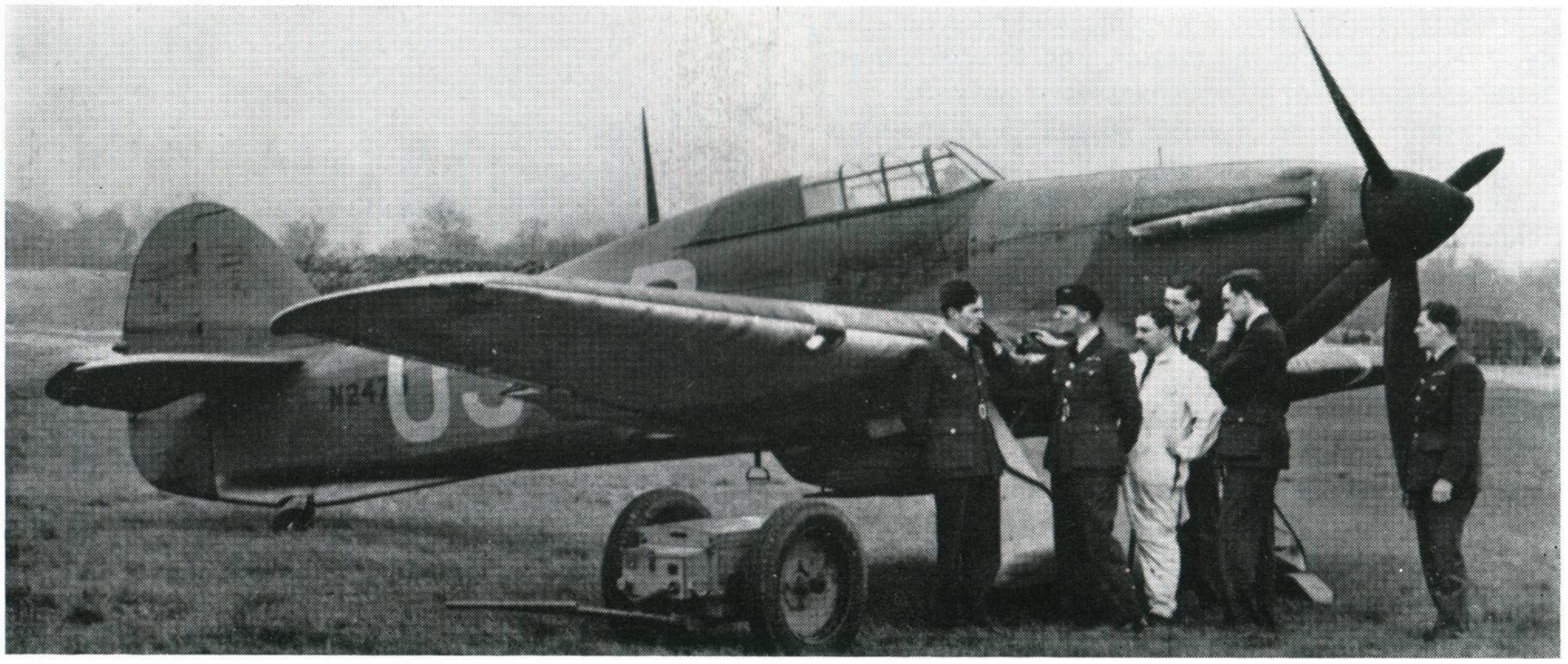
The need to change to a new under surface colour had been under review for some time, and two colours had been considered—Sky and Sky Blue. Sky Blue was considered to be too light and reflective, but Sky had already been used by the Camouflage Unit at Heston, where it was found to be an improvement on other colours, such as Sky Blue and Aluminium. Sky was intended to provide a good compromise colour under conditions of cloud and pale blue clear sky at altitudes up to 10,000 feet, at which height the average combat took place during 1940.

The colour was first used operationally on Blenheim bombers in November 1939. Sky was adopted for use and notified for use on fighters on 6th June, 1940. After this date the majority of fighters gradually changed to the new colour as soon as supplies of paint permitted. At first the colour was evidently in short supply and some home mixing took place, resulting in colour shade variations. Because of shortages some fighters continued to use the existing 'black and white' scheme for a period. But, as the supply position improved standard shades of Sky became more evident and the majority of operational fighters were repainted.

Sky was introduced on production lines as soon

Hurricanes of No. 111(F) Squadron at Wick, early 1940. The newly painted starboard upper wing of L2001, and lack of roundel, may be a reflection of the doubts concerning which types of aircraft were to have Type A upper surface roundels, as ordered by the telegrams sent to all Commands on 30th October and 5th and 10th November, 1939. All aircraft except coastal reconnaissance types were eventually excluded from these orders. (I.W.M.)





N2479 of No. 56 Squadron, April 1940. US-R. Night, White and Aluminium under surfaces. (*R. C. Jones*)

after 6th June as was possible without affecting the flow of new aircraft. Gloster Aircraft changed to the new colour as conveniently as possible after 11th June, and the important Civilian Repair Organisation at Morris, Cowley, which was responsible for repairing damaged Service aircraft, started to use it after 12th June.

When Sky replaced existing fighter under surface colour schemes, under wing roundels were not used. The only exceptions were those fighters still covered by the official directive issued on 2nd September, 1939, ordering fighters and other aircraft flying over France to carry under wing roundels. R.A.F. fighters based in France repainted in Sky had these roundels, and evidence shows that some home-based squadrons temporarily carried them for actions fought in support of the British evacuation. Photographs taken of No. 32(F) Squadron, for example, during June show under wing roundels, but photographs taken of the same Squadron in July and early August show plain Sky under sides.

The timing of the introduction of Sky on Hurricanes in France is uncertain. Nos. 1 and 73 Squadrons of 67 Wing stayed long enough to have the new colour, because they did not leave to return home until mid-June. No. 501 Squadron also remained until the same time, and was presumably repainted.

The history of No. 87 Squadron is open to doubt for, according to some reports, the Squadron is said to have returned to England on or around 22nd May, 1940, and photographs showing Sky under surfaces on their Hurricanes are said to have been taken at the end of May. However, it is probable that the dates of the photographs are incorrect and they were most probably taken after 6th June.

After the introduction of Sky the standard production scheme used on Hurricanes was as follows—Dark Green and Dark Earth upper surfaces in either A or B scheme patterns, with 49in. diameter Type B upper wing roundels and 35in. diameter Type A.I fuselage roundels. All Sky under surfaces without roundels until mid-August. 8in. high rear fuselage serial letters and numbers in Night. Fin flash consisting of 9in. wide bars of Blue and White, with the entire forward portion of the fin Red. Typical example of new production Hurricanes painted in this scheme were V6635 and V6638, both Gloster-built.

Hurricane fin stripes, as on other R.A.F. types during this hectic period, showed considerable variation. Although the type laid down by the manufacturers' markings drawing became a much-used form on Hurricanes, the Air Staff became concerned about the lack of standardisation generally in aircraft

L1822 of No. 111(F) Squadron, 10th May, 1940. The Yellow outer ring to the fuselage roundel was introduced on 1st May. The under sides are Night and White, equally divided down the aircraft centre line. The starboard aileron is painted in Night, from an earlier period.



markings. Consequently, a meeting was held on 23rd July, 1940, to discuss the matter, and to effect some general standards for various classes of aircraft.

The re-introduction of under wing Type A roundels was confirmed by this meeting, but an important resulting item was the adoption of a standard form of fin flash for R.A.F. fighters and other types. This new marking was to consist of 8in. wide bands of Red, White and Blue, 27in. high. The new marking was authorised for use from 1st August 1940, and notified to all Commands on 11th August.

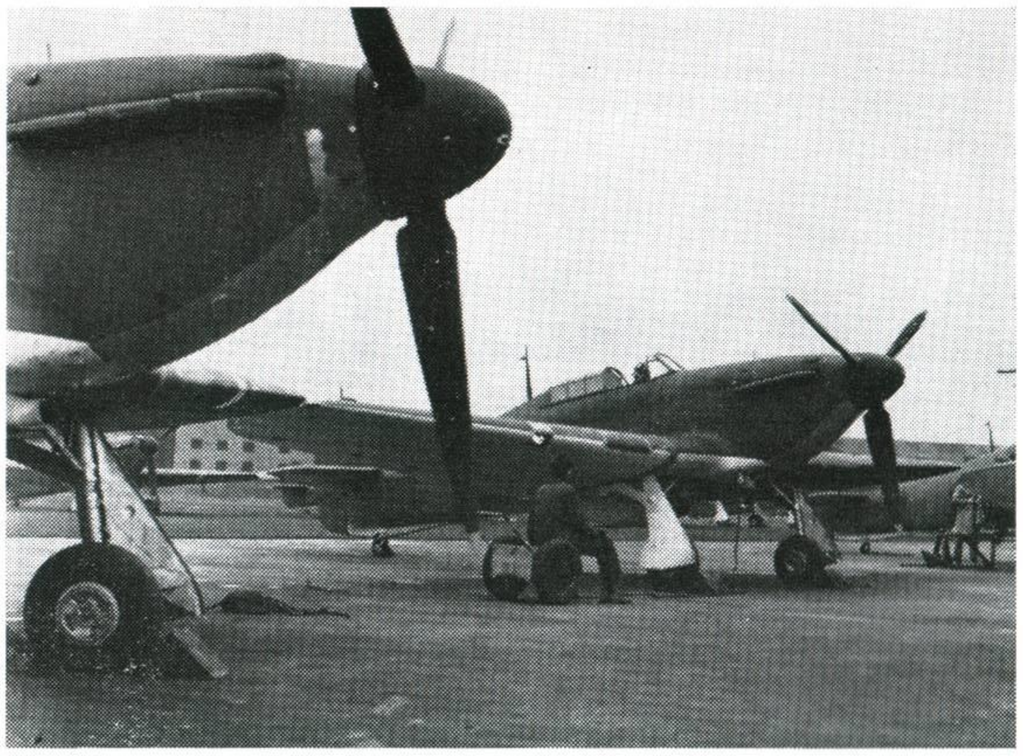
No disruption of work at fighter squadrons was to be caused by the introduction of the new fin flash, and it was to be applied as and when time permitted. Some Hurricanes, which were out of use at the time, were repainted soon after receipt of the Order, but the majority continued to retain their existing fin markings until later, and a few still had them as late as 1941. The new standard fin flash was of more concern to Hurricane production factories and Civilian Repair Units, where it was introduced soon after the beginning of August.

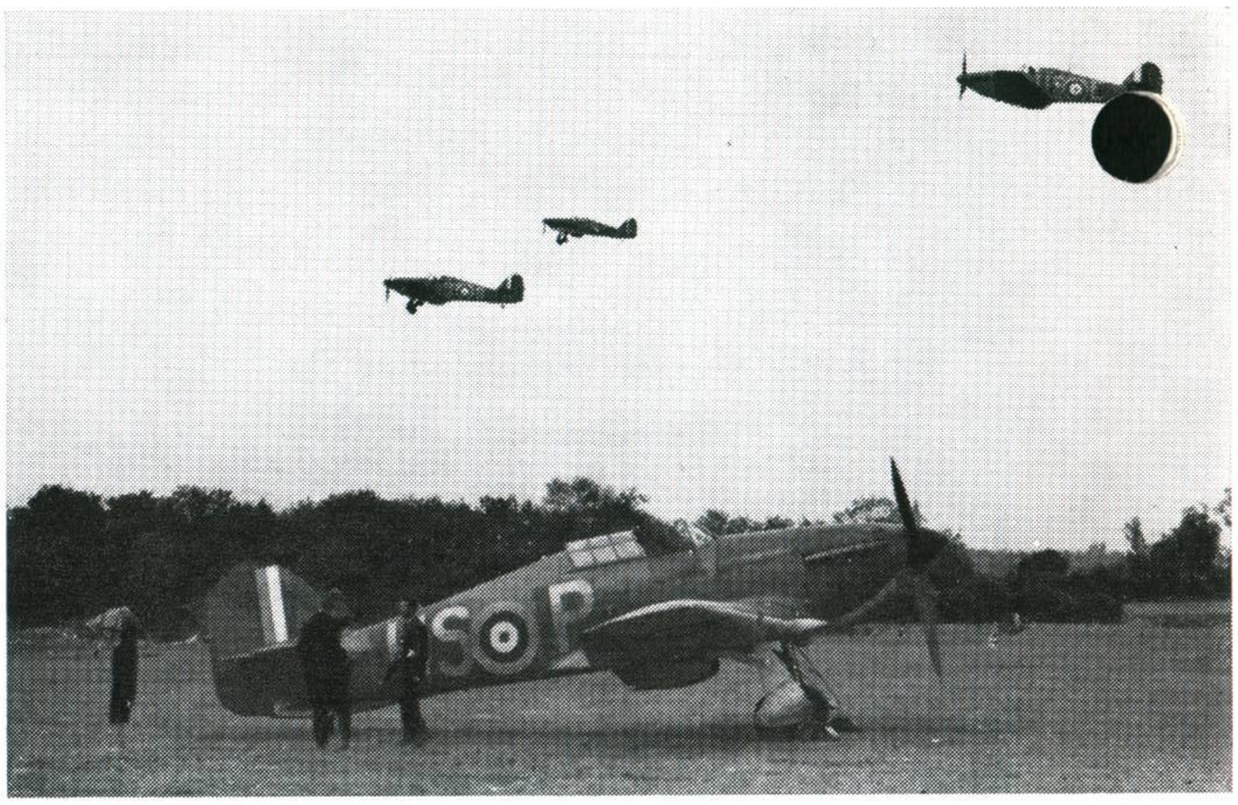
Under surface roundels on Hurricanes also showed considerable variation in size and position when re-introduced, until aircraft with the standard production form began to be delivered to M.U.s and then on to squadrons. The standard production form was a Type A roundel consisting of five ring widths of 10in., making a total diameter of 50in. The Red centre spot was 10in. diameter, the White 30in. and the Blue 50in. This roundel was introduced on the Hawker and Gloster production lines as soon as possible after 1st August without disrupting the flow of new Hurricanes.

During the Battle of Britain spinner markings were not in general use, the basic colour being Night. Some pilots, however, did adopt coloured spinners or light coloured rings. The use of Flight colours on some spinners appears to have been adopted by some pilots, although this was not general. Even during their stay in France some Hurricanes did have similar adornments, but they were a rarity. Paul Richey, in his splendid book 'Fighter Pilot', recalls the loss of his Hurricane with the Red spinner.

As German daylight raids gradually diminished and the heavy night 'blitz' began during the latter part of

Standard production Hurricanes at Brooklands early in 1940. 35in. diameter Type A fuselage roundels. Night, White and Aluminium under surfaces. 6in. high serial. (Flight)





Hurricanes of No. 56(F) Squadron, 30th May, 1940. Taken during the withdrawal of British forces from France and Belgium. US-P has Night, White and Aluminium under surfaces. The roundels were added under the wings following the signal of 15th May.

1940, fighter squadrons were not so extended and consequently there was more time to apply the authorised markings and the standard fin flash became more commonly used.

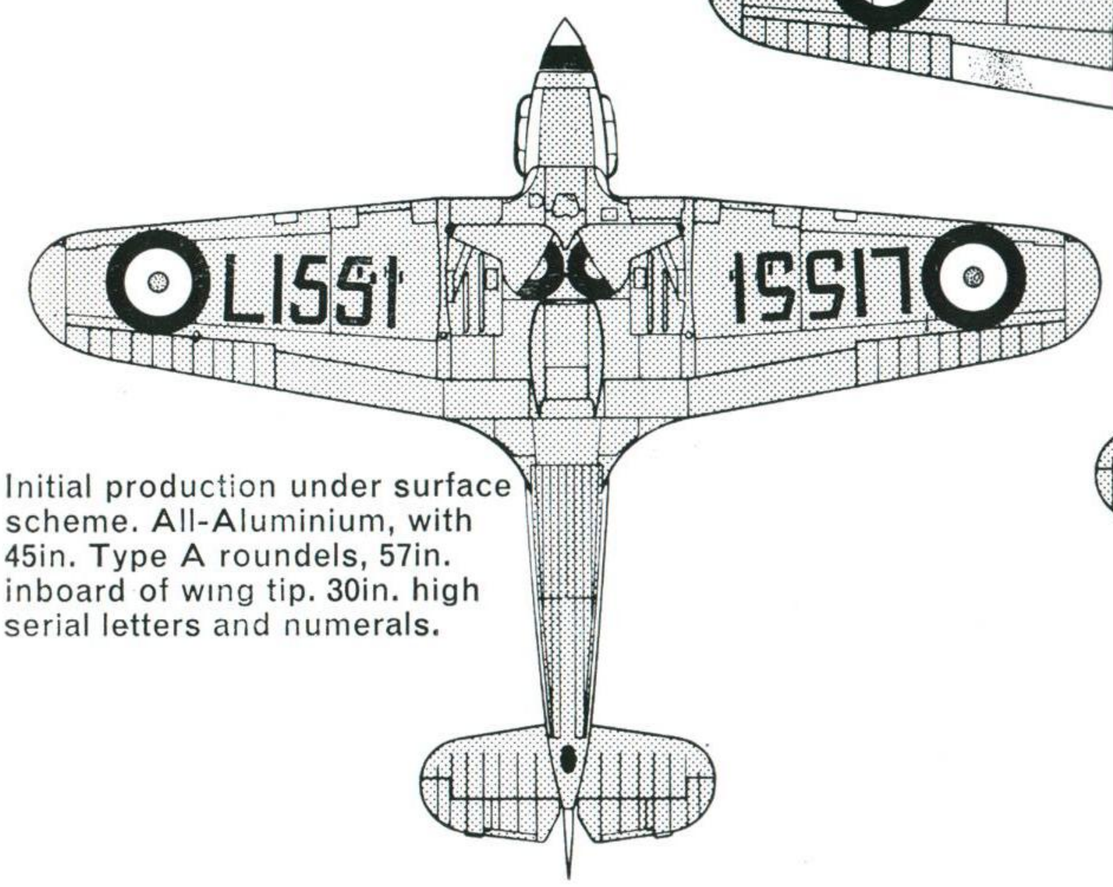
With the Battle of Britain virtually over, Fighter Command re-assessed the camouflage and markings of its aircraft in the light of combat experience. General consensus of opinion favoured a return to the 'black and white' under surface finish. Fighter pilots had found it a useful means of immediately locating the position of friendly fighters above them, and the knowledge that they were covered was reassuring. Although the black wing also identified R.A.F. fighters to the enemy, this slight disadvantage was accepted. In view of this, the decision was taken to re-introduce the 'black and white' scheme throughout Fighter Command on 27th November, 1940. However, in view of the enormous amount of man hours involved in the re-painting it was also agreed that the painting of the port wing 'black', leaving the existing colour scheme of Sky on the rest of the under surfaces, would suffice.

The paint used for the 'black' wing was not the standard Night finish but a semi-permanent, washable form (DTD.441). This was to facilitate the removal of the 'black' marking if and when this was found to be desirable.

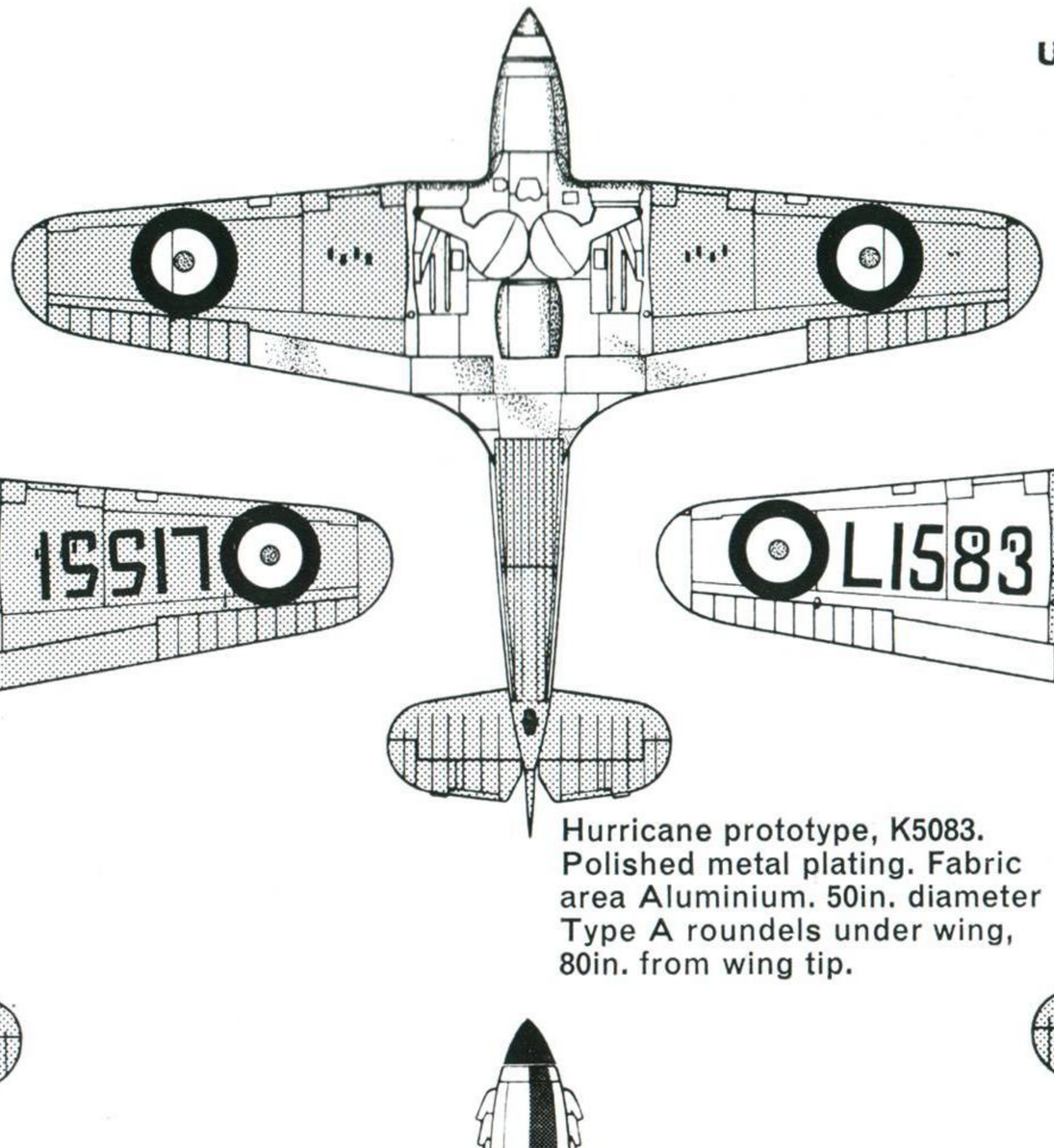
There is not evidence to indicate that the 'black' port wing was ever painted on by the aircraft manufacturers during normal production. It was left to the Royal Air Force MUs. where it was painted on new Hurricanes before delivery to squadrons and by individual squadrons to their existing aircraft.

With the re-introduction of the 'black' wing on 27th November, 1940, came two other identification features—the Sky painted spinner and the Sky painted band of 18in. width around the rear fuselage, just forward of the fin. The Sky spinner had been used unofficially on some Hurricanes during the Battle of Britain.

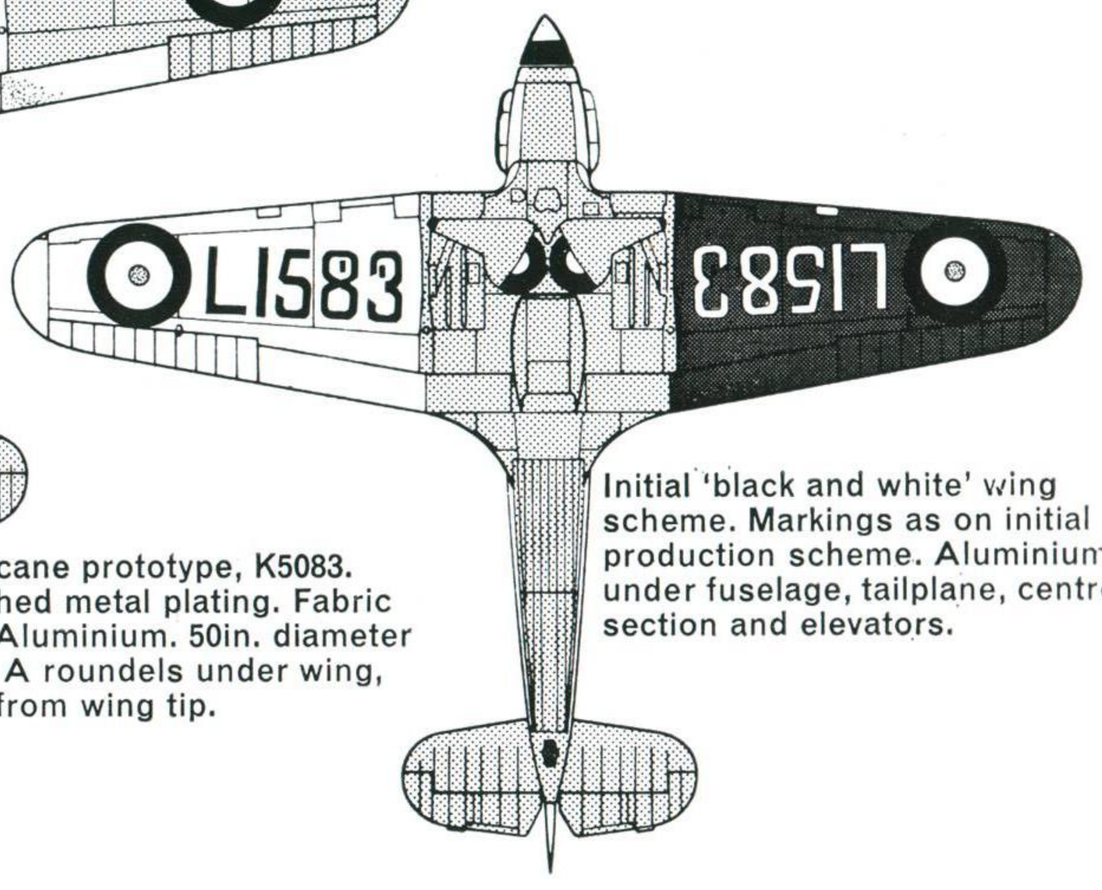
Underwing roundels would be left in their existing positions, but a Yellow ring would be added around the roundel on the port wing. The width of this Yellow ring



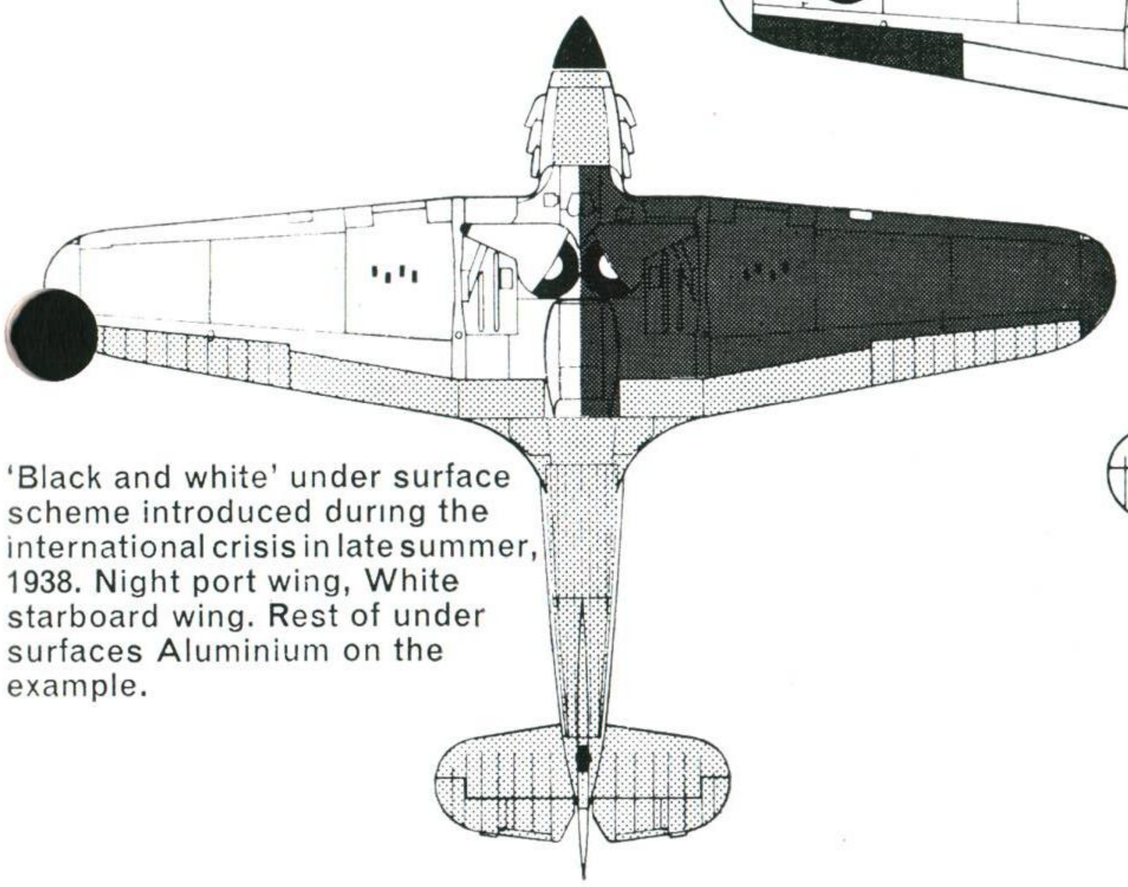
Initial production under surface scheme. All-Aluminium, with 45in. Type A roundels, 57in. inboard of wing tip. 30in. high serial letters and numerals.



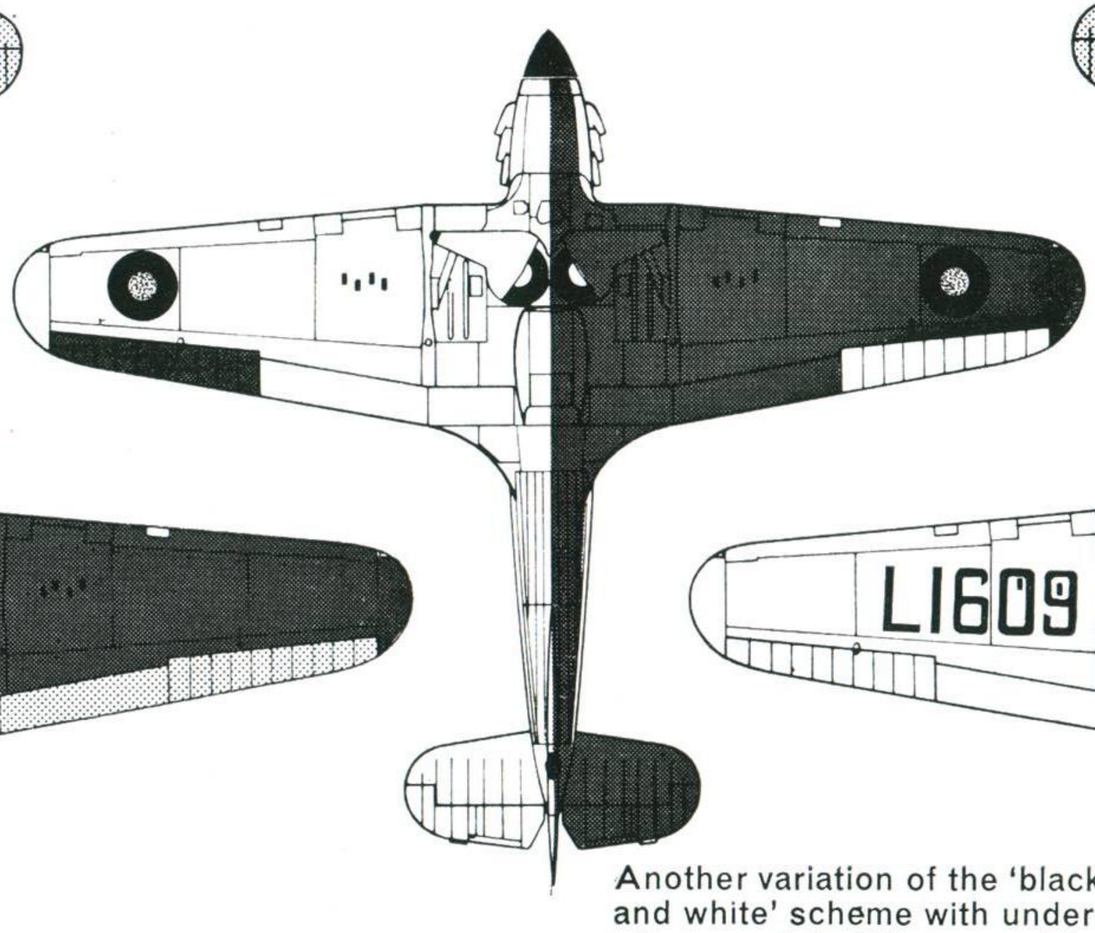
Hurricane prototype, K5083. Polished metal plating. Fabric area Aluminium. 50in. diameter Type A roundels under wing, 80in. from wing tip.



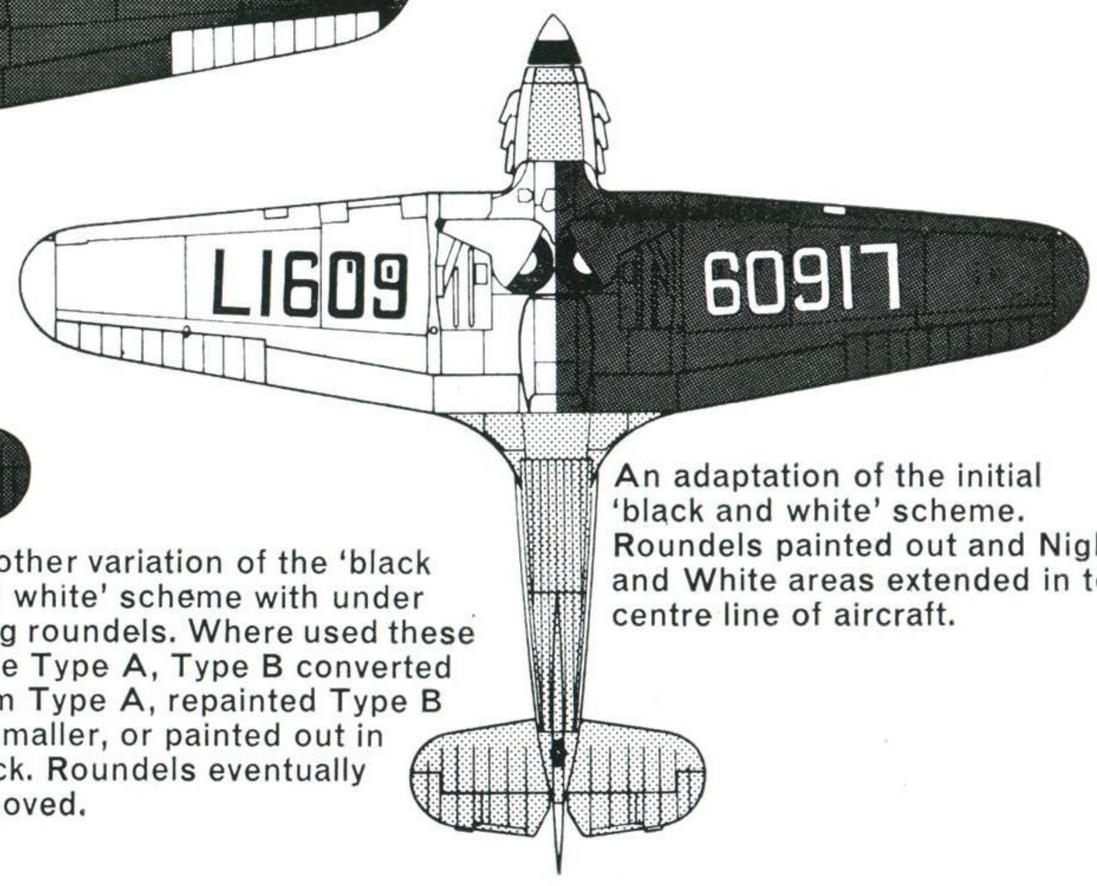
Initial 'black and white' wing scheme. Markings as on initial production scheme. Aluminium under fuselage, tailplane, centre section and elevators.



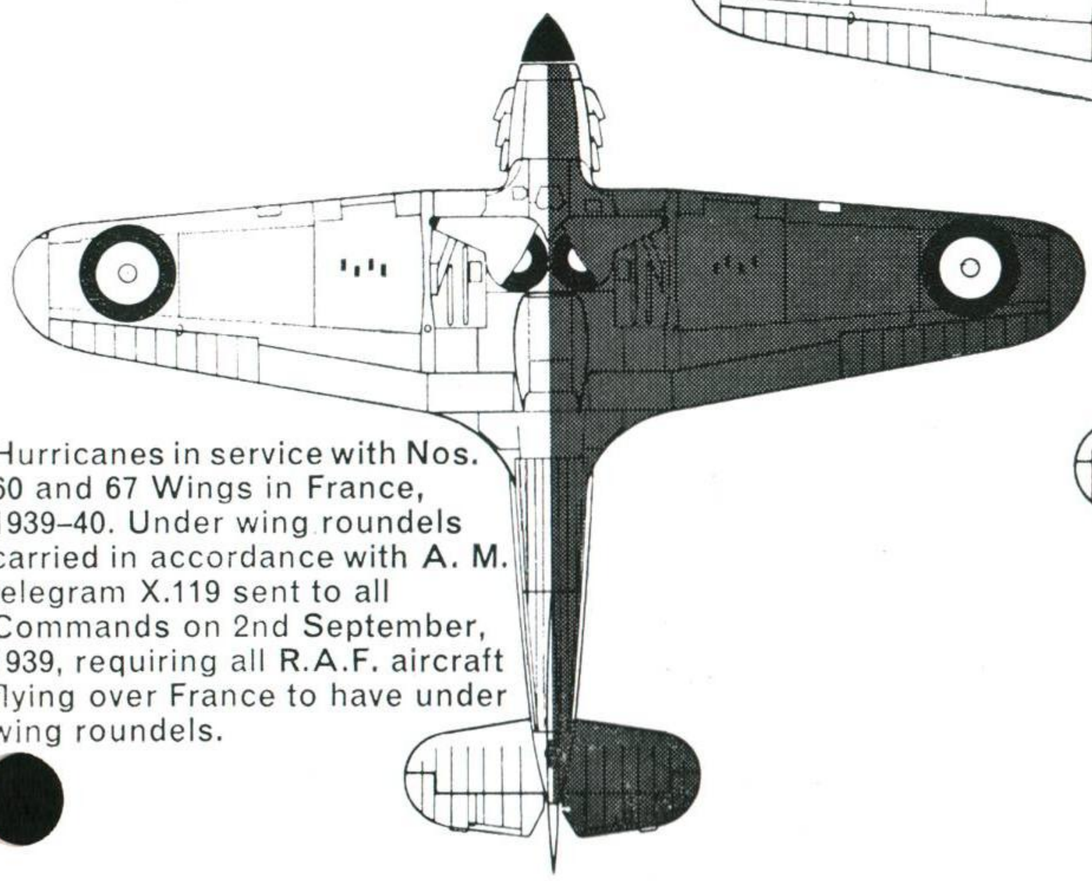
'Black and white' under surface scheme introduced during the international crisis in late summer, 1938. Night port wing, White starboard wing. Rest of under surfaces Aluminium on the example.



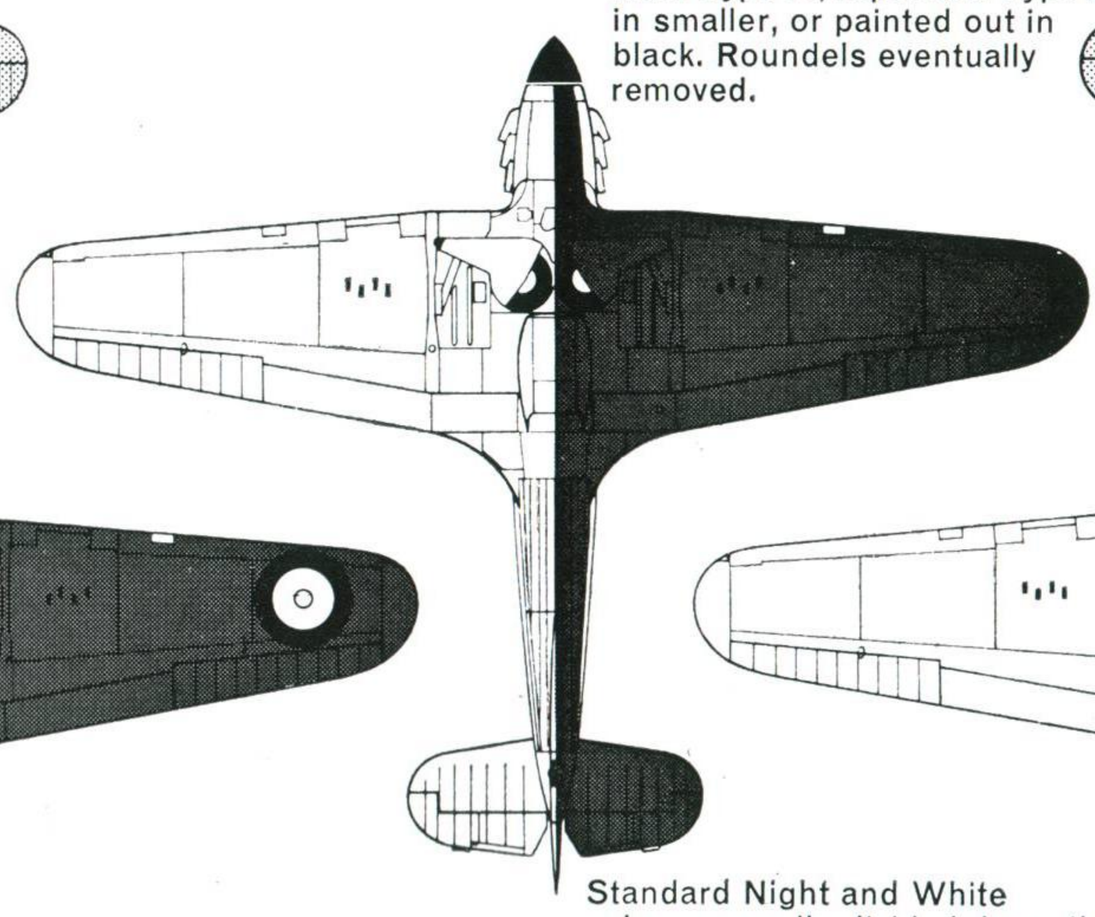
Another variation of the 'black and white' scheme with under wing roundels. Where used these were Type A, Type B converted from Type A, repainted Type B in smaller, or painted out in black. Roundels eventually removed.



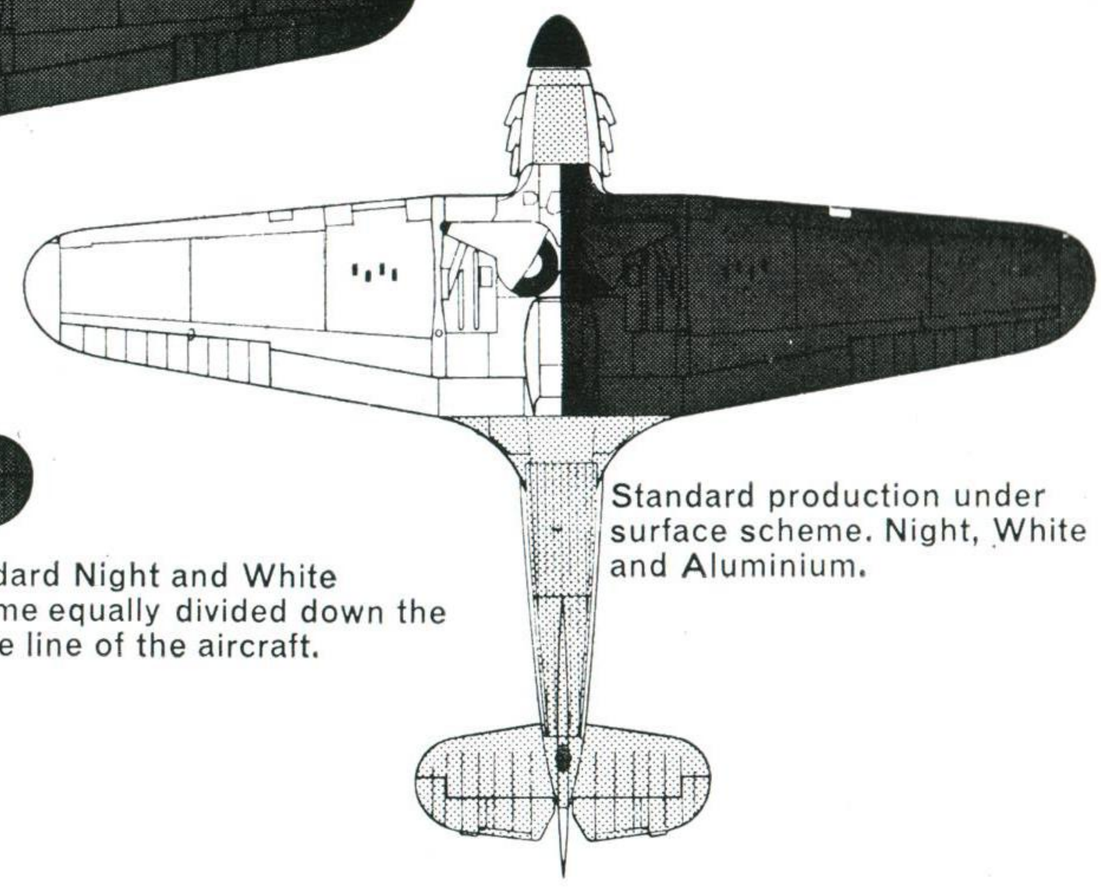
An adaptation of the initial 'black and white' scheme. Roundels painted out and Night and White areas extended in to centre line of aircraft.



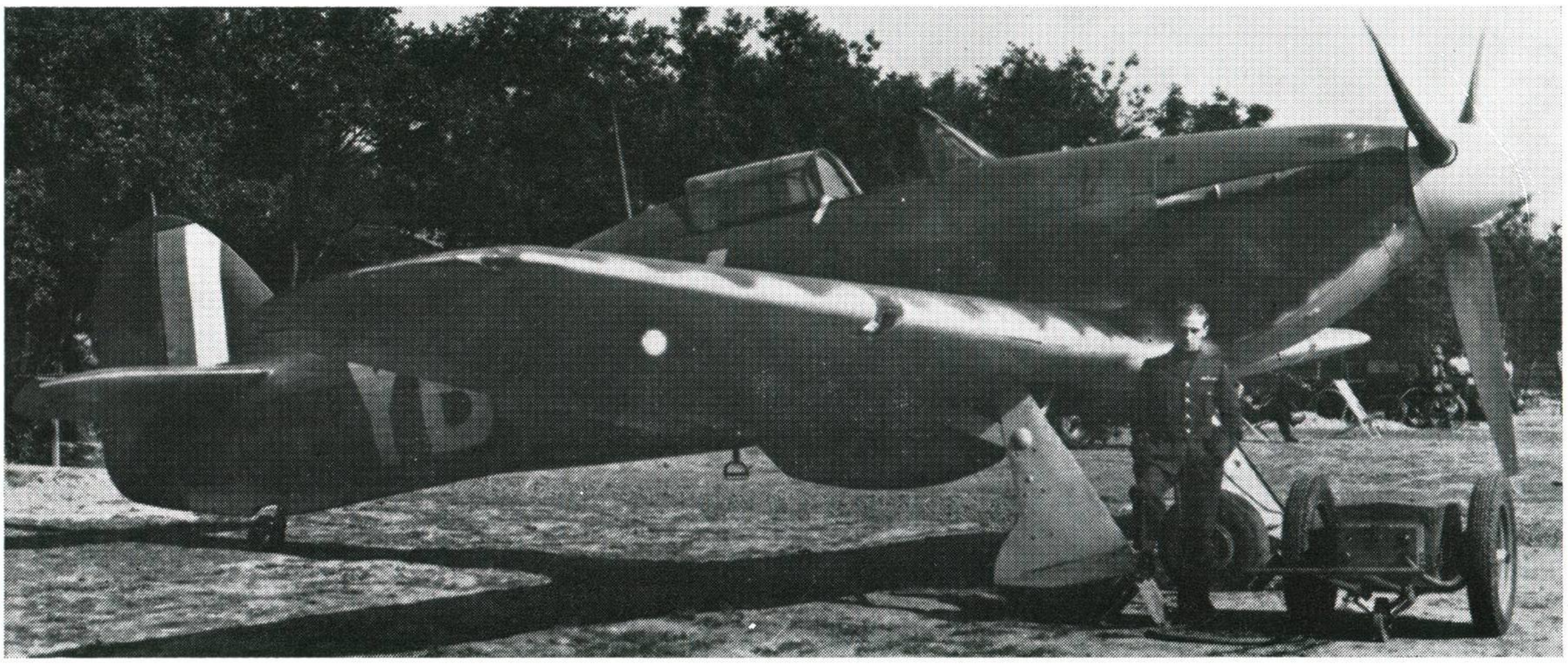
Hurricanes in service with Nos. 60 and 67 Wings in France, 1939–40. Under wing roundels carried in accordance with A. M. telegram X.119 sent to all Commands on 2nd September, 1939, requiring all R.A.F. aircraft flying over France to have under wing roundels.



Standard Night and White scheme equally divided down the centre line of the aircraft.



Standard production under surface scheme. Night, White and Aluminium.



Hurricane I of No. 17(F) Squadron, taken after the painting of all-Sky under surfaces after 6th June, 1940. Under wing roundels were not added until August. The wavy Sky leading edge of the wing is an individual touch. The Sky spinner is also an unofficial adornment at this period. The fin flash has 9in. wide Blue and White bars, with all-Red forward area. YB-W, P3878. (Official)

varied according to the positioning of the roundel and its size. Often the Yellow ring was of the same width as the existing Red, White and Blue rings, but there were many instances where insufficient space permitted only a narrow ring to be used. In some instances the entire roundel was repainted, bringing the overall diameter up to the same size as the Type A roundel on the starboard wing.

The painting of the rear fuselage band was subject to some variation; in some instances it was broken to leave the serial number visible, whilst in others it partially obliterated it. But generally the band was correctly applied, with the serial number painted across the Sky band.

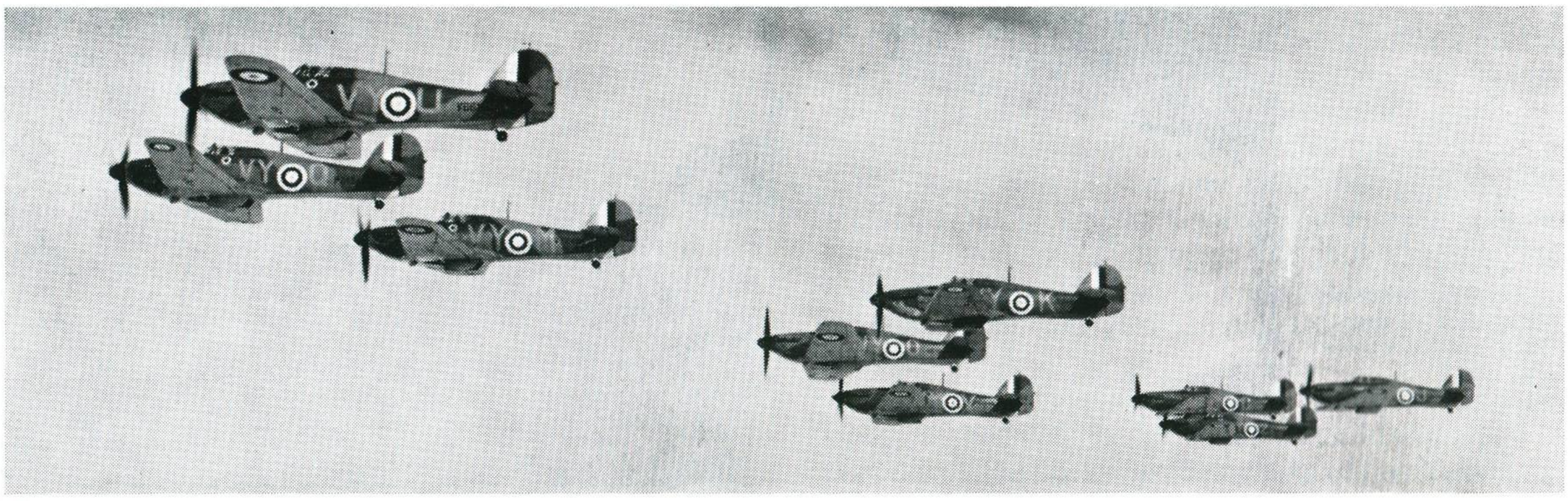
An important production change during January, 1941, was the abandonment of the B-scheme camouflage pattern, which had been in use since 1937. All future Hurricanes were produced in the A-scheme only.

After the 'black' port wing had been in use again for several months the signal A279 was sent by Fighter Command to the Air Ministry and all other Commands on 7th April, 1941, notifying them that from dawn on 15th April (but subsequently delayed until 22nd April), the 'black' marking would be removed from all port wing under sides of day fighters. The reasons for this sudden change of policy is not known, but was possibly a reflection of the change of role of Fighter Command from a purely defensive force to the more aggressive actions in the form of mass formation 'sweeps' into enemy-held territory. In this context, the 'black' wing would have provided ground observers of the whereabouts of R.A.F. fighters. The same problems arose during bomber escort duties.

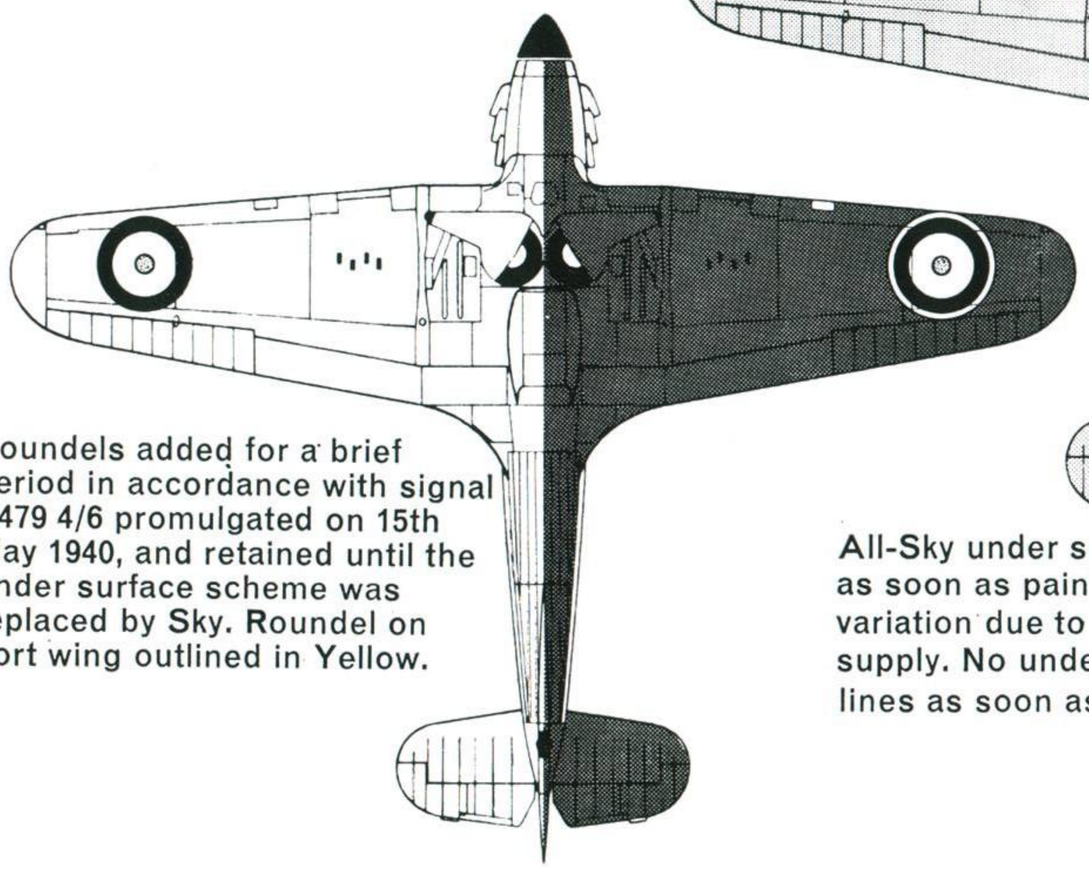
From 22nd April, all day fighter aircraft reverted to the all-Sky under surface finish, with Type A roundels, but there were instances where the Yellow outer ring was retained around the port wing roundels until it was overpainted with Sky. The Sky spinner and rear fuselage band were retained in Fighter Command for the rest of the war.

From early in 1941, the whole question of fighter camouflage had again been reviewed in the light of new operating conditions. The existing scheme of Dark Green and Dark Earth upper surfaces, with Sky

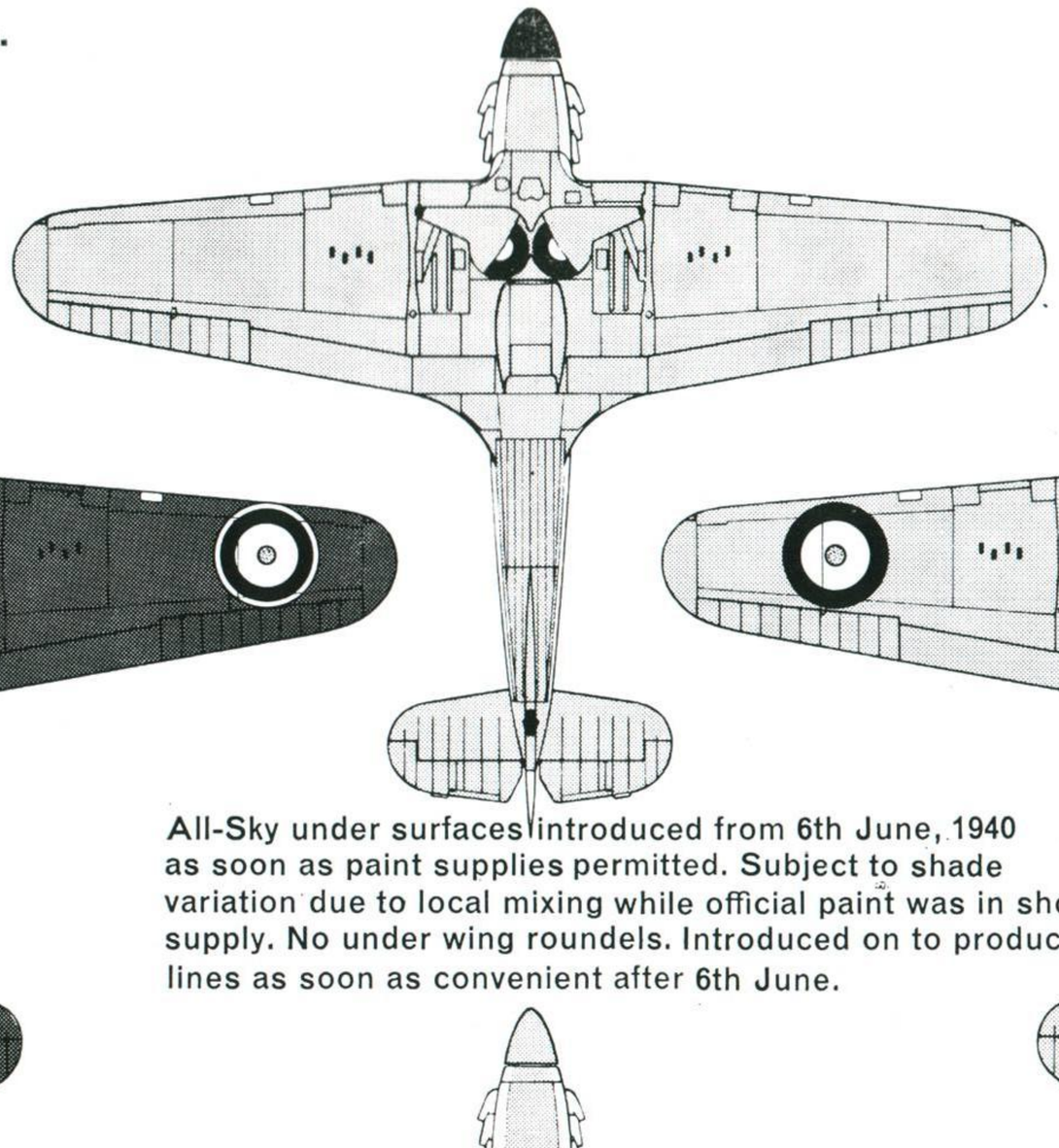
Hurricanes of No. 85 Squadron. Most of the aircraft have standard 'Battle of Britain' upper surface factory finish and markings including 35in. diameter Type A.I fuselage roundels. 9in. wide Blue and White bars on fin flash, with all-Red forward area. Many of these aircraft are from the Gloster Aircraft Company's production line. Most were produced with all-Sky under surface finish, without roundels. The variety of roundel styles under the wings suggests both squadron and M.U. painting. (I.W.M.)



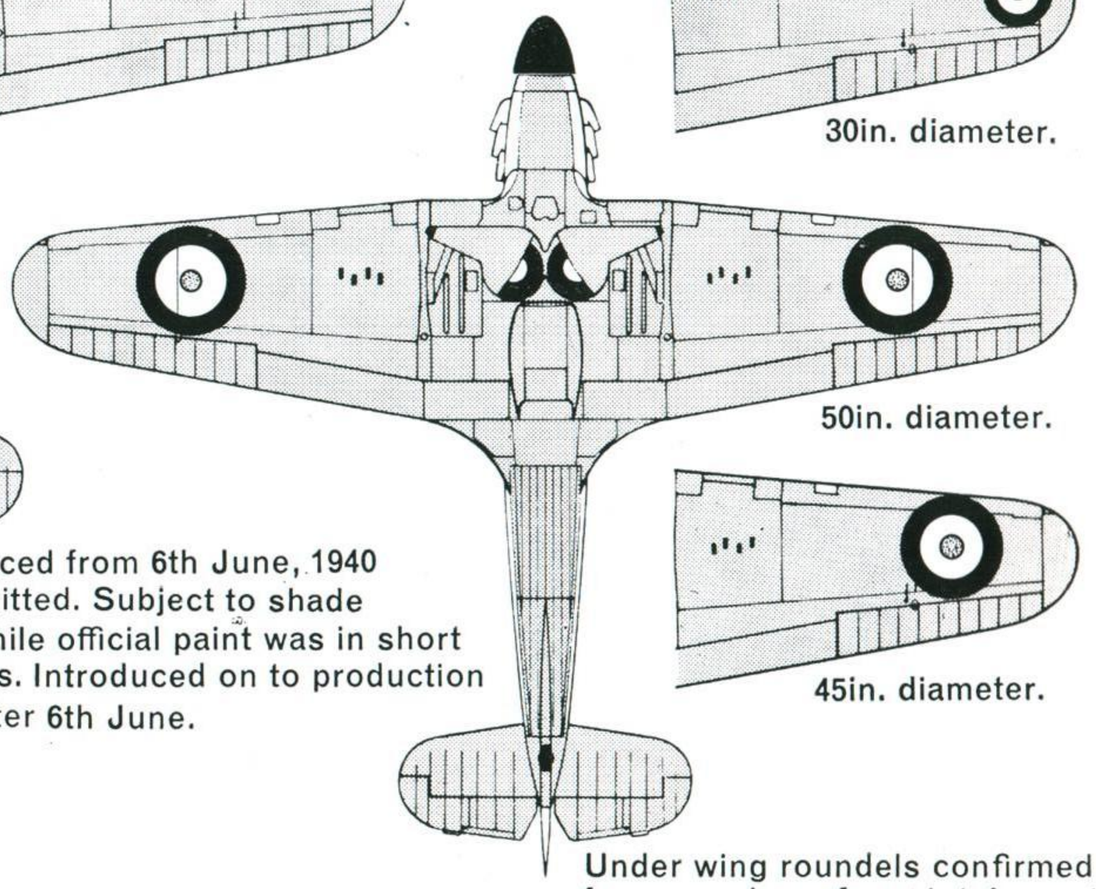
Under surface schemes.

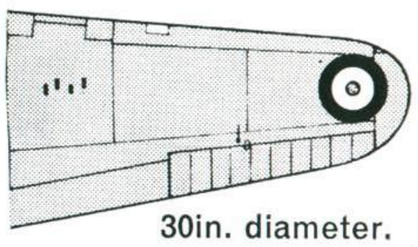


Roundels added for a brief period in accordance with signal X479 4/6 promulgated on 15th May 1940, and retained until the under surface scheme was replaced by Sky. Roundel on port wing outlined in Yellow.



All-Sky under surfaces introduced from 6th June, 1940 as soon as paint supplies permitted. Subject to shade variation due to local mixing while official paint was in short supply. No under wing roundels. Introduced on to production lines as soon as convenient after 6th June.

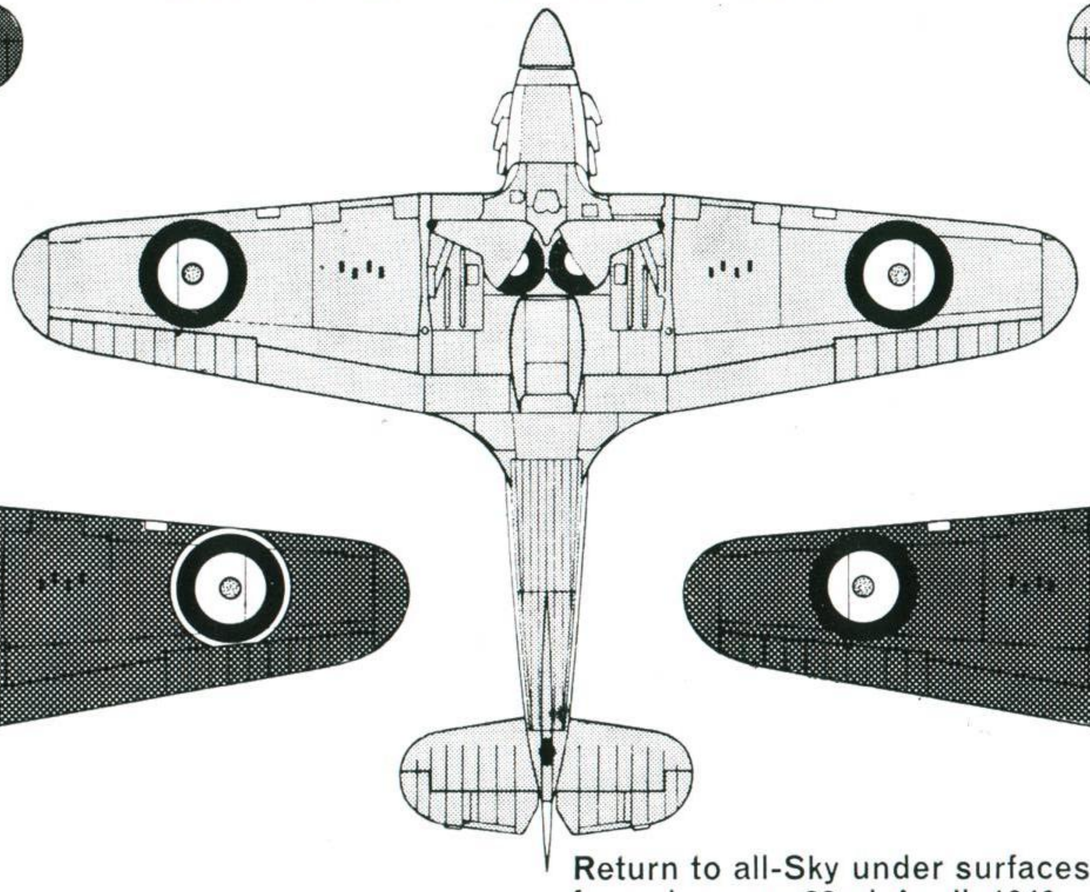




30in. diameter.

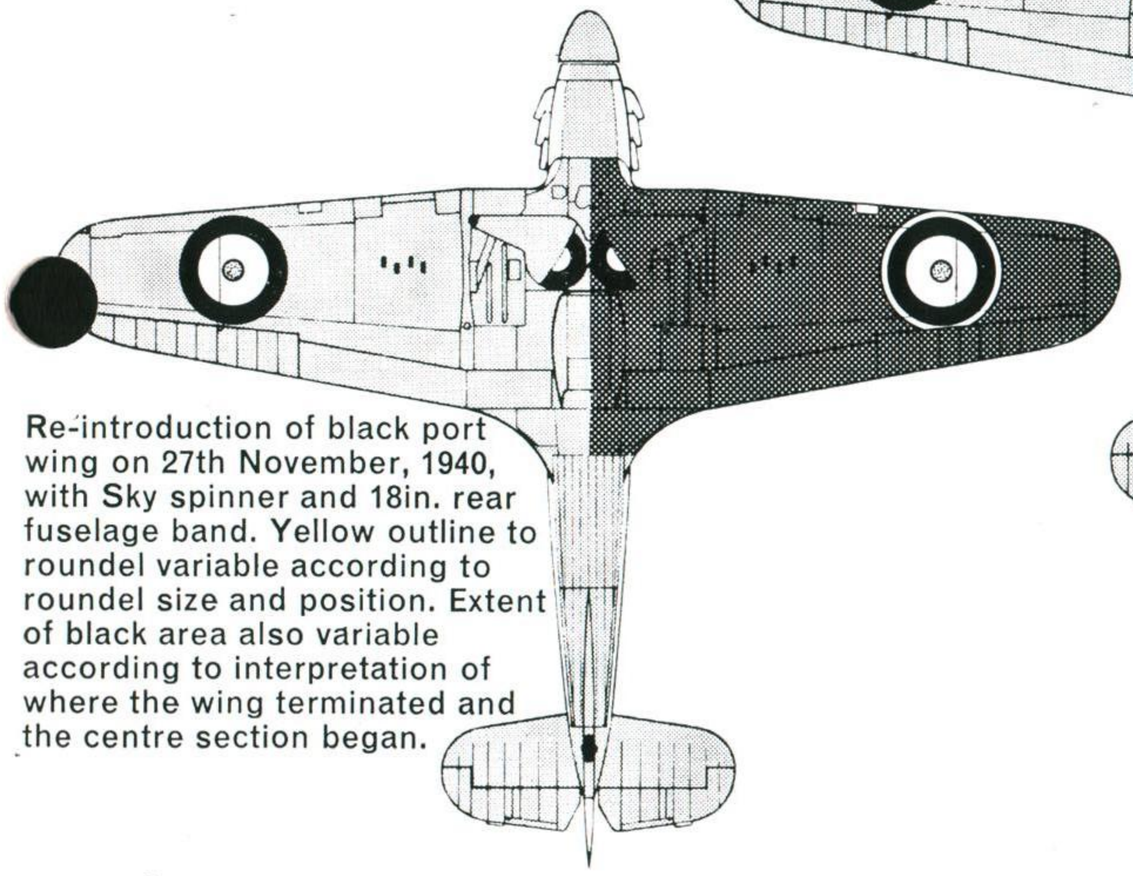
50in. diameter.

45in. diameter.

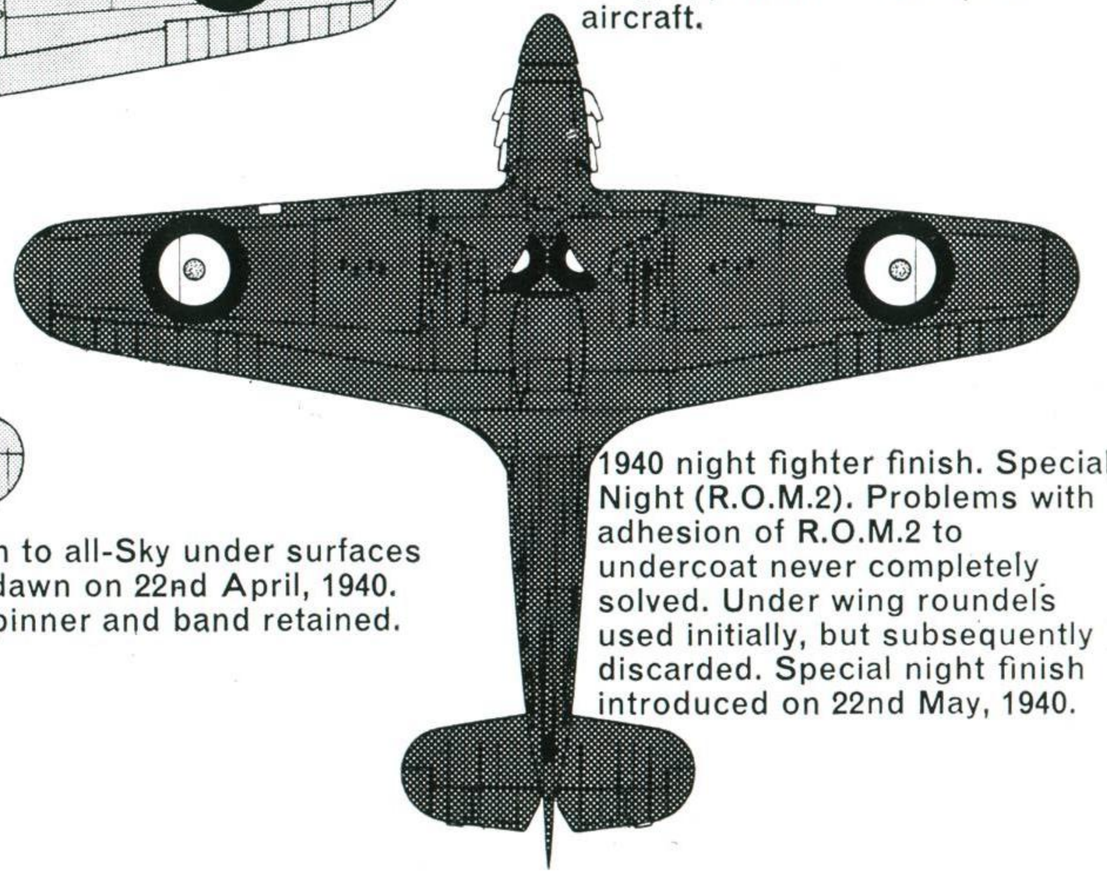


Return to all-Sky under surfaces from dawn on 22nd April, 1940. Sky spinner and band retained.

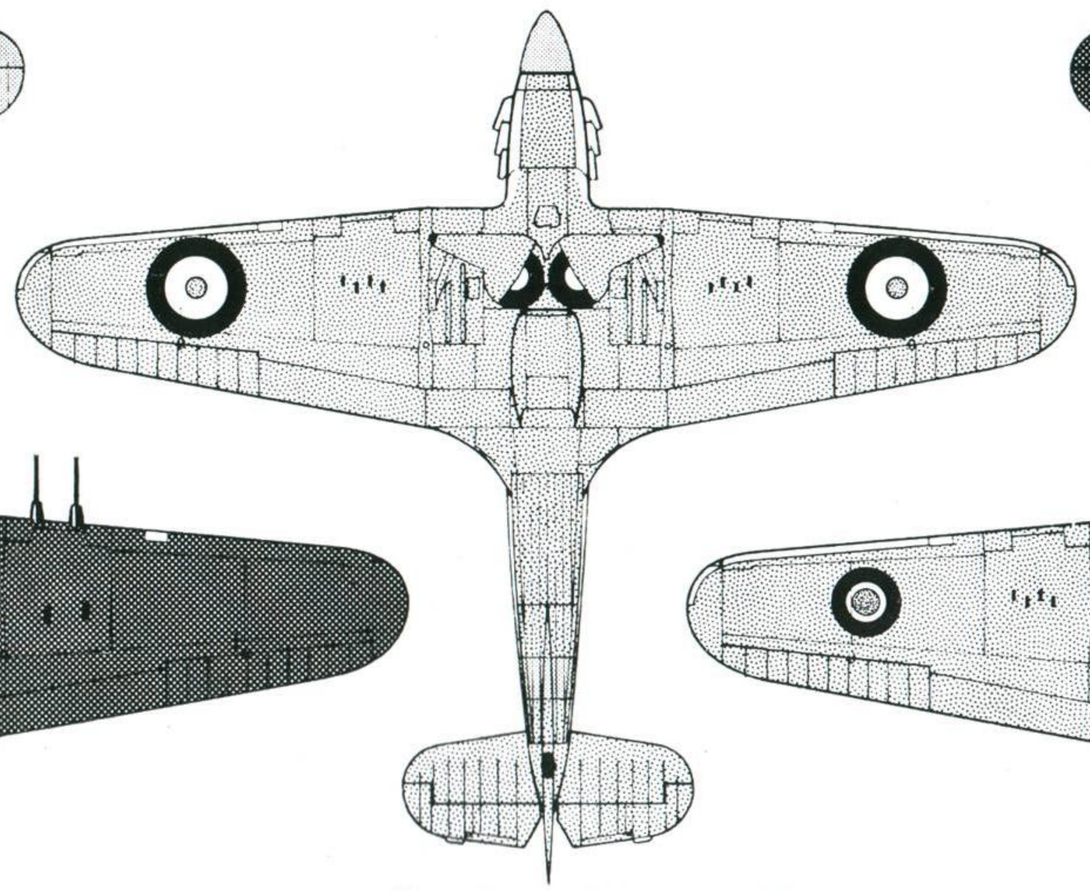
Under wing roundels confirmed for general use from 1st August, 1940. Subject to variation in size and position. 50in. diameter production form, 80in. inboard of wing tip, shown on complete aircraft.



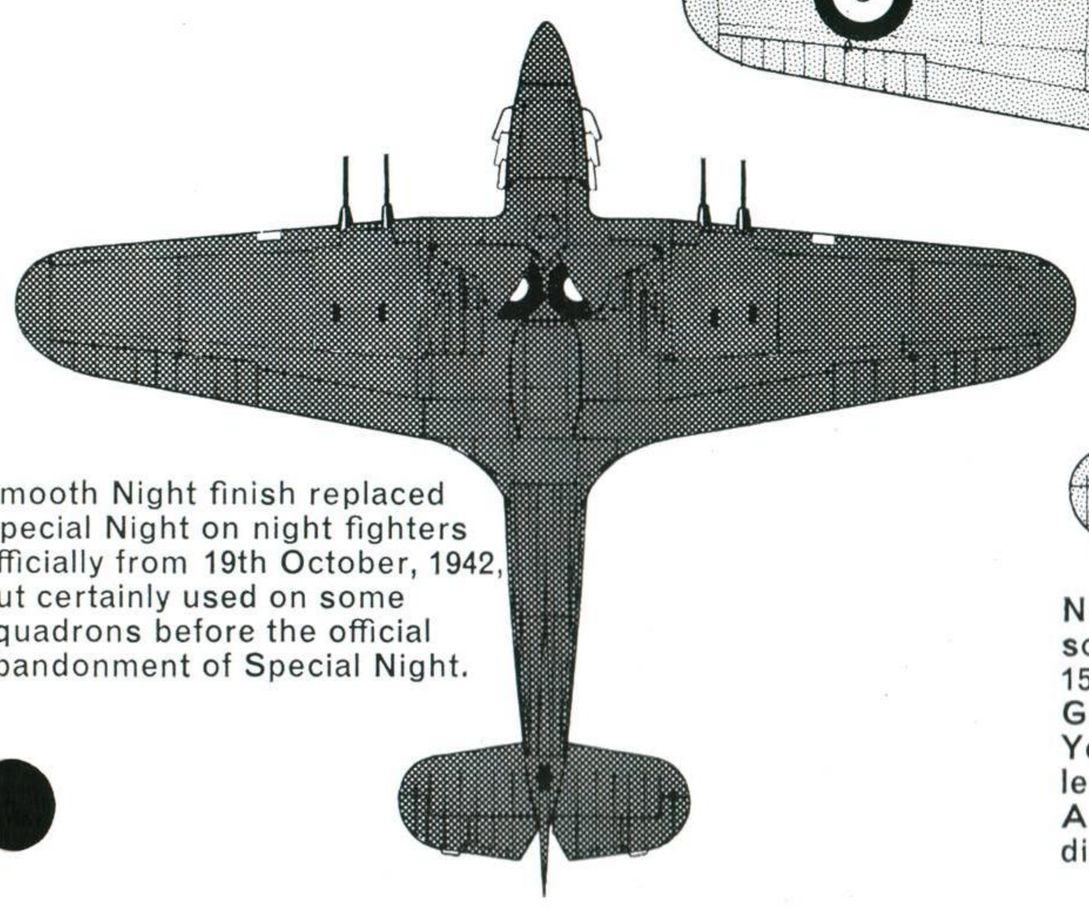
Re-introduction of black port wing on 27th November, 1940, with Sky spinner and 18in. rear fuselage band. Yellow outline to roundel variable according to roundel size and position. Extent of black area also variable according to interpretation of where the wing terminated and the centre section began.



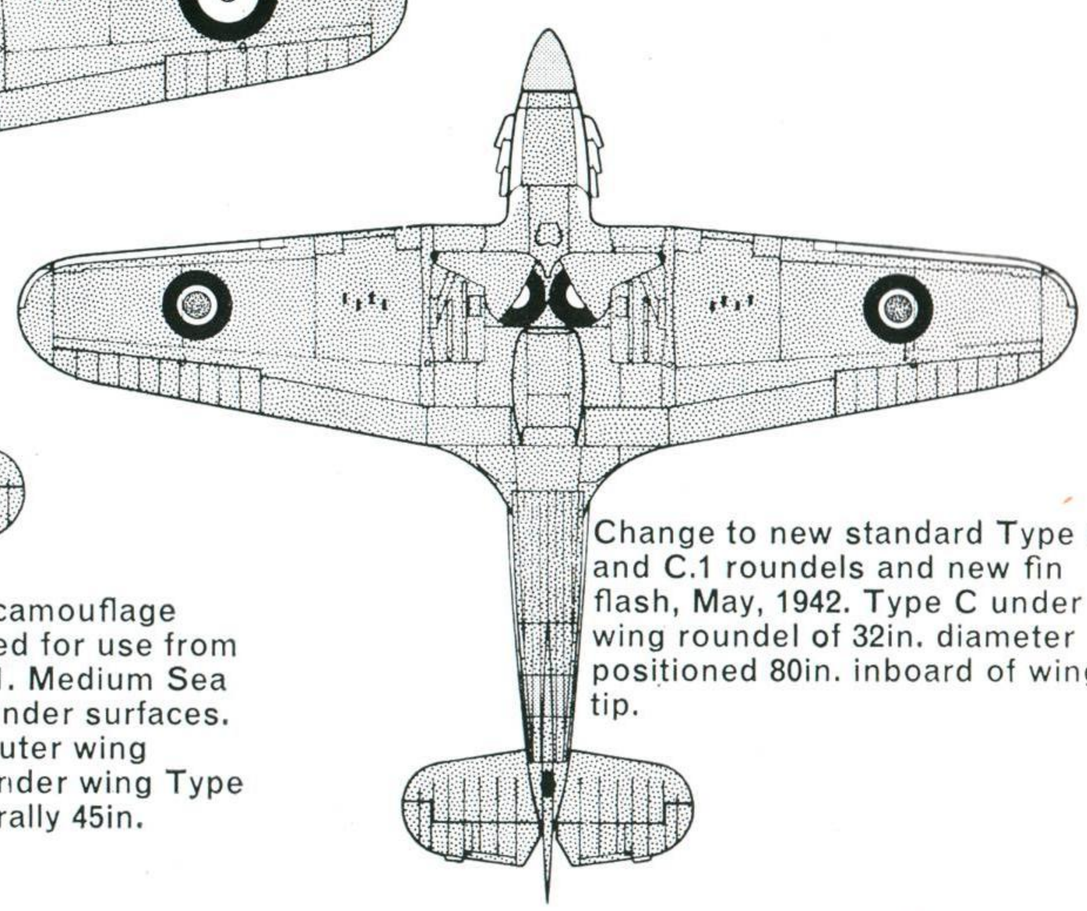
1940 night fighter finish. Special Night (R.O.M.2). Problems with adhesion of R.O.M.2 to undercoat never completely solved. Under wing roundels used initially, but subsequently discarded. Special night finish introduced on 22nd May, 1940.



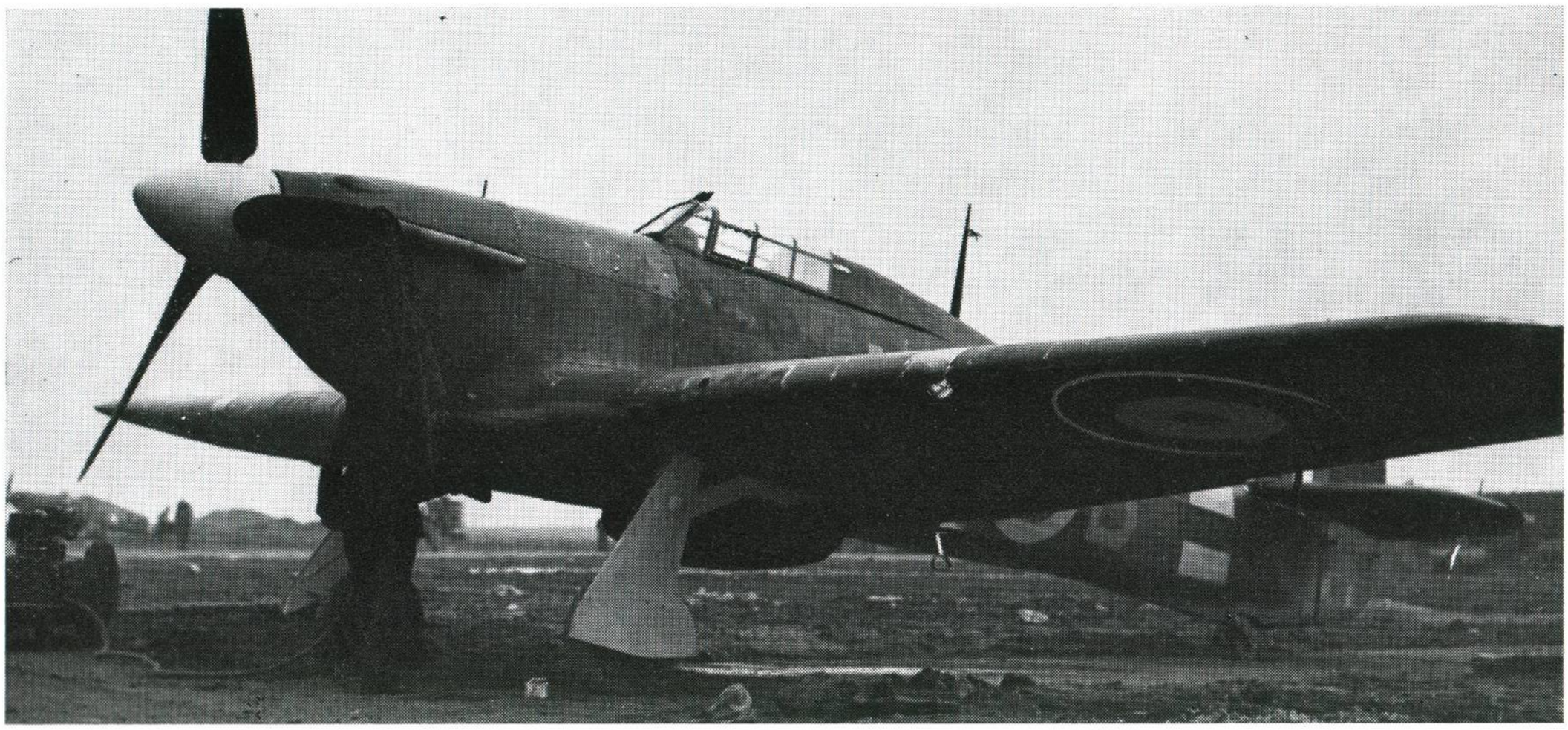
New day fighter camouflage scheme authorised for use from 15th August, 1941. Medium Sea Grey overall on under surfaces. Yellow strip on outer wing leading edges. Under wing Type A roundels generally 45in. diameter.



Smooth Night finish replaced Special Night on night fighters officially from 19th October, 1942, but certainly used on some squadrons before the official abandonment of Special Night.



Change to new standard Type C and C.1 roundels and new fin flash, May, 1942. Type C under wing roundel of 32in. diameter positioned 80in. inboard of wing tip.



Hurricane Mk. I, V7104, of No. 601(F) Squadron, early 1941. Sky under surfaces with black port wing. 50in. diameter Type A roundel on port wing with very narrow outer Yellow ring. Note how Sky rear fuselage band has been painted around serial. Dark Green and Dark Earth upper surfaces. Code letters, UF-B, in Medium Sea Grey. B scheme camouflage. (Cyril Peckham)

under surfaces, had been developed for use over land at medium altitudes, or for dispersal on grass aerodromes. Air combat was now taking place at ever-increasing altitudes, well above the 10,000 feet level which was the maximum for which the scheme had been designed.

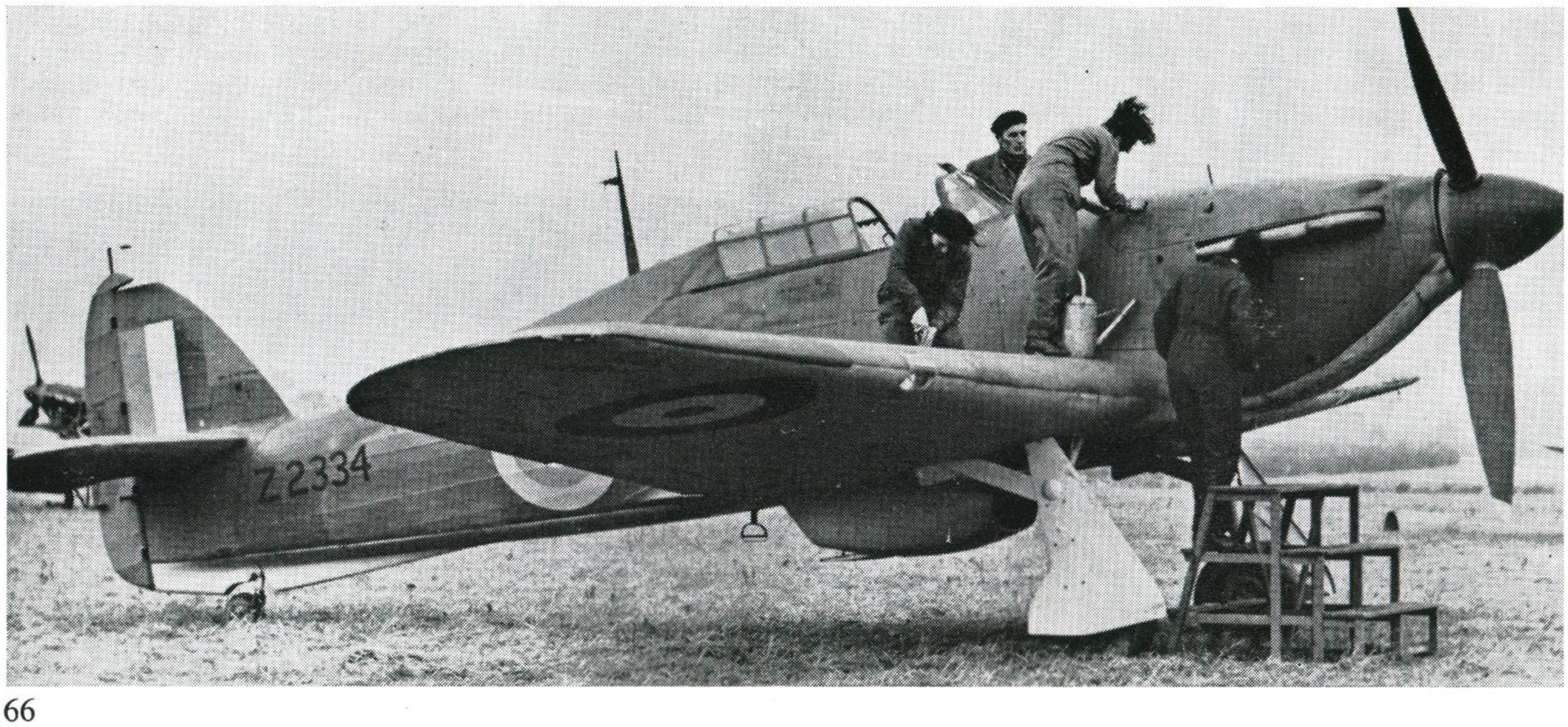
Above this height the combination of Dark Green and Dark Earth was considered to be too dark, and Sky was too light. German fighter camouflage, with the under surface colour of Hellblau extending up to the upper parts of the fuselage and merging into the upper surface scheme producing a mottle effect, was considered by the R.A.F. to be superior to the existing Fighter Command scheme at the higher altitudes. Consequently, on 26th March, 1941, the Air Fighting Development Unit at Duxford requested permission to begin a series of trials to develop a new standard day fighter camouflage scheme.

Two Spitfires, X4815 and X4816, were used initially in these tests, and a number of different schemes were tried out. Scheme A, used on X4815, consisted of using a pattern on the upper surfaces of two-thirds of the area painted in Sky Grey, and one third in a special colour—Olive Grey. The latter was described as being mid-way between Dark Sea Grey and Light Slate Grey—in other words, a medium, greenish grey. The under surfaces of X4815, with the new colours, was Sky Blue, a surprising choice in view of that colour being even lighter and more reflective than Sky.

Scheme C used on the same Spitfire, consisted of half the upper pattern being painted in Medium Sea Grey, and the other half in Olive Grey, with the under surface again Sky Blue.

The first scheme used on X4816—Scheme B—concerned only the under surface colour, which was a light greenish blue. Shortly after this X4816 was painted in Scheme D, in which half the upper surface

Standard late 'Battle of Britain' finish. 35in. diameter Type A.I fuselage roundels, 50in. diameter Type A under wing roundel, 49in. diameter Type B upper wing roundels. Standard 27in. by 24in. fin flash introduced after 1st August, 1940. Hurricane Mk. IIA, Z2334. (R. C. Jones)



HURRICANE CAMOUFLAGE & MARKINGS. ALL MARKS BASICALLY SIMILAR. BASED ON HAWKER DRG.E 116520

VARIABLE. 5,6,OR 7 IN. WIDE STRIPES

18 IN. (9IN.WIDE BLUE AND WHITE)

8 IN.
8 IN.
8 IN.

STANDARD FIN FLASH, AUGUST, 1940

27 IN.

18 IN. SKY BAND

4·5 IN

10 IN.

40·25 IN.

35 IN.

5 IN.

25 IN.

15 IN.

21 IN.

35 IN.

35 IN.

14 IN.

TYPE B CONV. OF 49 IN. ROUNDEL.

24 IN.

2 IN.

11 IN.

11 IN.

STANDARD FIN FLASH, MAY, 1942

DARK GREEN AREAS

80 IN.

Y

4 IN.

24 IN.

X

X

Y

24 IN.

49 IN

19·5 IN.

26 IN.

25·5 IN.

4·25 IN.

23·37 IN.

96·25 IN.

45 IN. DIA.

45 IN.

9 IN.

14·5 IN.

30 IN.

L1573

27 IN.

EARLY PRODUCTION UNDER SURFACE

UNDER SURFACE ROUNDELS

80 IN.

2·5 IN.

6 IN.

X–X

Y–Y

YELLOW STRIPE ON WING LEADING EDGE

35 IN.

7 IN.

40 IN.

50 IN.

30 IN.

18 IN.

6 IN.

21 IN.

24 IN.

30 IN.

8 IN.

10 IN.

25 IN.

50·5 IN.

21·5 IN.

32 IN.

STANDARD U/SURFACE ROUNDEL, 1942

12 IN.

16 IN.

5 IN.

8 IN.

P3395

32 IN.

16 IN.

12 IN.

1·12 IN.

8 IN.

5 IN.

POSITION OF SERIAL No.

36 IN.

STANDARD FUS. ROUNDEL, 1942

25IN.

10 IN.

FUSELAGE ROUNDELS

TYPE B CONV. OF 35 IN. ROUNDEL

35 IN.

7 IN.

21 IN.

49 IN.

7 IN.

21 IN.

35 IN.

© JAMES GOULDING

pattern consisted of Dark Sea Grey and the other half Medium Sea Grey, with the under surfaces changed to Sky Grey.

During May, 1941, a Hurricane at North Weald was painted in Medium Sea Grey and Olive Grey upper surfaces, with Sky Blue under surfaces. Eventually it was intended to paint an entire squadron, probably No. 56 at North Weald, in this combination of colours. Whether this was done is not known, but at least one Flight of No. 56 Squadron was involved with the A.F.D.U. at Duxford in further trials at the end of May. Further colour schemes were investigated, including combinations of dark and light greys, greens and greys and mottle affects.

One of the major problems involved in changing to a new camouflage scheme was the repainting of vast numbers of day fighters and the thousands of man hours involved, not to mention the possibility of hundreds of aircraft being grounded for a period of time. For this reason it was found to be desirable to lessen the work load by retaining one of the basic colours, Dark Green being the obvious choice.

Two Greys Adopted

Although official documentation is obscure regarding this point, two greys were adopted as replacements for the existing colour of Dark Earth. One was the new standard M.A.P. colour Ocean Grey, which was a medium, greenish, blue-grey. The other, a simple mixture of seven parts of Medium Sea Grey and one part of Night, was less greenish than Ocean Grey. It was probably close to Dark Sea Grey in shade.

Both greys are referred to in official documents, including Air Ministry Orders, as Ocean Grey, but it is advisable to differentiate between the two shades. Pending supplies of pure M.A.P. Ocean Grey squadrons used the mixed grey from 15th August, 1941. The first squadrons to use the new upper surface camouflage scheme were those in Nos. 10 and 11 Groups, and the Spitfire Wing of No. 12 Group.

With the new upper surface colour scheme, Medium Sea Grey became the new standard under surface colour, replacing Sky. Further changes introduced with the new colours included the change from Grey code and aircraft letters to Sky and the adoption of a



Hurricane Is of No. 402 Squadron, Digby, early 1941. The demarcation of the black port side marking is unusual. The official requirement was for the wing only to be painted in semi-permanent black paint. 402 had not long been formed, and it is possible that these Hurricanes had been in store and were still in their old 'black and white' scheme when delivered, the white side being overpainted with Sky. (I.W.M.)

Yellow strip along the wing leading edge. On Hurricanes this strip was officially 6.5in. wide at a point 96.25in. inboard of the navigation light corners, tapering to 2.5in. wide at the termination point in the centre of the end of the wing tip. But there were variations of this marking. The new colour scheme was introduced on Hurricane production lines soon after 26th August, 1941. The underwing roundel was generally reduced in size to 45in. diameter to permit more space between the roundel and the new Yellow strip.

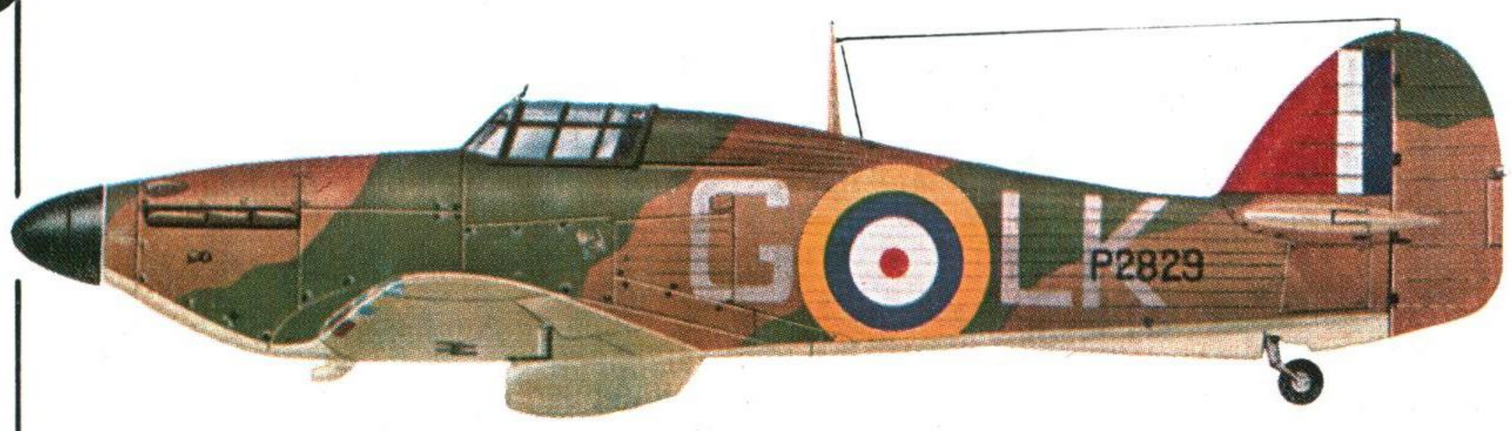
The last major change to Hurricane day fighter markings concerned the adoption of the less conspicuous Type C and C.1. roundels, and the standard 24in. by 24in. fin flash. The type C.1. roundels used on the fuselage position were the standard 36in. diameter pattern, and those under the wings, the standard 32in. diameter Type C roundel.

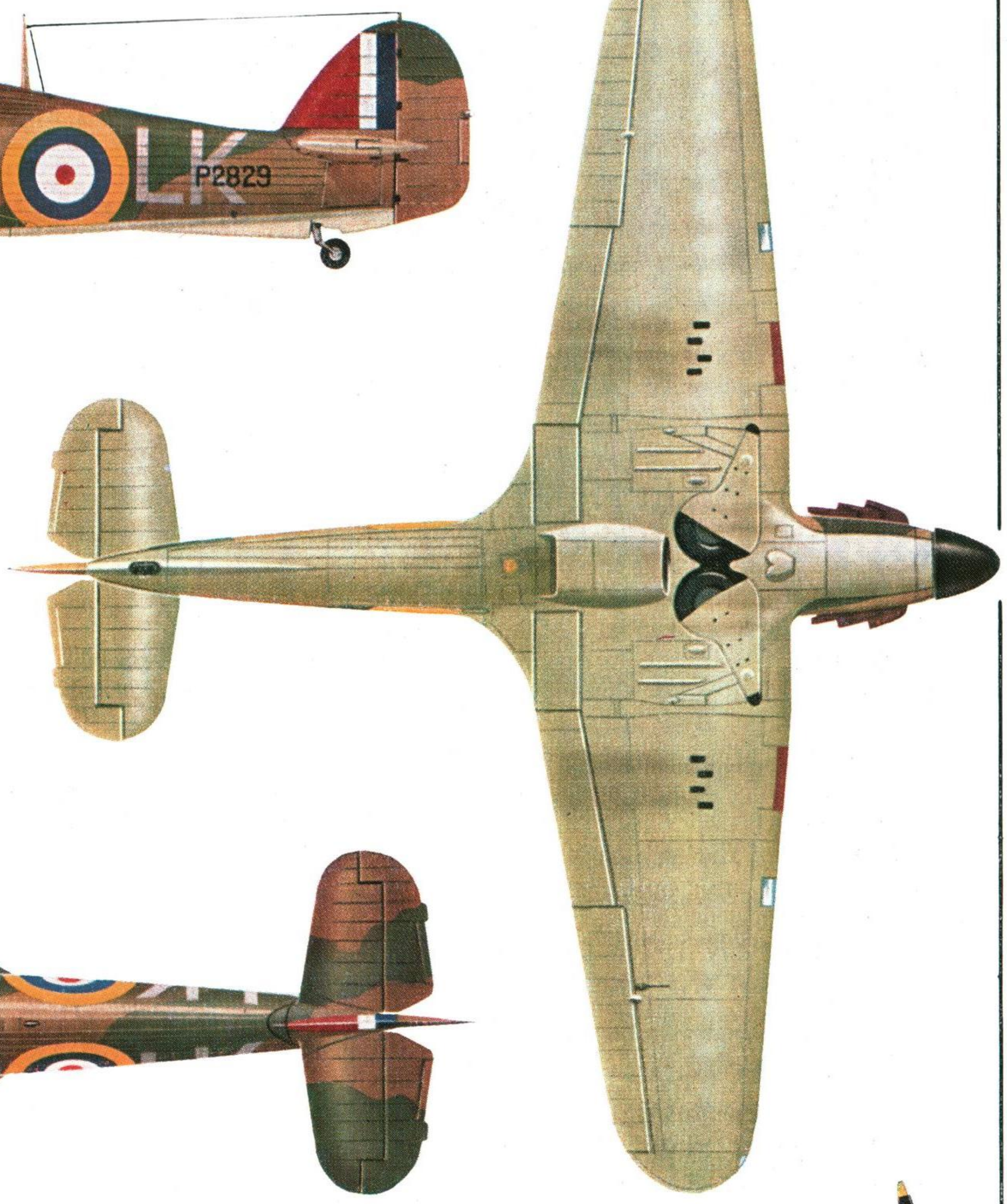
Sky code and aircraft letters had by this time become standardised at 24in. high. The new standard roundels and fin flash were introduced from the middle of May, 1942. By this time more potent day fighters were replacing Hurricanes, which came to be used in the fighter-bomber role.

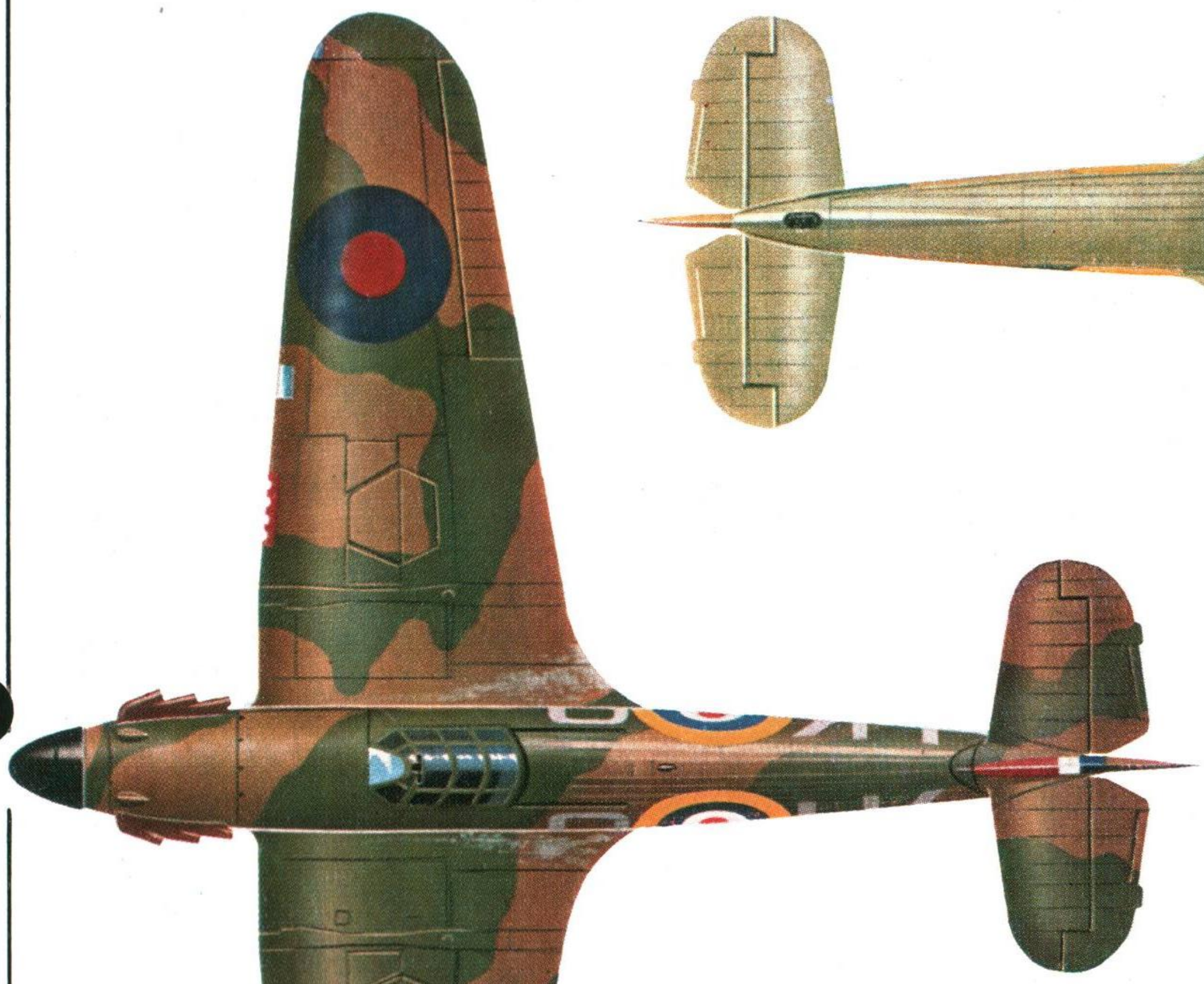
Hurricane I, V6864, of Sqdn. Ldr. Robert Stanford-Tuck, Commander of No. 257(F) Squadron, early 1941. Note Sky rear fuselage band painted over the serial, but serial repeated in smaller size aft of the band. The 'Burma' marking on the door flap was a standard blue ensign, with the Burma President's Seal super-imposed upon it, not red as previously illustrated. The red Burma flag was not used until Independence. The under surfaces were all-Sky with a black port wing.

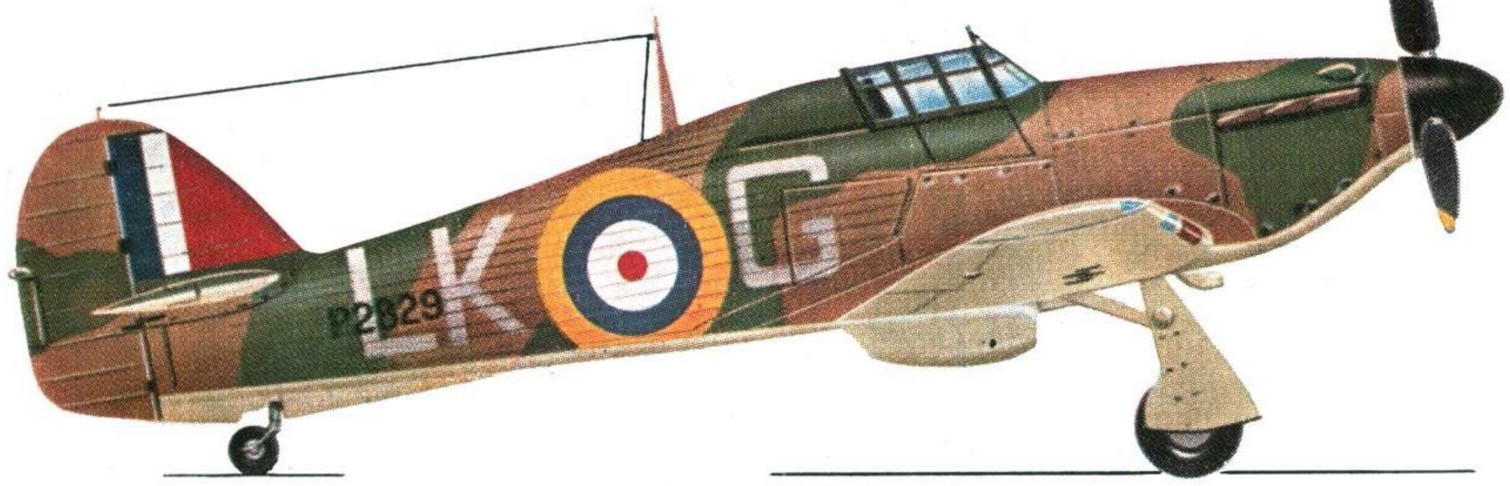


© JAMES GOULDING





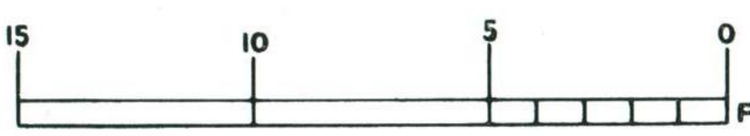


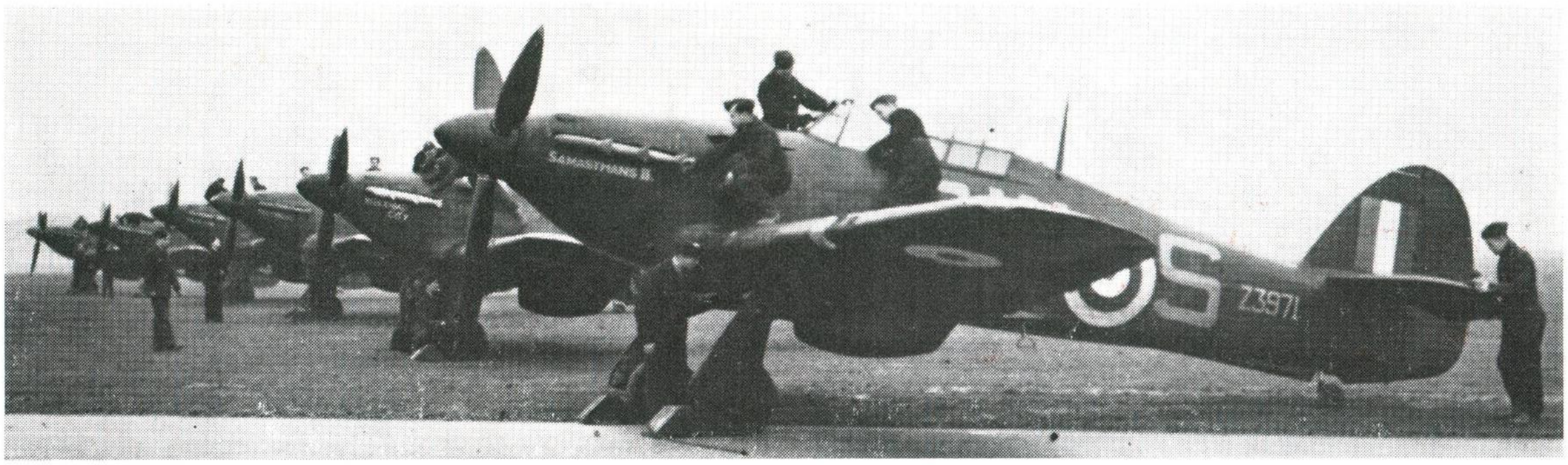




Hurricane Mk.1, P2829, of No. 87 (F) Squadron, A Flight, June 1940. The aircraft is shown as it was painted just after the introduction of Sky finish on all under surfaces. No under wing roundels were carried at this period.







Hurricane IIBs of No. 253(F) Squadron. These night fighters have an overall finish of Special Night (R.D.M.2). 35in. diameter Type A.I fuselage roundels, 49in. diameter Type B upper wing roundels, 45in. diameter Type A under wing roundels, 27in. by 24in. fin flash, 8in. Red serials. Code letters and aircraft letters in Medium Sea Grey. (I.W.M.)

Hurricane Night Fighters

Practically all the fighter types in service with Royal Air Force Squadrons in the period between the wars were given the title of 'day and night fighter', not by virtue of any special means of making contact with enemy aircraft at night, but more because the fighter carried the requisite equipment to enable it to fly at night.

Early in 1939, and more so during the Battle of Britain, specialised night fighters began to be equipped to detect enemy bombers during the hours of darkness, and the era of the true night fighter was beginning. But the heavy raids by German bombers later in the Battle of Britain was to result in many un-equipped, single-engined day fighters to be used for night interception duties. The single-engined Boulton Paul Defiant, two-seat, turret fighter had already been transferred to the night fighting role, but it had been equipped with A.I. radar.

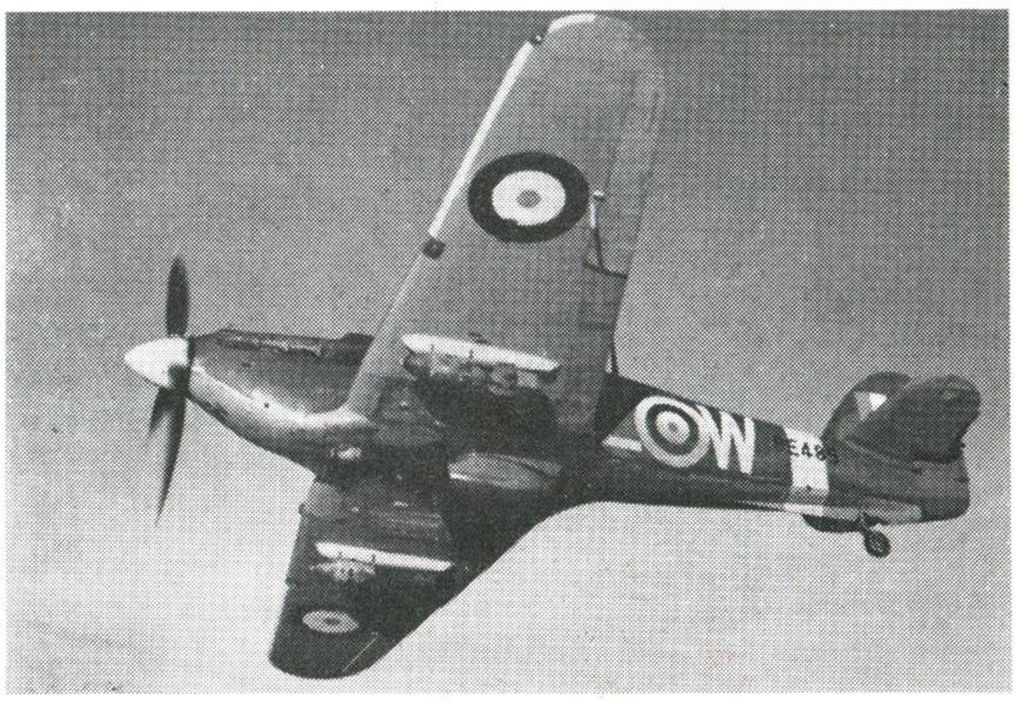
Of the single-engined day fighters, only the Hurricane was considered suitable for general night fighting duties by virtue of its wide-track undercarriage, which made for safer take-offs and landings. Consequently, several Hurricane Squadrons augmented the Blenheims, Defiants, and the handful of Beaufighters of the specialised Night Fighter Squadrons.

Up to the middle of November, 1940, night fighters were painted in standard temperate land scheme camouflage of Dark Green and Dark Earth upper and Sky under surfaces, but from mid-November night fighters, commencing with Defiants, were painted with the Special Night (RDM.2) finish, and marked as night bombers. The use of Special Night on Hurricanes was promulgated on 22nd November.

When Hurricane squadrons commenced operations as night fighters they were usually finished in the following scheme—Special Night (RDM.2) finish overall, 35in. Type A.1. roundels on fuselage sides, 49in. Type B roundels on upper wing surfaces. 50in. Type A under wing roundels were used initially, but soon discarded. Medium Sea Grey or Sky Grey code letters approximately 30in. high and 8in. high serials in Red on the rear fuselage, Standard 24in. by 27in. fin flash. The official requirement was that night fighters should be finished with the same markings as night bombers, but to be painted Special Night overall.

Like the night bomber squadrons, the night fighter units were dissatisfied with, and apprehensive about, the existing Type A.1. fuselage roundel. Bomber crews maintained that it was extremely conspicuous in the glare of searchlights over enemy territory, and the night fighter pilots considered that their position was made known to enemy bomber crews through the roundel's brightness in British searchlights.

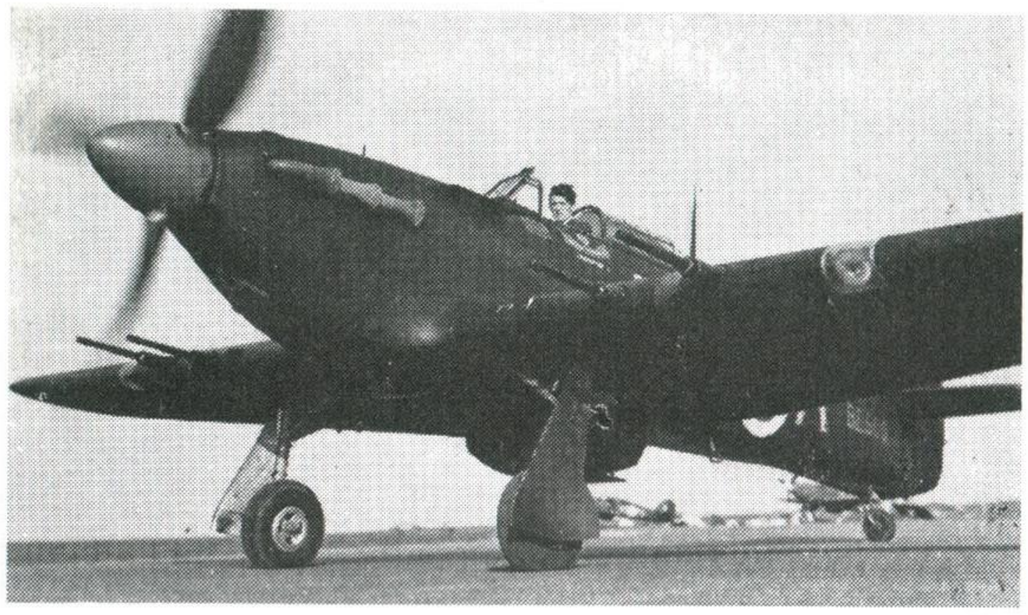
These complaints were passed on to the Air



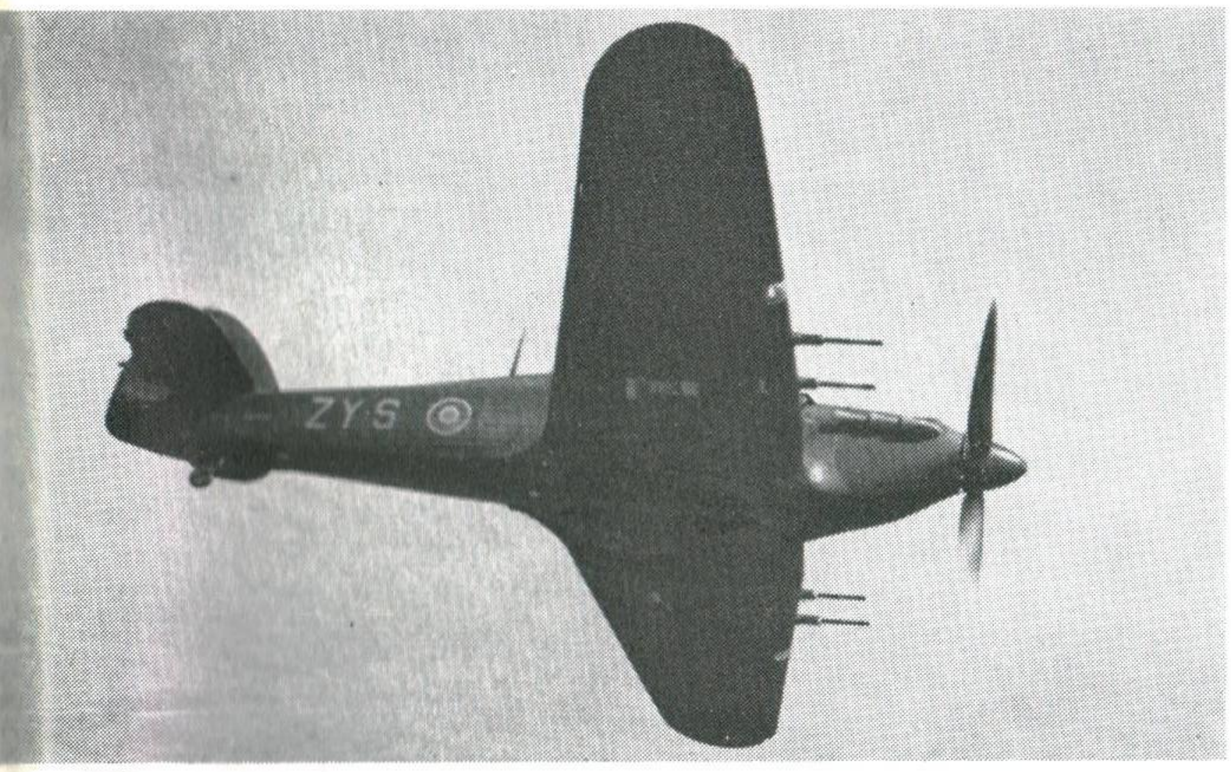
Hurricane IIB Fighter-bomber of No. 402(F) Squadron. New standard day fighter finish of Ocean Grey and Dark Green, with Medium Sea Grey under sides. Sky spinner, rear fuselage band and code and aircraft letters. 45in. diameter Type A under wing roundels. Yellow strip along wing leading edge in the official form. February 1942. Code letters AE-W.

Hurricane IIBs of No. 134(F) Squadron, 151 Wing, R.A.F. at Vaenga, North Russia, Sept.–Nov. 1941. Dark Green and Dark Earth, with Sky under sides and spinner. 35in. diameter Type A.I fuselage roundels, 49in. diameter Type B upper wing roundels, 50in. diameter Type A under wing roundels, 27in. by 24in. fin flash. Code letters GV, 27in. high approximately. Number 33, 24in. high approximately. (I.W.M.)





Hurricane IIC night fighter of No. 87(F) Squadron. Squadron Leader D. C. Smallwood in his aircraft, presented by the United Provinces and named 'Cawnpore 1'. See side views, page 59, for colours.



Hurricane IIC of No. 247(F) Squadron, BD939. Experimental night fighter finish. 18in. diameter Type C.I roundels, 15in. high code and aircraft letters grouped together, 18in. square fin flash. Most of the squadron's aircraft appear to have been painted in Special Night finish, but other experimental colours may have been used. This photograph of ZY-S suggests that it may have been finished in Nivo, or Dark Green, two, at one time, favoured colours. (I.W.M.)

Ministry, and the R.A.E. at Farnborough conducted a series of tests on these markings with a view to producing a more satisfactory design of national marking. During these tests a Wellington of Bomber Command, illuminated by searchlights, was flown over various observers stationed at selected points. Reports from ground observers showed that even at 20,000 feet, the Type A.1. roundel could be easily seen as a bright spot of light.

Numerous styles of roundel were investigated to produce equal reflectivity on each colour, Yellow and White in the existing roundel proving to be far brighter than the Red and Blue rings. One of the additional problems with existing national markings was that the paint used was not as matt as the paints for the upper surface camouflage, and was much more shiny than the Special Night finish. This also added to the reflectivity of the roundel in searchlight glare.

Roundels Modified

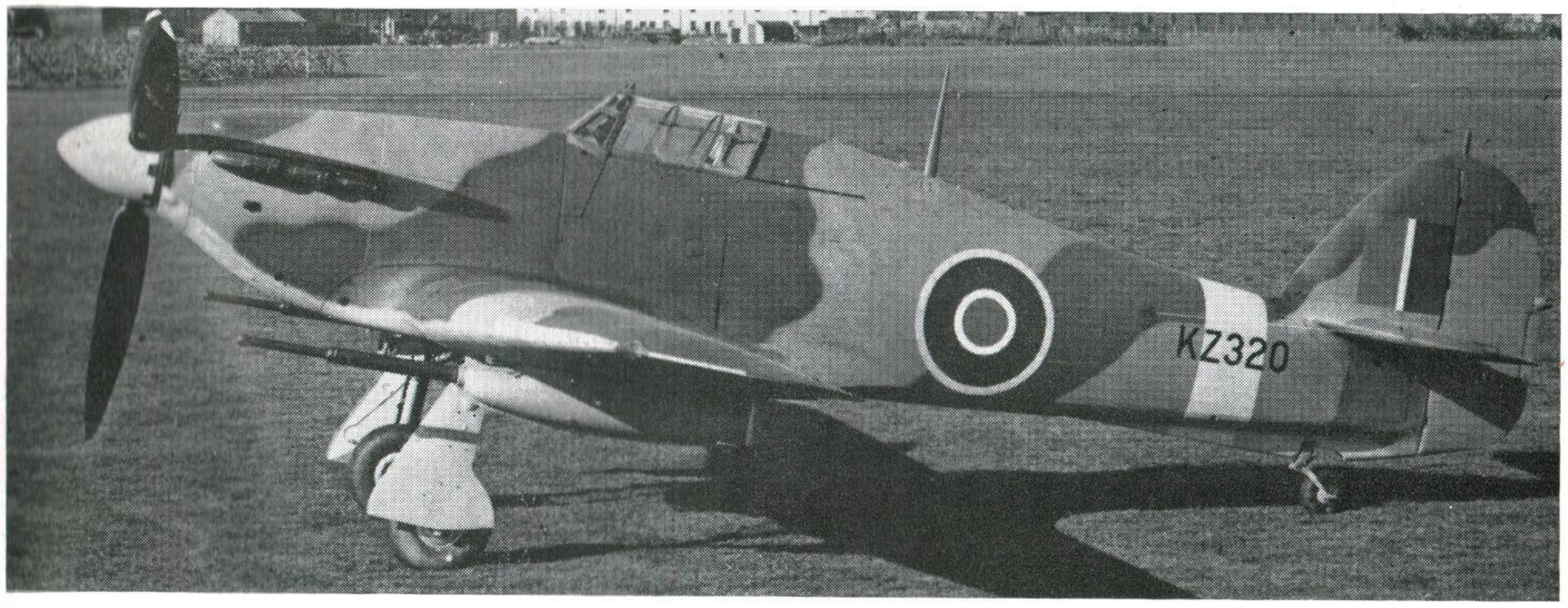
While investigations and tests were being carried out, individual squadrons in both Bomber Command and Fighter Command acted on their own initiative and modified the roundels on their night flying aircraft. Like others, the Hurricane night fighter squadrons produced their own solutions to the problem.

In December, 1940, No. 85 Squadron converted their Type A.1. fuselage roundels into 25in. Type B, with 10in. Red centres. The Yellow outer ring was painted out with Special Night, the Red centre enlarged to 10 inches and the rest of the Blue area filled in. The standard 24in. by 27in. fin flash was retained and the White hexagon, which had been carried on the squadron's aircraft during the 1914–18 conflict, the Battle of France and Battle of Britain, was painted on the fuselage beneath the cockpit hood.

A popular solution among night fighter squadrons was the painting out of the Yellow outer ring with Medium Sea Grey, and the conversion of the inner Type A roundel into a 25in. diameter Type B as related above. It is of interest to note the Camel night fighter squadrons during the 1914–18 war used a similar roundel scheme, but used light blue instead of grey. It would be interesting to know if the night fighter squadrons made reference to these earlier schemes when deciding how to modify their roundels.

No. 87 Squadron started night fighting with their Hurricanes painted in Special Night, but this was replaced by smooth Night Finish early in 1942. No

A Hurricane IID in standard day fighter finish after mid-May 1942. Dark Green and Ocean Grey upper surfaces. Medium Sea Grey under surfaces. 36in. diameter Type C.I fuselage roundels, 32in. diameter Type C under wing roundels, 24in. square fin flash, 49in. Type B upper wing roundels. (Hawker Aircraft)



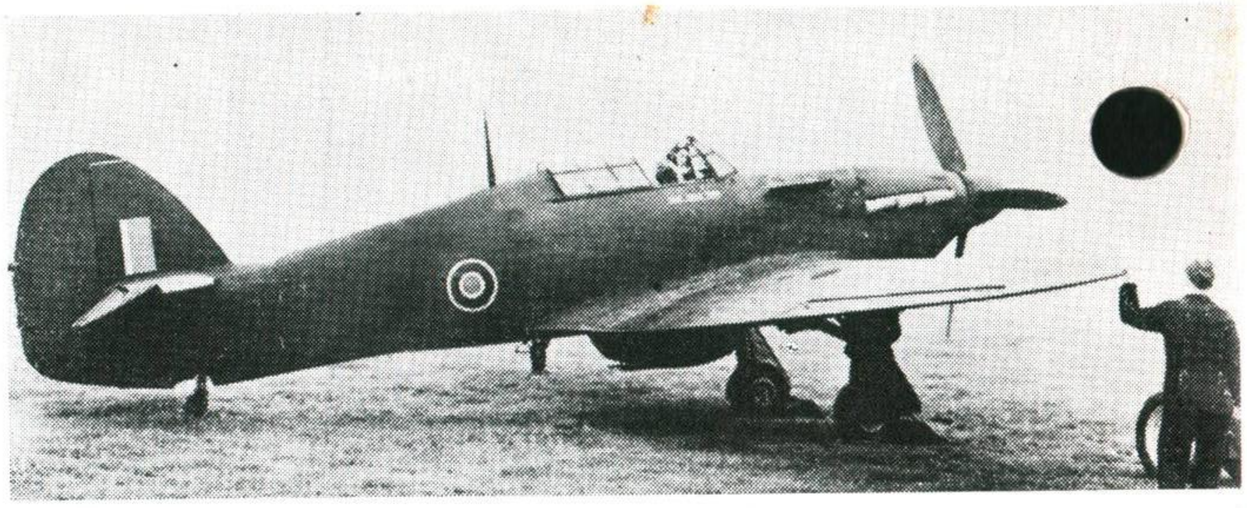
attempt was made to modify the 35in. Type A.1. fuselage roundels of the Hurricanes, and most of the squadron's aircraft had Grey, probably Sky Grey, code and aircraft letters. At least one aircraft had Red code and aircraft letters.

In accordance with the Air Ministry directive relating to night bomber aircraft, to which night fighters conformed, rear fuselage 8in. serials were painted in Red. The upper wing roundels were 49in. Type B, and the fin flash was the standard 27in. by 24in. rectangle. No under wing roundels were carried. No. 247(F) Squadron's Hurricanes were mainly painted in R.D.M.2 during 1942 and had the smallest standard size of Type C.1. fuselage roundels. These were half the size of the normal roundel of this type, being composed of the following ring diameters—Yellow 18in., Blue 16in., White 8in. and Red 6in. The squadron code and aircraft letters were unusual in being grouped together and positioned aft of the roundel on each side of the aircraft. They were 15in. high and painted Dull Red. The fin flash was an 18in. square composed of 8in. wide Dull Red and Blue bars, with a 2in. wide centre White bar. The serial number, painted in very small Dull Red letters and figures, was positioned on the fuselage just in front of the rudder. No under wing roundels were carried. Some of this Squadron's Hurricanes may have been painted in Nivo or Dark Green.

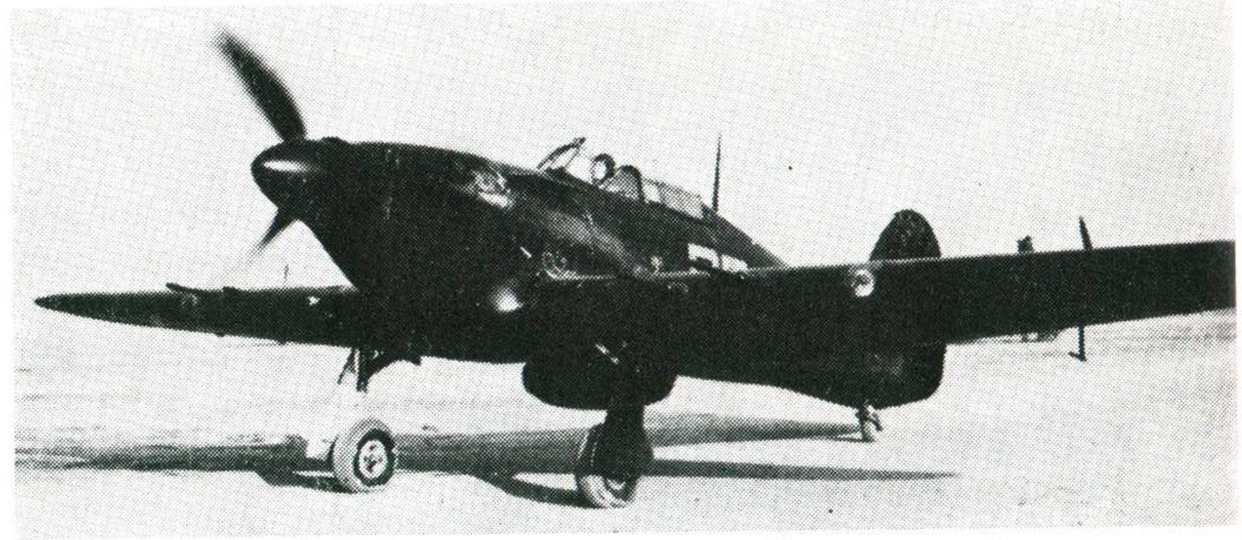
Another famous night fighter squadron, No. 3, had Special Night painted Hurricanes and also used similar sized small roundels and fin flash as on No. 247 Squadron, but differed in having standard 24in. high Dull Red code and aircraft letters. Serial numbers were also the standard sized 8in. in Dull Red.

After a long period of experiments with suitable colours for night fighting, by R.A.F. squadrons, the Fighter Interception Unit and the R.A.E., the Special Night and smooth Night finishes were found to be unsuitable for night fighting. Nivo, the old night bomber colour, and Dark Green were found to be successful in reducing the silhouette effect produced by the 'blacks', but eventually the most satisfactory scheme was found to be Medium Sea Grey overall with the outline broken up with a pattern of Dark Green on the upper surfaces.

For intruder operations it was considered desirable to have a black under surface finish to reduce reflectivity. Both of these schemes were adopted as standard. Although Hawker Aircraft prepared drawings of the new night fighter finish for the Hurricane, new specialised twin-engined fighters were rapidly replacing the existing Hurricanes, and there is no evidence that the new finish was ever applied to them.



Hurricane IIC of No. 247 Squadron, Special Night finish. 18in. diameter fuselage roundel and 18in. square fin flash. This aircraft has a yellow gas warning panel just in front of the fin on the fuselage top. (I.W.M.)



Hurricane IIC of No. 3(F) Squadron, Hunsdon, late 1942. The finish appears to be Special Night (R.D.M.2) touched up in places with Smooth Night. R.D.M.2 always suffered severely from lack of adhesion to the undercoat and consequently peeled in the airflow. (R. C. Jones)

However, No. 87 Squadron's Hurricane IICs did have their overall Night finish replaced on the upper surfaces by Medium Sea Grey and Dark Green for intruder sorties. These colours were crudely brushed over the existing finish, leaving the original code and aircraft letters in (probably) Sky Grey. These letters were almost certainly repainted eventually in Dull Red. The fuselage roundels were repainted as 36in. diameter Type C.1., and the standard 24in. square fin flash was applied.

Some intruder Hurricanes had used standard day fighter camouflage with hurriedly painted Night finish on under surfaces and, in some instances, up the fuselage sides. Gradually all Hurricanes were withdrawn from night fighting and intruder operations in favour of later types.

Text and illustrations © James Goulding.

Hurricane IICs of No. 87(F) Squadron in intruder finish. Medium Sea Grey and Dark Green painted over Smooth Night finish. New colours painted around existing grey code letters, but latter eventually painted Dull Red. Night finish retained on upper surfaces. (I.W.M.)



Copyright Ducimus Books Limited, London, England. Printed by Staples Printers Limited, London, England.