PROFILE PUBLICATIONS

The Hawker Fury



NUMBER

18



The Hawker Fury

Squadron Commander's Aircraft, No. 1 Squadron.

("Flight" photo)

Fame attaches to an aircraft for any of a number of logical reasons: great achievements by its crews, significant technical advances portrayed or great responsibilities vested in large numbers built. The Hawker Fury I of the nineteen-thirties, while certainly heralding a considerable technical step forward, won fame and sentimental admiration for the purity of aerodynamic design according to contemporary standards. As the biplane disappeared from the scene, the Fury remained in mind as the epitome of classic design with in-line engine.

Nub of the Fury's concept lay, as with so many great aircraft, in radical powerplant development. Sydney Camm had, since the mid nineteen-twenties, strived to lead the development of the interceptor through the mediocrity of traditional air-cooled radial and overweight liquid-cooled in-line engines. The Hornbill of 1926, for whose later development he had been responsible, came near to achieving the magic 200 m.p.h. with the unsuitable Rolls-Royce Condor, but nevertheless proved the lie in the belief that fighter speeds could not increase without major aerodynamic advance.

With the advent in 1927 of the Rolls-Royce F.XI, which promised hitherto unapproached power/weight ratios possible with cylinder banks cast in one—replacing separate cylinder castings—Camm embarked on the Hart bomber and a lighter, but related, interceptor. These two designs, together with the Tomtit elementary trainer, represented in the Hawker family a co-ordinated airframe advance incorporating the new fabricated steel and aluminium tubular structure in the fuselage and the dumb-bell wing spars that were to remain features of all Hawker aircraft until well into World War II.

After Camm's Hawfinch failed in its competition

with the Bristol Bulldog (see *Profile* No. 6), Hawkers went ahead with the independent development of an interceptor, using the F.20/27 specification as a guide to Air Staff fighter concepts. The un-named Hawker F.20/27 Mercury-powered interceptor prototype served to illustrate conclusively the inadequacy of current air-cooled radials, but into this design had been incorporated the ability to replace the radial with the F.XIA engine with little alteration to the basic "shape" of the fuselage; thus with the appearance of the in-line prototype, a fairly accurate comparison of speeds could be derived.

This aircraft—the Hawker Hornet—together with the Hart and Tomtit were the sensation of the 1929 Olympia Aero Show, their first public appearance. The Hornet, so named by Hawkers, was first flown by Flt. Lt. P. W. S. ("George") Bulman at Brooklands in March 1929, and although for initial trials the 420-h.p. F.XIA engine was used, when the prototype (registered *J9682*) was delivered for Service evaluation at Martlesham Heath it had been fitted with a 480-h.p. F.XIS.

Despite the fact that the Hornet's concept was entirely unsponsored by Air Ministry Specification or contract, its appearance at Martlesham was regarded by many senior Air Force staff officers as something of a face-saver. The 174-m.p.h. Bulldog fighter had just been adopted and ordered into extensive production, yet the appearance of the 184-m.p.h. Hart bomber brought about a disagreeable state of affairs—amply demonstrated in the course of the 1930 Air Defence Exercises when the Harts went about their business virtually undisturbed by the fighter defence. But the appearance of the first Hart squadron in 1929 had already forced the Air Staff's hand; *J9682* was purchased for £6,500, placed on Air Ministry charge



Above: The true Hawker Fury prototype was the Hornet, seen here before purchase by the Air Ministry, and without registration J9682. Right: Side elevation of the Hornet.



and the design re-named Fury I. Findings of the Martlesham trials spoke enthusiastically of the aeroplane's advanced features, drawing particular attention to the unexpected degree of accessibility to the finely cowled engine (now named the Kestrel IIS).

In the air the Fury set entirely new standards with its high rate of climb (reaching 10,000 feet in 4 minutes 25 seconds), fast rate of roll and lightness of control. It was also the first interceptor to serve with the R.A.F. capable of more than 200 m.p.h., its top speed being 207 m.p.h. at 14,000 feet. So impressed with the prototype were the Service pilots that Air Ministry Specification 13/20 was drafted about the design. This featured the standard steel and aluminium tubular structure built up on the Warren principle as a rectangular box section faired to oval by superimposed decking stringers. The unequal span, singlebay wings were mounted with considerable stagger and were built up on metal dumb-bell spars and spruce ribs, fabric-covered with ailerons on the top wings only. The undercarriage was of the cross-axle Vee type with oleo-rubber shock absorbers. The standard fighter armament of two synchronised Vickers 0.303-inch machine guns was located in the nose top decking with ammunition supply of 600 rounds per gun.

The Kestrel IIS engine, supercharged to give 525 b.h.p. at 14,000 feet, drove a wooden two-blade fixed-pitch Watts propeller; its radiator was situated between the undercarriage legs and was equipped with controllable shutters.

FURIES IN SERVICE

Despite the opening remarks, the Fury I did *not* achieve widespread R.A.F. service. In view of the previous acceptance of the Bulldog, the relatively high cost- (£3,900 per aircraft for early production examples, amortising to £3,700 for aircraft built during and after 1933) might well have prevented Furies from ever entering production—especially in view of the impending economic slump. The unquestioned superiority of the Fury I, however, prompted the Air Staff to regard the aircraft as the spearhead of Britain's air defence—the equipment of three Squadrons, Nos. 1, 25 and 43, the R.A.F.'s corps d'elite.

As a tentative beginning the Air Ministry placed a contract with the H.G. Hawker Engineering Company for 21 Fury I's (K1926–K1946) in August 1930, and



Side, front and rear views of the first production Hawker Fury I, K1926.





returned J9682 to commercial charge. Between then and the end of that year, the Hawker pilots, Bulman and P. E. G. ("Gerry") Sayer, took turns to demonstrate the prototype in Norway, Spain, Yugoslavia and Denmark, while at Kingston and Brooklands tooling got under way to commence Fury production.

Sayer flew the first production Fury from Brooklands on 25th March 1931, and all the 21 R.A.F. machines had taken the air by 15th April. The first squadron chosen to receive these was No. 43—"The Fighting Cocks"—based at Tangmere under the command of Sqdn. Ldr. L. H. Slatter (later Air Marshal Sir Leonard Slatter, K.B.E., C.B., D.S.O., D.F.C.) and 16 aircraft were delivered in May.

Straightway the Service learned of the Fury's aptitude for aerobatics, and no greater exponents in public display techniques lived than the pilots of No. 43. That legendary pilot, Sayer, also flew successive variants of the Fury through scintillating aerobatic displays at the annual Whit Monday Motor Races at Brooklands.

From an operational standpoint, The Fighting Cocks demonstrated in the 1931 Air Defence Exercises their ascendancy over all other defenders, the one Fury squadron achieving more successful interceptions than the entire remaining defences.

Further contracts under Specification 13/20 were placed with Hawker during 1931, the first—for 48 aircraft—being completed in the remarkably short period of eleven weeks. The two squadrons scheduled

to receive these were Nos. 1 and 25, but those for the former squadron were delivered to the Air Storage Unit at Cardington for fitting of night flying equipment, with the result that No. 25 (Fighter) Squadron, based at Hawkinge under Sqdn. Ldr. W. E. Bryant, M.B.E., received its Furies before its traditional rival, No. 1.

Conscious that the public spotlight might fall upon his squadron, Bryant set about the systematic training of his pilots in complicated air drill and formation aerobatics, and one of his pilots recalls that it was the C.O.'s favourite pastime to drill the Officers on the parade ground—on bicycles! It has also been said that the official blind eye was invariably turned upon No. 25's ebullience, and countless Station Commanders made complaints to deaf ears after anonymous Furies had indulged in high spirits over—and not high over—their airfields. After all, the Secretary of State for Air, Sir Philip Sassoon, was an honorary member of No. 25.

By the turn of 1931, the famous No. 1 Squadron at Tangmere had completed re-equipment with Fury I's, and for the next four years an intense rivalry sprang up among the three Squadrons. Certainly therein lay many of the seeds of *esprit* so vitally mature in 1940. The R.A.F. Display at Hendon in June 1933, however, featured the Furies of No. 25 Squadron performing formation aerobatics, the aircraft being linked together by elastic ropes with streamers attached—the entire performance carried out without breaking the



A late series Fury I serving with the Royal Air Force College at Cranwell.

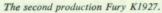
ropes. A grim sequel to this fine display came two months later on 7th August when a Horsley of No. 504 (County of Nottingham) Squadron, in summer camp at Hawkinge, struck a disused shed while landing and fell upon a hangar housing No. 25's machines. Both buildings caught fire and, together with the Horsley, whose crew narrowly escaped by falling from their aircraft to the ground, six Furies were destroyed. It was, however, No. 25 Squadron that won the Air Defence Challenge Trophy for air fighting tactics and gunnery in 1933.

No. 1 Squadron, as air fighting champions in 1934, was chosen in July that year to participate under the command of Wg. Cdr. G. C. Pirie in the Canadian Centennial celebrations at Toronto and, to judge from Press comment, certainly upheld the best traditions of that premier Squadron.

By 1936 Fury I's were being replaced in the newly constituted Fighter Command by Fury II's and most of the older aircraft were withdrawn to second-line duties. Some were delivered to Flying Training Schools, prominent among them being Nos. 3 and 7, and the overseas draft Training Unit, then stationed at Sealand. At least one (and possibly as many as three) late-series Fury I's equipped the Advanced Training Flight at the R.A.F. College, Cranwell.

FURY I'S ABROAD

Foreign interest in the Fury I dated back to the months immediately prior to the appearance of the first R.A.F. Fury I. During the course of demonstrations of the Hornet towards the end of 1930 on the European







continent, Yugoslavia displayed active interest in the type and placed an initial order for six aircraft, and these were commenced in the Hawker shops at about the same time as those for the R.A.F. These Yugoslav Furies, temporarily registered *HF1* to *HF6*, were delivered during June 1931, the first having been flown by Bulman on 4th April. The following year Hawker received an order to equip five of the Yugoslav Furies with wheel spats (a feature not adopted by the R.A.F. until 1936 on the Fury II), and in one such aircraft, Capt. Sintic of the Royal Yugoslav Air Force won the International Alpine Air Race at the Zurich Show, leading the field at an average speed of 201 m.p.h.

The sixth Yugoslav Fury was returned to Brooklands before the end of 1931 for conversion to take the Hispano-Suiza 12 N.B., being flown by Sayer on 27th August. The engine proved unsuitable in the Fury, due to the lower thrust line, and the aircraft was returned to standard in 1933.

Norway, early in 1932, ordered a single Fury for evaluation, powered by an Armstrong-Siddeley Panther IIIA air-cooled radial engine. Registered 401 and first flown by Sayer on 9th September 1932, this



one-off example was extensively evaluated at Martle-sham Heath on behalf of the Norwegian Government, and although first trials seemed promising, the subsequent verdict of the R.No.A.F. showed the installation to be unsuitable. It appears that 401 displayed a tendency to nose-over while taxiing, the c.g. of the big Panther engine being 9 inches forward of that of the Kestrel. At one time 401 was also flown in Norway on a ski undercarriage.

Perhaps the most interesting variant of the Fury I was that ordered by the Persian Government in January 1933. This country had acquired an extensive agreement with Pratt & Whitney for the purchase and servicing of the big Hornet radial engine. The initial order was for sixteen Hornet Furies to be equipped with the variable-pitch three-blade Hamilton propeller; for purposes of initial evaluation, however, and during most of the initial trials at Brooklands, large coarse-pitch wooden Watts propellers were used. Once again nose-heaviness resulted in taxiing difficulties but, after a taxiing accident at Martlesham, tail ballasting proved an adequate remedy—without significant performance penalty.

Below: Persian Fury with Pratt & Whitney Hornet engine and Hamilton 3-blade propeller. ("Aeroplane" photo.). Top of page, left: The first Persian Hornet Fury with the standard Watts wooden propeller. Right: Head-on view of the Persian Fury with Hamilton 3-blade propeller.





An early photograph of the Intermediate Fury, G-ABSE.



The High Speed Fury with Kestrel VI S engine, tapered wing and Vee interplane struts.

("Flight" photo)

Despite fast accumulated experience with the Hornet engine in the Persian Furies, the complicated cooling shutter arrangement in front of the cylinders was found to be unreliable and was discarded, with the result that the engine life in the tropics was considerably reduced. Thus by 1934 the need for further Furies in Persia had arisen and a provisional order for about thirty Furies was placed with Hawker Aircraft Ltd. In the meantime, however, the Bristol Mercury had emerged as a realiable engine and already an alternative installation had been evolved at Kingston. The follow-up order by the Persian Government was, therefore, reduced and almost all the original Hornet Furies returned for conversion to the British radial.

Powered now by the Mercury, the new and refurbished Persian Furies were undoubtedly attractive little fighters, and on return to their parent Air Force embarked on a long and interesting career. Persian Mercury Furies visited almost every country in the Middle East and North Africa between 1935 and 1938, and later came to be flown by pilots of the *Regia* Aeronautica. As late as 1942, one squadron of about ten aircraft was based at Meherabad in the remote province of Ustan Cheharum—poised to repel any infiltration by the German forces through the Caucasus to the Persian oil fields. During their spell of duty, they were joined by No. 74 (Fighter) Squadron of the R.A.F., and at least one of the Mercury Furies was equipped with a replacement Hurricane tailwheel!

The last known existence of a Persian Fury was at Habbaniyah in 1948 where, minus engine, it was used to exercise the station fire crews.

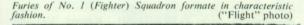
Having recently acquired licence rights for the manufacture of Hispano-Suiza engines, and in anticipation of putting into effect these rights, the Yugoslav Government persisted in its efforts to match its Furies with various Hispano engines and there were reports that increased orders were to be placed with Hawker towards the end of 1933. The original Hispano Fury, *HF3* was returned to Brooklands once more and made ready for delivery of a new Hispano, but in the event the engine was delayed for another two years; in the

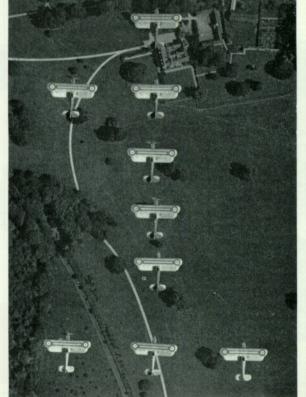


The sole Norwegian Panther Fury.

meantime, as something of a privately-sponsored insurance against failure of the Hispano, Camm proposed a conversion to take the Lorraine Petrel 720-h.p. H frs twelve-cylinder in-line engine and this installation did in fact fly in 1934. Stressing problems prevented this from being accepted as standard.

One other country purchased Fury I's from the parent company. In November 1933 the Portuguese Government ordered three Fury I's with Kestrel IIS







Hispano-powered Fury.



The first Yugoslav Fury photographed early in 1931.

engines de-rated to give longer patrol endurance, and the first of these, 50, was flown on 28th May 1934. The following month all three were delivered by air to the Portuguese Army Air Service and participated in the Lisbon Aero Shows of 1935 and 1936. The last surviving example is believed to have been shot down at sea during the Spanish Civil War late in 1937.

FURY I DEVELOPMENTS

Fury deliveries abroad continued almost up to the outbreak of World War II though after 1936 such variants as the Yugoslav and Spanish Hispano Fury should more accurately be classified as Mark II derivatives.

On the other hand the Fury I underwent active development between 1932 and 1935 in preparation for the R.A.F.'s Mark II and this development,

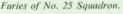


Fury I, No. 5 Flying Training School, Sealand, 1938.
(Ministry of Defence photo)

carried out in standard or modified Mark I airframes is logically covered here.

It was the appearance of the Fury I on Air Ministry charge and the results of the Martlesham evaluation in 1930 that demonstrated the potential realism of the Air Staff Specification F.7/30. For some months previously some members of the Air Staff had sought a formula by which to break the bounds of the accepted interceptor limits containing a speed bracket between 160 and 200 m.p.h., the slavish adherence to an armament of two synchronised rifle-calibre machine guns and specialist day fighter capabilities. In its original draft form, without being too specific, F.7/30 sought to expand these limits. With the appearance of the Fury and the Kestrel IIS engine, the speed limit appeared to have been raised.

Camm, therefore, realised that should the early promise of increased power from the Kestrel materialise, only relatively limited attention to the airframe would enable the Fury to carry greater armament without sacrifice in performance. With this in mind, the manufacturers financed the construction of two airframes, the first to serve the dual purpose of company demonstrator and limited trial installation air-





The Persian Fury re-engined with a Bristol Mercury engine.

("Flight" photo)

craft. Registered *G-ABSE*, the Intermediate Fury was flown by Sayer on 13th April, 1932 with a standard Kestrel IIS, and within a month was being used to flight test the wheel spats specified for the Yugoslav Fury.

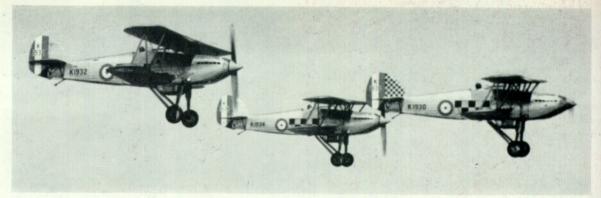
As successive drafts of F.7/30 materialised, so did insistence on the use of the Rolls-Royce Goshawk steam-cooled engine. From the outset most British airframe designers were sceptical of the benfits of steam-cooling in a fighter, and Camm had already gained some experience with the vagaries of a steamcooled Kestrel in a Hart test-bed. Nevertheless use of the Goshawk steadily became mandatory in the Specification and Hawker set about preparation for this engine in the Fury. By the end of 1932 G-ABSE had flown with a special Kestrel IVS to test the supercharger for the Goshawk, and in 1933 was fitted successively with Goshawk III, Kestrel VI and Kestrel VIS (Special). It is believed that G-ABSE soldiered on for many years from hack job to hack job, eventually finding its way on to Air Ministry Charge just prior to the Second World War.

While *G-ABSE* was clearly capable of only limited development work for F.7/30 (being only stressed for

("Flight" photo)







Fury Is of No. 43 Squadron.

("Flight" photo)

a maximum diving speed of 270 m.p.h.), the second P.V. prototype commenced by Hawker was stressed for terminal velocity dives of 360 m.p.h., with an increased proportion of steel primary structure in the fuselage. So expensive did this prototype threaten to become that its birth was only assured by partpurchase by the Air Ministry and when first flown on 3rd May 1933 it carried the registration K3586. Subsequent estimates of this aeroplane's development and manufacture showed it to have cost more than £12,000. As some justification for this high cost, Specification F.14/32 had officially been written around it.

Throughout the period 1933-6 K3586, known

variously as the Super Fury and, more correctly, the High-Speed Fury, amassed a total of over 800 hours test flying, being fitted in turn with a 525-h.p. Kestrel IIS, 600-h.p. Kestrel S, 525-h.p. Kestrel IIIS, 600-h.p. Kestrel VIS (with this engine it underwent handling trials with No. 43 (F) Squadron), 696-h.p. Goshawk III and Goshawk B.41. When fitted with evaporativecooled engines, K3586 featured a straight wing with built-in leading edge condensers, but for much of its life a swept-back tapered wing with Vee interplane struts was fitted. In this form K3586 was credited by a Martlesham report with a top speed of 261 m.p.h. and was flown by Bulman in the S.B.A.C. Display of 1933.

© Francis K. Mason, 1965

SPECIFICATION

Powerplant: Standard Mk. 1: 525-h.p. Rolls-Royce Kestrel Powerplant: Standard Mk. I: 525-h.p. Rolls-Royce Kestrel IIS driving 2-blade Watts wooden propeller. Norwegian Fury: 530-h.p. Armstrong-Siddeley Panther IIIA driving 2-blade Watts propeller. Persian Fury: Either Pratt & Whitney Hornet S2BIG or Bristol Mercury VISP radial engines (Hornet driving 3-blade v.p. Hamilton and Mercury driving Watts 2-blade wooden propeller). Portuguese Fury: 515-h.p. Rolls-Royce Kestrel IIS(S) driving 2-blade Watts propeller. Yugoslav Fury: 525-h.p. Kestrel IIS, Hispano-Suiza I2 NB or Lorraine Petrel H Frs driving 2-blade Watts propeller. 2-blade Watts propeller.

Dimensions: Span (all versions) 30 ft. Length (Kestrel engine) 26 ft. 8 in. Height 10 ft. 2 in. Wing area (all versions)

Weights: Empty (Kestrel engine) 2,623 lb. Loaded (Kestrel engine) 3,490 lb. (Persian Mercury VI), 3,490 lb. (Persian Hornet) 3,590 lb. (Portuguese) 3,548 lb. (Norwegian) 3.575 lb.

Performance: Standard Mk. I: Maximum speed, 207 m.p.h. at 14,000 ft. Climb, 4 min. 25 sec. to 10,000 ft. Range, 305 miles. Service ceiling, 28,000 feet.

Norwegian Fury: Maximum speed, 202 m.p.h. at 16,500 ft. Climb, 5 min. 40 sec. to 10,000 ft. Range, 310 miles. Service ceiling 27,800 ft. Persian Hornet Fury: Max. speed, 178 m.p.h. at 6,500 ft. Climb, 4 min. 45 sec. to 10,000 ft. Range, 300 miles. Service ceiling, 26,000 ft. Persian Mercury Fury: Max. speed, 212.5 m.p.h. at 16,000 ft. Climb, 3 min. 55 sec. to 10,000 ft. Range, 310 miles. Service ceiling, 28,800 ft. Portuguese Fury: Max. speed, 169 m.p.h. at 10,000 ft. Climb, 5 min. 42 sec. to 10,000 ft. Range, 340 miles. Service ceiling, 26,500 ft.

Armament: Standard R.A.F. armament of two 0.303 in. Vickers guns with 600 rounds per gun. Foreign Furies were armed with 7.7 mm. Mauser, Colt or Spandau guns. Most aircraft had provision for light bomb racks to carry 25 lb. practice bombs or flares. Other data: Fuel capacity on all versions was about 50 gallons. Wheel track was 5 ft. 91 in. with 750×125 mm. Palmer wheels and Palmer hydraulic wheelbrakes.

PRODUCTION

All Fury I's were built by the H.G. Hawker Engineering Co., Ltd., (or Hawker Aircraft Ltd. after July 1933),

Kingston and Brooklands, Surrey.

One Hornet prototype, J9682, designed and built to the provisions of Specification F.20/27, under Contract 887063/28.

First Fury I production Contract 40559/30. production batch: 21 aircraft, K1926-K1946.

Second production batch: 48 aircraft, K2035-K2082. Contract 102468/31, to Spec. 13/30.

Third production batch: 15 aircraft, K2874–K2883, K2899–K2903. Contract 184968/31, to Spec. 13/30.
Fourth production batch: 13 replacement aircraft, K3730–K3742. Contract 252331/33, to Spec. 13/32 with Vickers Mk. III guns.

Fifth production batch: 20 aircraft, K5662-K5681, Contract 409396/35, to Spec. 13/32.

Interim (Intermediate) Fury: I aircraft, G-ABSE. Yugoslav Fury Series IA: Six aircraft, HF.I-HF.6 under Contract 289711/32.

Norwegian Fury (Panther IIIA): 401 Persian Fury Series 1: 16 aircraft, 201-216, under Contract

100118/33

Portuguese Fury 1: Three aircraft, 50-52, under Contract 331709/34.

Persian Mercury Fury Series II: Six additional aircraft, 217 et seq. under Contract 366843/34 with Mercury VISP engines.

High-Speed Fury: One aircraft to Interim Spec. F.7/30, K3586.

FURY I's IN SERVICE

Representative aircraft with R.A.F. units No. I (F) Squadron, Tangmere: K1943, K2046 (crashed 26/5/32), K2881, K5668, K2048 (flown by Wg. Cdr. G. C. No. 25 (F) Squadron, Hawkinge: K2060, K2877, K5677. No. 43 (F) Squadron, Tangmere: K1935 (later used as Fury II prototype), K2050, K2882, K3736, K5674. No. 3 F.T.S., Grantham: K2058, K2880, K5680. Advanced Training Squadron, Cranwell: K5682, (aircraft