THE *TAUBE* AT WAR

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WINDSOCK DATAFILE 104

UK PRICE £10.00 (NET)

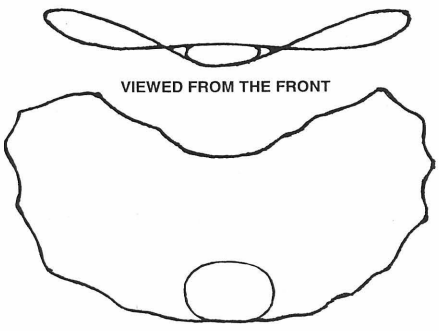
HISTORY

THE ETRICH *TAUBE* COMES TO LIFE

Still viewed today as the traditional symbol of early German aviation, the famous *Taube* (dove) monoplane was the creation of a tenacious Austrian industrialist and inventor named Igo Etrich.(1) Scion of a wealthy textile manufacturer, Etrich based his experiments on the *Zanonia* seed's unique gliding properties.(2) By virtue of a singular wing shape and weight distribution, the *Zanonia* seed could glide over an appreciable distance to propagate the species, a characteristic discovered by Professor Friedrich R Ahlborn of Hamburg, who published his findings in 1897.(3) Having studied the paper, Etrich and his assistant, engineer Franz Xaver Wels, visited Hamburg to seek Ahlborn's advice. Etrich declared his intention to build an aircraft based on the seed's configuration and, according to Ahlborn, entered into a gentleman's agreement to jointly share in the development of a full-scale flying machine.(4) Ahlborn turned over his models of the *Zanonia* seed to Etrich, but specifically warned Etrich that obtaining a German patent was 'out of the question' because his discovery had already been published, a transaction that under German patent law would amount to 'prior disclosure.'(5)

Starting in 1900, Etrich (joined by Wels in 1903) began his experimental investigations and built a series of model gliders, then manned gliders and motorized flying machines which were carefully tested to analyze and master the vagaries of controlled flight. For technical support, Etrich purchased two of Otto Lilienthal's gliders and sundry equipment after his death in order to incorporate Lilienthal's findings in his own work, as did the Wright brothers and other aviation pioneers. Initially, *Zanonia* glider flights were performed at the Etrich family factory at Oberaltstadt near Trautenau (today Trutnov) in northeast Bohemia. In 1908, Etrich moved his workshop to the *Rotunde* exhibition hall in Vienna while flight trials with various monoplanes took place on the vast Steinfeld in Wiener-Neustadt.(6) The Etrich I *Sperling* (sparrow) performed brief motorized hops in 1909 but still showed deficiencies in control and stability. Real success came with the larger and more-powerful Etrich II *Taube* (dove) which, piloted by Etrich's mechanic Karl Illner on 10 April 1910, was seen as 'a unique aeronautical event demonstrating that an untrained pilot immediately after take-off was able to perform figure eights and S-turns at five to twenty metres' altitude.'(7) Of

A word about the photographs. Pre-war Germany was inundated by hundreds of Taube monoplanes built by many constructors both large and small. Their documentation would require a full-scale book. Consequently, with few exceptions, I have limited my choice to those examples that were flown during the war. They are presented here in alphabetical order.



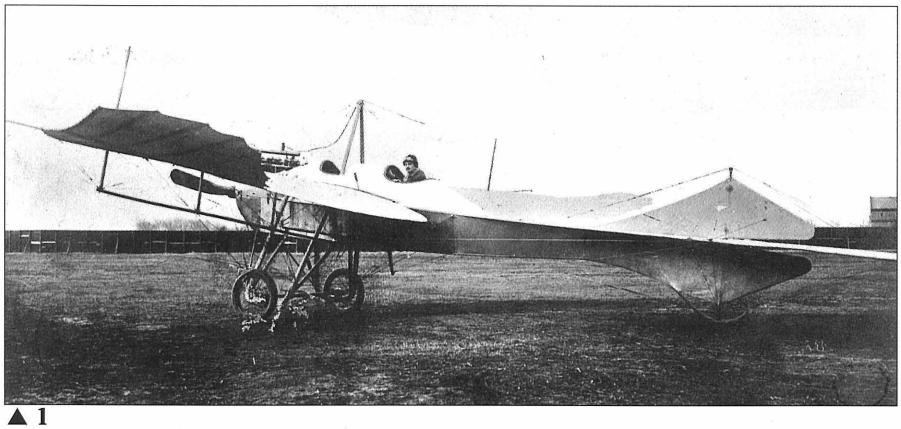
D.1: **Inspiration for Etrich's *Taube* was the *Zanonia macrocarpa* seed (now generally known as *Alsomitra macrocarpa*), a tropical climber of the gourd family in Java. The average dimensions are 10cm wide and 5.7cm long. Its weight varies from 0.159 to 0.161 grams.**

ALBATROS

1). **Hellmuth Hirth at the controls of a new Albatros *Taube* photographed in March 1913. The permanently washed out ailerons were a characteristic *Taube* feature to assure stability. Like many who copied the design, Albatros engineers often made small improvements - in this instance a simplified undercarriage structure.**

2). **Engine mechanics had to be acrobats then as now. This Albatros *Taube* A.28/13, powered by a 100-hp Mercedes engine, was attached to *Feld-Flieger Abteilung* 12 in Döberitz in November 1913. The *Taube* (*Leipzig I*) was one of four donated to the *Fliegertruppe* by the citizens of Leipzig at a cost of M 23,159 each. The large size of the twin radiators is an indication of their inefficiency.**

3). ***Leutnant*** **Hans Hesse was piloting Albatros A.29/13 (*Leipzig II*) over Ostende to reconnoitre the English troop landings when the engine began to stutter. Under fire and certain he would get lynched if he came down in Belgium, he nursed his *Taube* into neutral Holland, landing at Oostburg and internment on 20 August 1914.**



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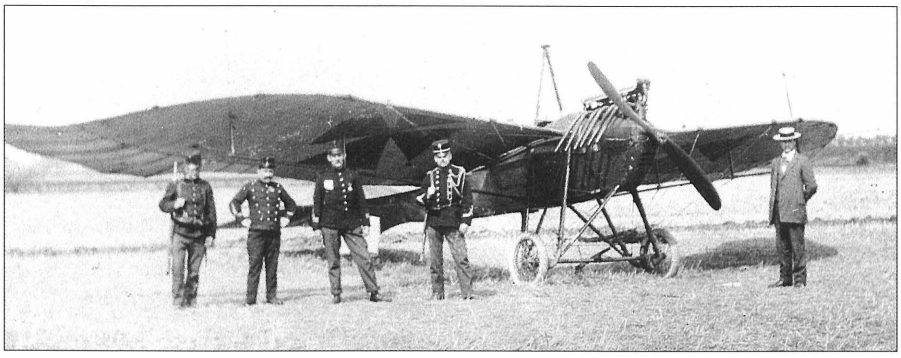

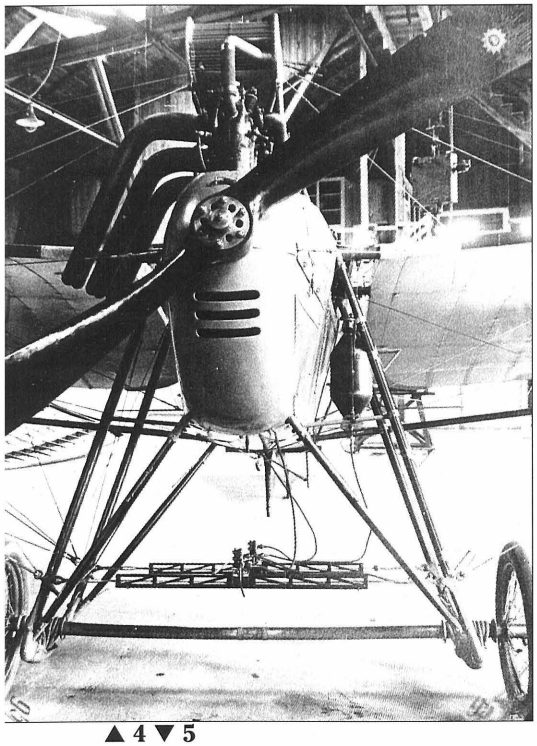

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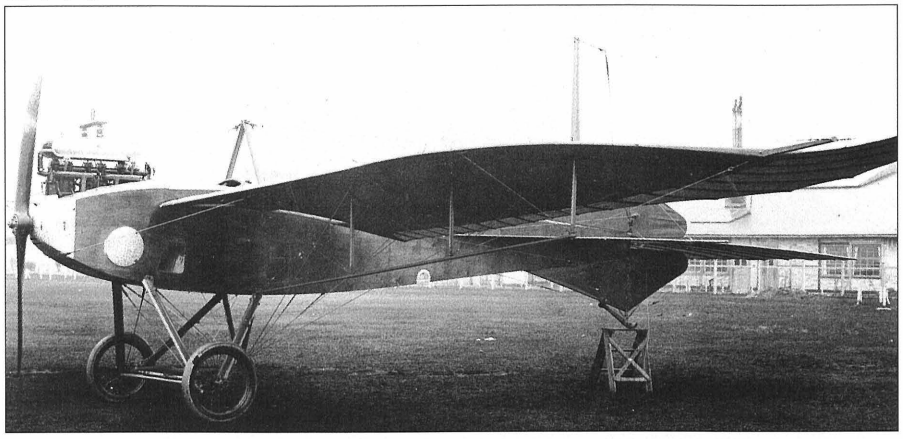
greatest significance was the *Taube*'s automatic stability that even 'as spectators feared an imminent crash when hit by strong side gusts [the monoplane] held itself splendidly and safely.' One must remember that during these pioneering days flights lasted but a few minutes and usually were performed in calm conditions; anything out of the ordinary was viewed with awe and wonder.

The defining characteristic of Etrich's *Taube* monoplane was the unmistakable *Zanonia* wing - a broad , kidney-shaped surface supported by a single spar and a web of cables. The majority of the *Taube* monoplanes had a consistent wingspan measuring between 13.5 and 14.5 metres. The *Brücke* (bridge) truss support under the wing remained a common feature until 1914. The rounded and swept back wingtips were washed out to emulate the *Zanonia* configuration. The wing trailing edge and wingtips were constructed of thin bamboo cane which provided strength yet possessed sufficient flexibility to warp the wingtips by means of a battery of splayed control wires. It should be noted that a few late-model *Taube* monoplanes featured twin spars, fewer wire cables and aileron control in lieu of the flexible wing tips. Obviously, the induced drag of the myriad wires and struts had a detrimental effect on performance. Virtually all *Taube* monoplanes had tail surfaces constructed of thin bamboo that could be warped to provide a modicum of directional control.

Etrich's *Taube* from the outset, unlike many contemporary aircraft, proved to be extremely easy and safe to fly because it was inherently stable and free of dangerous traits. Etrich and Illner achieved well-earned fame throughout Austria-Hungary by breaking every record for duration, distance and altitude. In September 1909, Etrich applied and eventually obtained patents for the *Taube* wing shape in major European countries and the United States. In view of the commitment to his family's business, Etrich assigned the Austrian license rights to the Viennese Motor-Luftfahrzeug-Gesellschaft (MLG) which contracted with the



4). **The *Deutsche Versuchsanstalt für Luftfahrt* instrumented one Albatros *Taube* to investigate the tension forces in the wing support cables during flight. These experiments, begun in February 1914, were part of an ongoing programme to improve airframe strength.**

5). **The same plywood-covered, semi-monocoque fuselage structure seen on the Albatros B.I and B.II biplanes was used in the improved Albatros *Taube* (*Typ EE*) that made its appearance in 1914. Power was supplied by a 100-hp Mercedes engine.**

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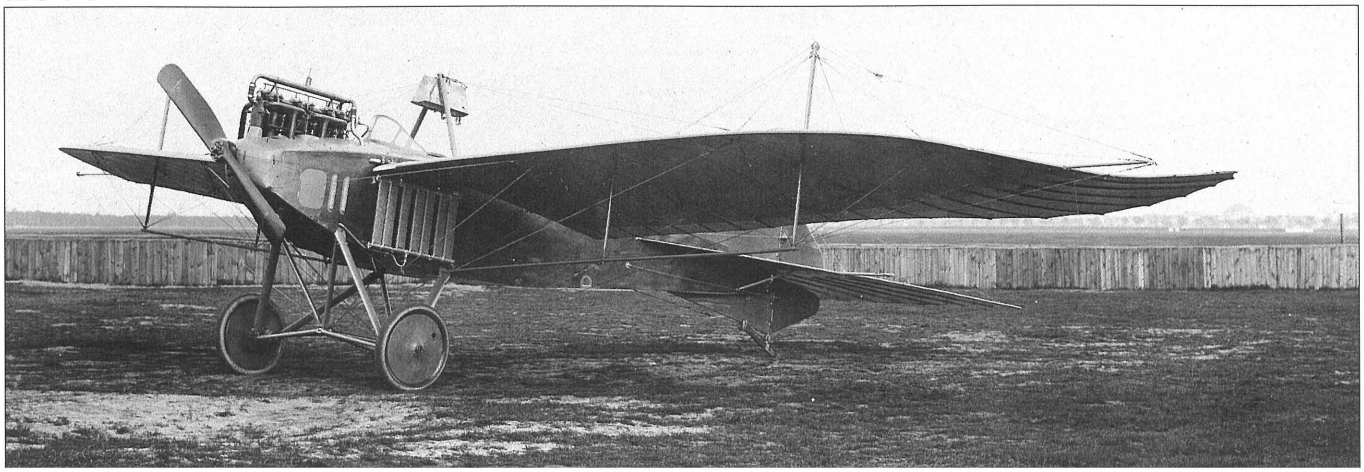
6). **Albatros *Taube* (*Typ EE*) No.8 was flown by *Leutnant* Pfeifer and *Oberleutnant* von der Hagen in the *Prinz Heinrich Flug* of May 1914. A black stripe under each wing was the official *Fliegertruppe* identification marking during the pre-war years.**

7). **Albatros *Taube* (*Typ EE*) was powered by a 100-hp Mercedes engine. Poor flight characteristics owing to the short fuselage were reported during the *Prinz Heinrich Flug* - findings that were confirmed by *Fliegerbataillon* 1 pilots in June 1914. The undercarriage has been further simplified, but the *Brücke* (bridge) support under the wing defines its ancestry. This was the last *Taube* designed and built by Albatros before the war began.**

8). **Close-up of the simplified Albatros *Taube* (*Typ EE*) undercarriage, showing the wing cable supports and the hefty claw brake.**



Lohner company in Vienna to build the *Taube* airframes while MLG installed the engines and instruments. MLG was responsible for world-wide marketing and sales. The *Taube* enjoyed modest success, primarily with sales to the Austro-Hungarian *Luftfahrtruppe* and to foreign countries including Russia, China, Italy and Great Britain.[8]

Etrich and Rumpler - the *Taube* becomes public property

Quick off the mark on 21 July 1910, Edmund Rumpler, a fellow Austrian citizen and proprietor of a custom aeroplane manufacturing shop in Berlin, obtained an exclusive five-year *Taube* manufacturing licence for Germany.[9] Etrich dispatched Illner and a *Taube* monoplane to Berlin to compete in the *Berliner Flugwoche* held at Johannisthal in 9-16 October 1910.[10] The *Taube*, powered by a 50-hp Rumpler 'Aeolus' V-8 engine, caused 'all-round astonishment' on 16 October 1910 when Illner 'masterfully' demonstrated the *Taube's* stability in windy conditions that had most airmen watching from the ground.[11] The next day, Illner and *Leutnant* Geerdtz flew the *Taube* to the military airfield in Döberitz clocking the fastest time over the 40 kilometre distance. Further flight trials at Döberitz induced the Prussian military establishment to award Rumpler with an order for five *Taube* monoplanes on 30 October 1910. To demonstrate the *Taube's* qualities, compete for monetary prizes and act as flying instructor, Rumpler hired *Ingenieur* Hellmuth Hirth who in a mere four days learned to fly the *Taube* in Wiener-Neustadt. In light of the risks involved in flying the rudimentary and dangerous aircraft of the day, Hirth's brilliant and seemingly effortless *Taube* exploits were truly spectacular, culminating in an exciting round of record-breaking and cross-country flights that made Hirth and the Etrich-Rumpler *Taube* overnight sensations throughout Germany and Europe. In the process the Rumpler company reaped a commensurate share of the widespread publicity.

Whereas Etrich had secured patent protection for the *Taube* in other European countries, his German application, upon which the success of the Etrich-Rumpler venture depended, was invalidated by the German patent office in September 1911 as predicted by Professor Ahlborn. It was judged that Ahlborn's discovery and prior disclosure of the *Zanonia* seed's gliding properties had compromised Etrich's claim. In addition, the German patent court ruled that the German patent application presented no improvement over the original Austrian patent and therefore declared invalid. In

CASPAR

9). **Caspar *Taube*. Gotha had financed Caspar and owned the controlling (but concealed) interest in the *Centrale für Aviatik Caspar* in Hamburg. Gotha supplied the *Taube* monoplanes used by the Caspar flying school. Caspar only began to build aircraft when in August 1914 the *Fliegertruppe* awarded an order for six Caspar *Taube* monoplanes, designated A.307-312/14 and powered by a 100-hp Oberursel rotary engine.**

10). **Caspar *Taube* from the series A.307-312/14. These six aircraft, originally ordered by the *Fliegertruppe*, were scheduled to be turned over to the German navy's landplane training operation beginning 20 September 1914. As might be expected the airframe is similar to that of the Gotha LE 2 which Caspar used as a primary trainer.**

11). **There is no mention in the early wartime German naval records (which are quite complete) of the Caspar *Taube* being in service with any naval unit. The presence of three *Fliegertruppe* mechanics seems to reinforce the supposition that the six monoplanes were never taken over by the Navy.**

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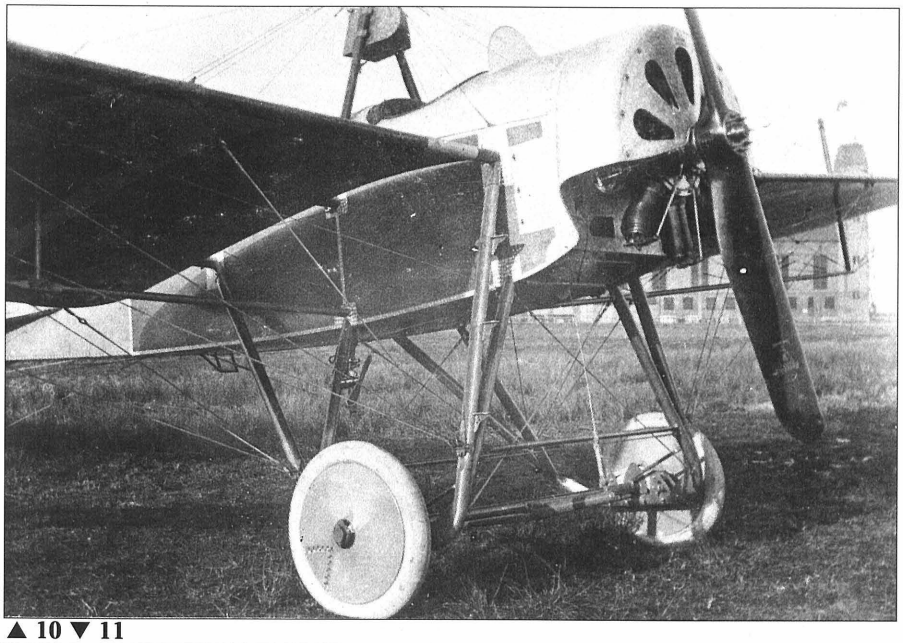

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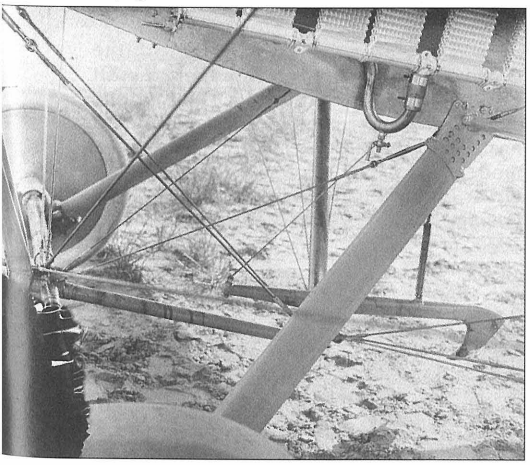

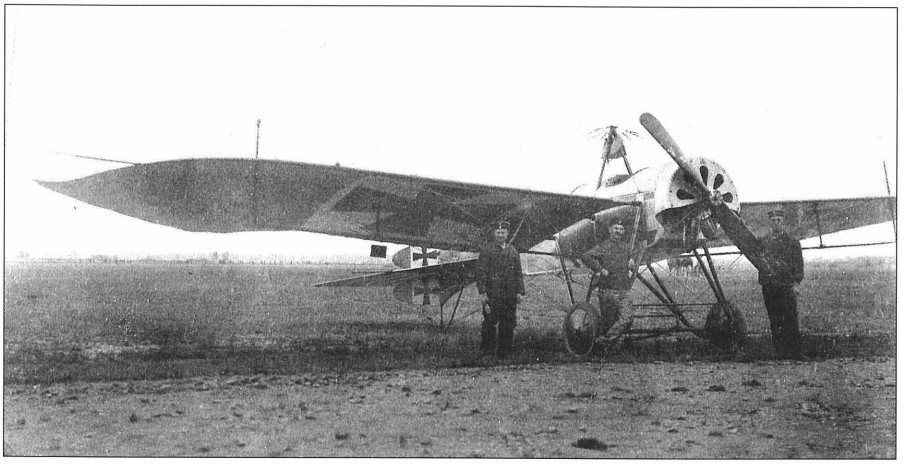

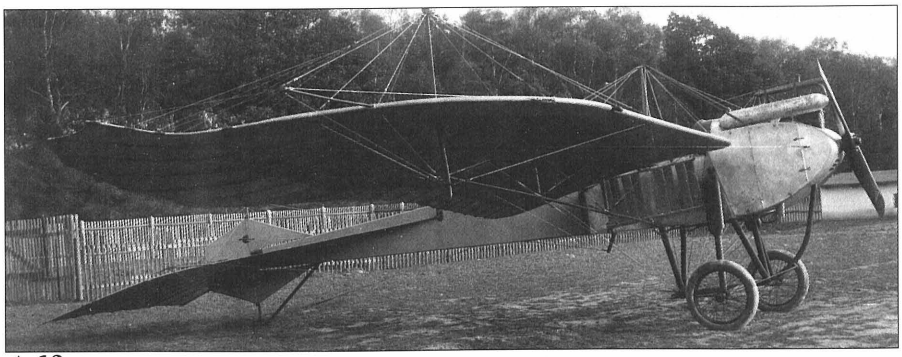

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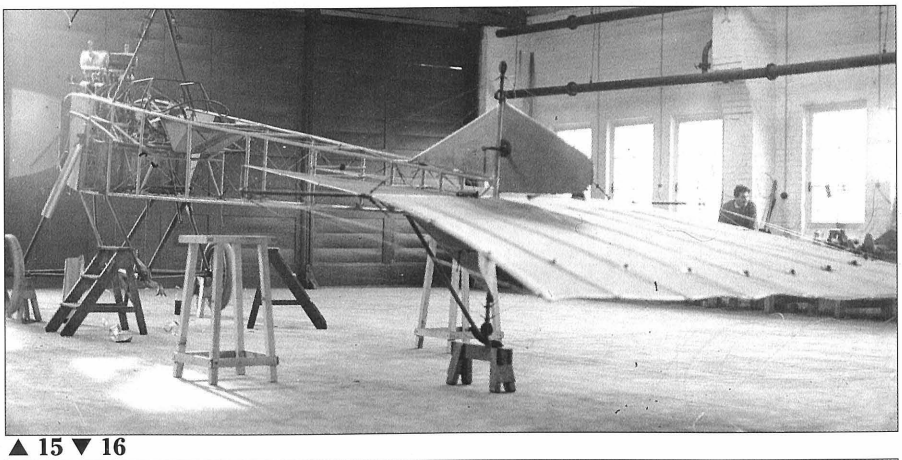

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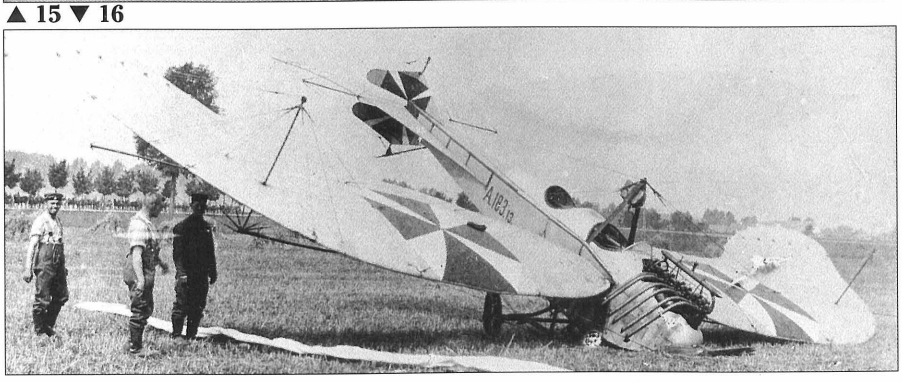


view of the *Taube* explosion that followed, one wonders what would have happened in Germany had Etrich been granted the *Taube* patent?

Immediately Etrich's *Taube* design became public domain in Germany, this negated Rumpler's patent monopoly in the process. By now it was a well-known fact that anyone could learn to fly the

DEUTSCHE FLUGZEUG WERKE (DFW)

12). **The DFW *Stahltaube* (steel dove) was a late-comer on the scene. The prototype (*w/n* 44) shown was photographed on 20 May 1913. Powered by a 100-hp Mercedes engine, it was a modern machine sporting a rectangular fuselage, a hinged rudder and a simplified undercarriage. The large exhaust header ran through and exited under the fuselage.**

13 and 14). **These photographs depict a military DFW *Taube* A.5/14 (works number 84) fresh from the factory in Leipzig in the summer of 1914. The version has a streamlined ventral radiator, a hinged rudder and a rounded nose, but the drag-producing *Brücke* wing support remained.**

15). **A DFW *Taube* under construction. The rectangular fuselage was assembled from steel tubing thus imparting great strength. The rudder is hinged, but the elevator retains the original *Taube* configuration.**

16). **The crash of DFW *Taube* A.183/13 provides an opportunity to view the broad expanse of the *Zanonia*-seed shaped wing and the crude iron-cross markings applied when war was declared. This *Taube* was attached to *Flieger Bataillon* 1 in March 1913.**

17). **This DFW *Taube* was powered by a 100/120-hp Mercedes engine. Only DFW-built *Taube* monoplanes had the unique ventral radiator.**

18). **Because the DFW *Taube* was flown by the *Lübeck-Travemünde* flying school (shown here), it has been incorrectly attributed as a having been built by that company. In fact, *Lübeck-Travemünde* was a subsidiary company established and owned by DFW to provide flight training for military pilots. DFW supplied the *Taube* and B-type biplanes for training service until late in the war.**

19). **A four-cylinder 100-hp Argus engine graces the blunt nose of this DFW *Taube*. This machine is fitted with conventional side radiators.**

ETRICH

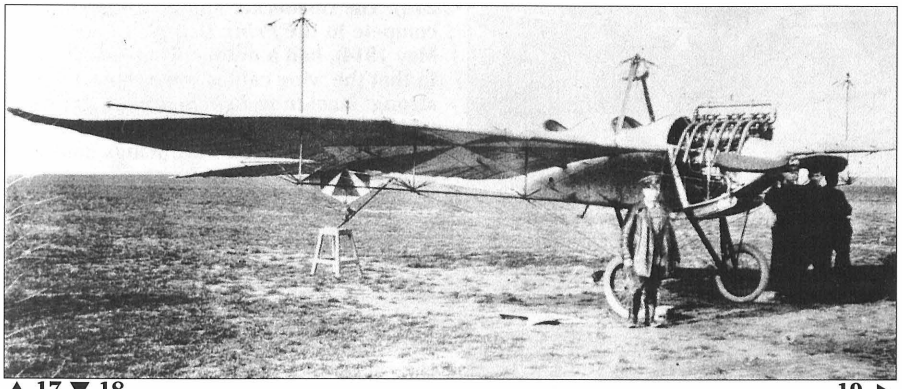
20 and 21). **Etrich's only success with the German *Fliegertruppe*! This Liebau-built Etrich *Taube*, powered by a 100-hp Benz engine, was impressed at the beginning of hostilities. Compared to contemporary, more-modern *Taube* monoplanes, the 1914-built Etrich *Taube* does appear dated. It was photographed on the Schulzendorf airfield in 1914-1915.**

22). **Close-up of the same Etrich *Taube* shows the streamlined gravity tank, the barometer suspended from the centre-section, the filler pipe for the main tank, the control wheel for wing warping and the handle for the claw brake. The pilot is Karl Becksmann who later served with *Feld-Flieger Abteilung* 22 (field aviation section).**

Taube and - most importantly - that it was the safest aircraft on the airfield. Because it was relatively inexpensive to build, the *Taube* design was accessible to would-be aviators of modest means. And since nothing stood in the way of building a copy, the door was open for every German company, eager to cash in on the *Taube's* exploits, to plagiarize the design line for line in the hopes of bagging military orders. Such established firms as Gotha, Albatros, Halberstadt and the Deutsche Flugzeug Werke hopped on the *Taube* bandwagon accompanied by a motley assortment of entrepreneurs, amateur home-builders and brash opportunists. Truly a veritable *furor Teutonicus* had embroiled the German aviation world in the quest to wring fame and profit from Etrich's creation. The *Taube* captured the nation's imagination and especially that of the German military establishment which regarded the *Taube's* safe flying characteristics as the paramount feature to lessen the danger of flying for army personnel.

With patent protection null and void, Rumpler saw his five-year monopoly fade into thin air. Facing competition right and left, Rumpler refused to honour the licence agreement or pay licence fees. He began to market the *Taube*, impossible to differentiate from the original design, under his own name to such an extent that the name Rumpler became synonymous with the *Taube* although Rumpler had no hand in the original concept and design. In 1912, Etrich sued Rumpler and the court awarded him M 16,632 in compensation, a pittance compared to the amount Rumpler and other aircraft manufacturers were to receive by selling the *Taube* to the *Fliegertruppe*.[12]

It is difficult to entirely blame Rumpler, a profit-orientated businessman, for backing out of Etrich's licence agreement. Why should Rumpler pay royalties when patent protection was nullified by the



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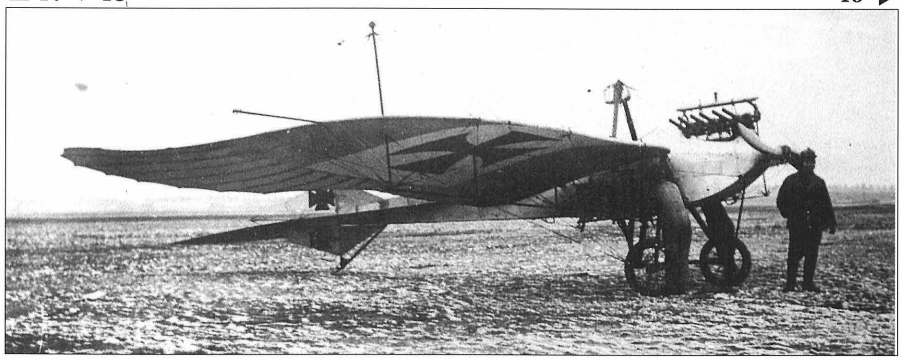

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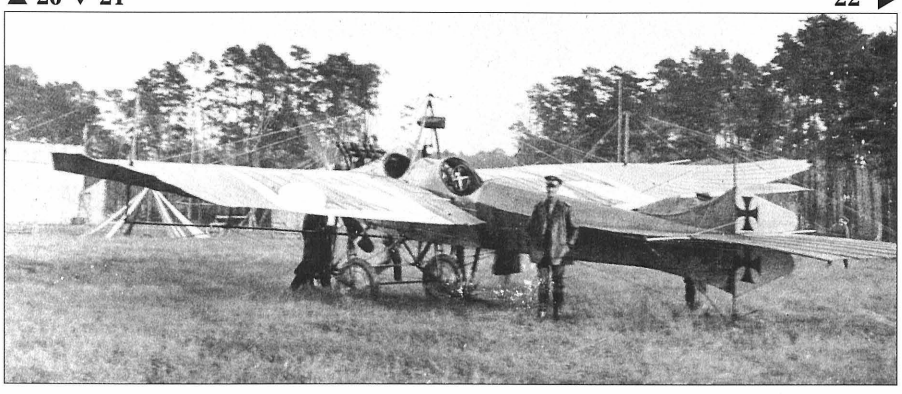

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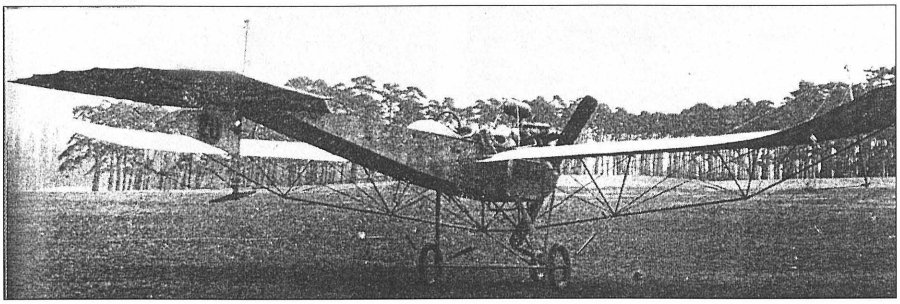

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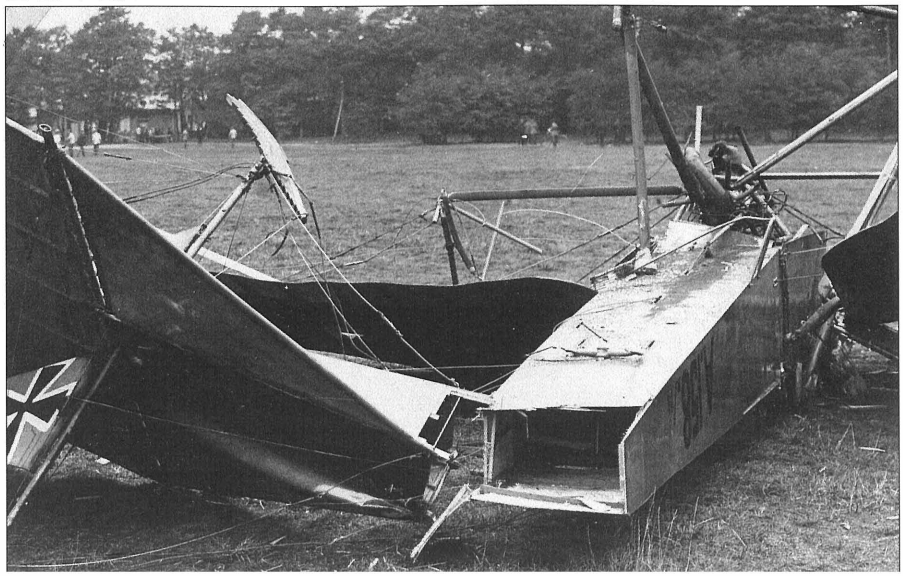


EULER

23). **The modest output of the *Euler Werke* included three *Taube* monoplanes featuring a unique wing *Brücke* and strut-happy undercarriage assembly. The Euler *Taube* monoplanes were numbered A.32 to 34/13 (*w/n* 102-104) and were powered by a 95-hp Argus four-cylinder engine.**

24). **Exhibited along with several other German warplanes on an outdoor fair ground, the dilapidated Euler *Taube* with iron crosses on the wing obviously has seen better days and awaits the scrap heap.**

GOEDECKER

24a). **The Goedecker Militär *Taube*, built to compete in the *Prinz Heinrich Flug* (17-25 May 1914), had a unique wing construction in that the wing cables were replaced by a strong, steel-tube *Brücke* under the wing which enhanced its awkward appearance. For ground transport the wings could be folded back against the fuselage.**

25 and 26). **In 1914, the *Fliegertruppe* purchased at least one Goedecker *Taube*, designated A.158/14 and powered by a 100-hp Mercedes engine. The original photographs are labelled 'bad landing' which is something of an understatement. Besides the serial number, the aircraft name *'Deutsches Aar'* (German large bird of prey) can be read on the fuselage which was covered with plywood veneer.**

GOTHA

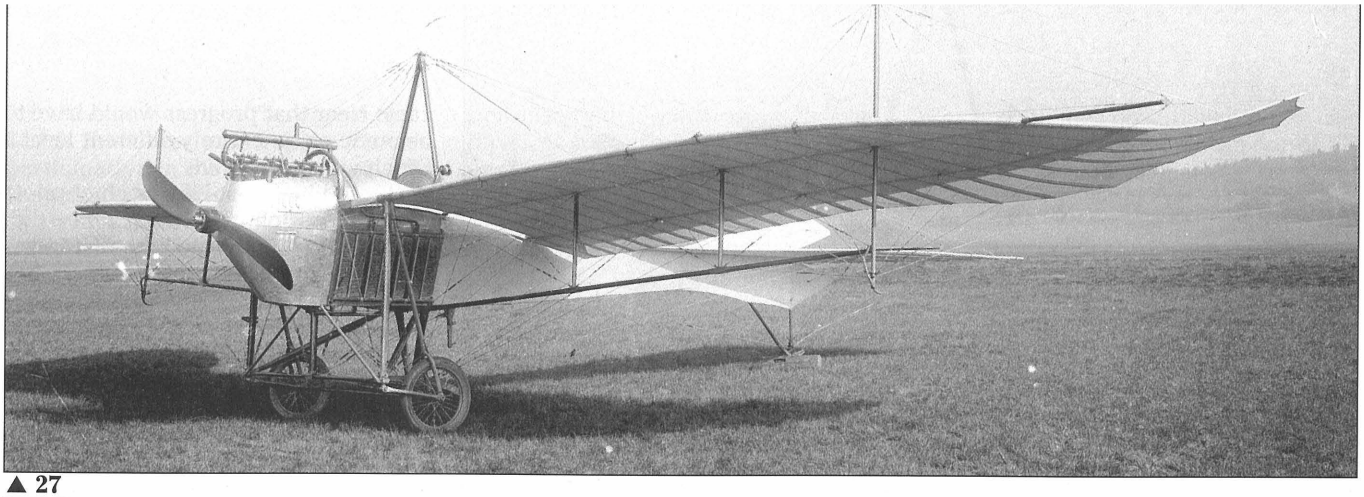
27). **The Gotha *Waggonfabrik* performed the maiden flight with their first *Taube*, the Gotha LE 1 (*Land Eindecker* 1 = land monoplane) on 22 April 1913. Eight Gotha LE 1 were built; six remained with the Gotha flying school and two went to the *Centrale für Aviatik Caspar* school in Hamburg, an organization in which Gotha had the controlling interest.**

28). **This Gotha LE 1 was one of the two Gotha monoplanes that participated in the para-military *Prinz Heinrich Flug* of 1913. The one piloted by *Leutnant* Joly (with *Oberleutnant* Felmy as passenger) completed all competition stages. A few of the Gotha LE 1 aircraft were employed as trainers early in the war.**

29). **Gotha LE 2 A.123/13 shows the black stripe under the wing - the peacetime *Fliegertruppe* aircraft identification marking. On 4 November 1914, *Leutnant* Caspar and *Oberleutnant* Roos flying a Gotha LE 2 made history when they dropped two bombs on Dover and returned safely after a five and a half hour flight**

30). **Gotha LE 2 showing the improved undercarriage designed to support the wing bracing cables. A large claw brake and a six-cylinder Mercedes engine complete the picture.**

31). **The centre pylon of this Gotha LE 2 *Taube* supports a small barograph box. The articulated wingtip skid is interesting. The reputation for solid workmanship led the *Fliegertruppe* to purchase 35 Gotha LE 2 monoplanes. This example is powered by a 100-hp Mercedes engine.**



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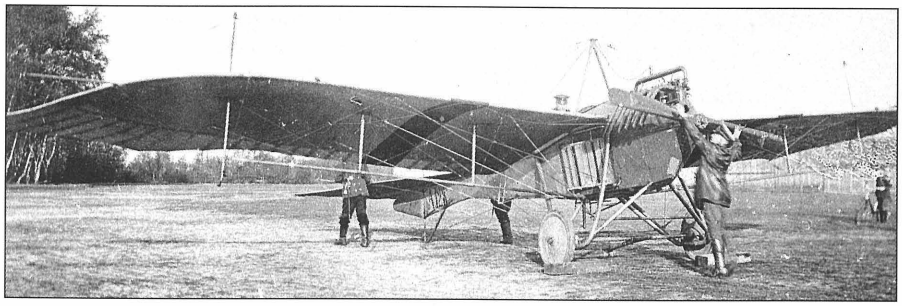

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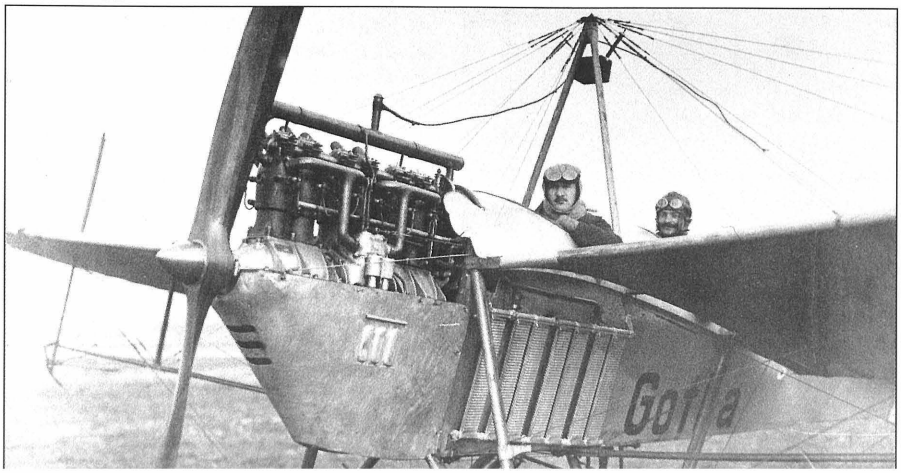
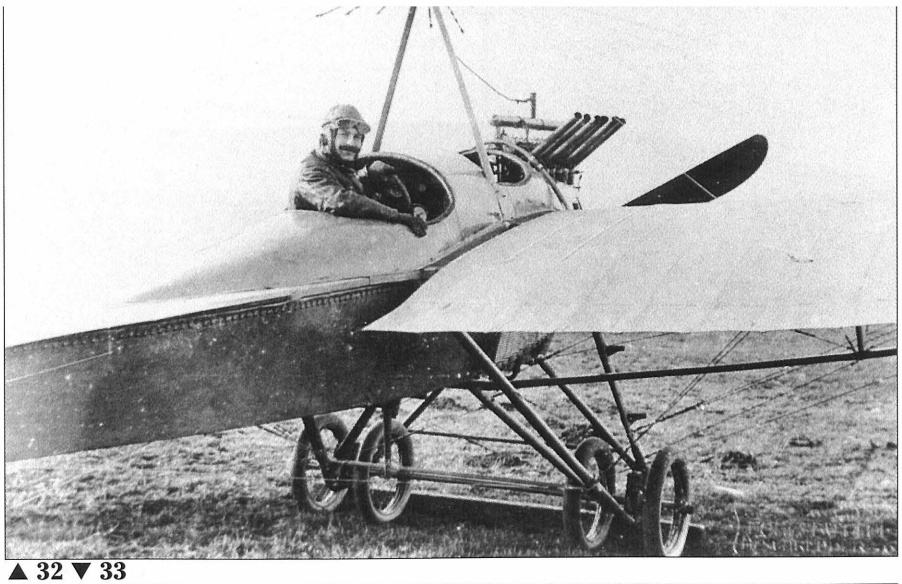


German courts and he now faced competition on every corner? To be sure, Rumpler was less than honest in marketing the 'Rumpler *Taube*' as his own creation and failing to credit Etrich's discovery, but Albatros, Jeannin, Aviatik, Gotha and Roland, just to name some of the larger manufacturers, were equally opportunistic. Justifiably, Etrich was furious. His resentment simmered for years and Etrich and Rumpler continued to exchange acrimonious accusations. It was not until July 1930 that both parties, having gone to court, were induced to refrain from further wrangling by a court decree.[13]

Etrich moves to Germany

Denied patent protection and eschewing futile litigation, Etrich chose to compete directly for the burgeoning German *Taube* market by establishing a flight school and manufacturing facility in Germany to meet the war office requirement that a military supplier be located on home turf. In December 1911, Etrich founded Sport-Flieger GmbH in Johannisthal that advertised flight instruction under the bold headline 'ETRICH THE INVENTOR OF THE *TAUBE* - Instruction on Original Machines.' The school does not appear to have been particularly successful: only one *Taube* pilot's licence was recorded in 1912 and eleven in 1913, at a time when other factory flying schools were churning out pilots in far greater numbers. The competition was fierce and other firms were better financed and benefited from military support. The fatal crash of Sport-Flieger instructor Gustav Michaelis in an Etrich *Taube* on 27 May 1913 did not enhance business prospects.[14] In conjunction with the flying school, the Etrich-Flieger-Werke GmbH was established on 28 February 1912 in Liebau (now Lubáwka, Poland), 20 kilometres across the border from Trautenau. In the small Liebau factory, Etrich produced a modest total of three experimental (types I, II and III) and nine 'production' monoplanes (type NM-1 to NM-9) through April 1914. In addition Salz lists 'as most likely' three smaller type K *Taube* monoplanes the first flight of which occurred in December 1913.[15] As might be expected, the Liebau-built monoplanes differed only marginally from the original *Taube* configuration, thereby emphatically demonstrating the static nature of the design. It soon be-



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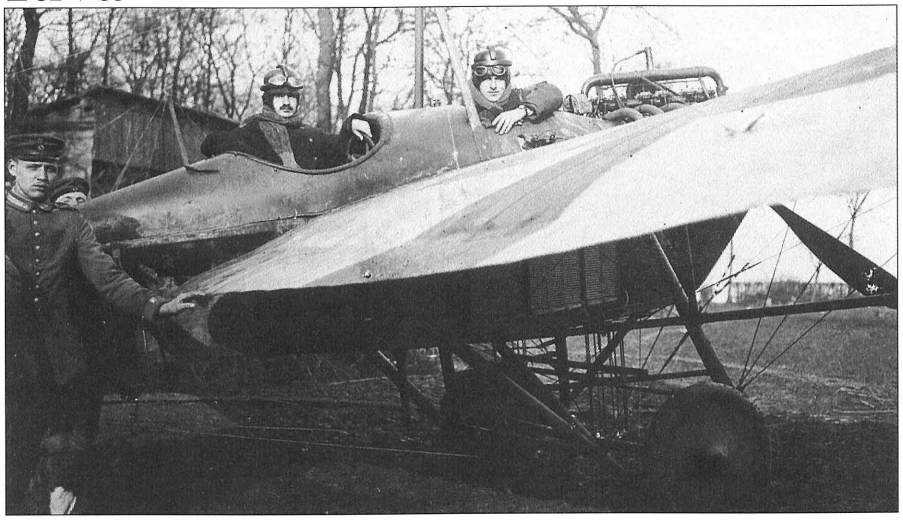

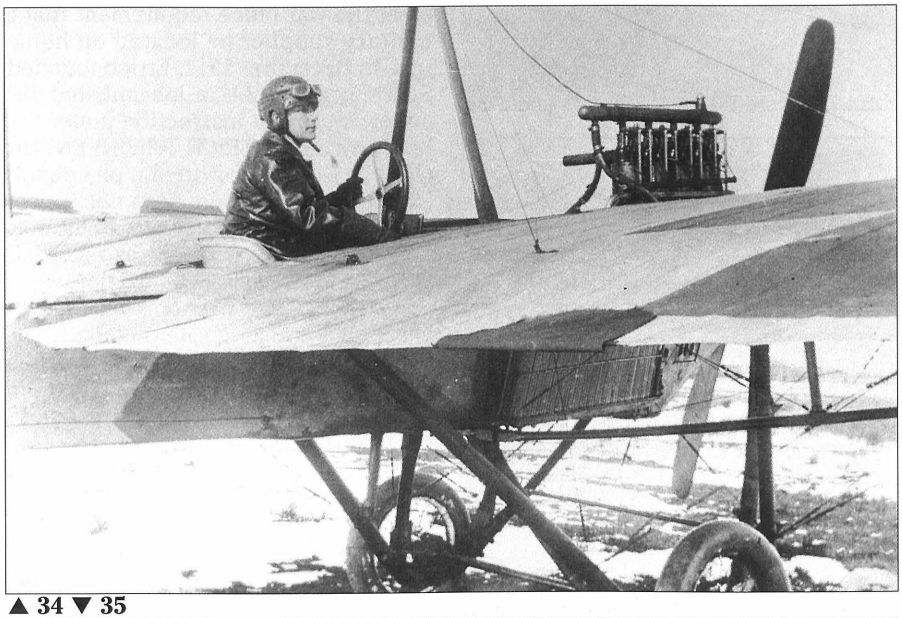

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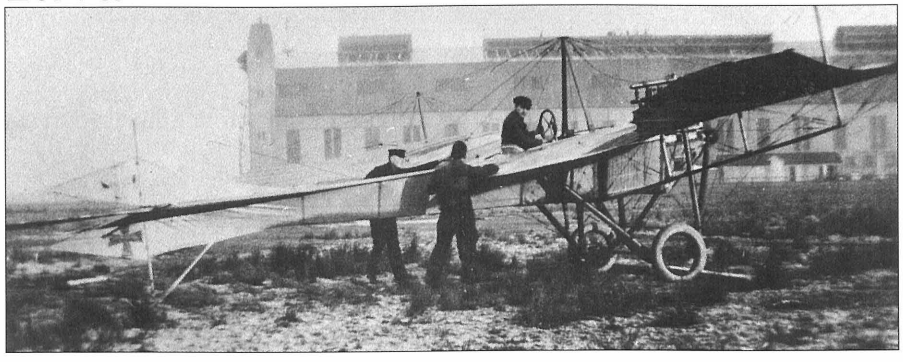

came clear that progress would have to be made on an entirely different level if Etrich were to survive.

Piloted by Sport-Flieger chief pilot Alfred Friedrich, the Etrich *Taube* did perform some notable long-distance flights: Berlin-Paris-London (September 1913) and Berlin-Copenhagen (October 1913) that gained fame and publicity but little else. Twice demonstrated to *Fliegertruppe* authorities in Döberitz, the Etrich *Taube* was rejected as 'unsuitable' without any reason given in the extant documentation. The *Taube* built by Etrich in Germany simply did not offer sufficient improvement in performance over those already being delivered by solidly established manufacturers such as Albatros, Gotha, Jeannin and Rumpler.

The Etrich *Taube*'s Swansong

Etrich's sole sales success to the German military establishment came with the purchase of two Liebau-built *Taube* monoplanes by the Bavarian air service in 1913. Of the two Etrich machines that were on hand as of 1 January 1914, one was written off on 20 June 1914, and all nine *Taube* monoplanes purchased by the Bavarian air service had disappeared from the inventory list by 1 August 1914.[16] By now the *Taube* had lost much of its appeal and was rapidly losing ground to the more efficient biplane and the fine Fokker monoplane. If Etrich had entertained grand visions of inundating the German *Fliegertruppe* with Etrich-built *Taube* monoplanes his expectations had come to naught.

'To be closer to the centre of aeronautical activity' Etrich now decided to move his factory once again, this time to Briest/Brandenburg in the vicinity of Berlin. However, the real motivation appears to have been a war office directive to shift production facilities from the unprotected eastern border to a safer interior location. In the process, Etrich and several investors established the Brandenburgische Flugzeugwerke at Briest on 16 March 1914 but aircraft production did not begin there until 1 January 1915.[17] In mid-1914, Ernst Heinkel who had worked for LVG and Albatros was hired by Etrich as technical director. While at Liebau, Heinkel built several biplanes copied directly from the success-

32). **Gotha supplied a number of LE 2 trainers to the *Centrale für Aviatik Caspar* who modified the undercarriage into a four-wheel configuration to absorb hard landing shocks.**

33). **The pilot in the rear cockpit grasps the steering wheel as he prepares for take-off in this wartime Gotha LE 2 *Taube*. Close inspection shows that two bomb-launching chutes are mounted under the observer's position between the undercarriage struts.**

34 and 35). **Stripped down to the bare essentials with little protection for the pilot, the Gotha LE 2 single-seat primary trainer was flown at the *Centrale für Aviatik Caspar* in Hamburg in the early days of the war. The engine is a four-cylinder Argus.**

ful Albatros B-types. The day of the Etrich *Taube* was past history. Etrich's participation in the Brandenburgische Flugzeugwerke remained minimal because as an Austrian reserve officer he was called to the colours in July 1914, then quickly furloughed to put his expertise to work in the family's textile factories. In October 1915, Etrich sold his shares in the Brandenburgische Flugzeugwerke and he did not return to aviation until 1929-1930 when he built the *Sporteindecker* - another safe, wing-warping monoplane that, clever as it was, had no future.[18]

The *Taube* enters military service

The *Fliegertruppe* regarded the tractable *Taube* as an ideal vehicle for its rapidly expanding air service. In those pioneer days of military aviation (October 1911), a commission setting standards for military aircraft concluded that the advantages of the *Taube* design consisted of 'great stability in the air, easy controllability with low demand on the pilot's physical strength, robustness of the undercarriage, good overview of the engine and easy ground transport.' Nor were 'special mental or physical skills required to control it aloft.' Perhaps Otto Linnekogel's bravura act in a Rumpler *Taube* over the Cuatros Vientos airfield in Spain best depicts the *Taube*'s amazing stability. At 250 metres' altitude Linnekogel stepped out of the pilot's seat and 'held on to the wing pylon' while the *Taube* continued on - 'totally stable' - for the delectation of the Spanish crowd.[19] At least two incidents have been recorded in which an unattended *Taube* with engine running took off on its own accord, flew a straight path and came down safely after the fuel ran out.[20] Since practically anyone could readily learn and safely fly the type, the precious lives of military personnel, especially officers, were minimally exposed to risk.

But there were disadvantages. The

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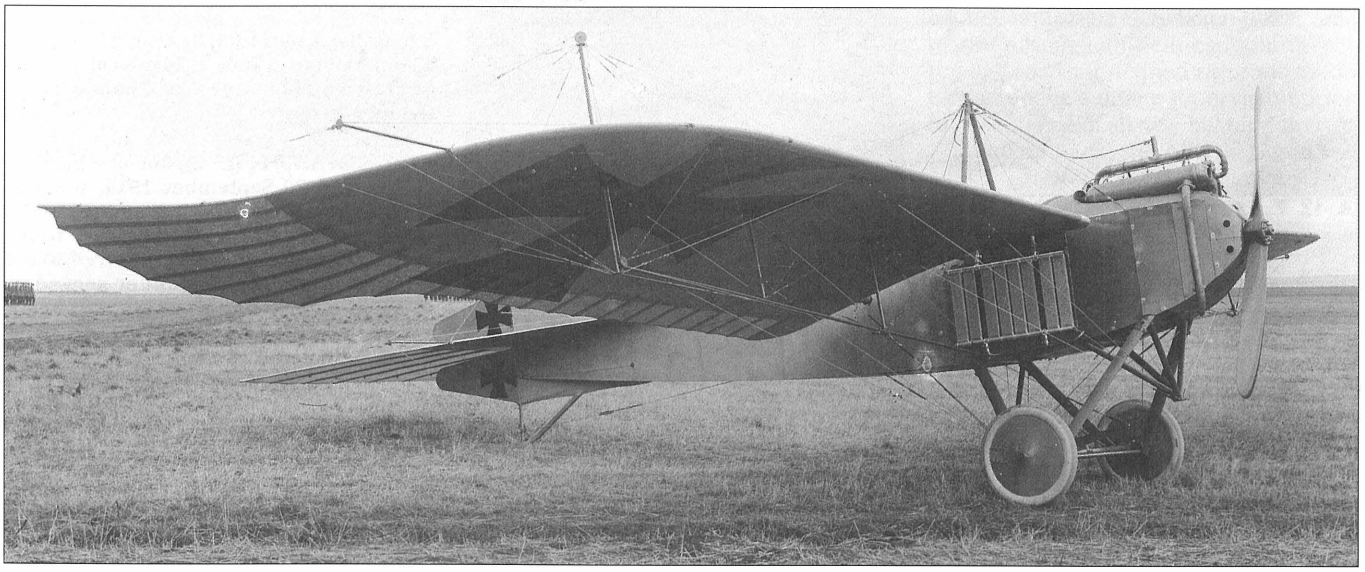
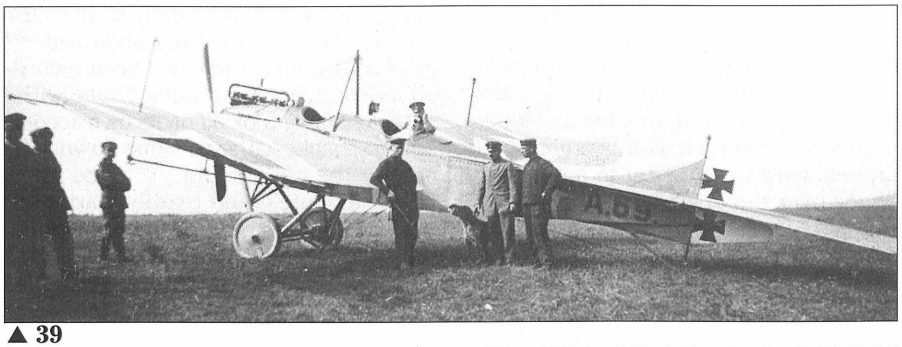
36). **Gotha LE 2 *Taube* here fitted with 80-hp Oberursel engine. The spiderweb of struts and bracing wires required to support the wing structure required painstaking adjustment and its drag depreciated flight performance, two good reasons why the *Taube* monoplanes were quickly superceded by biplanes once the war began.**

▲ 37 ▼ 38

37). **At mobilization, eight Gotha LE 3 *Taube* aircraft, originally intended for the Gotha flying school, were commandeered for combat work. Here, Gotha A.71/14 with *Feld-Flieger Abteilung* 9 is being loaded with two 10kg Carbonit bombs. The power for this *Taube* was supplied by a 100-hp Mercedes engine.**

38). **Because the triangular fuselage of the previous Gotha *Taube* monoplanes tended to twist in flight, Gotha designed the LE 3 with a much stiffer, rectangular one. The undercarriage has been simplified and two separate pylons now support the lift wires in order to separate them from the undercarriage structure. Work on the Gotha LE 3 began on 10 January 1914. After a long gestation period, the *Fliegertruppe* ordered 16 LE 3 *Taube* monoplanes in June 1914 with the first delivery recorded on 31 August.**





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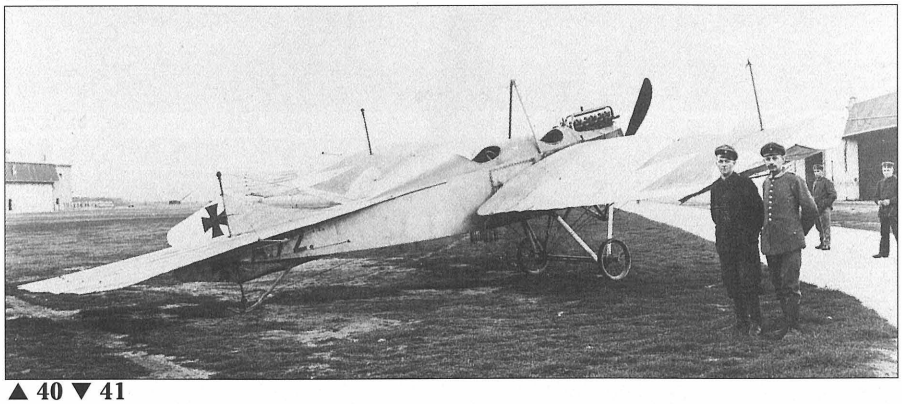

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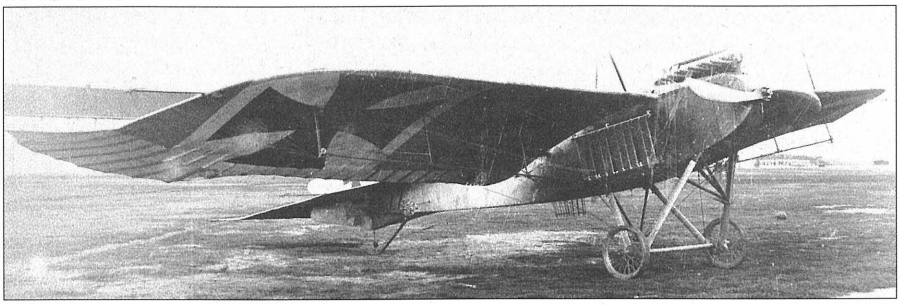

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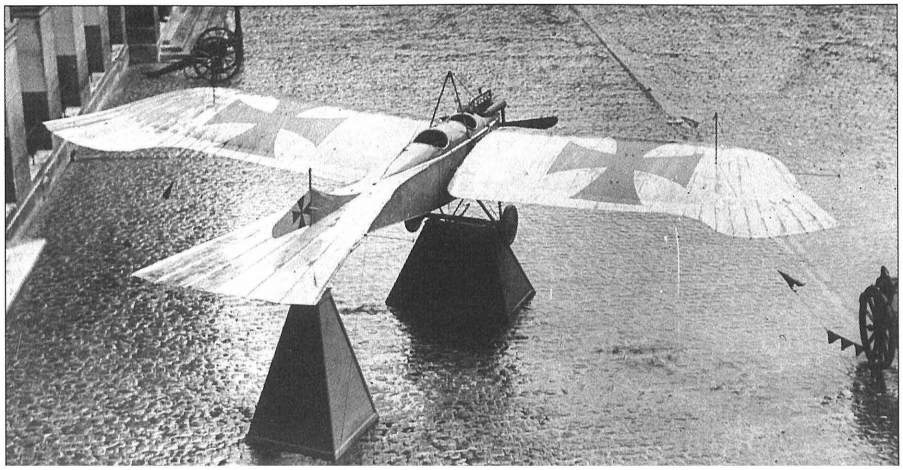


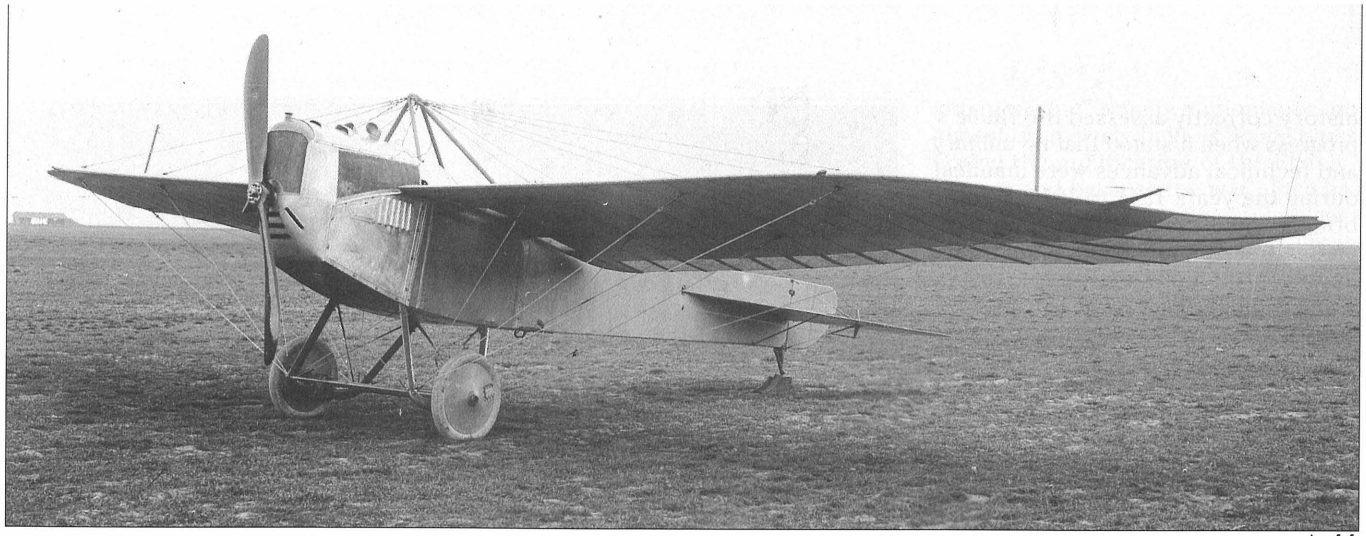
military commission listed 'the poor observation position especially for the pilot; the necessity of having an expansive, flat terrain for take-off and landing which limited military use; the low position of the undercarriage skid (there to protect the propeller); in-flight drift in a side wind; and the nuisance of exposure to engine oil and exhaust gases.'[21] While the *Taube* may have been easy to control in a straight path and gentle turns, it was impossible to turn quickly - not to mention performing any sort of fast manoeuvre. One pilot, flying in shirt sleeves, recalled perspiring profusely because of the extreme exertion required to execute a simple turn while struggling against the unwieldy wing-warping controls. Not only was the *Taube* sluggish aloft, but take-off was long due to the poor climb rate and landing was difficult because of the tendency to hover near the ground combined with the poor view of the terrain from the cockpit. Nevertheless, it was a relatively safe proposition and gave many Austro-Hungarian and German army pilots their first experience of what it was like to go aloft. It was no secret that pilots who had obtained their licence on a *Taube* were not, by a long shot, qualified to fly a conventional, aileron-controlled biplane.[22] That was a different kettle of fish altogether. A contemporary instruction manual warned *Taube* pilots that 'real flying only begins the moment you sit down behind the controls of a biplane.'[23] Unfortunately, there are no reports describing the difficulty or the amount of time required to make the biplane transition, but certainly additional instruction was mandatory.

The German army office, enviously ogling French aviation progress across the border and eager to expand the German aircraft manufacturing base, began to purchase aircraft, both monoplanes (A-types) and biplanes (B-types), to catch up with the French. In the process Rumpler, Albatros, Gotha and Jeannin received substantial A-type *Taube* production orders as shown in *Table 1*. It is noteworthy that Etrich was excluded from Prussian military business but the reason is not known.

39). **Gotha A.69/14 (LE 3), one of a batch of 16 ordered on 30 June 1914, was dispatched to *Etappen Flug Park* 3 in Cambrai on 16 October 1914.**

40). **Gotha A.72/14 (LE 3), 0ne of a batch of 20 ordered 20 September 1914, was dispatched to *Flugpark* 6 in Cambrai on 22 October 1914. In all, Gotha built 111 *Taube* aircraft of which 89 were delivered to the *Fliegertruppe*; the remainder served as competition or training machines.**

41). **Another view of Gotha A.72/14 (LE 3) showing the two bomb chutes mounted in the pilot's cockpit. Well-built and rugged, the Gotha *Taube* monoplanes saw combat on all Fronts. The last LE 3 *Taube* (A.302/14) was delivered to *Flieger Ersatz Abteilung* 3 (aviation replacement section) in Gotha on 7 July 1915.**



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42). **Gotha LE 3 *Taube*. One had to dress warm to fly in those days, although the observer had an engine to warm his feet. The radiator overflow tube can be seen leaving the header and running up to the centre pylon. The black object on the pylon appears to be a battered Dachshund good luck talisman.**

43). **One of the German war trophies exhibited at the *Cour d'Honneur* of *Les Invalides* in Paris was this Gotha LE 3 captured intact in September 1914 in the region of the Meuse. Unfortunately the military number is not visible in the many photographs that were published of it.**

44). **The Gotha LE 4 *Taube*, powered by a 100-hp Mercedes engine, had a hinged rudder and elevator while the integral 'auto' radiator, unusual for any *Taube*, imparted a distinctly modern look. The first version of the LE 4 had the lift wires attached directly to the undercarriage structure, an arrangement frowned upon by the *Fliegertruppe*.**

45 and 46). **The second version of the Gotha LE 4 had the front and rear lift wires attached to separate pylons situated in front and behind the undercarriage. This, the only machine built, was attached to the *Herzog Carl Eduard Fliegerschule* in Gotha. According to company records, the LE 4 had a top speed of 120 km/h**

It must be understood that the information in *Table 1*, based on Professor Wilhelm Hoff's article in 1920, concerns only army aircraft delivered to the Prussian *Fliegertruppe* and fails to take into account monoplanes delivered to the German navy and the Bavarian air service; nor does it list the replacement airframes supplied for crashed aircraft.[24] We should keep in mind that the Blériot, Dorner, Fokker and Harlan monoplanes were not *Taube* designs, unlike the other A-type monoplanes listed. The aircraft orders for 1914 are derived from serial number analysis and are estimates. The 62 'unknown' monoplanes in 1914 were primarily *Taube* models built by Rumpler, Albatros, Jeannin and possibly DFW.

The *Taube* sheds its feathers

For *Fliegertruppe* personnel the *Taube*'s reputation literally came apart on 4 September 1913 when, during the annual army manoeuvres, a Rumpler *Taube* lost its wings, killing two officers. Both Rumpler and Albatros had been asked to build a *Taube* designed with wings that could be taken apart for cartage on a special truck in order to facilitate ground transport. [25] Named *Klapptaube* (folding *Taube*), a batch of 12 each had been ordered from the two companies for trials. The suspect aircraft were grounded and immediate steps were taken to identify the cause of failure. A blue-ribbon committee was hastily convened to oversee the first static load tests performed on German military aircraft under government supervision. The load tests took place between 21 September and 9 October 1913.

The concept of an aircraft 'safety factor' already had been under discussion by scientists of the *Wissenschaftliche Gesellschaft für Flugtechnik* who initially proposed a safety factor of ten(!), later reduced to a more realistic factor of 5.5. But this was academic. Until now no German military aircraft had been officially load-tested because it had not been stipulated by the acceptance regulations. To say the least, the results were shocking.[26] Only one monoplane (the non-*Taube* Fokker A.99/13) came close to the arbitrarily chosen safety factor; in fact all the *Taube* monoplanes were structurally suspect as results shown in *Table 2* demonstrate.

During the load tests it was found that the cable attachment fixtures supporting the wing broke and in two instances the wing spar and undercarriage strut supporting the wing cables had failed.[27] The *Fliegertruppe* ordered all *Taube* monoplanes grounded pending reinforcement with stronger fixtures and components to achieve a safety factor of four. The *Klappflügel* (folding wing) design was banned and steps were taken to upgrade manufacturing guidelines including regulations that defined rigorous load testing under military supervision prior to acceptance of all new military aircraft.

Looking back, the official German

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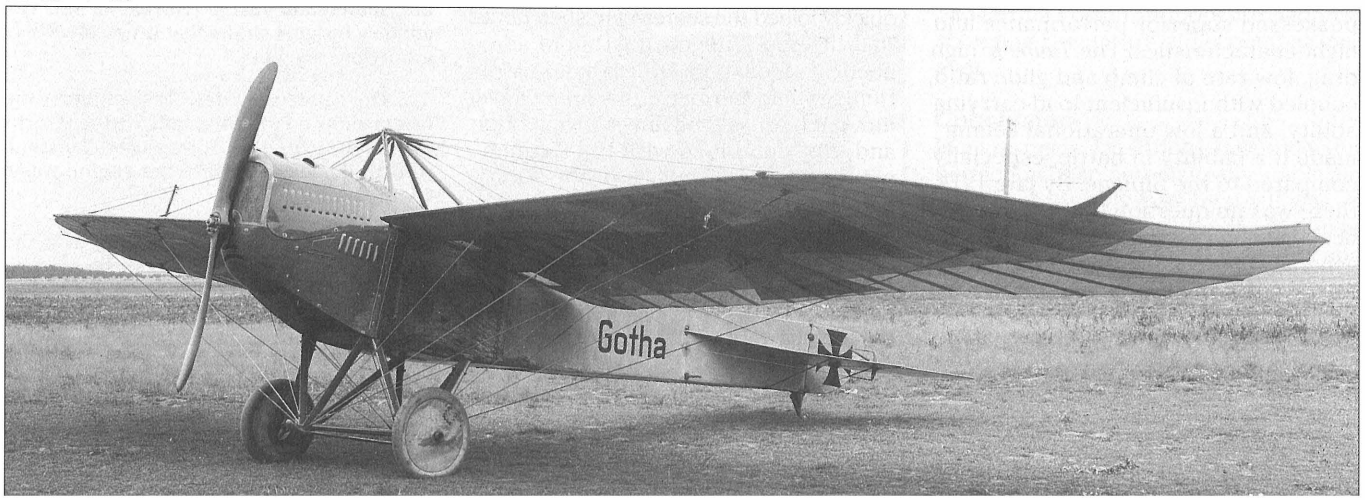


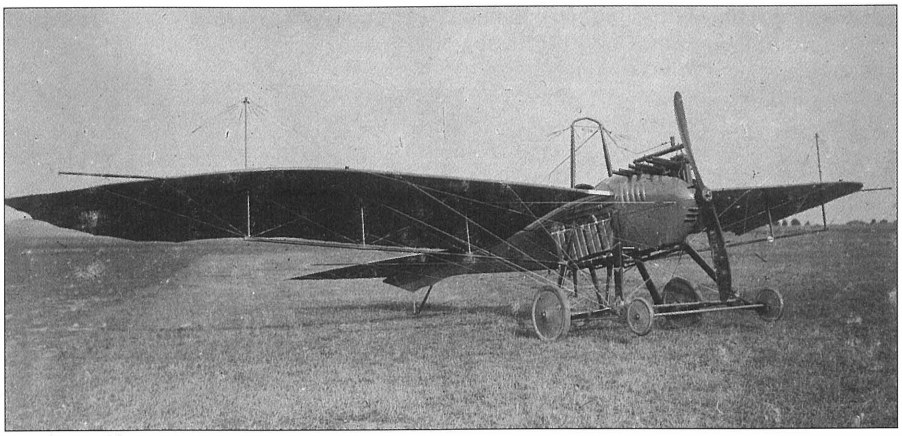
history correctly assessed the *Taube*'s progress when it stated that no military and technical advances were manifest during the years 1911 to 1913. Despite bringing new manufacturers into the picture to foster competition, the *Taube* models produced by Albatros, DFW, Jeannin and Gotha 'brought no improvement with respect to weight reduction, airspeed and climb rate.'[28] Although a Rumpler *Taube* achieved a world's altitude record in July 1914, the biplane now easily outdistanced the *Taube* in all categories.

By the summer of 1914, many of the *Fliegertruppe*'s 1912 and 1913 *Taube* monoplanes, having deteriorated owing to rough handling and frequent use, were no longer considered safe to fly. After careful inspection, 55 older *Taube* monoplanes were written-off at the end of June 1914. To maintain the *Fliegertruppe*'s strength during the hectic preparation for war, the army office ordered 220 replacement aircraft composed of 184 biplanes from six companies and 36 Gotha *Taube* monoplanes, an improved version (LE 3) at the time regarded among the best in its class. The small number ordered was another indication that the *Taube* was nearing the end of its military usefulness.

The *Taube* at war

In the early weeks of hostilities when aircraft were flown from unprepared airfields under harsh conditions, the wastage proved to be far greater than anticipated. Frontline units could not get enough aircraft and the German aircraft industry was hard pressed to meet the demand. Rather than incur delays by switching over to biplane production, the *Fliegertruppe* had little choice but to give established *Taube* manufacturers add-on production orders for an estimated total of 228 *Taube* monoplanes. Documentation regarding individual production totals in the year 1914 is sparse. *Table 1* shows the breakdown of purchases and *Table 3* shows the frontline inventory of the various *Taube* monoplanes, as well as the Fokker and Pfalz A-type monoplanes. What stands out in *Table 3* is the low number of Rumpler *Taube* monoplanes at the Front in comparison to aircraft of other manufacturers.

That the *Taube*, among other aircraft, contributed to the timely reconnaissance at Tannenberg and the Marne fighting is undisputed but overrated considering that biplanes also participated, and these possessed superior performance and flight characteristics. The *Taube*'s 'high drag, low rate of climb and glide ratio, coupled with insufficient load-carrying ability' and a low operational ceiling made it a liability in battle, especially compared to the biplane. By late 1914, there was no question that the *Taube*'s fleeting military career was finished. Not generally appreciated is the fact that the Austro-Hungarian Army had recognized this important truth as early as 1912 - the year the last military *Taube* was purchased by the *Luftfahrtruppe* - at a time when the German love affair with the *Taube* had just begun to blossom.[29]



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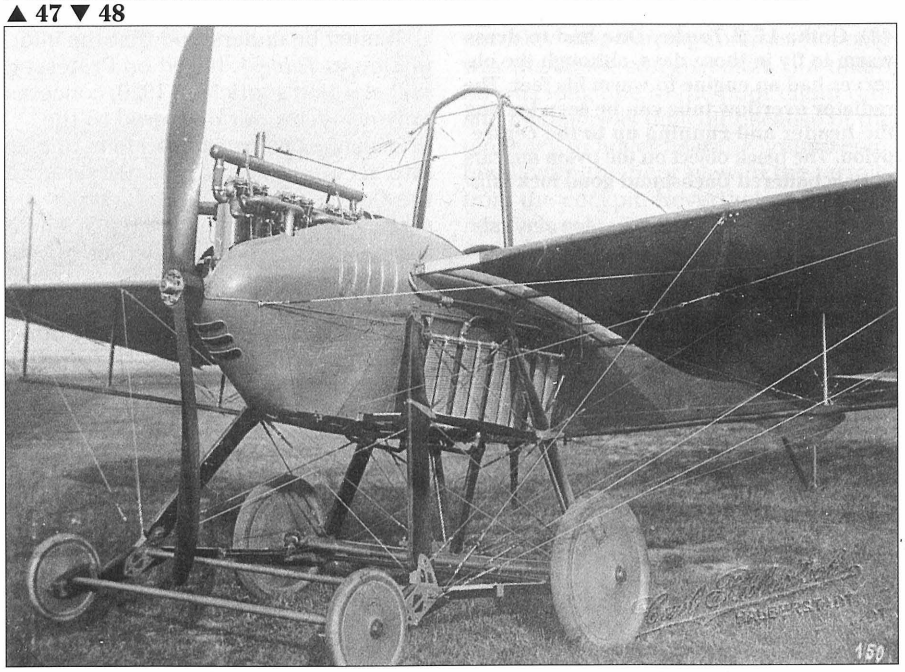


An appraisal

Since the *Taube* patents were valid in most European countries except Germany, Etrich threatened to take legal action (by confiscating the aircraft) against any pilot who flew a non-Etrich *Taube* outside Germany, effectively limiting German *Taube* pilots to flying competitions held in Denmark, Sweden and Norway where patents had not been applied for.[30] It is significant that in the countries where Etrich's patent was recognized the *Taube* failed to make any headway at all. In fact, a total of only two licenced builders, both in France, have been identified and these quickly joined the scores of dashed hopes that littered France's dustbin of aeronautical innovation. Other than Austria-Hungary and Germany, the *Taube* never did catch on as a business proposition and this, combined with the German patent court's dismissal of the *Taube* patents, must have been a crushing blow to Etrich's hopes and aspirations.

In October 1913, an aeronautical journal, bemoaning the lack of innovation in the development of monoplanes, had this to say about the contemporary

HALBERSTADT

47 and 48). **The *Halberstadt Flugzeugwerke* opened one of the first German flying schools to train military pilots in May 1912. The enterprise required a number of *Taube* monoplanes for primary flight training and some of these were built by Halberstadt. The massive four-wheeled undercarriage of the Halberstadt *Taube* assured a safe landing even for the most ham-handed pilot. Power was supplied by a 75/100-hp Mercedes engine.**

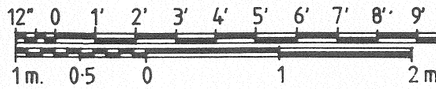
49). **This in-flight view of the ponderous, four-wheeled Halberstadt *Taube* gives a fine impression of the typical *Taube* wing and tail layout. With a good head wind, the top speed would be some 50-60 kilometres an hour.**

50). **A sudden carburretor flash fire provides an inside view of the triangular fuselage of the Halberstadt *Taube* (Works No. 43). The military insignia shows that it was obviously a wartime machine.**

51). **The connected controls seen under the fuselage on this Halberstadt *Taube* (Works No.47) indicate that it was used for dual-control instruction. Here the engine was a 75-hp Mercedes.**

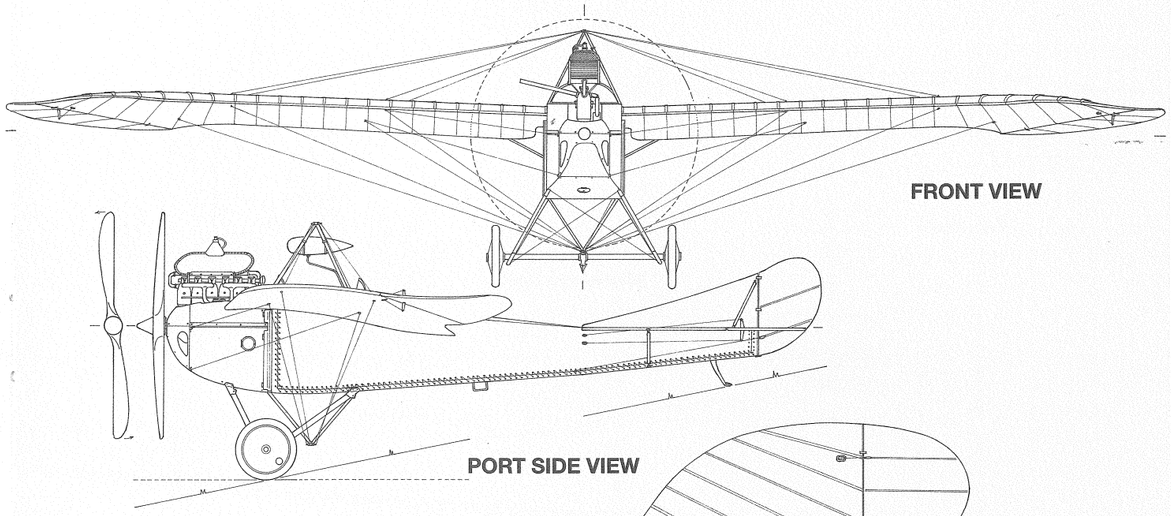
52). **A small iron cross insignia and the school identification 'No.9' can be seen on the tail of this Halberstadt *Taube* photographed in front of the company flight hangars.**

RUMPLER *TAUBE* 4C



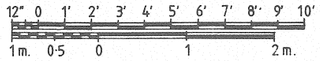
1:48 SCALE DRAWING

UNDERSIDE VIEW



FRONT VIEW

PORT SIDE VIEW



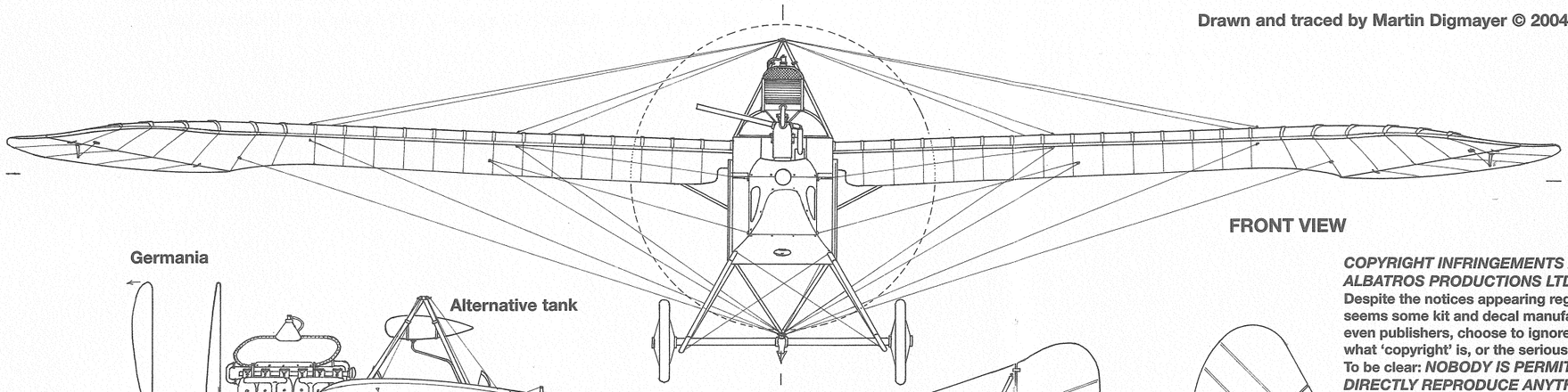
1:72 SCALE DRAWINGS

RUMPLER *TAUBE* 4C

PLAN VIEW

STARBOARD SIDE VIEW

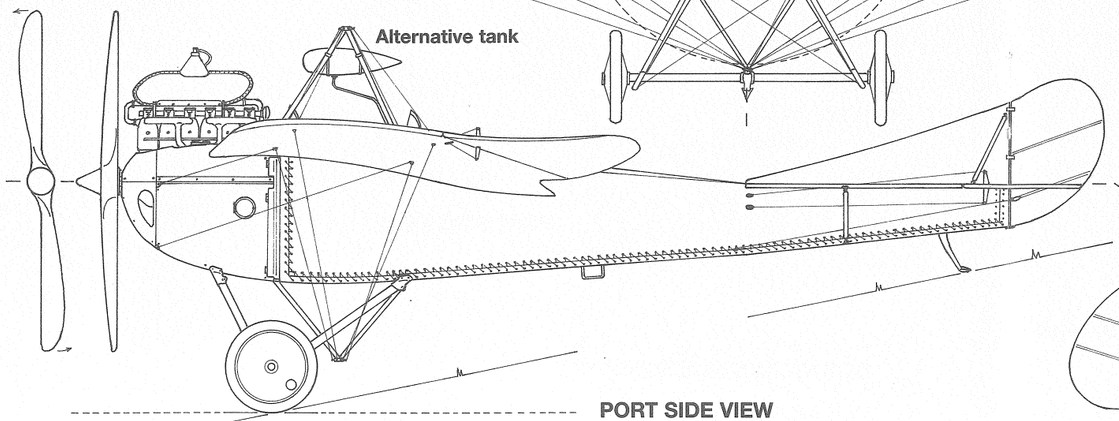
FUSELAGE SECTIONS



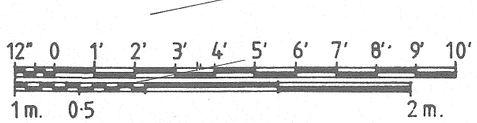
FRONT VIEW

Germania

Alternative tank

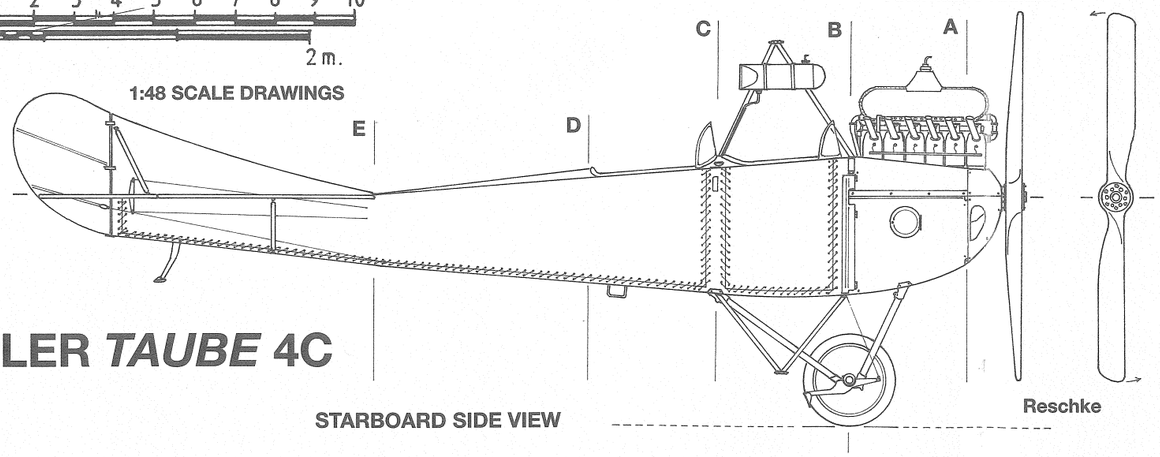


PORT SIDE VIEW



1:48 SCALE DRAWINGS

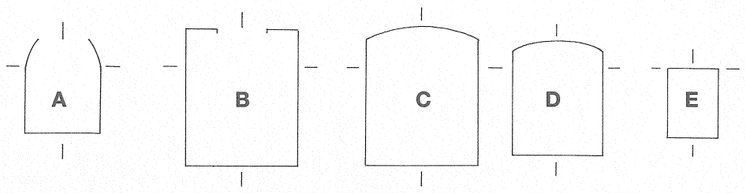
Alternative radiator

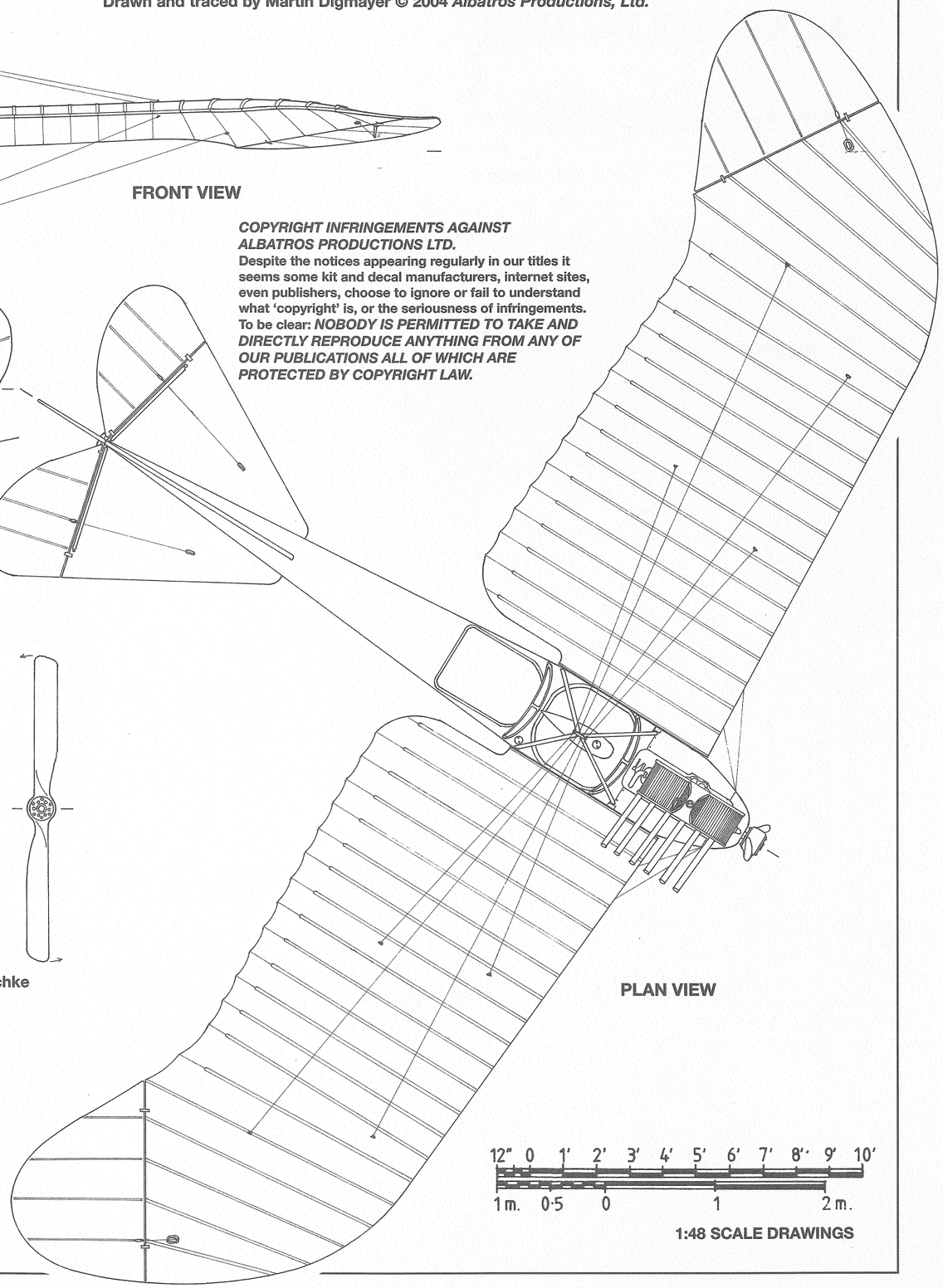


RUMPLER *TAUBE* 4C

STARBOARD SIDE VIEW

SECTIONS





PLAN VIEW

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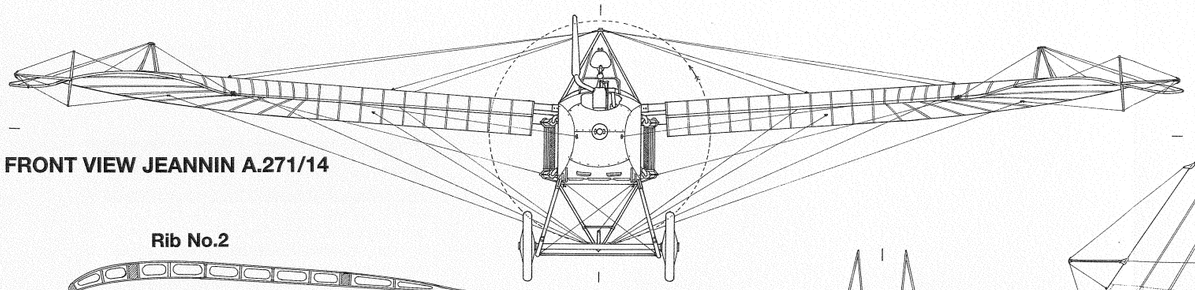
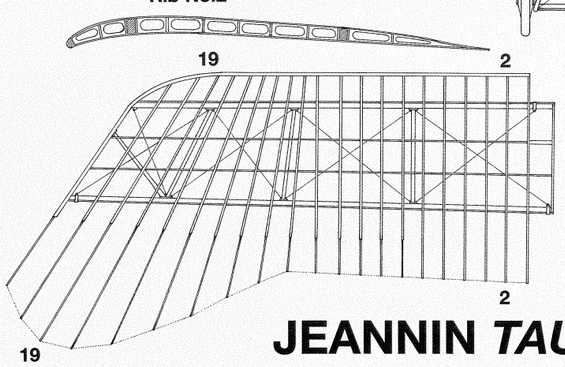
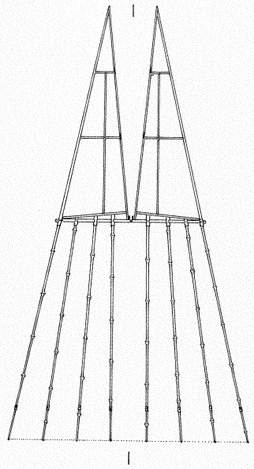


FRONT VIEW JEANNIN A.271/14

Rib No.2



WING/TAIL STRUCTURES



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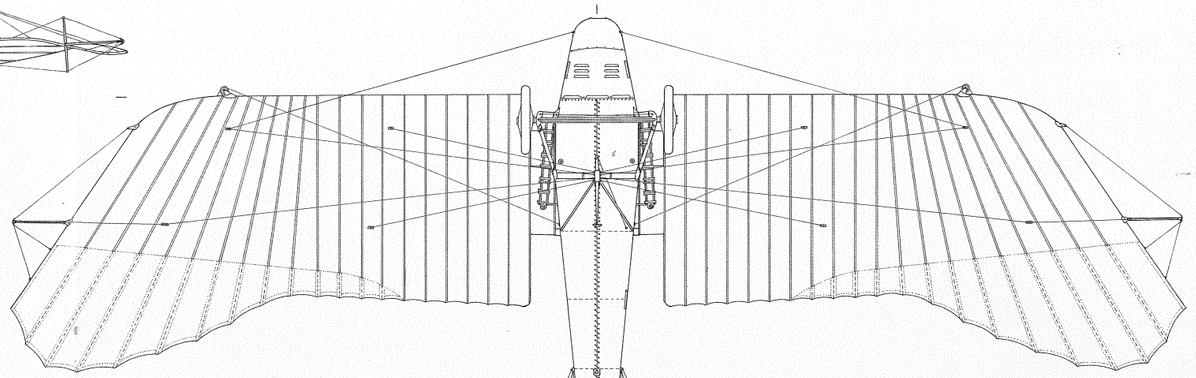
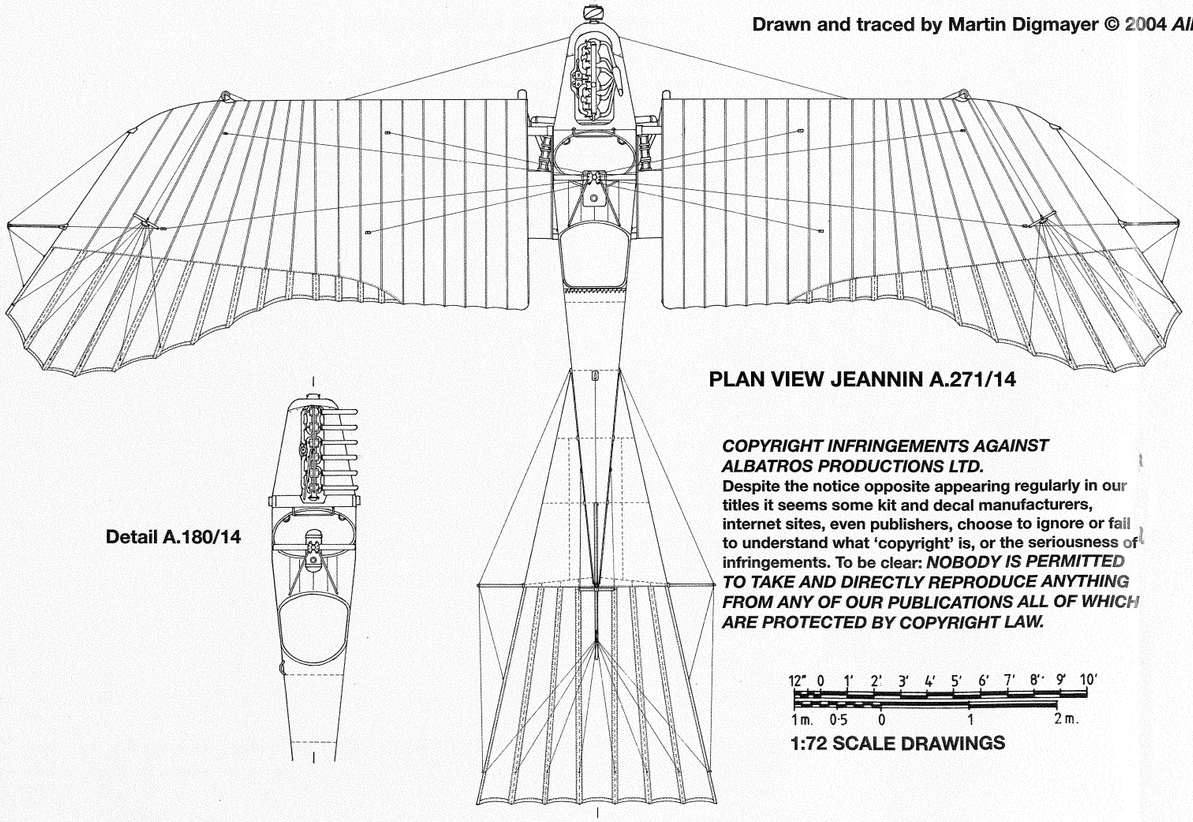
JEANNIN *TAUBE*



UNDERSIDE VIEW



PLAN VIEW JEANNIN A.271/14

Detail A.180/14

1:72 SCALE DRAWINGS

UNDERSIDE VIEW

RUMPLER *TAUBE* 4C

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JEANNIN *TAUBE*

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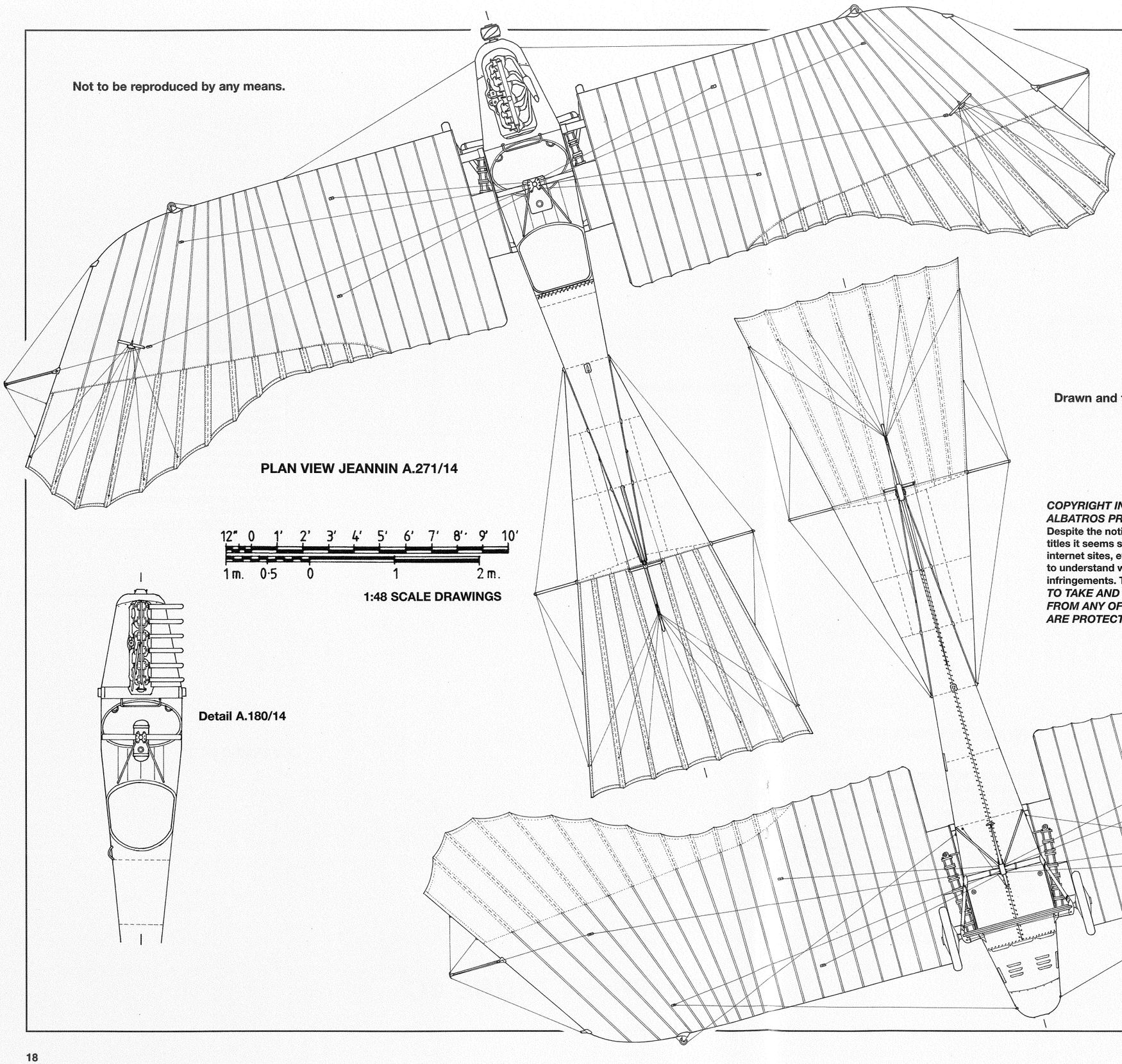

PLAN VIEW JEANNIN A.271/14

1:48 SCALE DRAWINGS

Detail A.180/14

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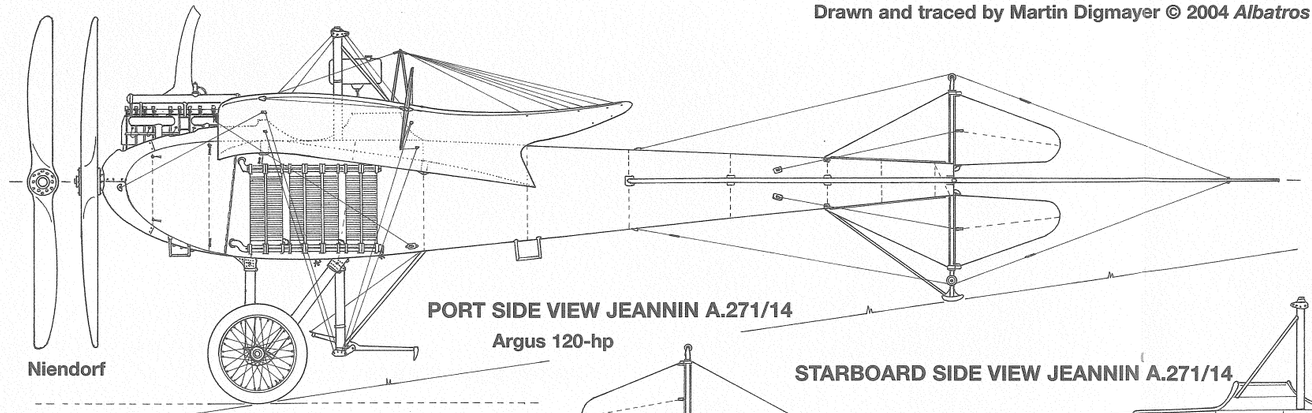
UNDERSIDE VIEW JEANNIN A.271/14



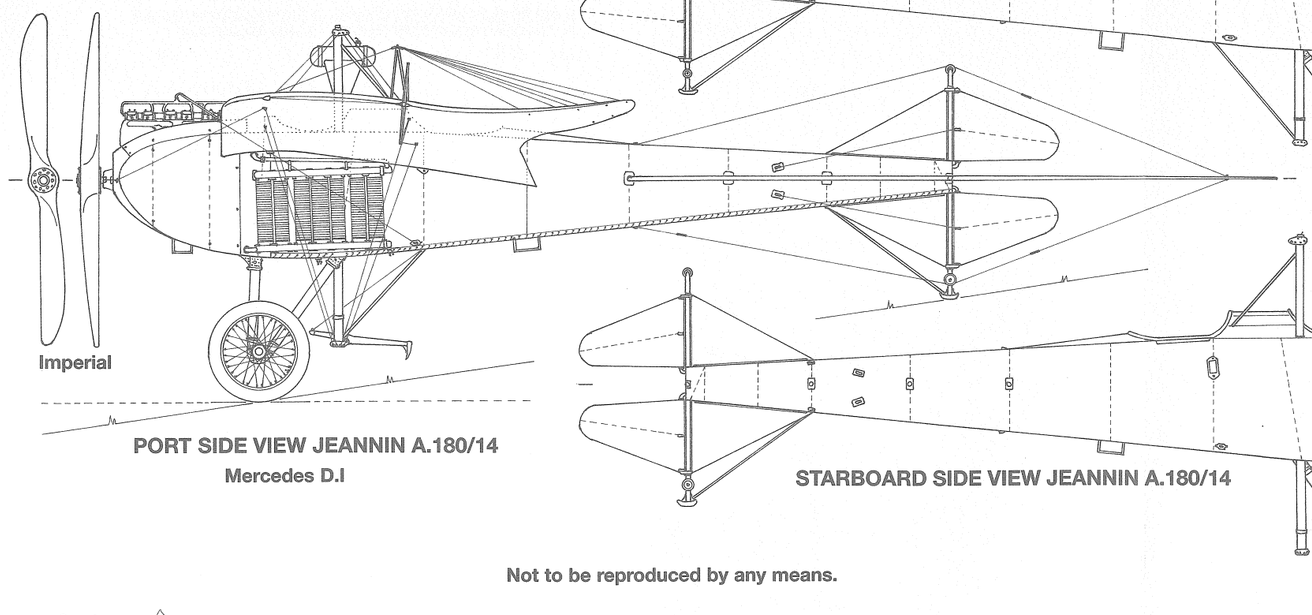
Niendorf

PORT SIDE VIEW JEANNIN A.271/14

Argus 120-hp

STARBOARD SIDE VIEW JEANNIN A.271/14

1:48 SCALE DRAWINGS

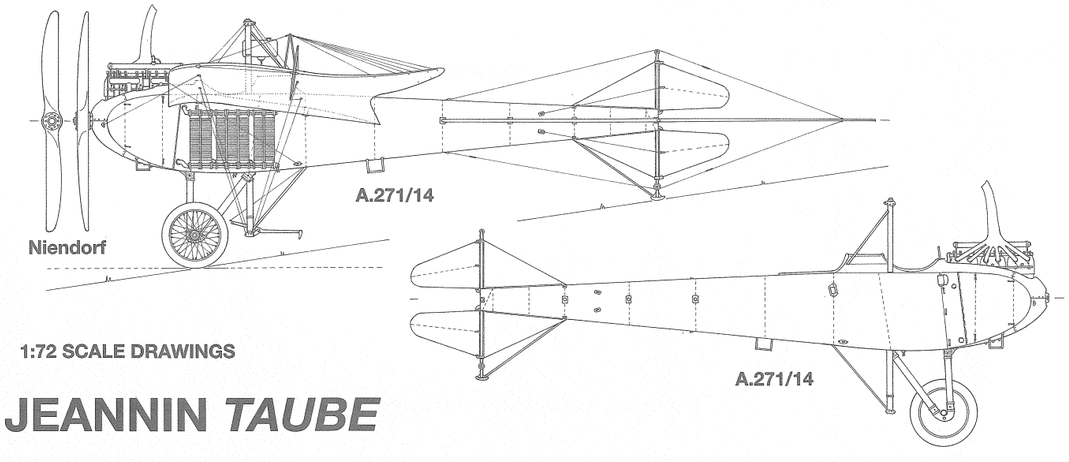


Imperial

PORT SIDE VIEW JEANNIN A.180/14

Mercedes D.I

STARBOARD SIDE VIEW JEANNIN A.180/14



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A.271/14

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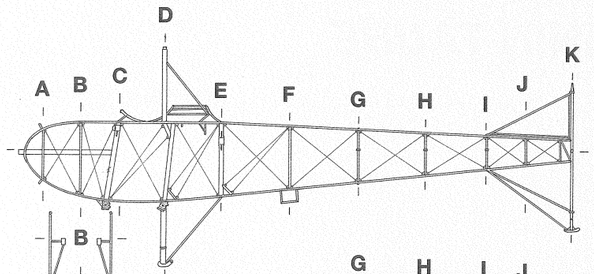
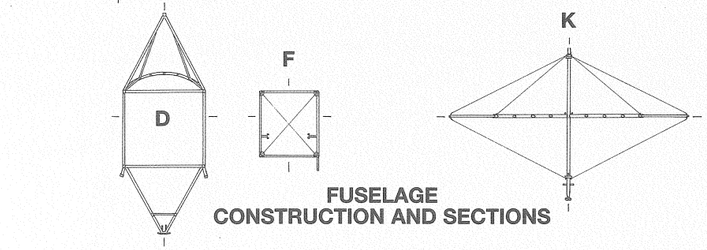
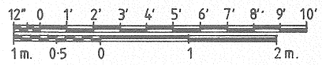
1:72 SCALE DRAWINGS

JEANNIN *TAUBE*





FUSELAGE
CONSTRUCTION AND SECTIONS



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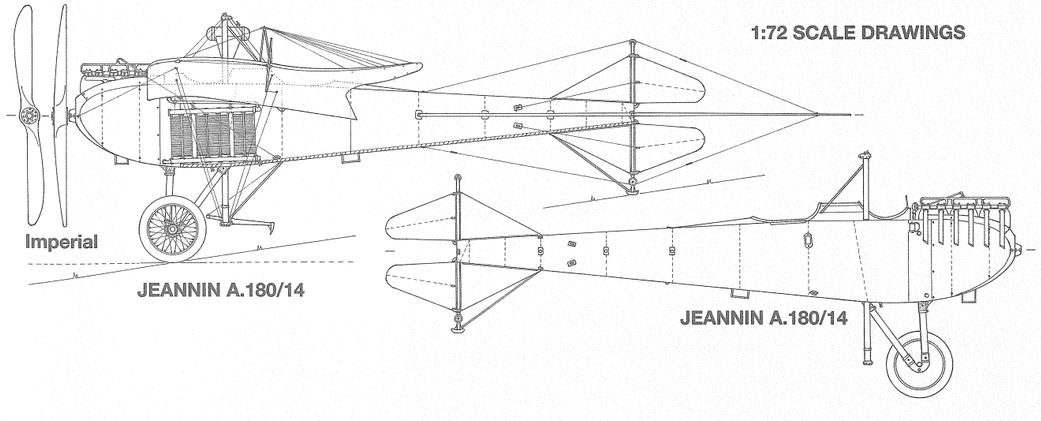


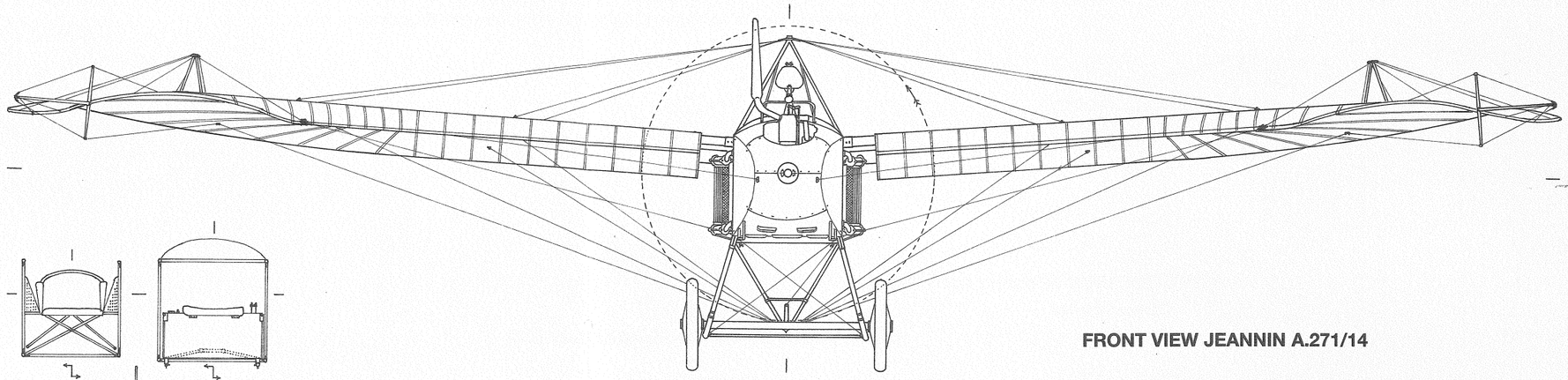
Imperial

JEANNIN A.180/14

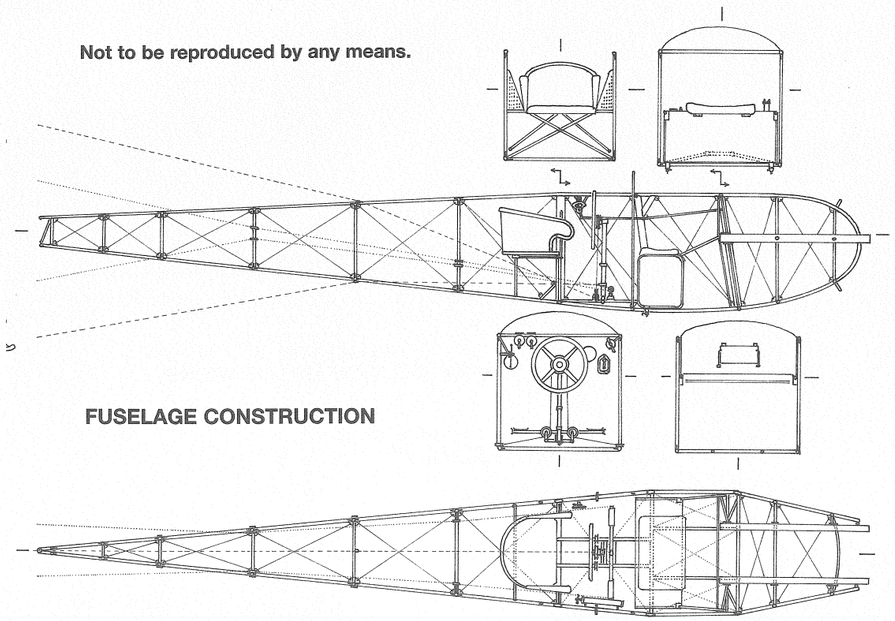
1:72 SCALE DRAWINGS

JEANNIN A.180/14

JEANNIN *TAUBE*



FRONT VIEW JEANNIN A.271/14



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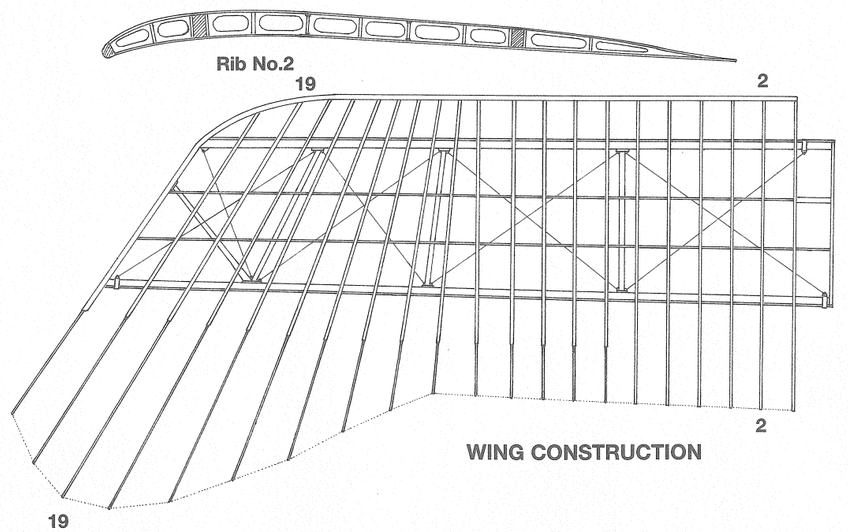

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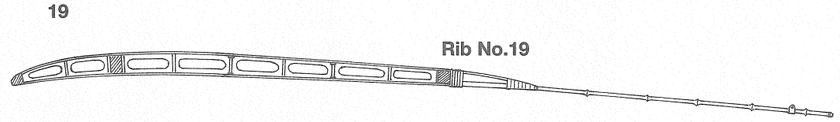

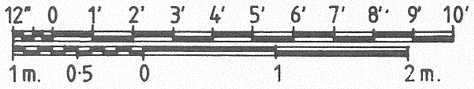

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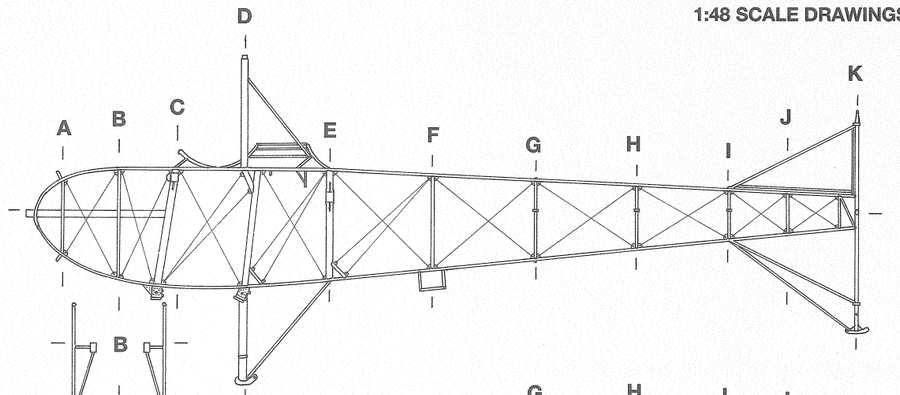

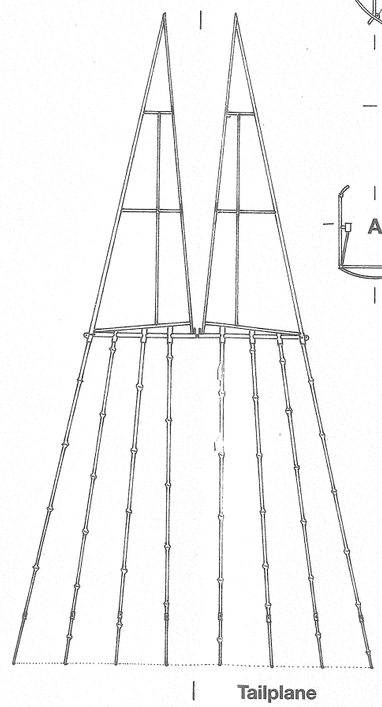

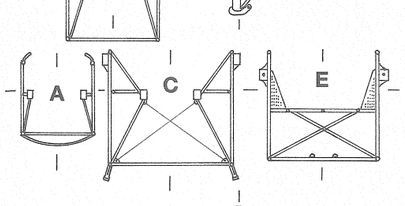

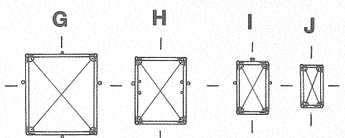

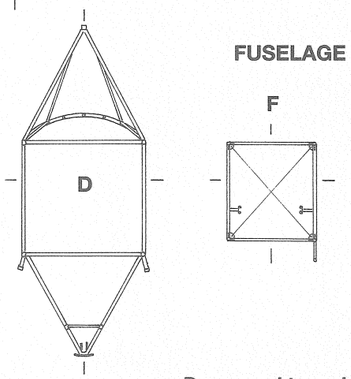

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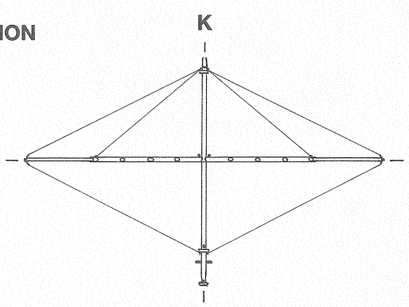

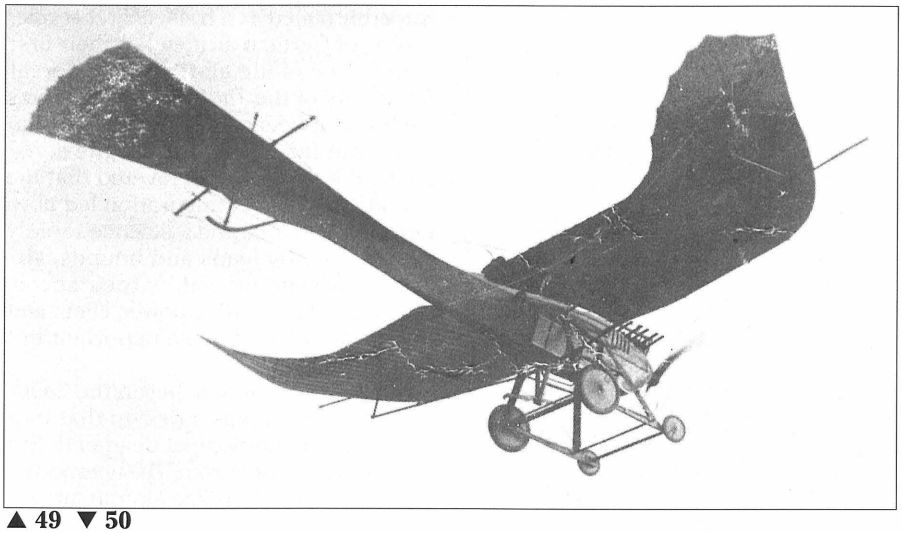

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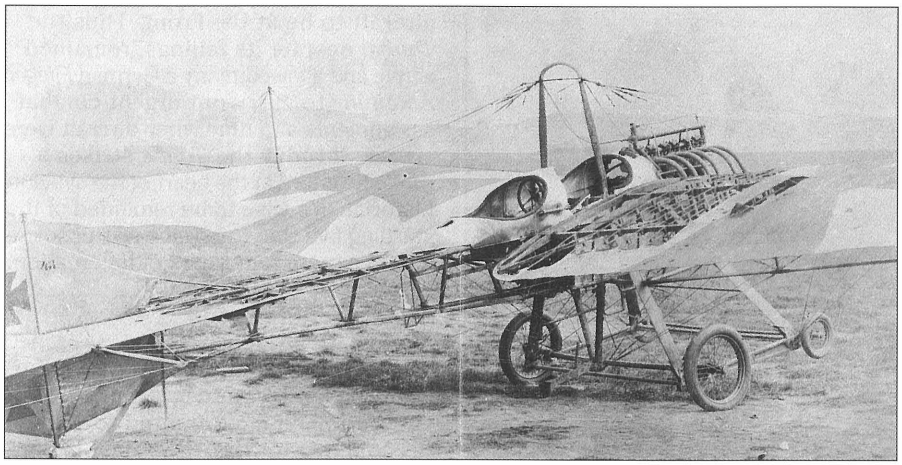

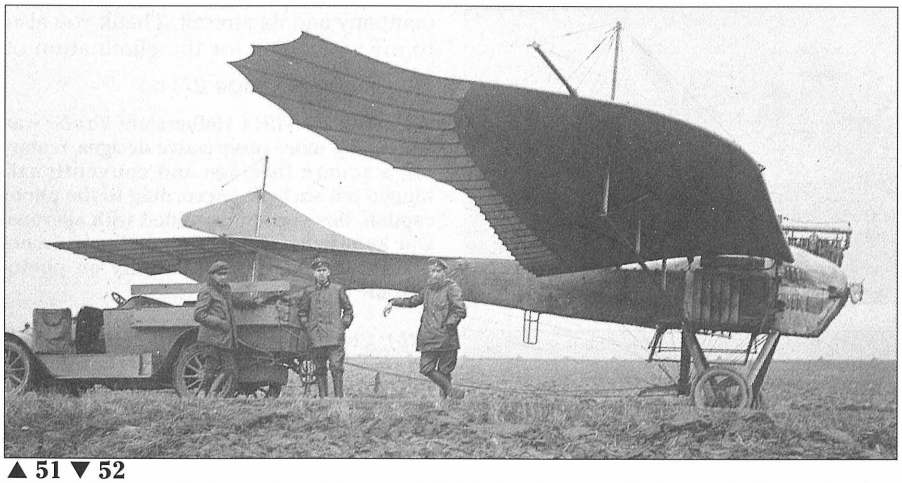

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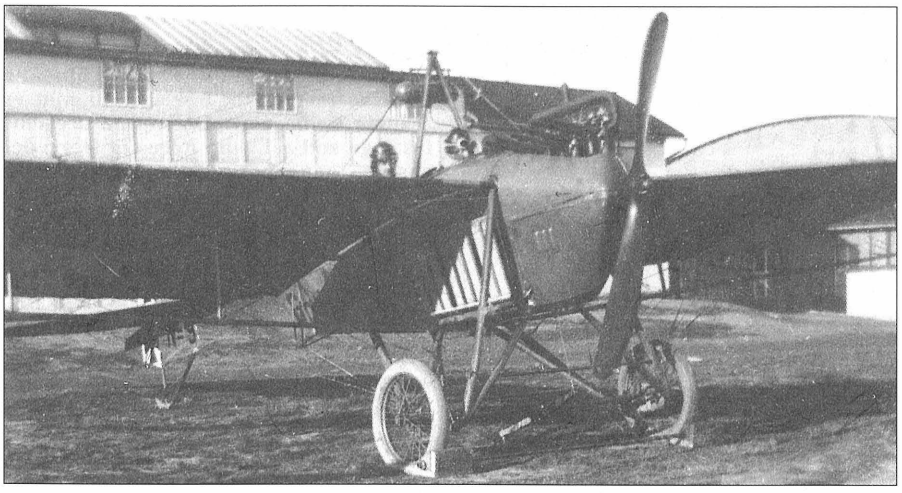


situation: 'In Germany monoplanes are almost exclusively built as *Taube* types. Owing the nullification of the Etrich patents and because the war office has purchased hardly any other monoplanes during the course of the year, a great many German companies have begun the manufacture of *Taube* aircraft.'(31) The *Fliegertruppe* could have benefited from the lesson learned by the Austro-Hungarian *Luftfahrtruppe*, which by 1912 had demoted the *Taube* to training service and then only on a most rudimentary level.

On the other hand the *Fliegertruppe* command was not totally unaware of the technical parameters. As early as 17 January 1914, a director of the Kondor company seeking financial support for his new *Taube* was informed by General von Haenisch, general-inspector of military transportation, that:

> 'the military would only provide financial support if Kondor were to produce a military biplane of the same type presently in service. In addition the *Fliegertruppe* was interested in a fast monoplane powered by a rotary engine. To stick further monies into the production of *Taube* monoplanes was regarded as impractical.'

In a meeting with Professor Hugo Junkers on 3 July 1915 seeking support for the development of a modern, all-metal monoplane, *Hauptmann Freiherr* von Thüna, a leading *Idflieg* officer had this to say about the *Taube* situation. According to Junkers:

> '(Thüna) did not share the opinion of all the other gentlemen in the military establishment that the monoplane should be absolutely condemned. This conviction arose because almost all German companies chose the *Taube* configuration for their monoplane, which possessed a multitude of serious faults: high aerodynamic drag, poor climb, poor glide and minimal utility (load carrying ability). It is because of the *Taube* - against which Thüna has fought for years - that the development of a good monoplane, for example such the French have, has been made impossible.'

Thüna perhaps forgot the excellent Fokker monoplanes powered a rotary engine (types M 5 and M 8). Just arriving on the scene, these were only luminous stars in the A-type (monoplane) firmament that would soon mutate into the armed and dangerous Fokker monoplane fighters changing the nature of air combat forever.

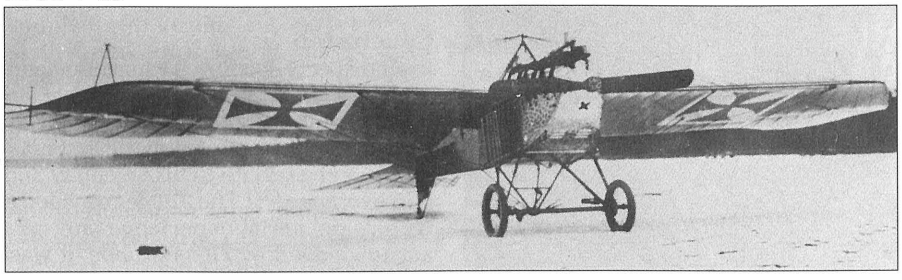
Conclusion

In all respects, Igo Etrich's invention and perfection of an automatically stable aircraft that literally flew by itself was an engineering achievement of the first magnitude and a tribute to his ingenuity and perseverance.(32) The *Taube* provided a truly 'safe' aerial experience and, as acknowledged by *Fliegertruppe*, it was

▲ 52a

▲ 52b ▼ 53

▲ 54 ▼ 55



'superbly suited as a trainer.' In that role, scores of German airmen got their first experience of life aloft. The universal popularity of the *Taube* in Germany was such that it became a cultural phenomenon. But for all its renown, the aeronautical world soon discovered that the *Zanonia*-derived configuration led nowhere. With aeronautical science rapidly progressing by leaps and bounds, aircraft now were judged by their speed, manoeuvrability, lifting power, climb and duration - with safety an important but equal criterion.

By the time the war began the *Taube* was 'frozen' - it was a design that had reached a technological dead-end. But there was one last hurrah. The unexpected high wastage of frontline aircraft and ensuing shortage required every available aircraft to be at the Front. Thus the *Taube*, despite its failings, remained active and allowed many a German *Flieger Abteilung* to carry out urgent combat assignments at a time when aircraft were scarce. If today the *Taube* strikes a romantic chord in the heart of the aviation historian, it's wise to be reminded of the startling fact that the *Taube* was obsolete within a mere four years of its creation.

Acknowledgements

I should like to thank Dr. Dieter Gröschel, Leo Opdycke and Reinhard Zankl for their valuable comments and helpful suggestions. I am indebted to Guido Rissmann-Ottow for the valuable contribution regarding the elusive Kondor company and its aircraft. Thank you also to my wife Lilian for the elimination of

Continued on page 27:

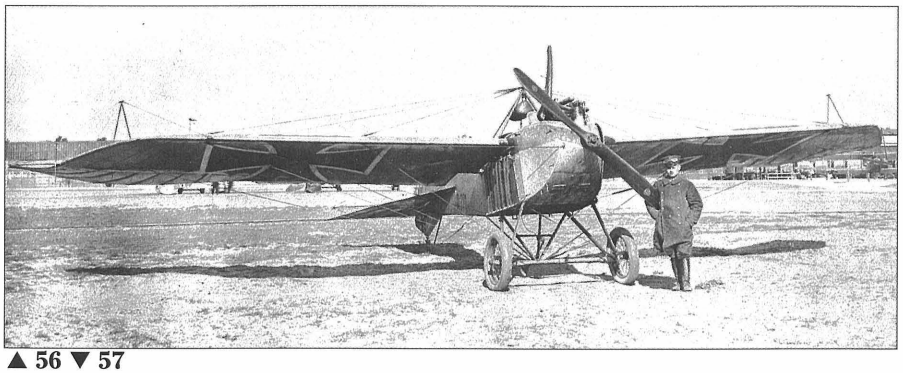
52a). **This late-1914 Halberstadt *Taube* was among the more progressive designs, featuring a square fuselage and conventional, hinged tail surfaces. According to the photo caption, this version was fitted with ailerons. Our knowledge of Halberstadt *Taube* monoplanes depends almost entirely on photographic evidence.**

52b). **Close up of the modern Halberstadt *Taube* shows a robust four-strut pylon, a fully-cowled 100/120-hp Mercedes engine and a simplified undercarriage. This example, designated A.164/14, was very likely one of the five machines at the Front in February-April 1915.**

JEANNIN

53). **Jeannin *Stahltaube* with 'Köln' and '1914' marked on the fuselage. All military Jeannin *Taube* monoplanes had a steel-tube fuselage and a 120-hp Argus or Mercedes engine. Tannenberg pilots who had flown the lighter Rumpler complained that the heavier Jeannin *Taube* lacked the ability to climb and glide and was very 'wobbly', perhaps an indication that it had more facile manoeuvrability.**

54 and 55). **Jeannin *Taube* A.172/14 in front of the large hangar complex at Adlershof in the winter of 1914. One of the more modern *Taube* monoplanes, the Jeannin product, well-designed, robust and powerful, was flown primarily on the Eastern Front and participated in the Tannenberg battle.**



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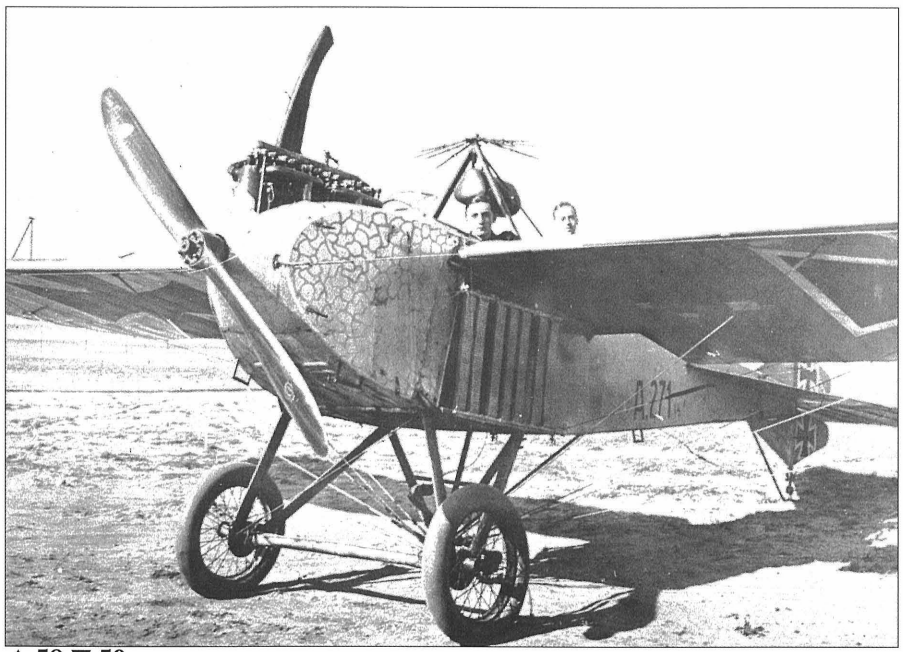

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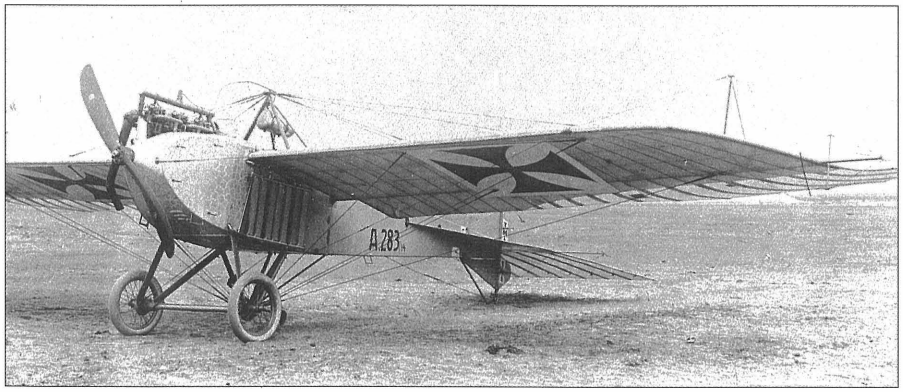

grammatical errors and sloppy syntax. All photographs are from my collection. The opinions expressed and any errors are mine alone. I wish to refrain from commenting on aircraft markings or camouflage colours since this is the responsibility of editor Ray Rimell.

Footnotes

[1] Etrich's early powered aircraft were named after common birds. For a general history see Hanus Salz, *Igo Etrich Leben und Werk*, Flugzeug

***56). Idflieg* test pilot Emil Wendler with the Jeannin *Taube* A.271/14 powered by a 120-hp Argus engine. That this particular aircraft was subject of the standard type-test procedure in mid-1915 seems odd since by then the type was militarily obsolete.**

***57).* Jeannin *Taube* A.271/14 with test pilot Wendler aboard. Notable are the step and handholds on both cockpits, the 18-litre gravity tank, the no-nonsense undercarriage and the heavy wire bracing cables. The inner wing section remains uncovered in order to give the pilot a view of the ground when landing.**

***58).* Another view of Jeannin *Taube* A.271/14 which may have been used as an *Idflieg* communication machine based at Adlershof.**

***59).* Jeannin *Taube* A.283/14 was powered by a 120-hp Mercedes engine. The aluminum engine cowling was lovingly burnished in a decorative pattern by a master craftsman - beautiful to the eye but militarily of no consequence.**

***60).* Posed with three airmen in pre-war leather flight suits, this early Jeannin *Taube* trainer was powered by a 120-hp Mercedes engine fitted with a *Scheitelkühler* (brow radiator). Most unusual is the auxiliary nose wheel to prevent nose-overs.**

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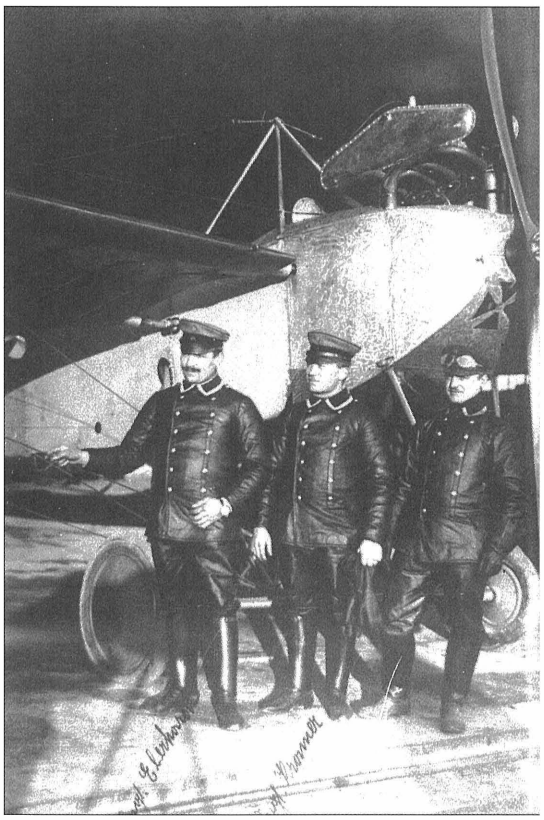

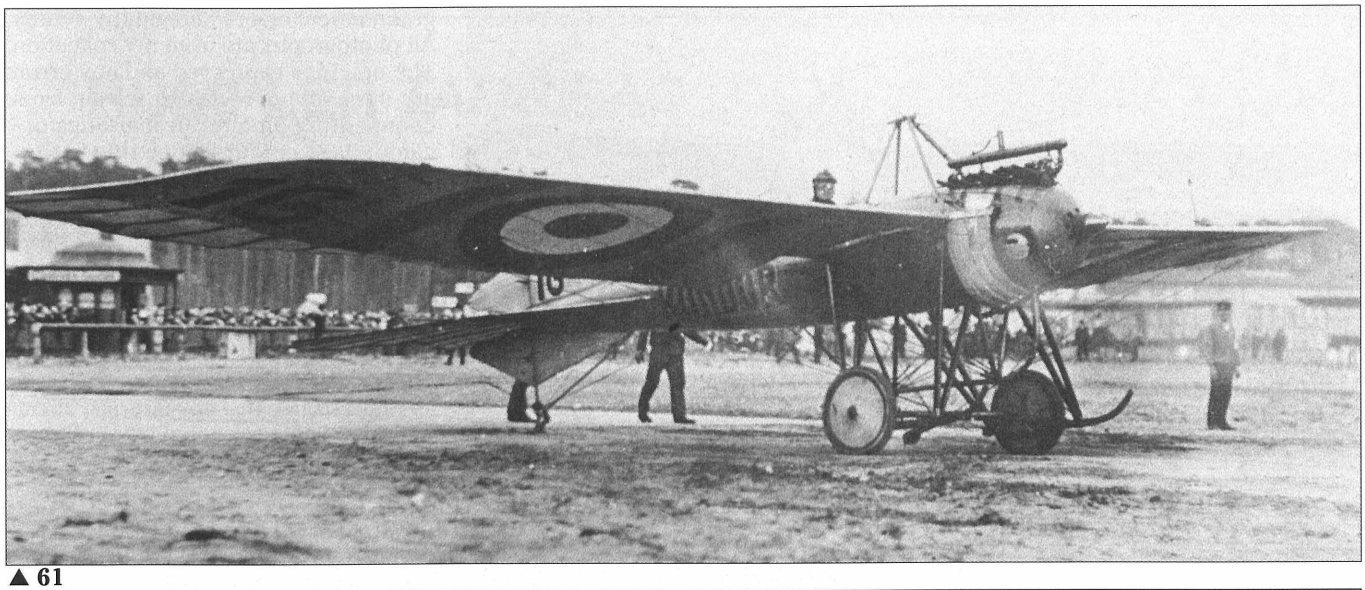

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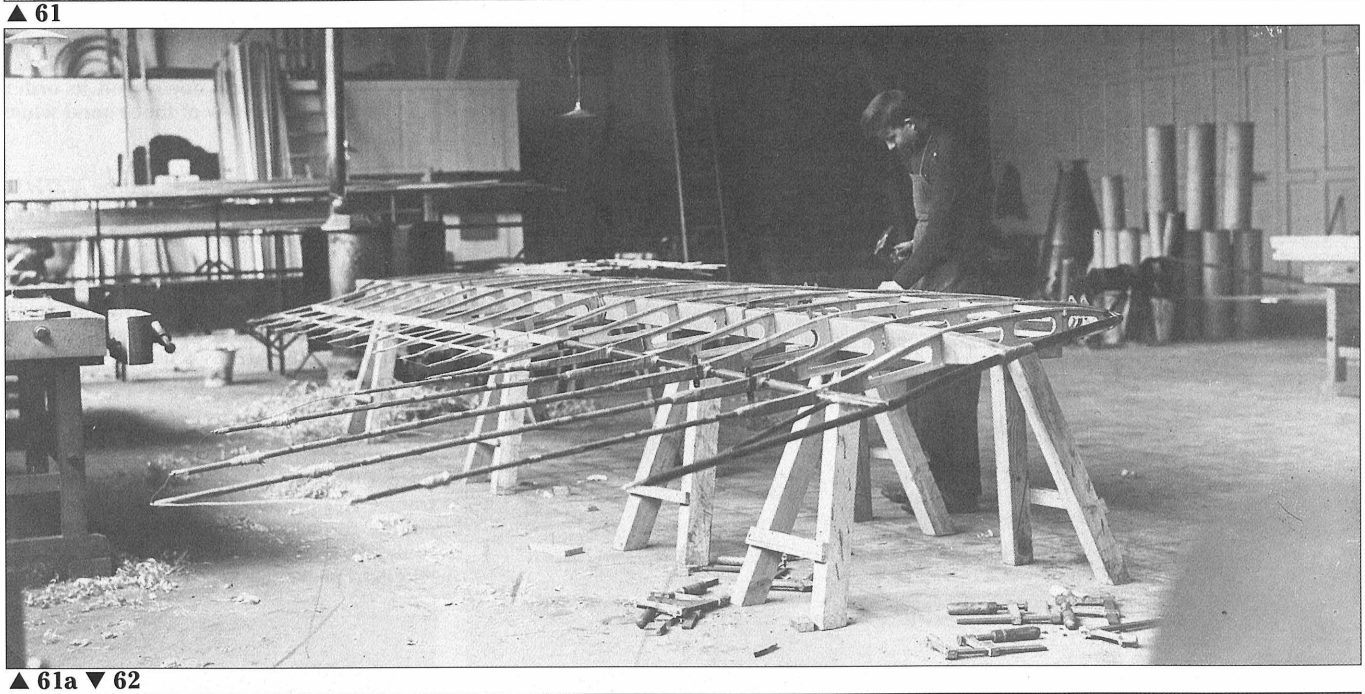

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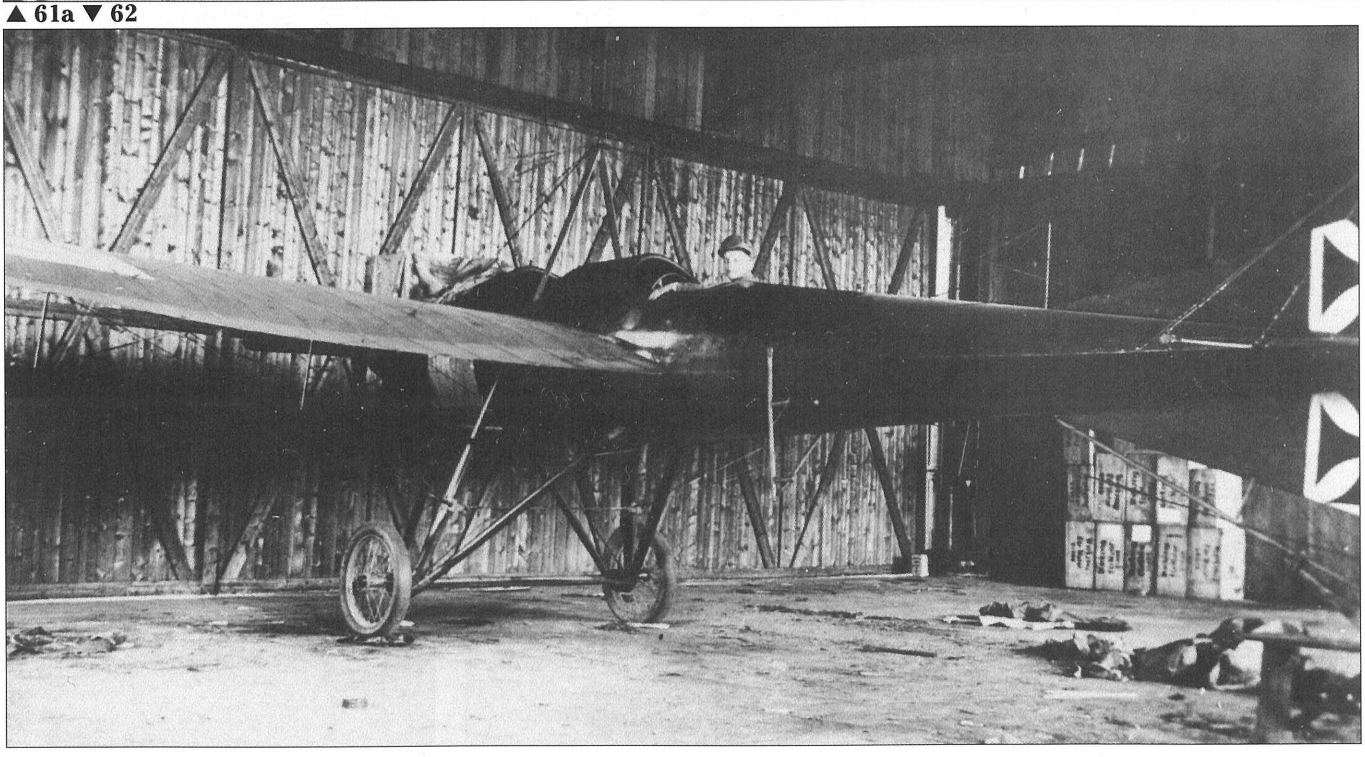

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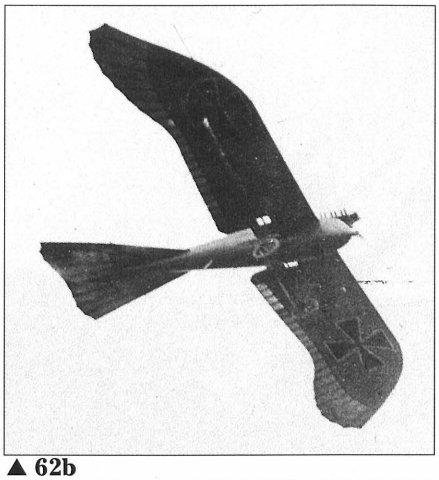

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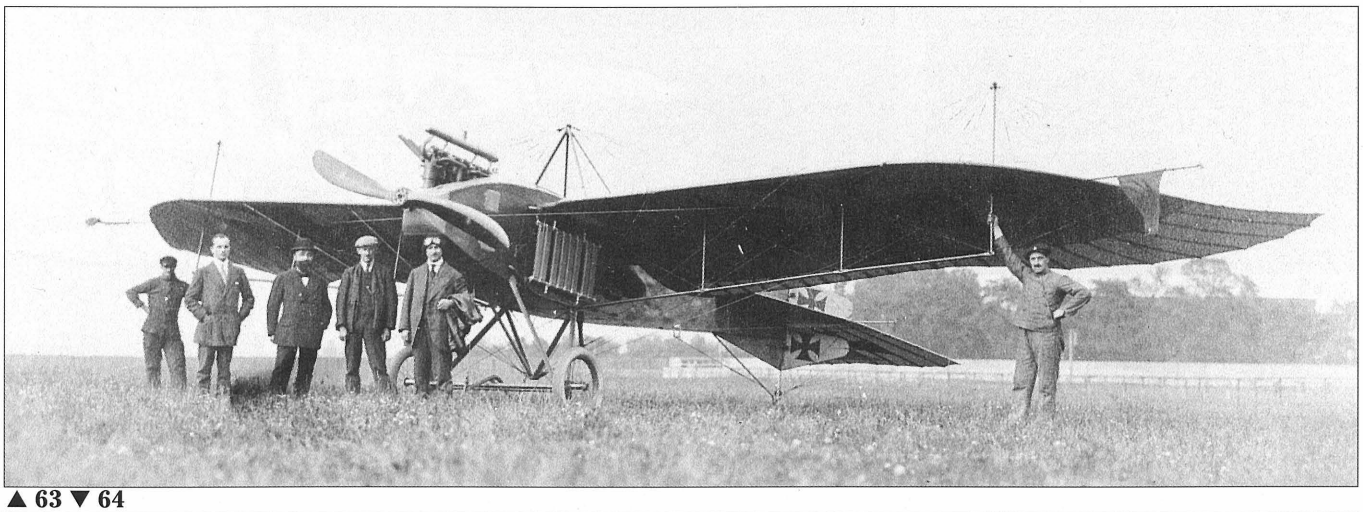

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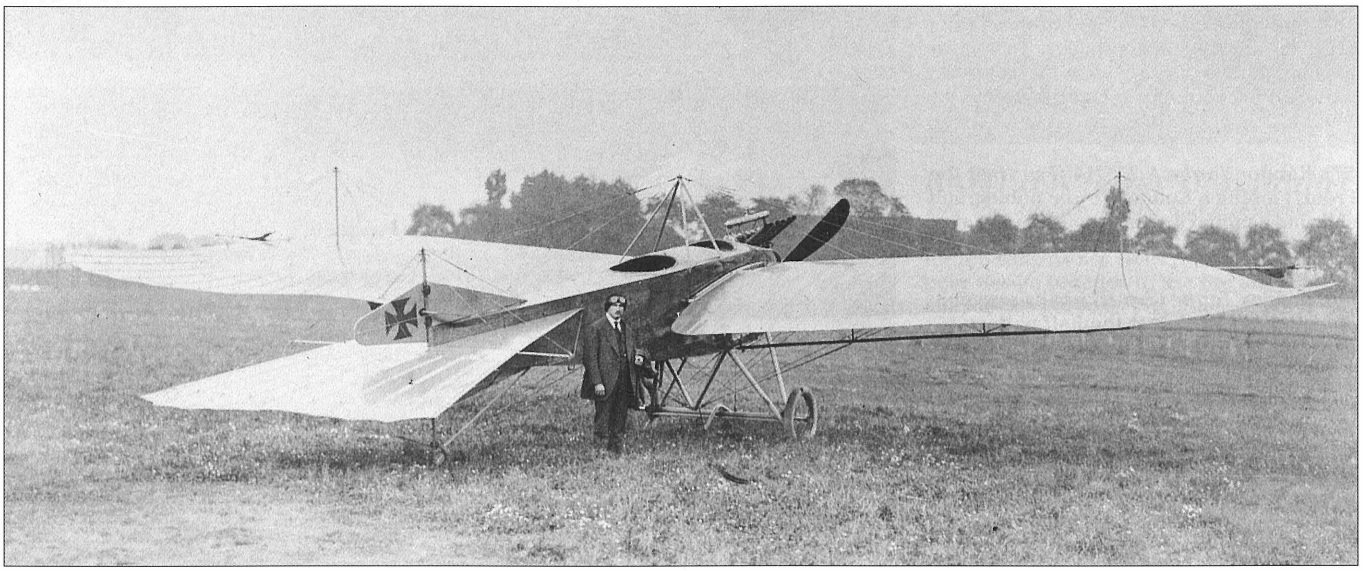


KONDOR

61). The Kondor Flugzeugwerke in Essen began to built *Taube* monoplanes, based on the design of pre-war pilot Joseph Suvelak, in October 1912. Here, a version flown by chief pilot Otto Beck in the annual *Rund um Berlin* competition in August 1913. The 95-hp Mercedes engine was cooled by an unusual radiator that was literally wrapped around the nose. The roundels under the wing had no special meaning other than to identify the machine as a Kondor product

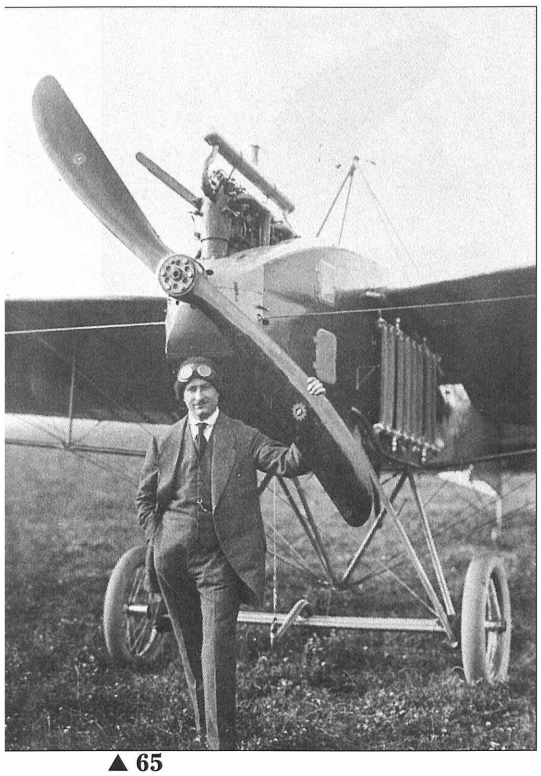
61a). A Kondor Taube wing under assembly shows how the thin, flexible bamboo cane was fitted into the end of the wing ribs.

62). Kondor *Taube* with iron cross markings was probably one of the five examples intended for Spain that were never delivered owing to the outbreak of war. Requisitioned by the *Fliegertruppe*, it too was fitted with an annular nose radiator.

62a). This Kondor *Taube* (number K 14) was flown by chief pilot Otto Beck in the *Dreiecksflug* (triangle flight) of May-June 1914. Compact and well-designed, it featured a plywood fuselage and was powered by a 100-hp Mercedes engine colled by the more-efficient *Scheitelkühler* (brow radiator).

62b). At the beginning of the war Kondor *Taube* (K 14) was requisitioned by the *Fliegertruppe* and was photographed in the air showing off its iron cross insignia.

63 and 64). On 4 September 1914, Kondor presented a new *Taube* (*Typ H*) featuring a rectangular, plywood-covered fuselage to the *Fliegertruppe* who accepted it and ordered 11 additional machines. The four-strut upper cable pylon appeared on late-model *Taube* aircraft. Although the *Taube* appears massive in relation to the bystanders, the wingspan was just shy of 14 metres which was the average wingspan of all *Taube* monoplanes.



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65). Kondor designer and chief pilot Otto Beck shown here with the Kondor *Taube* (*Typ H*) powered by a 100-hp Mercedes engine. The trim fuselage stands in direct contrast to the archaic wing structure, a fact that emphasizes the tremendous influence the *Taube* configuration had upon the aeronautical community.

▲ 66

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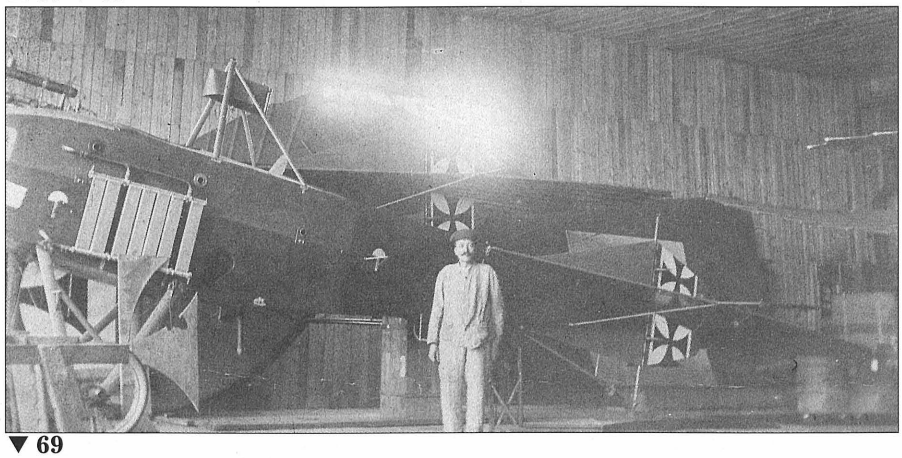
66). Kondor *Taube* (Typ H) in full military array for a family photograph in front of the Kondor hangar. In this view the company name on the roof has been removed by retouching.

67). Kondor *Taube* A.255/14 (*Typ H*) at the Front. Finding a Kondor *Taube* photograph showing a military serial number was a rare event.

68). Kondor *Taube* (*Typ H*) awaits assembly. Sharp eyes will detect the half-pattern for applying the iron cross insignia to the wings.

69). Factory photograph of the Kondor *Taube* (*Typ H*) as delivered to the *Fliegertruppe* in 1915. Power was supplied by a 100-hp Mercedes engine. A small gravity tank is mounted on the upper pylon.



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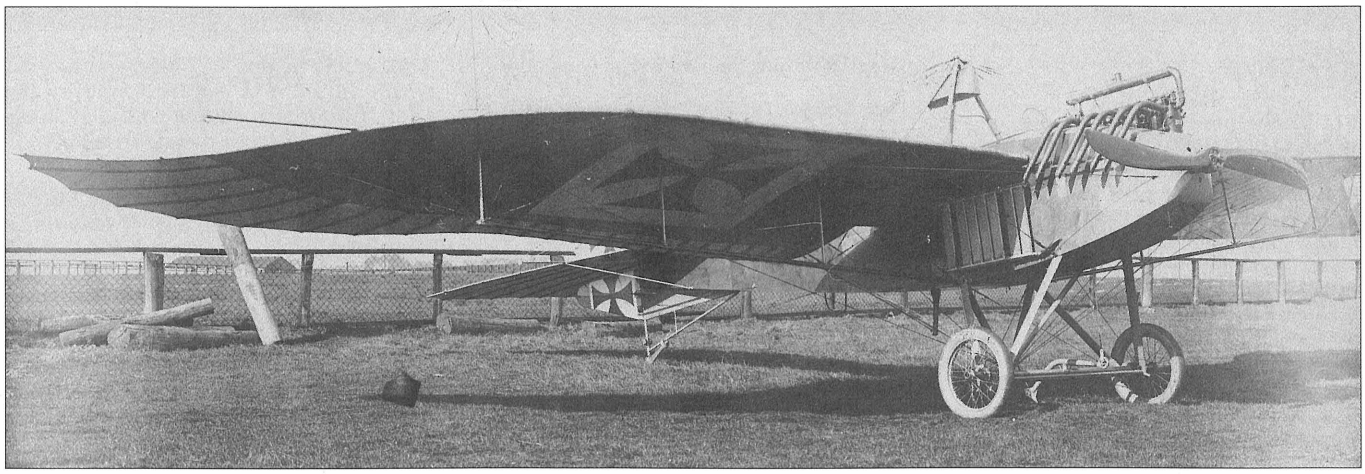

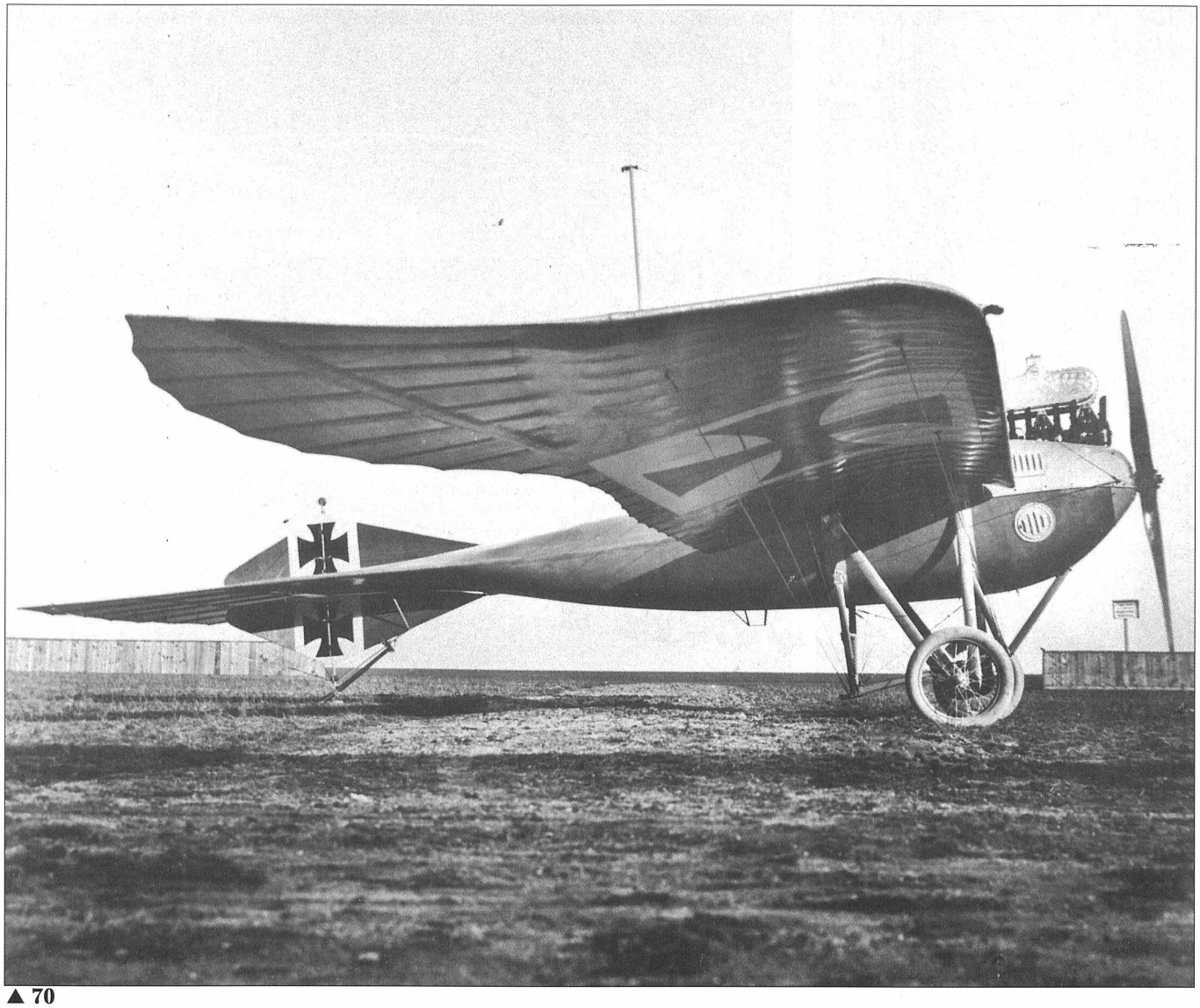

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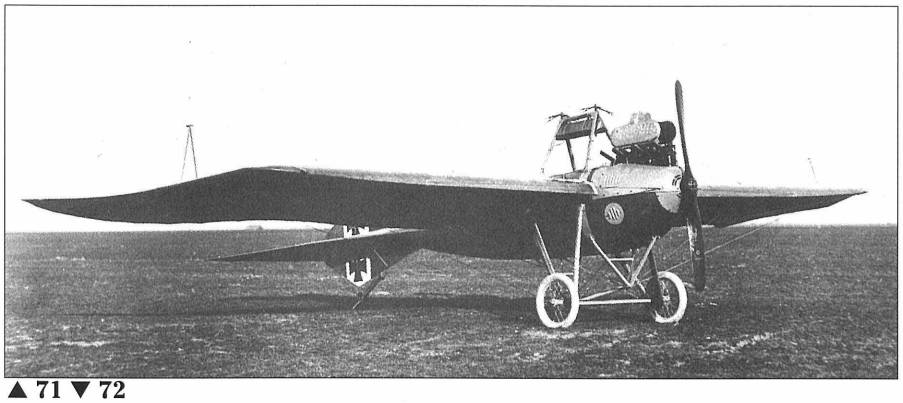

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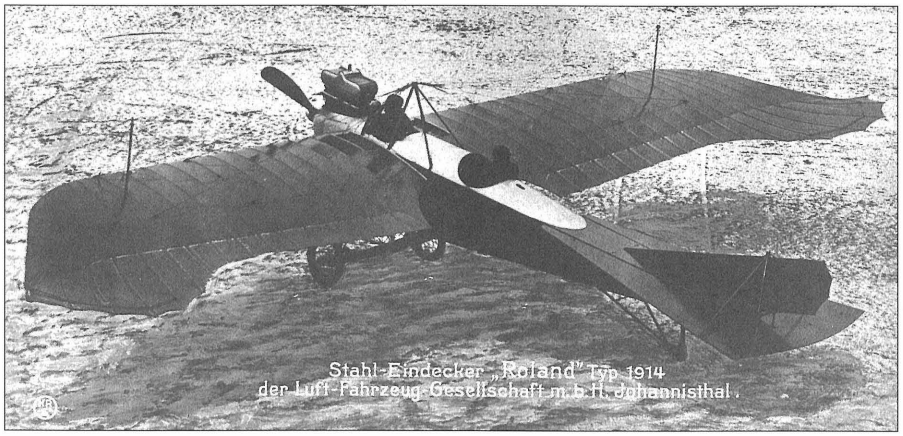


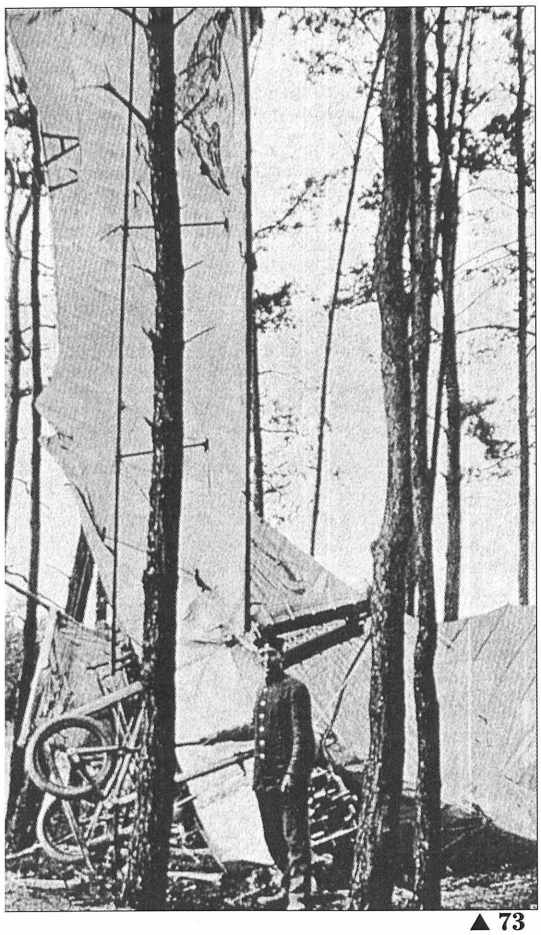
RAHTJEN (later Germania)

70). **The Rahtjen *Taube* had a separate triangular support brace under the fuselage for the wing cables since it was regarded as poor design practice to use the undercarriage for this purpose. What appears to be an aileron hinge is simply a structural member running along the wing. Power was supplied by a six-cylinder Argus engine.**

71). **The Rahtjen *Taube* arrived in early 1915, too late to be of much use to the *Fliegertruppe* and probably was intended as a factory school machine. This rather sleek monoplane was built by the Flugzeugwerke Rahtjen & Co. in Leipzig, later re-named *Germania Flugzeugwerke*. A factory photograph shows four Rahtjen *Taube* monoplanes under construction probably the number that were built.**

ROLAND

72). **The *Luft-Fahrzeug-Gesellschaft* (the former German Wright company that operated under the trademark name of Roland) had little success in selling aircraft to the pre-war *Fliegertruppe* - only two aircraft, one biplane and one *Stahltaube* (A.157/13), were purchased. The beautifully-finished Roland *Stahltaube* shown here may well have been the machine in question. Much of the structure was composed of steel tubing and the rudder and elevator surfaces were hinged.**



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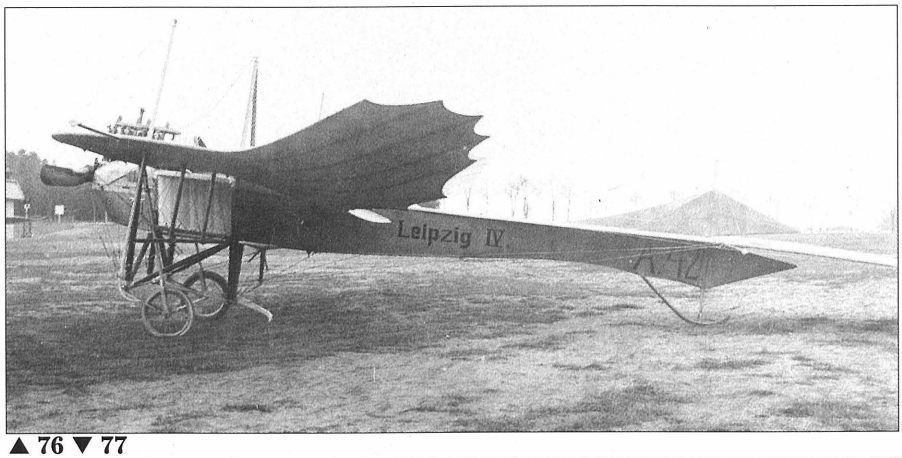

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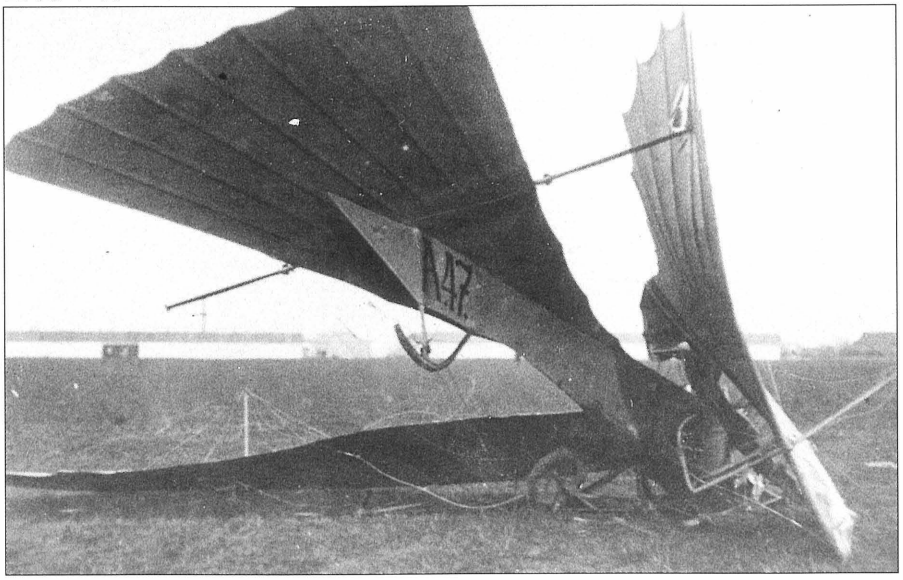


RUMPLER

73). **Here is Germany's first military *Taube*, Rumpler A.1/11, after an encounter with high trees in the vicinity of Döberitz. What is noteworthy is the Prussian eagle insignia (barely visible at the top of the photo) adorning the lower wing surface - perhaps the earliest military identification known, at least in a German aircraft. Just for the record, Rumpler A.1/11 was powered by a four-cylinder 50-hp Austro-Daimler engine, cost M 18,570 and was delivered on 22 March 1911.**

74). **The exposed four-cylinder Argus engine, the undercarriage and turn-over skid are typical of early *Taube* machines. Here a pristine Rumpler A.10/12 shows the forward position of the observer and the wing cut-out for the pilot to provide some view of the terrain when landing.**

75). *Leutnant* Joly's Rumpler A.35/12 basking in the aura of hundreds of awed spectators lining the landing ground at Speyer on 14 October 1912. Such exciting events were unique and always assured a massive turnout of the local citizens.

76). **To support the *National Flug Spende* (National Air Subscription), many German towns sponsored military aircraft. When the citizens of Leipzig purchased their fourth Rumpler *Taube* (A.42/12), it was clearly and proudly labelled *Leipzig* IV. This view gives a good indication of the amount of wash-out required at the wingtips.**

77). **A not uncommon sight. Crashes small and large were frequent owing to the unreliability of the early aircraft engines. Here Rumpler A.47/12 flaunts the broad expanse of its bamboo tail feathers.**

Publikations, Illertissen, 2000.

[2] *Zanonia macrocarpa*, now generally known as *Alsomitra macrocarpa*, is a tropical climber of the gourd family grown in Java. For dimension, area and weight see *Etrich und seine Taube*, Einzelschrift der Kreigswissenschaftlichen Abteilung der Luftwaffe, Wien, 1942, p.14.

[3] Peter Supf, *Das Buch der deutschen Fluggeschichte*, Bd.I, Klemm, Berlin, 1935, p.195-198, and Ahlborn, *Manuskripte und Abhandlungen des Naturwissenschaftlichen Vereins in Hamburg*, Bd.15, 1897. Professor Ahlborn was interested in streamlining and drag effects in air and water. He was a founding member of the Hamburg society for aeronautics.

[4] Supf, p.196. As Ahlborn tells it, Etrich regarded himself as the 'sole inventor' of the *Taube*. Salz does not mention Etrich's 'gentlemen's agreement' as described by Ahlborn.

[5] Supf, p.197.

[6] Salz, p.18-21.

[7] Flug und Motor Technik, 25 April 1910.

[8] For the Taube's military service in Austria-Hungary, see Grosz *et.al. Austro-Hungarian Army Aircraft of World War One*, 2nd ed., FMP, Boulder, 2003.

[9] Salz, p.32.

[10] There is some confusion whether it was an Etrich- or Rumpler-built *Taube*. The authoritative Vorreiter and Rozendaal both state that Etrich sent Illner and a *Taube* to Berlin to appear in the *Flugwoche*. According to Rumpler the *Taube* was built in Berlin and performed the maiden flight on 10 October 1910. Vorreiter, *Jahrbuch der Luftfahrt*, Lehmann, 1911, p. 495; Rosendaal, *Die Taube*, Automobiletechnische Zeitschrift, 1938, p.384; *Die Rumpler Werke A.G.*, Eckstein, Berlin, 1919, p. 26.

[11] Deutsche Luftfahrer Zeitschrift, Nr.22, 1910, p.26.

[12] Salz, p.70.

[13] Luftschau, Nr.17, 10 September 1930.

[14] Flugsport correctly attributed the fatal crash to an Etrich *Taube*. In a letter to Flugsport, Ignaz Etrich (Igo's father), in an attempt to detach the name Etrich from the accident, explained that Sport-Flieger had two *Taube* aircraft, one an Etrich and the other a 'self-built *Sportfliegertaube*.' Curiously he does not state specifically that Michaelis crashed in this aircraft but does claim that no pilot had ever been killed in an 'original' Etrich aircraft. Since the school was dedicated to flying 'original' Etrich *Taube* aircraft, it is difficult to believe the 'self-built *Sportfliegertaube*' differed from the original Etrich design. The Michaelis crash photograph shows the name Etrich boldly emblazoned on the wing. Flugsport, No.12, 1913, p.425, p.492.

[15] for Liebau production see Salz p.79 and p.99.

[16] In addition to the two Etrich *Taube* aircraft, the Bavarian air service had the following *Taube* monoplanes: five Albatros, one Rumpler and one Otto. I am indebted to Reinhard Zankl for this information.

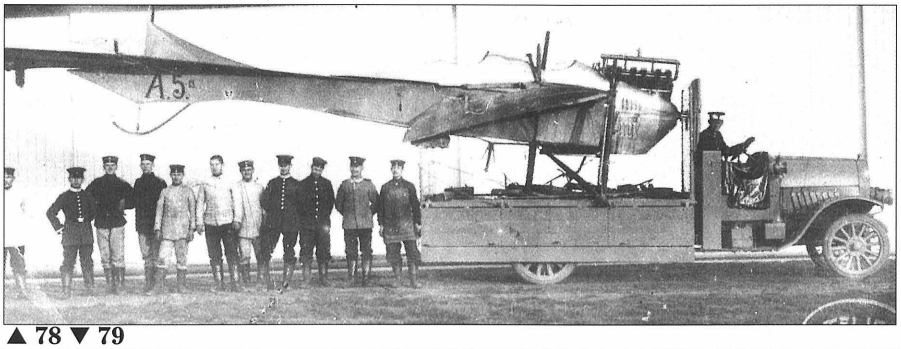
[17] Motorwagen, 30 April 1914; also Salz, p.100-101. The Liebau-built biplanes are almost impossible to differentiate from the original Albatros design giving credence to Thelen's statement that Heinkel had purloined the drawings. Peter M Grosz, *Albatros B.I*, *WINDSOCK DATAFILE* No.87, May 2001, Berkhamsted,

[18] for description see Salz, p.101-110.

[19] Flugsport, 1913, p.158.

[20] Another incident occurred when a lady companion, left aboard a *Taube* with engine running while the pilot was on the ground, accidentally brushed the throttle with her voluminous flying tunic. The engine caught with a roar, sending the *Taube* off into the air. 'Recovering from her initial panic' the astute companion had the 'presence of mind' to shut off the engine. The *Taube* flew into a wall and was destroyed, but fortunately the 'volunteer pilot' suffered only from sheer fright. Flugsport, 1913, p.769.

[21] *Die Militärluftfahrt bis zum Beginn des Weltkrieges*, Mittler, Berlin, 1966, p.41.



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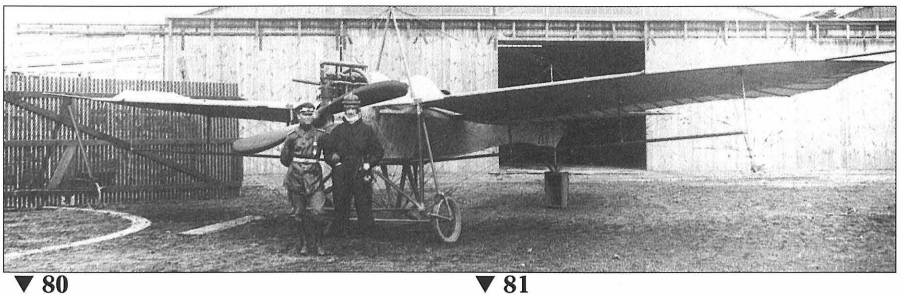

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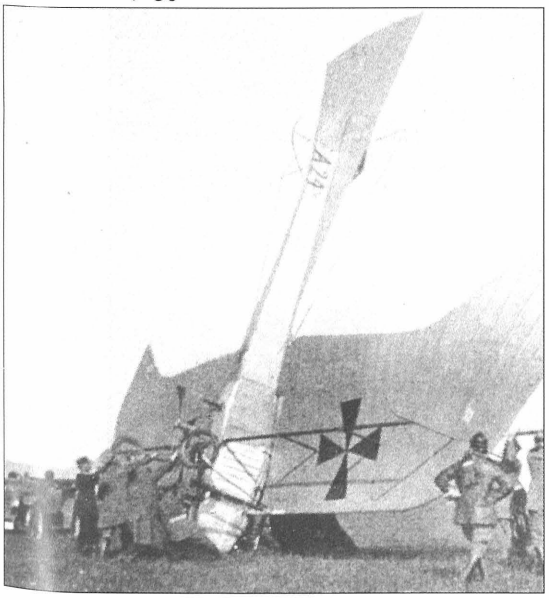

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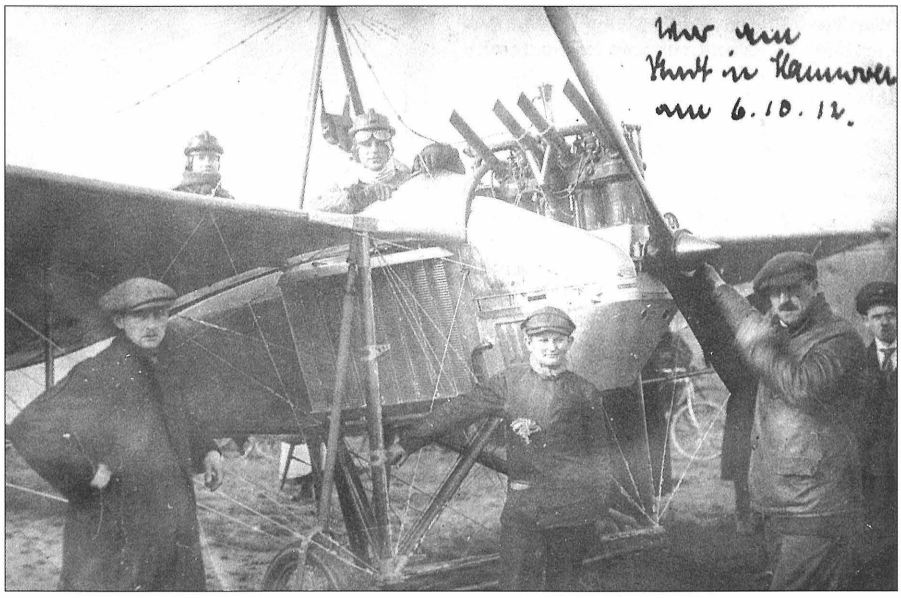
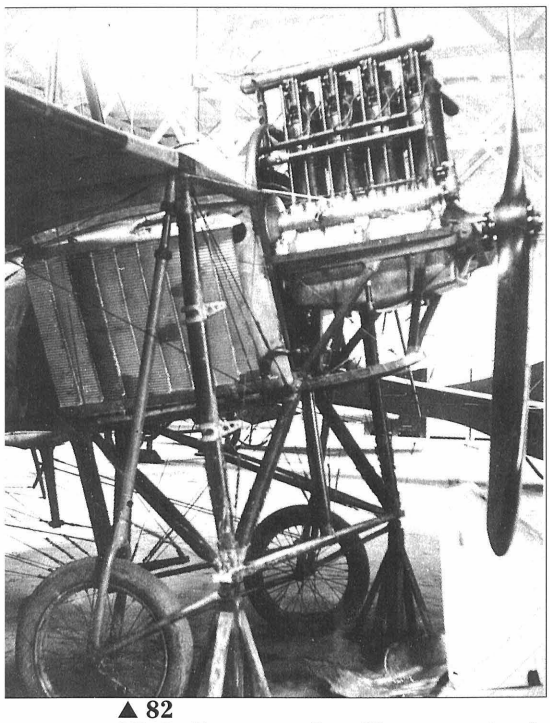


78). Rumpler A.5/13, powered by 100-hp Mercedes engine being hauled back to the hangar on a flat-bed truck. The drooping wingtip shows what happens when the support cables and pylon fail. Go to work, you diorama buffs, here's a super scene certain to be contest winner!

79). Rumpler A.8/13 with *Leutnant* Joly and *Hauptmann* Osius, two pre-war *Fliegertruppe* officers who amassed a lot of *Taube* flight time.

80). If you guessed this was a war-time photograph, guess again. Shown here is Rumpler *Taube* A.24/13 sporting the insignia of the 'red party' during the *Kaiser* manoeuvres of 1913. It is likely that the cross was painted in red.

81). Even though it only had four cylinders, sitting behind the open exhaust of the Argus engine must have been an unpleasant experience. This Rumpler *Taube*, flown by *Oberleutnant* Kastner, landed at Hannover on 6 October 1912.



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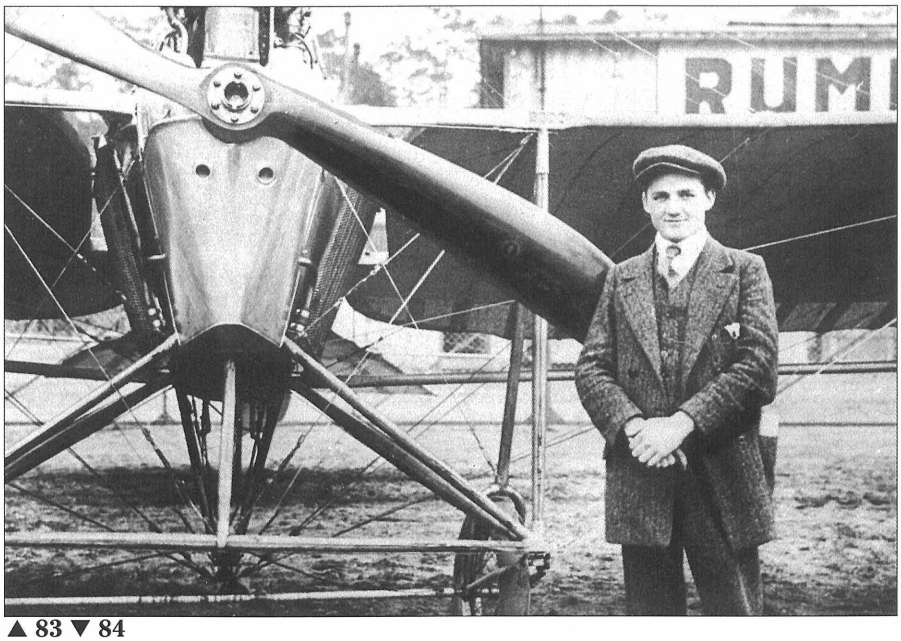
82). Rudimentary, dear Watson - and so is the engine installation and undercarriage structure of this early Rumpler *Taube*. The engine is a four cylinder 90-hp NAG built by the *National Automobil Gesellschaft* in Berlin.



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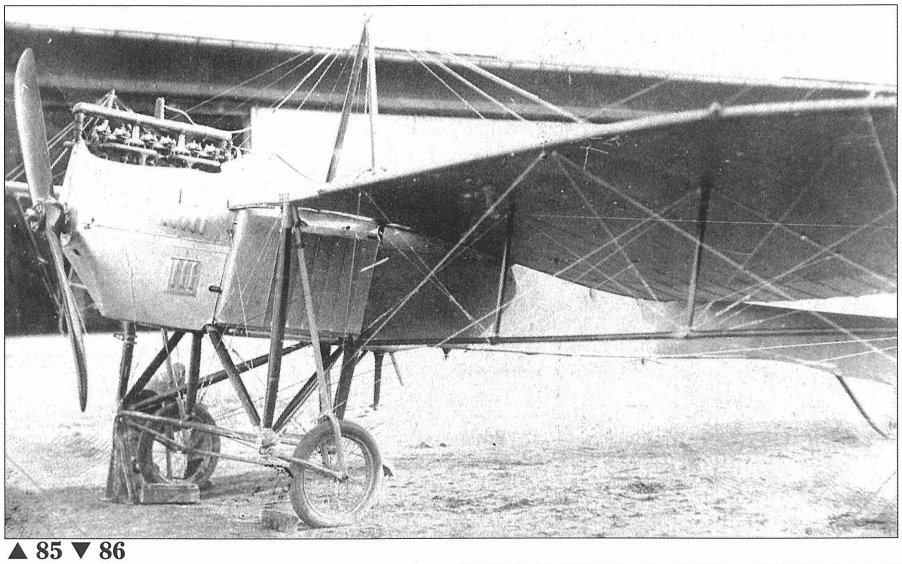
83). Rumpler test pilot Gustav Basser in front of a Rumpler *Taube* such as was delivered in 1912-1913. The mish-mash of struts and cables must have been a rigger's nightmare. Basser, an extremely skilled pilot and accomplished raconteur, was involved with testing most Rumpler prototypes throughout the war. The author can verify that Basser's tales of Johannisthal were legendary.

84). A standard Rumpler *Taube Modell* 1912 parked in front of the Rumpler factory hangars at Johannisthal. The typical upturned wing tips are clearly in evidence. The aluminum turtledeck over the pilots' seats was one concession to aircrew comfort.



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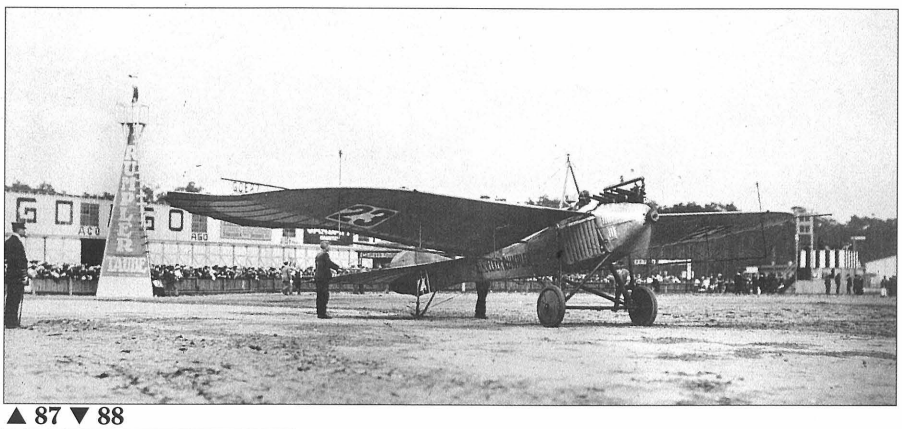
85). This Rumpler *Taube* powered by a 100-hp Mercedes engine was flown by *Leutnant* Kurt Student who commanded the German paratroop army that captured Crete in World War Two. The myriad of wing and undercarriage struts and support cables totally negated any effect of streamlining, such as this fine engine cowling.

86). Pilot Gustav Flick with an early Rumpler *Taube* that by virtue of existing German naval records is well documented. Originally purchased by the *Fliegertruppe* as Rumpler A.131/13 (work no. 170), it was turned over to the Navy and assigned aircraft number S.42 (for *Schulflugzeug* = trainer). A fuel gravity tank (perversely mounted sideways) and altimeter are mounted on the centre struts.

87). It was not until April 1913 that Rumpler began to visibly improve the *Taube* airframe with the appearance of the Rumpler 3C *Taube* but with no change in wing and tail configuration. Piloted by Otto Linnekogel and powered by a 100-hp Mercedes engine, this Rumpler 3C *Taube* took second place in the *Rund um Berlin Flug* in August 1913.



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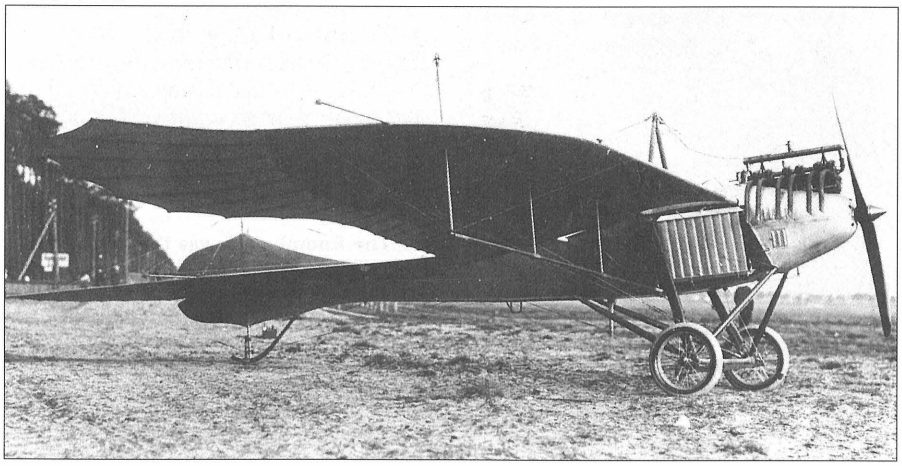

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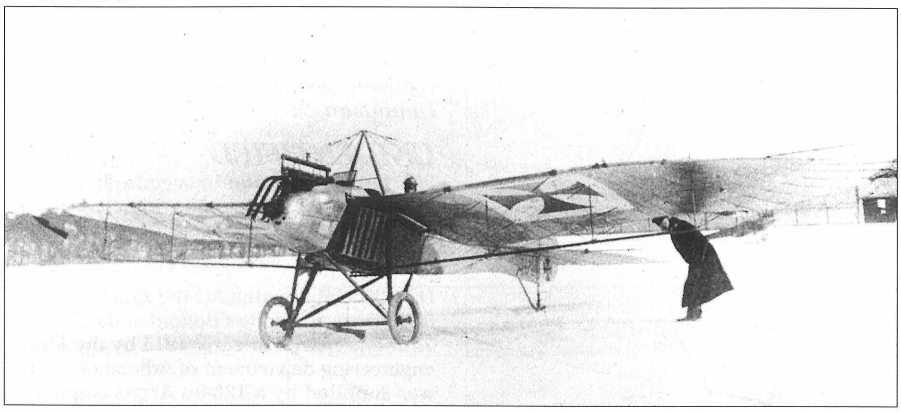


[22] Deutsche Luftfahrer-Zeitschrift, No.20, 1 October 1913, p.483.

[23] Josef Flassig, *Fliegerkurs*, Druckerei und Verlags AG, Vienna, 1913.

[24] Wilhelm Hoff, *Die Entwicklung deutscher Heeresflugzeuge im Kriege*, Verlag des Vereins deutscher Ingenieure, Berlin, 1920, p.2.

[25] For photographs see Flugzeuge, Velhagen & Klasing, Volksbücher Nr. 63a, 4.ed., Leipzig, p.31.

[26] *Die Militärluftfahrt bis zum Beginn des Weltkrieges*, Mittler, Berlin, 1966, p.77.

[27] Noteworthy is the fact that the Fokker A.99/13 (type M 2) demonstrated the highest safety factor among the aircraft tested. Fokker, who tested and demonstrated his own prototypes made certain to qualify their strength by thorough in-house load testing, an attribute perhaps missing in aircraft designed by engineers who did not fly their own aircraft. It would have been instructive to learn the safety factor of an original Etrich *Taube*.

[28] *Die Militärluftfahrt bis zum Beginn des Weltkrieges*, Mittler, Berlin, 1966, p.88.

[29] Of course, the Austro-Hungarian *Taube* aircraft continued in service as primary trainers, but were excluded from combat situations.

[30] Deutsche Luftfahrer Zeitschrift, 1 October 1913, p. 483.

[31] Deutsche Luftfahrer-Zeitschrift, No.20, 1 October 1913, p.483. Fortunately, Anthony Fokker, a superb technical innovator and never one to follow the crowd, would soon develop a monoplane with flight and performance characteristics far beyond the *Taube*'s limited capabilities.

[32] The same could be said for Fokker's unique *Spinne* monoplane which, patented in Germany, provided the impetus and wherewithal to start his aircraft empire. Fokker, far more clever and versatile than Etrich, had the foresight to follow the *Spinne* with a new design, the Fokker M 5 and M 8 monoplanes, that not only were superior to the *Taube* monoplanes but garnered substantial military production orders eventually leading to the brilliant Fokker E-type single-seat fighter. ❐

KEY TO COLOUR PLATES:

1 and 2). **Rumpler *Taube* 4C**
Typical colours of the Rumpler *Taube* 4C - natural linen covering, doped and varnished with metal panels and struts left in their original finish. Few, if any *Taube* monoplanes bore any form of camouflage; when marked with national insignia this took many forms and variations.

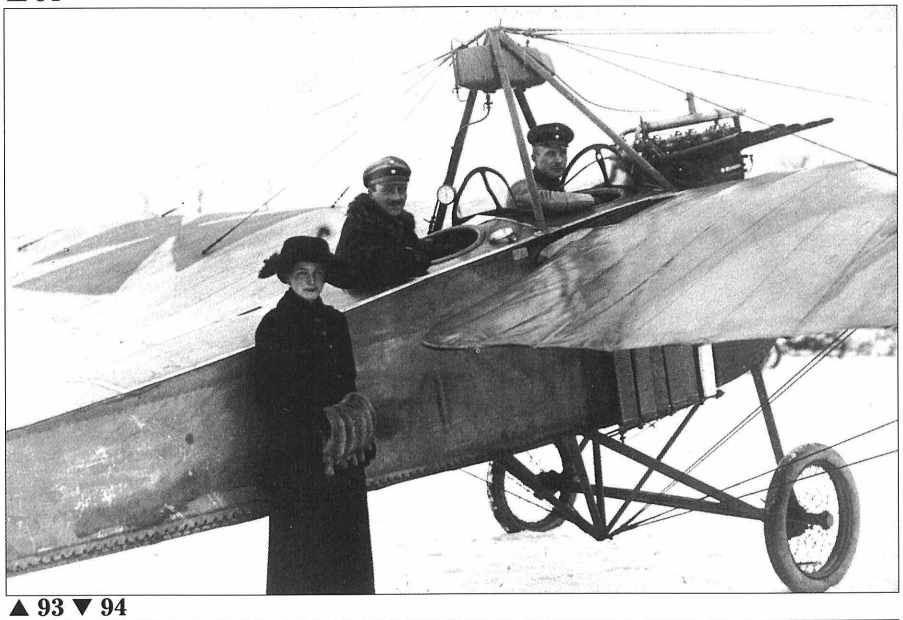
88). **Other than a streamlined nose and simplified undercarriage, the Rumpler 3C maintained all the characteristics of the original *Taube* layout. It was in this model *Taube* that Linnekogel performed his hands-off stunt by climbing out of the cockpit and hugging the support pylon while aloft over the Cuatros Vientos airfield in Spain.**

89). **A 100-hp Mercedes engine supplies the power for the Rumpler 3C. Interesting are the wing cut-outs for observer and pilot to provide a view of the ground. A claw brake supplied stopping power.**

90). **Rumpler 3C *Taube* (A.–/13) with early German identification markings and a small pennant on the right wing. According to the frontline inventory chart all Rumpler *Taube* aircraft were taken out of combat service in November-December 1914.**

▲ 91

▲ 92



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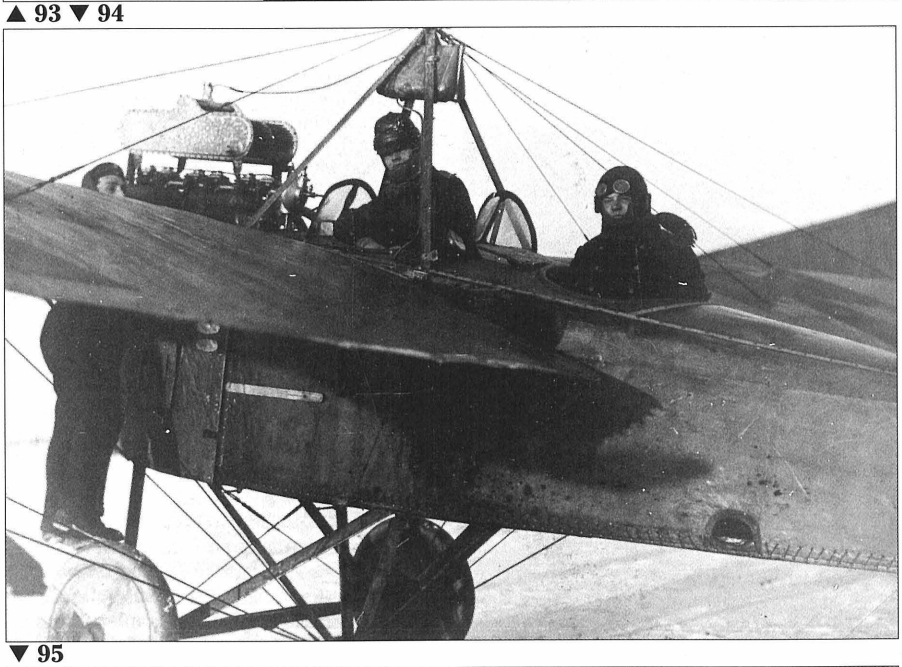

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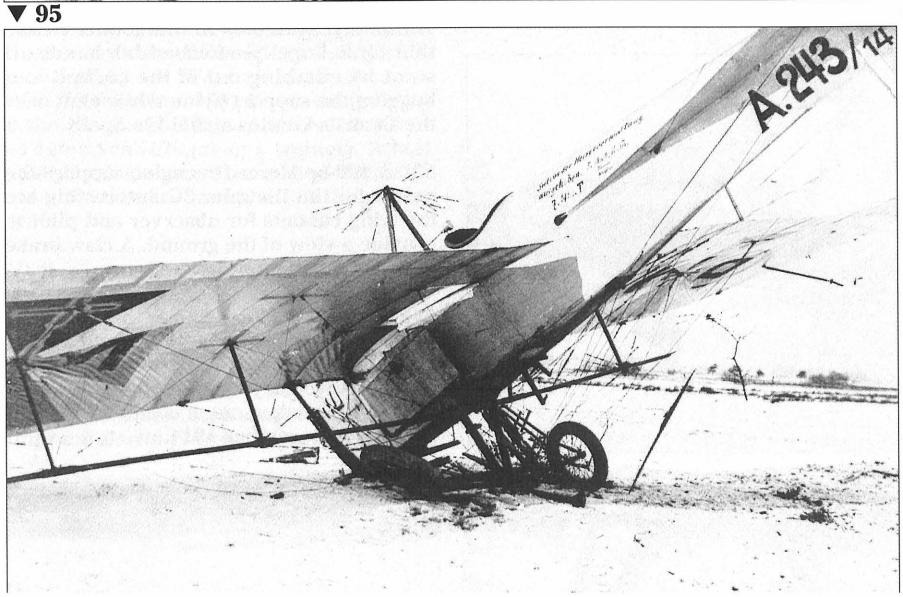


Black crosses, outlined and/or applied to white squares could be seen on various examples. The photos in this book offer a wide selection of insignia as applied to these aircraft.

3). Rumpler *Taube* 4C.

Fitted with Hazet side radiators, the rudder crosses of this 4C were painted on white squares. **Source**: *photo 91* opposite.

91). **The Rumpler 4C was the grand finale of the *Taube* symphony. It had a stronger, rectangular fuselage, reduced wing bracing and a robust centre pylon. Totally new are the actuated tail controls and wingtip ailerons to improve manoeuvrability. But the archaic wing shape remained a design oxymoron. The iron crosses on the wing and elevator have been applied directly to the (orange?) fabric without the benefit of white edging. The man on the far right is Alfred Friedrich, the former Etrich pilot and instructor.**

92). **Rumpler *Taube* A.185/13. Rough airfields caused rough landings, though fortunately here only a wheel and propeller were damaged. The remains of the black, pre-war wing band can be seen on the leading edge. The iron cross was painted over this band on the wing underside.**

93). **With Friedrich in the pilot's seat, and a freezing masochist in the front, the Rumpler 4C provides a stunning backdrop for somebody's favourite squeeze. The photograph was taken in East Prussia in September 1914.**

94). **A *Fliegertruppe* Rumpler 4C being readied for take-off. Rather than ear radiators, the 100-hp Mercedes engine is fitted with a *Scheitelkühler* (brow radiator). Again, the iron cross insignia has been applied without white edging.**

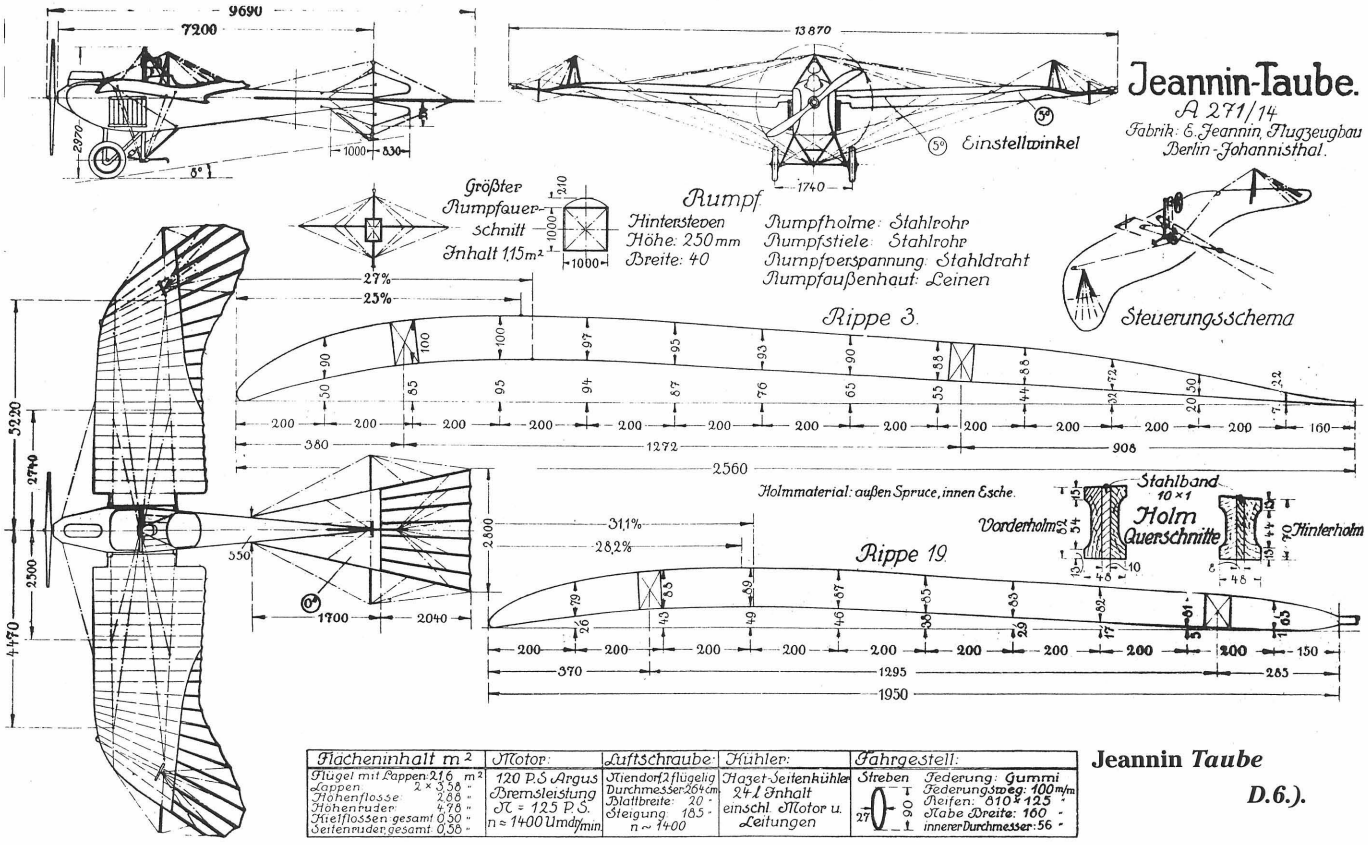
95). **This interesting photograph shows an impressed Rumpler *Taube* A.243/14 with curious 'transparent' crosses on the lower wing. Behind the pilot's cockpit the following is written: 'seitens der Heeresverwaltung ausgehoben. *Fl. Ausb. Kom., 7. Mob. T., Blomer Hptm.* (Which translates 'impressed on behalf of the army administration, fliers training company, seventh mobilization day, Blomer *Hauptmann*').**

UNIDENTIFIED

96). **Finally a *Taube* in seemingly pristine condition, sporting huge wing crosses and a high tail skid. Any ideas as to the manufacturer?**

D.6: **Official drawing for the *Baubeschreibung* (construction description) of the Jeannin *Taube* prepared in early 1915 by the *Idflieg* engineering department of Adlershof. Power was supplied by a 120-hp Argus engine.**

▲ 96



Jeannin *Taube*

D.6.).

APPENDICES AND REPRESENTATIVE

***Table 1* - *Fliegertruppe* purchases of A-Type aircraft 1911-1916**

Manufacturer	1911	1912	1913	1914	1915	1916
Rumpler	10	48	73	3		
Aviatik		2				
Halberstadt		2	6	4		
Albatros			32	5		
Gotha			36	54		
Jeannin			26	87		
Euler			3			
DFW			2	6		
Roland			1			
Goedecker				1		
Caspar				6		
Unknown				62		
Bleriot (not *Taube*)				1		
Dorner (not *Taube*)		1				
Fokker (not *Taube*)			12	65	13	22
Harlan (not *Taube*)	1	7				
Totals	**11**	**60**	**191**	**294**	**13**	**22**

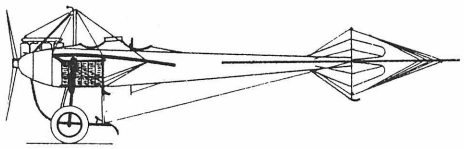
***Table 2* - Load test results on German monoplanes 1913**

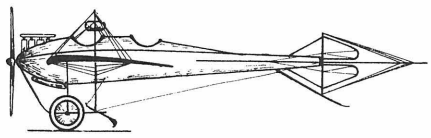
Manufacturer	Serial No.	Test Load (kg)	Loaded Aircraft Weight (kg)	Safety Factor
Fokker	A.99/13	4675	1029	4.54
Albatros	A.30/13	3615	1007	3.59
Albatros (*Klapptaube*)	A.69/13	3555	1008	3.53
Jeannin	A.77/13	3429	996	3.44
Rumpler	A.28/12	3146	919	3.42
Rumpler	A.46/13	2853	987	2.89
Gotha	A.81/13	2768	1053	2.63
Rumpler (*Klapptaube*)	A.52/13	2507	997	2.51
Rumpler reinforced		4122	1056	3.90

D. 2 and 3: **Subtle differences in layout and design are shown in these two variants of the DFW *Taube* of 1914. The wing span was 14 metres and the length overall 11.5 metres. Power was supplied by a 100-hp Mercedes engine.**

D.4: **The Goedecker *Militärtaube* of 1914 demonstrates aptly how little progress has been made in the period of four years by some manufacturers, one would have expected better. The wing span was 13.74 metres and the length overall 10.32 metres. Power was supplied by a 100-hp Mercedes engine.**

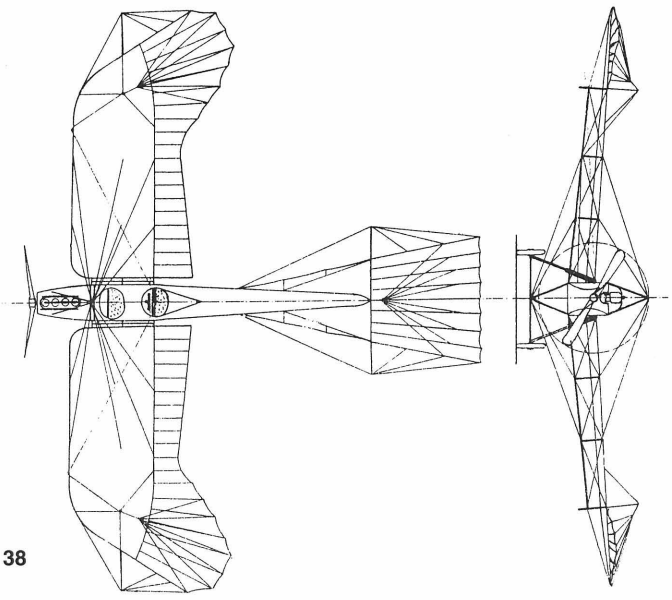
D.5: **Rumpler 3C first appeared in April 1913 and did show some design progress. Compared to the older Rumpler *Taube* monoplanes, the 3C had a streamlined fuselage, new wing spars and simplified undercarriage design. The wing span was 14 metres and the length overall 10.2 metres. Power was supplied by a 100-hp Mercedes engine.**

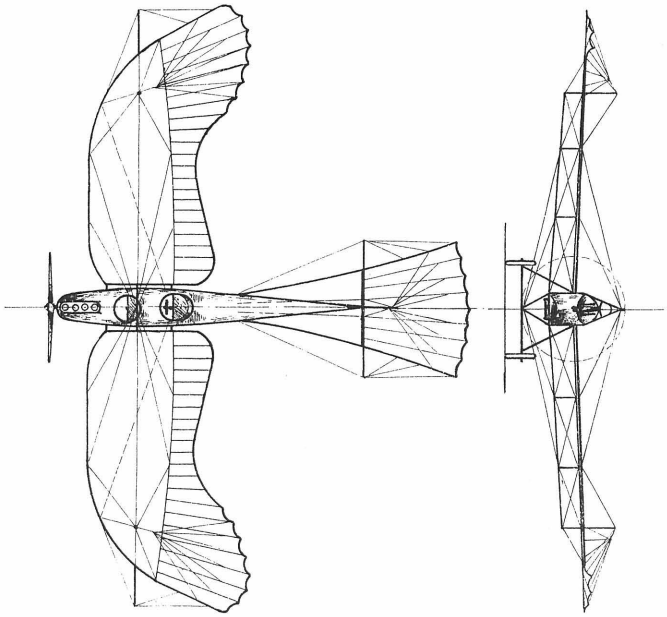




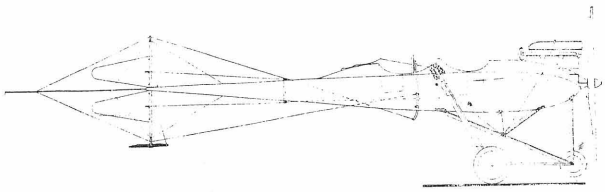
D.2.). **DFW *TAUBE***

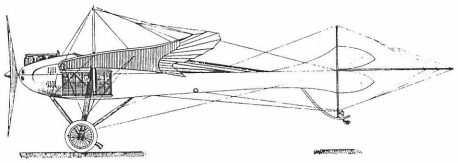
D.3.). **DFW *TAUBE***

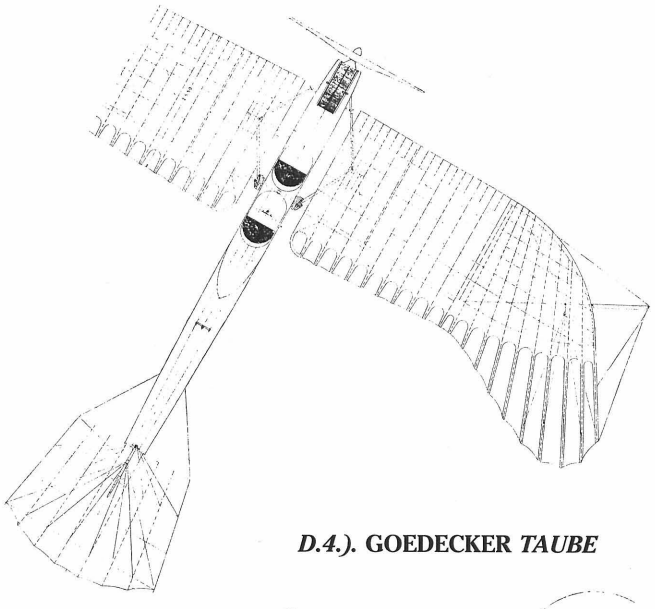




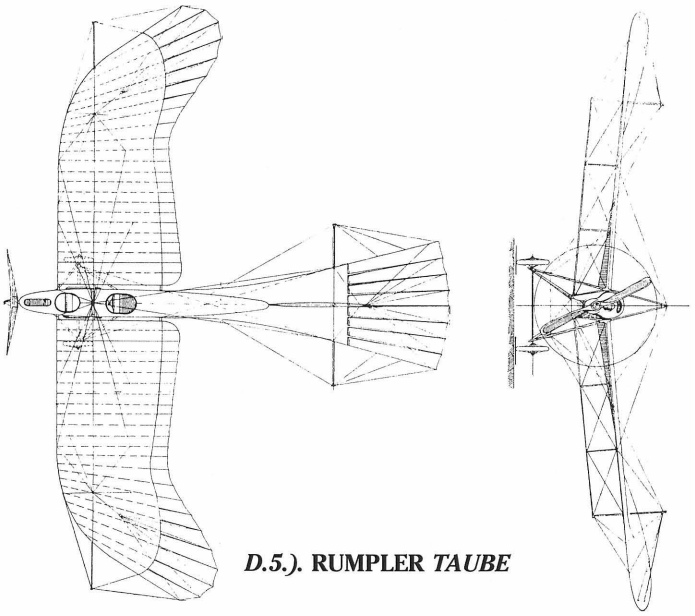
TAUBE DRAWINGS 1913-1914...



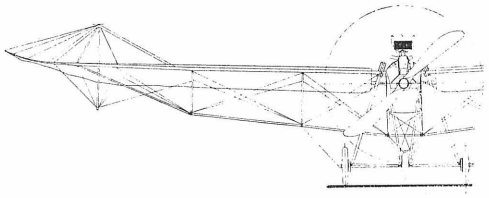




D.4.). **GOEDECKER *TAUBE***



D.5.). **RUMPLER *TAUBE***



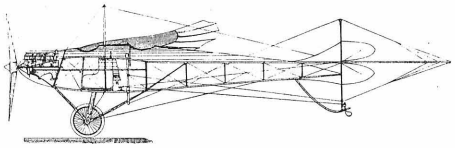
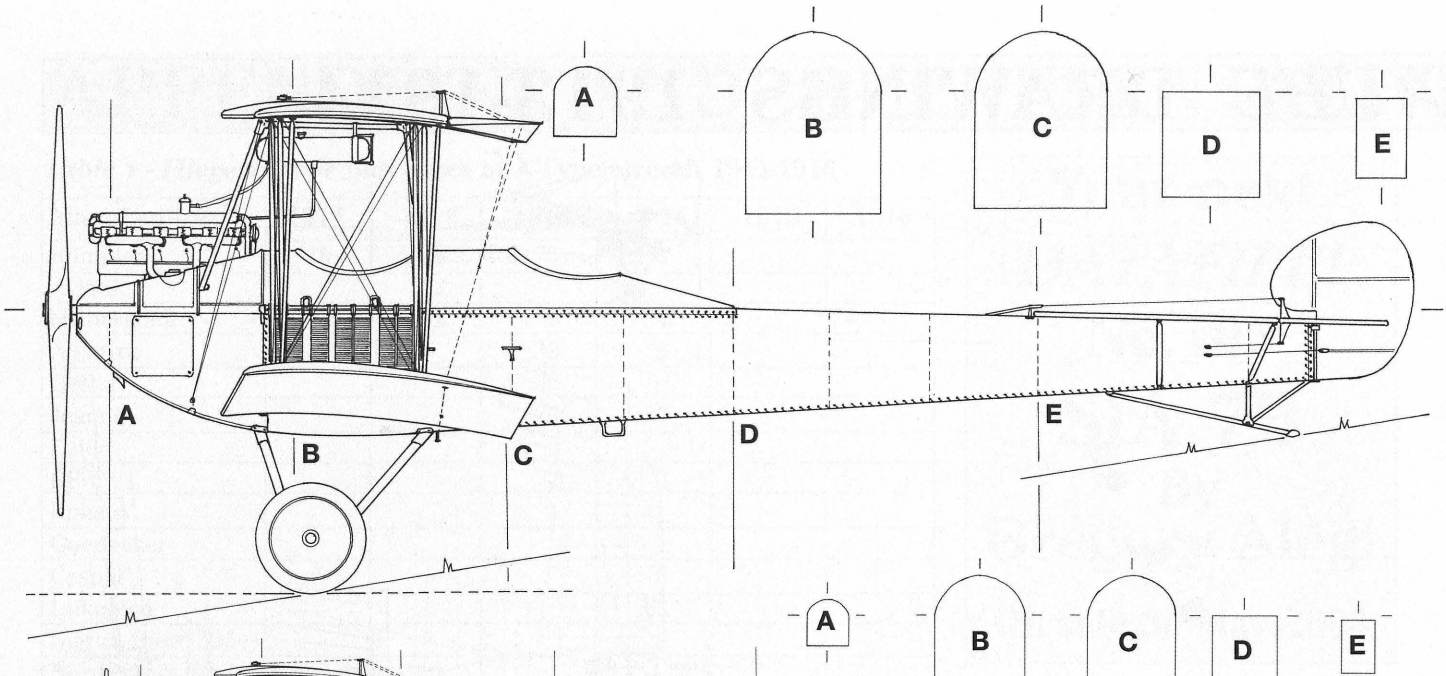


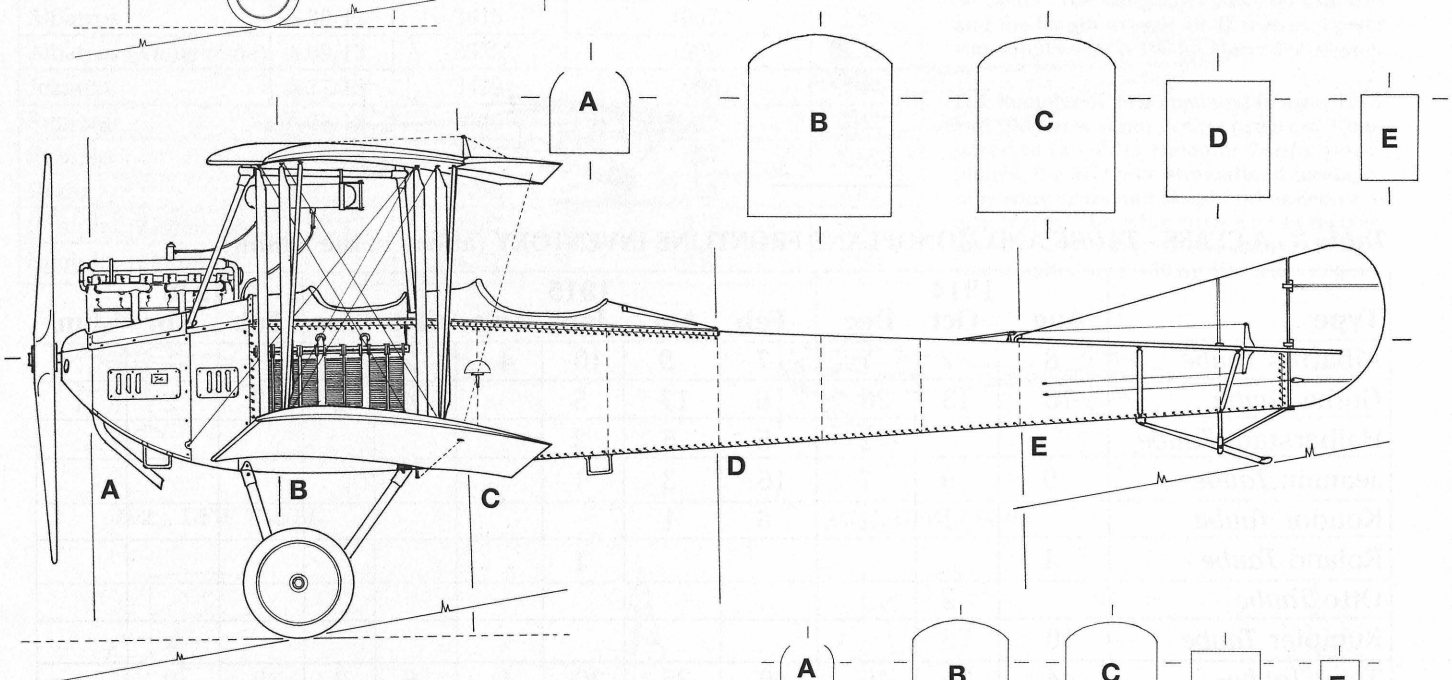
***Table 3* - A-CLASS - *TAUBE* AND MONOPLANE FRONTLINE INVENTORY** (at end of the month)

Type	1914 Aug	1914 Oct	1914 Dec	1915 Feb	1915 Apr	1915 Jun	1915 Aug	1915 Oct	1915 Dec	1916 Feb	1916 Apr	1916 Jun
Albatros *Taube*	8	2	7	7	9	10	4	2				
Gotha *Taube*	16	13	26	6	17	5		4	2	2	2	1
Halberstadt *Taube*			2	5	5	3						
Jeannin *Taube*	9	9	7	16	3	1						
Kondor *Taube*		1	4	6	1							
Roland *Taube*	1					1						
Otto *Taube*		2										
Rumpler *Taube*	10	3										
Total *Taube*	44	30	46	40	35	20	4	6	2	2	2	1
Fokker A		5	9	23	21	17	8	9		8	7	5
Pfalz A		1	3	1	5	17	19	18	1	3	1	1



AVIATIK B.I (P14/1913)

Missing sections from *DATAFILE No. 102*



AVIATIK B.I (P14/1914)

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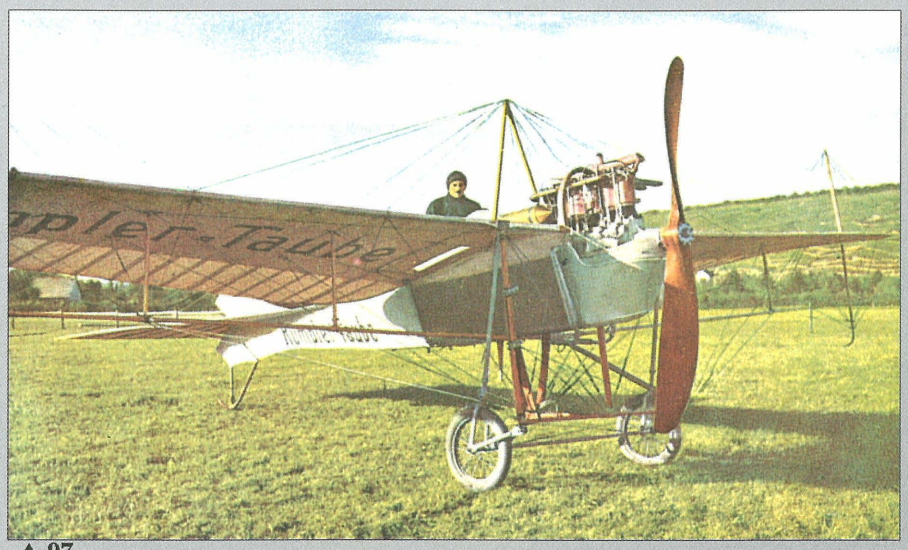
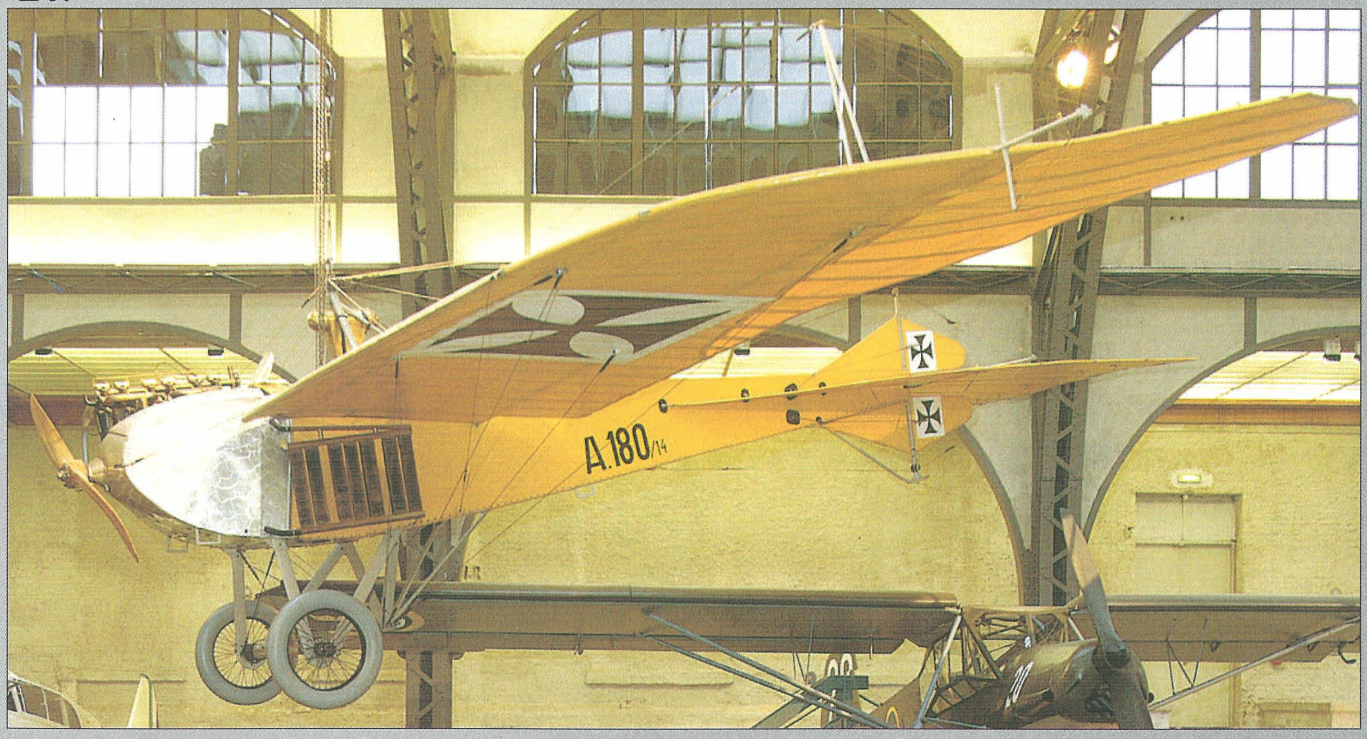
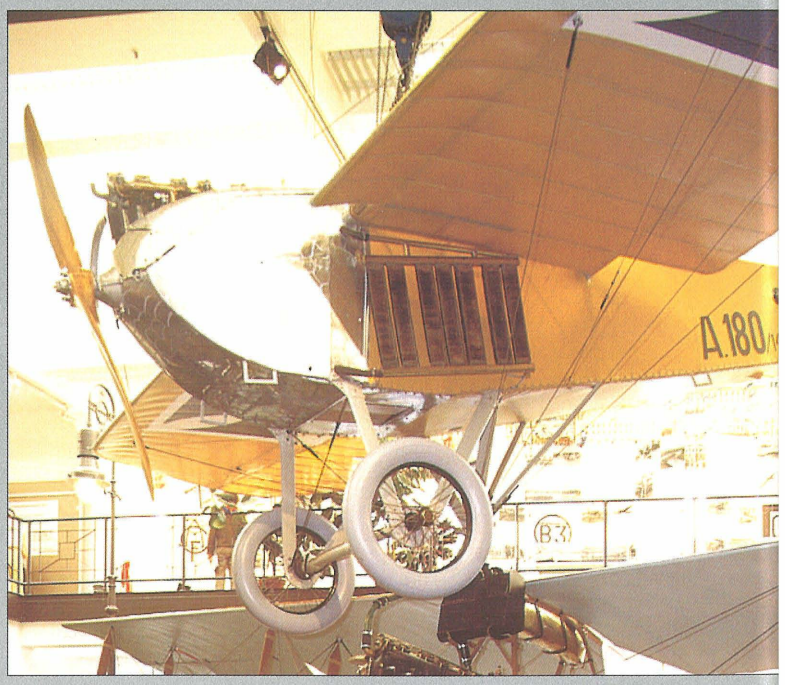


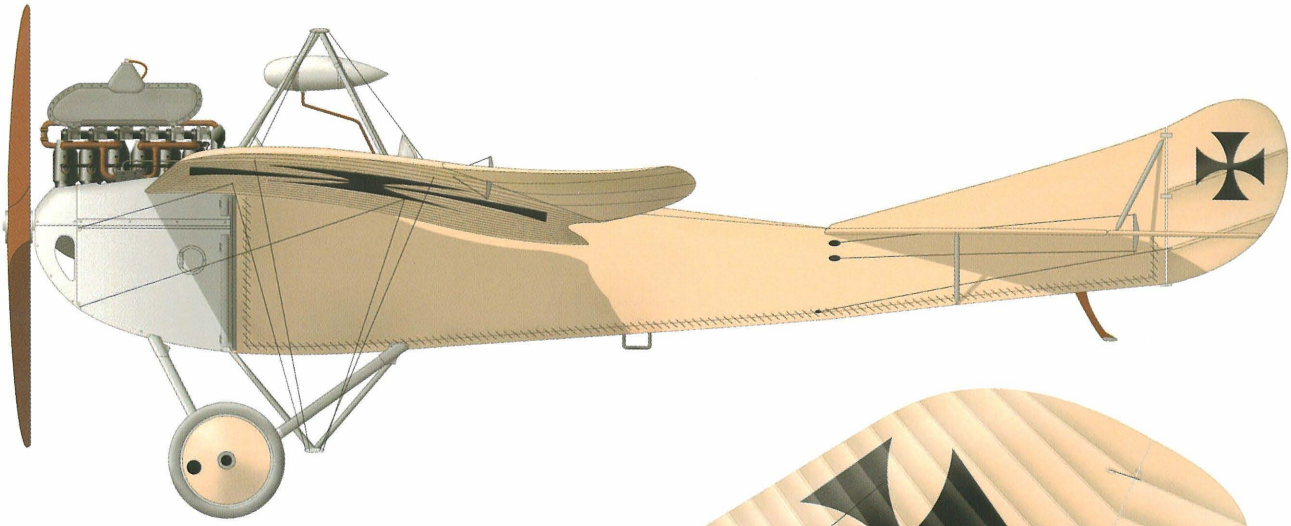
▲ 97

97). Not many Rumpler *Taube* monoplanes were fitted with an engine as powerful as this 120-hp Austro-Daimler. The extra-large laminar radiator on the fuselage sides reflects the engine power and the inefficiency of the radiator. The colour values of this 1911 aquatint postcard appear to be reasonably accurate.

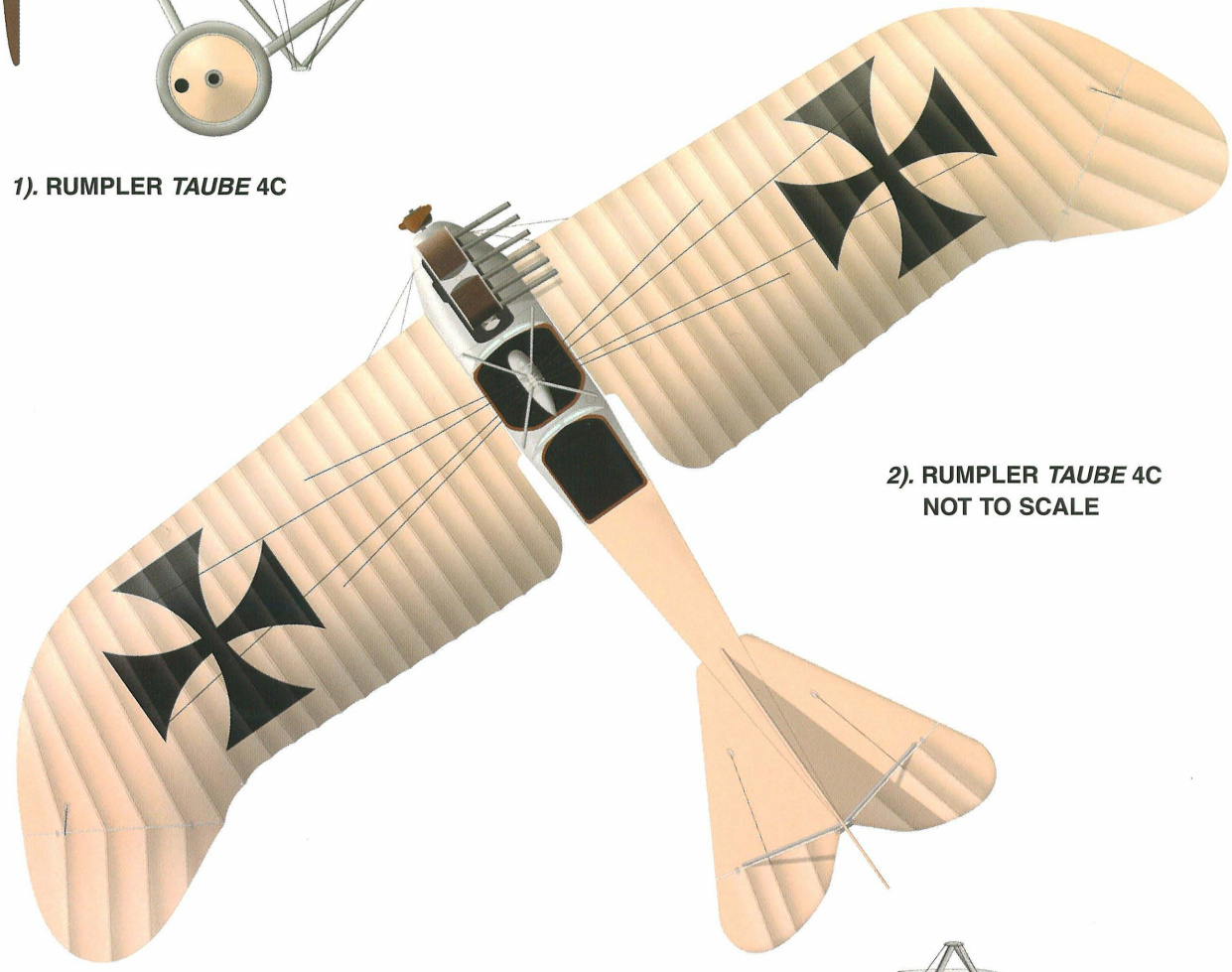
INSIDE FRONT COVER AND BELOW:
Four views of Jeannin *Taube* A.180/14 as currently displayed at the Deutsches Technik Museum, Berlin. This superb restoration carefully employs the materials and construction techniques used by Jeannin, including the original Continental fabric with the orange rubberized coating. Undeniably the finest example of a genuine *Taube* design anywhere in the world today, it is one of few known survivors from the original pre-World War Two *Deutsche Luftfahrt Sammlung* in Berlin. *(DTM Abteilung Luftfahrt)*



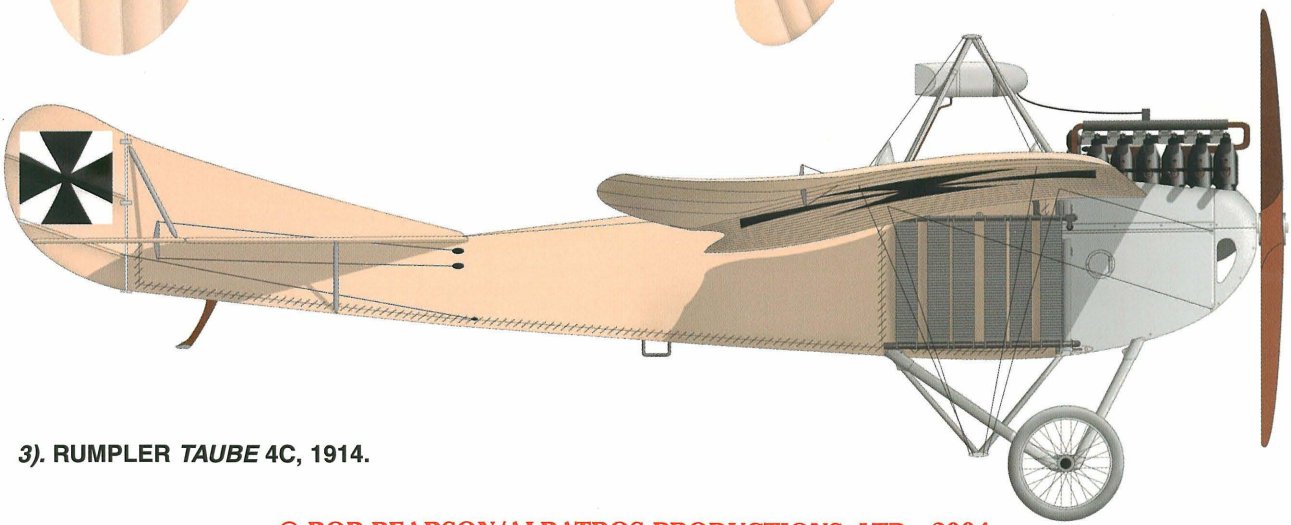




1). RUMPLER *TAUBE* 4C



2). RUMPLER *TAUBE* 4C
NOT TO SCALE



3). RUMPLER *TAUBE* 4C, 1914.

Printed in Great Britain