FOKKER D.VII

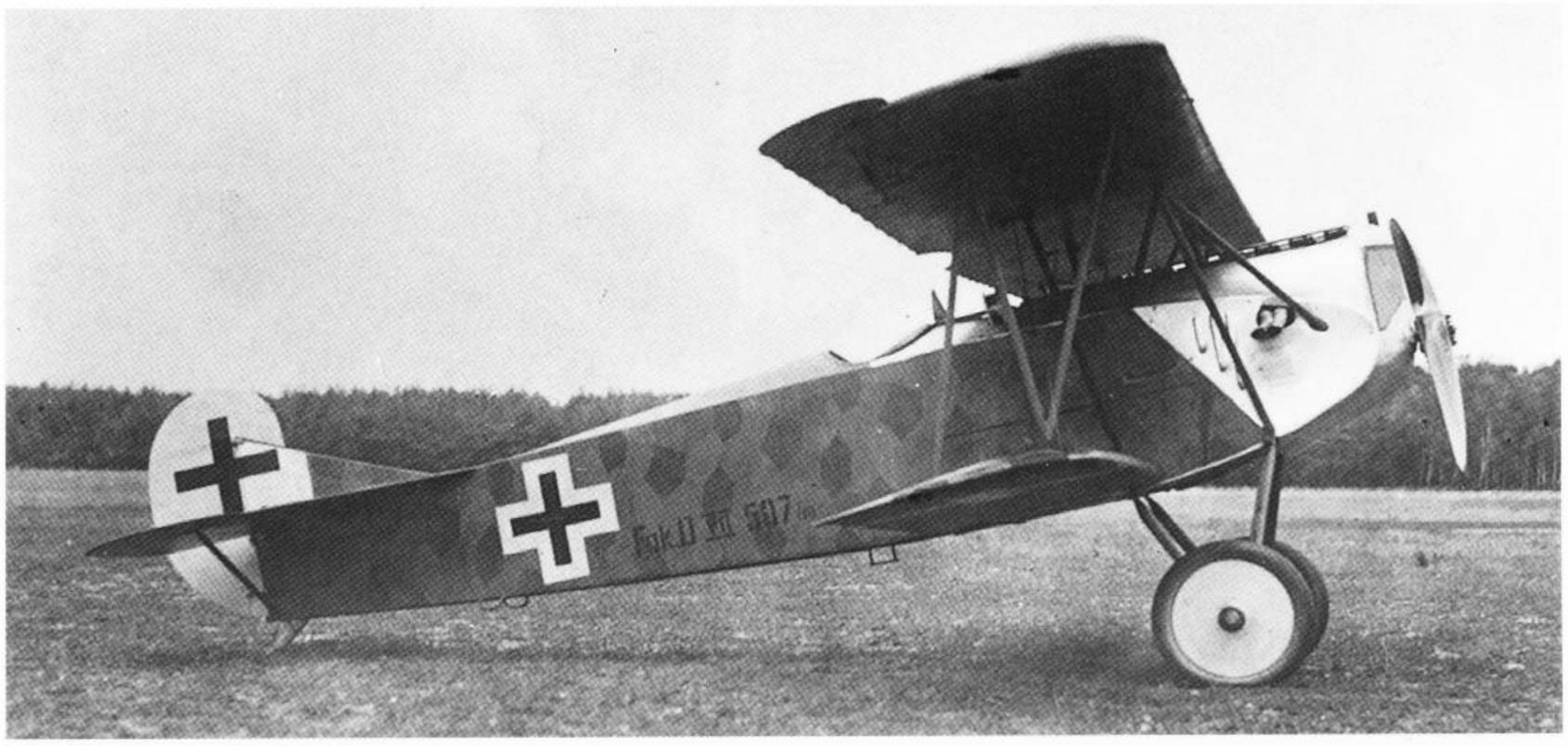
ANTHOLOGY 1

FRONT COVER:
Dawn Patrol
Bustling with activity, this evocative scene typifies Fokker D.VII-equipped *Jasta* 73 in late 1918 as groundcrew steady their pilots' mounts before take-off. In the hands of an experienced flyer the Fokker D.VII was a formidable combat aeroplane. It has been recorded that after the D.VII had entered frontline service, the scoring of many pilots rose rapidly and even average airmen became aces on the type. *(Painting by Jim Dietz)*

Above, Fokker-built D.VII 507/18 covered with four-colour printed fabric and featuring aluminium nose panels with white-doped wheel covers. The fuselage and rudder crosses do not conform to the May 13 *Idflieg* directive – see page 36 for clarification. According to photographic evidence, printed fabric was applied to the fuselages of Fokker-built D.VIIs from 379/18 onwards; most earlier examples bore the streaky green finish as discussed in later pages. *(Greg VanWyngarden)*

Right, Fokker-built D.VII F7733/18 by contrast is covered in five-colour printed fabric, the upper 'row' of grey-turquoise diamonds providing the easiest identification marker. Use of five-colour fabric is believed to have been re-initiated with 7770/18 or 7772/18 and Fokker continued to use it until the end of production. The aeroplane carries the ultimate proportions of *Balkenkreuze* with fully ventilated side cowls, radiator cowling, axle wing and all struts painted deep green save the interplane 'N' members which are a lighter colour; probably grey. The F designation before the serial number signifies those Schwerin Fokkers fortunate enough to receive the excellent BMW D.IIIa 185-hp engine. *(NASM via B Nicklas)*

UK PRICE £17.50 (NET)



AN INTRODUCTION

So much has been written about Germany's Fokker D.VII that one might be forgiven for thinking there was nothing really left to be said about it. Yet, despite countless magazine features and books devoted to the type in past decades presenting scale drawings, colour profiles and photos in great abundance, recent research has forced a reappraisal of D.VII structure and finishing practices.

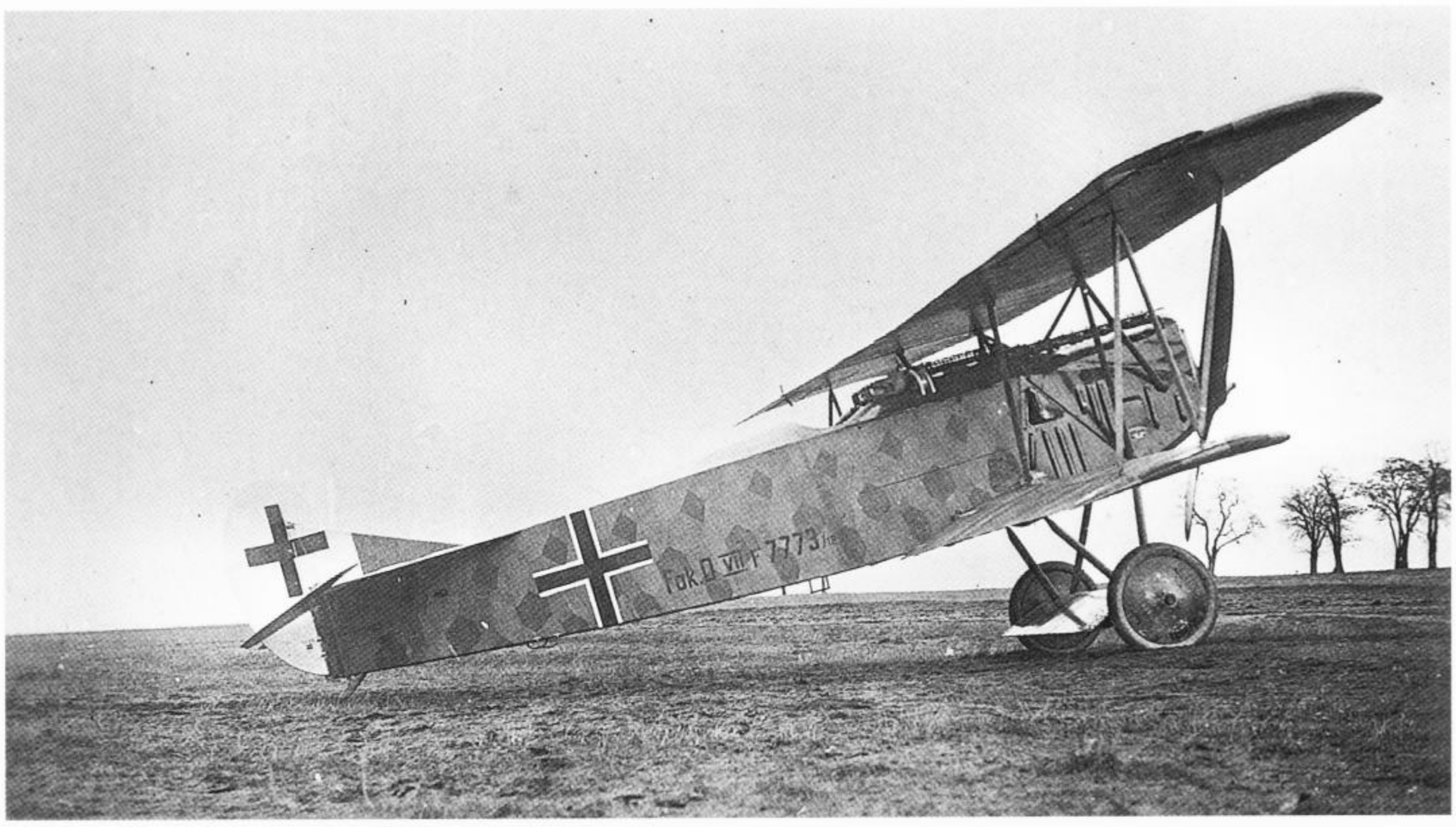
Reassessing available archive material and carefully scrutinizing original documents, photos and drawings, diligent enthusiasts like Dan Abbott, Peter Bowers, A E Ferko, Peter Grosz, Alex Imrie, Dave Roberts, Charles Schaedel, Wally Tripp, Ian Stair, Greg VanWyngarden and others have managed to uncover a great deal of new information which gives us a radically different 'spin' on this most famous of WWI fighter aeroplanes – as a result many modellers will now look on the D.VII in quite a different light.

It is at the *modelmaker* that this anthology is squarely aimed. By providing completely new and revised scale drawings, computer-generated cockpit schematics, a graphic résumé of the type's oft-misinterpreted features and the first serious attempt to begin recording *all* known D.VII unit markings, this book breaks new ground in WWI aviation publishing. At the outset it was quickly apparent that with the large amount of fresh incoming material, one volume would prove insufficient to contain it all in the kind of depth and detail the subject duly warranted. Thus our first anthology combines a general introductory background history with accurate scale drawings concentrating solely on Fokker-built machines together with their wide cowling variations; a subject that forms a study in its own right.

For ease of reference, subsequent anthologies will offer similarly authentic general arrangement drawings that will include all the subtle detail differences for Albatros and OAW-built D.VIIs together with finishing and markings practices applicable to each. Similarly the exhaustive record of D.VII *Jasta* colours will be continued and we'll also be taking a closer look at surviving examples, finer points and recording the fighter's international post-war career.

As ever, updates and revisions are always welcome to round out our present knowledge of what is generally regarded to be one of the most efficient combat aeroplanes of the first air war. For the moment, however, this new volume should satisfy even the most demanding of D.VII devotees.

Ray Rimell, 1997.



THE FOKKER D.VII STORY

CHARLES SCHAEDEL DESCRIBES A FAMOUS AEROPLANE

Much has been made of the fact that the Fokker D.VII was the only aircraft specifically mentioned thus in the Armistice terms, where it was decreed that all examples of this type were to be handed over to the Allies. Despite the inference that it was accorded this honour because of its outstanding quality and without disputing the excellence of its design and performance, it seems logical to suppose that the occupying powers, in order to suppress any resurgent action by militant groups within the defeated German nation, would ask for the surrender of that fighting vehicle which they knew to exist in the greatest numbers. Whatever the real reason for its inclusion, its quality and durability was proven by the lengthy service it gave to various countries during the ensuing post-war years.

Fokker D.VII development

In the latter half of 1917, faced with the problem of providing their fighter pilots with aircraft capable of regaining superiority in the air, the German authorities decided to hold an evaluation meeting at the Adlershof airfield near Berlin. This meeting, to be held towards the end of January 1918, was open to any single-seat fighter aircraft developed around the 160-hp Mercedes D.III engine. The various designs would be demonstrated by manufacturers' representatives and comparatively tested by service pilots, with the winning design receiving a production order. By the appointed date there were 31 different aircraft from ten different makers at Adlershof, many of them fitted with rotary engines for further comparison against the types built to the design specifications.

The two long-standing rival firms of Albatros and Fokker were each well represented, but whereas the former relied upon uprated versions of the established D.Va, Fokker and his designer Reinhold Platz

Above, OAW-built Fokker D.VII 6520/18 photographed in the hands of the 1st Aero Squadron at Trier, Germany *circa* January 1919 – in the background are 91st AS Salmsons and an LVG C.VI (extreme right). The dark-painted fuselage with its white nose suggests former use by *Jasta* 12, but this remains in doubt, for the striped tail was seen on other D.VIIs at Trier, which points to a unit marking rather than individual whim. The low circular access door (seen opened behind the front pylon) only appeared on OAW-built D.VIIs. *(NASM via B Nicklas)*

Left, here is an early production Fokker-built D.VII (note data plaque on front cowling) with both *Eisernen* and *Balkenkreuz* national markings. The glossiness of the deep green-painted nose cowling may be noted. Streaky finish was applied to the fuselage, tailplane and axle wing uppersurfaces; solid turquoise beneath; wings covered in four-colour printed fabric. Struts possibly grey or turquoise blue.

made their bid with new biplane designs built around the Mercedes engine and fitted with the thick cantilever wings developed by the company. These designs evolved into the eventual winner of the competition.

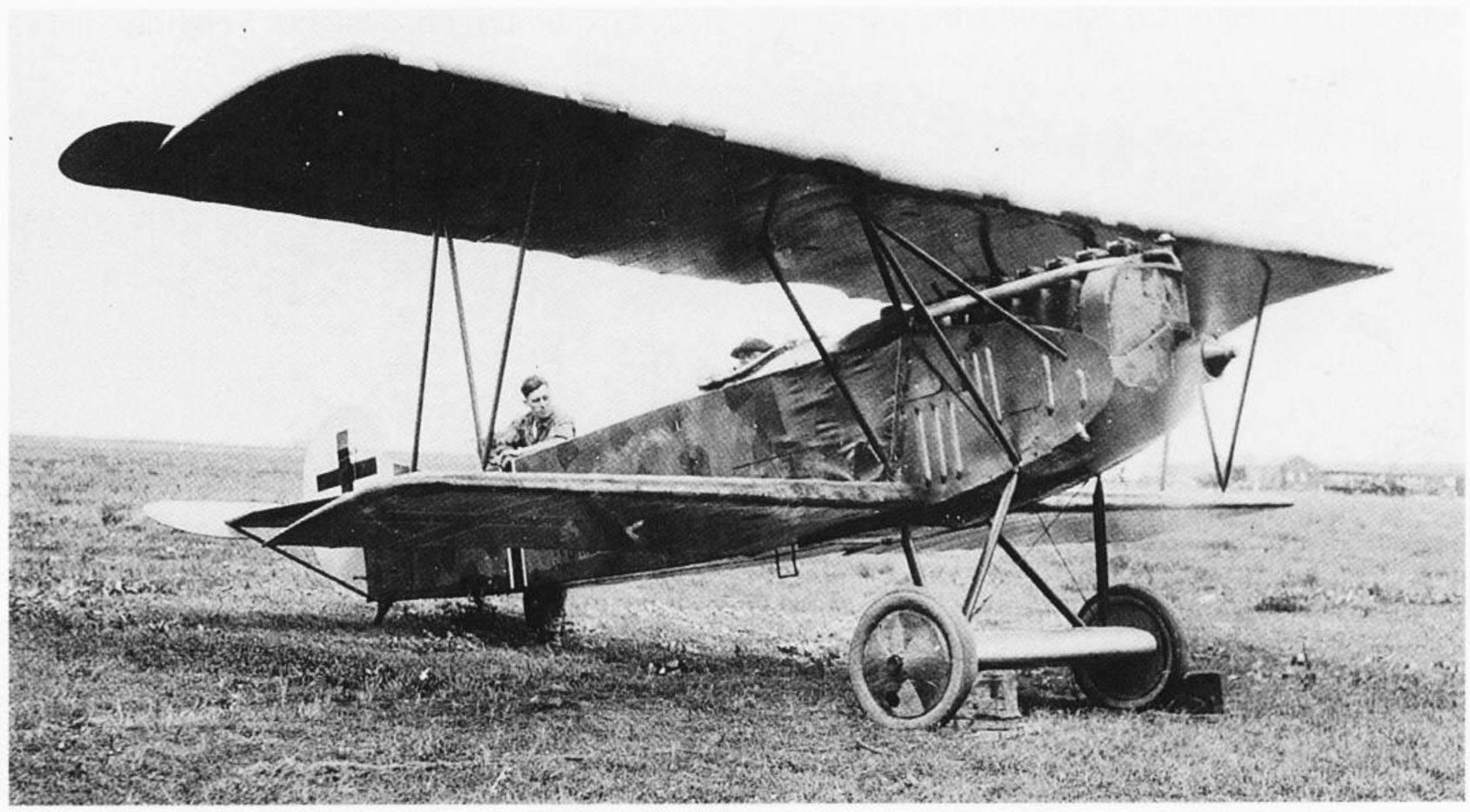
There is a familiar story that the V.11, Fokker's first entry, was directionally unstable and inclined to spin very easily, so during the competitions he secretly locked himself and a welder or two in the hangar and lengthened the fuselage by about 16 inches. He also fitted a fin and a new rudder, shifted the upper wing and altered the aileron balances, all within the space of overnight or over a weekend, depending on the particular story. It has been stated that in this form the aircraft became the competition winner, and as the Fokker V.18 evolved into the Fokker D.Vll. However, in view of the different rear fuselage shape of the V.11 as compared to the V.18, it seems a more likely assumption that the V.18 was a separate aircraft (the V.11 Mk.2 if you like), and only required the addition of a fin and altered wing stagger to produce a machine of great fighting potential.

In this form the V.18, with its improved directional handling and its ability through the wing design to retain manoeuvrability at height, was received with enthusiasm by service pilots who were assigned to test the entries after the manufacturers' pilots had completed their demonstrations. On their recommendations, including that of Manfred von Richthofen, the aircraft in its improved form was chosen to be put into production with the type designation of Fokker D.VII, and an initial order for Fokker to supply 300 aircraft at a price of 25,000 Marks each from his factory at Schwerin. To complete his triumph, the Albatros Werke was also ordered to produce large numbers of the D.VII under licence at the parent factory at Johannisthal, and also by Ostdeutsche Albatros Werke at Schneidemühl. To distinguish between the licence-built Fokkers and those from the parent company, the Johannisthal machines were registered Fok. D.VII (Alb.) and those from Schneidemühl were Fok. D.Vll (OAW). A further designation D.VII F identified the Schwerin-built BMW-engined version, where F signified Frietz of BMW.

In addition Albatros utilised their experience in wooden construction to produce a D.VII with a plywood covered wooden fuselage as insurance against an expected shortage of steel tubing. (Fokker built two). D.VII (Alb.) 541/18 actually weighed more than the standard design, but the anticipated shortage did not arise so there was no need to proceed with this form of construction. The peak production reached at the Fokker factory at Schwerin was eight aircraft per day.

For powering the D.VII at least three engines were used: the Mercedes D.IIIa (160-180-hp); the Mercedes D.IIIaü (180-200-hp) and the BMW D.III (185-hp). Machines with the latter type were eagerly sought after by the frontline units because of their greatly increased performance. Although the various versions differed in detail introduced by the constructors or in the light of operational experience, there was no major external design change to indicate the

Top, another post-war Fokker-built D.VII in American hands. Here is D.VII F7729/18 in five-colour printed fabric finish – compare tonal values of the pattern with that of 7773/18 on the inside front cover. ***(Greg VanWyngarden)***



Right, the serial of this captured, late production Fokker-built D.VII eludes the caption writer, but the fighter wears typical finish with the ultimate form of *Balkenkreuz*. Powered by a BMW engine, this D.VII F features the conical quick-release airscrew hub with its single large retaining nut. ***(Greg Van Wyngarden)***

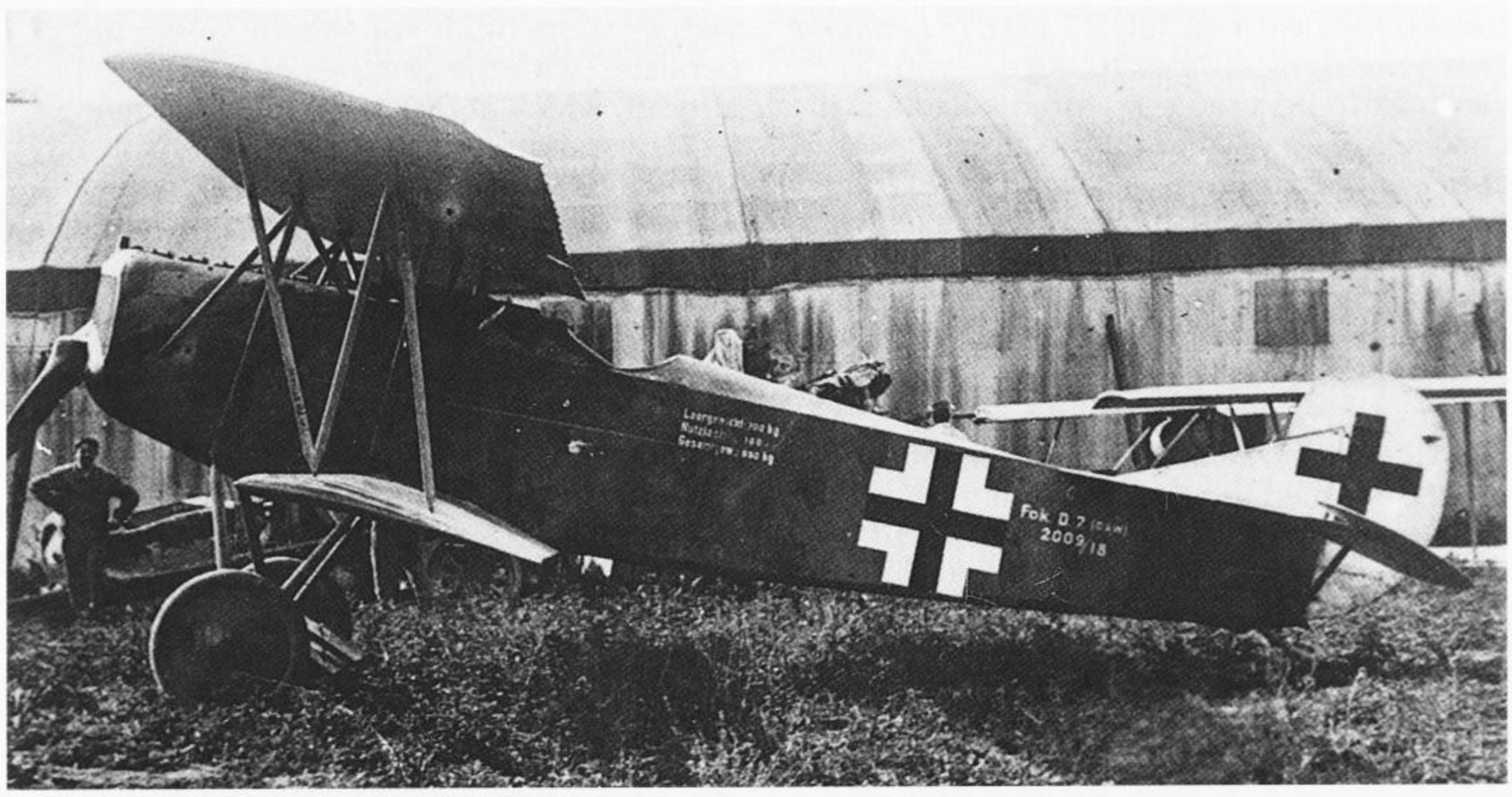
type of engine fitted, except in the case of a version built by the Allgemeine Ungarische Maschinenfabrik AG (MAG) in Budapest, Hungary. This aircraft was fitted with a 210-hp Austro-Daimler engine and featured a distinctive radiator design. Armament was two 8 mm Schwarzlose machine-guns and the maximum speed was about the same as the BMW-engined D.VII, although there was an improvement in climb performance, but the war ended as production commenced.

Operational details

The death of Manfred von Richthofen on April 21 1918 dealt a heavy blow to the morale of German airmen who were trying to sustain the March offensive begun just one month earlier. But as though in compensation the Fokker D.VII now started to arrive at frontline units, where pilots had been eagerly awaiting the new weapon with which they hoped to regain air superiority over the Allies. Initial supplies were too few to enable units to be completely re-equipped at one time so they were allotted to the senior pilots of the top German units, with *Jagdgeschwader* I receiving the first examples. The first operational flights were carried out in company with their less fortunate companions in Albatros, Fokker Dr.I and Pfalz aircraft, which were by now pretty much of an open book to the Allies as regards performance and tactics. However, the introduction of the new German fighter caused the Allied pilots some initial problems, because of its ability to retain performance at altitudes where previously they had an advantage. And at no time during its service life could the D.VII be treated lightly by its opponents.

As an example, the SE5a pilots of No.2 Squadron, Australian Flying Corps, accustomed to having an edge over the enemy at their normal patrol height of 16,000 feet, suddenly discovered that the opposition could stay with them. Similarly their fellow Australians in No.4 Squadron found that the outstanding aerobatic qualities of their Sopwith Camels had to be fully utilised to hold their own above the 12,000 feet at which they normally roamed, although in experienced hands the lighter Camel may have had a slight advantage. A newly joined Australian pilot (Lt. E A Collins), concerned about his action if he found a D.VII on the tail of his Camel, was advised by his flight commander to go into a left-hand turn using bottom rudder to counteract the nose-up tendency induced by engine torque, then tighten the turn until the engine weight and torque of the Fokker forced it to spin. Theoretically he could then tighten his own turn still further and drop down on his adversary. Be that as it may, the German Air Service now had a very efficient all-round fighting vehicle.

The majority of German pilots appeared



Left, in French hands at Villacoublay is the well-known OAW-built 2009/18 which later formed the subject of an in-depth intelligence report that included dimensioned general arrangement drawings. It is commonly illustrated with French roundels covering the original national markings. The grey(?) N struts and forward undercarriage leg bear the black stencilled legends *Fok.D.7 (OAW)* while the datum line, weights table (positioned aft of the cockpit) and serial (arabic '7') are in white. The rear portion of the rudder carries the Albatros logo. *(SHAA 389 670 via GVW)*

Lower left, a later view of 2009/18, now with French markings and pitot on starboard N strut, reveals early-style OAW 'patch' camouflaging of nose panels and wheel covers in sprayed areas of deep green and greyish violet. The axle wing is divided into these colours – later OAW D.VIIs had the colours in hard-edged 'lozenge' style to roughly match adjacent printed fabric. White serial numbers were also typically applied to the outer wheel covers.

to be quite satisfied with the handling qualities of the Fokker D.VII which they considered easy to fly throughout the speed range, although a comparatively high landing speed of about 100 km/hr (62 mph) caused some crashes during conversion. In fact it was held in sufficient regard to be often used as a comparison yardstick for other German types introduced later in the year. In most cases the comparison favoured the D.VII, especially the BMW-engined version that had a speed equivalent to the best of its opponents.

Here again its qualities were relative. Capt. E F Pflaum, an Australian pilot who flew both Camels and Snipes, had an opportunity to fly the Fokker D.VII after the Armistice, and his assessment of the German machine was that it was a very nice aeroplane to fly, but it was heavy compared to the Camel and to a lesser extent the Snipe. This is not meant to detract from the quality of the Fokker D.VII, but it illustrates how two completely different design approaches can each produce a very efficient end result.

Its strong construction was one feature which made the D.VII popular with the men who were required to risk their lives daily in aerial combat. This strength eliminated to a great extent the fear of structural failure such as had plagued the Albatros D.Va and the Fokker Dr.I when they first came into service. Probably the only time that the D.VII was regarded with real mistrust was when a series of mysterious mid-air fires resulted in some fatal mishaps. One of these fires caused the death on July 15 1918 of *Leutnant* Fritz Friedrichs of *Jasta* 10. An ace with 21 victories to his credit, Friedrichs had a last chance for survival when the flames appeared because he was wearing a parachute, but unfortunately this failed to open. These static-line parachutes figured in quite a few incidents involving notable German pilots and Fokker D.VIIs. *Oberleutnant* Erich Loewenhardt, also of *Jasta* 10, was killed as the result of a mid-air collision with *Leutnant* Wenz on August 10 1918. Both men jumped, but while Wenz reached the ground safely Loewenhardt, with 53 victories to his credit, fell to his death at the end of his unopened parachute.

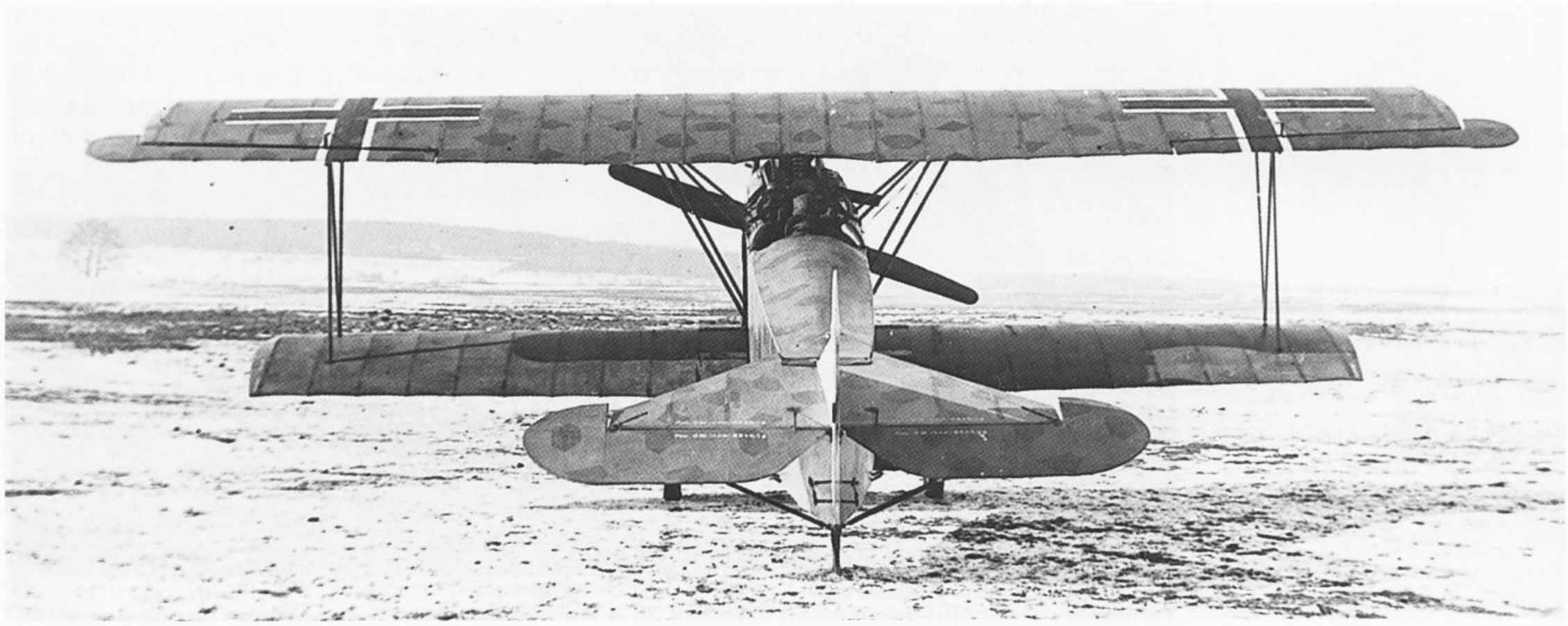
Another lucky one was *Oberleutnant* Ernst Udet, whose 62 victories gained him the distinction of being the highest-scoring surviving German ace at the Armistice. He almost lost that distinction in the summer of 1918 when his parachute became tangled around the tail surfaces of his disabled D.VII. Fortunately it tore loose and bore him safely to the ground.

In order to eliminate the fire danger which caused the loss of Friedrichs various causes were investigated. These included overheating, the type of incendiary ammunition then in use, and fuel tank chafing which occurred in the early days of the D.VII's service life. Changes in each of these spheres eliminated the problem before it became a major threat, and the supply of Fokkers to the units continued. One plainly apparent solution to the serious overheating problem was additional louvres cut into nose panels and cowlings. These took many forms, there being wide variations even between contractors, while at *Jasta* level further modifications were common – in warmer months upper engine cowlings were often left off altogether. Many examples are illustrated within the pages of this book.

Generally the type's introduction proceeded smoothly if slowly, but one particularly troublesome D.VII could be said to have indirectly cost the life of *Leutnant* Hans Kirschstein, leader of *Jasta* 6 with a victory score of 27. For several weeks he persisted with the vagaries of his new aircraft, which at one stage included five forced landings in a week, but finally on July 16 1918 he was forced to return it to the Aircraft Park at Fismes. No replacement was available so a Hannover was sent from his own unit to pick him up, but on the return journey his pilot lost control of the two-seater and in the resultant crash both men were killed.

Fortunately, incidents such as these were rare and the maintenance staffs were comparatively happy with their new charges.

Below, splendid study of a late production OAW-built D.VII in the 8300-8649/18 range – the white wheel stencil states 8331/18; under the port aileron the stencilling reads 884*0*/18! This makes photo identification such fun! Here one can see the variable geometric patch-painting of the nose panels and the distinctive treatment of the wheels. The divided axle wing colours did not always appear thus, for they are also seen in 'mirror image' – dark one side, light the other and *vice versa*. Double rudder horns were frequently seen on OAW D.VIIs. Also visible is the vertical offset radiator filler pipe of late production D.VIIs. *(Lafayette Foundation via GVW)*



However, partly because of delays in supplies of new engines to the aircraft factories and partly because of the wastage resulting from the large offensives being alternately mounted by each side, some units were still waiting to be re-equipped several months after the new fighter came into service. Even then they might not necessarily receive a full complement or could be given another type such as the Pfalz D.XII. The latter aircraft, due to its general similarity to the Fokker D.VII, was particularly subject to comparative criticism, not only by pilots, but by ground crews who looked forward with anticipation to the lack of wing bracing on the D.VII, only to be confronted by the two-bay wire braced wings of the Pfalz. In the air the Pfalz was equal to or better than the Fokker in some respects, although it was heavier on the controls and tended to lose more height in manoeuvres. But despite its good points it appears certain that in some instances it was condemned in advance by units which had eagerly awaited the D.VII.

To make matters worse Germany was beginning to fight a rearguard action, material and fuel supplies were dwindling, and replacement problems brought about by the last-ditch escalation of the air war made it hard to keep the existing frontline units at full strength. Despite these difficulties and the fact that the German ground forces were no longer capable of offering any organised resistance to the rapidly advancing Allies, the German Air Service refused to admit defeat until there was no more fuel to take the aircraft into the air or until an Armistice came into effect, whichever came first. It has already been observed that the Fokker D.VII played a predominant part in those last days of the war, and it further enhanced the deadly reputation it had built up during the six months it had been at the front.

Construction

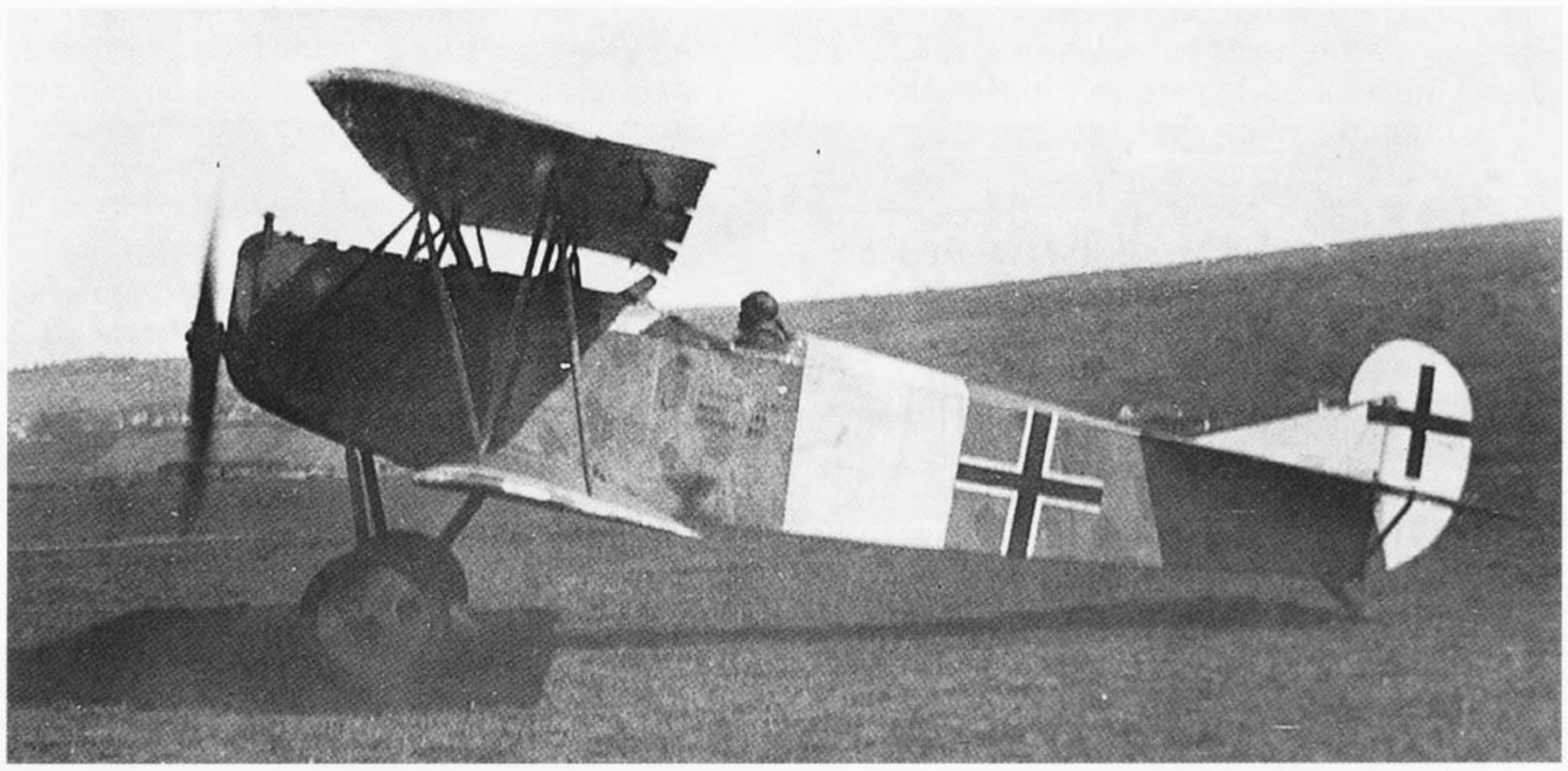
The narrative has already given evidence of the qualities of the Fokker D.VII from the point of view of its operational capabilities, in which field it was excellent although not, as some would argue, invincible. However, for the period when it was evolved one feature that would be hard to match was its construction.

Welded steel tube construction was not a new process in the Fokker factory, but designer Reinhold Platz used knowledge gained as a former welder to construct a fuselage structure which when completed retained all members, including engine bearers and wing attachment points, as an indivisible unit. This gave both strength and ease of assembly, so that not only pilots,but ground crews welcomed the D.VII to their units.

The main fuselage upper and lower longerons consisted of a series of varying diameter tubes with one tube slipped into the previous one and welded. The longerons were joined vertically and laterally by steel members and the whole rear fuselage was braced by piano wire looped around eyes welded into the corner of each bay, so that the whole rectangular section structure was very strong and rigid. From the top and bottom front end of the fuselage proper the engine bearer supports were extended forward and welded to the bearers themselves, forming an integral part of the fuselage. To carry the top wing the steel tube centre-section struts on each side were made in the form of a tripod, with one leg welded to the front end of the top longeron, another welded to the engine bearer and the third to the bottom fuselage tubing where it extended ahead of the lower wing. This complete unit comprised the main fuselage structure, which was also provided with a recessed portion to accommodate the one-piece lower wing.

Attached to the front end of the engine bearers was the automobile-type radiator of varying styles and manufacture, the position of which was a departure from standard German practice at the time. Its core was built up of circular brass tubes arranged parallel to the direction of flight, with the ends of the tubes expanded into hexagonal shape and sweated at each end. Fitted above the port side was a brass water tank which was matched on the other side by an aluminium fairing although this fairing was sometimes discarded completely or modified in shape. A small spring-loaded shutter mounted behind the radiator on the starboard side of the engine bay could be

Above, another view of the OAW-built D.VII illustrated opposite. The white serial numbers on tailplane and elevators establish the probable identity of the machine as 8840/18. The five-colour printed pattern fabric is dulled by over-varnishing. This aspect provides a graphic illustration of the D.VII's unusual wing geometry, a feature that even to this day is not fully understood. *(Lafayette Foundation via GVW)*



swung across by pulling a cable to blank off approximately one-third of the cooling surface. (OAW fitted two shutters). The cooling air came from the slipstream of any one of a variety of laminated wooden airscrews provided by German propeller makers at the time.

Each side of the engine was mounted on split-collar supports slipped around each bearer tube and clamped tight by the engine holding-down bolts. The engine bay itself was enclosed in aluminium panels which left only the rocker gear exposed. Initially the side panels reached only as far as the fuselage member joining the middle and rear struts of the centre-section tripod, but this was later extended by the addition of a triangular panel enclosing the next bay. Early overheating problems resulted in the introduction of various forms of vented panels to replace the original plain ones. A rather cumbersome enclosed exhaust manifold which was led out through the starboard side panel was eventually discarded, probably for the same reason, and later aircraft had a simpler pipe which lay along the modified top panel.

In the bay behind the engine compartment a brass fuel tank was suspended from the top cross members. The port compartment of this composite tank contained the main fuel supply of 60 litres (13.2 Imp. gallons), next was the reserve tank holding 33 litres (7.25 Imp. gallons), and the starboard side contained the oil tank with a capacity of 25 litres (5.5 Imp. gallons), although in some cases an oil tank was mounted on the rear end of the starboard engine bearer adjacent to the crankcase filling point. Initial air pressure for the petrol tanks was provided by a hand pump mounted in the cockpit by the pilot's right hand, and was maintained thereafter by an engine-driven pump. A separate pressure gauge and air pressure cock for each tank was provided, and a cock on the dashboard allowed the use of either tank separately.

The next cross member behind the fuel tank carried the front supports for the twin machine-guns, which lay above the aluminium top decking with the breech mechanism easily accessible from the cockpit. The front supports gave slight lateral adjustment and the rear supports, which were mounted on the cross member immediately in front of the pilot, provided vertical adjustment. The height of the gun mounts depended on the type of engine fitted, with BMW being the highest. The ends of the guns were padded to protect the pilot in the event of a crash. Two sheet aluminium boxes were attached with simple clips to the top longerons on either side of the cross member that supported the front ends of the guns, the rear one carrying the 500-round belts for each gun and the front one receiving the empty belts and ejected cartridge cases.

The cockpit, in keeping with the general appearance of the aircraft, was strictly functional. The plywood seat had back and sides shaped from aluminium with padding on the front edges, and the unit was mounted in a steel tube frame which clipped to the

Top, an unidentified Albatros-built D.VII prepares for take off – either camera shutter speed or poor copying has faintly distorted some of the features. Lack of armament suggests this is a post-war photo. *(Greg VanWyngarden)*

Right, frontal aspect of Albatros-built D.VII 527/18 from the early batch reveals the low exit position for the twin-branch exhaust pipe, raised up on machines after 677/18. Another view that emphasises the distinctive D.VII wing design.

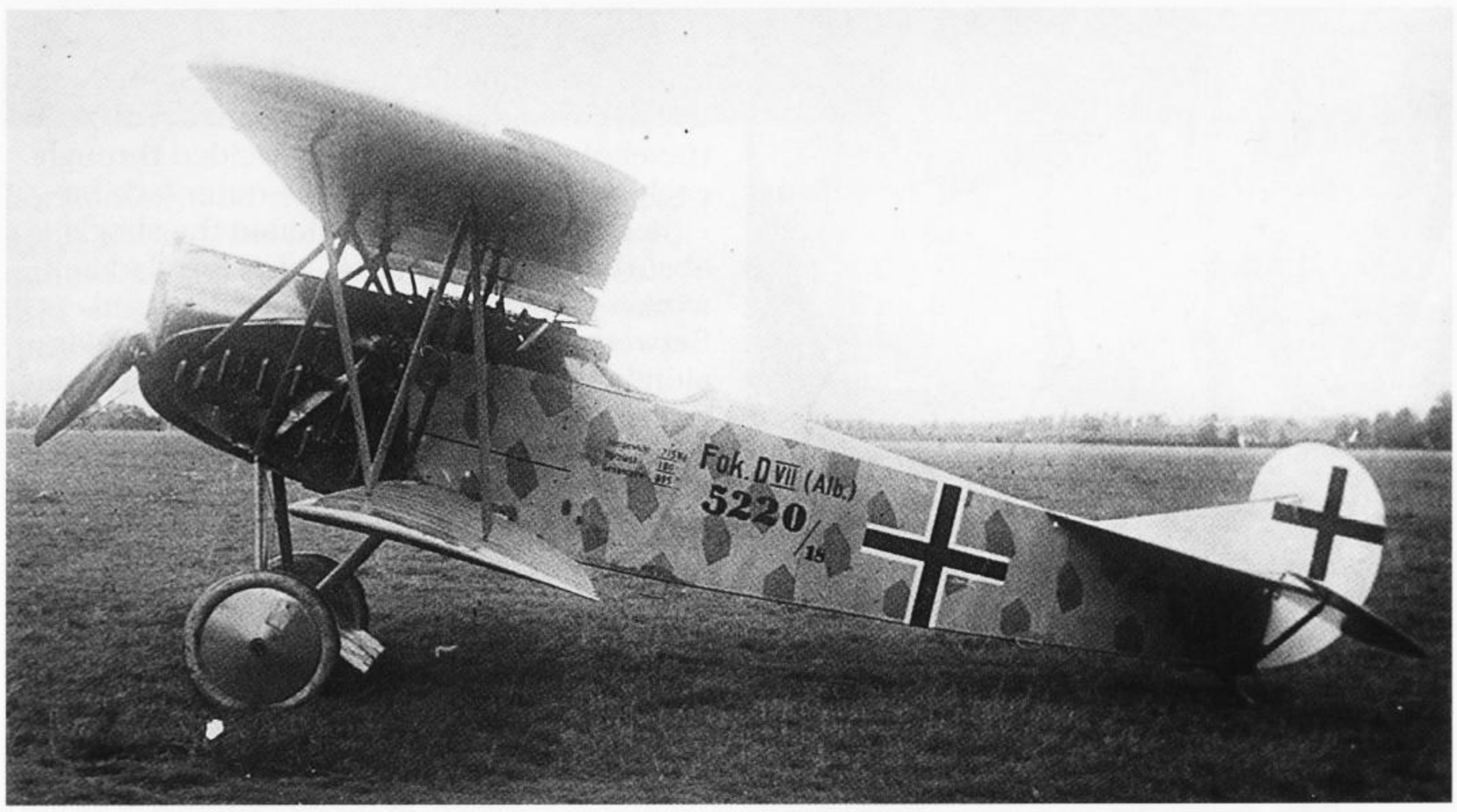
fuselage vertical members in such a way as to allow adjustment for height. Immediately in front of the pilot on the cross member supporting the guns a tachometer was mounted. Further forward under the coaming was the rudimentary dashboard containing the two fuel pressure gauges for the main and reserve tanks, together with the handle for the water pump grease gun, the ignition switch and a starting magneto with its handle. Finally, three cocks provided main or reserve fuel selection, main or reserve pressure release, and mechanical or hand pump fuel tank pressure.

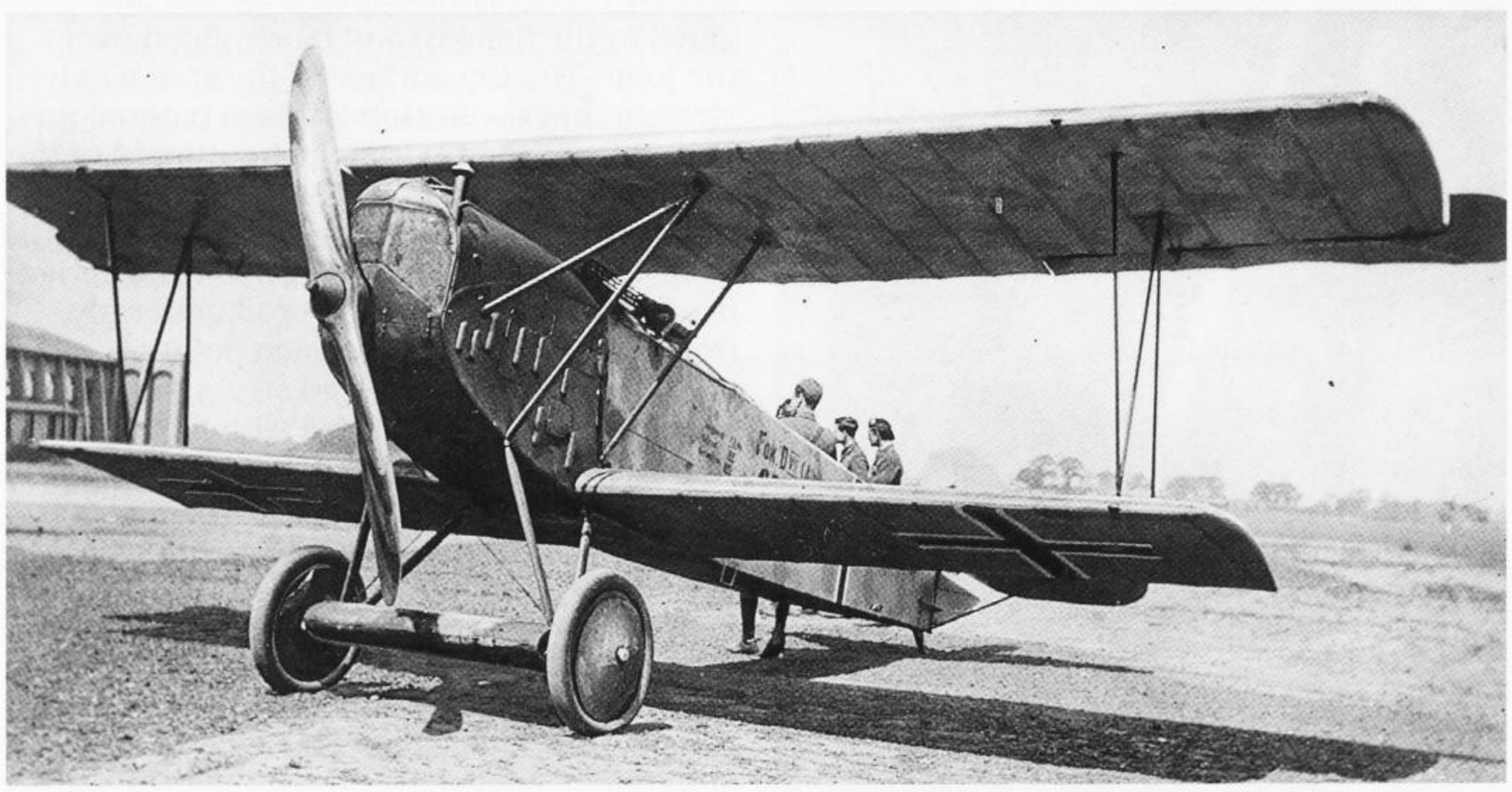
A compass was fitted near the floor on the starboard side of the cockpit and the main throttle and ignition levers were on the port side, engine operation being controlled by long tubes of very light gauge. In addition, on the control column an auxiliary throttle lever was fitted which connected with the main throttle control by Bowden cables, for the purpose of allowing the pilot to maintain full concentration in combat without having to move his hand from the control column to fumble for the main throttle.

The aileron cranks and control column were attached to a longitudinal rocking shaft mounted in bearings fixed to cross members clamped to the bottom longerons. The aileron cranks on the front end of the shaft had the port arm staggered ahead of the starboard one, which allowed for the crossing of the cables on their path to the upper wing pulleys via short tubular guides fixed to the top longerons. Behind the cranks the tube that formed the rudder bar was pivoted on a vertical column, which was secured at the top to a fuselage cross-member and at the bottom to two tubes sitting astride the rocking shaft. Plain tubular stirrups welded to the rudder bar accommodated the pilot's feet and the rudder cables, which were attached to the bar by shackles, led directly back to the rudder horns.

The tubular control column carried the auxiliary throttle lever, a shaped wooden grip for the pilot's right hand, and the gun triggers which were operated by pulling backwards with the fingers against pressure maintained by the thumbs on the recessed top of the column. There were separate systems for each gun. A plywood floor fitted with metal heelplates under the rudder bar was incorporated with the control assembly.

The top decking behind the cockpit was a plywood sheet which formed the rear half of the cockpit coaming, and then tapered back to be secured to the cross member at the front of the tailplane recess. The rear fuselage was covered by fabric which was





Left, Albatros-built D.VII 5220/18. Typical of late production batches – the engine panel louvres resemble no others – while the centred rudder/fin cross was standard for Albatros-built D.VIIs. This side view illustrates the downward slope of the upper longeron aft of the cockpit and the fuselage framework delineated by the taut fabric covering. Like many Albatros-built D.VIIs the wheel covers were made of light aluminium. *(Greg VanWyngarden)*

Lower left, another late production Albatros-built D.VII, here in British hands after the war; its serial, regrettably, eludes us. The spanwise wing leading edge tape appears as a low seam on Albatros-built D.VIIs – a feature self evident here. Wheel covers appear to be of fabric on this machine.

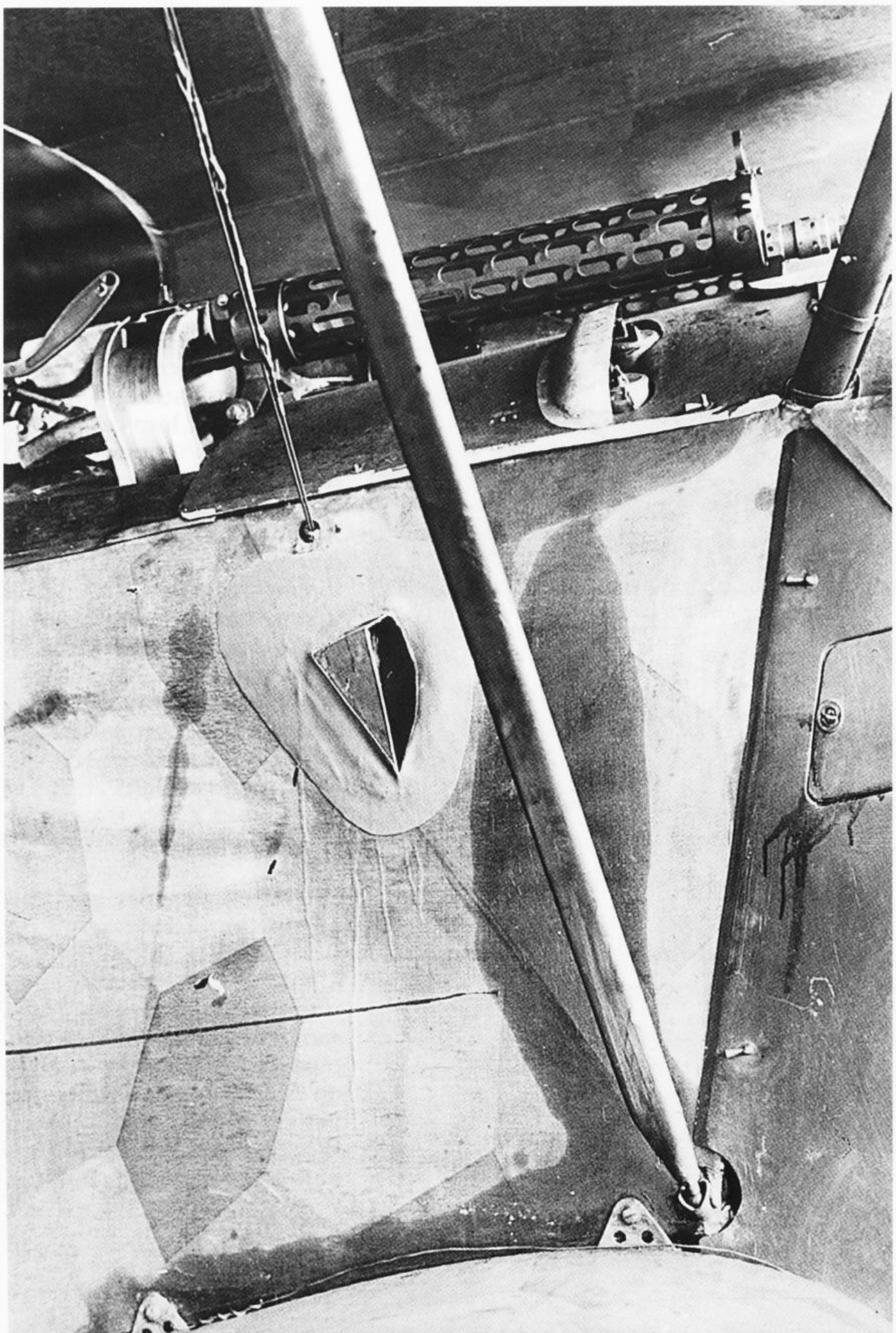
carried right over the top and then laced along the bottom centre-line, except for a piece laced to the cross tubes immediately behind the cockpit. The rear end of the fuselage had no actual tube sternpost, but just forward of the welded junction of the longerons a tube was inserted that extended below the bottom longerons to carry the buckle for the tailskid. Supported thus about one-third from its lower end, the steel-shod ash skid was given its shock-absorbing qualities by two coil springs attached to the top longerons, with its travel limited by a wire cable. The top end of this tailskid support carried the rear attachment point for the one-piece tailplane, which was constructed of steel tubing built up around a 35 mm diameter member roughly triangular in shape. This formed a fabric-covered surface of symmetrical section that fitted into the recess provided at the rear end of the fuselage, where it was secured by three bolts, one on each side at the front and a single one at the rear. This gave a fixed incidence of approximately 3 degrees which could be altered if necessary by the use of washers.

The balanced elevator unit was built in one piece and hinged to the tailplane rear spar with a length of recessed wood placed between the two tubes. The horizontal leg of the triangular fin was bolted at the front end to a clamp fitting around the tailplane main tube, the clamp being to port of the centre-line sufficient to offset the fin approximately 2.5 degrees as a counter to torque, although this could be varied depending upon the position of the clamp. The rear end of this leg was held by the same fitting that secured the tailplane. The rear vertical fin member was a recessed length of wood into which the rudder kingpost fitted, both being held to the top and bottom fin tubes by pressed metal hinges. The same form of attachment was used to secure the lower section of the rudder to the ends of the fuselage longerons, with the length of wood forming what was actually a false sternpost. All tail surfaces were of fabric-covered steel tubing, and from about May 1918, the tailplane was braced to the top of the fin by wire cable. To the bottom longerons it was supported by streamlined steel tube struts (all streamlined struts used on the D.VII with the exception of the undercarriage struts were the same sectional size).

In keeping with the rest of the aircraft the undercarriage was very strongly constructed, and in addition the front legs were wire-braced diagonally. The upper end of each leg terminated in a ball which fitted into a socket welded to the bottom fuselage members, and this was held in place by a bolt. The bottom ends of the legs on each side were welded into a sheet steel box which contained a slot to permit vertical travel of the axle. Two pins welded through each box projected past the outer face on either side of the axle and held the shock absorber coil springs, which were clad in a woven covering – bungee was also used. Between the two steel boxes a rectangular aluminium box surrounded the axle, forming a spar for the plywood cambered aerofoil surface that was made in two halves and clipped together along the line of the axle, thus covering the whole unit except on Albatros and early Fokker-built D.VIIs.

The top and bottom wings were each built in one piece and embodied the same type of all-wood construction. Each wing was built around two main spars of box construction, with top and bottom flanges consisting of two laminations of spruce joined on either side by three-ply birch webs tacked and glued to the flanges, and fabric glued over the joint. The top surface of the spar was straight, but the bottom surface tapered up uniformly to the tip from just outboard of the centre-section strut attachment on the top wing, and from the point where the bottom wing joined the fuselage. Viewed from above, front and rear surfaces tapered uniformly from the same points. At each point of attachment to fuselage and struts the centre space of the spar was filled with a block of wood, wedged into position in such a way that it could gradually absorb any applied stresses that might otherwise result in a sudden shear action.

The ribs were of three-ply with flanges formed by placing a piece of pine of approximately square section on each side of the rib, then glueing the lot together with the addition of small nails driven right through



Below, a fine close up of a late Albatros-built D.VII showing installation of the LMG 08/15 Spandau guns which have late type cocking handles. Clearly visible is the louvre over fuel and oil tank filler caps and oil-soaked printed fabric which suggests insufficient doping. The additional 'rough and ready' scoop on fuselage side was to help negate the heating problem which resulted in phosphorous ammunition spontaneously igniting in warm weather. Several D.VIIs were lost in July 1918 when exploding rounds set the adjacent fuel tank ablaze. *(National Technical Museum, Prague)*

horizontally and riveted over. The ribs were not lightened, the only holes being those cut out to take the control cables and internal drift wires. Each rib was stiffened between the spars by vertical pieces of triangular section wood, two in the top wing ribs and one in the bottom, and triangular section pieces also reinforced the junctions of the ribs to the spars. Special box-form compression ribs were used adjacent to the fittings for the attachment of the drift wires, and also at the commencement of the small cut-out in the trailing edge of the top wing.

At the point where the rib flange crossed the spar a piece of fabric was bound around the flange and glued to the spar, and all woodwork in the wing was varnished. The wingtips consisted of a shaped piece of wood hollowed out into a U-section and attached to the ends of the spars. Two 5 x 10 mm stringers ran through the nose sections of all the ribs, and a sheet of thin plywood with deep serrations along each edge was wrapped around and tacked to the top and bottom of the front spar to form the leading edge. Between the spars and behind the rear spar were 10 x 10 mm stringers, although it appears that some Fokker wings had tapes that alternately criss-crossed each rib. Finally there was a 12 x 12 mm auxiliary spar just in from the trailing edge. The trailing edge itself consisted of wire threaded through eyes fastened to the end of each rib, and the entire wing was fabric-covered. The steel tube balanced ailerons were attached with the same type of hinge used for the movable tail surfaces, and the aileron cables ran through aluminium pulleys attached to the strut pick-up points on the rear spar of the top wing.

As already mentioned, the front centre-section strut tripod was a fixture, and the forked fitting secured to the front main spar of the upper wing was bolted directly to this with no provision for adjustment. The separate centre-section strut supporting the rear spar had a similar attachment at the top, but was fitted at the lower end with a ball that entered into a socket welded to the fuselage. A bolt then secured this ball which was mounted on the end of a screw in order to provide any necessary incidence adjustment. This form of adjustment was also provided on each extremity of the interplane struts, which were welded together to form a complete N-shaped unit.

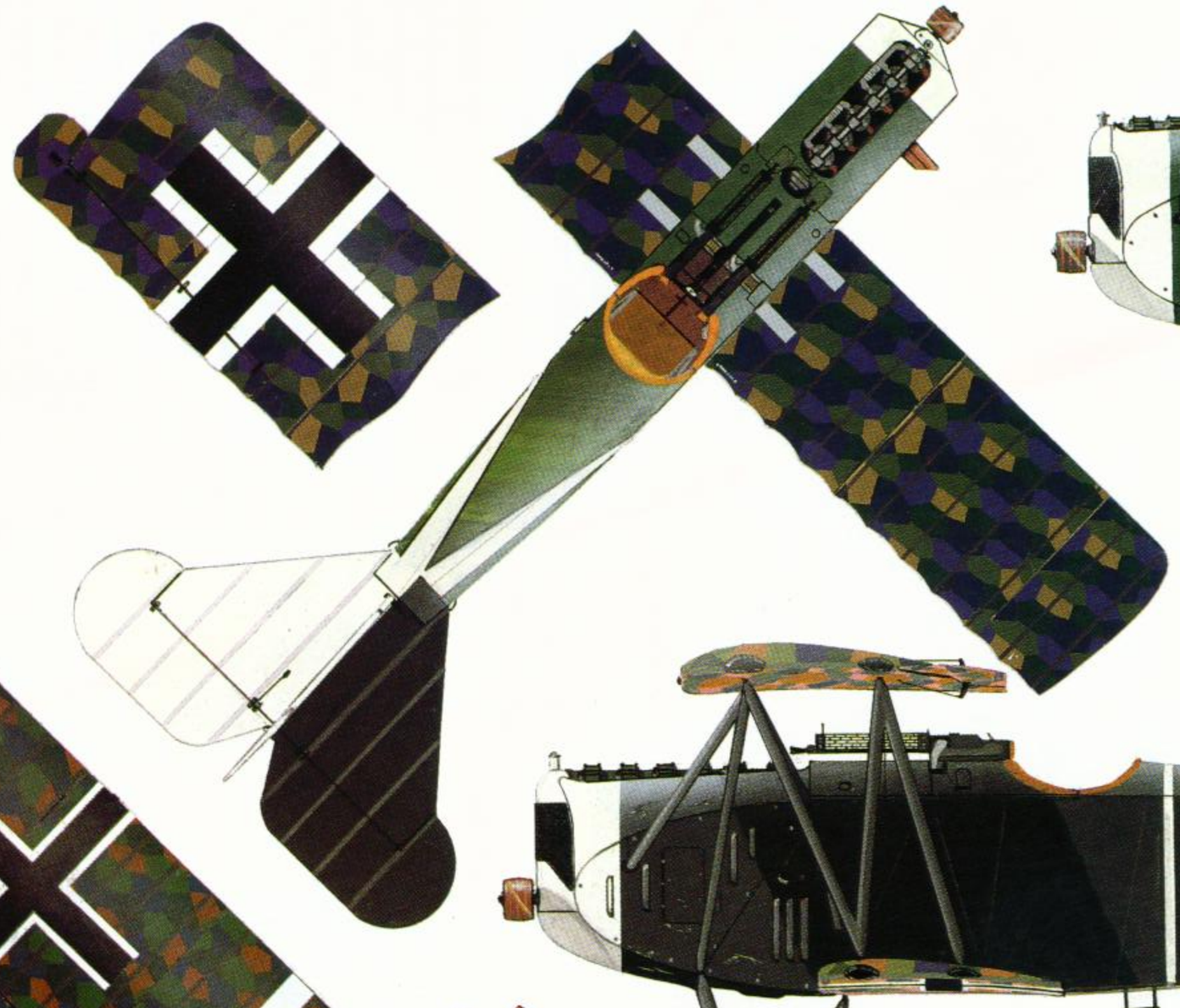
The bottom wing was merely lifted into the recess provided in the fuselage, and bolted through the forked fittings around the spars to the lugs provided in the fuselage frame, with no adjustment after assembly. A frame consisting of tubes and metal panel was then bolted into position to maintain the bottom fuselage line. There were no external bracing wires required at all for the wings.

The incidence setting of the wings at the centre-section was 0 degrees for the top wing and 1 degree for the bottom, and the settings remained constant along the span. The wing design maintained a high degree of lift and controllability throughout the speed range and gave the ability to fly safely and slowly at a high angle of attack. This feature often surprised an Allied pilot who discovered a Fokker D.VII standing on its tail below him and calmly hosing him with bullets. ❑

Above, *Ltn. d R* Emil Thuy. *Jastaführer* of *Jasta* 28, with Fokker-built D.VII 262/18 in Summer 1918. The streaky finish of the fuselage is clearly seen and the cross shows clear evidence of its conversion from a thicker form. Thuy's personal marking of a white band covers part of the serial while beyond it cruder patches cover the installation of a flare pistol – the cartridge rack is on the upper cowling. Other pertinent details include the gun padding and the small windscreen, visible frame members with bracing cables beneath the fabric, and cabane strut fixing plates. The wing fabric is an unusual variant of five-colour material with certain colours either transposed or printed weakly. The dark polygons clearly visible were usually ochre, and appeared quite light in most photographs – or could this aeroplane's upper surfaces bear the lighter undersurface fabric? *(M Schmeelke)*

1a) Upper wing detail 332/18.

1b) Upper fuselage and lower wing detail 332/18.

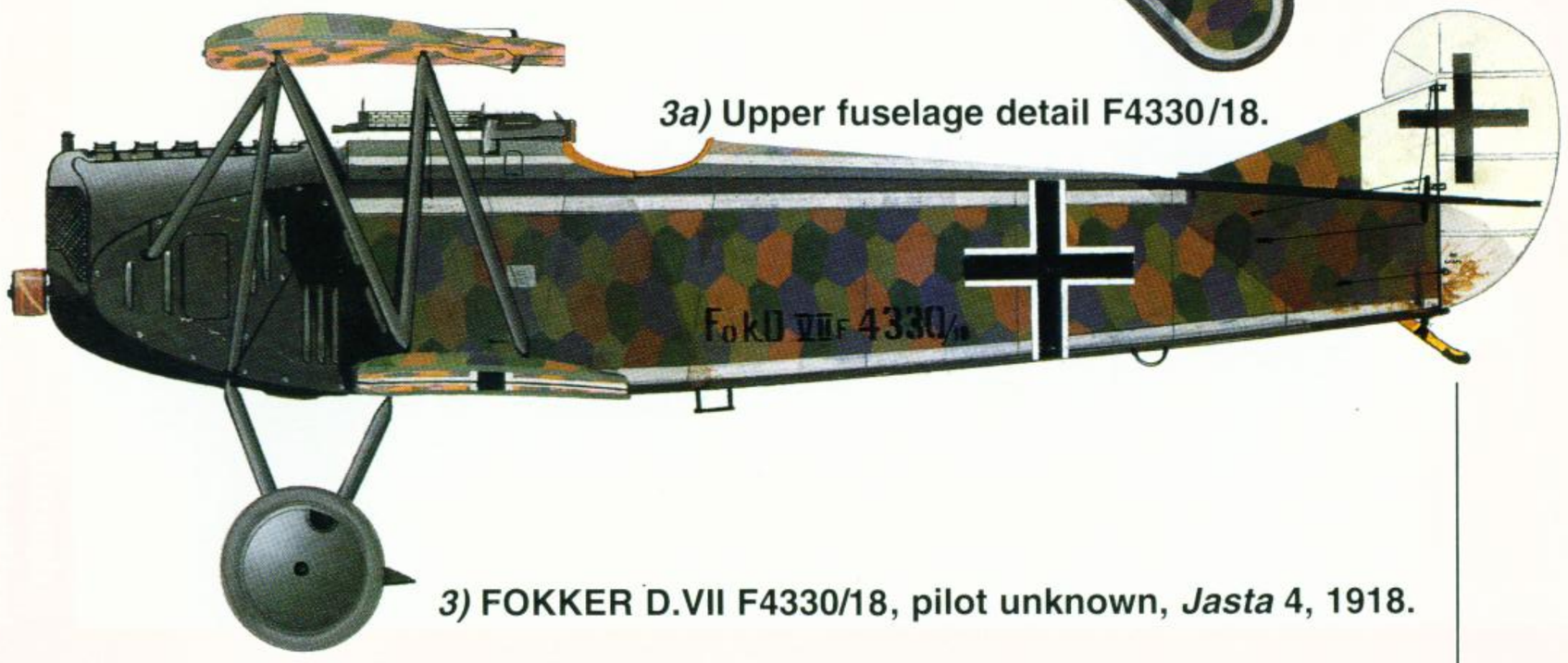


1) FOKKER D.VII 332/18, pilot unknown, *Jasta Boelcke*, 1918.

2) FOKKER D.VII, serial unknown, *Rittm.* Karl Bolle, *Jasta Boelcke*, 1918.

2a) Plan view, Bolle's D.VII.

3a) Upper fuselage detail F4330/18.



3) FOKKER D.VII F4330/18, pilot unknown, *Jasta* 4, 1918.

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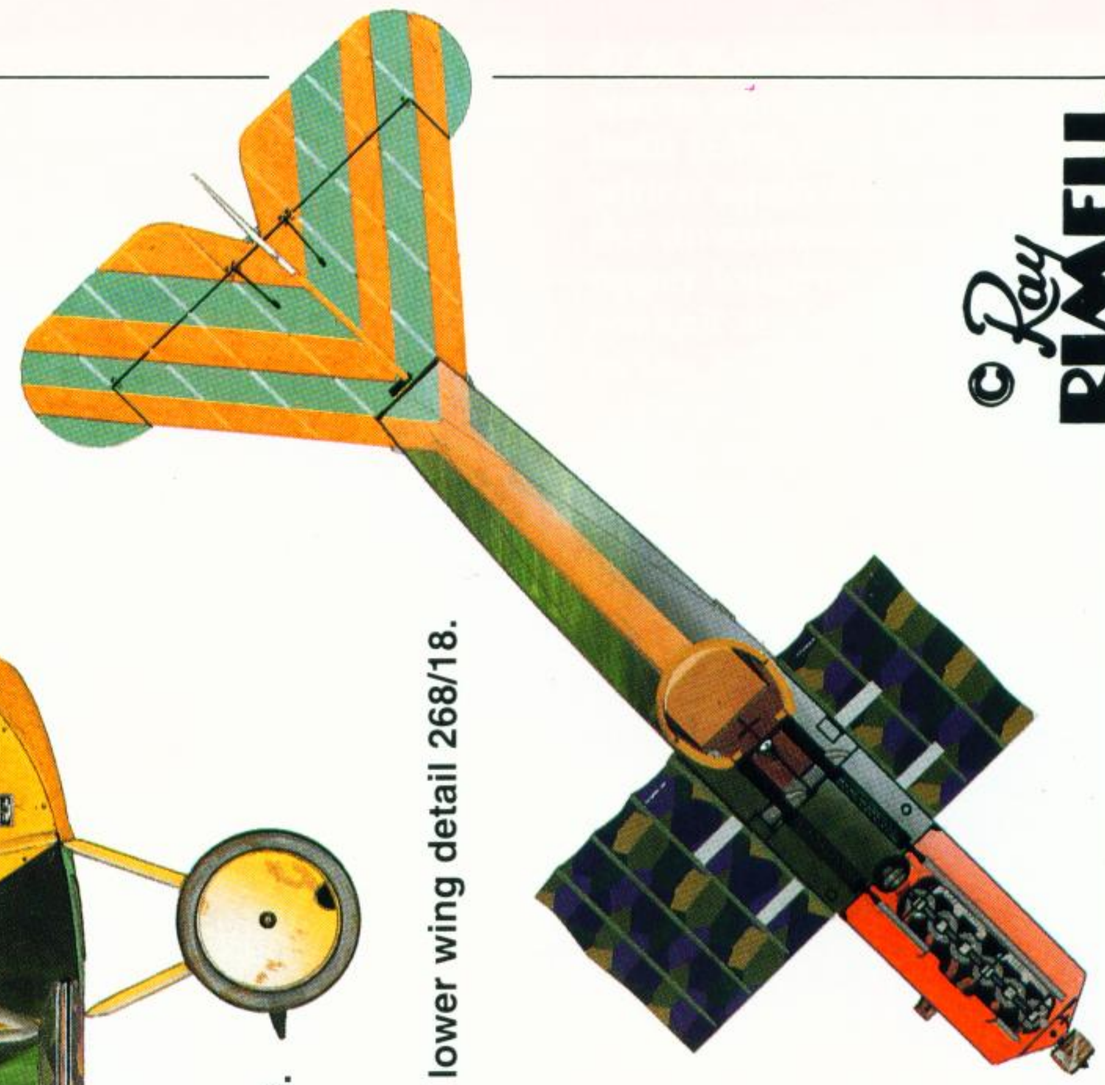
4) FOKKER D.VII 291/18, *Vzfw.* Meyer, ex-*Jasta 6*, 1918.

5) FOKKER D.VII 309/18(?), *Ltn.* Friedrich Friedrichs, *Jasta* 10, 1918.



6a) Upper fuselage and lower wing detail 268/18.

4a) Upper wing detail 291/18.

4b) Upper fuselage and lower wing detail 291/18.

6) FOKKER D.VII 268/18, *Vzfw.* Willi Gabriel, *Jasta* 11, 1918.

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18b) Jasta Raben stencil.

20A) Lower plan view 2052/18.

18) FOKKER D.VII (Albatros-built), serial and pilot unknown, *Jasta* 18, 1918.

18a) Tail uppersurface detail (Plate 18)

19) FOKKER D.VII (OAW-built), serial unknown, *Ltn.* Ernst Riedel, *Jasta* 19, 1918.

20) FOKKER D.VII (OAW-built) 2052/18, *Ltn.* Karl Thom, *Jasta* 21, 1918.

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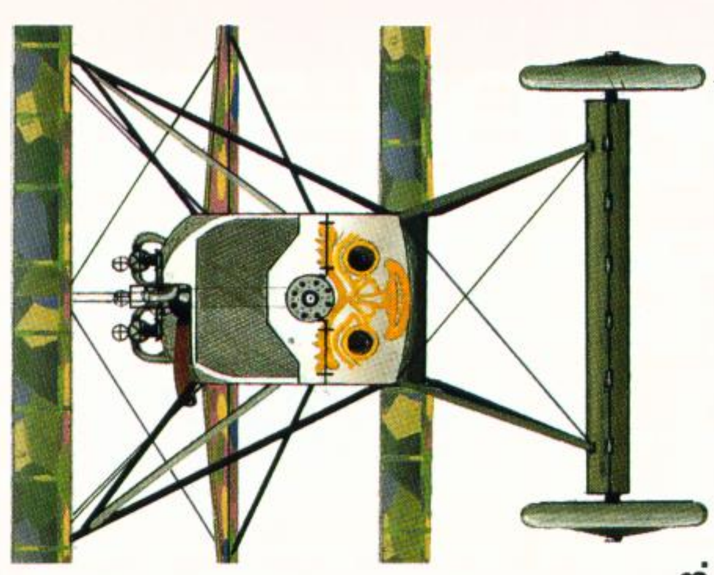
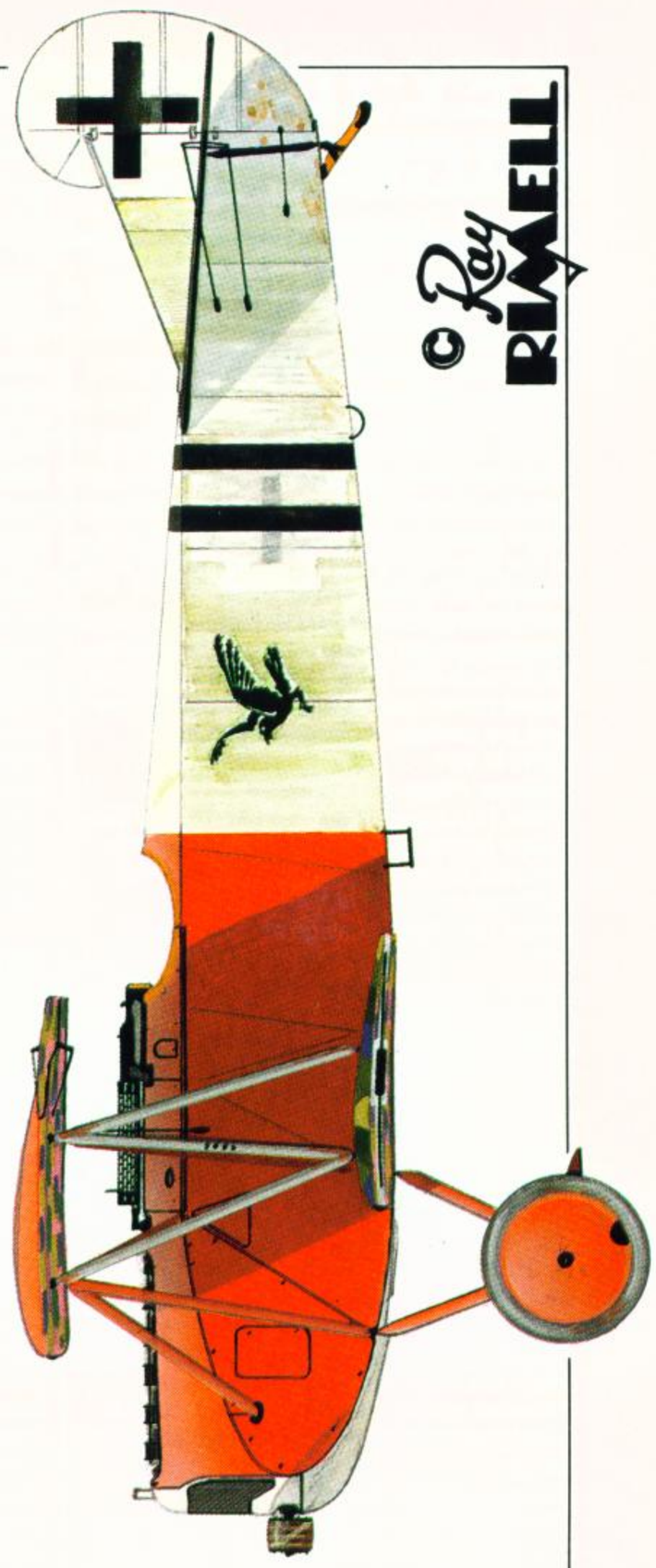


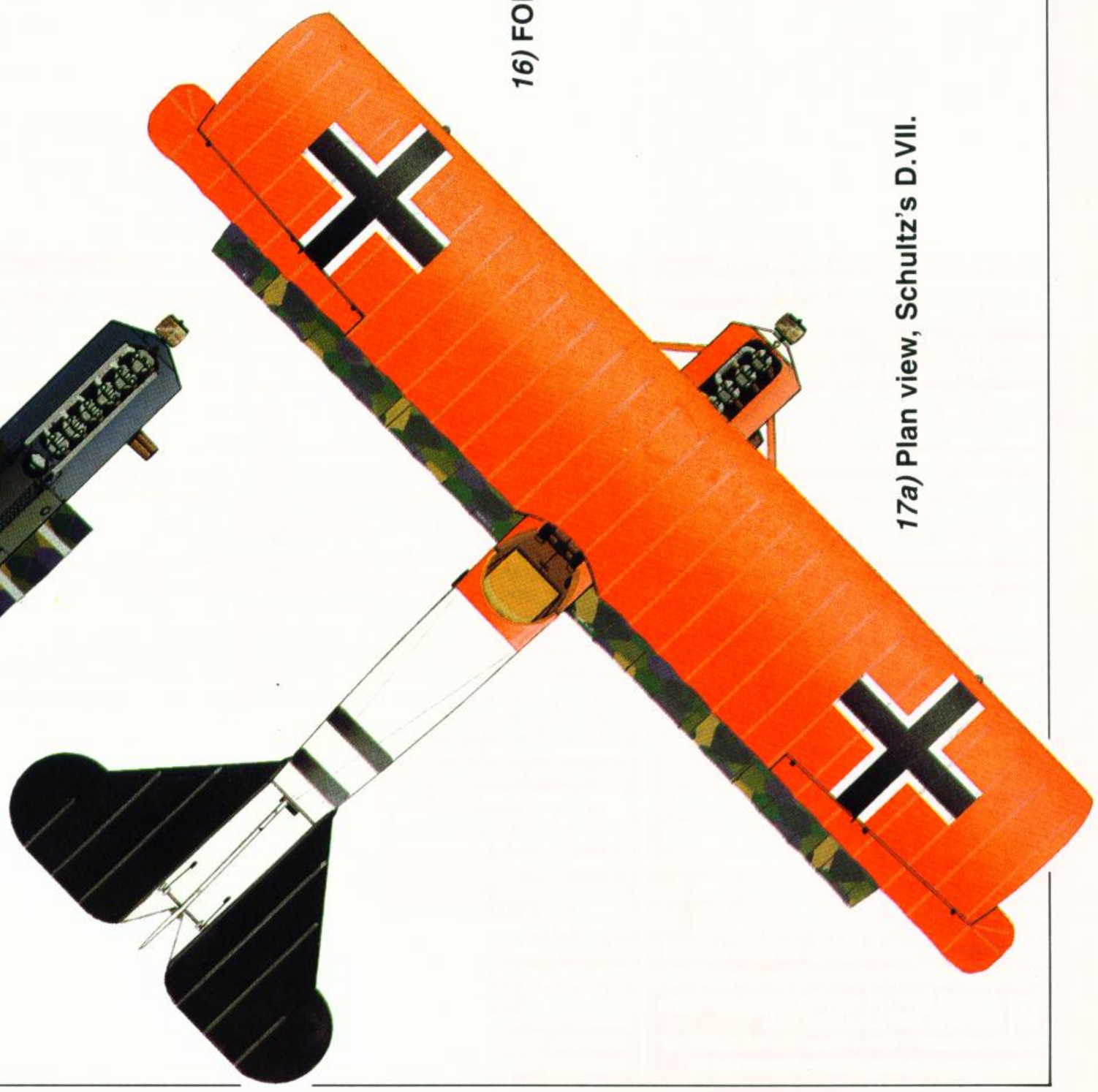
14) FOKKER D.VII 402/18, *Vzfw.* Max Holtzem, *Jasta* 16b, 1918.

15) Nose detail, FOKKER D.VII (Albatros-built), *Jasta* 17, 1918.

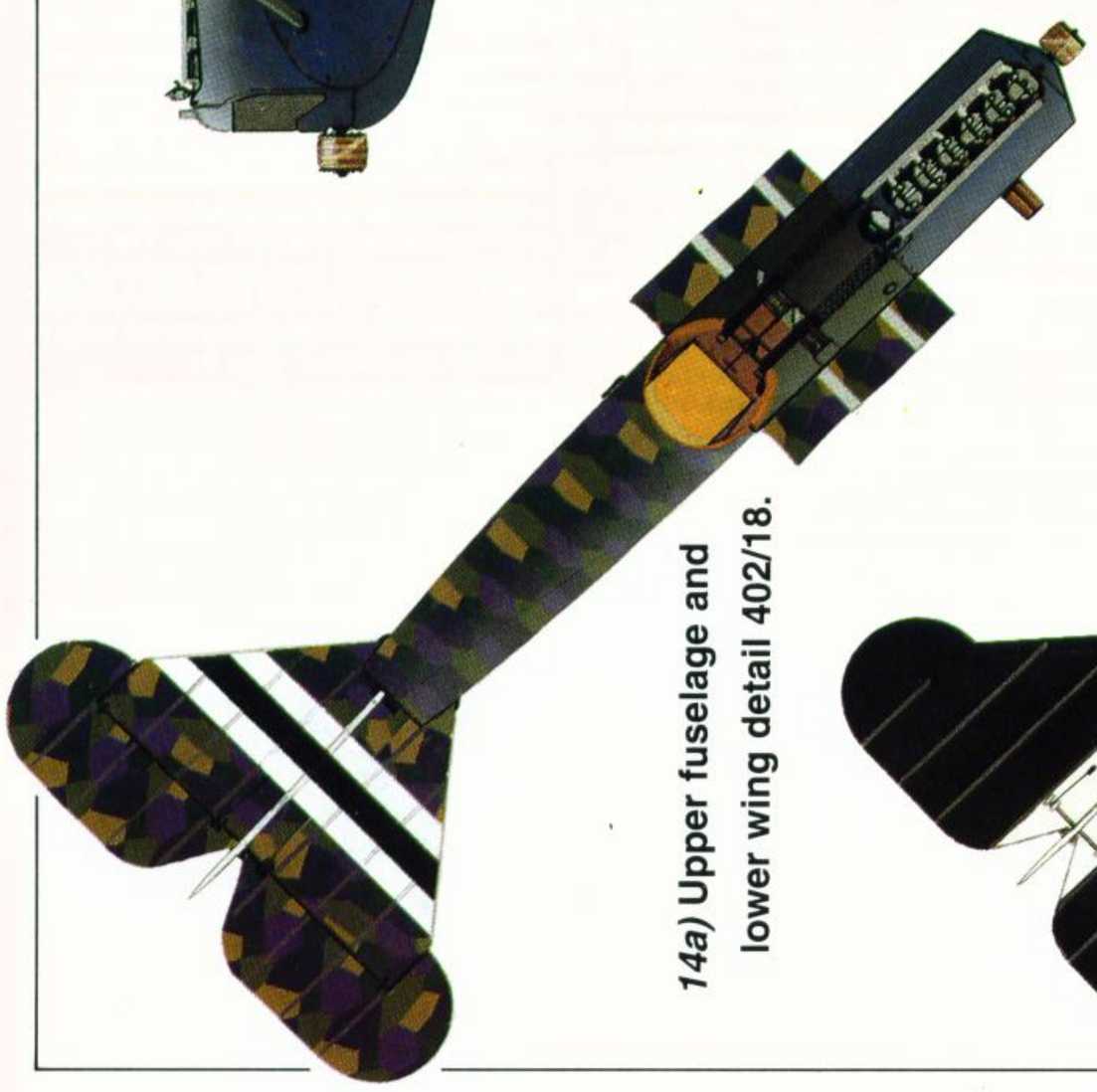


16) FOKKER D.VII (Albatros-built), serial unknown, *Ltn. d R* Alfred Fleischer, *Jasta* 17, 1918.

17) FOKKER D.VII 368/18, *Ltn. d R* Hans Schultz, *Jasta* 18, 1918.



17a) Plan view, Schultz's D.VII.



14a) Upper fuselage and lower wing detail 402/18.

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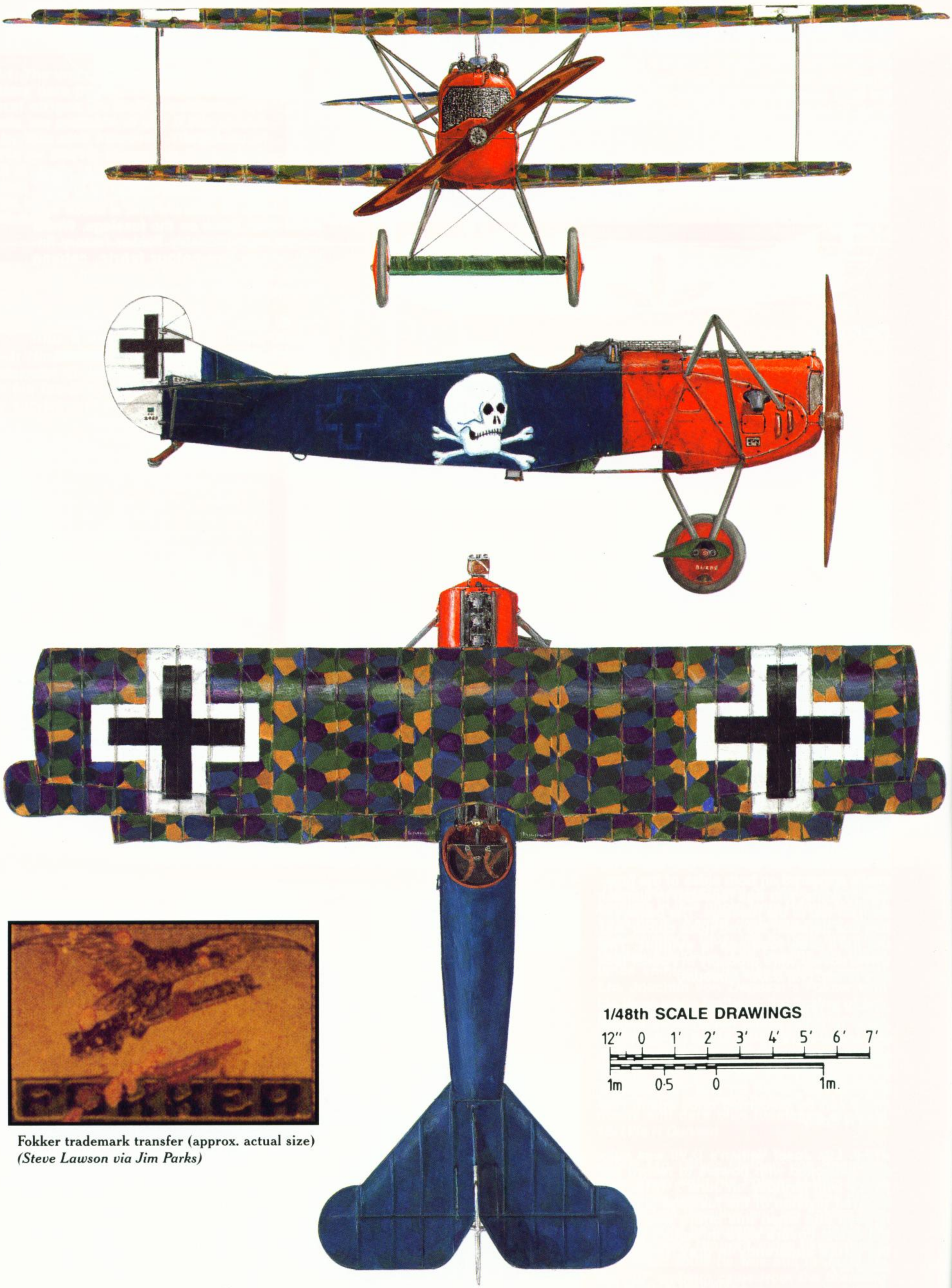
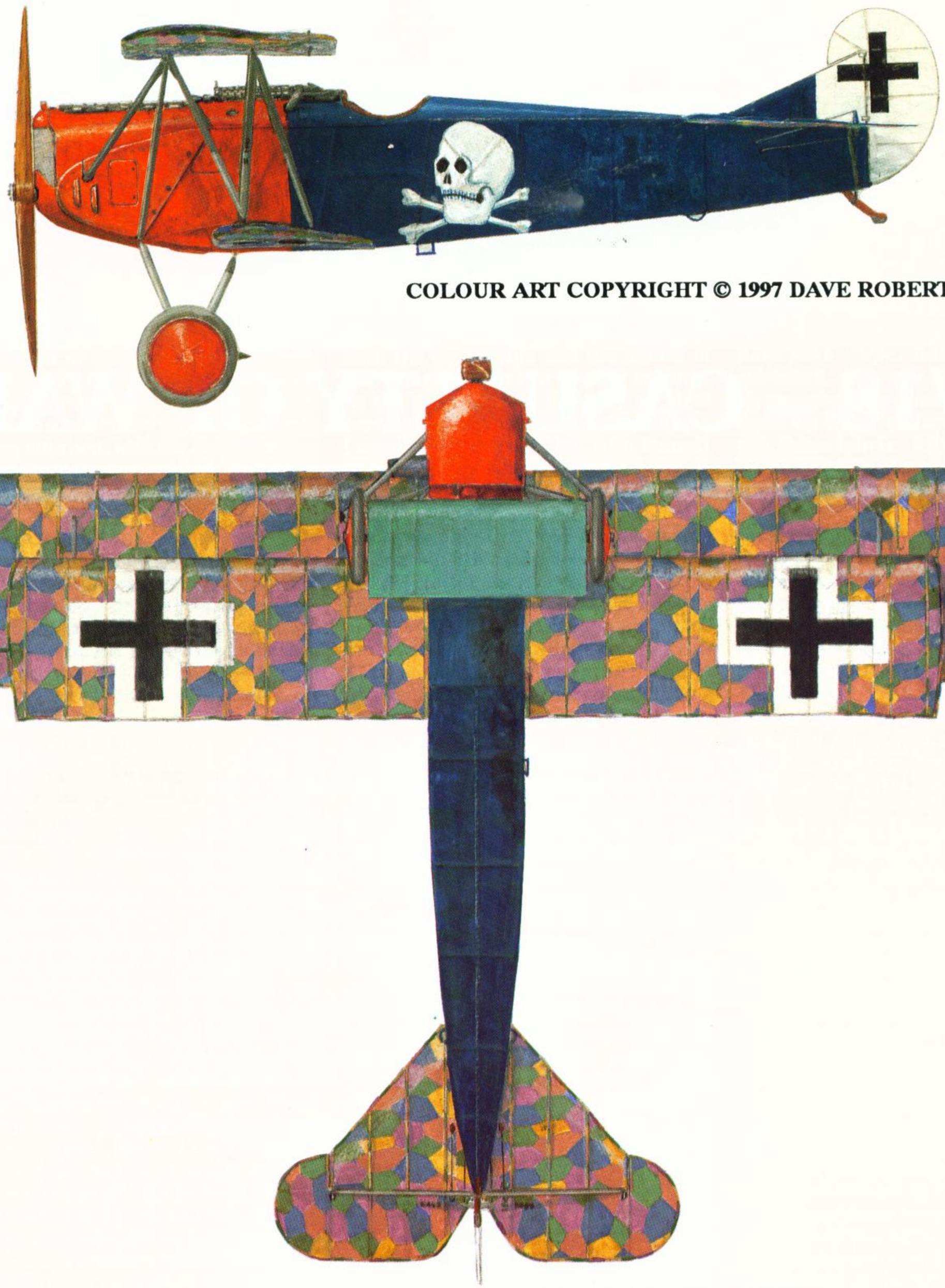


Fokker trademark transfer (approx. actual size)
(Steve Lawson via Jim Parks)

'CASUALTY OF WAR' - FOKKER D.VII 382/18

The aircraft is depicted in its final serviceable condition, with modified cowling side panels and full *Jasta* 15 colour scheme. Fabric pattern orientation and seam locations are believed correct for 382, but in the absence of clear photographic evidence, individual polygon locations on most of the flying surfaces cannot be guaranteed accurate, and rib taping is entirely arbitrary. 40mm natural fabric reinforcing tapes visible under the skin at the leading edges were unique to Fokker-built D.VIIs. The exhaust pipe, apparently by Bachmann & Jagow, differs from those used by Albatros and OAW and from pipes fitted by Fokker to BMW and earlier Mercedes engines. Its distinctive angled mouth is visible in the well-known photograph of a Schwerin-built D.VII of this vintage in flight.



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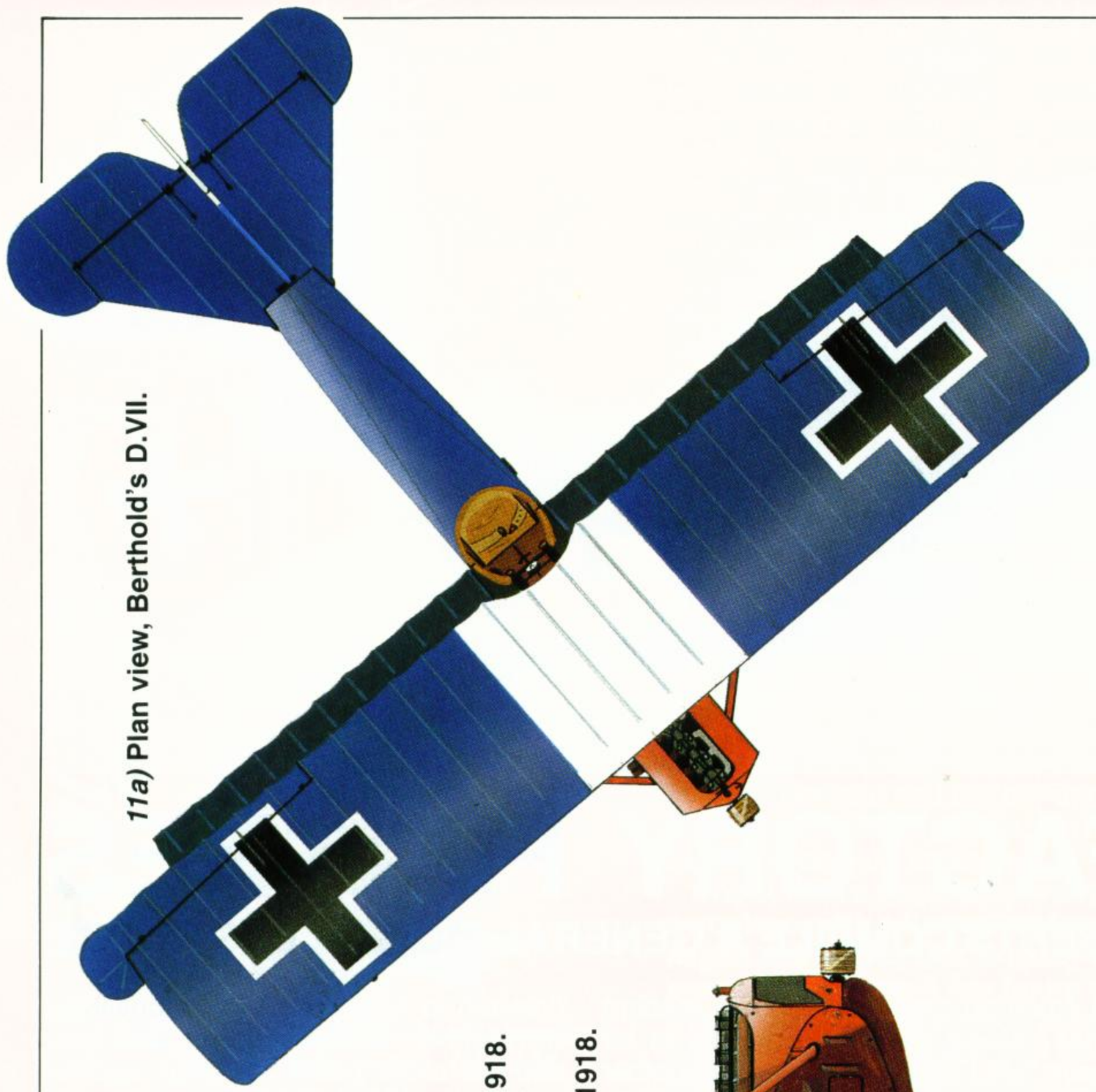

11a) Plan view, Berthold's D.VII.

13) FOKKER D.VII, serial unknown, *Ltn. d R* Hugo Schäfer, *Jasta* 15, 1918.

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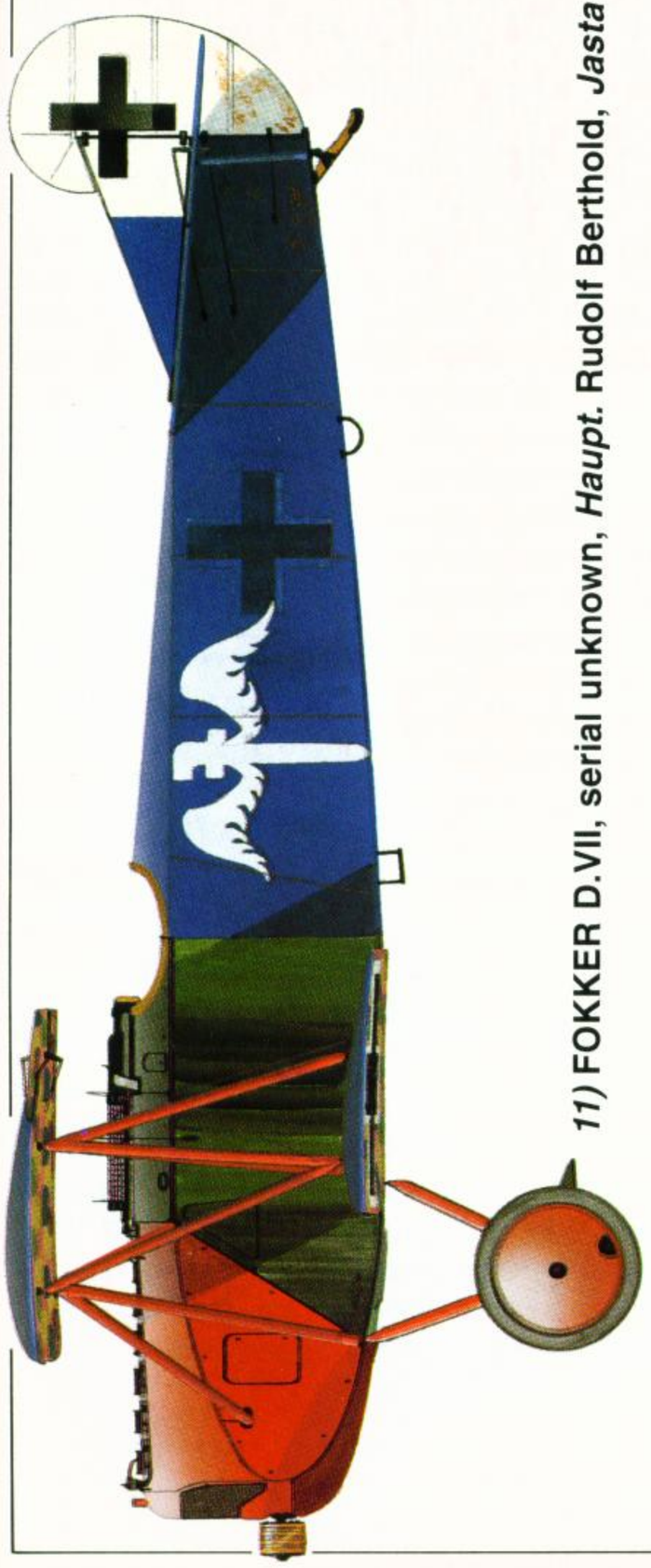
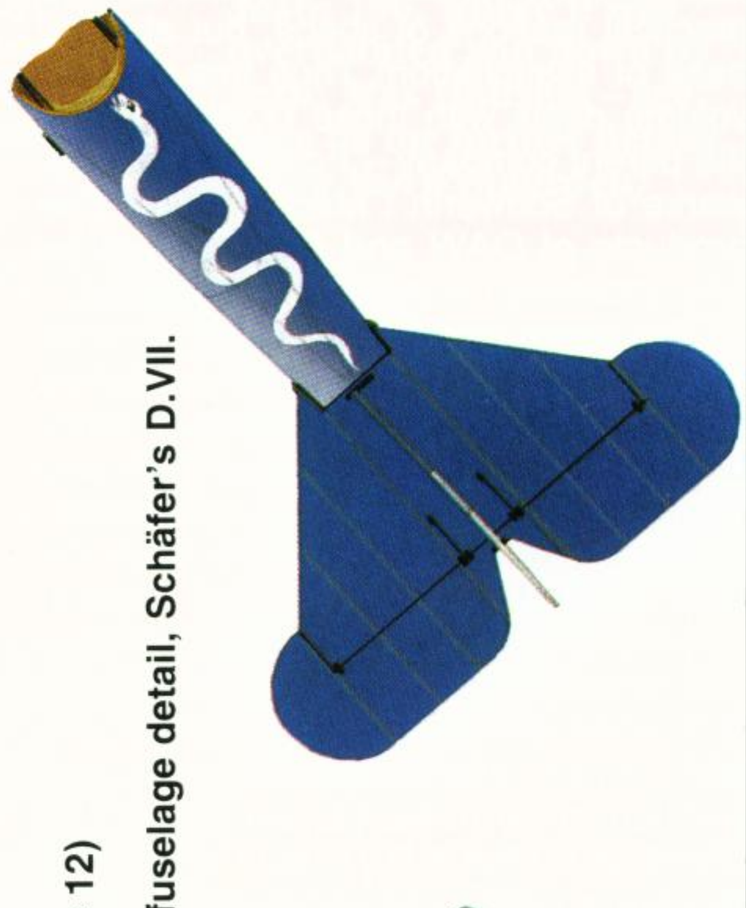
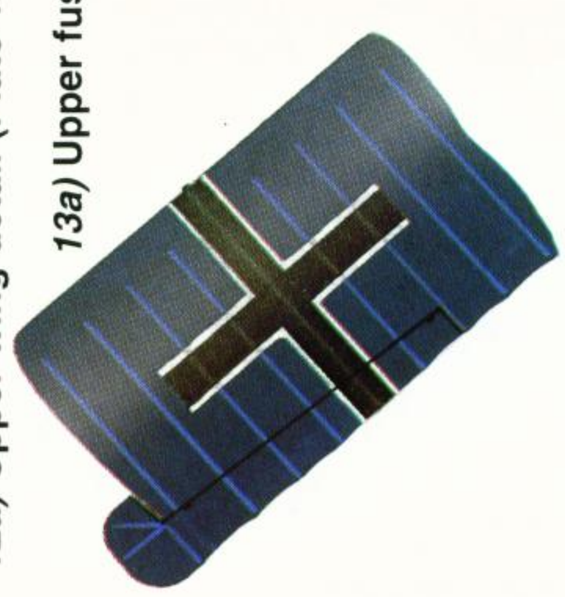


11) FOKKER D.VII, serial unknown, *Haupt.* Rudolf Berthold, *Jasta* 15, 1918.

12) FOKKER D.VII, serial unknown, *Ltn.* Oliver *Freiherr von* Beaulieu-Marconnay, *Jasta* 15, 1918.



12a) Upper wing detail (Plate 12)



13a) Upper fuselage detail, Schäfer's D.VII.

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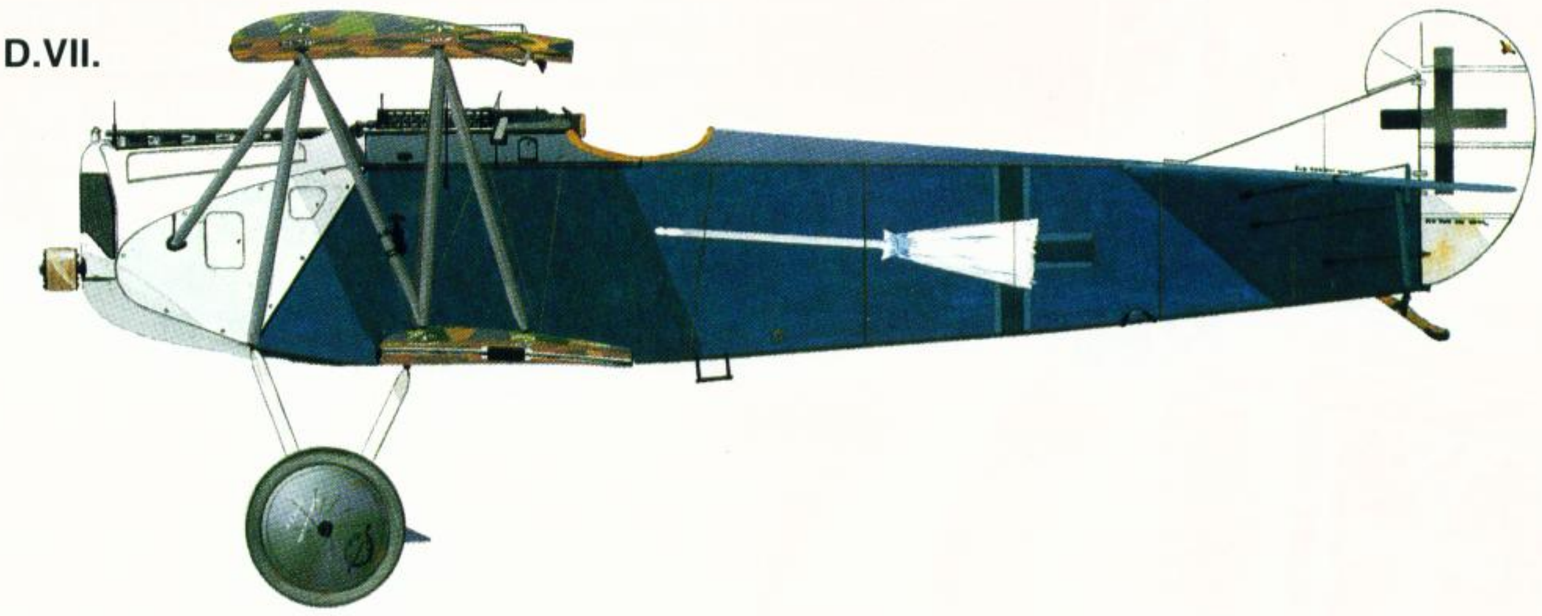
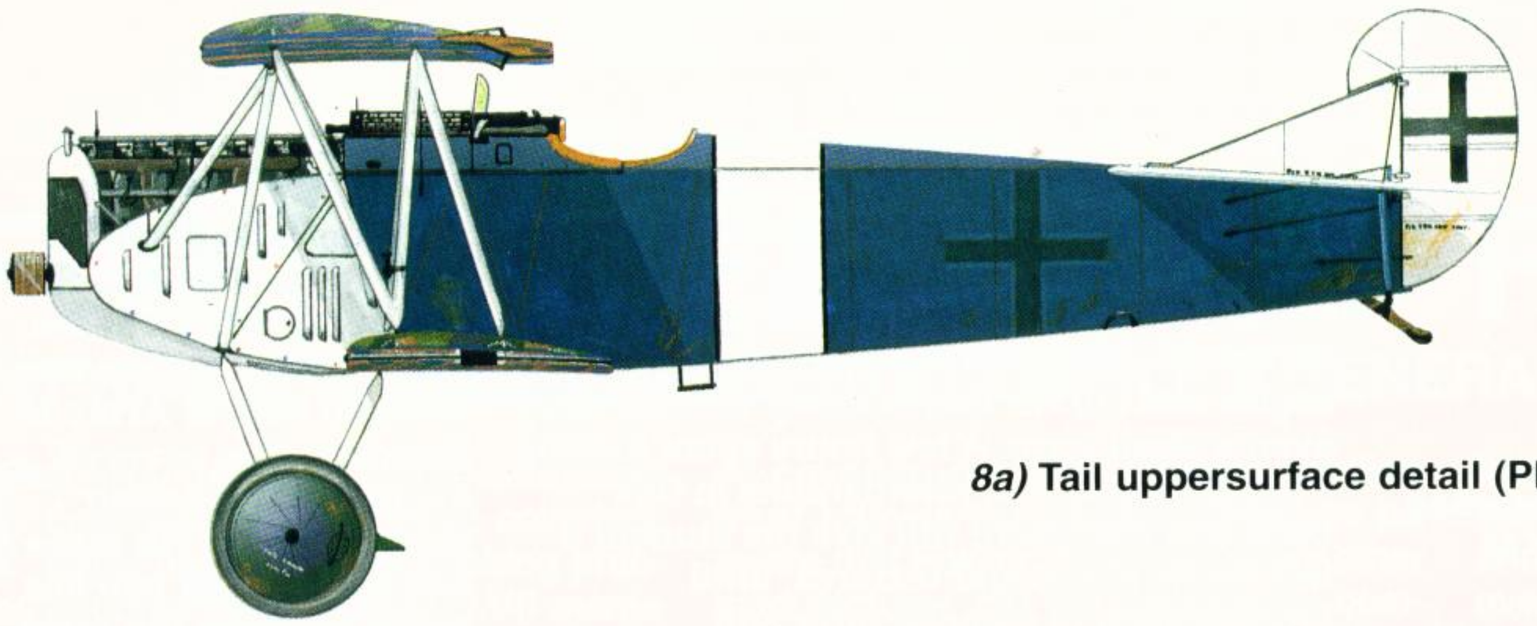
7a) **Upperwing detail, Besser's D.VII.**

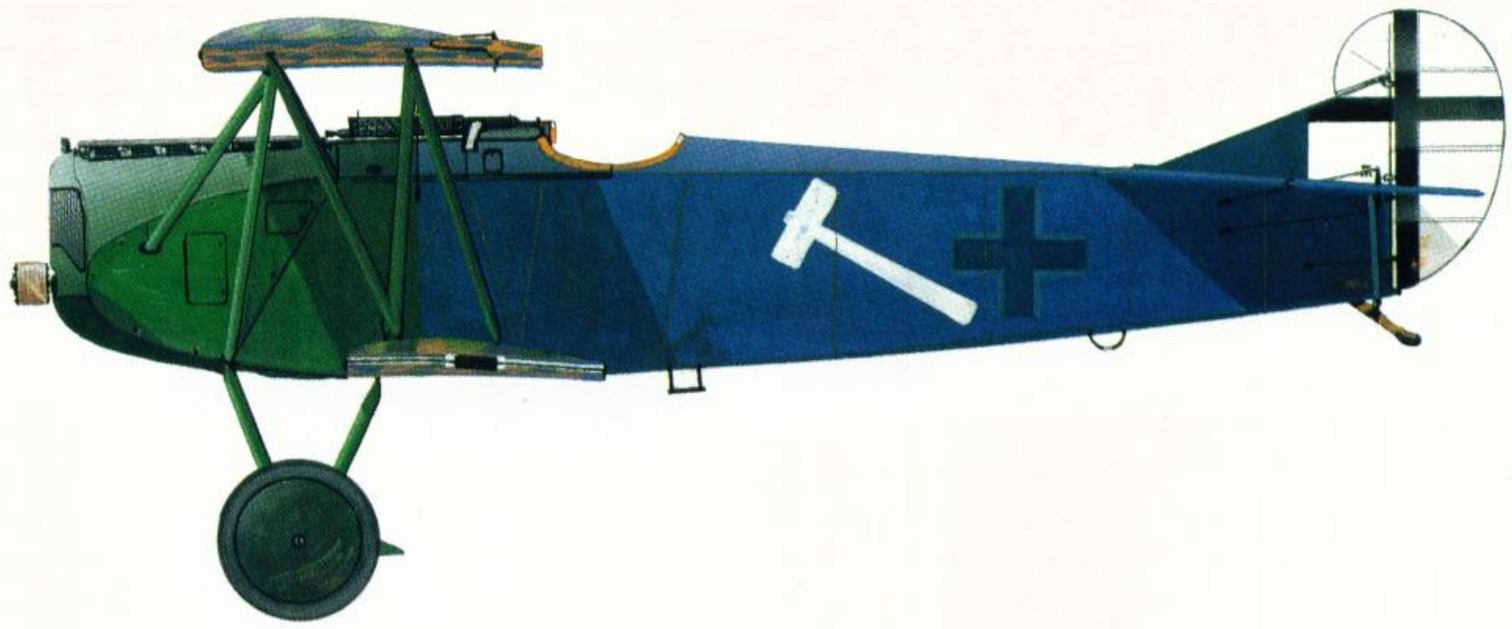


7) **FOKKER D.VII (OAW-built), serial unknown, *Ltn. d R* Hans Besser, *Jasta* 12, 1918.**

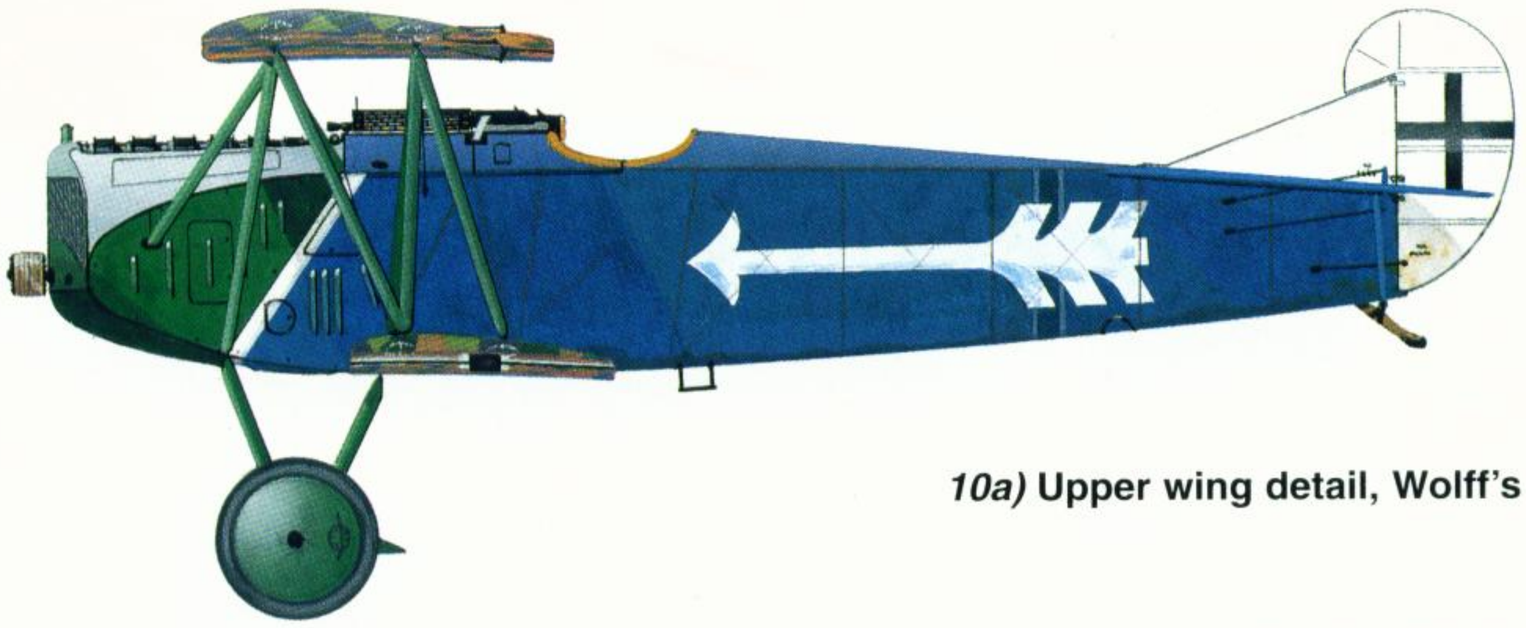


8a) **Tail uppersurface detail (Plate 8)**

8) **FOKKER D.VII (OAW-built), serial and pilot unknown, *Jasta* 12, 1918.**



9) **FOKKER D.VII, serial unknown, *Ltn. d R* Werner Niethammer, *Jasta* 13, 1918.**



10a) **Upper wing detail, Wolff's D.VII.**

10) **FOKKER D.VII (OAW-built), serial unknown, *Ltn. d R* Paul Wolff, *Jasta* 13, 1918.**

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▲1

SALIENT POINTS

THE SUBTLETIES OF D.VII ARCHITECTURE COME UNDER SCRUTINY BY *DAVE ROBERTS*

1) **Splendid study of Fokker-built D.VII F7788/18 (*w/n* 3640 with BMW D.IIIa engine 1674) that passed its acceptance test on November 29 1918, and passed to the USAS at Coblenz early the following year. It is covered in five-colour printed fabric with rib tapes from that material; note leading edge tapes and metal stacking bumps, white serial stencil data beneath upper wing tip and on aileron, weights table (the figures were averaged out over a production batch), paper rigging diagram (positions varied) and 'half moon' valve cover patch on the wheel.** ***(R Watts via GVW)***

2) **The RAF Museum's recently restored OAW '8417/18', reveals the straight, segmented, fabric-wrapped longeron sections aft of the cockpit.**

3) **Late Fokker-built D.VII 7756/18 clearly shows the fuselage structure under the four-colour printed fabric covering.**

Most vintage aircraft enthusiasts would recognise a Fokker D.VII instantly, and many could probably describe it quite well, yet truly accurate drawings, paintings and models of 'Old Straight Wings' remain rare. The aim of this study is not to review kits or previous plans, but to describe the shape of the D.VII in some detail, so that kit manufacturers, modellers and illustrators may assess material for themselves. The present tense is used where features can be found on surviving airframes.

The core of the aircraft, the fuselage frame, is more angular than is generally shown, for apart from the arched support for the three-stringered plywood top fairing, there are no intentionally curved members aft of the cockpit. Each bay, including the longerons, is built up from short pieces of *straight* tubing, diminishing in diameter towards the tail. The vertical spacers thus show clearly through the skin, as do the bracing wires, which leave rust-lined impressions in preserved fabric 80 years later. Some old fuselages do show slight local bowing of the longerons, possibly due to bracing wire tension, but nothing like the smooth, curved fuselage sides found in kits

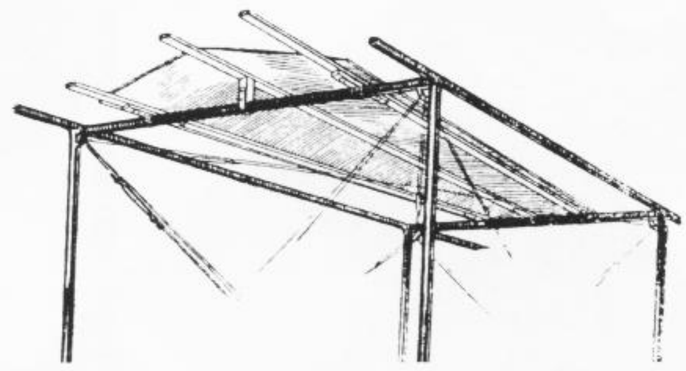
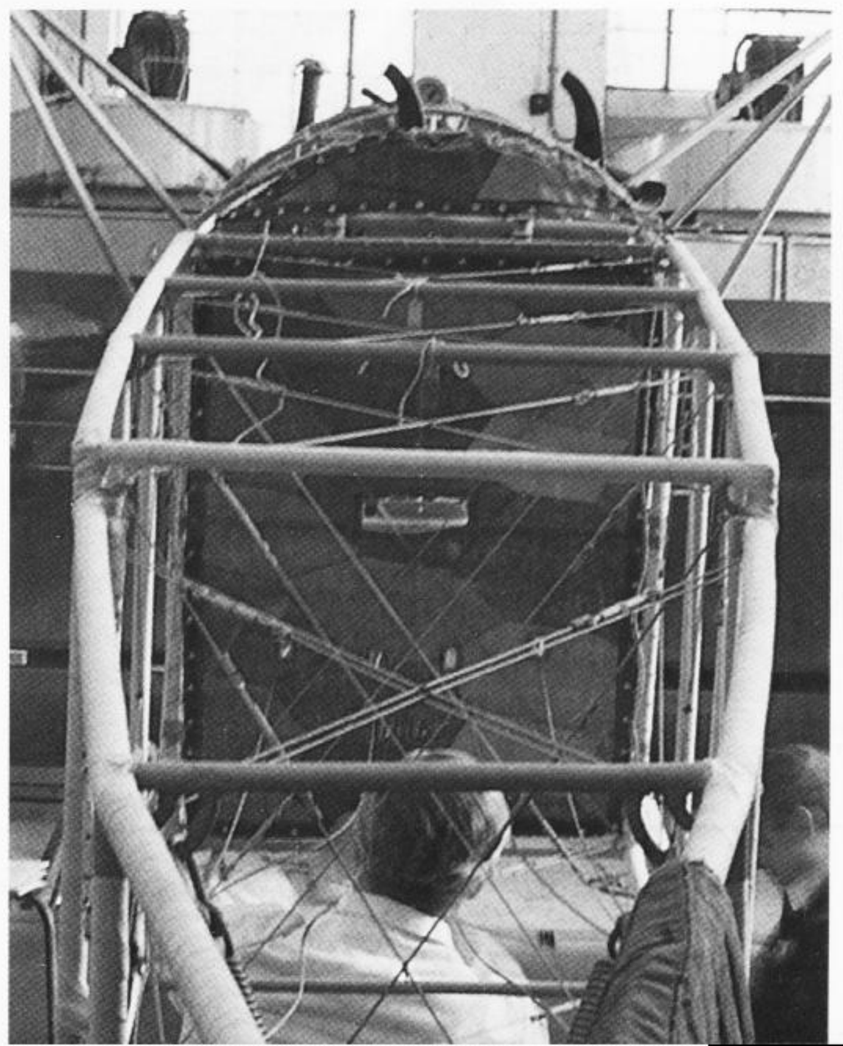
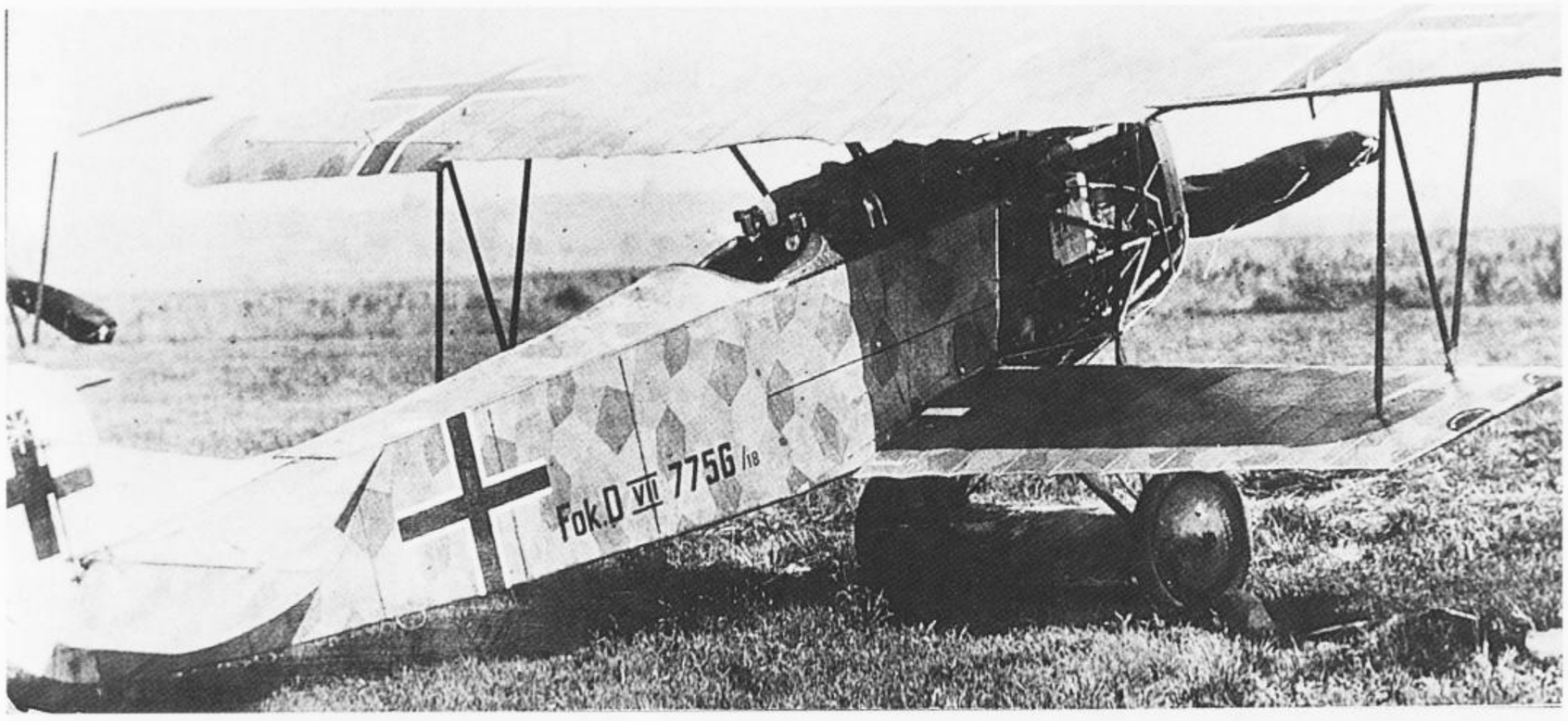


Fig. A) **Three-ply turtledeck supported on wood battens.** ***(Ministry of Munitions report, 1918)***

▼2





▲3 ▼4

4) **At McCook Field after the war is another late Fokker-built D.VII; this is 7776/18 which again demonstrates the downward sweep of the upper longerons aft of the cockpit and the application of the fuselage's fabric covering. Despite previous claims to the contrary, pattern orientation was *not* standardised. Realistically, how *could* it be?**

5) **RAFM Fokker radiator with square and rectangular ducts to aid cooling of ammunition.**

▼5

and so many plans. Aft of the cockpit, the upper longerons slope down to the tailplane step. Slight as this slope is, it defines the fuselage profile, affecting both top and bottom outlines. The lifting handles on the lower longerons are upturned on OAW machines, downturned on those of the other builders. Note, however, that they could be, and sometimes were, reset in service by ground crew.

The famous radiator has a cutaway semi-circular top, faired in on early machines, and in most cases the horizontal base above the airscrew extends either side of the narrow flat central portion. While most radiators were hexagonal honeycombs, some, like that fitted to Goering's 5125/18, had a diagonal

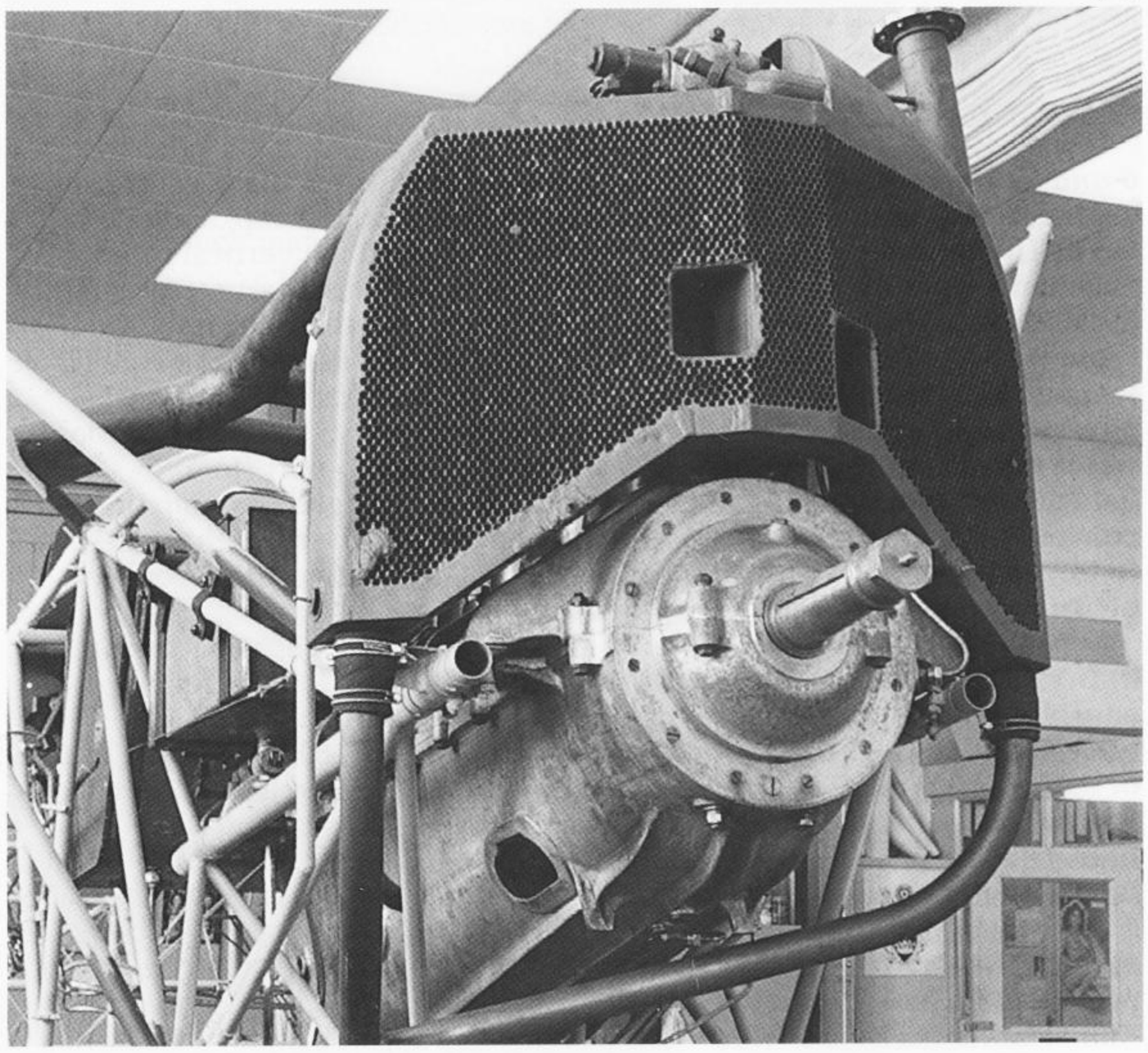
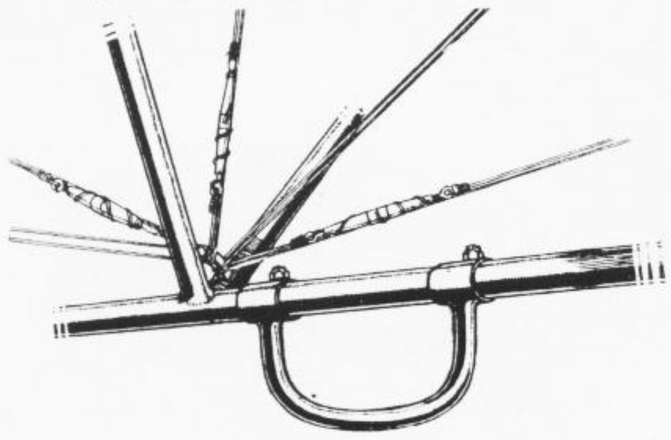
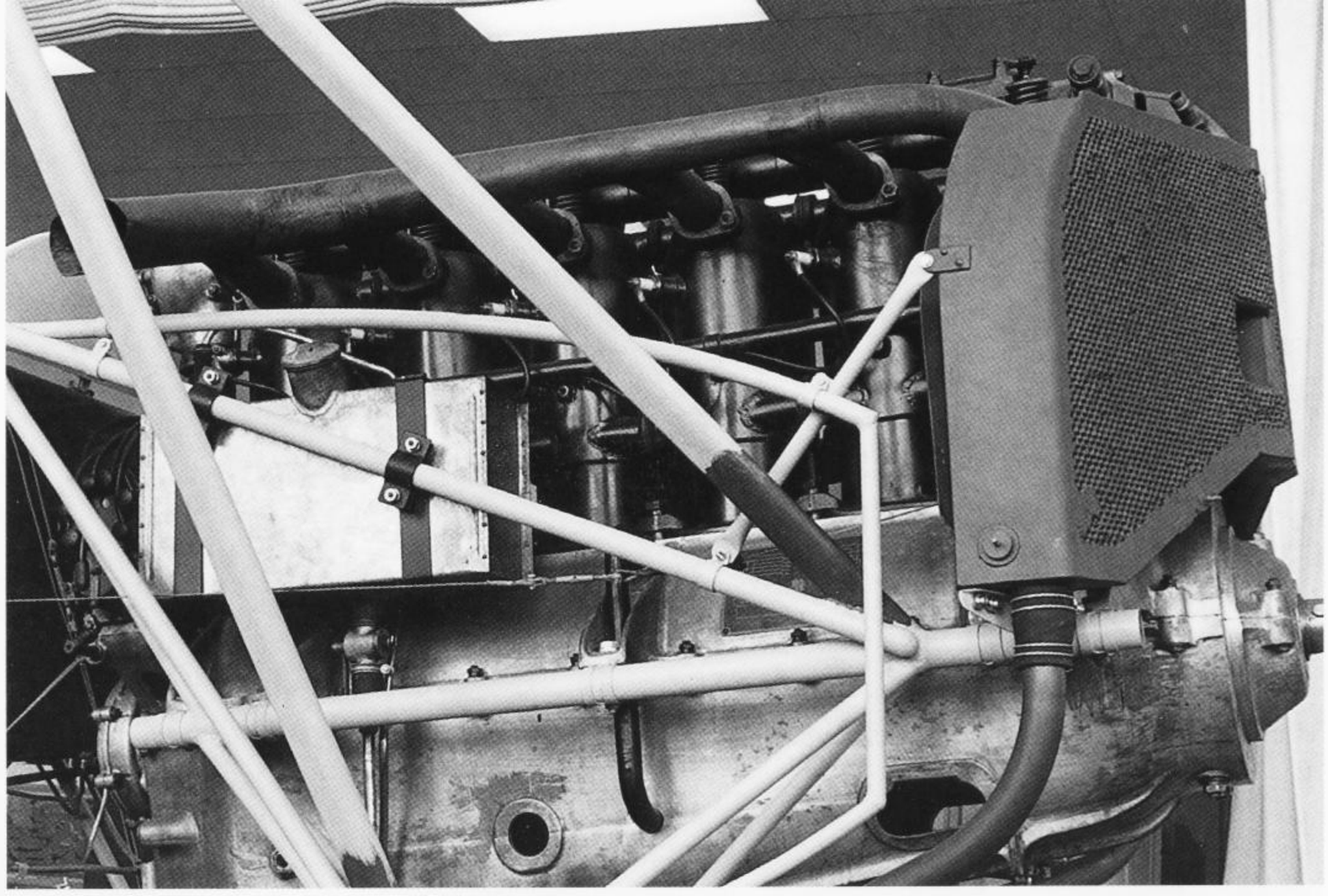


***Fig. B)* Rear lifting handle clipped to lower longeron – positions varied.**
(M of M report, 1918)





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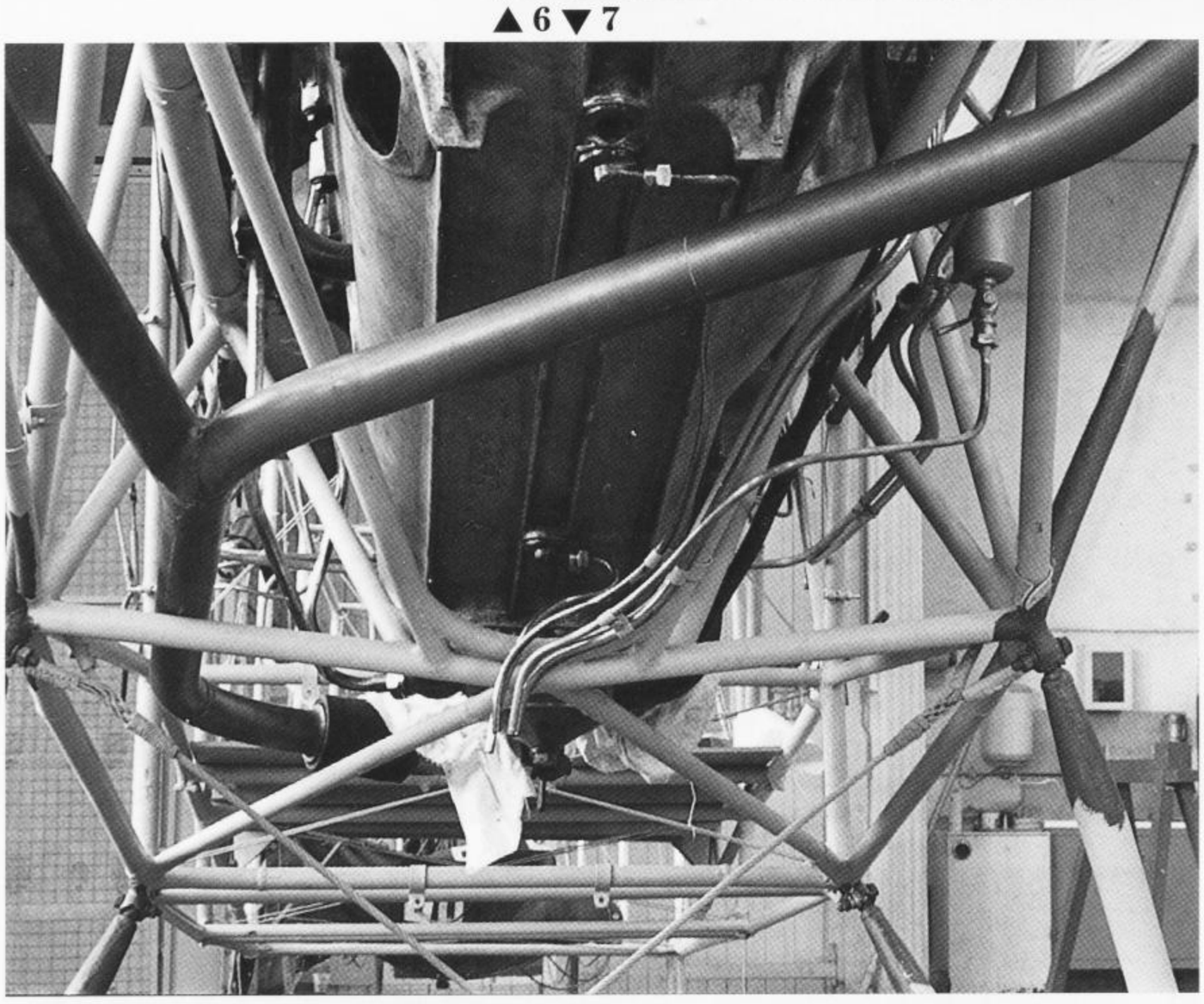


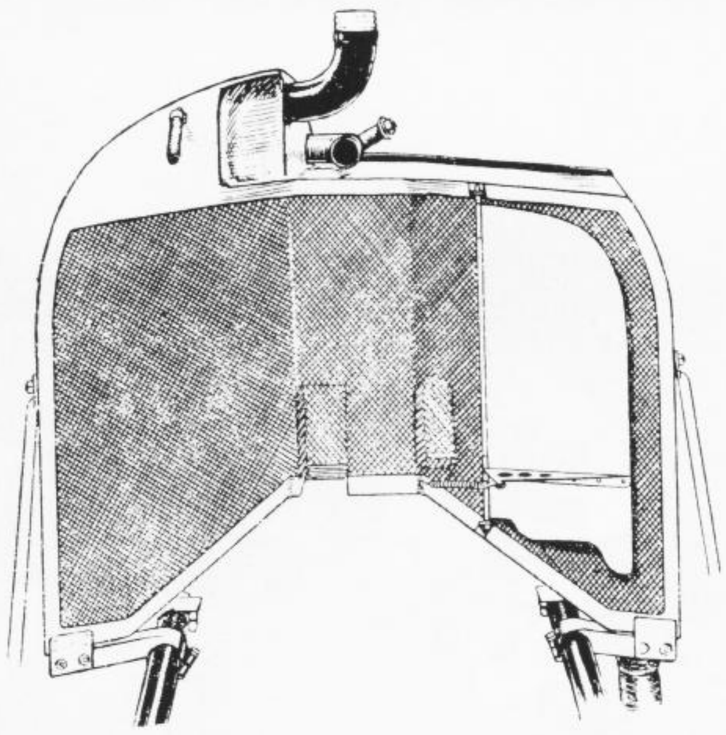
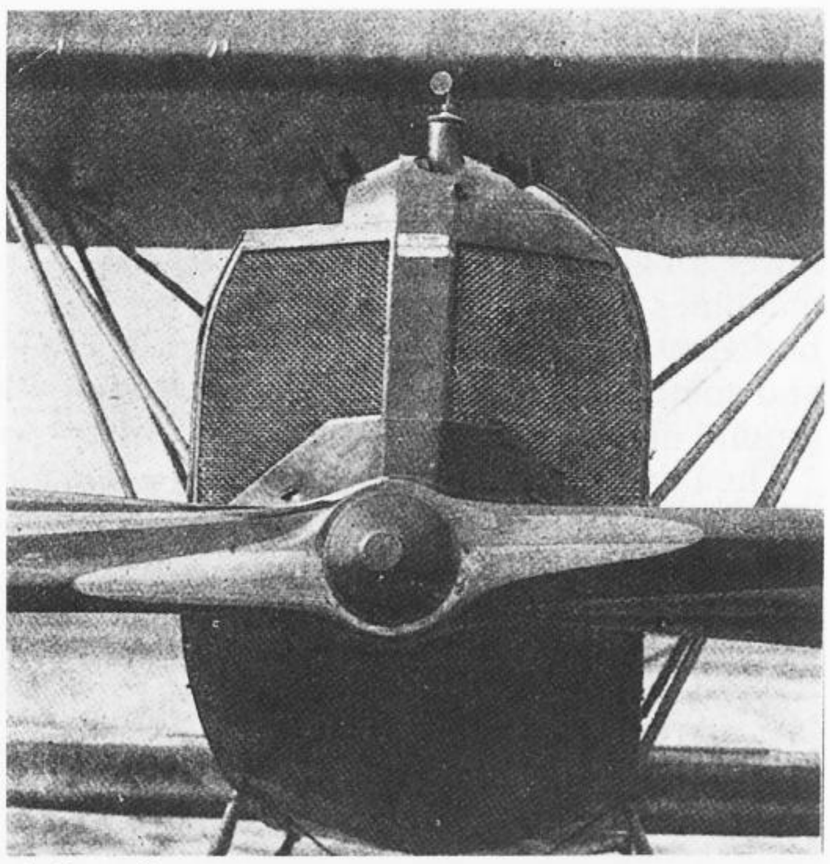


Fig. C) **Rear view of D.VII radiator (of 368/18 – see *photo 20*) shows fixing points to airframe and internal shutter. *(M of M report, 1918)***



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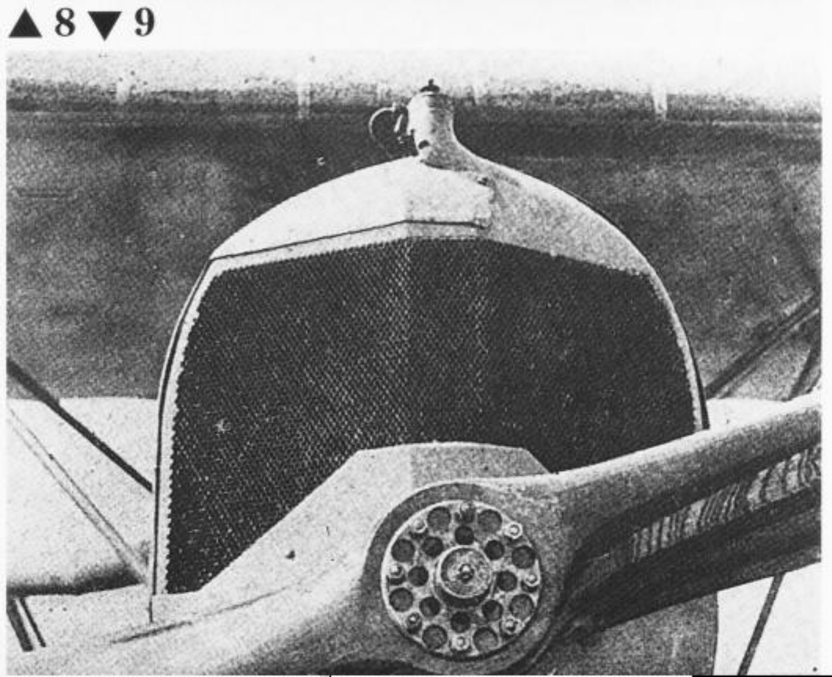


***6 and 7)* Mercedes D.IIIaü engine detail on the RAFM D.VII. The radiator was 'mechanic-friendly' in that it could be replaced, or removed for engine access, without unbolting the airscrew. The asymmetric water pipes running from beneath the radiator converge aft, thence back to the engine-driven water pump.**

***8)* D.VII radiators varied considerably in style and were supplied by a number of manufacturers. This one was produced by the Neuen Industrie Werke (NIW) of Berlin and Oberursel...**

***9)* ...while this radiator was produced by Norddeutsche Kühlerfabrik (NFK) of Berlin.**

square-tube matrix with a blank centre and a temperature gauge on the cap, and others, fortunately rare, used flat vertical tubes which put out short fins alternately on either side to interlock with their neighbours. Rectangular ducts for ammunition cooling air also pierced many radiators. Filler necks could be central, or fractionally to starboard, or a few centimetres to port (to accommodate the upright air pump on some Mercedes engines), or, for late machines, on the port side. Cap shapes varied between manufacturers.

The three commonest engines found in D.VIIs are the Mercedes D.IIIa, variously quoted as 160- to 180-hp, the high-compression D.IIIaü of 180/200-hp, and the 185-hp BMW D.III. The Mercedes D.IIIa has two plain inlet manifolds, whereas on the D.IIIaü they are heated by water jackets. The D.IIIaü introduced a new flat twin-cylinder air pump instead of the upright single one found on the D.IIIa, but this is not an infallible guide, for the old style pump, a bought-in component, also appears on some D.IIIaüs.

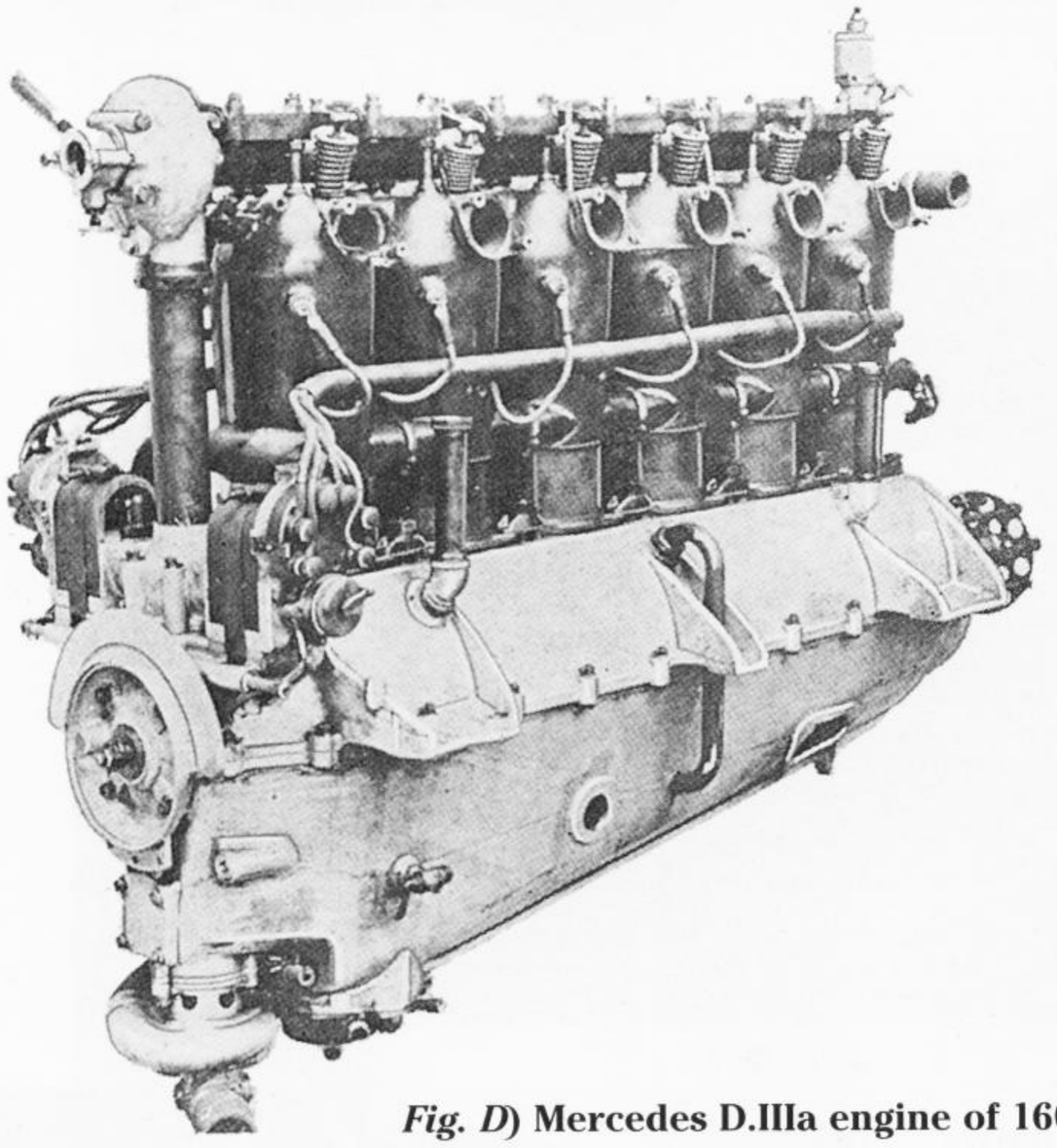


Fig. D) **Mercedes D.IIIa engine of 160-hp.**

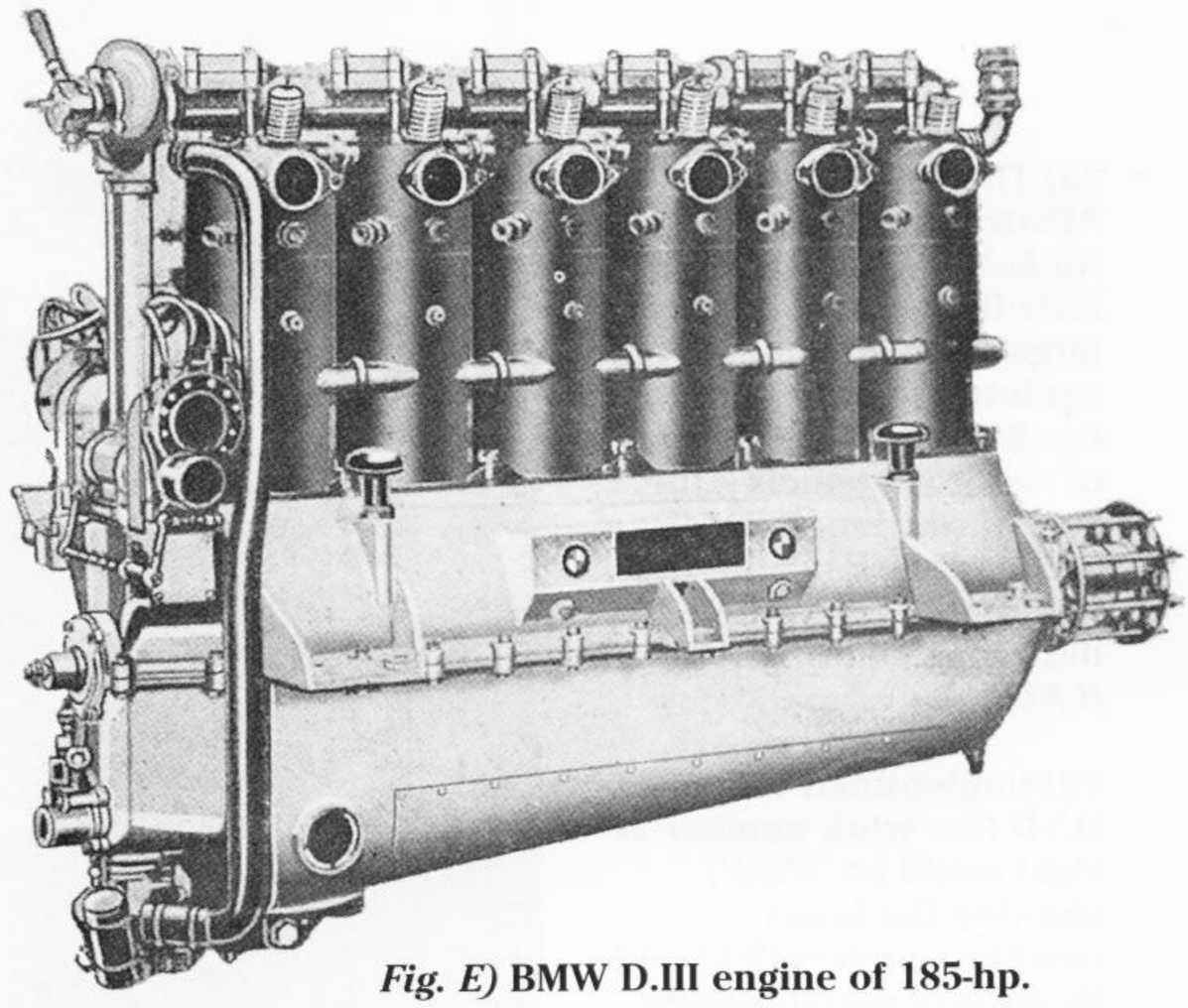
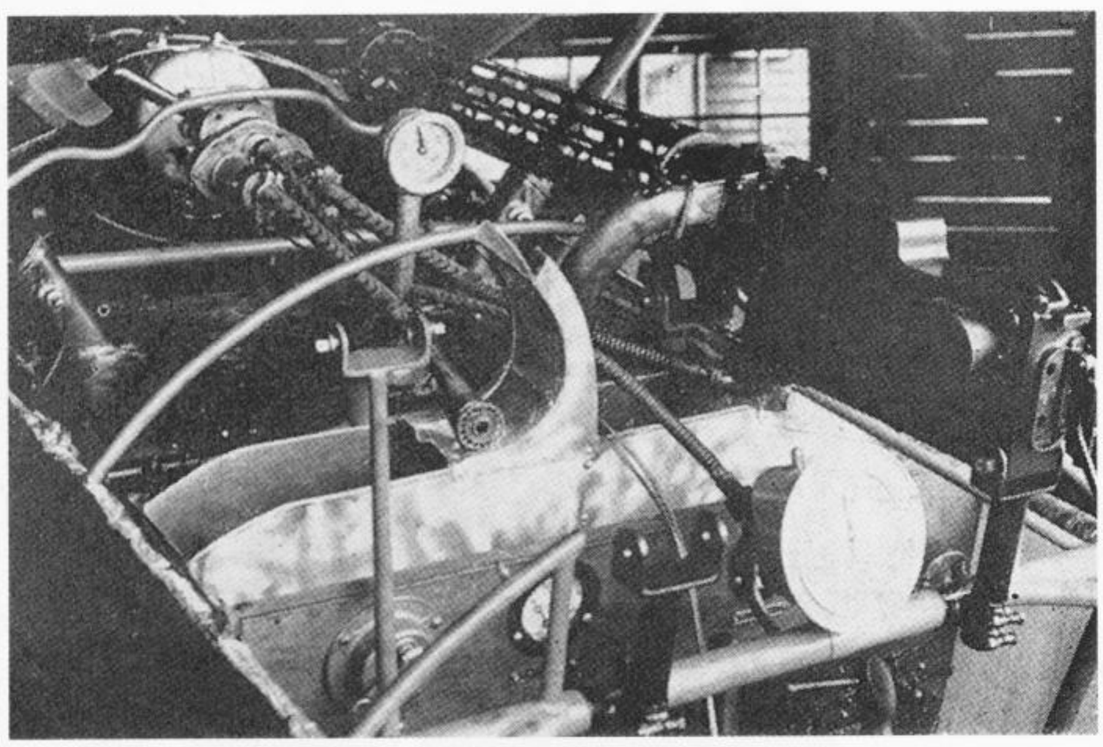


Fig. E) **BMW D.III engine of 185-hp.**



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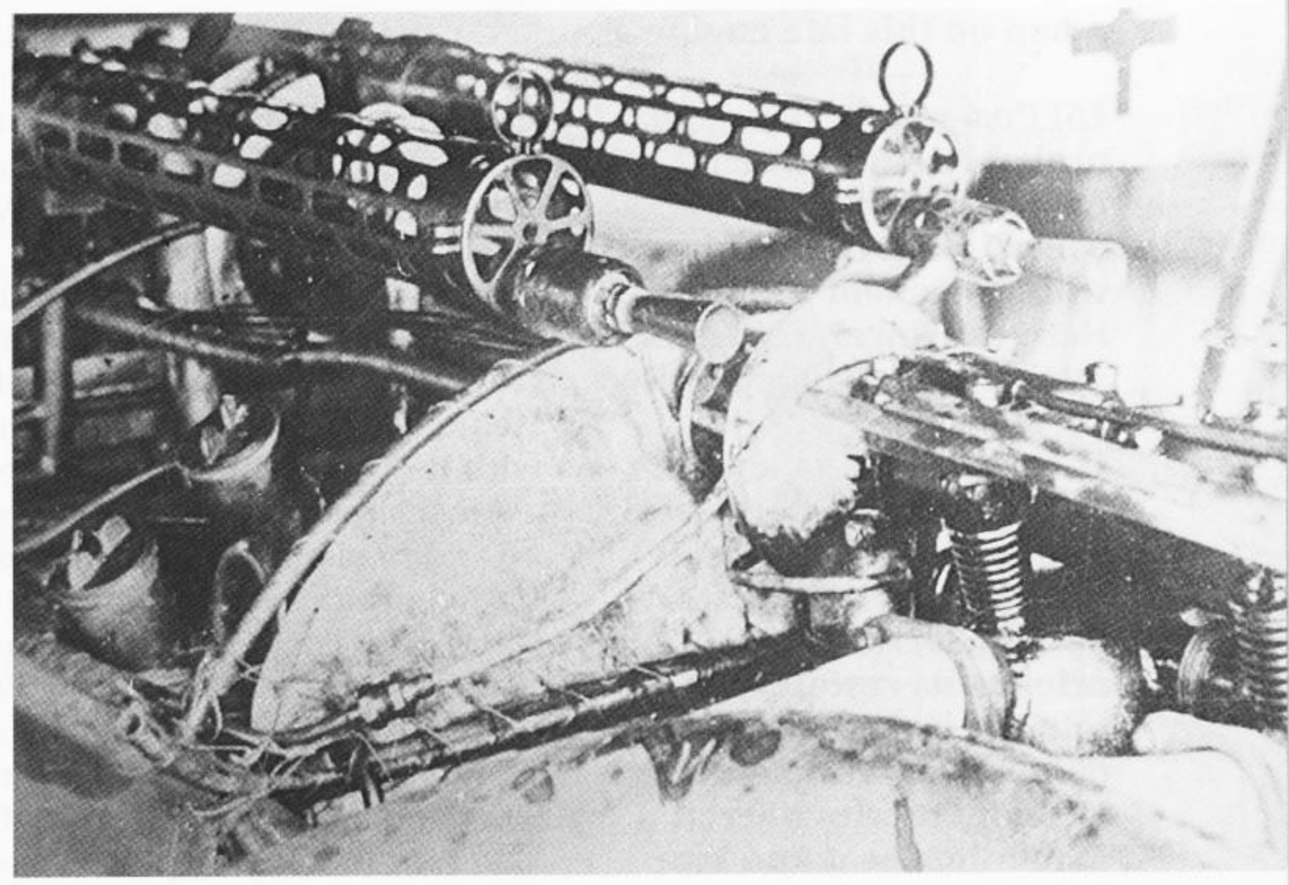

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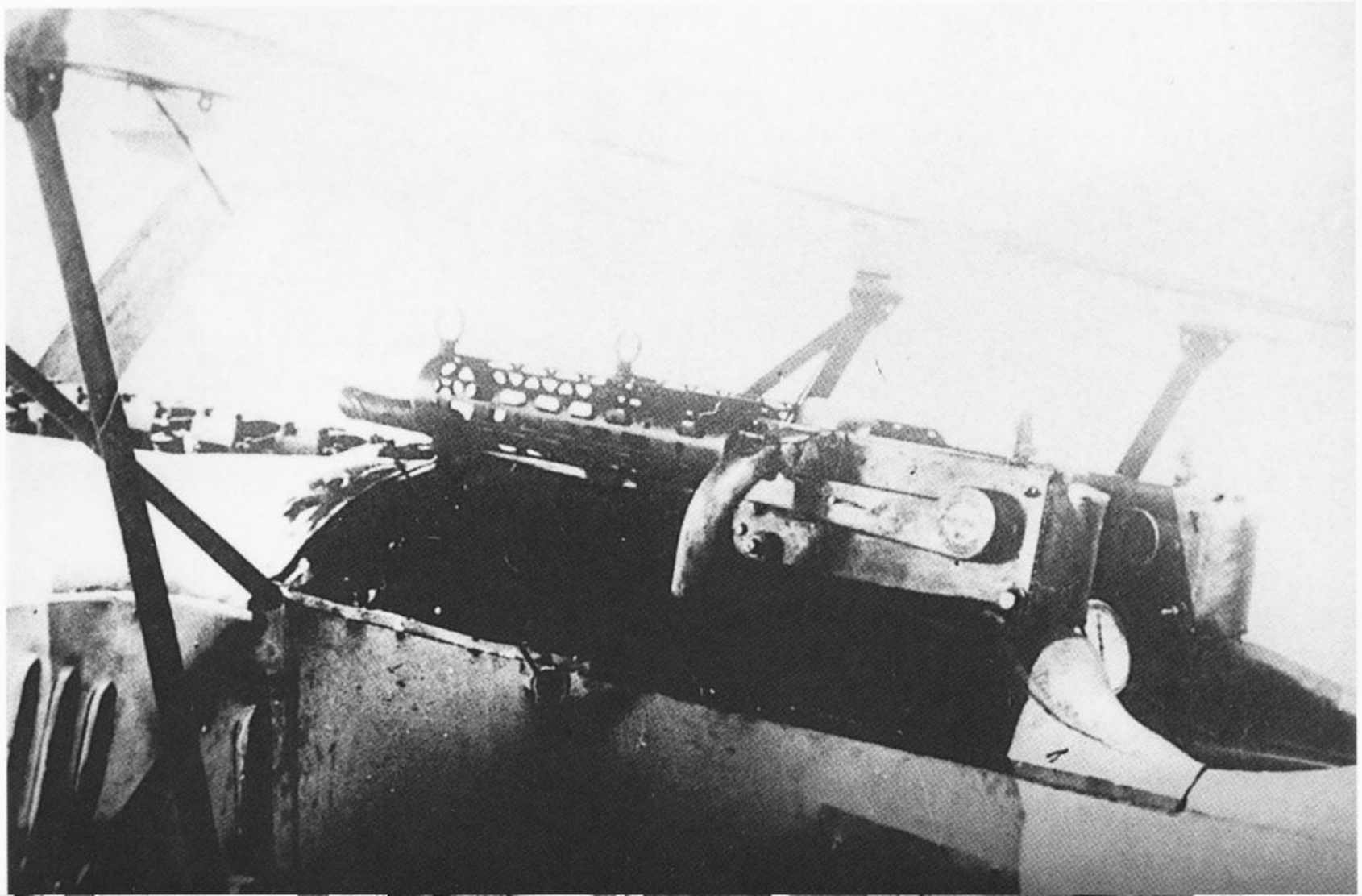
On a fully cowled D.VII, the only sure way to tell these engines apart in side view is by the cam box nuts, which protrude above the tops of the boxes on the D.IIIa, but are level with them on the D.IIIaü. Early machines with the D.IIIa may have had the guns mounted lower; photograph *10* (reproduced above) shows two recesses in the forward decking support arch to accommodate the gun jackets, and there were presumably equivalent grooves in the decking panel. I am not sure about a Mercedes referred to as the D.VIIIavü; it may be an alternative designation for the D.IIIaü, but one source quotes its bore as 5mm greater. If it is a different engine, I have not seen any pictures of it. Any details would be welcomed. The BMW is easier to spot, having a single straight-through manifold. It is also taller, sticking up above the fuselage top profile

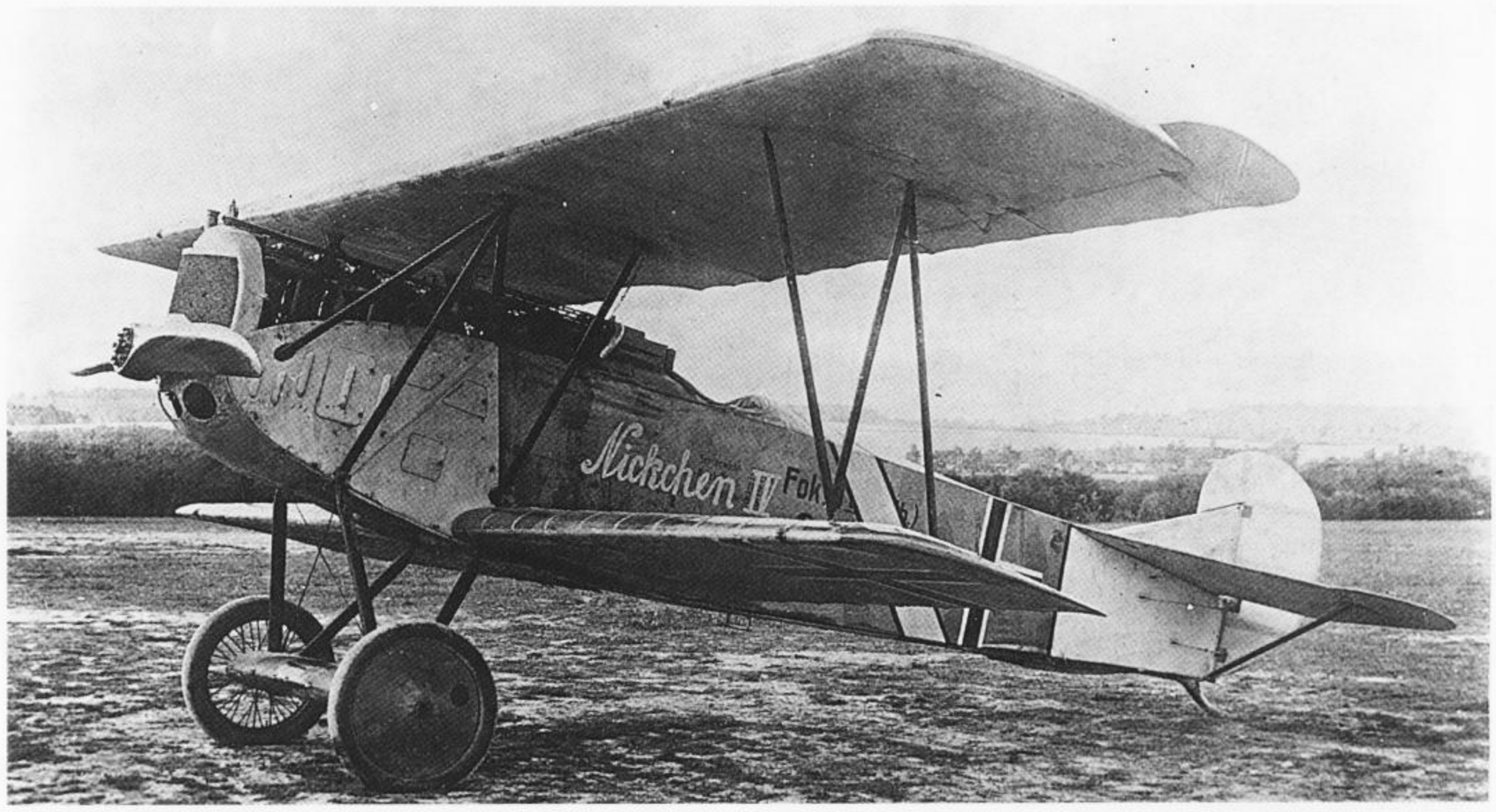
▼ 12



***10)* An early D.IIIa – powered D.VII with low-sited machine guns as evidenced by the rarely-seen recessed forward support arch.**

11)* Business ends of LMG 08/15 Spandaus fitted to an unidentified D.VII with angular anti-flash troughs at right. *(Greg VanWyngarden)

12)* Although somewhat lacking in clarity, this photo nevertheless displays armament installation to advantage. Style of padded gun butts is typical. *(Greg VanWyngarden)



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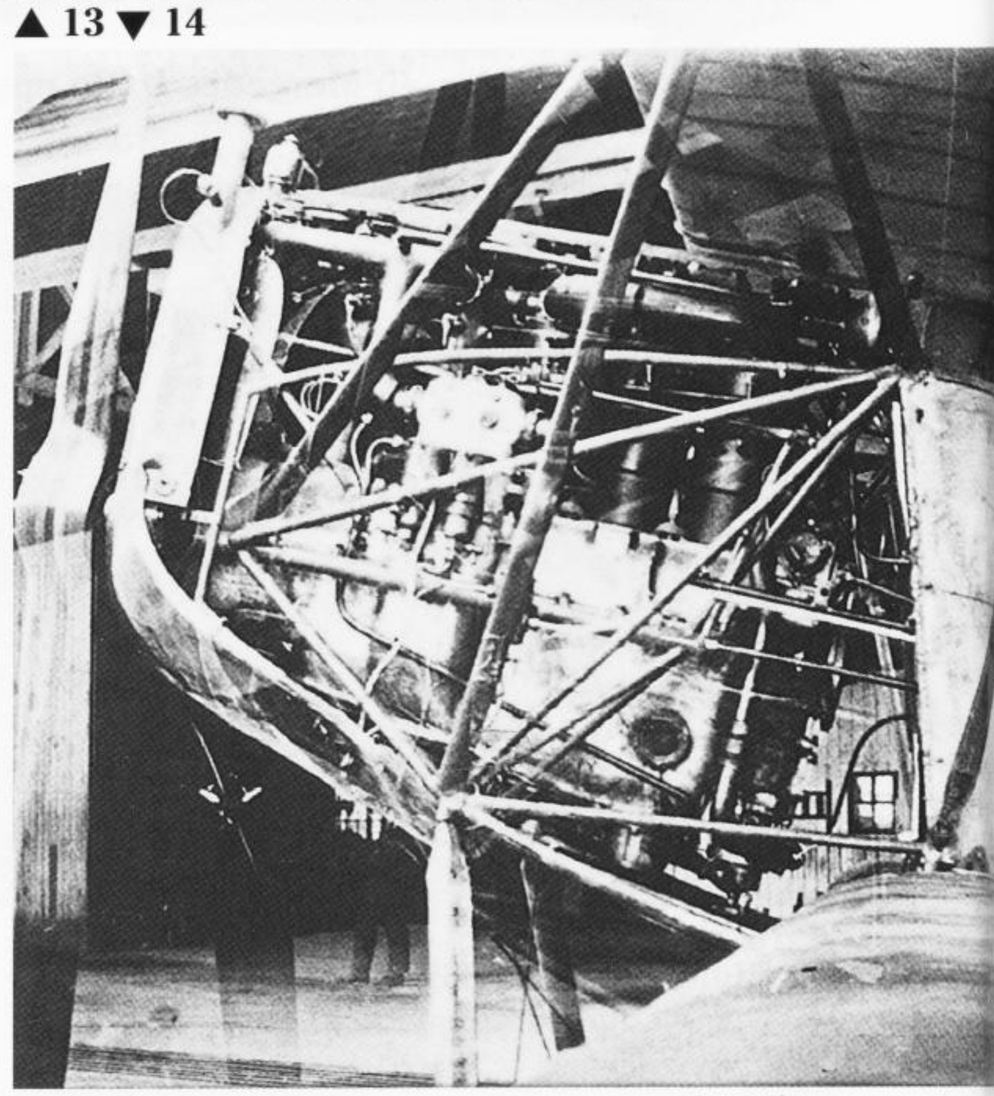

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13) **The well-known Albatros-built D.VII 817/18 *Nickchen IV* of *Jasta* 53's Fritz Blumenthal displays large circular cooling vents cut into the nose under-cowling and illustrates style of side cowl panels – the rearward triangular sections are late additions. Markings were white with dark blue edges. *(NASM via B Nicklas)***

14) **Unidentified wartime D.VII (the work number at right could be '3384') showing the lower cowling's undershield with its slightly flared trailing edge. Note upright air pump on this late engine.**

15) **Post-war D.VII, probably of the Dutch Army Air Service, in an overall dark colour (green?) with armament removed. Here the lower undershield section is really emphasised.**

16 and 17) **Two views of the D.VII cockpit area. This, somewhat incomplete, is NASM's well known OAW-built 4635/18 (*w/n* 3533) prior to its restoration. Of interest is the harness pattern, leather-padded cushion, fabric-covered aluminium seat and lace holes (port side) for attaching the padded cockpit coaming. *(Greg VanWyngarden)***

and causing the guns to be raised completely out of the decking. Some BMWs had a conical quick-release airscrew hub with a single large nut; the example preserved in the Musée de l'Air has one of these.

Airscrews were of bewildering variety, with almost every manufacturer represented. Makes noted include Axial, Heine, Wolff, Garuda, Astra and Wotan, each with its own distinctive shape and markings.

Most drawings I have seen so far show the cowling side panels with a near-elliptical outline, the curve at the front being fairly tight. This is closest to the shape used by Albatros, but D.VIIs built by Fokker and OAW had a more open radius. The shape varied a bit, so photographs are the most reliable reference. All edges were gently bevelled. The rear metal side panels are a fairly late addition, but could be retro-fitted, as on (Alb) 817/18, *Nickchen IV* (photo *13* above). So could the horizontal exhaust pipe which replaced the original low-level type.

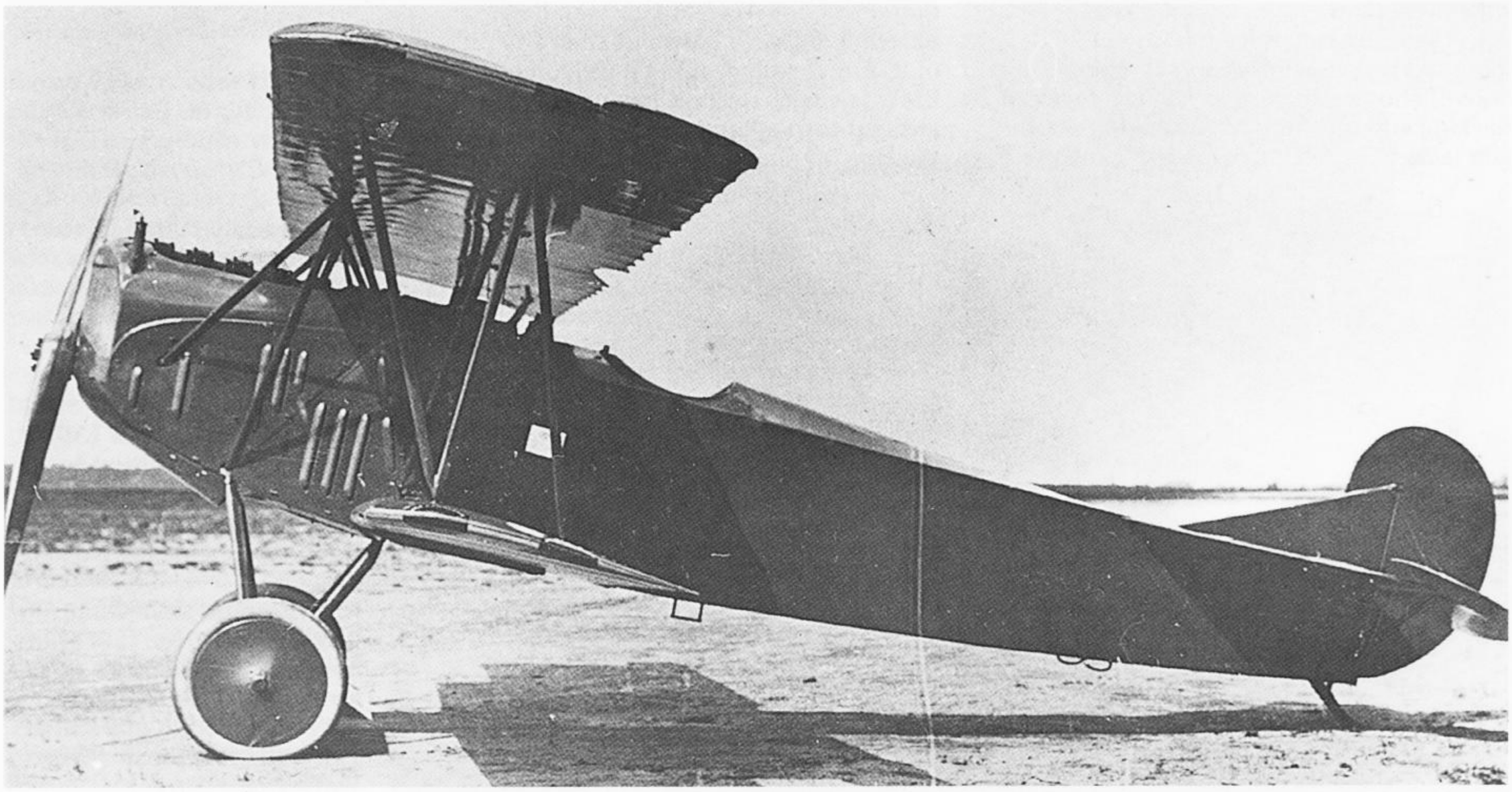

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Fig. F

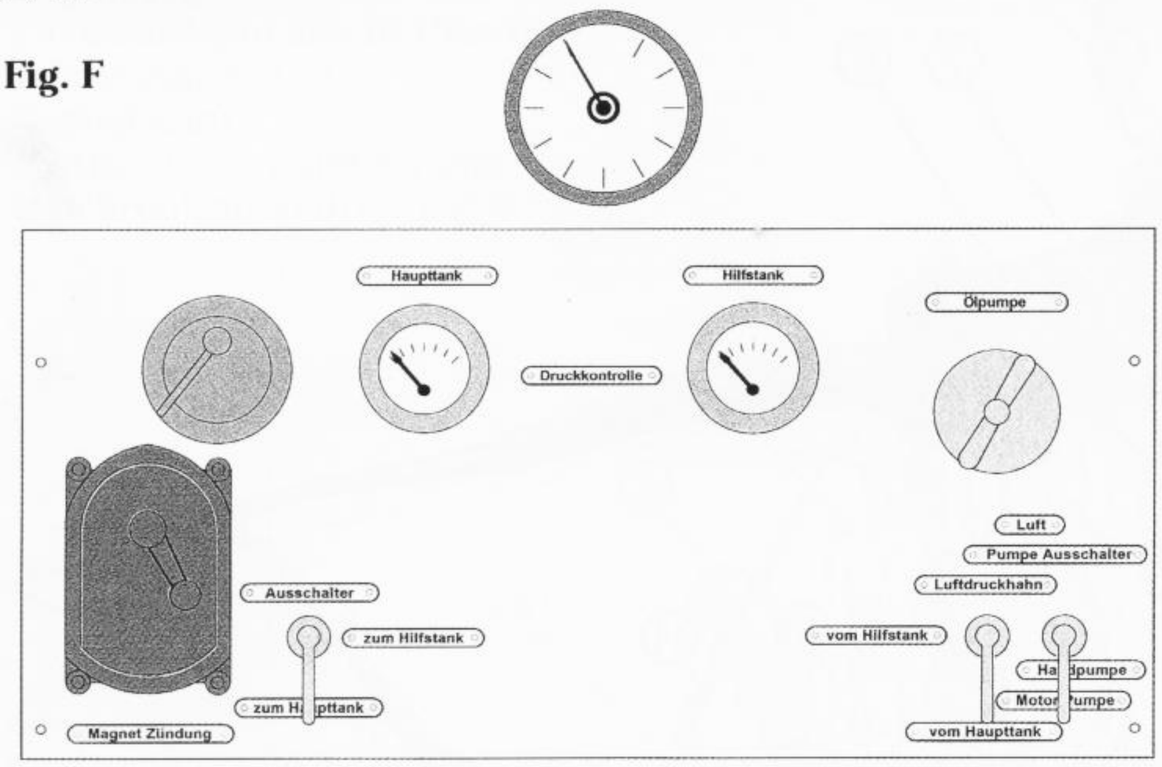
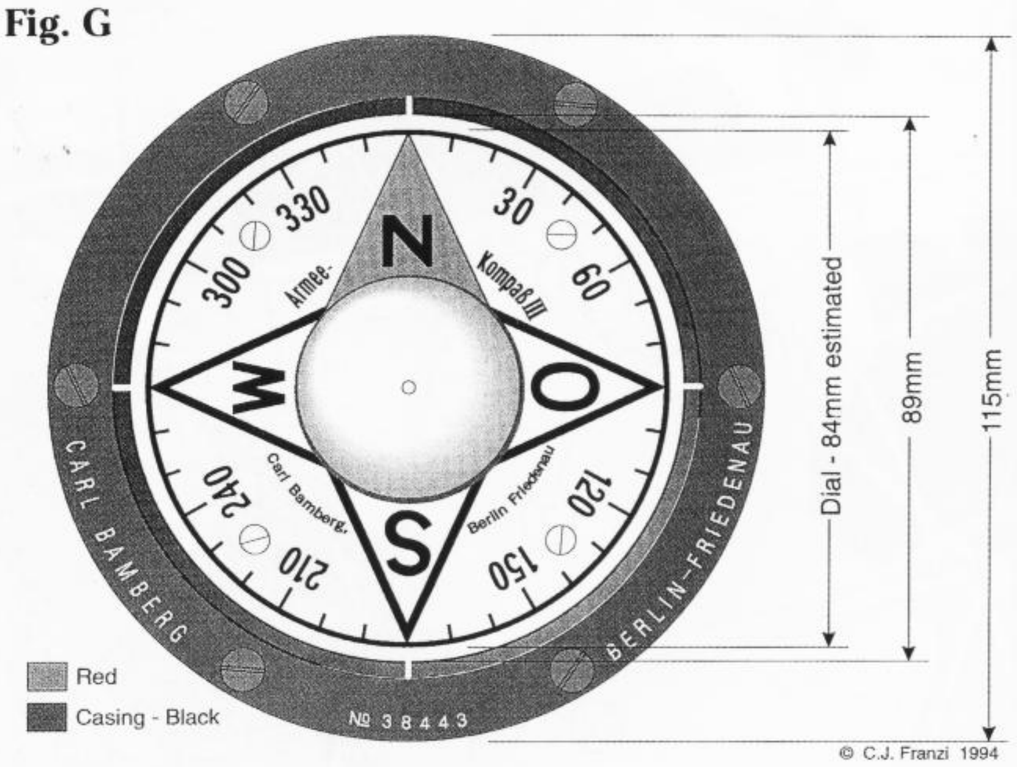


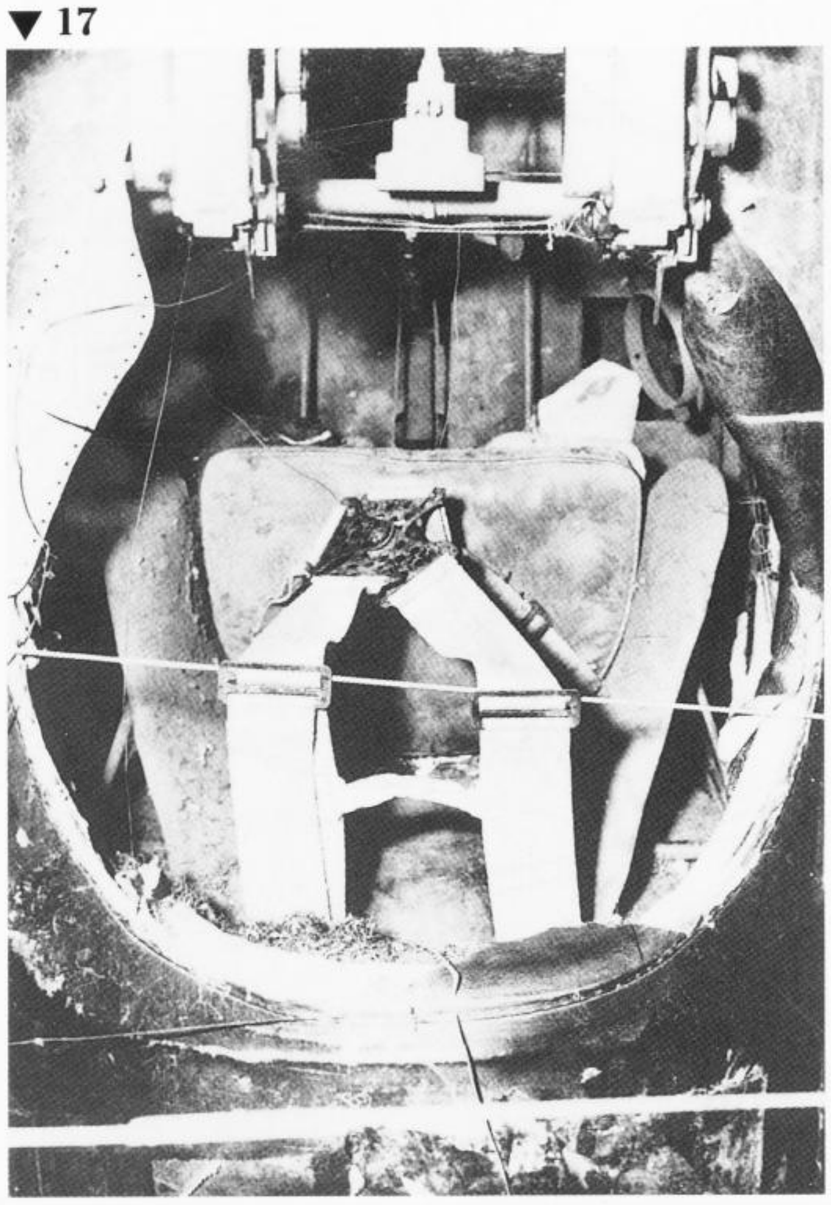
Fig. F) **Typical instrument layout for Fokker-built D-VIIs based on NASM's 4635/18. Plaques were bright metal; letters and border in relief. Both black-on-metal and *vice versa* have been noted.** ***(Drawing: Juanita Franzi)***

Fig. G



Carl Bamberg Armee Kompaß III

▼ 17



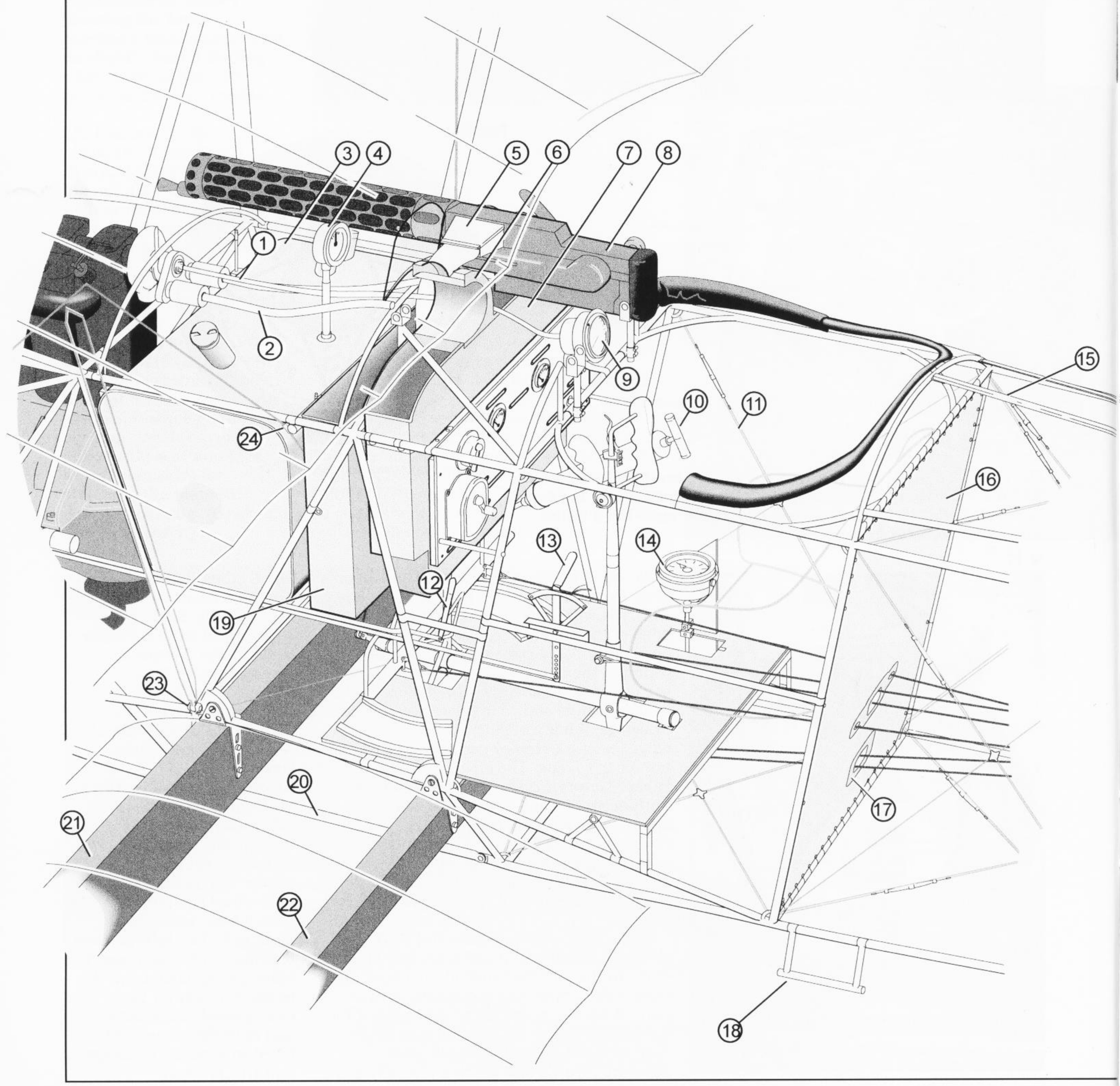
We won't go into the many cowling details here, except to note two features common to all D.VIIs with their original engines: the edge of the engine aperture in the top cowling slopes down towards the radiator owing to the change in cross-section, and the undershield ahead of the undercarriage is deeper than shown in nearly all previous drawings; it has a slightly flared trailing edge, leaving a step or gap for oil drips and hot air to escape. The strictly provisional Fokker factory GA showed a continuous bottom profile, and almost everyone, apparently including the compilers of contemporary French and British technical reports, has copied it ever since! Some post-war Swiss and German civil D.VIIs had either a smooth bottom profile or a much reduced gap.

Inside the cockpit, Fokker and OAW used the same panel layout and taps, but Albatros stuck to the circular-labelled taps seen on their own fighters and moved the grease pump from the panel to the port side of the gun mounting bar. All photographs I have seen of wartime D.VII cockpits show separate throttle and ignition levers rather

Fig. G) **Carl Bamberg Army Compass III as used in many D.VIIs. Scale 1:2. Souvenired from a Fokker D.VII by Sgt. Fergus Cox, mechanic with No.2 Squadron, AFC. This compass is currently on display at the Museum of Australian Army Flying Oakey, Queensland, Australia. All dial markings black on white unless otherwise noted. The dial is held in place by four screws as shown.The centre disc is domed upwards. Compass dial centre hole was mis-punched. The lubber lines continue in black down the white inside surface of the bowl. The text on the casing has been stamped and may have been paint filled in white.** ***(Drawing: Juanita Franzi)***

Fig. H) COCKPIT CUTAWAY

Key to Fig. H
(Note starboard gun and cockpit bay cross bracing omitted for clarity)
1 Tachometer drive cable
2 Gun interrupter gear drive cable for starboard gun
3 Fuel tank
4 Fuel gauge
5 Empty cartridge chute for port gun
6 Ammunition guide for starboard gun
7 Ammunition box
8 Port gun. Starboard gun is mounted in the same manner, but has been omitted for clarity
9 Tachometer
10 Fuel pressure hand pump
11 Cross bracing. All cross bracing is looped through lugs welded to the frame and tightened with a turnbuckle. Similar bracing is fitted to the starboard bay, but has been omitted for clarity
12 Ignition control handle
13 Throttle control handle
14 Compass
15 One of three timber longerons to reinforce ply turtledeck (ply not shown). Longerons are fastened to small lugs welded to fuselage structure.
16 Fabric screen
17 Leather reinforcing around control cable holes
18 Step clamped to fuselage frame
19 Empty cartridge box
20 Removable section of fuselage frame. Allows removal of the lower wing
21 Front lower wing spar
22 Rear lower wing spar
23 Attachment fitting for wing strut (shown in grey outline)
24 Aileron control cable guide



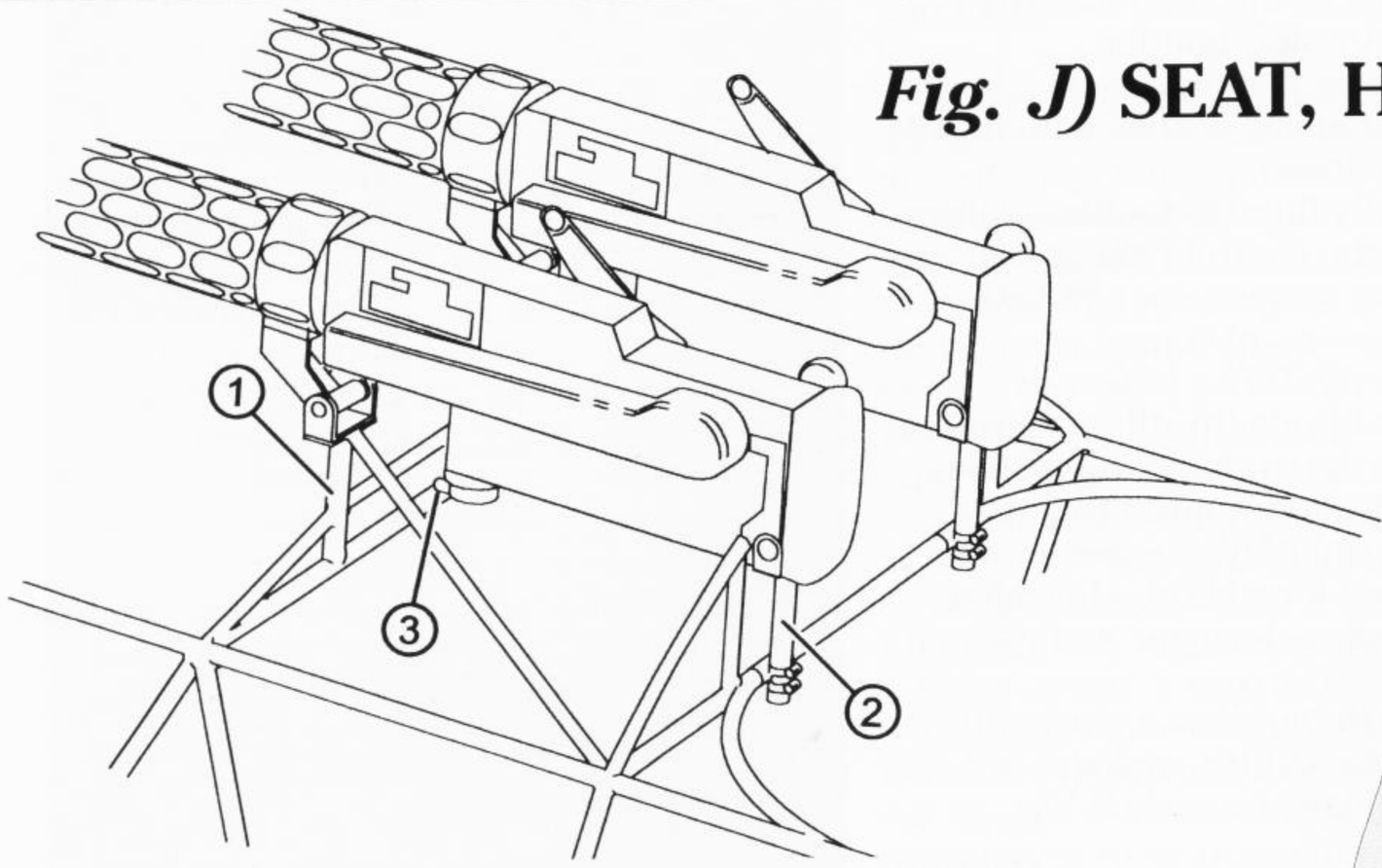
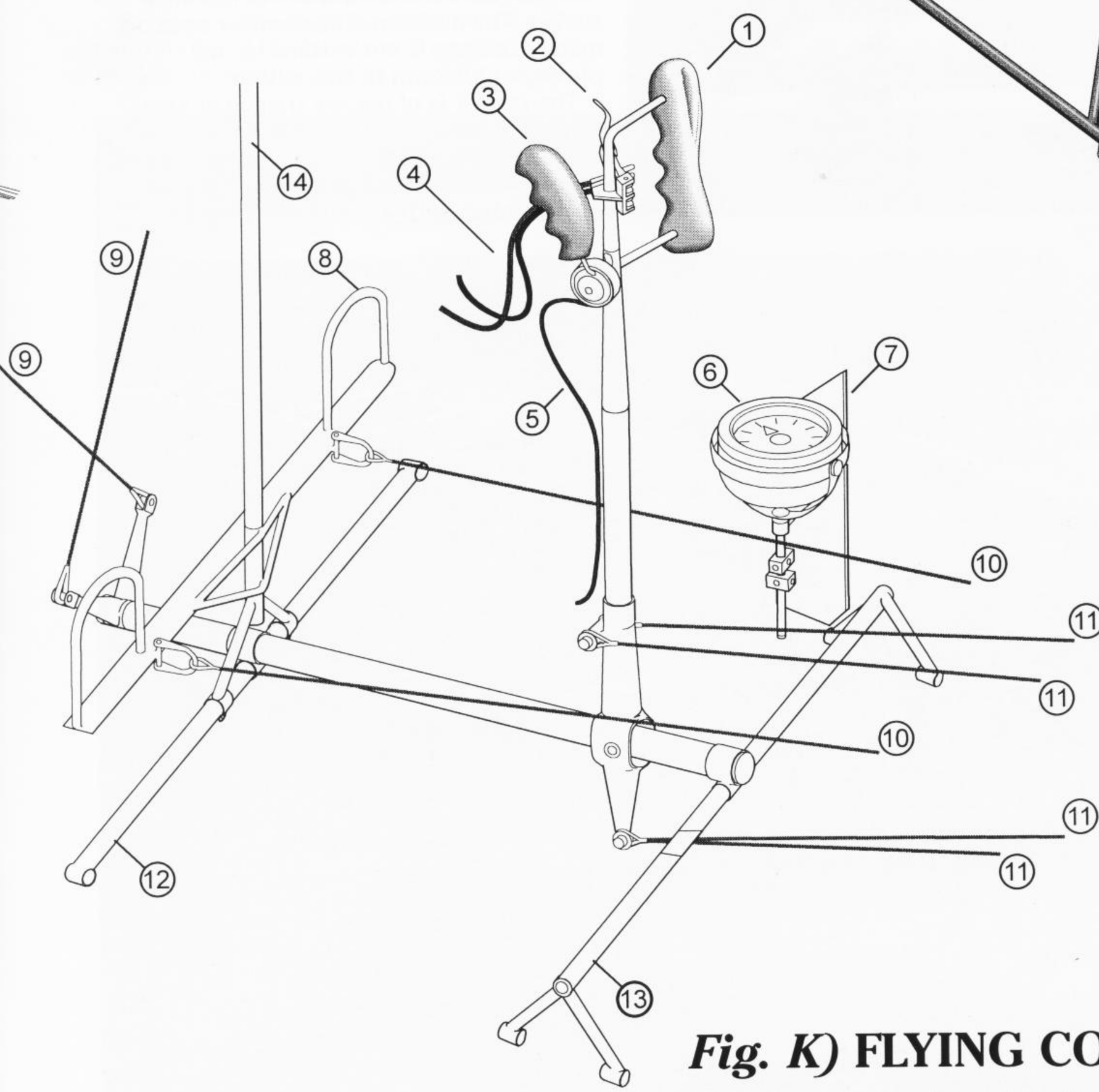


Fig. J) SEAT, HARNESS AND FRAME

Fig. I) GUN MOUNTINGS

Key to *Fig. I*
1 Forward gun mount (fixed)
2 Rear gun mount (adjustable)
3 Attachment point for gun synchronisation drive cable



Key to *Fig. K*
1 Control column grip
2 Gun trigger (two levers)
3 Auxiliary throttle
4 Gun trigger cables
5 Auxiliary throttle cable
6 Compass
7 Ply panel, attached to lower frame member and cross bracing, to which compass bracket is mounted
8 Rudder bar
9 Aileron control cables
10 Rudder control cables
11 Elevator control cables
12 Forward support tube (clamped to fuselage frame)
13 Rear support tube (clamped to fuselage frame)
14 Rudder support tube

Fig. K) FLYING CONTROLS

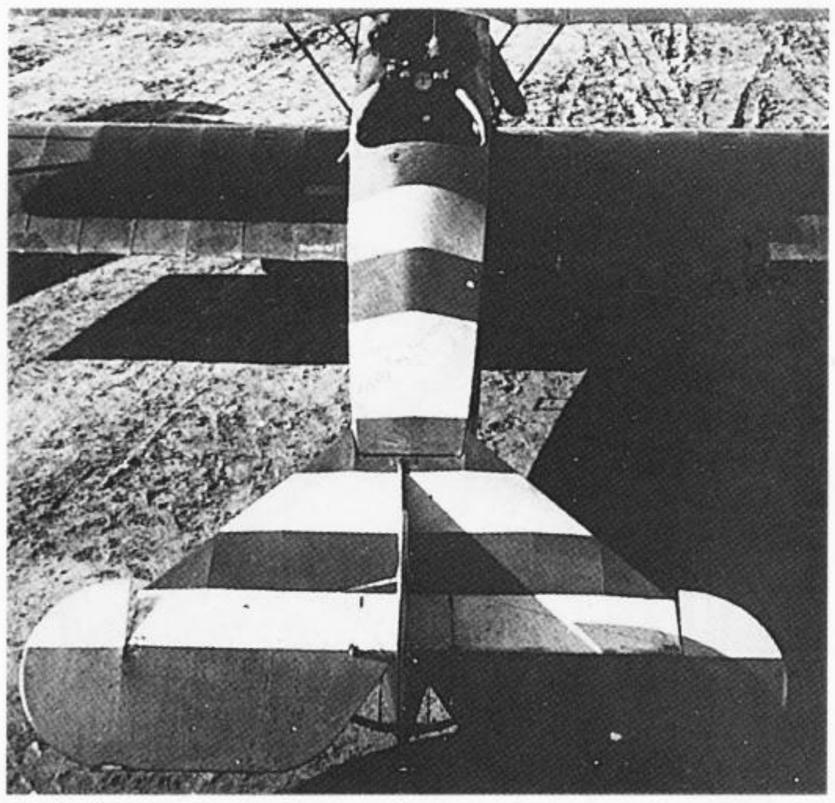
(All drawings: Juanita Franzi)

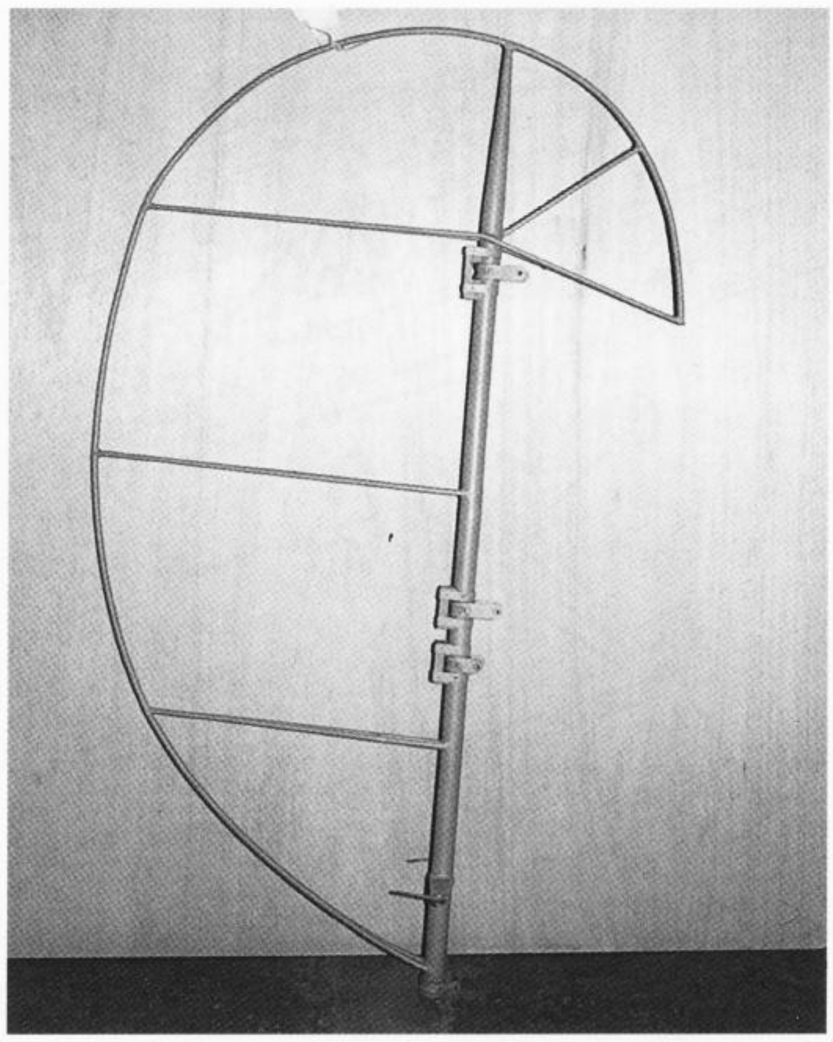
than the combined fitting shown on the Fokker GA. The 'Autoloc' ignition advance/retard lever is mounted on a bar in the spacer 'V' just ahead of the main throttle lever, and slightly lower.

OAW consistently fitted a double auxiliary throttle lever on the control column, but the other two builders seemed content with a single one. There were, of course, exceptions. The *'ACHTUNG. Höhengas'* (CAUTION. High-altitude throttle) inscription on D.VII dashboards, a reminder to use full throttle only at altitude, applies to both Mercedes D.IIIaü and BMW engines. It was probably only used for a short while after the introduction of each engine and was not very common.

The fin, angled to port, has a single thin vertical member amidships, and was not braced to the tailplane on early D.VIIs,

▼18 ▶19





relying on the rudder and the rigidity of the attachment fittings to hold it upright. Bracing cables were soon added, connecting the tip of the fin to those of the tailplane rear spar. A channelled wooden sternpost attached to the ends of the longerons accepts the leading edge tube of the rudder, and the rear vertical member of the fin is similar. The horizontal fin member seen on many drawings is not verified by any photograph known to this author.

The rudder is of narrow triangular cross section, becoming diamond-shaped in the balance horn, and the main tube flattens at the top. The shape of this surface is well documented, with a curve which sweeps

18) Bruno Loerzer's *JG.*III *Jasta* 26 Fokker offers a rare overhead view of the D.VII's offset fin, parallel central tail ribs and acute arched appearance of the rear turtledeck.

19) The restored rudder of the RAFM's '8417/18' fully painted and ready for covering reveals the oft-misinterpreted outline. *(R G Moulton)*

20) Perhaps an over-familiar view of *Ltn. d R* Hans Schultz's Fokker-built 368/18 (*Jasta* 18) at Islington's Agricultural Hall, but it does provide good details of wing and fuselage structure. Though stripped of most fabric, the white nose cowl and red-painted wheels are still evident. What a pity this airframe and those of its companions were never saved for posterity.

▼20

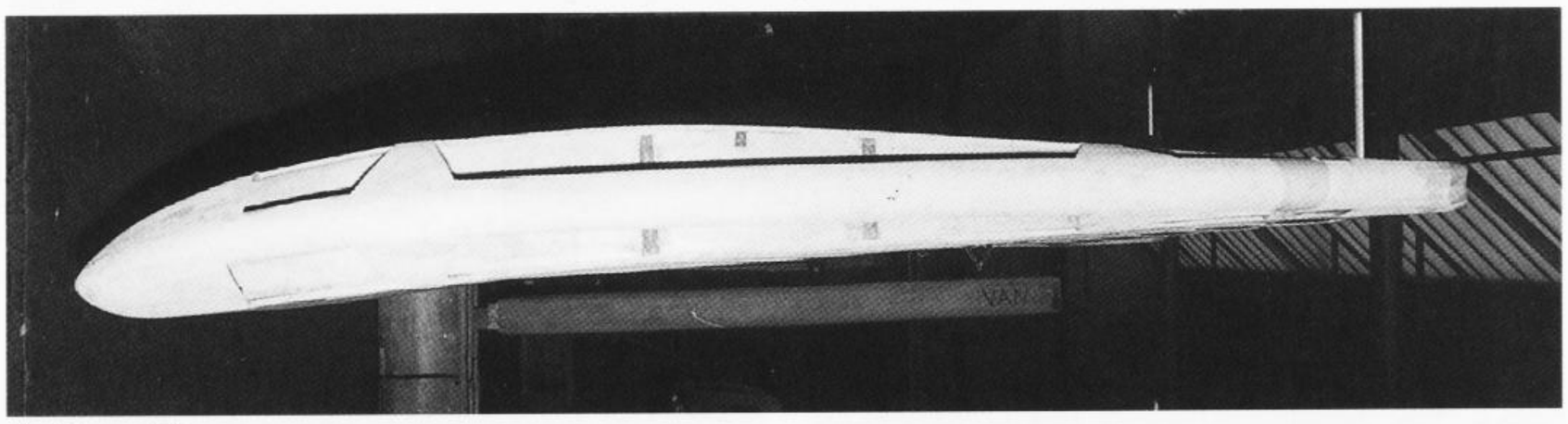
smoothly up from the line of the lower longerons (actually just above them) rather than joining the sternpost at an acute angle as in several drawings and kits. Some variation is noted in the shape at the top, but the trailing edge was very consistent. Hinges are simple U-shaped metal straps with a narrow strip in the bend turned inside out to form a clamp for a metal bush, surrounding the rudder tube and bolted to the sternpost and fin. The elevators are of the same construction.

Tailplane dimensions vary slightly from one drawing to another, being based on different captured and preserved examples. In fact, components from the same factory could differ by several millimetres, hence the serial numbering of every part. The tailplane has a thick, sweptback tubular spar and a straight rear spar of the same diameter. The symmetrical ribs bend around the main spar, becoming quite prominent at this point, to converge on the thin leading edge. At the rear, they are welded to the spar so that their profile blends with it. The tailplane is thus gently convex on both surfaces. A strip of wood, tapered and channelled to receive both the rear spar and the smaller-diameter leading edge of the elevators, forms the tailplane trailing edge. It is covered by the fabric. Thin struts brace the tailplane tips to the lower longerons.

Beware of drawings which show the two central ribs of the tailplane diverging; this means the rear fuselage is much too wide, and there will be many other inaccuracies, too.

D.VII wing geometry has been much discussed in print, but essentially can be described as follows: take a thin three-piece WWI upper wing, like that of an SE5a, but without raked tips, and assemble it with dihedral. Stretch two pieces of string from tip to tip along the spar centrelines, and deepen the spars so that their tops lie along the strings. Now make new ribs to fit these tapered spars; they will be deep and rounded at the centre, shallower and flatter at the tips. The undercamber remains the same for all ribs, within a manufacturing tolerance of a millimetre or two.

Many versions exist of the wing sections, which may have differed very slightly between contractors and were in any case not always very accurately cut out, but most drawings derived from contemporary published material are close enough for modelling and illustration purposes. The sections in the contemporary *Flight* magazine article on D.VII 368/18 are, however, based on incorrect measurements and assumptions; it is not easy to measure ribs installed in a bulky, complex wing. Drawings in articles quoting reams of mathematical formulae sometimes disagree with the evidence of photos and preserved airframes! The lower wings have a continuous smooth curved undercamber, but the upper wing has a distinct break of contour just aft of the rear spar, becoming



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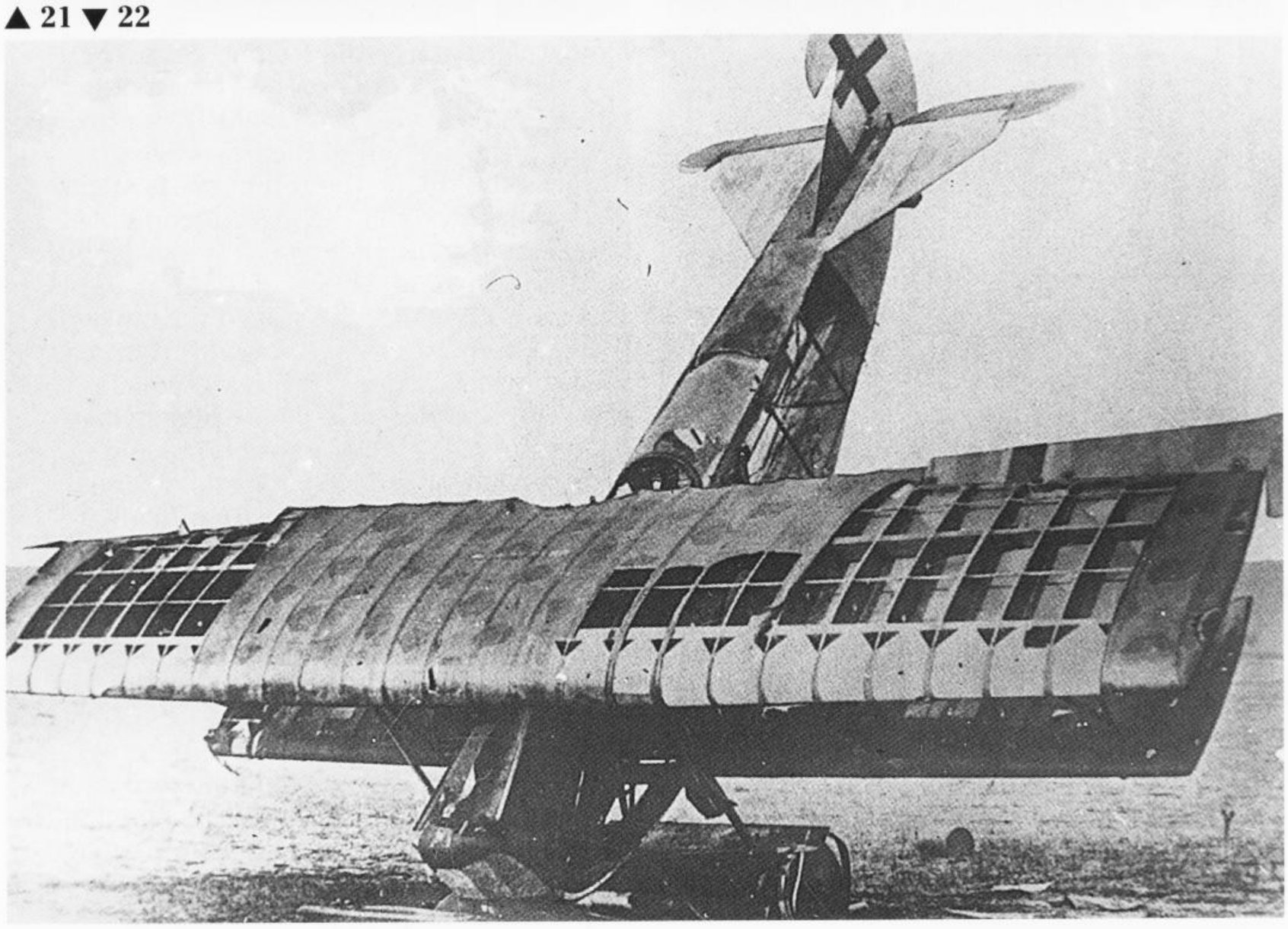


21) **Up-ended photo showing the tip section of the port lower wing panel from the RAFM D.VII.** ***(R G Moulton)***

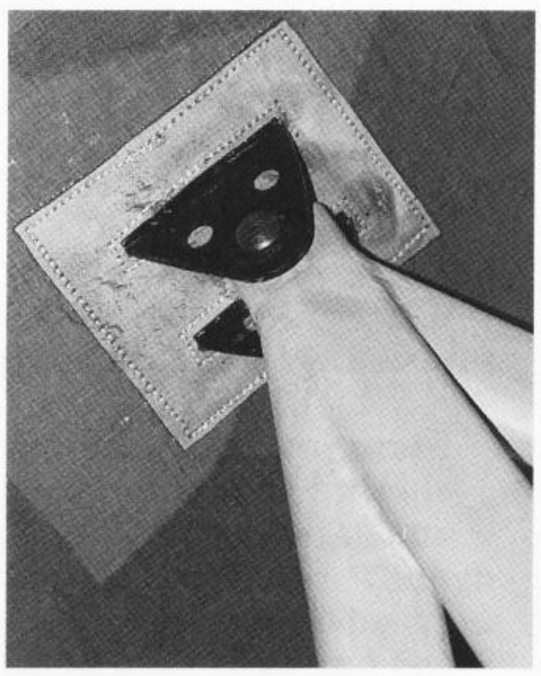
22) **Well souvenired late-production Fokker-built D.VII with most crosses removed. The angle does show the style of 'serrated' leading edge ply sheathing to advantage and orientation of the five-colour printed fabric.**

23) **Centre pylon and rear centre strut detail of the recently-restored RAFM OAW-built D.VII reveals strut attachment plates and aileron control cables (port side).**

24) **Upper port centre pylon attachment plate detail and leather reinforcement patch.**

25) **Port wing tip of RAFM D.VII with one variation of handling stencils (repeated on uppersurfaces) and typical OAW component stencilling applied to the aileron.**

▲ 23



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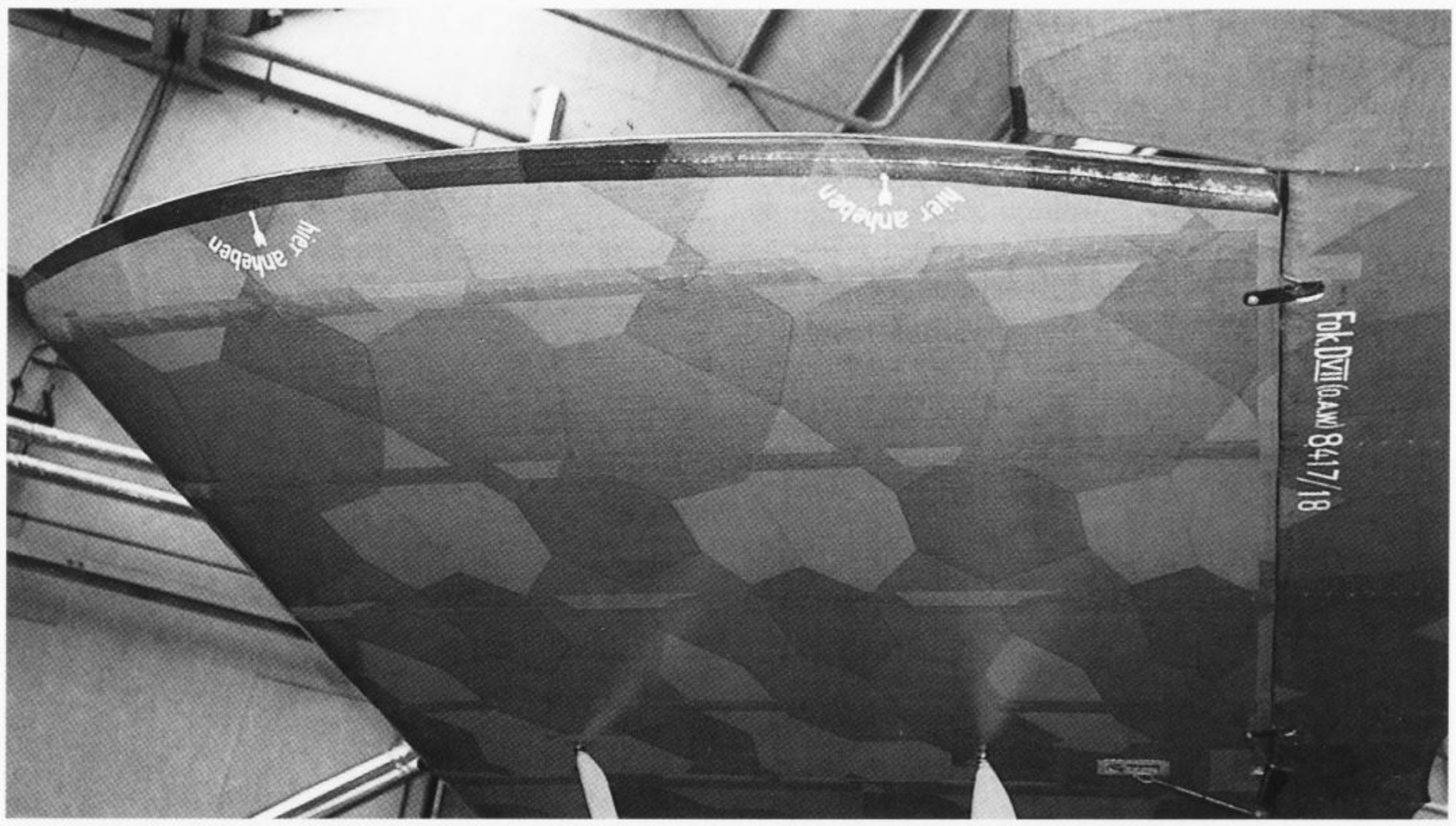

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Fig.L) **Various aspects of upper wing control cables, spar-mounted guide pulleys and aileron horns. A and B show the pulleys on the upper wing rear spar which run the cables through holes in each rib out to the ailerons at position C. *(Flugsport, 1918)***

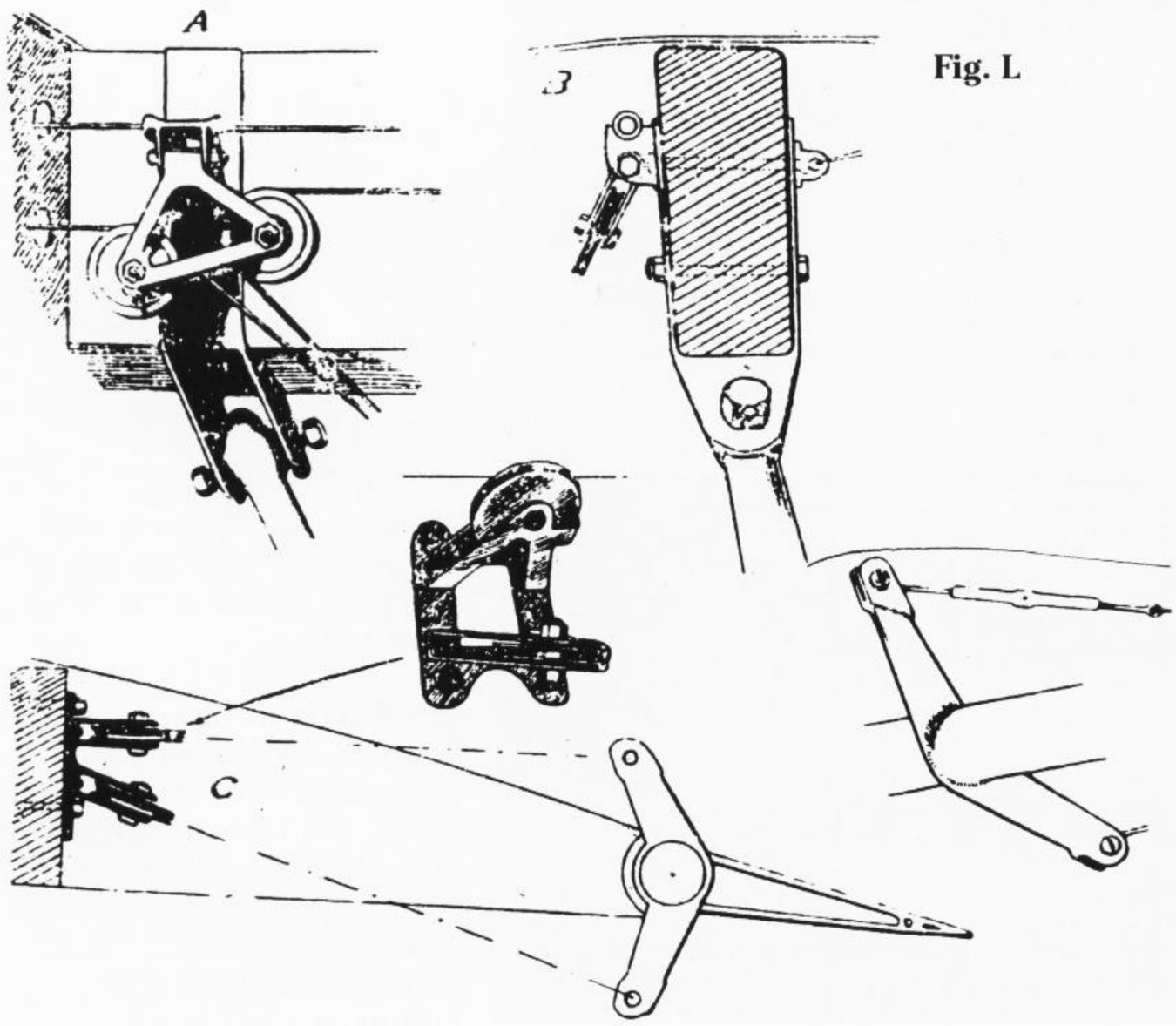
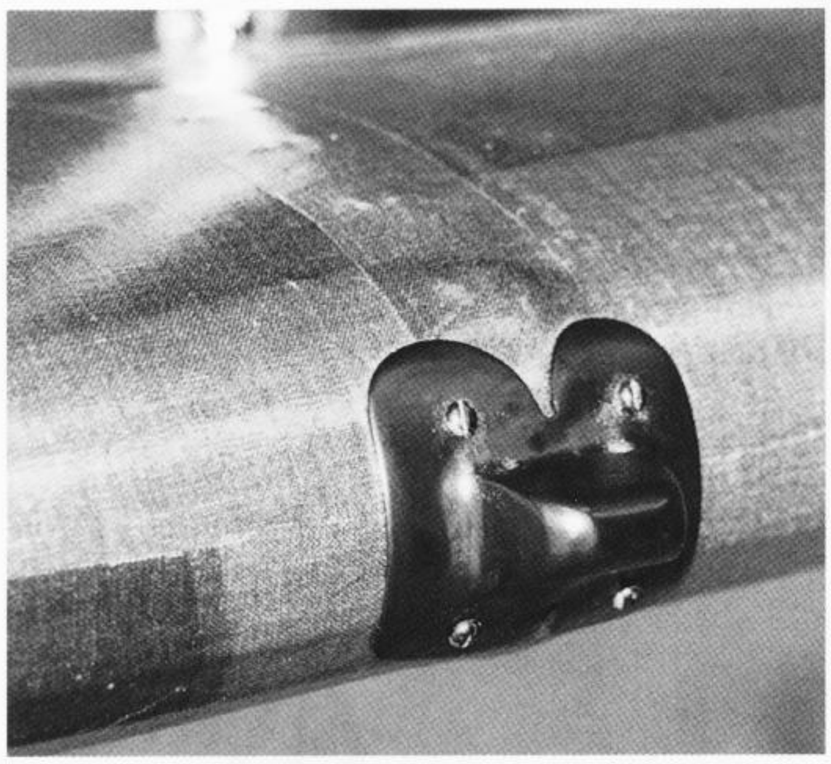


Fig. L

almost flat back to the trailing edge.

An intriguing detail in the French official report on Fok.D.7.(OAW) 2009/18 is a gentle reflex in the section of the lower wing towards the tip, *ie*, the top curve is slightly 'S'-shaped. Study of the now restored RAF Museum aircraft, on which it is subtle, but definitely present, suggests that this applied to starboard wings, but not to port, where the top of the tip ribs is straight from rear spar to trailing edge. The reflex, which shows up most clearly on stripped wings and in 3/4 rear shots viewed obliquely, makes sense as a device for countering torque, but I cannot state categorically that it was universal. Because the centre or root ribs as drawn in contemporary reports arch a little higher between the spars than do the tip ribs, the top profile of the wing slopes *slightly* up towards the centre, despite the straight top *centrelines* of the spars. This has led some to suppose that either the front or both spar tops had anhedral, which they didn't, at least when new. Examining the RAF Museum's D.VII during its recent refurbishment, I was able to confirm the slope, which is quite prominent from



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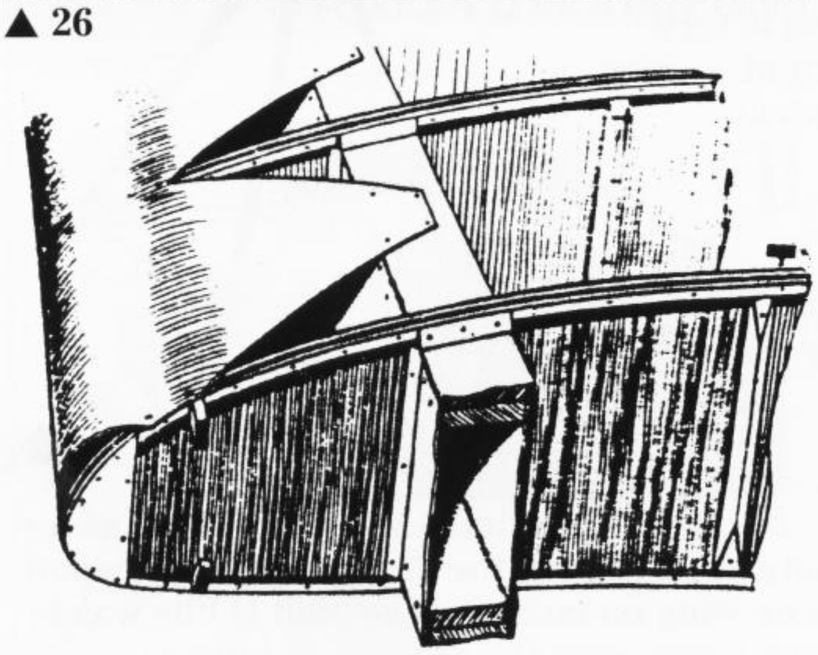


Fig. M) **Forward spar, wing rib and typical ply leading edge sheathing on the D.VII wings.** ***(M of M report, 1918)***

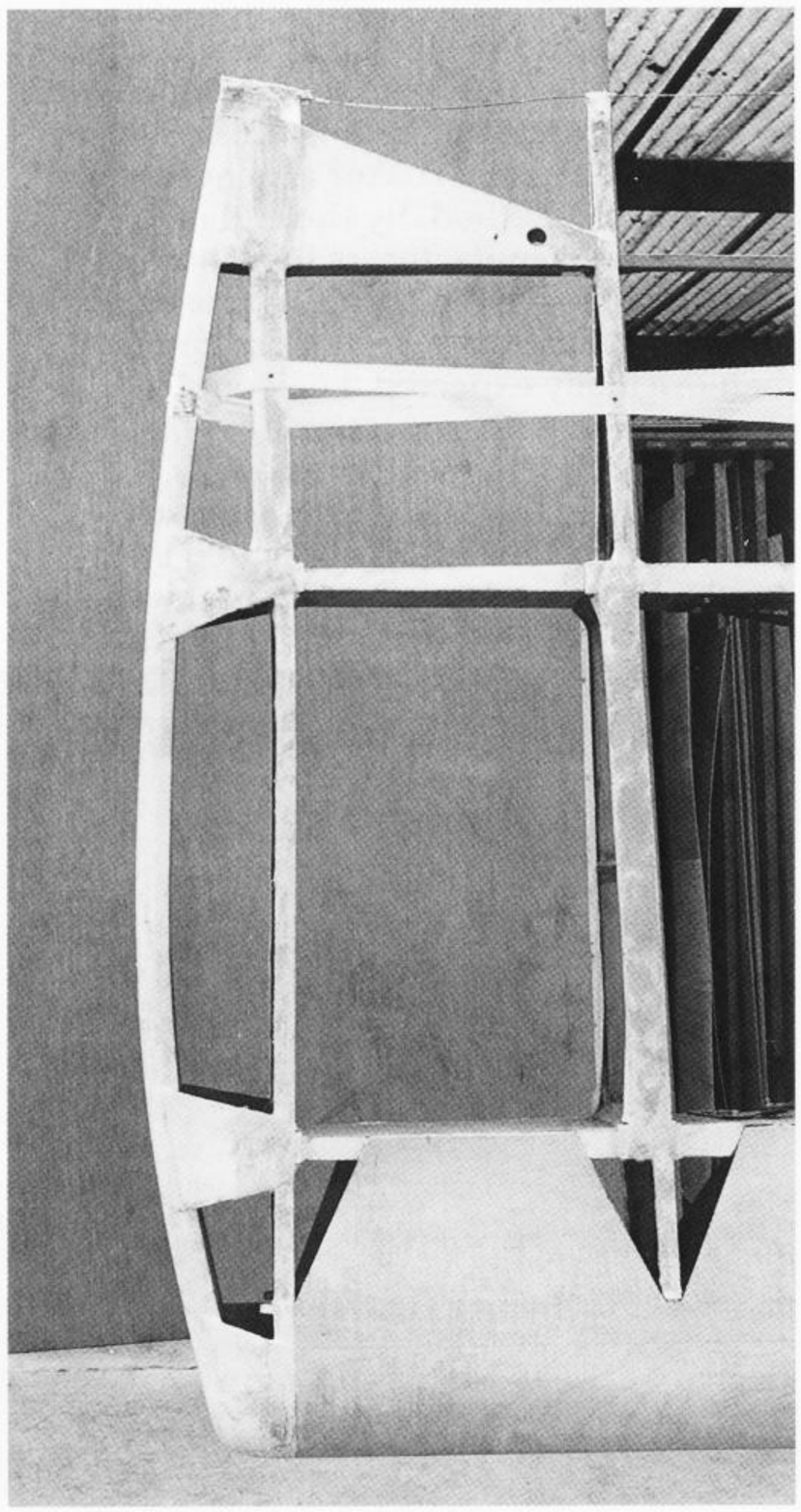
some angles even after correction of the slight droop acquired over a long working life.

Extreme leading edge profiles are fairly tight circular arcs throughout. Ribs at the ends of the upper wing cut-out on later OAW aircraft, and at the root and part of the tip of the lower wing, are box structures, and therefore wider than the others. Both wings have very short straight sections in the leading edges between the end rib and the tip fairing, a feature not yet seen in any kit. The lower wings, lacking ailerons, have the straight bits at both leading and trailing edges. Away from the upper wing centre section, the spars taper in width as well as in depth, and their top and bottom surfaces are angled to fit the ribs.

Details visible under the fabric are the leading edge plywood serrations, the tops of the rear spars where the fabric occasionally sags onto them and sticks, and the thin gussets on the ribs along the aileron aperture and on the spars at the tips. The tops of the ribs show much more prominently between the spars than aft of the rear spar; the **Revell** 1:72 scale kit is not that far out! Also, early Fokker-built D.VIIs used broad strips of plain fabric as leading edge reinforcement, and if the skin was heavily doped, they fused with it and shone through the translucent lozenge fabric.

The aileron line is angled, principally to connect points of equal depth in the tapering wing, because the aileron leading edge is a plain steel tube – you need a line of constant depth because the tubular leading

▼ 27



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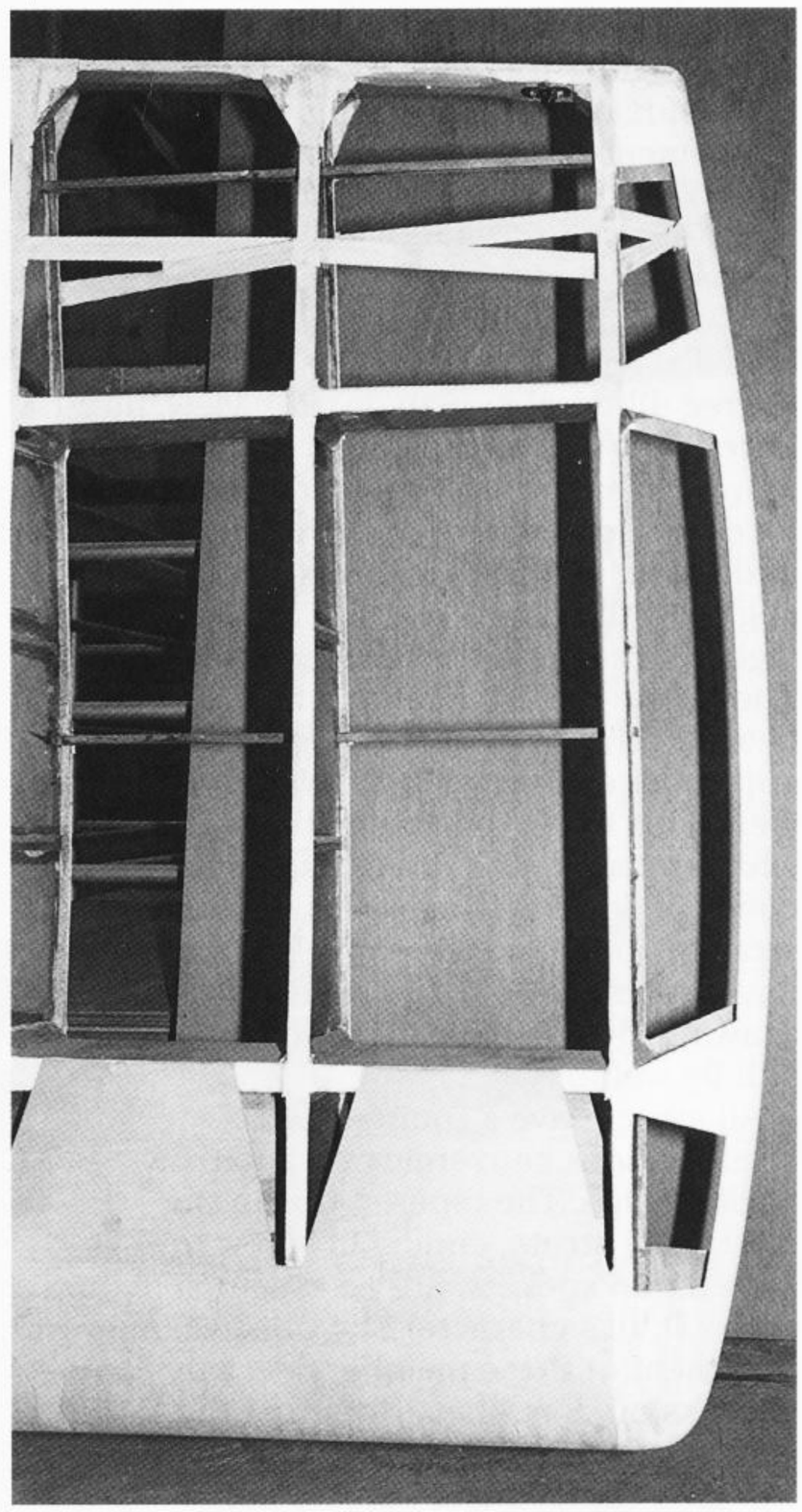


26) **Detail of the RAFM D.VII reveals that the metal stamped leading edge stacking bumps were secured by four dome-headed screws. (This is the OAW version).**

27) **Starboard lower wing profile of the RAFM's '8417/18' clearly shows the small straight sections at leading and trailing edges between the end rib and wing tip fairing. Ply sheathing is not original.** ***(R G Moulton)***

28) **Upper wing profile (starboard side from beneath) shows the straight section at leading edge.** ***(R G Moulton)***

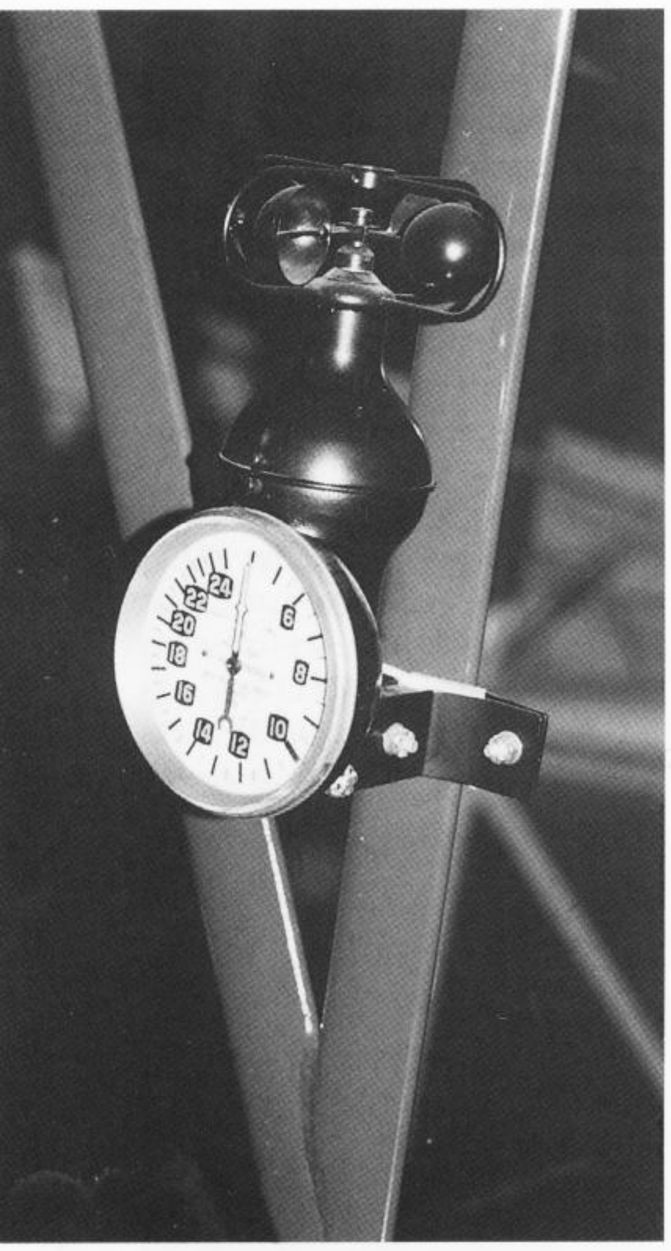
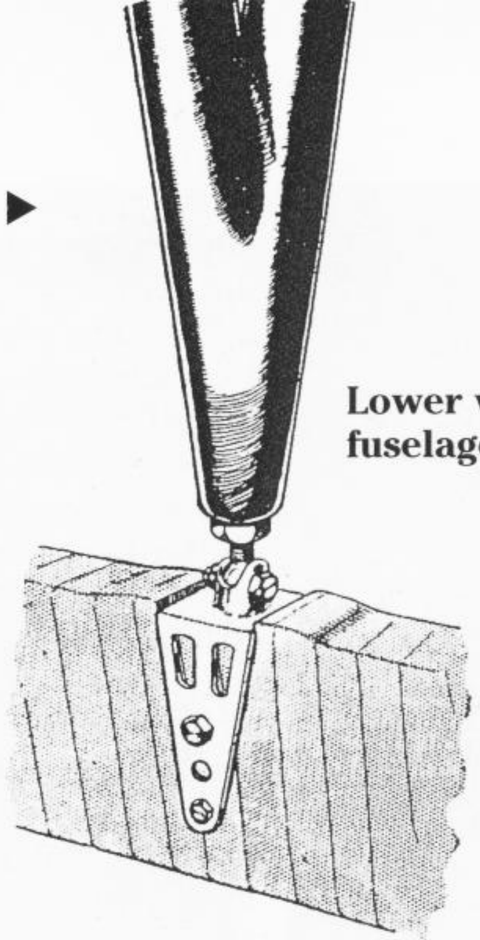
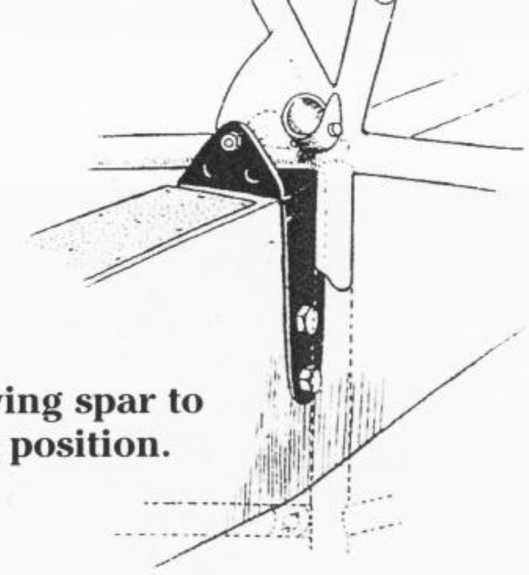


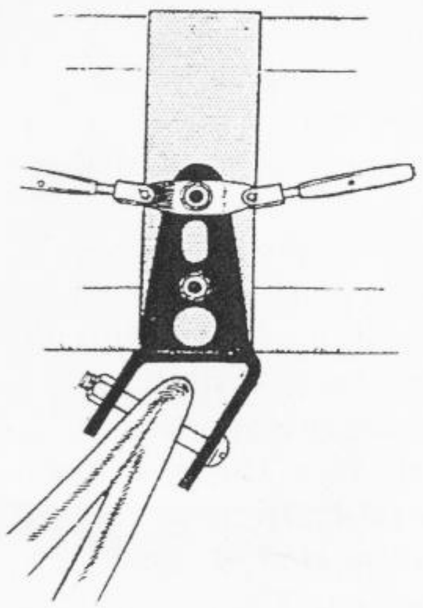
Fig. N) **Details of interplane strut attachment to forward lower wing spar – note ball and socket joint. Orientation of bolt hole could vary – the RAFM D.VII has both!**



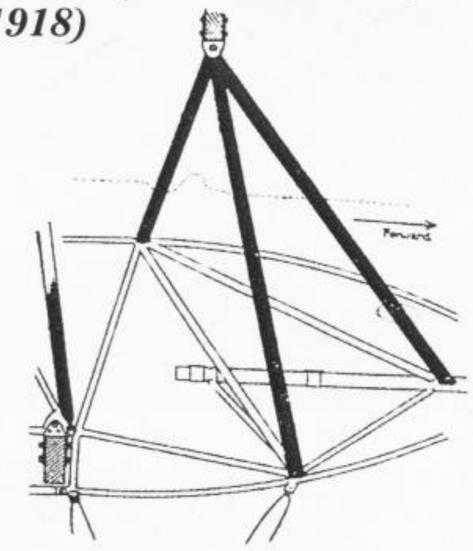
Lower wing spar to fuselage position.



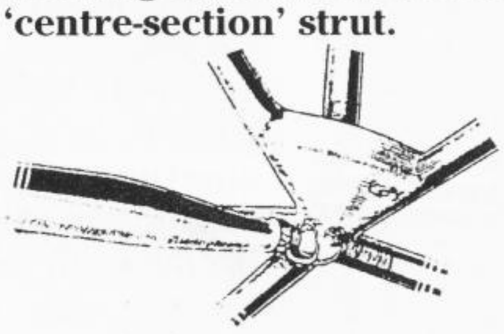
Attachment of upper 'centre-section' strut pylon to forward upper wing spar.



Forward 'centre-section' strut pylon welded integrally with the fuselage frame. ***(All – M of M report, 1918)***



Lower fuselage structure showing attachment of rear 'centre-section' strut.



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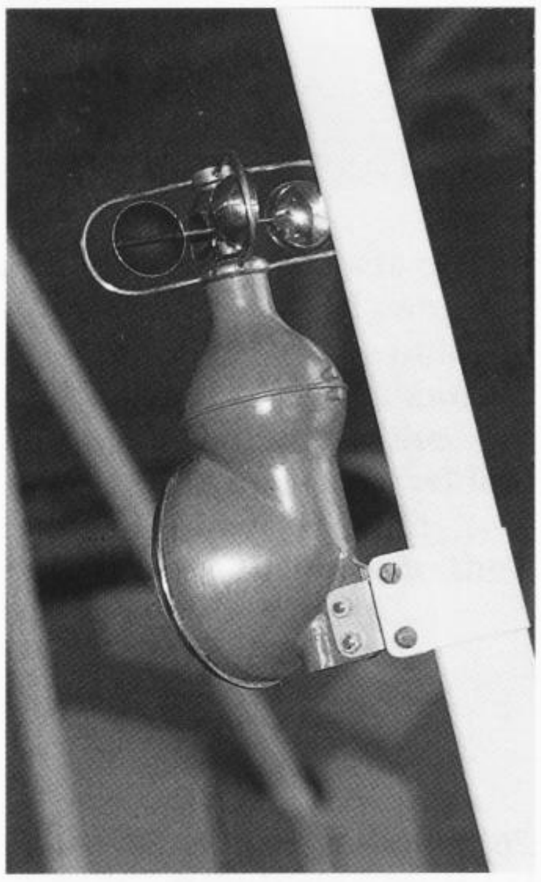


29) **Typical Morell strut-mounted anemometer as frequently seen on D.VIIs. This example is mounted on the restored Fokker-built D.VII 7748/18 at Soesterberg in the Netherlands. This view also reveals the aerofoil section of typical D.VII struts.** ***(M H Green)***

30) **Rear aspect of the Morell anemometer as may be seen on the restored D.VII displayed at Hendon's Royal Air Force Museum.**

31) **The RAFM D.VII reveals detail of its undercarriage while the axle wing is being remade – the duralumin box contains the axle.**

edge is not tapered, whereas the wing depth is. This may have conferred some aerodynamic advantage as well; the D.VII's ailerons are certainly very efficient for their size. Apart from wire trailing edges, they are built and attached to a channelled wooden subspar in much the same way as the elevators, but are not symmetrical in cross-section.

Completing the detailing of the wings, don't forget the aileron pulley access panels, the triangular forked strut brackets on the underside of the upper wing, or the attachment fittings and metal tread plates on the spars at the roots of the lower.

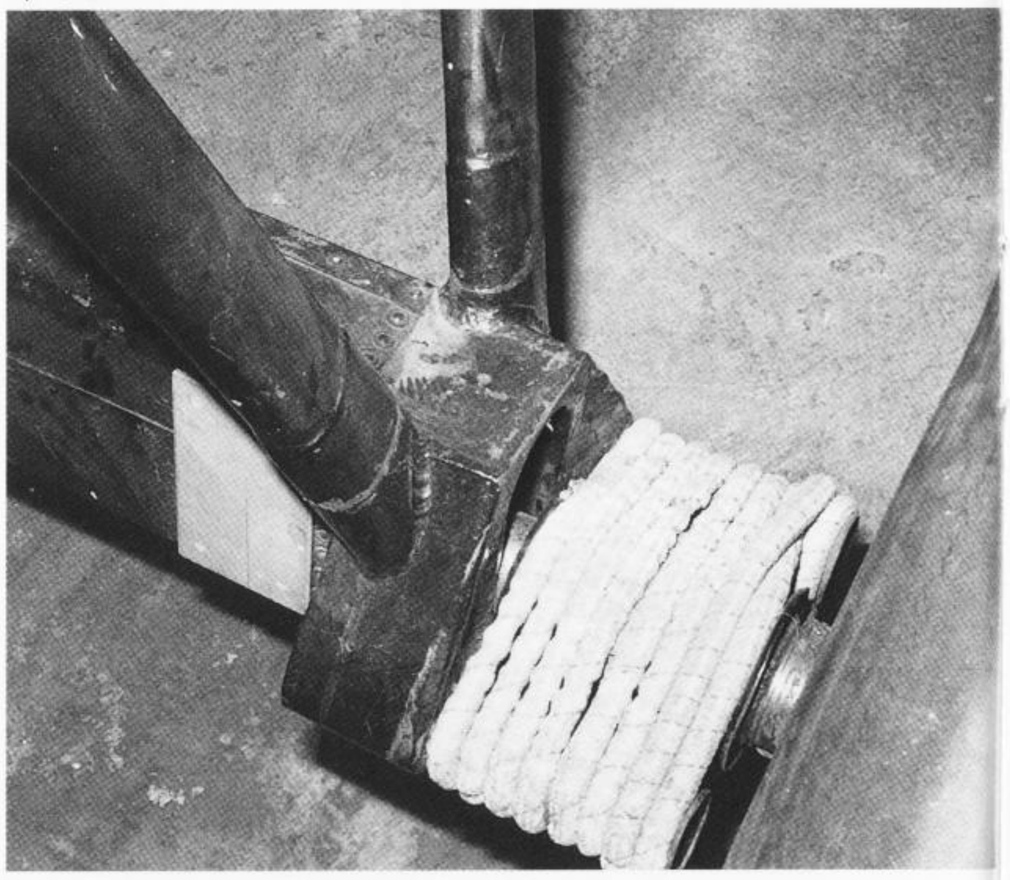
A quirk of geometry, which ought to appear on drawings, but hardly ever does, applies to the D.VII. The upper wing is installed at zero incidence, hiding the 2 degree dihedral in plan, *ie*, top, view, but the lower wing has an incidence of 1 degree or more. Its leading and trailing edges lie on the 1⅓ degree dihedral plane formed by the underside, and the spar axes are at right angles to the chord line, not to the line of flight as shown in the Fokker factory GA. The positive incidence thus tilts the tips back relative to the roots, giving the appearance of very slight sweepback in plan view. This effect of foreshortening may be what fooled *Flight*'s draughtsman into constructing the wing with swept edges on straight spars. In fact, some D.VII replicas have swept wings based on the *Flight* drawing, but it's not too noticeable, and they still fly well!

All struts have a round leading edge and straight sides converging on a narrow trailing edge. The tapered tips of the interplane struts, ending in screw fittings bolted into sockets, are an essential feature of the D.VII's characteristic poise; clumsy treatment of these members destroys any impression of realism. Note that the lower ends of the rear 'centre-section' struts are similarly tapered and adjustable.

Undercarriage detail varies as much as for any other part of the airframe. The plywood axle wing on most Fokker-built D.VIIs was in one piece, with the springs or bungee accessible only through holes in the ends. Ground crew often cut away part of the skin above the springs and tacked on new, easily removable pieces of ply. Albatros, anticipating the problem, split the wing into top and bottom halves, with three pairs of small hinges at the leading edge and clips at the rear, while OAW went for a front and rear split, bolted together with fishplates above and below the axle. Fokker also eventually adopted this method. By the end of production, manufacturers had shortened the wing to leave the springs exposed; breakages must have been more common than originally expected. Look out for aircraft fitted with undercarriages from other builders; it did happen occasionally.

Streamlined steel tube legs, welded to hollow sheet steel fittings attached to the duralumin box containing the axle, had

▼ 31



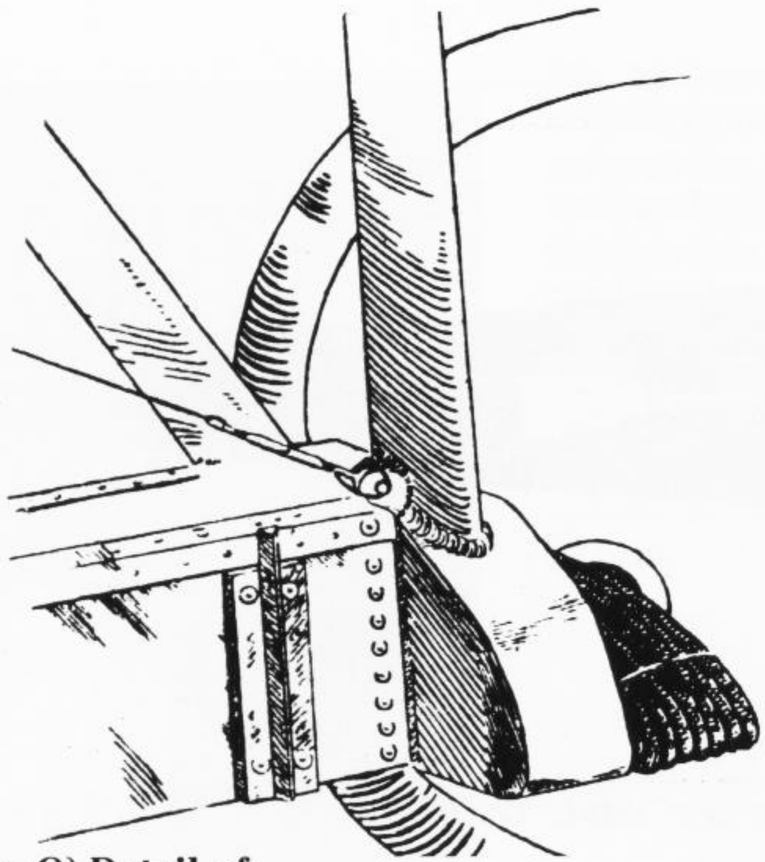


Fig. O) **Detail of encased axle and end fairing.** ***(Flugsport, 1918)***

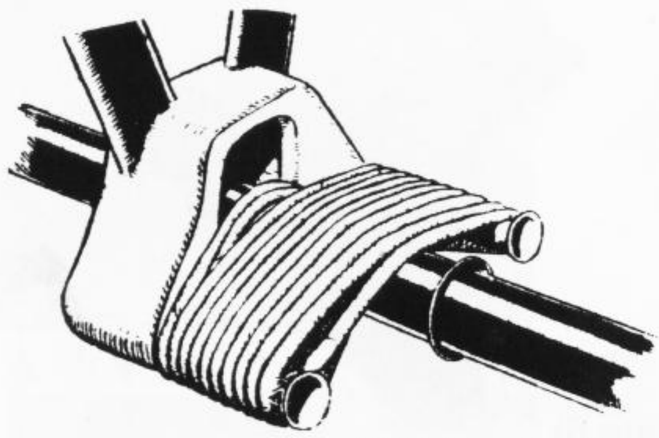


Fig. P) **D.VII shock absorber and axle detail.** ***(M of M report, 1918)***

pointed adjustable tips like those of the interplane struts. If this looks fragile, it is because the undercarriage was designed to break off in a crash-landing rather than trip the aircraft into a somersault; it was more than adequate for normal operations. On the RAFM's Albatros-built gear the leg section is the same as that of other struts, but some sources suggest a more oval section, which may have been used elsewhere. Quoted dimensions for the span of the axle wing vary (surprise, surprise!), and may reflect actual slight differences between makers.

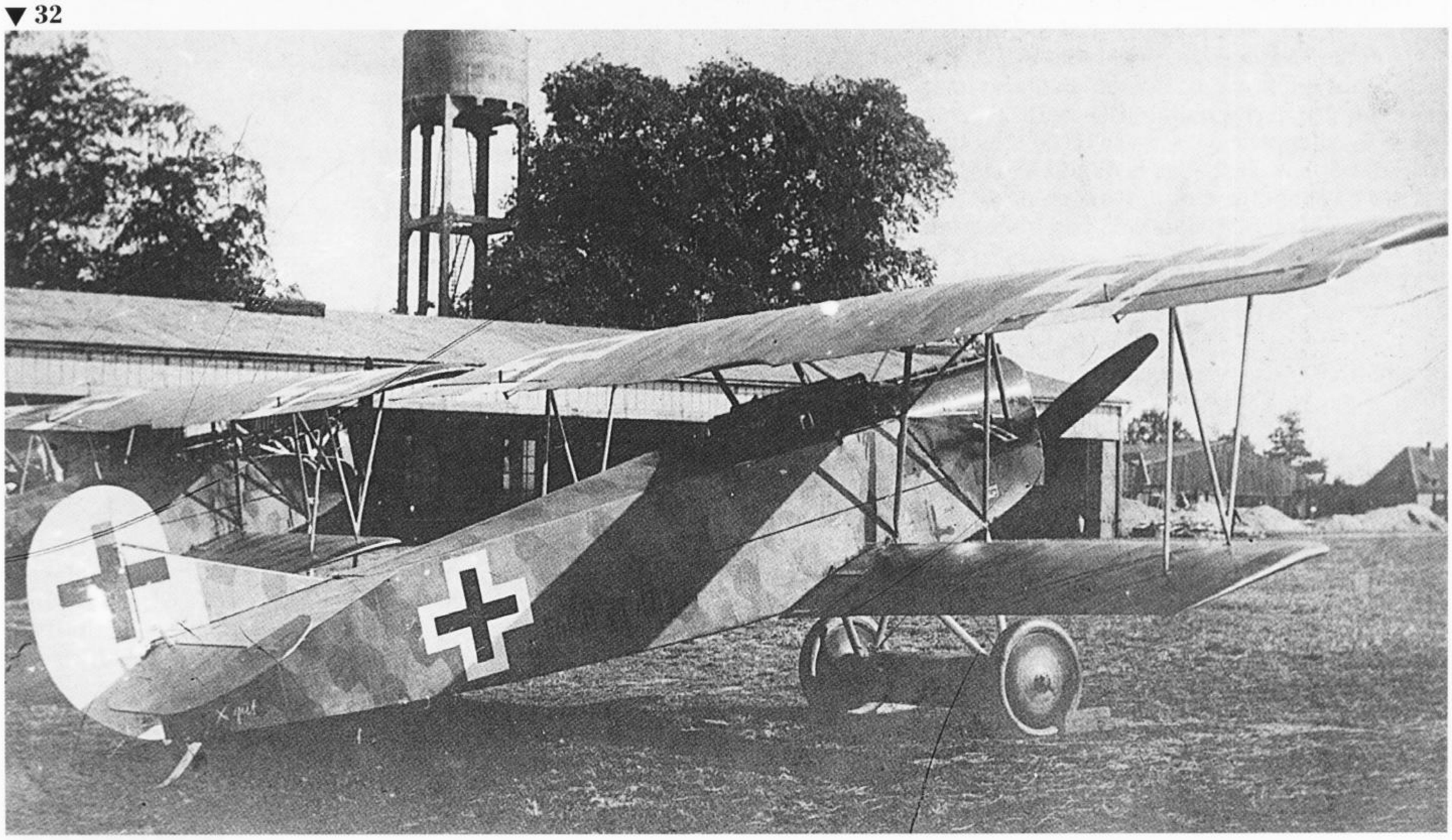
Wheels could be either symmetrically coned or offset, British style. The latter type appears mainly on Schwerin machines. For most of their production, Fokker used fabric covers with a large half-moon hole against the rim on either the inner or outer face for valve access. OAW had fabric covers with a round or rectangular hole on the outer face, and metal covers were common on Albatros-built D.VIIs.

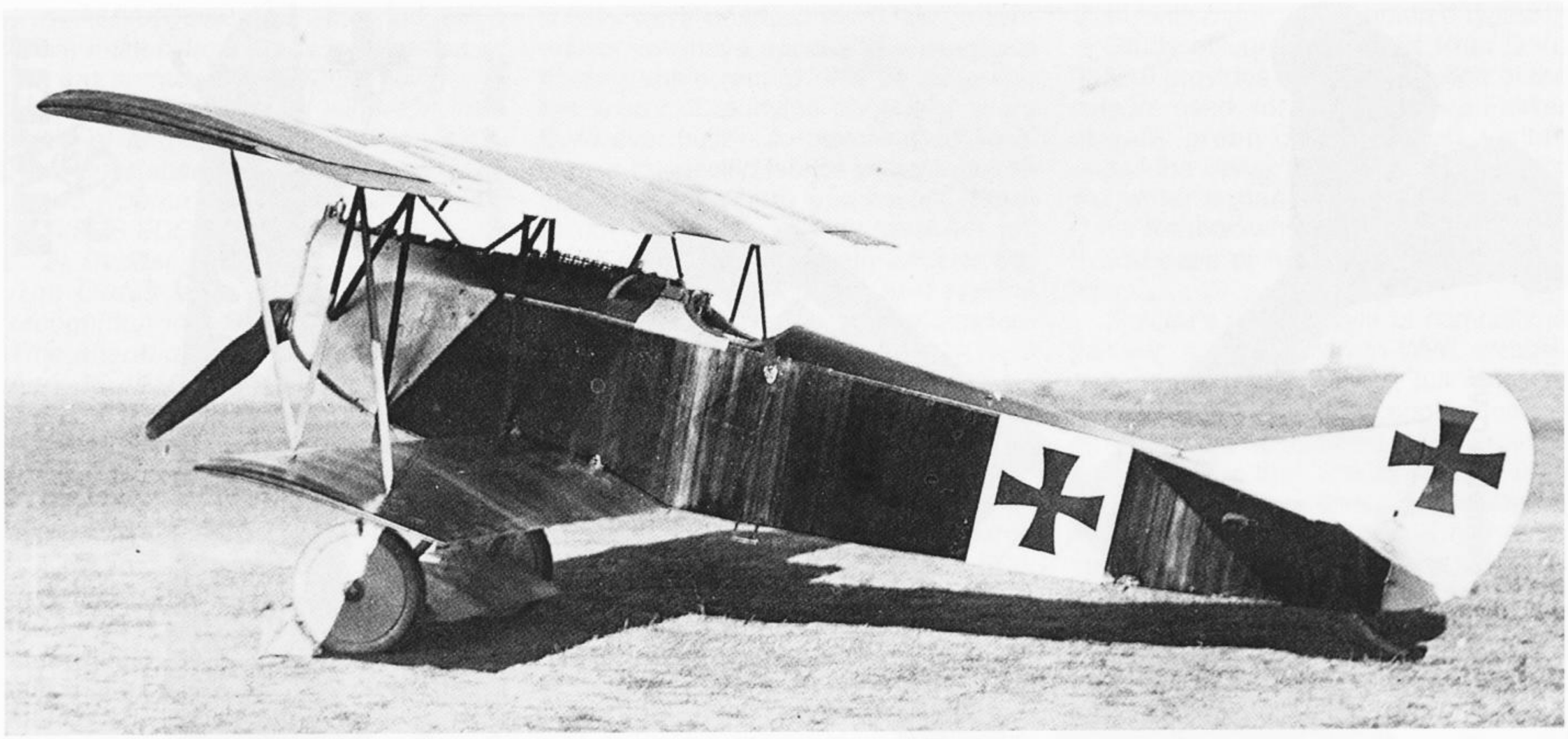
It follows that anyone setting out to model or illustrate a D.VII, or any other WWI aircraft, should obtain as many photographs as possible of the chosen subject and any close sister ships from the same contractor. Not many D.VIIs were exactly alike leaving the factory, let alone in squadron service; as well as the structural details mentioned above, there were changes in national markings, often interpreted rather liberally by unit painters, and factory-applied colour schemes tended to change, particularly on early Fokker-built machines.

The D.VII is a handsome, well proportioned aeroplane, with a harmony of masses, lines, angles and curves that is easily destroyed by even a small error. A few hours spent looking – *really* looking – at photographs in this book and elsewhere will give the student a feel for its shape and textures, until identification of manufacturer and approximate date becomes easy. Don't rely exclusively on any drawing or description, cross-check as much as possible and draw your own conclusions. There's an awful lot of duff gen out there, much of it recycled uncritically or never questioned, but a little digging will usually bring you closer to the truth, and may even lead to new discoveries. Good luck! ❑

32) **Fine example of an early Fokker-built D.VII, this being 402/18 at the *Armee Flug Park* in the German Fourth Army in Flanders. It is covered overall in five-colour printed fabric, rib tapes and reinforcing patches being cut from the same material. Engine cowling and panels were green – struts probably in grey. D.VII 402/18 later served in *Jasta* 16b, where it was overpainted and flown by *Vzfw.* Max Holtzem – see page 59 for further details.** ***(Greg VanWyngarden)***

▼ 32





FOKKER FACTORY FINISHES

RAY RIMELL AND *DAVE ROBERTS* COMPILE A GENERAL MODELLERS' GUIDE

To provide really comprehensive coverage of the myriad covering, detail markings and finishing practices adopted by all Fokker D.VII manufacturers would require a book far larger than this. It is an extremely complex subject and one the publishers feel best treated by concentrating on the manufacturers individually – not just for the practical reasons of space, but also for ease of assimilation! Thus this present volume deals with those D.VIIs built by the parent company – Fokker Flugzeugwerke of Schwerin i Mecklenburg. The products of OAW and Albatros will be fully addressed in subsequent editions.

The writer has based much of what follows on certain previously published studies (see *Further Reading...*) combined with careful study of photos and discussion with a number of aero historians, none of whom claims to have the full, definitive story. The logical sequence of Fokker production batches has been followed, noting the changes in finishes and markings as appropriate, with keyed references to photos and published sources as required. The drawings on page 63 should also serve to clarify details of serial and stencil application as well as typical printed fabric covering practices. Before reading what follows the reader needs to be aware that Fokker, like most every other manufacturer, did not necessarily comply immediately with *Idflieg*'s directives on cross form and ratios. Also, D.VIIs went through many changes before a 'standard' finish was adopted – as ever available photos remain the only really reliable source of information, better yet if coupled with the admittedly scarce amount of original documents and equally rare *genuine* WWI fabric samples ...

Fokker factory production

Peter Grosz has provided Fokker serials (see table below) which, taken from company production records, can be considered relatively accurate. Note that Fokker did not necessarily deliver D.VIIs in serial number order, while within the batches there were wide variations in finish and markings.

D.VII 227/18 – D.VII 526/18

The first three examples of this order were prototypes and had their uppersurfaces in streaky green camouflage of similar style to that used on the company's Dr.I triplanes; undersurfaces were finished in turquoise.* Nose cowlings were either natural metal or pale grey and the *cross patee* markings applied over large white panels (on the lower wing these areas may have been clear-doped). Wheel covers were probably white – see photo above.

The use of printed camouflage fabrics on Fokker-built D.VIIs was initiated with D.VII 230/18 (which was the pattern machine for OAW and was subsequently re-covered and modified by them). Initially the four-colour pattern was adopted for use on the wings – rib tapes were cut from the same material – while the remainder of the airframe retained the streaky finish with turquoise undersides. The forward 2/3rds of the fin, and frequently the lower section of the rudder, could also be seen in camouflage paint. Wheels were also now green and spun when brushed to leave a lighter central portion. Wing crosses (whose positions were moved further inward) were white outlined rather than appearing on white fields and cowlings were grey or green.

On March 20 1918 *Idflieg* issued their order 41390:

'To improve the recognition of our aircraft, the following is ordered:

Date	No. ordered	Serial range	Remarks
Feb 1918.	300	227-526/18	Dual exhaust, centre of cowling.
June 1918	200	4250-4449/18	Exhaust raised, upper cowling louvres added.
July 1918	100	5050-5149/18	Radiator changes noted.
Sept 1918	200	7604-7805/18	
Oct 1918	200	10347-10399/18	Only 37 built.

Above, early production D.VII with overall uppersurface streaking and old-style insignia. Both V.11 and V.18 prototypes (possibly brought up to D.VII standard) were designated 227/18 and 228/18 respectively. *(G VanWyngarden)*

Some Dr.Is at least had *blue-tinted* shrinking dope on their undersurfaces. **(DR)**

1) All (A/C) are to be equipped with a straight-lined Iron Cross on the tips of the top surface of the upper wing and lower surface of bottom wing. On both sides of fuselage behind pilot's seat. (The cross should not have curved sides as old type cross). WITH 15cm WHITE STRIPES EDGING THE CROSS.

2) Rudder to be painted white with Iron Cross imposed upon it. Other recognition marks are not envisaged. This alteration is to be carried out by April 15 1918. The carrying out of this order at home should not influence the dispatch of A/C. Aircraft loaded, ready for the dispatch, can be altered at the Front. Order 41390 to be speedily executed'

Now some writers have assumed that as a result *all* German aeroplanes were thus transformed overnight by some miraculous, unseen force. The truth is that these changes took time to implement, especially on machines serving with frontline units, while misinterpretations led to a variety of styles being seen. Two examples of early Fokkers in these finishes are the well known D.VII 234/18 of *Jasta* 10's *Ltn.* 'Fritz' Friedrichs (see page 46) and D.VII 244/18 of the same unit's *Ltn.* Aloys Heldmann – see also photos 98, 99 and 100 on page 37 of *Von Richthofen's Flying Circus (Fabric Special No.1)*

Fokkers in the 240/18 – 249/18 range were similarly finished and most soon carried the first form of *Balkenkreuz* as specified by *Idflieg*. From about D.VII 240/18 onwards the upper wing crosses were relocated outboard 60cm to the tenth rib and this became more or less the standard position for most subsequent Fokker-built D.VIIs. Fokker took care to follow order 41390's reference drawing which showed a 4:1 ratio of cross arm length-to-width. However whilst the all-round white border conformed to the order's illustration, it did not always follow the specified width of 15cm.

The fuselage and tailplane were still in streaky camouflage, but the wings could now be seen covered in either four- or five-coloured printed fabric – sometimes mixed! It is unwise to be over pedantic about which particular D.VIIs were covered in which pattern unless you have access to a complete photographic record. We do not have the luxury of studying photos of every D.VII ever built – so matching up aeroplanes to specific fabrics without pictorial evidence is pure guesswork. Five-colour fabric of a slightly-narrower roll width prevailed in the late 240s to the early 400s serial range and typical examples of Fokkers in the aforementioned scheme are D.VII 247/18 assigned to *Jasta* 14 (see photo *J14-1* on page 52); *Ltn.* Richard Kraut's *Jasta* 4 machine (see photo 15 on page 12 of *Von Richthofen's Flying Circus)*; *Ltn.* Emil Thuy's D.VII 262/18 (see photo on page 9); and the well-known blue/red machine of *Hptm.* Rudolf Berthold illustrated on page 52.

After April 15 1918 *Idflieg*'s decree had to be complied with and several versions of cross proportions may be seen from D.VII 300/18 onwards. Wally Tripp (*ref. WWI Aero* No.102) established a top limit of D.VII 379/18 with a change in fuselage cross presentation by D.VII 382/18. Still in streaky green camouflage and five-colour printed fabric, these D.VIIs had their serial numbers stencilled in white. For the first time the rigging table can be seen on the port fuselage centre-line, Fokker trademark transfers on all major components (see page 54) and black work numbers stencilled in 25mm Roman characters on forward fuselage, above and below all flying and control surfaces and to the lower wing spar. Good examples of D.VIIs thus finished are D.VII 332/18 of *Jasta Boelcke* illustrated on page 38 and Fokker V.24 (see photo below) which bears fuselage crosses with 50cm borders. Another is D.VII 368/18, the first D.VII to be shot down and captured. (On June 6 1918 by Lt. C H R Lagesse of No.29 Squadron RAF). The Fokker was flown by *Ltn.* Hans Schultz of *Jasta* 18 (see page 20) and was thoroughly evaluated by the Technical Department of the Ministry of Munitions and formed the subject of detailed analysis in *Flight* magazine (reprinted in *Cross and Cockade* (US) Vol. 2, No.4, Winter 1961, on pages 295-315). This D.VII was later displayed at Islington's Agricultural Hall along with many other captured types.

Study of surviving fabric from D.VII 368/18 provides a fairly good idea of the colours used, for the distinctive Fokker streaky green camouflage is visible under the *Jasta* paint. At this juncture the writer is handing over the reins to Dave Roberts who has some fascinating hypotheses of his own relating to this finish...

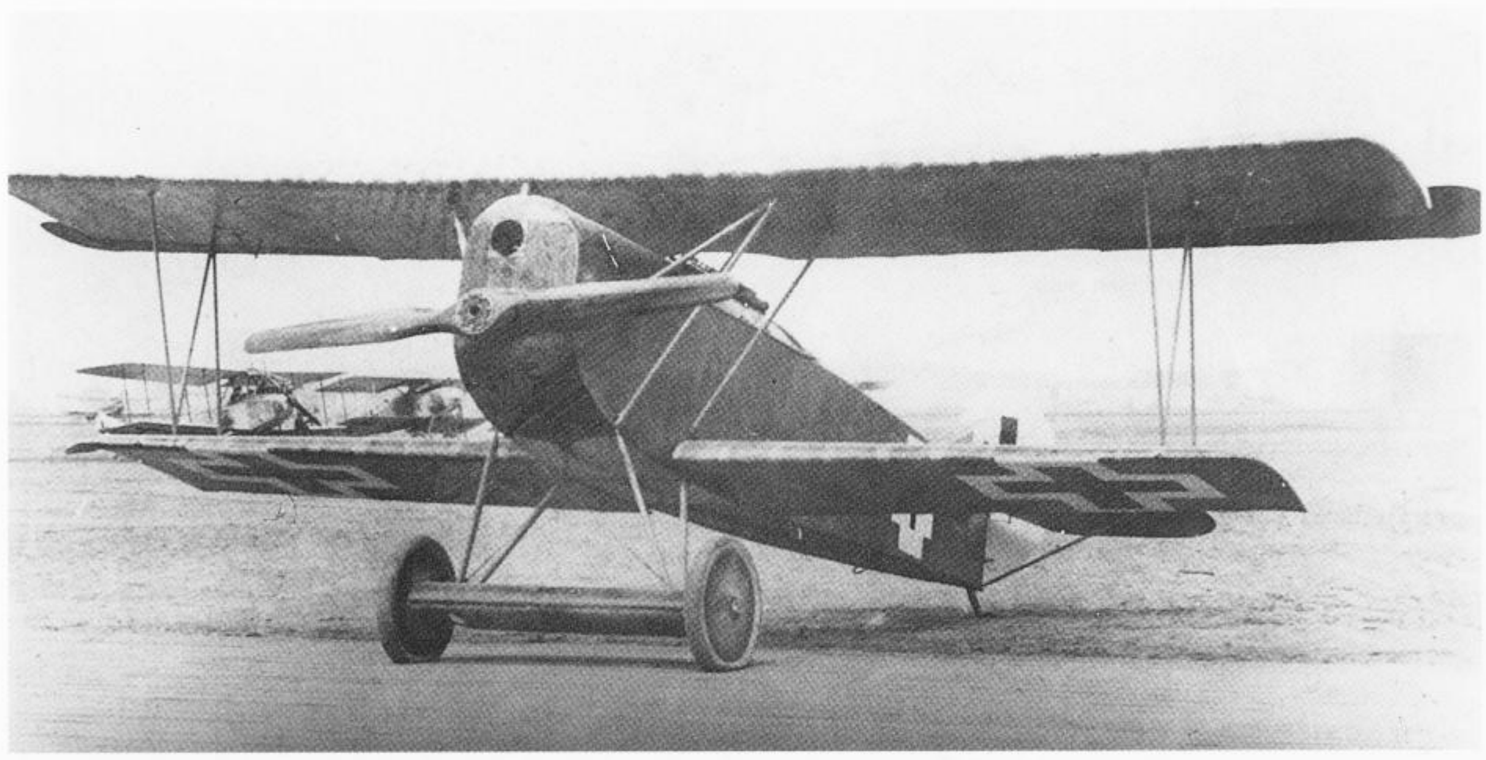
'Fokker's unique style of camouflage painting is well known to WWI enthusiasts, but its exact history, full range of colours and method(s) of application still remain to be established with certainty, The trouble is that, like all processes in industry, or in nature for that matter, it evolved over the year and a half of its use. Like palaeontologists, we must rely on fossils (structural fragments and fabric samples) and imprints on the environment (monochrome photographs and personal recollections). Few of those who saw the beast alive, and none of its creators, are available for questioning, and the survivors had other things on their minds at the time...

'Fortunately, the eight decades separating us from operational Dr.Is and D.VIIs are not nearly as serious a barrier as the 65 million years between us and *T.Rex:* we do have rather more to go on, and with a little conjecture a reasonably detailed impression can be gained. The surge of interest in WWI aircraft at the turn of the 1960s threw up two schools of thought about the streaky finish – no doubt it all depended on which samples one had seen. Some illustrators insisted that the effect was always obtained by brushing out a dark brownish olive paint until almost dry, leaving bare fabric or blue undercoat in places, while others depicted a combination of greens, or green and greyish blue. As samples exist to confirm *all* of these, it follows that all must have been used at one time or another. Also it should be emphasised that a small patch of preserved skin will not necessarily show all the colouring, or the lightest and darkest shades, found on the aircraft.

'The most common *method* of application, as convincingly surmised by Wally Batter in the 1980s, was probably to blend two or more different shades or

Acknowledgements

The writer duly acknowledges the pioneering work on D.VII finishes by Dan Abbott, Alex Imrie, Peter L Gray, Dave Roberts, Wally Tripp and Greg Van Wyngarden upon whose untiring efforts much of the above material has been based. **(Ray Rimell)**



Left, well-known view of the Fokker V.24 reveals its turquoise fuselage underside from beyond the front undercarriage legs. Fuselage crosses bear 50cm borders.

hues of paint on the fabric, using the same brush dipped alternately into either colour without cleaning it. Some mixing thus occurred in the brush, and occasionally a line of pure colour would emerge amid the feathery streaks. There does seem to have been a sequence of colour changes; the following is an attempt to document them from available evidence.

'*1.* Introduced late 1916 on D.III and D.IV. Colours unknown, but at least two shades were blended, as on later machines.

'*2.* D.V had a different style of application; one unknown colour was brushed out thinly over fabric which remained translucent, the weave clearly visible. If this was an attempt to save paint, it presumably did not go down well with *Idflieg.* Perhaps the paint was neat Mocha woodstain?

'*3.* F.I (Triplane pre-production) 1917. Brownish olive either streaked over blue or blended with it. No longer so translucent, and fabric weave is hidden.

'*4.* Production Dr.I. Wet blending of following combinations: (a) Brownish olive and a greyer shade of same, *eg:* 144/17; (b) Olive and a brighter, purer green, *eg:* 425/17; (c) Olive and light blue, *eg:* 583/17; (d) Sample, unfortunately not further identified and possibly D.VII suggests dark conifer and bright grass greens, not unlike *GWR Brunswick* and *LNER Apple.* All these combinations covered the fabric well, with only the occasional thin spot evident. Sadly, they are not readily distinguishable in photographs, and surviving samples may not tell the whole story; there could have been more than two paints on some airframes, and, if mixed just before use, they might vary slightly from day to day. There was a noticeable tendency among inter-war artists to depict Dr.Is in a light blue/dark green "splinter" scheme; while not accurate, this presumably reflects the impression gained by Allied airmen from a distance. Blue was therefore possibly quite common on Dr.I uppersurfaces.

'*5.* D.VII. Probably in two greens, though some, *eg:* Heldmann's 244/18, may have had blue patches as well. The general appearance is less stripey than that of the Dr.I. and on some early airframes there were large areas of colour with fewer streaks, but blended at the edges. It is not clear whether this was an intentional change of style, or due to the temporary absence of key members of the paint shop staff. A winter 'flu epidemic would do the trick. Streaks were apparently applied to the top of the axle wing for a time.

'Close-ups of early D.VIIs sometimes show apparent extra streaking over some areas with a clumped old brush loaded with dark paint and lightly applied in long strokes to create repeated groups of narrow dark lines. The underlying paint was probably almost dry at this point, as less blending is evident, and the brush occasionally scratches down to the fabric. This may have been the work of a second painter. No doubt everyone in the paint shop could recognise each other's handiwork at a glance.

'The colours noted can all be obtained (I've tried it) from various combinations of the four pigments specified for non-fabric-covered parts of D.VIIIs, namely mocha woodstain (a translucent dark coffee brown, almost black), violet, azure blue (cyan) and true green. The azure might be lightened with white when applied as a main colour, and black may have been used to darken the green. No surviving sample shows a colour dominated by violet, although such a shade could presumably have been tried. Protective varnish applied over the paintwork would quickly age and impart a yellowish tint,

'An interesting, but unconfirmed, possibility is that browner shades were used on Dr.Is entering service in the autumn and winter, while the greens tended to predominate as spring approached. *THIS IS NO MORE THAN A THEORY!* However, the four basic colours do make a versatile landscape palette. A high proportion of blue, as on Dr.I 583/17, might help conceal the aircraft against a snowy, smoky or misty landscape, but could have been due to a temporary shortage of one or more of the other colours. Streaky finish was continued on the wings of at least some Fokker E.V/D.VIII monoplanes – the four pigments were simply mixed in equal quantities by weight to make a plain dark olive green, adequate summer camouflage when combined with lozenge fabric.'

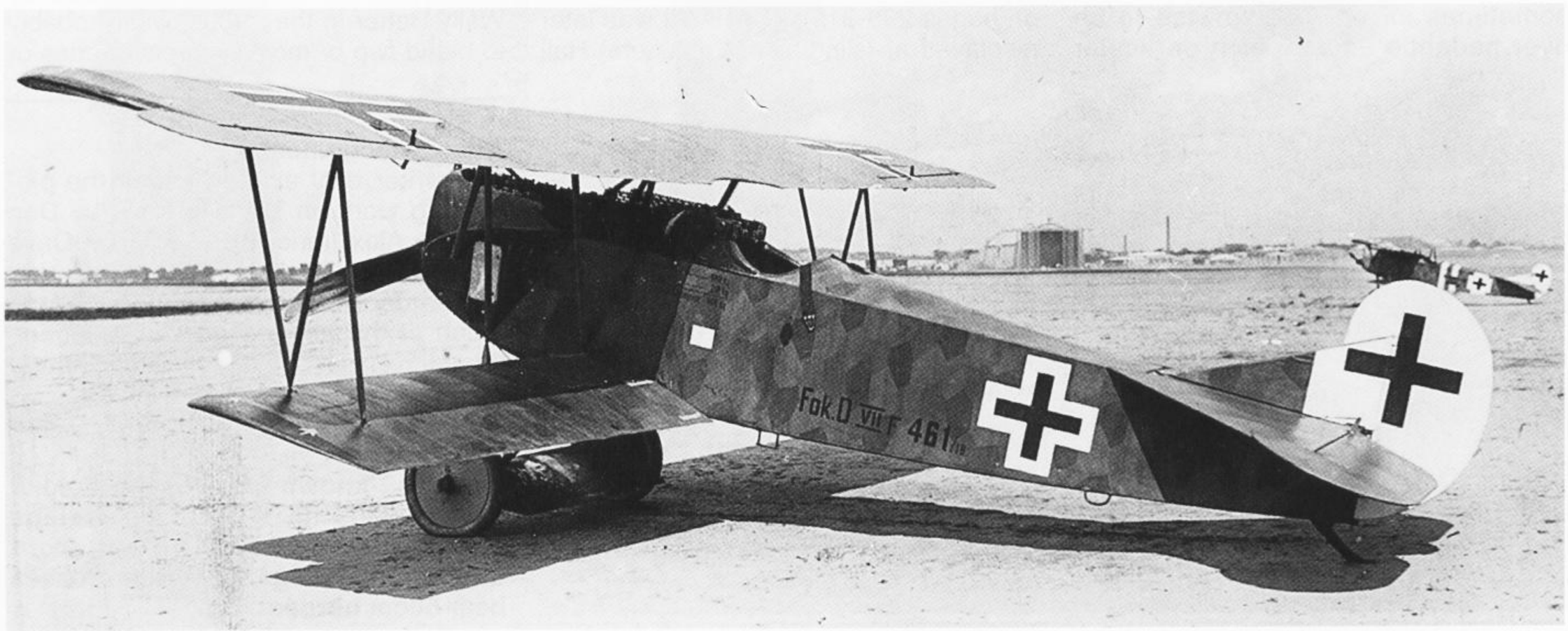
It is worth recording that a former mechanic recalled Dr.Is being delivered from the factory 'in a green finish, this colour turning to *brown* in about six weeks...' (*Ref: WS* Vol.13, No.3, page 4).

The story continues...

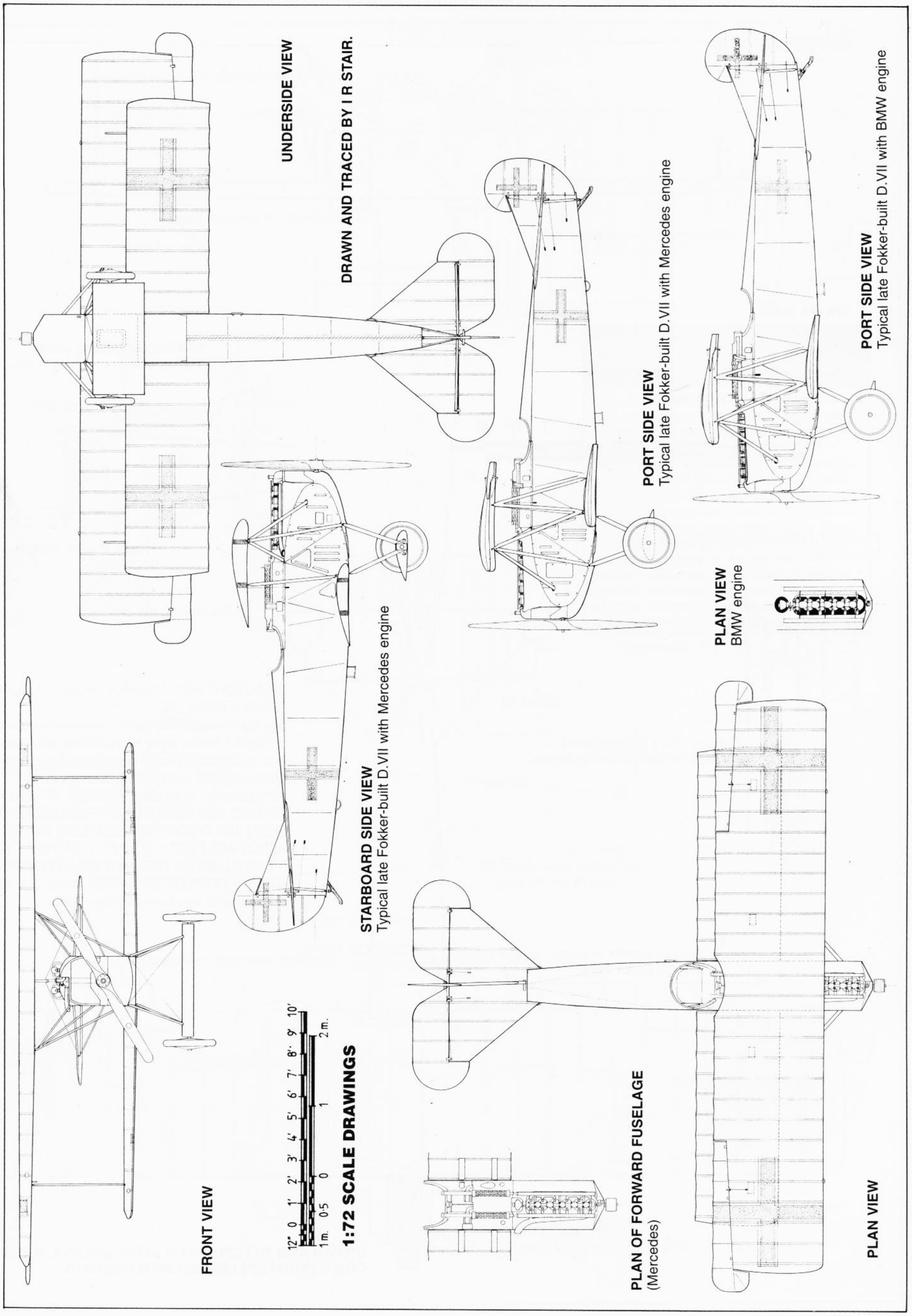
From D.VII 377/18 onwards, the streaky finish on fuselage and tail gave way to printed camouflage fabric which initially, at least up to about the early 400s serial range, was the five-colour version. Four-colour was used thereafter up until around D.VII 7773/18 when five-colour was apparently reintroduced. Be warned, this is only a *rough* guide and you will need to study photos of particular machines very carefully to be sure. Generally, for both fabrics the darker version was nearly always applied to the uppersurfaces and the lighter beneath the aeroplane – and that included the fuselage undersides. Metal panels remained green, as did the ply axle wing and most struts.

One representative example of these Fokkers is D.VII 402/18 (see photo *32* on page 27) which was later repainted when flown by *Vzfw.* Max Holtzem of *Jasta* 16b (see also page 59). Five-colour fabric was applied to this machine. From study of other photos we can determine datum lines on both fuselage sides, the black serial, weights table and work number stencils now

Below, BMW-powered D.VII F461/19 with fully-enclosed wing and fuselage crosses; rigging panel doped on the fuselage centre line.



Continued on page 36



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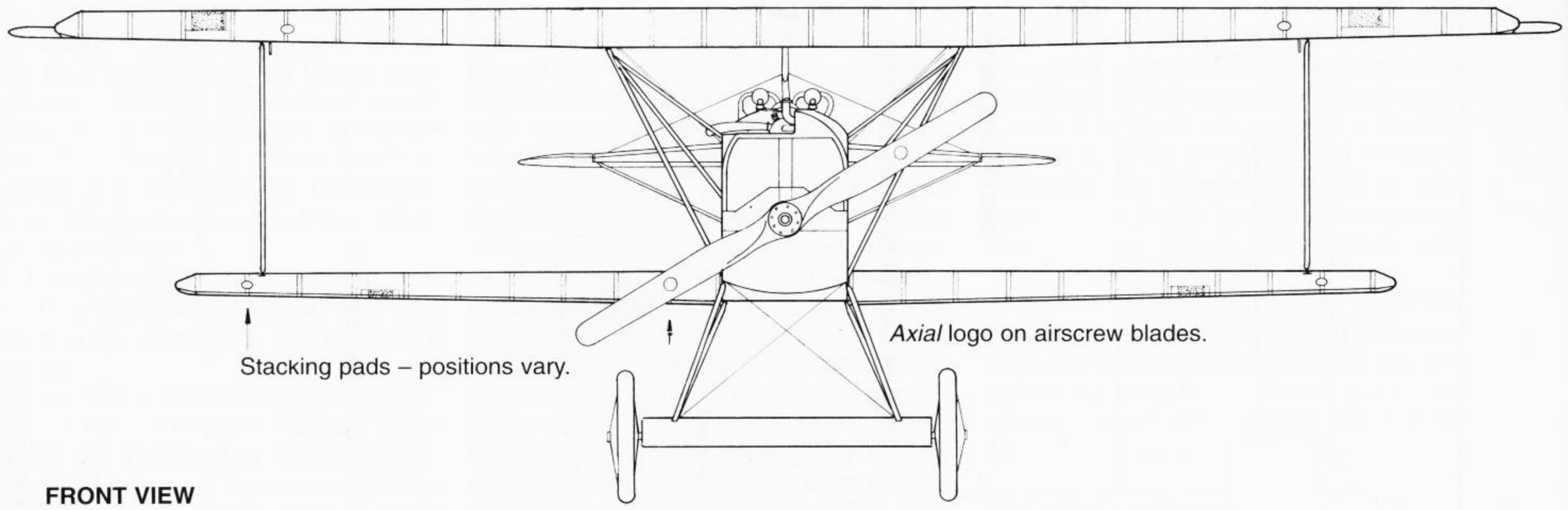
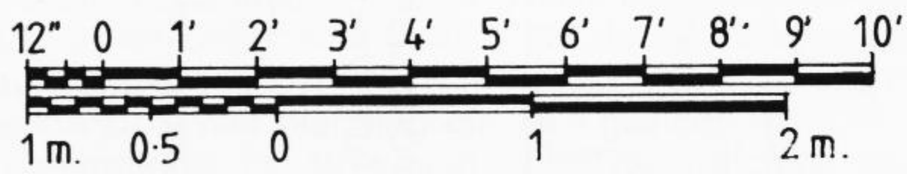
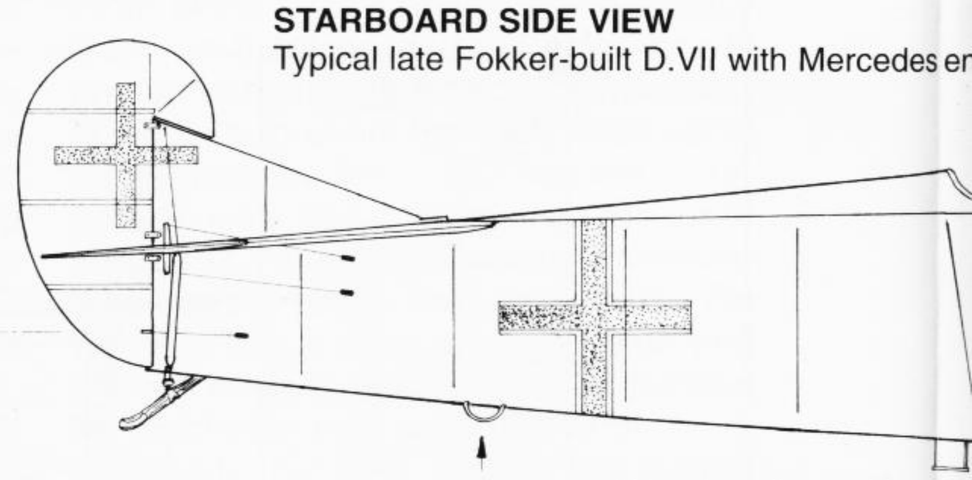


FRONT VIEW

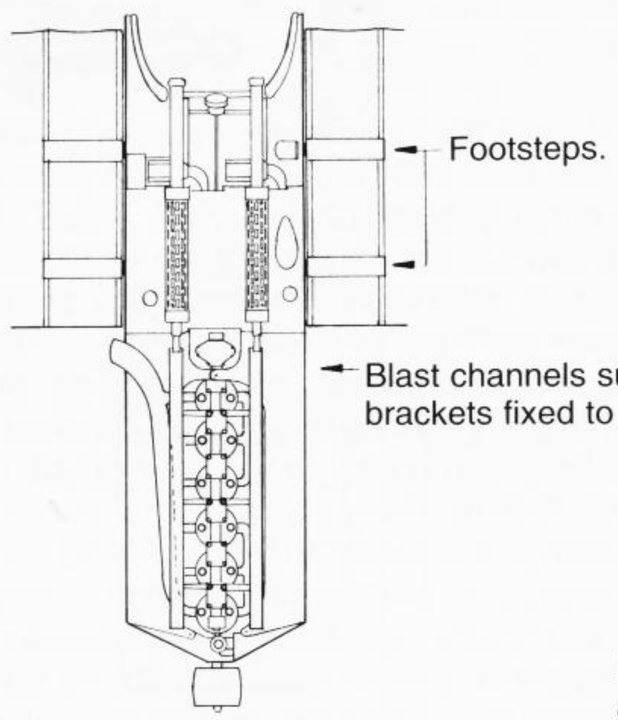
STARBOARD SIDE VIEW
Typical late Fokker-built D.VII with Mercedes en

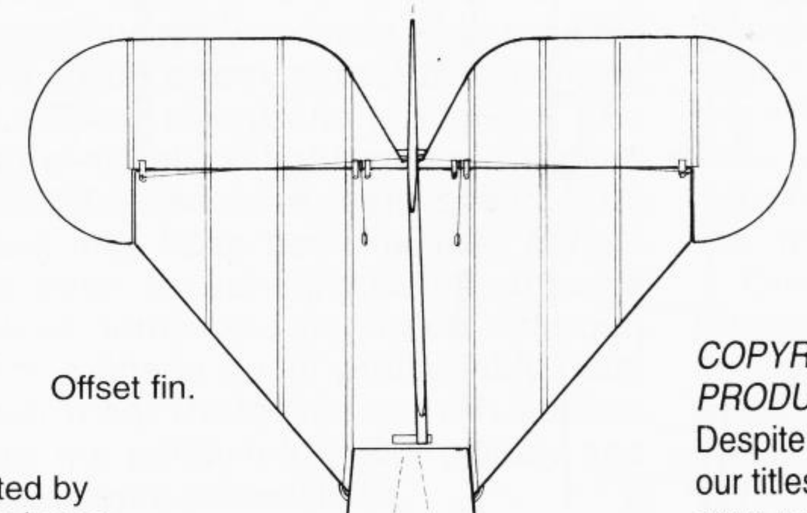
1:48 SCALE DRAWINGS





PLAN OF FORWARD FUSELAGE
(Mercedes)





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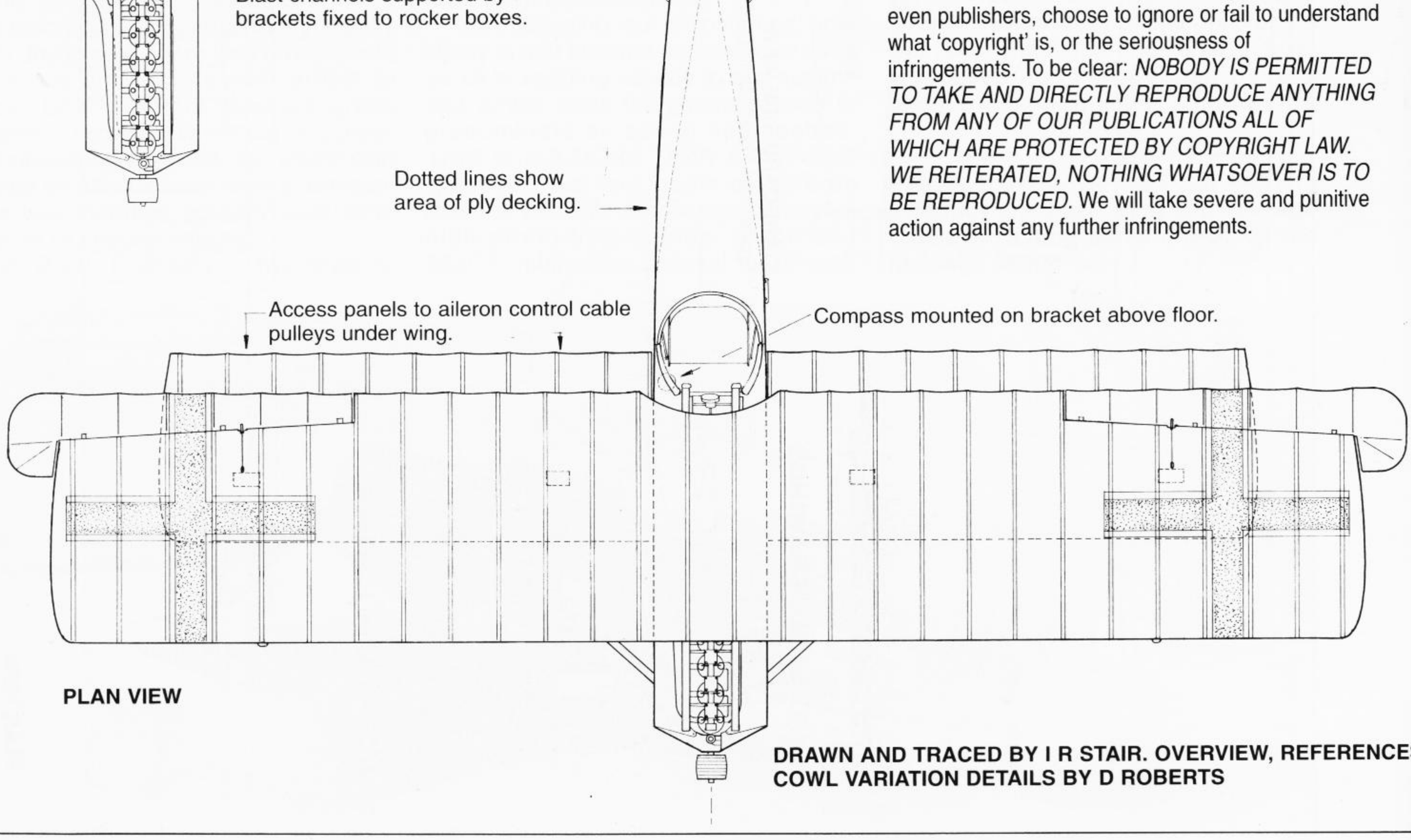

PLAN VIEW

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COWL VARIATION DETAILS BY D ROBERTS

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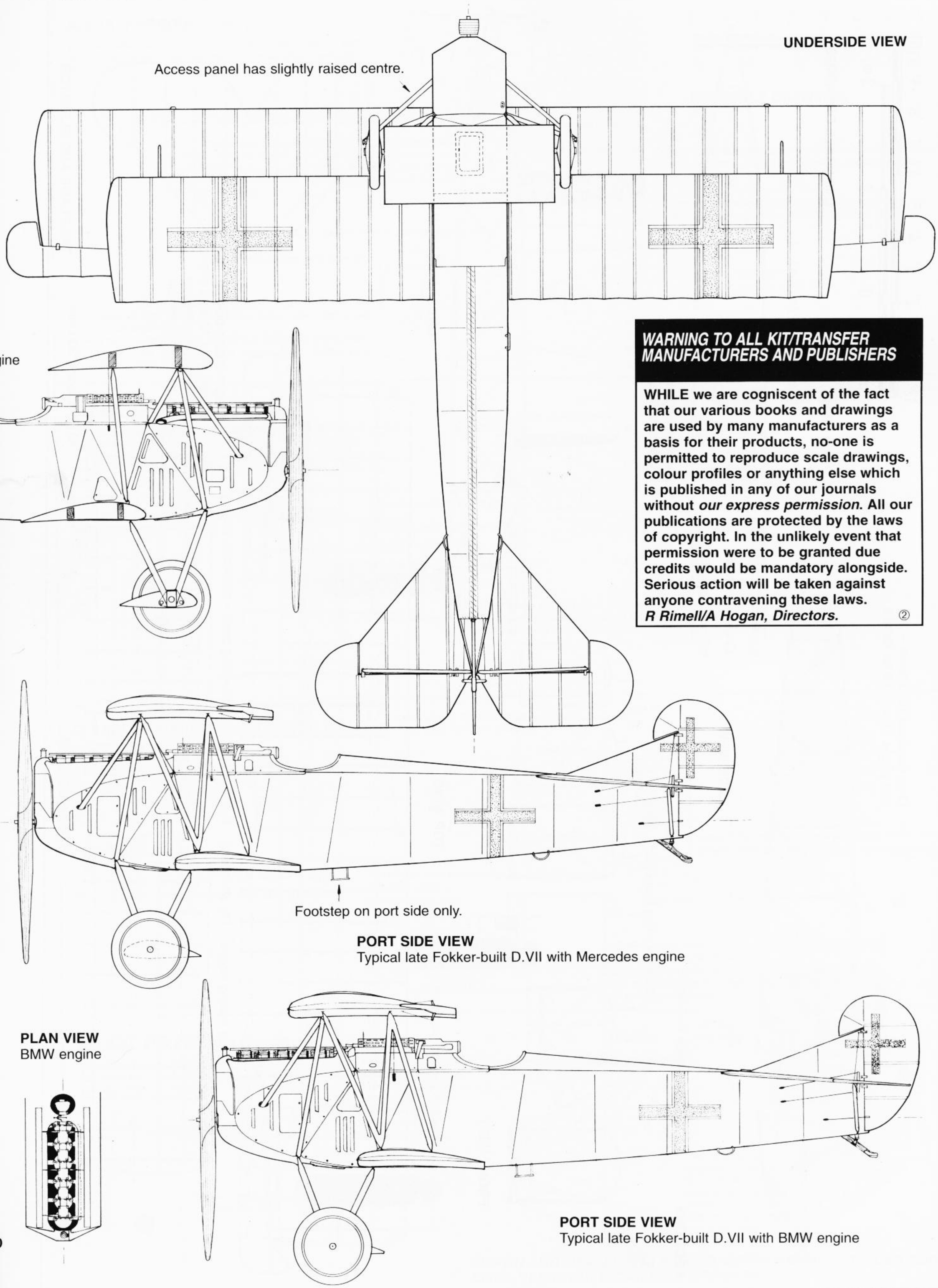

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R Rimell/A Hogan, Directors. ②

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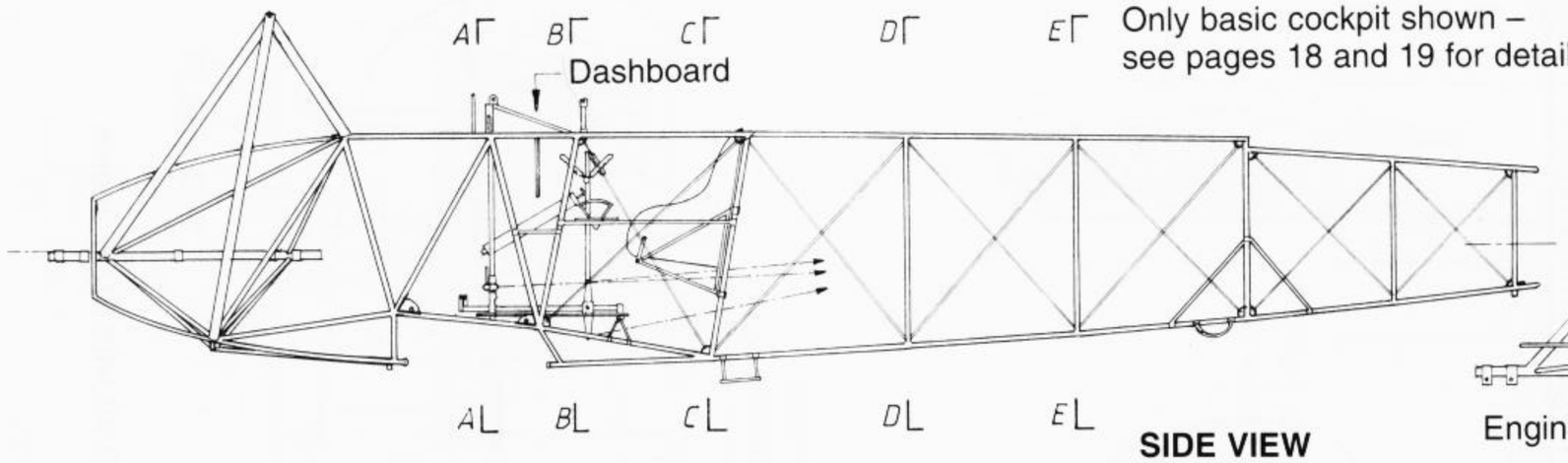
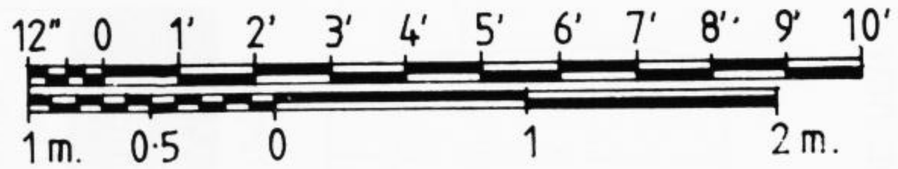
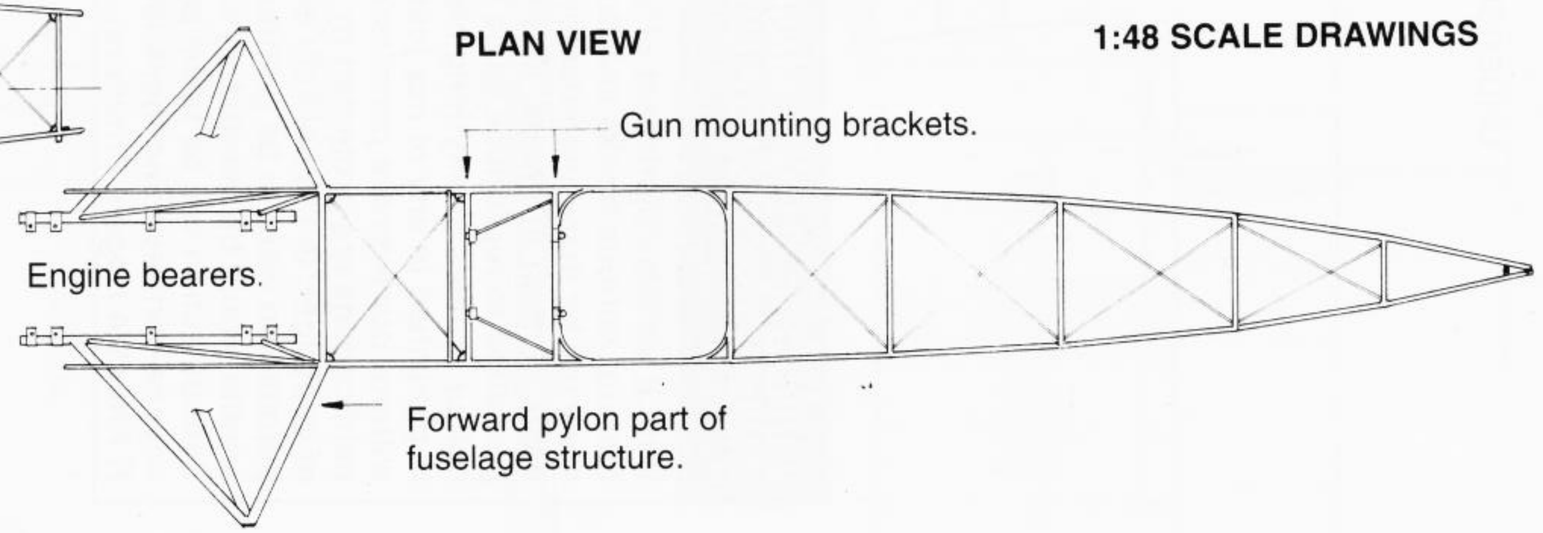


SIDE VIEW



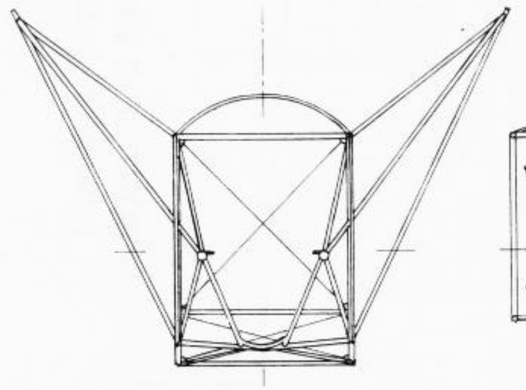
1:48 SCALE DRAWINGS

PLAN VIEW

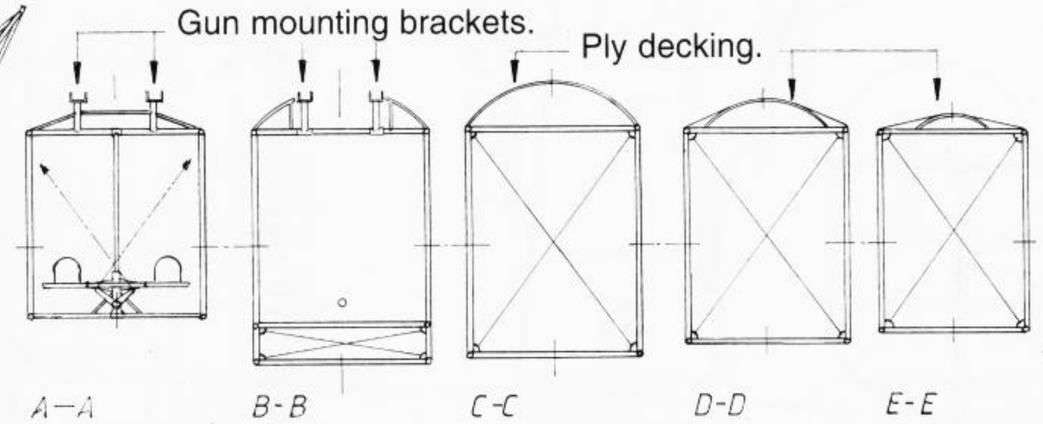


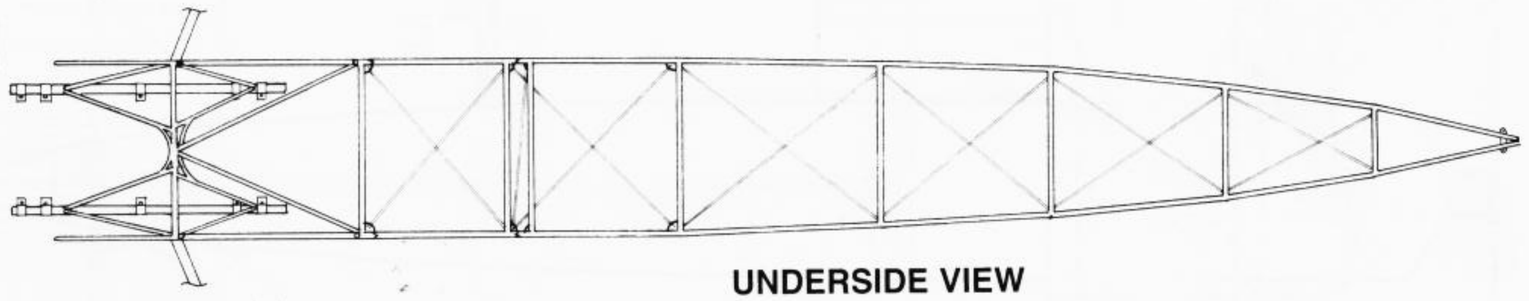
SECTIONS

Details back to A only

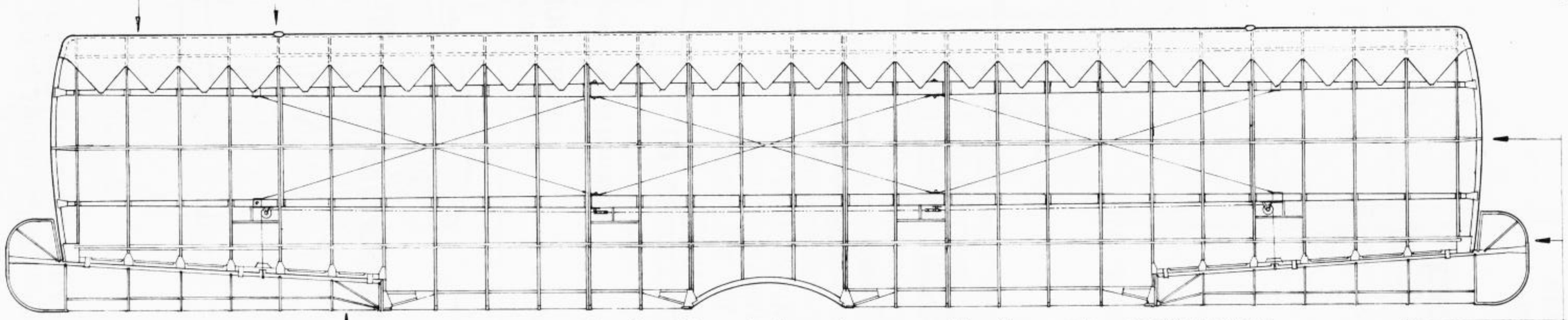


FRONT VIEW

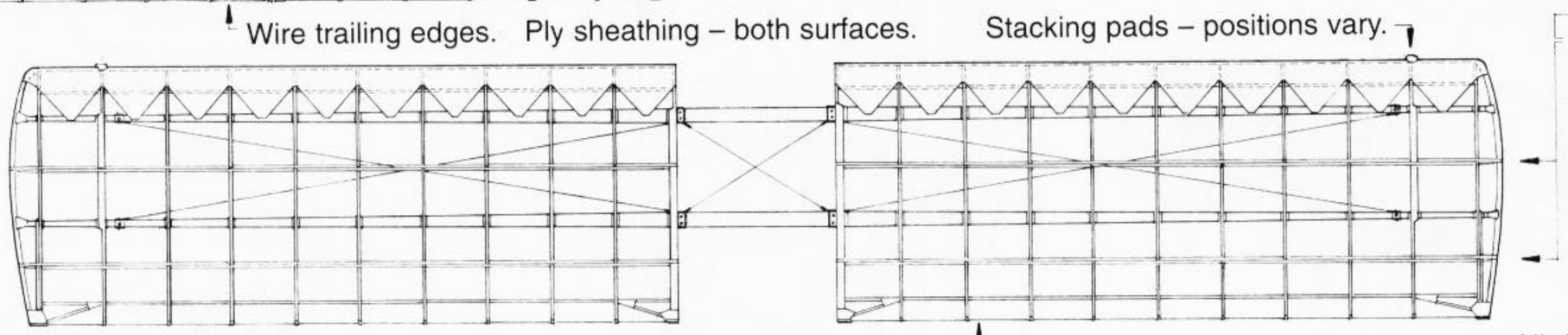


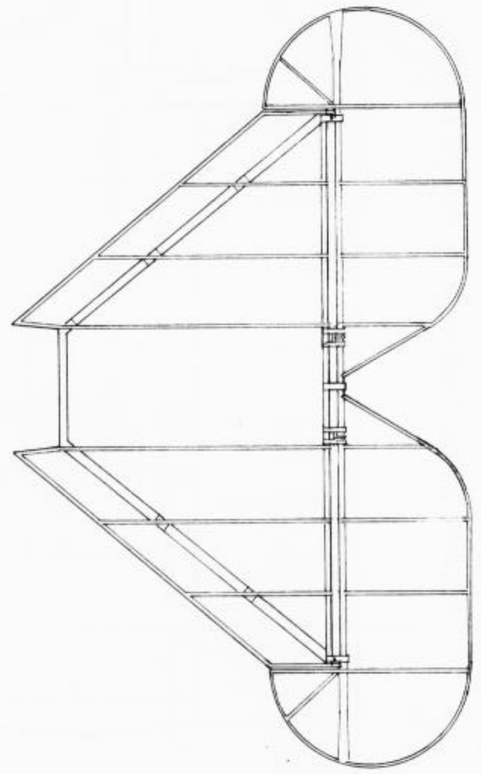


UNDERSIDE VIEW



TOP WING



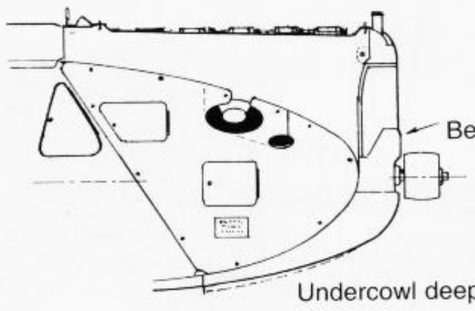


TAILPLANE AND ELEVATOR

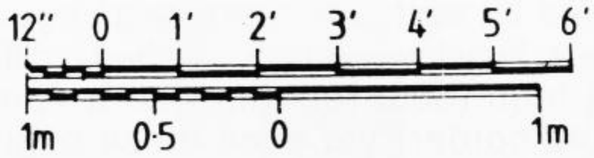
NOTED COWLING VARIATIONS – ALL FOKKER-BUILT

A) EARLY PRODUCTION

Engine cowling and radiator top secured on stbd.side by one stud. Some *Jasta* 10 a/c had panel cutaway around exhaust and strut.

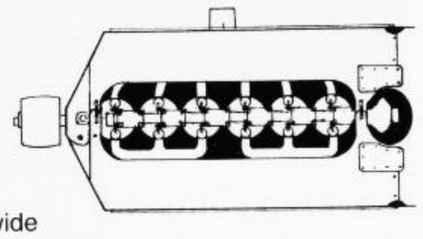


Undercowl deeper by 383/18.



1:48 SCALE DRAWINGS

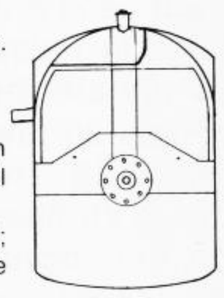
Note: Smaller door in panel deleted by Fokker at some point between 244 and 286/18. OAW and Albatros retained it and OAW added the long horizontal door, with which their pattern a/c 230/18 entered service. This was apparently not an original Fokker feature.

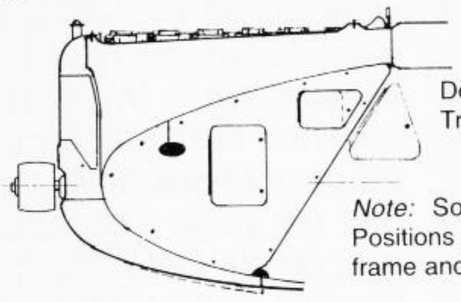


Cylinder head aperture 300mm wide with downturned edge on straight portions, small plates reinforce decking below gun muzzles.

Top panels connected by spring clips. Front clips and lugs probably omitted when upright air pump fitted, or panels altered to join behind it.

Central flat continues on top and bottom fairings. 80mm wide with this radiator.
Filler on at least one very early a/c.





Doors in panel were flush.
Triangular door stood proud of fabric.

8mm AF hex honeycomb radiator, most common on Schwerin D.VIIs. Fixed joint, not a break line. Chin panel comes off in one piece.
Filler neck position varied according to type of air pump fitted; often raked far forward to clear upright pump. Some were slightly to starboard of centre.

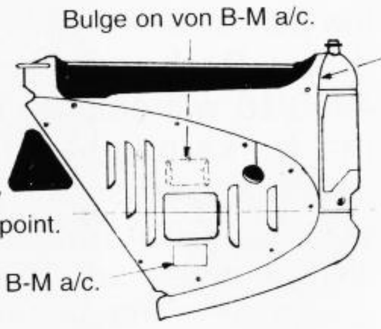
Note: Some fasteners further from edge than others. Positions varied slightly; studs were clamped to fuselage frame and could be moved.

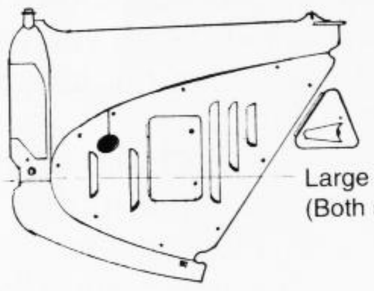
B) EARLY PRODUCTION MODIFIED

D.VIIF (serial unknown) of *Ltn.* Oliver *von* Beaulieu Marconnay, *Jasta* 15 and probably 19. A much modified machine, this D.VII acquired louvres and bumps not seen elsewhere and may have had a change of radiator – see pages 25, 52 and 53.

This line not confirmed but line of previous cowl probably kept. Top of rad is now under main panel.

Bulge on von B-M a/c.





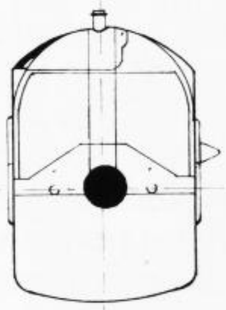
This door left off at one point.

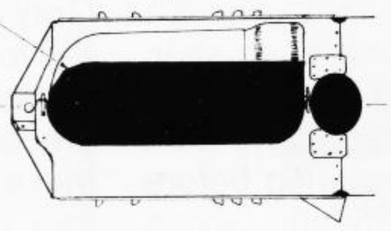
Large vent added. (Both sides?)

Quite angular – flat top conjectural.

Filler position varies.

Apparently absent from von B-M a/c.





Radiator seen on front view may not be original. This type with 7.5 mm cells usually seen on OAW a/c.
'Pimples' suggest ex-OAW. rad.

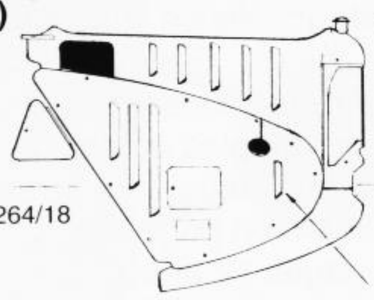
Filler shown on 3/4 rear view.
If radiator replaced with OAW model vented cap probable.

C) EARLY PRODUCTION WITH HIGH EXHAUST (4250-4449/18)

Udet/Göring 4253/18 *Jasta* 4/*Jasta* 11
Taller filler, ex-OAW; probably a mod.

Jasta 10.

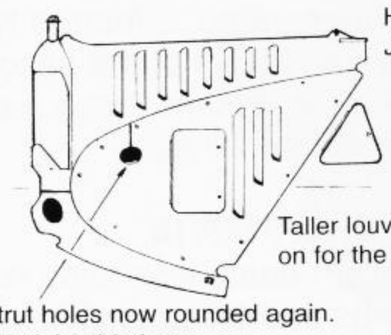
Vented cap



Heldmann, 4264/18
Jasta 10.

Single louvre not common.

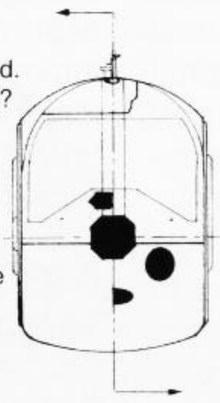
Shape of exhaust hole estimated – not clear on photos.



Hole below rad.
Jasta 10 mod?

Taller louvres from here on for the most part.

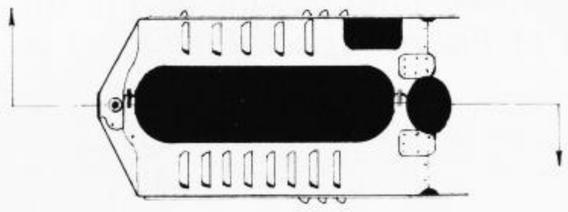
Strut holes now rounded again.
(Straight-sided on several earlier a/c.)



Large hole seen on various a/c: not all Fokker-built.
Smaller hole ditto, but not always with large ones!

Jasta 4/11.

Jasta 10
Heldmann 4264/18-5 louvres.



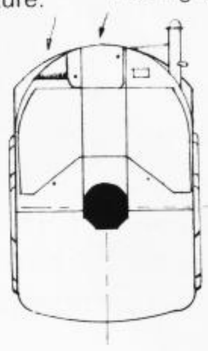
Jasta 4/11 Udet/Göring 4253/18. 8 louvres. Udet flew this a/c minus top panels in Summer 1918.
(Early production OAW upper wing fitted for a while).
These louvres apparently originated before change to high-level saxophone exhaust.

D) FINAL FOKKER-BUILT VERSION

With high capacity radiator. Cowl panels also fit earlier radiators. Fokker did not fair over stbd side, as per OAW.

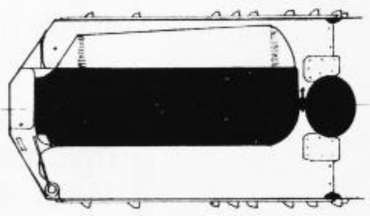
Upturn at rear of engine aperture.

Fairing over top hose joint.



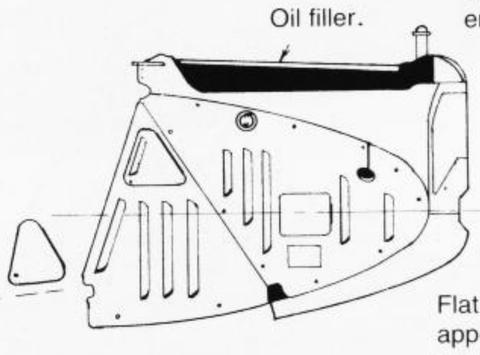
Radiator walls only 5mm thick!

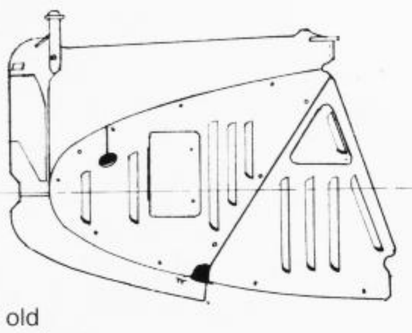
Late radiator, up to 150mm thick, with 7mm hex. cells, 100 across. Top centre fairing conjectured from photos, and may often have been omitted in service.



Oil filler.

Oil tank now in engine bay.





Flat top of panel appears to follow old curve of thin rad. while accommodating extra thickness of new one. Both rad. types were in use at this time.

DRAWN AND TRACED BY I R STAIR. OVERVIEW, REFERENCES AND COWL VARIATION DETAILS BY D ROBERTS

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From page 30
joined by white incidence markings on wings. Fuselage crosses adopted a different form (500x100 mm with a 75mm white border) yet even these exhibit dimensional variations through the rest of the production batch. Another of these machines was D.VII 382/18 for which a full description appears on pages 54-58 and to which the reader is referred for details.

Yet a further variation in the early Fokker series is seemingly initiated with BMW powered D.VII F461/18 (see photo on page 30) which features louvred side cowlings and white '*hier anheben*' legends in an arc enclosing an arrow above and below each wing tip. Photos show most wing crosses are fully enclosed and their ratios changed to 8:1 height to width. Rigging panel on port side is situated on the fuselage centre-line. Four-colour fabric covering is evident here with green-painted metal panels, most struts and ply axle wing. One well known example from this 'series' is the as yet unidentified D.VII with the polka-dot tail decoration – see photo above.

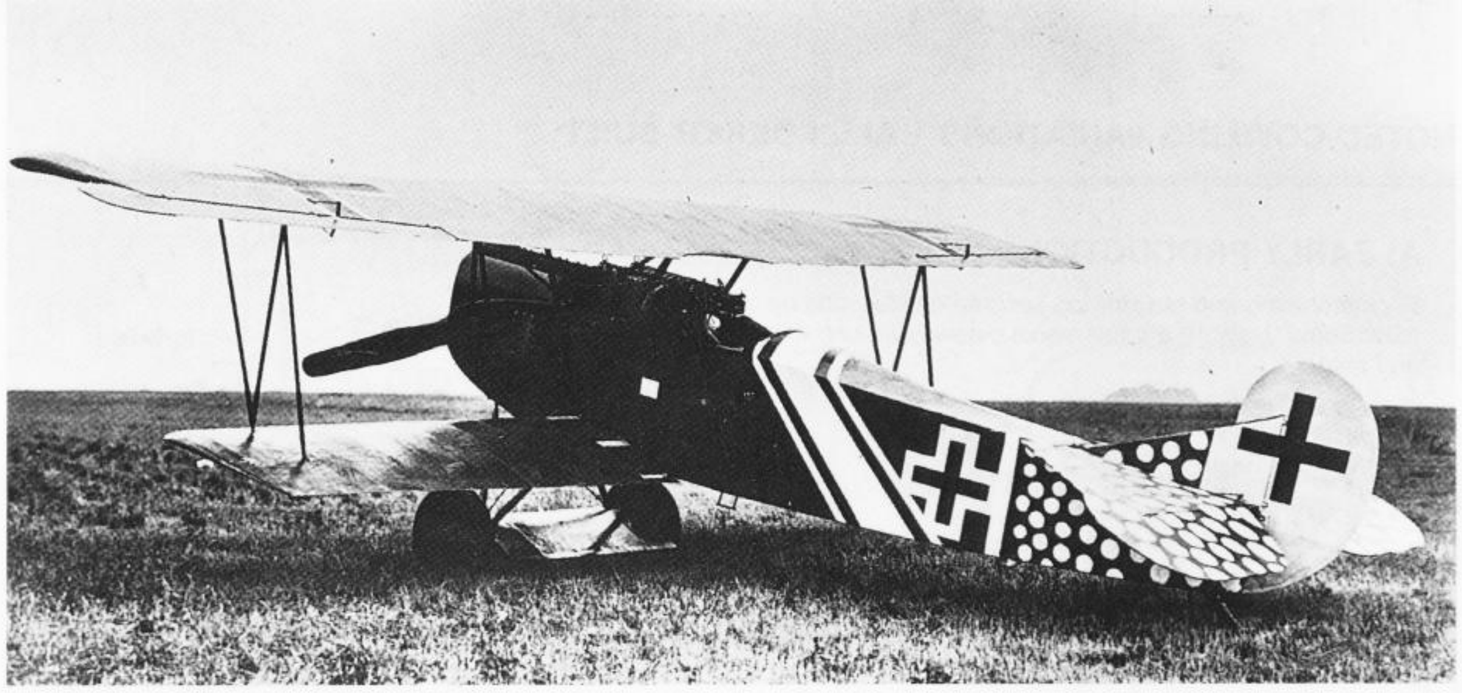
The final few dozen D.VIIs of the first production order reflected further variations. The wing tip *'hier anheben'* legends were still white, but now they appeared on black elliptical patches. In accordance with an *Idflieg* order of May 13, wing crosses were now to be full chord and changed to 5:4 ratio, yet the fuselage and tail crosses remained the same. Most of these features are apparent on D.VII 507/18 (see photo below).

D.VII 4250/18 – D.VII 4449/18

With the second production batch came yet more changes. The exhaust pipe was raised above the cowling and additional cooling louvres were added to upper port and starboard cowlings, but not necessarily to all machines simultaneously. Wing crosses now conformed to *Idflieg*'s order of June 4, but fuselage and tail markings did not. Representative is Udet's D.VII F4253/18, a much used and overpainted machine illustrated in *Fabric Special No.1*. We can now update the captions to this D.VII for photos 25 and 26 of that book *both* show F4253/18. The first (on page 14) shows the D.VII fitted with an old OAW upper wing, the original having presumably been damaged beyond repair. Some writers have misidentified this machine on the basis of the port aileron stencil 2076/18. It's easily done! Perhaps one day a photo of 4253/18 will emerge that clearly shows the works number on the rudder and small wing crosses (like those of OAW-built *'Du Doch Nicht!!)* The Fokker-style lifting handles and the tip of the red forward part of the fin can be seen in photo 25 and every detail matches those seen in photo 26. This D.VII appears to have subsequently visited an aeroplane park and received a new Fokker wing before being assigned to *Oblt.* Hermann Göring (see photos 169, 170 and 171 on pages 62 and 63 of *Fabric Special No.1*) for the wing crosses are no longer coaxial with the aileron horns. It is possible that final changes on Fokker-built D.VIIs occurred around D.VII 4300/16 when rear metal louvred panels were added, a feature typical for almost all machines of the second batch although on occasion these were retro-fitted to earlier machines.

D.VII 5050/18 – D.VII 5149/18

The third production batch was fairly consistent in markings and finish. Included in this range was Göring's all-white D.VII F5125/18 (see photos and profile on page 63 of *Fabric Special No.1*). It is believed this special scheme was applied at the factory.



Above, a well known, but sadly (as yet) unidentified, early series D.VII with enclosed *Balkenkreuze*.

D.VII 7604/18 – D.VII 7805/18

The fourth production batch differed little apart from the re-introduction of five-colour printed fabric around the D.VII 7772/18 – D.VII 7788/18 range. As noted elsewhere at least two new radiators were introduced with the fourth Fokker series.

D.VII 10300/18 – D.VII 10399/18

Only 35 out of the 100 ordered were delivered by Fokker. They appear to have carried identical markings to those of the preceding two batches. Typically most of these late Fokkers were covered in either four or five-colour fabric as noted with green-painted metal panels, axle wing and most struts. Black serials, weight table, works numbers appeared in the usual positions, together with the Fokker logo, *'hier anheben'* appeared in white on elliptical black wing tip patches, and the white incidence markings were borne on the wings. Fuselage crosses were full depth and those on the wings full chord. See examples on previous pages: D.VII F 7773/18 on the inside front cover; D.VII F 7929/18 on page 2 and *Photos 1, 3* and *4* on pages 12 and 13.

Further reading

The following references will be a valuable aid when researching further into D.VII colours and markings.

Von Richthofen's Flying Circus, Fabric Special No.1, by Greg VanWyngarden, **Albatros Productions,** 1994 – photos and colour plates for D.VIIs of *Jastas* 4, 6, 10 and 11.

German Fighter Units – June 1917-18 by A Imrie. (**Osprey**, 1978).

Fliegertruppe 1914/1918 Nr.2 by A E (Ed) Ferko. Published by its author, 1987. (Useful for *Jasta* 18 schemes.)

WWI Aero, No.102. For 'That Fokker's an Albatros' by Wally Tripp, and 'Fokker D.VII Covering Practices' by D S Abbott – many useful sketches and identification pointers.

WWI Aero, No.107, December 1985. For 'Markings and Finish of Fokker-built Aircraft' by D S Abbott – comprehensive drawings and notes. ❑

Below, D.VII 507/18 of the first production batch. The wing crosses conform to *Idflieg*'s order of May 13 – full chord and of 5:4 ratio.

KEY TO COLOUR PLATES FOUND ON PAGES 10, 11, 25, 28, 37 AND 40.

NB. All Mercedes-powered unless otherwise stated and apologies for the small typeface!

PAGE 10:

Plate 1) **FOKKER D.VII 332/18,** pilot unknown, *Jasta Boelcke*, 1918. *Jasta* black/white nose and tail markings over factory finish of streaky green fuselage and tailplane, with turquoise blue undersurfaces and five-colour printed fabric on both wings. White serial number as several other D.VIIs in the 300-380/18 range – fuselage and wing crosses have been converted by overpainting. Cowling when new was possibly natural metal, once overpainted the struts were also probably painted black. The wheel covers are not typical of early Fokker and are perhaps replacements from an OAW D.VII?

Source: *Photo JB-1*, page 38.

Plate 1a) Upper wing detail 332/18 with five-colour printed fabric, rib tapes cut from the material. Cross converted from earlier, full-bordered form.

Plate 1b) Upper fuselage and lower wing detail 332/18 – note orientation of five-colour printed fabric – style of turtledeck lightning bolt marking is provisional.

Plate 2) **FOKKER D.VII,** serial unknown, *Rittmeister* Karl Bolle of *Jasta Boelcke*, 1918, one of at least four D.VIIs flown by this pilot which bore similar markings – the plate depicts his third (BMW-powered) Fokker. Entire fuselage and wheel covers probably overpainted black as shown with the unit's white nose and white/black tail. As on most of his mounts Bolle added his personal white/black/yellow fuselage stripes. The latter was the facing colour of his former cavalry unit *Kürassier-Regiment von Seydlitz* No.7, the black and white borders are Prussian colours . Narrow *Balkenkreuze* in eight positions, four-colour printed fabric on wings.

Source: *Photo JB-5*, page 41.

Plate 2a) Plan view, Bolle's D.VII showing the two chord-wise wing bands. Orientation of four-colour fabric with a full bolt across the centre section is typical Fokker practice.

Plate 3) **FOKKER D.VII F4330/17**, pilot unknown, *Jasta* 4, 1918. This BMW-powered D.VII was covered in four-colour printed fabric overall and appears to have black cowling panels, wheel covers and struts. Narrow *Balkenkreuze* in eight positions – wing markings similar to Bolle's *(Plate 2a)*. The black used to edge the fuselage and tailplane appears light, evidence of poor covering quality?

Source: *Photo J4-1*, page 43.

Plate 3a) Upper fuselage detail F4330/17,showing the thin black and white overpainting of tailplane, elevators and upper longerons, orientation of four-colour printed fabric is provisional.

PAGE 11:

Plate 4) **FOKKER D.VII 291/18**, *Vzfw.* Meyer, ex-*Jasta* 6 machine which later served with *Fl.Abt* A298. *Jasta* 6 black and white nose, tail and wheel cover markings over factory finish of streaky green fuselage and tailplane with turquoise blue undersurfaces. Colour of rear fuselage either black or Fokker green used to convert fuselage cross. Swastika markings are shown as red, but equally could be yellow or blue. This war-weary D.VII bears non standard cowling louvres, replacement rudder and upper wing from OAW-built D.VII (or D.VIIs).

Source: *Photo J4-1*, page 44.

Plate 4a) Upper wing detail, 291/18 shows typical OAW –built D.VII wing with *Balkenkreuze* well outboard, four-colour printed fabric with blue rib tapes.

Plate 4b) Upper fuselage and lower wing detail 291/18 shows typical *Jasta* 6 tail markings and the original five-colour printed fabric on the lower wings, lower wing crosses probably close to fuselage style.

Plate 5) **FOKKER D.VII 309/19** (?), *Ltn.* 'Fritz' Friedrichs, *Jasta* 10, 1918 with the unit's chrome yellow colour on nose panels, wheel covers and undercarriage struts. This over factory finish of streaky green fuselage and tailplane with turquoise blue undersurfaces – five-colour printed fabric on both wings. Fuselage cross converted by overpainting and a band added ahead of it shown as blue but true colour not known. The Imperial double eagle emblem is also provisional as are its colours of red, white and black: wing crosses are full bordered.

Sources: *Photos J10-1, 2* and *3*, page 46.

Plate 6) **FOKKER D.VII 286/18,** *Vzfw.* Willi Gabriel, *Jasta* 11, 1918 is one of the best known and documented of all D.VIIs and this plate offers an alternative to that of *Fabric Special No.1*. Unit red paint and pilot's personal colours over factory finish of streaky green fuselage and tailplane with turquoise blue undersurfaces, five-colour printed fabric on both wings that bore full-bordered crosses.

Sources: *Photos J11-1, 2* and *3*, page 43.

Plate 6a) Upper fuselage and lower wing detail 286/18. This view shows the ultimate colouration of Willi Gabriel's D.VII; note the slightly narrower five-colour wing fabric and the non-standard cut-out of the starboard upper engine cowling.

PAGE 25:

Plate 7) **FOKKER D.VII (OAW-built)**, serial not known, *Ltn. d R* Hans Besser, *Jasta* 12, 1918, bears the squadron's white nose colour to supplement the dark blue overpainted fuselages and tails of *JG*II aeroplanes through which fuselage crosses were often still visible. The broom marking on this example accords with the pilot's name. This early OAW-built D.VII carries four-colour printed fabric on both wings: the all-white fin is an OAW hallmark as is its stencilling and that of the rudder. Wheel covers are in early OAW factory green and mauve segmented, soft edged pattern with white serial number. Albatros logo on rudder.

Source: *Photo J12-2*, page 48.

Plate 7a) Upper wing detail of Besser's D.VII showing four colour printed fabric, blue rib tapes and wing crosses of 4:5 proportions.

Plate 8) **FOKKER D.VII (OAW-built)**, serial and pilot unknown, *Jasta* 12, 1918. This is a late OAW machine (as evidenced by the additional metal cowlings and extra louvres). *Jasta* 12 D.VIIs often flew without upper cowlings and bore non-standard oval cut outs on the lower front nose cowling for further cooling. A white band with black edging encircles the fuselage and the four-colour printed fabric covered wings bear narrow outlined *Balkenkreuze*. Note later style of OAW wheel finish.

Source: *Photo J12-5*, page 48.

Plate 8a) Tail uppersurface detail (**plate 8**) showing the white edging of the *JG*II blue tailplane.

Plate 9) **FOKKER D-VII,** serial unknown, *Ltn. d R* Werner Niethammer, *Jasta* 13, 1918. Niethammer flew at least two similarly-marked D.VIIs, the other (OAW-built) also carried his personal hammer marking on the fuselage turtledeck – see *Photos J13-6* and *7* on page 50. The colour plate shows an earlier Fokker-built mount with (probably) five-colour printed fabric on both wings and the *Jasta* 13 dark green nose and forward fuselage. Narrow *Balkenkreuze* on wings.

Source: *Photo J13-5*, page 50.

Plate 10) **FOKKER D.VII (OAW-built),** serial not known, *Ltn. d R* Paul Wolff, *Jasta* 13, 1918 now with the reduced green nose area and additional white band initiated by the unit's new CO, *Ltn.* Franz Büchner in June 1918. Photos tend to show the upper nose cowlings as white but this might be the result of solar flare or alternatively we could be seeing unpainted replacement (as depicted). Wings in four-colour printed fabric with narrow *Balkenkreuze*.

Plate 10a) Upper wing detail Wolff's D.VII showing four-colour printed fabric, salmon pink rib tapes and outboard position of *Balkenkreuze*.

PAGE 28:

Plate 11) **FOKKER D.VII,** serial not known, *Haupt.* Rudolf Berthold, *Jasta* 15, 1918. Like Gabriel's mount, Berthold's DVII is almost a 'D.VII cliche' and has adorned more book covers and kit box tops than any other example. This is believed to be the definitive(?) rendering of this aeroplane based on the one known photo. The red unit and *JG*II blue colours are applied over the fuselage and tailplane streaky green camouflage and turquoise blue undersurfaces. When the photograph was taken, the red painting of the forward fuselage was incomplete. Some writers have suggested the winged sword emblem was repeated in black on the central white upper wing panel but this cannot be confirmed.

Source: *Photo J15-1*, page 52.

Plate 11a) Plan view of Berthold's D.VII showing the dark blue uppersurfaces, wings were covered in five-colour printed fabric, lower wing crosses of similar style to those shown. Axle wing probably in red.

Plate 12) **FOKKER D.VII,** serial not known, *Ltn.* Oliver *Freiherr von* Beaulieu-Marconnay. *Jasta* 15, 1918.

Another familiar *JG*II machine, but less well-known that this D.VIIF was one formerly flown by Berthold – his winged sword marking can just be seen under the additional blue overpainting in the reference photo. This much modified D.VII featured an 'armoured' windscreen installed, much altered (and battered) engine cowlings, and overpainting of the fuselage in blue. The photograph also indicates a replacement upper wing with narrow *Balkenkreuze*. All these features are recreated in the profile which represents a somewhat war-weary machine; wing colours are provisional. This D.VII may have gone with its pilot to *Jasta* 19 and would have had its red areas overpainted yellow – see page 39.

Source: *Photo J15-3*, page 53.

Plate 12a) Upper wing detail ***(Plate 12)*** shows one possible finish – dark blue overpainting and narrow style cross.

Plate 13) **FOKKER D.VII,** serial unknown, *Ltn.d R* Hugo Schäfer, *Jasta* 15, 1918. Another typical early-Fokker built *Jasta* 15 machine with red/blue division situated midway between guns – the line varied amongst machines of this unit. When the reference photos were taken, Schäfer's D.VII retained the factory green wheel covers and interplane struts – they may have been overpainted later of course. Wings probably covered in five-colour printed fabric with narrow *Balkenkreuze* similar to that of Beaulieu-Marconnay's machine. The winged serpent insignia is well worn and the starboard version is slightly different.

Sources: *Photos J15-4 and 5*, page 53.

Plate 13a) Upper fuselage detail of Schäfer's D.VII showing a less elaborate serpent on the turtledeck.

PAGE 37:

Plate 14) **FOKKER D.VII 402/18,** *Vzfw.* Max Holtzem, *Jasta* 16b, 1918. Early Fokker-built D.VII with five-colour printed fabric overall and a good mixture of *Balkenkreuze*! The nose and wheel covers are painted in the unit's cobalt blue with white/black/white tail stripes and the pilot has applied his famous white comet. Fabric orientation on fuselage is inverted on the port side, erect on the starboard, where bottom left hand corner of turquoise pentagon meets top right point of star. Colours of struts are provisional.

Sources: *Photos J16-1* and *2*, page 59.

Plate 14a) Upper fuselage and lower wing detail of 402/18 – note angled orientation of upper fuselage covering; tailplane orientation is provisional based on Lörzer's *Jasta* 26 machine....

Plate 15) Nose detail, Fokker D.VII (Albatros-built) serial unknown, *Jasta* 17, 1918. Covered in five-colour printed fabric with white nose cowl and black (?) forward panels this D.VII's fuselage sports a large swastika and chevron together with these comical face markings around the cowling ports. The profile shows the pilot's decorations as yellow but this is pure guesswork.

Sources: *Photos J17-4* and *5*, page 60.

Plate 16) **FOKKER D.VII (Albatros-built)**, serial unknown, *Ltn.d R* Alfred Fleischer, *Jasta* 17, 1918. This D.VII is also covered in five-colour printed fabric, that on the fuselage inverted and canted upwards towards the tail. Nose markings are shown as white with black forward areas and the stripes and fuselage markings in yellow. The latter colour is purely conjectural and the publishers welcome more learned input on this interesting machine's true colours. Narrow, ultimate *Balkenkreuze* in eight positions. **Source:** *Photo J17-2*, page 59.

Plate 17, **FOKKER D.VII 368/18**, *Ltn.d R* Hans Schultz, *Jasta* 18, 1918.

This famous example of an early Fokker-built D.VII was captured by the British on June 6 1918 and became the subject of several detailed reports which gave conflicting descriptions as to its colours. *Flight* reported thus: *'As regards the covering of the Fokker biplane, this is chiefly remarkable, in the specimen under review on account of the colours in which it is painted. The front portion of the body and the top portion of the top plane is painted a deep vermilion, while the rear portion of the body is painted white. The lower surfaces of the top plane and the bottom plane are camouflaged in the usual German manner by a printing in different colours of lozenge-shaped figures. The tailplane and elevator are painted black, with the exception of a parallel portion of the top surface, which is painted white like the body'*

The plate follows this description, though strangely no report or contemporary drawing (See *C&CGB Journal*, Vol.10 No 3, 1979) includes the *'Staffel Raben'* marking and its application here is provisional – perhaps it was souvenired? The original streaky green finish shows through the white in places and the printed fabric was five-colour as shown.

Source: *Photo 20*, page 20.

Plate 17a) Plan view of Schultz's D.VII showing the vermilion overpainting of the forward fuselage and upper wing with sub-chord thick *Balkenkreuze*. The tailplane was black and white on both surfaces; tail struts in black.

PAGE 40:

Plate 18) **FOKKER D.VII (Albatros-built),** serial and pilot unknown, *Jasta* 18, 1918. Another of *Jasta* 18's spectacularly-marked Albatros-built D.VIIs with red forward fuselage wings and tailplane; white radiator and rear fuselage with black perforated sash – the latter seen on at least two *Jasta* 18 D.VIIs. Upper surface of lower wing may have been overpainted red. Four- or five-colour printed fabric applied to wings, narrow *Balkenkreuze* in four positions.

Source: *Photo J18-2*, Page 60.

Plate 18a) Tailplane uppersurface detail shows provisional style of rear fuselage sash.

Plate 18b) *Jasta Raben* stencil. Mainly applied in black or red but could have been used with even more colours for individual pilots – comparison with tonal values in various photos suggests red ravens are at least a possibility.

Plate 19) **FOKKER D.VII (OAW-built),** serial unknown, *Ltn.* Ernst Riedel, *Jasta* 19, 1918.

This provisional profile is based on a single photograph. The fuselage marking may be incomplete, its true colours are certainly unknown but the profile nevertheless does show the typical yellow/dark blue of *Jasta* 19 D.VIIs. The fuselage cross was still evident when the photo was taken but could have been overpainted at a later date. The Albatros logo may have been applied to the rudder – wings in four-or five-colour printed fabric with narrow *Balkenkreuze*.

Source: *Photo J19-1*, page 61.

Plate 20) FOKKER D.VII (OAW-built) 2052/18, *Ltn.* Karl Thom, *Jasta* 21, 1918. Finished as typical early OAW D.VIIs with soft-edged green and mauve patches on nose panels and wheel covers; four-colour printed fabric elsewhere. Unit markings of black and white fuslage bands are supplemented by a black (?) tailplane – the pilot's initial T may have been repeated on upper wing inboard of port and starboard crosses, possibly on wing undersurfaces too. OAW stencils on fin, rudder and wheel covers; Albatros logo on rudder.

Source: *Photo J21-1*, page 62.

Plate 20a) Lower plan view 2052/18 showing provisional orientation of four colour fabric and typical early OAW green/mauve camouflage (soft-edged). Axle wings were divided centrally as shown – colours reversed between machines. ❑

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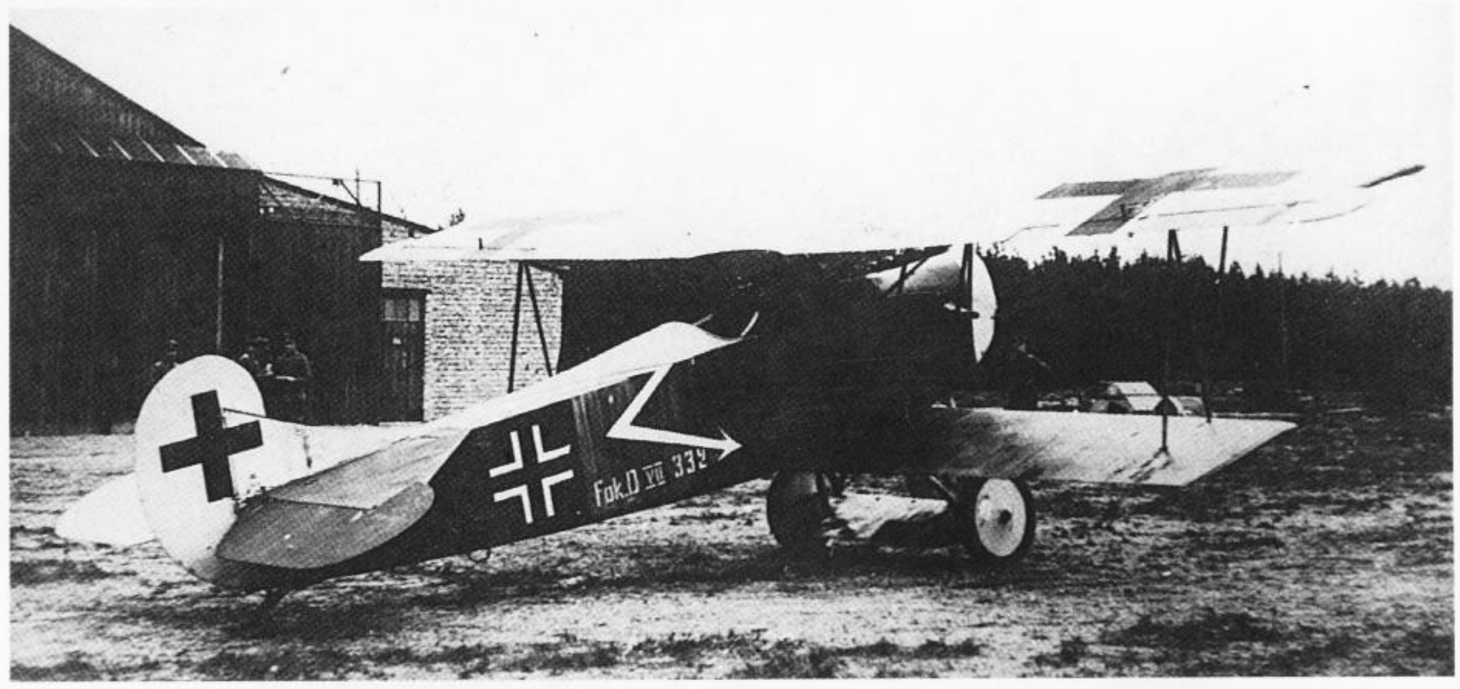
THE FOKKER D.VII IN *JAGDSTAFFEL* SERVICE BY *GREG VANWYNGARDEN*

Part 1 – Jastas 1 to 21

The publishers believe this anthology begins the first serious attempt to chronicle the colours and markings used by all units known to have operated the Fokker D.VII in 1918. It cannot be, and does not claim to be, complete and research is ongoing as new photo albums and fresh data continue to surface. In the following pages Greg VanWyngarden records the heraldry carried into battle by airmen from over 20 *Jastas*. Inevitably there are gaps and, as ever, reliable updates will be welcomed for possible inclusion in subsequent volumes. Our thanks to *all* researchers past and present without whose enthusiasm and diligence the following could not have appeared in its present form. *(RLR)*

JASTA 1

On October 2 1918, *Vzfw.* Belz of this unit was shot down by Camels of No.54 Squadron RAF, and his D.VII (OAW) 5301/18 was captured and became G/1Bde/17. The report on this D.VII says it had 180-hp Mercedes No.42855, and that the *'tailplane has two green lines painted over the camouflage on either side at an angle running backwards and outwards. Rudder and fin, white with a green triangle on the fin.'* This tailplane and fin marking sounds like a unit emblem, but this remains unconfirmed.



▲ JB-1 ▼ JB-2

JASTA Boelcke

JB-1: Fokker D.VII 332/18 of *Jasta Boelcke* displays the streaked fuselage camouflage, typical of early-production Fokker-built aircraft. The half black/half white tailplane was the unit emblem along with white radiator shell and forward section of the cowling. The unidentified pilot employed a personal marking of a white lightning bolt with narrow dark edging on the sides and top of the fuselage. The 'thick' style of crosses seen on the fuselage and wing was the result of conversion from an earlier, full-bordered form. The wheel covers were apparently white. Several Fokkers in the 300-380 serial range were marked with stencilled serial numbers in white as evidenced on this machine. Five-colour 'lozenge' fabric covered the wings. *(H J Nowarra)*

JB-2: Comparison with the previous photo will reveal that these D.VIIs of *Jasta Boelcke* have the tail colours reversed (*ie,* starboard side white and port black). These two patterns of unit marking may have served to divide the aircraft into two *Ketten* (flights). The Fokker on the left was another early production aircraft, and the method of converting the cross on the fuselage is visible. All D.VII fighters of *Jasta Boelcke* were marked with white fins. From left the pilots in this view are: *Ltn. d R* Heemsoth, *Ltn.* Bolle, unknown, *Gefreiter* Mynerek; unknown. *(Alex Imrie via William Puglisi)*

▼ JB-3

JB-3: This Fokker-built D.VII with spectacular wing damage may have served in *Jasta Boelcke* as evidenced by its nose markings, though it was not the usual practice in that unit to overpaint the fuselage cross. The stress of forceful manoeuvres in a dogfight sometimes caused the failure of the ribs in the centre-section aft of the main spar in the D.VII upper wing. However, the spars generally remained intact – thus allowing this relieved pilot to pose with his personally decorated machine. *(via P M Grosz)*

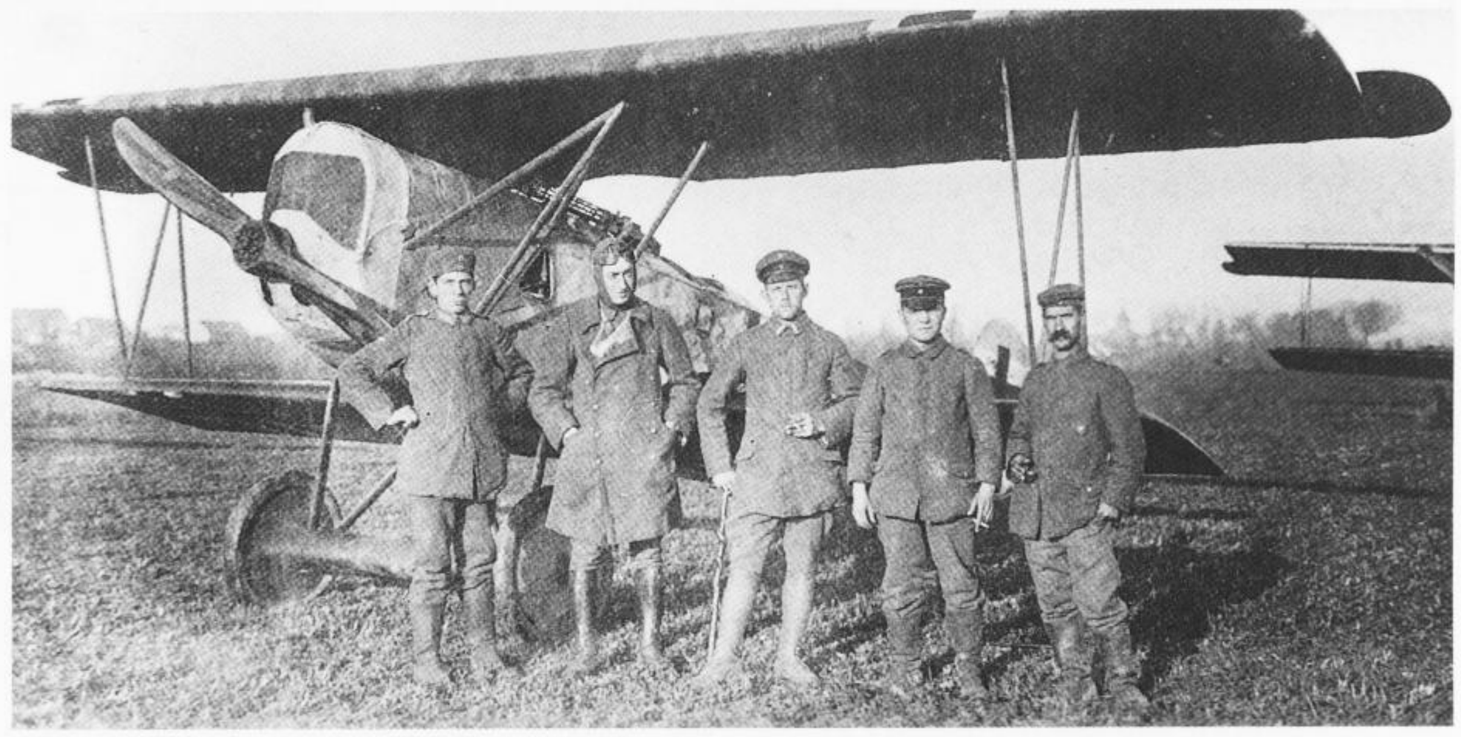
JB-4: Staffelführer Karl Bolle with one of his highly decorated D.VIIs. Besides the unit colours on the tail and nose, this machine was identified by Bolle's personal coloured bands on the fuselage; a broad central yellow band (the facing colour of his old cavalry unit, *Kürassier-Regiment von Seydlitz Nr.7*), flanked by

Continued on page 41.

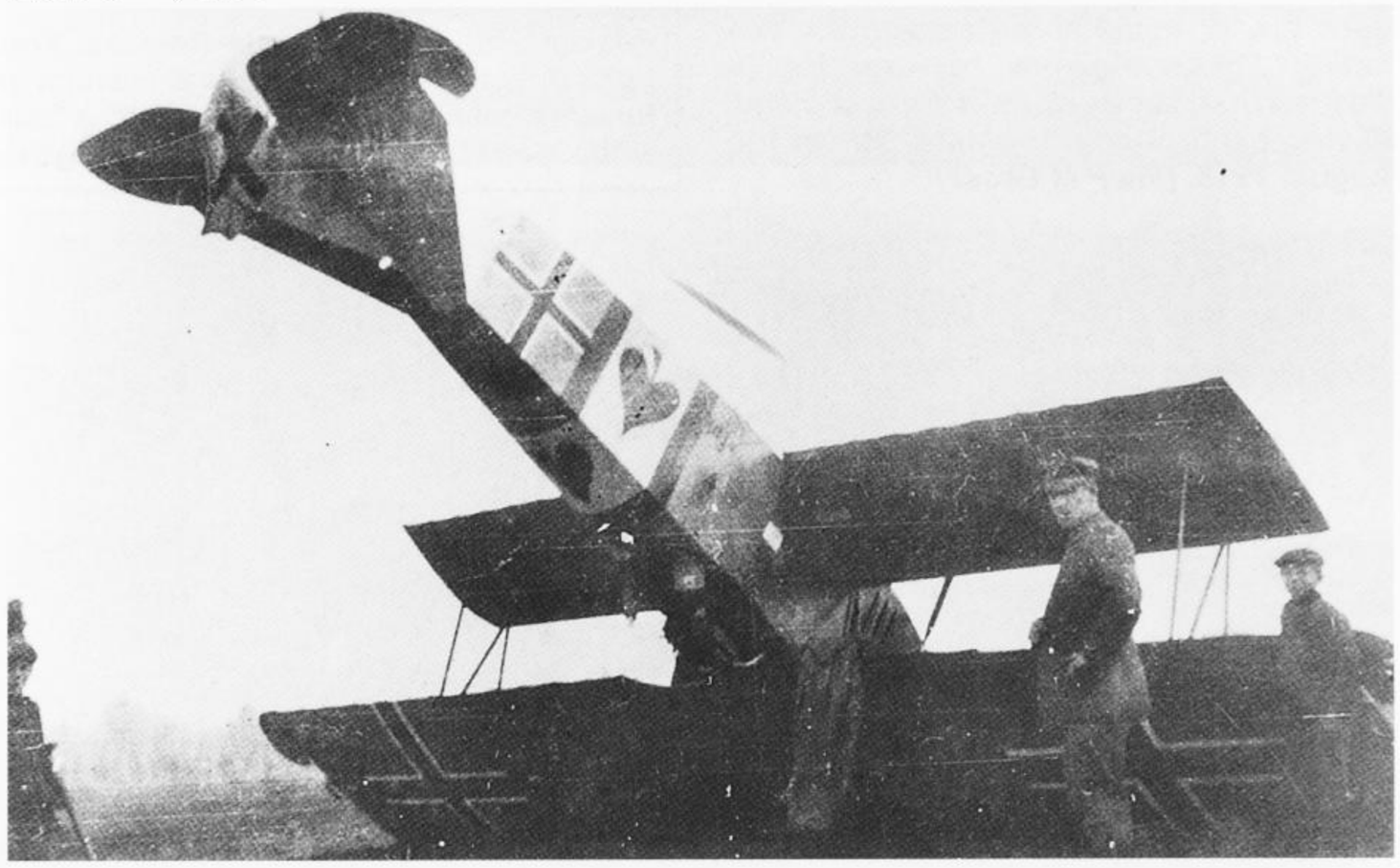
the black and white Prussian colours. It would appear that much of the remainder of the fuselage was black. The two white stripes on the top wing no doubt helped to further distinguish the *Jasta* commander's aircraft. The proportions of the crosses probably indicate a conversion from an earlier form. *(via P M Grosz)*

▼ JB-4

▲ JB-5



▲ JB-6 ▼ JB-7



JB-5: Following the Armistice, many Fokkers of *Jagdgdeschwader* III (including several from *Jasta Boelcke*) wound up in British hands at Nivelles, where they were the subject of keen interest from RAF personnel. This D.VII at Nivelles *circa* December 1918 was probably the last machine flown by *Oberleutnant* Bolle. It is a later model than Bolle's aircraft seen previously, though it too had an apparently black fuselage with Bolle's multi-coloured bands. This aircraft was also marked with the two white stripes on the top wing, which wrapped over the leading edge of the wing and extended approximately back to the front spar on the underside. *(via P M Grosz)*

JB-6: This *Jasta Boelcke* pilot posing with groundcrew is thought to be Fritz Papenmeyer – the *Jasta* marking on the nose is shown to good effect. Cooling holes are present in the cowlings of the aircraft. *(Via P M Grosz)*

JB-7: This nosed-over D.VII displayed the ultimate configuration of national insignia, in positions characteristic of Fokker-built aircraft. The unknown *Jasta Boelcke* pilot applied a personal emblem of an ace of spades (presumably black) on a white band with black borders. The black and white tailplane colours extended down the adjacent fuselage sides on all *Jasta Boelcke* Fokkers. It is thought that four-colour fabric covered this machine. *(Via P M Grosz)*

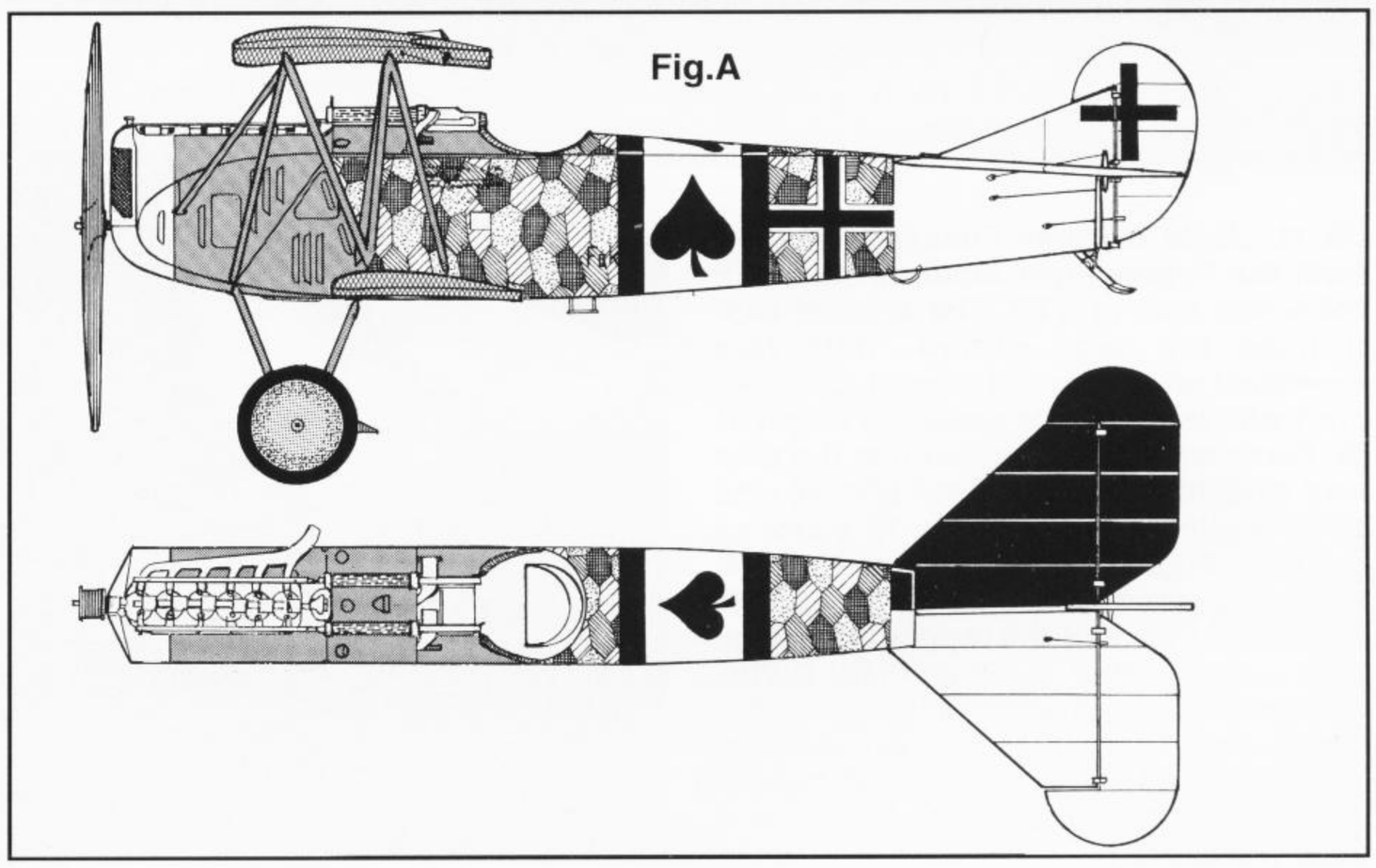
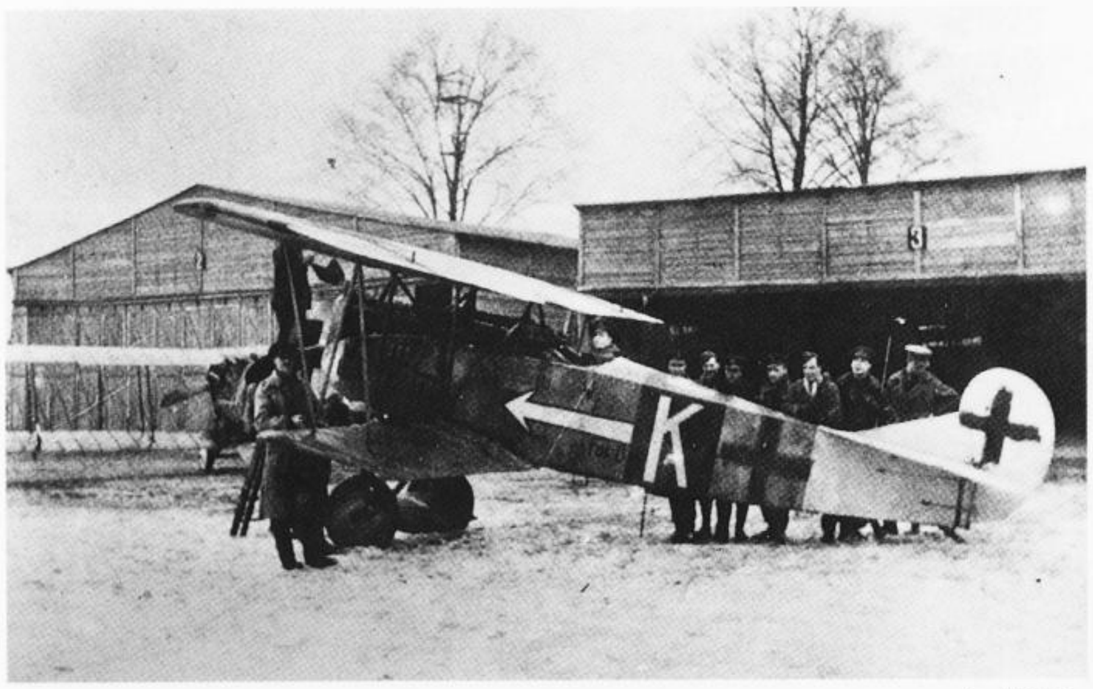


Fig A: Fokker-built D.VII of *Jasta Boelcke* (see photo *JB-7*); pilot and serial not known. Green cowling, struts and Fokker-factory finish wheels with four-colour fabric on wings and fuselage; *Jasta Boelcke* markings in black and white – wing crosses similar to Bolle's D.VII illustrated above.



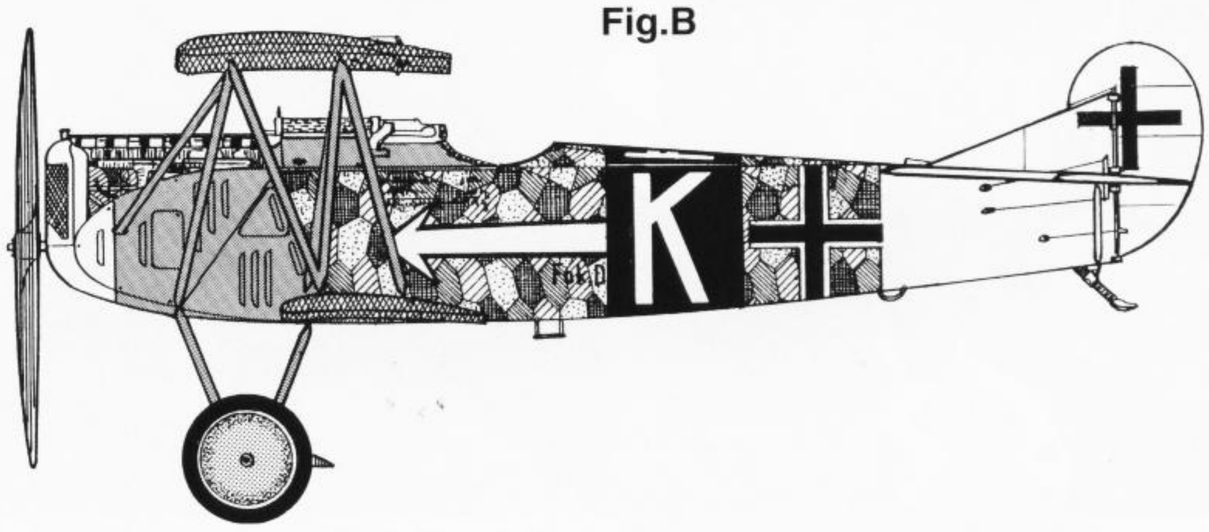
▲ JB-8

▲ JB-9

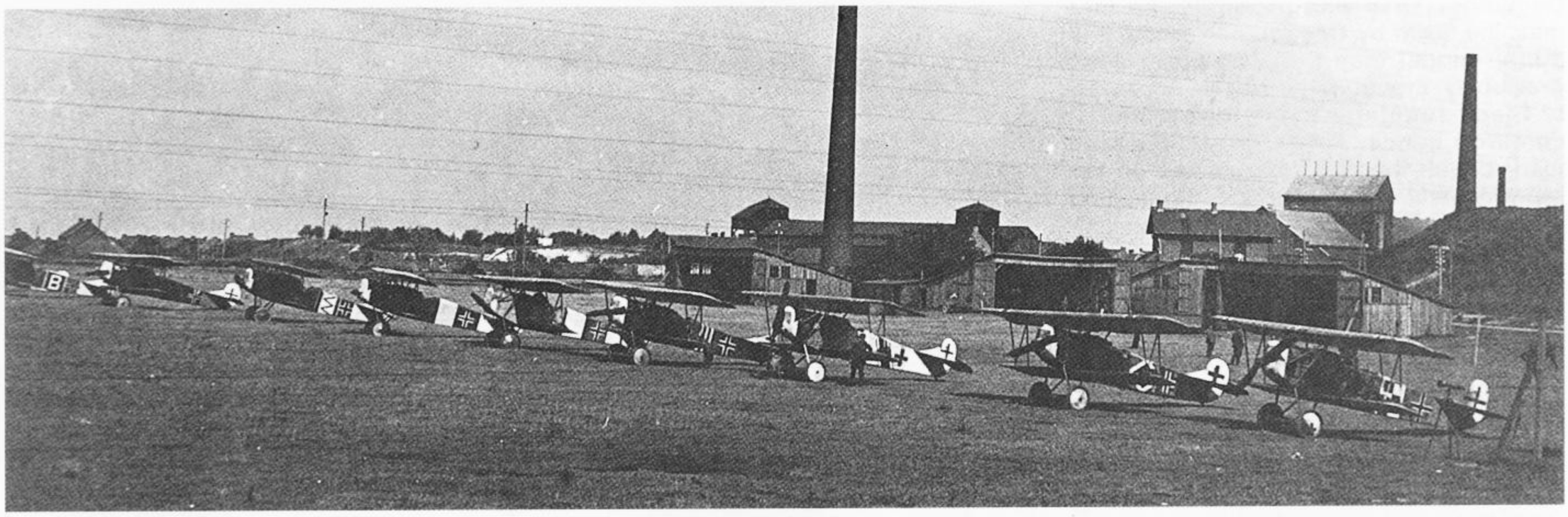
JB-8: RAF personnel at Nivelles gather around a surrendered D.VII of *Jasta Boelcke*, as it is apparently readied for flight. An attempt to obliterate or remove the national insignia was made. The unknown pilot used a white 'K' on a dark band as an individual marking, along with a black-outlined white arrow. *(Via P M Grosz)*

JB-9: A poor quality, but interesting view of the starboard side of the 'K'-marked Fokker, showing the black colour on that side of the tail. There is a *slight* possibility that this aircraft had been flown by *Ltn. d R* Friedrich 'Fritz' Kempf, who had earlier used his 'K' initial as an emblem on two familiar Fokker triplanes; however, Kempf was not in *Jasta Boelcke* at the war's end, having been posted to *Jasta-Schule* I in August 1918. *(Via P M Grosz)*

Fig.B



Fokker-built D.VII of *Jasta Boelcke*. Four-colour fabric, green cowling and struts, Fokker factory finish wheels. K is white on a black (or red?) band, repeated on top of fuselage while arrow is white with a black (?) outline. *Jasta* markings in black and white. Serial and pilot unknown - wing crosses as per Bolle's D.VII see page 41.



▲ JB-10 ▼ JB-11

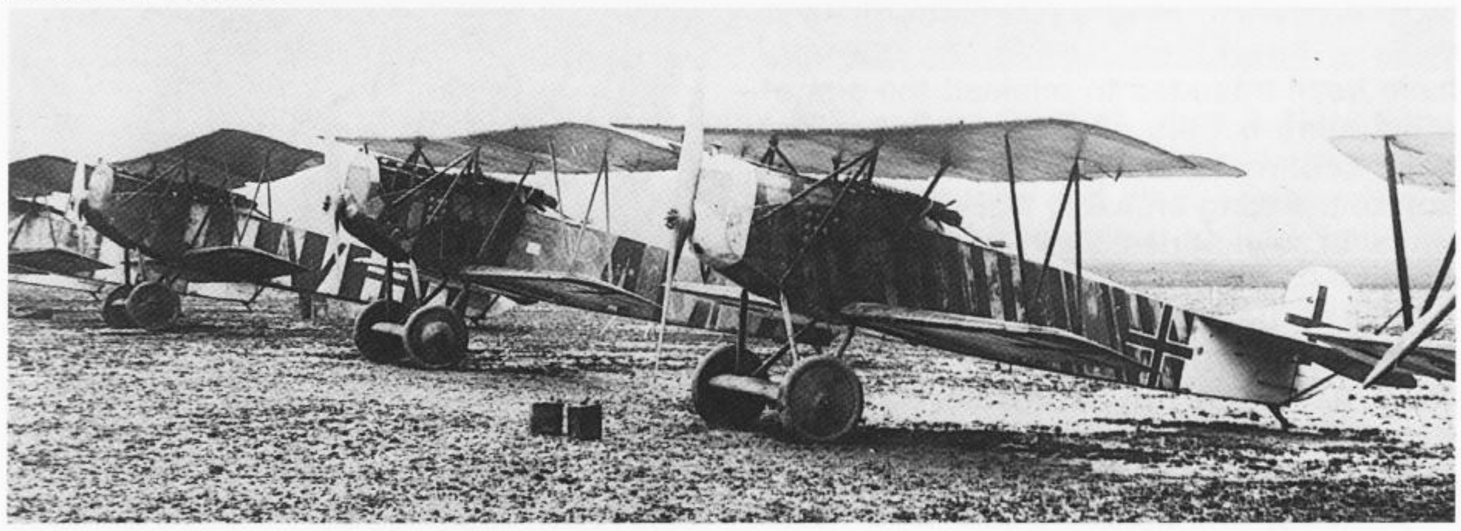
JB-10: Jasta Boelcke in November 1918 displays its ultimate livery. *(HAC/UTD)*

JB-11: Jasta Boelcke Fokker-built D.VII from the Papenmeyer album in the AEF collection now at UTD. The original caption on the back stated *'With this machine I shot down 10 aircraft ... my aircraft with which I shot down the English'*. Ed Ferko was of the opinion that the pilot was probably *Ltn. d R* Otto Löffler who achieved the last ten of his 15 victories between August 9 and October 30 1918. Löffler is recorded as flying a BMW-engined D.VIIF, and the weight table seen here matches that of other BMW D.VIIs. All markings probably black and white; metal cowling aft of the white front appears black, or perhaps just Fokker green. Interplane struts are white or pale blue. *(HAC/UTD)*

JB-12: Leutnant Alfred Lindenberger of *Jasta Boelcke* and his OAW-built D.VII 4453/18: Lindenberger scored eight of his 12 victories from June 1 to November 1 1918. His striped D.VII was interned after the Armistice and shows up in many of the well known line-up photos taken at Nivelles in 1919 – see below. *(HAC/UTD)*

JB-13: Fokkers of several different units and manufacturers appear in photos taken at Nivelles in December 1918. Just beyond an unidentified Albatros D.Va in this view is Fokker D.VII (OAW) 4453/18 of *Ltn.* Lindenberger from *Jasta Boelcke*, its fuselage displaying oblique striping from nose to tail. The rudder bore the Albatros logo and the serial number appeared on the base of the fin and on the rudder. Next in line is D.VII (OAW) 4179/18 of an unknown unit, marked with a dark spiral band. Third is a Fokker-built aircraft, 501/18 of the first production batch; it bore the bold black and white fuselage bands of *Jasta* 26. Since the unit colours covered the original serial on the fuselage, this was re-marked on the white fin and on a white band just beneath the horizontal stabiliser. Next in line is another *Jasta Boelcke* D.VII, then a machine of *Jasta* 46 marked with a white rear fuselage and the 'H' emblem of *Vzfw.* Oskar Hennrich. All these aircraft display the wear and tear of operational flying, while British personnel have attempted to alter or remove the national insignia on some as well. The two sloping bands seen just aft of the cockpit of the *Jasta* 26 D.VII 501/18 may have been part of a 'W' superimposed on the black and white unit colours (in red ?) or more likely were simply a chevron-style geometric emblem. *(Via Chaz Bowyer)*

▲ JB-12 ▼ JB-13



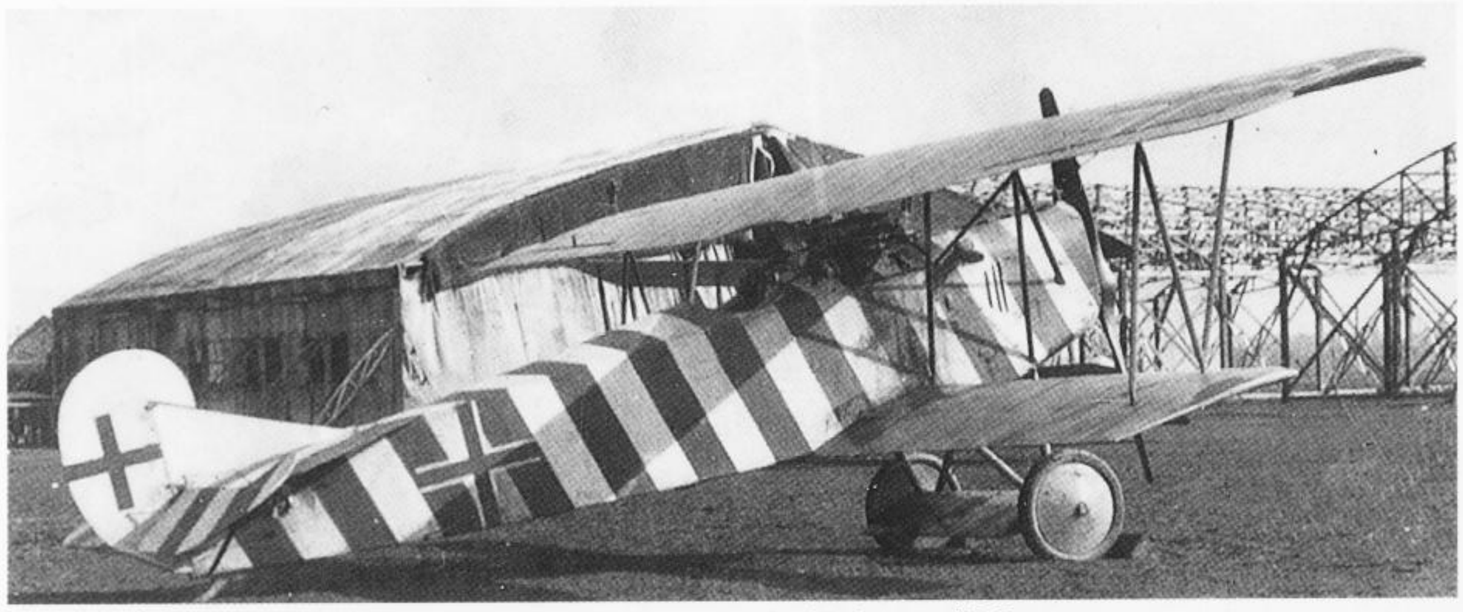
JASTA 3

J3-1: Little is known of D.VII markings adopted by *Jasta* 3, but here is *Ltn.* Georg Weiner with his Fokker D.VII, probably the machine he flew as commander of the unit in Sept-Nov 1918. The personal 'W' insignia was probably black/white and the machine carried a tubular gun sight. Possibly an Albatros-built D.VII judging from the teardrop fairing on the forward cowling. *(Via N Franks)*

JASTA 4

J4-1: It was usual (but not universal) to mark the longerons of *Jasta* 4 D.VIIs with coloured borders in black and white. The former was apparently not the official dense eggshell paint supplied for national markings, but less densely pigmented and possibly a little glossier. 'Black' paints are actually very dark shades of some colour or other; lamp black is slightly brownish, and might photograph darker on ortho' film than a 'black' paint based on a bluish pigment for example. This photo of F4330/18 shows how the borders sometimes extended to the tailplane and elevators. The nose, struts and possibly wheel covers too, were painted the unit's black colour. (For further *Jasta* 4 D.VII photos and profiles, see *Fabric Special No.1*, *Von Richthofen's Flying Circus).*

▲ J3-1 ▼ J4-1



▲ J5-1 ▼ J5-2

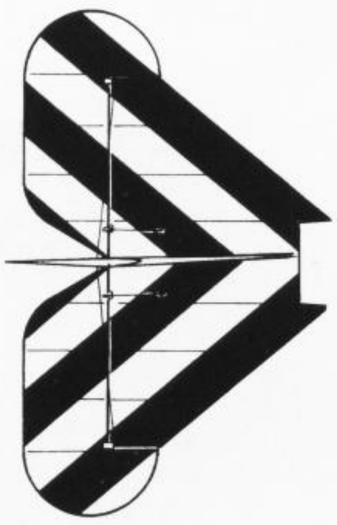
JASTA 5

J5-1: Fokker D.VII (OAW) 4598/18, flown by *Ltn. d R* Josef Mai of *Jasta* 5. The black and white striped fuselage and tailplane were personal markings of Mai only, and not unit markings. These stripes may have been intended to mislead the aim of a pursuing hostile pilot, but this has not been confirmed. Note the outboard position of the wing crosses. Mai survived the war with 30 victories. *(Via H J Nowarra)*

J5-2: Ltn. Josef Mai of *Jasta* 5 with his black and white-striped D.VII (OAW) 4598/18, probably in September 1918. Mai flew this aircraft in late September to achieve his 26th and 27th victories. Reportedly, this machine was also flown by *Ltn. d R* Otto Konnecke before Mai.

▲ J5-3

J5-3: Oberleutnant Otto Schmidt, final commander of *Jasta* 5 and *Jagdgruppe* 2, with his OAW-built D.VII. This aircraft was marked with a dark-coloured nose which may have been red, judging from earlier *Jasta* 5 practice, and a white-trimmed dark band abaft the cockpit; four-colour fabric is seen as well. Photos of *Jasta* 5 D.VIIs are scarce and precise information on what unit markings – if any – were used on the unit's Fokkers has eluded the author and publishers who seek further details from our readers. *(Michael Schmeelke)*



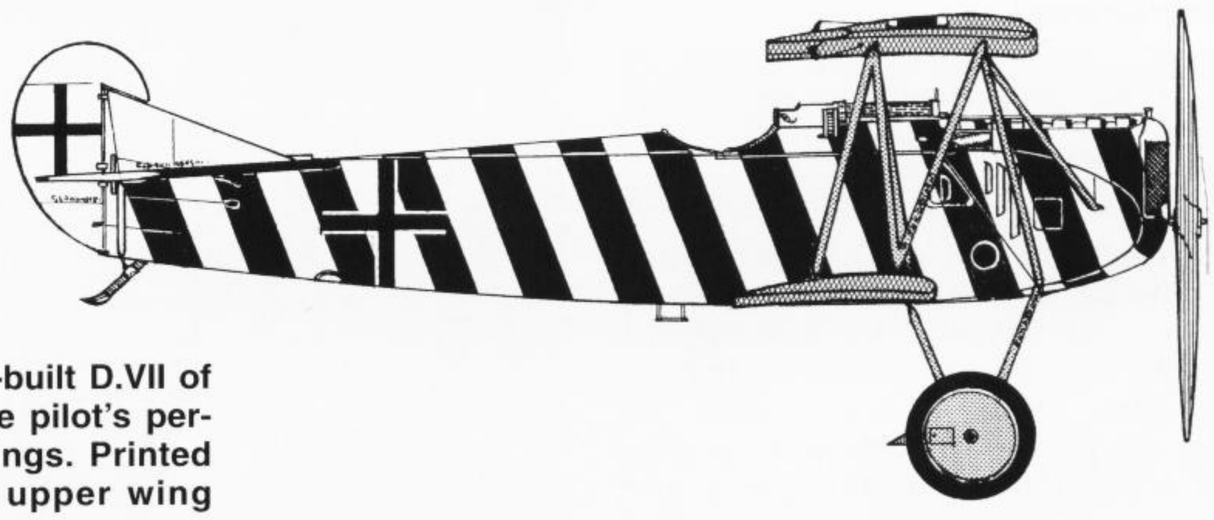


Fig C: This well known OAW-built D.VII of *Ltn. d R* Josef Mai sports the pilot's personal black and white markings. Printed fabric covered wings with upper wing crosses well outboard.

▼ J6-1

JASTA 6

J6-1: Fokker-built D.VII 291/18 flown by *Vzfw.* Meyer of *Fl. Abt.* A298. This ex-*Jasta* 6 machine (as confirmed by its black and white-striped tailplane, nose and (presumably) wheel covers) is seen here at a later date operating as a photo reconnaissance machine with starboard camera mounting. The rear fuselage appears to be in one or two dark colours – black? – green? – perhaps applied during conversion of the cross. The rudder appears to be a replacement from a late OAW machine (as is the upper wing) and is at distinct odds with the original (?) Fokker fin. Exact colour of swastikas is not known.

(For further *Jasta* 6 D.VII photos and profiles, see *Fabric Special No.1, Von Richthofen's Flying Circus).*

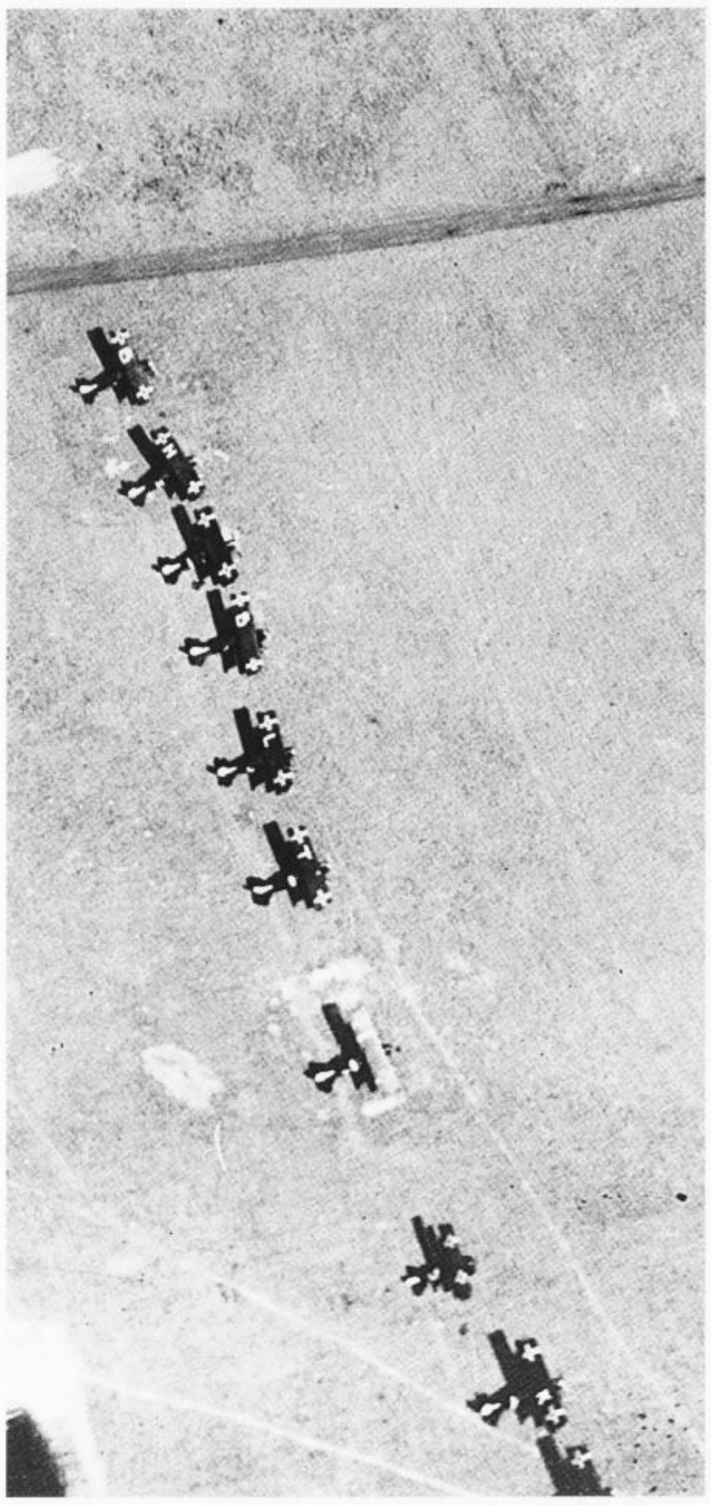
JASTA 7

J7-1: The mixed equipment of *Jasta* 7 at Ste Marguerite airfield in late 1918. First in line are two of Josef Jacobs' well-known black triplanes, followed by five Fokker D.VII fighters of both Fokker and Albatros production; Albatros types complete the line-up. All of the D.VIIs bear black fuselages and tailplanes, with personal markings displayed on the fuselage sides. The third D.VII was decorated with a version of Jacobs' famed devil's head emblem and was presumably occasionally flown by him. At a later date, the upper surfaces of the wings were often painted black as well, with large initials in white sometimes added to the top wing surface for further personal identification. *(Via H H Wynne)*

▲ J7-1 ▼ J7-2

J7-2 and *Fig D: Ltn. d R* Willi Nebgen's early Fokker-built D.VII of *Jasta* 7. Nearly the entire aircraft was painted black, including – apparently – both surfaces of both wings. Nebgen's D.VII was equipped with a rack for flare cartridges and what seems to be a tube for a flare pistol protruding beneath the cockpit. The two-colour oblique band on the aft fuselage may have been black, red or dark green and white. The white characters on the black portion of the fin are not fully legible, but they may read 'I. R. 133' (possibly a reference to the pilot's former infantry regiment – but this is unconfirmed), or they might be something else entirely. At some point this aircraft may have been marked with the large white 'N' on the top wing, just inboard of the starboard cross, as such markings are seen on several *Jasta* 7 Fokkers in photo *J7-3.* Note the anemometer affixed to the starboard interplane strut. Nebgen achieved four confirmed victories before he himself fell on October 22 1918. *(Photo: Dr. V Koos)*

▼ J7-3



J7-3: Aerial photo of *Jasta* 7 Fokker D.VIIs (and one Dr.I) – all but one have black wings – the following identifications are provisional.

From top to bottom:

1. B on top wing – *Uffz.* Böhne? *Ltn.* Barth?
2. H on top wing and fuselage-*Vzfw.* Huttenrauch?
3. White vertical band on fuselage.
4. B on top wing, unknown – *Uffz.* Böhne? *Ltn.* Barth – emblem on fuselage.
5. L on fuselage and wing – *Vzfw.* Lieber?
6. T on top wing
7. Lozenge fabric wing, white stripe on wing and fuselage along with cross.
8. One of Jacobs' Dr.Is
9. K on top wing, obscured fuselage marking – *Ltn. d R* Kresse? *(HAC/UTD)*

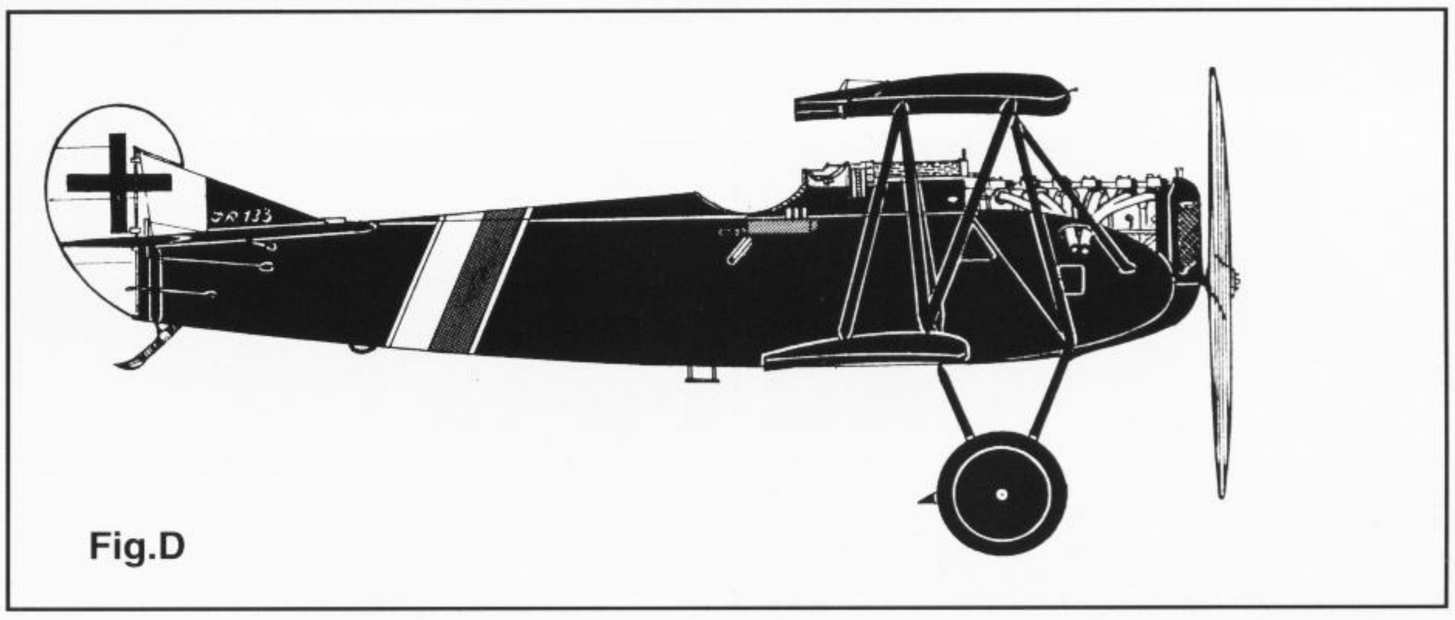


Fig.D

JASTA 8

J8-1: Here is a captured OAW-built D.VII in the hands of the 22nd Aero Squadron, possibly after the war. Broad light and dark bands encircle the fuselage, with unit (?) markings on fin and tailplane – the wing's chordwise panels are also in two colours. This D.VII *may* have been of *Jasta* 8, but be warned – our tentative identification is based purely on a well-known Nowarra photo of Albatros D.Va fighters with similar tail markings that Heinz labelled as *Jasta* 8. An RAF Intelligence report also stated that *Jasta* 8 aircraft were marked with black and white stripes. This D.VII may have belonged to another unit entirely. The publishers are confident *Jasta* 8 had D.VIIs at some stage, but they have no photos to confirm this.

▼ J8-1

JASTA 9

▲ J9-1

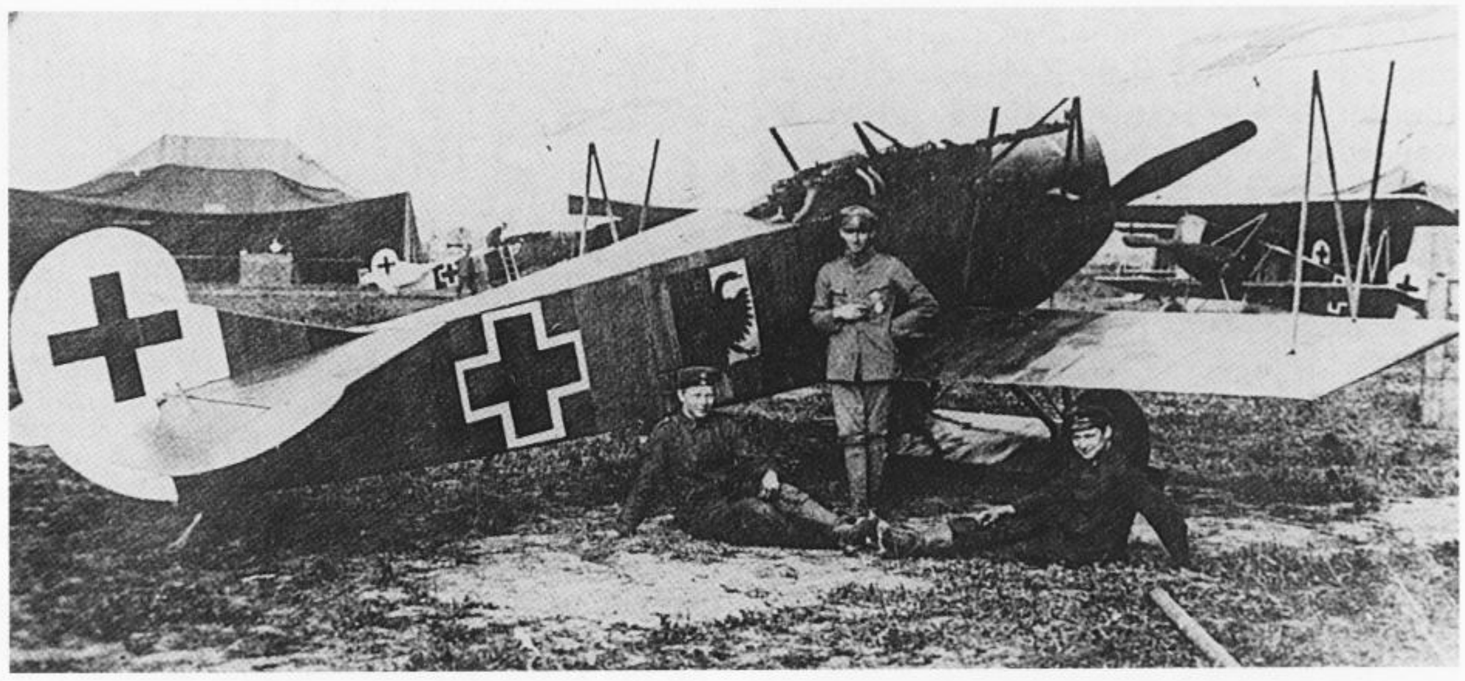
J9-1: Ltn. d R Walter Blume, commander of *Jasta* 9, poses with his Fokker D.VII in this Sanke card photo. In a letter written *circa* 1961, Blume stated, *'...our Fokker D.VII aircraft had black fuselages, white radiators and white wings. In addition to these colours, my aircraft bore a large letter 'B' on the side of the fuselage'.* The D.VII in the background bears the colours Blume described. It seems likely the white on the wings was confined to the upper surface of the top wing. Blume survived the war with 28 victories and the *Pour le Mérite,* and went on to become an aircraft designer with the Albatros and Arado firms.

▲ J9-2

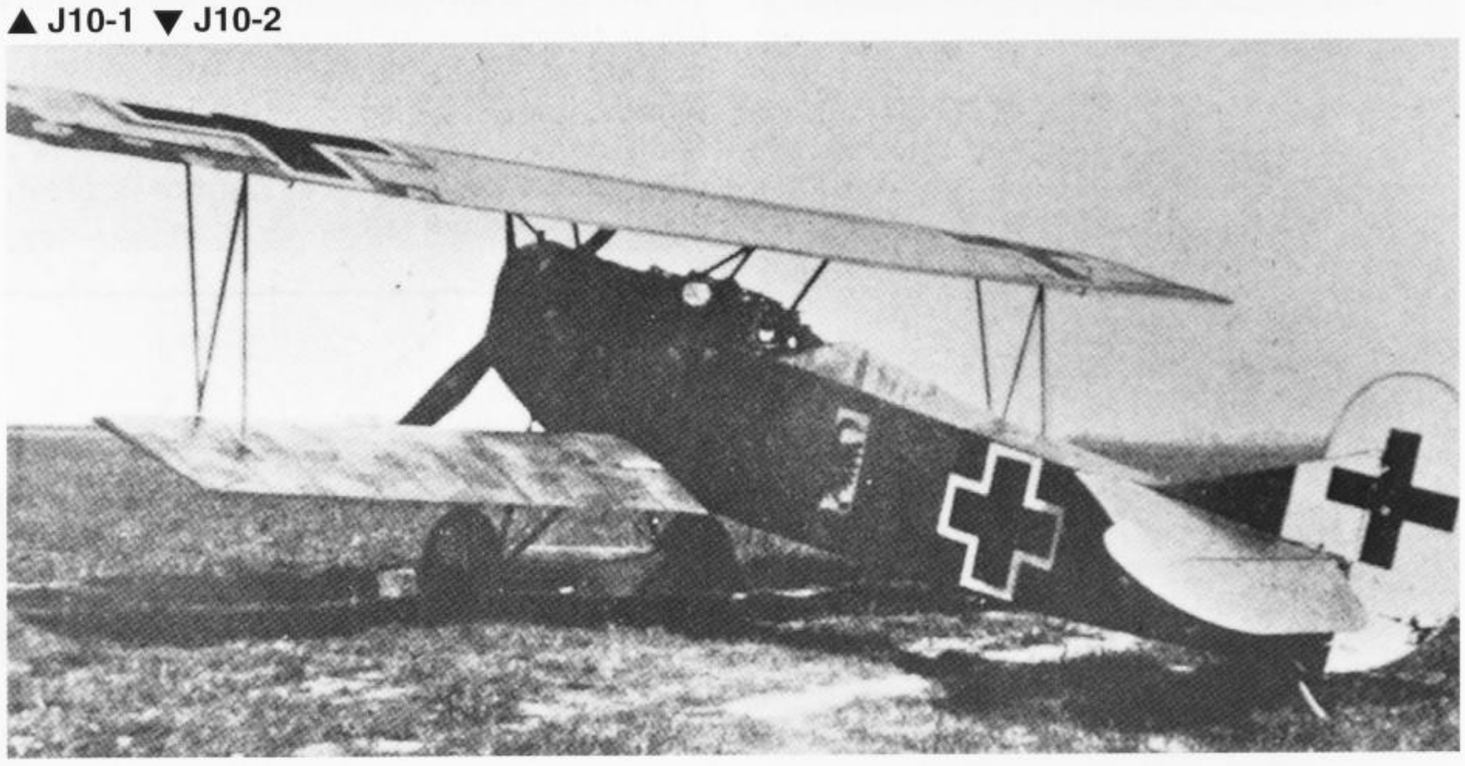
J9-2: After scoring his *Staffel's* 100th victory, a happy Walter Blume is helped out of his flying suit. His black-fuselaged OAW-built D.VII displays his personal white outlined 'B' emblem and the white radiator shell and forward nose. There is no evidence in this photo that the wings were white; in the original print, only printed fabric is discernible. Perhaps white paint was added later? *(HAC/UTD)*

JASTA 10

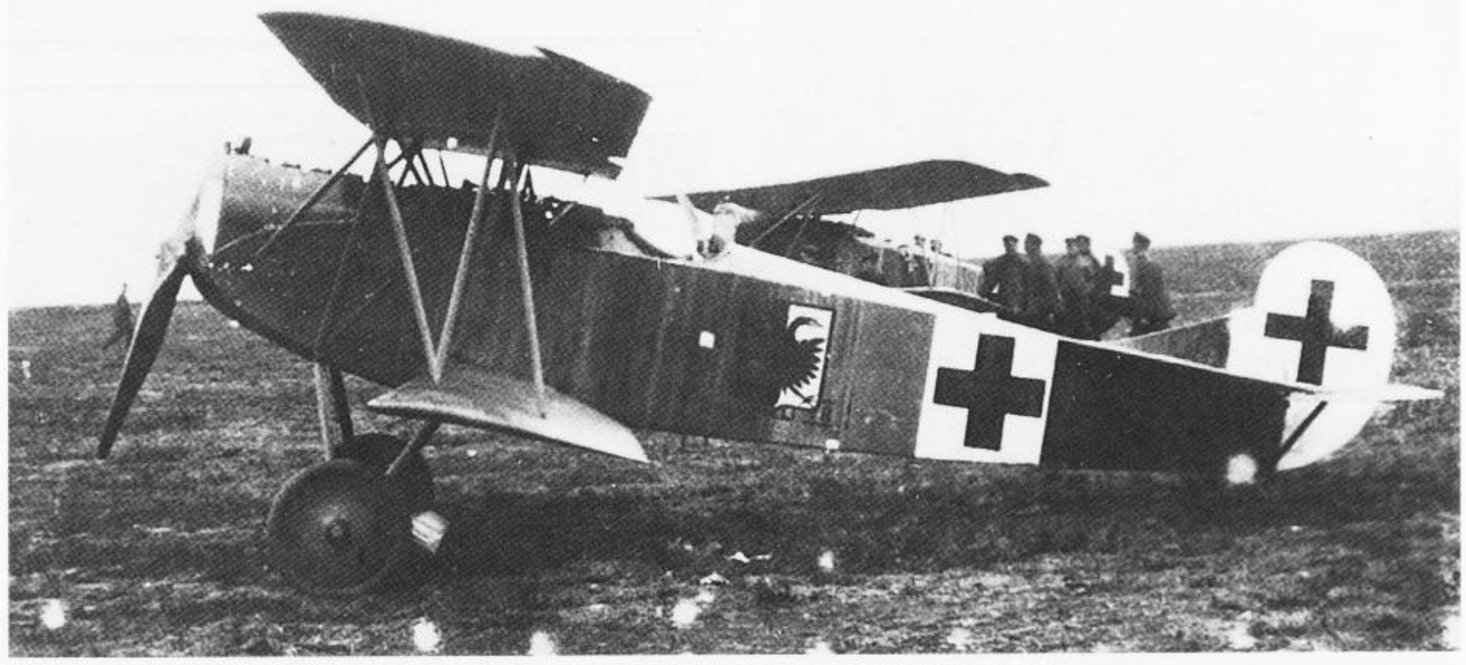
J10-1 and *J10-2: Ltn.* Friedrich (Fritz) Friedrichs and Fokker D.VII. Besides its yellow nose, this D.VII was emblazoned with a heraldic rest as a personal marking. The derivation of this is unconfirmed, but Aloys Heldmann recalled Friedrich's aircraft bore the colours of Schleswig-Holstein. A native Westphalian, Friedrichs did serve for a time in the Holstein Infantry Regiment No-85; a prominent emblem in the 19th Century military heraldry of the two duchies was a double-headed eagle. The tails of aircraft were favoured locations for personal colours in *Jasta* 10, as evidenced by the D.VII in the background. A 21-victory ace, Friedrichs died on July 15 1918 when the unstable phosphorus ammunition of D.VII 309/18 ignited and set it alight. He was able to take to his parachute, but the harness snagged on the tailplane and the chute failed. He had only recently been nominated for the *Pour le Mérite. (USAF Museum via Jon Guttman)*



▲ J10-1 ▼ J10-2



▼ J10-3

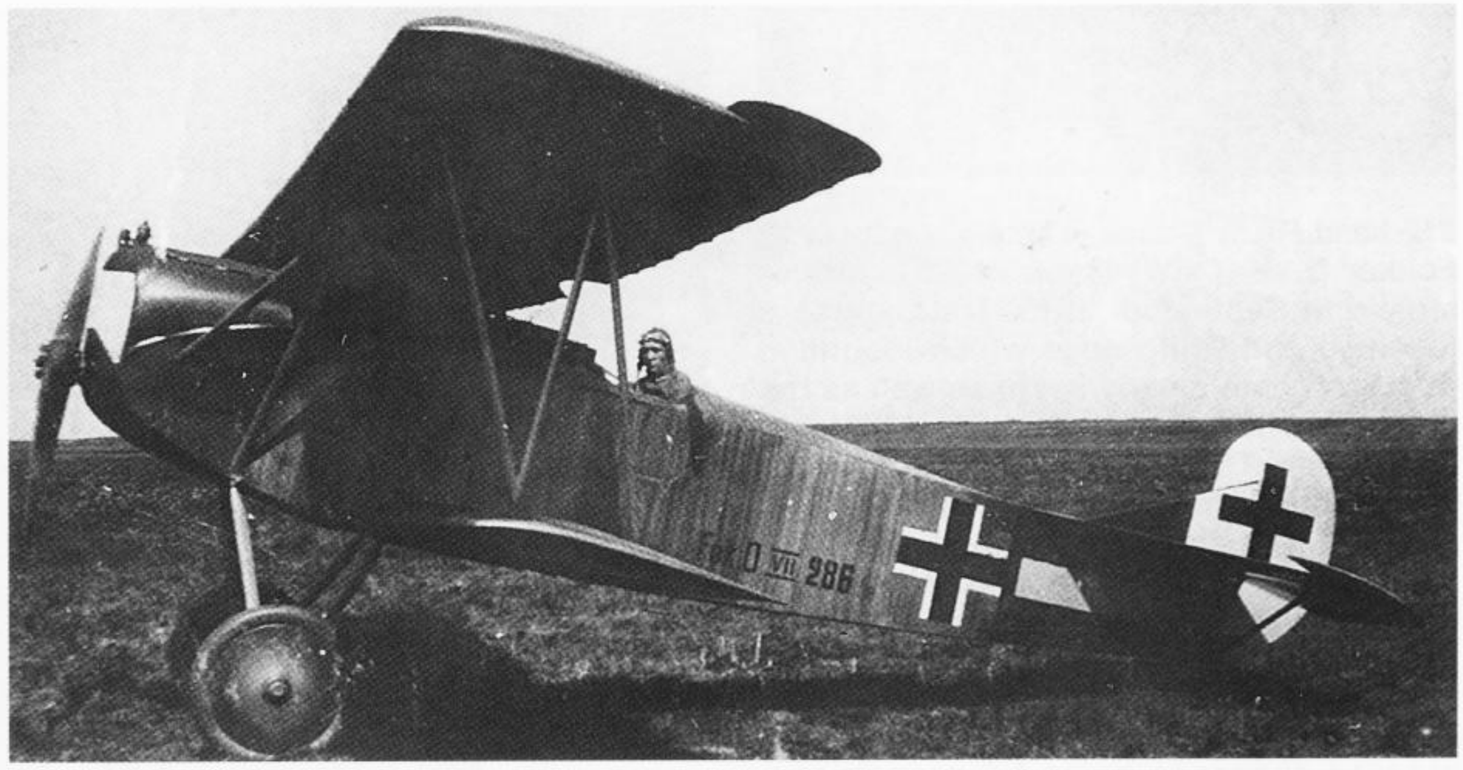


J10-3: A puzzle! This photo was in AEF's *Jasta* 19 file, and identified as *w/n* 2344, serial 258/18 – AEF said this photo was also in the von Buttlar album (*Jasta* 15) and another shot appears in Möller's book on *JG* II! However Alex Imrie has identified a photo of the pilot with this D.VII as 'Fritz' Friedrichs of *Jasta* 10! Since *Jasta* 10 was one of the first units equipped with the D.VII perhaps this one went on a 'familiarisation' tour to other units, thus turning up in several albums? Whether the white fuselage cross panel pre-dates or post-dates the other two photos here is not known. *(HAC/UTD)*

(For further *Jasta* 10 D.VII photos and profiles, see *Fabric Special No.1, Von Richthofen's Flying Circus).*

JASTA 11

▲ J11-1



▲ J11-2 ▼ J11-3

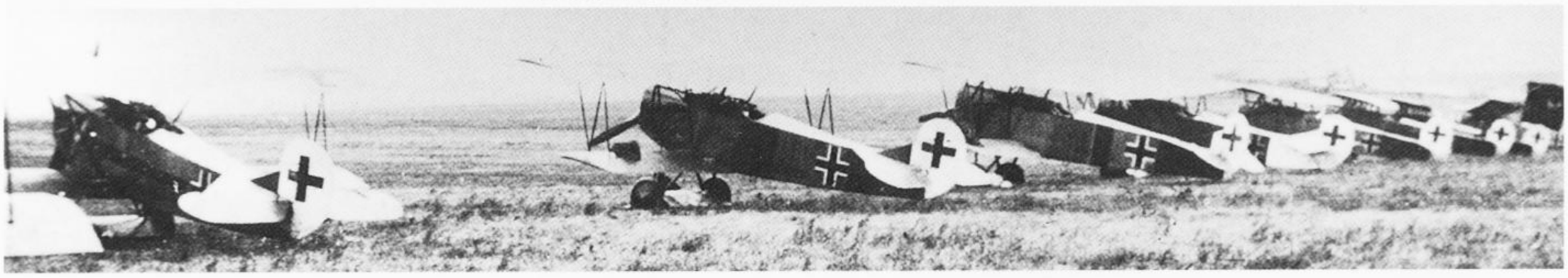
▲ J11-4 ▼ J11-5

J11-1 and *J11-2: Jasta* 11 probably received its first complement of D.VIIs in mid-May, and one of the best known examples is Willi Gabriel's 286/18. Gabriel described it to Alex Imrie and other historians over 30 years ago and numerous photos record its appearance. A Fokker-built machine of the first production batch, its fuselage left the factory in Fokker's streaky finish, while the wings bore *five*-colour printed fabric. At the time this photo was taken the cabane and interplane struts, as well as the nose, were red, while the undercarriage struts and wheel covers (in factory finish at this stage), were later painted in the unit colour. Gabriel followed typical *Staffel* practice in painting the tail in personal colours. He chose orange and light sky blue stripes. Later, lengthwise orange stripes were added to the sides and top of the fuselage as shown in the colour profile.

J11-3: Vzfw. Gabriel in characteristic pose. This angle provides details of the chevron-striped tail, the application of the streaked camouflage, and the style of exhaust exit on the starboard engine cowling. (For further *Jasta* 11 Fokker D.VII photos, see *Fabric Special No.1, Von Richthofen's Flying Circus*).

J11-4: Good photos of early *Jasta* 11 Fokker D.VIIs (other than Willi Gabriel's!) are surprisingly scarce – here is *Leutnant der Reserve* Erich Just with his Fokker-built D.VII. The factory printed fabric finish is supplemented with the unit's red paint on cowlings, struts and wheel covers and the pilot's personal black and white fuselage sash. *(HAC/UTD)*

J11-5: Familiar line-up of *Jasta* 11 D.VIIs at Beugneux in July 1918 – Gabriel's at left. *(G VanWyngarden)*



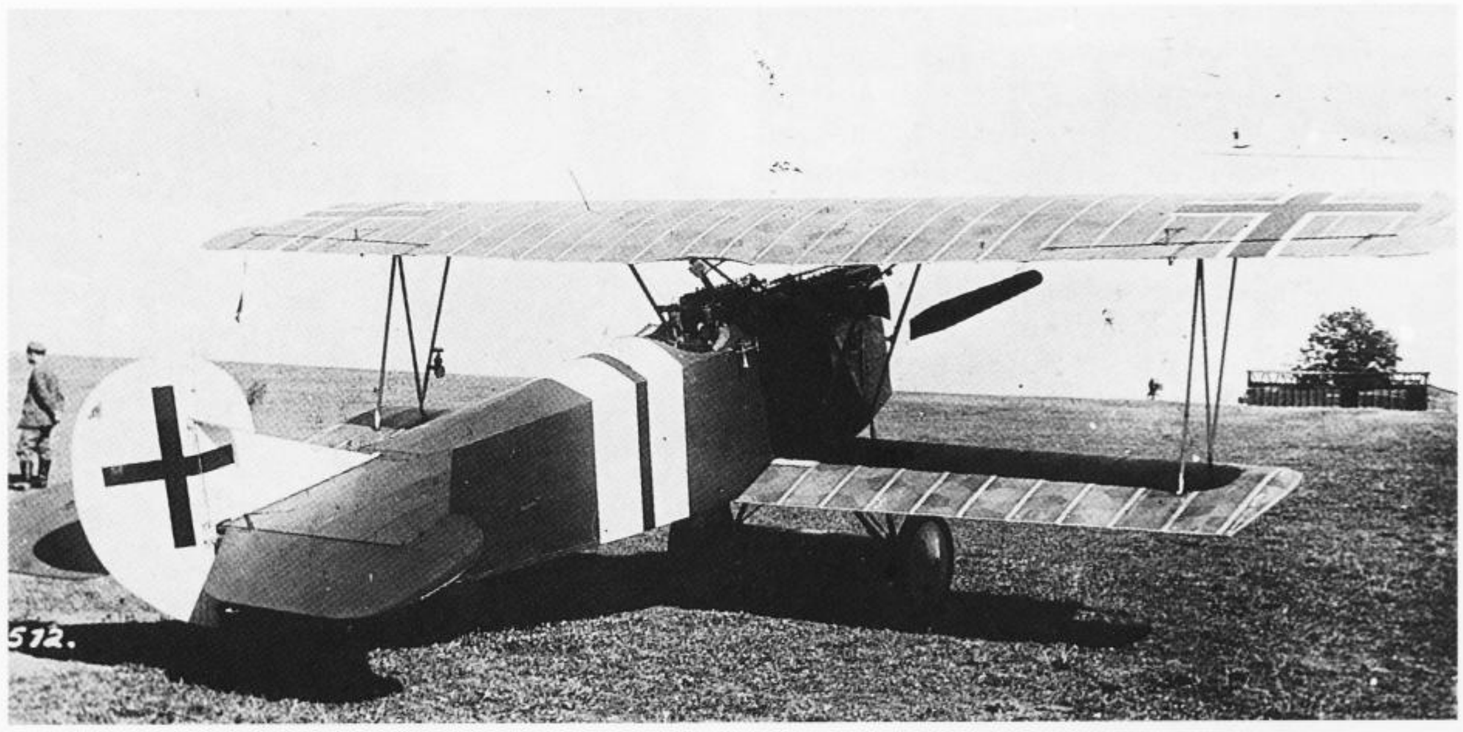
JASTA 12

J12-1 and *Fig.E*: Classic example of a *Jasta* 12 Fokker D.VII (OAW) taken at Giraumount airfield in September 1918. The dark blue fuselage and white nose which identified this *Staffel* are clearly seen, as well as the unknown pilot's two individual white fuselage bands. The Albatros logo on the rudder is noted only on OAW-built machines, and this was dispensed with in later production aircraft from this firm. The extreme outboard position of the wing crosses is also characteristic of *some* OAW aircraft, generally those of the 4000 – 4199/18 and 4450 – 4649/18 series. The crosses appear to be of 4:5 proportions. Note the light rib tapes over the four-colour fabric on the wings and the anemometer type ASI on the port 'N' strut. *(Via P M Grosz)*

J12-2: Ltn. d R Hans Besser of Jasta 12 chose a white broom as a personal symbol, a play on words relating to his name. This OAW-built aircraft bore the usual *Staffel* colours on fuselage and tail, and the wheel covers display typical early OAW finish of two-tone camouflage patches (most likely dark green and greyish violet). The crosses on the wings appear to be of 4:5 proportion, as a result of a directive issued on May 13 1918. These proportions were also effected on the rudder cross, though this was not called for in the directive. *(Alfred Greven photo via P S Browne)*

J12-3: Three unidentified comrades of *Jasta* 12 strike a confident pose with a D.VII (OAW) of a later production batch (possibly 6300-6649/18 series). The white area on the nose was increased to include the additional metal cowling panel. Just discernible on the original print is a dark-bordered white band behind the three pilots, and a white border around the tailplane and elevators. *(Via W R Puglisi/ P M Grosz)*

J12-4: The ace *Ltn. d R* Ulrich Neckel poses with a *Jasta* 12 D.VII in the background. Note the white cabane struts and wheel covers, features which are not always seen on other Fokkers of this unit. *(Via H J Nowarra)*



▲ J12-1

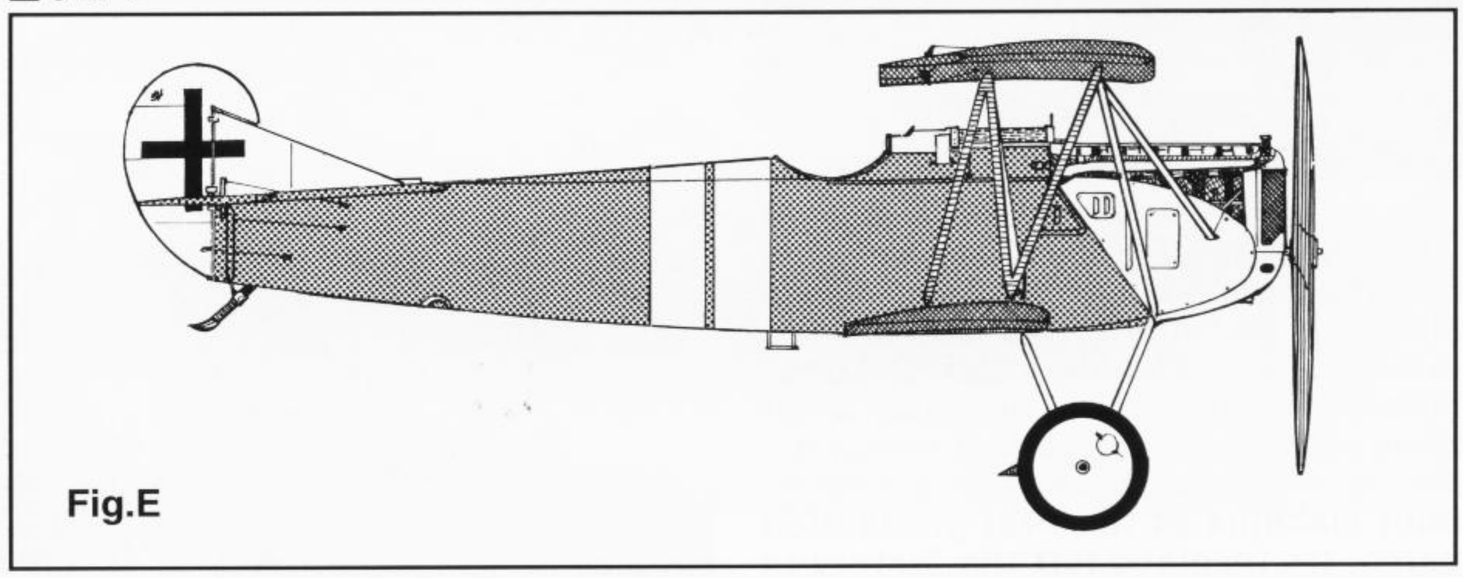
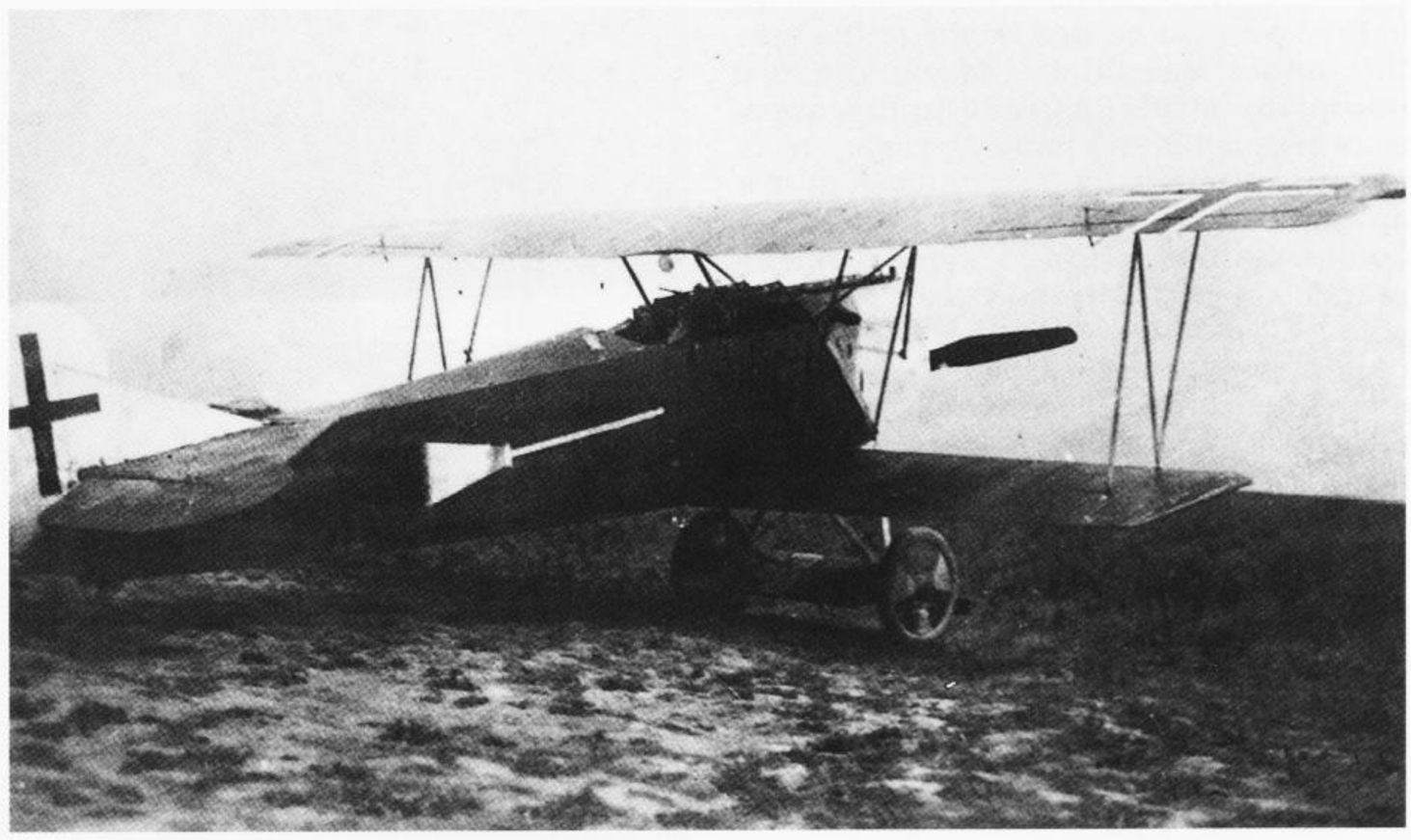


Fig.E



▲ J12-2 ▼ J12-3

▼ J12-4

JASTA 13

Fig.F: Provisional drawing of a Fokker-built D.VII of *Jasta* 13, serial unknown, pilot *possibly Uffz.* Johannes Fritzsche, but this is not known. Dark green nose, dark blue fuselage. Wings in five-colour fabric, dark green (?) struts with Fokker factory-finish wheel covers. White 'F' as personal emblem.

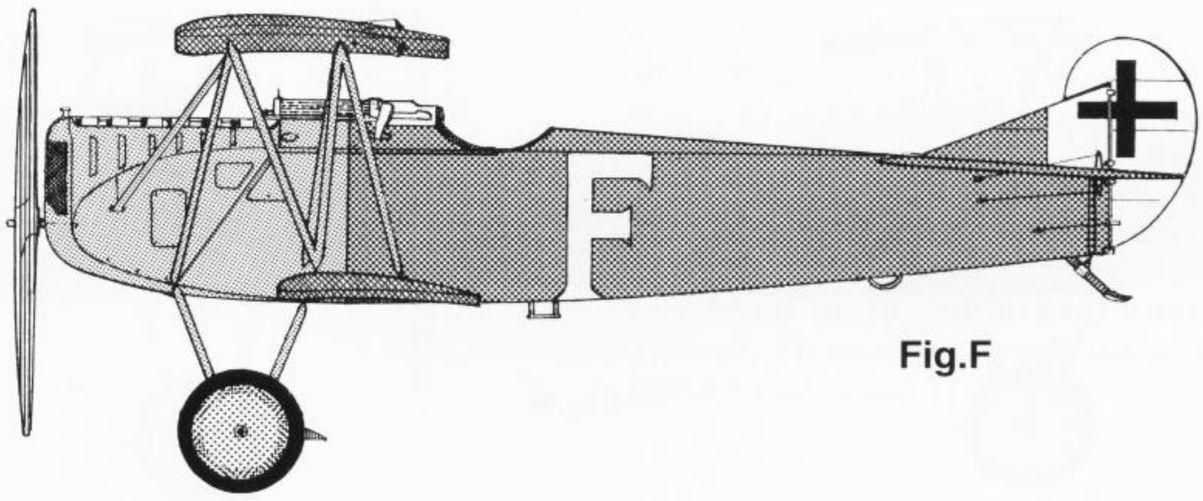


Fig.F

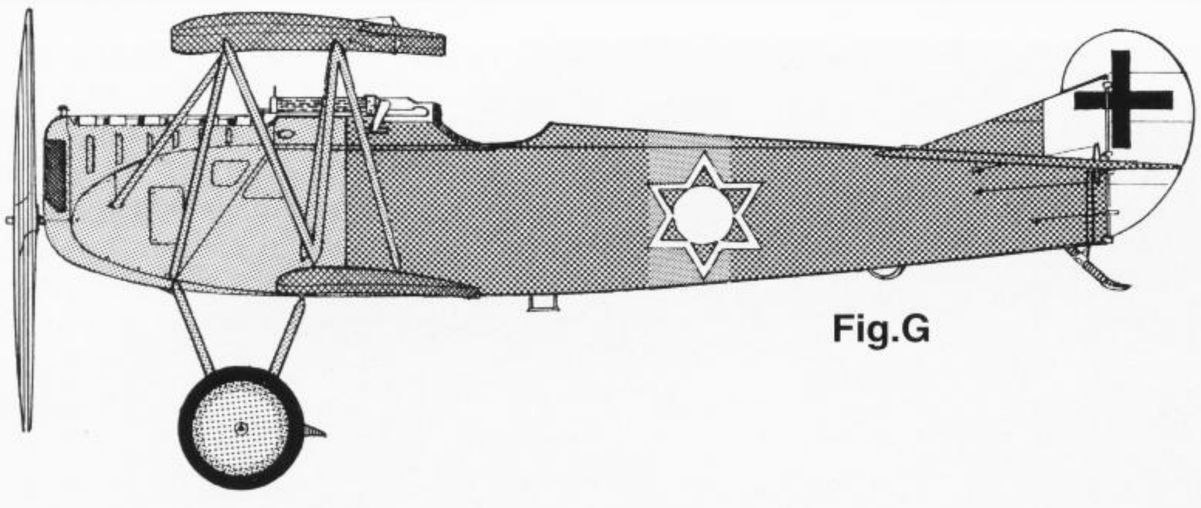


Fig.G

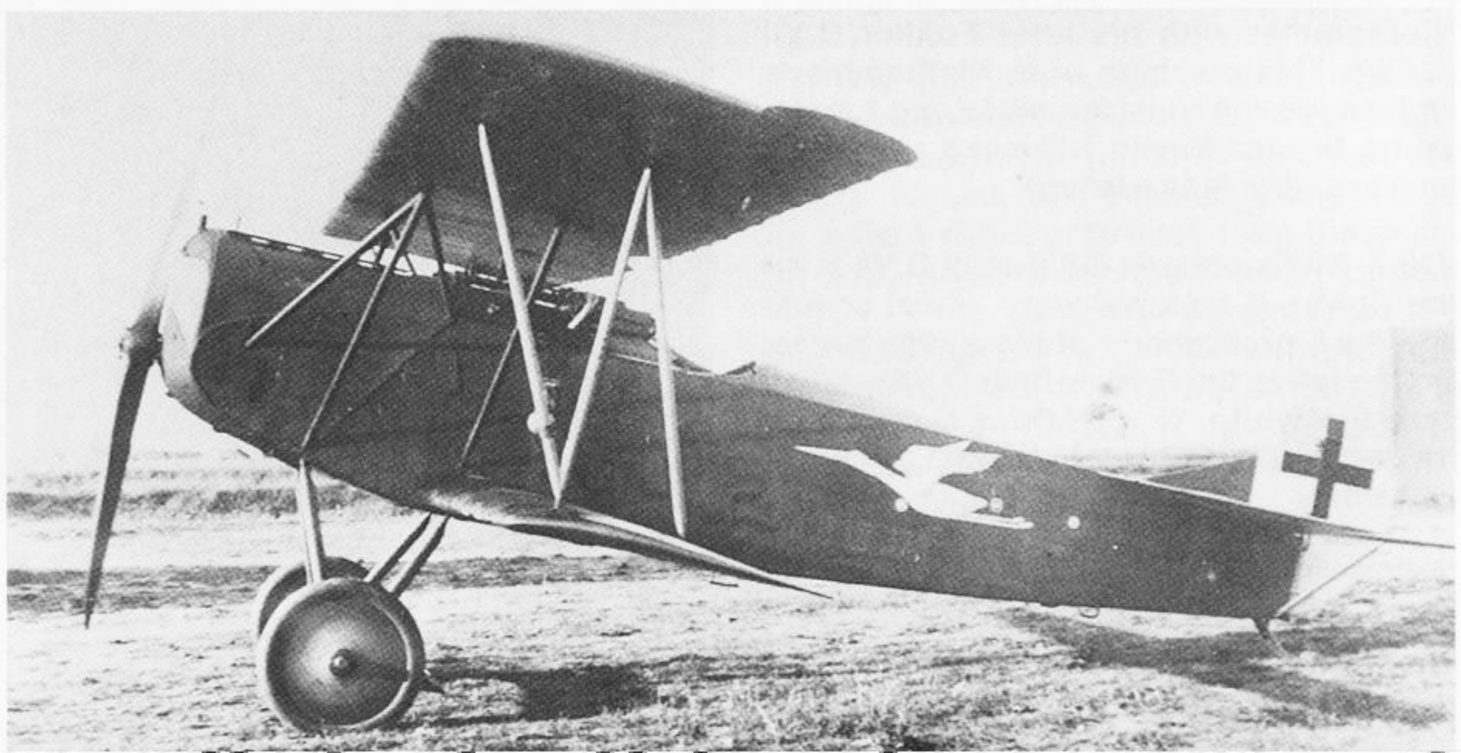
Fig.G: Fokker-built *Jasta* 13 D.VII, June 13 1918 probably flown by *Ofstv.* Jacob Ledermann. Dark green nose and struts (?), dark-mid blue fuselage and tail surfaces (at least upper surfaces). Colours of personal insignia on the fuselage unknown; the light 'band' may be a previous marking which was overpainted. Wings in five-colour fabric while wheels retained the Fokker factory finish.

J13-1: Jasta 13 Fokkers in June 1918. At least the first three aircraft have had louvres cut into their upper cowlings to improve cooling. All bear *Jasta* 13 colours of blue fuselages and green noses, though the differences in tonality of the former colour are noteworthy. The third machine from the right was flown by *Uffz.* Piel, and the fifth aircraft is thought to have been *Vzfw.* Haussmann's. The machine marked with the Star of David was probably flown by *Ofstv.* Jacob Ledermann, a Jewish pilot taken POW on August 20 1918. *(Dr. Volker Koos via P M Grosz)*

▲ J13-1 ▼ J13-2

J13-2: The demarcation line between the green and blue of *Jasta* 13's D.VIIs is clearly evident in this view of *Uffz.* Heinrich Piel posing with D.VII 373/18 (the white serial number remains visible beneath the blue overpaint). Piel's personal emblem was the white stork, and the roundels indicate bullet hole patches. *(Via P M Grosz)*

▼ J13-3



J13-3: Another view of *Uffz.* Piel's D.VII 373/18. Note the anemometer-type airspeed indicator mounted on the port interplane strut. The wheels remained in Fokker factory finish, and the wings were covered in five-colour fabric. Piel was killed in this aircraft on June 29 1918. *(Via Jon Guttman)*

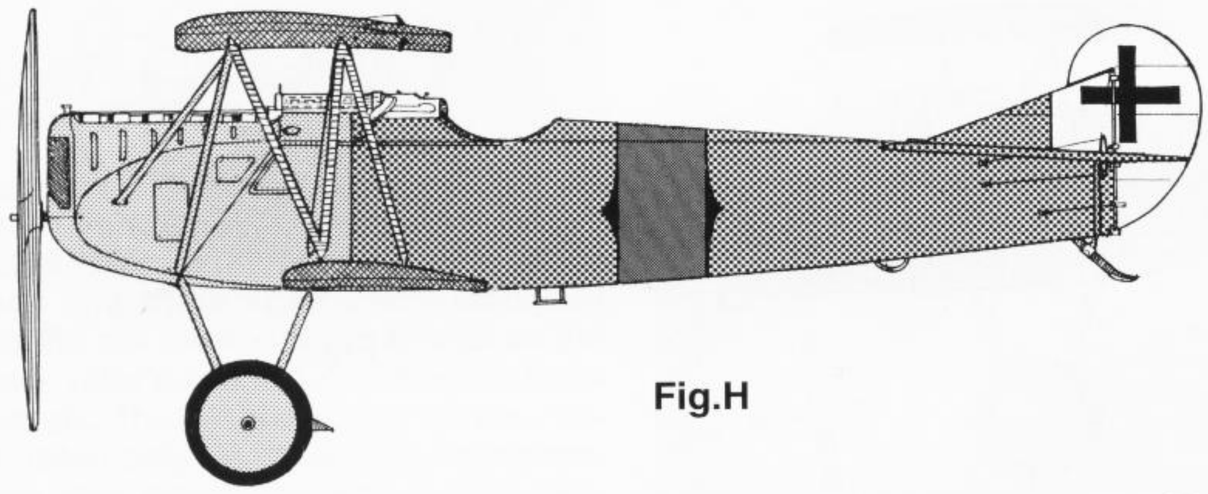


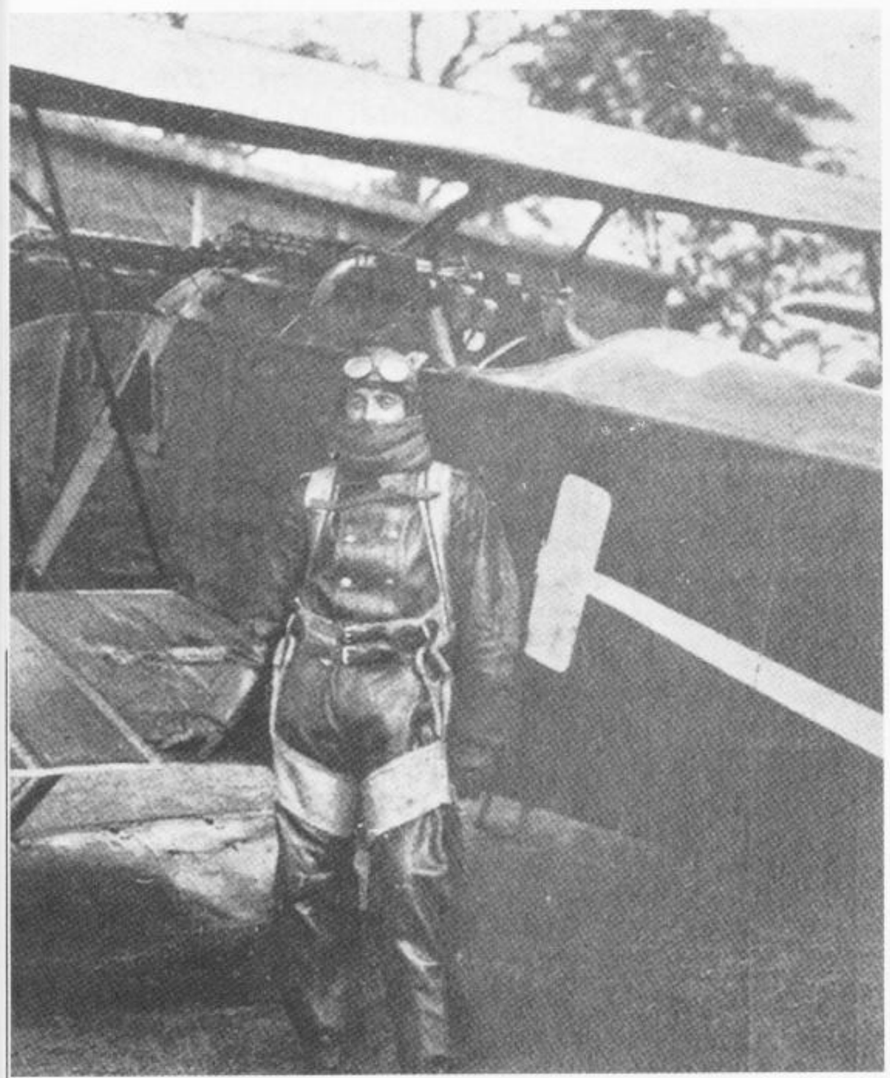
Fig.H

Fig.H: Fokker-built D.VII, serial unknown, *Vzfw.* Albert Haussmann, *Jasta* 13. Dark green nose, dark blue fuselage and upper tail surfaces. Five-colour fabric on the wings. Wheel covers, u/c and cabane struts may have been dark green as well. Haussmann's personal insignia was the two-colour engrailed band around the fuselage, colours unknown. Haussmann survived a mid-air collision in this D.VII.

J13-4: The 15-victory ace *Vzfw.* Albert Haussmann of *Jasta* 13 strikes a pose with his D.VII. The dark green nose is distinctly visible, as is Haussmann's personal band marking in two colours. *(Dr. Volker Koos via P M Grosz)*

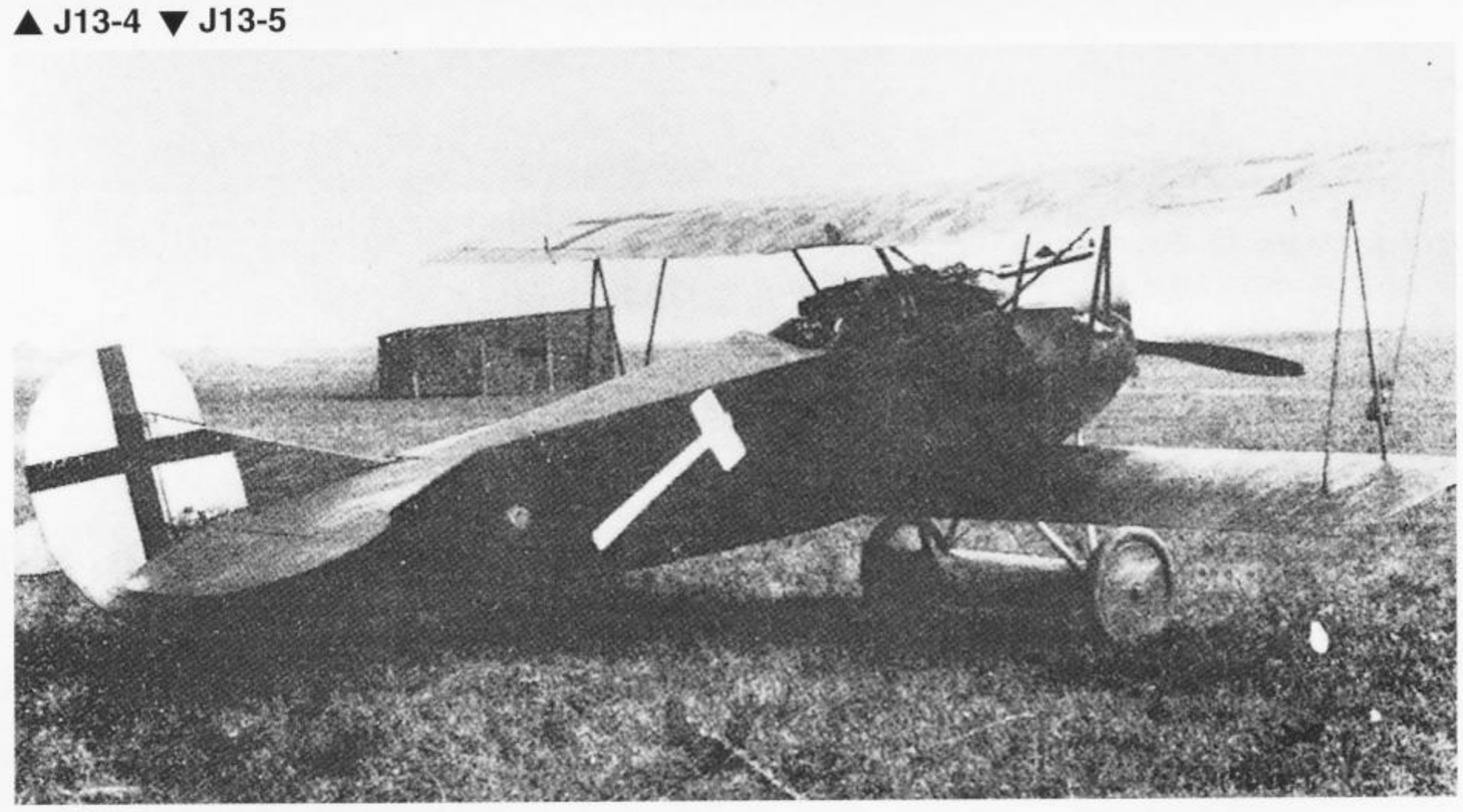
J13-5: *Ltn. d R* Werner Niethammer (whose name translates as 'riveting hammer') used the emblem of a white hammer on his Fokkers of *Jasta* 13. The unusual cross form on the rudder and fin is seen on a few other early-production D.VII fighters from the parent factory. The crosses on the printed fabric-covered wings bear evidence of conversion from earlier types. *(Via P M Grosz)*

▲ J13-4 ▼ J13-5

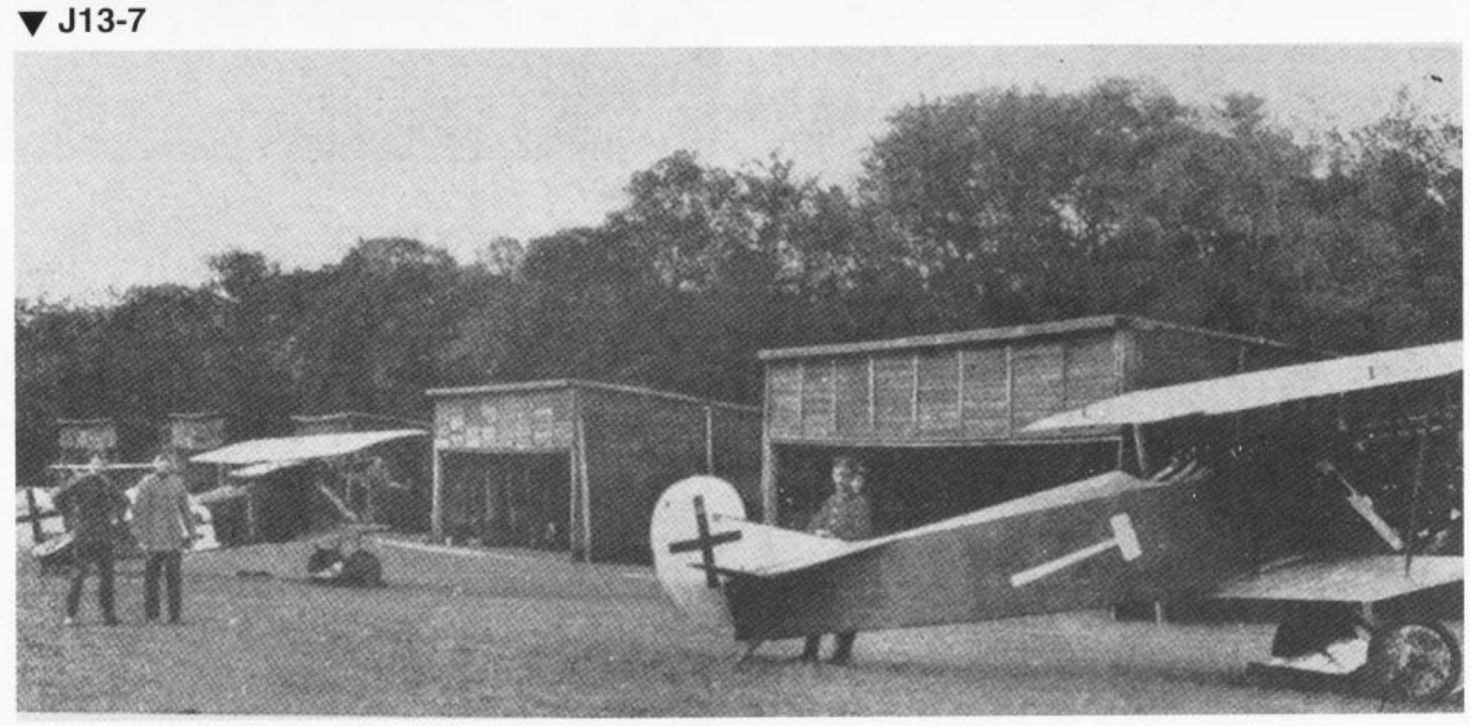


▲ J13-6

J13-6: Ltn. Franz Büchner took command of *Jasta 1*3 in mid-June 1918, and it is believed he modified the unit markings of the *Staffel* at this time. The green area on the nose was reduced in size and bordered by a white stripe. The new unit livery is discernible in this view of *Ltn. d R* Niethammer with his later Fokker D.VII (OAW). This machine bore Niethammer's emblem on the fuselage sides and top; he wears the reinforced Heinecke parachute harness. *(Via N Mladenoff)*



▼ J13-7



J13-7: Niethammer's OAW-built D.VII is on the right – it features worn wheel covers and 4 x 5 proportions of the rudder cross. On the left is the Fokker-built D.VII marked with the white 'G' of *Ltn. d R* Grimm, a three-victory pilot of *Jasta* 13. *(Via R Duiven)*

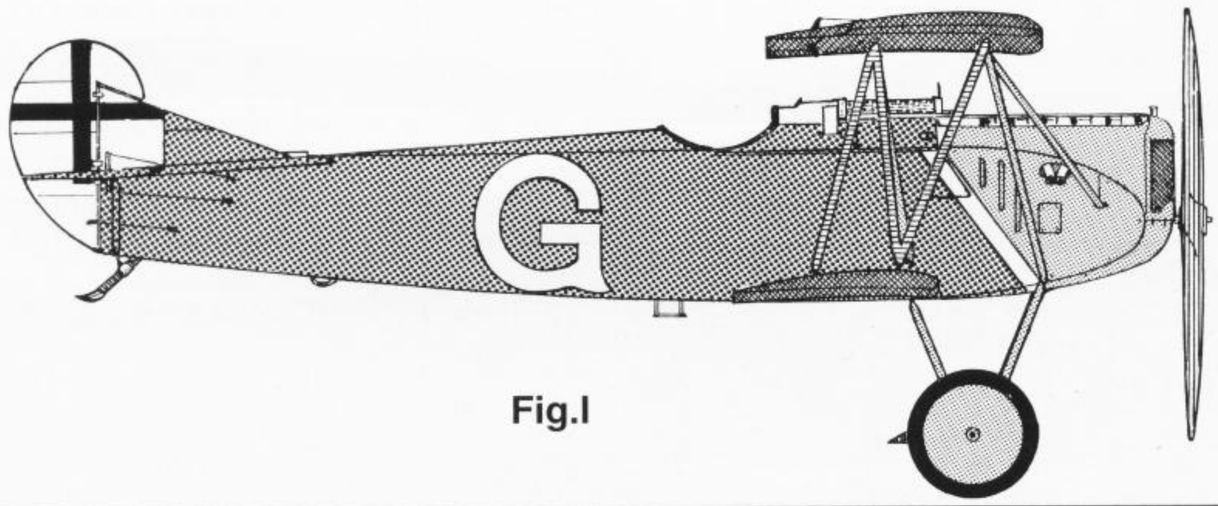


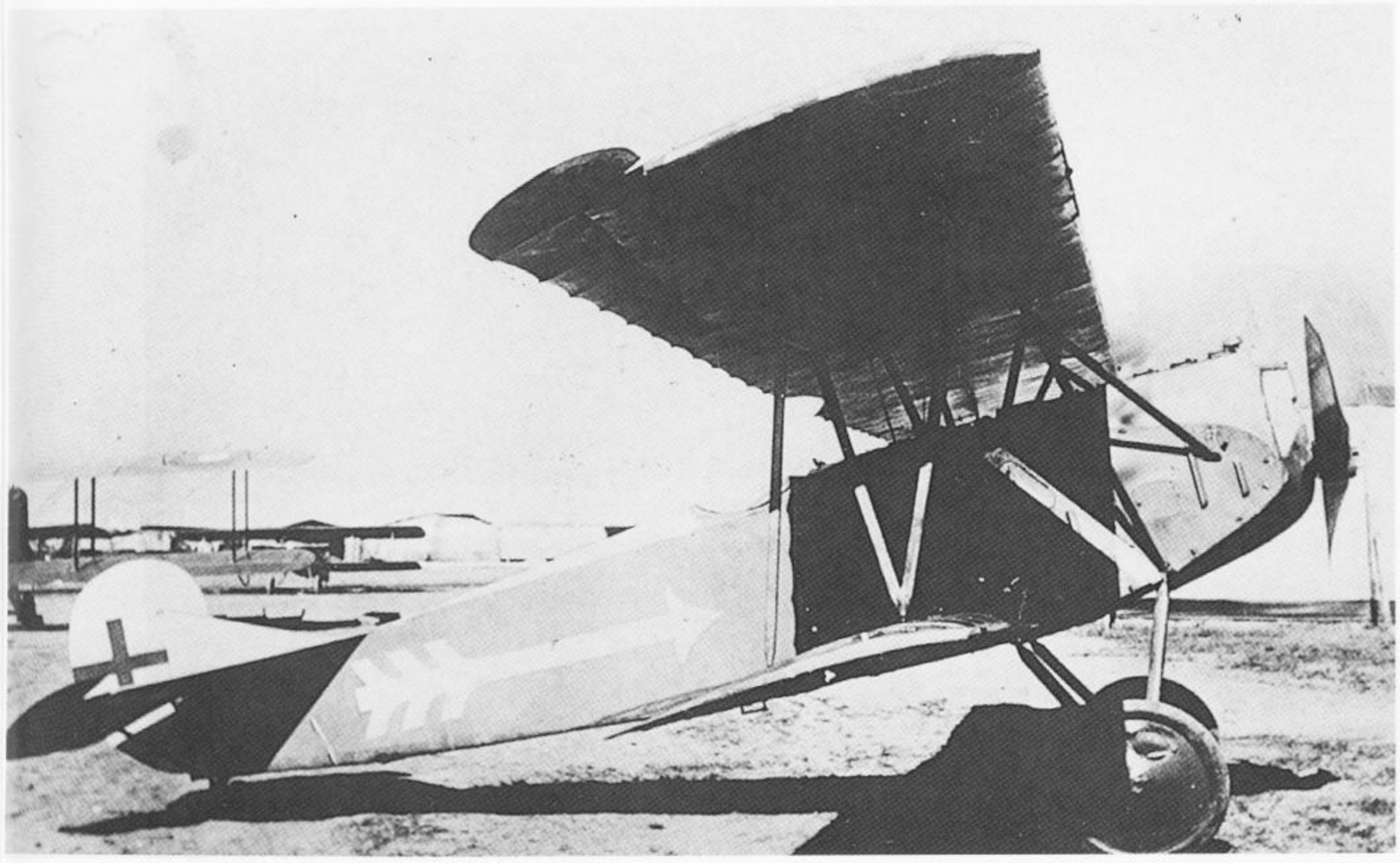
Fig.I

Fig.I: Fokker-built D.VII, serial unknown (early production) *Ltn. d R* Grimm, *Jasta* 13. Dark blue fuselage, dark geen nose with white border, dark green (?) wheel covers and u/c and cabane struts. White 'G' initial. The unusual cross is seen on a few other early-production Fokker-built aircraft. Five-colour fabric on wings (and beneath tailplane ?)

J13-8 and *J13-9:* The familiar Fokker D.VII (OAW) of *Ltn. d R* Paul Wolff of *Jasta* 13 was brought down and captured on September 14 1918. Wolff's individual arrow marking was emblazoned on the blue fuselage, and the wheel covers were apparently the same dark green as the nose. Note the light-coloured upper cowling panel, perhaps white or is it an unpainted replacement cowling merely left in natural metal? The wings appear to be have been covered in four-colour fabric. *(Via P M Grosz)*

▲ J13-8 ▼ J13-9

▼ J13-10



▼ J13-11

J13-10: Jasta 13 *Staffelführer* Franz Büchner commemorates his 30th victory by the *JG* II custom of posing with his wreathed D.VII. This was an OAW-built machine, apparently in the 4450-4649/18 serial sequence – judging from the louvred cowling panels. Büchner's individual markings of a green/white checkerboard (signifying his native Saxony) and a leonine image said to be a werewolf's head were painted on a plaque for such commemorations as well. *(Via P M Grosz)*

J13-11: Büchner later flew a different OAW-built D.VII, probably from the 6300-6649/18 batch. His personal emblems are boldly marked on the fuselage and a tube for a flare pistol protrudes from the cockpit side. Additional sights were mounted ahead of the guns.The paleness of the blue fuselage could be due to orthochromatic film, but it is possible *Jasta* 13 may have used a somewhat paler shade of blue than other *JG* II units like *Jasta* 15. *(Via P M Grosz)*

JASTA 14

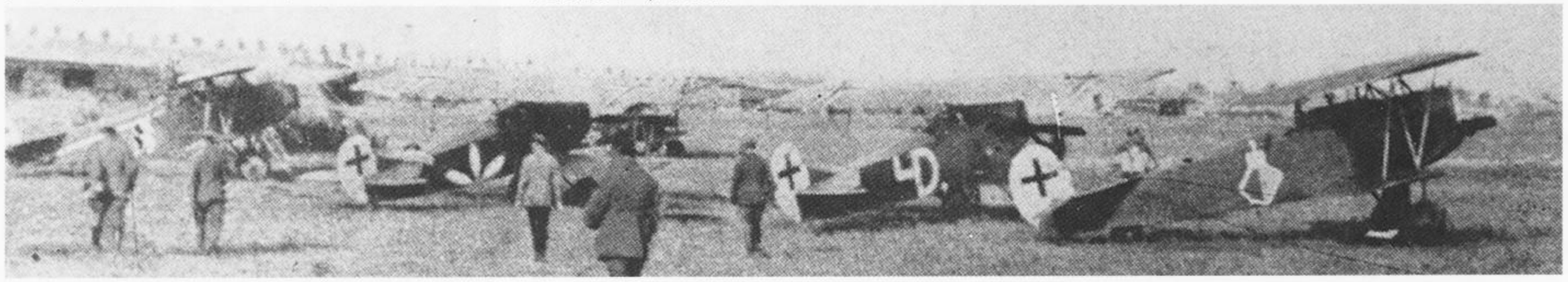
J14-1: The unit's Albatros and Fokker Dr.I fighters bore horizontal black and white lateral stripes on their fuselages. Few details are available of any D.VIIs operated by this unit however. The photo of 247/18 (or 243/18) shows this Fokker-built D.VII at *Jasta* 14 with the unit's Triplanes behind. Photos of *other Jasta* 14 Fokker D.VIIs are currently being sought by the publishers.

▲ J14-1

JASTA 15

J15-1: Hauptmann Rudolf Berthold, the commander of *Jagdgeschwader* II, poses with his famous Fokker in possibly the only surviving photo of this familiar aircraft. This D.VII was painted in the *Jasta* 15 colours of red cowling panels and a dark blue fuselage from the cockpit aft. This was an early production Fokker product, and the factory finish of streaked camouflage is visible on the fuselage from the cowling aft to the centre of the cockpit; this may well have been overpainted red at a later date. The upper surfaces of both wings were painted dark blue as well, with the exception of a white centre-section of the upper wing. Berthold's famous winged sword emblem appeared on the side of the fuselage in white, and it *may* have been repeated in some form on the upper wing centre-section as well. The fuselage cross remained slightly visible through the blue paint. *(Reinhard Kastner)*

▲ J15-1 ▼ J15-2



▼ J15-3

J15-2: An assortment of *Jasta* 15 Fokkers appears in this photo from Hanns Möller's 1939 book, *Kampf und Sieg eines Jagdgeschwaders*. From left to right are *Vzfw.* Gustav Klaudat's D.VII bearing his Uhlan lance emblem with black/white pennon; *Ltn.* Joachim von Ziegesar's Fokker with his three white feathers; the Fokker of *Ltn.* Oliver *Freiherr von* Beaulieu-Marconnay, identified by the '4D' branding iron insignia of his former dragoon regiment; an unidentified machine marked with a crowned crest. All of these aircraft were Fokker-built and were painted with the red noses and dark blue fuselages of *Jasta* 15. (*Via R Duiven)*

J15-3: Ltn. Oliver *Freiherr* von Beaulieu-Marconnay with his Fokker D.VIIF. It has previously been assumed that this photo depicts von Beaulieu and his Fokker during his stint as commander of *Jasta* 19, but it is now thought more likely that it was taken while he was still in *Jasta* 15. His '4D' emblem came from the branding iron symbol of his old *Dragoner-Regiment*

von Bredow (1. Schlesisches) Nr.4, or the 4th Dragoon regiment. The D.VIIF in the photo was formerly used by *JG* II commander *Hauptmann* Berthold, and the overpainted winged sword emblem is still discernible. The upper surfaces of the wings may have been overpainted, though the light section on the starboard upper wing is unexplained; perhaps a hasty repair. *(Via P M Grosz)*

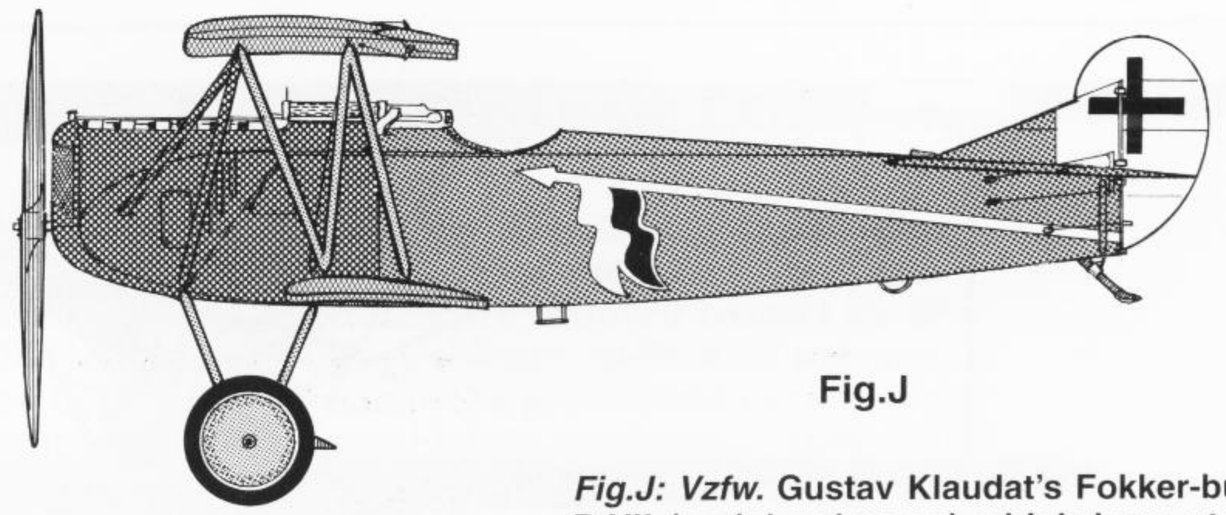


Fig.J

Fig.J: Vzfw. Gustav Klaudat's Fokker-built D.VII (serial unknown) which bore standard *Jasta* 15 colours and a black and white Ulan lance on the fuselage. Wheel covers were probably Fokker factory finish, wings five-colour fabric, cabane struts red. A somewhat conjectural depiction, as the photo is unclear.

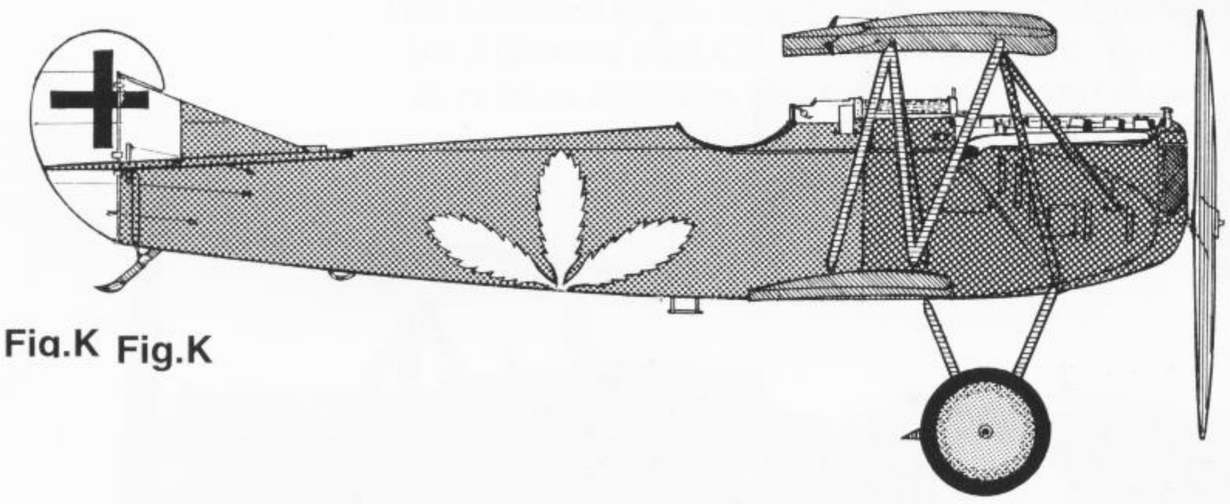
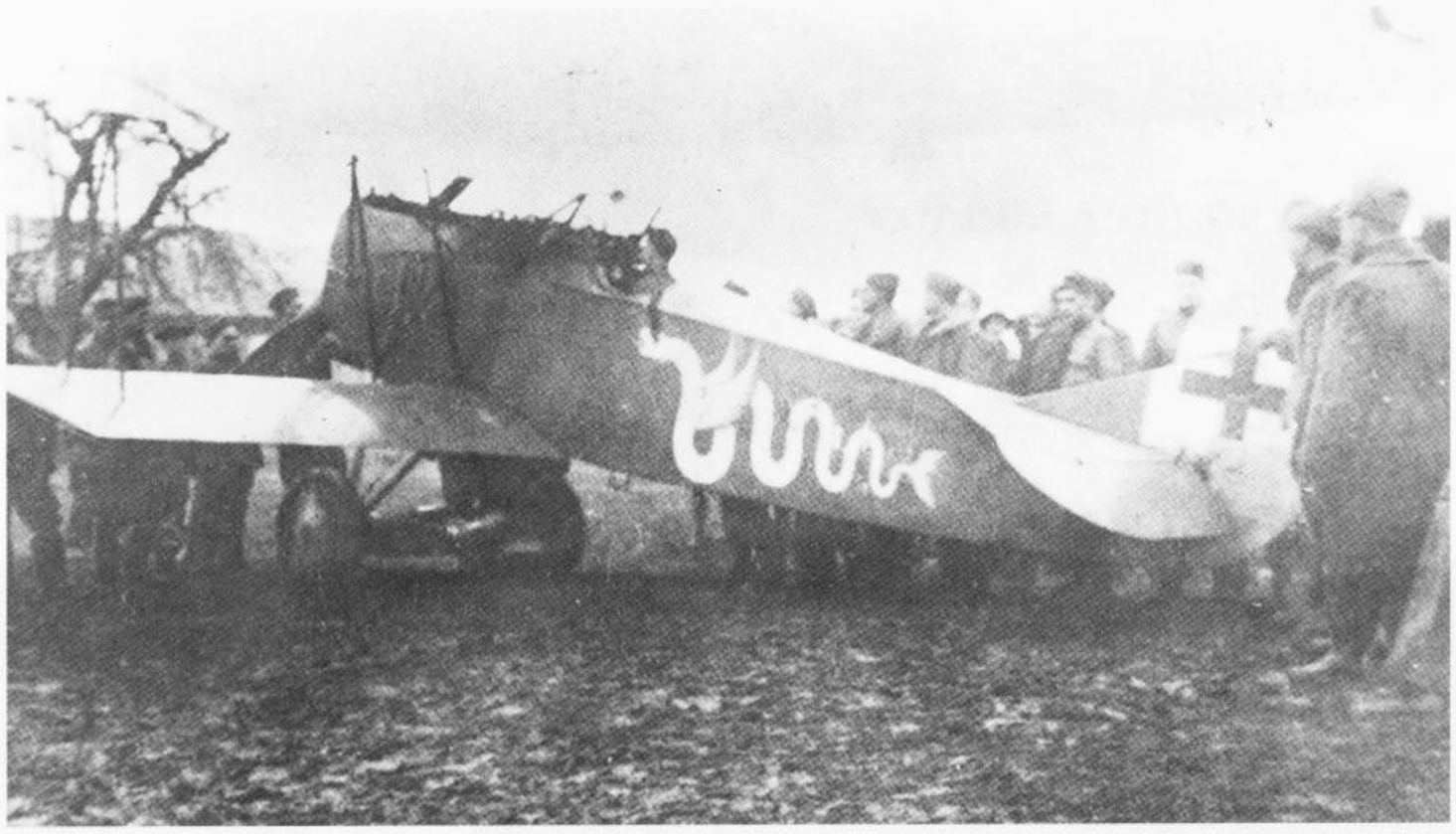


Fig.K Fig.K

Fig.K: Ltn. Joachim von Ziegesar's Fokker-built D.VII, in standard unit colours. It bore his three white feathers.



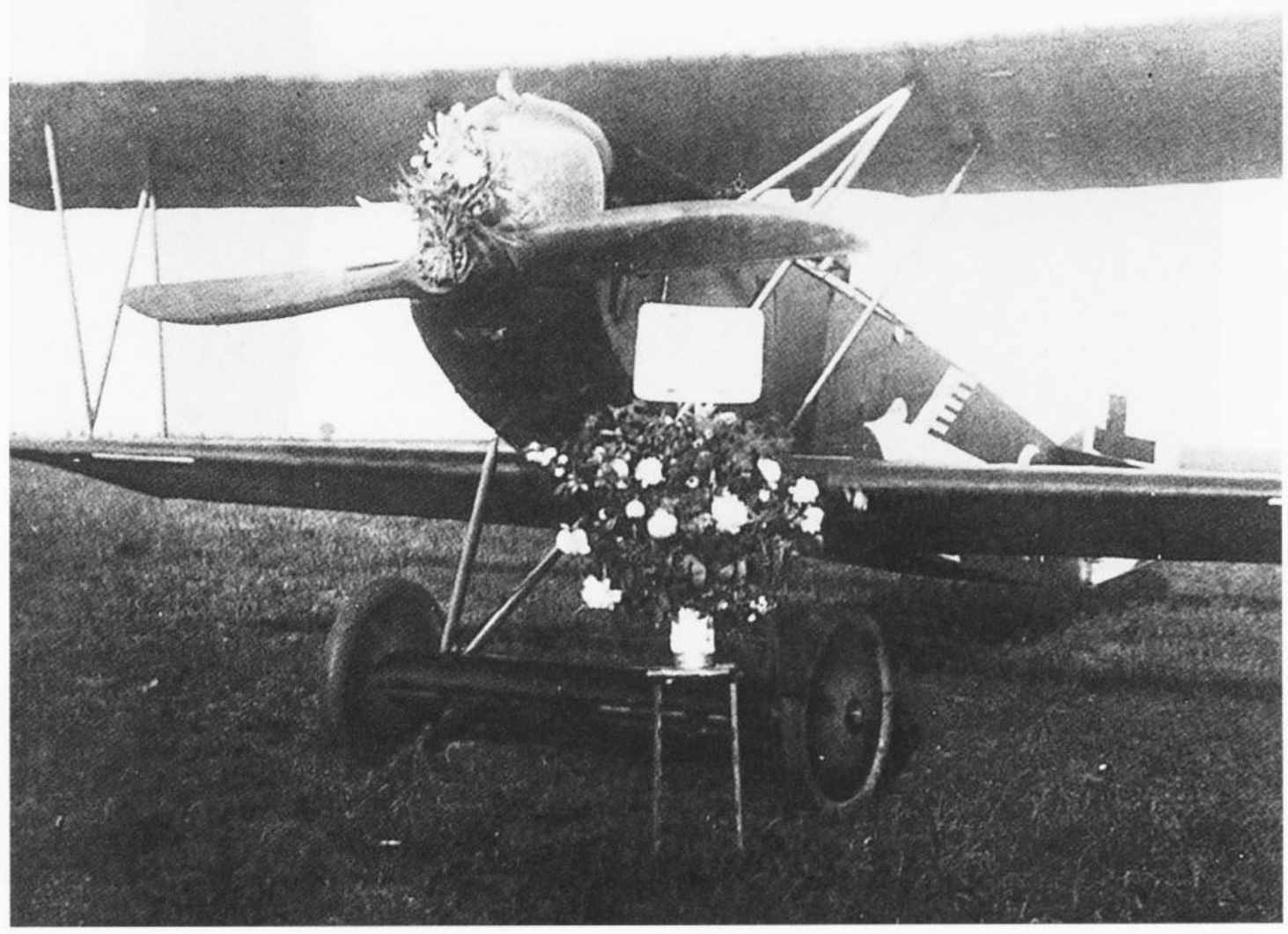
▲ J15-4 ▲ J15-5 ▼ J15-6

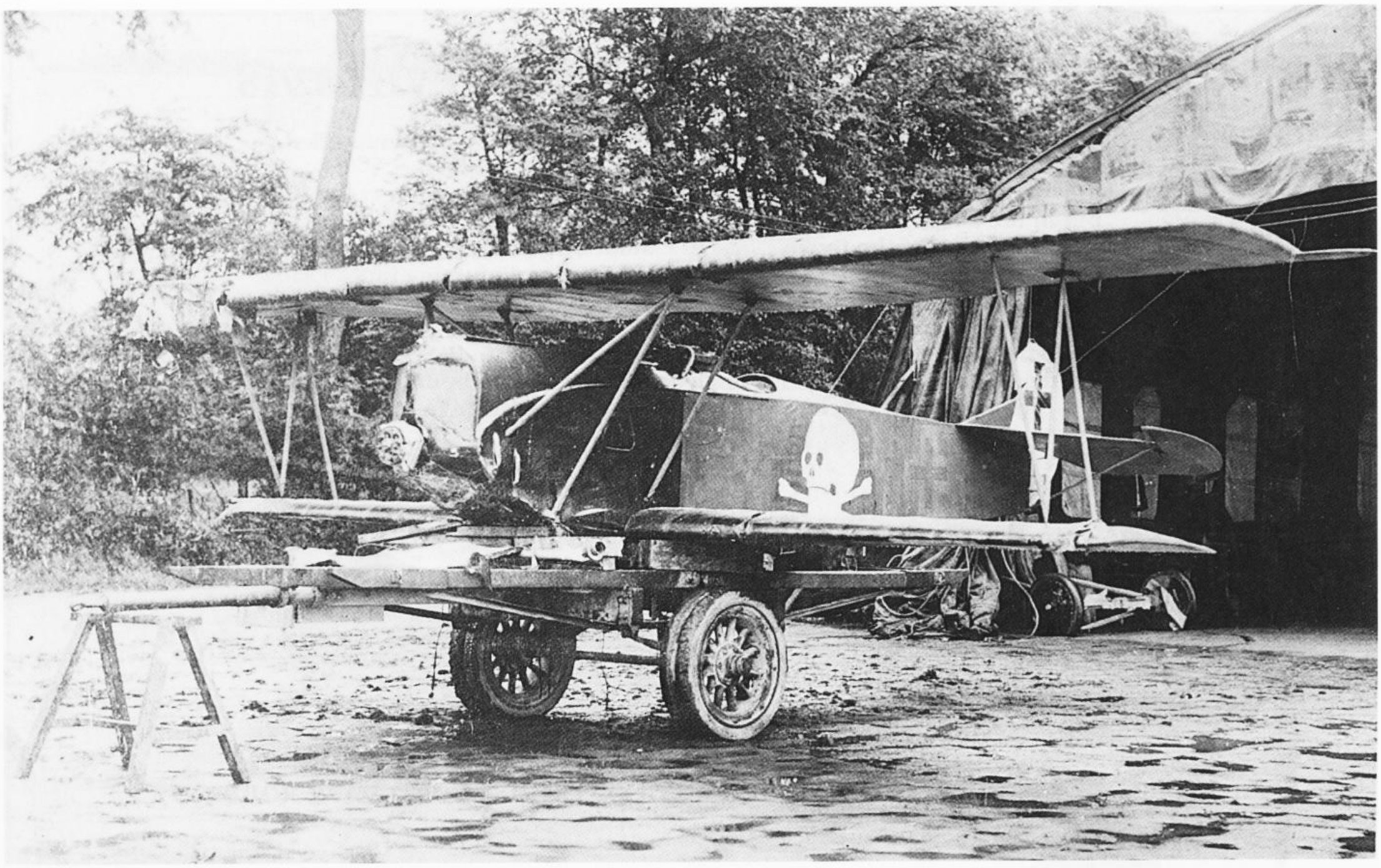
J15-4: The 11-victory *Jasta* 15 pilot *Ltn.* d R Hugo Schäfer is known to have used a snake emblem on his aircraft, and this D.VII decorated with a fanciful winged serpent is thought to have been his. It is seen in American hands after the war. The snake appeared on both sides of the fuselage in white, and was repeated in simpler form on top of the fuselage. The demarcation line between the red nose colour and the dark blue fuselage is evident. The wheel covers were probably in Fokker factory finish. *(Via USAF Museum)*

J15-5: A poor-quality view of Schäfer's *Jasta* 15 D.VII, which nonetheless shows the snake marking repeated on the fuselage top. The paint used was seemingly of poor quality as much of the snake emblem has flaked off and the fuselage cross can be discerned once again. *(Via Jack R Eder)*

J15-6. Ltn. Josef Veltjen's D.VII was suitably bedecked with flowers to record the pilot's 24th birthday on June 2 1918. The blue/red division of the fuselage is clearly seen and when this photo was taken the wheel covers were in factory finish, the struts apparently in grey. *(Reinhard Kastner)*

Continued on page 59.





382/18 – CASUALTY OF WAR

DAVE ROBERTS RE-EXAMINES A FAMILIAR FOKKER...

After Ernst Udet's *Du doch nicht!!* (the colours of which remain uncertain) and Hermann Goering's all-white machine, the best known Fokker D.VII is probably 382/18, normally flown by *Ltn.* Georg von Hantelmann of *Jasta* 15, but fatefully borrowed on June 17 1918 by *Ltn.* Kurt Wüsthoff. The gaudy red and blue fuselage, emblazoned with a large Jolly Roger, epitomises the dashing, devil-may-care attitude which romanticists attribute to WWI fighter pilots.

The truth, of course, is less seductive. This machine carried Wüsthoff, reportedly on his first 'op' after returning from sick leave, to captivity and a painful, embarrassing injury. The emblem may have had no personal association for either pilot, and the aircraft, even when newly-painted, must have looked more than a little shabby at close range in its thin, patchy coat of *JG* II blue and *Jasta* 15 red. For all that, it is a striking example of the squadron painter's art, and a close study of the few available photographs reveals several details not previously mentioned in print. The intention of this article is to describe a typical early D.VII in frontline service, rather than to repeat personnel histories adequately covered elsewhere.

According to the RAF capture report, Wüsthoff was shot down in this aircraft near Cachy by Capt. G O Johnson, Capt. IDR McDonald, and Lt. HD Barton of No.24 Squadron, RAF, flying Viper-engined SE5as Nos. C.1084, D.3444 and C.6481. In some accounts, JH Southey was credited with at least part of the victory. The fight reportedly involved 19 aircraft from *Jagdgeschwader* II and 15 from No.24 Squadron. Wüsthoff, a 27-victory ace and former commander of *Jasta* 4, had just been posted to *Jasta* 15 after three months' leave, and had not yet been allotted an aircraft. He borrowed one from Hantelmann, and in the combat that day he was wounded in the groin. He managed to land inside the French lines and became a guest of the French army for the duration, while the Fokker was turned over to the RAF, who allotted the number *G./5 Bde.17* to it. Until comparatively recently, it was frequently misidentified as D.VII 1445/18 from a component serial found on one of the wings, and as 2469/18 from its Fokker *Werke* number.

A Mercedes engine, military serial No. 41245, was fitted. This engine, described as a high-compression version of the 160-hp D.III with high-altitude carburettor, was initially referred to by the RAF as a 180-hp unit, later revised to 200-hp after testing. I would identify it tentatively as a D.IIIaü. It had a flat two-cylinder air pump, and the serial number would have been painted in white on the front of No.1 cylinder.

The airscrew, broken in the crash and sawn off near the hub by the recovery crew, was not identified in the report, but was probably a Heine of 2800mm diameter; pitch 2050, as fitted to other D.VIIs from the same batch.

Four photographs of 382/18 are known to this author. All were taken at the same location, an RAF airfield, possibly Conteville, to which the wreck was moved on a trailer after recovering. The port 3/4 front view (see above), on orthochromatic emulsion, gives a good impression of the crash damage. The aircraft appears to have landed more or less level, but with a lot of sideslip to starboard – not surprising considering that Wüsthoff's wound must have left him with little control over the rudder. Remains of the undercarriage, lying in the doorway of a Bessonneau hangar in the background, show that it collapsed during the landing, breaking off the starboard legs, most of the axle wing and bending the port legs to starboard. The machine then pivoted around the chin and the starboard wingtips then overturned, bending the fin and rudder and denting the top of the radiator. Apart from crushing of the starboard leading edges, the wing cellule suffered little damage and shows no obvious defor-

mation.

Both airscrew blades were broken, and the front end of the engine was pushed up a centimetre or two, taking its mounts, the radiator and top cowling with it. The deformation is evident if the radiator is compared with the vertical colour division on the fuselage. This, and a slight bending outwards of the top of the side cowling as the subframe deformed and some of the retaining studs sheared, exposed a narrow wedge of bare metal which, catching the strong sunlight, has led some illustrators to interpret it as a white marking. No. 382/18 was thus one of many early Fokker-built machines delivered with polished natural metal cowlings. The two small louvres visible are probably an in-service modification; *Uffz.* Piel's 373/18 of *Jasta* 13, another *JG* II unit, had at least one similar louvre (see page 49), but shots of factory-fresh machines from this batch show none. On Hantelmann's D.VII the louvres appear freshly 'bashed' and not yet retouched, having shiny edges. The edge of the panel also looks scuffed, adding to the highlight effect.

All struts are left in the light grey lacquer used by Fokker on structural steel parts, including the fuselage frame. The *Werke* number is visible on the port side of each set of interplane struts. Some aircraft in *JG* II had the struts and undercarriage overpainted in *Jasta* colours, but on this machine only the wheels were so adorned, with the serial number applied in white on the inside faces in a style similar to that used on OAW wheels.

It has been suggested that some Dr.Is and early D.VIIs had the top of the axle wing painted in streaks like the fuselage and tailplane. Fragments of the upper wing surface still attached to 382's axle box appear to show faint streaks, and the underside sheeting, lying on the trailer ahead of the fuselage, photographs pale enough to be light blue. The u/c wing is therefore reconstructed here in the probable final version of the streaky camouflage.

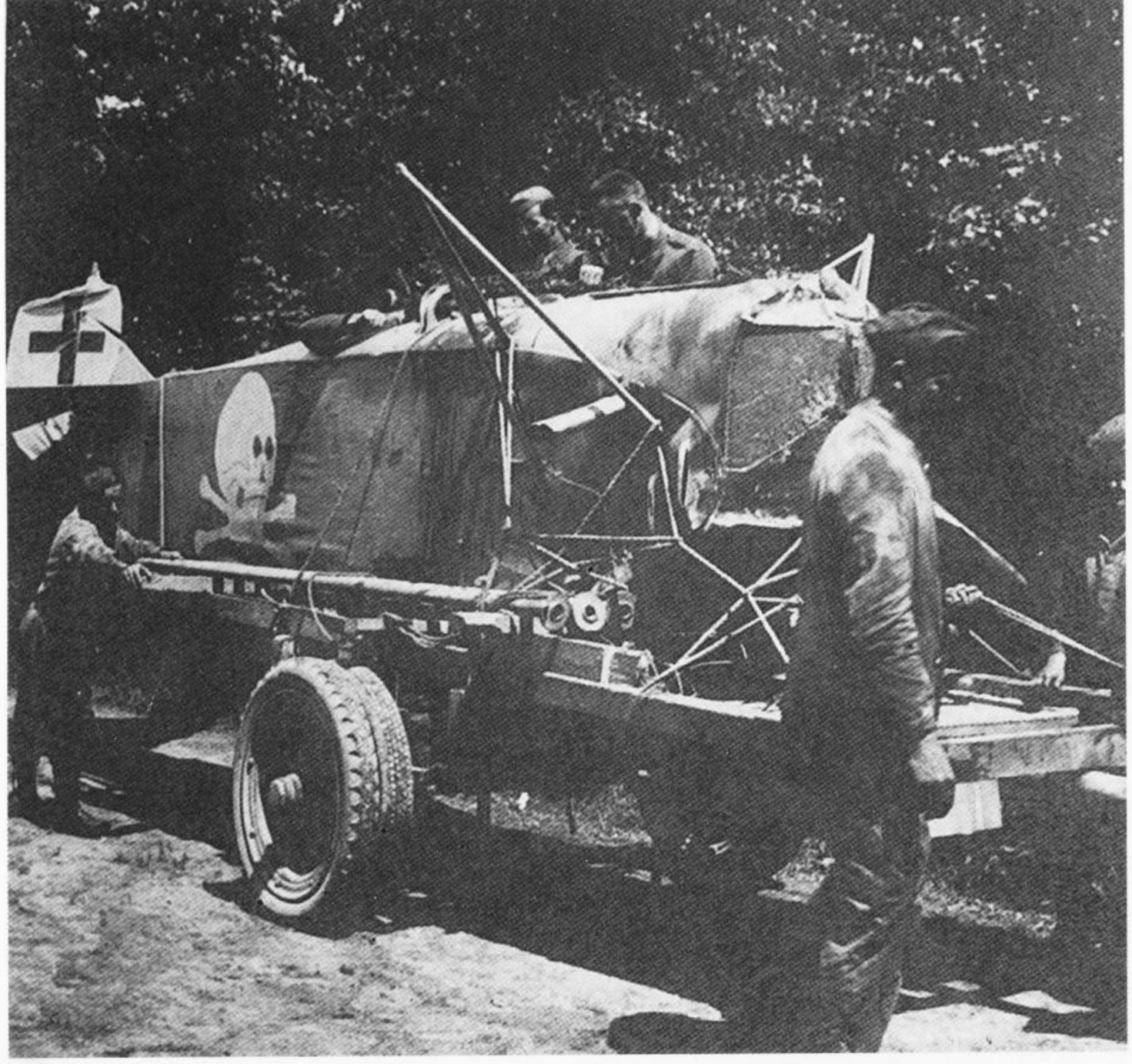
Dan Abbott, in his 1985 article on Schwerin D.VII finishes, quotes a dark green, **Methuen** *26F8*, not olive-toned, and suggests *26D3* for the lighter shade. A sample of apparent Fokker fabric seen by the author in the early 1980s had the same dark green, but blended while wet with a brighter, more grassy green rather than a whitened version of the former, Unfortunately, there was no opportunity to take a Methuen reference, but I have estimated it from memory on the illustration, using approximations to hues specified by Fokker for the D.VIII. It could have been 'New True Green' (probably close to Methuen *27A8*) dulled with a touch of 'Violet' and/or 'Mocha'.

Light turquoise blue undersides on axle wings persisted for some time after the switch to 'lozenge' fabric for fuselages; as some components were completed and painted before others, it should not be assumed that *all* aircraft in a particular production series were identically-coloured.

D.VI wheels, and those of D.VII 353/18 and the experimental V.24, were painted a light shade, a photographic match for both the grey struts and the lighter of the two greens in the streaky scheme. As the grey appears typically on steel parts, and the wheel covers were fabric, I would prefer green, but who knows? Many Fokker wheels of the period, apparently including those of D.VII 368/18, had a dark green border. It is a reasonable bet that 382 had the same wheel finish as her close sister, also overpainted in red.

382/18 was one of the first Fokker-built D.VIIs to have 'lozenge' fabric on the fuselage and tail. Conventional wisdom has it that *all* Schwerin D.VIIs of this vintage had four-colour fabric, but I have long had my doubts, vividly confirmed in 1985 by the researches of Alan Ackroyd, who corresponded with me while modelling Willi Gabriel's 286/18. Al painstakingly plotted every strip on the wing uppersurfaces of this machine from photographs and proved that the fabric was in fact *five*-colour. Although the pattern does not show very well through the fuselage paint of 382, some pink polygons, dark on ortho' film, are evident under the port upper wingtip, and a broad half-hexagon under the port elevator has an edge almost exactly parallel to the selvedge. Only the five-colour system has such a polygon, and another, partially visible inboard of it, is at the correct spacing for that fabric. We estimate that D.VIIs from around the 250s to the early 400s had five-colour fabric; on Max Holtzem's (see photo *J16B-1* on page 59) the pattern is unmistakable in a close-up shot of the pilot sitting on the cockpit edge, and 406/18, photographed during delivery by rail, faintly shows the distinctive close-spaced trapezoids on the port side of fuselage.

The fuselage fabric was usually inverted from one side to the other, presumably to save material by interlocking the tapered panels as they were cut from the roll; typically, the port side would have dark trapezoids at the top; the starboard, dark pentagons, but it could be the other way round. Rib and border tapes on flying surfaces were cut from the same fabric. Although all fabric strips ran the same way on any given Fokker-built wing, the orientation of the pattern varied from airframe to airframe; for example, on 382/18 the turquoise diamond was to port, whereas on Bruno Loerzer's early machine it was to starboard. Some areas of 382's 'lozenge' fabric are perforce conjectural in the illustration, but seam locations are believed to be correct. Serials and *Werke* numbers were black, and the enigmatic Fokker trademark transfer



Left, this well known shot of D.VII 382/18 sees it prepared for transportation. The radiator appears less displaced (or has subsided). The engine bearer may have broken, loosening the whole nose, or the cowling may have been removed to examine the engine and been replaced more neatly. The skull marking is white with black nose and eye cavities, detail shading in blue. *(Greg Van Wyngarden)*

was applied to all main components.

Like most Fokker-built D.VIIs, 382/18 had wide strips of natural fabric reinforcing the mainplane leading edges and tip bows under the rib tapes, and they show distinctly through the 'lozenge' material, which was never much like the smooth, solidly-coloured stuff implied by transfers. Modern reproductions used on replicas and restorations have the same thread count, but look to be of rather higher quality. The original coarse linen has about the same colour absorbency as denim, fades as easily, and has a prominent, sometimes erratic, weave, plainly visible under clear dope and, if applied, matt varnish. It takes dope rather superficially, and tends to flake after a while in service. Modellers may simulate the weave, even in 1:72 scale, by gently cross-hatching the surface with very fine wet-and-dry paper or a fibreglass brush, but only the 'lozenged' parts; if 'lozenge' transfers are to be used, the resulting texture can be washed with very thin dark grey paint and wiped before applying them. Dope filled the weave to give a fairly smooth surface, and overpainting usually hid it quite effectively. Of course, the rough stipple of **Revell**'s 1:72 kit is considerably overdone.

The next photo (reproduced on the previous page), was taken at the same time, from port 3/4 rear, on an emulsion which renders the tones of the fuselage more accurately, giving a light red and a darker blue. Considerable retouching is evident around the skull and crossbones, the blue paint being applied here more thickly in clearly visible strokes. All factory markings on the fuselage are overpainted. The paper rigging diagram appears absent, either never having been applied or removed before overpainting. No fin bracing wires are apparent. The wing fabric pattern, just visible, appears to have the spacing and tonal contrast of five-colour fabric.

The deformation of the side cowling panel is very clear in this shot, as are wrinkles in the fuselage skin. With overtightening of the wingnut fasteners inevitable (and probably necessary), side panels quickly became concave in everyday use, and the crash probably only emphasised wear and tear already present. Note that the panel outline, especially at the front, diverges considerably from the subframe; not all fastening studs are close to the edge of the panel. Plenty of scope for resin merchants here!

Moving round to the starboard side, a third shot (reproduced in an early *US Cross and Cockade* Journal) and a fourth (reproduced above) were taken when the wings had been removed and the fuselage replaced on the trailer for further transportation. The emblem, otherwise identical to that on the port side, faces forward, and the early low-level exhaust manifold is visible, but the picture yields little extra information. No bullet holes are revealed for the benefit of diorama builders.

The exact shades of red and blue used on the aircraft are not known; the capture report by 2nd Lt. G Barfoot Saunt, dated June 28 1918, simply says red and dark blue. The bright, gloss red may have been the vermilion enamel also used by *Jasta* 18, but the blue is harder to pin down. Few units had a consistent supply of paint for their own markings, and *JG* II blue became noticeably lighter or brighter towards the end of the war.

Here, however, the blue was quite deep, and distinctly matt. Methuen *218C8,* natural ultramarine, has often been used in illustrations of *JG* II machines, but I prefer to use *21D8,* close to Prussian blue, applied over grey markings and muted 'lozenge' camouflage, to approximate the appearance in the panchromatic shot and to fit Lt. Barfoot Saunt's description. Unless an authenticated sample from a *Jasta* 15 machine turns up, we must make (hopefully) educated guesses!

My original (1:32 scale) painting reproduced on the preceding pages in 1:48 embodies dimensions from various sources, including the Fokker factory side view and wing assembly drawings, Charles Cash's fuselage drawing published in *World War I Aeroplanes,* Jan. 1978, and Nick Karstens's mainly accurate plans in *Wings* magazine, April 1979. The official French report on Fok. D.7 (OAW) 2009/18, and the British one on 368/18, proved helpful, as did contemporary magazine articles. Assembling a drawing from confirmed component sizes gives an overall length of about 6950 mm rather than the round 7000 commonly quoted. The length in tail-down attitude is not significantly different.

The head- and end-on aspects of the wings are based on many photographs and on measurements taken from the RAF Museum's eclectic D.VII when at Cardington; any errors in the alar department are entirely my own! The cowling panels are also based on photographs of early Schwerin products. The belly vent, which was made progressively deeper as the tendency to overheat became apparent, is fairly shallow in this case.

Undercarriage geometry comes from the Fokker factory drawing, against photographs of early machines; some drawings based on late production examples show the axle and its wing about 3 cm further forward. Photos seem to confirm this alteration, possibly intended to counter the appreciable extra mass of the thicker radiators on late D.VIIs; just try lifting one, even empty!

'Lozenge' fabric layout is based mainly on 286, 382 and 402/18, the latter useful for starboard side and top decking detail.

Acknowledgments: My thanks to the staff at Cardington, to Alex Imrie, and to Jack Bruce for the loan of his superb facsimile of the Fokker works GA. ❑

Continued from page 53

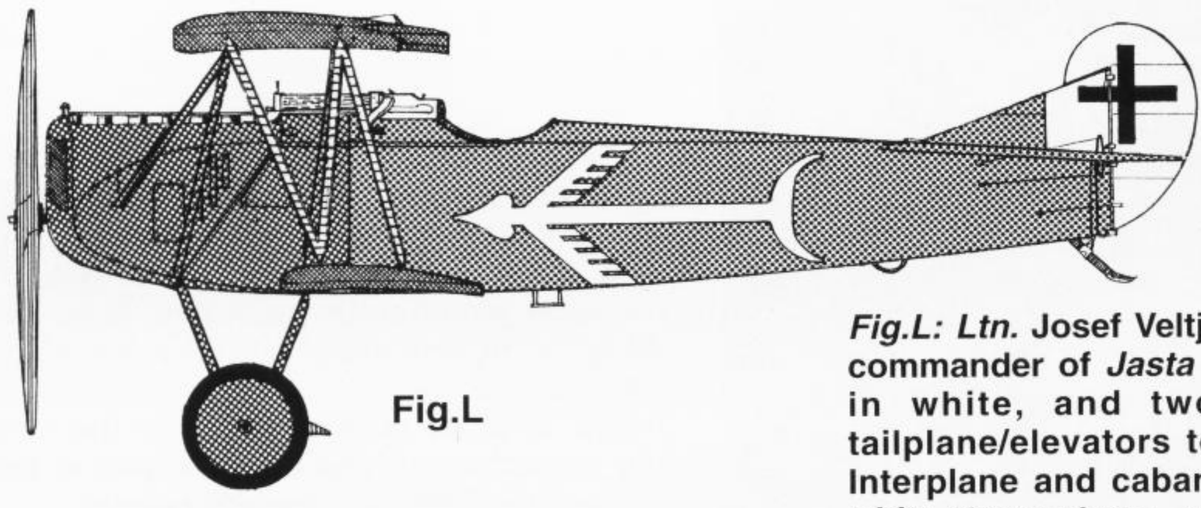
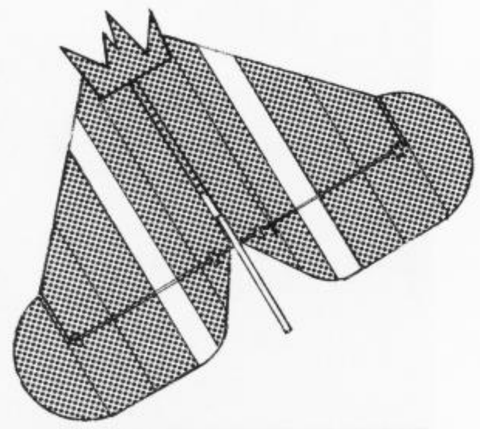
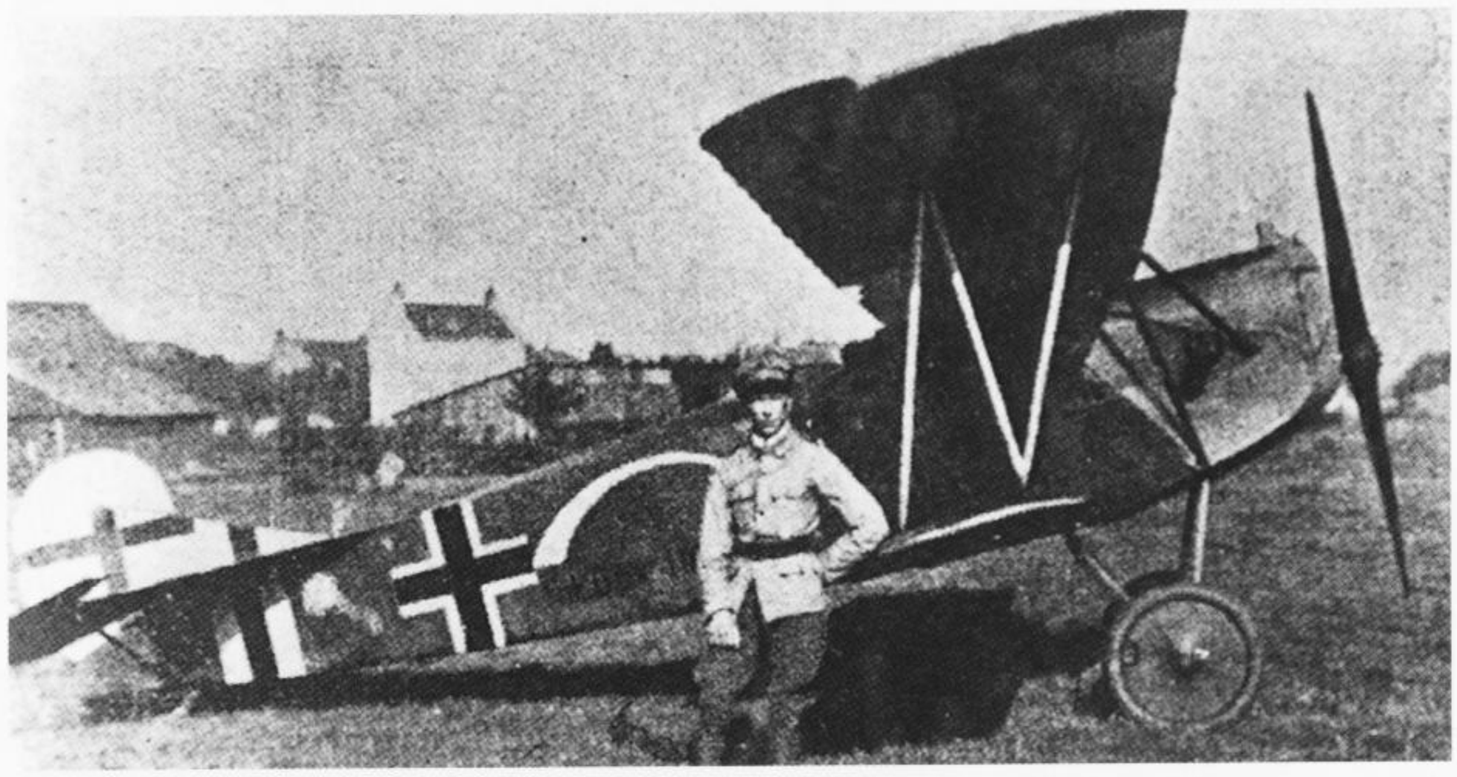


Fig.L

Fig.L: Ltn. Josef Veltjen's D.VII, which he flew as commander of *Jasta* 15. It bore his Indian arrow in white, and two white stripes on the tailplane/elevators to denote the *Staffelführer*. Interplane and cabane struts were also painted white at one stage – see photo *J15-6* on page 53.



JASTA 16B



◀ J16-1 ▲ J16-2

J16-1: Vzfw. Max Holtzem astride his comet-adorned D.VII 402/18 – interesting details include the centre-section mirror, staining of five-colour fabric along lower longeron and roundel bullet hole patch: a previous photograph of 402/18 appears on page 32. *(Nich Hauprich)*

J16B-2: By late Summer of 1918, *Jasta* 16b's D.VIIs sported dark blue nose panels and narrow white/ black/white bands encircling the rear fuselage and tailplane. The photo shows *Vzfw.* Max Holtzem's Fokker D.VII 402/18 of *Jasta* 16b, late 1918. This machine bore Fokker factory scheme with unit markings on rear fuselage and tail. Of interest are the proportions of the fin/rudder cross. Two colour views of this machine appear on page 37. *(Nick Hauprich)*

JASTA 17

▲ J17-1

J17-1: A white lightning bolt decorated the Albatros-built D.VII of *Ltn. d R* Günther Schuster of *Jasta* 17. The Fokkers of this *Staffel* apparently had dark noses (colour unknown) with white radiator shells and personal fuselage markings. The small, easily overlooked, teardrop-shaped fairing just under the radiator helps identify this as a D.VII (Alb). Schuster achieved six victories before a wound on August 1 1918 took him out of action for the remainder of the war. *(Via P M Grosz)*

J17-2: Regrettably the pilot of this D.VII has 'censored' the serial number of this Albatros-built D.VII by virtue of his personal markings. Believed to be *Leutnant der Reserve* Fleischer, a six victory ace of *Jasta* 17. The machine is covered in five-colour fabric, that on the fuselage having been inverted and the bolt angled upwards – unique to Albatros? The forward fuselage areas are believed to be in black (with white nose) the pilot's personal decoration, probably yellow which would stand out well against the printed fabric, provides a great deal of Albatros built-D.VII detail to inspire all modellers. *(HAC/UTD)*

▼ J17-2

J17-3: An unidentified pilot with his equally unidentified D.VII of *Jasta* 17 cries out for further details – sadly no work numbers are visible on the airframe. The rear fuselage grab handle positions, nose panels and the background D.VII suggest this was an Albatros-built machine. The additional, circular cooling holes in the cowling lend themselves to the comical face applied over the unit's white colour.

J17-4: Another view of the same D.VII-colours are not known but the swastika and fuselage banding may be yellow. The Albatros way of applying five-colour fabric to wings and fuselage is of interest. *(HAC/UTD)*

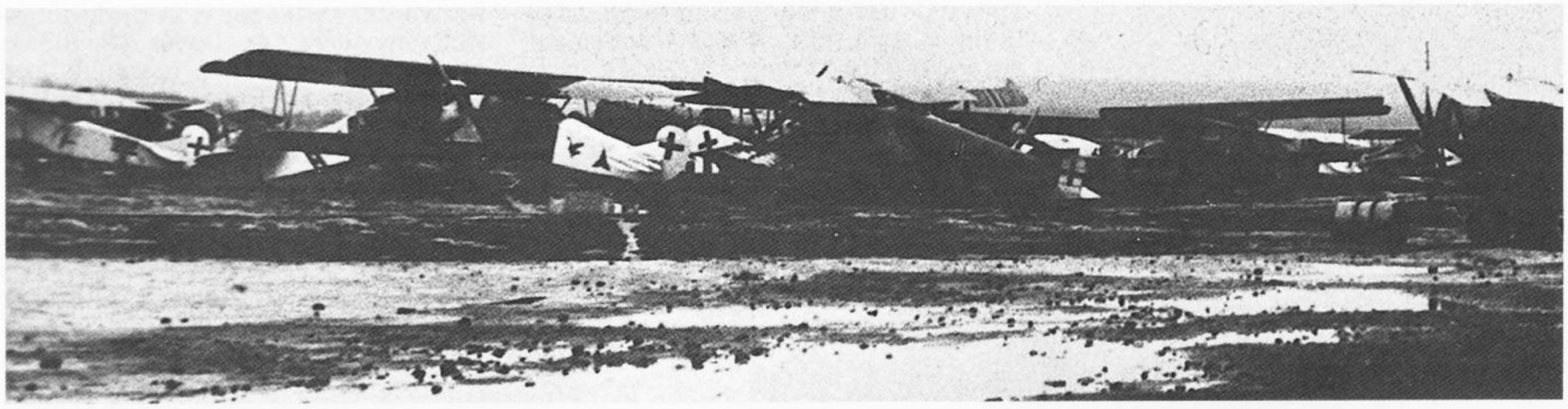
◀ J17-3 ▼ J17-4

JASTA 18

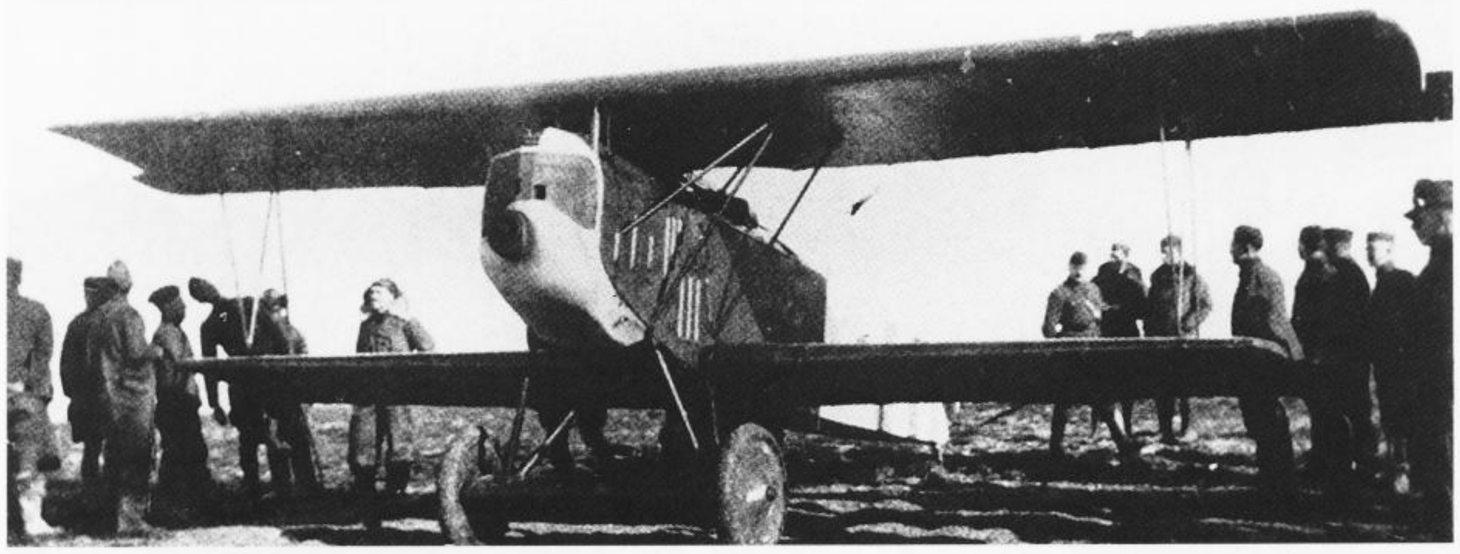
J18-1: Leutnant Kandt (or Kant) and ground crew with an Albatros-built D.VII of *Jasta* 18. The unit's distinctive red and white markings are readily apparent; and equally recognisable is the raven fuselage marking applied by stencil. It is likely that the ravens were applied in different colours for individual pilots. Certainly the one here does not appear to be black; other examples appear to match the red paint of the forward fuselage and wings. This D.VII features the cut-out openings in the cowling peculiar to *Jasta* 18's D.VIIs. *(Greg VanWyngarden)*

J18-2: Off. Stv. Off. Wilhelm Kühne and ground crew with an unidentified *Jasta* 18 Albatros-built D.VII at Montingen, October 1918. This machine has yet to have its additional cowling 'vents' cut out and bears an apparently black raven and perforated fuselage sash. The tailplane uppersurfaces were probably red. *(Greg VanWyngarden)*

▲ J18-1 ▼ J18-2



▲ J18-3



▲ J18-4 ▼ J18-5

J18-3: Some of *Jasta* 18's OAW-built D.VIIs after the Armistice. The one on the right bears the usual raven emblem, plus personal markings of a three-pointed star on the fuselage and chevrons on the tailplane. The other *Jasta* 18-marked with the perforated sloping dark band maybe the same machine illustrated opposite in *J18-2.* Other Fokker D.VIIs appear in the background and a Hannover CL type is on right. The Fokker D.VII with the three -pointed star on its aft fuselage has a black and white striped tailplane.

J18-4: Another post-war photo of a war prize *Jasta* 18 D.VII; probably an OAW-built machine in the 6300/18 to 8649/18 series range. Shadows cast by American personnel confuse the image and the fuselage markings thus remain a mystery. *(Greg VanWyngarden)*

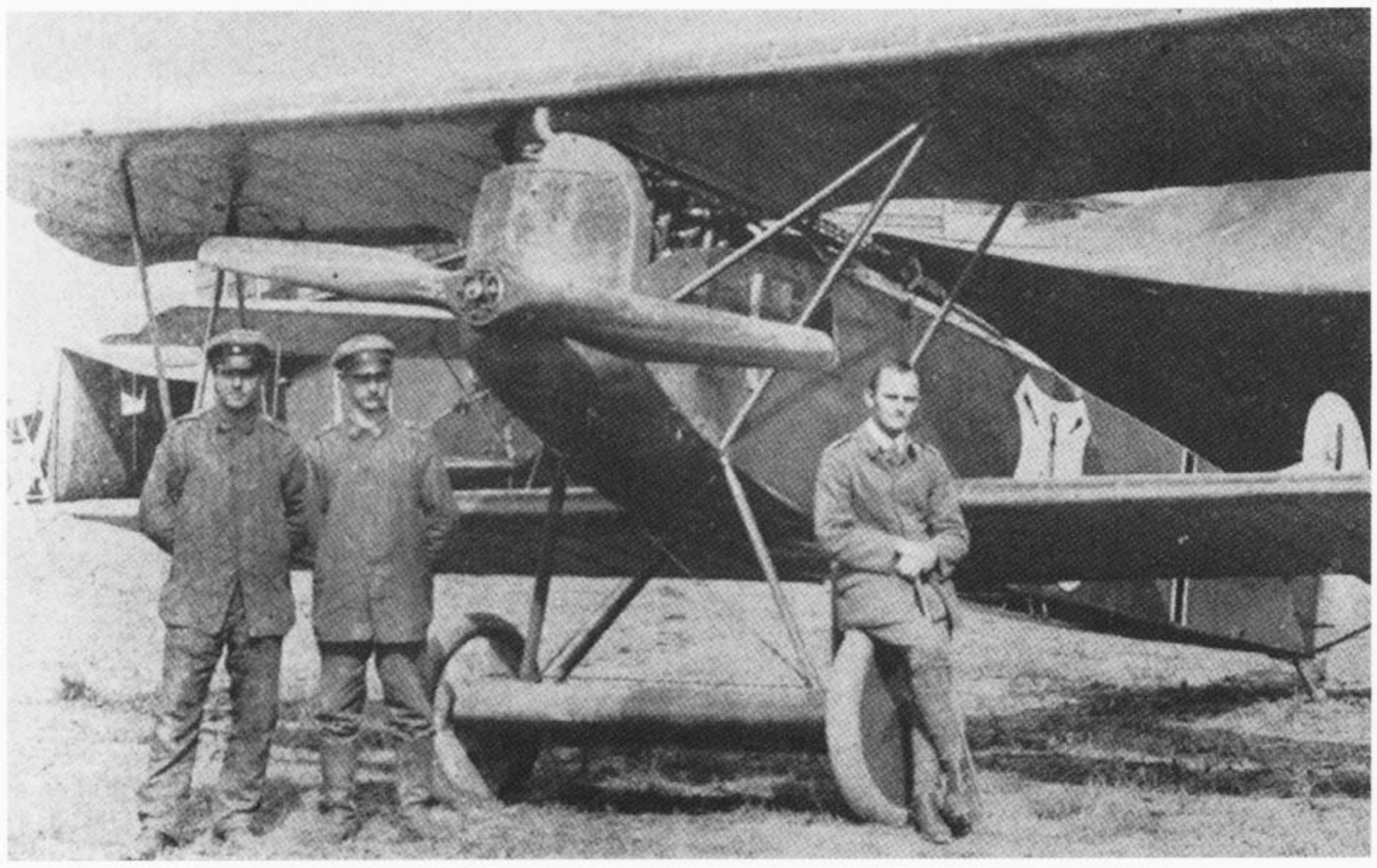
J18-5: This ex-*Jasta* 18 D.VII is also in American hands post Armistice – just visible is what appears to be an obliquely sloping black sash on the rear fuselage – at least two *Jasta* 18 D.VIIs were so marked. Wheel covers are typical of OAW but nose panels may be a mix of Albatros and OAW-built D.VIIs. *(Greg Van Wyngarden)*

JASTA 19

Very few records are available of D.VIIs in this unit and even less photographic evidence. Fokker D.VIIs of *Jasta* 19 initially had green nose panels later changed to yellow, their fuselages and tailplanes were dark blue and both fin and rudder were white.

J19-1: This photo shows *Ltn.* Ernst Riedel of *Jasta* 19 sitting on the wheel of his OAW-built D.VII (as evidenced by the central colour division of the axle wing). The D.VII appears to be in the unit's blue and yellow decor with printed fabric covered wings. *(via H Nowarra)*

▼ J19-1



▲ J19-2

J19-2: Ltn.d L Hans Pippart, CO of *Jasta* 19 celebrates his 21st of July 22 1918 (and penultimate) victory in the usual *JG* II fashion with a floral wreath. This OAW-built D.VII appears to bear *Jasta* 19 colours of yellow cowling panels and dark blue fuselage, but no personal markings are discernible. *(HAC/UTD)*

JASTA 20

This unit definitely had at least a few D.VIIs by late 1918. A *Kofl.*4 document, dated August 14 has a drawing of an Albatros D.Va. The unit's markings are described as brown fuselage, white horizontal stabiliser with dark outline, white elevators and rudder. The drawing shows a white spinner as well. Fokkers were likely to have been similarly marked.

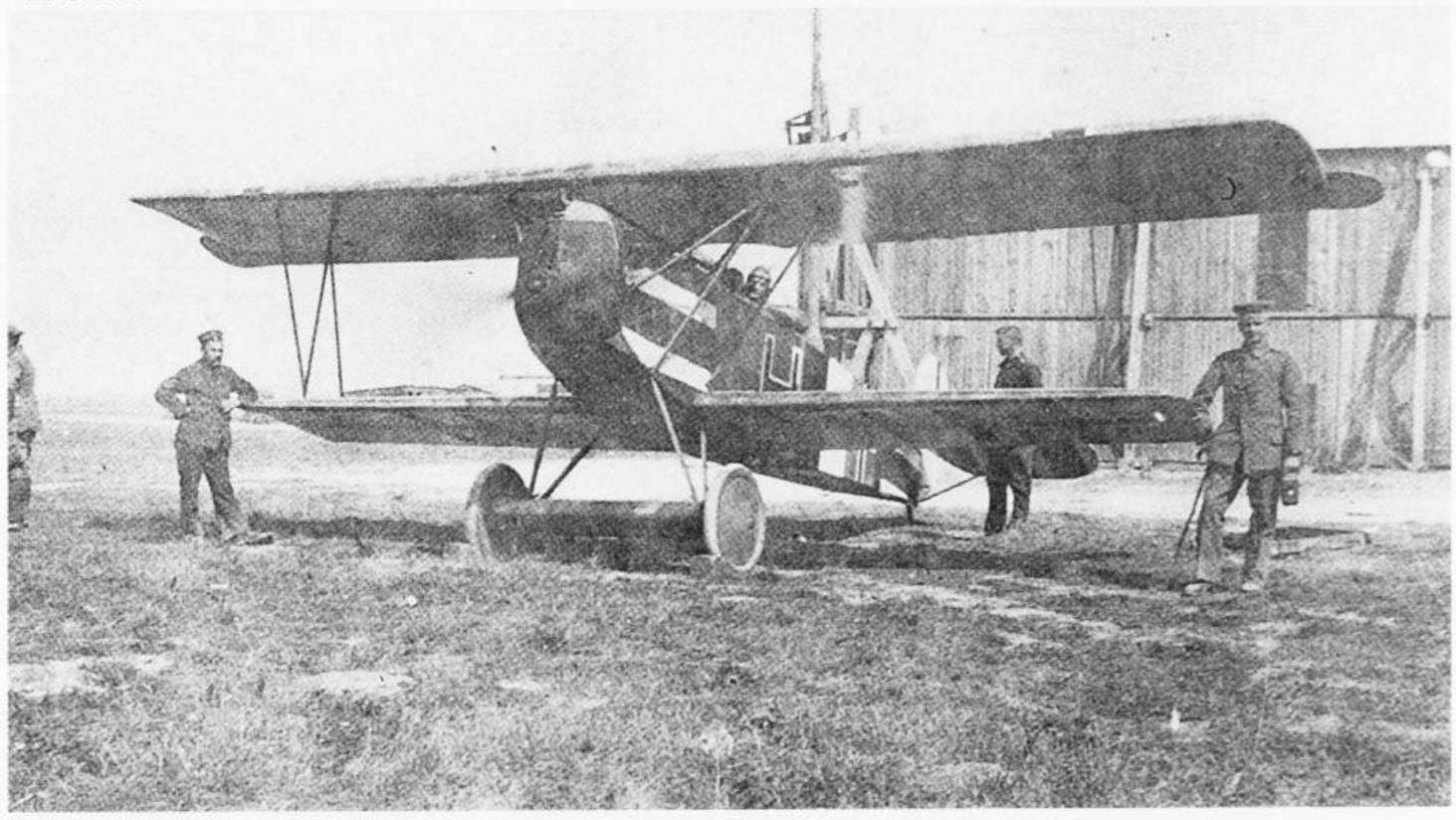
▲ J21-1

JASTA 21

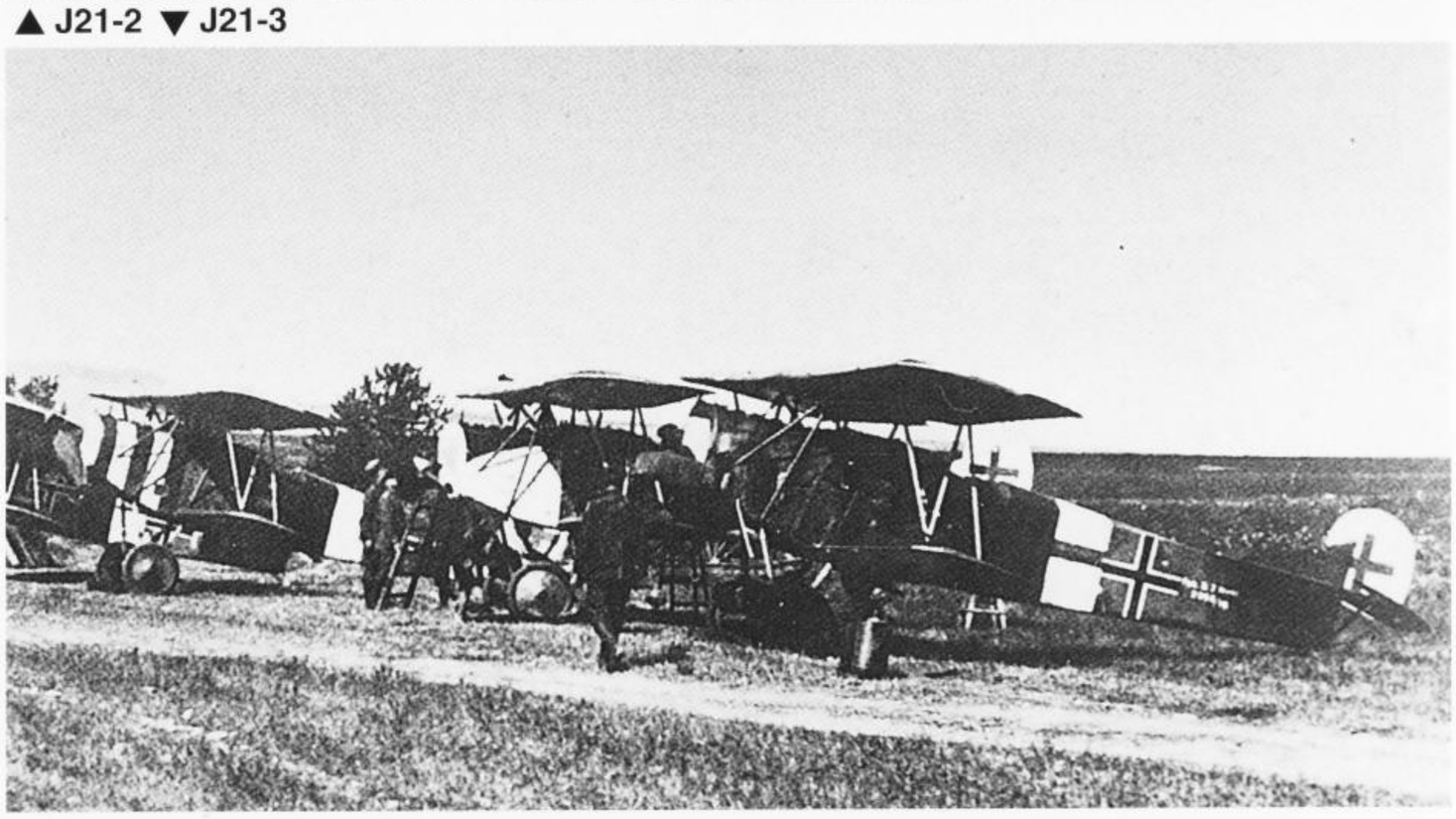
J21-1: Formidable *Jasta* 21 ace *Ltn.* Karl Thom in his D.VII (OAW) 2052/18. The black and white bands aft of the cockpit were unit markings.The forward fuselage behind the metal panels and tail section are also a dark colour, most likely black. Both the nose panels and the wheel covers were factory-finished in a cloudy application of camouflage patches, probably in dark green and greyish violet. Thom's personal 'T' was in black and white which *may* also have been marked without the white border on the upper wing, (and perhaps the lower wing as well) both on the port and starboard sides just inboard of the crosses – if a drawing on the cover of a post-war book on Thom is correct. *(Via P M Grosz)*

This Fokker D.VII of the Saxon *Jasta* 21 was flown by *Ltn.* Höhn and seen here at Soissons in August 1918. It bears the unit's black and white fuselage bands with additional horizontal bands fore and aft and the pilot's monogram beneath the cockpit. *(R Kastner)*

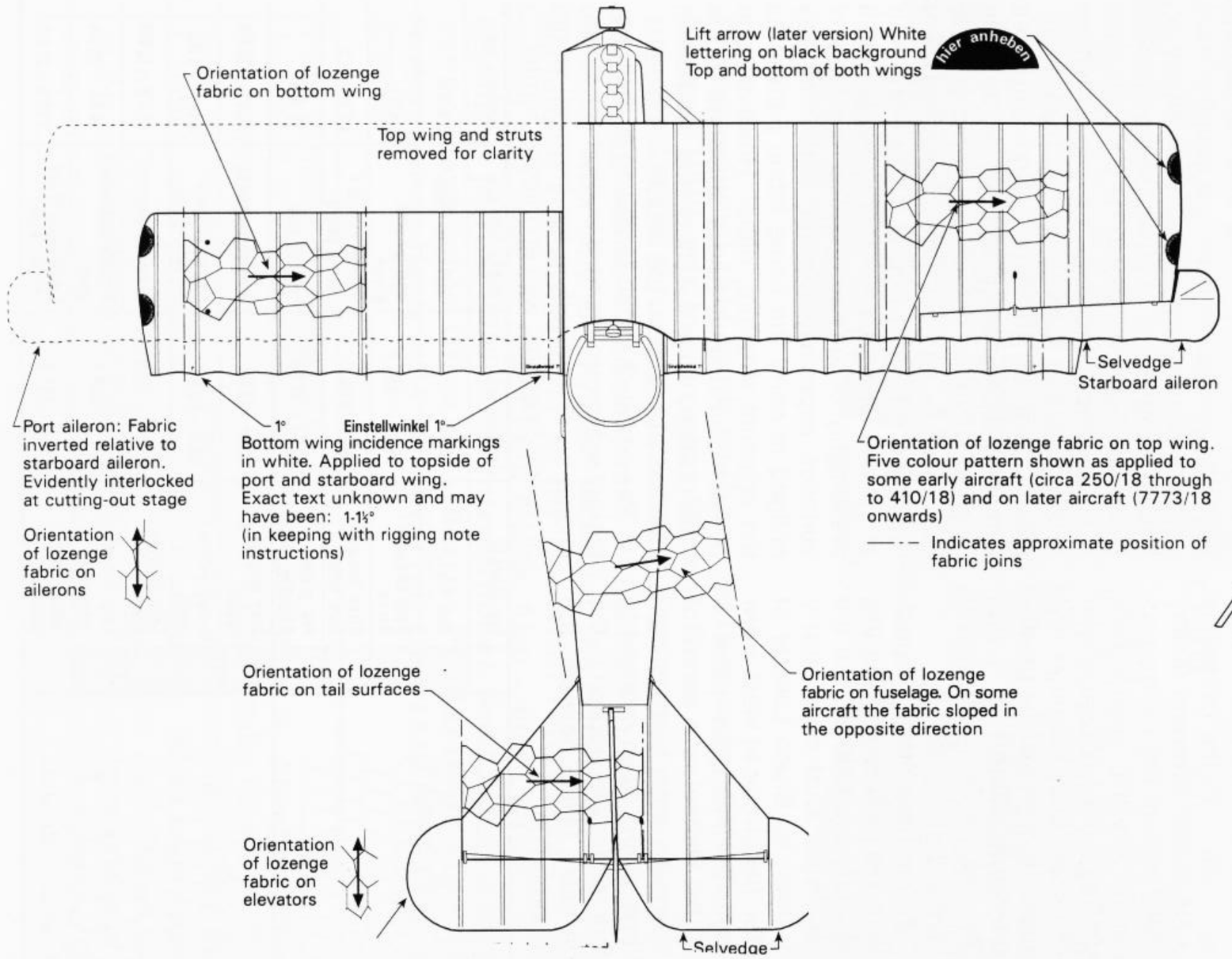
J21-3: Rare photograph of a late 1918 *Jasta* 21 line-up reveals four OAW-built D.VIIs. First right is 2096/18 with a dark-painted fin; the next pair sport white and black/white noses as individual pilot markings to supplement the unit's rear-fuselage and tailplane decor. Fourth machine is Thom's D.VII, marked with his initial T, it is probably 2052/18 after modification of the fuselage cross...



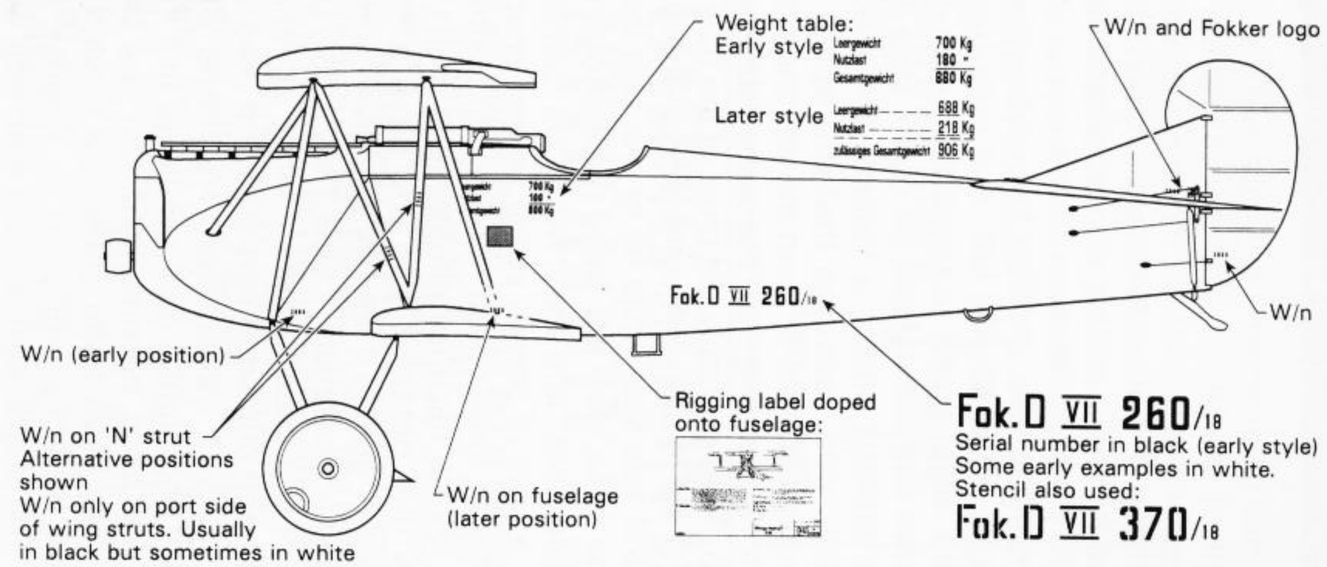
▲ J21-2 ▼ J21-3

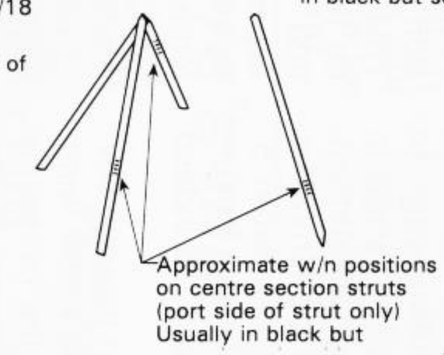


To be continued...



2068
Example of werke Nr stencil



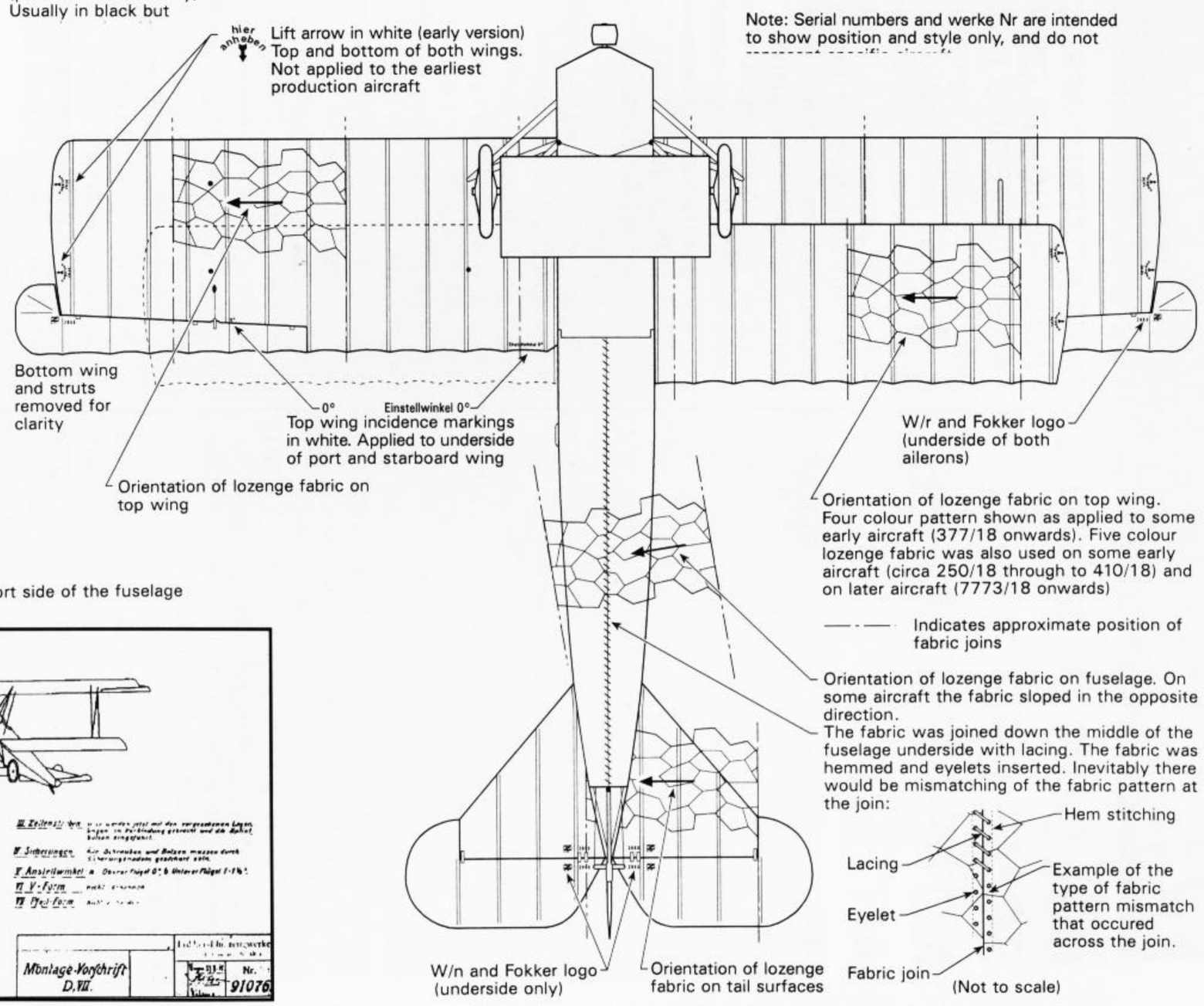


Examples of numerals used for Fokker serial numbers:

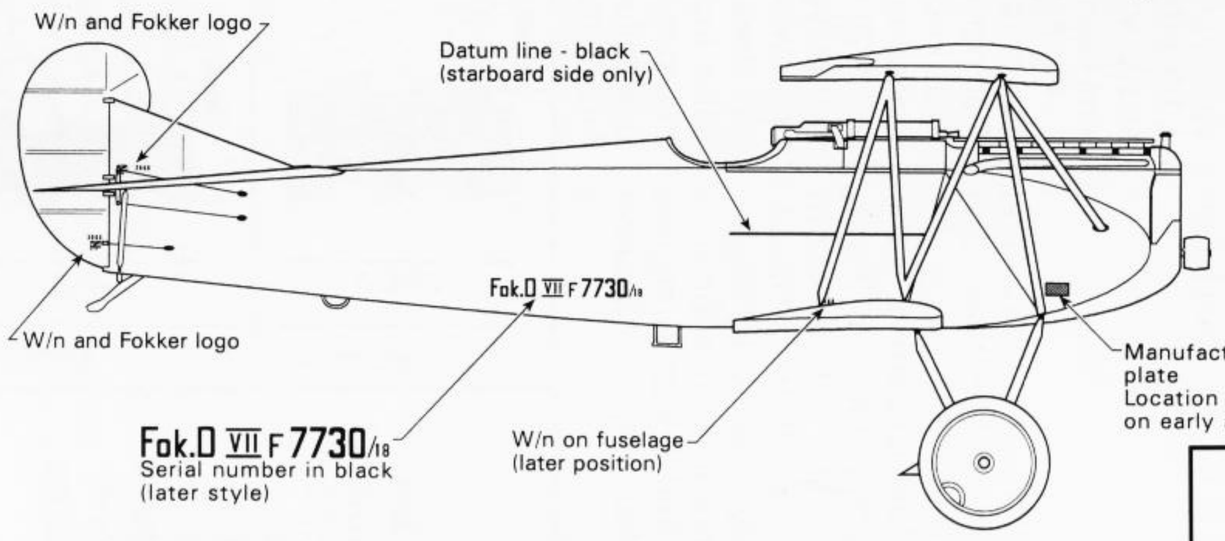
123456780

Fokker company logo Applied with 'D.VII' below the logo. Often seen on 'N' struts

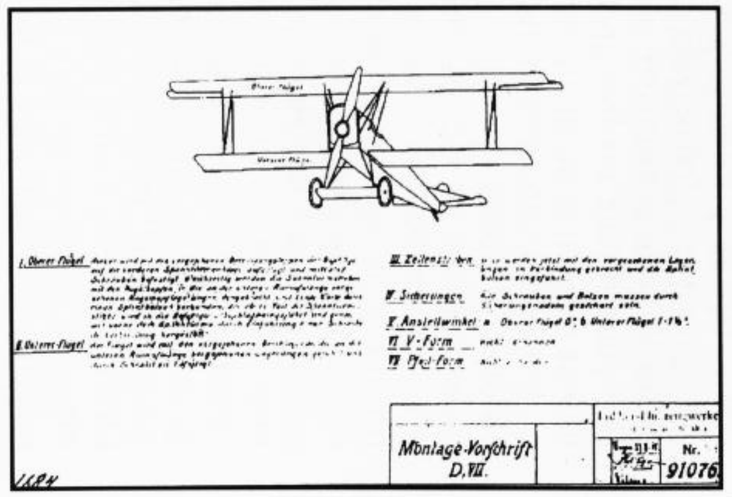
Note: Serial numbers and werke Nr are intended to show position and style only, and do not represent specific aircraft.



Note: Direction of fabric pattern was actually reversed in about 50% of cases - see production line photos.



Detail of rigging label
Labels doped to the port side of the fuselage



TYPICAL FOKKER STENCIL APPLICATION AND FABRIC COVERING ORIENTATION

DRAWINGS BY JUANITA FRANZI

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COLOUR PLATES – SOME PERSONAL NOTES FROM THE ARTIST

The colour views on pages 10, 11, 25, 28, 27 and 40 depict Fokker D.VIIs of 13 different fighter units equipped with the type in 1918. Most have never been illustrated before, whilst others are fully revised and updated versions of some old favourites. Many,many months were spent researching and creating the various profiles and the artist must express his gratitude to Dave Roberts and Greg VanWyngarden for their knowledgeable input and invaluable advice, freely given at regular stages: Greg in particular supplied several mono profiles as excellent reference guides. All nuances in interpretation are, however, the sole responsibility of the artist. Great care has been taken to ensure the various views are as accurate as possible, in particular the use, location and orientation of printed fabrics where known, the correct style of engine panels as appropriate and stencil applications where visible-see schematics on the preceding page for further reference on the latter.

Modellers should note that while the exact shades of some unit colours depicted are based on actual fabrics, most are not and may be considered a 'close guess' at best; no-one can say for certain, thus *Methuen* colour references are not being quoted for unmatched colours. Further, one should take into account over-varnishing which would result in a yellowish tinge over the streaky green finishes and a brownish tinge over some 'lozenge' fabric-covered uppersurfaces. Modellers may find it helpful to mix small amounts of yellow or light brown with appropriate varnish/fuel proofer for their final finishing coats.

Printed fabric

Plastic modellers will find authentic four and five colour 'lozenge' bolts for both upper and lower surfaces in 1:48 and 1:72 scale are available from **Americal/Gryphon** in the USA and **Pegasus Models** in the UK. Flying scale modellers are referred to recent 'lozenge' features in *RC Scale Aircraft* magazine (published by Nexus Special Interests): methods of scale reproduction appear in Volume 13's issues 1 and 2 with a detailed treatise on the actual fabric by Ron Moulton in issue 3. **(RLR)** ❑

DAVE ROBERTS OFFERS SOME FINAL THOUGHTS ON FOKKER FABRIC COVERING PRACTICES

During research into the application of lozenge pattern fabric to Fokker-built D.VIIs, it was noted that the bolt width of 5-colour as applied to the airframe was less than standard for that system, and roughly the same as that of 4-colour material, spanning about 4 ½ rib spaces.

Either the 5-colour fabric was delivered in narrower rolls than usual, which might have caused registration problems or flooding at the ends of the printing rollers, or, more probably, the material was deliberately cut down before application.

If true, and if 4- and 5-colour fabric were not originally for *same* size, this can be traced to the unusual geometry of the D.VII wing. The dihedral angle on the leading edge, coupled with the taper in depth, meant that each panel was slightly different from its neighbour, and not quite rectangular. Because of the change in top camber, panels on the upper surfaces were of noticeably shorter chord than root panels. For series production, templates would be useful in cutting out the panels before they were hemmed and sewn together at the leading edge to cover the wing. The first Fokker-built wings to carry lozenge fabric had the 4-colour pattern, and it is logical to suppose that the templates made for it continued in use when wider 5-colour material was substituted. The offcuts could serve as rib or border tapes, as indeed they did on Fokkers.

Another peculiarity of Fokker lozenge covering was the treatment of the upper wing; instead of having a seam on the centreline like Albatros and OAW, the Schwerin factory laid a piece of fabric across the centre-section. We do not know why this arrangement was chosen, but it may have produced slightly fewer awkward offcuts than the other layout. In practice, the central panel was usually a bit offset; fabric could distort as it was stretched along the wing, however skilfully it was tailored and applied.

Photographs showing the fabric disposition on the tailplane are hard to find, as this member was frequently overpainted, but the well-known high-angle shot of an early Fokker-built D.VII flown by Bruno Loerzer of *Jasta* 26 reveals the pattern, or at least a few key polygons, under the thin black paint. A chordwise seam, just visible as a series of tiny kinks in the spanwise stripe borders, indicates that a full bolt width (again reduced in the case of 5-colour fabric) was applied to the port tailplane, the seam falling between the fin and the first starboard rib.

It has been noted elsewhere that the orientation of the fabric pattern on Fokker airframes varied, both on flying surfaces and fuselages. The most likely explanation for this is that the fabric cutters worked at benches on which, perhaps because of the layout of the room, fabric was unrolled from either the left or right. Alternatively, left- and right-handed cutters might prefer to unroll their material in different directions. Now, sit down, take a few deep breaths and/or a Valium, and mediate on this; *don't* assume that the upper and lower mainplanes, or even the top and bottom *surfaces* of a wing, had the same fabric orientation. They probably did most of the time, but it's not set in stone. A cutter would do several top and side sets while he or she had the roll on the table, then the same number of undersurface sets, and they would be combined from a pool of panels in the sewing shop. Of course, in most cases nobody can contradict your choice because photographs aren't normally that detailed, and you have a 50/50 chance of getting it right for any given surface!

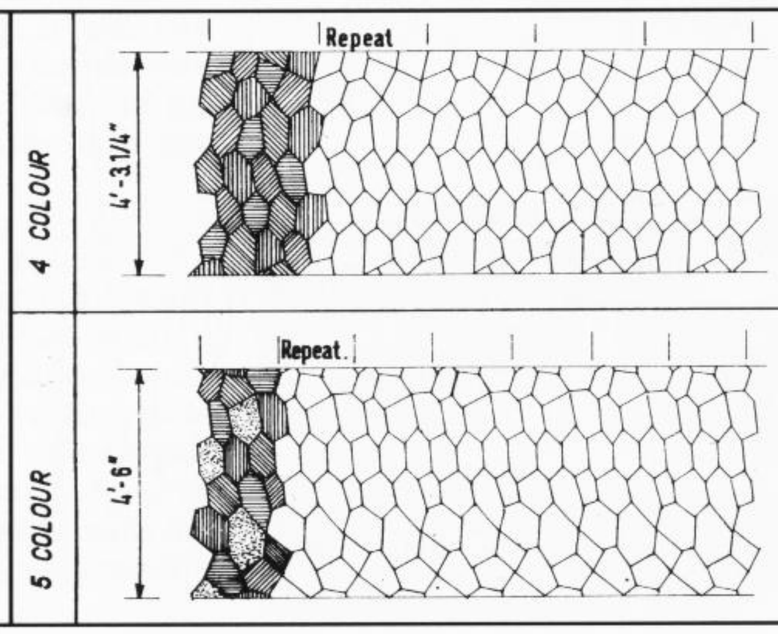
Just occasionally – Emil Thuy's 262/18 on page 9 is a case in point – fabric appears to have been printed in non-standard colours or with colours transposed. Polygons which usually photograph dark, whatever film emulsion was used, became light, and *vice versa*. This may have been underside fabric used on top surfaces, but even so it looks a bit odd. The shade shift is more than one would expect from different types of film emulsion, or even the use of colour filters by the photographer.

If the colours were actually transposed, it may be that the various rollers consumed dye at slightly different rates, and adjustment might be needed to even out supplies as a delivery of dye was used up. Perhaps all known samples of original lozenge fabric, especially 5-colour, should be photographed in colour and compared. There is no reason to suppose that a given wing carried anomalous fabric on top and bottom surfaces simultaneously, except perhaps at the point of changeover to five-colour in early 1918. Mixing of 4- and 5-colour fabric was not unknown; at least one D.VI had 5-colour wings and tail with a 4-colour fuselage, and it presumably occurred on D.VIIs, too. Control surfaces, especially ailerons, were in no way obliged to carry the same fabric pattern as the adjacent structure, either. However, one of each pair usually had a selvedge at the trailing edge, while the other had the pattern inverted and cut from the middle of the bolt.

The moral of all the foregoing is that photographs of your intended subject (or victim) should be scrutinised, in the immortal words of Neddy Seagoon, with an intense scrute! ❑

LOZENGE PATTERNS

Four-colour and five-colour printed fabric bolts drawn to 1:72 scale by I R Stair. Colour hues and *Methuen* refs are averaged out – there were dye variations and slightly differing bolt widths.



TOP SURFACE	Methuen ref.	UNDER SURFACE	Methuen ref.
Dull blue.	21 D4	Dull china blue	23 D4
Deep turquoise / Green.	24E7 - 25E7	Dull greyish green	26D4
Olive brown / Dark blond.	4D4 - 5D4	Brazen yellow / Yellow ochre.	4C7 - 5C7
Pea green / Absinthe green.	29D5 - 30D5	Greyish rose	11 B 5
Deep greyish violet.	17E5 -17E6	Greyish magenta	14D4 - 15D4
Honey yellow / khaki.	4D6 - 5D6	Amber yellow / wheat (golden).	4B6 - 5B6
Deep greyish green.	28D5 - 28D6	Greyish ruby	12C5 - 12D5
Deep greyish turquoise	24E6 - 24F6	Greyish turquoise / green.	24D4 - 25D4
Dullish deep blue	21E6 - 21E7	Copenhagen blue / greyish blue.	21D6 - 22D6

FABRIC COLOUR TABLE – all notations are approximate!		
Colour	**Methuen match**	**FS595B match**
Deep Green (solid)	26F8	34092
Pale Turquoise	25C5	24241
Pale Grey	IBI/ICI	No close match
Streaky Green	27A8-26D3	24190-34277
Mocha Woodstain } Mixed	'Near black'	–
Violet } to	17A8 (typical)	No match
Azure Blue (Cyan) } obtain	23A7 (typical)	11587
Green } ↓	27A8 (typical)	24190 (approx)
Olive Green	26F3	14077 (approx)

COMING SOON IN ANTHOLOGY 2.....

The second volume in the D.VII series covers those fighters built by OAW and includes full 1:48 and 1:72 drawings of these machines and their various cowling variations. There are also features on Polish D.VIIs , D.VIIs in Hollywood movies, more spectacular colour profiles, colour close-up photos of genuine D.VIIs and the unique record of D.VII unit markings continues with *Jastas* 22 to 46. Plus colour notes, OAW finishing and stencil data and much more! Price and availability to be announced in *WINDSOCK International*...

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DEDICATION

We would like to dedicate this book to the memory of Ed Ferko whose encyclopaedic knowledge of German WWI aviation history knew no limits and who in recent years continually encouraged and aided us with our various German aeroplane titles despite a debilitating illness.
(Ray Rimell/Angela Farrell)

YOUR ANTHOLOGY'S MAIN CONTRIBUTORS ARE:
Juanita Franzi
Dave Roberts
Ray Rimell
Charles Schaedel
Ian Stair
Greg VanWyngarden

ACKNOWLEDGEMENTS

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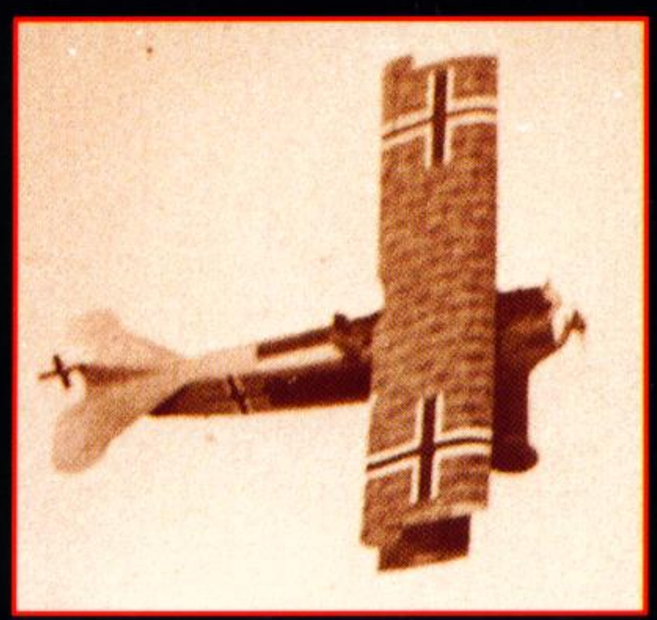
D.VII



The fame of Germany's World War One Fokker D.VII borders on the legendary – its qualities as a fighting machine universally acknowledged by those who flew it and by those who fought it, while the colourful heraldry it carried into battle still continues to engender lively debate amongst aero historians.

Although much has been written about this classic fighter over the years it seems there is still much to learn about the Fokker D.VII. The intricacies of its structure; the seemingly endless permutations of engine cowling design; contractors' hallmarks and covering practices; cockpit and armament fittings; the wide variation in *Jasta* liveries and much else besides. These topics, and others, are fully addressed in this unique Fokker D.VII Anthology with contributions from an international team of well-respected writers and illustrators. Highlights include accurate and completely revised scale drawings of Fokker-built D.VIIs, eight pages of exciting and original all new colour art, specially selected archive material, computer generated-cockpit schematics plus authoritative features on structure and markings – all combining to provide the most comprehensive reference work on the Fokker D.VII yet published.

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