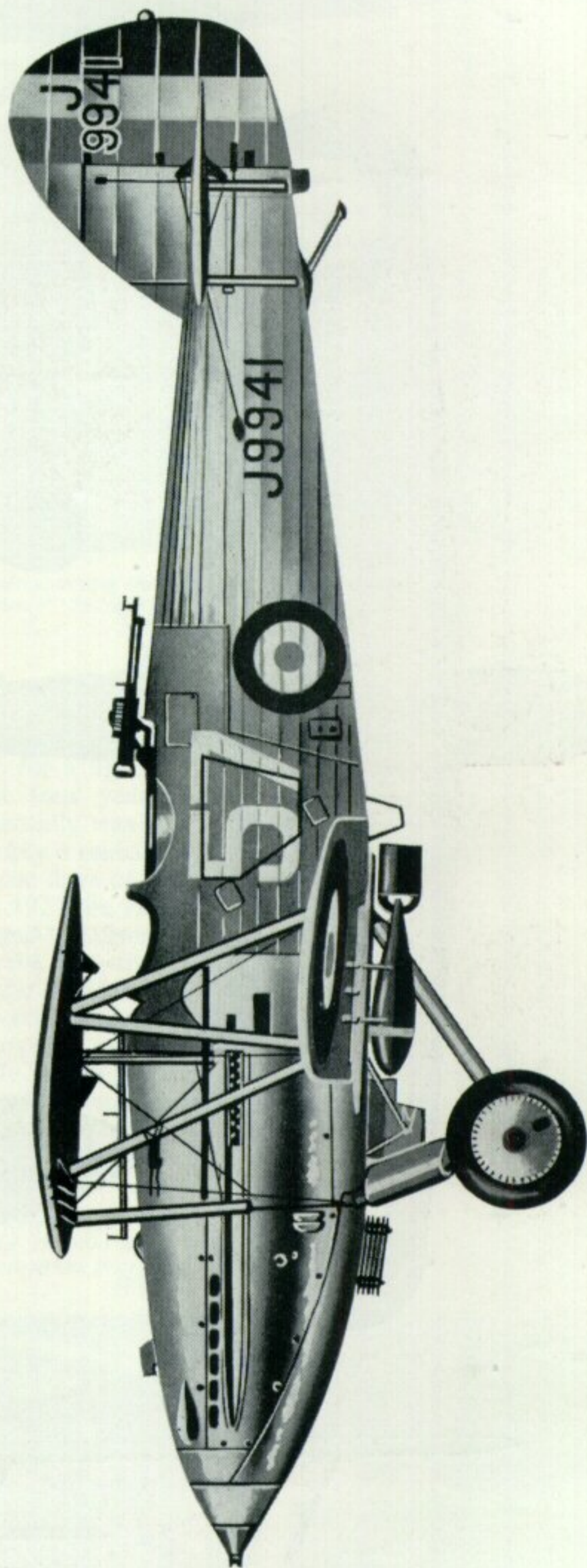
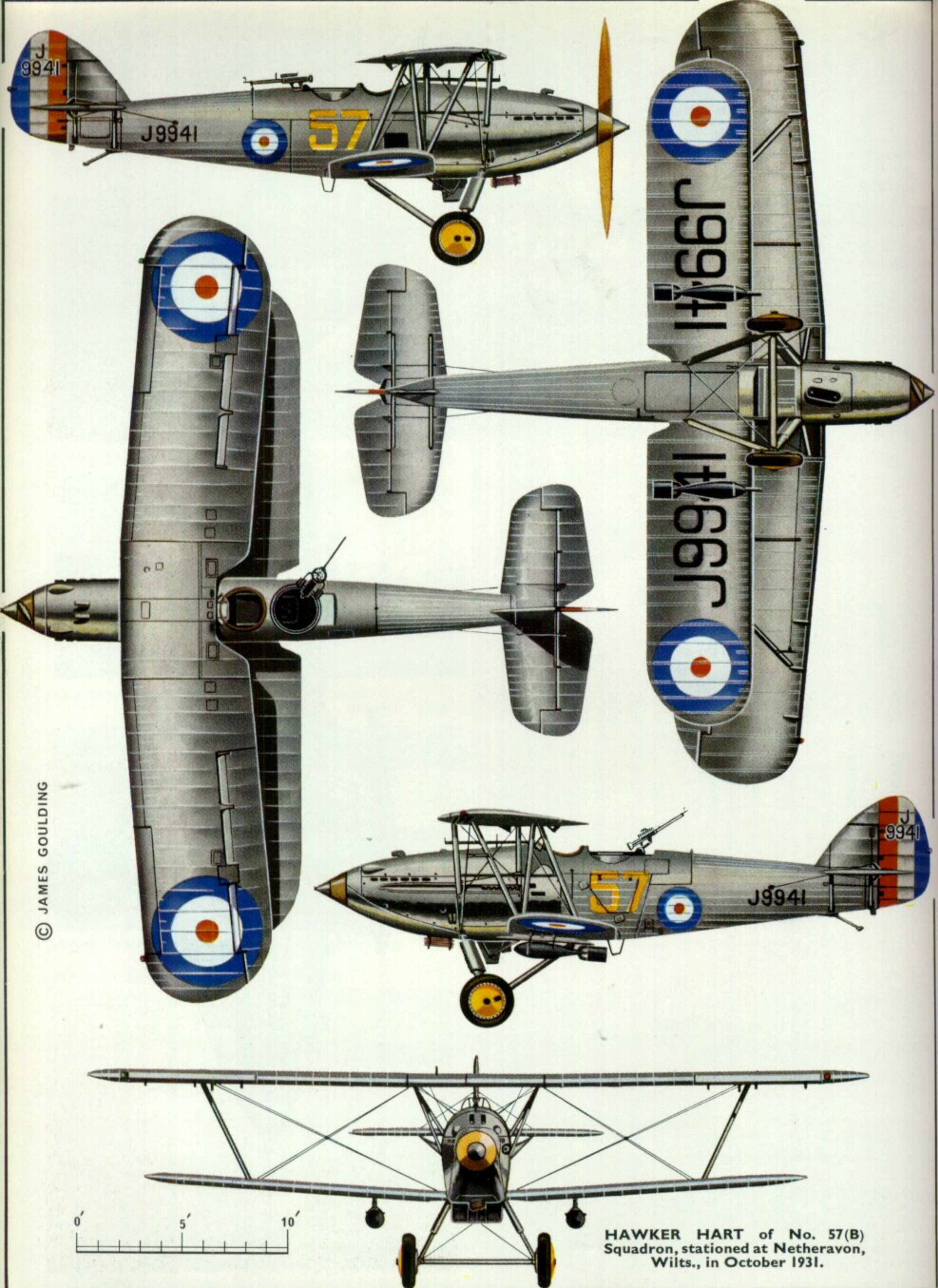


**PROFILE
PUBLICATIONS**

The
Hawker
Hart

NUMBER 57
TWO SHILLINGS

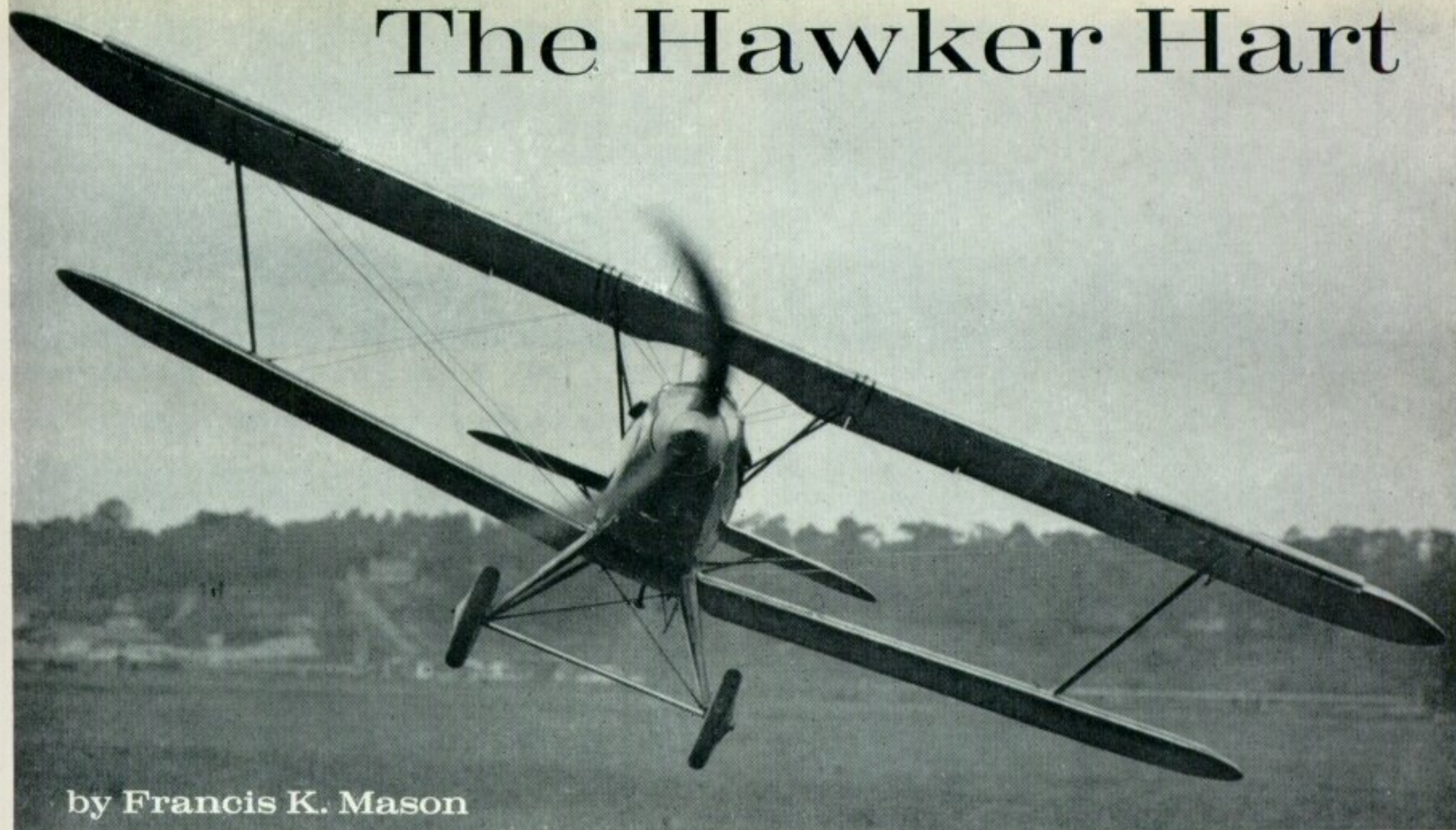




© JAMES GOULDING

HAWKER HART of No. 57(B) Squadron, stationed at Netheravon, Wilts., in October 1931.

The Hawker Hart



by Francis K. Mason

A feature of inter-war aviation photography was the degree of mutual understanding that existed between Company pilots and the photographer. Many were the spectacular pictures taken of Flt. Lt. "George" Bulman as he flew the Hawker biplanes low over Brooklands airfield. (Photo: Flight)

Among the historic aeroplanes which continue to be preserved in flying condition in Britain long after their disappearance from military service is an attractive two-seat biplane with in-line engine. More than thirty-five years have elapsed since this design was approved by the Air Ministry, but despite this the sheer beauty of a classic design can still be recognised and accepted as fundamental; for the Hawker Hart was without doubt the most important technical and tactical acquisition by the R.A.F. between the Armistice and the implementing of the Expansion Scheme in 1936. The existence of other preserved Harts and their variants around the world also provides evidence of widespread recognition of its technical advance.

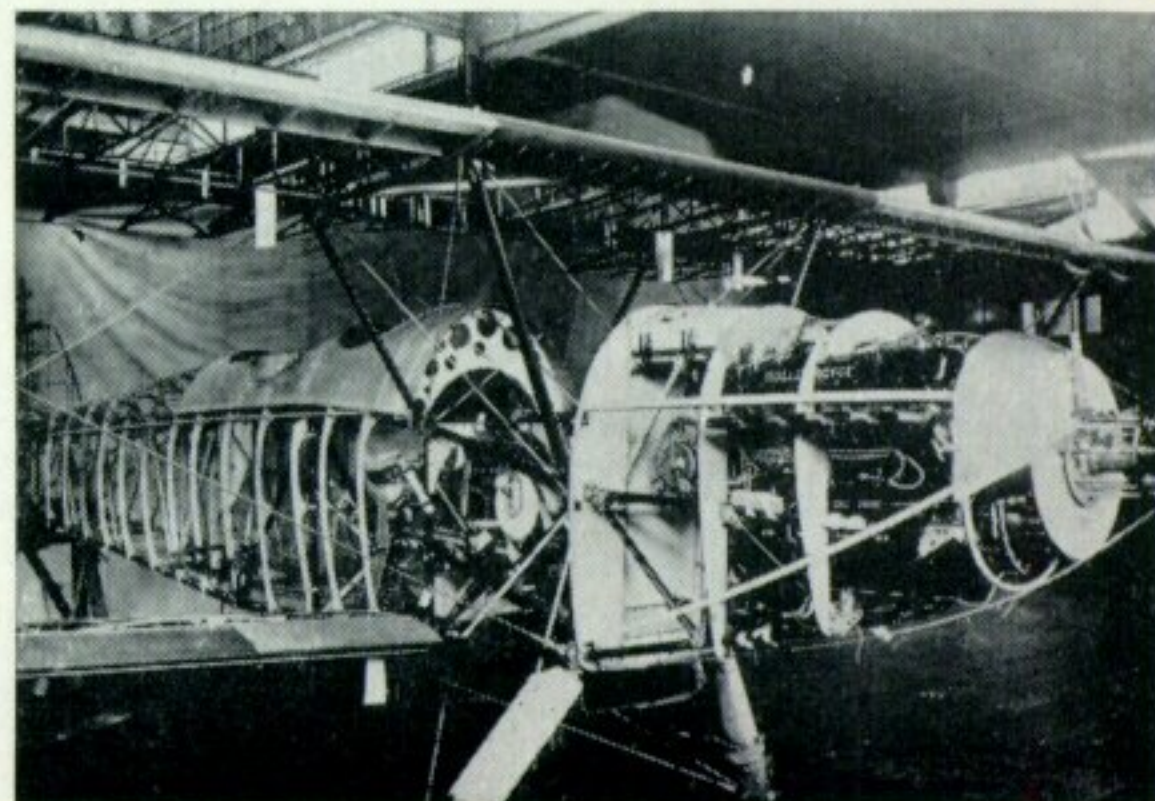
To understand the Hart's significance, a look at the technical environment during the mid-'twenties reveals a jungle of economic instability in and political apathy towards the British aircraft industry—the ten-year-old prejudice against combat monoplanes, reliance upon a handful of obsolescent wartime-developed engines, inadequate funds to exploit metal construction and a lack of initiative in Whitehall to pursue promising projects beyond the prototype stage. Within this environment Sydney Camm of the H.G. Hawker Engineering Company, among British designers, had progressed from prototype to prototype with a series of interesting fighter designs, among them the Hornbill and Heron. In the former he had sought in 1925 exploitation of a powerful water-cooled in-line engine in the smallest possible airframe which came near to achieving the elusive 200 m.p.h. top speed. The Heron, compromised at the outset by the unwieldy radial Jupiter engine, however introduced a metal fuselage primary structure developed by the late Fred Sigrist—long-standing Director-colleague of Sir Thomas Sopwith.

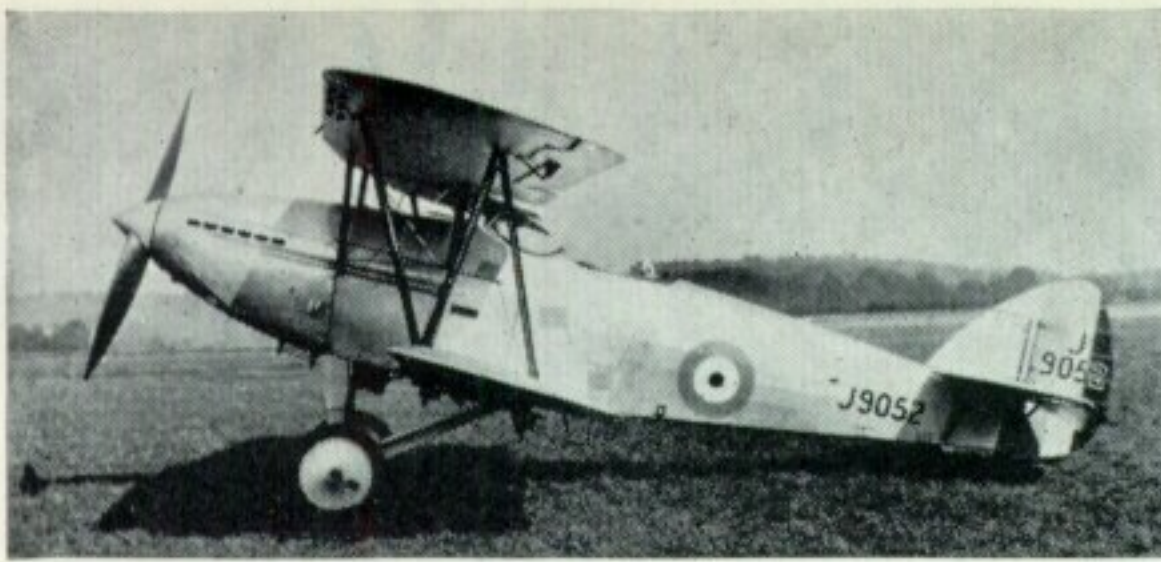
These and other fighter projects prompted Camm to turn in 1926 to seek the assistance of Rolls-Royce in the matter of advanced liquid-cooled engines with

which to further his theme. Already he knew of the Falcon F.I and this engine formed the nucleus of a design with which he intended to satisfy Specification 12/26 for a light bomber required for R.A.F. service about four years hence. Such long-term planning incidentally was itself no indication of farsightedness—simply a realistic approach toward Treasury apathy in those days of the Ten Year Rule.

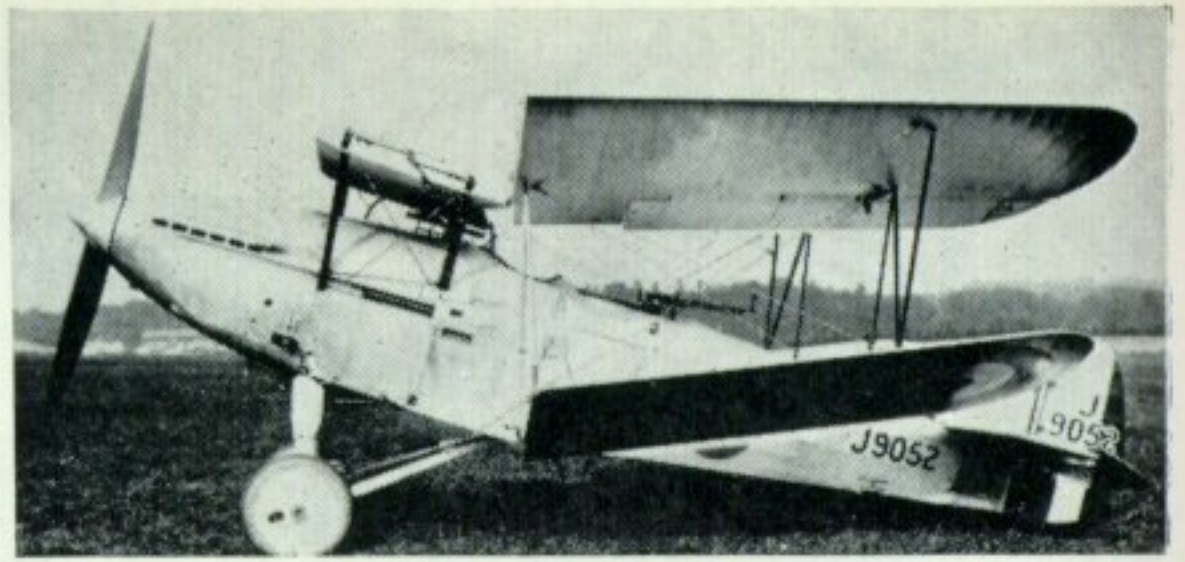
By 1927 the Hawker project staff had progressively changed the design to include a new engine developed from the F.I—the F.XIA, which differed in having the cylinder banks cast in one in place of separate castings. Split-axle undercarriage gave place to cross-axle, I-interplane struts to N-struts, and gravity-feed fuel supply to pump operation. An interesting side-line was the secrecy with which work was conducted on the new prototype—so competitive was effort to secure the rare production contracts in those days; it has even been averred recently that much of the Hart's design

The prototype Hart during construction; it was customary during the mid-'twenties to mock-up certain components of the airframe in wood on the prototype before replacing them with metal parts. (Photo: H. G. Hawker Engineering Co. Ltd.)





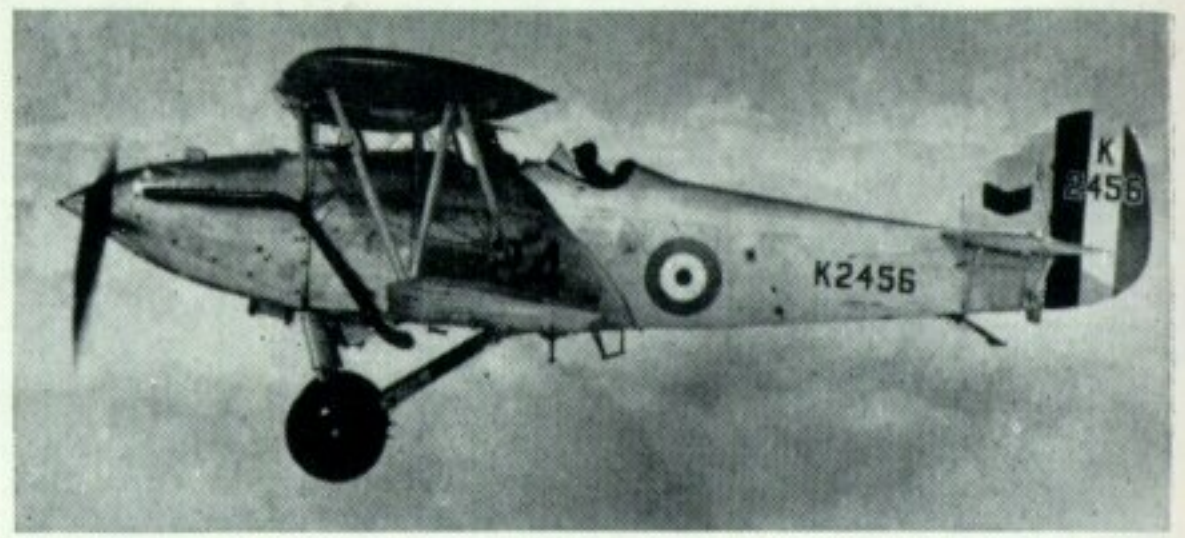
Left: *The Hawker Hart bomber prototype, J9052, in its original form.* (Photo: H. G. Hawker Engineering Co. Ltd., No. 1152.)



Right: *J9052 converted to Spec. 0.22/26 naval requirement, with wings folded.* (Photo: H. G. Hawker Engineering Co. Ltd., No. 1230)



Left: *Seen at Felixstowe Marine Aircraft Experimental Establishment, the Hart prototype is here equipped with Osprey floats and tail unit.* (Photo: Ministry of Defence, Air Ministry No. 6888B, 6/12/30.)



Right: *Hart (Communications), K2456, of No. 24 (Comms) Sqn. Principal difference between this and other Harts lay in the headrest fairing aft of the rear cockpit.* (Photo: F. K. Mason collection)

was the result of subversive "intelligence" applied to the products of another British designer!

So radical did the Hart's development prove to be that the prototype was not ready for its first flight by Flt. Lt. P. W. S. ("George") Bulman until June 1928. Six months' trials at Brooklands preceded its delivery to the A. & A.E.E., Martlesham Heath—even this being conducted with unusual secrecy. Not until the Olympia Aero Show of 1929 was the public shown the new light bomber, and there's no doubt that, together with the associated Hornet fighter and Tomtit trainer, the radical Hawker family provided the Show's technical—if not aesthetic—highlights.

Well might the Service seek to disguise the Hart's capabilities for, in one step, it had sponsored a design which itself outdated all recent technical demands from the industry. It had acquired a bomber which could outdistance any fighter extant and on order! Already competitive Service trials against other contenders (including the Avro Antelope and Fairey Fox II) had confirmed the Hart's superiority in every design aspect, and a production Specification, 9/29, had been issued and a contract raised for fifteen aircraft (J9933-J9947).

Twelve of these early Harts were delivered to replace Horsleys with No. 33 (Bomber) Squadron, commanded by Sqn. Ldr. J. J. Breen, at Eastchurch. Within three months the Squadron had achieved second place in the annual inter-unit bombing competition—and this before completion of working-up! Inserted in this first batch (between J9944 and J9945) was a company-owned demonstrator, registered G-ABMR—but more of this anon. Another of the first Harts was shipped out to Risalpur to explore the likelihood of the Hart replacing the Bristol Fighter and Siskin in the troublesome North-West Frontier province. This aircraft was destroyed after having been attacked by a kite (bird)—while being flown by Hawker's one-time test pilot, Fred Raynham. Service evaluation of this aircraft led to the development of

the Hart (India), of which 57 were built and which was subsequently delivered to Nos. 11, 39 and 60 (Bomber) Squadrons, having been flown by P. E. G. Sayer on 7th September 1931.

Meanwhile further orders had been placed for Harts for Home Service. A total of 82 was ordered during 1930-31 from Hawker and Nos. 12, 18 and 57 (Bomber) Squadrons were warned of pending re-equipment. Deliveries, though completed on schedule, placed such a strain upon Hawker's facilities (having regard to Fury, Horsley and Tomtit commitments) that plans were laid to sub-contract production elsewhere in the industry. First to receive a sub-contract was Vickers (Aviation) Ltd., Weybridge, with an order for 65 aircraft (K2966-K3030) placed in 1932. Thus were sown the seeds of the widest-ever peacetime sub-

For the purpose of reinforcement flights which entailed long sorties over water, some Harts were equipped with Kidde-Lux flotation bags contained in the top wing. Here a No. 33 (Bomber) Squadron Hart undergoes an inflation test. Provided that no strut damage occurred on impact with the water, the bags would support a ditched aircraft indefinitely.

(Photo: *The Aeroplane*, No. 1401)



manufacture of an aircraft in Britain; later production of Harts and variants was undertaken by Vickers (a total of 226 Harts built), Armstrong-Whitworth (456 built), Gloster (144 built), Avro (244 built), Bristol (141 built), Westland (43 built), and Boulton Paul (106 built). In addition, Hawker itself manufactured 1,438 Hart variants. At one time, in 1934, seven out of every eight aircraft being delivered to the R.A.F. were of Hawker origin, while in 1936, at the height of the R.A.F. expansion plan, three of every four new squadrons being formed were being equipped with Hart variants.

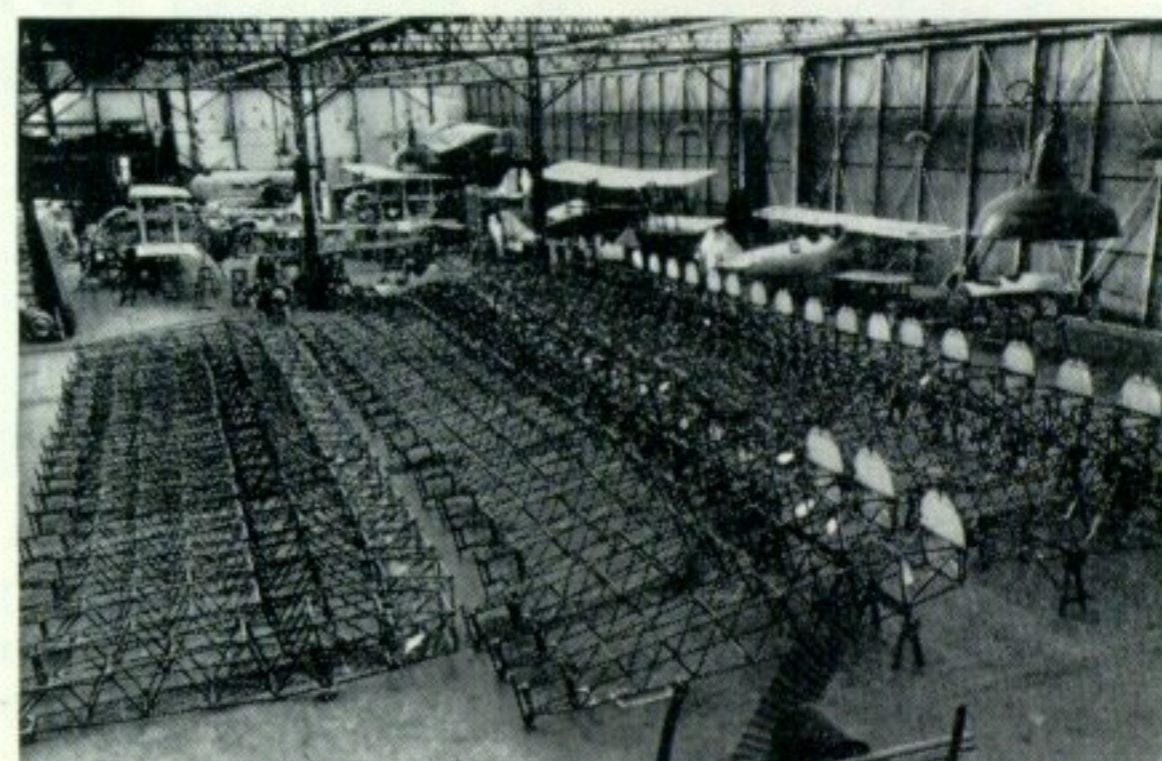
DEVELOPMENT OF THE HART

Returning to 1930, such impending widespread acceptance of the Hart bomber led to two important developments. Experience gained during the 1930 Air Exercises illustrated the immunity of the new bomber from interception by the R.A.F. fighters—the Bulldog being ten miles an hour slower than the Hart. Already production of the Fury fighter (see *Profile* No. 18) was well advanced, but another expedient was in train—that of setting a Hart to catch a Hart. Spec. 15/30 called up a Kestrel IIS-powered fighter variant and six such aircraft (K1950–K1955), termed Hart Two-Seat Fighters, equipped one trial Flight of No. 23 (Fighter) Squadron based at Kenley. Though these aircraft, subsequently named Hawker Demons, will be the subject of another *Profile*, it is worth recording here that the two-seat fighter formula, so promisingly portrayed by the peacetime Demon, was exploited with disastrous results in war by its successor, the Boulton-Paul Defiant.

The other vital consideration resulting from the Hart's introduction was the necessary advanced training syllabus. Once again the Hart provided its own answer and in February 1932 a prototype order was placed. This prototype K1996, for expediency, was in fact an Audax (also beyond the scope of this *Profile*) converted to dual control, and with two Hart Trainers, ordered later, demonstrated that the tailplane incidence range was inadequate to cope with the c.g. shift resulting from the removal of gun ring and bomb gear, with the result that on subsequent production Hart Trainers the top wing sweepback was reduced from 5 to 2½ degrees. Another feature of K1996, an increase in fin area thought to be necessary for spin recovery by pupil pilots, was in fact found to be unnecessary.



Hart production at Hawkers, Kingston. (Photo: Photopress Ltd.)



Hart sub-contract production spread through the British aircraft industry during the 'thirties, witness this batch of 65 airframes at Vickers (Aviation) Ltd.

(Photo: Vickers Armstrong Ltd., No. 4716)

Subsequently Hart Trainers formed the equipment of the advanced training wing at the Royal Air Force College, Cranwell, where they replaced Atlas trainers, and also went to first-line bomber squadrons for navigation, communication and instrument flying. Far more important, however, was the part played by the Hart Trainer in the Expansion Programme; every home Flying Training School flew Harts, as well as most of the later Elementary and Reserve F.T.S., the University Air Squadrons, Station Flights, the Central

The unregistered Panther Hart during armament evaluation at Martlesham Heath in 1931

(Photo: N. D. Zborowski)





With supply carriers under the wings, this Hart (India), K2101, of No. 11 (Bomber) Squadron is pictured flying over the treacherous country north of Amritsar, Pakistan. India-based Harts were constantly in action against marauding tribesmen in the North-West Frontier Province. (Photo: F. K. Mason collection)

Flying School, Bombing and Gunnery Schools, and various other Applied Flying Training Units.

In front-line service at home and overseas, Harts served on Nos. 6, 11, 12, 15, 18, 33, 39, 57, 60 and 142 (Bomber) Squadrons, No. 24 (Communications) Squadron and with Nos. 600, 601, 605 and 610 Squadrons of the Auxiliary Air Force, before being themselves progressively replaced by later members of their own family, Audaxes, Demons, Hardy's, Hinds and Hectors. As witness to the hallmark of an excellent design, the Hart demonstrated little design change throughout its service, apart from normal exploitation of powerplant advance. About the only external alterations were to the engine exhaust system and the adoption of tailwheels on some aircraft late in their life for operation from the metalled runways of the "Expansion" airfields.

HARTS FOR EXPORT

Sir Sydney Camm recently reflected that his Company

certainly owed its continuing prosperity during those difficult years of the Depression to the tremendous export business conducted with Hart and Fury variants. The Hart itself, though representing the manifestation of technical advance, did not however achieve widespread export orders, the burden falling upon its later kin. Undoubtedly this was because, prior to becoming a public company in 1933, Hawker simply had neither the facilities nor the finance to support the increased sales.

In 1932, however, the Estonian Government specified under contract the early delivery of eight Hart general-purpose bombers, 146-153, and, delivered during the autumn of that year, these were equipped with interchangeable wheel and float undercarriages—the result of earlier experience with the Osprey—the Fleet Air Arm's spotter reconnaissance variant of the Hart. A point worth mentioning here is that Hawker's servicing records relating to the majority of the Estonian Harts were maintained right up to the out-



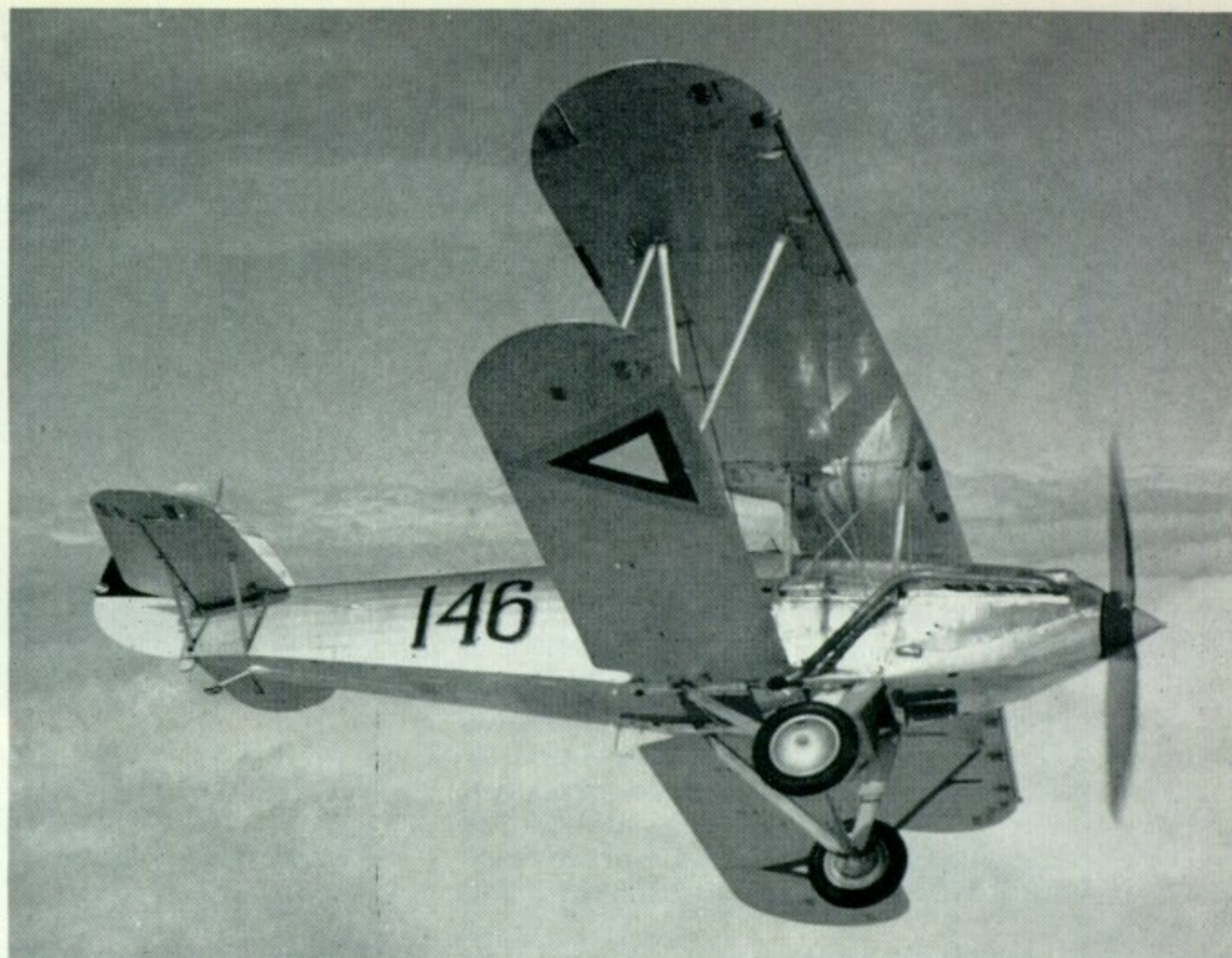
Left: The Hart Trainer prototype, K1996. (Photo: H. G. Hawker Engineering Co. Ltd., No. 67B.) Right: First full-standard production Hart Trainer, K3146. (Photo: Hawker Aircraft Ltd., No. 9E)



Left: Hart Trainer, K3153, in the markings of No. 10 F.T.S.; note the blind flying hood over rear cockpit. (Photo: K. J. Blackston.) Right: Late-series Hart Trainer K4751 with yellow-painted fabric-covered surfaces. (Photo: Hawker Aircraft Ltd., No. 25/59H)



The first Estonian Hart, 146,
with wheel undercarriage.
(Photo: *Flight*, No. 12138)



break of W.W.II, so it seems quite possible that when engulfed by the Russian tide the Harts were still airworthy.

There is no doubt however about the Hart's part in W.W.II at the hands of Swedish pilots. Among the countries visited by a demonstration Hart in 1931 and 1932 was Sweden, and in 1933, following a visit to Brooklands and Filton where various Hart test-beds were undergoing trials, the Swedish Government ordered four pattern aircraft, 1301-1304, to be delivered during 1934, powered by 580-h.p. Bristol Pegasus IM2 radial engines. These were delivered during the summer of 1934 and, after evaluation, paved the way for licence production at the Trollhättan State Aircraft Factory of 42 further examples, powered by licence-built 550-h.p. Nohab Pegasus IU2 engines.

During the nineteen-thirties Sweden experienced considerable trouble with aircraft of her own design and as a result came to rely to a great extent on foreign equipment. By the outbreak of war in September 1939, the *Flygvapnet* possessed a front-line strength of only about 140 aircraft, of which about one half consisted of Hawker Harts and Gloster Gladiators. When Russia attacked her neighbour Finland in November 1939, authority was quickly given for the formation of a volunteer unit which, under the command of Major Hugo Beckhammar, set up base at Kemi to assist in the defence against attacks by the Russian Air Force. By 11th January 1940, operating well within the Finnish Arctic Circle, *Flygflottilj 19* was in action with four Harts and twelve Gladiators. Three of the Harts were, however, lost in the first day or so, so that Beckhammar decided to disperse his forces to Nora, Oskar, Svea and Ulrik, in order to cover a greater patrol area without exposing too many of his forces simultaneously. It is interesting to remark that the Harts and Gladiators were equipped with ski undercarriages while the Harts carried additional skis attached to the sides of the rear fuselage; at least one

Hart was forced down behind the Russian lines but, being unhurt, the crew donned their skis and escaped back to friendly territory.

In all, about nine Harts took part in the Finnish war, carrying out reconnaissance patrols, bombing attacks on marching infantry and a small number of night intruder sorties. Three Harts were lost (two in an air collision), before hostilities ended and the volunteer unit returned to Sweden. At least one Hart remains to this day in Sweden, aptly displayed in the colours carried by *Flygflottilj 19*—the only established unit to fly Harts into action during W.W.II.

No other Harts were built for foreign governments, though four R.A.F. aircraft were loaned to the Yugoslav Air Force in 1931, and a number of ex-R.A.F. machines were transferred to South Africa and Southern Rhodesia shortly before W.W.II. Some of these eventually found their way to Egypt and were used for communications duties during 1940 and 1941, eventually being scrapped to provide spares for other variants which came in for more strenuous work.

TEST-BEDS AND OTHERS

From the outset the Hart showed itself an ideal laboratory aircraft. Wide flying limits, good control at low speeds and accommodation for a flight observer prompted both Hawker and Rolls-Royce to purchase ex-contract aircraft for engine test flying. The first, *G-ABMR*, is perhaps possessed with one of the longest useful flying lives of any aircraft now flying. Apart from having flown with almost every type of Kestrel engine between 1930 and 1939, *G-ABMR* was used during W.W.II both as a photographic aircraft and as a delivery pilot ferry; later it was raced in company colours and more recently has been repainted to display the colours of No. 57 (Bomber) Squadron. Another test-bed, *G-ABTN*, was used to flight-test Bristol Jupiter and Pegasus engines until it came to a watery end in the English Channel on its way back

from the 1932 Paris Aero Show. A third test-bed, this time for Armstrong Siddeley Panther, remained unregistered.

During the early development of the Rolls-Royce Goshawk steam-cooled engine, Rolls-Royce used a special Hart, K1102, for trials with strip condensers along the leading edge of the top wing. Due, however, to the discomfort caused by super-cooled water drops spraying the pilot, this aircraft was later provided with a canopy over the cockpits. Canopies were fitted on several other Harts, among them K3012, a Pegasus-powered ski-equipped Hart evaluated in Canada. Other engine test-beds included K2434 (Napier Dagger), K3020 (Bristol Pegasus and Mercury), and K3036 with Rolls-Royce P.V.12. The latter notable aircraft undoubtedly performed the lion's share of the early flight development of the Merlin, and by 1935 had completed the initial certification work preparatory for prototype installation in the Hurricane and Spitfire.

And now only G-ABMR is still flying. Carrying the serial J9941, it is perhaps fitting that it should portray a representative of the sire of the largest peacetime family ever built in Britain, and the original J9941 of No. 57 (Bomber) Squadron was the first Hart to reach 1,000 flying hours, after two and a half years' service—itsself a record.

HART PRODUCTION

Hart Prototype J9052 ordered under Contract No. 624/27 to Spec. 12/16. Powered in turn by Rolls-Royce F.XIA, F.XIB, Kestrel IB, Kestrel VIS and Kestrel IIMS.

Hart I Bomber. 15 aircraft, J9933–J9947, built by Hawker to Spec. 9/29 under Contract No. 922931/29.

Hart I Bomber. 32 aircraft, K1416–K1447, built by Hawker to Spec. 9/29 under Contract No. 26275/30.

Hart Trainer Prototype. K1996 (originally Audax airframe), ordered under Contract No. 129218/31.

Hart Two-Seat Fighter. 6 aircraft built by Hawker to Spec. 15/30, K1950–K1955 under Contract No. 56338/30. Later named Hawker Demon I.

Hart (India). 50 aircraft, K2083–K2132, built by Hawker to Spec. 9/31 under Contract No. 102035/31.

Hart (India). 7 aircraft, K3921, K3922, K8627–K8631, built by Hawker to Spec. 12/33 under Contract Nos. 265676/33 and 440876/35.

Hart I Bomber and Hart (C). 50 aircraft, K2424–K2473, built by Hawker to Spec. 9/29 (Part 2) under Contract No. 117876/31. Some aircraft completed as other Hart Variants.

Hart Trainer (Interim). 2 aircraft, K2474 and K2475, added to Contract No. 117876/31.

Hart Bomber. 65 aircraft, K2966–K3030, built by Vickers to Spec. 9/29 under Contract No. 198868/32.

Hart Bomber. 24 aircraft, K3031–K3054, built by Armstrong Whitworth to Spec. 9/29 under Contract No. 198870/32.

Hart Trainer. 13 aircraft, K3146–K3158, built by Hawker under Contract No. 246227/33.

Hart Trainer. 21 aircraft, K3743–K3763, built by Hawker under Contract No. 323239/34.

Hart Single-Engine Day Bomber (S.E.D.B.). 47 aircraft built by Vickers under Contract No. 262680/33. K3808–K3854.

Hart S.E.D.B. and (C). 50 aircraft built by Armstrong Whitworth

under Contract No. 272678/33; K3855–K3872 (S.E.D.B.), K3873, K3874 (C), K3875–K3904 (S.E.D.B.).

Hart (S.E.D.B.). 18 aircraft, K3955–K3972, built by Armstrong Whitworth.

Hart (C). 2 aircraft built by Armstrong Whitworth, K4297 and K4298, and delivered to No. 24 (C) Squadron.

Hart Trainer and Special. 72 aircraft, K4365–K4436, ordered as Harts from Glosters under Contract No. 333990/34 to Spec.



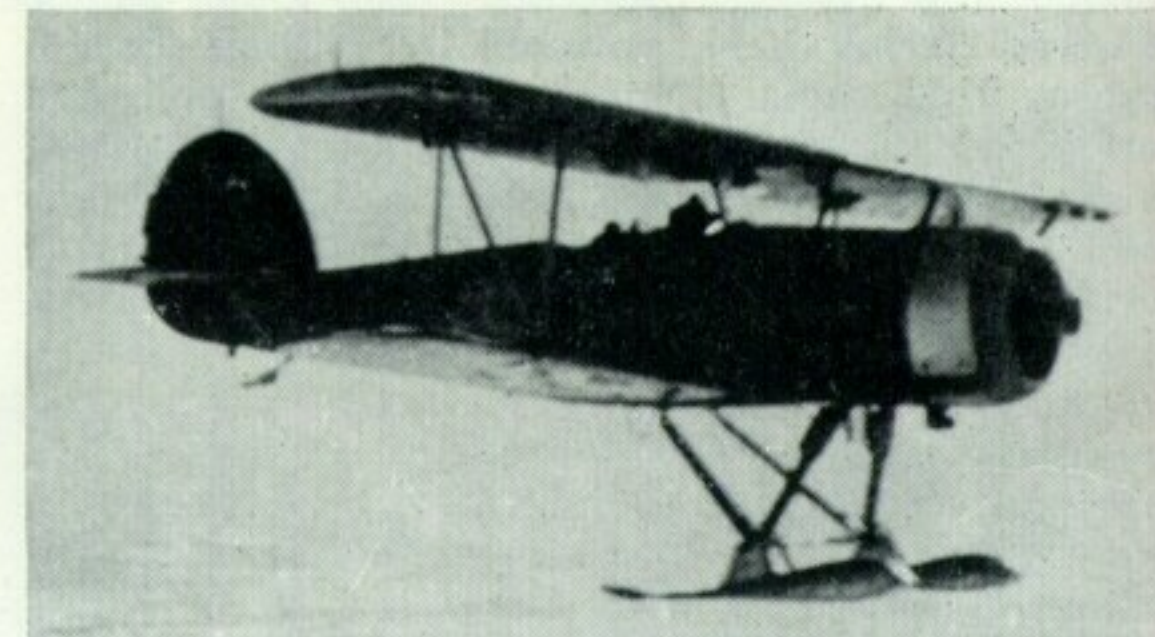
First Hawker-built Swedish Hart, 1301.

(Photo: Hawker Aircraft Ltd., No. 18F)



Third Swedish Hart, 1303, with Short S.51 floats at Felixstowe. This was used as a pattern aircraft for Swedish Ospreys which subsequently served aboard the aircraft-equipped cruiser Gottland.

(Photo: Ministry of Defence, Air Ministry No. 17791E)



Only known air photo of a ski-equipped Swedish Hart; this aircraft is powered by a long-chord-cowled Pegasus engine. (Photo: Zeitschrift fuer Flugtechnik und Motorluftschiffahrt)

Swedish-built Hart of F.5 with licence-built engine and N.A.C.A. cowling. Note also the snowshoe tailskid.



Swedish Hart in unit markings of Flvgflottilj 1.

(Photo: Gillberg, Linköping)





Restored in the camouflage scheme and Finnish swastikas used during the 1939-40 Russo-Finnish war, this Hart survives to this day in Sweden. (Photo: Flygvapnet, Malmslätt)

9/34 but many completed as Audaxes, Harts (Trainer, Interim) and Harts (Special).

Hart (S.E.D.B.). 59 aircraft, K4437-K4495, built by Armstrong Whitworth during 1934-35.

Hart Trainer (Special). One aircraft, K4617, built by Hawker.

Hart Trainer (Series 2). 20 aircraft, K4751-K4770, built by Hawker during 1934. Temperate aircraft.

Hart Trainer (Series 2A). 167 aircraft, K4886-K5052, built by Armstrong Whitworth to Spec. 8/35. Tropical radiators.

Hart Trainer (Series 2A). 114 aircraft, K5784-K5879, built by Vickers to Spec. 8/35 under Contract No. 410420/35. Provision (only) for tropical radiators.

Hart Trainer (Series 2A). 136 aircraft, K6415-K6550, built by Armstrong Whitworth to Spec. 8/35. Tropical radiators.

Estonian Hart. 8 aircraft, 146-153, built by Hawker in 1932.

Swedish Hart. 4 aircraft, 1301-1304, built by Hawker in 1933.

Bristol Pegasus IM2 radial engines.

Swedish Hart. 42 aircraft built by State Aircraft Factory, Trollhättan in 1935-36. 550-h.p. Nohab Pegasus IU2 engines.

SERVICE ALLOCATION

Representative aircraft in service with R.A.F. units
 No. 6 (Bomber) Sqdn., Ismailia, Egypt: K4406, K4407, K4415, K4423, K4469, K4471.
 No. 11 (Bomber) Sqdn., Risalpur, India: K2100, K2102, K2104, K2106-K2113, K2116, K2121, K3921, K3922.
 No. 12 (Bomber) Sqdn., Andover, Hants, and Khormaksar and Robot, Aden: K1419-K1429, K1444, K1446, K1447, K2427, K3004, K3009, K3010.
 No. 15 (Bomber) Sqdn., Abingdon, Berks: K3038, K3040-K3043, K3052, K3900, K3957, K3960, K3964, K3969, K3971, K3972.
 No. 18 (Bomber) Sqdn., Upper Heyford, Oxon: J9942, J9943, J9944, J9946, K1433, K1434, K2430-K2432, K2437, K2445, K2451-K2454, K2459, K2468, K3004, K3009, K3035.
 No. 24 (Communications) Sqdn.: K2443, K2450, K2456, K3001, K3002, K3748, K3873, K3874, K4297, K4298.
 No. 33 (Bomber) Sqdn., Bicester, Oxon; Upper Heyford, Oxon; Mersa Matruh, Egypt; Ramleh, Palestine; Amman, Transjordan; Gaza, Palestine; Ismailia, Egypt: J9934-J9936, J9938-J9945

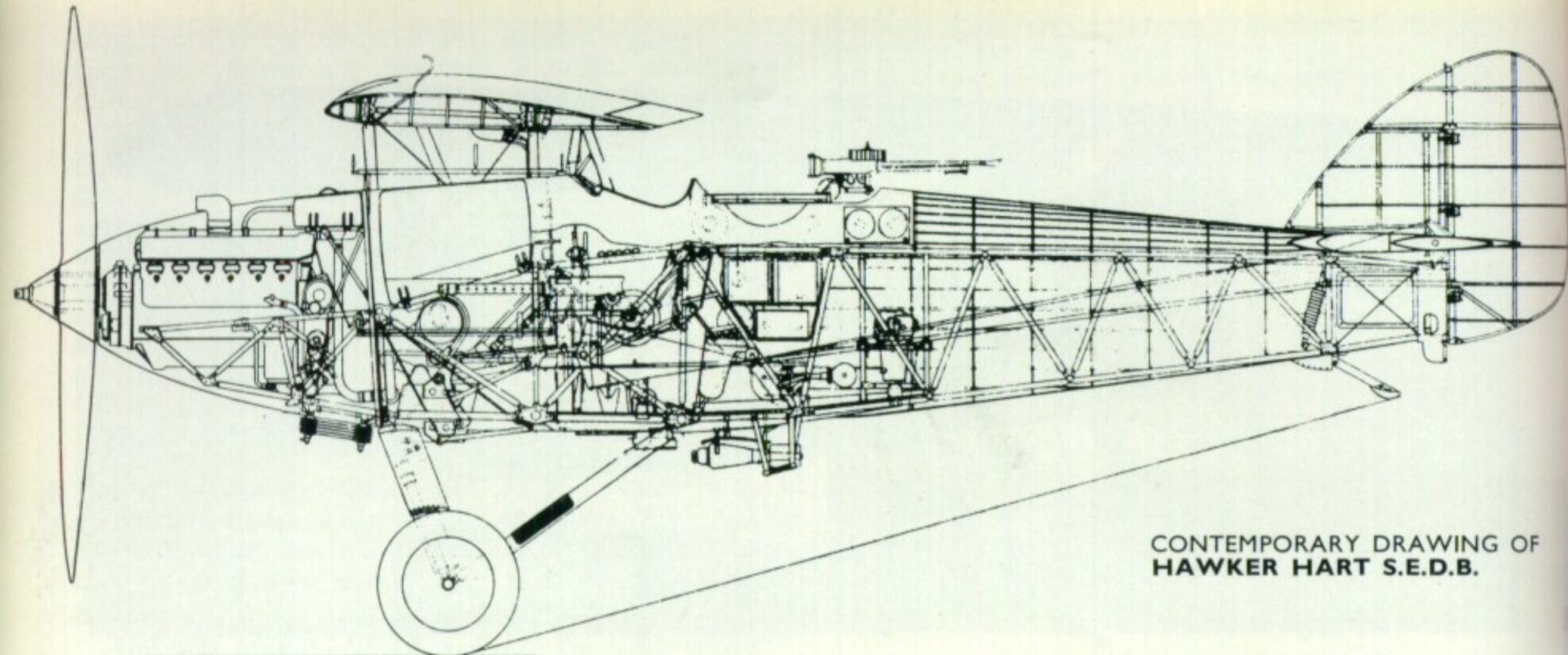


Left: An early picture of G-ABMR when fitted with Osprey tail unit. (Photo: H. G. Hawker Engineering Co.) Right: A late wartime photo of G-ABMR when in use as a Hawker delivery pilot ferry.

Left: The evaporative-cooling Hart test-bed, K1102, after addition of the protective canopy. (Photo: H. G. Hawker Engineering Co. Ltd., No. 45A.) Right: The ill-fated Bristol-Jupiter Hart test-bed, G-ABTN.

(Photo: H. G. Hawker Engineering Co. Ltd., No. 23/49B)





CONTEMPORARY DRAWING OF
HAWKER HART S.E.D.B.



P.V.12 (Merlin prototype) installation in Hart K3036.
(Photo: Hawker Aircraft Ltd.)

J9947, K1418, K1430-K1434, K2429, K2431, K2436, K2463, K4448, K4450, K4476.

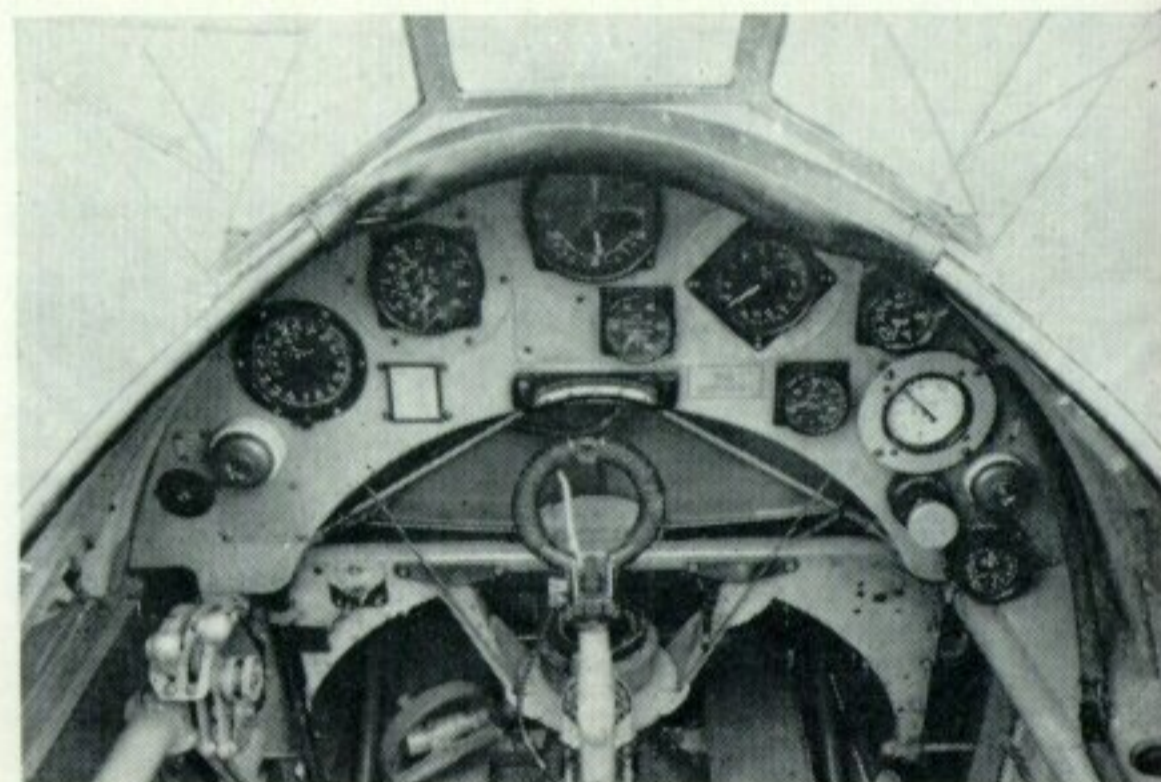
No. 39 (Bomber) Sqdn., Risalpur, India: K2087, K2088, K2090, K2096-K2098, K2100, K2104, K2105, K2110, K2113, K2115, K2116, K2119, K2122-K2124, K2126, K2129, K2131, K2132.

No. 40 (Bomber) Sqdn. (Hart (Special)), Abingdon, Berks: K4416.

No. 57 (Bomber) Sqdn., Netheravon, Wilts, and Upper Heyford, Oxon: J9940, J9941, K1422, K2446-K2448, K2457, K2458, K2460, K2461, K2465-K2467, K2472, K3007, K3018, K3026, K3032, K3034.

No. 60 (Bomber) Sqdn.: K2111, K2113, K2117, K2121, K2128, K2131.

No. 142 (Bomber) Sqdn., Netheravon, Wilts; Andover, Hants; Aboukir, Egypt; Mersa Matruh, Egypt: K3955, K3956, K3958, K3959, K3962, K3963, K3966, K3967.



The pilot's cockpit of the Hart Bomber.
(Photo: Hawker Aircraft Ltd.)

No. 500 (County of Kent) Sqdn., Manston, Kent: K2998, K3018.

No. 501 (County of Gloucester) Sqdn., Filton, Glos: K2439, K2998, K3018.

No. 503 (County of Lincoln) Sqdn., Waddington, Lincs: K2447, K3023, K3900.

No. 600 (City of London) Sqdn., Hendon, Middlesex: K2982, K2984, K2985, K2987, K2997, K3045, K3048.

No. 601 (County of London) Sqdn., Hendon, Middlesex: K2966, K2970-K2973, K2976-K2978, K2986, K2989, K3010, K3021, K3031, K3051, K3054.

A Hart (Special), K4469, serving with the Royal Air Force in Trans-Jordan during 1940. Note the low-pressure tyres.
(Photo: Ministry of Defence)





Hart, No. 33 Bomber Squadron, Eastchurch, U.K.
Black bands indicated aircraft carrying Air
Exercise Referee No. 4, August 1930.



No. 39 Sqdn.

Wing detail of above,
starboard wing only.



Hart, No. 39 Bomber Squadron, Risalpur, India.
The black Squadron identity bands around the
fuselage were first used by No. 39 Squadron in 1931.



Hart, No. 57 Bomber Squadron,
Upper Heyford, Oxon, U.K., 1934.



Hart Trainer in early trainer
colour scheme pre-1938.

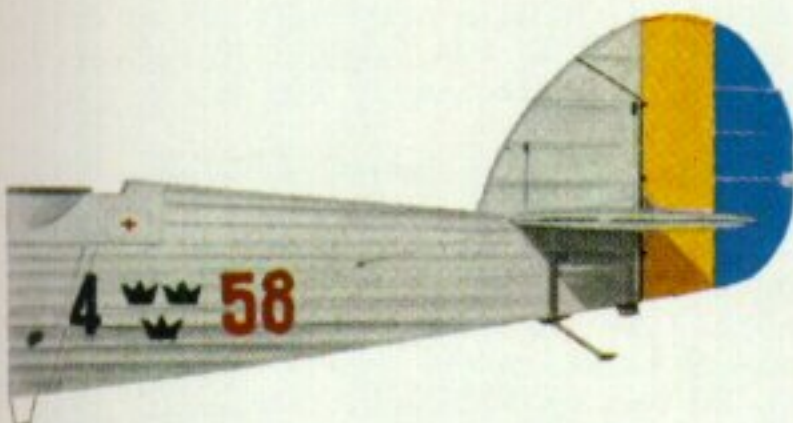


Hart, No. 1 F.T.S., 1940.



Hart Trainer used by
Squadrons and Air Schools,
South African Air Force.

Hart Trainer captured on Merville Airfield,
France, May 1940.



B4A of 4F



B4A (Hart) Swedish Air Force.



The Napier Dagger I 24-cylinder H-engine being test-flown in Hart K2434. (Photo: Flight No. 13716)

No. 602 (City of Glasgow) Sqdn., Abbotsinch, Renfrewshire: K3875.

No. 603 (City of Edinburgh) Sqdn., Turnhouse, Midlothian: K4642, K5498, K6809.

No. 605 (County of Warwick) Sqdn., Castle Bromwich, Warwick: K2435, K2440, K2452, K3861, K3888.

No. 609 (West Riding) Sqdn., Yeadon, Yorks: K3011, K3839.

No. 610 (County of Chester) Sqdn., Hooton Park, Cheshire: K4441, K4447, K4449, K4450.

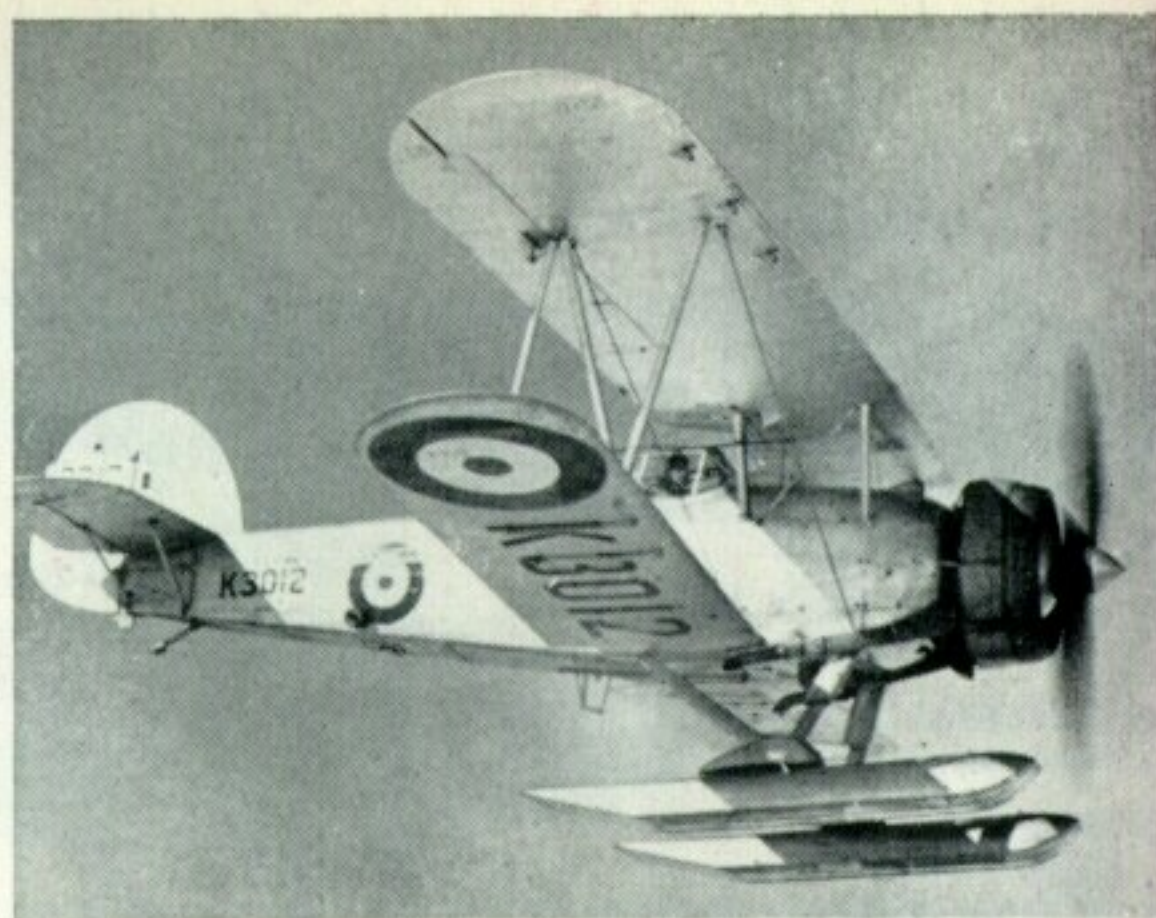
No. 611 (West Lancashire) Sqdn., Speke, Lancs: K3044, K3851, K3881.

Other Units: K1950-K1955 (2-Seat Hart Fighters, No. 23 (Fighter) Sqdn., Kenley); K2030 (C.F.T.S., Ambala); K2992, K2993, K2997, K4391 (R.A.F. College, Cranwell); K3753, K3756, K4982 (Oxford University Air Sqdn.); K6451 (Cambridge University Air Sqdn.); K4957-K4963 (University of London Air Sqdn.); K4760 (No. 148 Sqdn., 1942); K5841, K5857, K5864 (Central Flying School).



Above and below: The Bristol test-bed Hart, K3020, was flown in turn with short- and long-chord cowlings round Pegasus engines, and with Mercury driving Hamilton 3-blade metal propeller.

(Photos: Bristol Engine Co. Ltd., Nos. 5693, 5877, 6612)



Ski Hart with Pegasus engine flying in Canada. Note enclosed cockpit. (Photo: via Canadian Air Force Review, No. H.T.4)

Flying Training Schools: No. 5: K2474. No. 7: K3157. No. 10: K3154.

E. & R.F.T.S.: No. 1: K5000. No. 2: K5001. No. 3: K3903. No. 4: K5050. No. 5: K4941. No. 6: K5820. No. 7: K5834. No. 8: K6509. No. 9: K3846. No. 10: K5865. No. 15: K3870. No. 16: K4422. No. 19: K5800. No. 20: K6519. No. 21: K4995. No. 25: K3845. No. 29: K3054. No. 46: K4455.

Test-beds: J9933 (Frazer-Nash gun turret); G-ABMR (various Kestrels); G-ABTN (Bristol Jupiter and Pegasus); K1102 (evaporative cooling); K2434 (Napier Dagger); K3012 (ski undercarriage, Pegasus); K3014 (Flight Refuelling trials); K3020 (Bristol Pegasus and Mercury); K3036 (Rolls-Royce P.V.12, Merlin C and E).

Station Flight Allocation: Martlesham Heath: K2083. Northolt: K3856, Kenley: K5011. Hendon: K5035. Tangmere: K5023. Odiham: K6513.

R.A.F. Harts sold abroad: Sold to South Africa: K3016, K3029, K3876, K4383, K4392, K5022, K5784, K6527; sold to Southern Rhodesia: K3025, K3026, K3877, K3888, K3889.

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SPECIFICATION

Type: Two-seat light day bomber.

Construction: Bolted-up steel and aluminium structure with fabric covering.

Powerplant: R.A.F. Bombers: 525-h.p. Rolls-Royce Kestrel IB or 510-h.p. Kestrel XDR. R.A.F. Trainers: 525-h.p. Kestrel IB or Kestrel VDR or XDR. Estonian aircraft: 525-h.p. Kestrel IIS. Swedish aircraft: 580-h.p. Bristol Pegasus IM2. Test aircraft: 530-h.p. Kestrel IS, 510-h.p. Kestrel IIB, 525-h.p. Kestrel IIS, 525-h.p. Kestrel IIIS, 510-h.p. Kestrel IIIMS, 640-h.p. Kestrel V, 695-h.p. Kestrel VIS, 550-h.p. Kestrel XFP, and 695-h.p. Kestrel XVI; 450-h.p. Bristol Jupiter XFAM, 580-h.p. Bristol Pegasus IM2, 690-h.p. Pegasus IIIMS, 600-h.p. Bristol Mercury VI, 840-h.p. Mercury VIII, 890-h.p. Mercury IX, 890-h.p. Bristol Perseus; 780-h.p. Halford-Napier Dagger I, 805-h.p. Dagger II & III, Hispano-Suiza 12 Xbrs, 720-h.p. Lorraine Petrel Hfrs, 980-h.p. Rolls-Royce P.V.12, 1,025-h.p. Rolls-Royce Merlin C and E.

Dimensions: Span (bombers) 37 ft. 3 in., (trainers) 37 ft. 4 in.; length (R.A.F. aircraft) 29 ft. 4 in.; height (R.A.F. aircraft) 10 ft. 5 in.; wing area (bombers) 348 sq. ft., (trainers) 349.5 sq. ft.

Weights: (bombers) empty 2,530 lb., loaded 4,554 lb., (trainers) empty 3,020 lb., loaded 4,150 lb.

Performance: R.A.F. Bombers: Max. speed 184 m.p.h. at 5,000 ft.; climb 8 min. 20 sec. to 10,000 ft.; range 470 miles; endurance approx. 2 hr. 45 min.; service ceiling 21,350 ft. R.A.F. Trainers: Max. speed 168 m.p.h. at 3,000 ft.; climb 6 min. 30 sec. to 10,000 ft.; range 430 miles; endurance approx. 2 hrs. 30 min.; service ceiling 22,800 ft.

Other data: Fuel capacity 83 gallons. Oil capacity 7 gallons. Bomb-load up to 520 lb. Armament: one forward-firing Vickers Mk. II or III 0.303-in. machine gun and one Lewis gun on rear cockpit, with seven 97-round drums. Undercarriage 6 ft. 4 in. track, 800 x 150-mm. Dunlop wheels. Palmer hydraulic brakes and Dowty tailwheel fitted on late series aircraft.