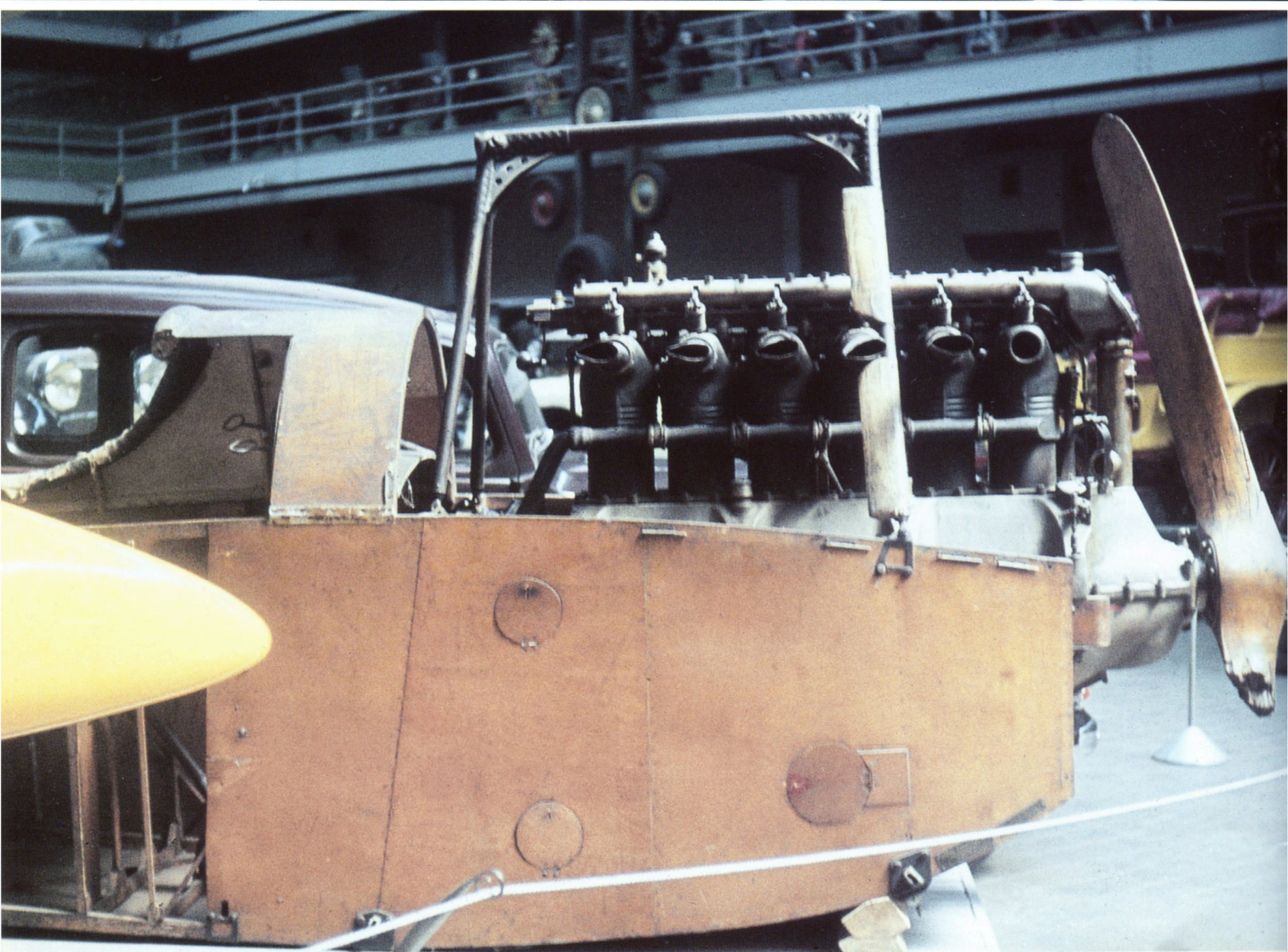
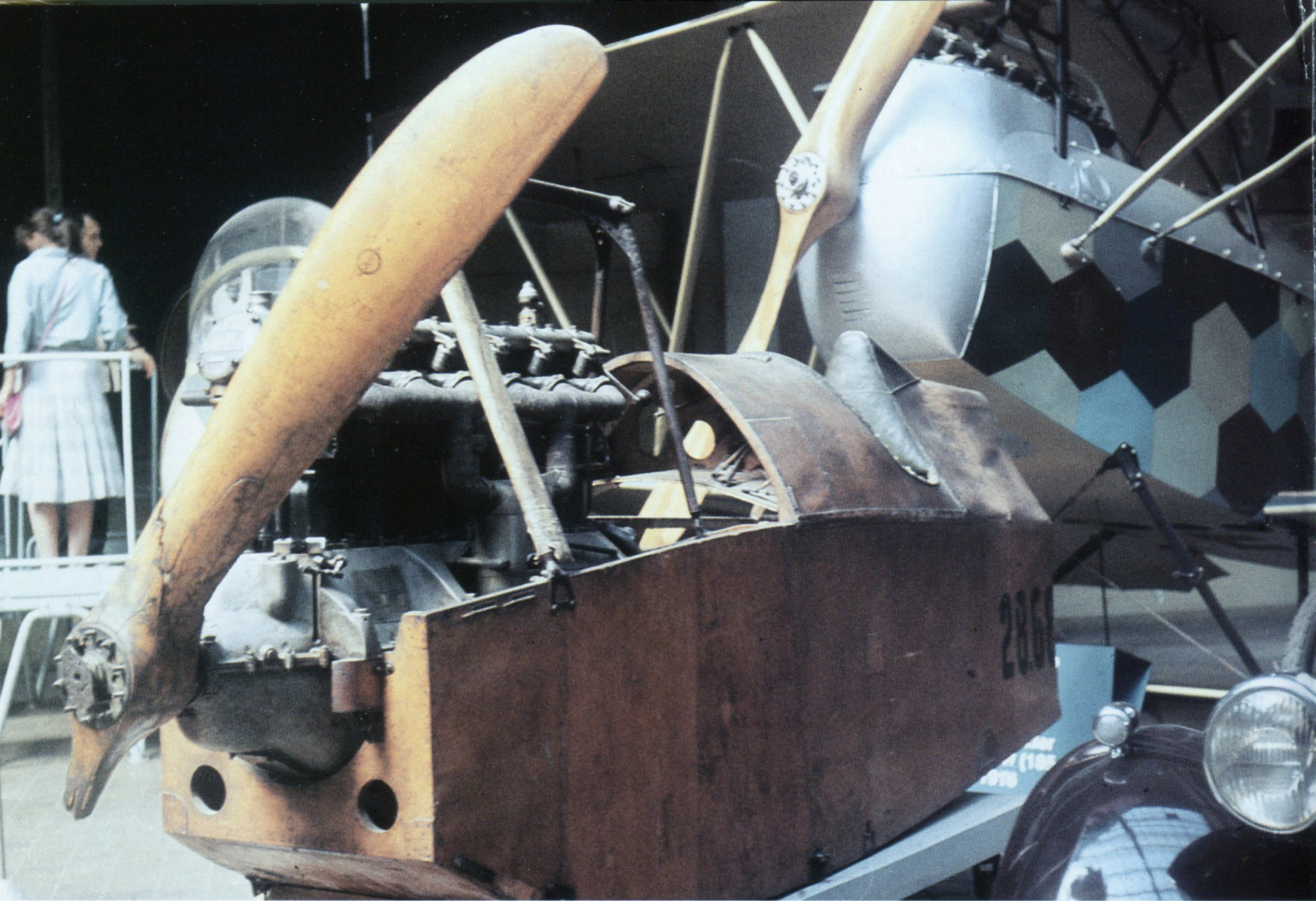


HANSA BRANDENBURG D.I

By Harry Woodman



WINDSOCK DATAFILE 118



HISTORY



▲ 1
"The Fokker fighter is outdated, therefore I have authorised the production of a light biplane fighter that is equal to all combat requirements" Oberst. Emil Uzelac, Commander of the Luftfarhtruppe, August 1916.

Unfortunately, Uzelac's hopes were rather optimistic, the 'light biplane fighter' on which such high hopes were centered subsequently failed to justify the expectations as Uzelac was to find out by personal experience. The need for a scout capable of taking on the new Italian Nieuports being encountered

was imperative but the new German-designed KD (*Kampfdoppeldecker*) was to fail on several counts.

The Hansa und Brandenburgische-Flugzeugwerke AG came into existence in October 1915 as a component in a conglomerate created by Viennese entrepreneur Camillo Castiglioni, through a series of take-overs which included the Lohner company in 1910, whilst in 1912 he acquired the Austro-Hungarian rights to Igo Etrich's patents. In 1912 Etrich made an unsuccessful bid to sell aircraft to the German army by establishing a company in Germany collaborating with

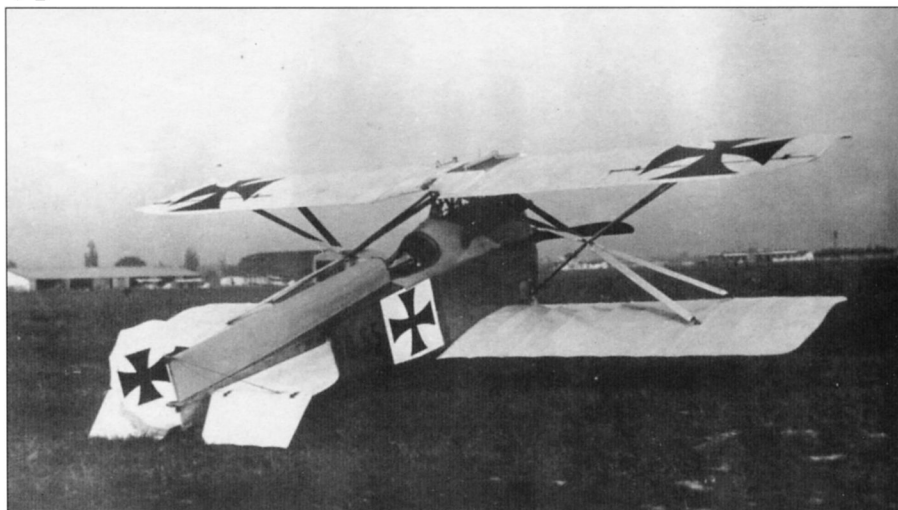
Gottfried Kruger to form the Brandenburgische Flugzeugwerke GmbH. A factory was established at Briest near Berlin which also happened to be sited near Lake Plauen providing a convenient means of testing seaplanes. It was Etrich who had hired Ernst Heinkel as technical director after experience with the LVG and Albatros companies and on his appointment he became joint manager with Kruger. In September 1914 Castiglioni formed a German holding company known as the Deutsche Aero Gesellschaft (DAG) ostensibly to engage in aircraft repair and the production of spare parts.

Facing Page: Two views of Prague's preserved Hansa Brandenburg D.I 28.68 as originally displayed at the National Technical Museum; the engine and airscrew have been removed in recent years. (Peter L Gray)

1). The first Brandenburg 'KD' prototype photographed at Briest in the spring of 1916 and powered by a 160-hp Mercedes. Note the original fuselage shape and excessive washout of the ailerons.

2). The second prototype also photographed at Briest with serial 60.55 in accordance with the sequence allocated to the Brandenburg company. The rear fuselage has been raised, the fin has vanished and a small comma rudder fitted. The straight leading edge of the stabilizer was altered to a curved format in production machines and a flat wing-mounted radiator has replaced the frontal item of the first prototype.

▼ 2





▲ 3

However, in June 1915 DAG purchased the Hamburg firm of Carl Caspar becoming the Hansa Flugzeugwerke AG. The final piece was put into place in October 1915 when Etrich sold his shares in the Brandenburg company which was then merged with the Hansa Flugzeugwerke to become Hansa und Brandenburgische AG. Castiglioni had meanwhile acquired all of Ludwig Lohner's shares and became overall managing director.

During the years leading up to 1914 the *Pfeilflieger* (biplanes with swept back wings, hence 'arrow') had been popular especially in Germany. In August 1914 the Austro-Hungarian army was equipped with numbers of this type of machine

designed and manufactured by the Lohnerwerke of Vienna. After faults were discovered in construction and the need to acquire better aircraft the War Ministry had no option but to turn to their German allies which meant permitting German-owned companies to establish themselves in Austria-Hungary. Companies such as Albatros and Aviatik soon took advantage of this situation rapidly followed by DFW which formed the Ungarische Lloyd Flugzeug und Motorenfabrik in Budapest.

However, the need for better aircraft was immediate, whilst Russian aviation presented no great challenge to the Austro-Hungarian and German air services

on the Eastern Front pressure was developing from another source. Relations between Rome and Vienna were rapidly deteriorating. Finally, on 2 April 1915 Italy denounced the Triple Alliance by which she had been allied to Germany and Austria-Hungary and it would only be a short time before she declared war which she did on 23 May 1915. This opened up another front and the need for new aircraft became essential, in consequence purchase of aircraft from Germany became a priority and firms such as Fokker, Albatros, Rumpler and Aviatik provided the bulk of them.

It was not until February 1916 that the first modest consignment of Fokker E.IIIs

▼ 4



(M.14) single-seat fighters arrived as part of an original order for 12. Fokker mono-planes were already being replaced on the Western Front but by the spring of 1916 Italian Nieuports type 10 and 11 were being encountered in numbers presenting problems for observation aircraft. Matters were not helped when *Idflieg* refused to provide the *LFT* with more up-to-date fighter aircraft leaving no option but to pressure its own aircraft industry to provide a solution. It was in this atmosphere that the KD scout was born, a creation of necessity. It was known that the Brandenburg company was already developing a single-seat prototype and with nowhere else to turn in April 1916 the *LFT* placed an order for an improved prototype with the promise of an order for a further 50 production

3). The second prototype photographed at the *Flik 26* airfield in the summer of 1916 for a front-line assessment. The neater cowling now contains a 160-hp Austro-Daimler. (Bernd Tötschinger)

4). This is believed to be the first Phönix-built D.I (serial 28.01) photographed at Aspern in January 1917, the man is Edmund Sparmann. Phönix simplified the centre-section strut arrangement and the interplane struts have been refined with 'cuffs' over the terminals. On 1 March *Hauptmann* Franz Rabitsch, CO of *Fluggeschwader I*, died in a crash in this machine.

5). One of a series of stock photographs of 28.02, the second model. Powered by a 185-hp Austro Daimler the Phönix product was preferred by pilots and was more successful than the German version. Delivered to *Flek 12* it became the personal aircraft of *Oblt.* Frank Linke-Crawford until May 1917.

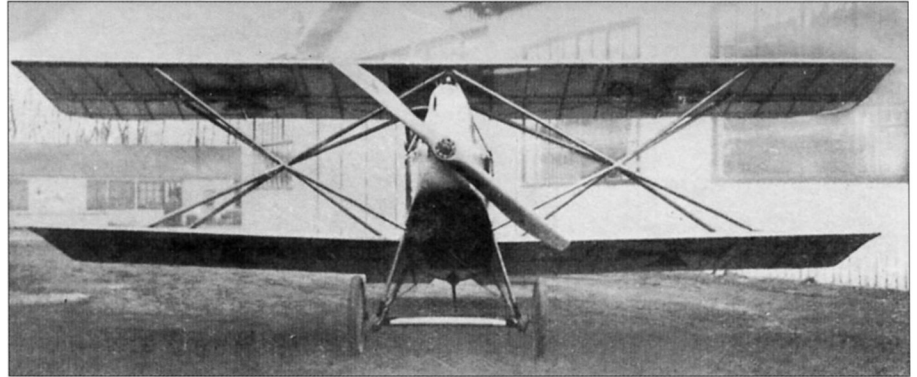
6). A rear view of 28.02 defining the fuselage shape and control surfaces, the wash-out has been substantially reduced.

7). A three quarter view of 28.02. After combat damage the airframe was repaired at *Flep 9* and was eventually written off ending up as an instructional airframe with *Flek 6*.

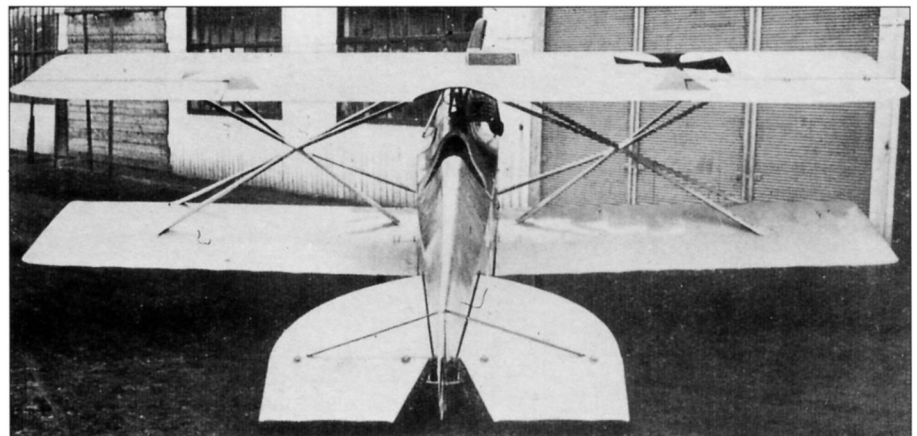
machines should the model be accepted.

The first Brandenburg KD which appeared in the spring of 1916 featured several unorthodox design features and an overall ungainly appearance. A tapering plywood covered fuselage was surmounted by an ugly headrest which looked as if it had been attached as an afterthought. The 160-hp Mercedes was totally enclosed in a bulky metal cowling surmounted by a radiator, the total effect reducing the pilot's forward view to practically nil. The tail assembly consisted of a conventional stabilizer and elevators but with a rather feeble fin and small comma type rudder. However, the most apparent innovation was the

arrangement of the interplane struts - a system proposed by Professor Richard Knoller. These consisted of two pyramidal structures of four units each. The upper pyramid was inverted and joined at the apex to the lower unit, the overall impression led to one of the names applied to the KD, the 'starstrutter'. The aim of this arrangement was to reduce drag and impart strength to the structure. The latter aim was certainly successful but it is doubtful if drag was reduced compared with the usual system of a single bay of struts per wing cellule with the usual wiring. The struts consisted of steel tubing with light metal streamlining sleeves, a system also applied to



▲ 5

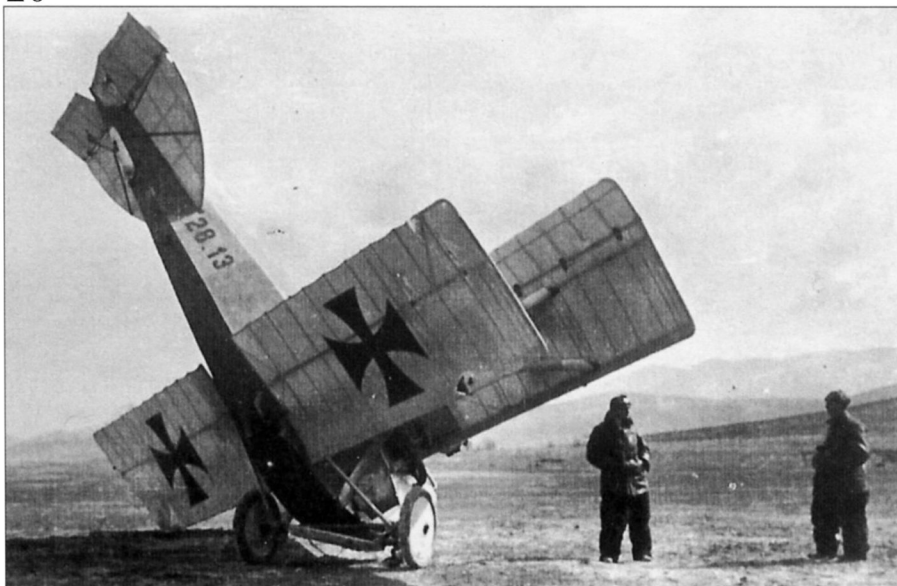


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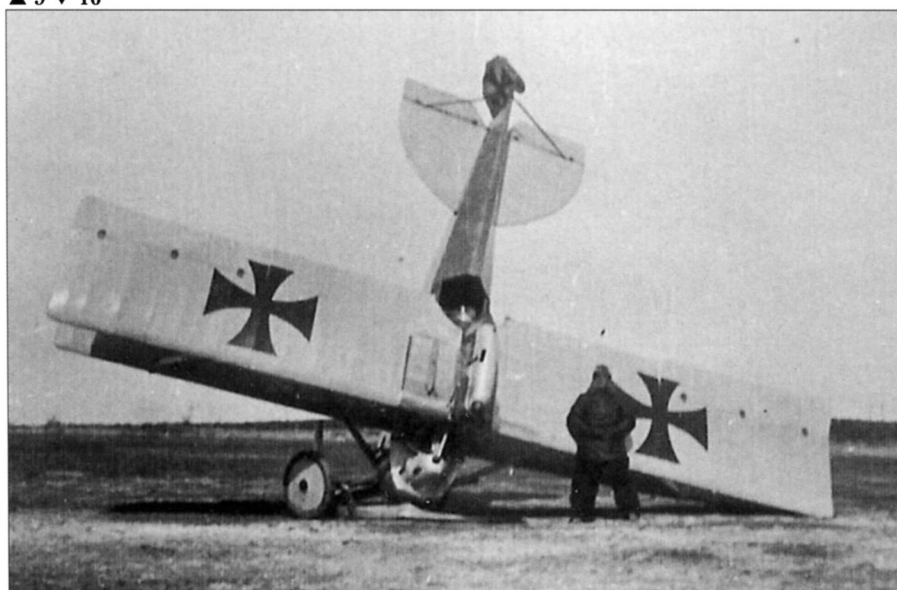




▲ 8



▲ 9 ▼ 10



the undercarriage. The wings were of usual construction for the period with ailerons on the upper wings only with extensive wash-out. Whatever impression the first KD prototype made, a second was ordered and allocated the designation 05.09, a cleaned up version of the first. The rear fuselage was built up with a curved top decking, the rear vertical former providing the attachment for the small comma rudder, no fin was fitted. The 160-hp Daimler which replaced the original Mercedes had a cleaner cowl with a more refined nose and the pilot's forward vision was marginally improved by the fitting of a flat radiator fitted into the upper right wing section. Unlike later wing radiators this was not contoured but was flat requiring fairings at front and rear. After initial trials the improved KD, now redesignated 60.55, was despatched to *Flik 26's* airfield on the Russian front for evaluation, at this stage it was unarmed. The field trials were carried out in July/August and appear to have been satisfactory for a formal contract ordering 50 production models was signed on 25 August 1916.

The Phönix clone

The Oesterreichisch-Ungarische Albatros-Flugzeugwerke GmbH had been formed on 28 April 1914 with a factory at Stadlau near Vienna.

By 1916 the company was producing about 20 aircraft per month and at the end of 1916 Castiglioni and Prince August Lobkowitz moved in and on 27 February 1917 it became the Phönix Flugzeugwerke AG. Henceforth, KDs manufactured by this company will be referred to as Phönix-built machines. KD (D.1) 65.57 was sent to the Phönix factory at Stadlau

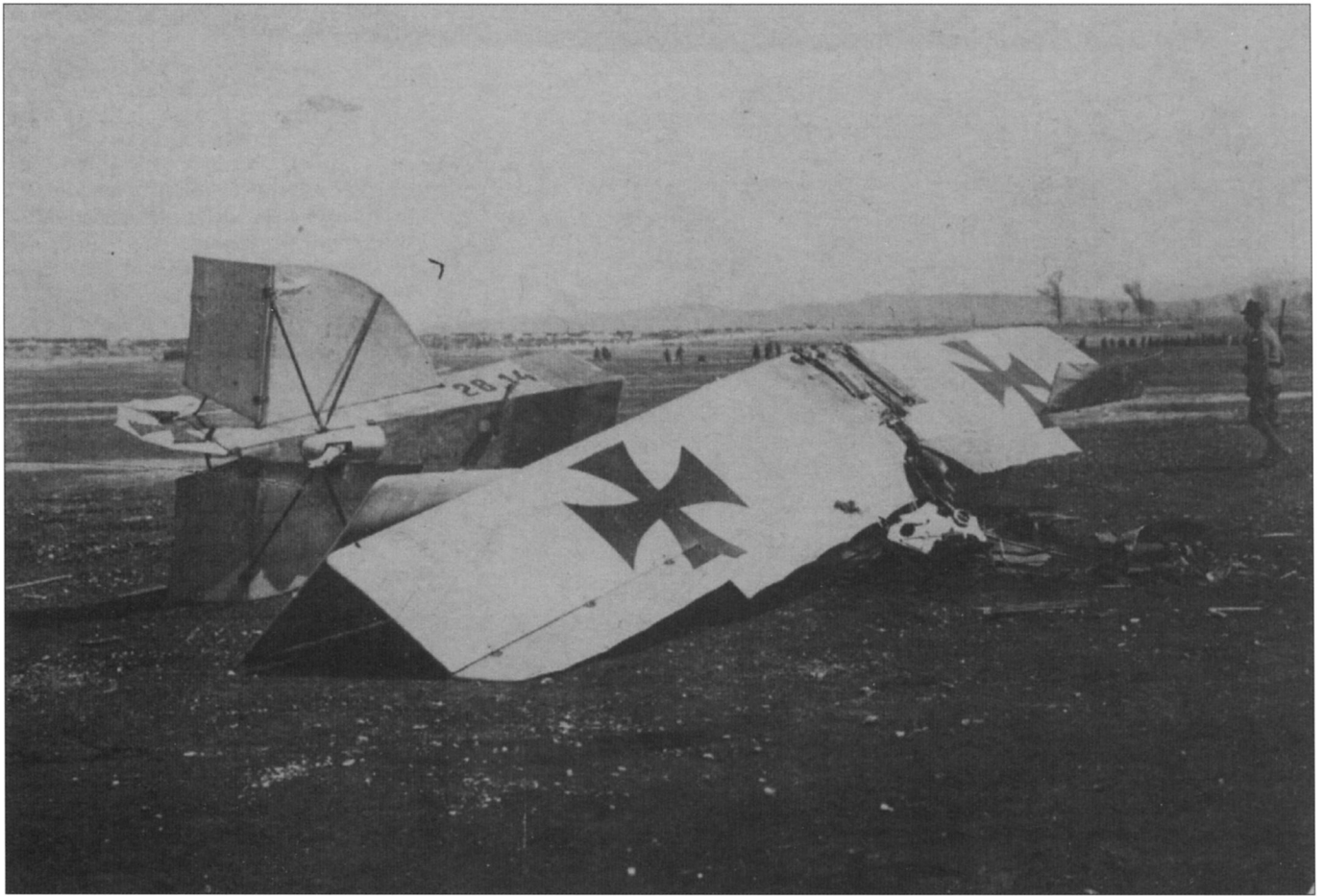
8). In an effort to improve performance and handling qualities *Offstv.* Julius Arigi of *Fluggeschwader 1* fitted his D.I 28.06 with a fin and rudder of his own design. This innovation was subsequently adopted for all Phönix-built D.Is, some modified in the field. A few late Brandenburg-built D.Is were also fitted with the modified item. The rather inhospitable landscape of the Isonzo Front is notable.

9). D.I(Ph) 28:13 in a static nose dive. Taken over by *Flik 41J* at Strasshof it was written off on 3 November 1917 and like others it ended up as an instructional airframe at *Flek 6.* (Martin O'Connor)

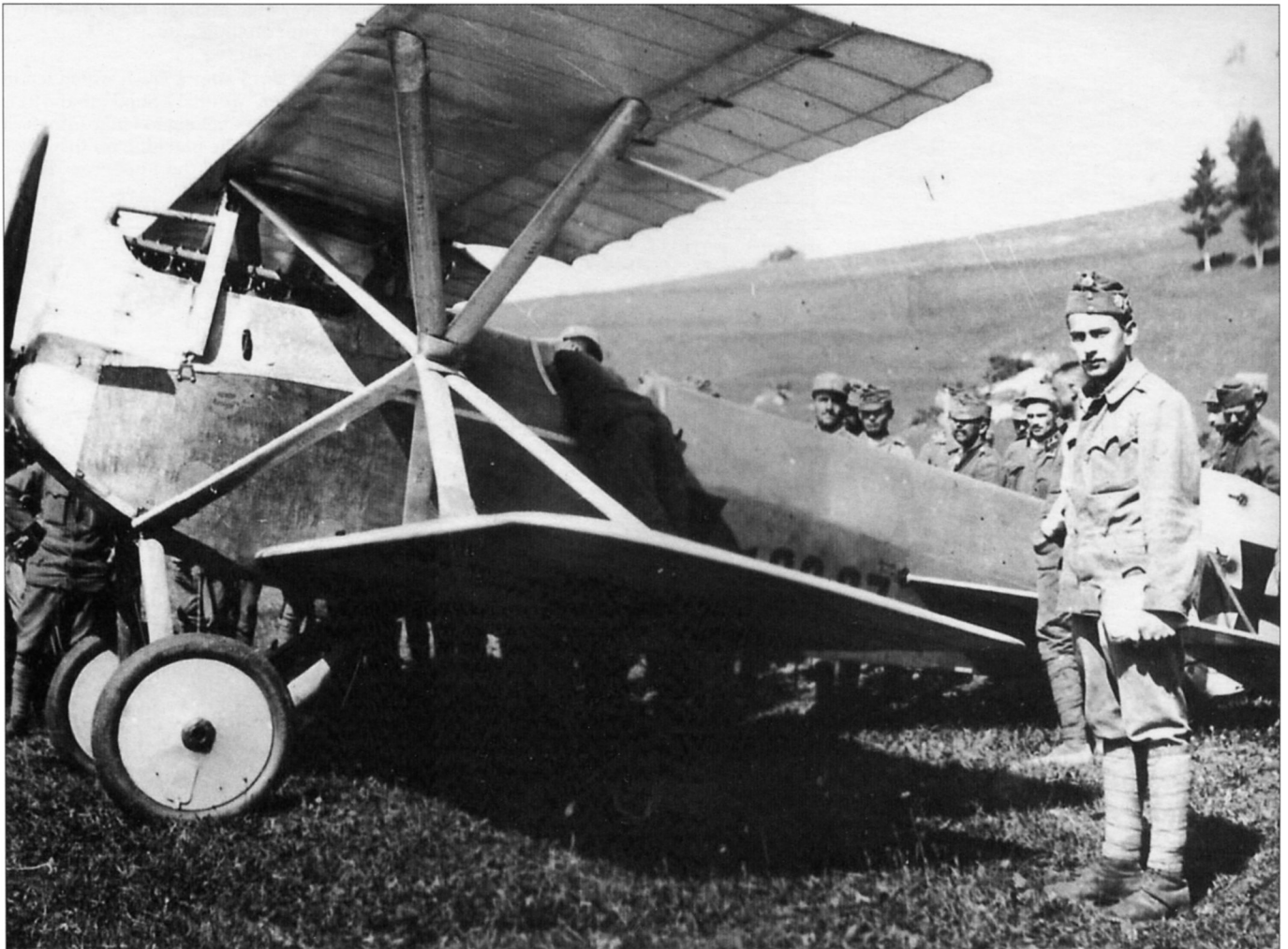
10). Another view of 28:13 reveals the VK II gun cannister. (Martin O'Connor)

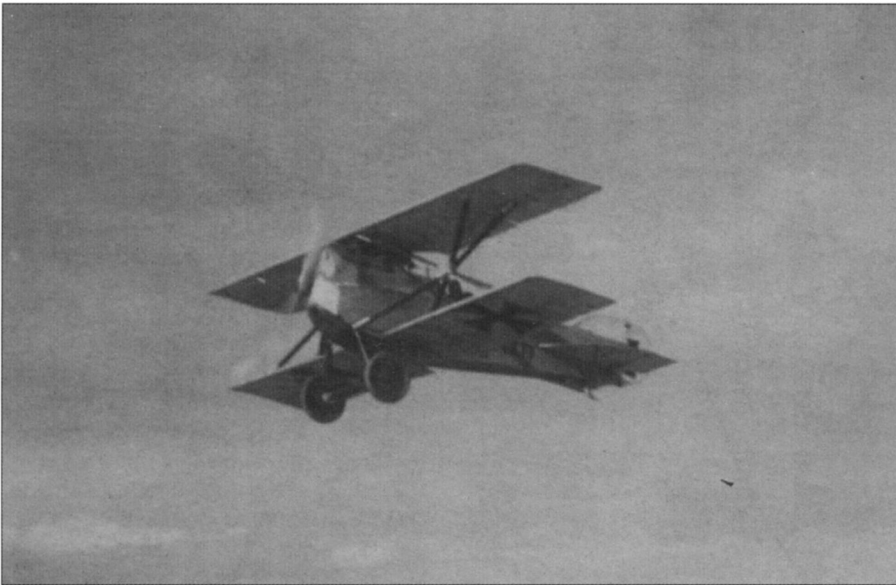
11). D.I (Ph) 28.14 was despatched to *Flik 41J* in March 1917 but on 21 April it crashed at the Sasena airfield severely injuring the pilot *Stabsfeldwebel* Kurt Gruber. As seen here the aircraft was a complete write-off. (NTM)

12). D.I (Ph) 28.37 attracting the attention of the soldiery. Accepted in May 1917 this aircraft was the personal mount of *Stabsfeldw.* Josef Kiss and was the most successful D.I on the Tyrolean front. (Jan Zahálka)



▲ 11 ▼ 12



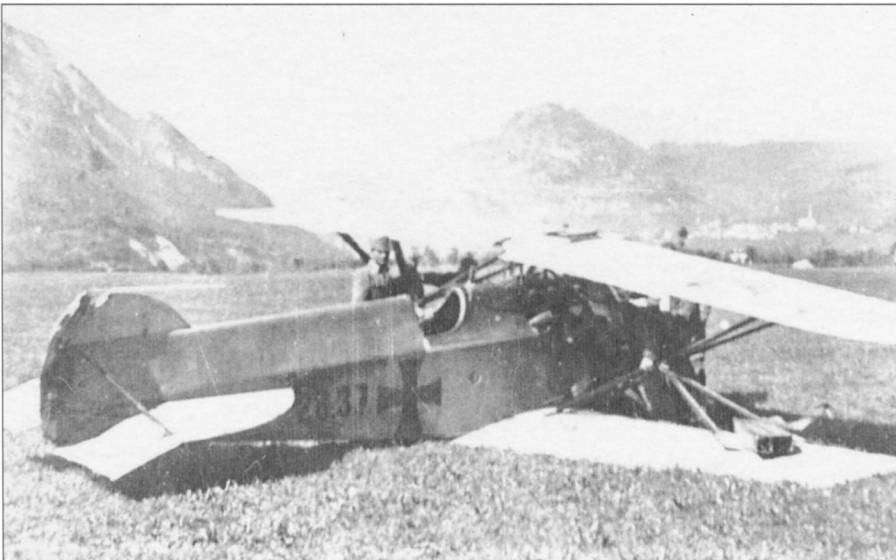


▲ 13

as an example and during the preparation of drawings, etc. Phönix engineers incorporated some alterations and improvements. The centre-section struts were altered and the pilot's seat raised to permit a better forward view and enabling him to sight his gun more easily. The main strut terminals were refined by being fitted with light cuffs with a similar fitting at the central junction. Finally, an 185-hp Daimler replaced the 160 engine of the Brandenburg-built D.Is. The two series were allocated serials according to standard practice, the Brandenburg D.Is were designated in the

13). D.I (Ph) 28.37 in flight photographed from a two-seater which Kiss was escorting. (P L Gray)

14). During a patrol on 14 September 1917, Kiss ran out of fuel and was forced to land near Pergine. The damaged 28.37 was sent to Aspern for repair and eventually written off on 27 October.



15). D.I (Ph) 28.26 was accepted in April 1917 and delivered to *Flep I* at Marburg on 24 April. Employed on escort, interceptor and photography duties as a unit of *Flik 16D* it was flown by *Hptm.* Raul Stojavljevic the CO of *Flik 16D*. On 11 January 1918 he was severely injured and forced to make an emergency landing behind his own lines. The aircraft was badly damaged and written off.

16). An unidentified D.I reveals the structure of the wings and tail surfaces in this poor but illuminating shot.

17). D.I (Ph) 28.15 after a crash which led to it being written off on 11 September 1917. The white trousers belong to Linke-Crawford who was piloting the machine on this occasion. The position of the undercarriage is interesting! (Martin O'Connor)

▲ 14 ▼ 15



65.5 series whilst the Phönix D.Is were allocated series No. 28.01 etc. The first series 65 D.I was accepted in October 1916 and the remaining 19 of the first part of the contract for 20 were accepted in December. Test flying of 28.01 took place at Aspern in January 1917 and the first of the D.I (Ph) fighters started to arrive at the Front in February and March.

Into service

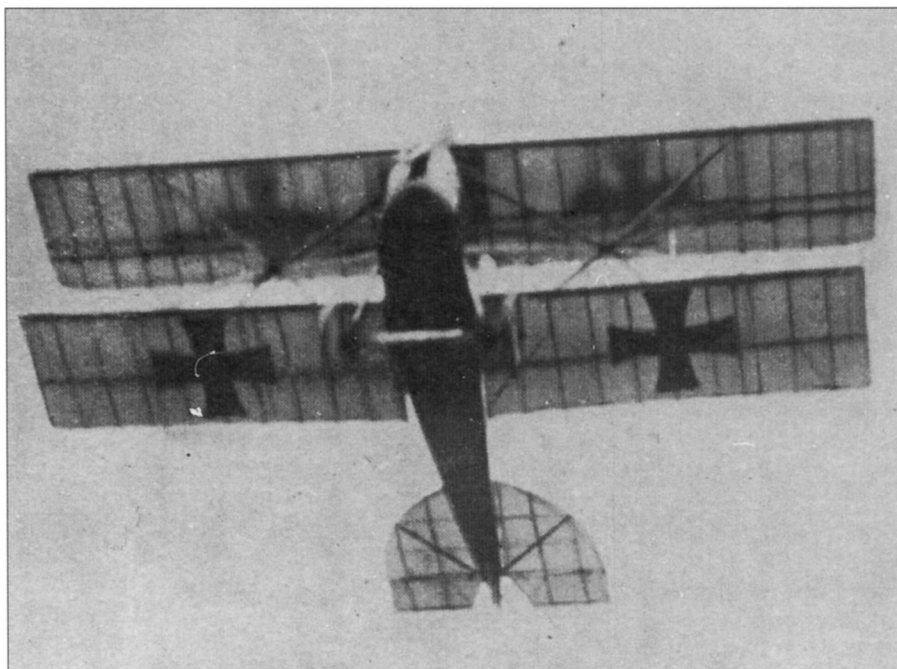
The first D.Is (65 series) were delivered to operational units in November and December 1916 whilst others were delivered to *Fleps* (Airfield Parks) in the rear. Eventually D.Is series 65.5 and 65.7 were sent to the Isonzo Front; *Fliks* 4, 12, 16, 19, 23, 34, 41J and *Fluggeschwader* I where they were mainly used as escort fighters. Series 28 D.Is were employed by *Fliks* 2, 12, 23, 28, 32, 34, 35, 41J, 42J, 46F and *Fluggeschwader* I on the Isonzo Front;

Fliks 17, 21, 24 and 101G on the South Tyrolean Front by *Flik* 16 as escort fighters and *Fotoeinsitzerflugzeuge* (photo single-seaters) on the Carinthian front. They were also employed by *Flik* 36 and the *Hauptmann* Nikitsch detachment on the Romanian front.

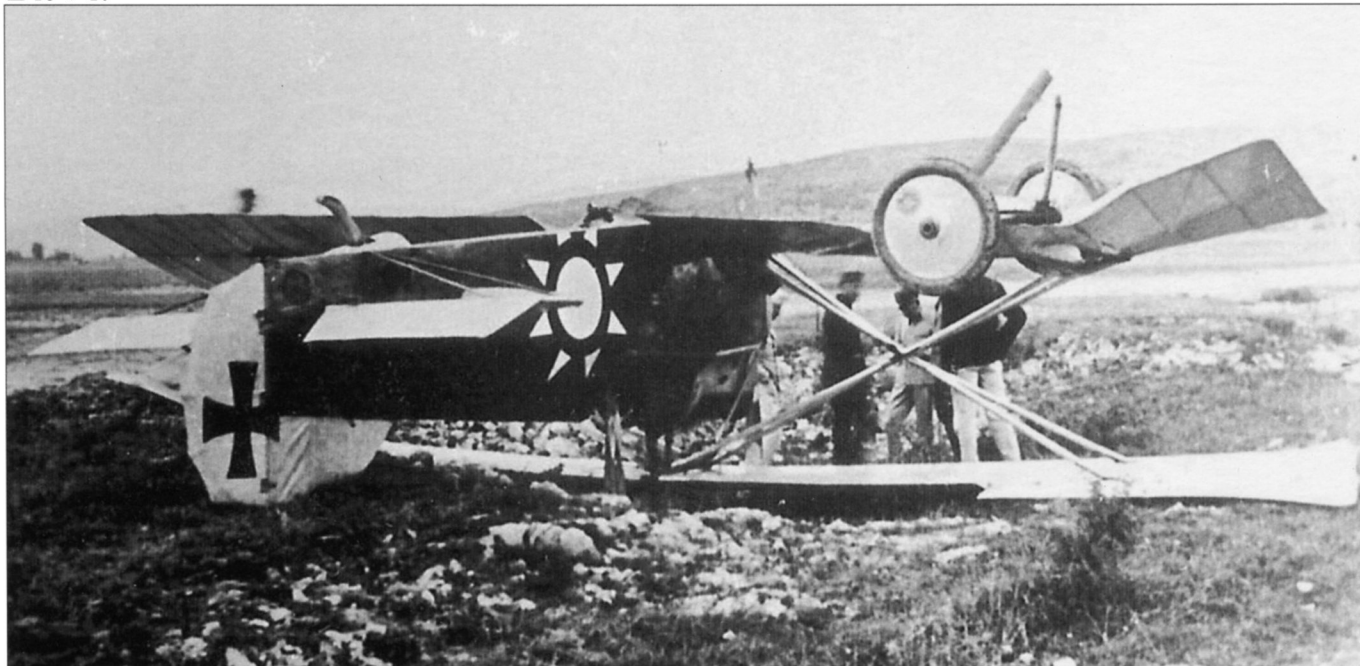
Even as early as November 1916 critical reports on the performance of the D.I had started to arrive in Uzelac's office. In February 1917 a *Flars* report was hardly encouraging stating that combat experience had revealed negative qualities such as poor climb and dangerous flight characteristics.

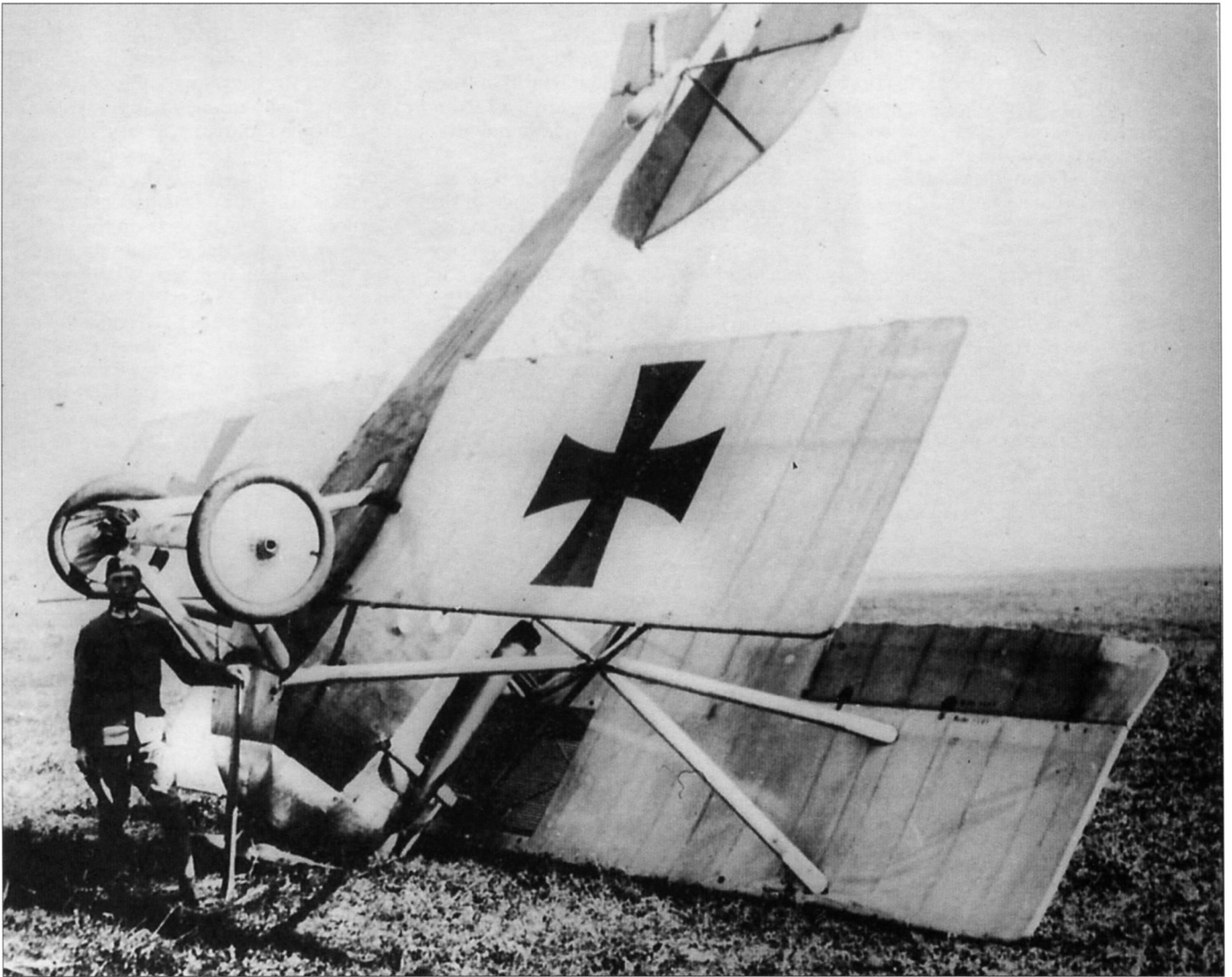
Some of the comments by experienced pilots contained the most damning conclusions such as those by *Oberst*. Adolf Heyrowsky, who in 1916 had been commander of *Flik* 19. Writing in 1942, Heyrowsky recalled that he regarded the D.I as being obsolete when it was first

introduced. He also criticised the unacceptable ceiling (3000 metres) and described the flight characteristics as difficult for inexperienced pilots with the D.I's sudden tendency to spin with consequent casualties. The situation was so serious that Heyrowsky decided to ground all D.Is pending further instructions. At this time *Oberst*. Uzelac, concerned about the reports on the D.I, was engaged on a series of visits to units on the Isonzo Front to investigate the various complaints. He arrived at *Flik* 19's base on 7 November 1916 to discuss the problems with Heyrowsky, it was a surprise visit. Unfortunately, Heyrowsky was away at the time and Uzelac decided to find out for himself what the D.I was really like and he ordered a D.I 65.56 to be prepared for flight. Some time later, Heyrowsky returned to see an inverted D.I with a crumpled undercarriage on the field and demanded to know who had disobeyed his instructions. He was told that the *Kommandant der Luftfahrtruppen* (*Koluft*) himself was the culprit and had been taken to hospital. Heyrowsky arrived at the hospital only to find that Uzelac had discharged himself despite being diagnosed with concussion. Negative reports on the D.I continued to pour in. A *Flik* 23 report dated 20 May 1917 suggested that the fighter should be withdrawn. To support this an account by an experienced pilot *Leutnant* Mirko Vrbanic was enclosed describing what happened during a combat mission. He had been engaged on an escort mission when at 3000 metres his D.I stalled and he was only able to recover control just short of crashing. The covering report contained the summary... 'In the pilots' unanimous opinion they cannot give full attention during combat if they are totally occupied with controlling the aircraft. In addition the climb rate is so slow that the KD must take off well in advance of the observation aircraft in order to reach



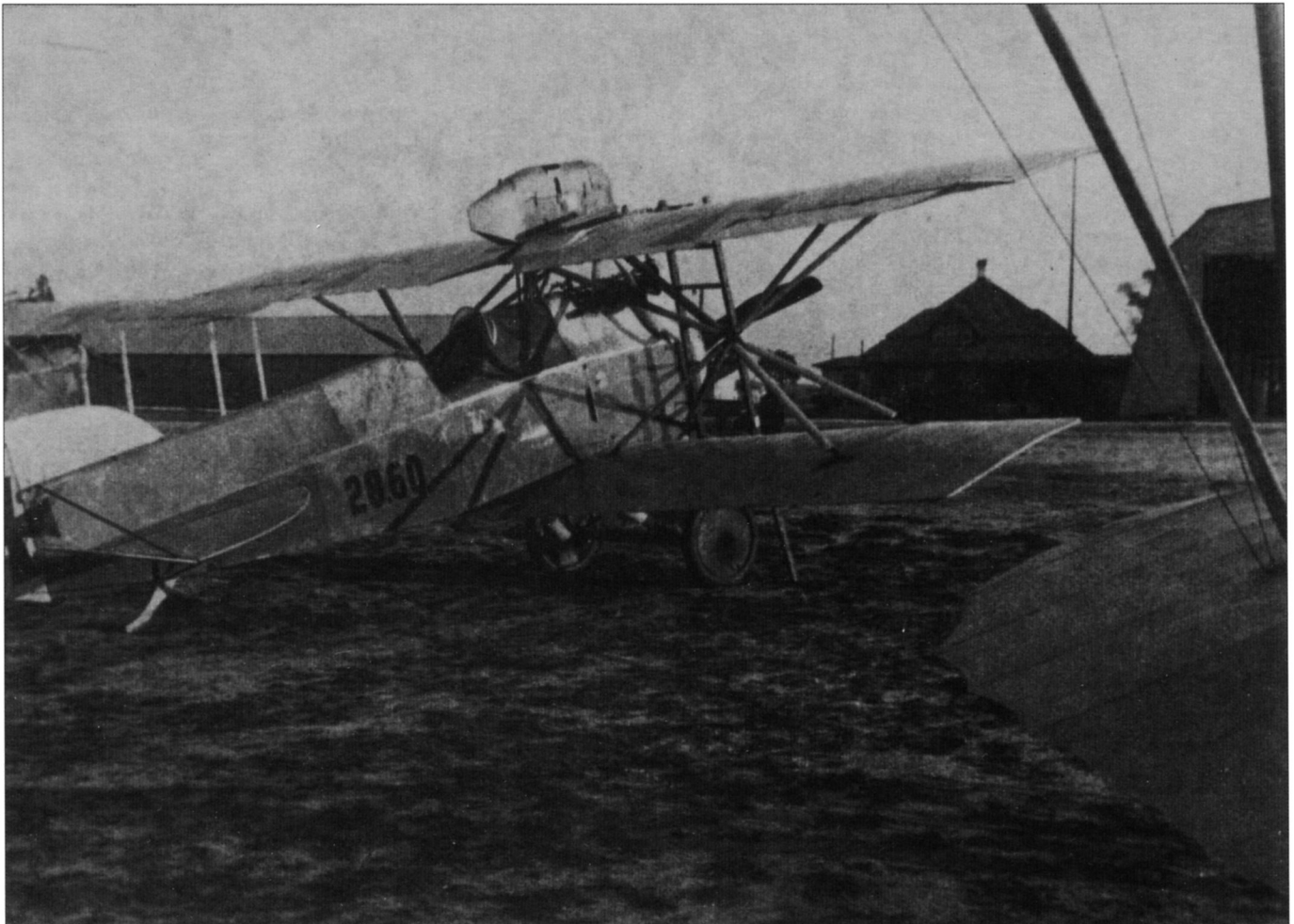
▲ 16 ▼ 17





▲ 18 ▼ 19





▲ 20

18). D.I (Ph) 28.57, this photograph was probably taken when the machine was employed as a trainer at *Flek 6*. On 19 August 1918 *Korporal Kirsch* died during a practice flight when the machine stalled during a turn. (Peter M Grosz)

19). D.I (Ph) 28.47 was sent to the Transylvanian front in July 1917 as a unit

▼ 21

of *Fliegerdetachment Hauptmann Nikitsch*. On 21 August 1917 it crashed on the *Kezdi Vasarhely* airfield badly injuring the pilot *Zugsführer* (Sgt.) *Johann Hramann*. The D.I was written off on 4 October 1917. (NTM)

20). D.I (Ph) 28.60 was despatched to the *Izonso Front* in September 1917 but was repaired in Prague in August 1918 and

ended up as an airframe trainer with *Flek 6*. (NTM)

21). On 14 September 1917 *Kaiser Karl* visited *Pergine* airfield to inspect the *Jagdstaffel Oberleutnant Essler*. Included in the parade was a D.I(Ph) alongside two *Aviatik C.Is*. The front rank consists of six *Albatros D.III* (OEF) scouts.



their altitude. The KD's ceiling is greatly inferior to that of enemy Nieuports which generally operate between 4-5000 metres'. In June 1917 *Flik 41J* reported that... 'The best pilots (and only they can fly the type) are shackled, ruin their nerves and perish in crashes over the airfield without their expert skill achieving anything'.

Non combat losses far exceeded those incurred during combat, *Flik 41J* losing eleven D.Is in accidents alone in July. The commander of *Flik 42J* reported that... 'The KD is inferior to enemy fighters, the enemy pilots are aware that the KD loses altitude in a turn and use this to their advantage.' It seems that by this time the D.I had acquired the unfortunate sobriquet... 'der fliegender sarg' (the flying coffin). Despite this the D.I did achieve some success in the hands of more experienced pilots such as

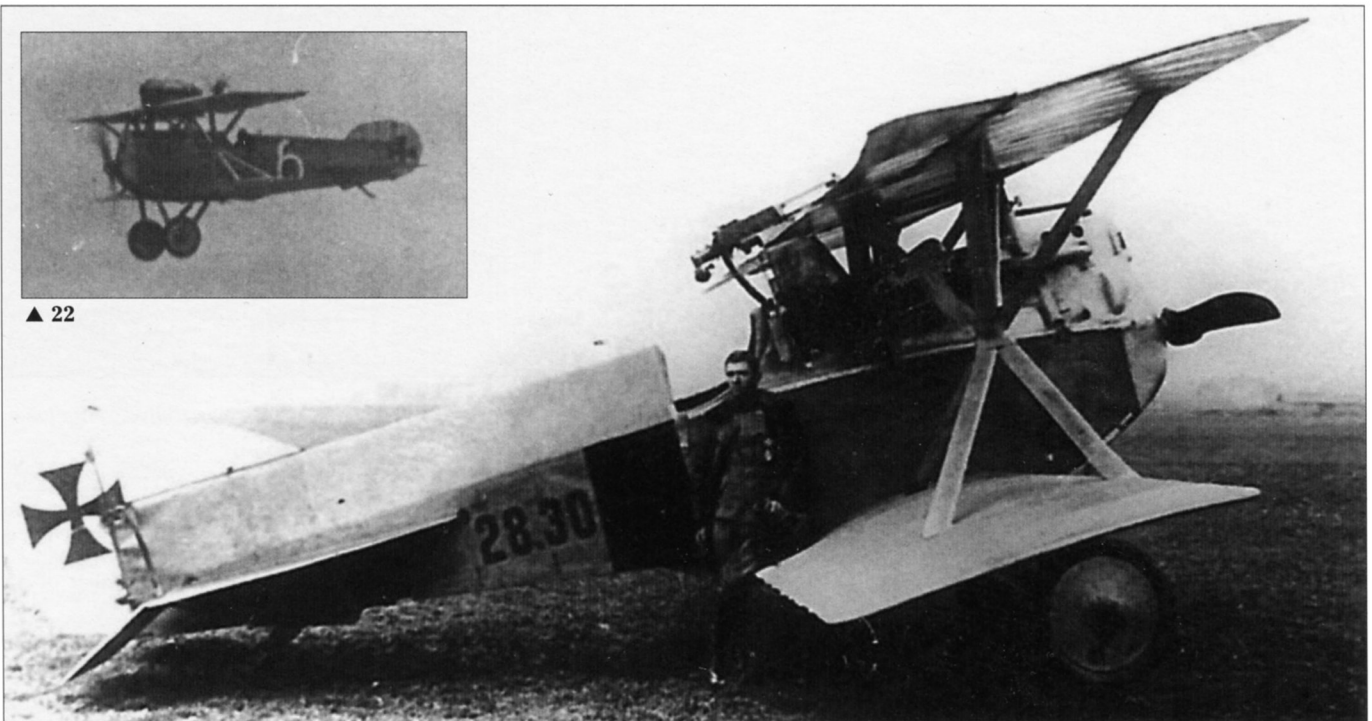
Brumowski, Kiss and Linke-Crawford but for the average or trainee pilot the aircraft's well known disastrous tendencies could hardly inspire confidence. Efforts were made to improve the type, Phönix lightened the airframe and a significant modification was instigated by *Offstv.* Julius Arigi of *Fluggeschwader 1*. He designed and fitted a fin and new rudder to his D.(Ph) 28.06. The improvement was such that this modification was adopted for production aircraft and later fitted in the field to existing Phönix-built D.I s, only a few late Brandenburg-built D.Is were fitted with the replacement fin and rudder. The second series of the Brandenburg-built D.Is 65.70-99 were also lightened and powered by the 150-hp Daimler but the performance was little improved. Generally, pilots preferred the Phönix built D.Is and most victories were won on these.

Armament

Like their allies and enemies Austro-Hungarian aircraft were armed with a machine gun that was basically a standard army weapon, in this case the 8mm Schwarzlose. Designed and patented by a German, A W Schwarzlose in 1902, it was put into production three years later by the Oestereische Waffen-fabrik Gesellschaft in Steyr, Austria. The weapon was remarkably simple in design employing a powerful spring and heavy bolt to provide sufficient inertia to resist the rearward thrust caused by the exploding charge. The barrel was comparatively short which, combined with an arrangement of levers caused the bolt to act at a mechanical disadvantage when compressing the main spring. The short barrel also meant that the breech pressure was reduced almost immediately which had a detrimental effect on the



▲ 22



▲ 23 ▼ 24





▲ 25
22). A rather poor photo of a D.I (Ph) with a significant personal marking.

23). D.(Ph) 28.30 with pilot *Hptm.* Raul Stojsavljevic, CO of *Flik* 16 revealing his special gun mount. Stojsavljevic pioneered the use of single seat scouts as high speed photo reconnaissance aircraft. Photographed on 14 August 1917, he achieved 12 victories during the war. (*Peter M Grosz*)

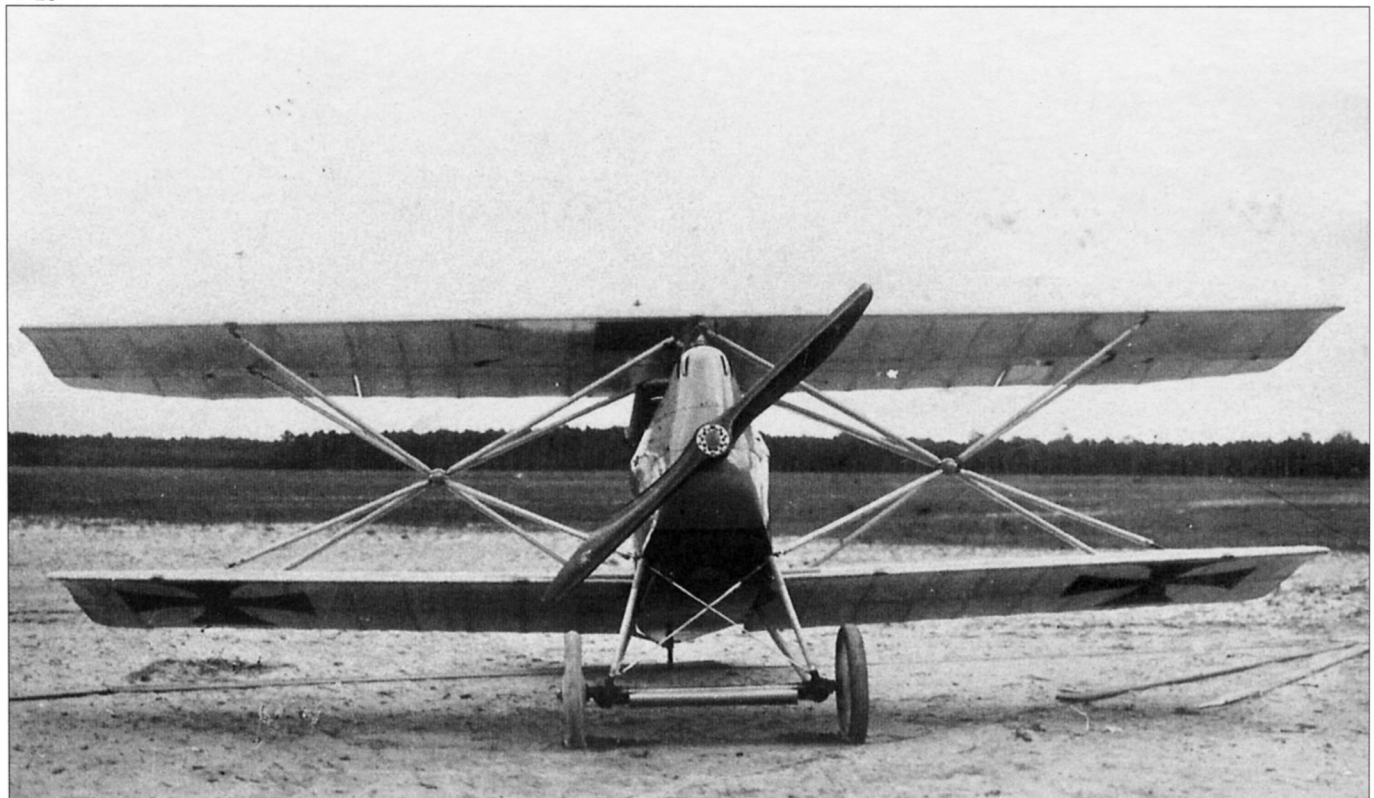
▼ 26

24). D.I(Ph) 28.33, a unit of *Flik* 42J where it was flown by Brumowski, Fiala and Arigi. It was written off after an accident at *Flep* 9 at Fiume. Whatever damage was done after this accident it was certainly made worse by the men who have climbed all over it...

25). Brandenburg-built D.I 65.54 with the 160-hp Austro-Daimler housed in a rather bulky cowl, the pilot sat low with little front

view, the seat was later raised. This photo was taken at the factory field at Briest and after delivery 65.54 was armed and served with *Flik* 12. Note the characteristic egg-shaped junction of the interplane struts. (*George Haddow*)

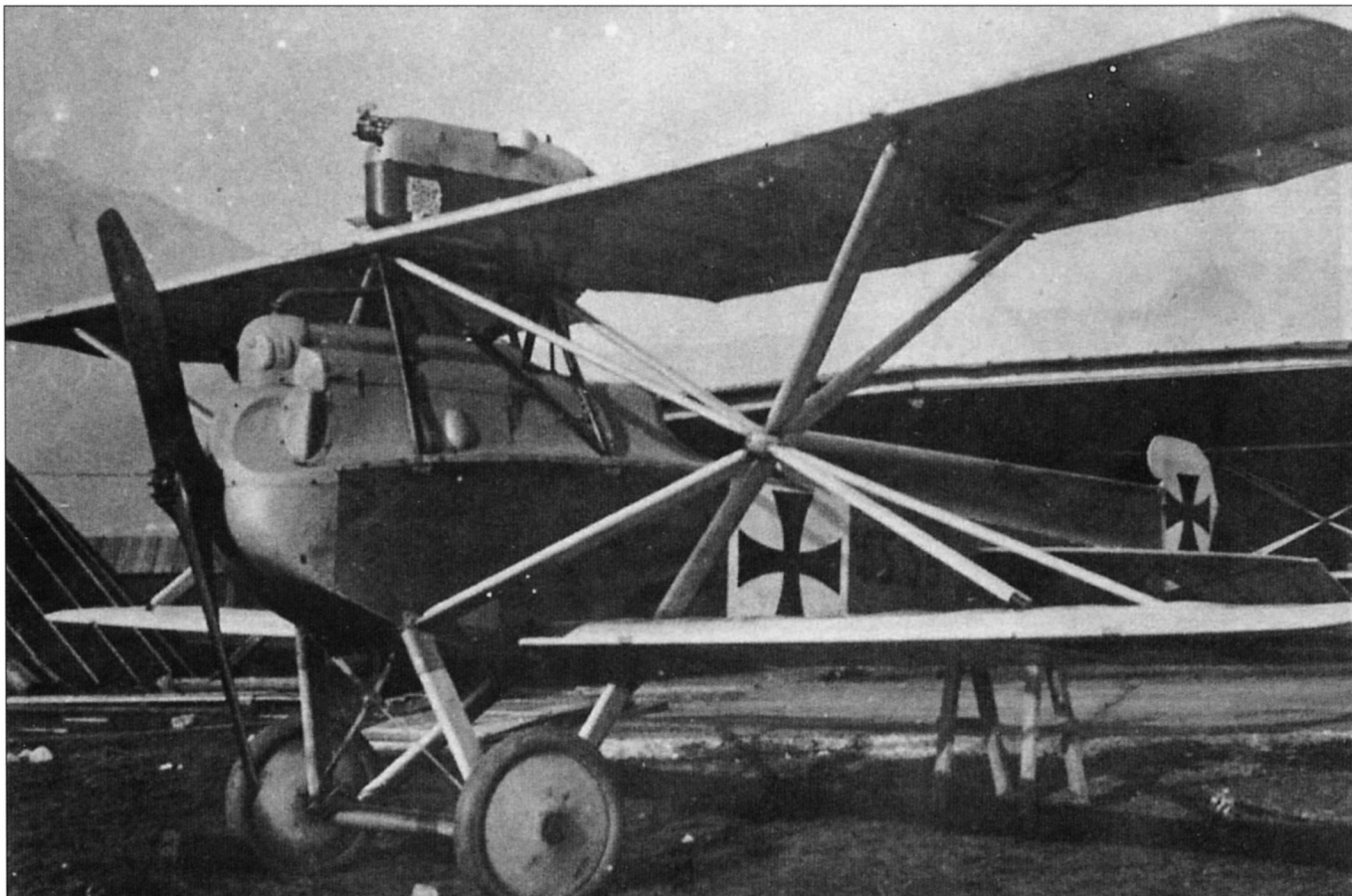
26). Another factory photo of 65.54 emphasizing the high nose and the faired undercarriage bracing wires, a feature of this series. (*George Haddow*)





▲ 27 ▼ 28





▲ 29

27). Brandenburg D.I 65.60 shows the revised reduced cowling which offered a slightly better forward view, the pilot also sits higher. In warmer weather the upper section of the cowling was usually removed to improve cooling for there is little louvring to be seen. Originally employed as a fighter trainer by *Fluggeschwader I* at *Strasshof* 65.60 ended up at *Flek 6*.

▼ 30

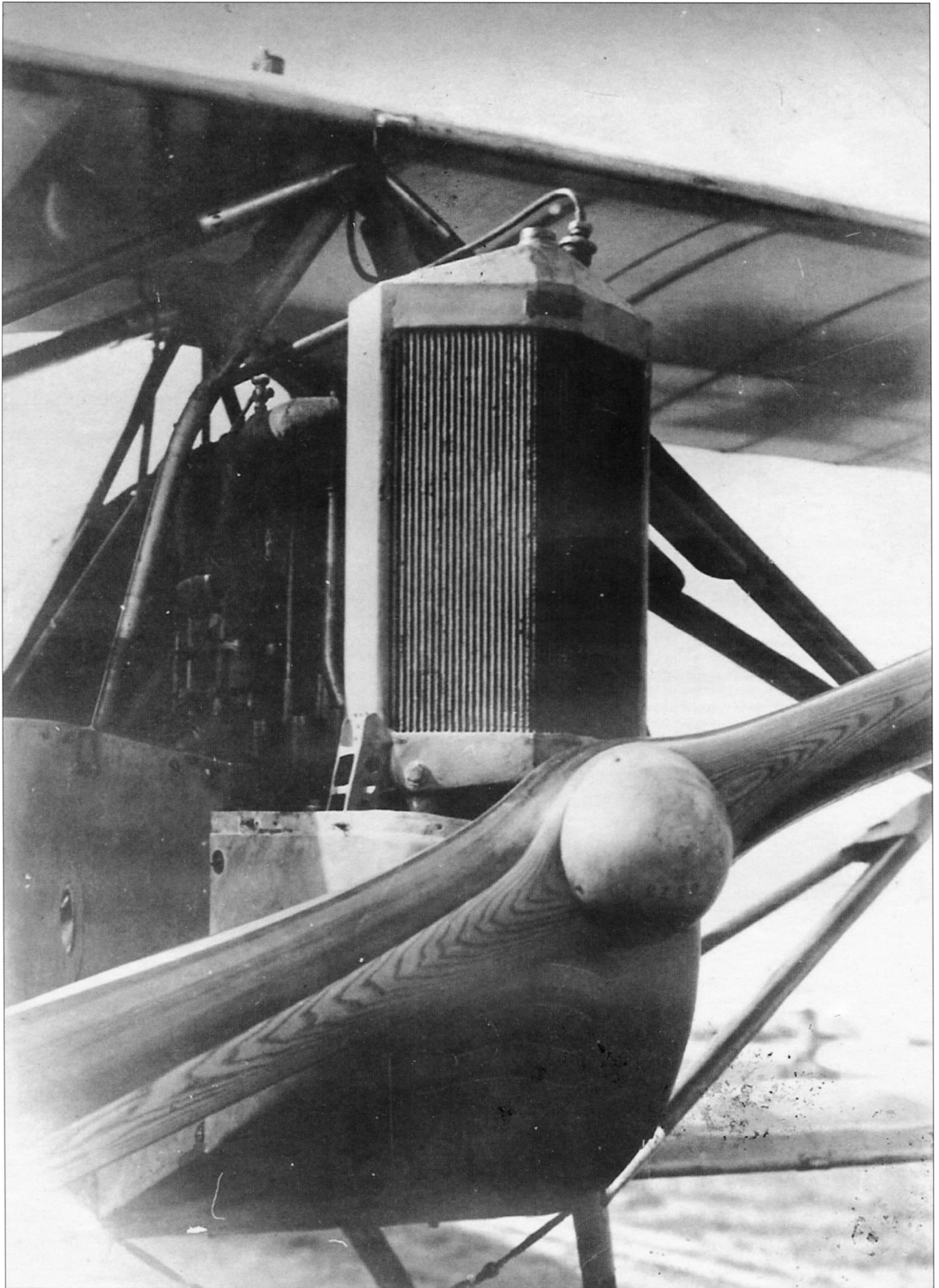
28). Another view of 65.60 with the cowling removed probably photographed later at its final abode at *Flek 6*. (*Peter L Gray*)

29). Brandenburg D.I 65.59 was despatched to *Flik 19* on 2 November 1916 where it remained until February 1917. The rather complex contours of the full cowling are revealed here whilst the gun protruding

from the *VK II* cannister is a *LMG 08 Spandau* complete with gate sight.

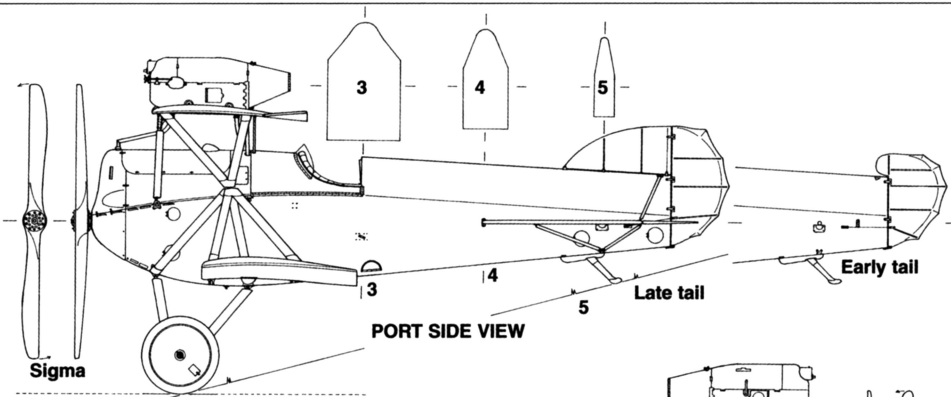
30). Brandenburg D.I 65.66 used as a trainer with *Flek 6*, it is one of the few German-built machines fitted with the *Phönix* style tail assembly and may have been the first so fitted.



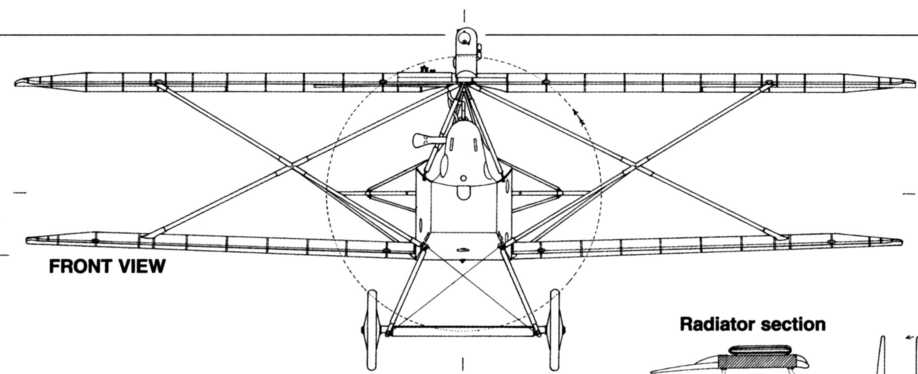


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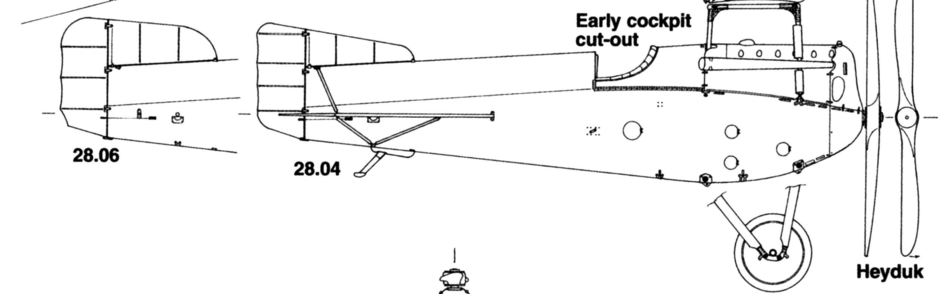
31). The second series 65.70 - 99 of the Brandenburg-built D.Is were powered by the 150-hp Austro-Daimler with a frontal automobile type radiator. The addition of a small spinner to this series would do little to improve performance.



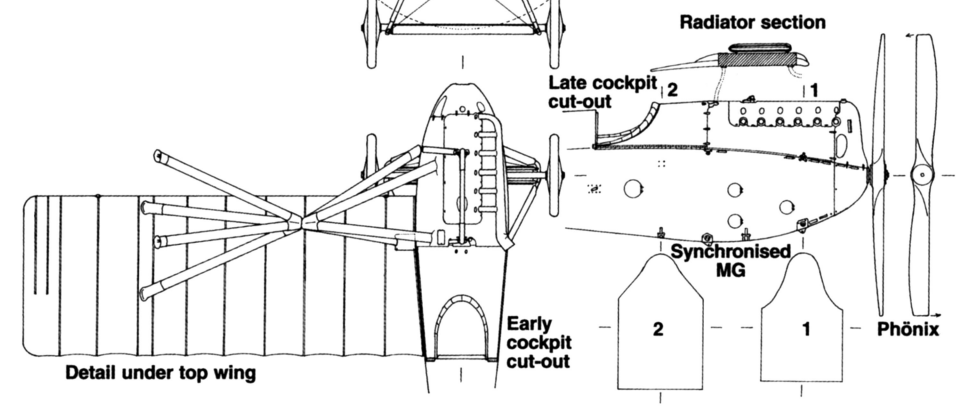
PORT SIDE VIEW



FRONT VIEW

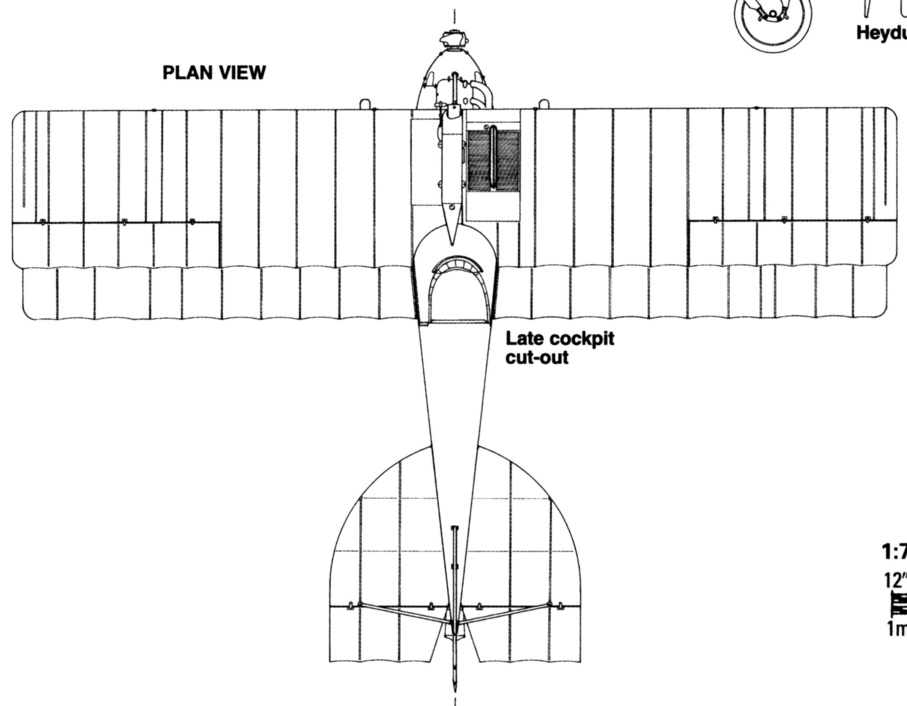


PLAN VIEW

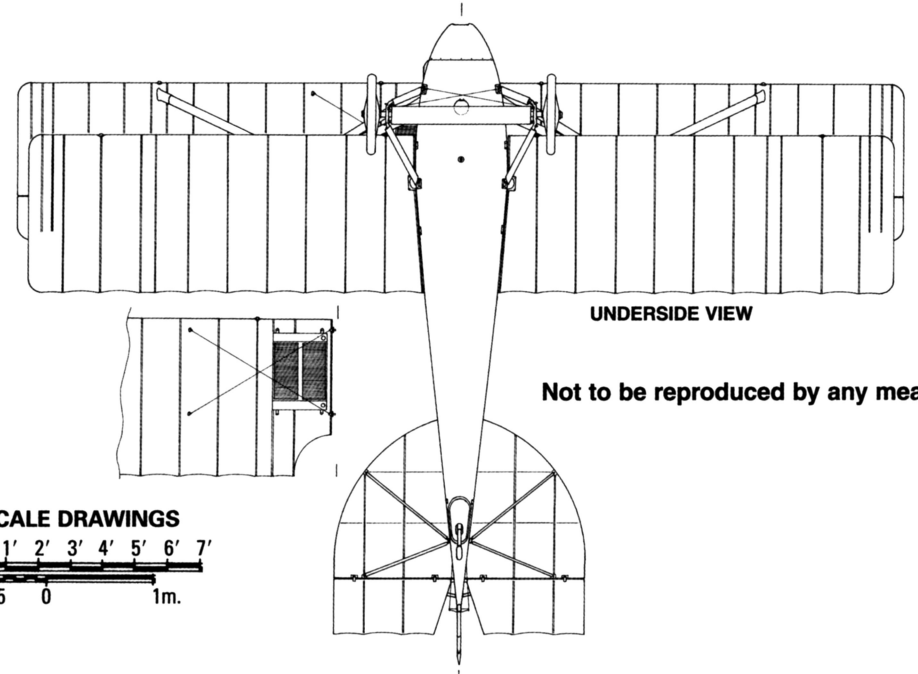


Radiator section

Detail under top wing

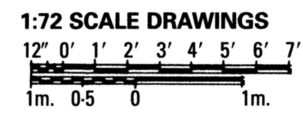


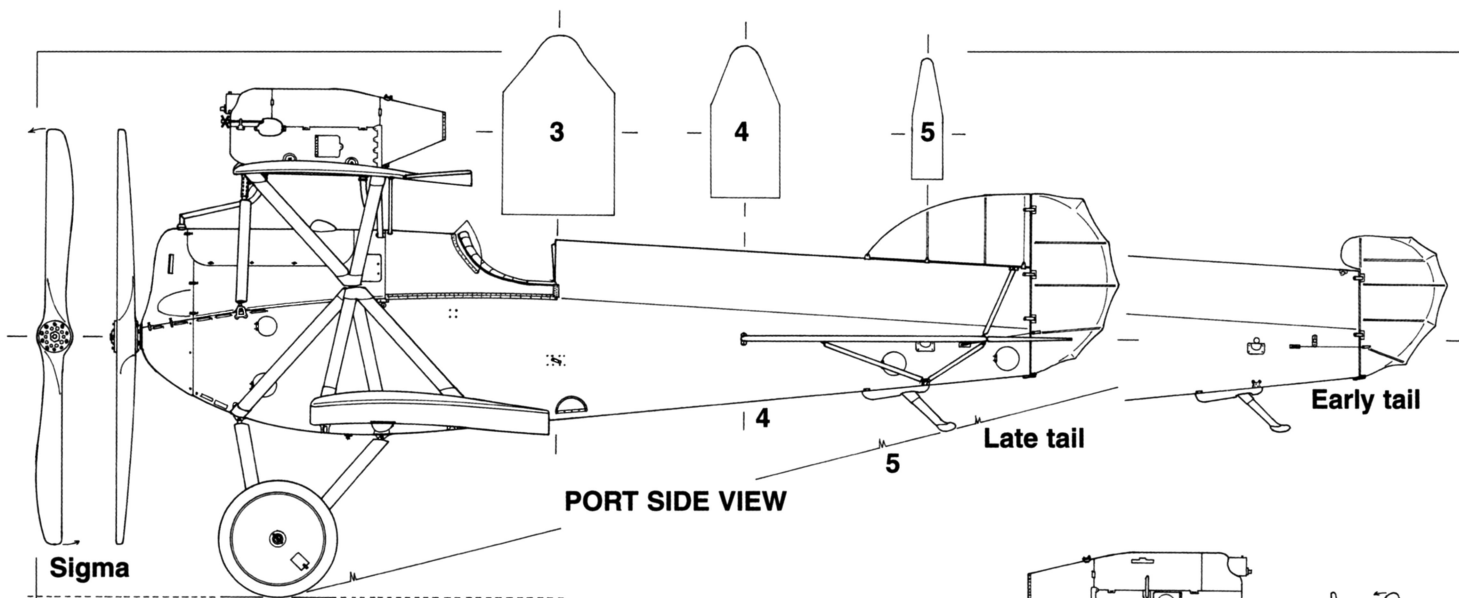
Late cockpit cut-out



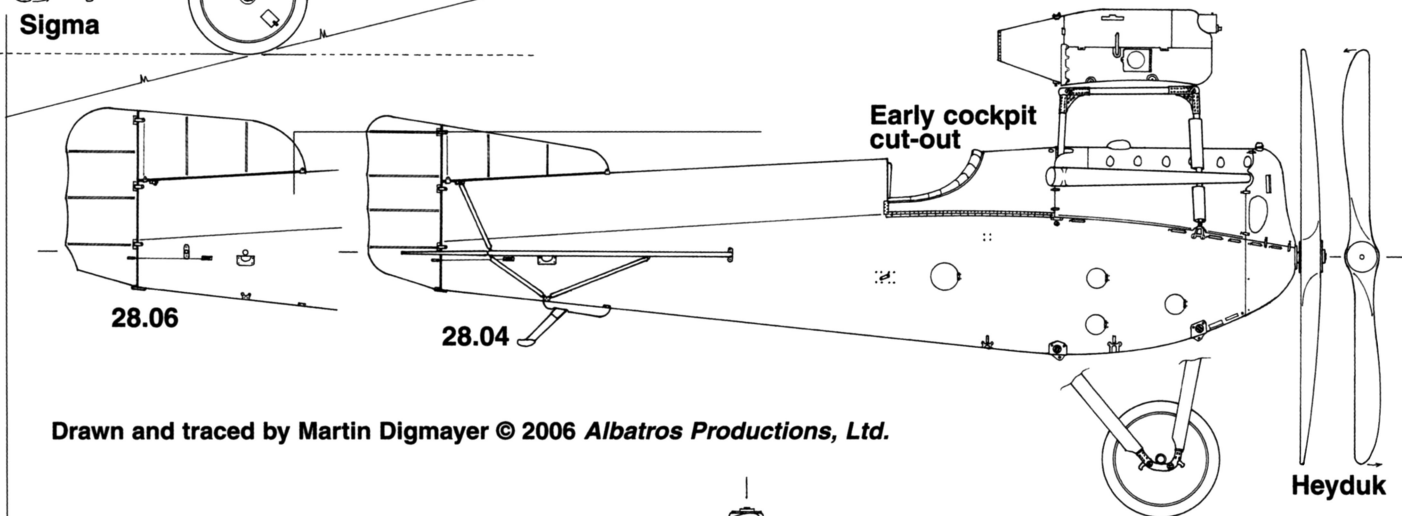
UNDERSIDE VIEW

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PORT SIDE VIEW



PLAN VIEW

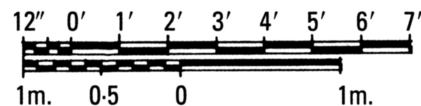
Drawn and traced by Martin Digmayer © 2006 Albatros Productions, Ltd.

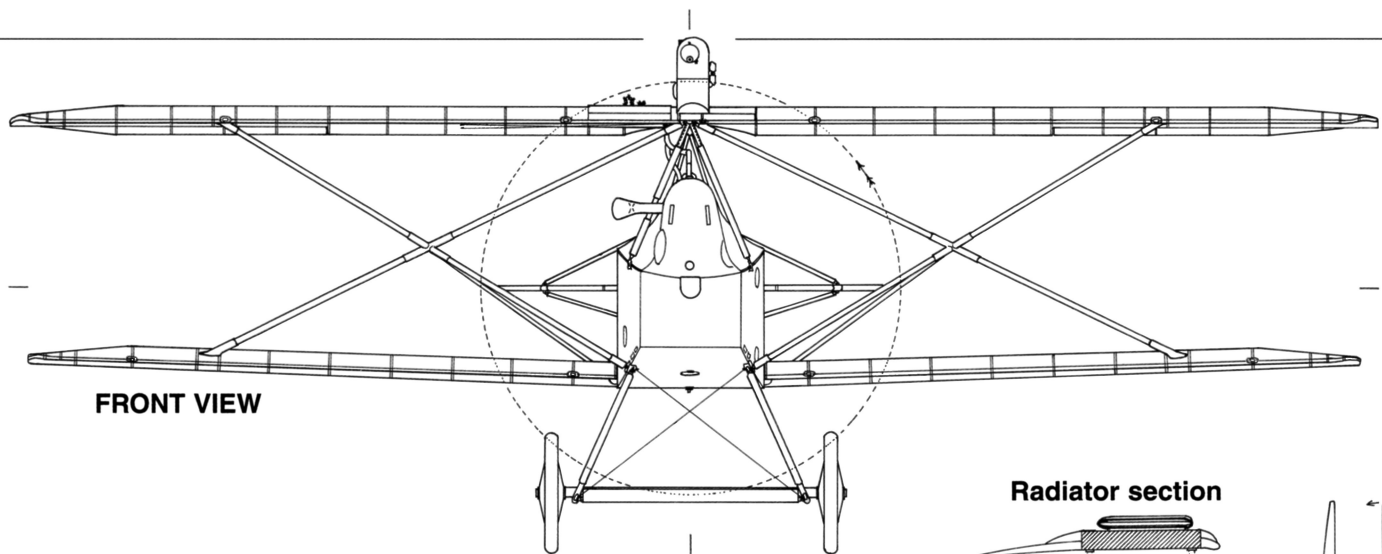
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Late cockpit cut-out

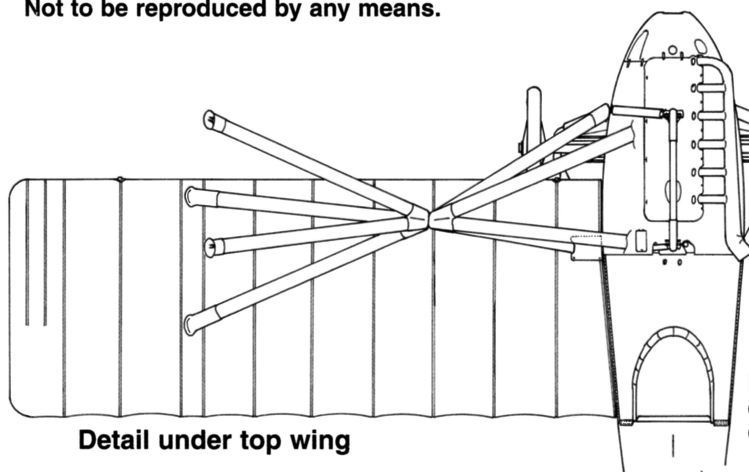
1:48 SCALE DRAWINGS



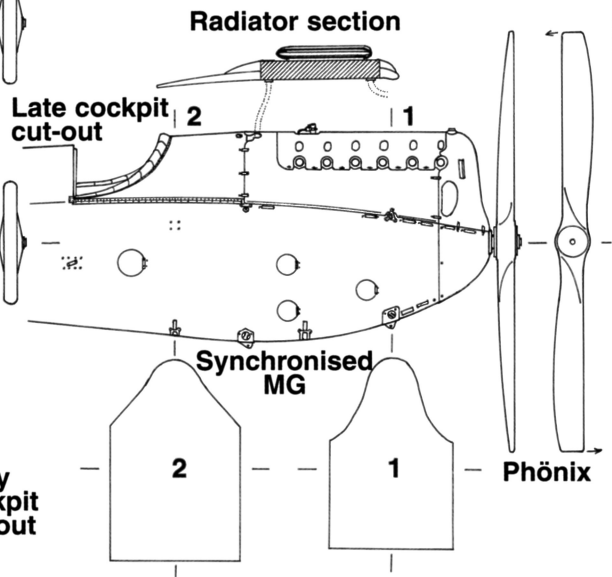


FRONT VIEW

Not to be reproduced by any means.



Detail under top wing



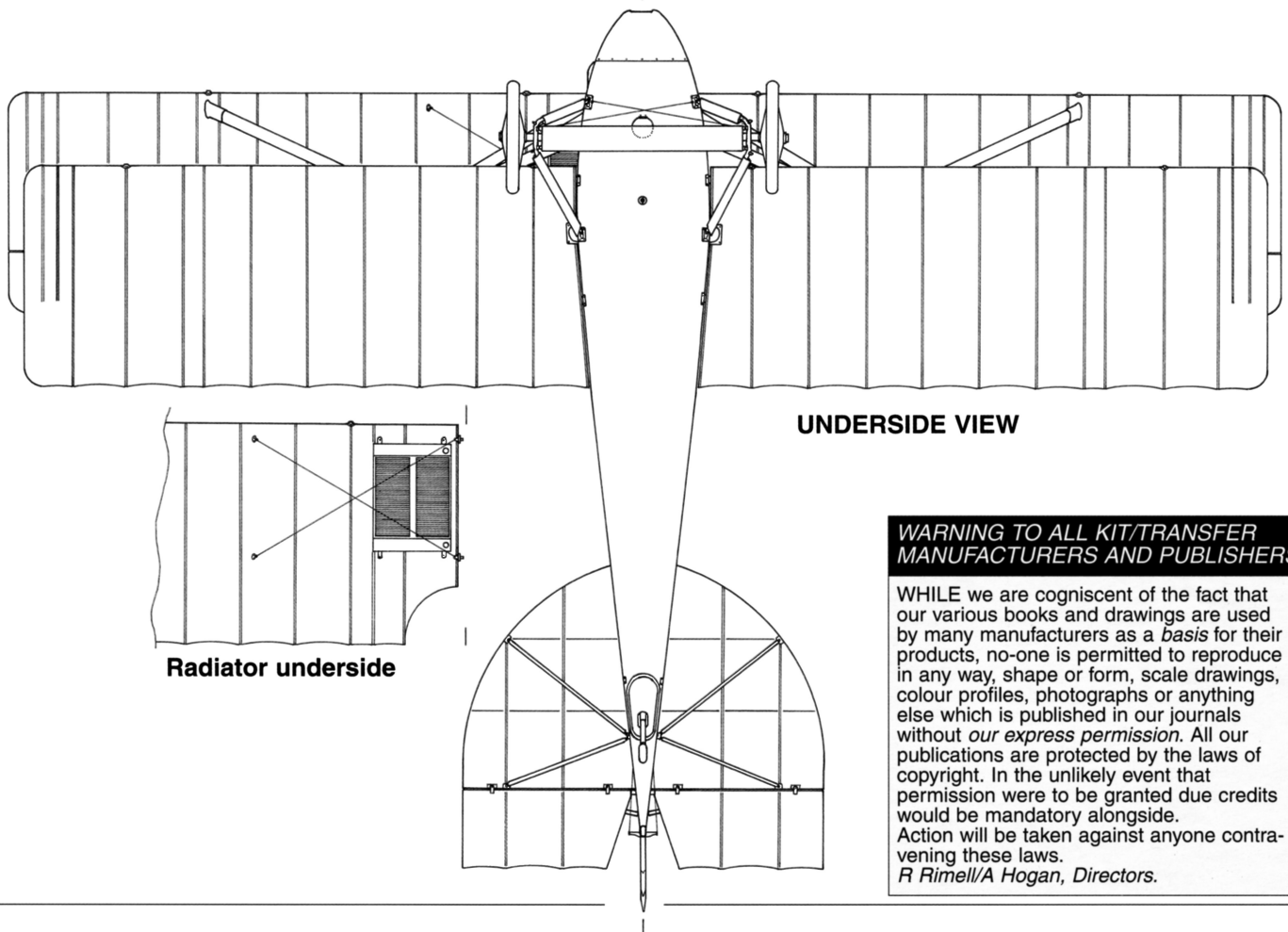
Radiator section

Late cockpit cut-out

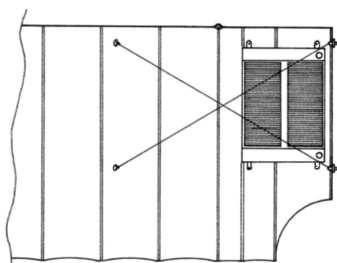
Early cockpit cut-out

Synchronised MG

Phönix



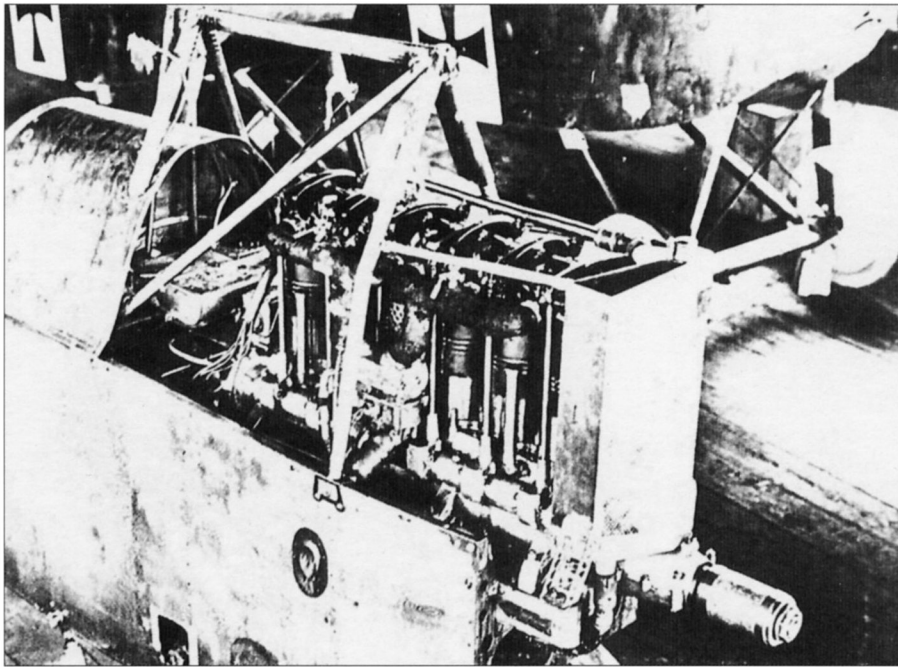
UNDERSIDE VIEW



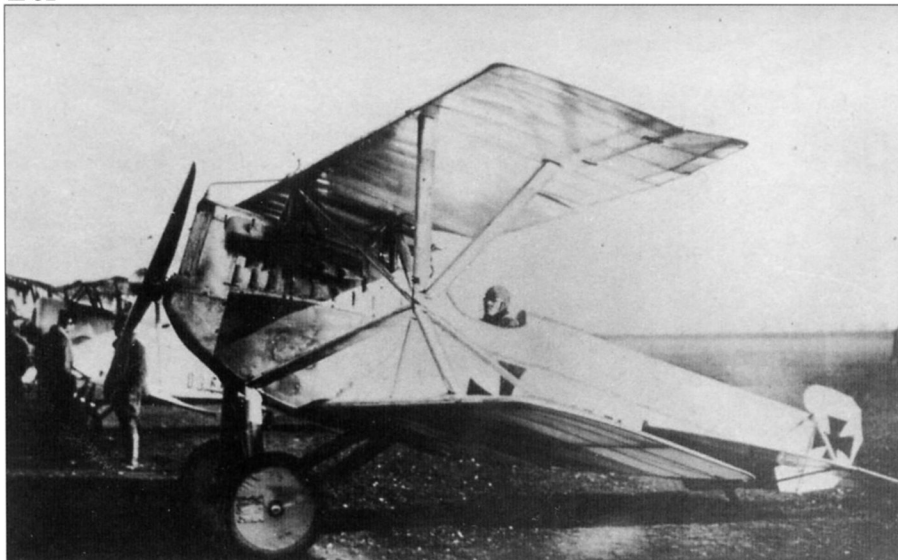
Radiator underside

WARNING TO ALL KIT/TRANSFER MANUFACTURERS AND PUBLISHERS

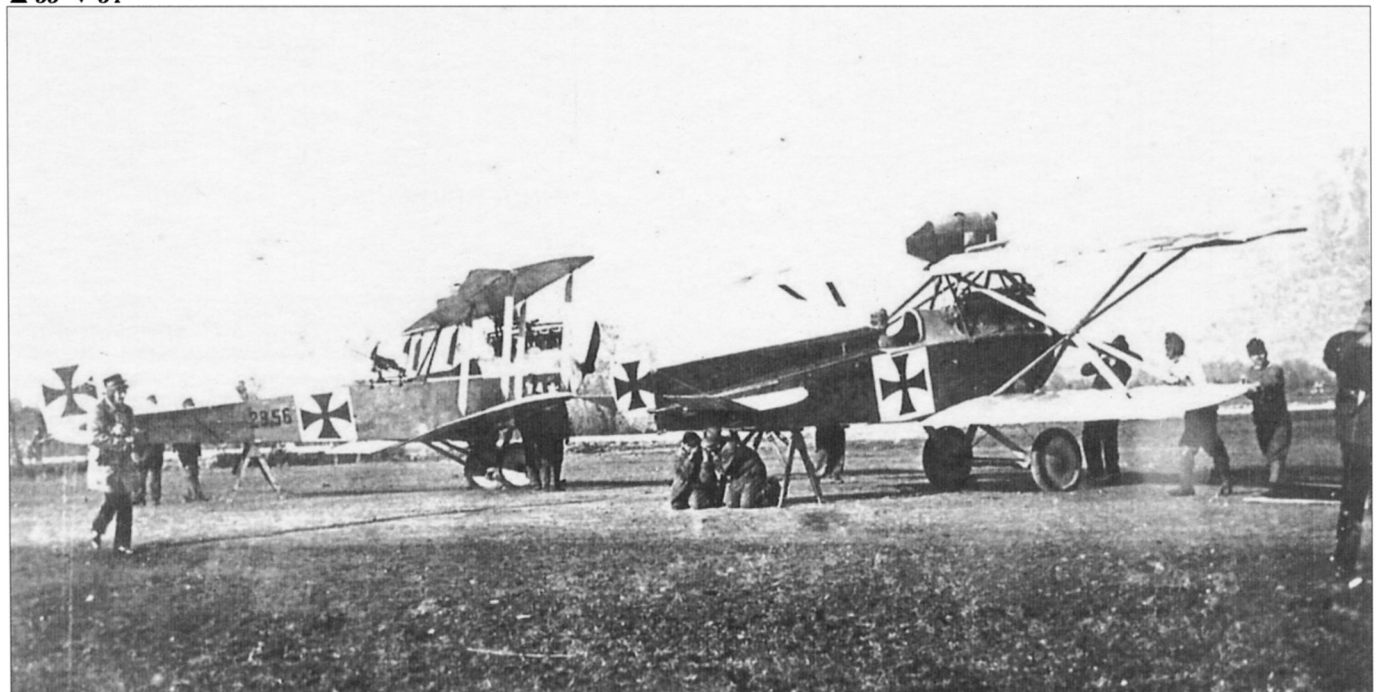
WHILE we are cogniscent of the fact that our various books and drawings are used by many manufacturers as a *basis* for their products, no-one is permitted to reproduce in any way, shape or form, scale drawings, colour profiles, photographs or anything else which is published in our journals without *our express permission*. All our publications are protected by the laws of copyright. In the unlikely event that permission were to be granted due credits would be mandatory alongside. Action will be taken against anyone contravening these laws.
R Rimell/A Hogan, Directors.



▲ 32



▲ 33 ▼ 34



muzzle velocity and in consequence, the range. The system was classed as 'retarded blowback' and the Schwarzlose was the only gun employing this system to see widespread service.

It was a rugged weapon and a number were used in various places after WWI and WWII. Like the Maxim guns (Vickers and Spandau) it was water cooled and would eventually be modified for air cooling as an aircraft weapon. The ammunition belt was fed into the underside of the breech and the empty belt exited in the same way as did the empty shell cases. The M7/12 model appeared in that year and this is the gun that equipped Austro-Hungarian aircraft during the war, the later model, the M.16 dispensed with the water jacket entirely but never entirely replaced the M7/12. The basic ground M7/12 required modifications for air use especially the need to reduce weight and increase the rate of fire. The large anti-flash cone of the ground gun was removed and *Flars* experts managed to raise the rate of fire to over 600 rpm. When it came to arming the D.I no synchronising system was available and a solution adopted elsewhere became necessary, the gun had to be mounted to fire over the airscrew arc. Mounting

32). The 150-hp Austro-Daimler laid bare showing the induction side, this engine exhausted to the left.

33). D.I 65.71 photographed at Wiener Neustadt with *Flek* 6. It was written off on 1 September 1917 after a landing accident. Note the Fokker B.II series 03:6 in the background.

34). D.I 65.53 was originally delivered to *Flik* 19 but later served with *Flik* 12. On 26 January 1917, Linke-Crawford was hit by a crosswind whilst landing this machine resulting in a crash. It was subsequently written off. The aircraft in the background is Albatros B.I (Ph) serial 23.56.

the Schwarzlose as an observer's weapon was one thing, fixing it above the pilot's head to be remotely fired was another. To accommodate the gun and its ammunition *Flars* created a streamlined box known as the Type II VK. Made of plywood with a metal detachable top it contained the gun and a reduced belt whilst the rear of the box was a small gravity tank. Operation of the weapon involved cocking and firing controlled by cables, whilst inside the box an empty belt take-up reel was motivated by a small windmill fixed to the side. This author has never been able to ascertain whether or not the water jacket which was retained for some time still contained water. Other modified water-cooled guns retained a perforated or louvred jacket permitting air to pass over the barrel but the Schwarzlose in the Type II VK box was totally enclosed with only the muzzle being exposed to the air. Many photos show that later the box with the metal top was removed and eventually the water jacket reduced to skeletal form. Whatever the situation, the box and its contents could only contribute to the mediocre performance of the D.I. Several experimental fittings were conceived and tried out by pilot's to gain access to the gun (clear jams etc.) and a few were armed with Spandaus. Some D.Is were fitted with the first synchronising system devised by *Oberleutnant Otto Bernatzik* of *Flik 8* in 1916. Unfortunately it had the habit of functioning erratically at higher engine speeds which was unnering for the pilot.

Experimentation and metamorphosis

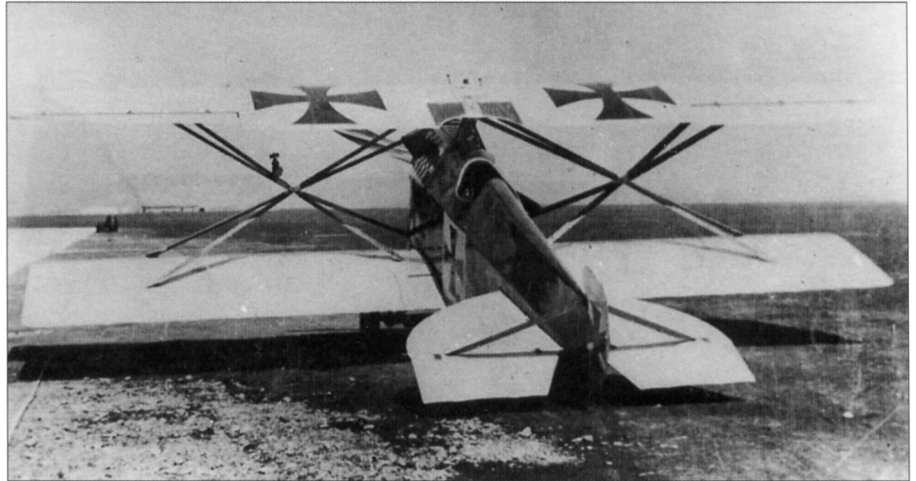
The success of the manoeuvrable Nieuport scouts influenced several designers in Germany such as the Albatros company which adopted the narrow lower wing form. In Vienna, *Dipl.Ing.* Leo Kirste of the Phönix company began a programme to modify the basic D.I airframe in an attempt to improve performance. In December 1916 a prototype was rolled out revealing that Kirste had taken a production D.I (28.48) and fitted an entirely new wing cellule. The area of the upper wing was considerably increased whilst the lower wing was reduced and tapered. The interplane struts consisted of unfaired vee units supported by a single long bracing member from the fuselage to the base of the vees. The original centre-section struts were replaced by raising the fuselage decking to support the upper wing. The machine crashed on 16 January 1917 before trials were completed. The damaged airframe, now redesignated 20.14 was rebuilt with a lengthened fuselage, redesigned tail surfaces and ailerons. Extra wing support struts were fitted apparently to reduce vibration. Although the performance was satisfactory it was inferior to another parallel development, another modified D.I airframe (28.50 renumbered 20.15) with a new wing structure designed by *Dipl.Ing.* Edmund Sparmann.

35). Another picture of 65.71, note the plywood panels in the centre-section and the attachment points for the VK II cannister.

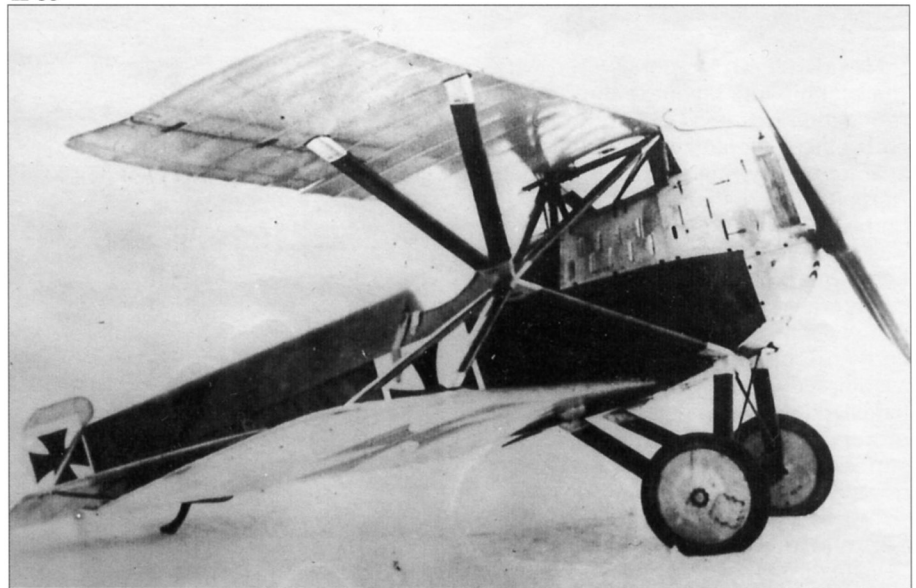
36). D.I 65.2 in service as a trainer with *Flek 6*, it was written off in May 1917. Note that the aircraft of this last series were fitted with cuffs covering the strut ends and the junction of the interplane

struts like the Phönix-built D.Is. (*George Haddow*)

37). Another fighter trainer 65.77 with *Flek 6*, this particular machine has a triangular fin and semi-circular rudder almost certainly fitted as a field modification. Note the extensive louvring of the cowling in this series. (*Jan Zahálka*)



▲ 35



▲ 36 ▼ 37





▲ 38

Meanwhile Kirste persevered with the sesquiplane layout taking another production airframe (28.73 redesignated 20.16) fitted with a 200-hp Daimler and a larger upper wing. Tests carried out in April 1917 were disappointing, the sesquiplane layout was dead. The aircraft was returned to Phönix for modification by Sparmann who fitted new wings which incorporated a new rib profile. The upper wing was larger than the lower and a conventional pair of wing struts and associated wiring were installed. This modified machine is regarded as the true prototype of the successful Phönix D.I/II series which started to appear at the front at the end of 1917.

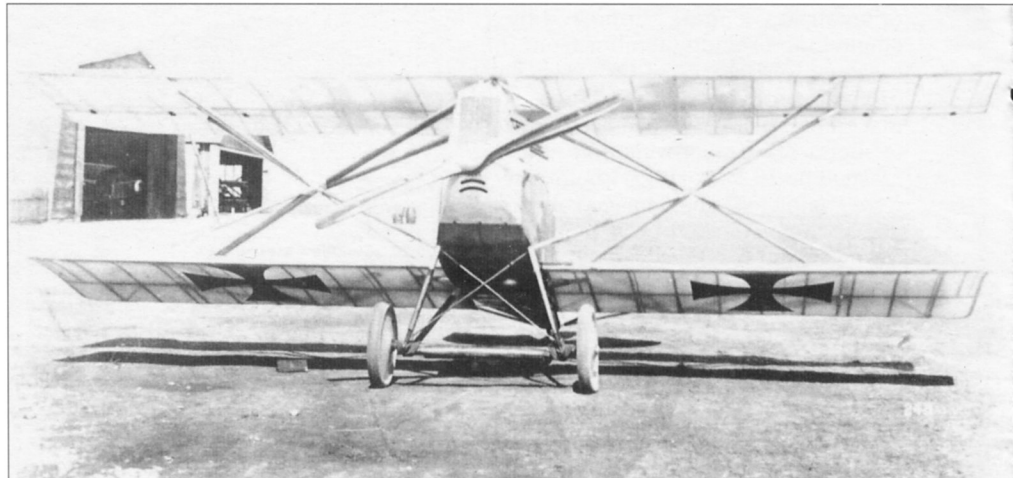
Summation

Despite the bad reputation and its inferior performance the D.I did achieve some success due mainly to the abilities and courage of pilots, in particular those who achieved 'ace' status. Almost all of their victories were gained whilst flying Phönix-built D.Is. An analysis of 68 confirmed victories revealed that only three were achieved by pilots flying the Brandenburg-built D.I.

Despite the fact that the serious defects of the D.I were officially acknowledged units had to continue with it until the arrival of replacement aircraft. On 1 July 1917, 41 Brandenburg built D.I and 40 Phönix-built scouts were at the fronts. Some D.I s were fitted with cameras for photo-reconnaissance with some success. Eventually as the new Albatros D.III(Oef) scouts arrived, the Brandenburg D.I was gradually withdrawn from operational service and ended up as *Flik* based trainers whilst others were sent to training units such as *Fleks* 4, 5



▲ 39 ▼ 40



and 6. On January 27th 1918 the *LFT* ordered that all Brandenburg fighters were to be removed from the Front. Despite its deadly reputation it should be pointed out that it was not the only single seat scout to gain an unsavoury reputation as a killer. However, the Sopwith Camel was redeemed by its remarkable manoevrability and agility which made it a supreme dogfighter due to its design and powerful rotary engine. The Brandenburg D.I lacked these qualities and suffered the lasting indignity of being remembered for its sobriquet, the 'flying coffin'. This writer has often thought that the dangerous qualities of its performance which led to so many casualties may not be the only reason why this name was attached to the D.I. Although the flat-topped coffin is familiar in this country, elsewhere, such as central Europe for example, a different type of casket is familiar. Dark stained, deep sided with a curved top, often with a partial hinged lid to enable relatives to view the face of the deceased it might have reminded pilots of similarity to the deep fuselage of the Brandenburg scout - only a thought.

COLOURS AND MARKINGS

Broadly speaking most examples of the Brandenburg D.I whether built by the parent company or Phönix were left in their natural finish. Ply fuselages were varnished, all fabric covered

38). *Zugsührer* (Sgt.) Karl Seiler of *Flik* 35D in his D.I 65.79 which at this time was with VII Korps of the Isonzo Army. The unit was disbanded at Wippach (Vipava, Jugoslavia). (Jan Zahálka)

39). Another view of 65.79 shows the muzzle of a Schwarzlose M16 protruding from the VK II. Some of this series had exhausts contained in louvred boxes as seen here. Almost all Brandenburg-built D.Is were delivered with the fuselage cross on a white background but some pilots did not appreciate this 'aiming point'.

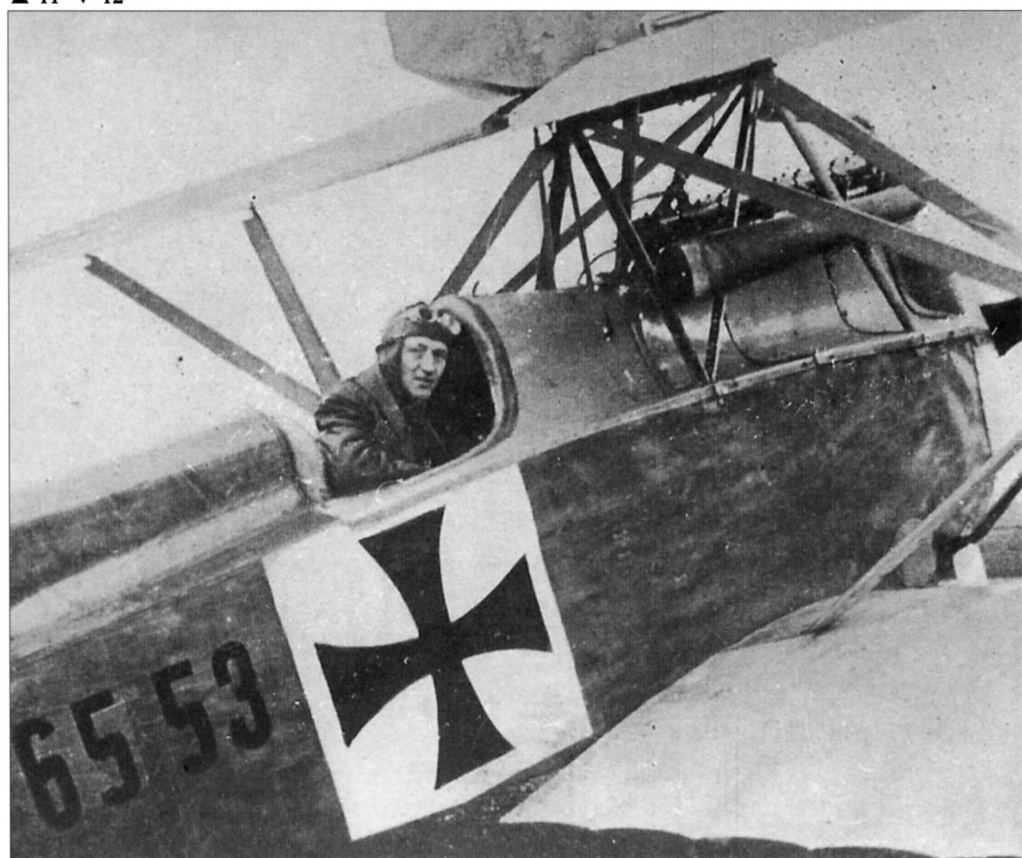
40). Like so many of the later Brandenburgs, 65.94 was delivered as a fighter trainer with *Flek* 6. It was written off after a landing accident in September 1917; the exhausts are bare here.

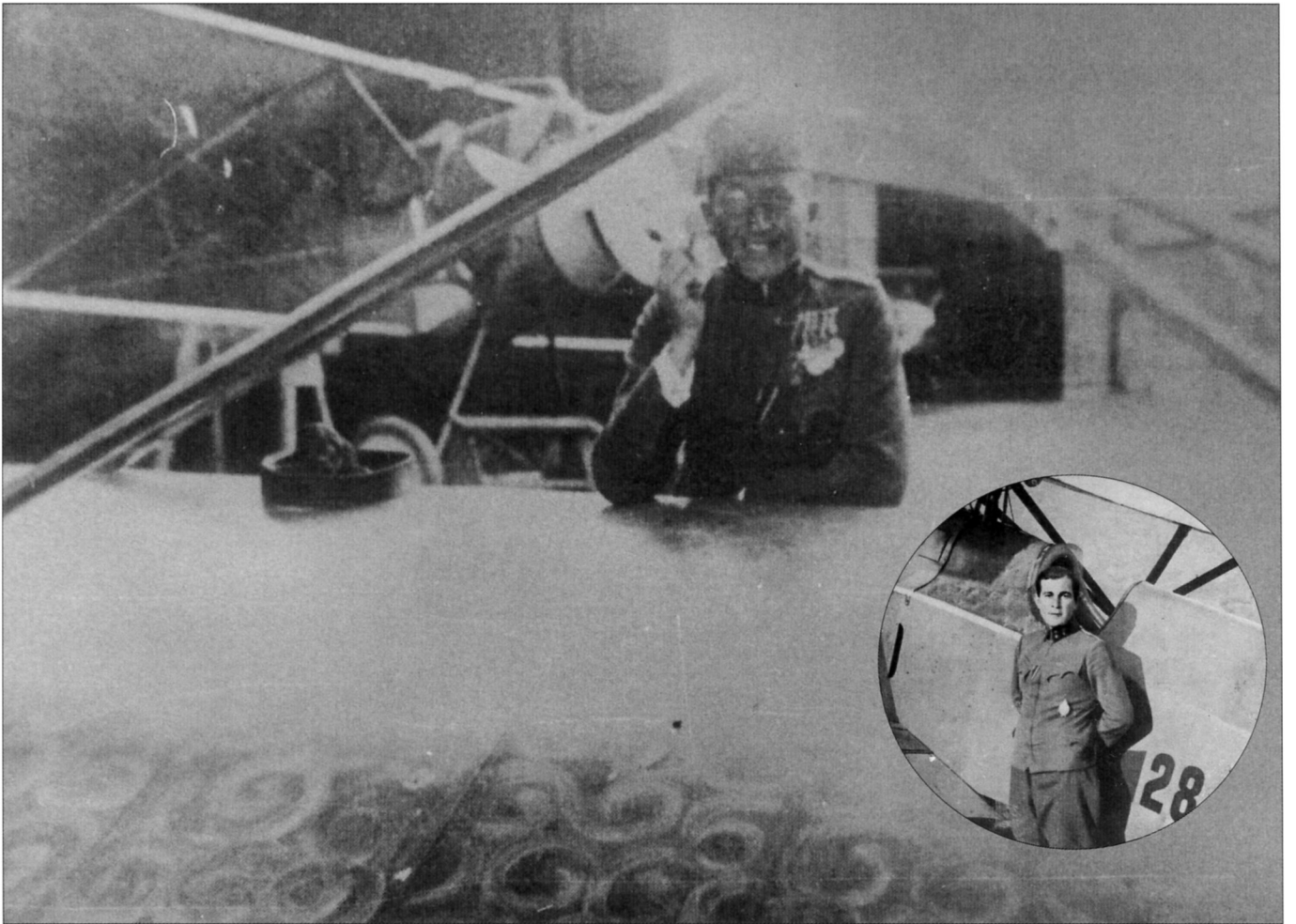
41). *Oberleutnant* Frank Linke-Crawford poses in front of 65.54. This photo was possibly taken whilst he was training with *Flek* 6 at Weiner-Neustadt in early 1917, or with *Flik* 19 in February where he was known to have piloted 65.51 or 65.59. The fuselage cross has been erased.

42). *Oberleutnant* Godwin Brumowski sits in the rather roomy cockpit of 65.53. with its low seating and the vision-blocking coaming in front of the pilot. Brumowski flew this machine with *Flik* 12 on the Isonzo front in 1916 when on 3 December a Caproni Ca.2 was shot down by four Austro-Hungarian Army and Naval pilots, Brumowski giving the *coup de grace* whilst flying this D.I.



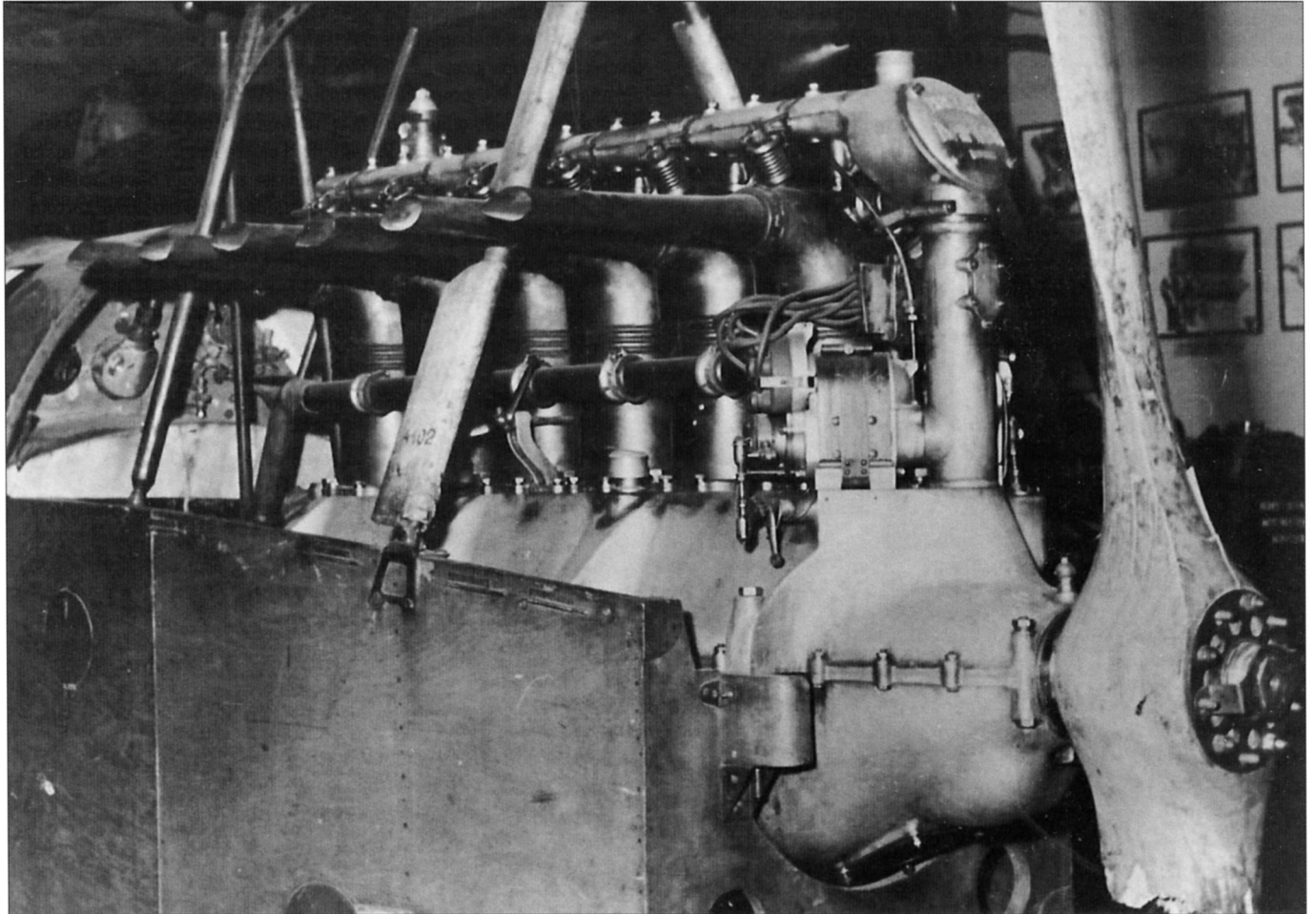
▲ 41 ▼ 42

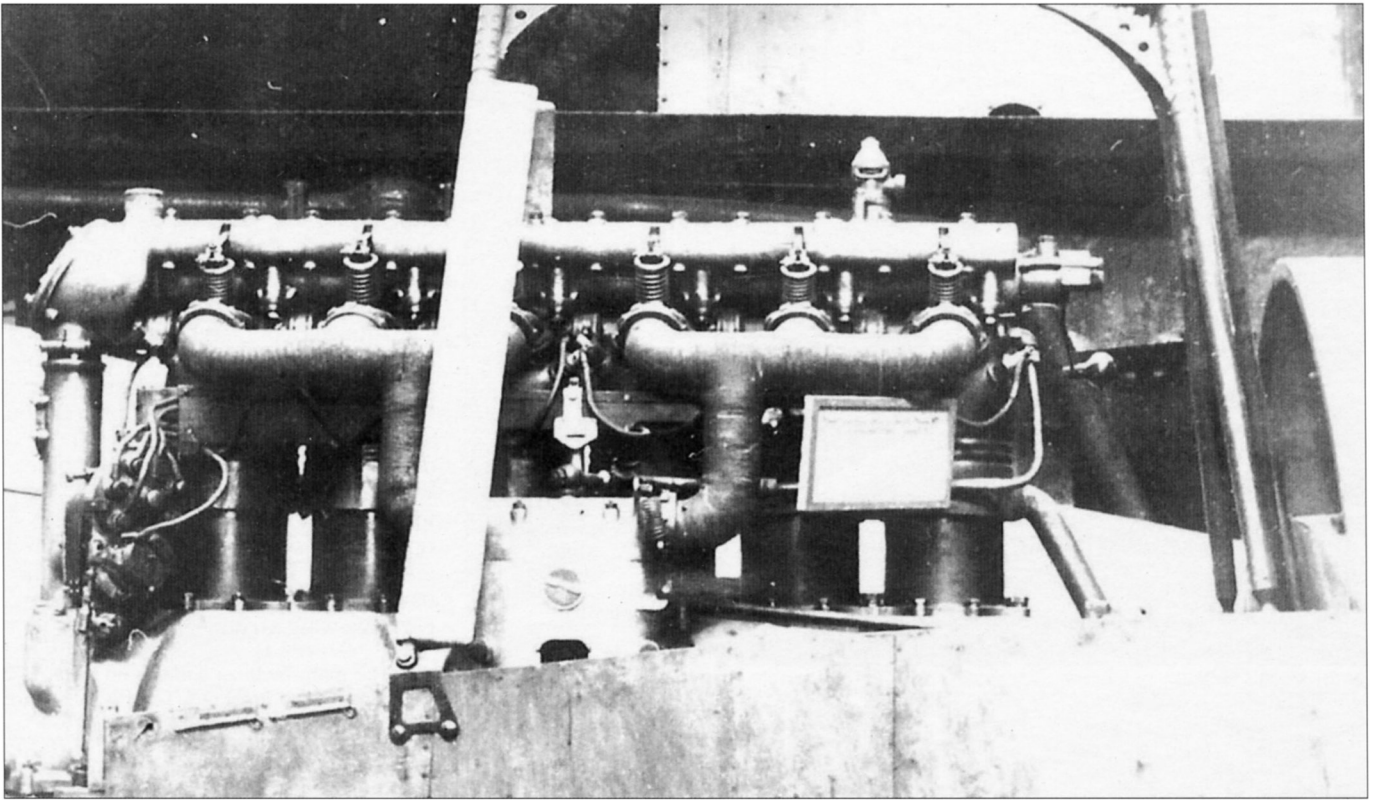




▲ 43

▲ 44 ▼ 45





▲ 46

43). A poor print but of interest inasmuch as it shows Brumowski leaning against the lower wing of his D.I which has the 'swirl' camouflage scheme seen later on several fighters. The machine is probably D.I(Ph) 28.69 of *Flik* 41J at Sesna in 1917. So far there is no evidence of any other D.I bearing a similar camouflage scheme. (*Jan Zahálka*)

44). *Oberleutnant* Benno Fiala *Ritter* von Fernbrugg, CO of *Flik* 51J, poses in front of what was probably D.I (Ph) 28.38 in which he gained five of his 28 victories. The fuselage appears to have been painted, note the small windscreen and rear view mirror. (*George Haddow*)

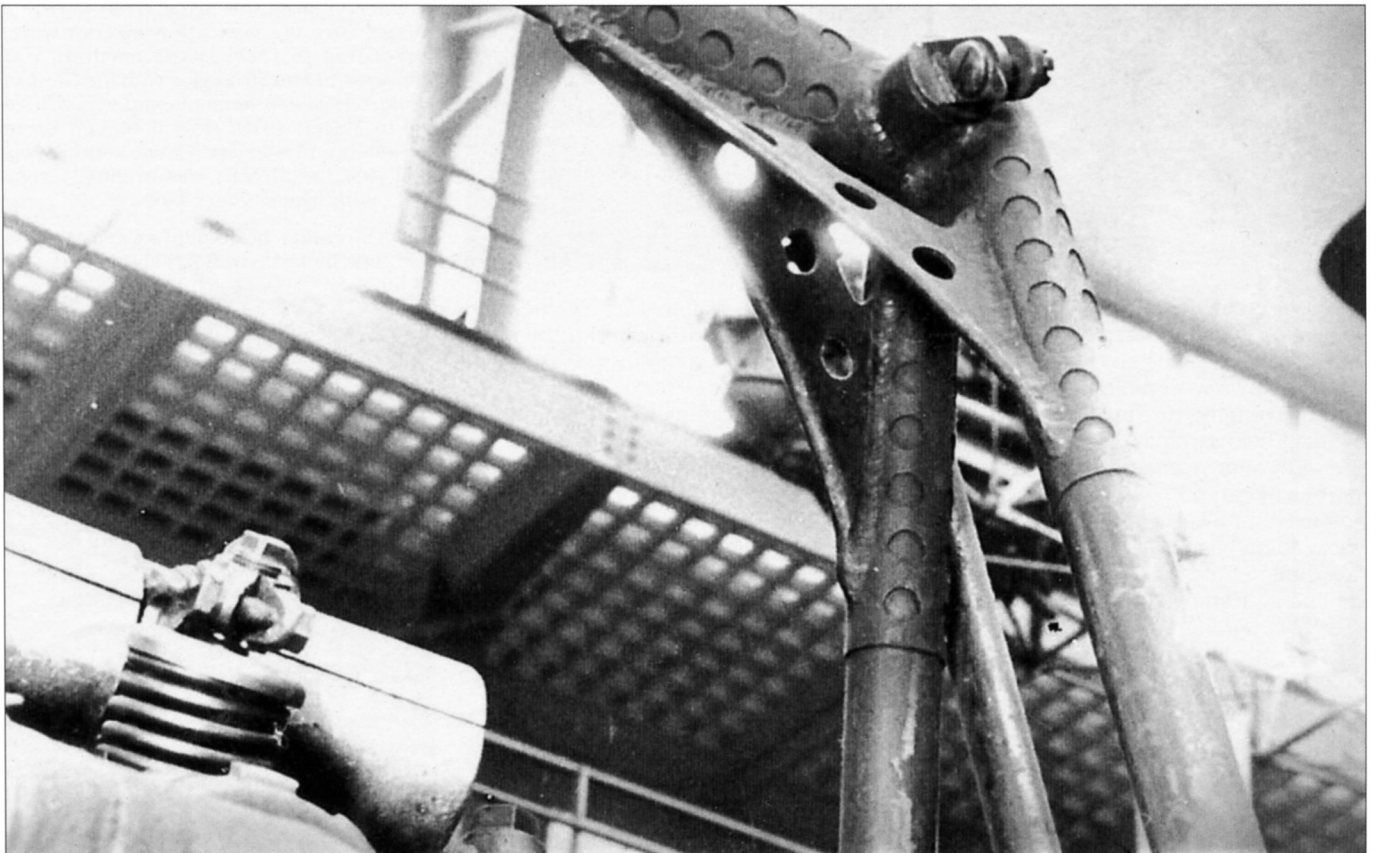
45). The 185-hp Austro-Daimler engine of the only known survivor of the Brandenburg

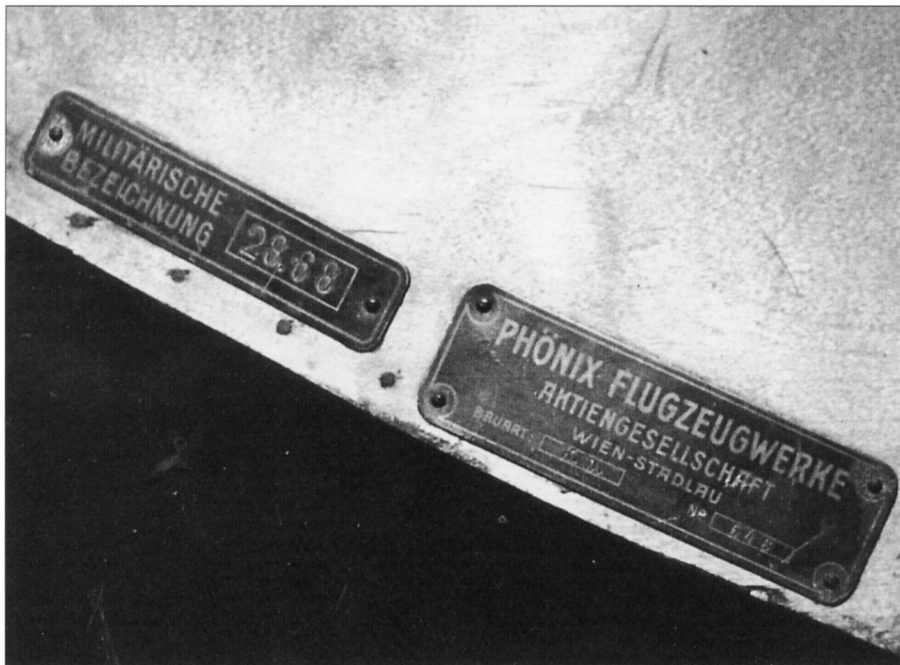
D.I series, the Phönix-built 28:68 held in Prague's National Technical Museum.

46). The induction side of the Austro-Daimler; note the metal sleeve covering the front strut. (*Peter L Gray*)

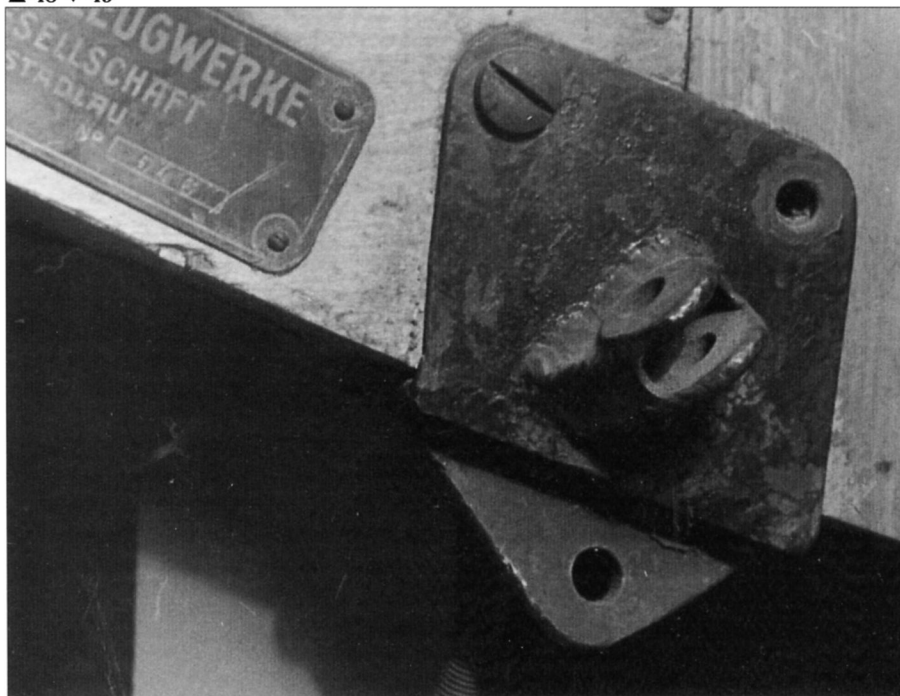
47). The rear centre-section strut junction showing the joint sleeves and web with lightening holes. (*Peter L Gray*)

▼ 47





▲ 48 ▼ 49



areas of clear linen clear-doped and varnished. The treatment of nose cowls and panels varied as study of the photo record shows with plain natural metal, 'riffing' (engine-turning) usually done by hand-held sandpaper, or else painted with a light grey enamel. Recorded examples of camouflaged D.Is are almost non-existent although at least one (see *photo 40* on page 22) reveals the 'sworl', rag-applied brown and/or green usually commonly seen on Phönix D.I/D.II fighters - see *DATAFILE No.31* by P M Grosz.

Even more interesting is the case of Prague's preserved D.I fuselage which bears evidence of green and brown mottling on the *inner* surface of one of the ply panels. Photos of this are shown on the inner rear cover and poses a number of questions. Obviously (?) the panel is a repair section but was it applied

during the war or after? History does not tell us and both author and publisher invite informed comments as to its provenance.

National markings were applied to the upper surfaces of the top wings, beneath the lower wings, the fuselage sides below the cockpit, and both sides of the rudder. Crosses on clear linen surfaces were plain black, whilst the fuselage markings were usually marked on a white square - plain examples have also been noted. Early 28 series D.Is had the cross on the fuselage sides without any white background. The 65 series seem to have had the cross on a white square background applied by the factory on all the series but notably missing on 65.64 and 65.66. In most cases, the wing crosses were painted direct to the clear-doped fabric and always spaced inboard. How-

ever there were one or two variants, eg: 28.44 which had a lower wing cross with a white border. The late 65 series appear to have had wing crosses on upper and lower surfaces over a white square background.

Fuselage crosses were often scraped away at *Flik* level and personal unit markings applied in their stead. The usual style of black serial numbers were painted behind the cross but these, too, often disappeared in service.

Struts were of metal, with metal cuffs often fitted to the ends of the interplane units and sported varied finishes. Usually left unpainted, several examples show the 'star-struts' painted off-white or cream as well as a dark colour, which we believe was likely to be black. The forward struts of the metal central pylon on Prague's example appears to be faired with wood, although aluminium was usually employed as it was for undercarriage wing struts.

48). The manufacturer's plates on the lower left edge of the fuselage. The Phönix plate indicated that the *Bauart* (type) is a 'KD', airframe number 546. The *Militarische Bezeichnung* (Military designation) is 28.68. (Peter L Gray)

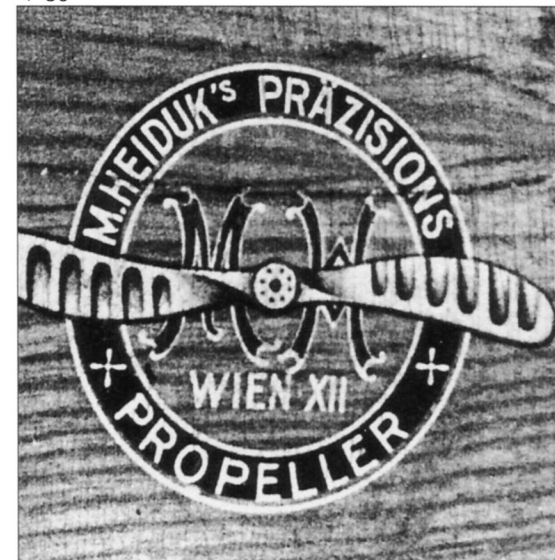
49). The single base plate to accommodate the leading undercarriage leg and the lower front section of the interplane strut. (Peter L Gray)

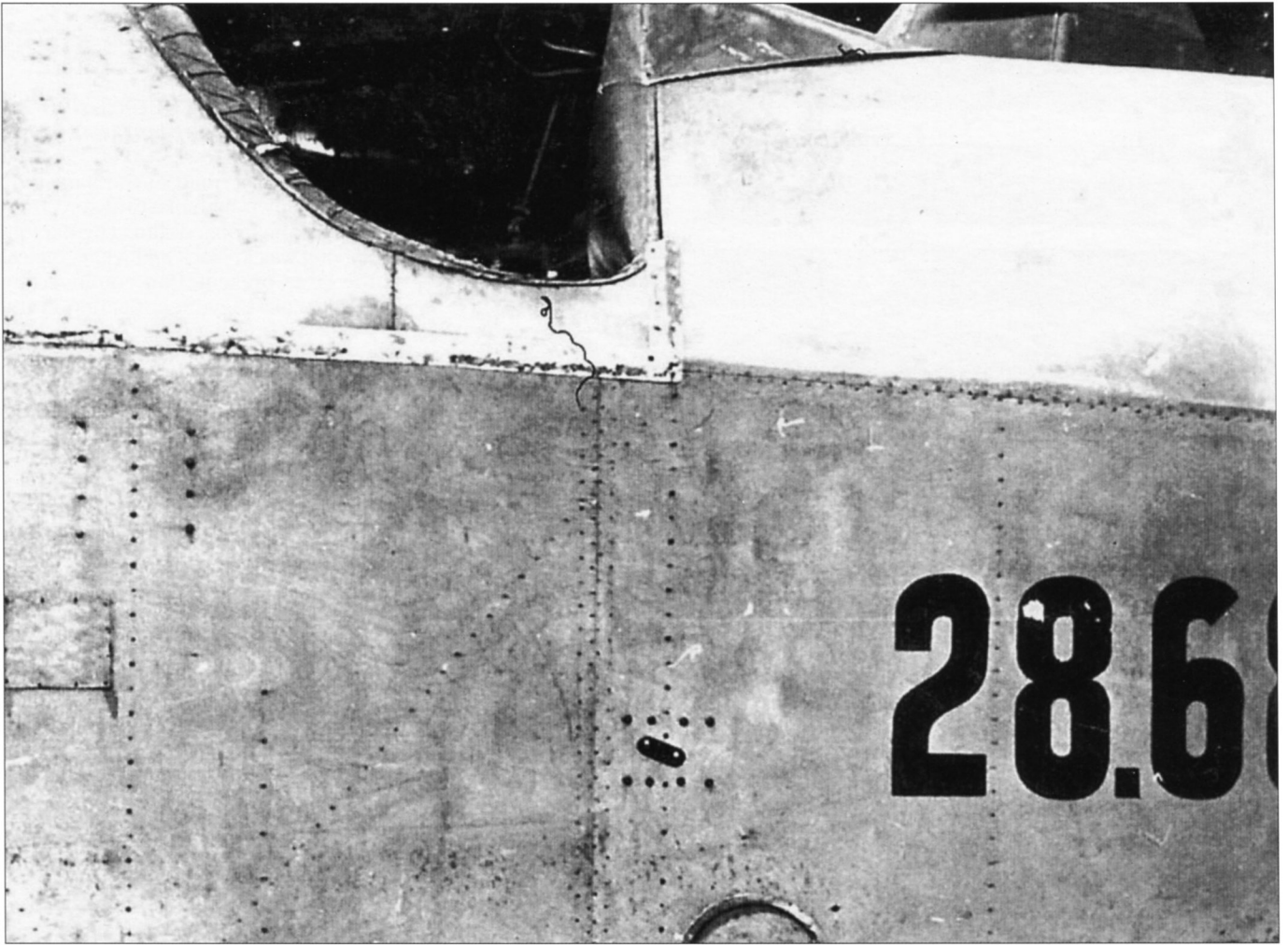
50). The transfer of M Heiduk's Precision Propeller Co. of Vienna on the Prague D.I. (Peter L Gray)

51). The cockpit area of 28.68, note the limited padding and reinforcing metal strip. The small headrest similar to that fitted to the Phönix D.I seems to be unique. One wonders if 28.68 was acquired by a private owner after the war, a few aircraft were. According to records the machine was delivered to *Flik 36* serving with the German *Donau Armee* in Romania and was written off in March 1918. How it turned up in Prague is a mystery and some sources suggest that the aircraft was originally complete with wings. (Peter L Gray)

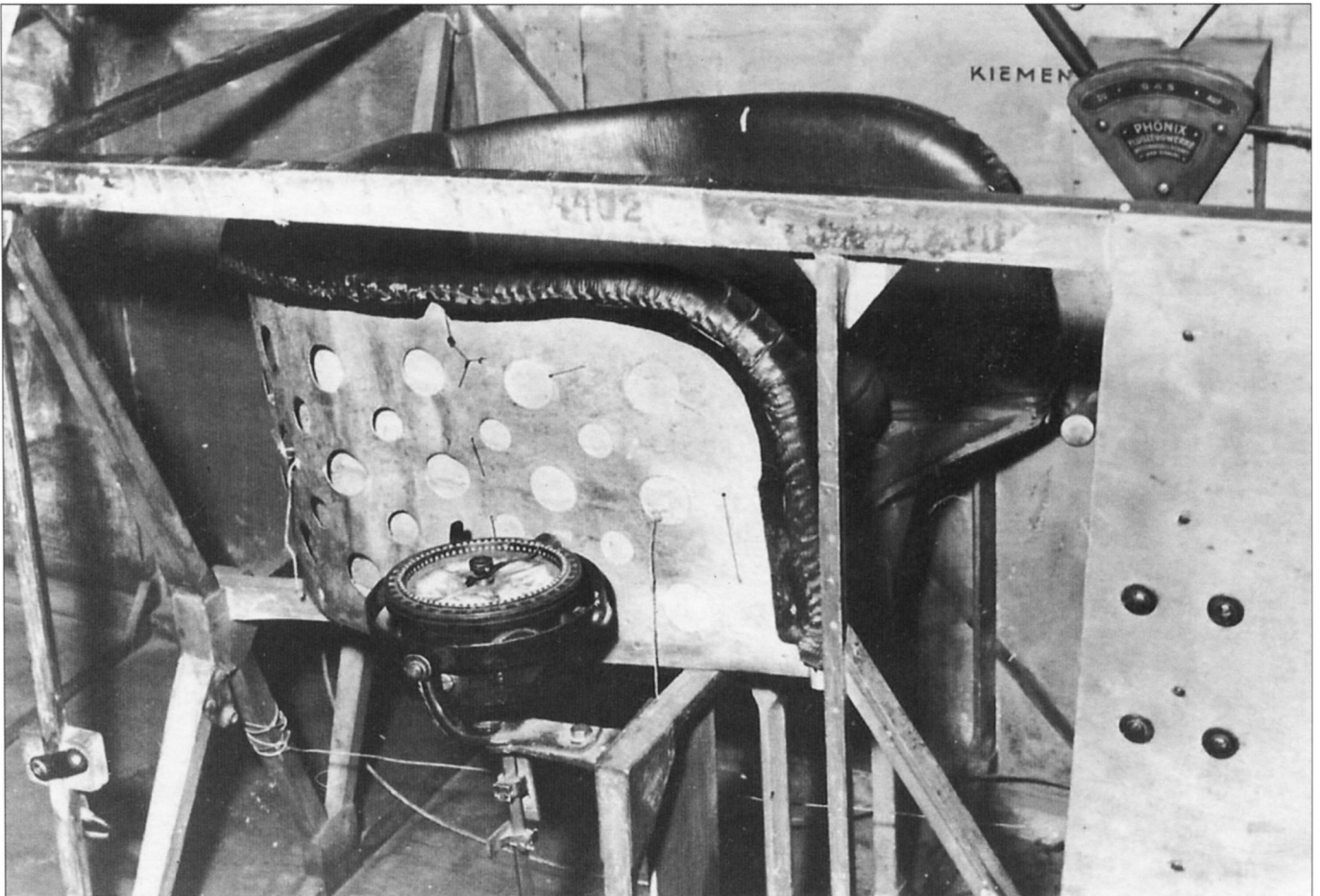
52). The rather basic pilot's seat, compass and throttle lever well in evidence.

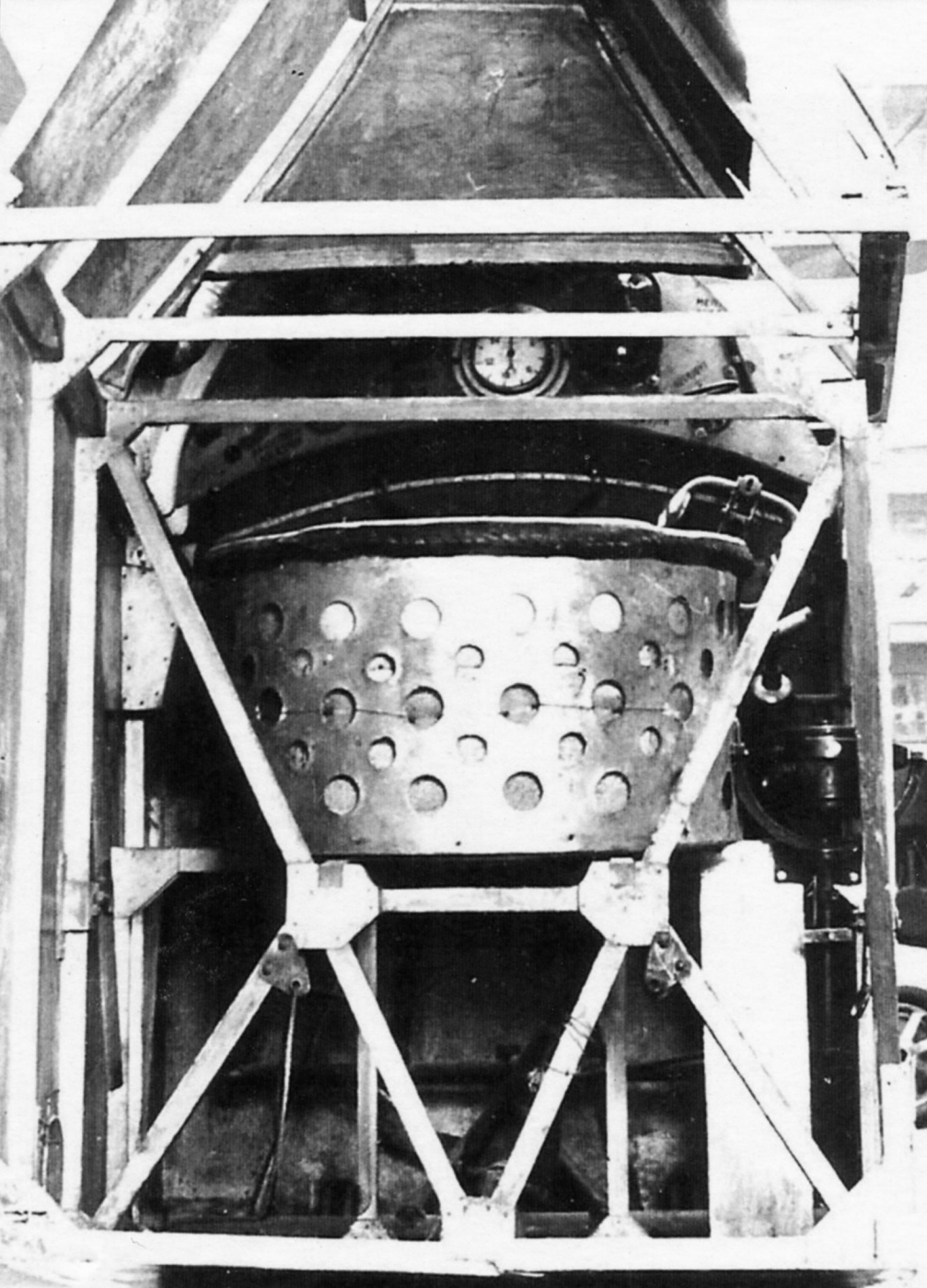
▼ 50





▲ 51 ▼ 52





KEY TO COLOUR PLATES:

1). HANSA BRANDENBURG (Ph) D.I 28.15, *Flik 41J Ober-leutnant Frank Linke-Crawford, 1917.*

Finished as described in the narrative, 28.15 was flown by Linke-Crawford from Sesana on the Isonzo Front. The personal marking was in black and white, typical of the large presentation employed by *Flik 41J* to aid easy identification in the air.

Source: *photo 15* on page 7.

2). HANSA BRANDENBURG (Ph) D.I 28.58, *Feldwebel Johann Risztics, Flik 42J, July 1917.*

Finished as described in the narrative, 28.58 bore an individual number - 3 in this case - which was usually retained for subsequent aeroplanes flown by the same pilot. The original serial number has been reduced, or overpainted in a neutral colour, to give the numeral more prominence.

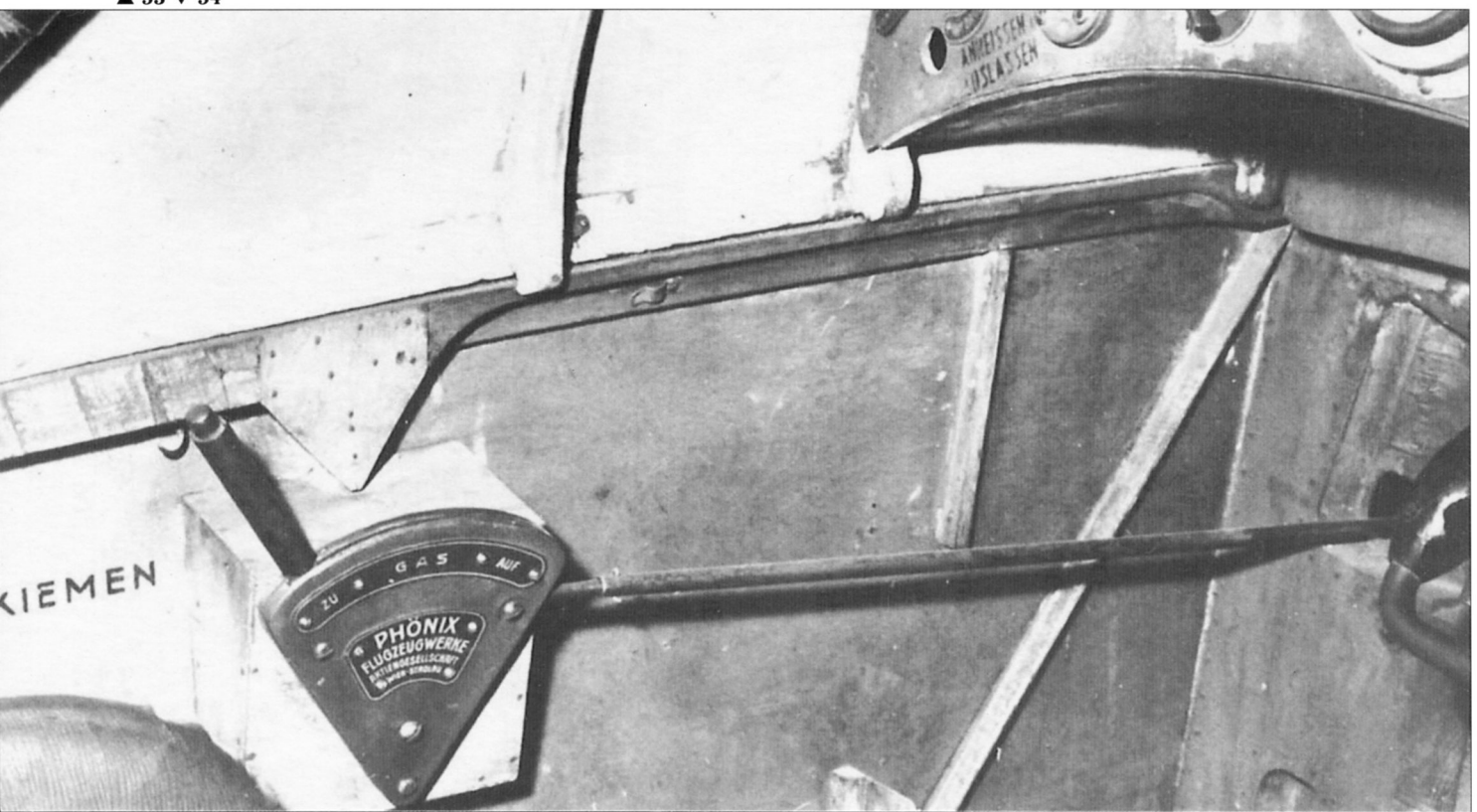
Source: photo on page 137, *Air Aces of the Austro-Hungarian Empire 1914-1918* by Dr. Martin O'Connor, Champlin Fighter Museum Press, 1986.

53). This rear view of the seat also reveals the shape of the curved fuselage top and the internal bracing. (*Peter L Gray*)

54). The left side of the cockpit area showing the throttle and its linkage. Like the German-built D.I the throttle is on the left whereas on Austro-Hungarian aircraft it was usually on the right.

55 and 56). The remarkably preserved dash still retains most of its instruments including a Bosch starting magneto, speedometer, fuel gauge, fuel selector switch and altimeter. Note the firing button on the control column. The inside of the cockpit coaming is painted white (a Brandenburg practice) and two glazed portholes have been let into the top of the coaming to increase light, another non-standard feature.

▲ 53 ▼ 54



KEY TO COLOUR PLATES:

1). HANSA BRANDENBURG (Pb) D.1
28.15, *Flik 41J Oberleutnant Frank*
Linke-Crawford, 1917.

Finished as described in the narrative,
28.15 was flown by Linke-Crawford from
Sesana on the Isonzo front. The person-
al marking was in black and white, typical
of the large presentation employed by the
Flik 41J to aid easy identification in the
air.

Source: *photo 15* on page 7.

2). HANSA BRANDENBURG (Pb) D.1
28.58, *Feldwebel Johann Risztics, Flik*
42J, July 1917.

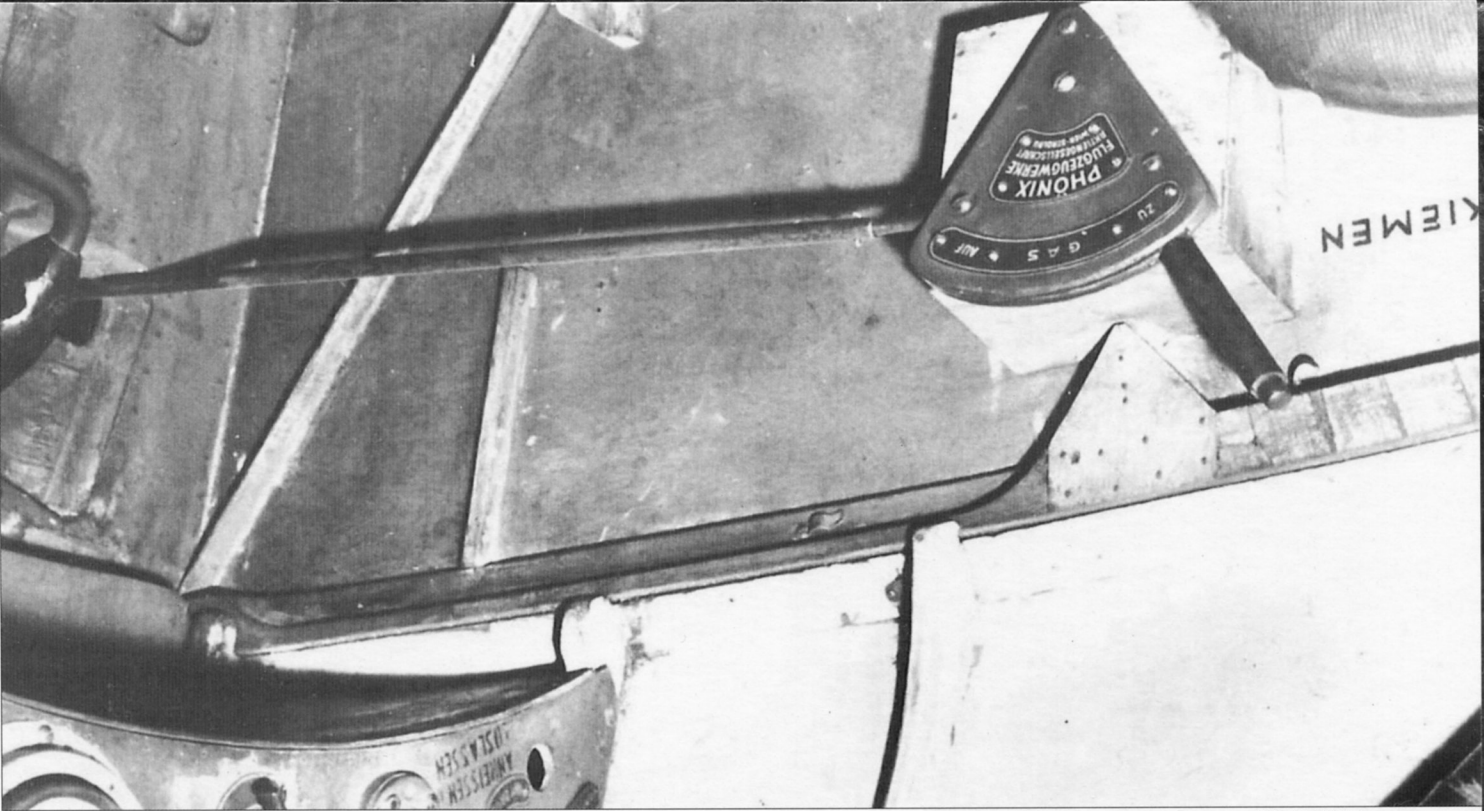
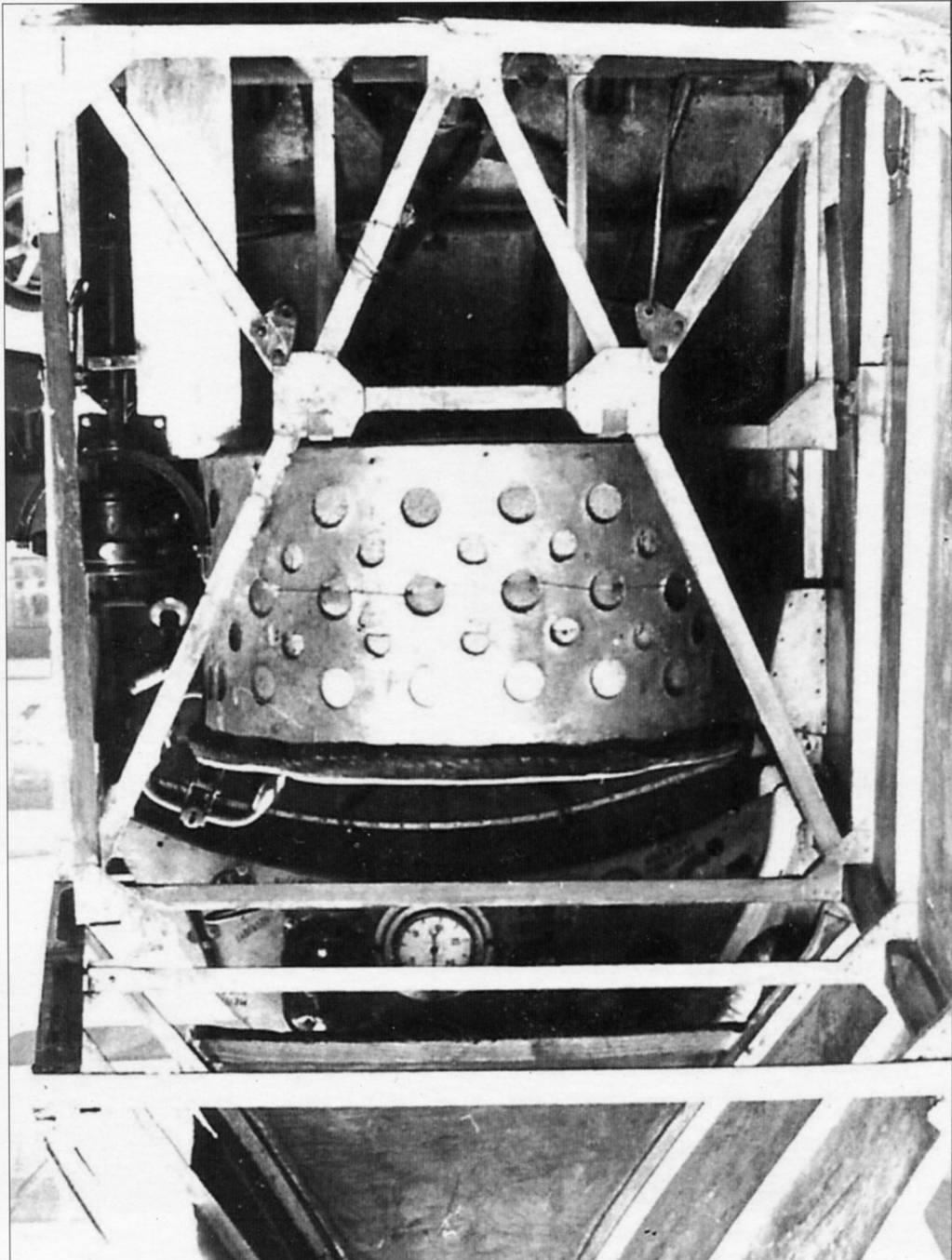
Finished as described in the narrative,
28.58 bore an individual number - 3 in
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has been reduced, or overpainted in a
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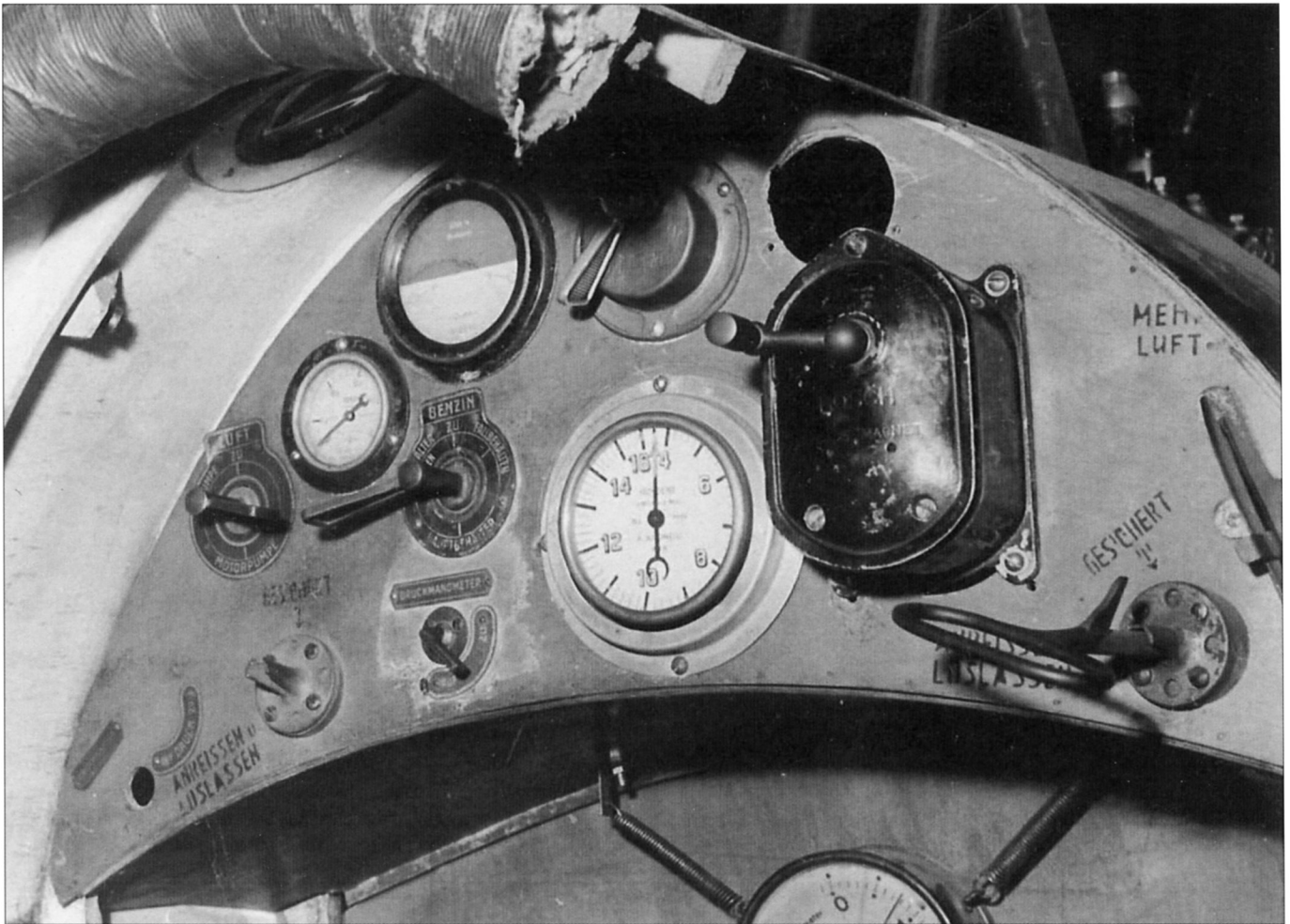
Source: photo on page 137, *Air Aces of*
the Austro-Hungarian Empire 1914-1918 by
Dr. Martin O'Connor, Champain Fighter
Museum Press, 1986.

53). This rear view of the seat also reveals
the shape of the curved fuselage top and
the internal bracing. (*Peter L Gray*)

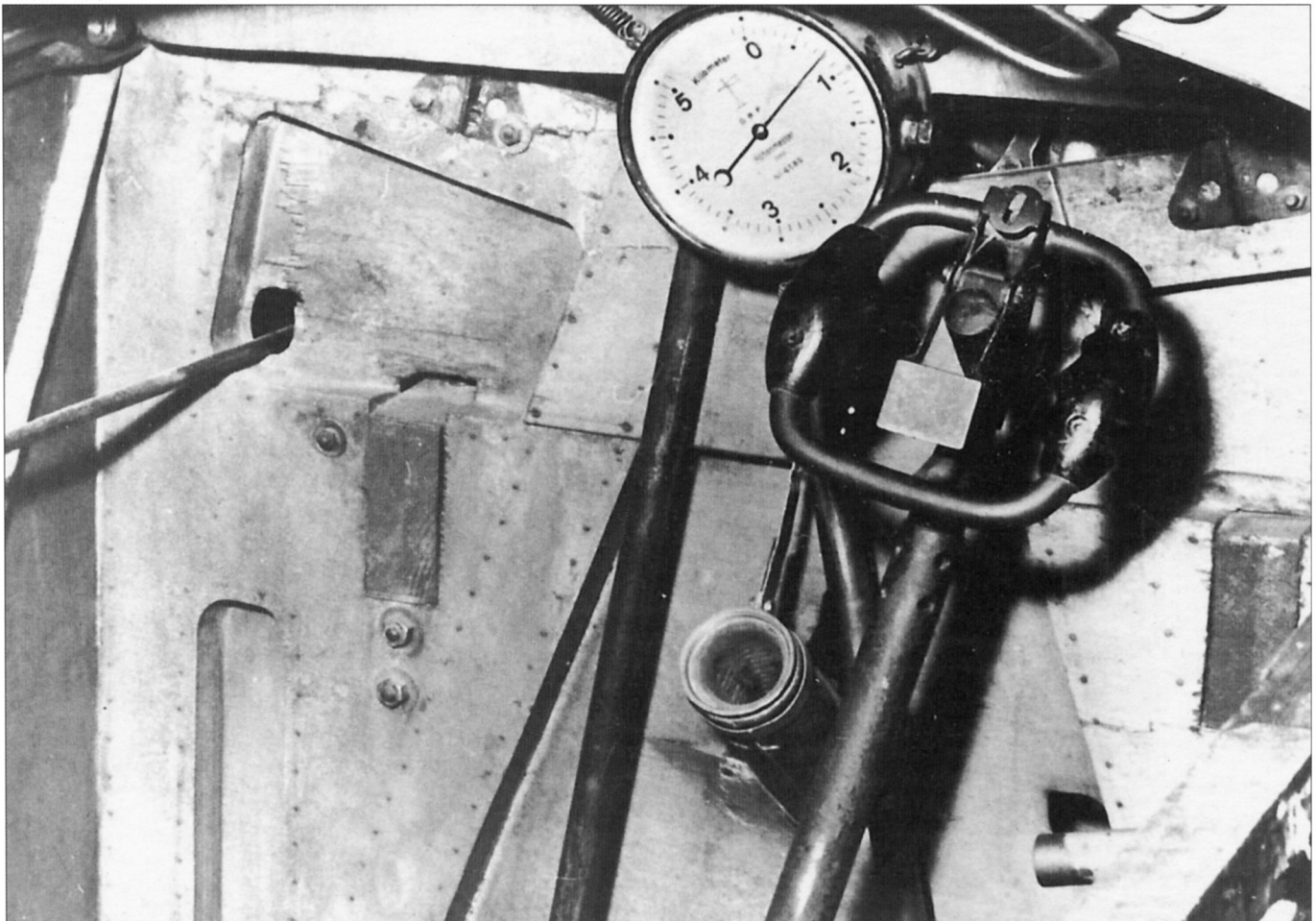
54). The left side of the cockpit area show-
ing the throttle and its linkage. Like the
German-built D.1 the throttle is on the left
whereas on Austro-Hungarian aircraft it
was usually on the right.

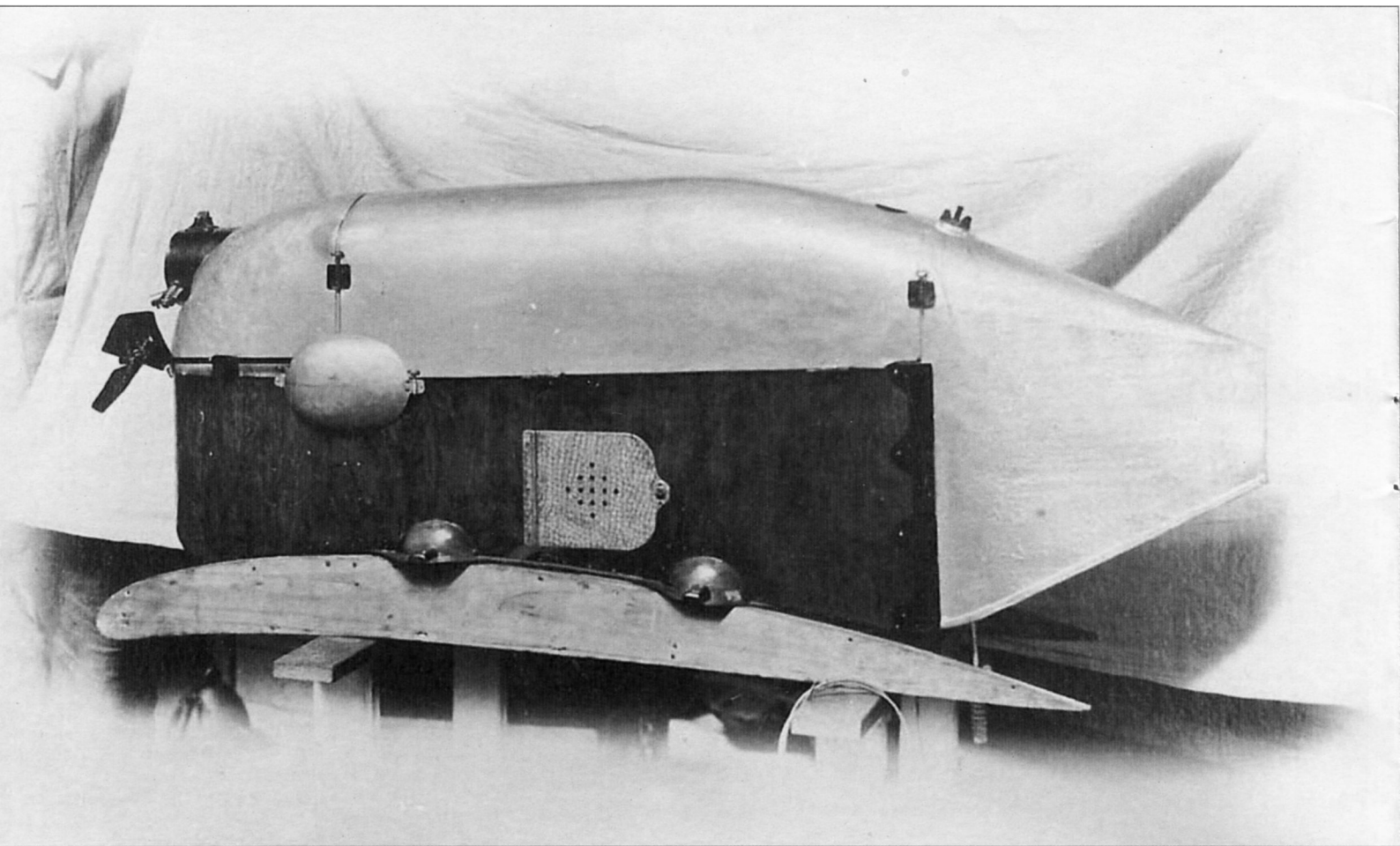
55 and 56). The remarkably preserved dash-
board still retains most of its instruments including
a Bosch starting magneto, speedometer,
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ter. Note the firing button on the control
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is painted white (a Brandenburg practice)
and two glazed portholes have been let into
the top of the coaming to increase light,
another non-standard feature.



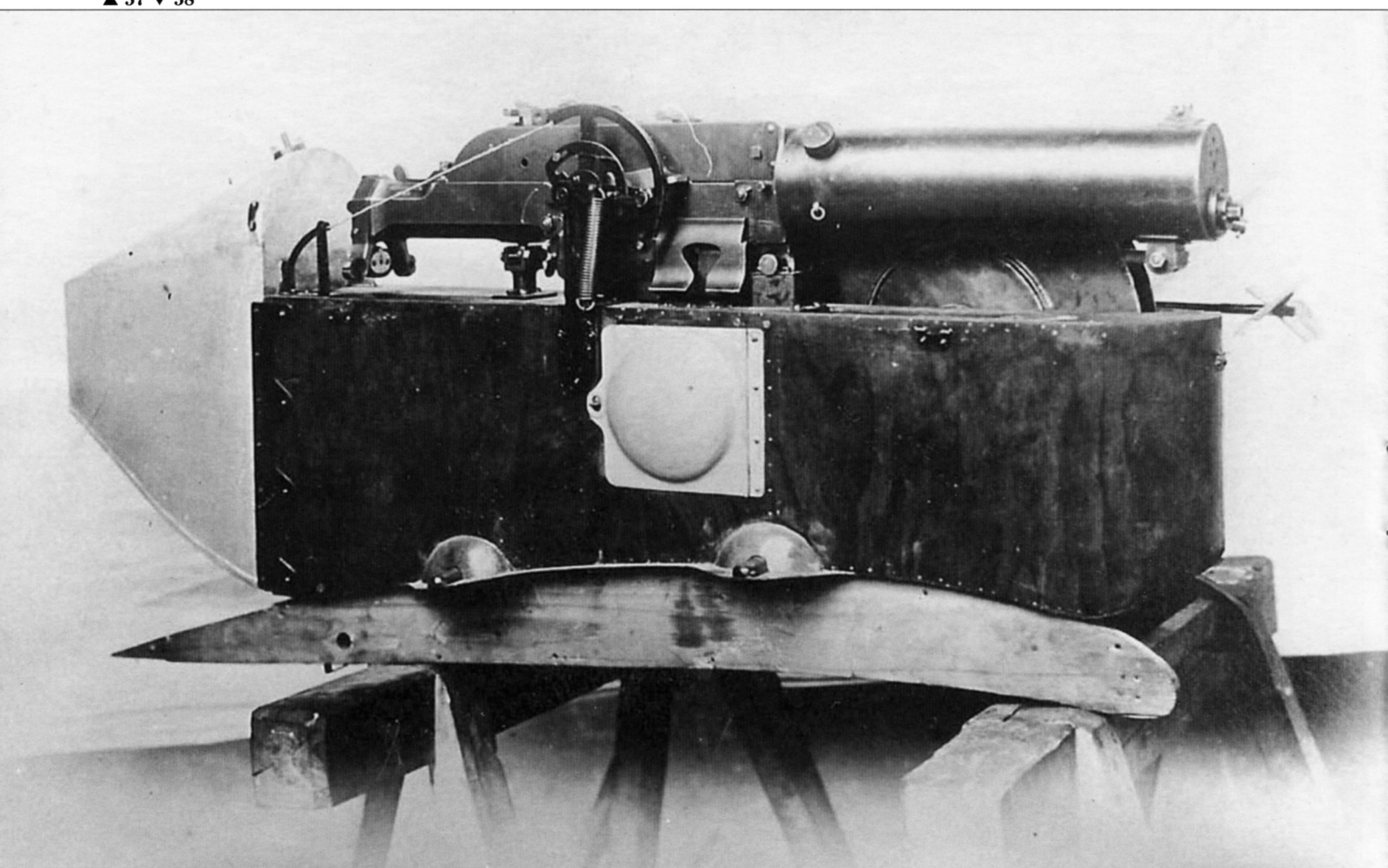


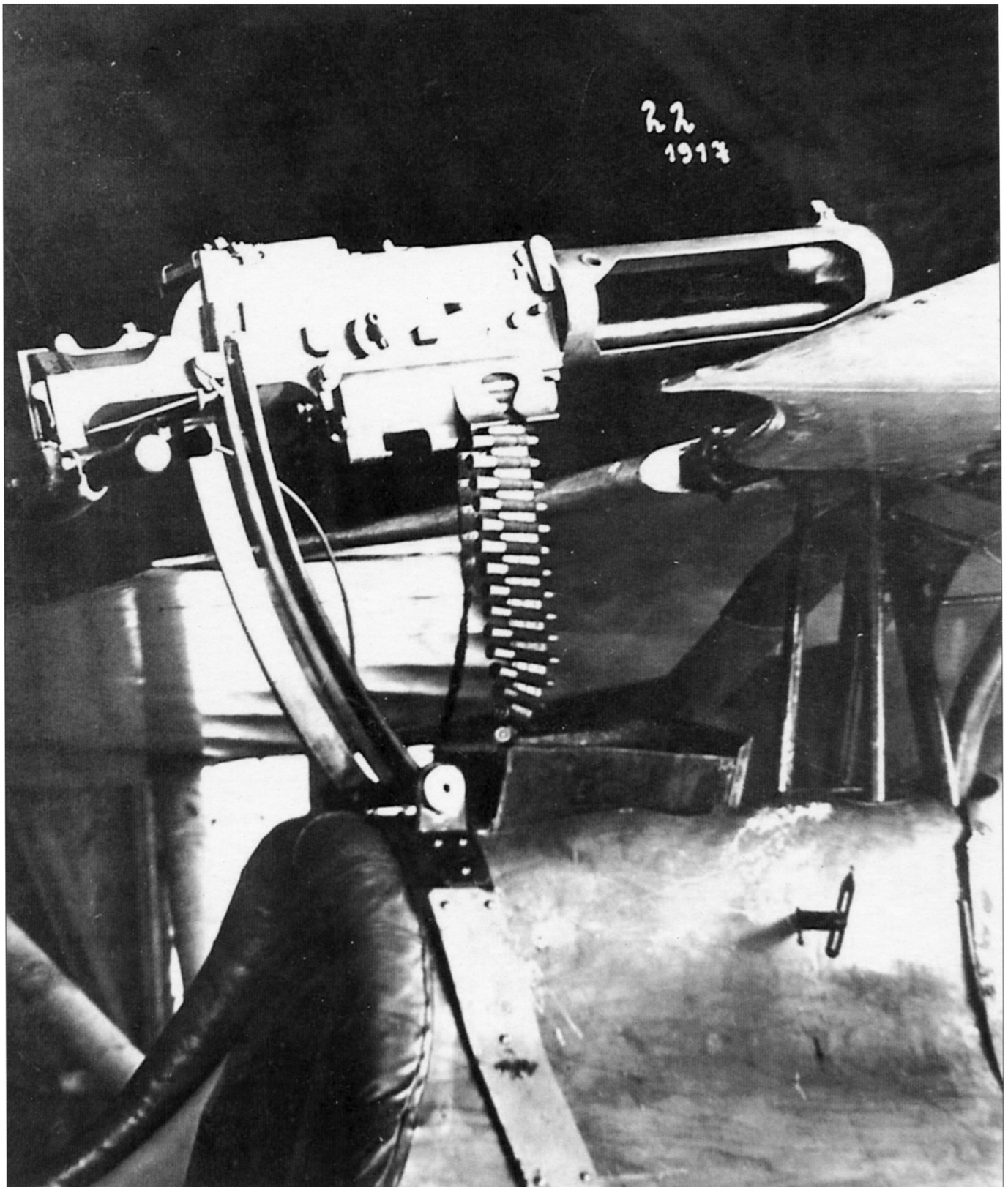
▲ 55 ▼ 56





▲ 57 ▼ 58





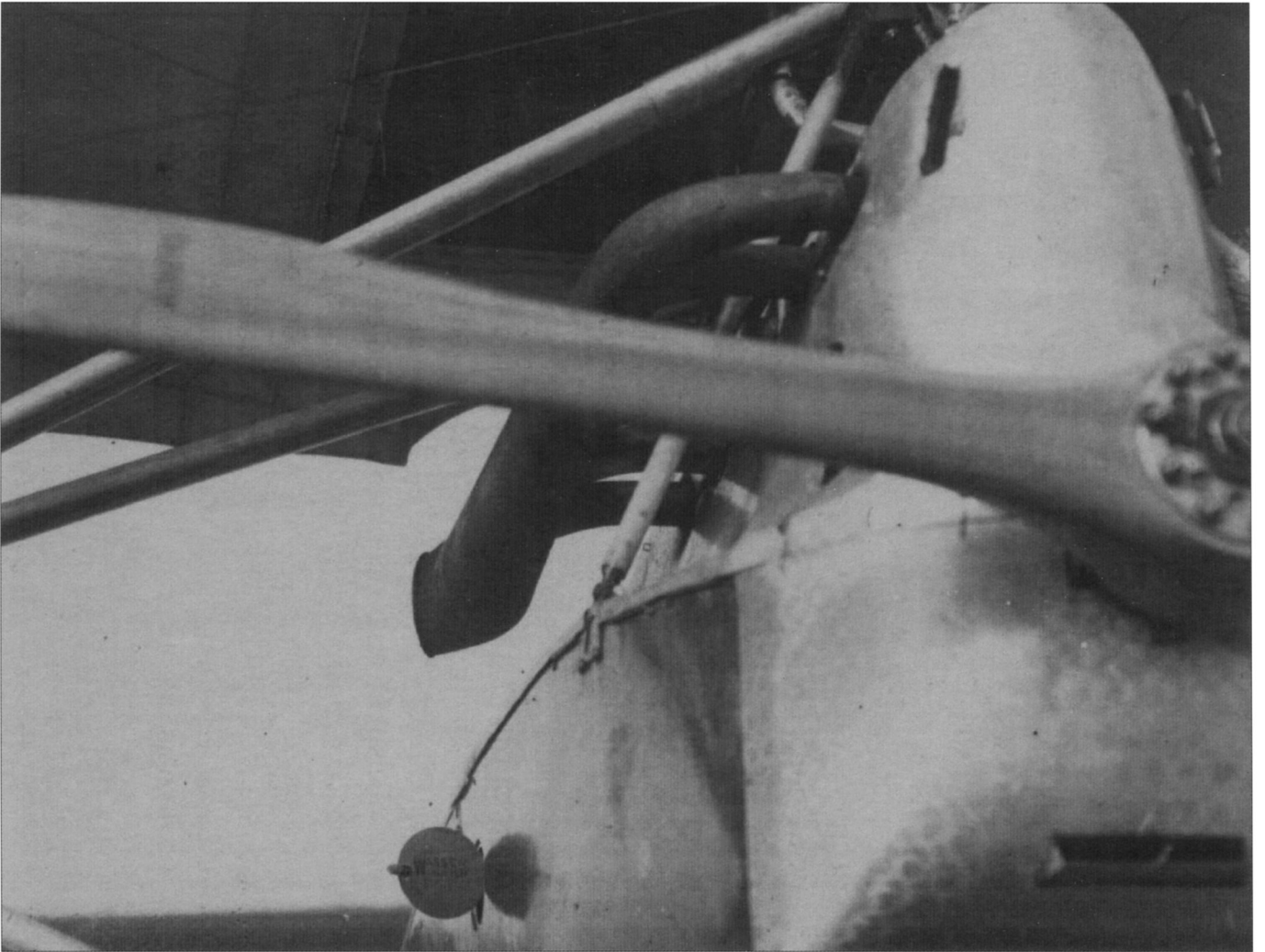
▲ 59

57). The left side of the standard VK II gun cannister which contained a Schwarzlose M 7/12 machine gun and a partial belt. The small wind vane fitted to the spindle was intended to activate the take-up reel for the empty belt. The gun still has a full water jacket and in view of the fact that the weapon is virtually totally enclosed in the cannister with little ventilation one can only wonder if the jacket still contained water which would add to the total weight of the system.

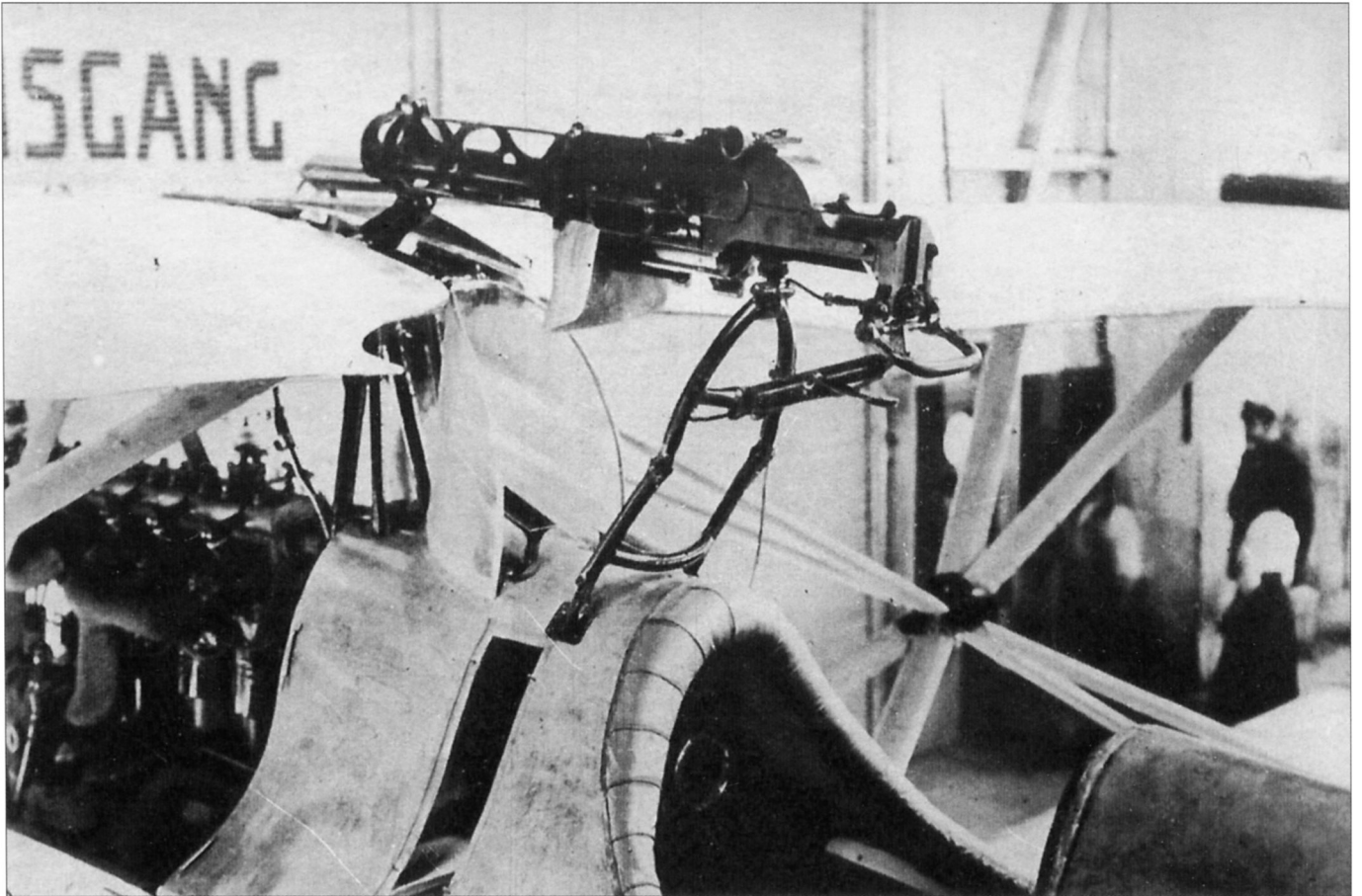
58). The right side of the VK II with the top

section removed revealing the internal arrangement. Note the semi-circular and spring-loaded cocking system with operating cable attached, the firing button is not connected here. The take-up spool is behind the barrel and as the empty belt emerged from the bottom of the breech it will be appreciated that it had to turn 90 degrees to arrive at the spool, a potential source of stoppages. The metal panel on the side opened to permit the armorer to feed the belt into the receptor just above. The rear of the cannister was a small gravity tank. (Peter M Grosz)

59). Some pilots tried out alternative systems such as this fitted to D.I (Ph) 28.46. The advantages here are that the pilot could reach the gun to attempt to clear stoppages (eg: a twisted belt or dislodged cartridge) and a larger belt could be accommodated within the fuselage compartment as shown. However the belt had to be protected from the slipstream. The water jacket of this Schwarzlose M7/12 has been cut away to skeletal form, in the subsequent M.16 gun it would be discarded entirely. (Peter M Grosz)



▲ 60 ▼ 61



3). HANSA BRANDENBURG D.I(Ph) 28.33, flown by various pilots of *Flik 42J*, 1917. Finished as described in the narrative, 28.33 was flown by several *Flik 42J* pilots including *Offizierstellvertreter* Julius Arigi, *Hauptmann* Godwin Bromowski, and *Oberleutnant der Reserve* Benno Fiala Ritter von Fernbrugg.
Source: photo 20 on page 10.

Acknowledgements:

The writer first became interested in the Brandenburg KD in the late 1960s when little seemed to be available on Austro-Hungarian aviation generally. It was George Haddow who first opened my eyes to what seemed then to be an

60). A close-up of the Phönix nose area, with machined metal cowling. The exhaust is substantial but there is little louvring to assist engine cooling although the top of the cowl has been removed. To maintain the integrity of the upper wing structure what would have normally been the internal wire bracing in the upper right wing panel has been applied externally to avoid the radiator. The raised radiator was unique and presumably a trial item. (NTM)

61). Another experimental system with an articulating bracket. Again a large belt could be accommodated within the fuselage but the tall windscreen and a smaller one fitted to the gun was necessary to shield the full or empty belt from the slipstream which could cause the belt to twist causing a stoppage. One of the few advantages of the Lewis was that such measures were not necessary. (George Haddow)

exotic collection of rare material. This led to the first attempt to write about the KD which was published in *Scale Models* in 1974. Since then a wealth of information on the subject has been researched and published by various people and the writer would like to acknowledge the work of the following: Peter M Grosz, George Haddow, Peter Schiemer, Bernhard Totschinger, Karl Meindle, Waiter Schroeder and the late Peter M Gray. Thanks are also due to Peter Cenker and Tomaz Rezek of Prague's National Technical Museum for their photographic contributions.

The Brandenburg D.I - Statistics

Manufacturers:

Series 65, the Hansa und Brandenburgische Flugzeugwerke AG, Briest near Berlin.

Series 28, The Oesterreichisch Ungarische Albatros Flugzeugwerke GmbH, Stadlau near Vienna. On 27 February 1917 this company became the Phönix Flugzeugwerke.

Total built was 122 but only 70 Phönix-built D.Is were accepted, two airframes being used as development projects (28.73/20.16)

Glossary:

Flars: *Fliegerarsenal* - The organisation responsible for the testing, acceptance and production of all army aviation equip-

ment embracing balloons, aircraft and *materiel*, technical development of aircraft, engines, ordnance, cameras, propellers and the building and repair of aircraft.

Flek: - *Fliegerersatzkompanie*: Aviation company responsible for primary and advanced flight instruction for pilots, observers, mechanics and other personnel. Some *Fleks* were responsible for organizing and equipping newly-formed *Fliks* prior to leaving for the Front.

Flep: - *Flieger Etappenpark*: Rear aircraft park.

Flik: - *Fliegerkompanie*: The basic operational or fighting unit of the *LFT*.

FIG: *Fluggeschwader*: Flying squadron, from September 1917 identified a bombing squadron.

Hauptmann: - Army captain

J-Flik: - *Jagdfliegerkompanie*: Fighter detachment or unit..

Koluft: - *Kommandant der Luftfahrtruppen*: Commander of aviation troops assigned to an army.

Leutnant: - Army lieutenant

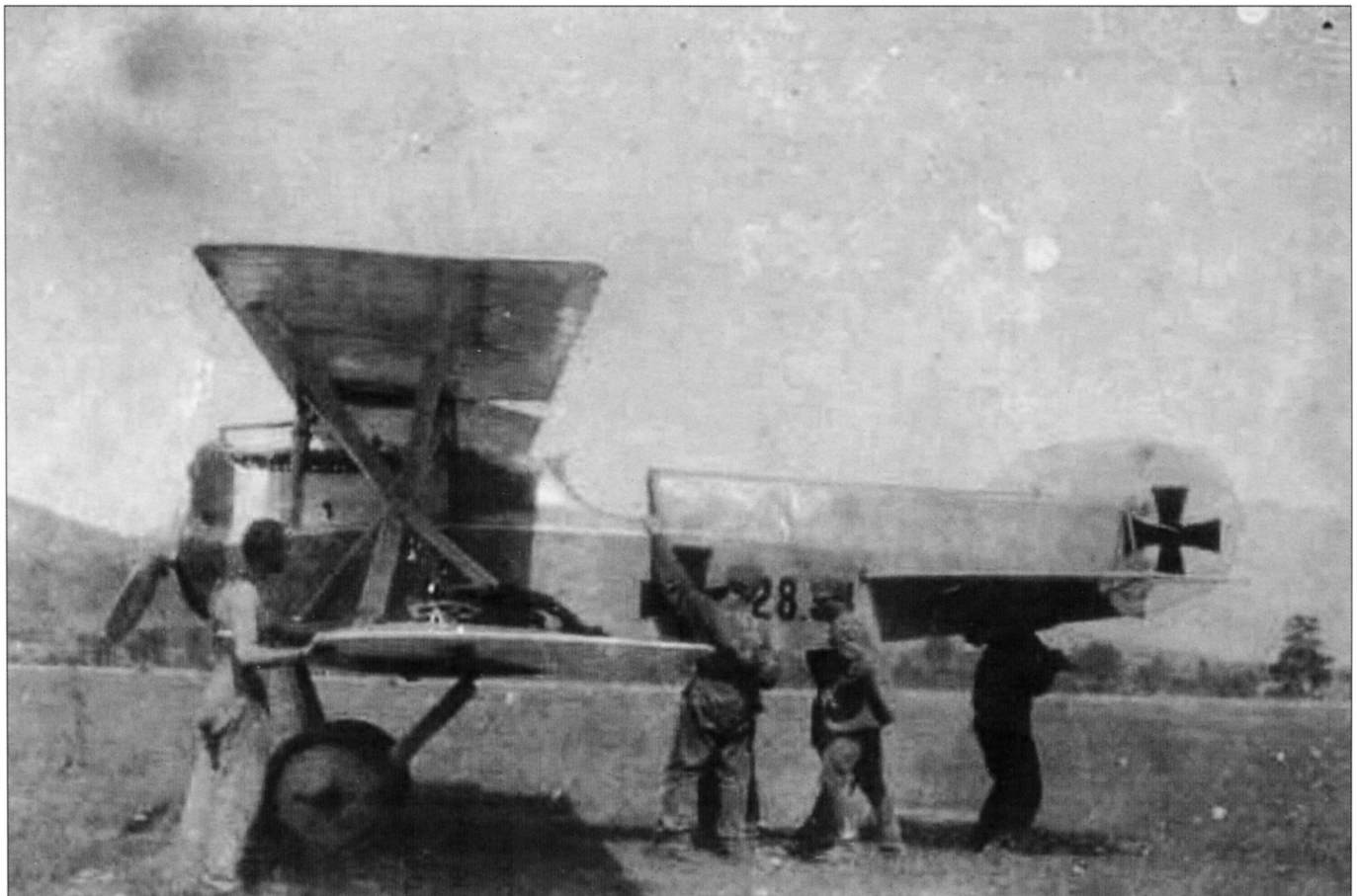
LFT: - *Luftfahrtruppen*: Aviation troops.

Oberleutnant: - Army senior lieutenant

Oberst: - Colonel

Ottstv. - *Offizierstellvertreter*: Acting officer.

Sttw: - *Stabsfeldwebel*: Staff sergeant.



APPENDICES

Specifications:

Brandenburg-built D.Is

	Series 65.5	Series 65.7
Engine	160-hp Austro-Daimler	150-hp Austro-Daimler
Span upper	8.50 m	8.50 m
Span lower	8.30 m	8.30 m
Chord upper	1.50 m	1.50 m
Chord lower	1.50 m	1.50 m
Gap	1.60 m	1.60 m
Dihedral upper	nil	nil
Dihedral lower	1.8°	1.8°
Stagger	0.50 m	0.50 m
Wing area	24 sq m	24 sq m
Length	6.35 m	6.35 m
Height	2.79 m	2.79 m
Weight empty	745 kg	672 kg
Weight loaded	1020 kg	940 kg
Max speed	185 k/p/h	179 k/p/h
Rate of climb	1000m in 4 mins	1000m in 3.5 mins

Specifications:

Phönix-built D.Is

	Series 28.01 - 28.50	Series 28.51 - 72
Engine	185-hp Austro-Daimler	185-hp Austro-Daimler
Span upper	8.50 m	8.50 m
Span lower	8.30 m	8.30 m
Chord upper	1.50 m	1.60 m
Chord lower	1.50 m	1.60 m
Gap	1.60 m	1.60 m
Dihedral upper	nil	nil
Dihedral lower	1.8°	1.8°
Stagger	0.50 m	0.50 m
Wing area	24 sq m	25.5 sq m
Length	6.35 m	6.35 m
Height	2.79 m	2.79 m
Weight empty	714 kg	690 kg
Weight loaded	1047 kg	958 kg
Max speed	185 k/p/h	175 k/p/h
Rate of climb	1000m in 4 mins	1000m in 4.5 mins

Series production

Series	Manufacturer	Engine	No. built
65:50 - 69	Brandenburg	160-hp Austro-Daimler	20
65:70 - 99	Brandenburg	150-hp Austro-Daimler	30
28:01 - 24	Phönix	185-hp Austro-Daimler	24
28:25 - 48	Phönix	185-hp Austro-Daimler	24
28:49 - 72	Phönix	185-hp Austro-Daimler	24

Total built was 122 but only 70 Phönix-built D.Is were accepted, two airframes being used as development projects (28.50/28.73)

61). The fuselage as currently displayed in the NTM with its untypical headrest and evident 'repairs' to the ply covering. The metal central pylons are left in their natural finish with the surviving forward fairings appearing to be of wood. (NTM)

62 and 63). One curious aspect of the Prague machine is the 'mottled camouflage' seen on the inner surface of the fuselage in both green and brown shades. It does not appear to have been applied by sponge or rag and its provenance is uncertain. (NTM)

64). Sprung-loaded flap for the pilot's step-up is of wood within the stamped metal surrounds. (NTM)



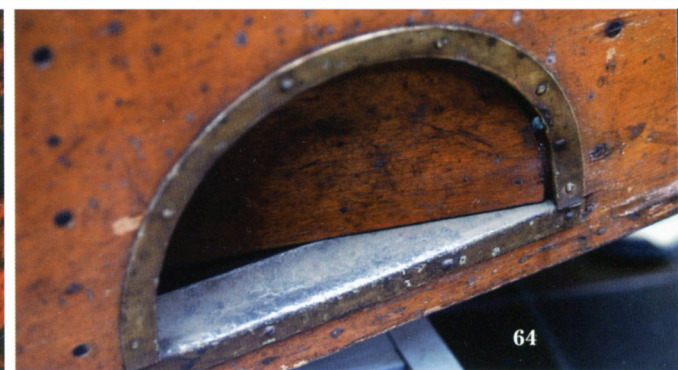
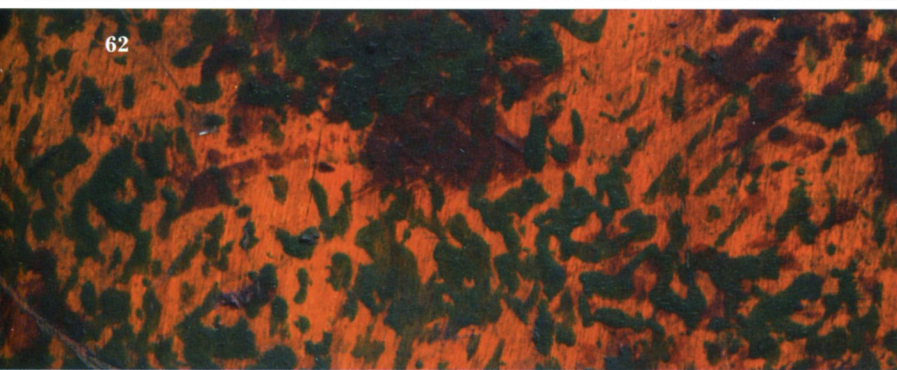
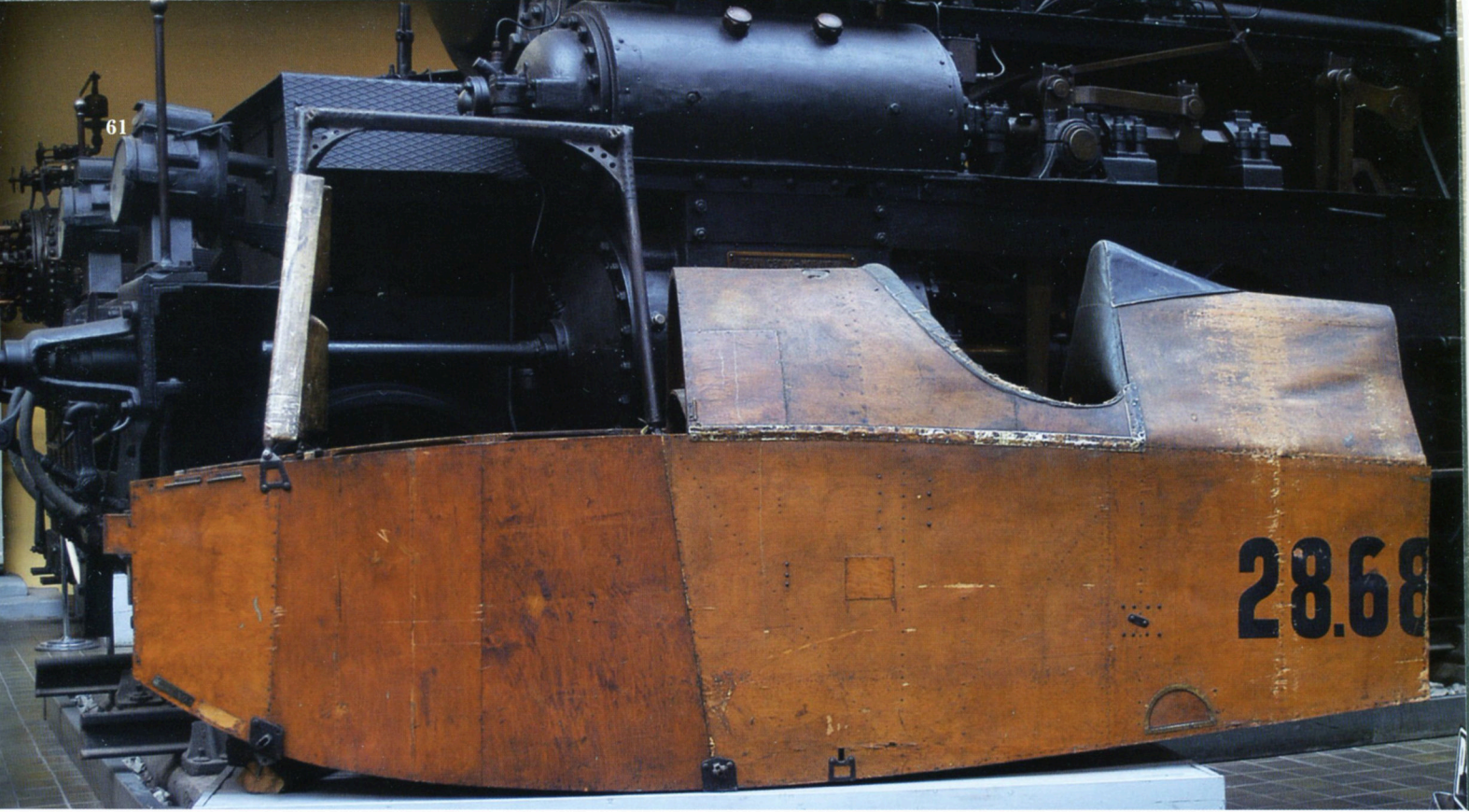
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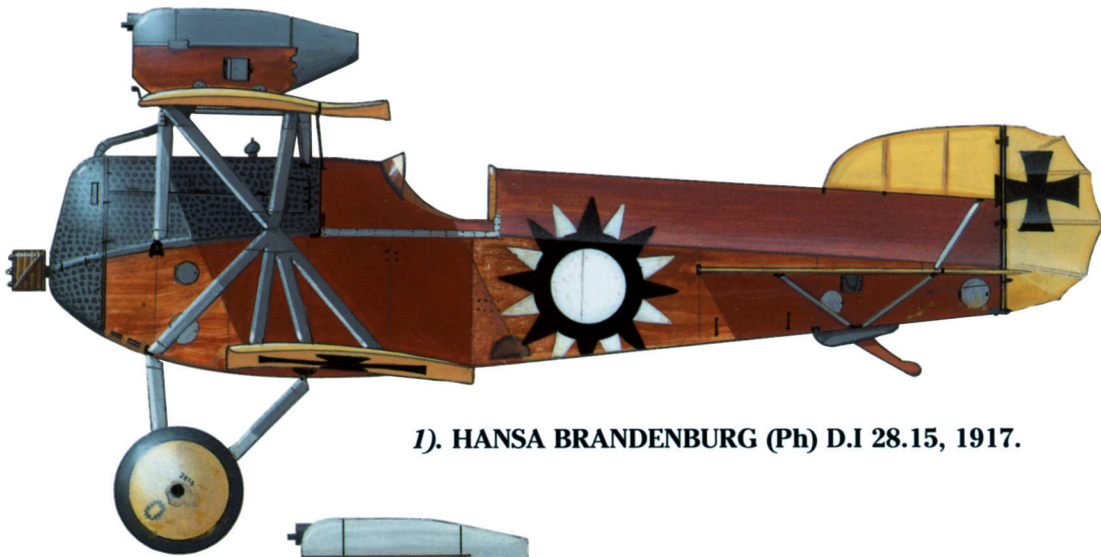
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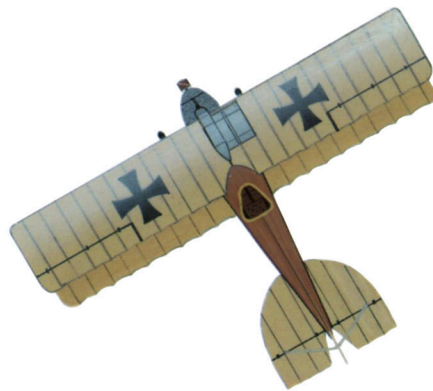
HANSA BRANDENBURG D.I



1). HANSA BRANDENBURG (Ph) D.I 28.15, 1917.



2). HB (Ph) D.I 28.58, 1917.



Generic plan view



3). HANSA BRANDENBURG (Ph) D.I 28.33, 1917.

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