

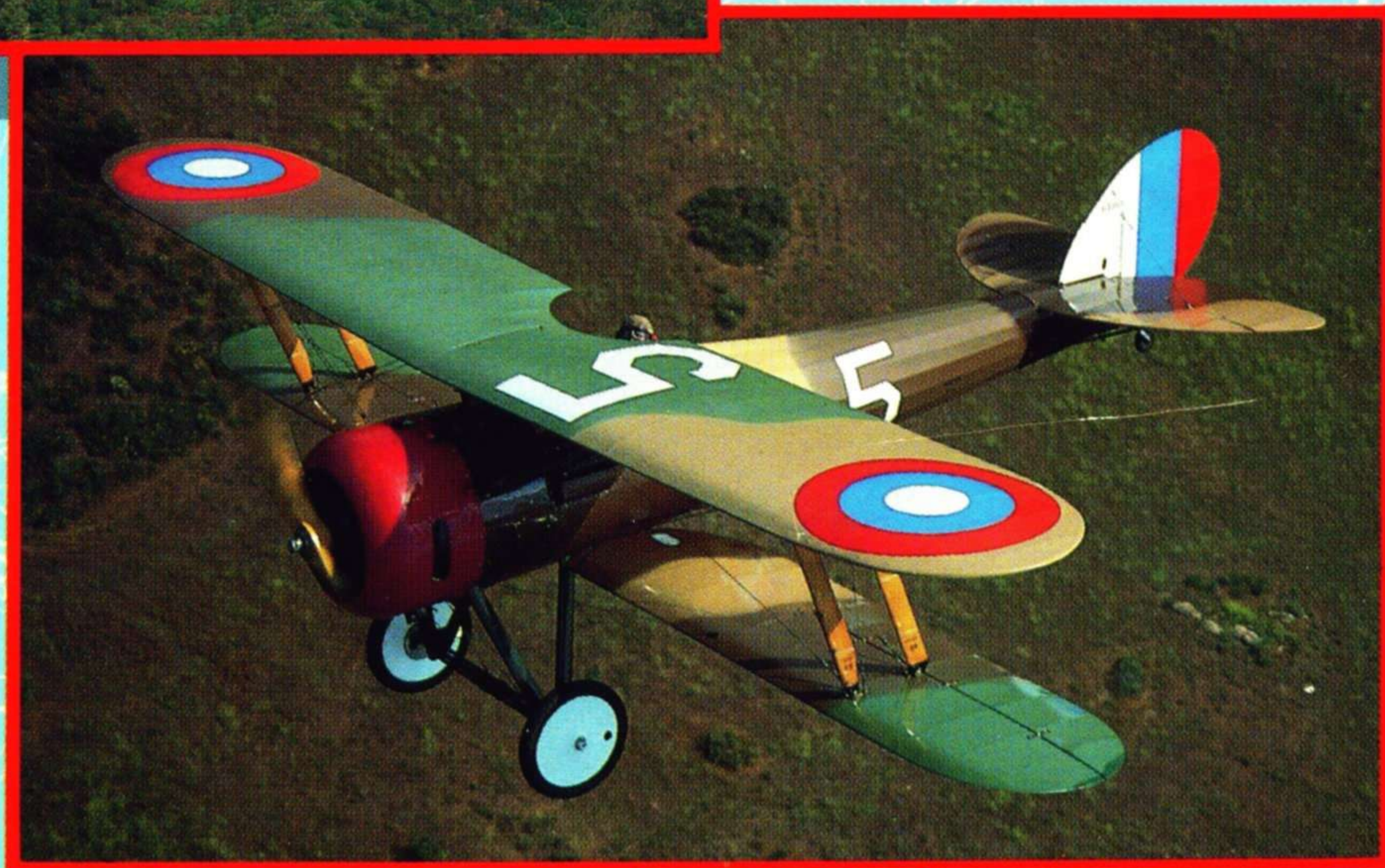


From the Publishers of Model Airplane News

Scale Aircraft Drawings

Volume I—World War I

**Scale Drawings,
Rare Photos, and
Historical Data
on Popular
WW I Aircraft.**



Scale Aircraft Drawings

Volume 1—World War I

Copyright ©1986 by Air Age, Inc.
ISBN: 0-911295-02-X

All rights reserved, including the right of reproduction in whole or in part in any form. This book, or parts thereof, may not be reproduced without the publisher's permission.

Published by Air Age, Inc.
632 Danbury Road
Wilton, CT 06897

Manufactured in the United States of America
This book was designed by Alan J. Palermo.

Publishers: Dr. Louis V. DeFrancesco, Yvonne M. Micik, and Louis V. DeFrancesco, Jr.
Editor: Dan Santich
Managing Editor: Mary Hennessy
Editorial Assistant: Karen Lindsay
Cover photos by Budd Davisson.

ACKNOWLEDGEMENT: The publishers wish to express their sincere gratitude to the following: *Jane's All the World's Aircraft*; *Jane's Encyclopedia of Aviation*; The American Aviation Historical Society; The Smithsonian Institute; Leonard Opdycke, WW I Aeroplanes, Inc.; Acme Photo Service; Garden City Press; Arco Publishing Co. Inc.; The Society of World War I Aero Historians; The Wright Bros. Historical Foundation; Silver Hill Aviation Museum; Air Force Museum; Naval Air Museum; Boeing Aircraft Corp.; The Curtiss-Wright Aircraft Corp. and Curtiss Museum; Paris Air and Space Museum.

Contents

Introduction	6
--------------------	---

AIRCRAFT

Albatros D.I to D.VI	7
Ansaldo SVA-1	12
Antoinette VII	14
Armstrong-Whitworth F.K. 8	16
Bleriot XI	18
Boeing MB-3A	20
Bristol F2B Fighter	22
Chance Vought VE-7, VE-9, & UO-1 ..	27
Curtiss Jenny JN-4—JN-6H	32
Curtiss Model D	37
deHavilland D.H. 1	39
deHavilland D.H. 4	43
Fokker Dr.I Triplane	48
Fokker D.VII	51
Fokker E.V/D.VIII	56
Hansa-Brandenburg C.I	61
Hansa-Brandenburg W.29	64
Junkers D.I	67
Loening M-8	69
Nieuport Nighthawk	72
Pfalz D.III	75
Pfalz D.XII	80
RAF S.E.5a	85
RAF S.E.5a Squadron Markings	89
Salmson Bomber 2 A.2	91
Siemens-Schuckert D.IV	94
Sopwith Camel	98

Sopwith Dolphin 5F.1	102
Sopwith Snipe 7F.1	107
Spad S.VII C.1	110
Spad S.XIA-2	114
Spad S.XIII C.1	119
Standard J-1	123
Thomas Morse S-4B, C, & E	126
Wright 1903 Flyer, Model A, & Model B	131

ENGINES

Clerget	136
Hispano-Suiza	138
Mercedes 160hp & 180hp	141
Siemens-Halske	144

ARMAMENT

Lewis Machine Gun	146
Vickers Machine Gun	148
Air Bombs	150

INTRODUCTION

by DAN SANTICH

The time-scale of this book represents the period in history when aviation was born. There were no rules. In many cases pilots were self-taught and their airplanes were handmade creations of fabric, wood, and dreams. Pilot comfort was not a pressing issue, and airports to operate from were a long time in coming.

Most of the aircraft presented in this book are only memories: scraps of fabric and wire that one time filled the sky with ambition and heroics. The photographs are all authentic; they represent a relatively new idea for the era—aviation photography.

A scale model is only as good as the effort that went into the research of it. There is, in absolute terms for scale modelers, no substitute for a dimension. A measurement of a given dimension of a given part of an aircraft is one of the most valuable aids to a scale project. With that dimension, a conversion to inches is a simple matter of mathematics. If it isn't given, it's only a guess.

These drawings are of both historical and artistic interest, and are what are generally referred to as Master Drawings.

This book is dedicated to the doer and the dreamer, the armchair pilot and the Captain of tomorrow's spaceship. It's history in black and white. The drawings presented herein are the works of master illustrators, such as Wylam, Nye, Larsen, Karlstrom, and others. It was a massive effort, and the drawings reflect countless hours of research and digging through the halls of history. In some cases, measurements were taken from the actual aircraft. In many cases there were no remaining examples of the aircraft. Obtaining the accurate dimensions of these aircraft was difficult, if not impossible. Where factory drawings and sketches were available, many differences in dimensions were found. To resolve this dilemma, a best-guess approach was used. But it was an educated guess.

Some errors, a few major and some minor, are noted in the text. Modelers and enthusiasts should check them carefully against available photographs before undertaking major projects. A lot of technical material has been uncovered in the last 30 years that was not available to these draftsmen.

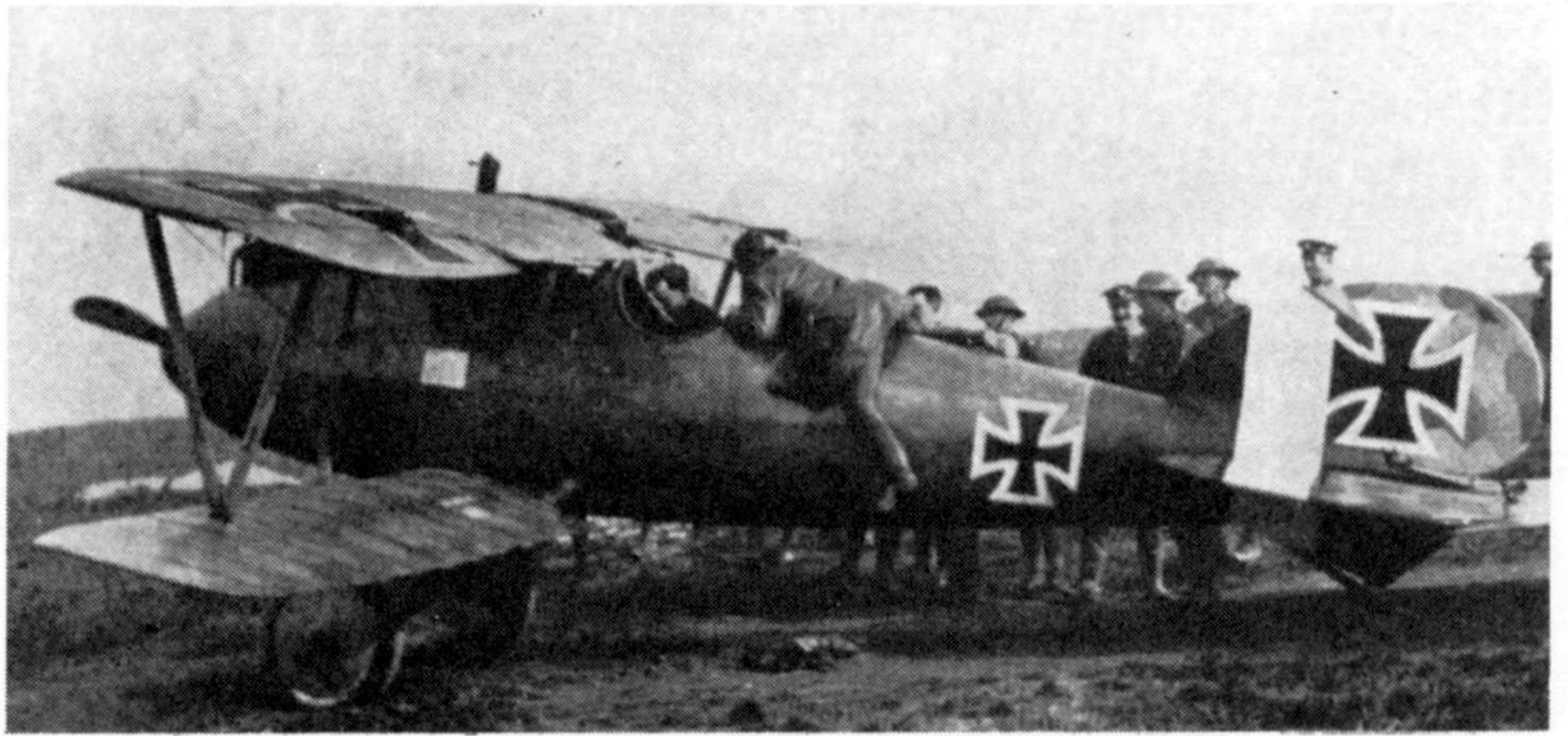
It should be noted that the scale reference given in the title block of each drawing does not reflect the scale size of that drawing. All of the drawings in this book have been reduced for presentation and are available from us in their full-size to the appropriate scale. These Master Drawings were rendered in varying scales.

For the scale modeler, this book is invaluable. For the historian, it's a collector's dream. For the aviation-minded, modeler or not, it's a fascinating collection of winged history. We hope you enjoy it.

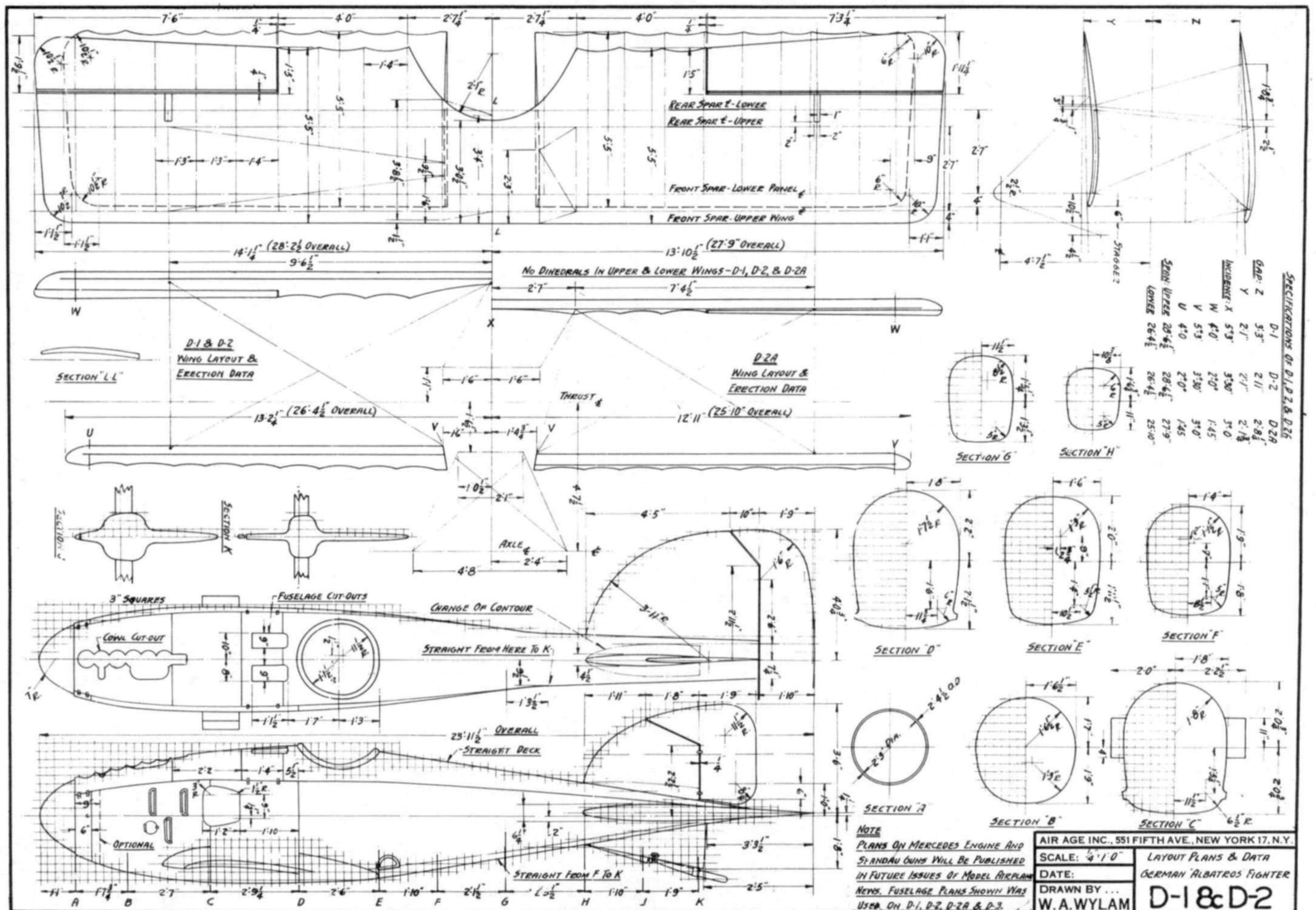
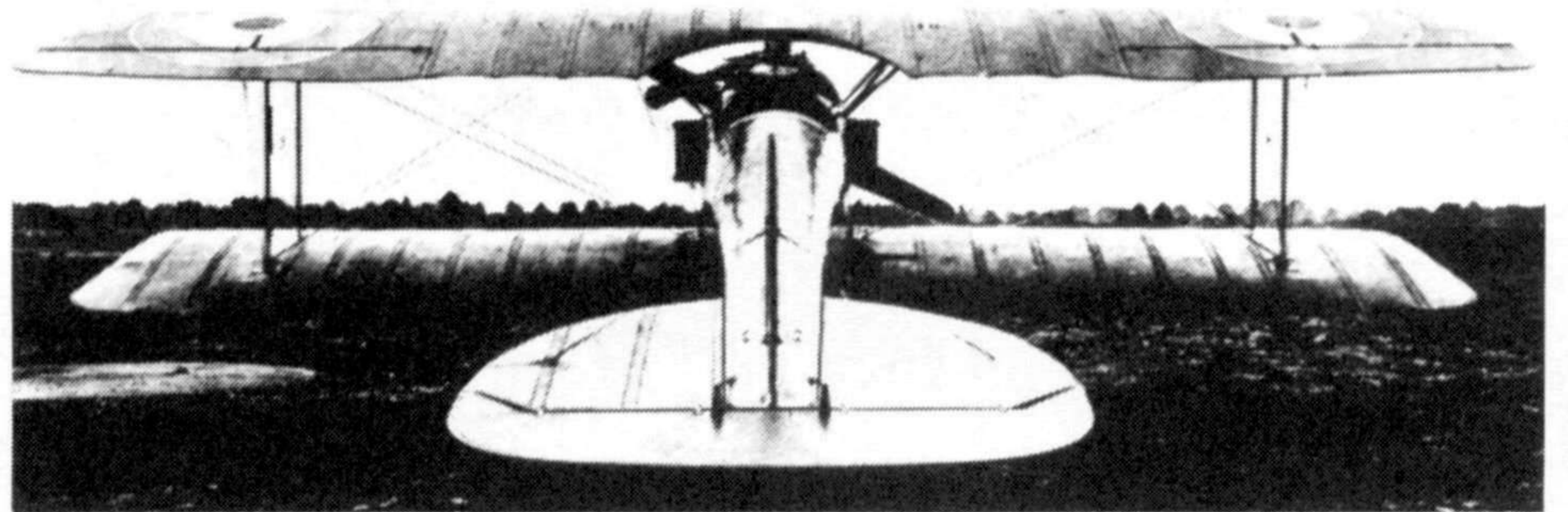
Albatros D.I to D.VI

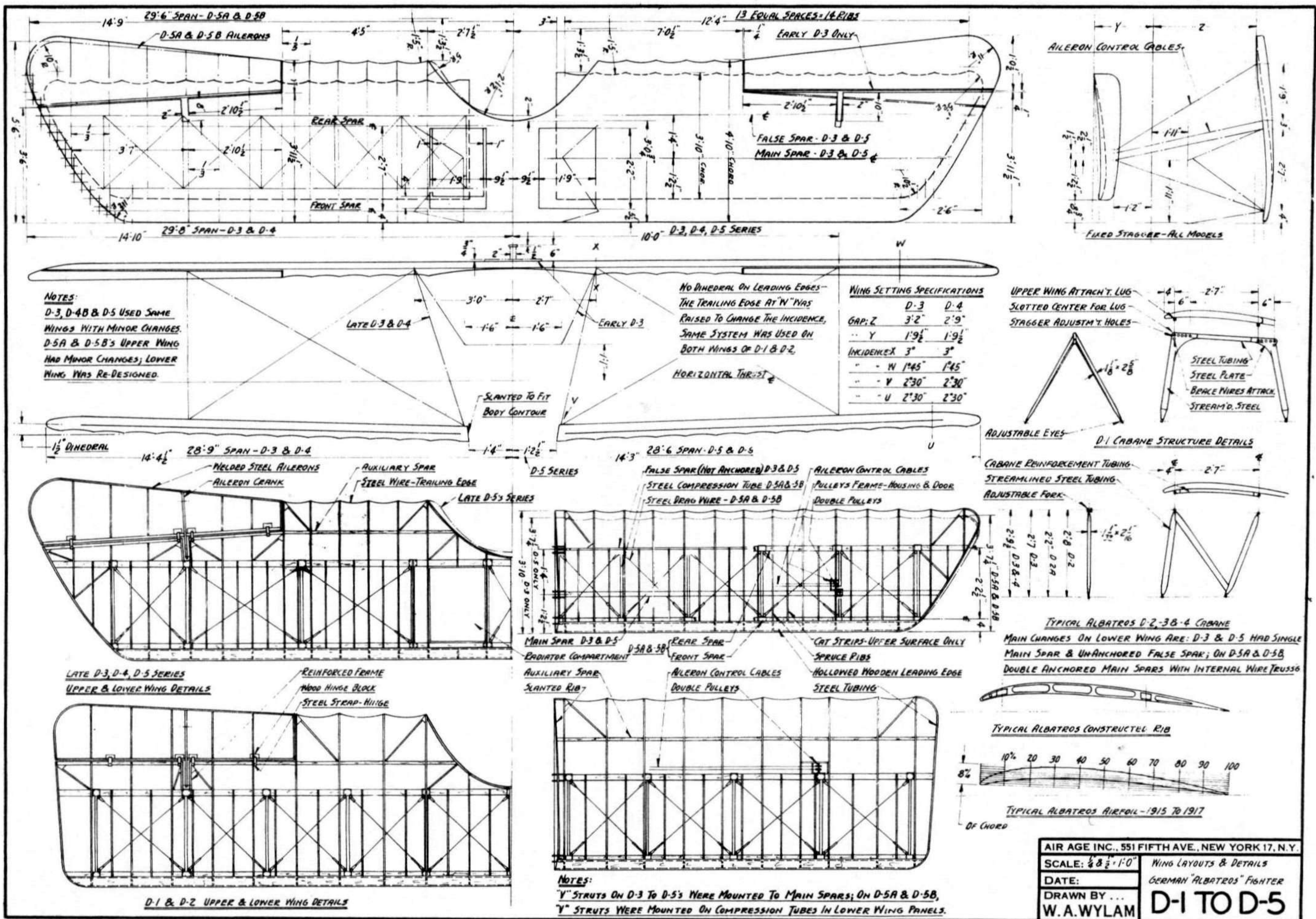
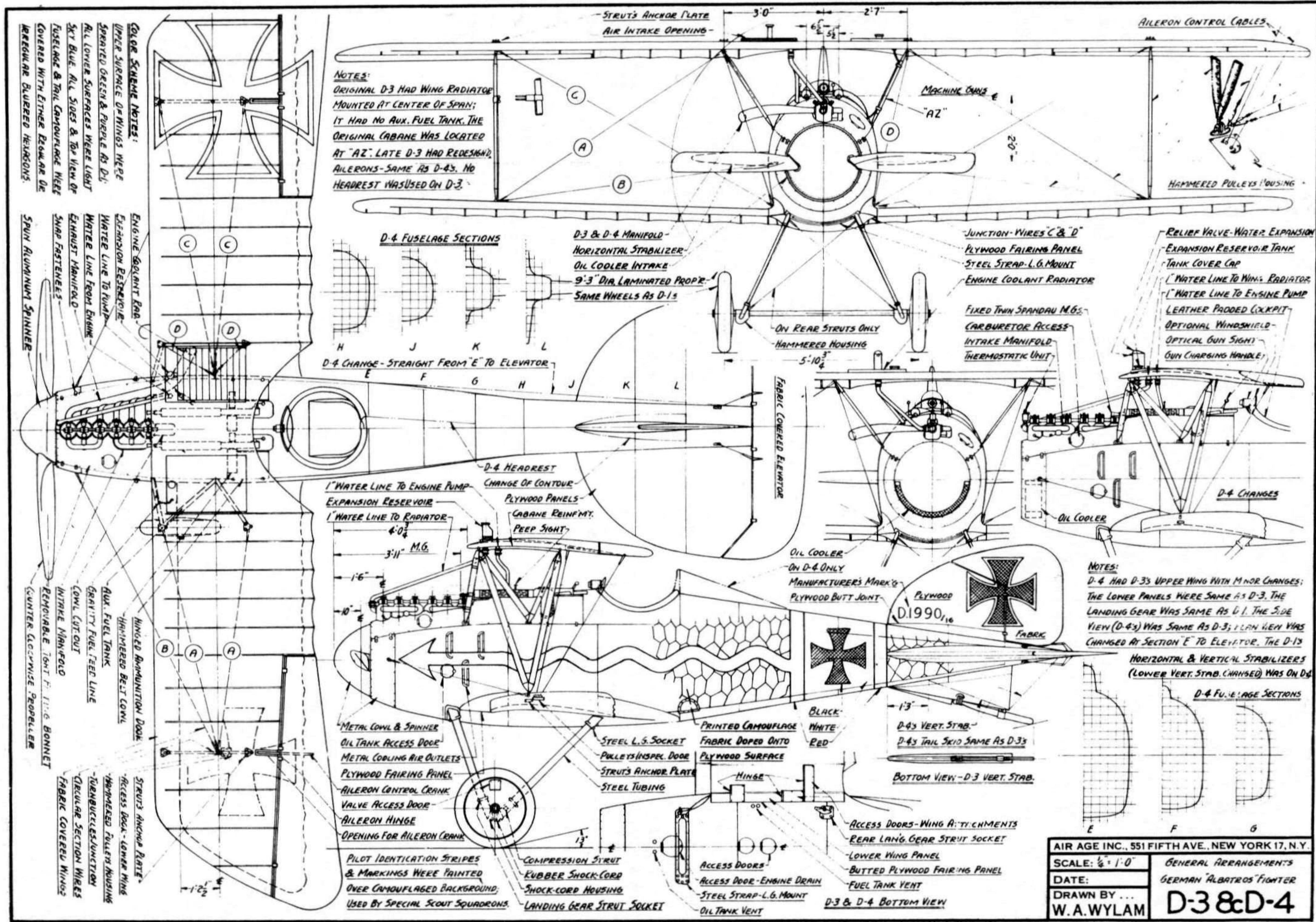
THE ALBATROS was introduced in April 1916 by the Albatros Werke, a manufacturing plant and civil flying school with excellent aero credentials, in the town of Johannisthal near Berlin. The Albatros was the mainstay of German airpower during the entire first world war, although it was outclassed by faster British and French aircraft later in the war. The Albatros D.I made its combat debut on September 17, 1916, against an ill-fated flight of seven British F.E.2b pushers, resulting in the loss of five of the pushers and no loss to the Germans.

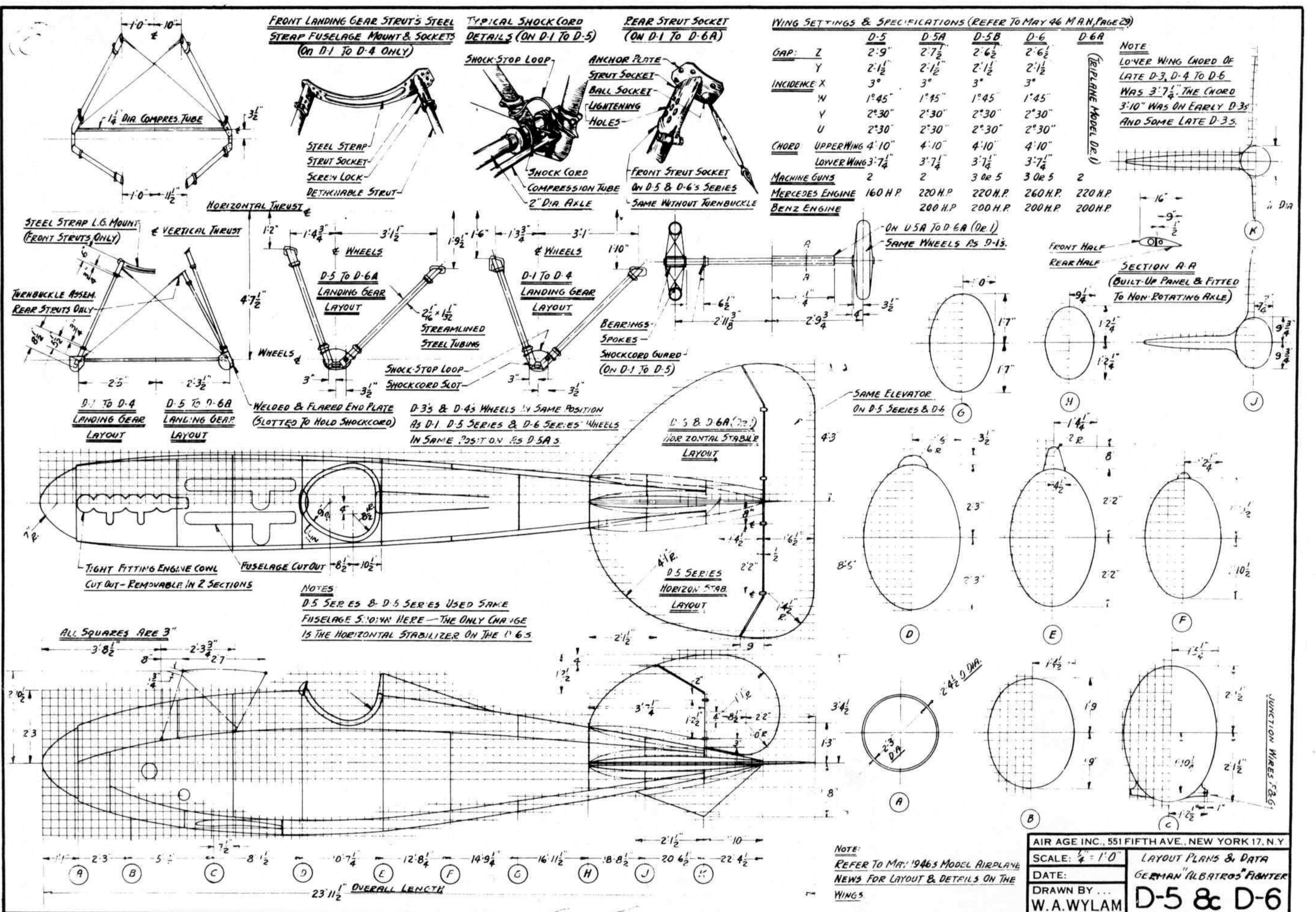
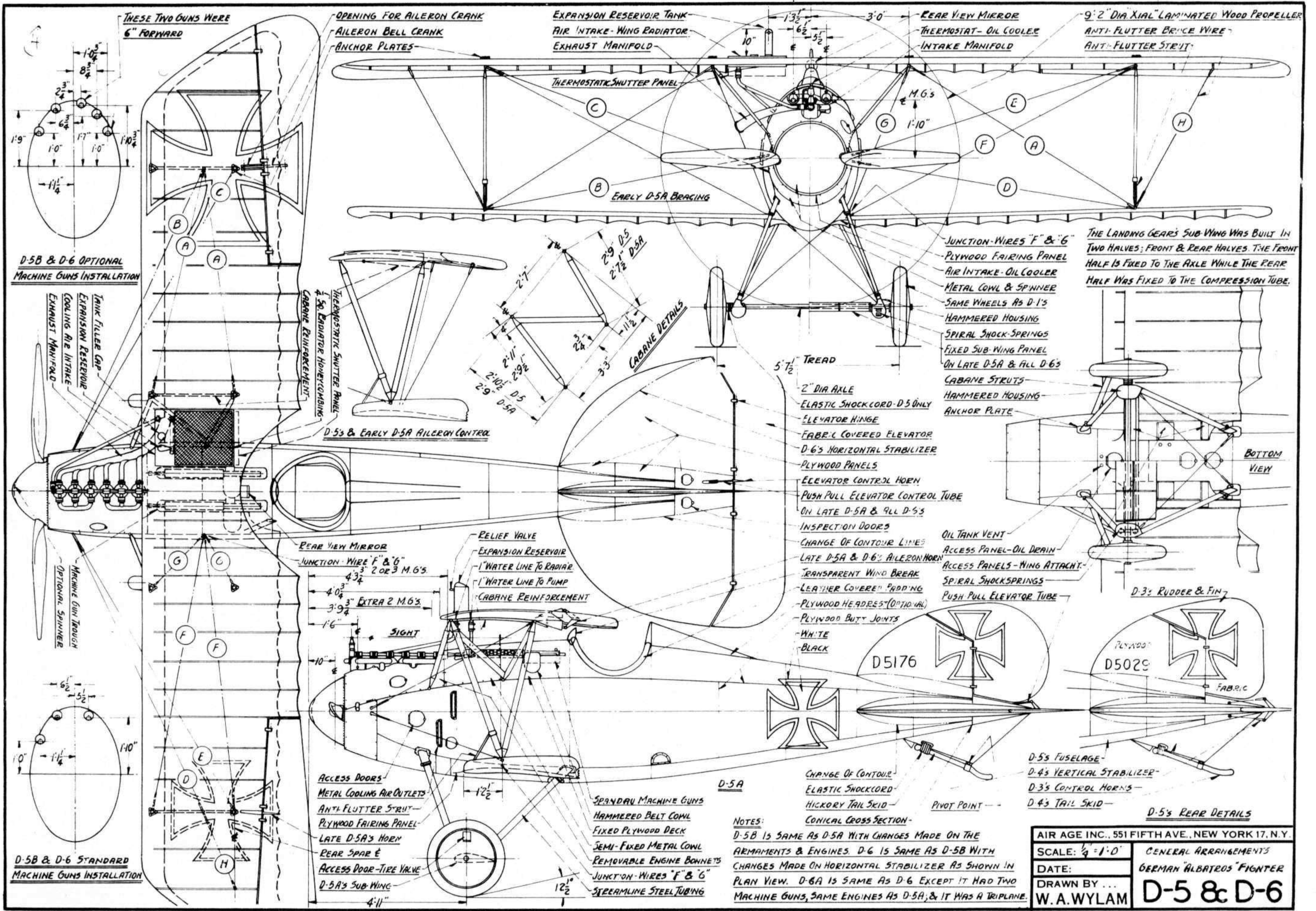
The D.I immediately made every other fighter aircraft at the front obsolete. Development continued, however, which ended with the D.XII. The combat career of the Albatros did not end with the closing of WW I, but went into Polish and Czechoslovakian units. Two survive, both D.Va's; one at the National Air & Space Museum, the other in Australia.

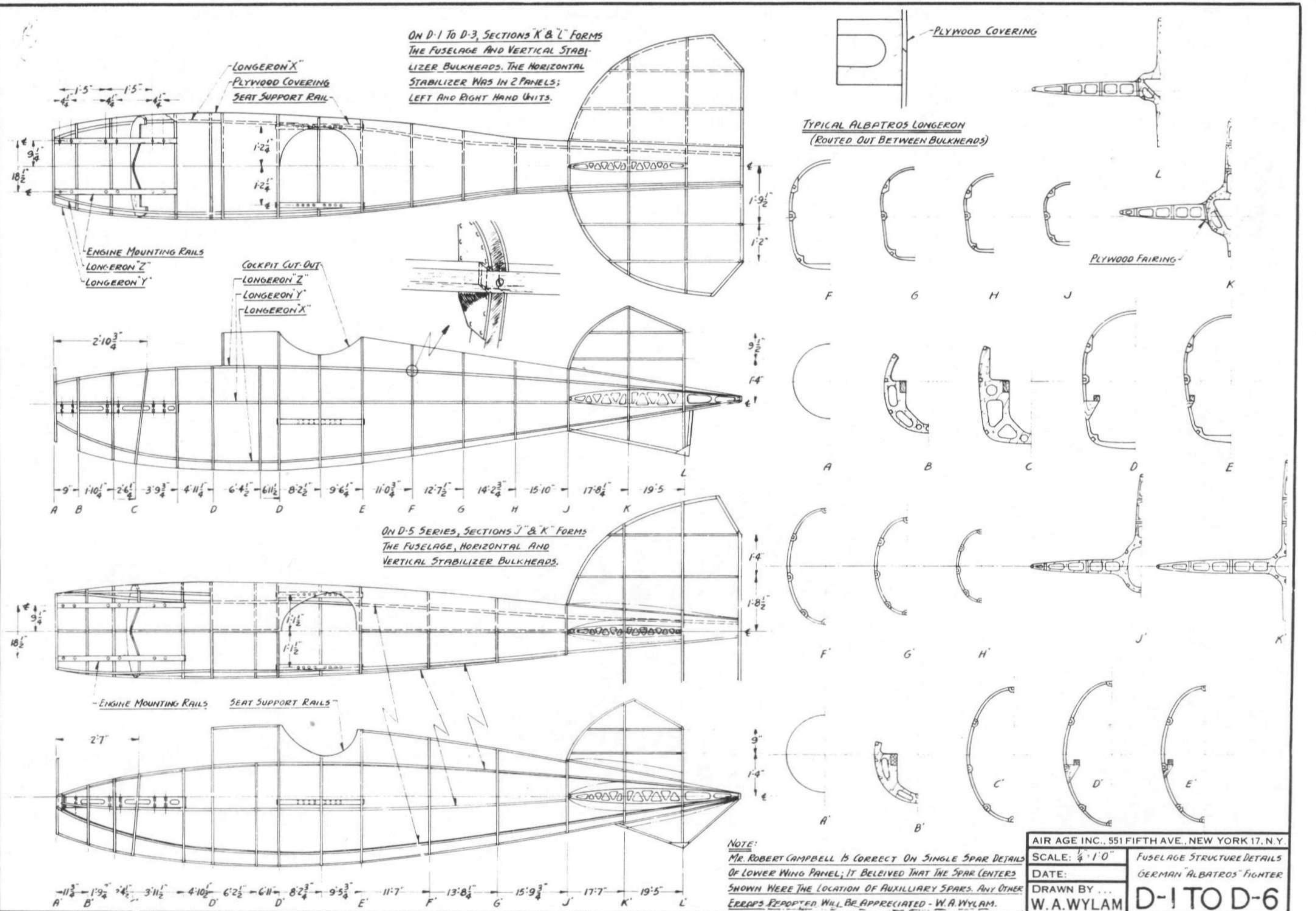
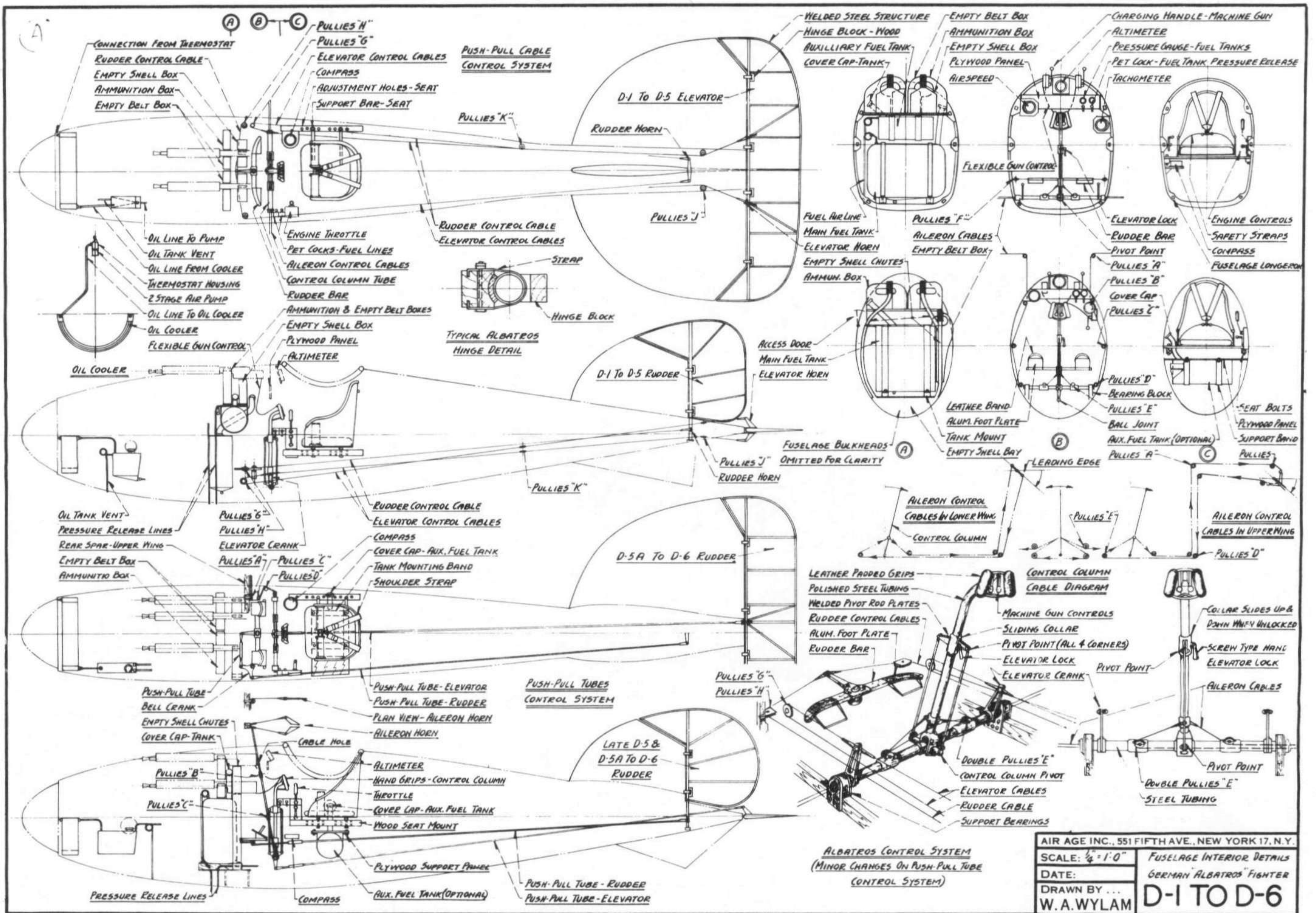


Above: A D.Va. The Albatros was a departure from the typical WW I fabric-and-stick fuselage and utilized advanced streamlining techniques for the times. "Jane's All the World's Aircraft" photo. Below: A captured Albatros D.III bearing RAF markings is another example of German streamlining attempts. Squadron/Signal Publications photo.









Ansaldo SVA-1

drawing by WILLIS NYE



Ansaldo SVA-4 was nearly identical to SVA-1. Note extra strut in center section bracing. Robert Hare photos from Air Age file.

ALTHOUGH little has been written of Italy's contributions during the first world war, the record is an amazing one. Italy's aerodynamicists were numbered among the world's finest, her factories were efficient, and Italian designs were definitely first class.

One of the largest companies was a firm known as "Societa Gio Ansaldo" of Genoa. To guarantee consistent quality, the firm established a testing program virtually unheard of during that period. In-plant testing and inspections were more critical than any contemporary

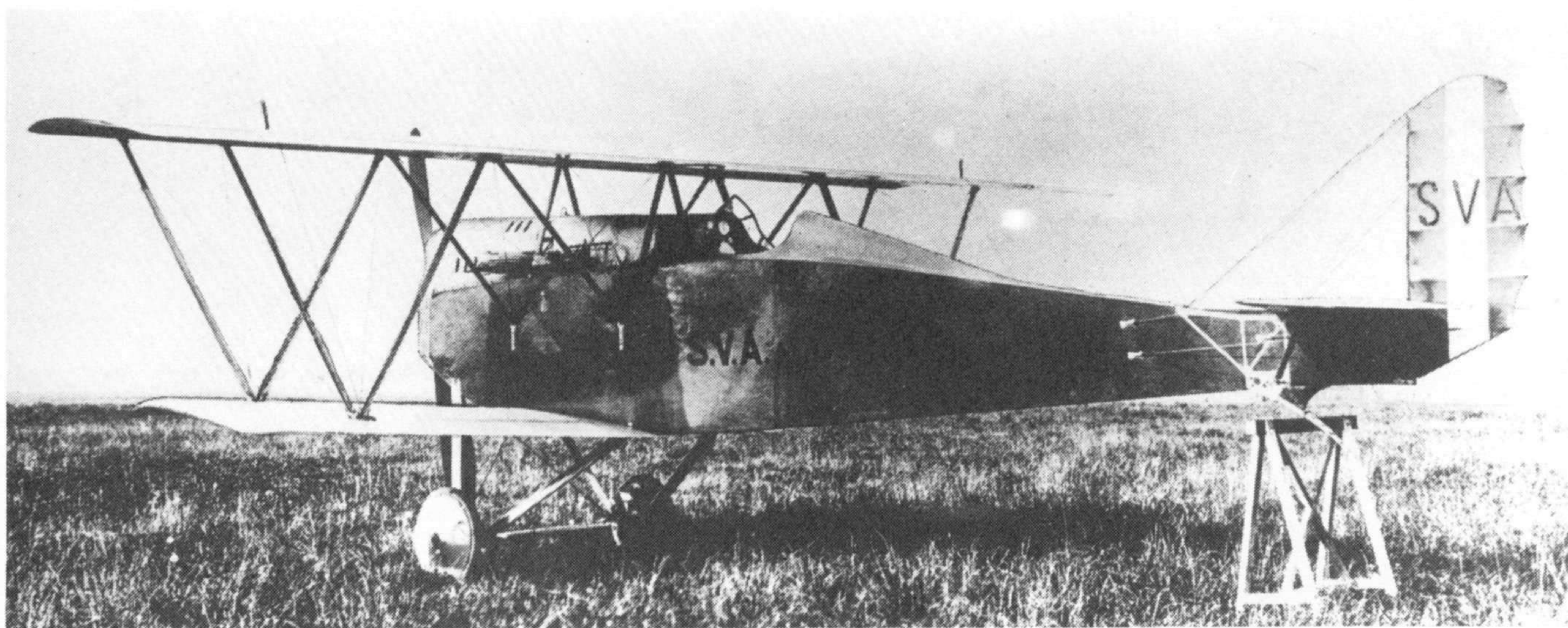
manufacturer had even thought of. From these facilities came the famous S.V.A. series of fighter and bomber aircraft.

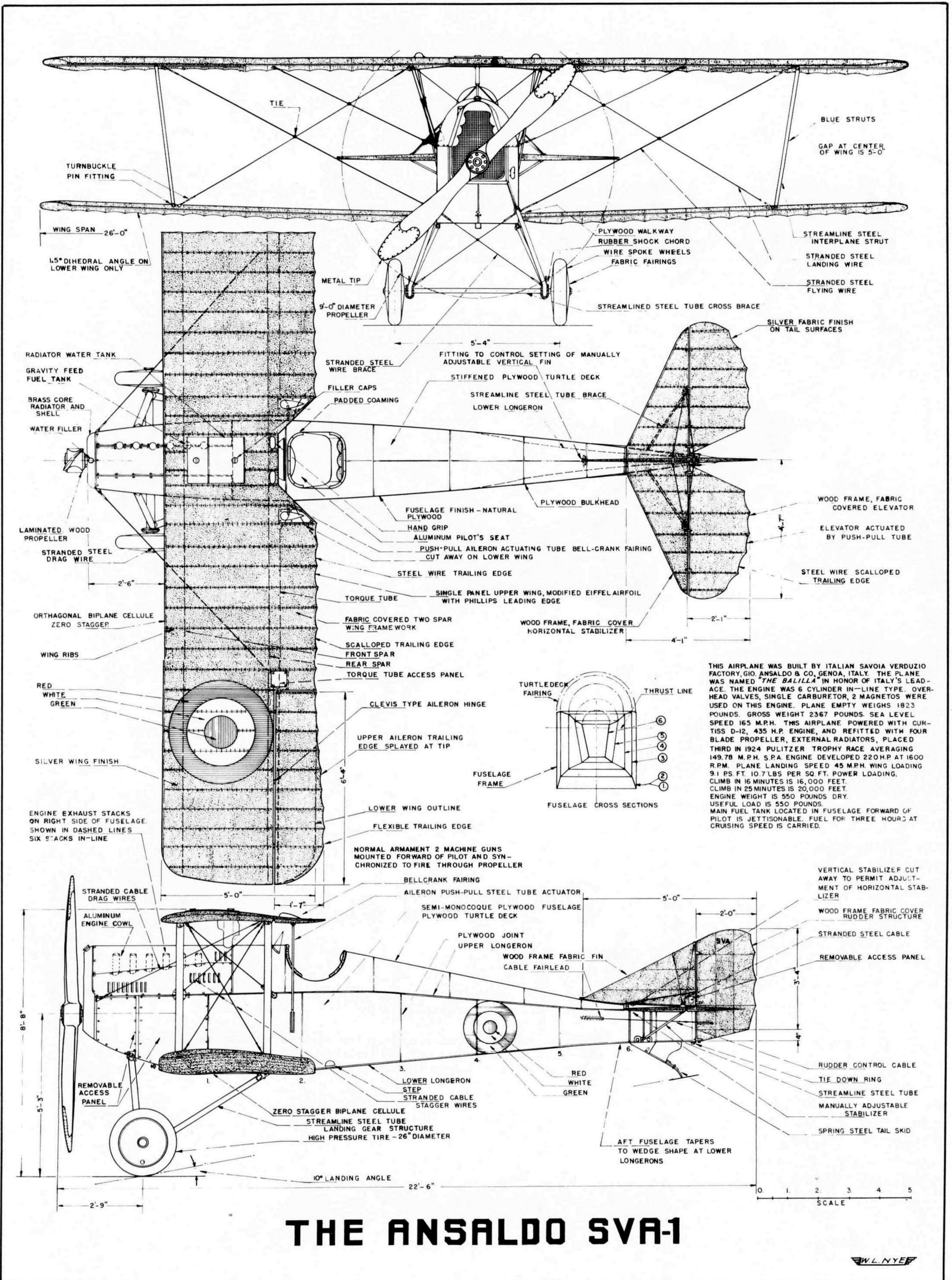
Fitted with a six-cylinder, water-cooled vertical-type engine that developed 225 hp at 1,700 rpm, the aircraft was suited to roles of both fighter and bomber. Altogether six models of the basic S.V.A. design are known to have been built, and of these three were exclusively single-seat fighters, two were listed as "escort" types, and one was fitted out as a single-seat bomber. Only the S.V.A.-4 and -5 reached true production status.

Operationally, the S.V.A.-4 and -5 were a distinct success. Nearly all Italian pursuit squadrons were fitted with the fighter version toward the war's end, while four bomber squadrons were entirely -4 equipped. They regularly took on missions of up to 700 miles round trip, which were completed in less than seven hours. Because of their versatility, the -5 fighters were often fitted with bombs for shorter range work and with extra fuel to escort the bombers.

A curious feature of Ansaldo aircraft, as well as other Italian aircraft up through WW II, was that the left-hand wings were *longer* than the right-hand wings to help overcome torque. Most drawings, including Nye's, do not show this.

The S.V.A. team was a formidable weapon deserving of an everlasting place in aviation's Hall of Fame. Seven survive, five in Italy and two in the U.S. □



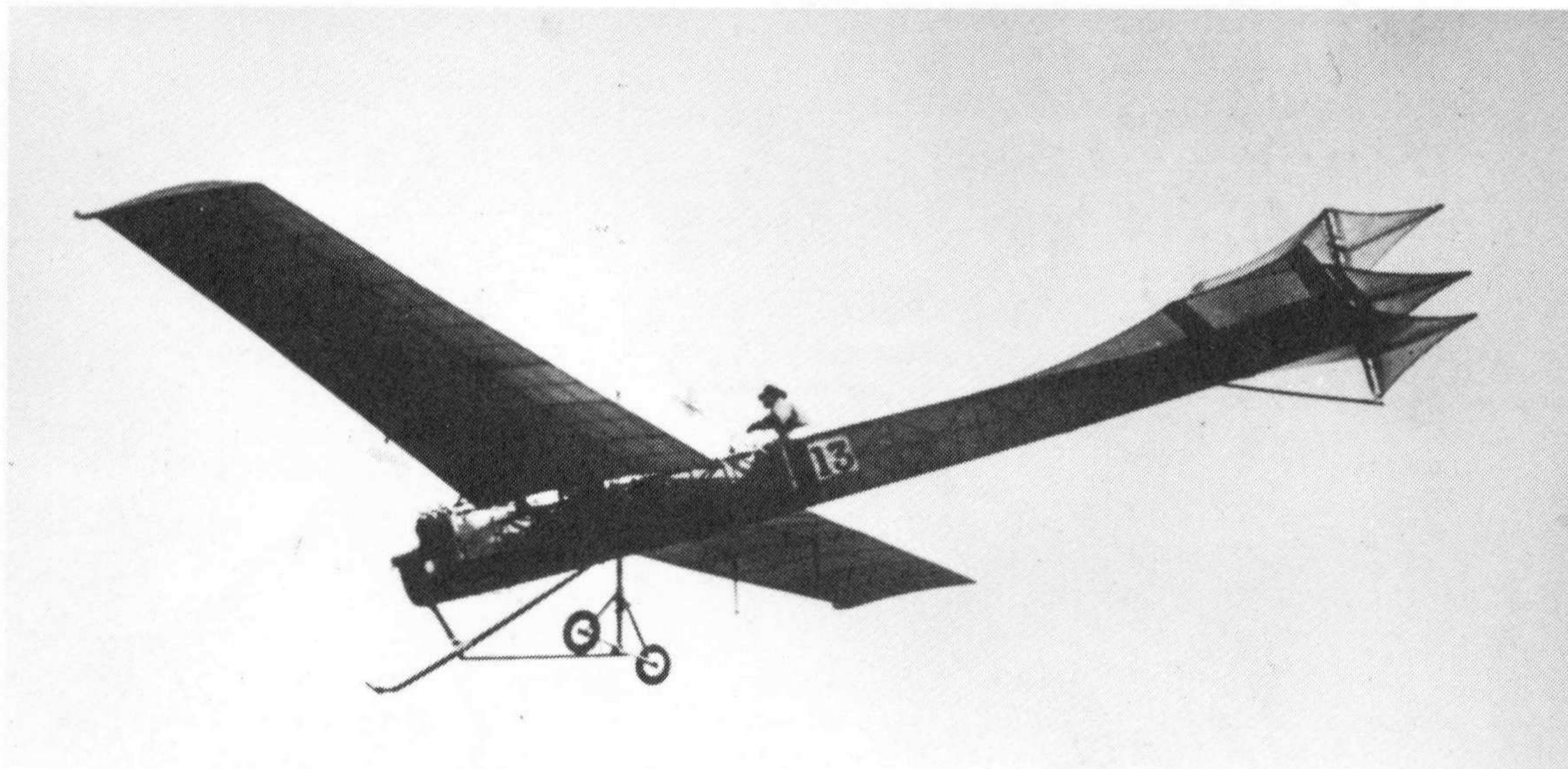


THE ANSALDO SVA-1

W.L. NYE

Antoinette VII

drawing by WILLIS NYE



FROM their motorboat engine factory, Leon Levavasseur and Jules Gastambide began building airplanes in 1903; the first successful design, Model IV, flew in 1908. Herbert Latham used it, much modified, in his first cross-Channel attempt, and the Model VII on his second: both efforts ended in the water. Most of the Antoinette designs were heavily modified: the two photographs on this page, and Nye's drawing, are all of the same machine.

The designs were fast and stable: Latham later flew his Model VII, repaired and dried out, over the Golden Gate Bridge in San Francisco in 1911. He was observed on the occasion by Willis L. Nye, our draftsman.

The firm also built the Monobloc, the first internally-braced low-wing monoplane, in 1910: it was too heavy to fly. Three Model VIIs were lent to the U.S. Navy by Harry Harkness, and two of them appear in photographs of the Curtiss training school at North Island, in California.

Three Antoinettes are left, one in London, one in Paris, and one in Krakow, in Poland. □



The advancement in aircraft design exhibited here in 1908 was quite revolutionary. Note rudder and elevator control surfaces. The entire wing panels were moved for lateral control. Photos courtesy of Leonard Opdycke, WW I Aeroplanes.

Armstrong-Whitworth

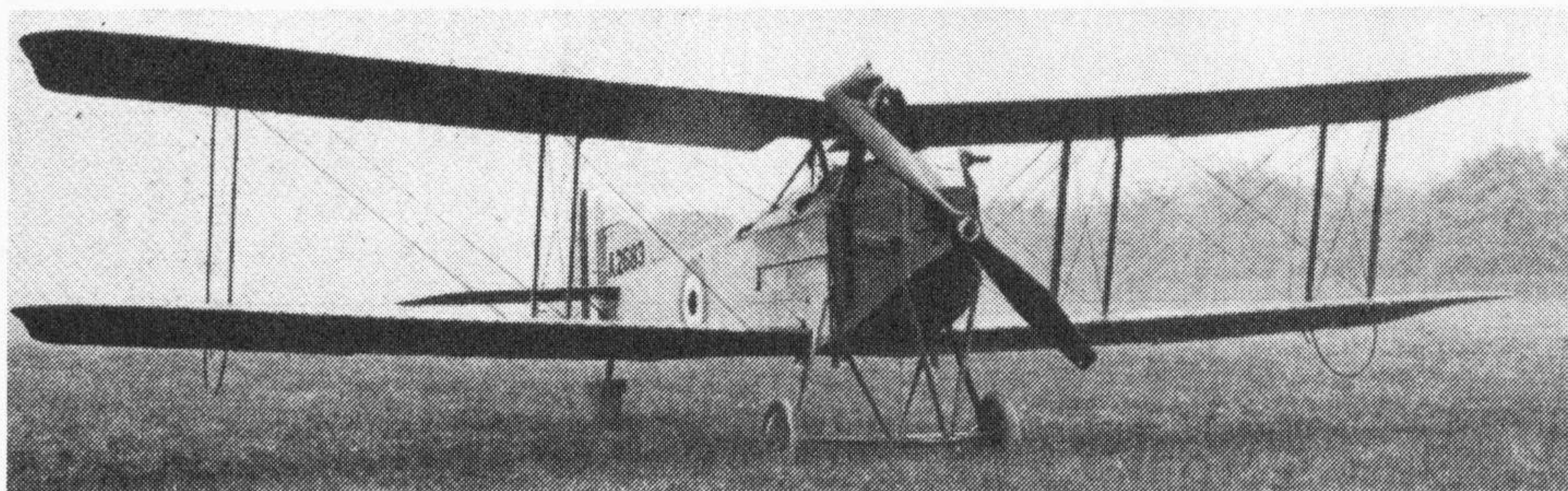
drawing by BJORN KARLSTROM

THE Armstrong-Whitworth F.K.8, designed by Mr. Frederick Koolhoven, was a heavier and an improved version of the F.K.3. It had a deeper fuselage, a slimmer type of undercarriage except that the central skid was cut short in front of the front V, and a 160-hp Beardmore engine. This machine was used to a large extent on various fronts of WW I for contact patrols, artillery spotting, light bombing, photography, and reconnaissance work up to the signing of the

Armistice.

About halfway through its active service life, the F.K.8 was slightly modified by having a V-type undercarriage fitted (at first from Bristol fighters, and when the stock ran low, from B.E.2c's, finally from Armstrong-Whitworth), and smaller radiators of improved efficiency installed. A long exhaust pipe was also added to carry the exhaust fumes well clear of the crew.

None survive. □



With 120-hp Beardmore engine, the F.K.8 had a top speed of 85 mph. Developed by the British, this aircraft served notably throughout WW I. "Jane's All the World's Aircraft" photos.

Specification.

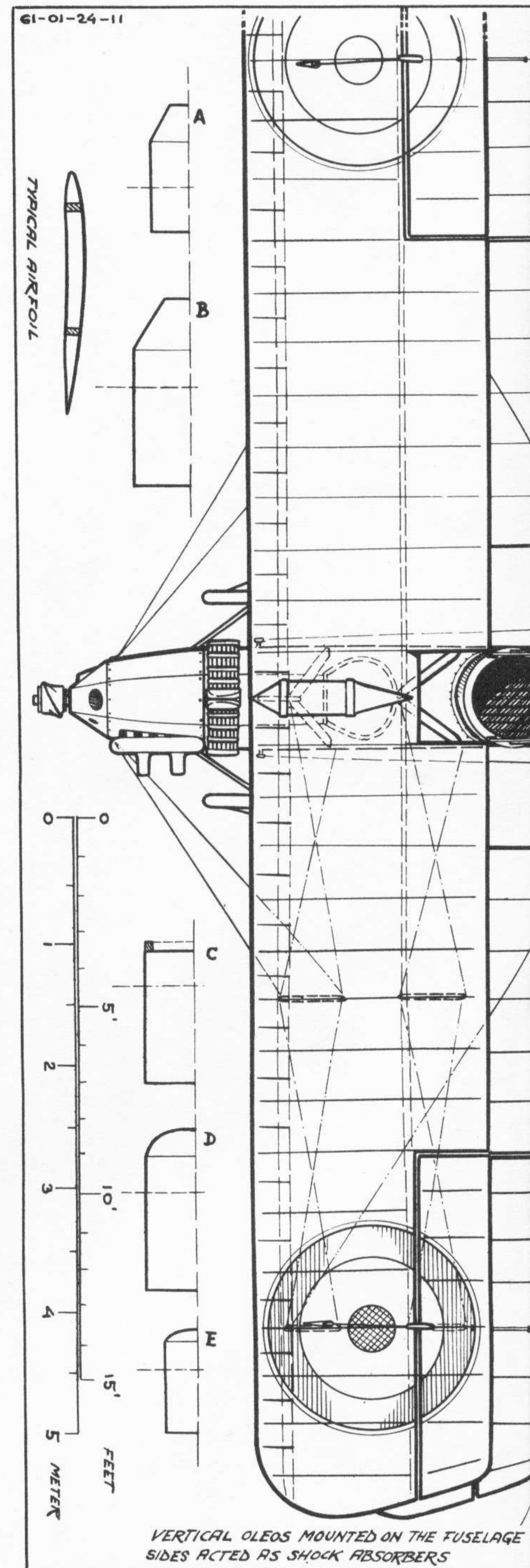
Type of machine	Two-seater Biplane.
Name or type No. of machine	Armstrong-Whitworth F.K.3.
Purpose for which intended	Sport and Training.
Span	40 ft.
Overall length	28 ft. 8 in.
Maximum height	10 ft. 2½ in.
Engine type and h.p.	90 h.p. R.A.F.
Weight of machine empty	1,900 lbs.
Tank capacity in hours	3½ hours.

Performance.

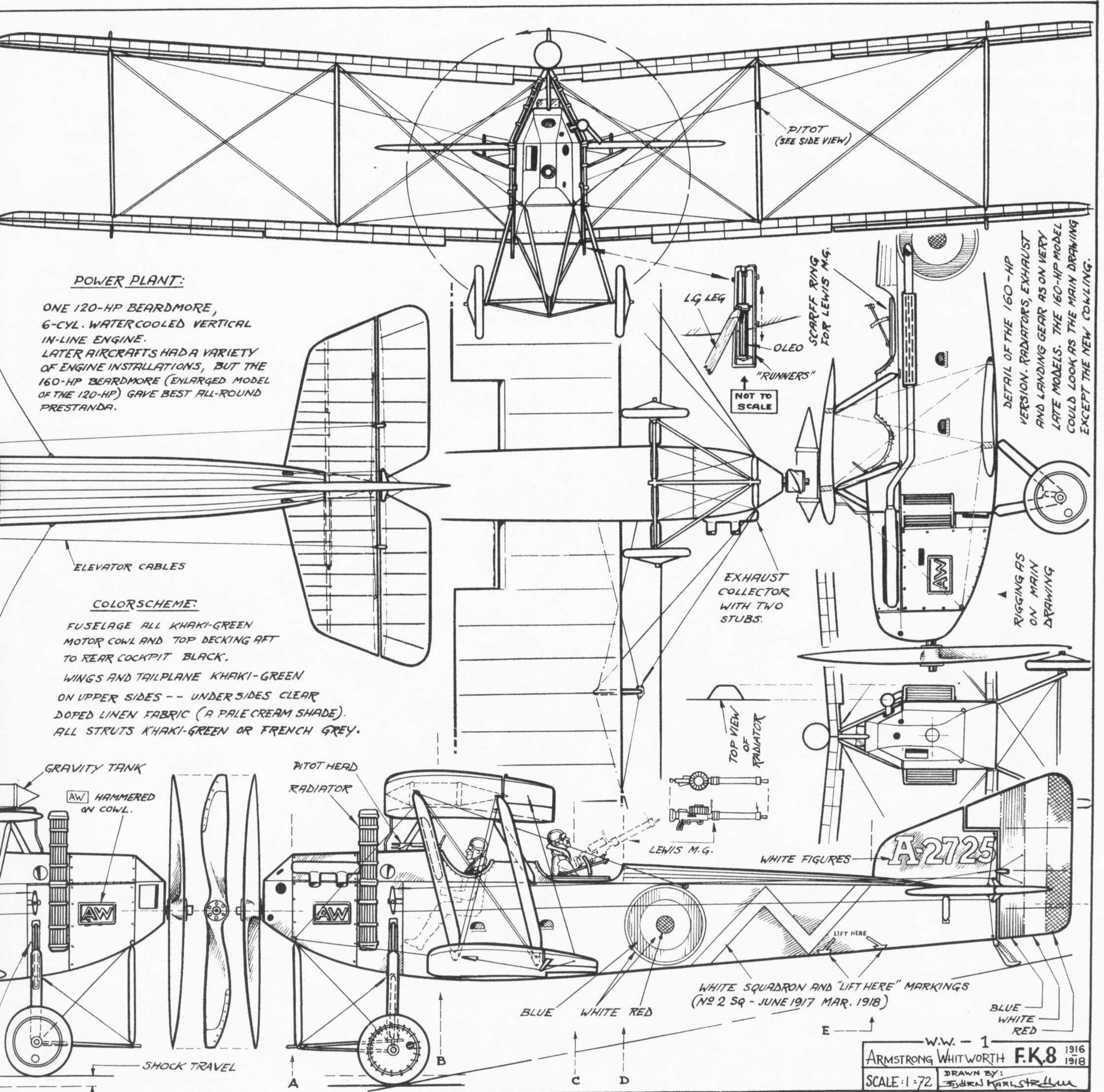
Speed at 1,000 feet	85 m.p.h.
Landing speed	38 m.p.h.

Climb.

To 10,000 feet in minutes	23 minutes.
-----------------------------------	-------------



North F.K.8



Bleriot XI

drawing by WILLIAM WYLAM

ONE of the epic flights of aviation history, probably equal in importance and impact to Lindbergh's flight, was Louis Bleriot's 22-mile flight across the English Channel in 1909. With this amazing feat, the French pioneer created a worldwide sensation and focused the attention of all civilization on the potential use of the airplane as a transportation vehicle.

The Bleriot XI was small and weighed only 660 pounds. Power was a three-

cylinder Y-type Anzani air-cooled engine that developed about 20 hp. The airframe was wood, with rubberized fabric covering. Lateral control was attained by warping the wings.

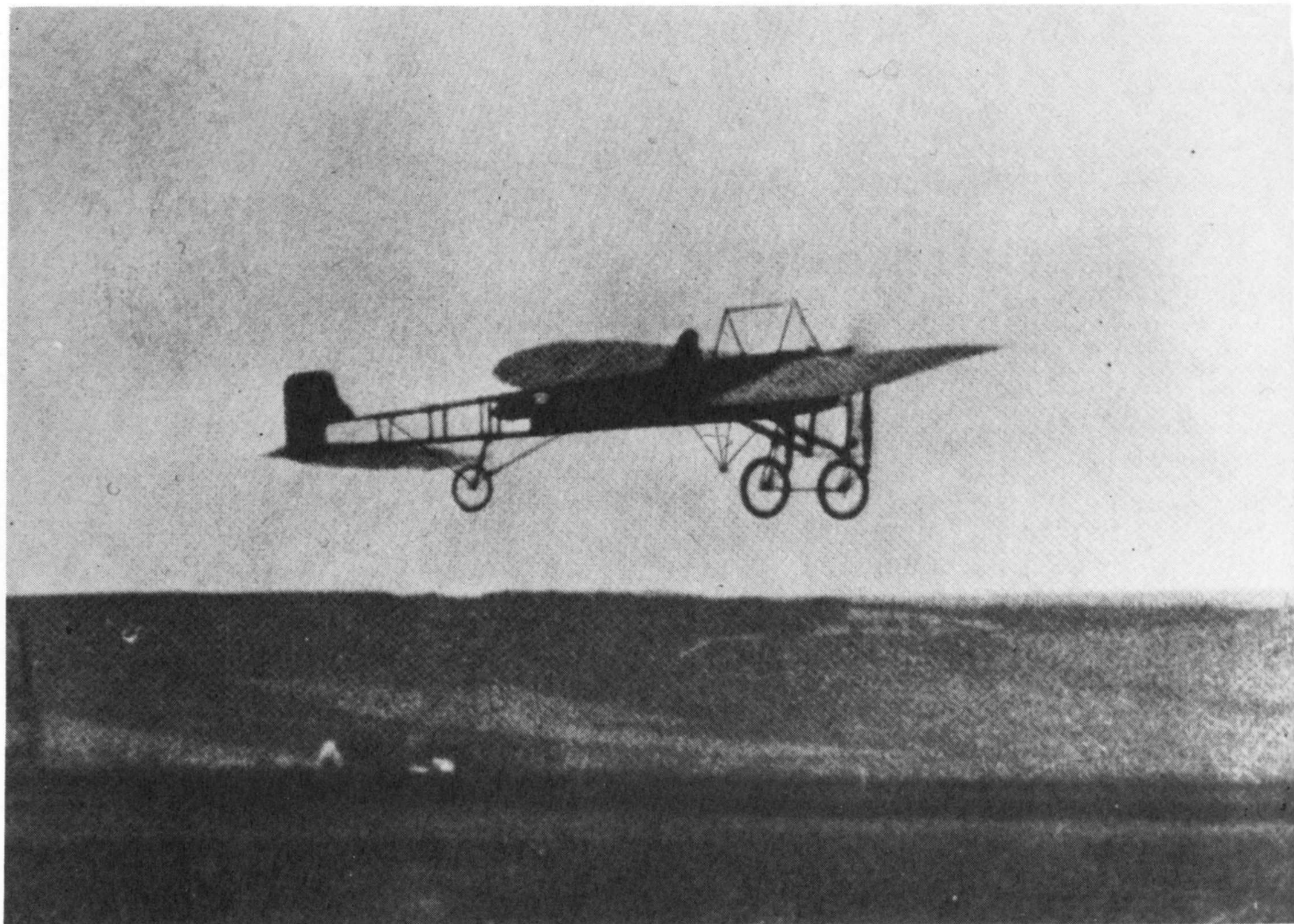
Sparked by an award of \$5,000 by the *London Daily Mail* for the first flight across the Channel, Bleriot was challenged for the award by Hubert Latham, a famous record-smashing pilot of that period. On Sunday, July 25, 1909, Louis Bleriot landed his plane near Dover

Castle, England, after crossing the Channel in less than one hour, a feat which garnered him over \$15,000 in prize money.

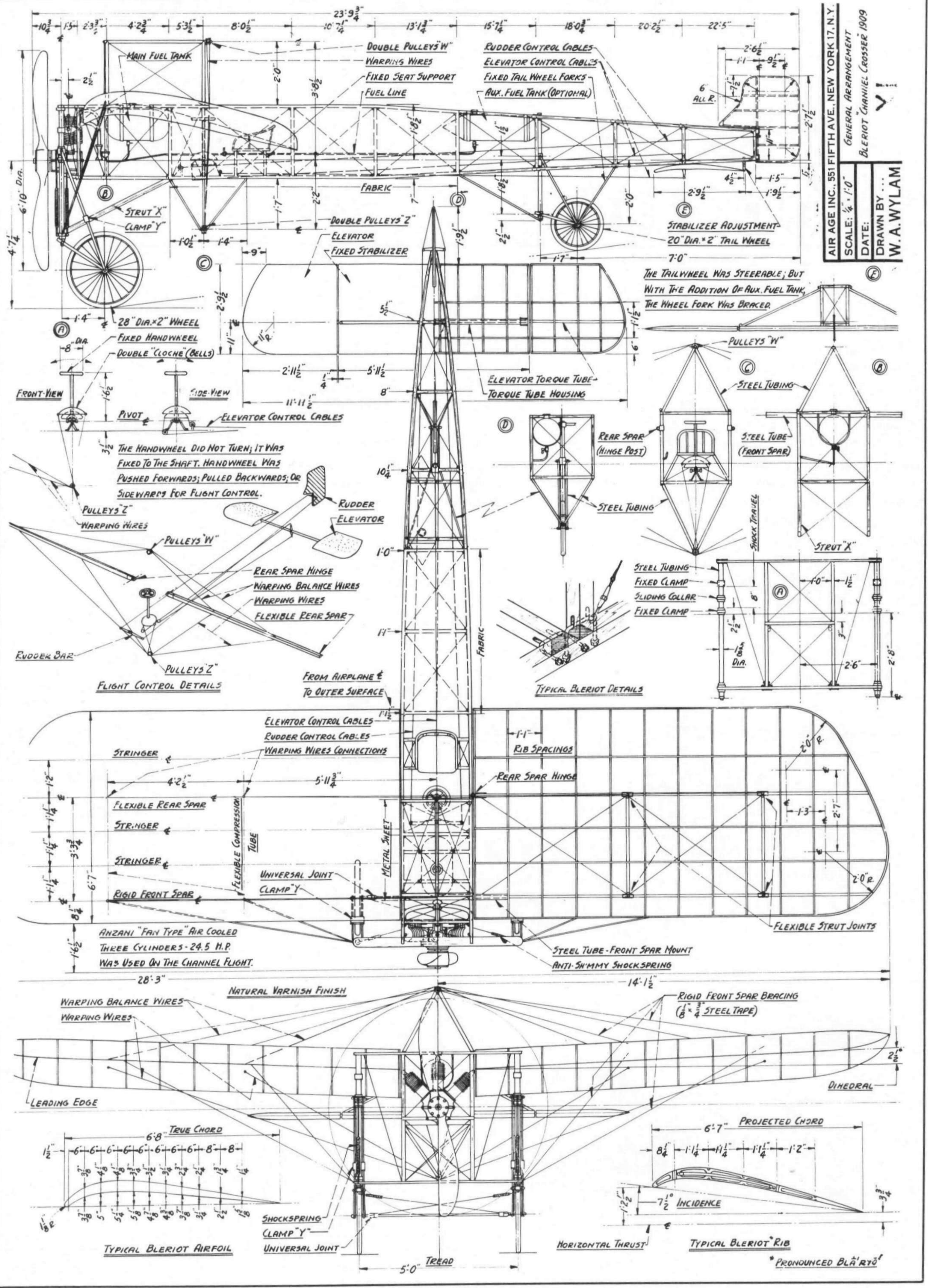
Many variants of the XI design were built by the Bleriot firm, including parasols and two-seaters. The photograph and Wylam's drawing show the aircraft Bleriot used to fly the Channel. Note the inflated bladder inside the fuselage.

Many Bleriot XIs are still around, in museums or privately owned. □

An extremely rare photograph, this shot taken as Bleriot commenced his journey into history crossing the English Channel on Sunday, July 25, 1909. Air Age file photo.



AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 GENERAL ARRANGEMENT
 BLERIOT CHANNEL CROSSER 1909
 SCALE: 1/4" = 1'-0"
 DATE:
 DRAWN BY ...
 W.A. WYLAM



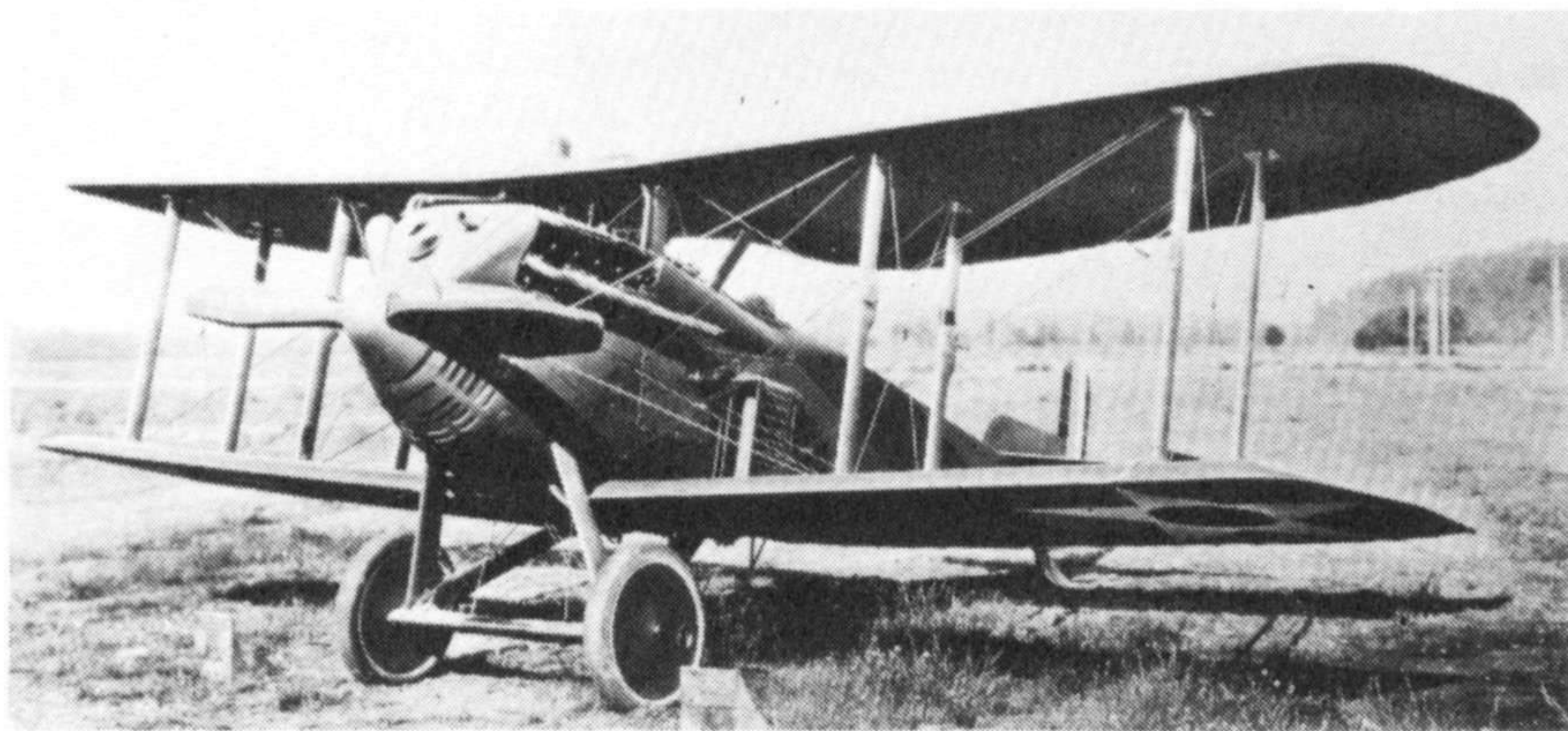
Boeing MB-3A

drawing by JOSEPH NIETO

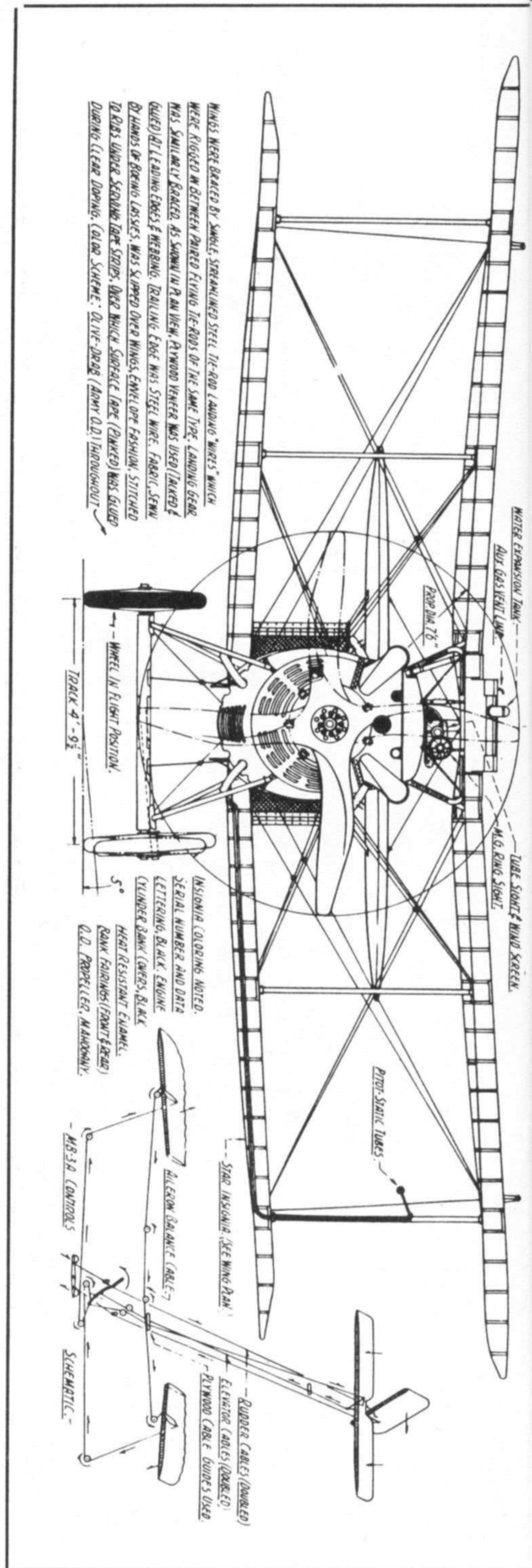
"IF THE WAR had lasted..." That was a common speculation among aircraft engineers and enthusiasts following the Armistice of WW I. Of course, no sane person of the period was genuinely in favor of continuing the European holocaust, but there was, after the fracas was all over, a somewhat nostalgic—and disappointed—feeling that swept over the American aircraft industry. The Thomas Morse Aircraft Co. had but one thing in mind with the MB-3: to equal, and possibly outperform any European plane of the same type. Designed in 1918, and not flown until February 1919, it was too

late to see service in the war.

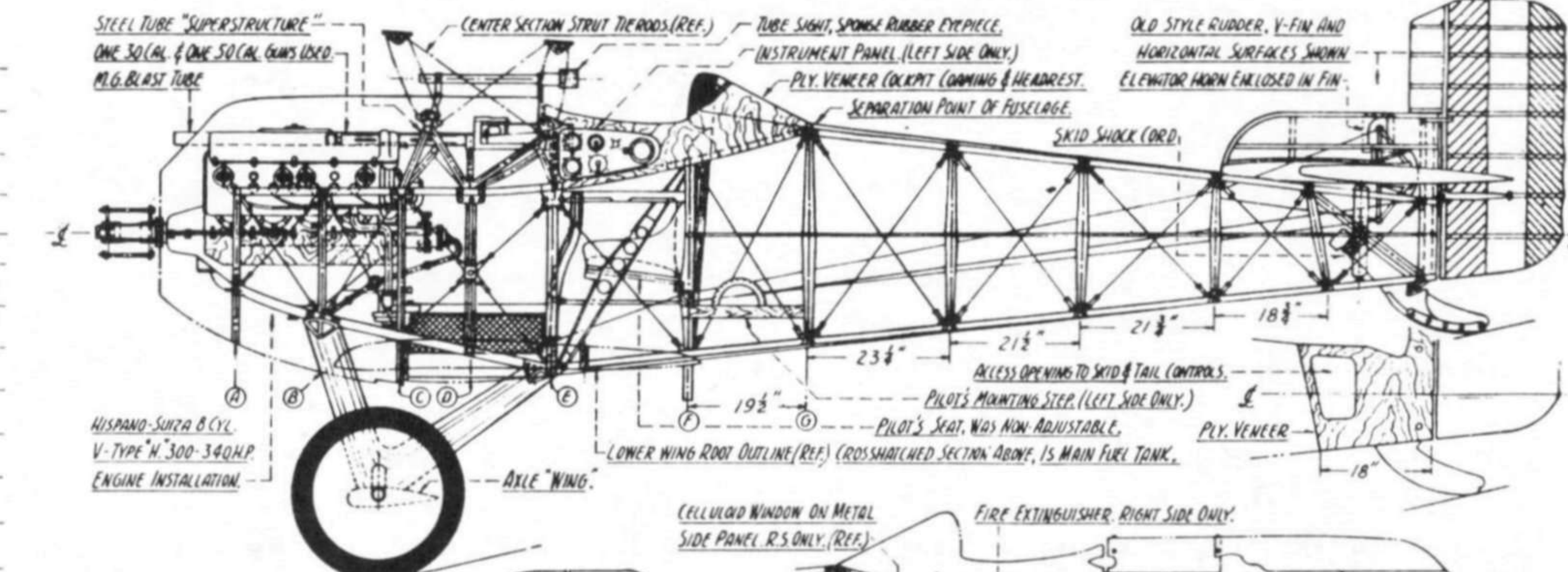
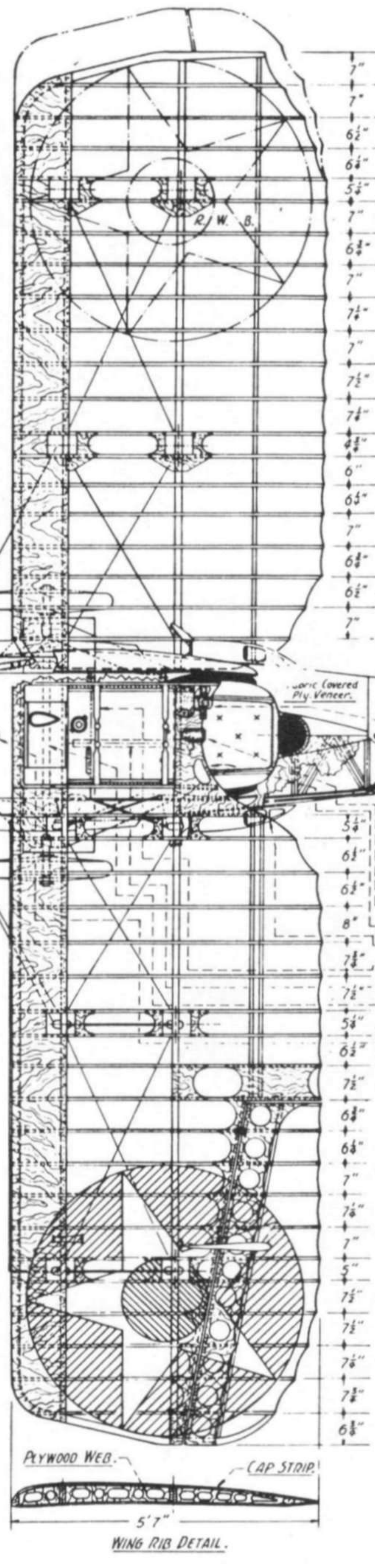
Boeing was contracted, along with Thomas Morse, to build the Thomas Morse design and the versions produced by Boeing were the MB-3A, which featured modifications to the control surfaces and empennage, among other changes to cowling and engine. The result was an airplane that, in its time, was equal to or better than anything in the air. Serving up until 1929, the MB-3A established Boeing as a quality craft builder at a time when the aviation business was really tough. □



Top photo, "Pedigree of Champions, Boeing Since 1916." Left photo, "Chronicle of Aviation History in America."

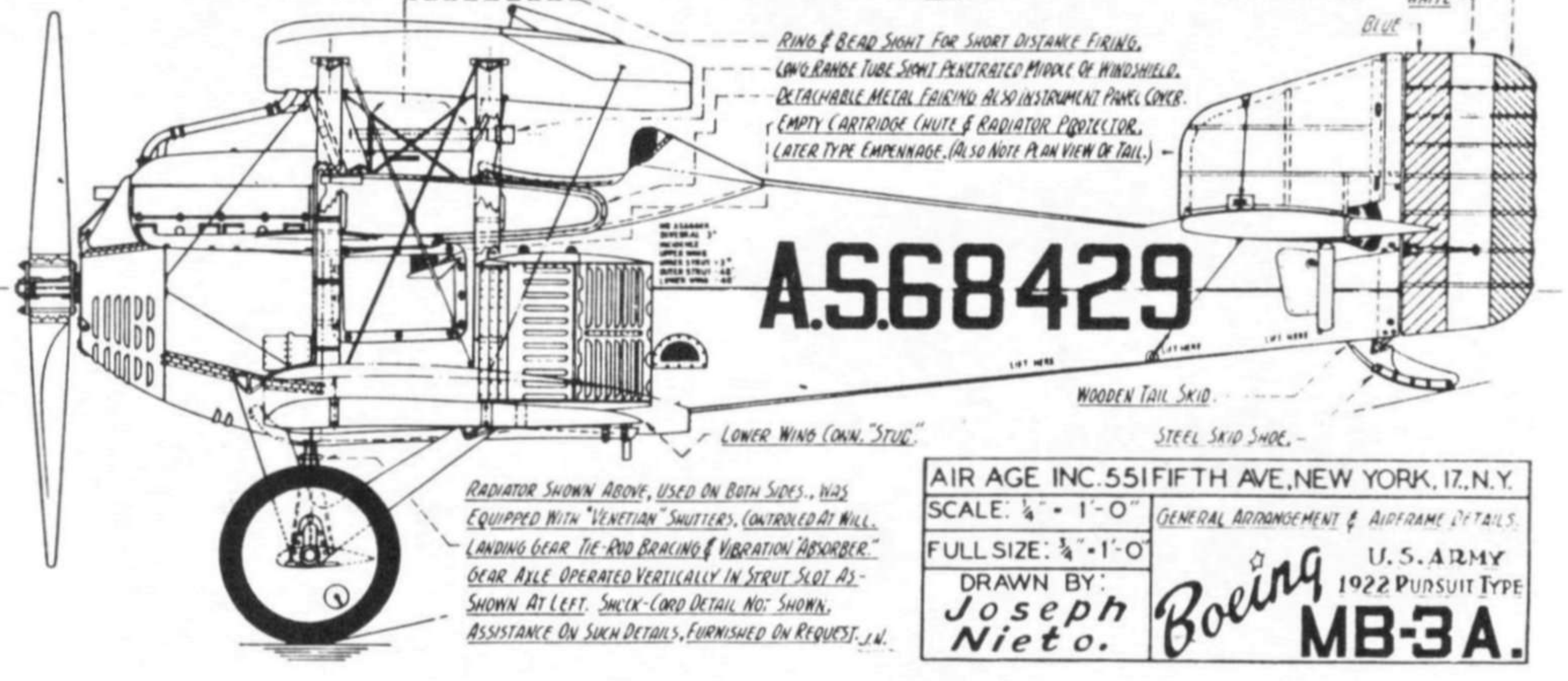
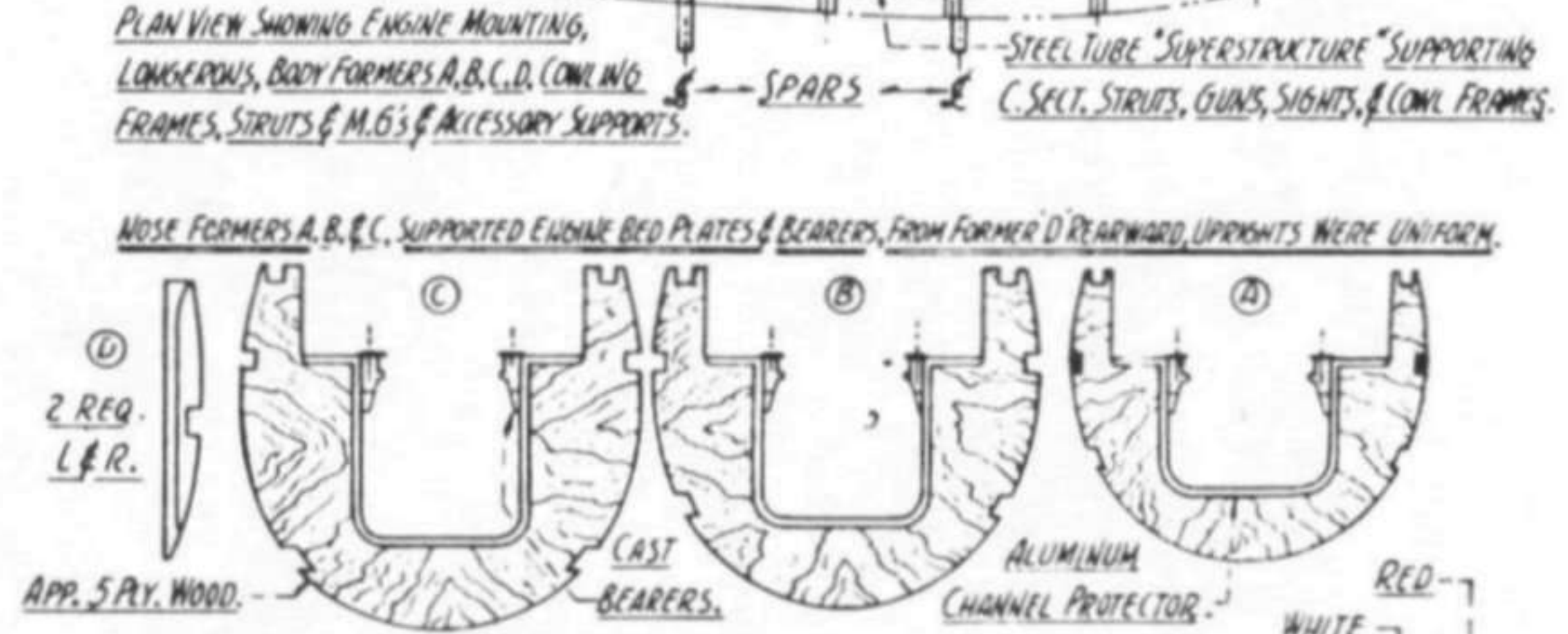
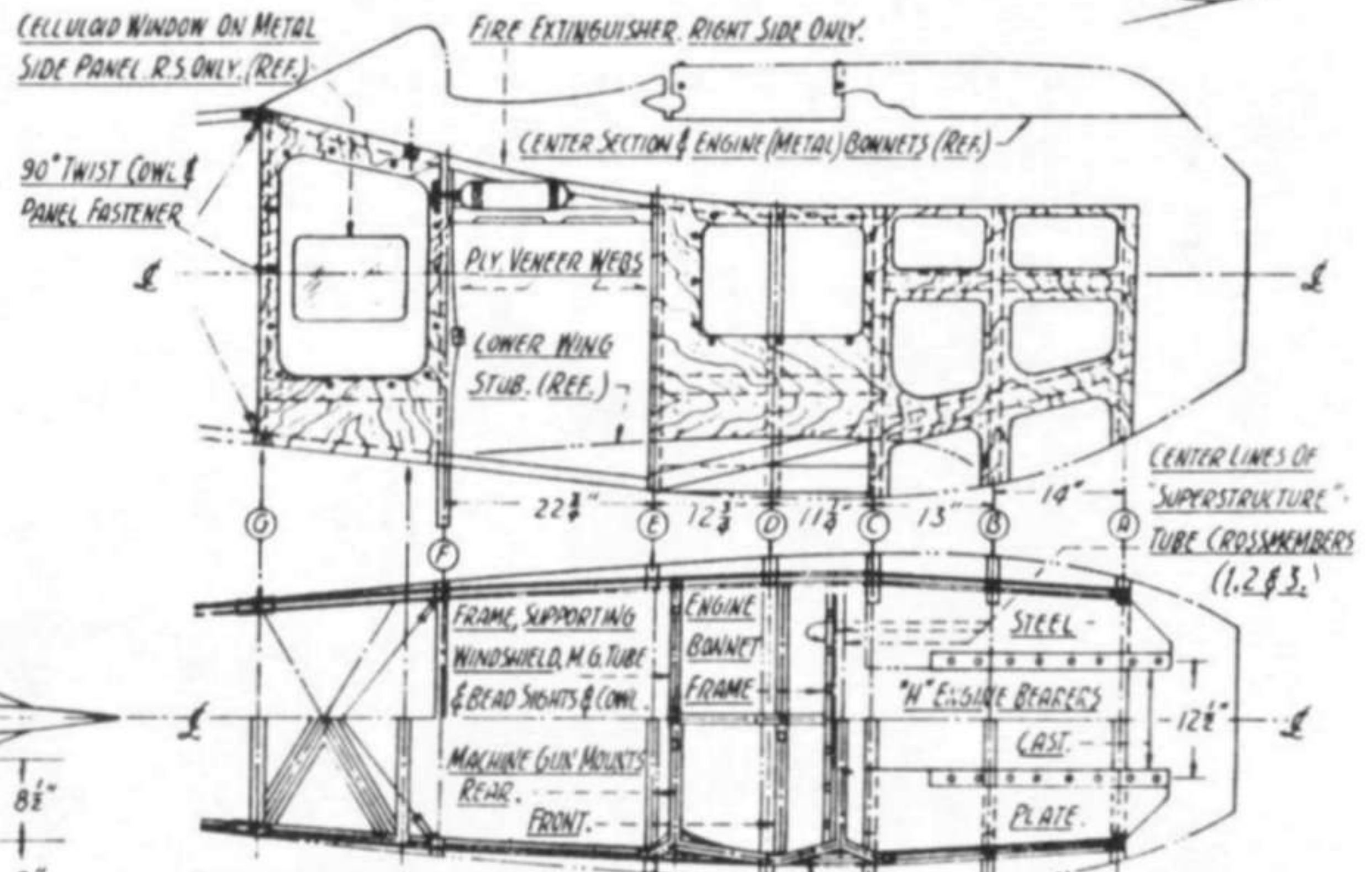


BOEING AIRCRAFT'S FIRST LARGE CONTRACT IN 1921, FOR THE U.S. ARMY, WAS FOR THE DESIGN AND CONSTRUCTION OF THE MB-3A. THIS WAS THE FIRST OF THE MB-3A'S, WHICH WERE DESIGNED BY BOEING AND BUILT BY THE U.S. ARMY AIRCRAFT FACTORY AT WRIGHT-PATTERSON FIELD, OHIO. THE MB-3A WAS THE FIRST OF THE MB-3A'S, WHICH WERE DESIGNED BY BOEING AND BUILT BY THE U.S. ARMY AIRCRAFT FACTORY AT WRIGHT-PATTERSON FIELD, OHIO. THE MB-3A WAS THE FIRST OF THE MB-3A'S, WHICH WERE DESIGNED BY BOEING AND BUILT BY THE U.S. ARMY AIRCRAFT FACTORY AT WRIGHT-PATTERSON FIELD, OHIO.



MODEL BUILDERS, PLEASE NOTE: IT IS THE SINCERE DESIRE OF THE AUTHOR TO FURNISH IN THESE DRAWINGS THE GREATEST & MOST ACCURATE DETAILS POSSIBLE. FOR SAKE OF CLARITY, MUCH DETAIL HAD TO BE EXCLUDED. ONLY THE CURVED BODY SECTIONS OF NOSE ARE SHOWN. (LOWER RIGHT) BUT MODELER MAY BE GUIDED BY OUTLINE OF BODY IN PLAN VIEW OF NOSE AT RIGHT. STRUCTURE OF LATE TYPE STABILIZER & ELEVATOR (PLAN VIEW) IS NOT AUTHENTIC BUT WAS RECONSTRUCTED WITHIN AUTHENTIC OUTLINES TO THE CONFORMITY OF WIND CONSTRUCTION. BRACING (ABLES) STRINGERS, (ABOVE & BELOW)

USED BETWEEN FORMERS A, B, C & D. (SIDE VIEW, SKELETON) WERE DOUBLED, NOT SHOWN, BUT USED, WERE BRACE WIRES WITHIN BODY FROM STATION "G" TO TAIL SKID POST. DIRECT READING MAGNETIC NAVIGATION COMPASS. AUX. GRAY FEED GASOLINE TANK QUANTITY GAGE. HAND-HOLD IN WING (CENTER SECTION, PILOT MOUNTING). STREAMLINED COOLANT (WATER) RADIATORS (EACH SIDE.) AUXILIARY FUEL TANK STRAPS. MACHINE GUN TUBE SIGHT. ENGINE COOLANT EXPANSION TANK. HOOK PROVIDED AS ANCHORAGE FOR HOUSTING SHIP.



AIR AGE INC. 55 FIFTH AVE. NEW YORK, N.Y.
 SCALE: 1/4" = 1'-0"
 FULL SIZE: 3/8" = 1'-0"
 DRAWN BY: Joseph Nieto.
 Boeing U.S. ARMY 1922 PURSUIT TYPE MB-3A.

Bristol F.2B

drawings by WILLIAM WYLAM

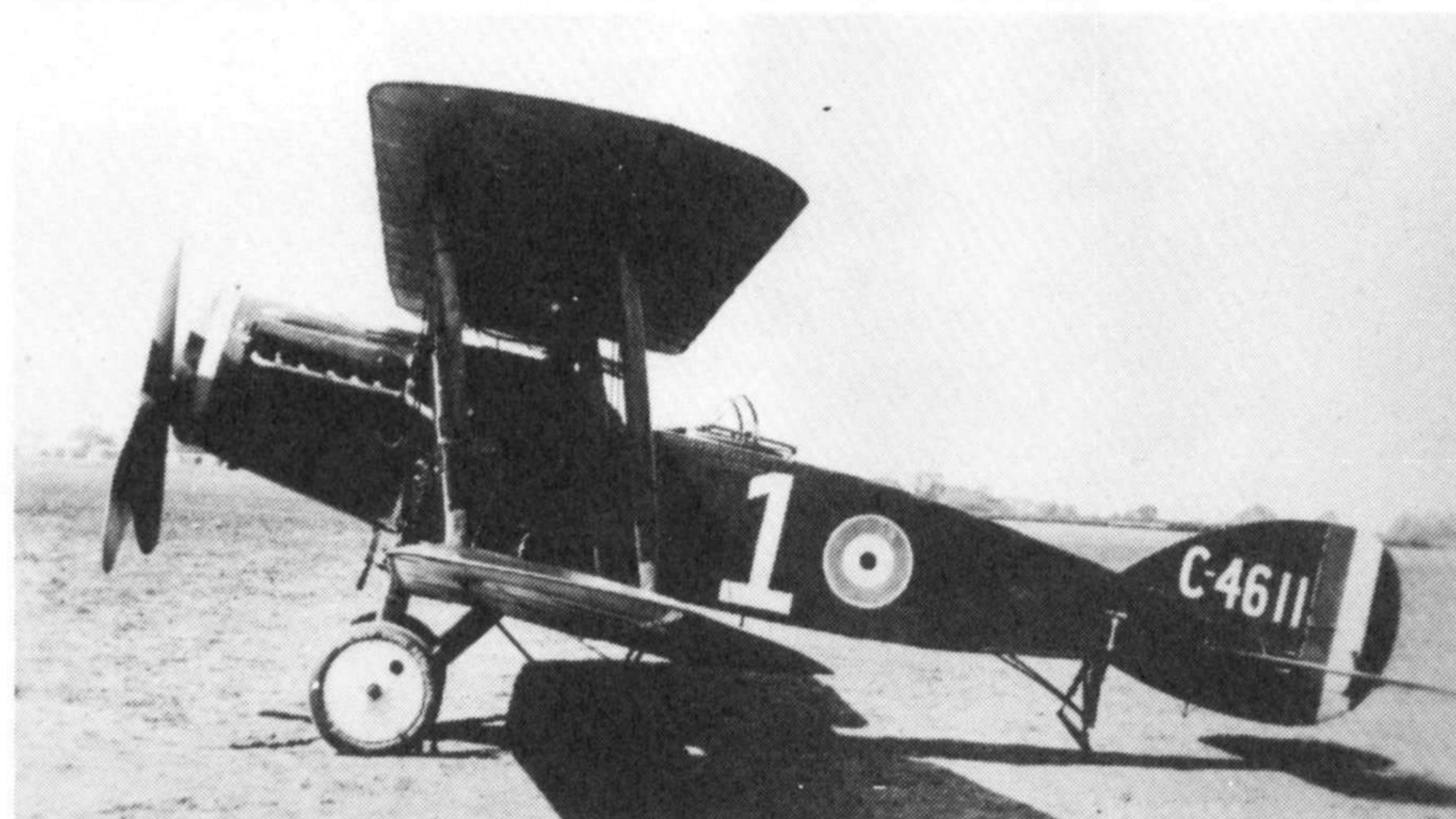
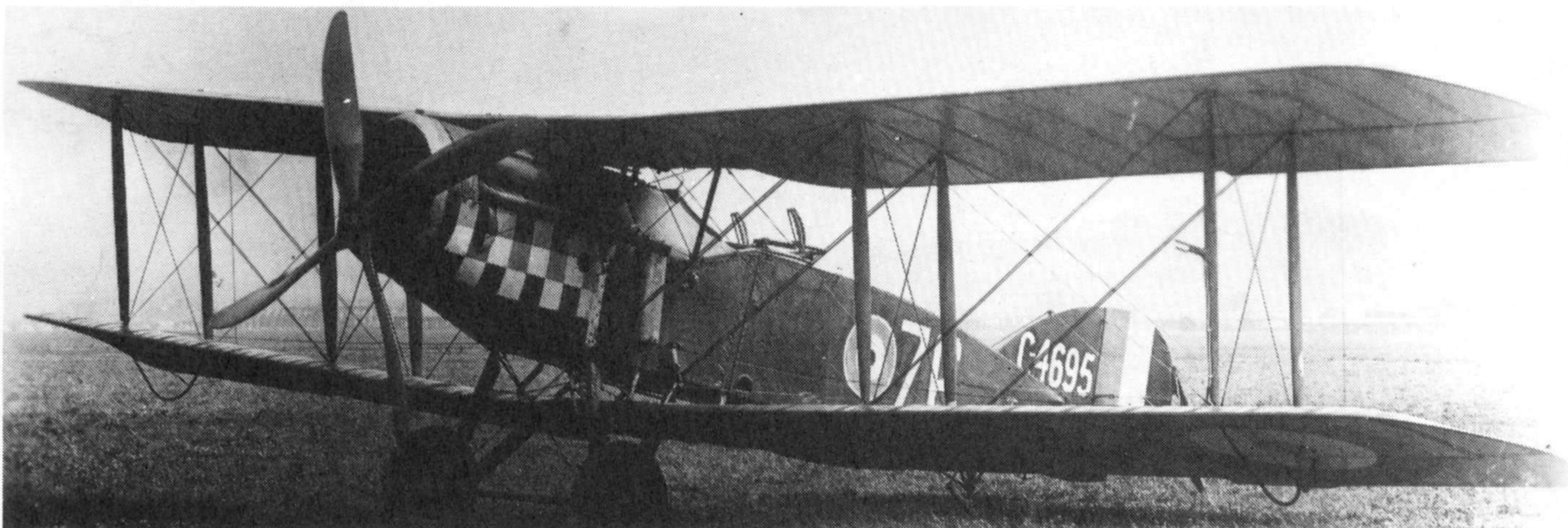
AN OUTSTANDING success in every role it was to play in WW I, the Bristol fighter, affectionately known as the “Brisfit,” was described as a “pilot’s airplane” by all accounts on file with the British Air Ministry. But its first appearance over the Front—six F.2A’s—ended with four of them shot down, because their pilots had not yet learned to fly them like fighters instead of observation planes. When they did learn, in the middle of 1917, the Fighter began to replace the

then-staged S.E.5. It didn’t take long for stories about the F.2B’s fighting ability to get around. A two-place airplane, the F.2B was a departure from pilots’ prior experience and the acceptance of it was initially slow. The training methods, however, stressed the remarkable features of the airplane itself and the pilot-observer teamwork necessary to obtain the greatest possible effect. The result was to fulfill a specific function—fighting in the air.

The engine selection varied from 190 to

280 hp, depending on the job expected of the plane and its date of manufacture. Radiators were fitted accordingly and differed in shape and size. The F-2B was probably the only two-seater built during WW I that handled like a single-seater. It was maneuverable and as fast as the Fokker D.VII. These features made it possible for pilots such as Capt. Andrew McKeever to gain 23 of his 30 victories. And McKeever had only one eye!

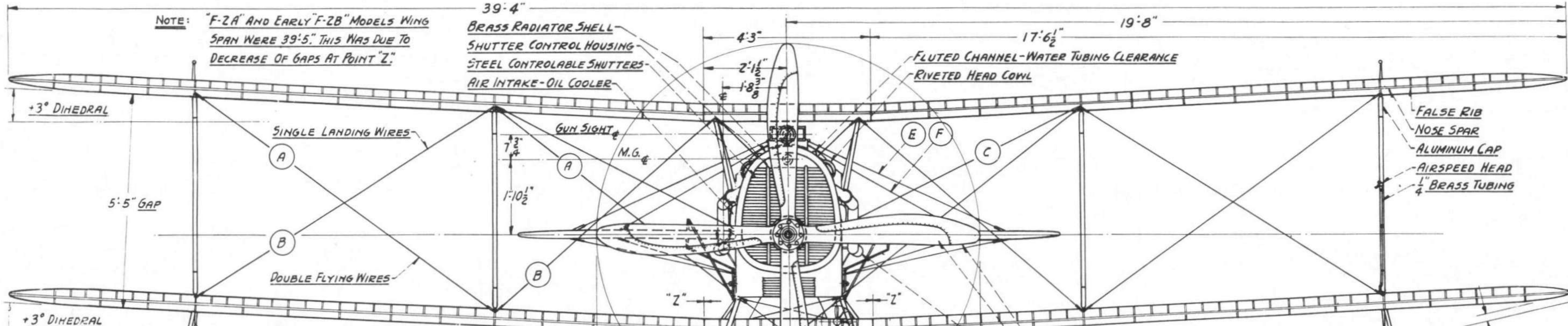
As many as ten F.2B’s survive, all in



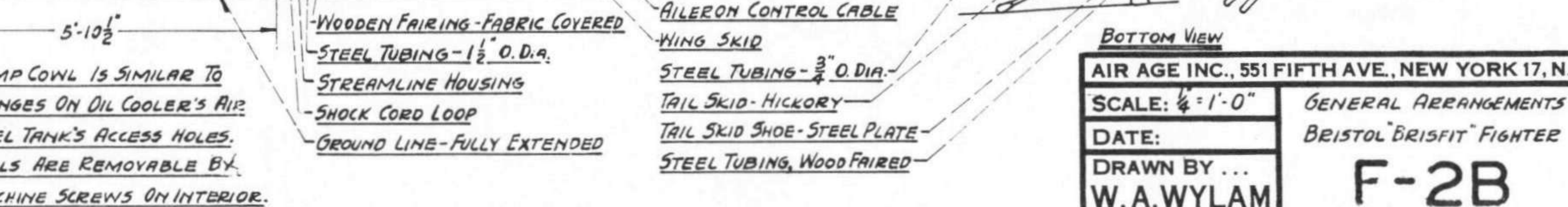
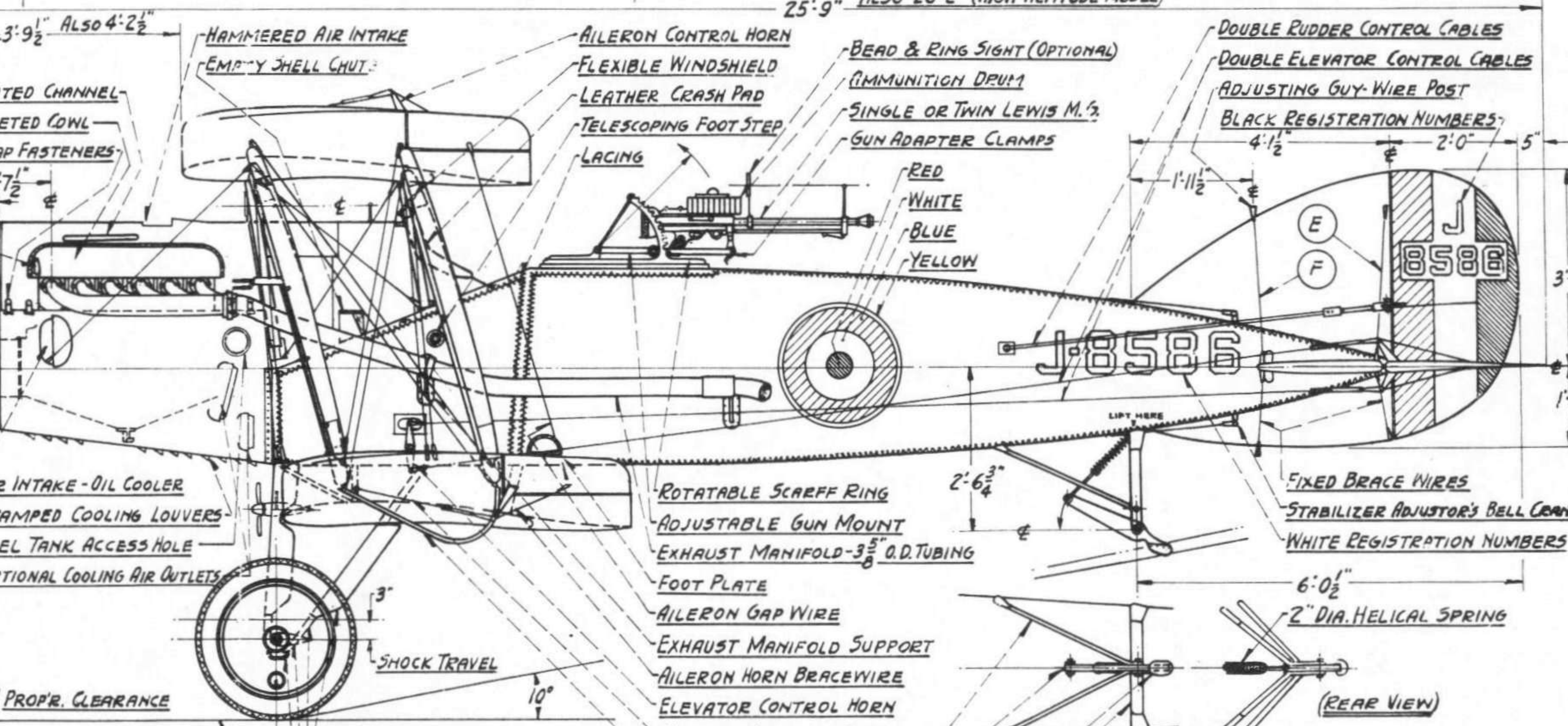
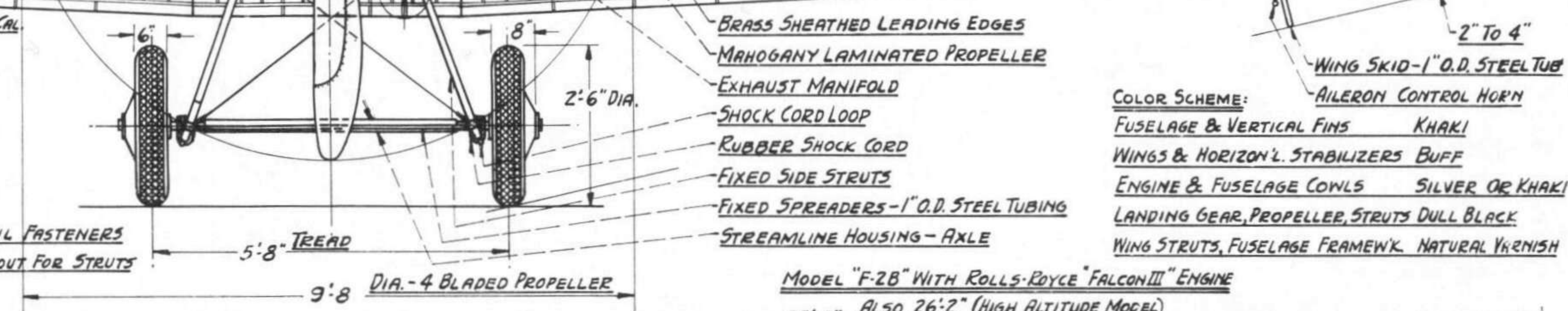
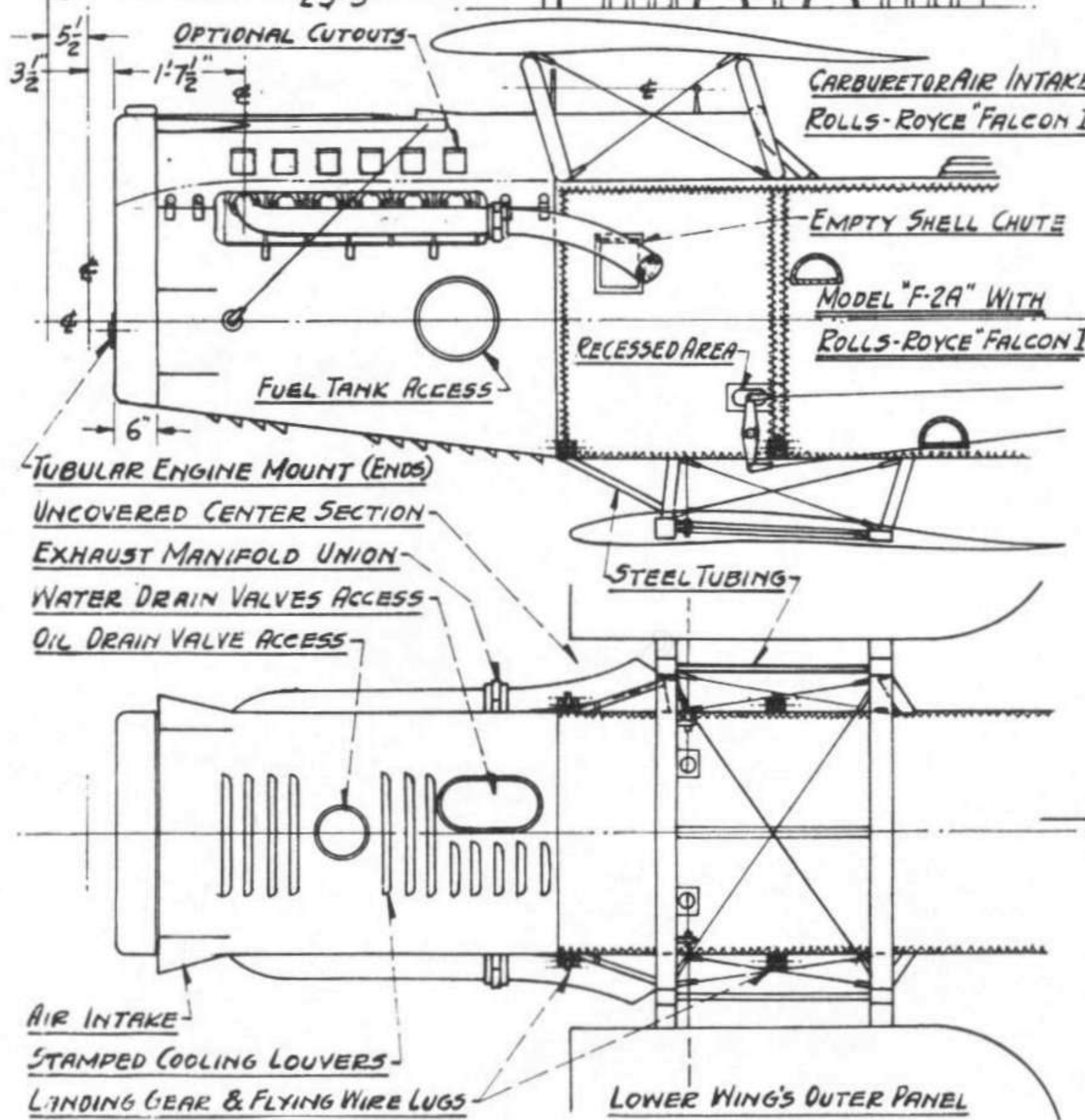
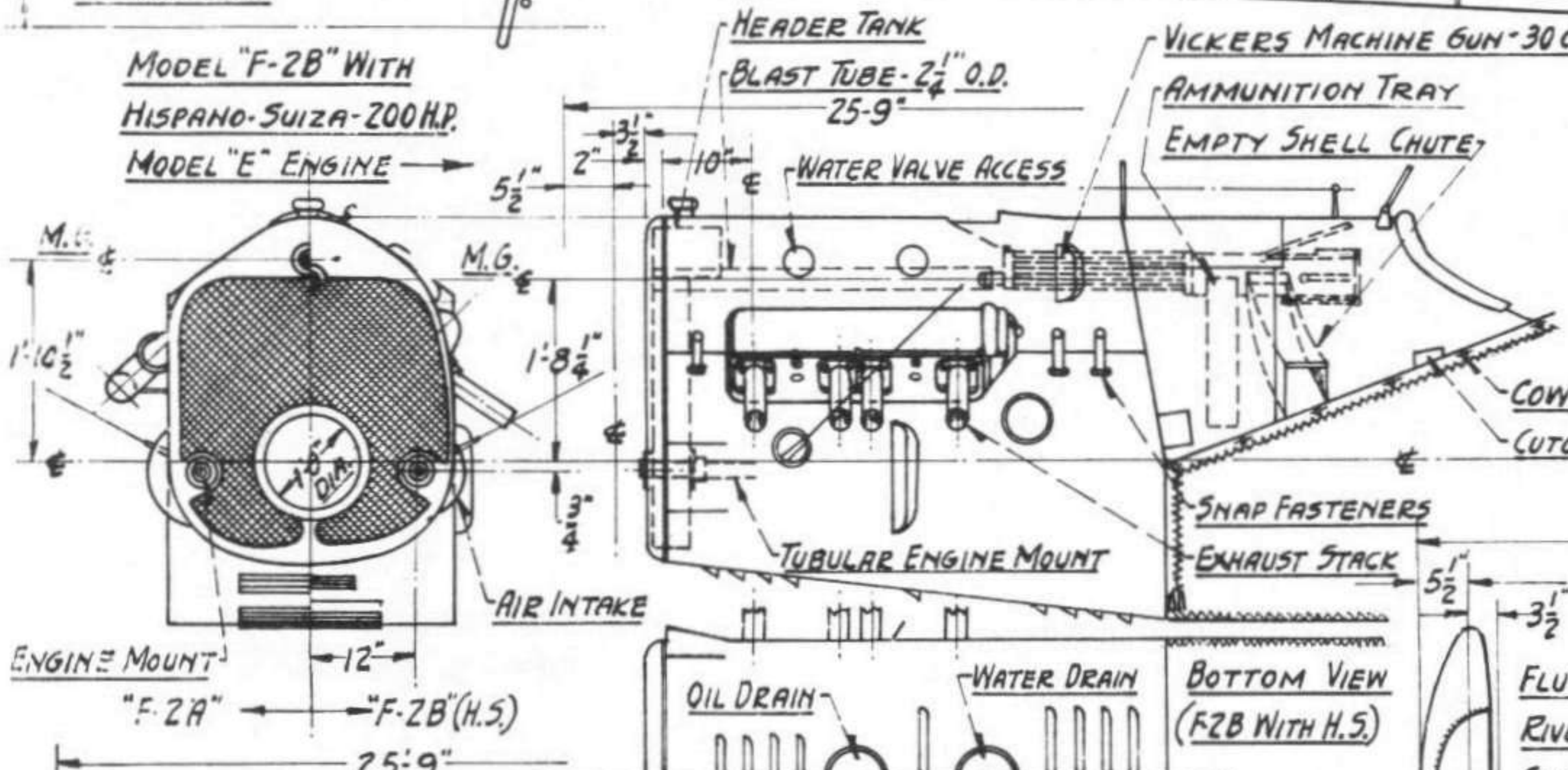
England; two of them in museums, the rest fragments being restored.

Wylam’s drawings of the F.2B are among his most beautiful and least accurate. Modelers should check especially carefully against good photographs the shape of the oval radiator, the tapering rear fuselage, vertical tail, and underline of engine cowling. □

The highly successful British Bristol Brisfit was very maneuverable and as fast as the Fokker D.VII. Air Age file photos.



NOTE: "F-2A" AND EARLY "F-2B" MODELS WING SPAN WERE 39'5". THIS WAS DUE TO DECREASE OF GAPS AT POINT "Z".



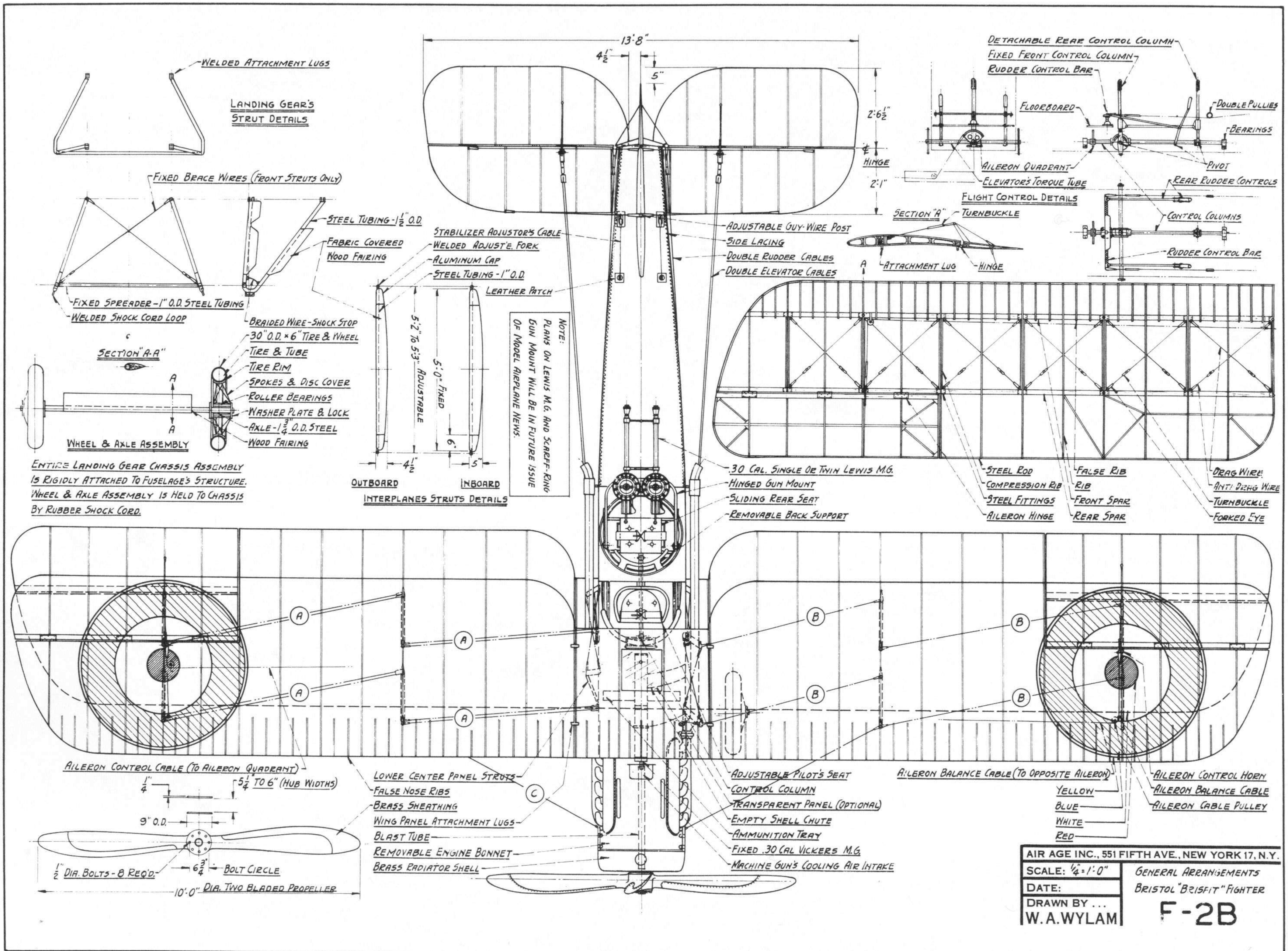
COLOR SCHEME:
 FUSELAGE & VERTICAL FIN KHAKI
 WINGS & HORIZON'L. STABILIZERS BUFF
 ENGINE & FUSELAGE COWLS SILVER OR KHAKI
 LANDING GEAR, PROPELLER, STRUTS DULL BLACK
 WING STRUTS, FUSELAGE FRAMEWK. NATURAL VARNISH

MODEL "F-2B" WITH ROLLS-ROYCE "FALCON III" ENGINE
 25'-9" ALSO 26'-2" (HIGH ALTITUDE MODEL)

"F-2B" (R:R) SUMP COWL IS SIMILAR TO "F-2A" WITH CHANGES ON OIL COOLER'S AIR INTAKE & FUEL TANK'S ACCESS HOLES. ALL SUMP COWLS ARE REMOVABLE BY REMOVING MACHINE SCREWS ON INTERIOR.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 1/4" = 1'-0"
 DATE:
 DRAWN BY ...
 W.A. WYLAM

GENERAL ARRANGEMENTS
 BRISTOL BRISFIT FIGHTER
F-2B



AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.

SCALE: 1/4" = 1'-0"

DATE:

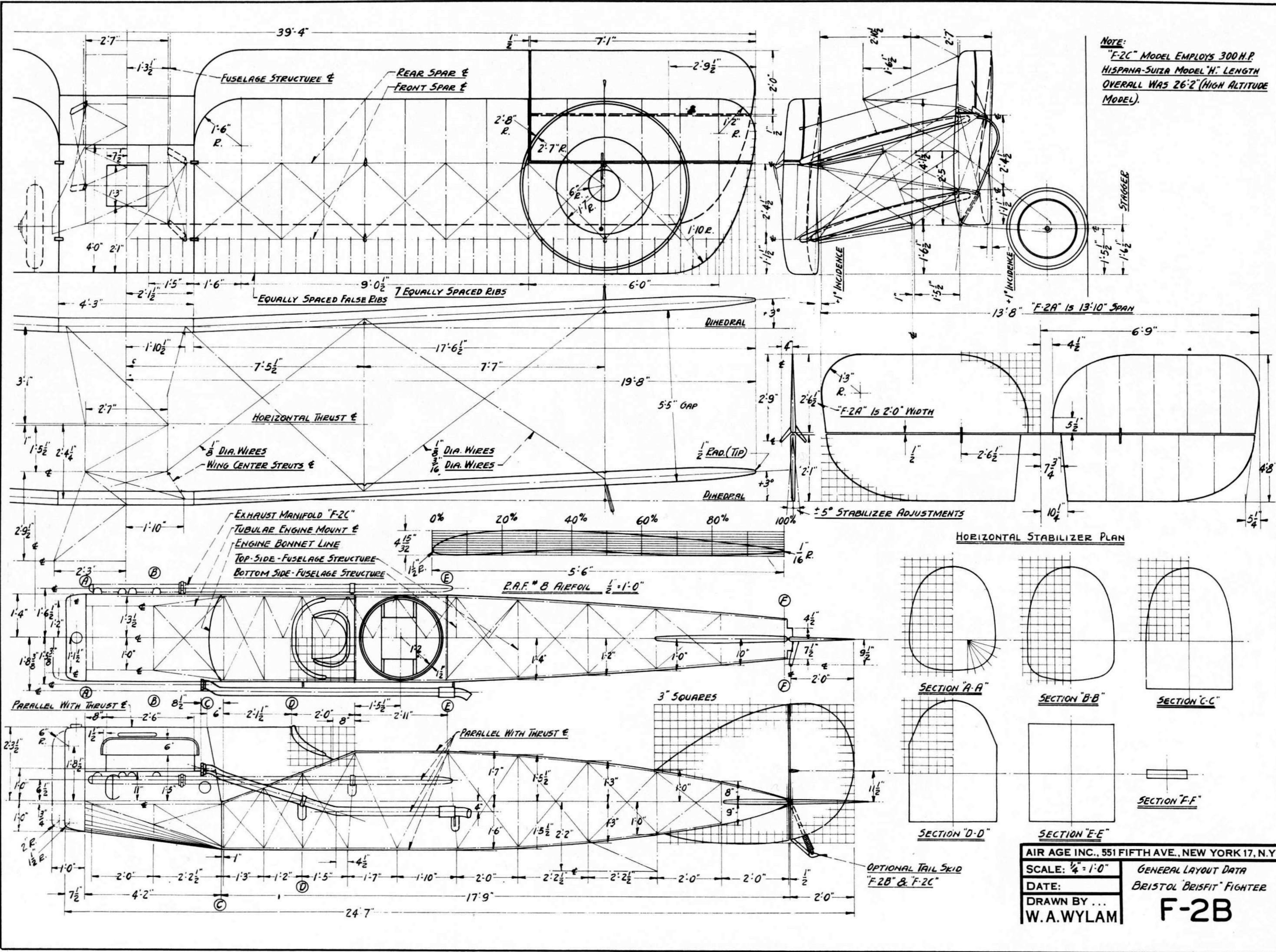
DRAWN BY ...

W.A.WYLAM

GENERAL ARRANGEMENTS

BRISTOL "BRISFIT" FIGHTER

F-2B



Chance Vought

drawings by WILLIS NYE

VE-7, VE-9, & UO-1



THE CHANCE-Vought VE-7 was designed as an entrant in the U.S. Army advanced trainer competition held in 1917, and the first experimental airplane was submitted for testing to Army authorities in 1918. The VE-7 won the competition and was ordered into production by the parent company and two

licensees, the Springfield Aircraft Co. and the B.F. Sturtevant Co. Twenty VE-7's were delivered by the end of WW I, and in 1922 to 1923 twenty-seven VE-9 airplanes were procured by the U.S. Army Air Service.

The VE-9 was an improved version of the VE-7, and was the first American-

designed ship-board airplane that could be launched from a catapult. The service time of this version was one of the longest of that era, spanning over 10 years, which gave credibility to the company that was to remain a main provider of aircraft for the U.S. armed forces for many years. □

*Their association
with Naval aircraft
design is legendary.
Air Age file photos
of VE-7.*



VOUGHT VE-7

ENGINE INSTALLATION: WRIGHT-MARTIN HISPANO-SUIZA, MODEL "A," 150 H.P. WATERCOOLED ENGINE.

PROPELLER: LIBERTY, 2-BLADE, 8'-4" DIAMETER OF LAMINATED WALNUT PITCH 5-5 1/2°.

ENGINE EXHAUST MANIFOLD: TUBULAR WELDED SHEET SUPPORTED ON FORGED BRACKETS.

ENGINE STARTING: PILOT'S COCKPIT PROVIDED WITH BOOSTER MAGNETO AND LUNKENHEIMER FUEL PRIMER. ENGINE WAS HAND CRANKED.

ENGINE CONTROLS: EACH COCKPIT PROVIDED WITH THROTTLE, SPARK, AND FUEL MIXTURE LEVERS ON LEFT SIDE.

ENGINE RADIATOR: HONEYCOMB TYPE, 9 1/2 GALLONS WATER SYSTEM CIRCULATION CAPACITY. DISTANCE TYPE TEMPERATURE INDICATOR. SHUTTERS MANUALLY CONTROLLABLE.

FUEL SYSTEM: TWO FUEL TANKS, MAIN UNDER REAR SEAT, AUXILIARY UNDER COWL BETWEEN ENGINE AND INSTRUMENT PANEL. FUEL CAPACITY 32 GALLONS. FUEL PUMPED TO CARBURETOR BY AN ENGINE-DRIVEN FUEL PUMP. HAND AIR PUMP FOR STARTING IN PILOT'S COCKPIT. FUEL SHUT-OFF VALVES IN EACH COCKPIT.

FLIGHT CONTROLS: DUAL JOYSTICKS AND RUDDER BARS IN EACH COCKPIT. CONTROLS ASSEMBLED AS A UNIT AND QUICKLY REMOVABLE.

INSTRUMENTS: CONSIST OF ALTIMETER, AIRSPEED INDICATOR, CLOCK, TACHOMETER, FUEL PRESSURE GAUGE, OIL PRESSURE GAUGE, WATER TEMPERATURE GAUGE, ETC.

DESIGN NOTES VE-7

(1) VARIOUS MAKES AND TYPES OF LAMINATED PROPELLERS WERE USED WITH VARIATIONS IN PITCH.

(2) INTERPLANE STRUTS OF CONSTANT OR VARIED STREAMLINE CROSS SECTION WERE USED.

(3) ENTIRE FLIGHT CONTROLS ARE CABLE ACTUATED. ALL CABLES ARE DOUBLE, FLEXIBLE TYPE.

THE AMERICAN VERSION OF THE HISPANO-SUIZA ENGINE WAS MANUFACTURED UNDER FOREIGN LICENSE BY THE SIMPLEX AUTOMOBILE COMPANY. THIS COMPANY WAS LATER ABSORBED BY THE WRIGHT-MARTIN AIRCRAFT COMPANY OF NEW BRUNSWICK, N.J., THE PARENT COMPANY OF THE PRESENT CURTISS-WRIGHT CORPORATION.

VOUGHT VE-7

FUSELAGE: ENGINE COWLS ARE PRESSED SHEET ALUMINUM. INSPECTION PLATES PROVIDED FOR ACCESS TO INSTRUMENTS, FLIGHT CONTROLS AND TAIL SKID. FRAME HAS SPRUCE LONGERONS AND STRUTS, STEEL CABLE BRACING, AND STEEL FITTINGS. RECTANGULAR CROSS SECTION. ENGINE SECTION IS DEMOUNTABLE AS A UNIT. ENGINE COWLINGS LIGHT BLUE ENAMEL, FABRIC GRAY ENAMEL. FUSELAGE TRUSS FAIRED TOP AND BOTTOM.

SEATING: EACH COCKPIT UPHOLSTERED WITH IMITATION LEATHER. PLYWOOD SEATS. LEATHER COCKPIT COAMING.

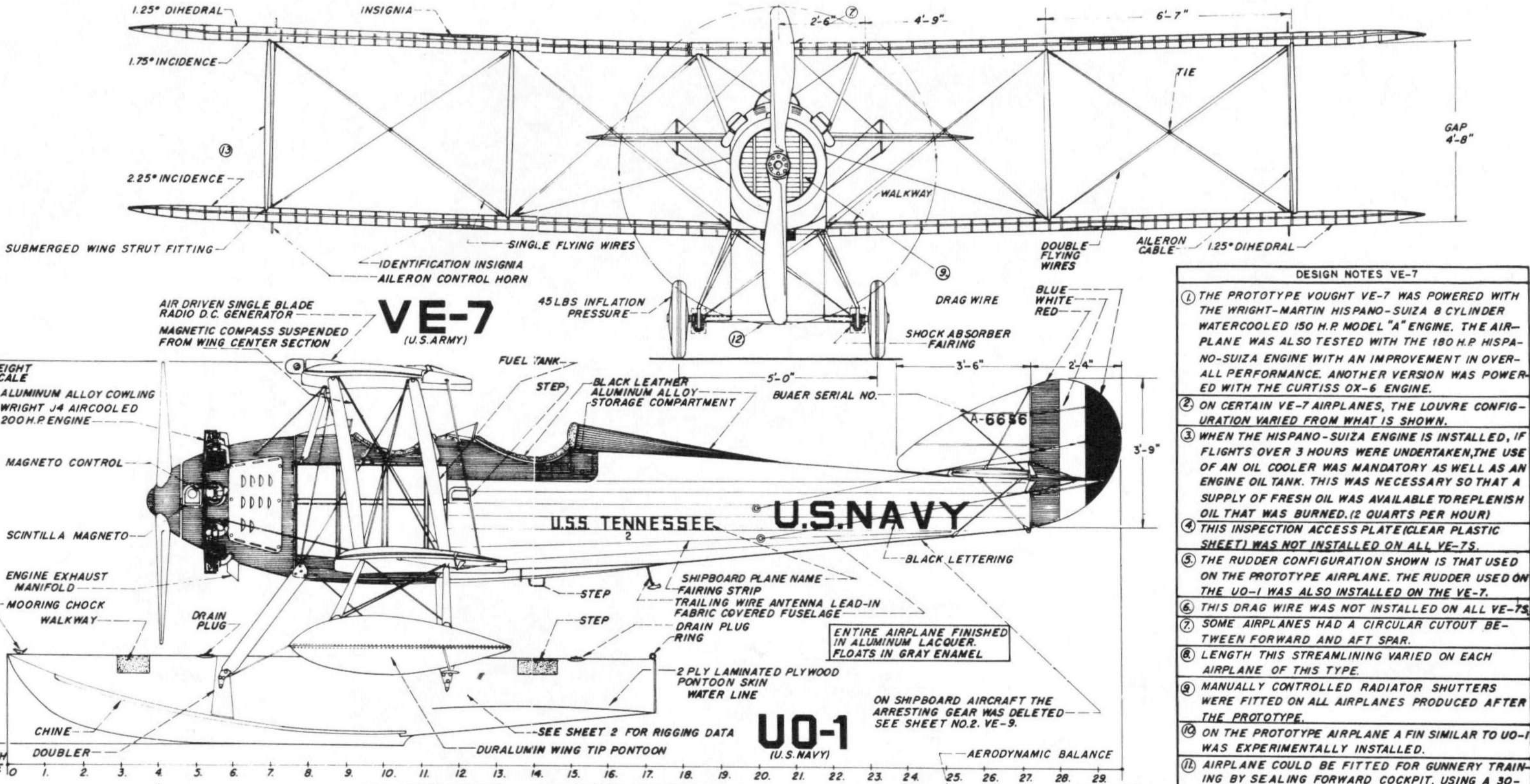
WINDSHIELDS: CLEAR REINFORCED PLASTIC SHEET.

EMPENNAGE: FIXED DOUBLE CAMBERED HORIZONTAL STABILIZER. ELEVATORS DUAL CONNECTED. FIXED VERTICAL STABILIZER. AERODYNAMICALLY BALANCED RUDDER. ALL FRAMES OF STEEL TUBES WELDED OR BRAZED TOGETHER, WOOD RIB FILLED OVER TUBULAR STEEL AND ROUTED SPRUCE SPARS. STRUCTURE INTERNALLY BRACED WITH SWAGED CABLES AND ADJUSTABLE STEEL FITTINGS. ENTIRE EMPENNAGE COVERED WITH APPROVED COTTON FABRIC, FINISHED TO MATCH FUSELAGE COVERING.

TAILSKID: PATENTED VOUGHT DESIGN, FLOATING TYPE, SEMI-UNIVERSAL AND SELF-ALIGNING IN ACTION. FITTED WITH RUBBER SHOCK ABSORBERS AND RENEWABLE METAL SHOE.

FACTOR OF SAFETY: UNIFORM FACTOR OF SAFETY OF 9 PLUS AT HIGH INCIDENCE CONDITION IN STATIC TESTS.

WEIGHT (GROSS): 2,000 POUNDS INCLUDING 525 POUNDS USEFUL LOAD AND 78 POUNDS ENGINE COOLING WATER.



DESIGN NOTES VE-7

(1) THE PROTOTYPE VOUGHT VE-7 WAS POWERED WITH THE WRIGHT-MARTIN HISPANO-SUIZA 8 CYLINDER WATERCOOLED 150 H.P. MODEL "A" ENGINE. THE AIRPLANE WAS ALSO TESTED WITH THE 180 H.P. HISPANO-SUIZA ENGINE WITH AN IMPROVEMENT IN OVERALL PERFORMANCE. ANOTHER VERSION WAS POWERED WITH THE CURTISS OX-6 ENGINE.

(2) ON CERTAIN VE-7 AIRPLANES, THE LOUVRE CONFIGURATION VARIED FROM WHAT IS SHOWN.

(3) WHEN THE HISPANO-SUIZA ENGINE IS INSTALLED, IF FLIGHTS OVER 3 HOURS WERE UNDERTAKEN, THE USE OF AN OIL COOLER WAS MANDATORY AS WELL AS AN ENGINE OIL TANK. THIS WAS NECESSARY SO THAT A SUPPLY OF FRESH OIL WAS AVAILABLE TO REPLENISH OIL THAT WAS BURNED. (2 QUARTS PER HOUR)

(4) THIS INSPECTION ACCESS PLATE (CLEAR PLASTIC SHEET) WAS NOT INSTALLED ON ALL VE-7S.

(5) THE RUDDER CONFIGURATION SHOWN IS THAT USED ON THE PROTOTYPE AIRPLANE. THE RUDDER USED ON THE UO-1 WAS ALSO INSTALLED ON THE VE-7.

(6) THIS DRAG WIRE WAS NOT INSTALLED ON ALL VE-7S.

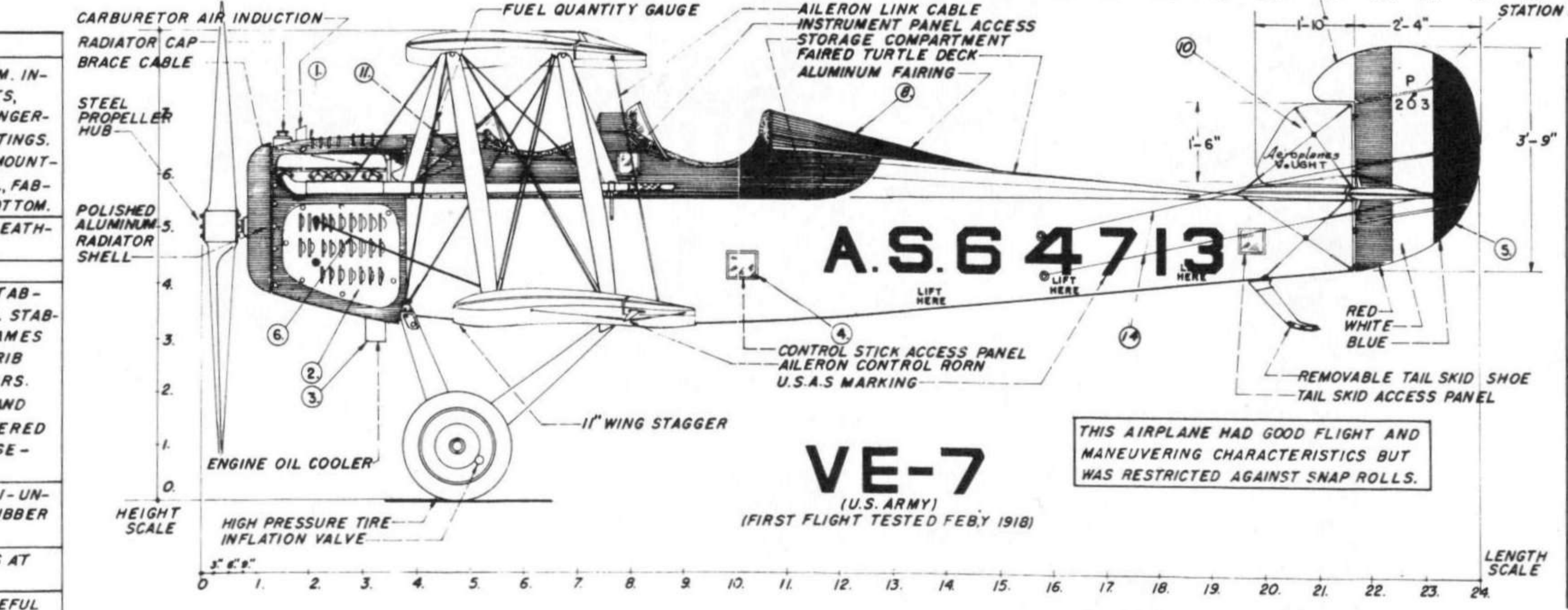
(7) SOME AIRPLANES HAD A CIRCULAR CUTOUT BETWEEN FORWARD AND AFT SPAR.

(8) LENGTH THIS STREAMLINING VARIED ON EACH AIRPLANE OF THIS TYPE.

(9) MANUALLY CONTROLLED RADIATOR SHUTTERS WERE FITTED ON ALL AIRPLANES PRODUCED AFTER THE PROTOTYPE.

(10) ON THE PROTOTYPE AIRPLANE A FIN SIMILAR TO UO-1 WAS EXPERIMENTALLY INSTALLED.

(11) AIRPLANE COULD BE FITTED FOR GUNNERY TRAINING BY SEALING FORWARD COCKPIT, USING A 30-CALIBER M.G. AND TELESCOPIC SIGHT.



VOUGHT VE-7

WINGS: CELLULOSE IS FOUR AILERON TYPE. TOP CENTER SECTION CUT AWAY FOR VISION. AIRFOIL R.A.F. 15. ANGLE OF INCIDENCE IS DIFFERENTIAL BETWEEN WINGS. WING CELLULOSE CONSISTS OF FIVE PANELS ASSEMBLED WITH SUBMERGED FITTINGS. WING SPARS OF SOLID I-BEAM ROUTED SPRUCE, REINFORCED AT PANEL POINTS. WING RIBS ARE UNIT ASSEMBLY TYPE. DOUBLE SWAGE WIRES IN INTERNAL DRAG TRUSS WITH ADJUSTABLE END FITTINGS. MAIN WING ATTACHMENT AND INTERPLANE STRUT FITTINGS ARE OF THE SUBMERGED TYPE. WINGS COVERED WITH LINEN, SEWED TO WING RIBS, AND TAPED. FIVE COATS ACETATE DOPE AND TWO COATS GRAY ENAMEL. INTERPLANE STRUTS OF SOLID SPRUCE STREAMLINE CROSS SECTION. WIRE BRACING IS ROEBLING 19-STRAND, ADJUSTABLE TURN-BUCKLES. FLYING WIRES DOUBLE, LANDING WIRES SINGLE.

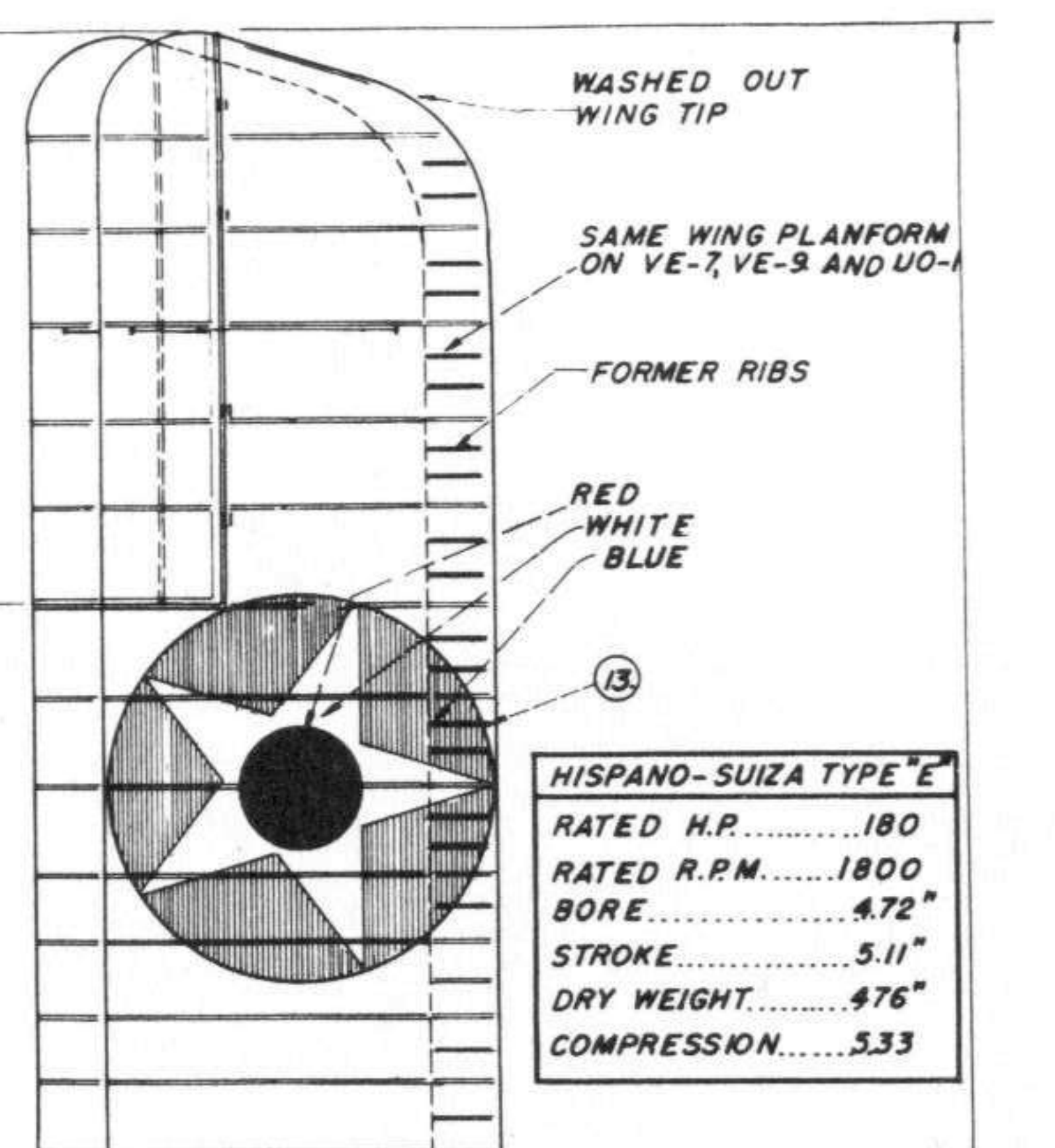
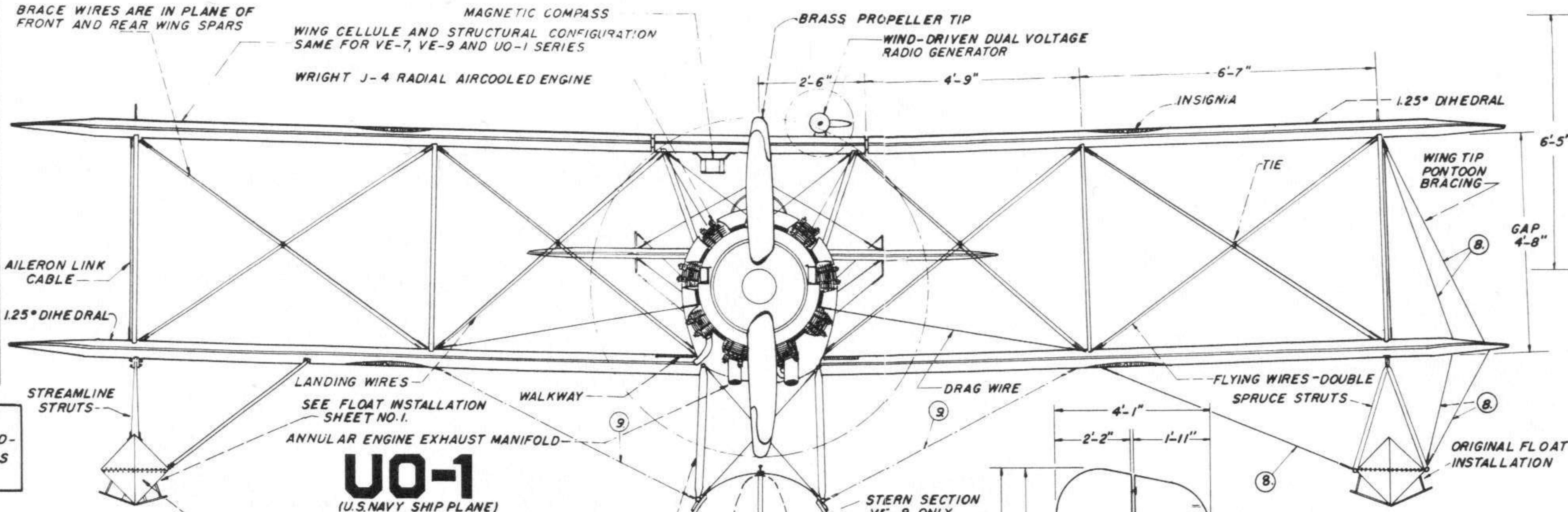
LANDING GEAR: VOUGHT VEE STRUT DUAL WHEEL TYPE. DETACHABLE BY REMOVAL OF PINS AT FUSELAGE FITTINGS. WHEELS 26 X 4 WIRE SPOKE TYPE. STEEL STUB AXLES OPERATE IN METAL GUIDES, FLOATING TYPE SHOCK ABSORBERS OPERATE IN STEEL GUIDE. AXLES, SPREADER BAR, AND SHOCK ABSORBERS STREAMLINED IN PRESSED METAL HOUSING. STRUTS OF ASH AND RUBBER CORD COTTON SHEATHED 5/8" DIAMETER. METAL PARTS FINISHED IN BLACK ENAMEL, WOOD STRUTS WITH THREE COATS CLEAR VARNISH. WHEELS STREAMLINED WITH FABRIC, DETACHABLE COVERS.

CHANCE VOUGHT VE-7 & UO-1

VOUGHT VE-7

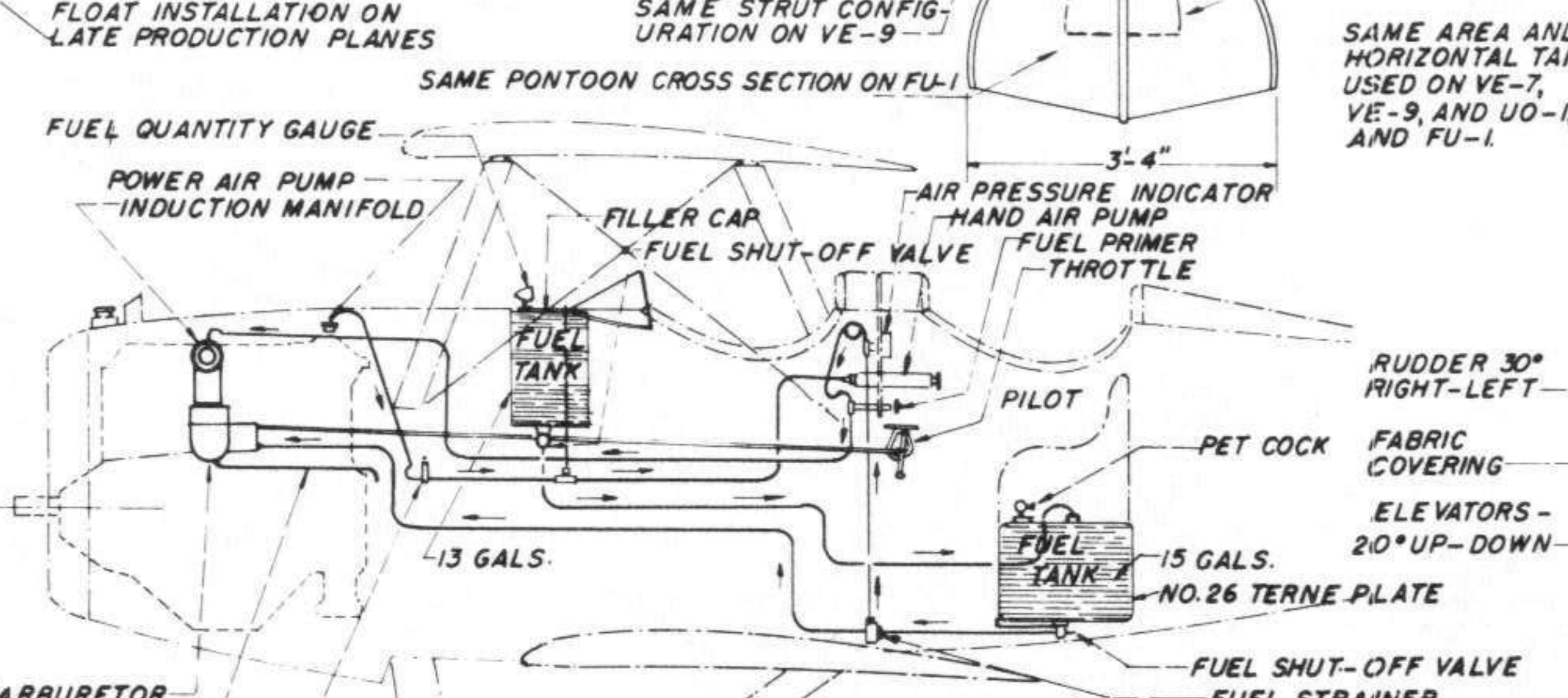
THE CHANCE VOUGHT VE-7 WAS DESIGNED AS AN ENTRANT IN THE U.S. ARMY ADVANCED TRAINER COMPETITION HELD IN 1917. THE FIRST EXPERIMENTAL AIRPLANE WAS SUBMITTED FOR TESTING BY ARMY AUTHORITIES IN 1918. THE VE-7 WON THE COMPETITION AND WAS ORDERED INTO PRODUCTION BY THE PARENT COMPANY AND TWO LICENSEES, THE SPRINGFIELD AIRCRAFT CO. AND THE B.F. STURTEVANT COMPANY. TWENTY VE-7 PLANES WERE DELIVERED BY THE END OF WORLD WAR I. IN 1922-23 YEARS 27 VE-9 AIRPLANES WERE PROCURED BY THE U.S. ARMY AIR SERVICE.

THE AIRPLANE WAS FINISHED IN SILVER PIGMENTED LACQUER. SHADED AREAS GRAY. ENGINE AND TIRES IN BLACK.



HISPANO-SUIZA TYPE "E"	
RATED H.P.	180
RATED R.P.M.	1800
BORE	4.72"
STROKE	5.11"
DRY WEIGHT	476
COMPRESSION	5.33

UO-1
(U.S. NAVY SHIP PLANE)



FUEL SYSTEM
(GRAVITY-AIR PRESSURE TYPE-VE-7 & VE-9)

NAVY VOUGHT VE-9

THIS AIRPLANE WAS AN IMPROVED VERSION OF THE VE-7 MODEL BUILT FOR THE U.S. ARMY. THE VE-9 WAS ADAPTED FOR LAND OR WATER OPERATION. THE VE-9 WAS THE FIRST AMERICAN DESIGNED SHIPBOARD AIRPLANE THAT COULD BE LAUNCHED FROM A CATAPULT. THE FUSELAGE WAS STRENGTHENED FOR ROUGH WATER LANDING AS WELL AS THE IMPACT OF CATAPULT LAUNCHING. TWO AIRPLANES OF THIS TYPE WERE ASSIGNED TO EACH BATTLESHIP FOR SCOUTING AND GUNFIRE SPOTTING.

ENGINE INSTALLATION: WATER COOLED, AEROMARINE MANUFACTURE, 250 H.P. MODEL U-873.

FUSELAGE: STRENGTHENED SPRUCE LONGERONS AND STRUTS AND STEEL CABLES AND FITTINGS.

SEATING: SAME AS VE-7.

WINDSHIELDS: SAME AS VE-7.

EMPELLAGE: SAME AS VE-7, EXCEPT INCREASED VERTICAL STABILIZER AREA.

FACTOR OF SAFETY: SAME AS VE-7.

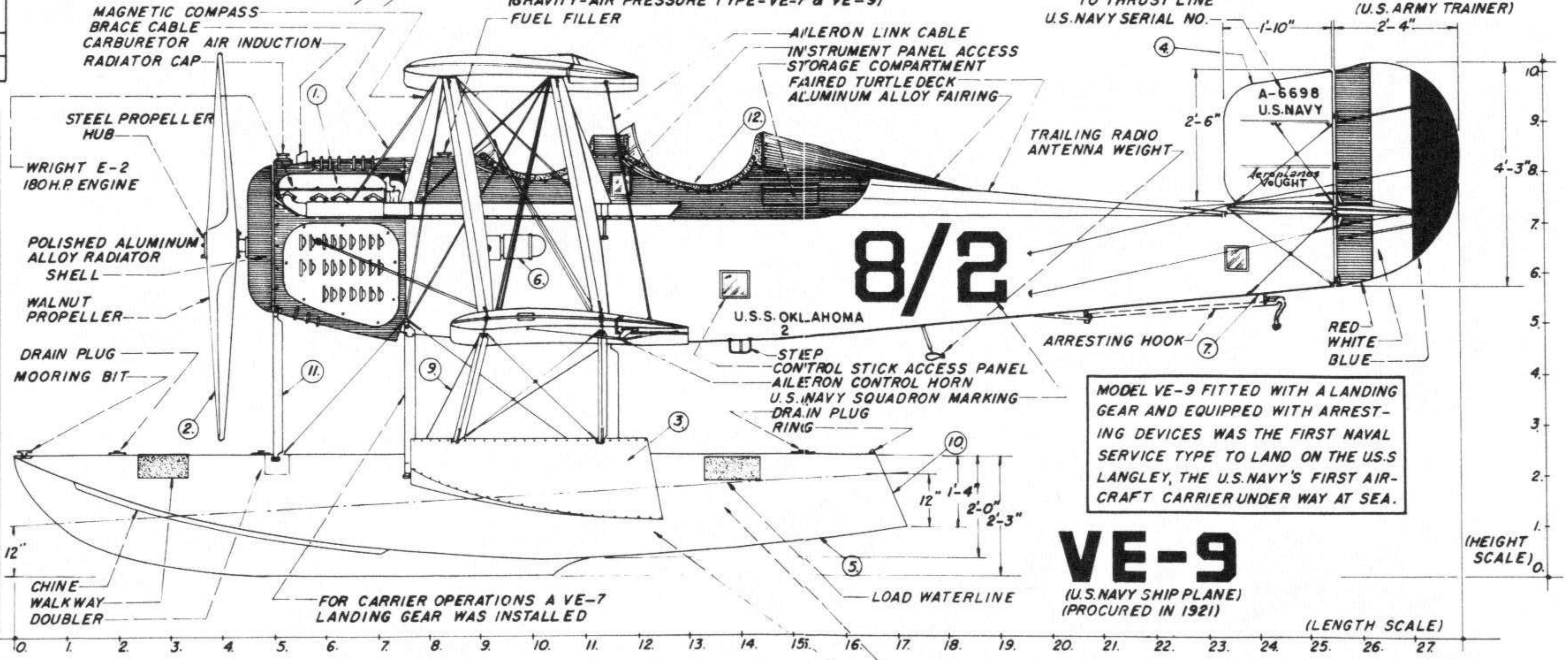
WEIGHT: IN EXCESS OF VE-7.

WING CELLULOSE: IDENTICAL TO VE-7. CENTER SECTION OF UPPER WING REINFORCED FOR HOISTING PURPOSES.

FLIGHT CONTROLS: SAME AS VE-7.

FUEL SYSTEM: IMPROVED OVER VE-7.

- DESIGN NOTES VOUGHT VE-9**
1. AEROMARINE TYPE ENGINE VEE CYLINDER BLOCK. WAS NOT SUCCESSFUL AS AN ENGINE TYPE.
 2. PROPELLER 8-4" DIAMETER LAMINATED TYPE.
 3. WING TIP FLOAT TYPE USED ALSO ON EARLY MODELS OF UO-1. (ALUMINUM ALLOY STRUCTURE)
 4. FIN INCREASED IN AREA AS REQUIRED WHEN PONTOONS ARE INSTALLED. (ADJUSTABLE SETTING)
 5. PONTOON CONSISTS OF SPRUCE FRAMES AND LONGITUDINAL MEMBERS AND LAMINATED MAHOGANY PLYWOOD (2 LAYERS) AT 90° DIRECTION OF GRAIN TO EACH OTHER.
 6. WIND-DRIVEN GENERATOR FOR RADIO TRANSMITTER WITH LOW AND HIGH VOLTAGE OUTPUT.
 7. ARRESTING HOOK OMITTED ON SEAPLANES.
 8. THIS BRACE CABLE USED ON VE-9 ONLY, AND EARLY PRODUCTION UO-1 AIRPLANES.
 9. THIS BRACE CABLE USED ON VE-9 SEAPLANES ONLY.
 10. THIS TYPE OF FLOAT STERN USED ON VE-9 SEAPLANES ONLY.
 11. STREAMLINE SPRUCE STRUTS.
 12. REAR COCKPIT WAS ADAPTABLE FOR GUNNERY.
 13. ORIGINAL IDENTIFICATION MARKS WERE RED, WHITE AND BLUE ROUNDELS. (1918).



VE-9
(U.S. NAVY SHIP PLANE)
(PROCURED IN 1921)

VE-7
(U.S. ARMY TRAINER)

PROCURED IN QUANTITY IN 1918 FOR U.S. ARMY AIR SERVICE. (MODEL VE-7) LIMITED PROCUREMENT IN 1920 FOR U.S. NAVY (MODEL VE-9). LIMITED PROCUREMENT IN 1921 FOR U.S. MARINES (VE-9 HISPANO-SUIZA)

VE-7 DESCRIPTION

WING AIRFOIL	R.A.F. 15
WING AREA (2)	283 SQ. FT.
STAB. AREA	18 SQ. FT.
ELEV. AREA (2)	17 SQ. FT.
AIL'N AREA (4)	39 SQ. FT.
FIN AREA	23 SQ. FT.
RUDDER	8.4 SQ. FT.
WT. EMPTY	1560 LBS.
WT. LOADED	2100 LBS.
WT. SQ. FT.	7.4 LBS.
WT. H.P.	11.6 LBS.
CLIMB 6500'	9.25 MIN.
CLIMB 10,000'	17.00 MIN.
SERV. CEILING	16,000'
DURATION	2.33 HRS.
MAX. SPEED 5,000'	111 M.P.H.
MAX. SPEED 10,000'	100 M.P.H.
LANDING SPEED	40 M.P.H.

ANGLE OF INCIDENCE TOP WING 1.75°

ANGLE OF INCIDENCE BOTTOM WING 2.25°

AILERON MOVEMENT UP-DOWN 20°

THANKS IS EXTENDED TO THOSE THAT ASSISTED TO MAKE THIS PRESENTATION POSSIBLE:

WILLIAM LARKINS, SECRETARY, AMERICAN AVIATION HISTORICAL SOCIETY.

ESTHER B. MUELLER, AIR FORCE CENTRAL MUSEUM, TECHNICAL SERVICES DIVISION, REFERENCE BRANCH.

RANDOLPH BRANDT-PHOTO COLLECTION.

ARTHUR SCHOENI, CHANCE VOUGHT AIRCRAFT.

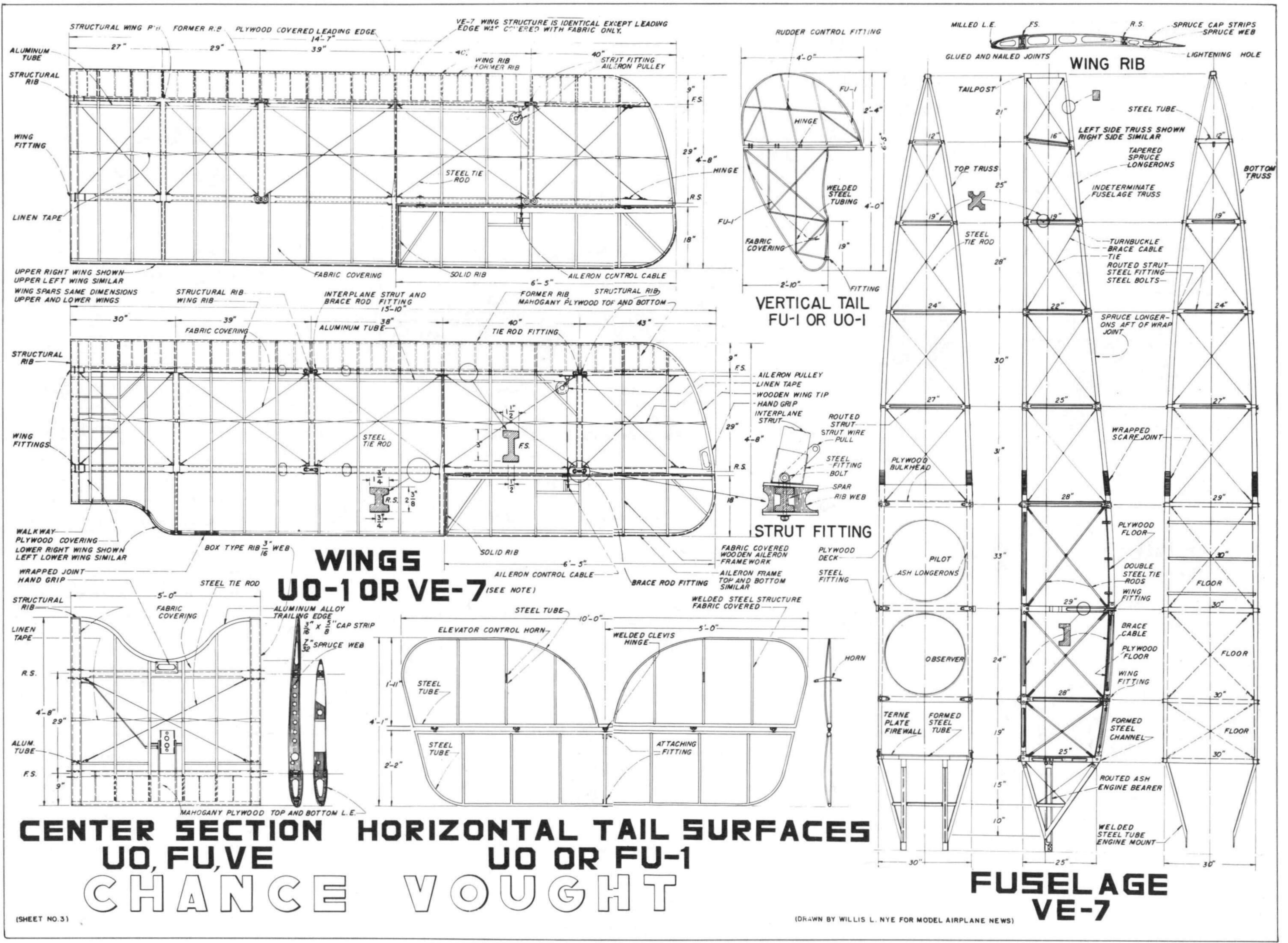
WILLIAM MIER, CHANCE VOUGHT AIRCRAFT.

F.E. DALLY, CAPT. U.S.N., TECHNICAL DATA DIVISION, BUREAU OF AERONAUTICS, U.S. NAVY.

CHANCE VOUGHT

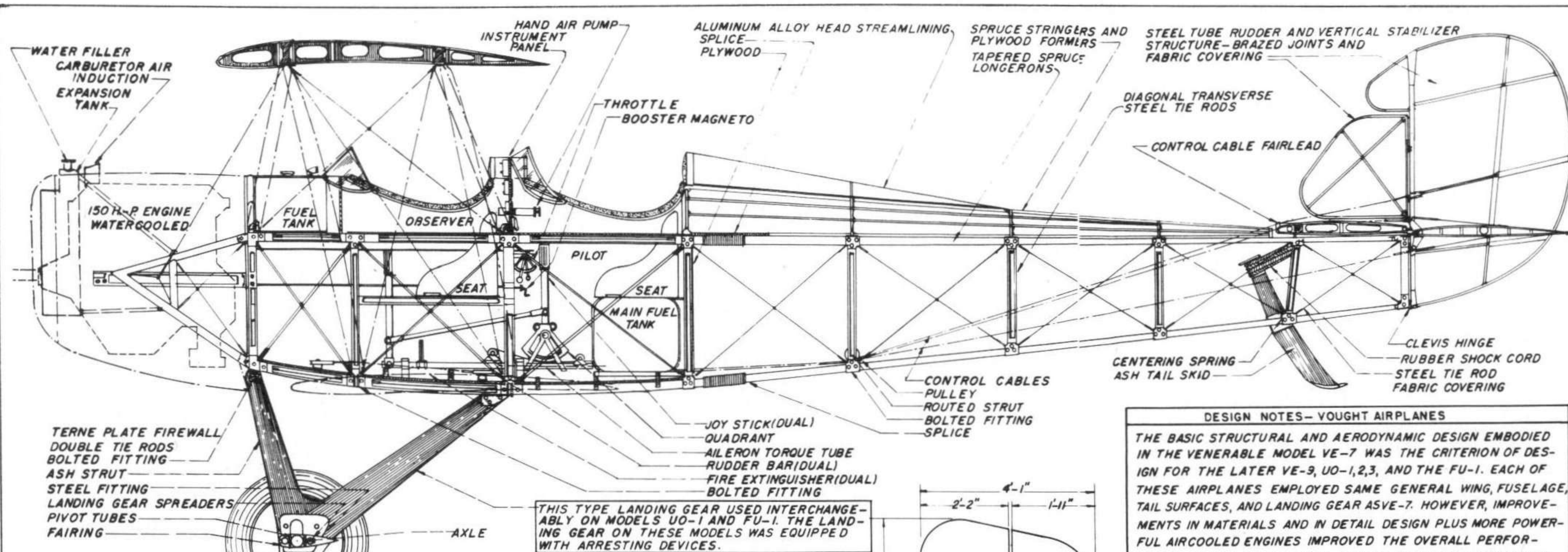
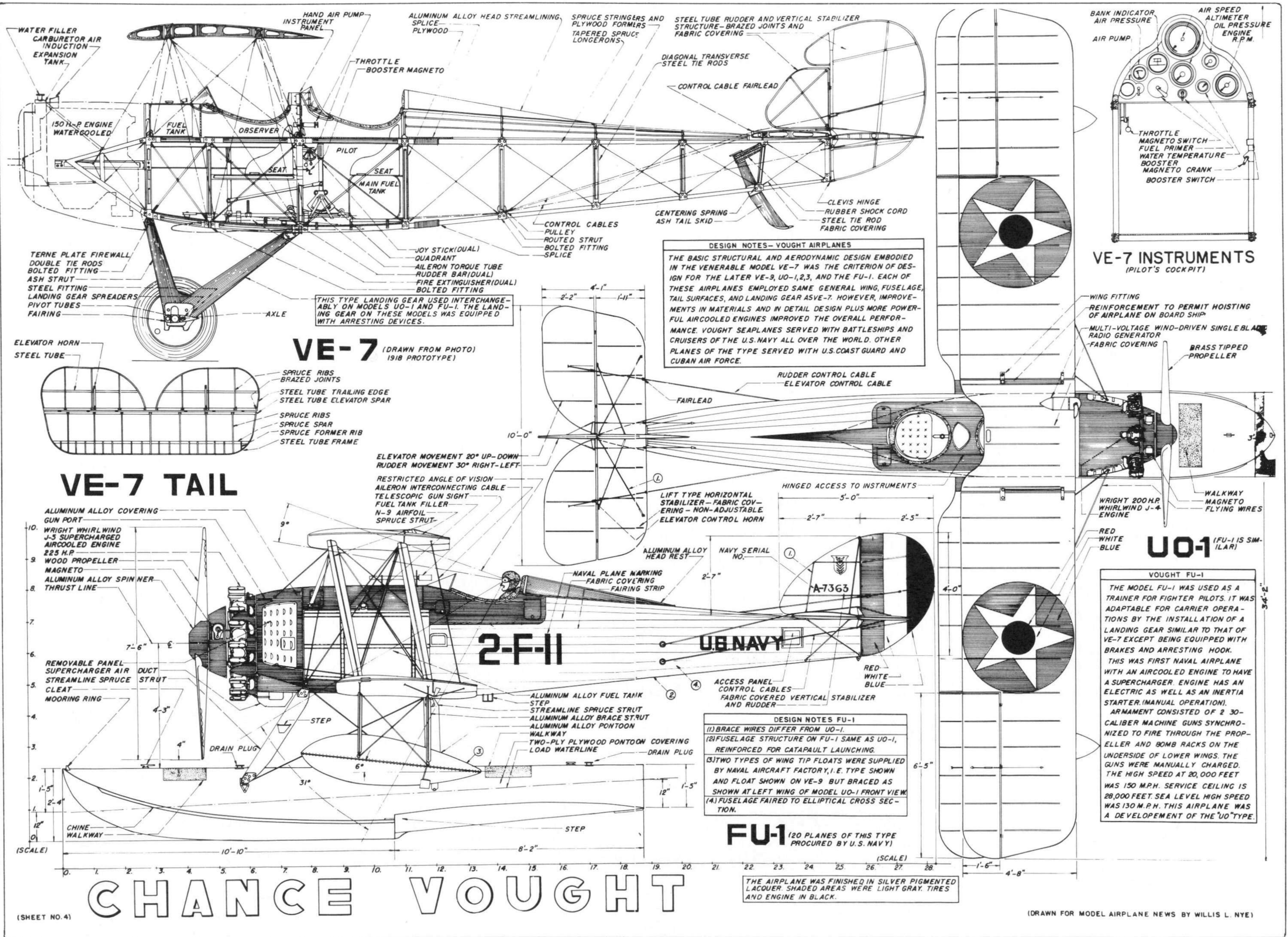
THE FLOAT BRACING IS RIGGED IN SUCH A WAY THAT WHEN THE AIRPLANE IS FLYING, THE LONGITUDINAL CENTERLINE OF THE FLOAT IS 6° INCIDENCE TO THE THRUST LINE.

MAIN PONTOON COVERED WITH 2-PLY PLYWOOD. PLYS AT 45° TO EACH OTHER.

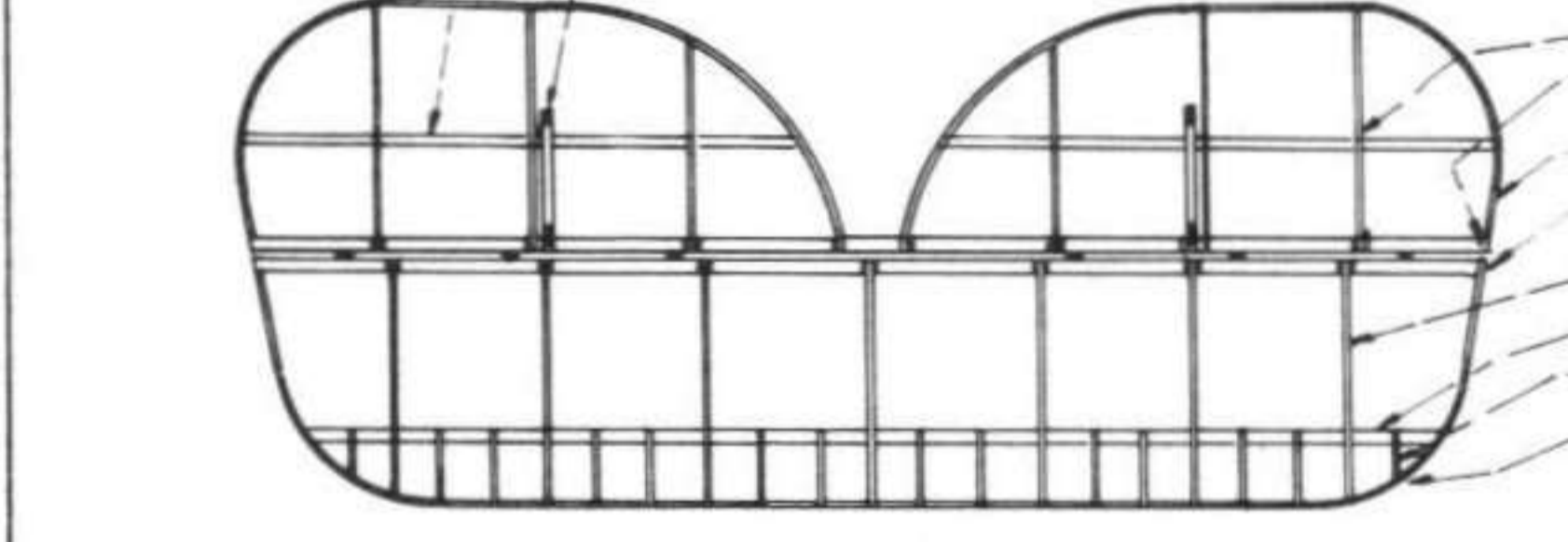


CENTER SECTION HORIZONTAL TAIL SURFACES
UO, FU, VE UO OR FU-1
CHANCE VOUGHT

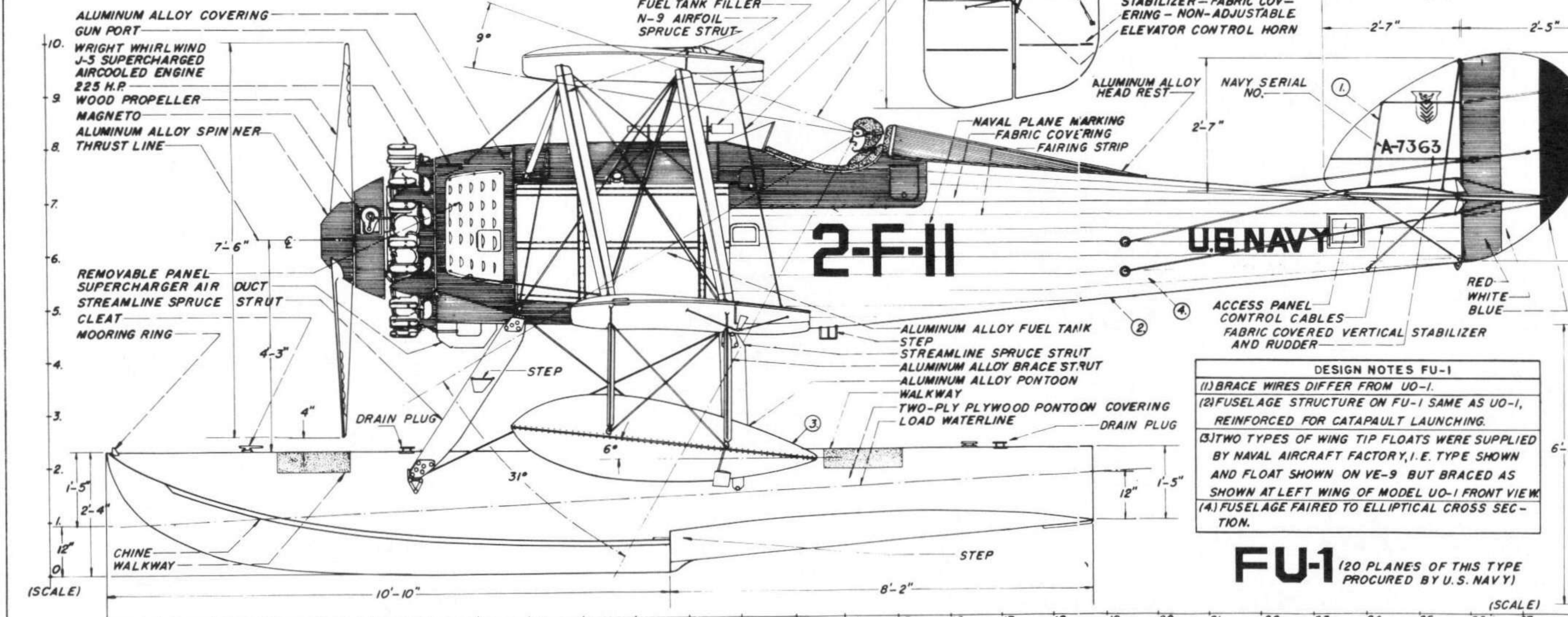
FUSELAGE
VE-7



VE-7 (DRAWN FROM PHOTO) 1918 PROTOTYPE

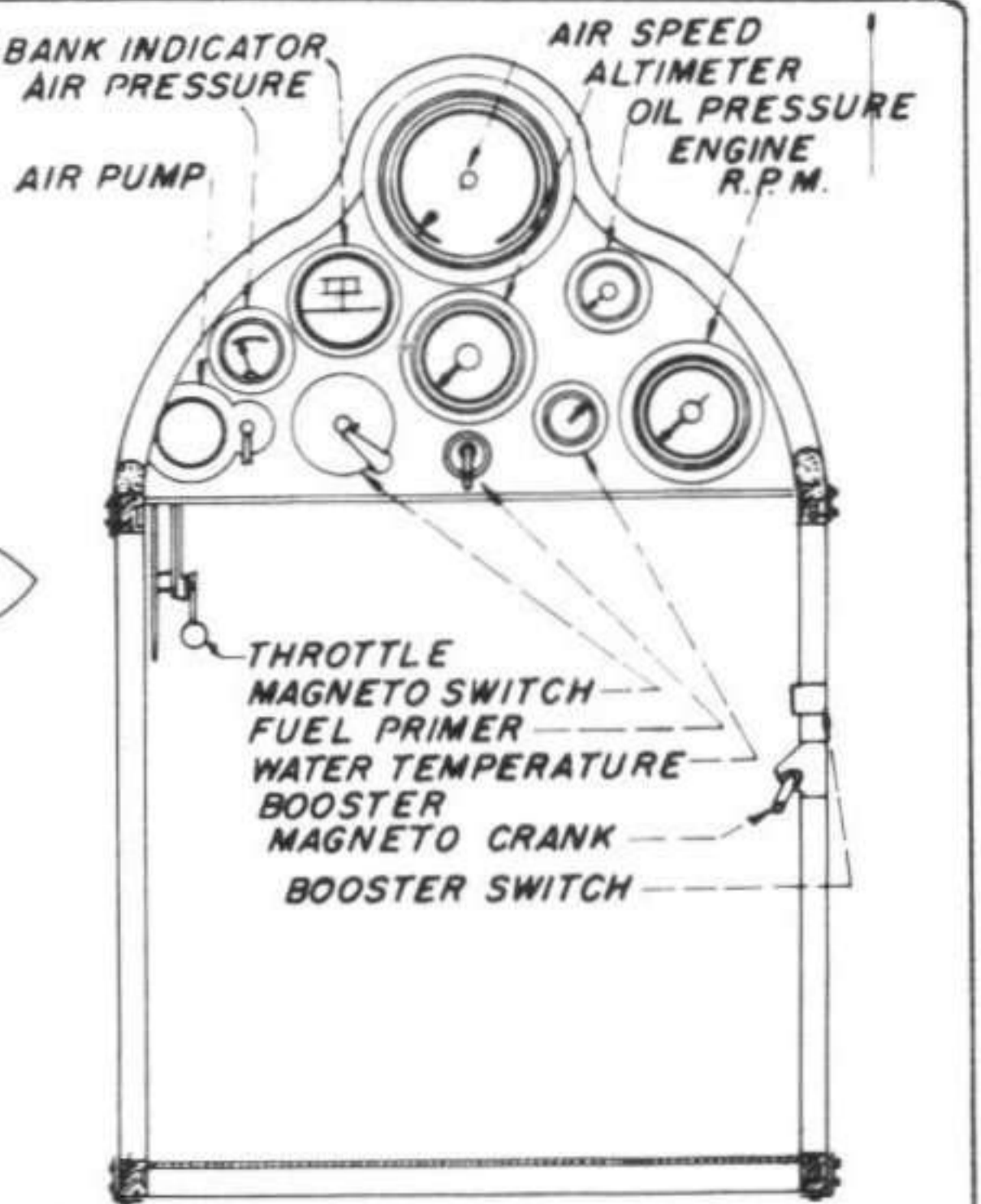


VE-7 TAIL

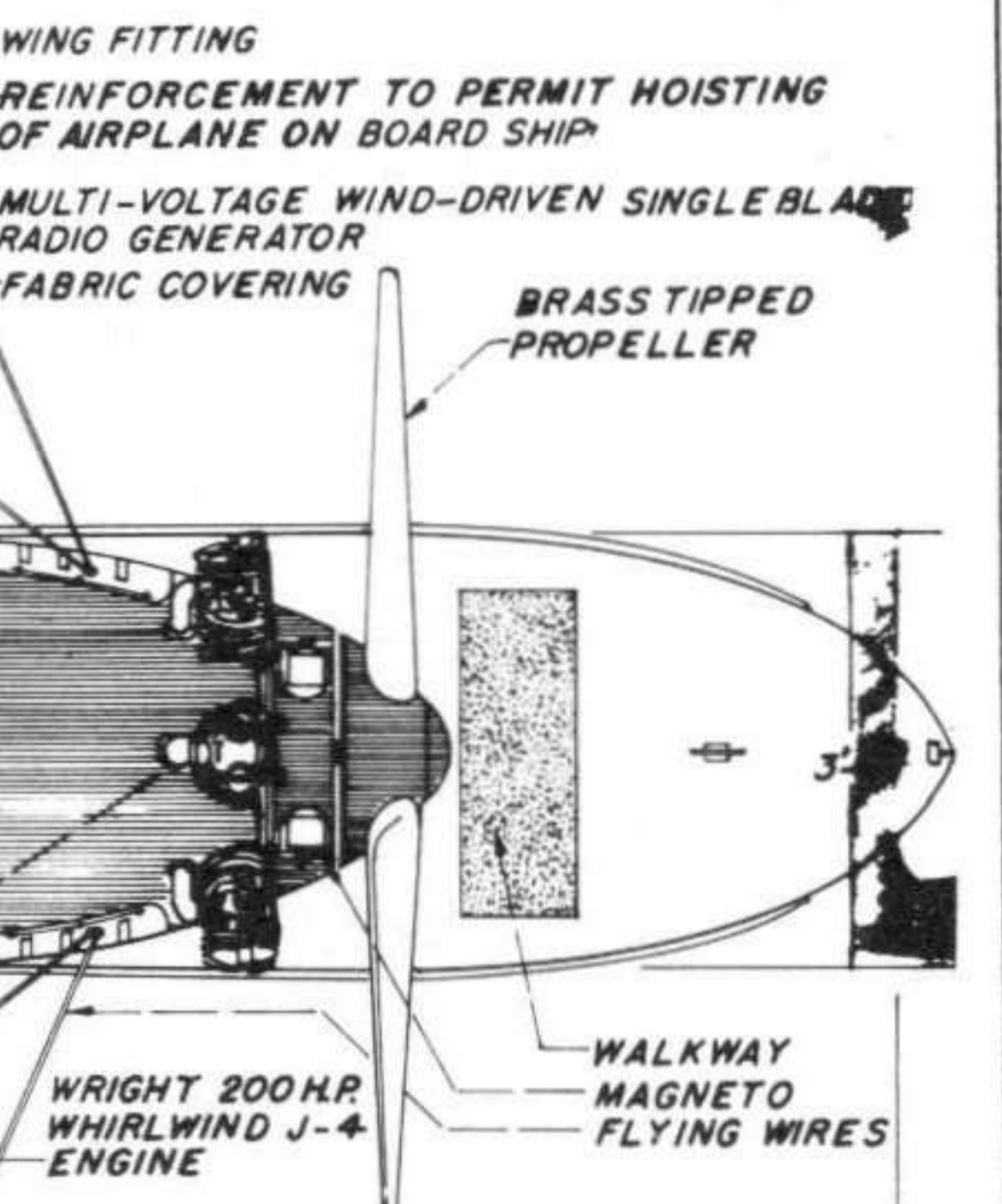


FU-1 (20 PLANES OF THIS TYPE PROCURED BY U.S. NAVY)

DESIGN NOTES-VOUGHT AIRPLANES
 THE BASIC STRUCTURAL AND AERODYNAMIC DESIGN EMBODIED IN THE VENERABLE MODEL VE-7 WAS THE CRITERION OF DESIGN FOR THE LATER VE-9, UO-1,2,3, AND THE FU-1. EACH OF THESE AIRPLANES EMPLOYED SAME GENERAL WING, FUSELAGE, TAIL SURFACES, AND LANDING GEAR AS VE-7. HOWEVER, IMPROVEMENTS IN MATERIALS AND IN DETAIL DESIGN PLUS MORE POWERFUL AIRCOOLED ENGINES IMPROVED THE OVERALL PERFORMANCE. VOUGHT SEAPLANES SERVED WITH BATTLESHIPS AND CRUISERS OF THE U.S. NAVY ALL OVER THE WORLD. OTHER PLANES OF THE TYPE SERVED WITH U.S. COAST GUARD AND CUBAN AIR FORCE.



VE-7 INSTRUMENTS (PILOT'S COCKPIT)



UO-1 (FU-1 IS SIMILAR)

VOUGHT FU-1
 THE MODEL FU-1 WAS USED AS A TRAINER FOR FIGHTER PILOTS. IT WAS ADAPTABLE FOR CARRIER OPERATIONS BY THE INSTALLATION OF A LANDING GEAR SIMILAR TO THAT OF VE-7 EXCEPT BEING EQUIPPED WITH BRAKES AND ARRESTING HOOK. THIS WAS FIRST NAVAL AIRPLANE WITH AN AIRCOOLED ENGINE TO HAVE A SUPERCHARGER ENGINE HAS AN ELECTRIC AS WELL AS AN INERTIA STARTER (MANUAL OPERATION). ARMAMENT CONSISTED OF 2 30-CALIBER MACHINE GUNS SYNCHRONIZED TO FIRE THROUGH THE PROPELLER AND BOMB RACKS ON THE UNDERSIDE OF LOWER WINGS. THE GUNS WERE MANUALLY CHARGED. THE HIGH SPEED AT 20,000 FEET WAS 150 M.P.H. SERVICE CEILING IS 28,000 FEET SEA LEVEL HIGH SPEED WAS 130 M.P.H. THIS AIRPLANE WAS A DEVELOPEMENT OF THE "UO" TYPE.

THE AIRPLANE WAS FINISHED IN SILVER PIGMENTED LACQUER. SHADED AREAS WERE LIGHT GRAY. TIRES AND ENGINE IN BLACK.

CHANCE VOUGHT

Curtiss Jenny JN-4—JN-6H.

drawings by JOSEPH NIETO

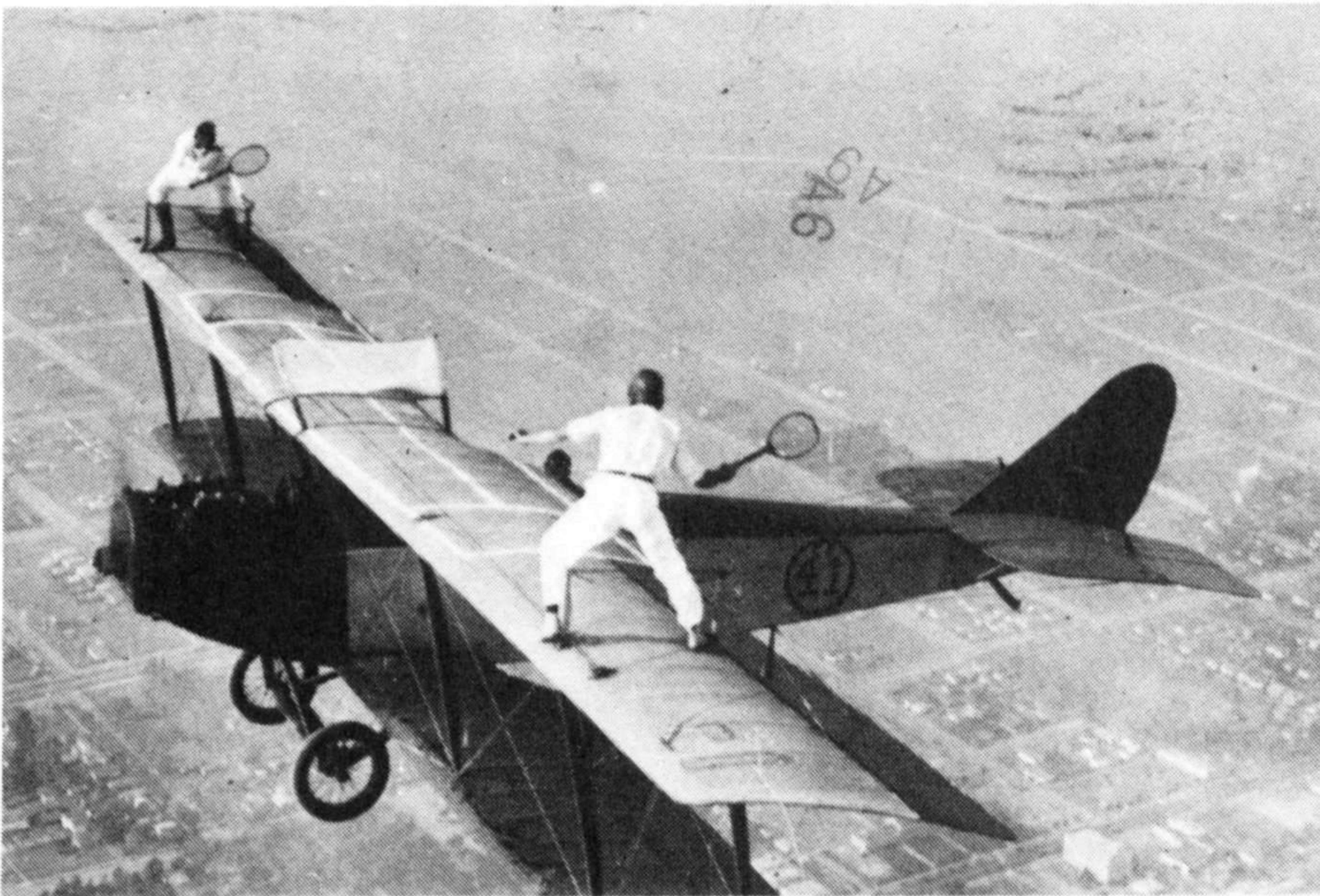


Photo courtesy of UPI.



"Flying the World's Great Aircraft" photo.

The Curtiss Jenny served as a trainer, a barn stormer, a mailplane, and was used extensively in early Hollywood films.



"U.S. Airmail Service" photo.



U.S. Navy photo.

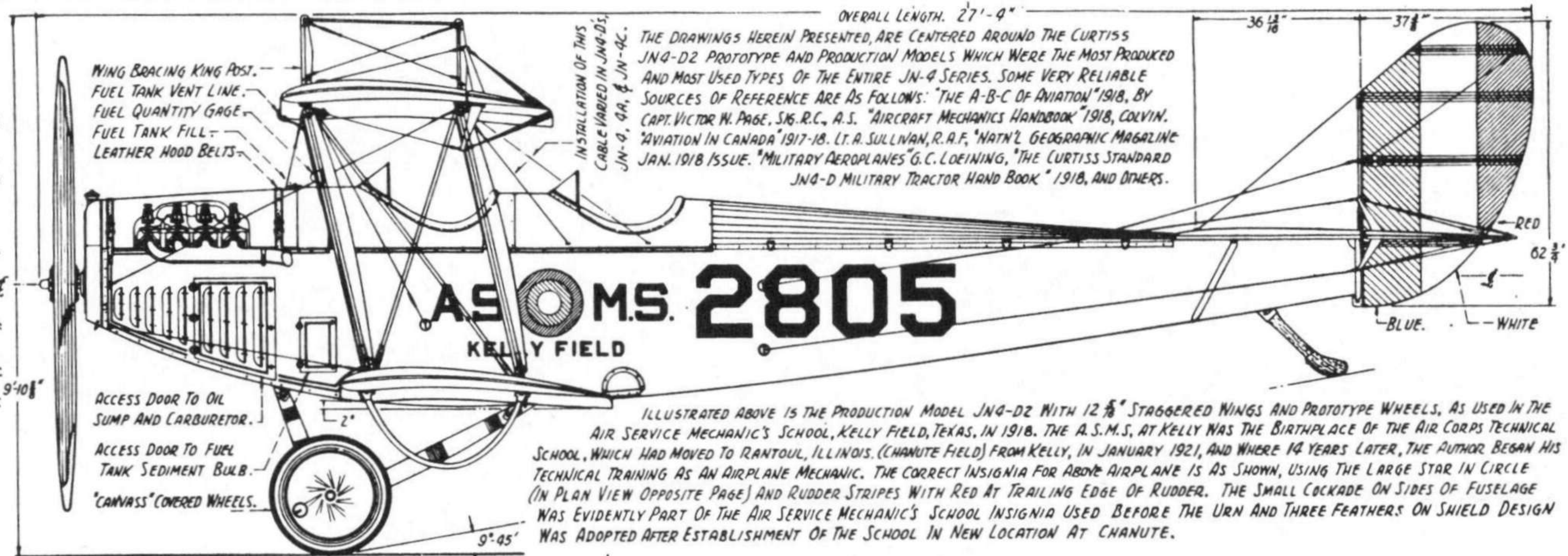
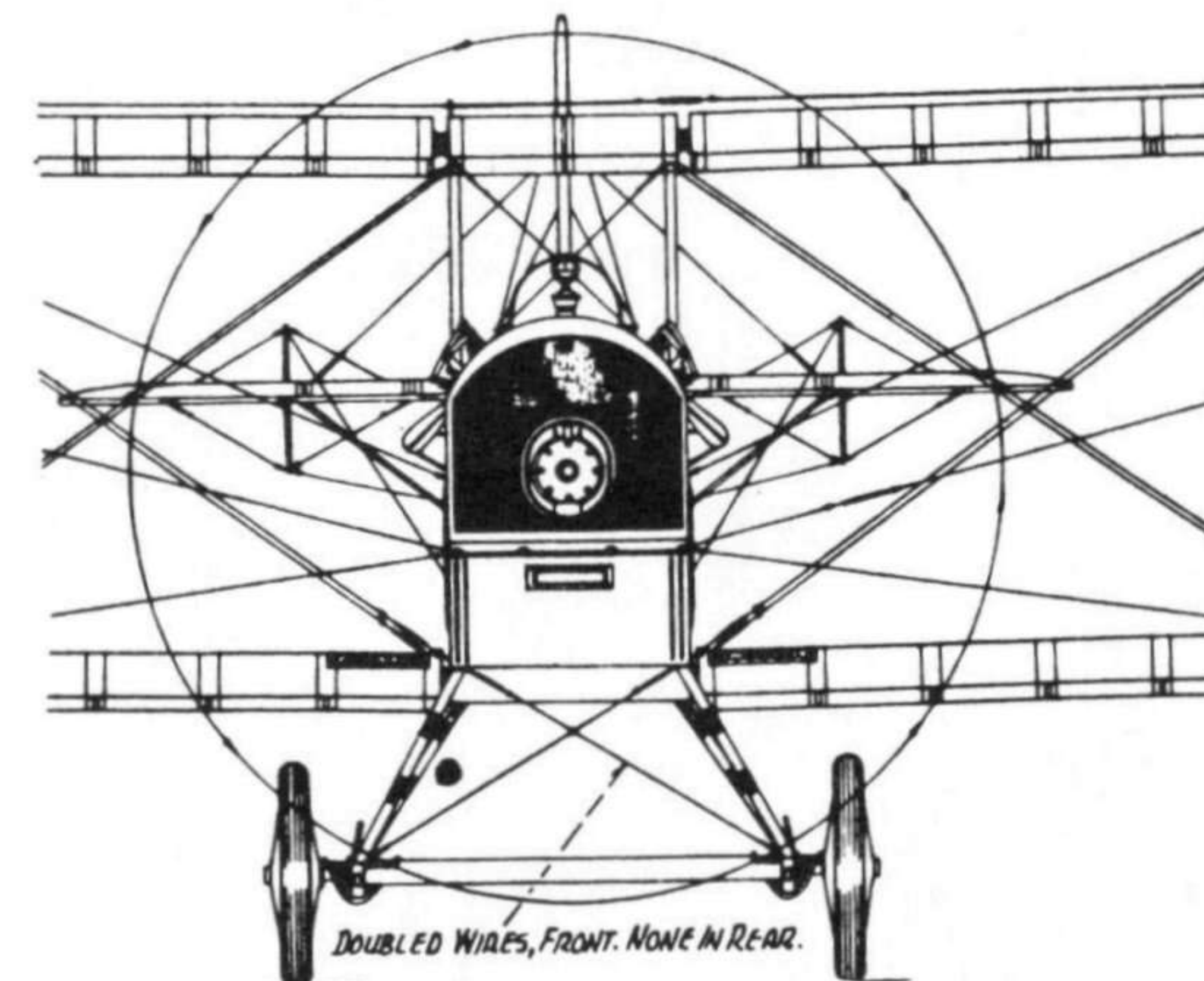
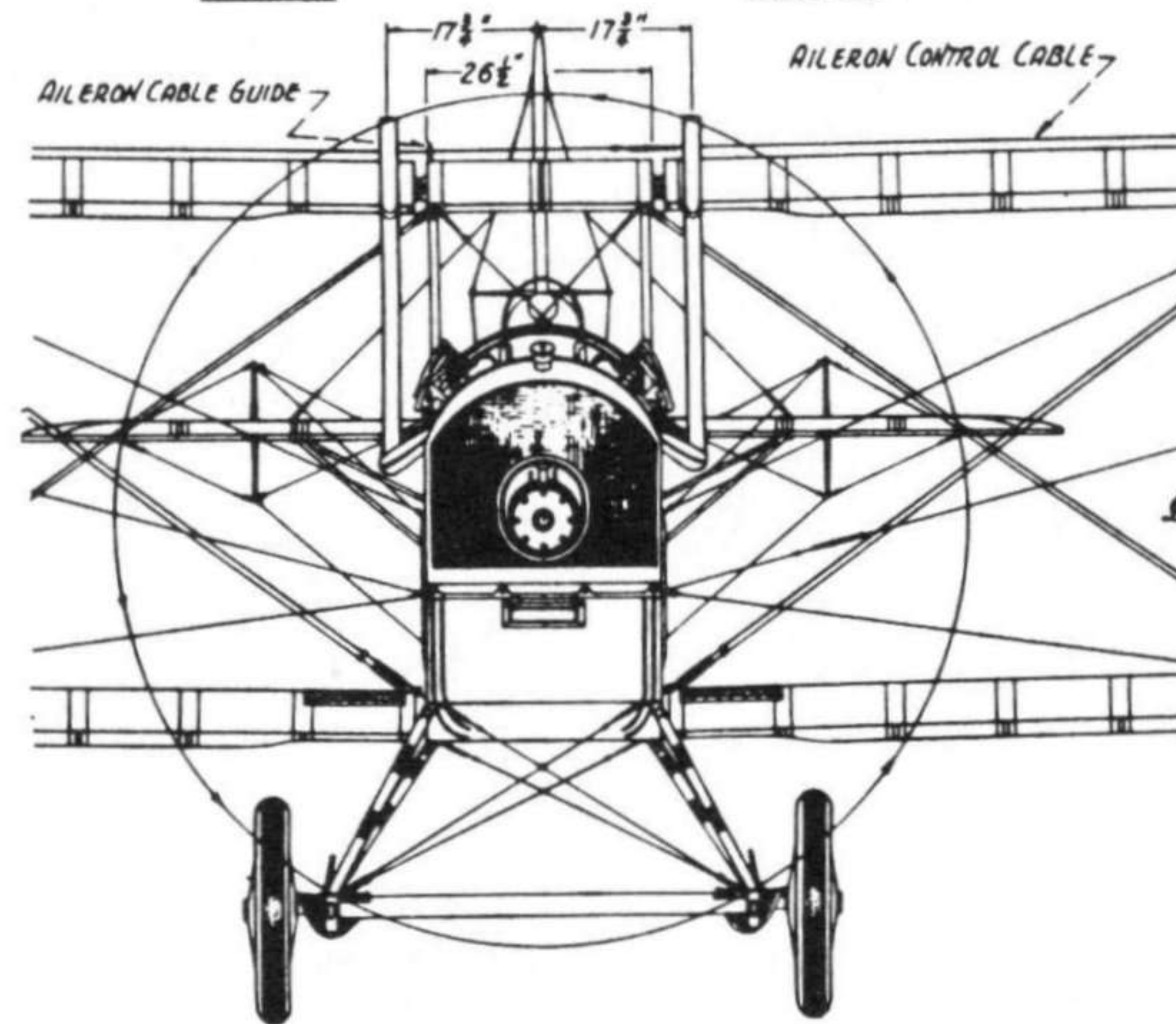
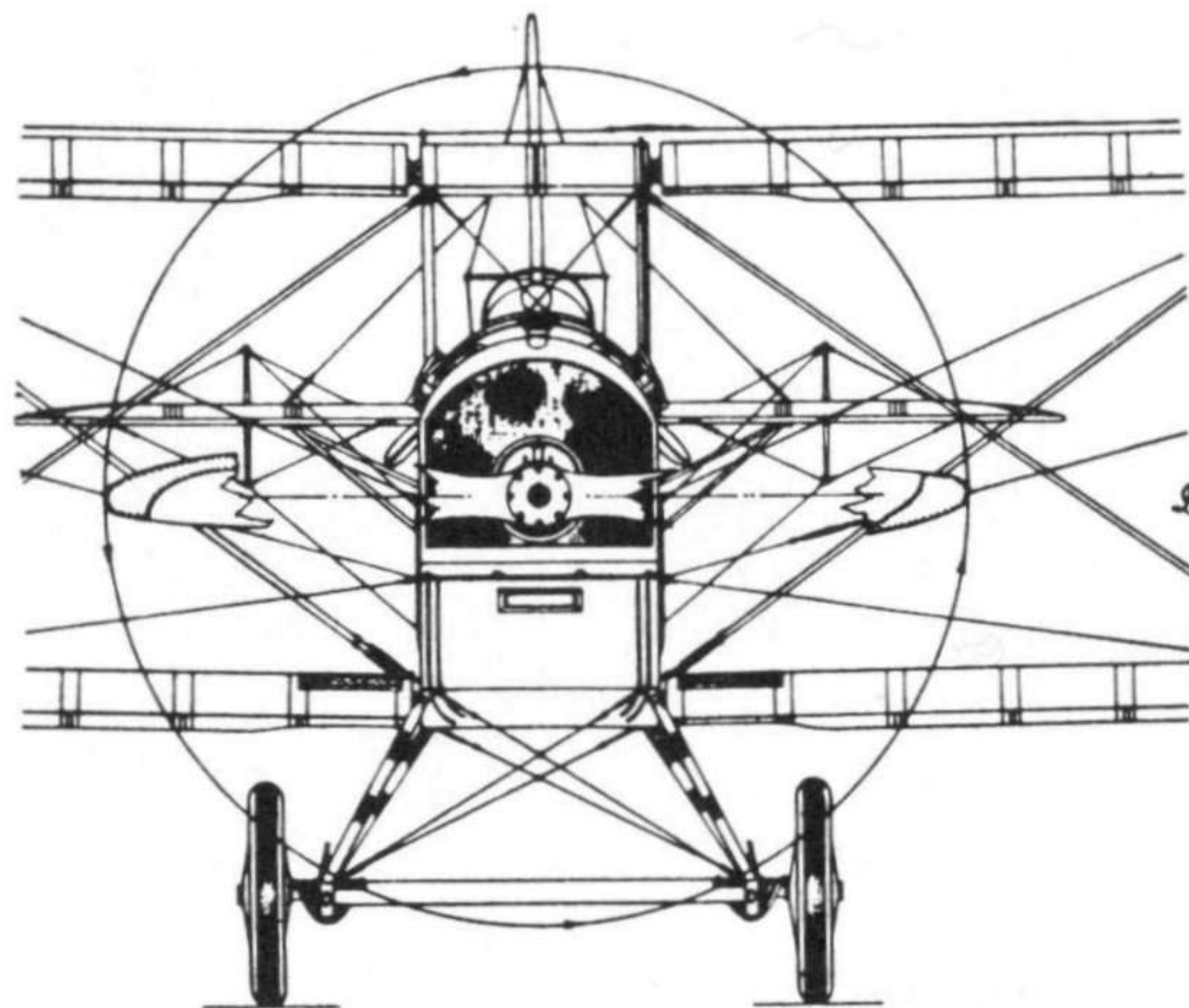
The Jenny was purely American. Produced in great quantities (over 4,500) for that period, Curtiss was helped in the effort by many subcontractors in Canada and the British Empire.

There used to be a saying, "If you can fly a Jenny, you can fly anything." She had her shortcomings, yet she would give novice pilots more than an even break. She was designed to teach men to fly and nothing more was ever expected of her.

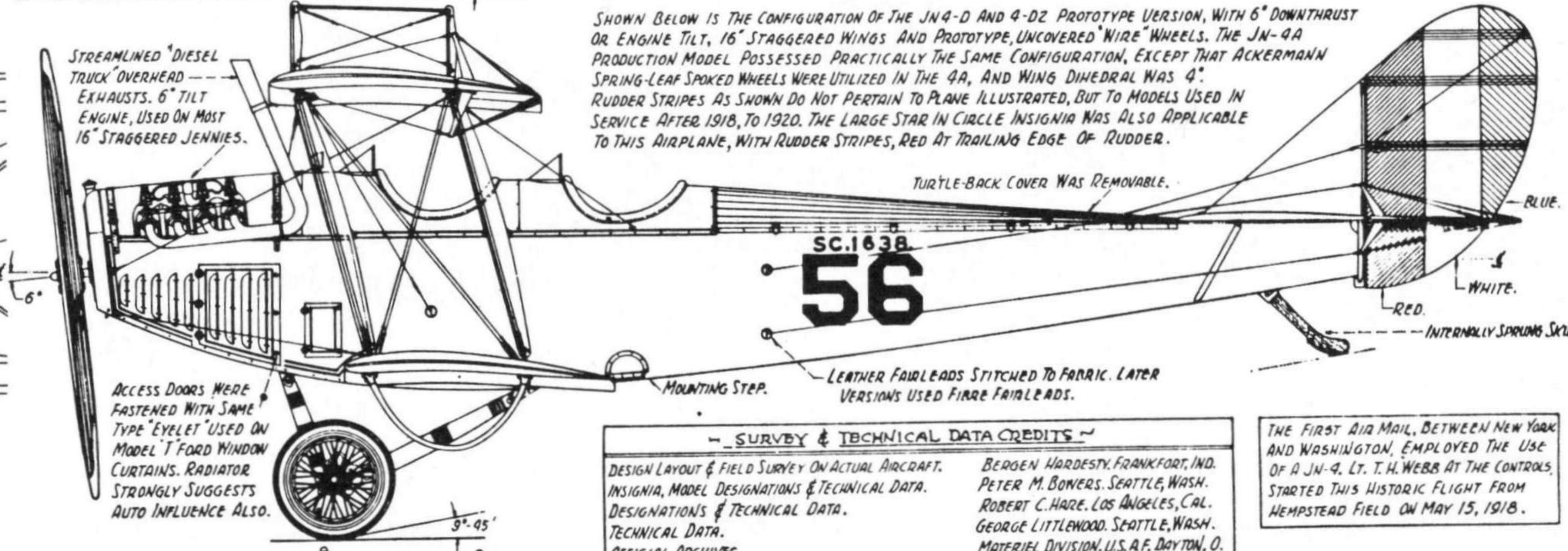
However clear-cut the Jenny's wartime purpose may have been, her greatest fame actually came in the post-war years of the 1920s. By sheer numbers she invaded—and took over—the initial phases of American aviation. She flew the first regular airmail schedule and became the first readily available private plane.

To those who teathed on a Jenny there is something magical in recalling the feel of air pressure on her elevators or rudder, of the throbbing of her OX-5 engine pulling her out of a dirt field, of every rib, strut, and wire vibrating in unison, of fabric dancing to the same beat as she bored her way to history. There is no pilot who has put in time in a Jenny who will not admit, "Verily, *there* was an airplane!"

Many survive—several are still flying. □



ILLUSTRATED ABOVE IS THE PRODUCTION MODEL JN-4-DZ WITH 12 1/8" STAGGERED WINGS AND PROTOTYPE WHEELS, AS USED IN THE AIR SERVICE MECHANIC'S SCHOOL, KELLY FIELD, TEXAS, IN 1918. THE A.S.M.S. AT KELLY WAS THE BIRTHPLACE OF THE AIR CORPS TECHNICAL SCHOOL, WHICH HAD MOVED TO RANTOUL, ILLINOIS (CHANUTE FIELD) FROM KELLY, IN JANUARY 1921, AND WHERE 14 YEARS LATER, THE AUTHOR BEGAN HIS TECHNICAL TRAINING AS AN AIRPLANE MECHANIC. THE CORRECT INSIGNIA FOR ABOVE AIRPLANE IS AS SHOWN, USING THE LARGE STAR IN CIRCLE (IN PLAN VIEW OPPOSITE PAGE) AND RUDDER STRIPES WITH RED AT TRAILING EDGE OF RUDDER. THE SMALL COCKADE ON SIDES OF FUSELAGE WAS EVIDENTLY PART OF THE AIR SERVICE MECHANIC'S SCHOOL INSIGNIA USED BEFORE THE URN AND THREE FEATHERS ON SHIELD DESIGN WAS ADOPTED AFTER ESTABLISHMENT OF THE SCHOOL IN NEW LOCATION AT CHANUTE.



SHOWN BELOW IS THE CONFIGURATION OF THE JN-4-D AND 4-DZ PROTOTYPE VERSION, WITH 6" DOWNTHRUST OR ENGINE TILT, 16" STAGGERED WINGS AND PROTOTYPE, UNCOVERED WIRE WHEELS. THE JN-4A PRODUCTION MODEL POSSESSED PRACTICALLY THE SAME CONFIGURATION, EXCEPT THAT ACKERMANN SPRING-LEAF SPOKED WHEELS WERE UTILIZED IN THE 4A, AND WING DIHEDRAL WAS 4". RUDDER STRIPES AS SHOWN DO NOT PERTAIN TO PLANE ILLUSTRATED, BUT TO MODELS USED IN SERVICE AFTER 1918, TO 1920. THE LARGE STAR IN CIRCLE INSIGNIA WAS ALSO APPLICABLE TO THIS AIRPLANE, WITH RUDDER STRIPES, RED AT TRAILING EDGE OF RUDDER.

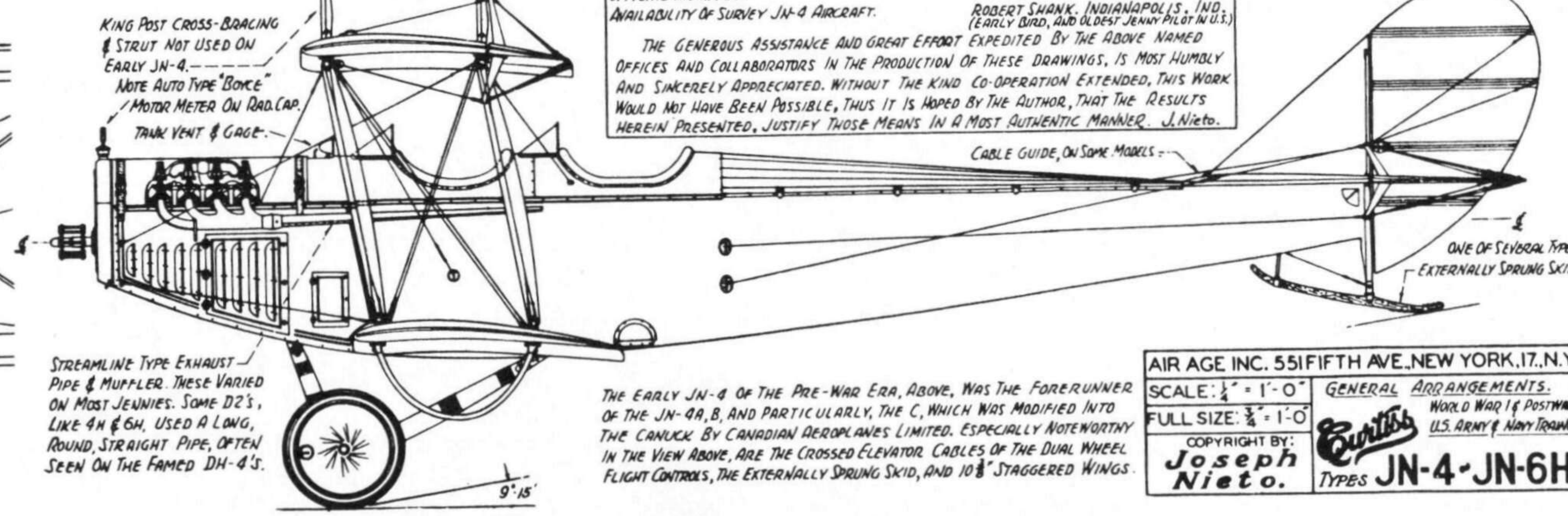
SURVEY & TECHNICAL DATA CREDITS

DESIGN LAYOUT & FIELD SURVEY ON ACTUAL AIRCRAFT. INSIGNIA, MODEL DESIGNATIONS & TECHNICAL DATA. DESIGNATIONS & TECHNICAL DATA. TECHNICAL DATA. OFFICIAL ARCHIVES. OFFICIAL ARCHIVES. AVAILABILITY OF SURVEY JN-4 AIRCRAFT.

BERGEN HARDESTY, FRANKFORT, IND. PETER M. BOWERS, SEATTLE, WASH. ROBERT C. HARE, LOS ANGELES, CAL. GEORGE LITTLEWOOD, SEATTLE, WASH. MATERIEL DIVISION, U.S.A.F. DAYTON, O. CHIEF OF AIR STAFF, R.C.A.F. ONTARIO, CAN. ROBERT SWANK, INDIANAPOLIS, IND. (EARLY BIRD, AND OLDEST JENNY PILOT IN U.S.)

THE GENEROUS ASSISTANCE AND GREAT EFFORT EXPEDITED BY THE ABOVE NAMED OFFICES AND COLLABORATORS IN THE PRODUCTION OF THESE DRAWINGS, IS MOST HUMBLY AND SINCERELY APPRECIATED. WITHOUT THE KIND CO-OPERATION EXTENDED, THIS WORK WOULD NOT HAVE BEEN POSSIBLE, THUS IT IS HOPED BY THE AUTHOR, THAT THE RESULTS HEREIN PRESENTED, JUSTIFY THOSE MEANS IN A MOST AUTHENTIC MANNER. J. Nieto.

THE FIRST AIR MAIL, BETWEEN NEW YORK AND WASHINGTON, EMPLOYED THE USE OF A JN-4. LT. T.H. WEBB AT THE CONTROLS, STARTED THIS HISTORIC FLIGHT FROM HEMPSTEAD FIELD ON MAY 15, 1918.



THE EARLY JN-4 OF THE PRE-WAR ERA, ABOVE, WAS THE FORERUNNER OF THE JN-4A, B, AND PARTICULARLY, THE C, WHICH WAS MODIFIED INTO THE CANUCK BY CANADIAN AEROPLANES LIMITED. ESPECIALLY NOTeworthy IN THE VIEW ABOVE, ARE THE CROSSED ELEVATOR CABLES OF THE DUAL WHEEL FLIGHT CONTROLS, THE EXTERNALLY SPRUNG SKID, AND 10 1/8" STAGGERED WINGS.

AIR AGE INC. 55 FIFTH AVE. NEW YORK, N.Y.

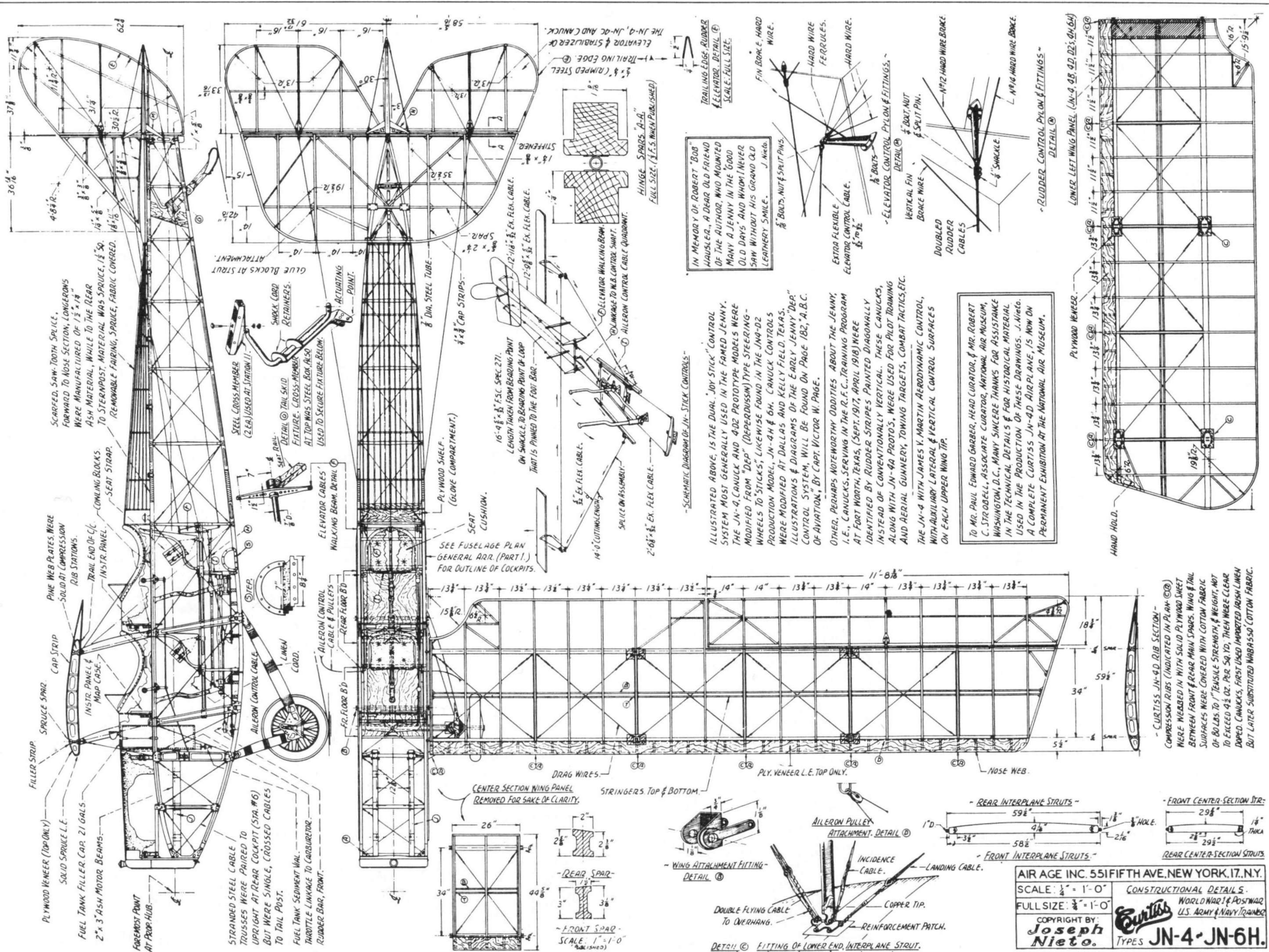
SCALE: 1/4" = 1'-0"

FULL SIZE: 3/8" = 1'-0"

COPYRIGHT BY: Joseph Nieto.

GENERAL ARRANGEMENTS: WORLD WAR I & POSTWAR U.S. ARMY & NAVY TRAINER.

Types JN-4-JN-6H.



SCARFED, SAW-TOOTH SPLICE, FORWARD TO NOSE SECTION, LONGERONS WERE MANUFACTURED OF 1 1/2" x 1 1/2" ASH MATERIAL, WHILE TO THE REAR TO STERNPOST, MATERIAL WAS SPRUCE, 1 1/2" x 3/4". REMOVABLE FAIRING, SPRUCE, FABRIC COVERED.

PINE WEB PLATES WERE SOLID AT COMPRESSION RIB STATIONS.

FILLER STRIP

PLYWOOD VENEER (TOP ONLY)

SOLID SPRUCE L.E.

FUEL TANK FILLER CAP, 21 GALS.

2" x 3" ASH MOTOR BEAMS.

STRANDED STEEL CABLE TRUSSES WERE PAIRED TO UPRIGHT AT REAR COCKPIT (STA #6) BUT WERE SINGLE, CROSSED CABLES TO TAIL POST.

FUEL TANK SEDIMENT VAL. THROTTLE LINKAGE TO CARBURATOR.

RUDDER BAR, FRONT.

FR. FLOOR B'D

REAR FLOOR B'D

SEAT CUSHION.

PLYWOOD SHELF. (GLOVE COMPARTMENT).

SEE FUSELAGE PLAN GENERAL ARR. (PART I.) FOR OUTLINE OF COCKPITS.

16-9/8" x 3/8" FSC SPEC 271. LENGTH TAKEN FROM BEARING POINT ON SHAKKLE TO BEARING POINT OF LOOP THAT IS PINNED TO THE FOOT BAR.

14-0" CUTTING LENGTH

2'-06" x 3/8" EX. FLEX. CABLE.

SPICE ON ASSEMBLY

1/2" EX. FLEX. CABLE.

1/2" DIA. STEEL TUBE.

4" x 4" CAP STRIPS.

SHOCK CORD RETAINERS.

STEEL CROSS MEMBER (2 EA) USED AT STATION 11.

DETAIL (C) TAIL SKID FITTURE. CROSS-MEMBER AT TOP WAS STEEL BOX (ALSO USED TO SECURE FITTURE BELOW).

ACTUATING POINT.

GLUE BLOCKS AT STRUT ATTACHMENT.

TRAILING EDGE (RIMMED STEEL) 1/2" x 1/2" x 1/2" (JN-4, JN-6 AND CANUCK)

HINGE SPARS "A-A" FULL SIZE. (F.F.S. WHEN PUBLISHED)

EXTRA FLEXIBLE ELEVATOR CONTROL CABLE. 3/8" TO 1/2"

TRAILING EDGE, RUBBER ELEVATOR. DETAIL (E) SCALE: FULL SIZE.

FIN BORE & HARD WIRE.

HARD WIRE FERRULES.

HARD WIRE.

ELEVATOR CONTROL PYLON & FITTINGS. DETAIL (B) 1/2" BOUT, NUT & SPLIT PIN.

DOUBLED RUDDER CABLES

VERTICAL FIN BRACE WIRE

N#1/2 HARD WIRE BRACE

RUDDER CONTROL PYLON & FITTINGS. DETAIL (C)

LOWER LEFT WING PANEL (JN-4, 4B, 4D, 4E, 4F, 4G, 4H, 4I)

PLYWOOD VENEER.

HAND HOLD.

19 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

13 1/2"

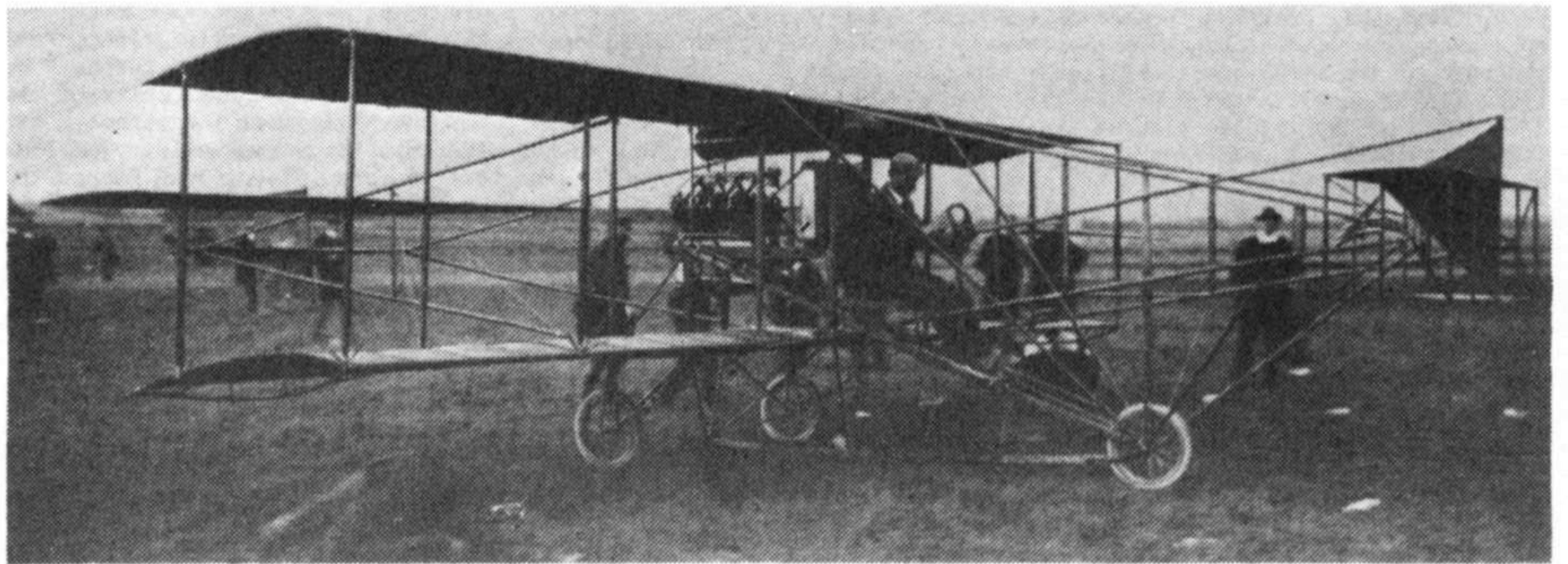
Curtiss Model D

drawing by WILLIAM WYLAM

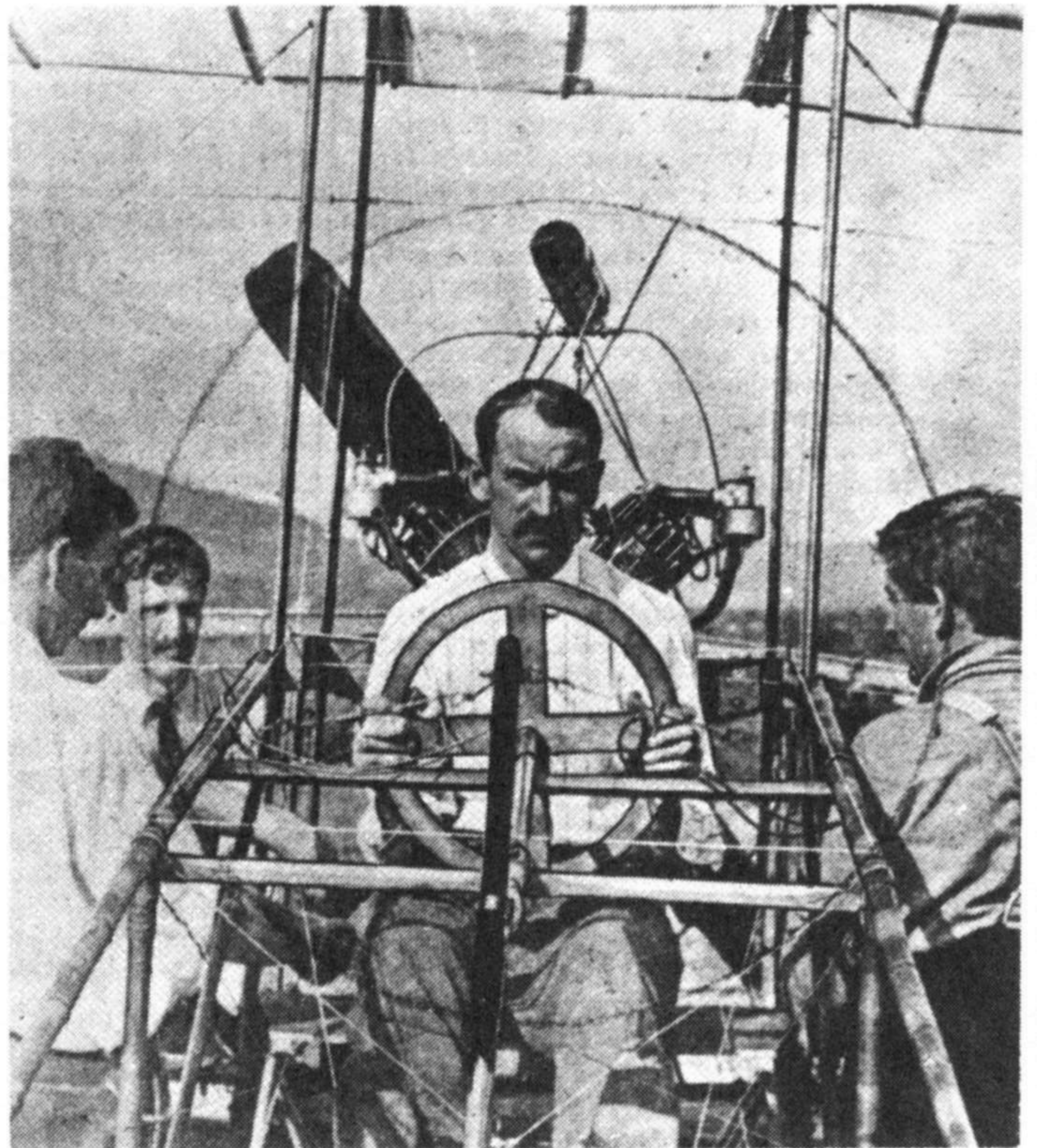
THIS AIRCRAFT was the result of U.S. Signal Corps authorization by Congress to appropriate aircraft for the Army. After a 5-year struggle to prove the practicality of the airplane, the Wright Brothers' flight demonstration had opened the eyes of Army brass to a new spectrum of weaponry. In 1911 Congress approved the first allotment specifically for aeronautics, and the Wright Brothers and Glenn Curtiss received the first two such contracts.

Designated "Signal Corps" sequence numbers, S.C. 1, the first military aircraft of the Wright Brothers was retired to the Air Force Museum that year, and Curtiss' S.C. 2 was the second aircraft to enter testing at Fort Sam Houston in April 1911. G.E.M. Kelly flew the trials on the morning of April 10. He took it up and shortly came in for a landing, hit the ground hard, and bounced back in the air. Climbing slowly, Kelly banked the airplane away from the tent area, suddenly lost control, and plummeted to his death. The S.C. 2 was repaired, however, and was used as a trainer. It was removed from service on February 24, 1914.

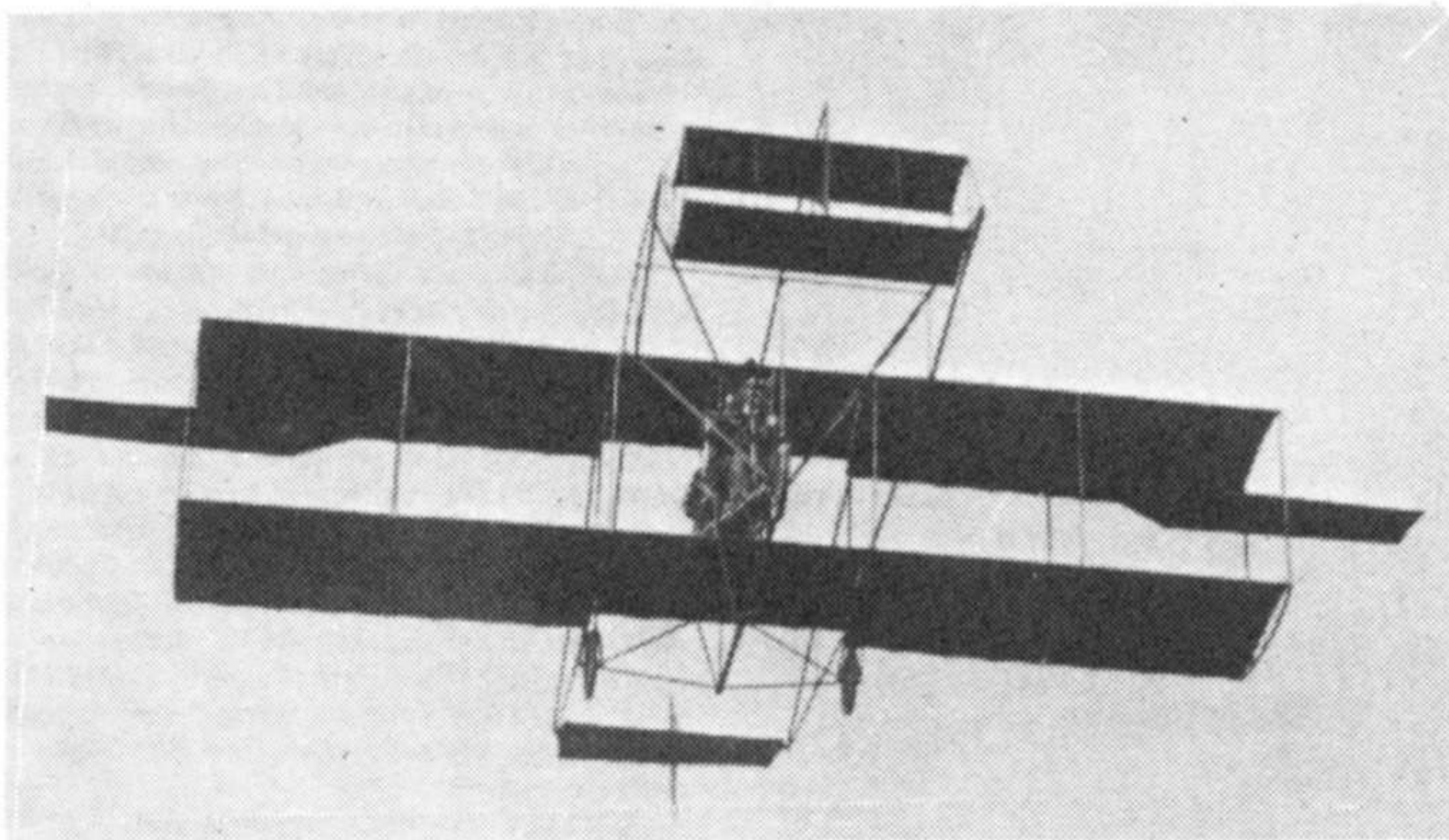
Seven Pushers survive, and many reproductions. □

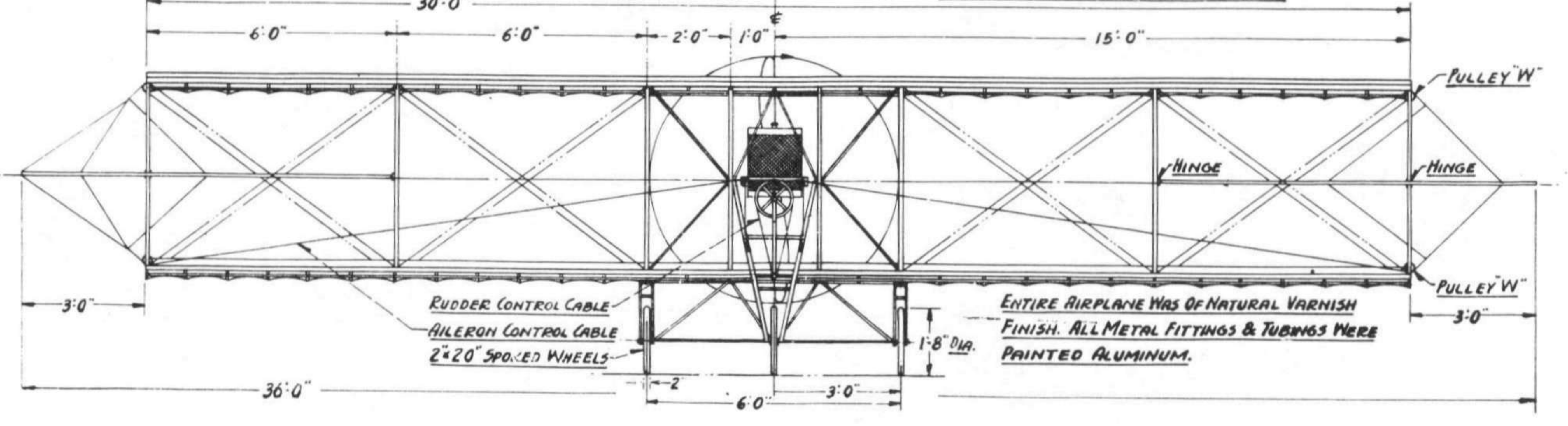
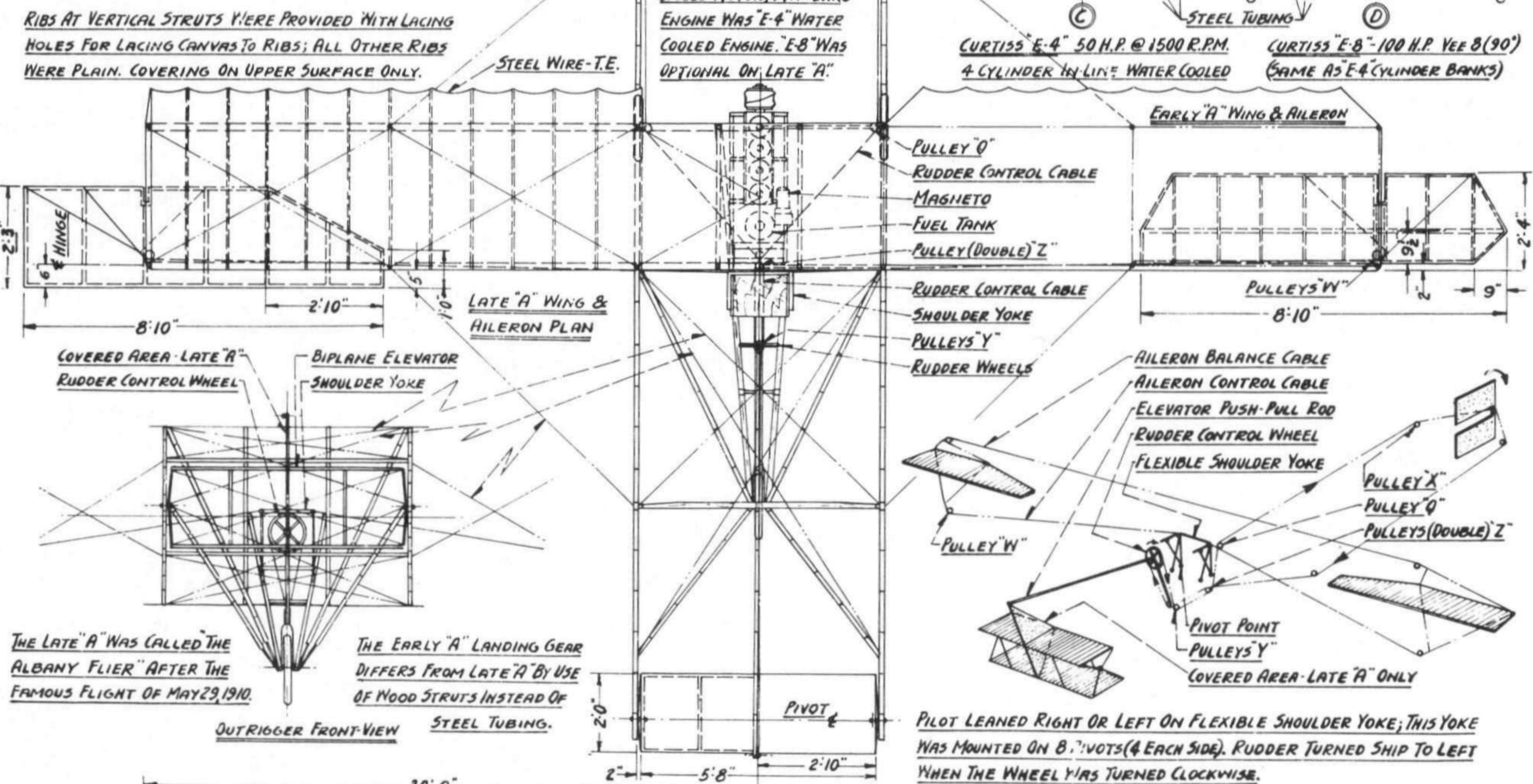
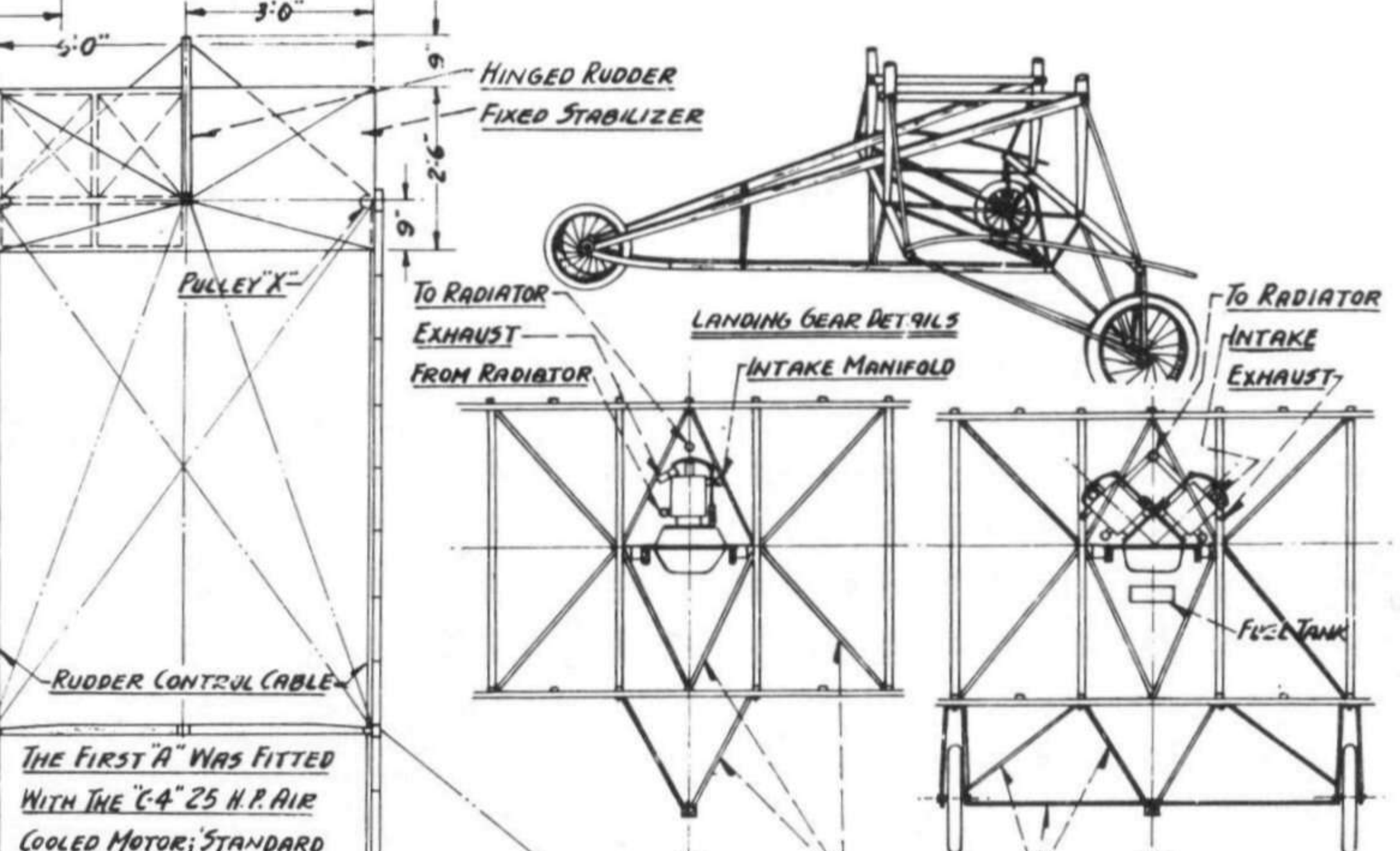
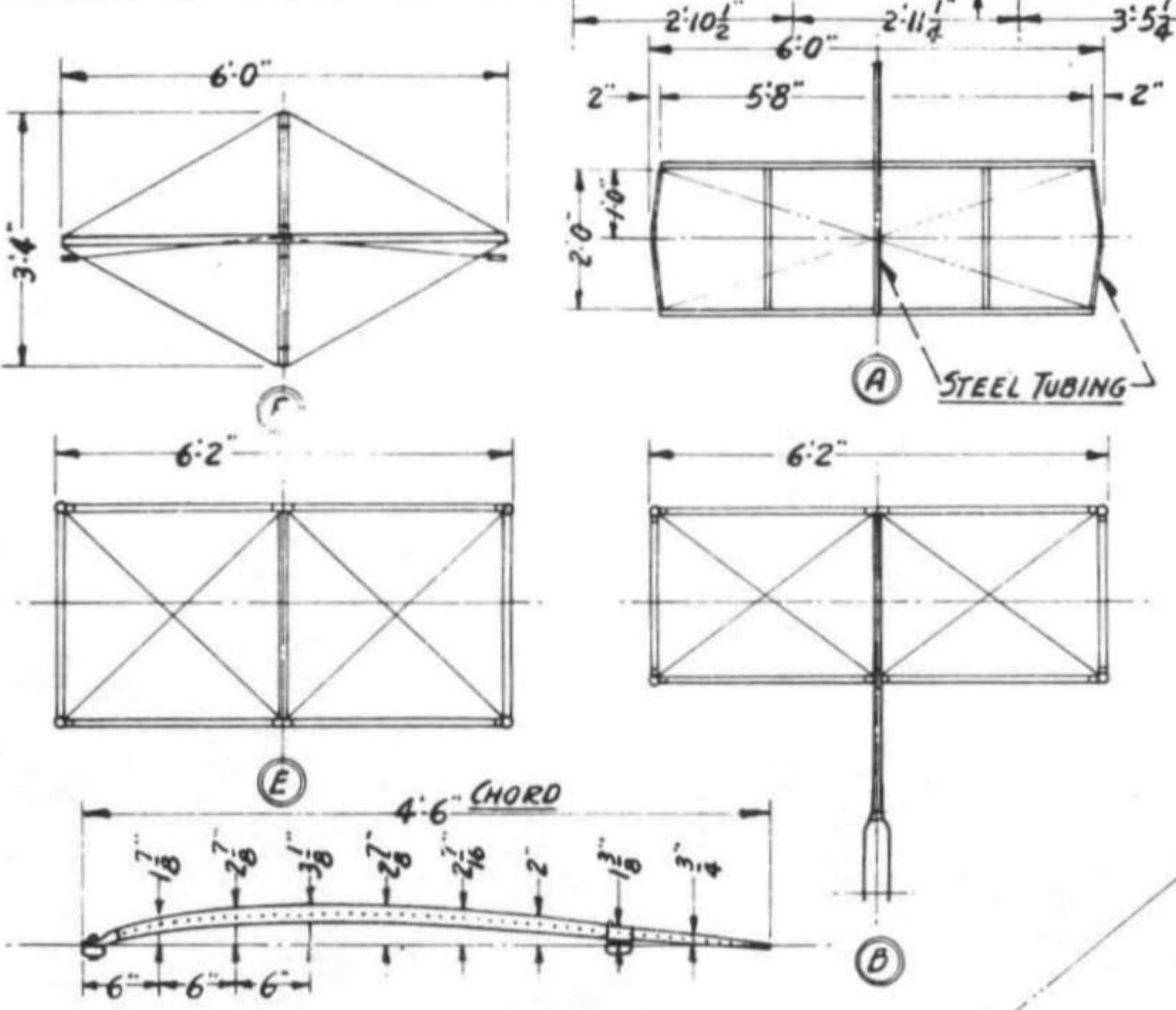
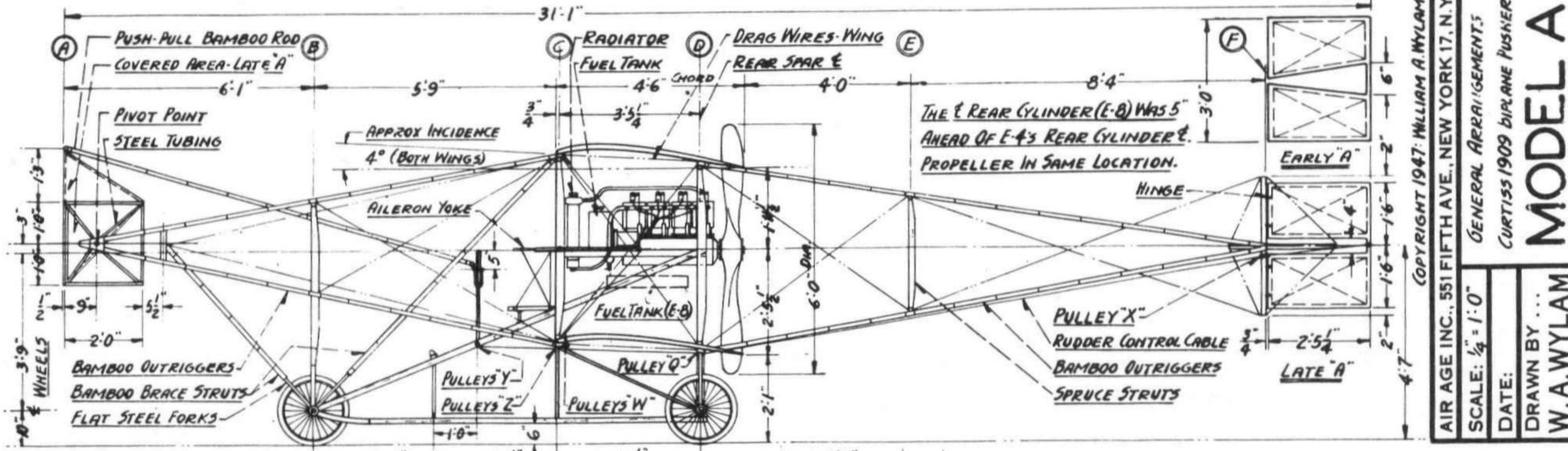


The Curtiss S.C. 2 was the second aircraft to enter the military inventory. "A.A.H.S." Journal photo.



Glen Curtiss at the controls of his June Bug was determined to prove the utility of the airplane to the military. "A.A.H.S. Journal" photo.





RIBS AT VERTICAL STRUTS WERE PROVIDED WITH LACING HOLES FOR LACING CANVAS TO RIBS; ALL OTHER RIBS WERE PLAIN. COVERING ON UPPER SURFACE ONLY.

THE FIRST "A" WAS FITTED WITH THE "C-4" 25 H.P. AIR COOLED MOTOR; STANDARD ENGINE WAS "E-4" WATER COOLED ENGINE. "E-8" WAS OPTIONAL ON LATE "A".

CURTISS "E-4" 50 H.P. @ 1500 R.P.M. 4 CYLINDER IN LINE WATER COOLED
 CURTISS "E-8" 100 H.P. VEE 8 (90°) (SAME AS E-4 CYLINDER BANKS)

THE LATE "A" WAS CALLED THE ALBANY FLIER AFTER THE FAMOUS FLIGHT OF MAY 29, 1910.

THE EARLY "A" LANDING GEAR DIFFERS FROM LATE "A" BY USE OF HOOD STRUTS INSTEAD OF STEEL TUBING.

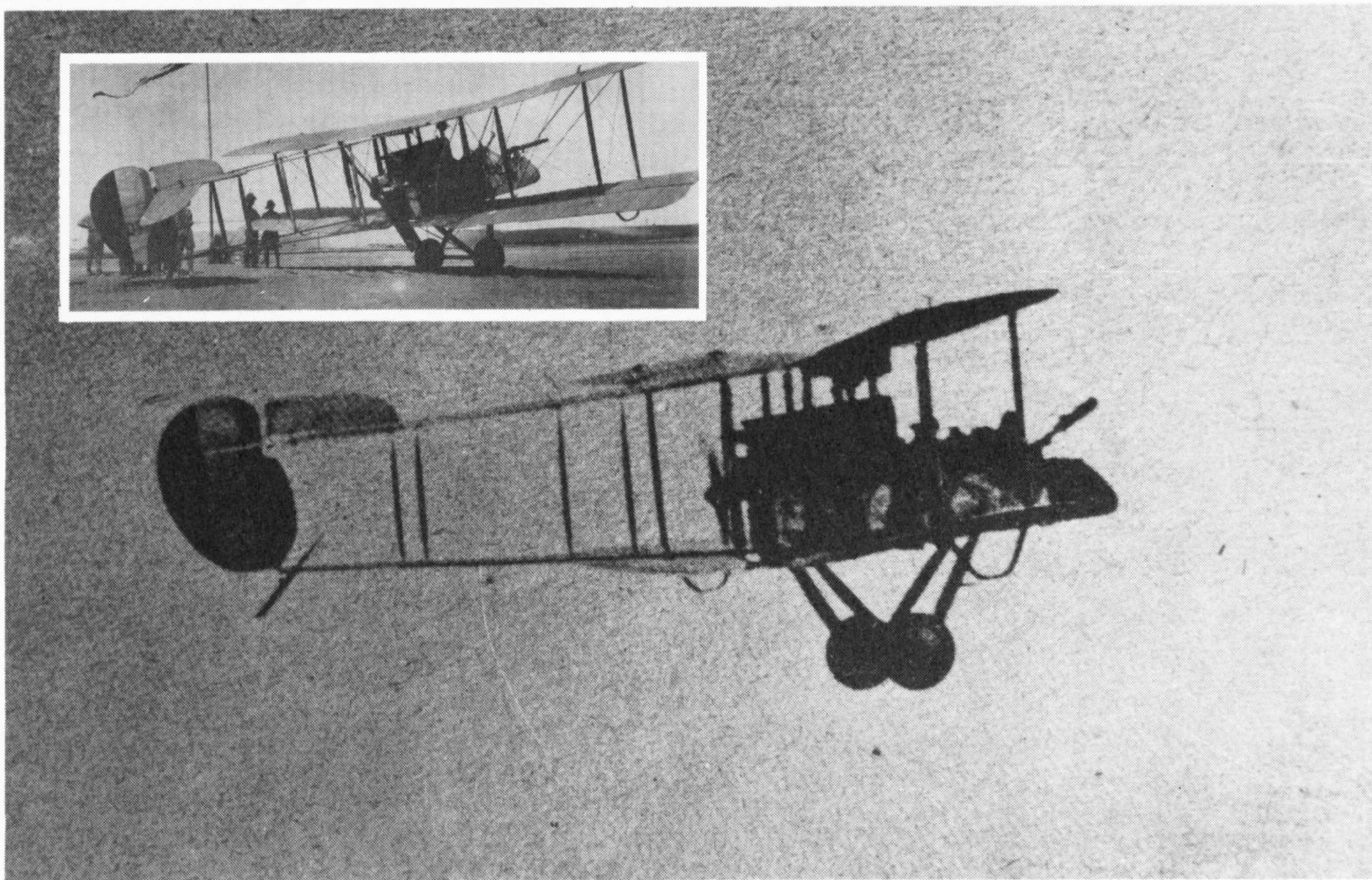
PILOT LEANED RIGHT OR LEFT ON FLEXIBLE SHOULDER YOKE; THIS YOKE WAS MOUNTED ON 8" PIVOTS (4 EACH SIDE). RUDDER TURNED SHIP TO LEFT WHEN THE WHEEL WAS TURNED CLOCKWISE.

ENTIRE AIRPLANE WAS OF NATURAL VARNISH FINISH. ALL METAL FITTINGS & TUBINGS WERE PAINTED ALUMINUM.

COPYRIGHT 1947 WILLIAM A. WYLAM
 AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 GENERAL ARRANGEMENTS
 SCALE: 1/4" = 1'-0"
 DATE: _____
 DRAWN BY: W. A. WYLAM
MODEL A
 CURTISS 1909 BIPLANE PUSHER

DeHavilland D.H.1

drawings by WILLIAM WYLAM



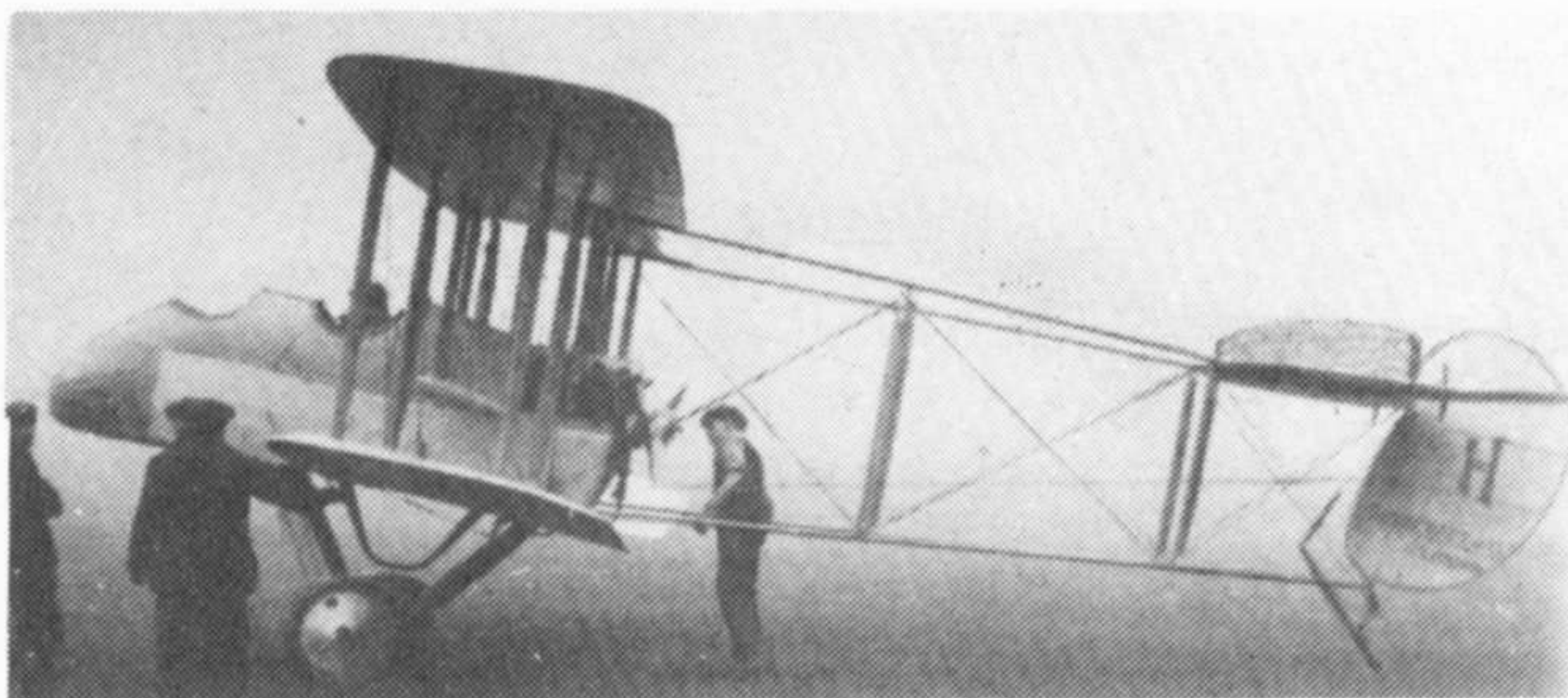
THE deHavilland D.H.1 was a two-bay pusher biplane designed by Geoffrey deHavilland in 1915 while he was with the Aircraft Manufacturing Company, producers of the plane. As simple as they were in those days, aircraft could be designed, built, and test-flown in a matter of just a few months. The D.H.1 was an immediate success and garnered much of that success from the 70-hp Renault V-type air-cooled engine. Its top speed at sea level was 78 mph, and its rate of climb was estimated at something less than 500 fpm.

DeHavilland himself did all the preliminary flight testing on the D.H.1. The lessons he had learned in the application of inherent stability theories to full-size aircraft were incorporated in his new

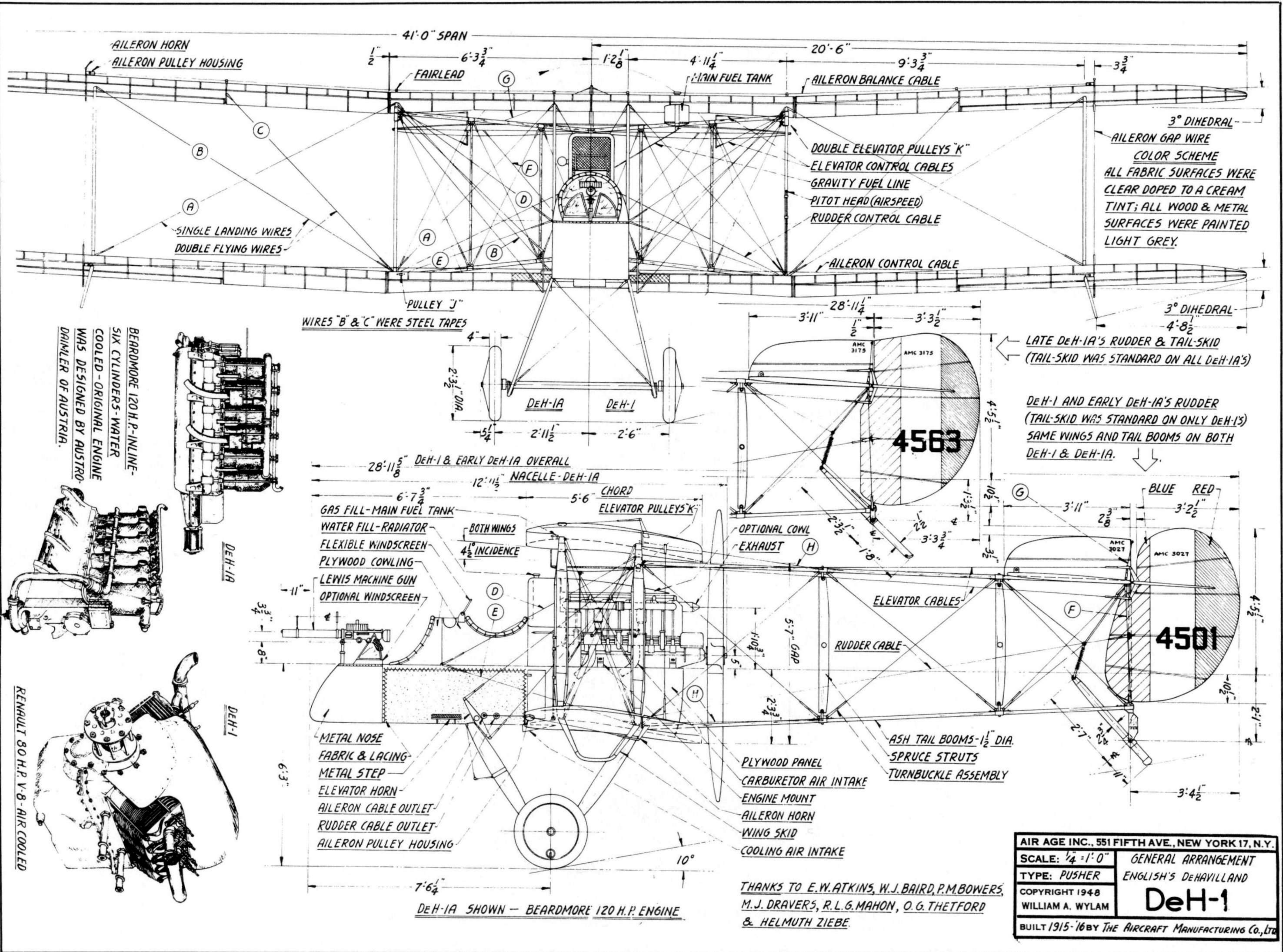
pusher. He demonstrated these qualities very impressively by flying hands off during tests and on low passes.

Although the D.H.1 was never produced in quantity, it was a very good airplane both performance-wise and structurally.

With a good airplane on their hands but no orders, the makers decided to develop the D.H.1 into a more serviceable military design, thus the D.H.1A evolved, which did reach limited production. There are none left. □

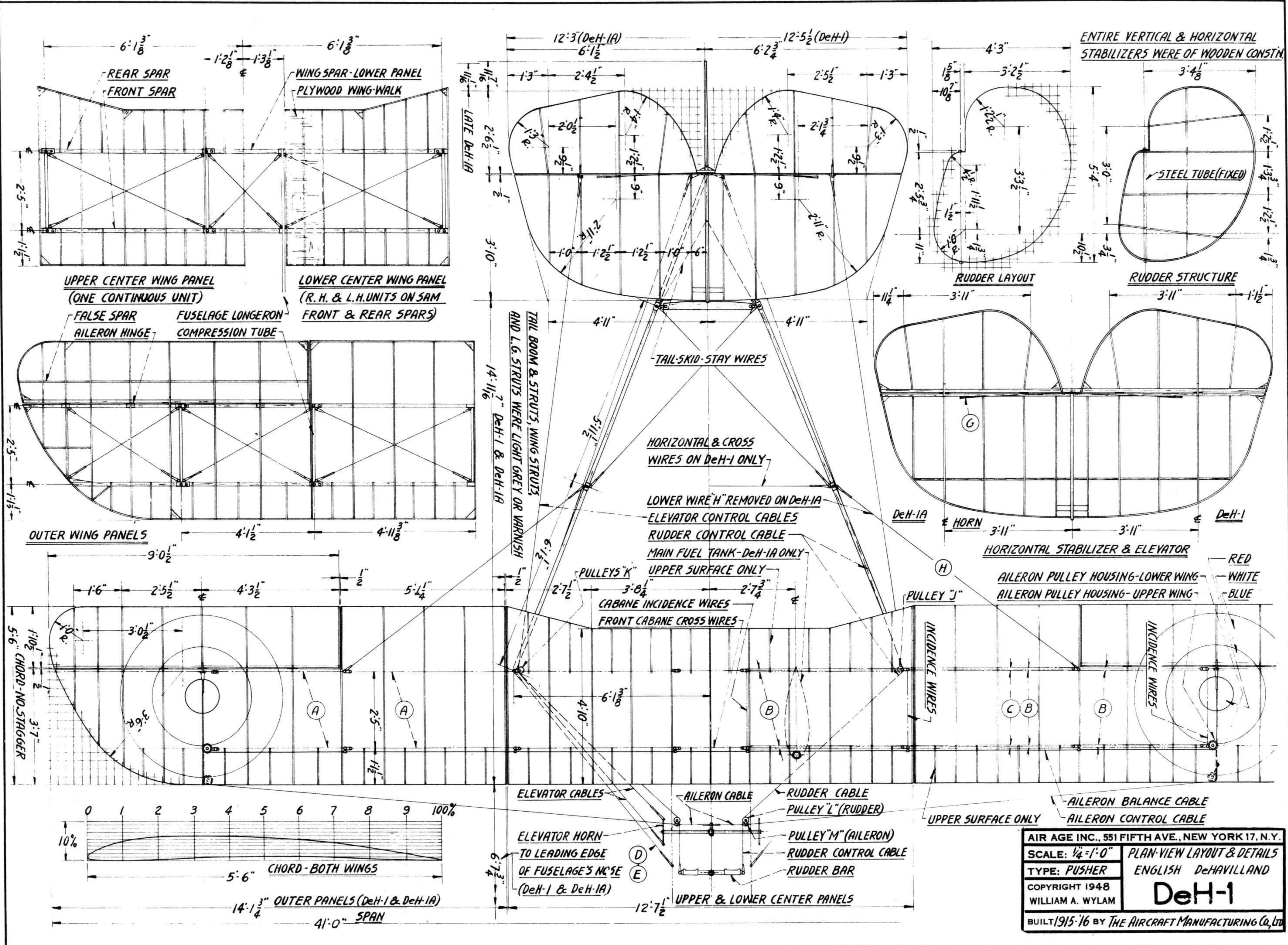


Springboard for the deHavilland aircraft manufacturing firm, the D.H.1 was considered a fine aircraft in its time. Air Age file photos.

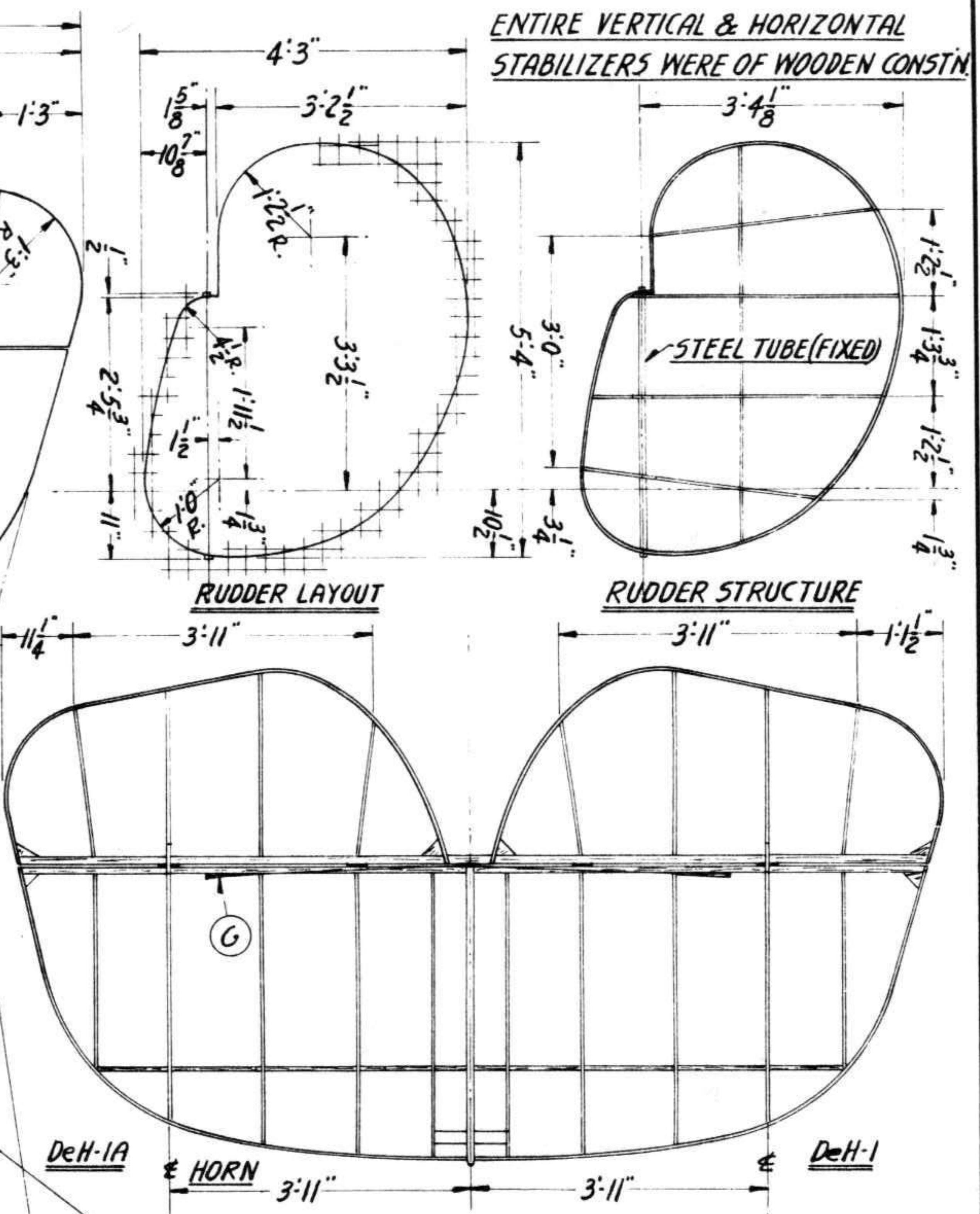
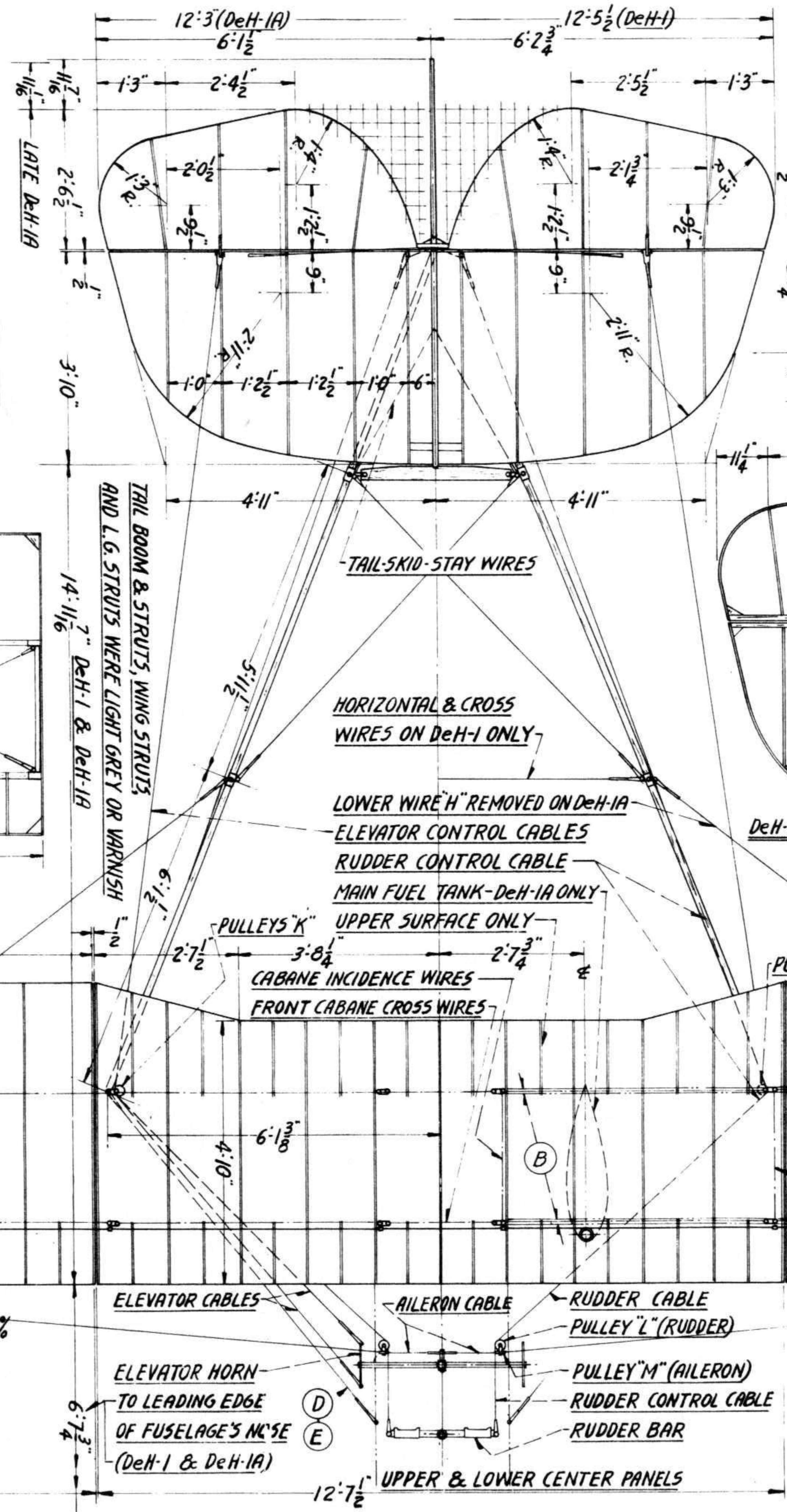
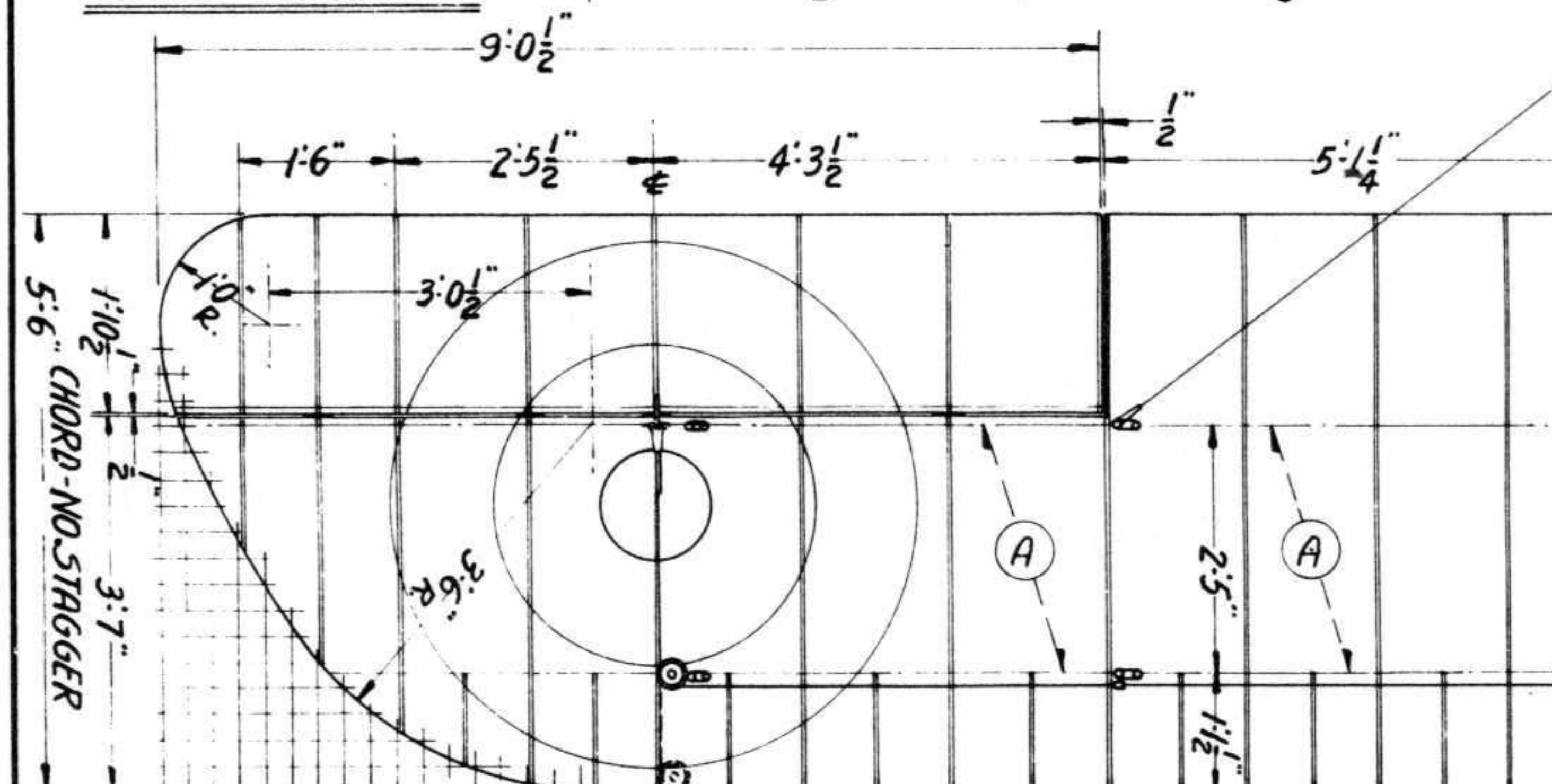
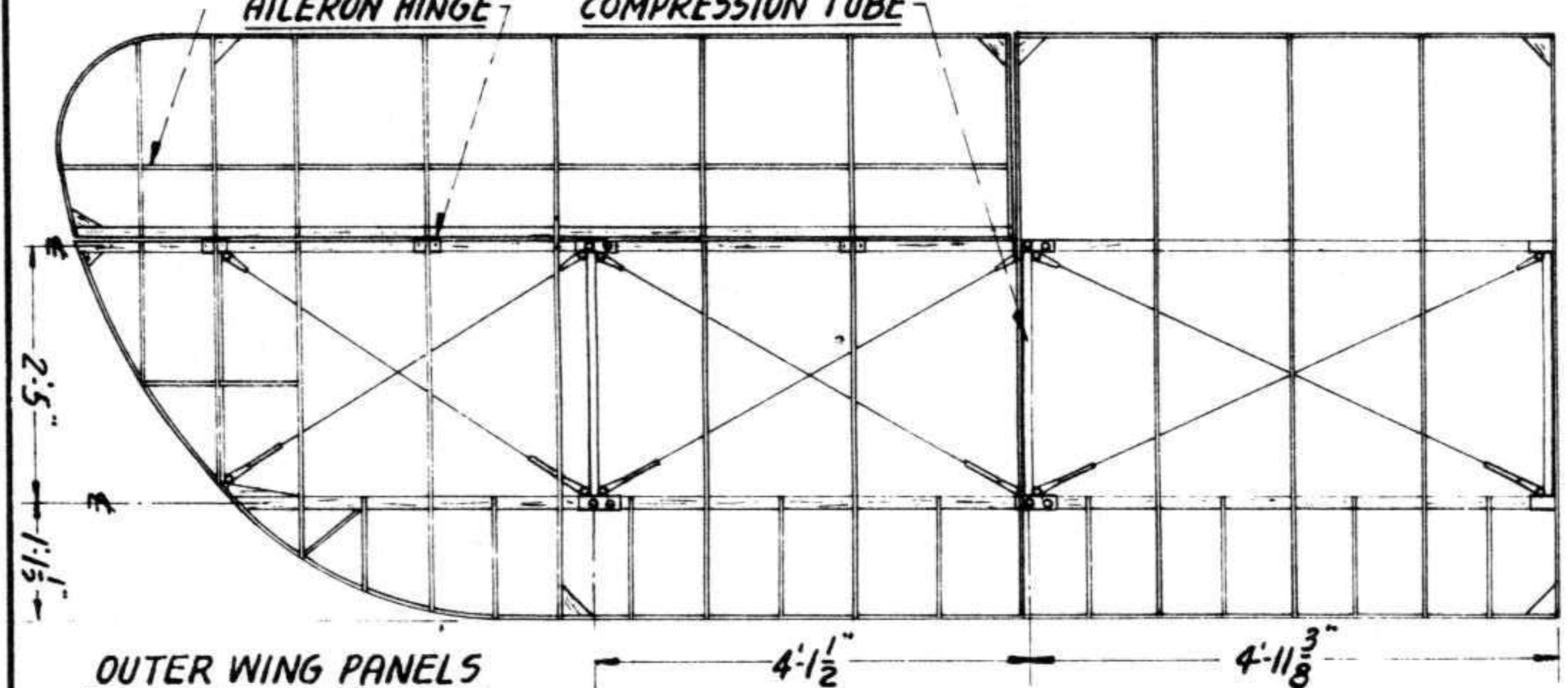
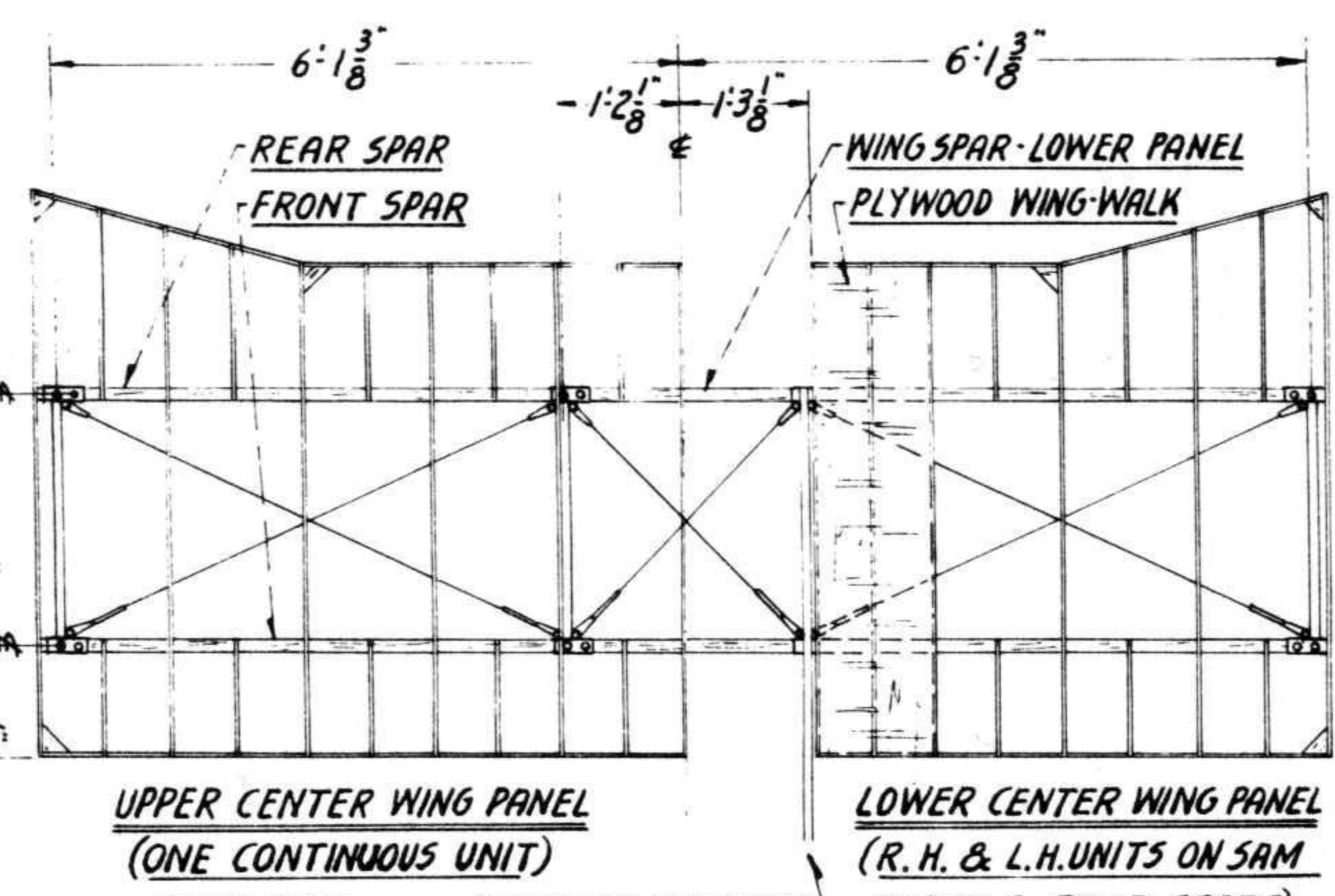


AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: 1/4" = 1'-0"	GENERAL ARRANGEMENT
TYPE: PUSHER	ENGLISH'S DeHAVILLAND
COPYRIGHT 1948	DeH-1
WILLIAM A. WYLM	
BUILT 1915-16 BY THE AIRCRAFT MANUFACTURING CO., LTD.	

THANKS TO E.W. ATKINS, W.J. BAIRD, P.M. BOWERS, M.J. DRAVERS, R.L.G. MAHON, O.G. THETFORD & HELMUTH ZIEBE.



ENTIRE VERTICAL & HORIZONTAL STABILIZERS WERE OF WOODEN CONSTR



AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.

SCALE: 1/4" = 1'-0"

TYPE: PUSHER

COPYRIGHT 1948

WILLIAM A. WYLM

PLAN-VIEW LAYOUT & DETAILS

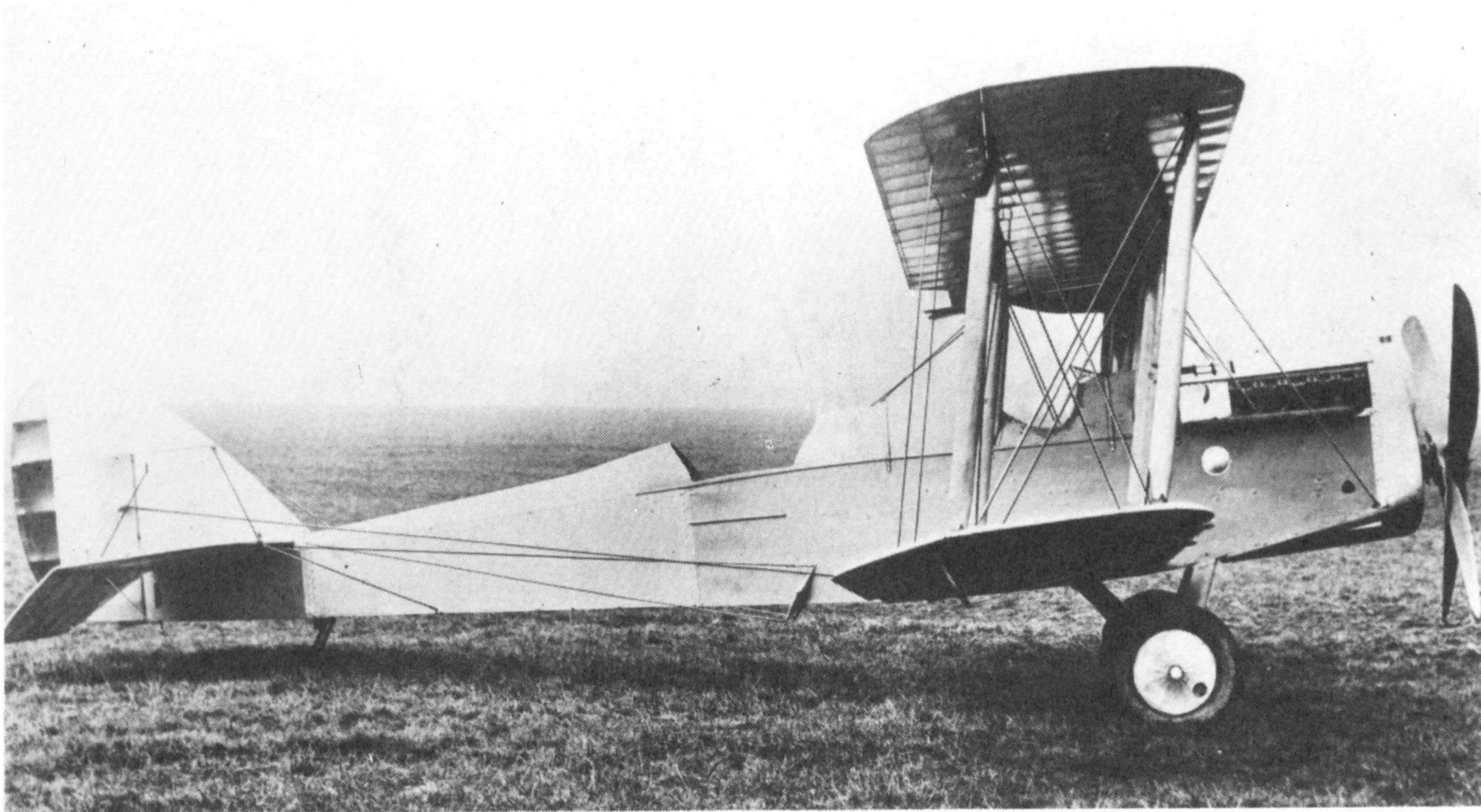
ENGLISH DeHAVILLAND

DeH-1

BUILT 1915-16 BY THE AIRCRAFT MANUFACTURING CO., LTD

DeHavilland D.H.4

drawings by WILLIAM WYLAM



THE BRITISH firm known as the Aircraft Manufacturing Company was founded by G. Holt Thomas in 1912, and among its talented designers was Geoffrey deHavilland. Credited with many successful designs, deHavilland was prolific. In June 1916 mechanics rolled out the prototype of the now famous D.H.4 biplane, which was later to be both condemned and praised for its characteristics and fighting abilities. The ship was big and beautiful, yet in some respects ungainly and unsafe.

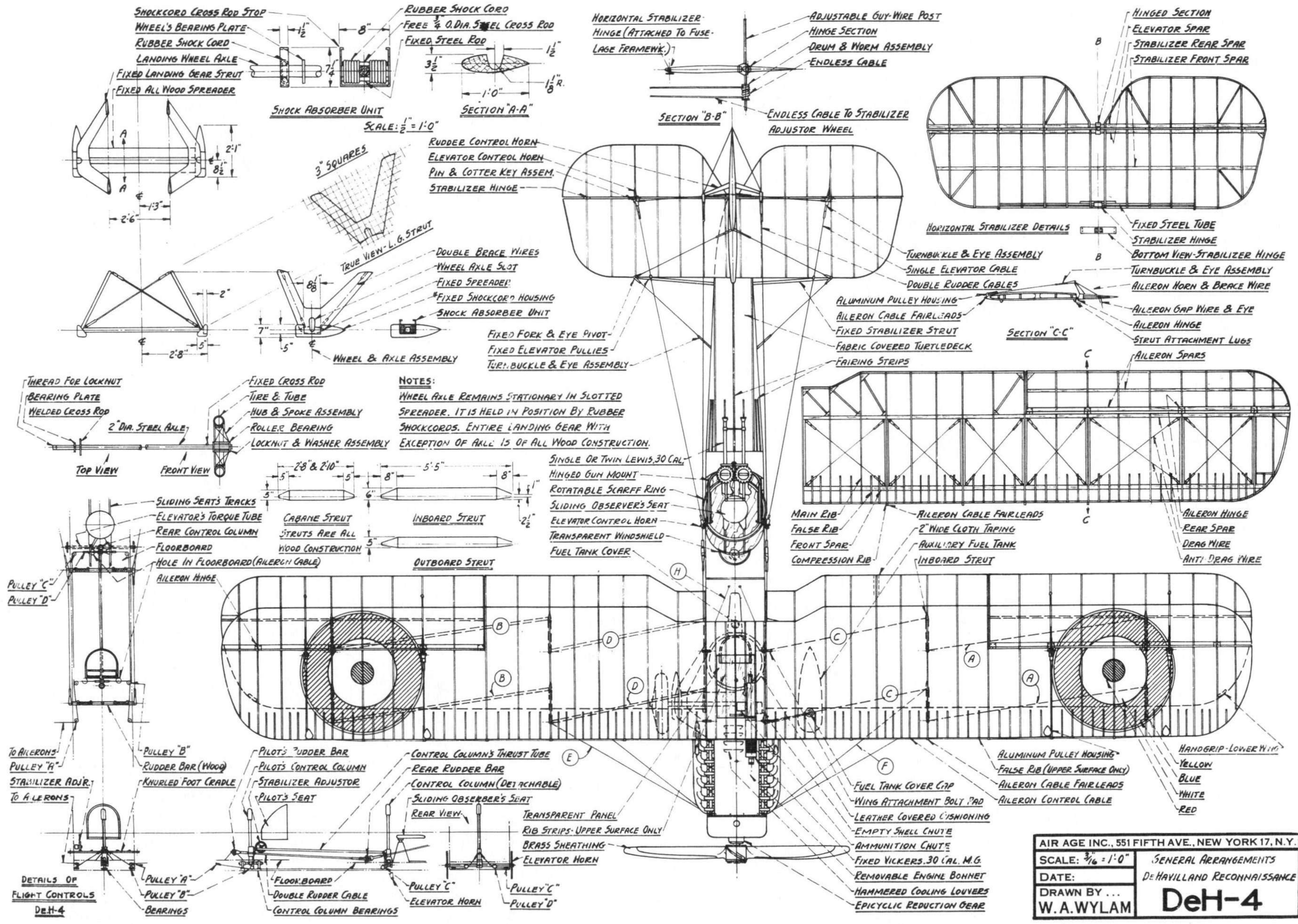
The first production models to go into service in 1916 were fitted with a variety of engines from 200-260 hp. The completely enclosed fuselage with its occupants sitting in tandem was not new, but the fact that the gunner member of the crew sat in the rear seat was. The greatest influence in the change of crew positions was the advent of the synchronized gun on the cowling.

Later versions of the D.H.4 made use of the Rolls-Royce Falcon engine and later still the Eagle engine, which produced 375 hp.

Throughout the history of aviation, airplanes have been given nicknames, most of them of a complimentary nature, and which were supposed to describe the plane's most outstanding characteristics. "Flaming Coffin" was attached to the D.H.4 early in its career, because the fuel tank was positioned between the cockpits. Its excellent handling qualities and large speed range encouraged development, and in the DH-4B (American designation) the pilot was moved back and the tank forward.

Six D.H.4's are left, in various models in various conditions. □

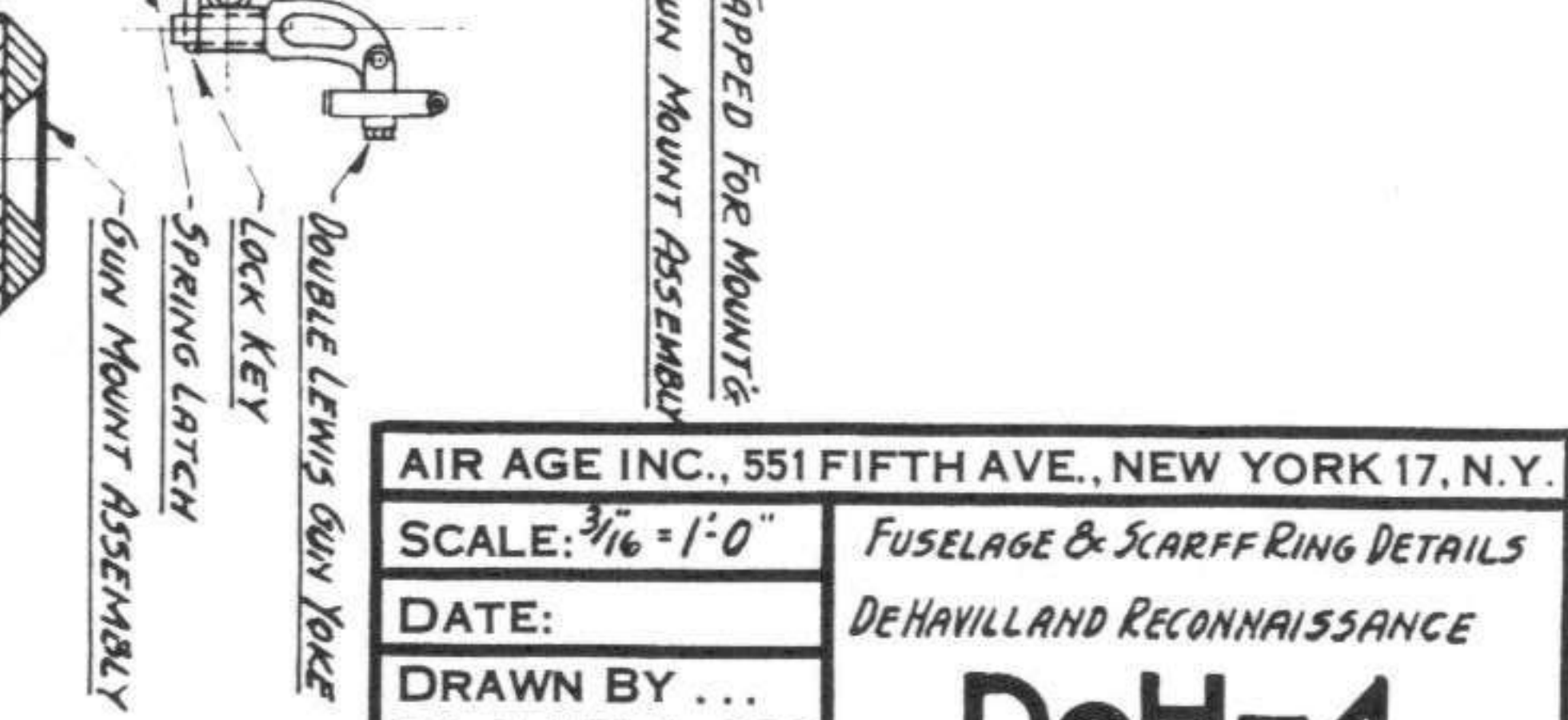
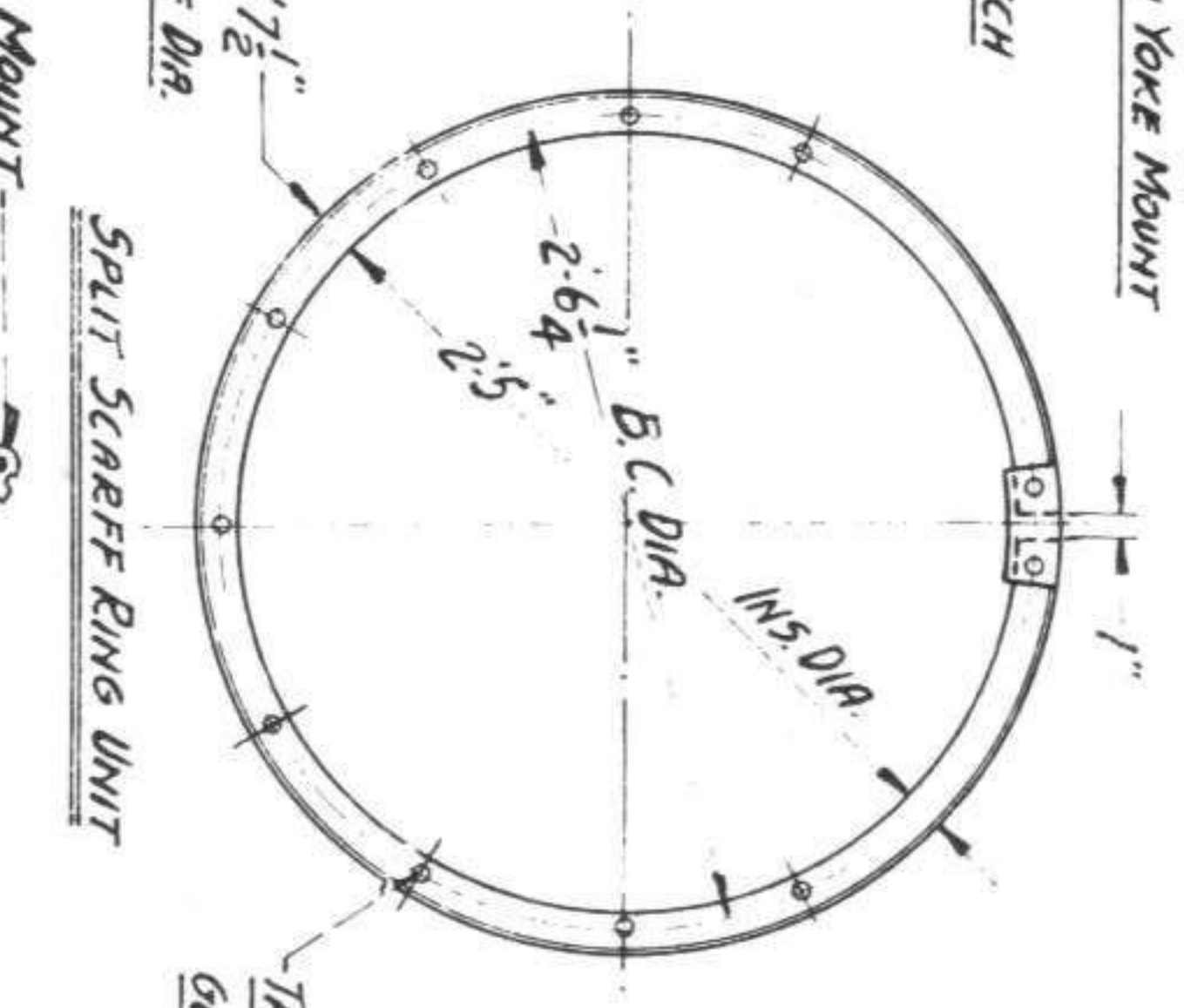
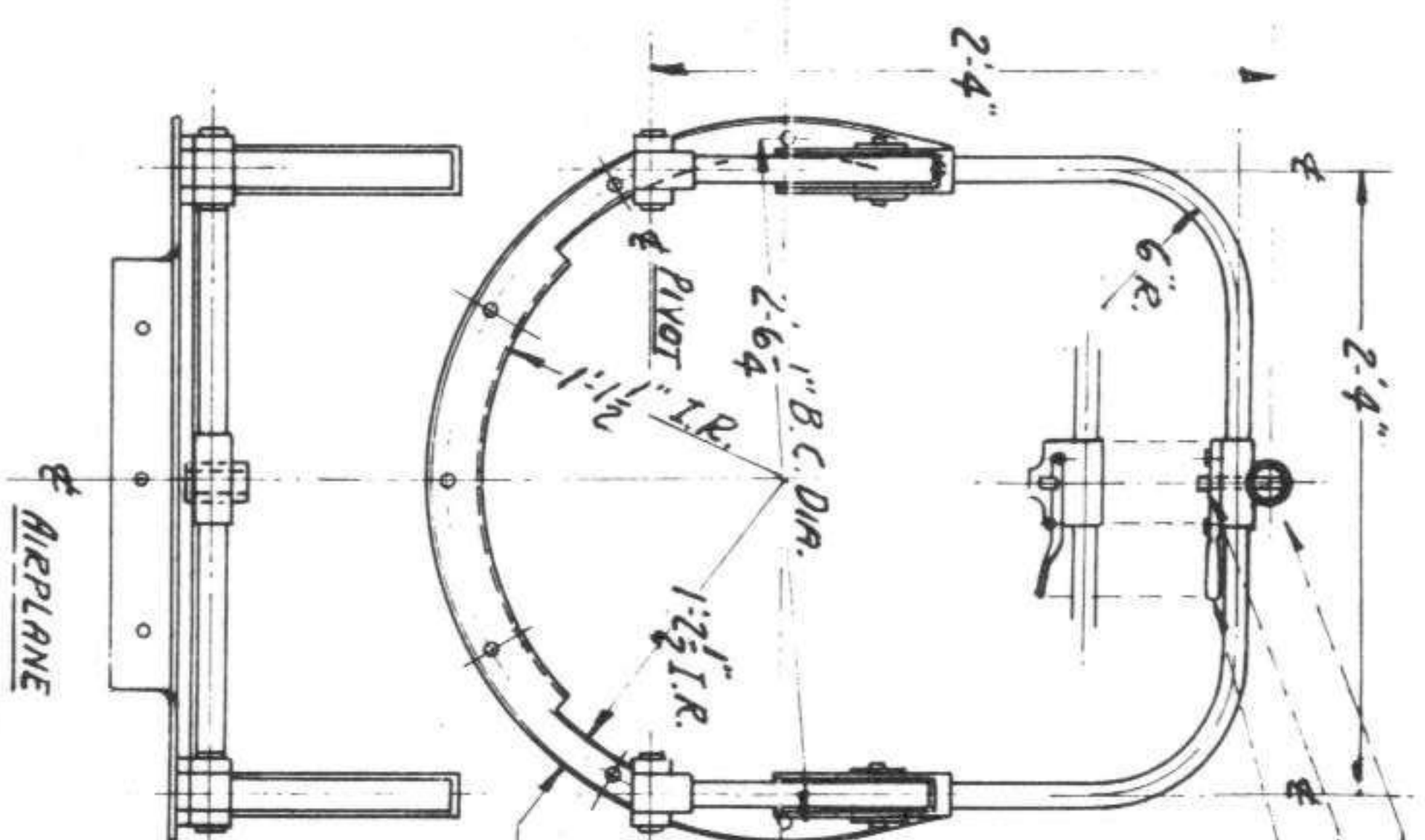
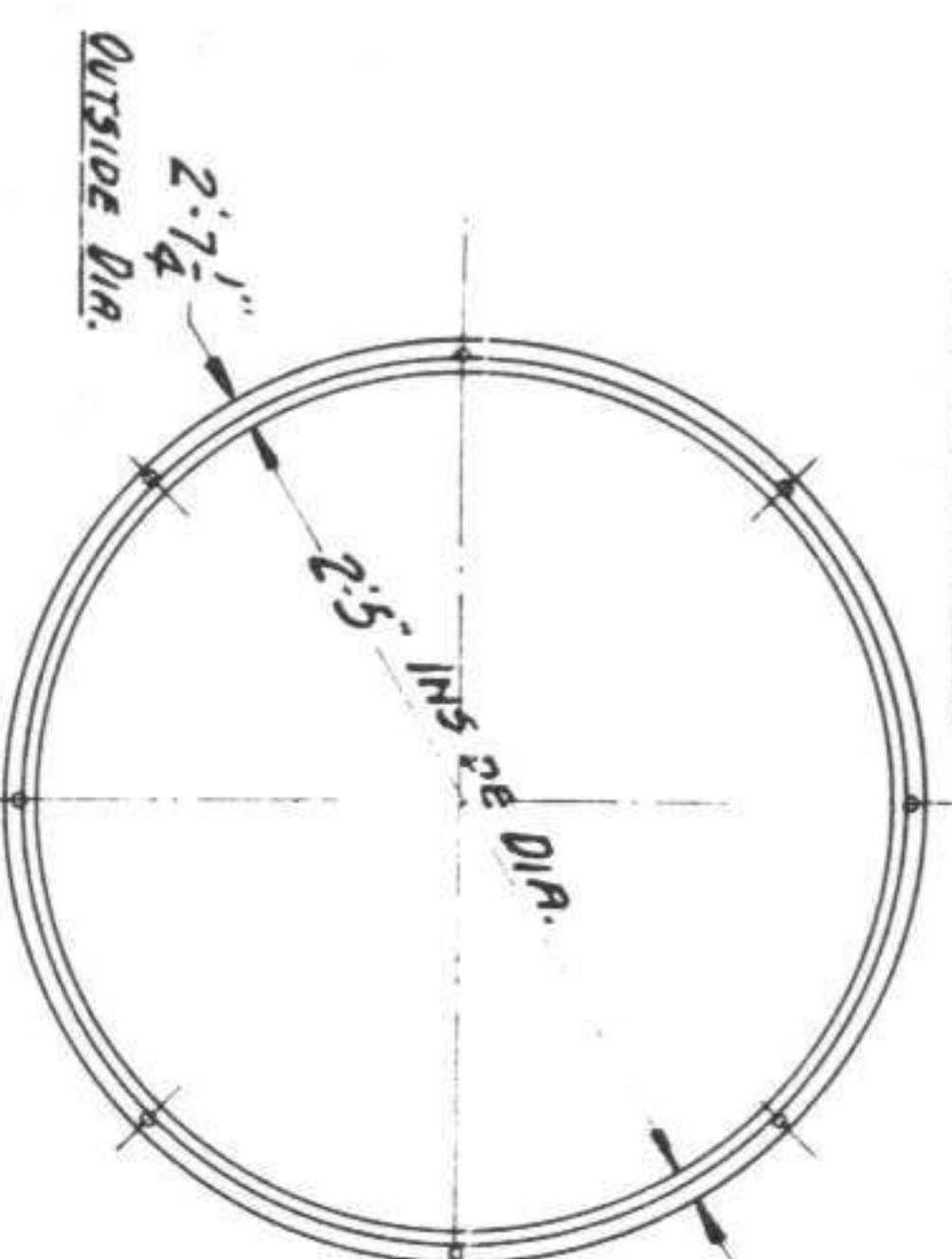
Entered into service in 1916, the D.H.4 had a long and productive life despite its reputation as a "flying death trap." "Model Airplane News" photo.



AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: $\frac{3}{16}'' = 1'-0''$
 DATE: _____
 DRAWN BY ...
 W.A.WYLAM

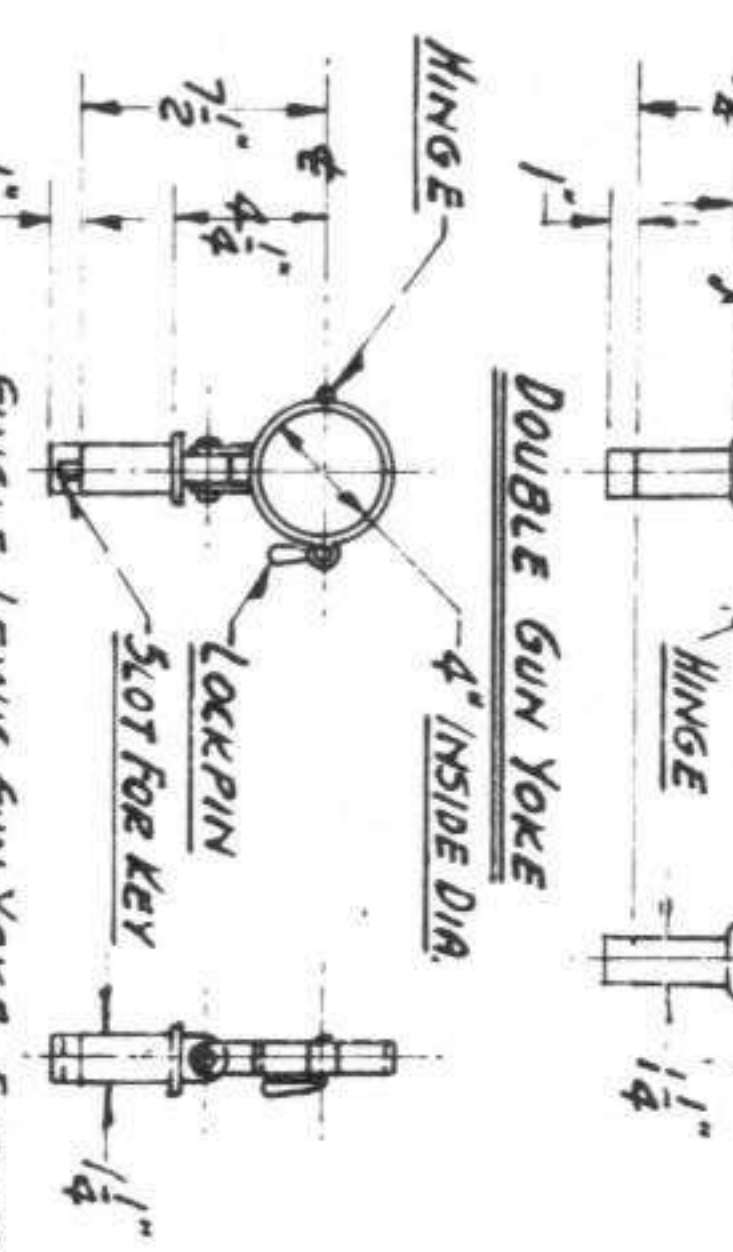
GENERAL ARRANGEMENTS
 DeHAVILLAND RECONNAISSANCE
DeH-4

MOUNTING BOLT HOLES WERE LOCATED TO SUIT AIRPLANE STRUCTURE BELOW IS TYPICAL FOR INSTALLATION ON PLYWOOD DECK.

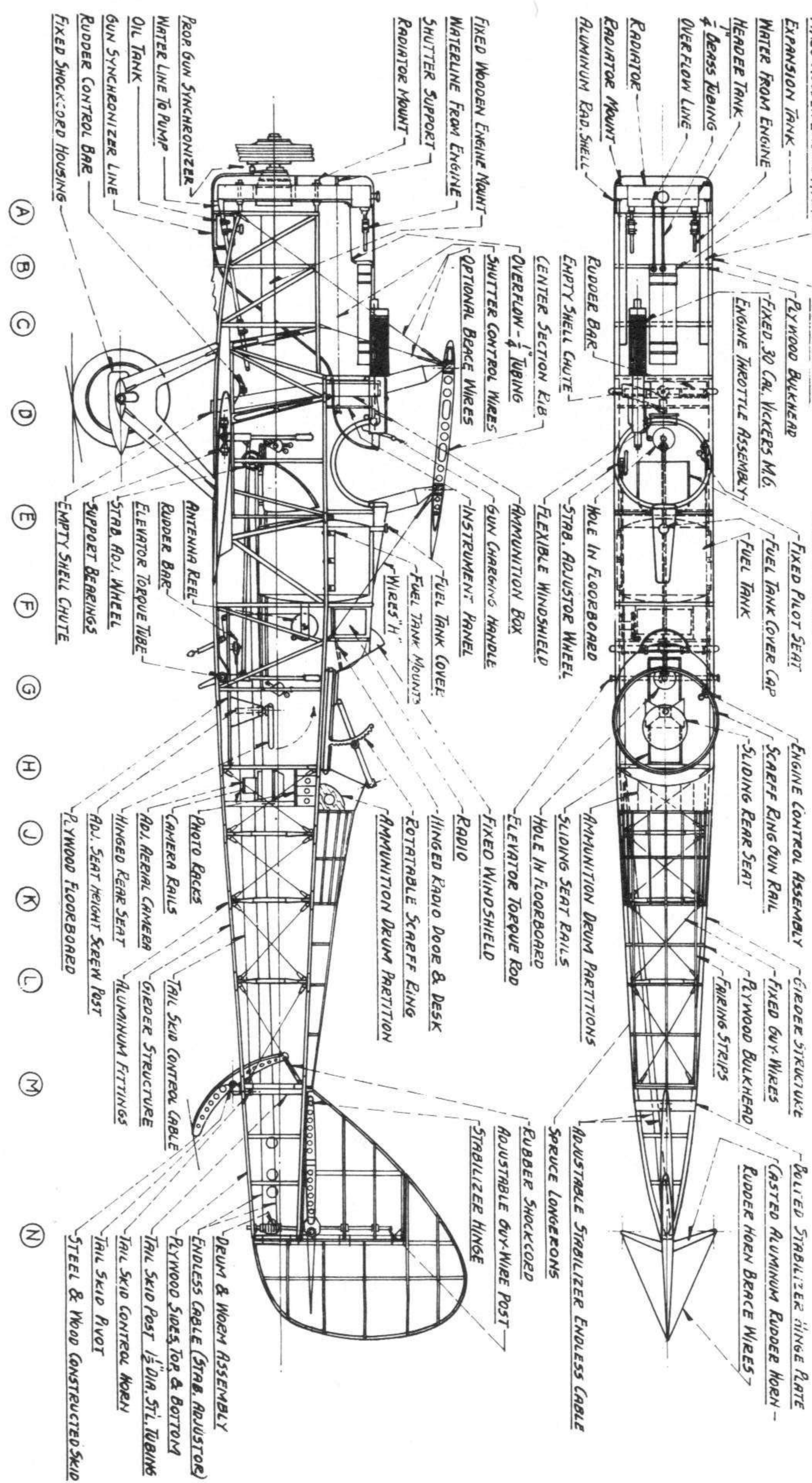
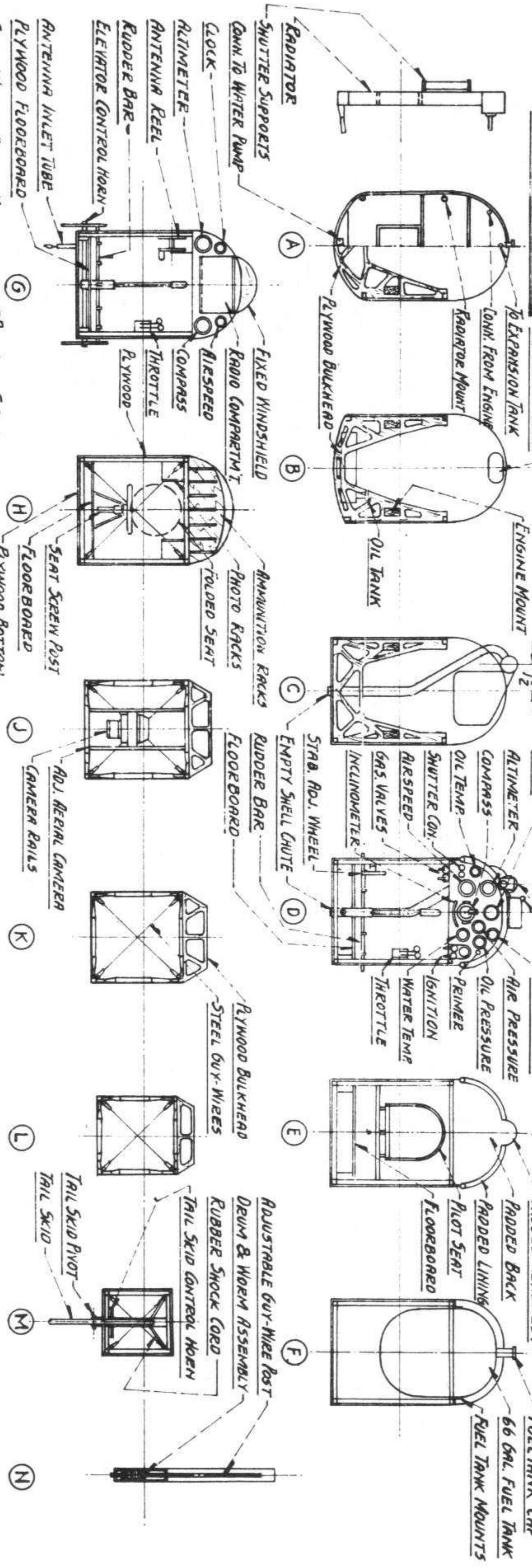
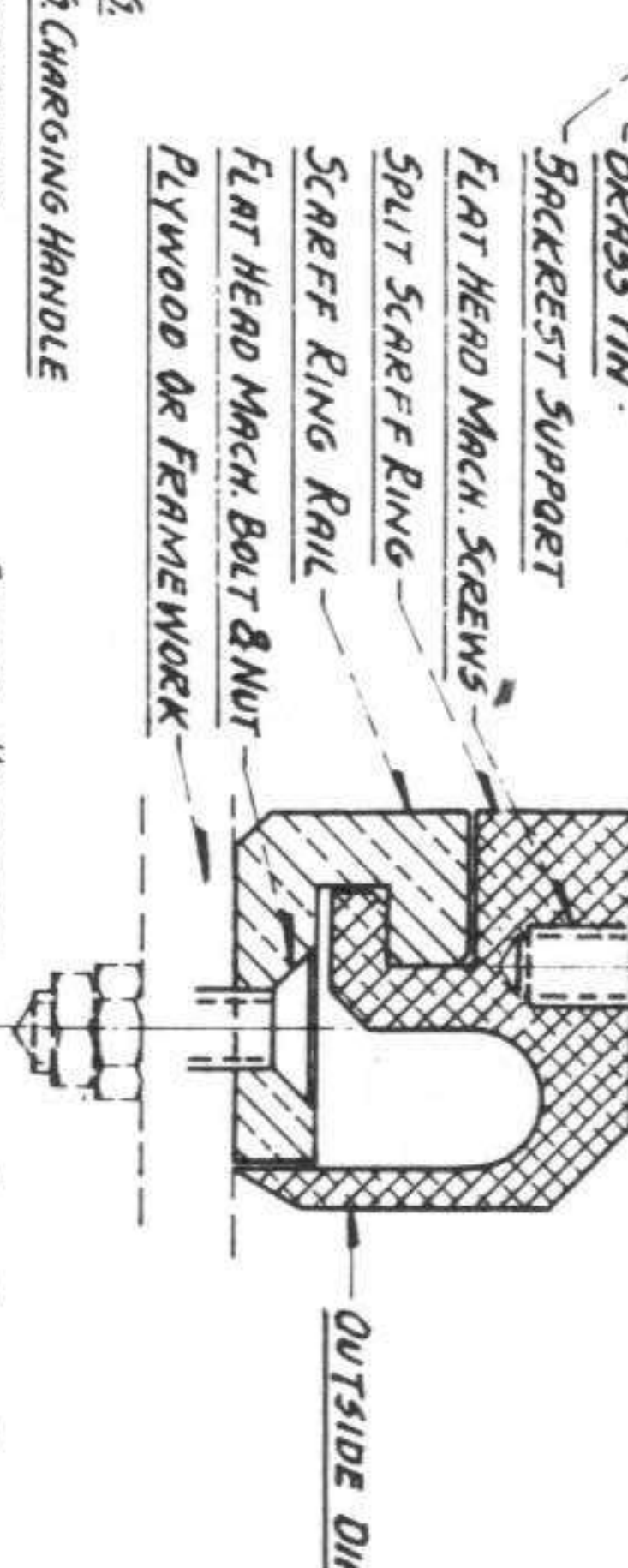


AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N. Y.
 SCALE: 3/16" = 1'-0"
 DATE: ...
 DRAWN BY ...
 W. A. WYLAM

FUSELAGE & SCARFF RING DETAILS
 DE HAVILLAND RECONNAISSANCE
DeH-4

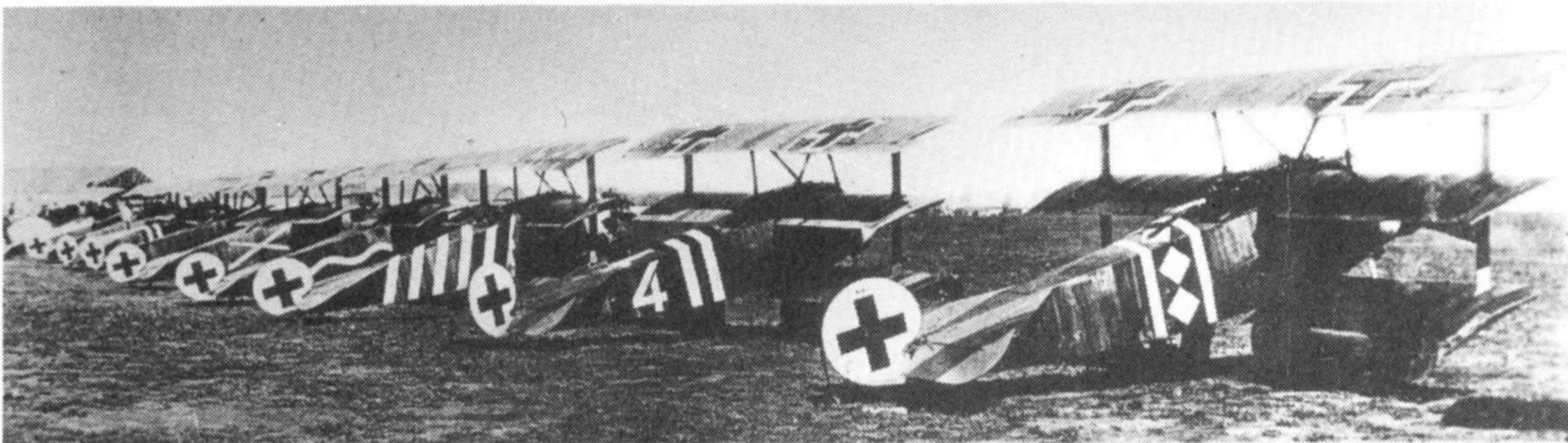


NOTES:
 SPLIT SCARFF RING UNIT IS SLIPPED ONTO RING RAIL, CLASP PART IS ATTACHED MAKING TWO INTEGRAL ROTTABLE UNIT. OIL IS USED FOR LUBRICANT BETWEEN FINISHED MARKED SURFACES. GUN MOUNT ASSEMBLY WAS ATTACHED AFTER SCARFF RING WAS MOUNTED ON TO AIRPLANE DECK. GUN YOKE WAS REMOVED BY PRESSING SPRING LATCH & REMOVING LOCK KEY.



Fokker Dr.1

drawings by JOSEPH NIETO



An airplane without flying wires, particularly a fighter, was unheard of in 1915. Anthony Fokker proved that self-supporting flying surfaces were not only practical but advantageous in his triplane. Air Age file photos.

ONE OF the most unusual fighters of WW I, the Fokker Triplane was also the most agile fighting machine during that period. Designed for dog fighting, the ship was unequalled in its ability to outmaneuver anything in the air. It quickly became apparent to German fighter pilots that the Dr.1 was the ship to fly when Manfred von Richthofen scored a victory on his first time out with the new design. The second time out he scored another. It also became apparent to British pilots that the Germans had

something to reckon with.

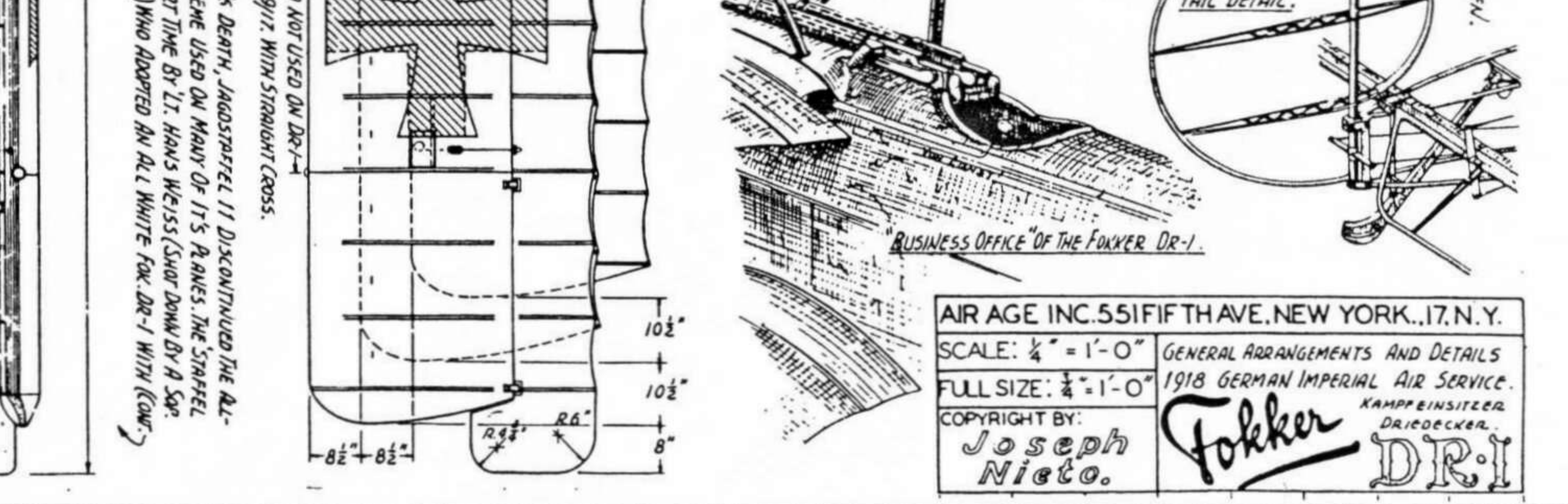
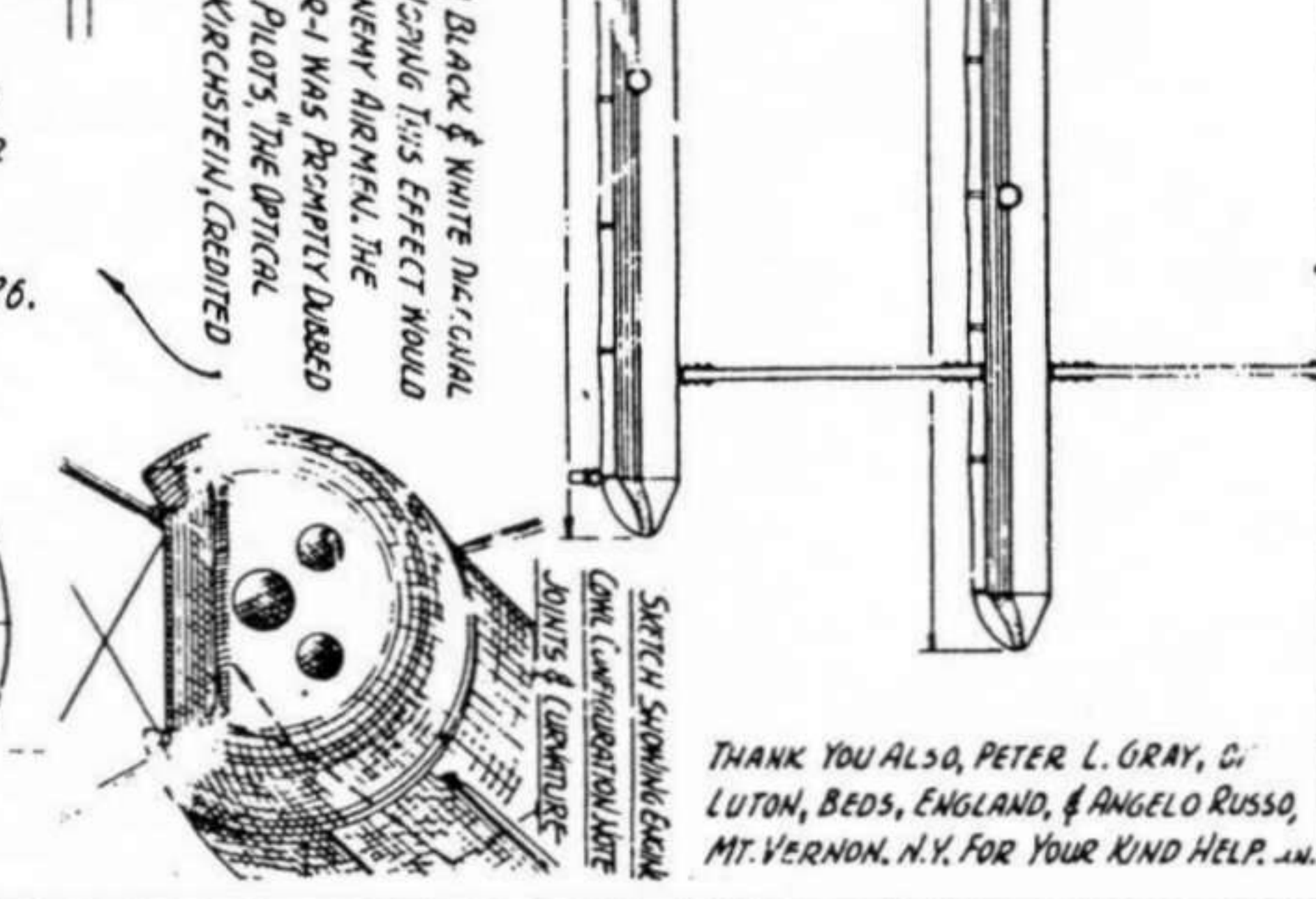
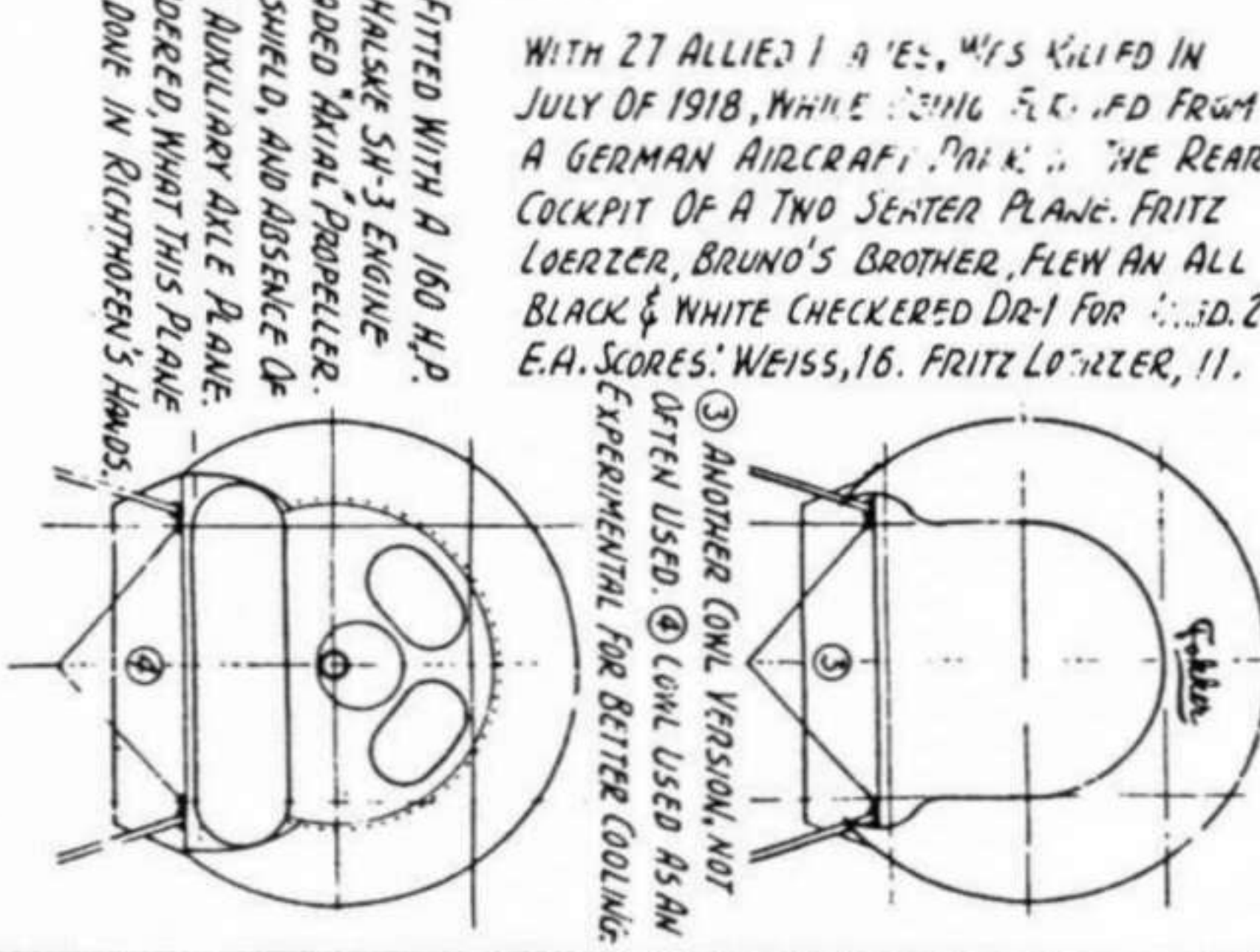
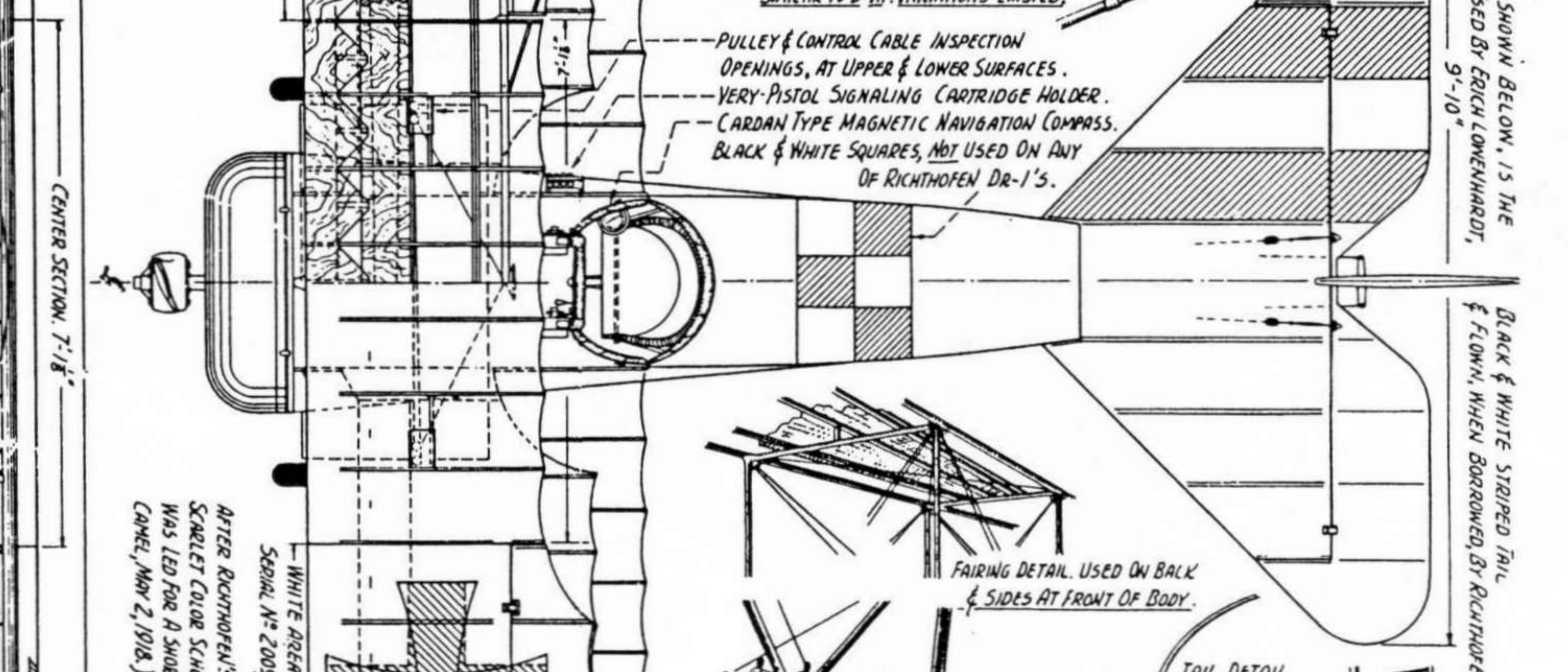
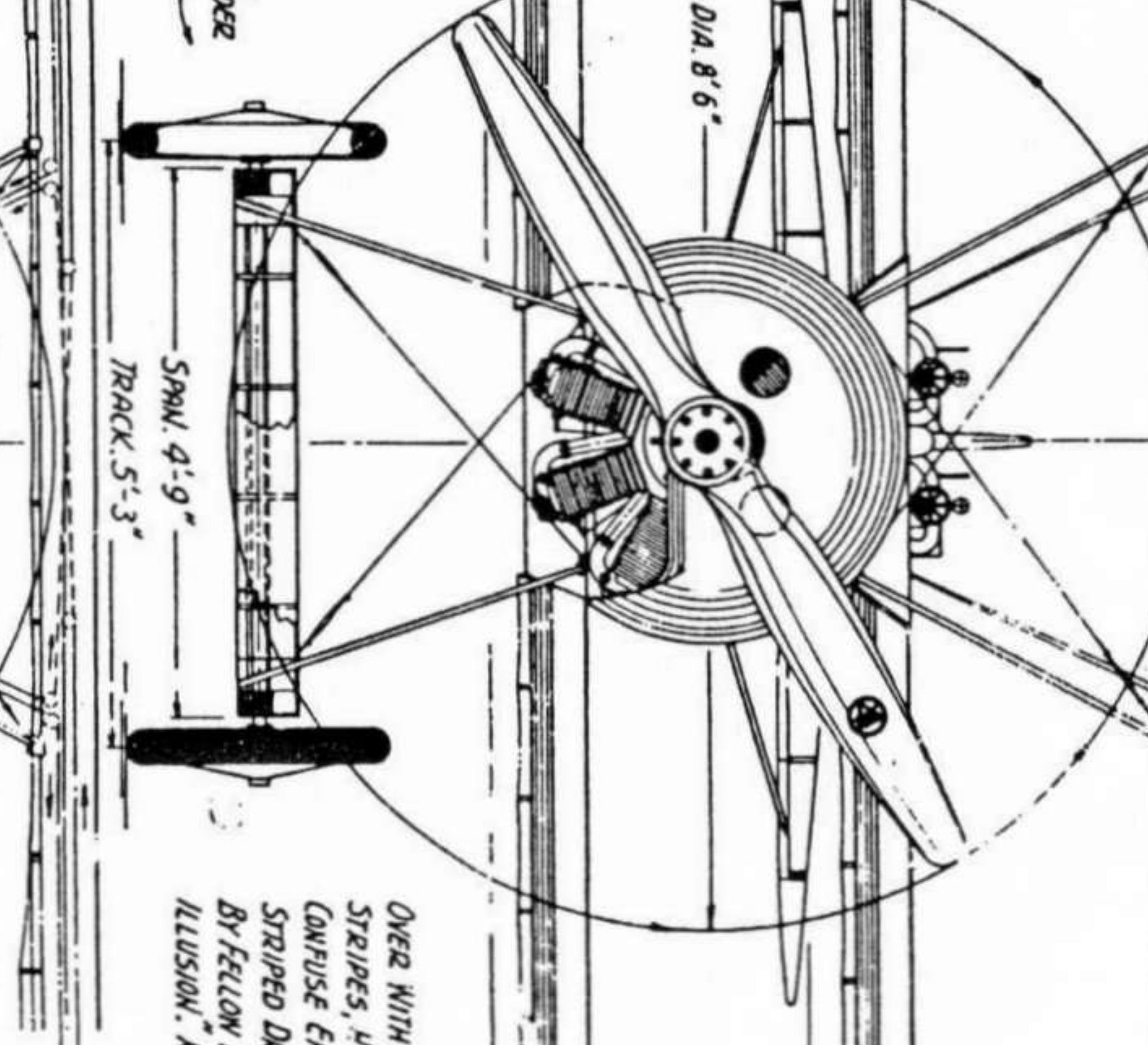
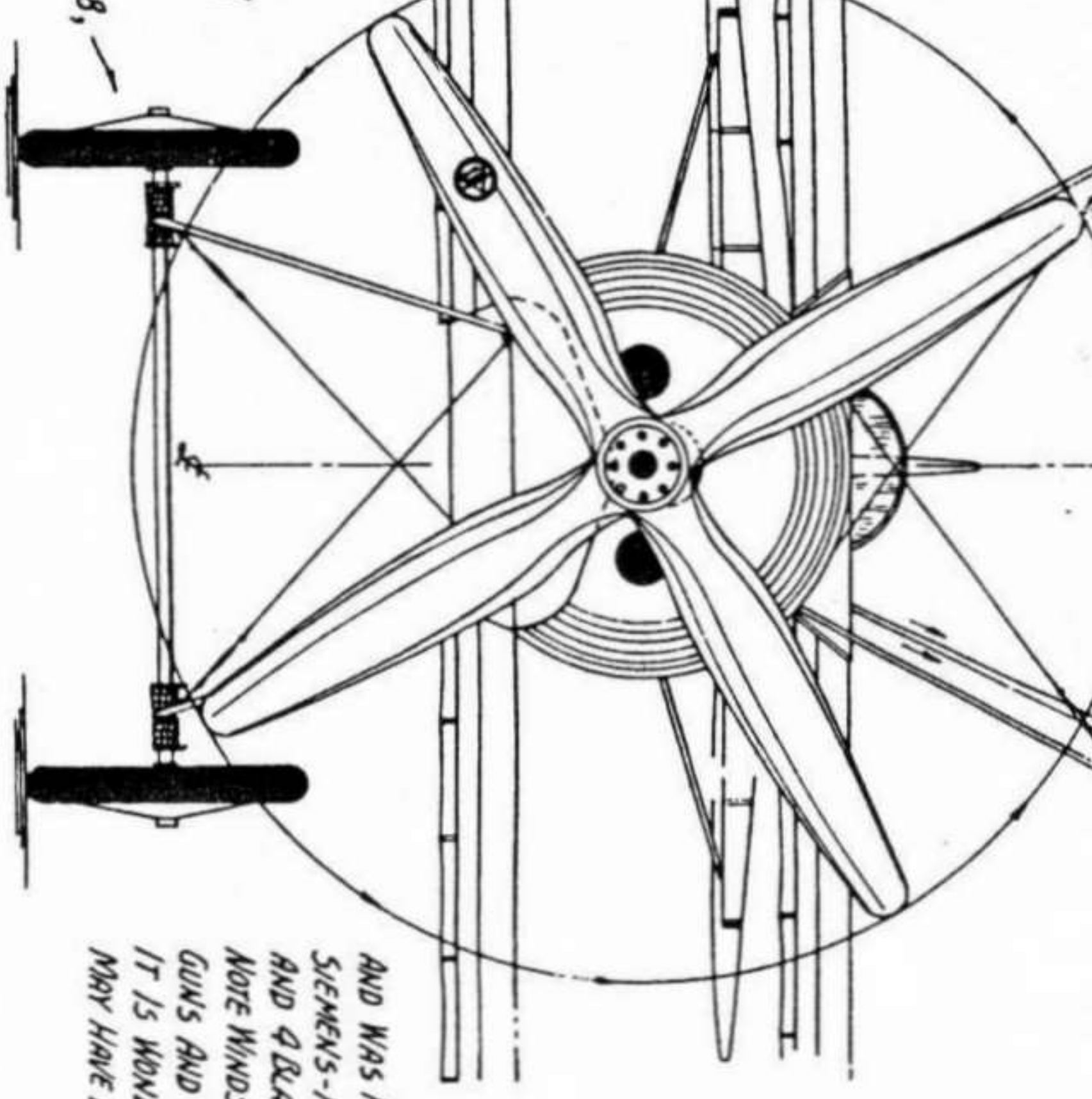
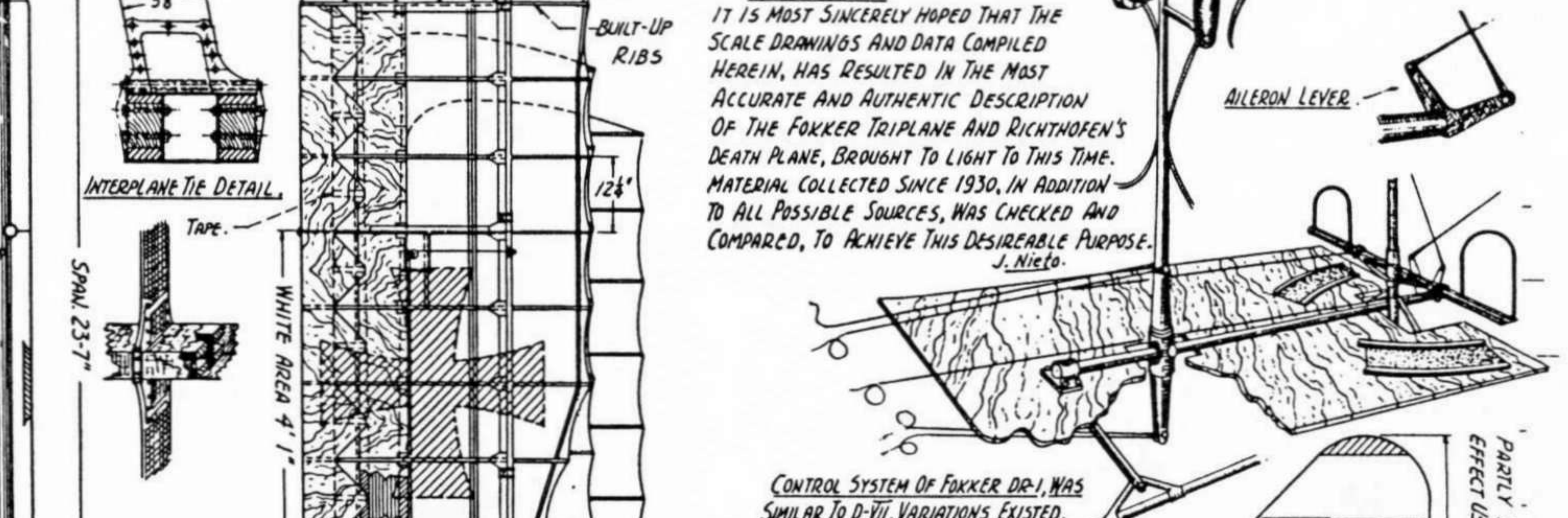
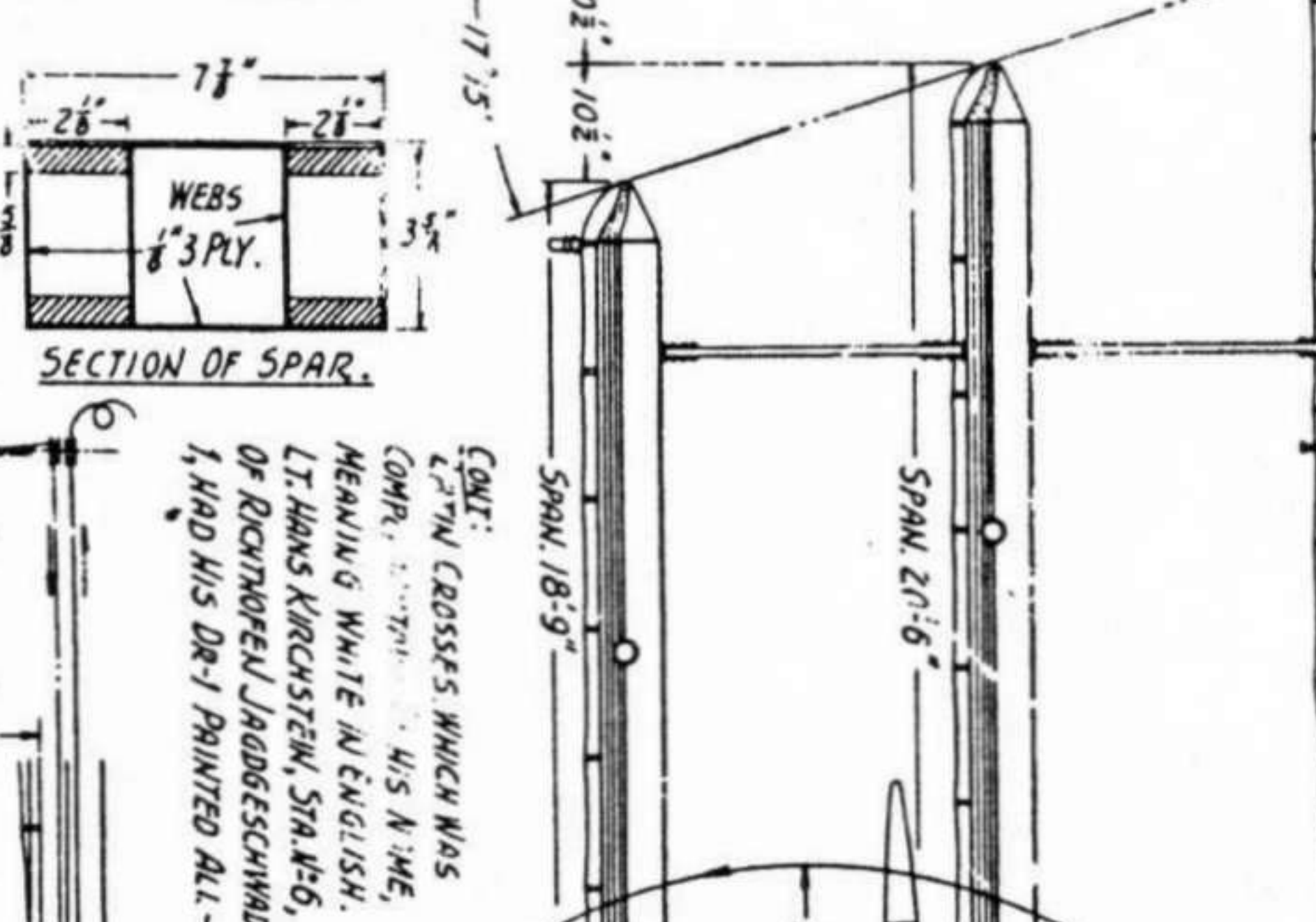
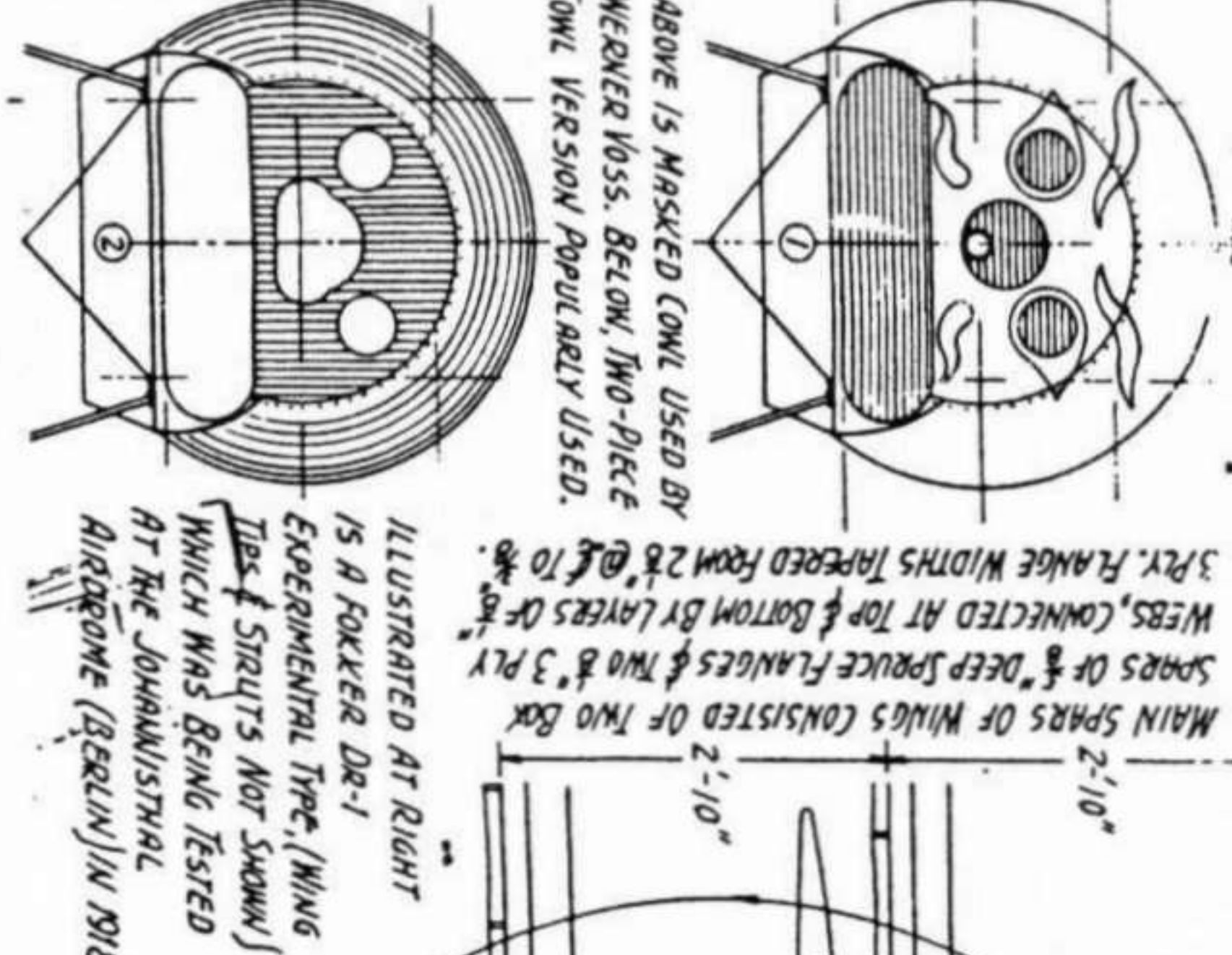
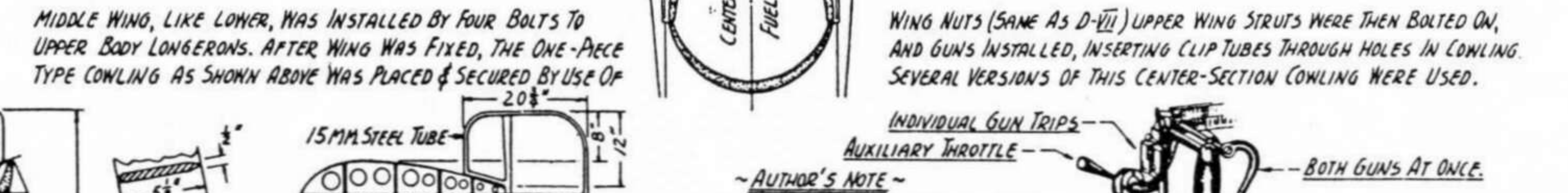
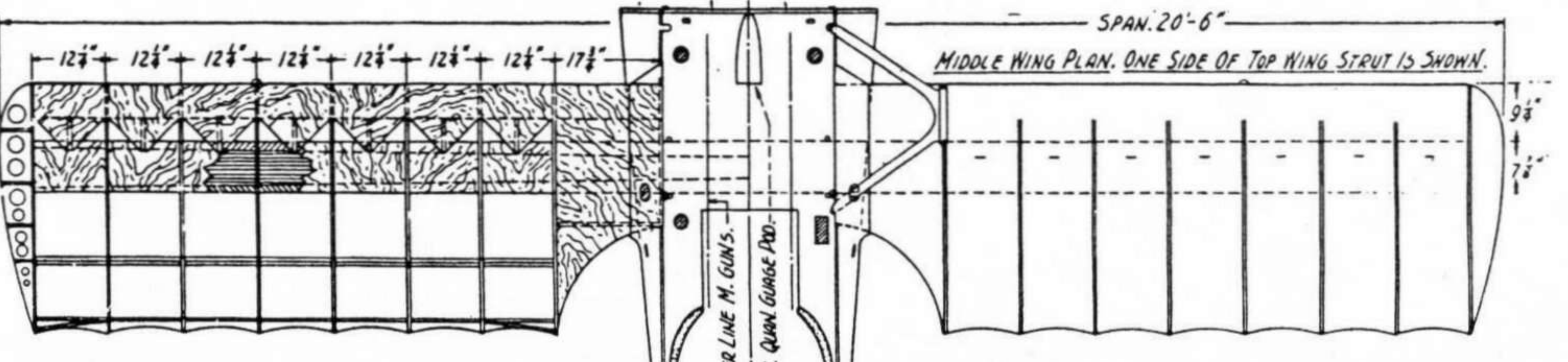
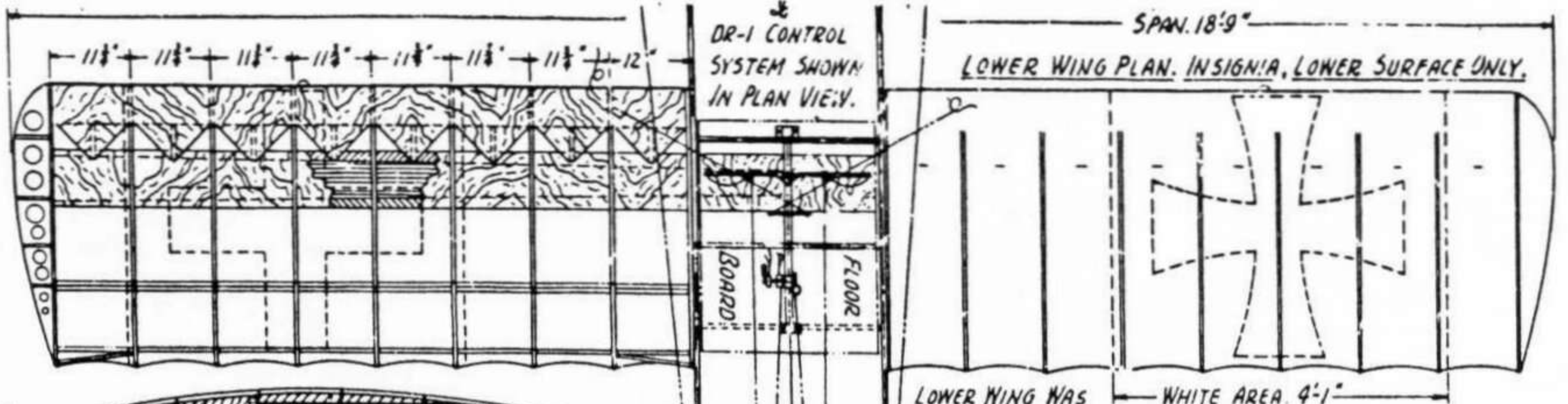
One of the most unusual aspects of this design, other than its being a triplane, was that it had no wires. Today this seems academic, but in 1915 design engineers fully expected the wings to fold on any airplane that had non-supported flying surfaces. This airplane proved that a cantilever wing was not only possible, but practical.

Powered by the Oberursel rotary engine rated at 110 hp, the triplane had a top speed of 97 mph and a ceiling of

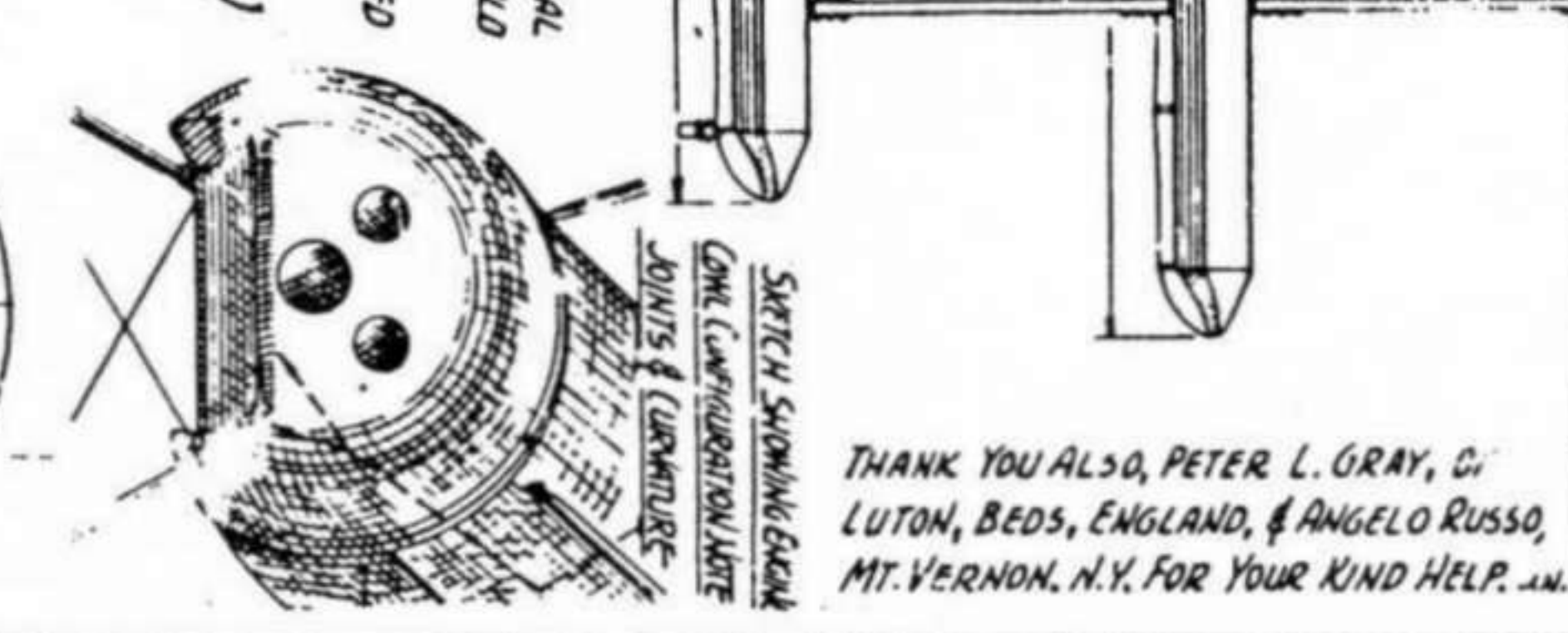
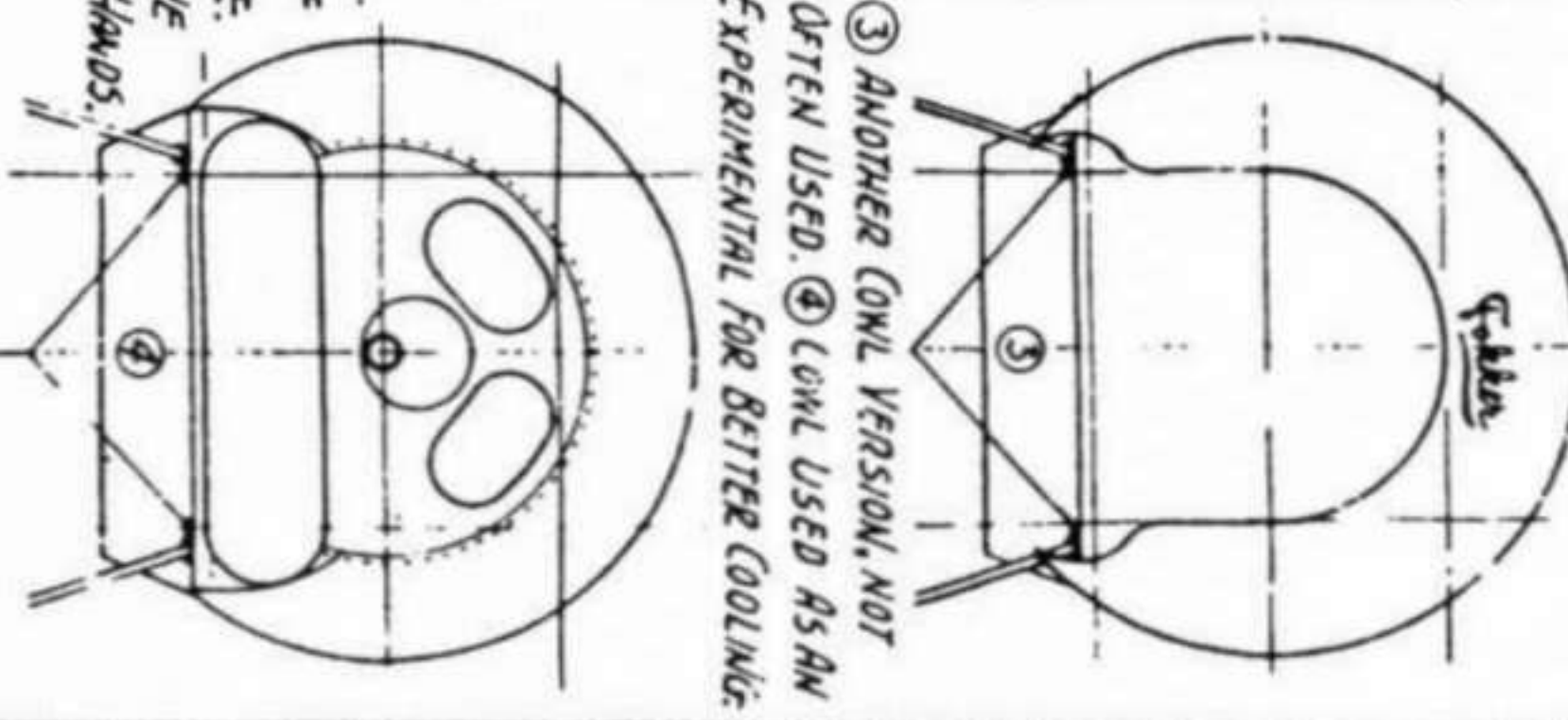
18,000 feet. The rate of climb was nearly 2,000 fpm and the landing speed in zero wind was only 30 mph. It was feather light on the controls and could literally turn on a dime, causing a near blackout to the pilot at the controls.

Von Richthofen was shot down in one.

Although the service period of the triplane was only seven months, it remains one of the most remembered aircraft of WW I. No original Triplane survived the war. □



WITH 27 ALLIED 1 AIES, WAS KILLED IN JULY OF 1918, WHILE ESCAPING FROM A GERMAN AIRCRAFT. IN THE REAR COCKPIT OF A TWO SEATER PLANE, FRITZ LOERZER, BRUNO'S BROTHER, FLEW AN ALL BLACK & WHITE CHECKERED DR-1 FOR 11.00.26. E.A. SCORES: WEISS, 16. FRITZ LOERZER, 11.

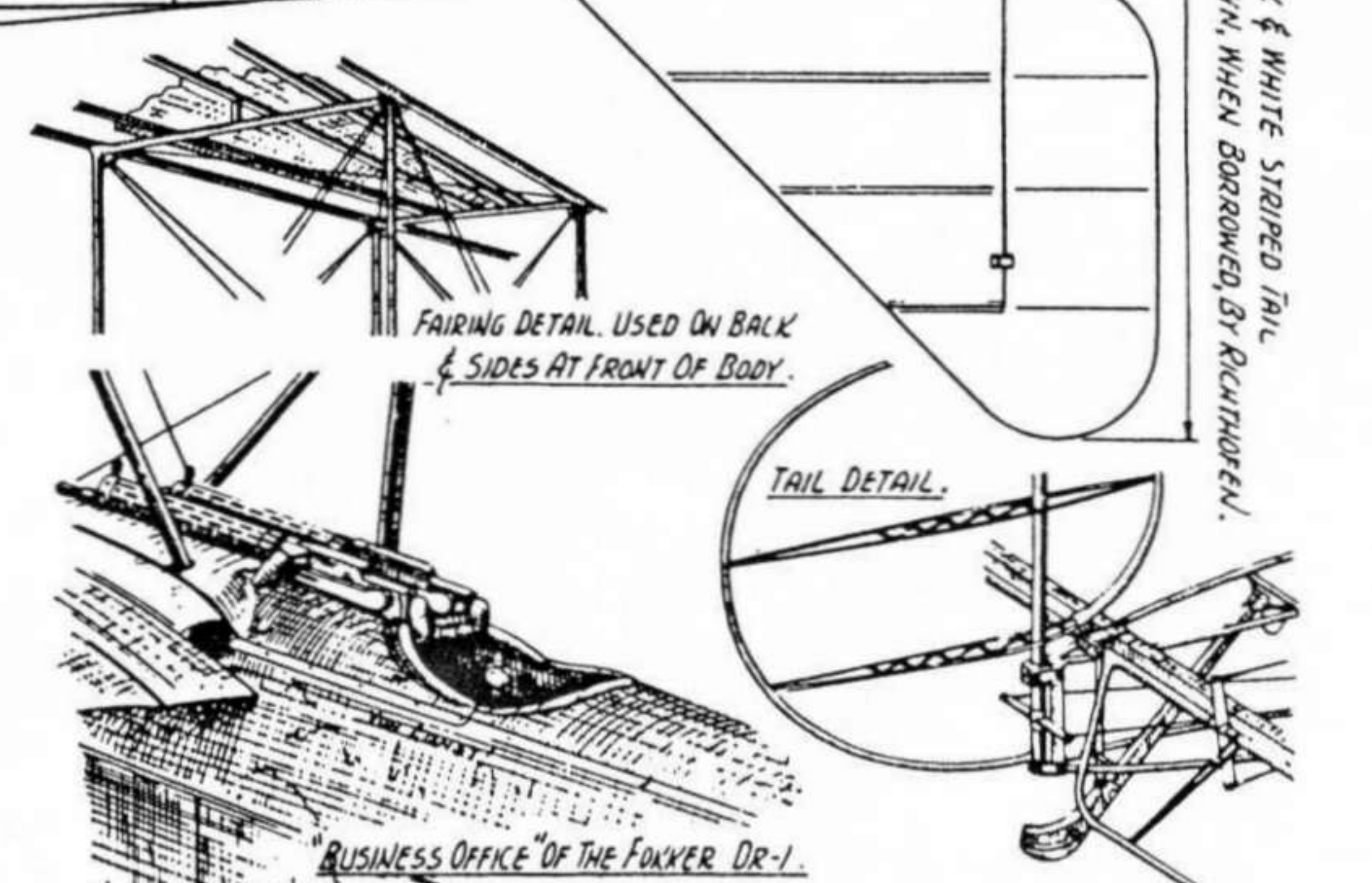
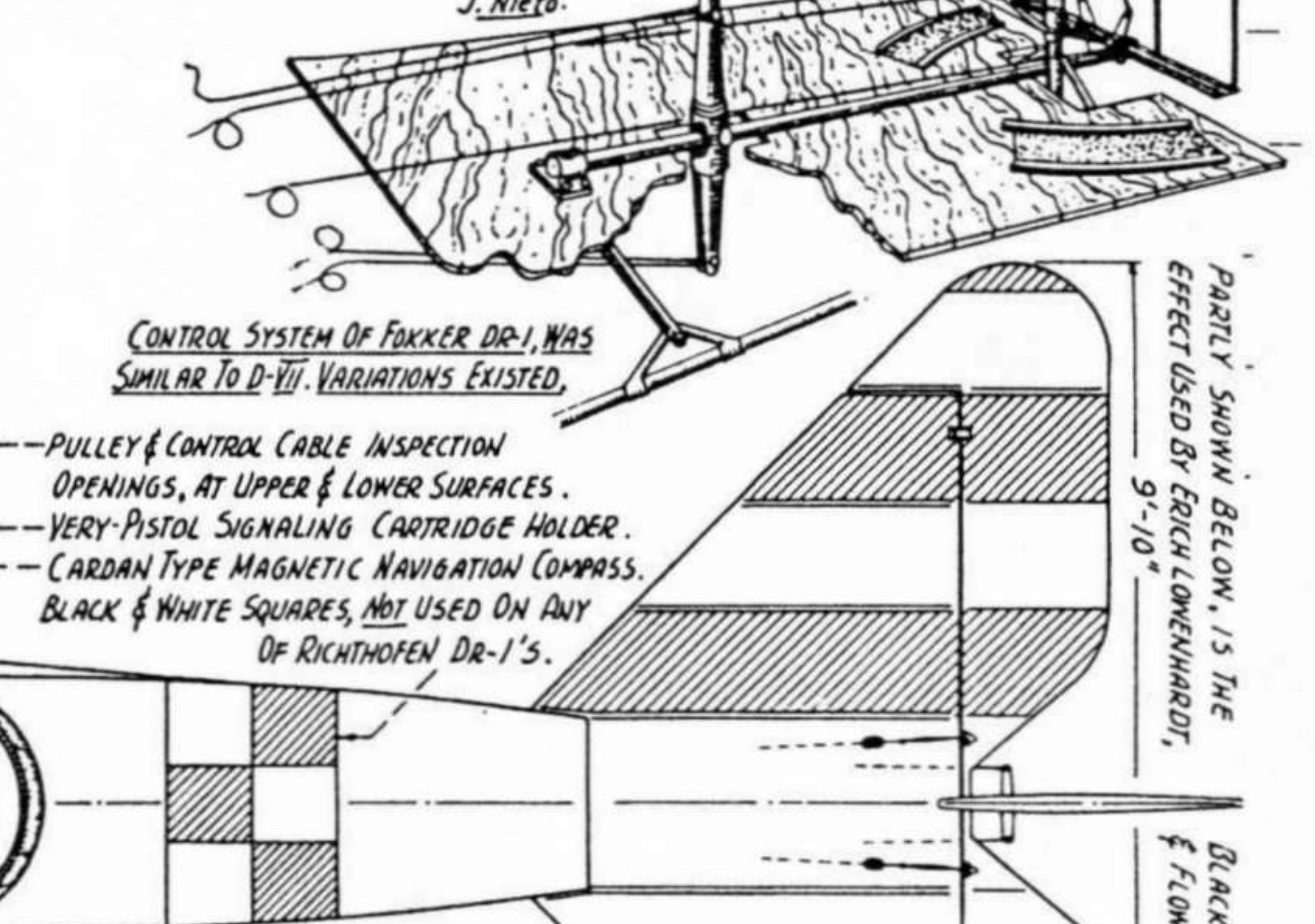


AFTER RICHTHOFEN'S DEATH, JAGDSCHIFFEL 11 DISCONTINUED THE ALL-SCARLET COLOUR SCHEME USED ON MANY OF ITS PLANES. THE STRIPED WAS LED FOR A SHORT TIME BY LT. HANS WEISS (SHOWN DOWN BY A SP. CANE, MAY 2, 1918.) WHO ADAPTED AN ALL WHITE FOK. DR-1 WITH (CONL)

WING NUTS (SAME AS D-VII) UPPER WING STRUTS WERE THEN BOLTED ON, AND GUNS INSTALLED, INSERTING CLIP TUBES THROUGH HOLES IN COWLING. SEVERAL VERSIONS OF THIS CENTER-SECTION COWLING WERE USED.

INDIVIDUAL GUN TRIPS. AUXILIARY THROTTLE. BOTH GUNS AT ONCE. AILERON LEVER.

~AUTHOR'S NOTE~ IT IS MOST SINCERELY HOPED THAT THE SCALE DRAWINGS AND DATA COMPILED HEREIN, HAS RESULTED IN THE MOST ACCURATE AND AUTHENTIC DESCRIPTION OF THE FOKKER TRIPLANE AND RICHTHOFEN'S DEATH PLANE, BROUGHT TO LIGHT TO THIS TIME. MATERIAL COLLECTED SINCE 1930, IN ADDITION TO ALL POSSIBLE SOURCES, WAS CHECKED AND COMPARED, TO ACHIEVE THIS DESIREABLE PURPOSE. J. Nieto.



AIR AGE INC. 551 FIFTH AVE. NEW YORK, 17, N. Y.

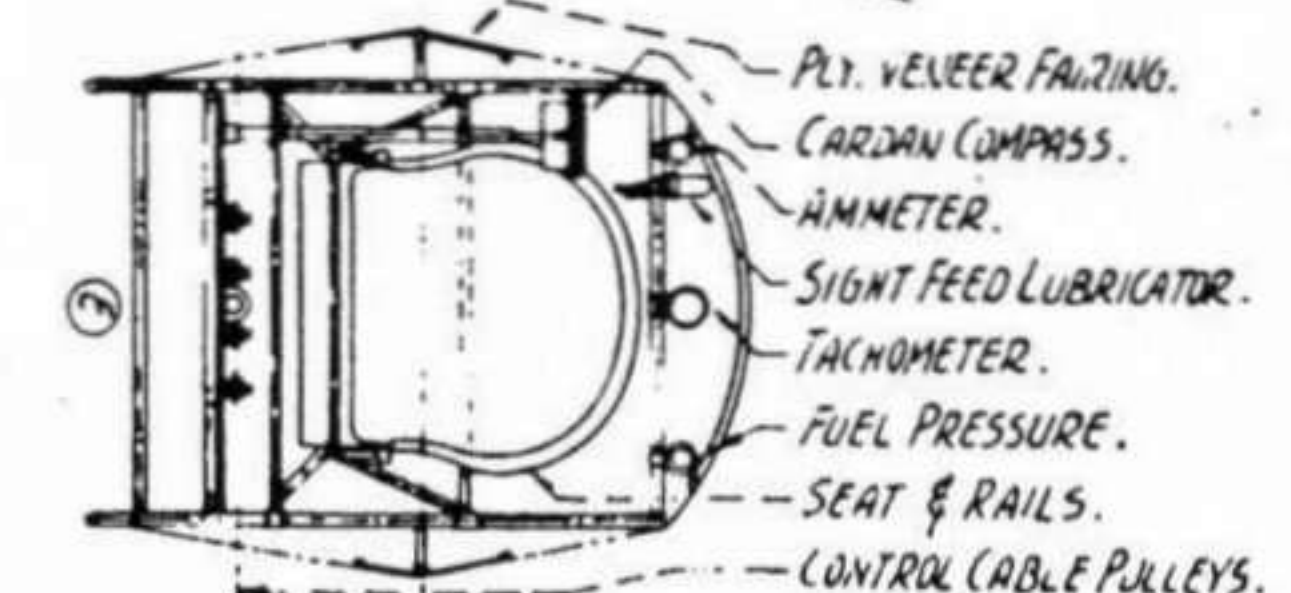
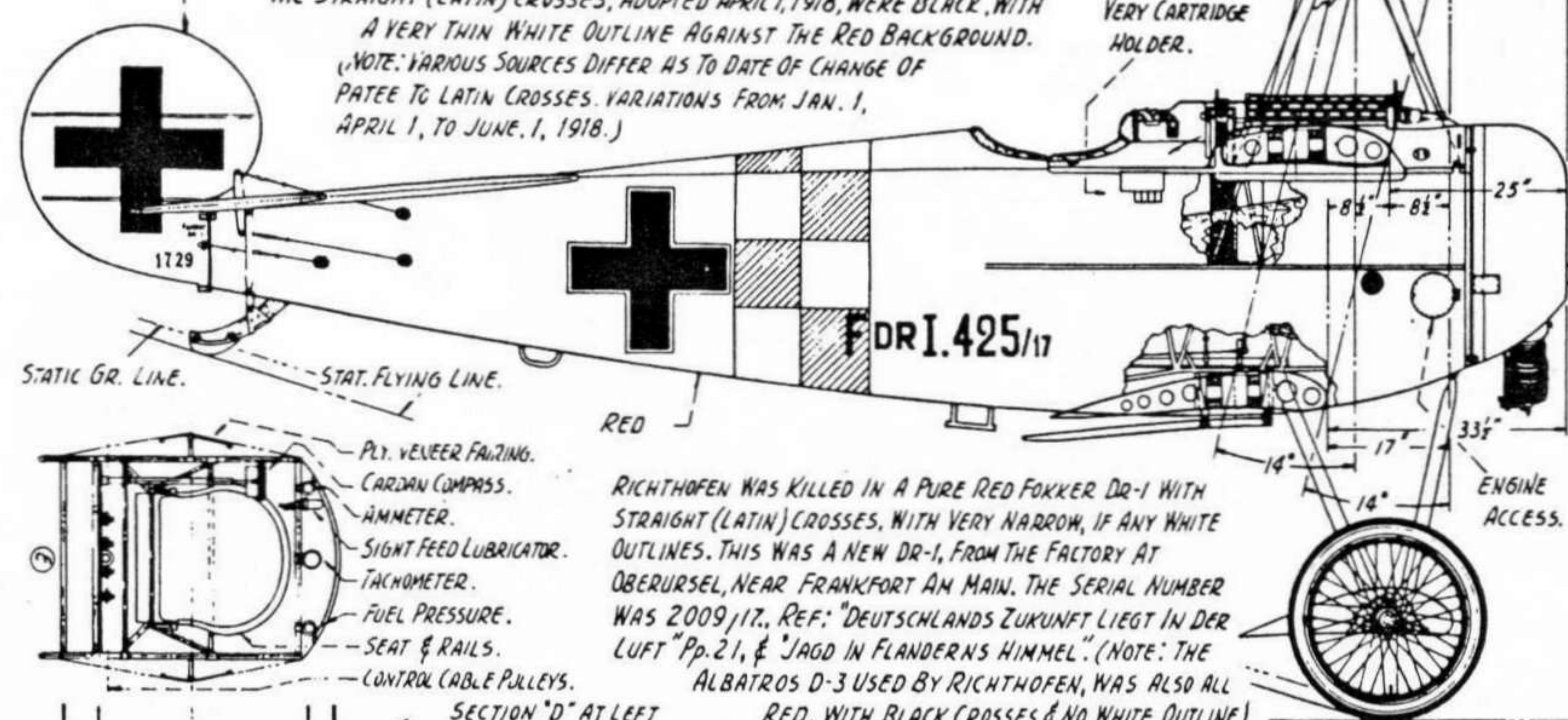
SCALE: 1/8" = 1'-0"

FULL SIZE: 1/4" = 1'-0"

COPYRIGHT BY: Joseph Nieto.

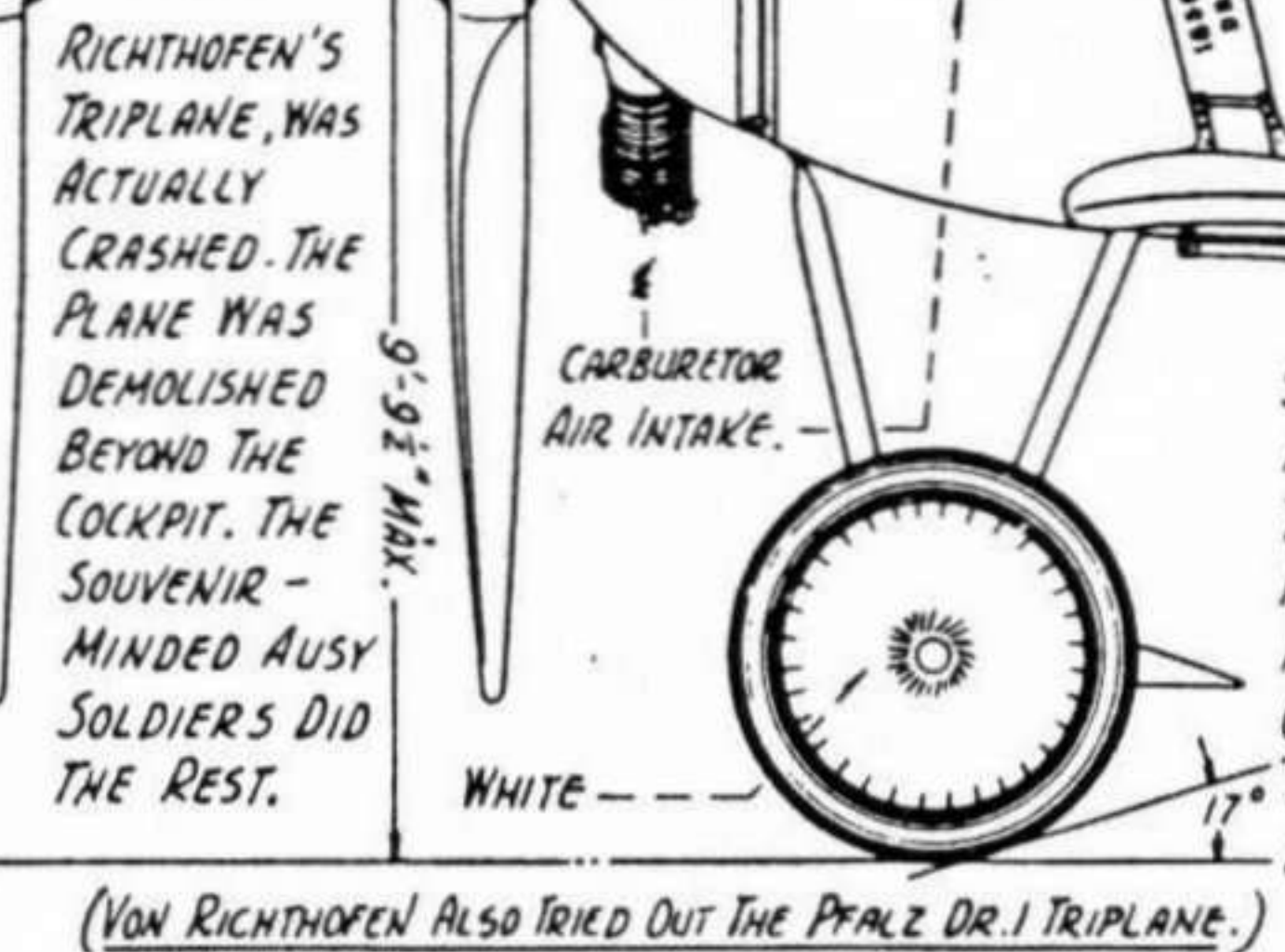
GENERAL ARRANGEMENTS AND DETAILS 1918 GERMAN IMPERIAL AIR SERVICE. KAMPFEINSATZER DRICOCKER. Fokker DR1

ILLUSTRATED BELOW, IS THE PLANE FLOWN BY BARON MANFRED FR. VON RICHTHOFEN AS LATE AS APRIL 20, 1918. ON THAT DAY, HIS COMBAT REPORTS STATE HE SHOT DOWN TWO ALLIED PLANES WITH THIS MACHINE. THIS PLANE WAS PURE RED, (LESS SQUARES & RUDDER NO. 1729 SHOWN HERE ONLY FOR ADDED ILLUSTRATION PURPOSES) WHILE THE STRAIGHT (LATIN) CROSSES, ADOPTED APRIL 1, 1918, WERE BLACK, WITH A VERY THIN WHITE OUTLINE AGAINST THE RED BACKGROUND. (NOTE: VARIOUS SOURCES DIFFER AS TO DATE OF CHANGE OF PATEE TO LATIN CROSSES. VARIATIONS FROM JAN. 1, APRIL 1, TO JUNE 1, 1918.)

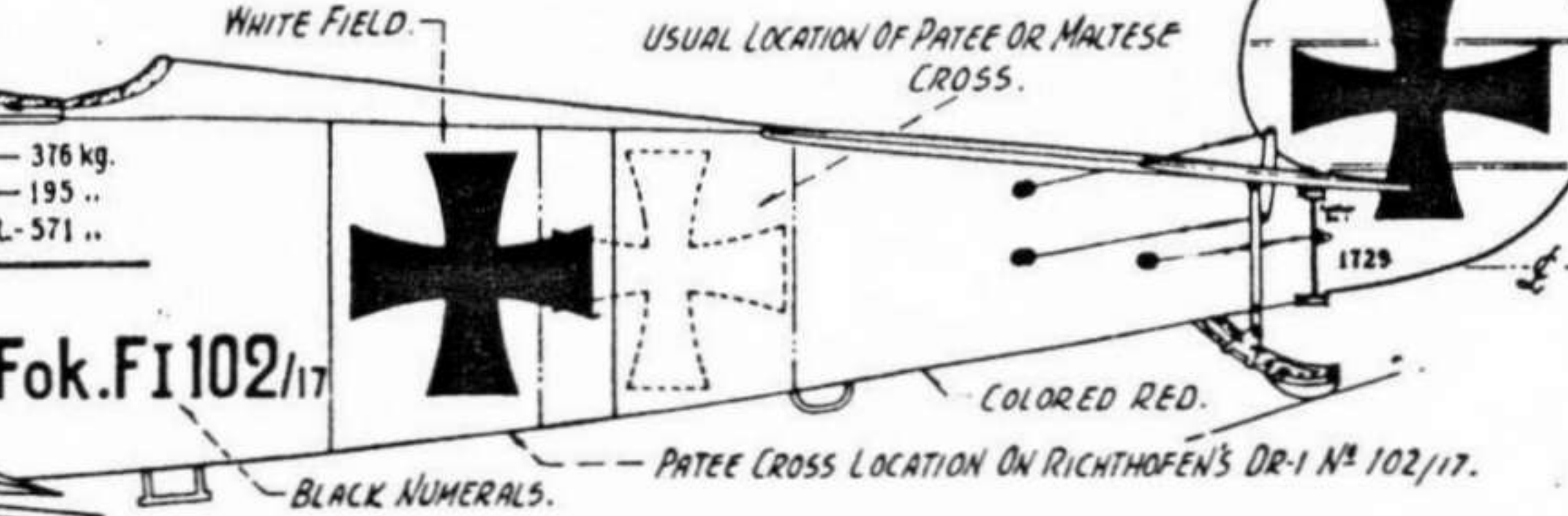


RICHTHOFEN WAS KILLED IN A PURE RED FOKKER DR-1 WITH STRAIGHT (LATIN) CROSSES, WITH VERY NARROW, IF ANY WHITE OUTLINES. THIS WAS A NEW DR-1, FROM THE FACTORY AT OBERURSEL, NEAR FRANKFURT AM MAIN. THE SERIAL NUMBER WAS 2009/17. REF: "DEUTSCHLANDS ZUKUNFT LIEGT IN DER LUFT" Pp. 21, & "JAGD IN FLANDERNS HIMMEL". (NOTE: THE ALBATROS D-3 USED BY RICHTHOFEN, WAS ALSO ALL RED, WITH BLACK CROSSES & NO WHITE OUTLINE)

ANOTHER POPULAR, BUT ERRING BELIEF WAS THAT RICHTHOFEN MADE A NORMAL THREE-POINT LANDING WHEN SHOT DOWN BY A. ROY BROWN. RICHTHOFEN'S TRIPLANE, WAS ACTUALLY CRASHED. THE PLANE WAS DEMOLISHED BEYOND THE COCKPIT. THE SOUVENIR-MINDED AUSTRIAN SOLDIERS DID THE REST.

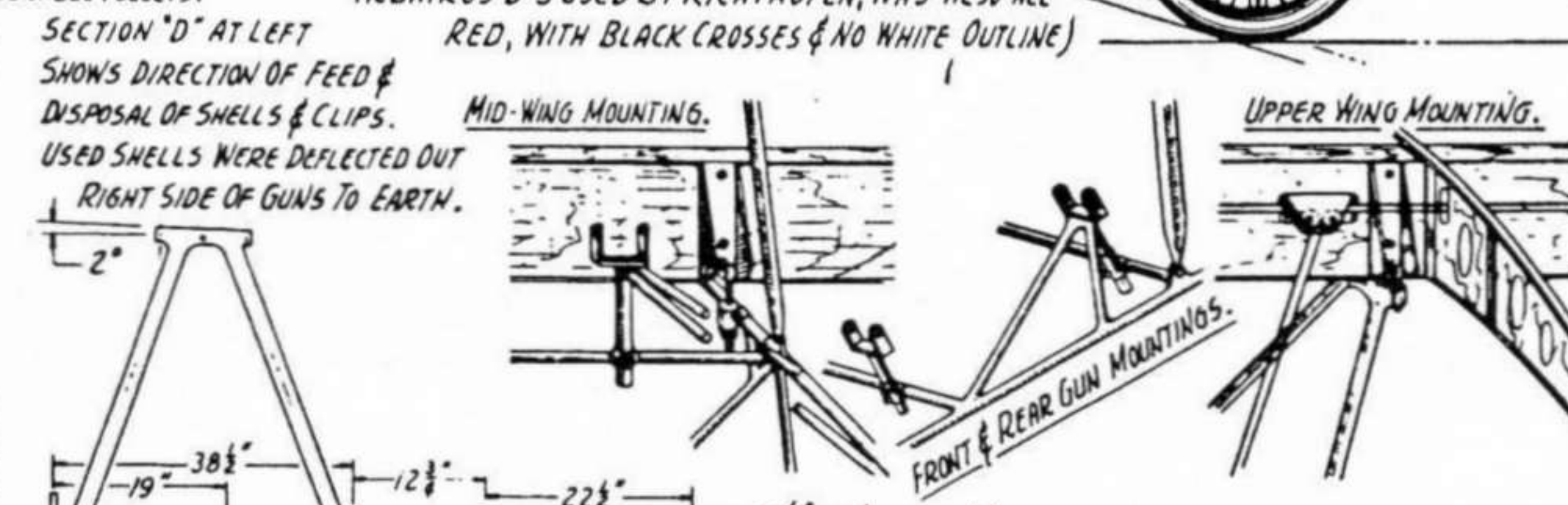


OVERALL LENGTH, 19'-0" SHOWN BELOW, IS THE FIRST FOKKER DR-1 TRIPLANE POSSESSED AND FLOWN IN COMBAT BY BARON MANFRED FREIHERR VON RICHTHOFEN, GERMANY'S GREATEST WORLD WAR I ACE, COMMANDER OF JAGDSTAFFEL 11, WITH 80 OFFICIAL AND 126 UNOFFICIAL VICTORIES TO HIS CREDIT BEFORE HE WAS SHOT DOWN NEAR SAILLY LE SEC, NORTH OF VAUX SUR SOMME, ON APRIL 21, 1918, BY CAPTAIN A. ROY BROWN, D. S. C. OF NO. 209 SQUADRON, ROYAL AIR FORCE.

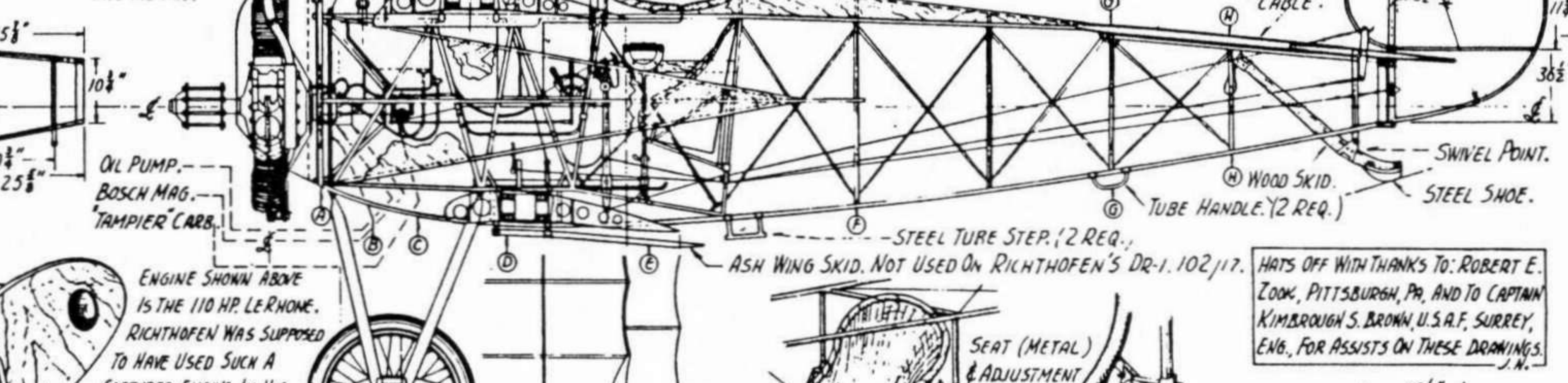


IT HAS BEEN GENERALLY PUBLICIZED THROUGHOUT THE PAST, THAT VON RICHTHOFEN WAS SHOT DOWN IN A FOKKER DR-1, SERIAL NO. FI. 102/17. THIS WAS DEFINITELY NOT TRUE. VON RICHTHOFEN, LIKE RAUL LUFBERY, EDDIE RICKENBACKER, AND MANY OTHER FAMOUS ACES OF THAT TIME, DID NOT CONFINE THEIR COMBAT FLYING TO THE USE OF ONE SAME, PERSONAL PLANE CONTINUOUSLY. RICKENBACKER, USED TWO IDENTICAL SPAD NO. 1'S, IMMELMANN ALSO USED THIS TRICK WITH E TYPE FOKKERS. LIKEWISE, RICHTHOFEN FLEW FOUR OR MORE DR-1'S INTERMITTENTLY, BUT RESERVED HIS 102/17 FOR OFFICIAL VISITS TO THE OTHER STAFFELS UNDER HIS WING, AND OCCASIONAL TRIPS TO THE FOKKER FACTORY. AT LEFT, IS SHOWN ANOTHER OF THE FOUR DR-1'S MANFRED USED, AND THE FOURTH, IDENTIFIED AS THE ONE IN WHICH THE FAMED RED KNIGHT OF GERMANY MET HIS DEATH. MANFRED'S SECOND TRIPLANE WAS FOK. I. 152/17.

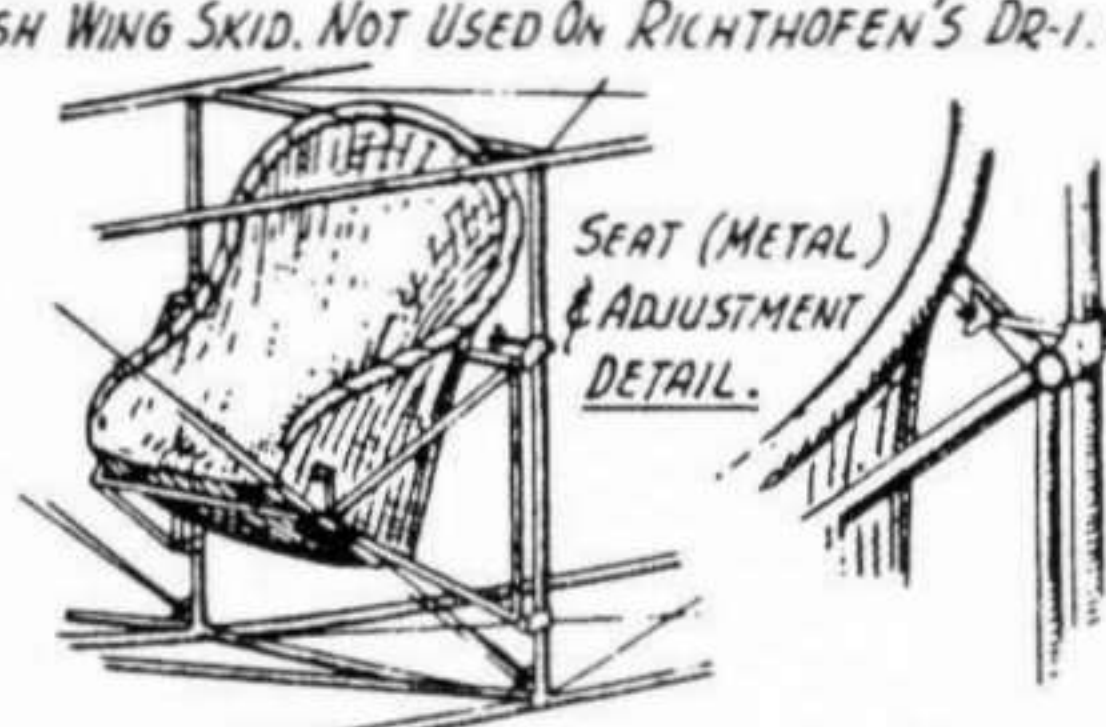
GENERAL CHARACTERISTICAL DATA: WEIGHT EMPTY, 376 Kg. (829 LBS.) USEFUL LOAD, 195 Kg. (430 LB.) TOTAL WEIGHT, 571 Kg. (1260 LB.) TOTAL SPANS, 23'7", 20'6", 18'9" O.A. LENGTH, 19'-0" MAX. HEIGHT, 9'-9 1/2" CHORD OF MAIN PLANES, 3'-3 1/2" GAP BETWEEN PLANES AS SHOWN ANGLE OF STAGGER OF ALL THREE PLANES, 14° O. ANGLE OF INCIDENCE, UPPER, 2° @ C.C. 3° 45' @ AILERONS, MIDDLE & LOWER WINGS, 1° 30' INCIDENCE OF TAIL PLANE, 5° POS. TAIL PLANE SPAN, 9'-10" ENGINE, 110 HP. LE RHONE (FR.) DR OBERURSEL. (GER. COPY) CONT. LOWER LEFT.



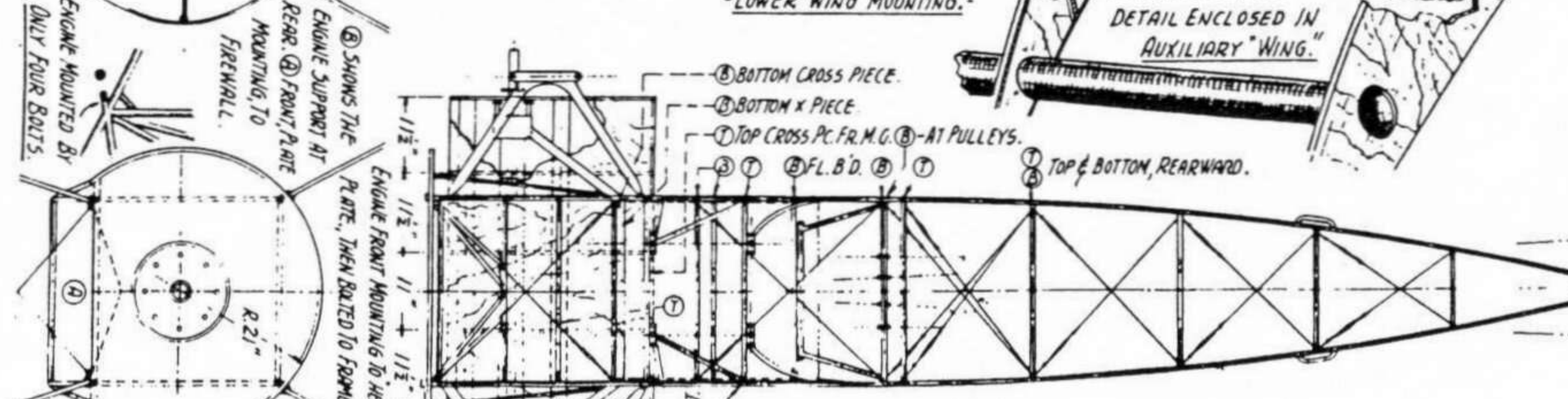
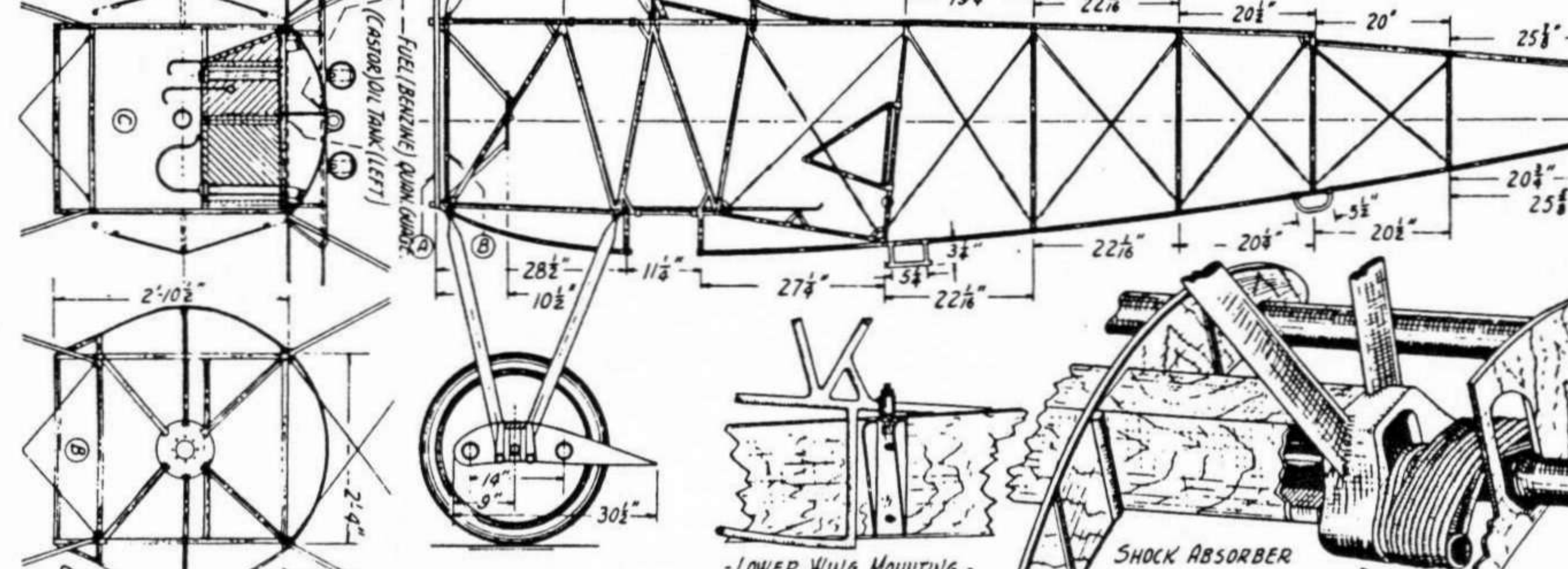
MACHINE GUN DETAILS ON MY FOKKER D-III DRAWINGS ARE IN ERROR. CORRECT SYSTEM SHOWN HERE, FITS D-III. LIVE AMMO ENTERS GUN FROM RIGHT SIDE & REAR TANK. CLIPS DISCHARGED THRU TUBE AT LEFT, EACH GUN, TO FRONT TANK. USED SHELLS DISCHARGED OUT RIGHT OF GUNS INTO THE AIR.



ENGINE SHOWN ABOVE IS THE 110 HP. LE RHONE. RICHTHOFEN WAS SUPPOSED TO HAVE USED SUCH A CAPTURED ENGINE IN HIS SHIP. THE GERMAN OBERURSEL WAS COPIED FROM THE 110 LE RHONE. WHEELS WERE 36 SPOKED, 18 SPOKES ON EACH WHEEL SIDE. SHOCK ABSORBER CORDS, OIL TANK FILL (4 GALS.), ENGINE COWL FASTENER.

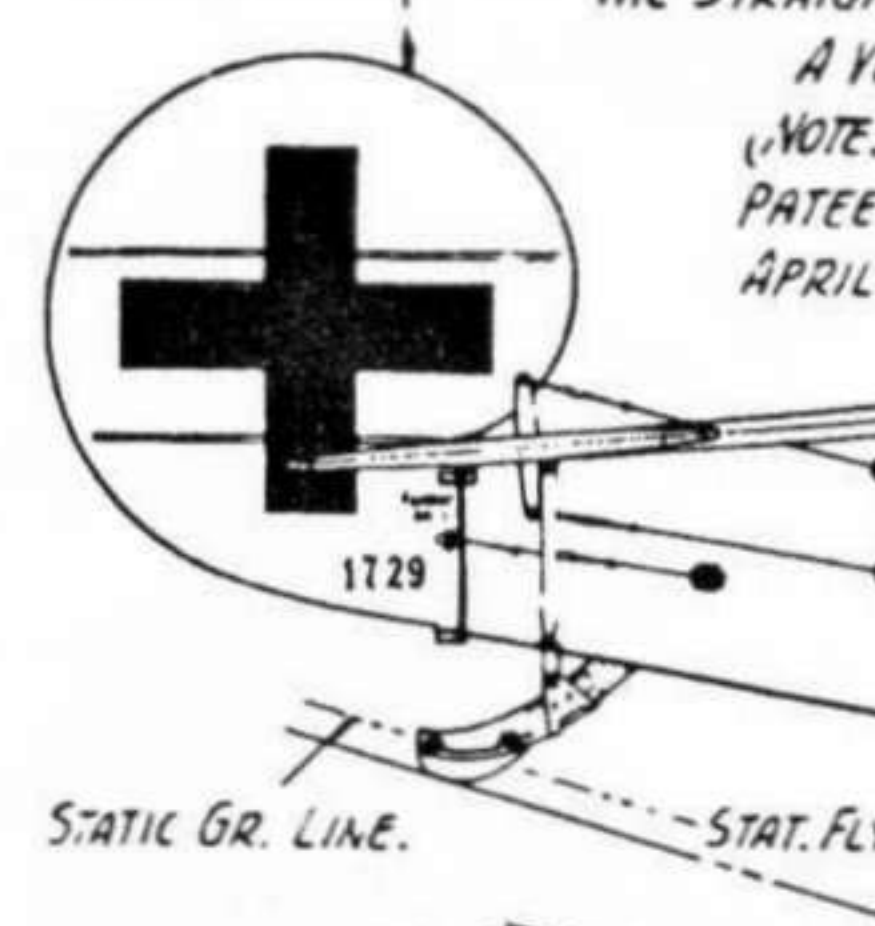
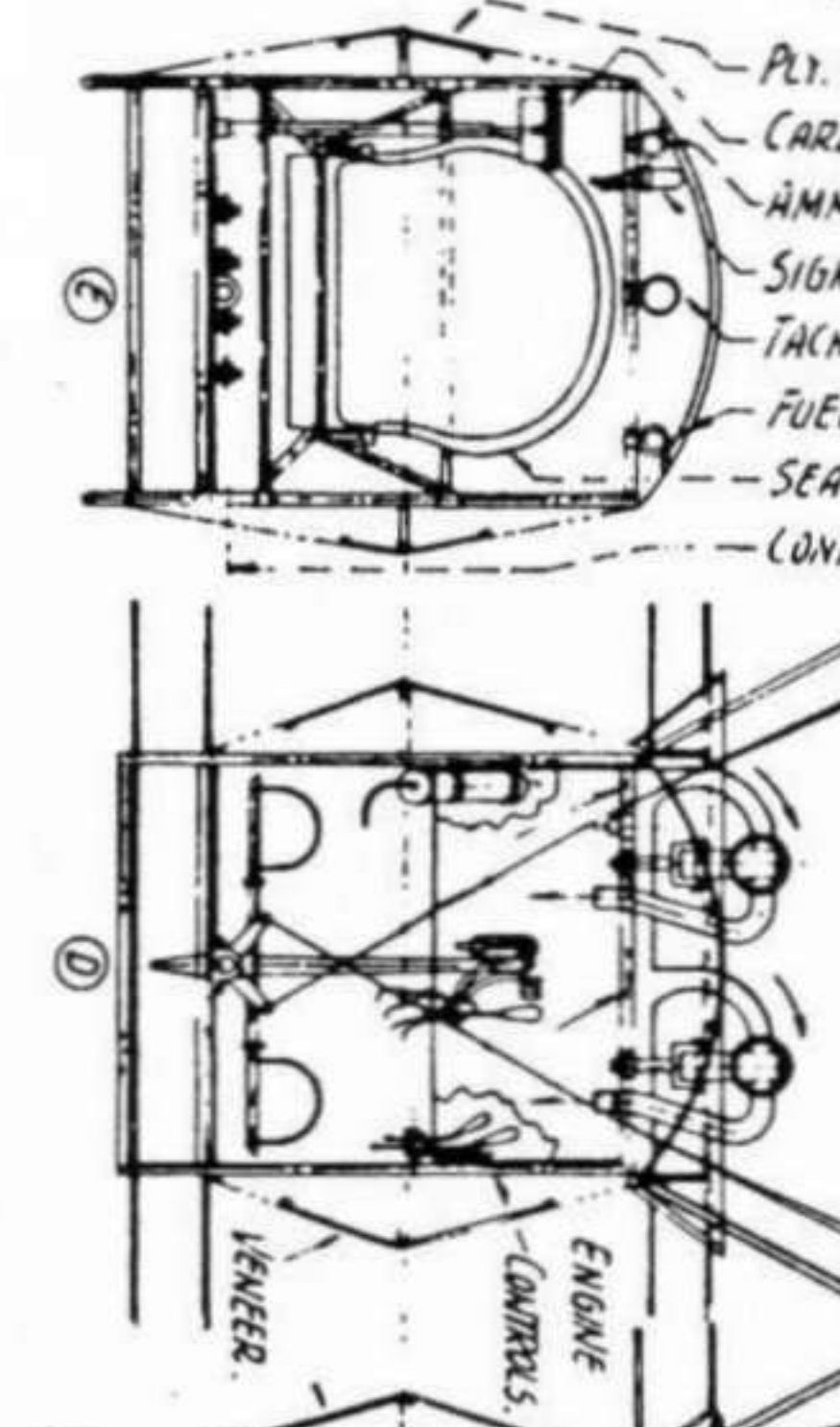
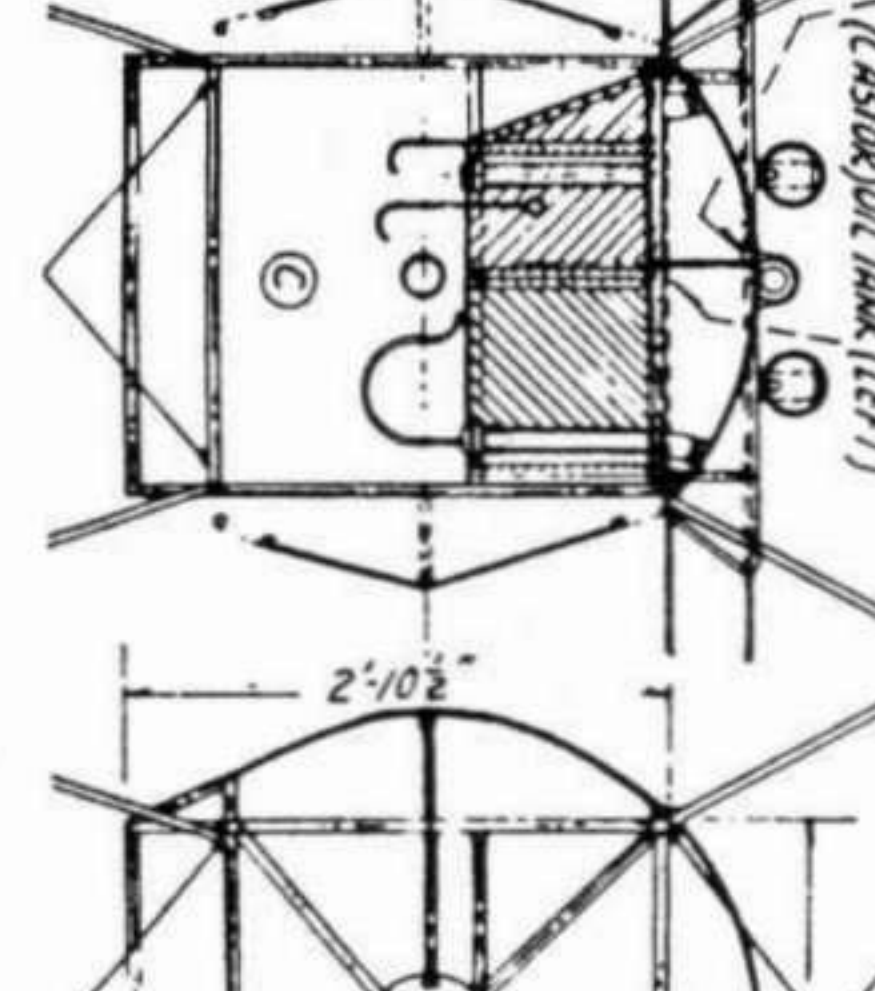
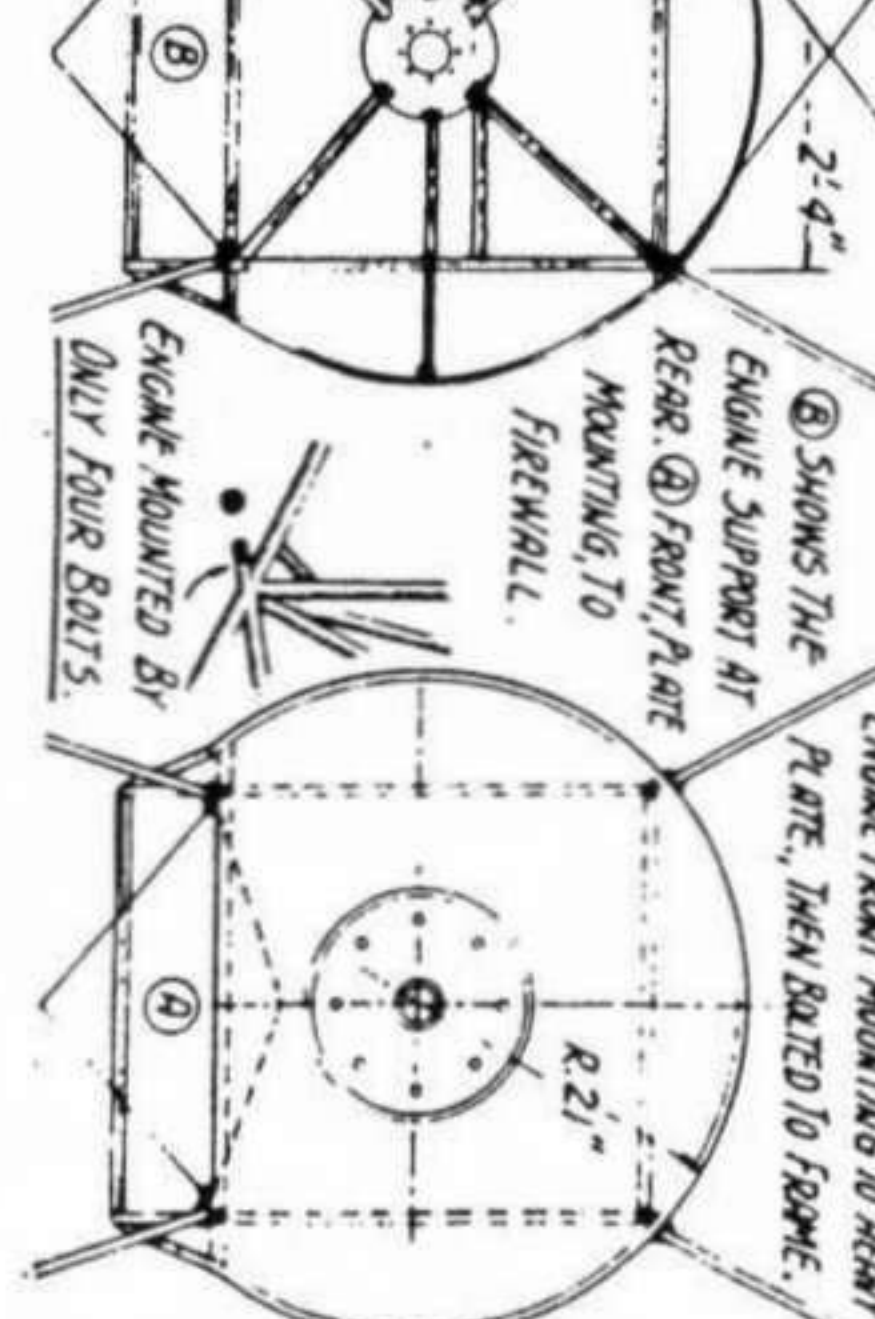
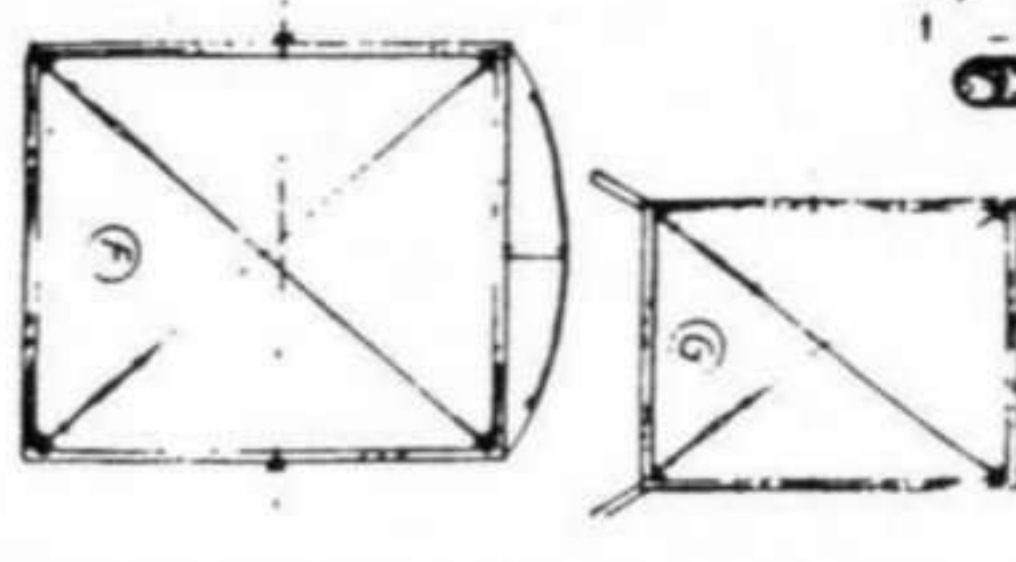
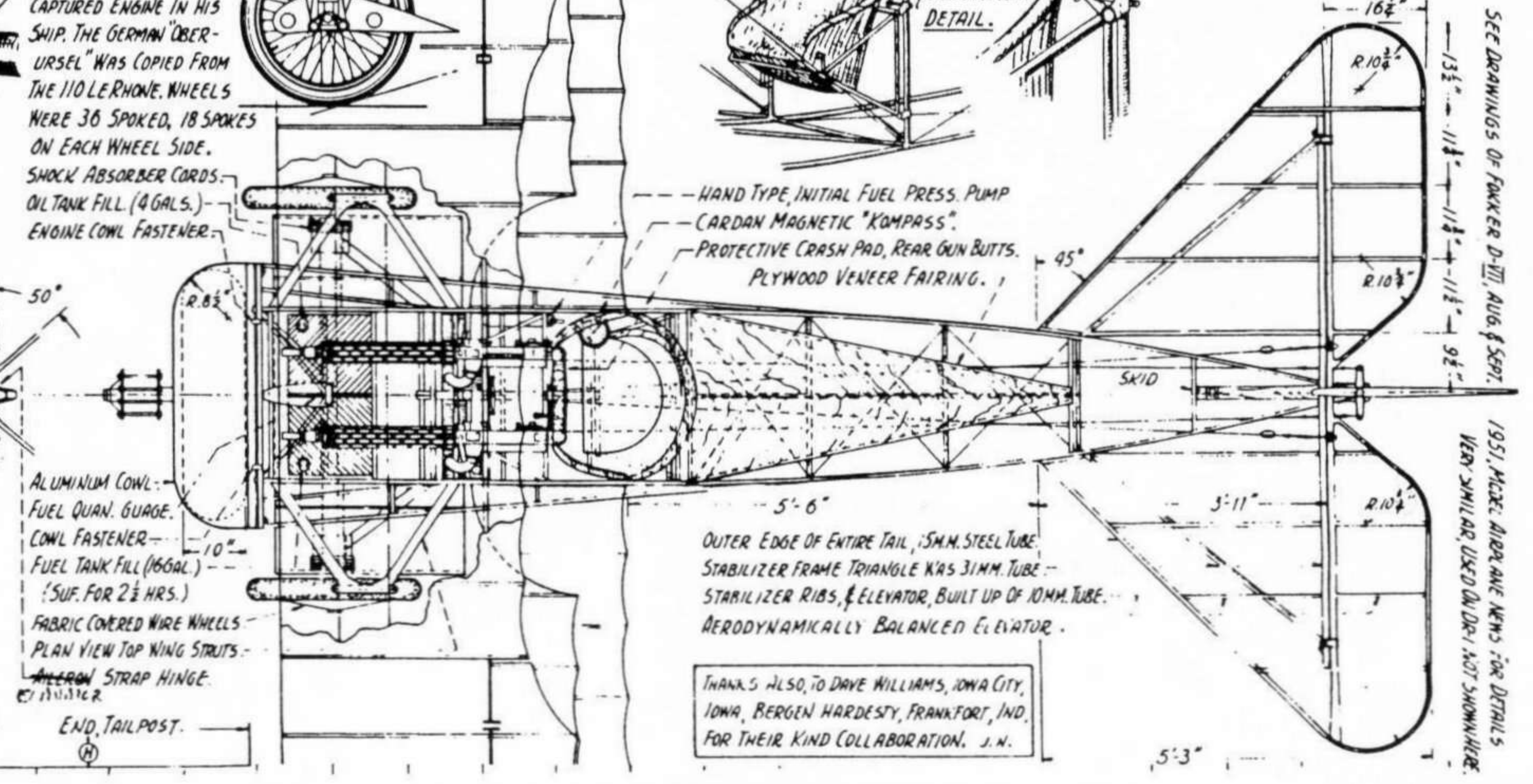


HATS OFF WITH THANKS TO: ROBERT E. ZOOK, PITTSBURGH, PA. AND TO CAPTAIN KIMBROUGH S. BROWN, U.S.A.F. SURREY, ENG., FOR ASSISTS ON THESE DRAWINGS.



GEN. DATA. CONT: ENGINE, ALSO SIEMENS-HALSKE SH-3, 160 H.P. WITH 4 BLADED PROP. PROP. DIA. 8'-6" AXIAL. FUEL CAP. 16 GALS., 4 GALS. OIL. FOR DURATION OF 2 1/2 HRS @ 10000 FT. ARMAMENT, TWIN SPANDAU (MAX. 18MM. M.G.'S SYNCHRO'D TO FIRE SINGLE OR SIMULTANEOUSLY THRU' PROP. INSTRUMENTS. CARDAN COMPASS, TACHOMETER, FUEL QUANTITY & PRESS, OIL SIGHT FEED VIAL, AMMETER, ETC. TOP SPEED, 120-30 MPH. CLIMB, 15000 FT. IN 17 MINUTES.

LOCATION OF STATIONS, BODY FORMERS, ENGINE MOUNT PLATE "A" TO TAIL POST.



Fokker D.VII

drawings by JOSEPH NIETO



Probably the most famous of German WW I aircraft was the Fokker D.VII. Ernst Udet, shown below, was an advocate of the design, although he preferred the D.VIII. Air Age file photos.

EARLY in May 1918, pilots assigned to the French sector began to meet increasing numbers of a strange new German pursuit plane. They observed it flying with squadrons of Albatros and Pfalz single-seaters, perhaps two or three to a flight. The new ships stayed pretty well back and very seldom engaged in a dog fight, but they impressed Allied pilots by their ability to bound around in the air like a rubber ball. This new plane, the D.VII, was the shot in the arm the Germans were looking for.

Among modelers and WW I aviation enthusiasts, the question always arises as to which was the best plane of that period. The Fokker D.VII certainly will have its supporters in any such discussion. Simplicity was the keynote of the design. The fuselage was of wire-braced welded steel tubing (the Germans did not trust welds in tension); the tail was all-steel. The wings were each built on two massive wooden box-spars, and there was no wire rigging. Most examples

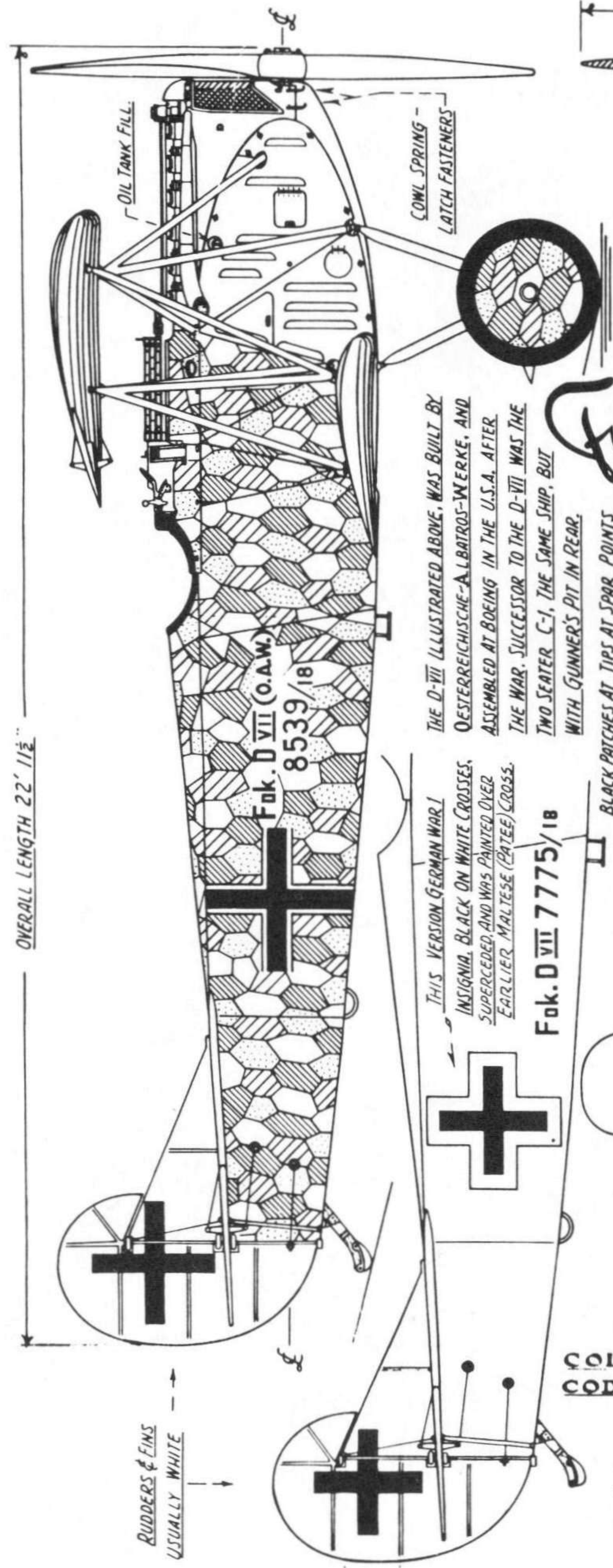


of the aircraft were powered by the Mercedes D.III engine, rated at 160 hp; however, later models were fitted with Daimler and B.M.W. engines for high altitude.

Two Spandau machine guns were mounted directly in front of the pilot, and the combination of pilot, machine, and firepower added up to a formidable

weapon for the Germans. From a historical standpoint, the Fokker D.VII will always hold a special significance as one of the most interesting airplanes ever built: it was the only German airplane by name to be mentioned in the Treaty of Versailles.

Seven original D.VIIs are in museums all over the world. □



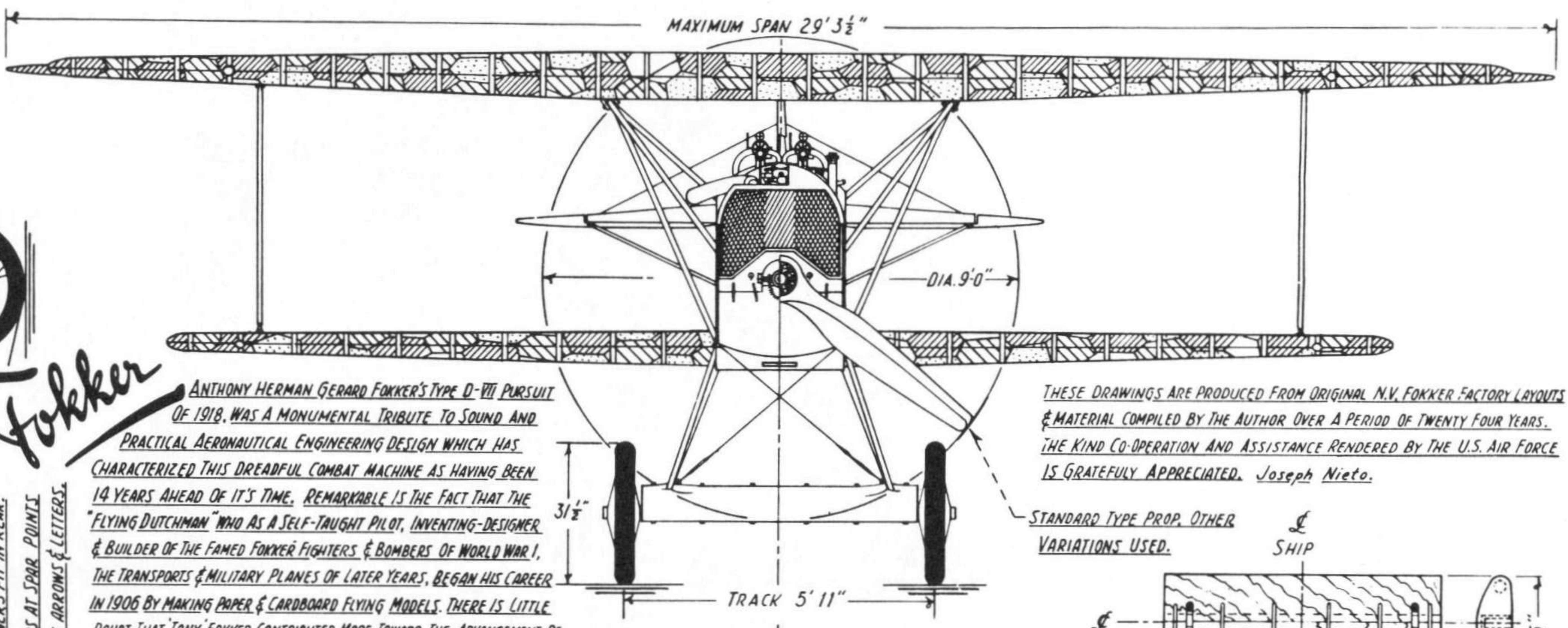
THE D-VII ILLUSTRATED ABOVE, WAS BUILT BY OESTERREICHISCHE-ALBATROS-WERKE, AND ASSEMBLED AT BOEING IN THE U.S.A. AFTER THE WAR. SUCCESSOR TO THE D-VII WAS THE TWO SEATER C-1, THE SAME SHIP, BUT WITH GUNNER'S PIT IN REAR.

THIS VERSION GERMAN WAR I INSIGNIA, BLACK ON WHITE CROSSES, SUPERCEDED AND WAS PAINTED OVER EARLIER MALTESE (PAZEE) CROSSES.

Fokker

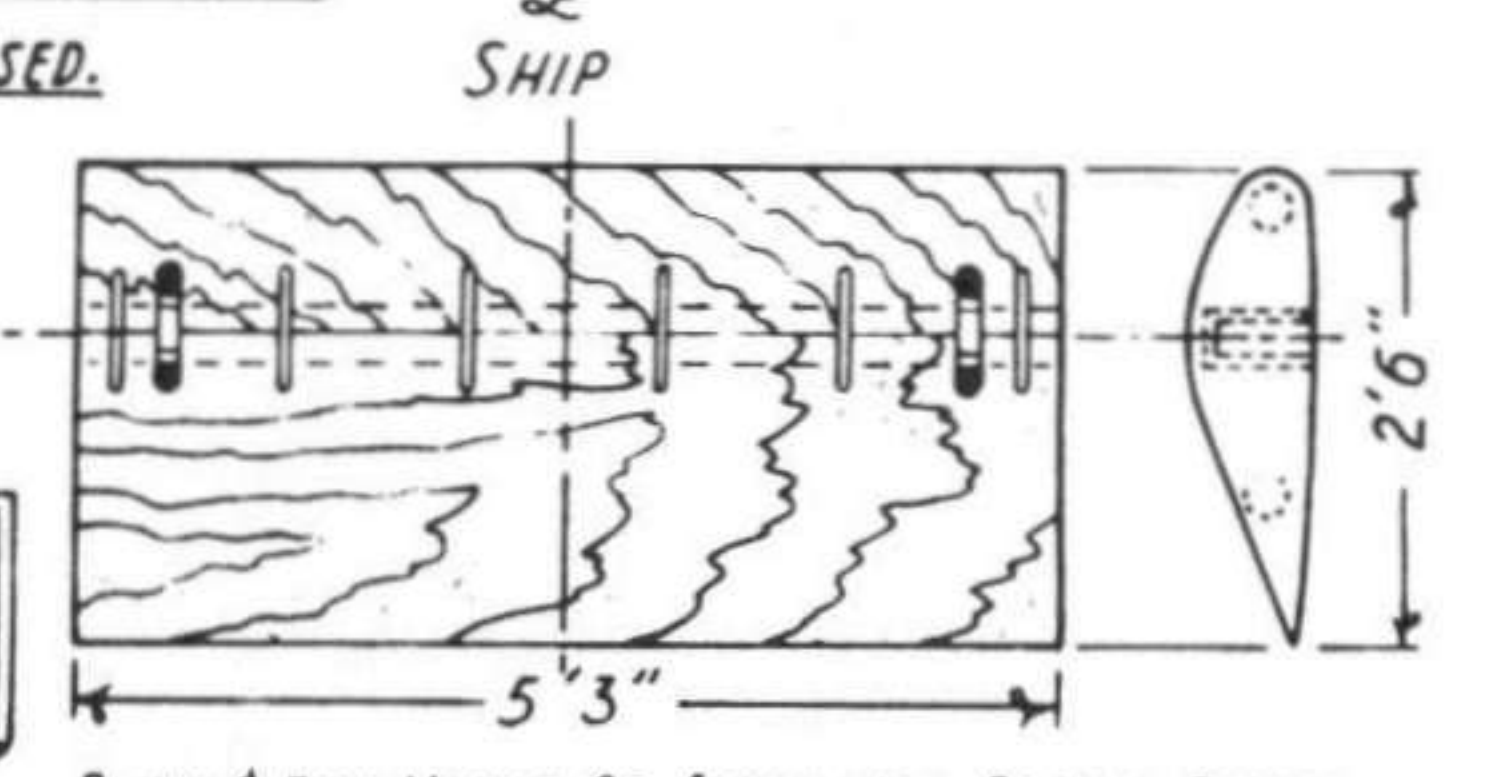
ANTHONY HERMAN GERARD FOKKER'S TYPE D-VII PURSUIT OF 1918, WAS A MONUMENTAL TRIBUTE TO SOUND AND PRACTICAL AERONAUTICAL ENGINEERING DESIGN WHICH HAS CHARACTERIZED THIS DREADFUL COMBAT MACHINE AS HAVING BEEN 14 YEARS AHEAD OF IT'S TIME. REMARKABLE IS THE FACT THAT THE "FLYING DUTCHMAN" WHO AS A SELF-TAUGHT PILOT, INVENTING-DESIGNER & BUILDER OF THE FAMED FOKKER FIGHTERS & BOMBERS OF WORLD WAR I, THE TRANSPORTS & MILITARY PLANES OF LATER YEARS, BEGAN HIS CAREER IN 1906 BY MAKING PAPER & CARDBOARD FLYING MODELS. THERE IS LITTLE DOUBT THAT TONY FOKKER CONTRIBUTED MORE TOWARD THE ADVANCEMENT OF THE AIRPLANE THAN ANY OTHER DESIGNER OF HIS TIME, ALBEIT THE ABILITY & PROMOTIONAL TACTICS HE EMPLOYED AS A SALESMAN ARE AS PROMINENTLY RECORDED IN THE ANNALS OF AVIATION HISTORY. NAMES OF WORLD WAR I & 2 GERMAN AIR SERVICE PILOTS BECAME OF FAME WITH THE FOKKER, RICHTHOFFEN, UDET, GOERING, BOELCKE, IMMELMANN, VOSS & MANY OTHERS, EVEN FOKKER

(CONT. BELOW)

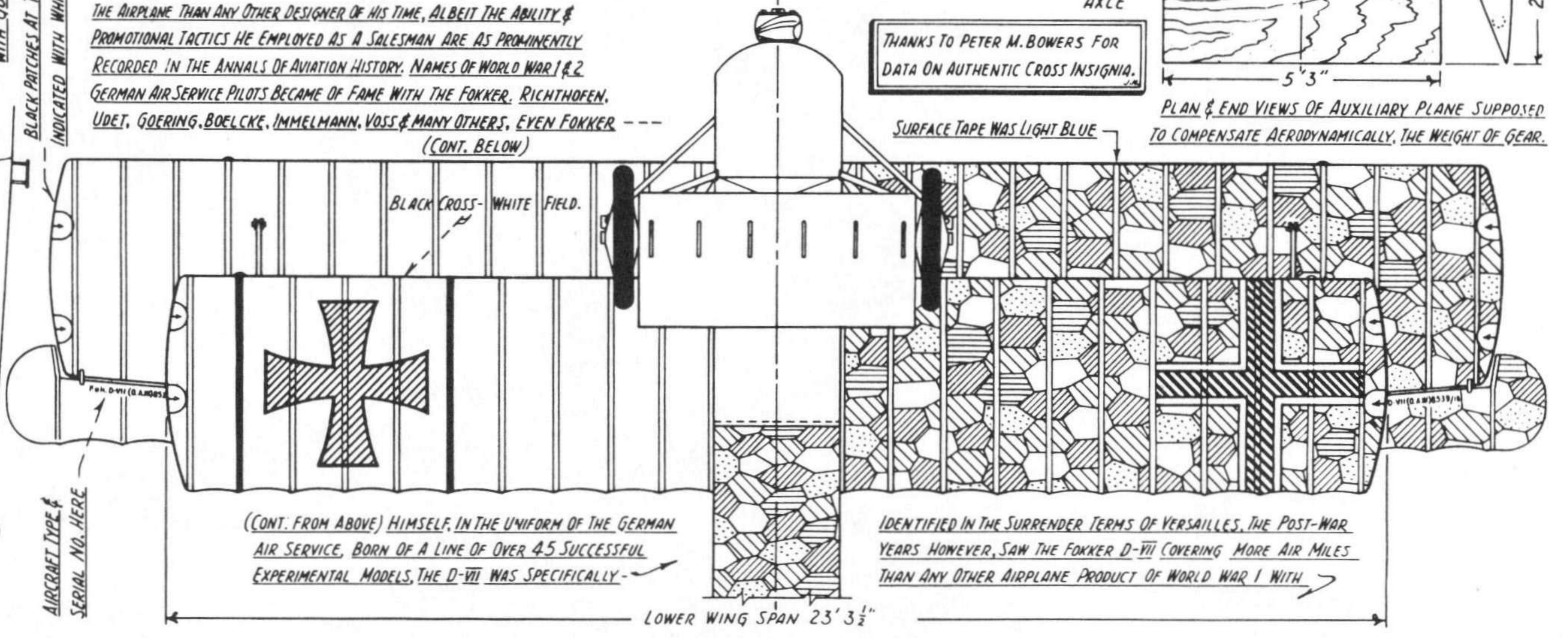


THESE DRAWINGS ARE PRODUCED FROM ORIGINAL N.V. FOKKER FACTORY LAYOUTS & MATERIAL COMPILED BY THE AUTHOR OVER A PERIOD OF TWENTY FOUR YEARS. THE KIND CO-OPERATION AND ASSISTANCE RENDERED BY THE U.S. AIR FORCE IS GRATEFULLY APPRECIATED. Joseph Nieto.

STANDARD TYPE PROP. OTHER VARIATIONS USED.



PLAN & END VIEWS OF AUXILIARY PLANE SUPPOSED TO COMPENSATE AERODYNAMICALLY, THE WEIGHT OF GEAR.



(CONT. FROM ABOVE) HIMSELF, IN THE UNIFORM OF THE GERMAN AIR SERVICE, BORN OF A LINE OF OVER 45 SUCCESSFUL EXPERIMENTAL MODELS, THE D-VII WAS SPECIFICALLY-

IDENTIFIED IN THE SURRENDER TERMS OF VERSAILLES. THE POST-WAR YEARS HOWEVER, SAW THE FOKKER D-VII COVERING MORE AIR MILES THAN ANY OTHER AIRPLANE PRODUCT OF WORLD WAR I WITH

COLOR CODING ● DARK GREEN. ● LIGHT GREEN. ● MAUVE. ● PINK. ● ROSE BEIGE OR FAWN.

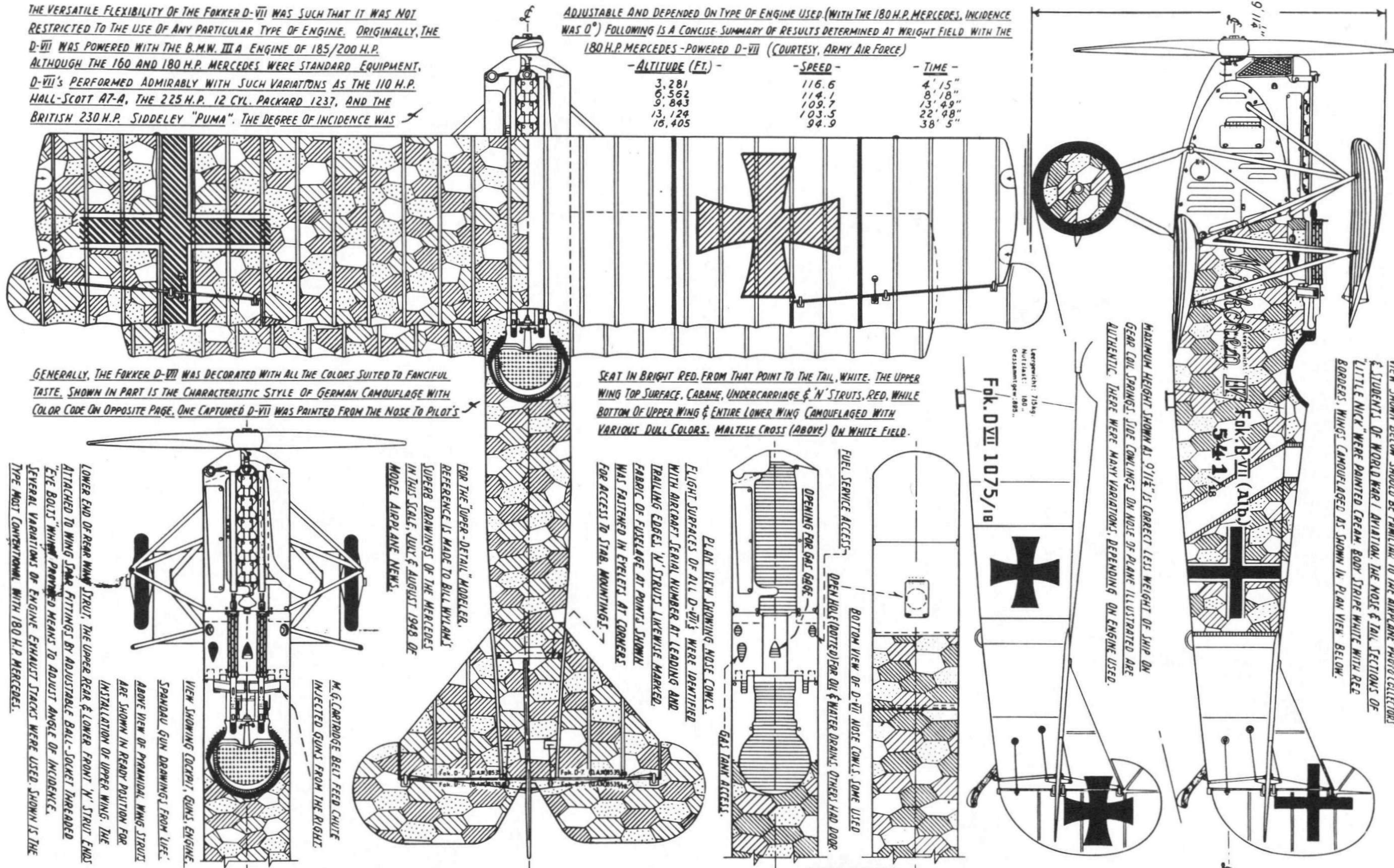
THE MILITARY AIR SERVICES OF POLAND, RUSSIA, RUMANIA, THE DUTCH, AND MANY OTHERS, NOT ONLY AS A SINGLE SEAT FIGHTER, BUT ALSO AS AN IDEAL WEATHER SHIP IN METEOROLOGICAL SERVICE, AS LATE AS 1933-34. (WITH OR WITHOUT SNOW SKIIS, THE D-VII COULD CLIMB TO 23000 FEET AND EASILY WITHSTOOD STRUCTURAL STRAIN OF TEMPERATURE CHANGES UP TO 50°C.) FOKKERS WERE FIRST BUILT AT "FOKKER FLUGZEUGWERKE, SCHWERIN-GORRIES, MECKLENBURG, THEN AT JOHANNISTHAL AERODROME, BERLIN, (FOKKER AEROPLANBAU, G.M.B.H.) AND LATER IN AMSTERDAM, HOLLAND, (N.V. NEDERLANDSCHE VLIEGTUIGEN-FABRIEK, POKIN, 84.) ALSO BUILT BY AUSTRIAN BRANCH, ALBATROS WORKS, O.A.W. (OESTERREICHISCHE-ALBATROS-WERKE, G.M.B.H.) VIENNA.

AIR AGE INC. 551 FIFTH AVE. NEW YORK, N.Y.
 SCALE: 1/4" = 1'-0"
 FULL SIZE: 3/8" = 1'-0"
 COPYRIGHT BY Joseph Nieto
 GENERAL ARRANGEMENTS. 1918 GERMAN PURSUIT KAMPE-DUPPELDECKER
Fok. D VII

THE VERSATILE FLEXIBILITY OF THE FOKKER D-VII WAS SUCH THAT IT WAS NOT RESTRICTED TO THE USE OF ANY PARTICULAR TYPE OF ENGINE. ORIGINALLY, THE D-VII WAS POWERED WITH THE B.M.W. IIIA ENGINE OF 185/200 H.P. ALTHOUGH THE 160 AND 180 H.P. MERCEDES WERE STANDARD EQUIPMENT, D-VII'S PERFORMED ADMIRABLY WITH SUCH VARIATIONS AS THE 110 H.P. HALL-SCOTT A7-A, THE 225 H.P. 12 CYL. PACKARD 1237, AND THE BRITISH 230 H.P. SIDDELEY "PUMA". THE DEGREE OF INCIDENCE WAS

ADJUSTABLE AND DEPENDED ON TYPE OF ENGINE USED (WITH THE 180 H.P. MERCEDES, INCIDENCE WAS 0°) FOLLOWING IS A CONCISE SUMMARY OF RESULTS DETERMINED AT WRIGHT FIELD WITH THE 180 H.P. MERCEDES-POWERED D-VII (COURTESY, ARMY AIR FORCE)

- ALTITUDE (FT.) -	- SPEED -	- TIME -
3,281	116.6	4' 15"
6,562	114.1	8' 18"
9,843	109.7	13' 49"
13,124	103.5	22' 48"
16,405	94.9	38' 5"



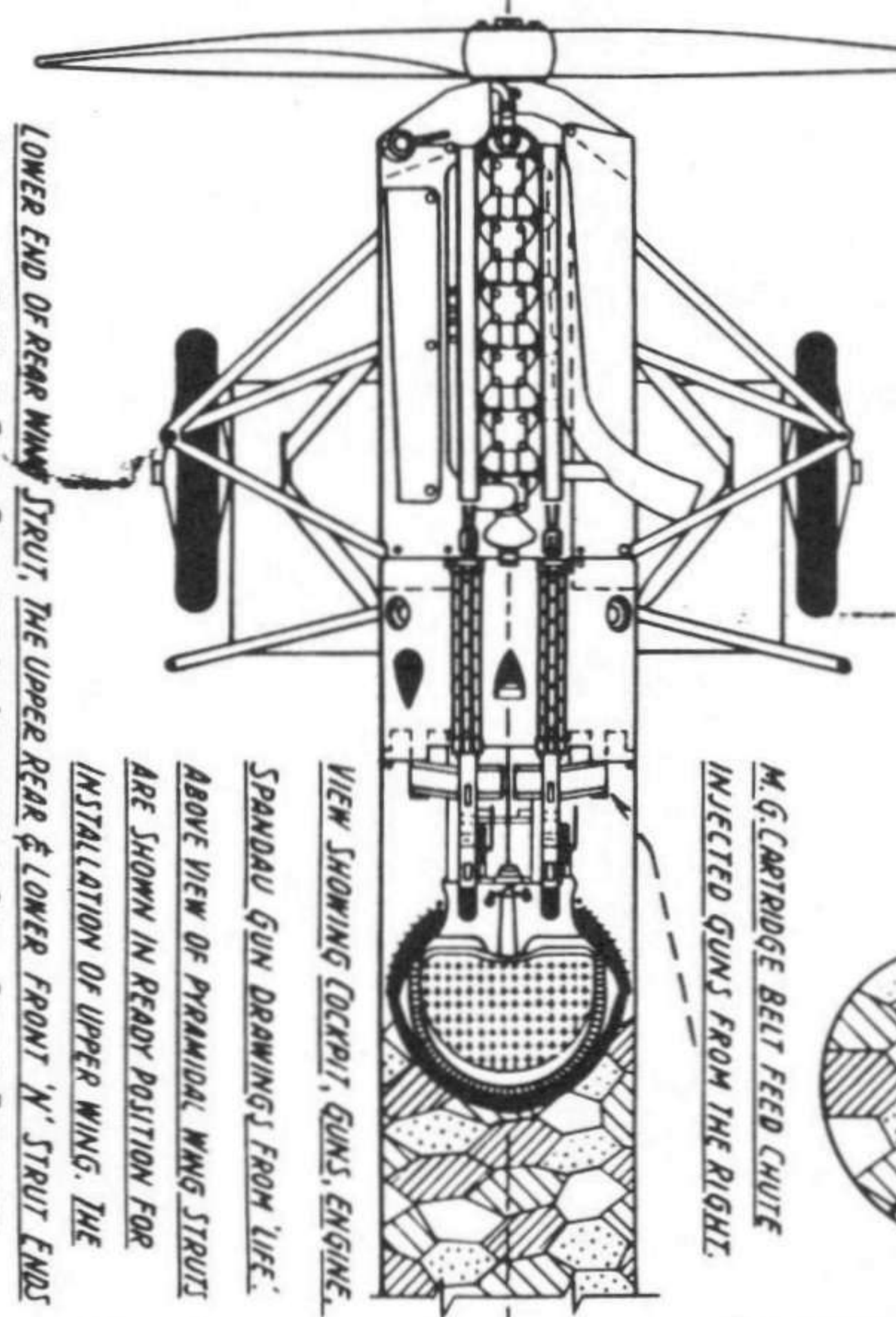
GENERALLY, THE FOKKER D-VII WAS DECORATED WITH ALL THE COLORS SUITED TO FANCIFUL TASTE. SHOWN IN PART IS THE CHARACTERISTIC STYLE OF GERMAN CAMOUFLAGE WITH COLOR CODE ON OPPOSITE PAGE. ONE CAPTURED D-VII WAS PAINTED FROM THE NOSE TO PILOT'S

SEAT IN BRIGHT RED. FROM THAT POINT TO THE TAIL, WHITE. THE UPPER WING TOP SURFACE, CABANE, UNDERCARRIAGE & 'N' STRUTS, RED, WHILE BOTTOM OF UPPER WING & ENTIRE LOWER WING (CAMOUFLAGED WITH VARIOUS DULL COLORS. MALTESE CROSS (ABOVE) ON WHITE FIELD.

MAXIMUM HEIGHT SHOWN AT 9' 11 1/2" (CORRECT LESS WEIGHT OF SHIP ON GEAR COIL SPRINGS. SIDE COWLINGS ON NOSE OF PLANE ILLUSTRATED ARE QUERENTIC. THERE WERE MANY VARIATIONS, DEPENDING ON ENGINE USED.

VIEW SHOWN BELOW SHOULD BE FAMILIAR TO THE AIRPLANE PHOTO COLLECTORS & STUDENTS OF WORLD WAR I AVIATION. THE NOSE & TAIL SECTIONS OF "LITTLE NICK" WERE PAINTED CREAM. BODY STRIPE WHITE WITH RED BORDERS. WINGS CAMOUFLAGED AS SHOWN IN PLAN VIEW BELOW.

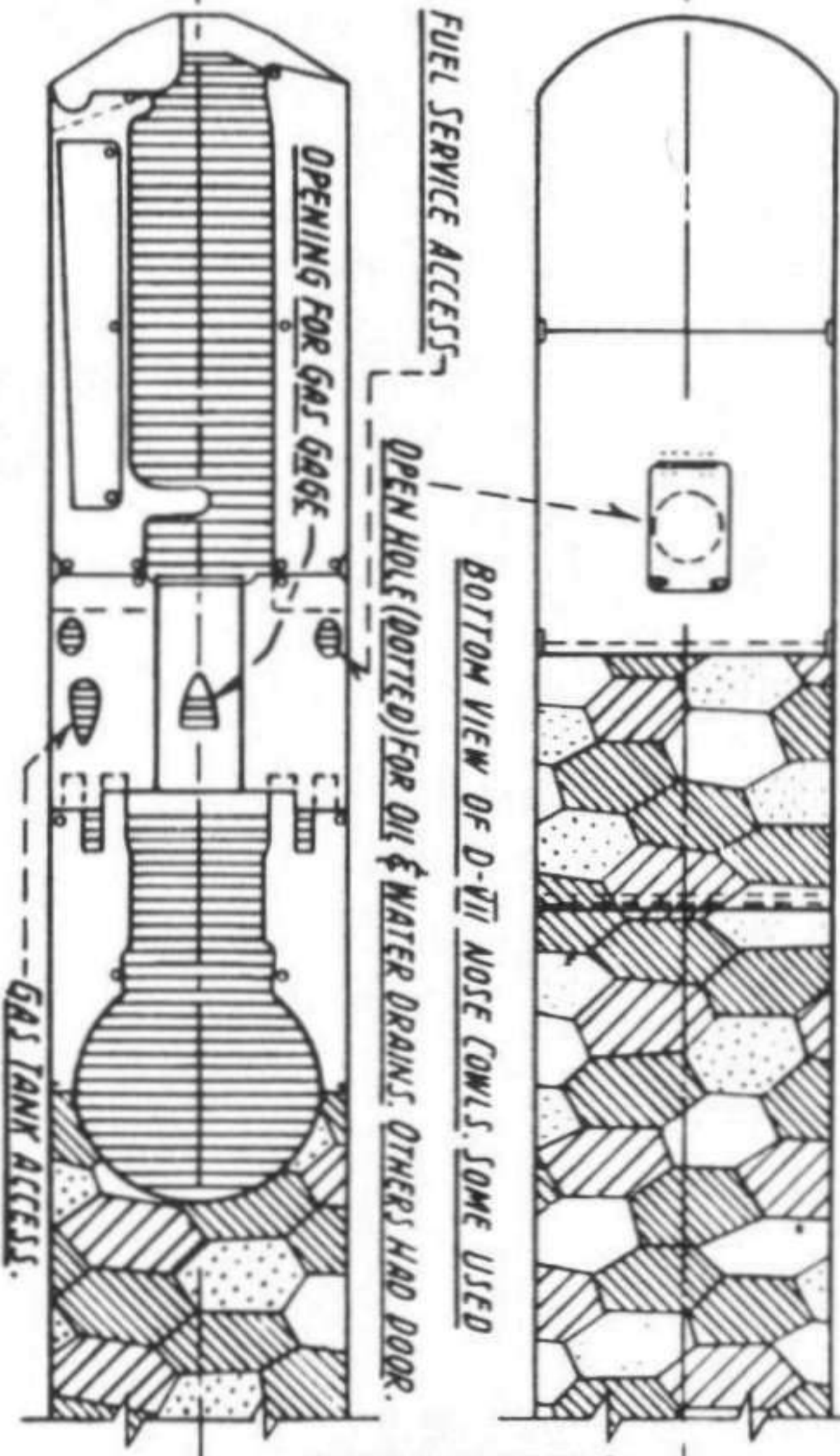
LOWER END OF REAR WING STRUT. THE UPPER REAR & LOWER FRONT 'N' STRUT ENDS ATTACHED TO WING SPAR FITTINGS BY ADJUSTABLE BALL-SOCKET THREADED "EYE BOLTS" WHICH PROVIDED MEANS TO ADJUST ANGLE OF INCIDENCE. SEVERAL VARIATIONS OF ENGINE EXHAUST STACKS WERE USED. SHOWN IS THE TYPE MOST CONVENTIONAL WITH 180 H.P. MERCEDES.



FOR THE "UPPER-DETAIL" MODELER, REFERENCE IS MADE TO BILL WYLLIAM'S SUPERB DRAWINGS OF THE MERCEDES IN THIS SCALE, JUNE & AUGUST 1948 OF MODEL AIRPLANE NEWS.

FLIGHT SURFACES OF ALL D-VII'S WERE IDENTIFIED WITH AIRCRAFT SERIAL NUMBER AT LEADING AND TRAILING EDGES. 'N' STRUTS LIKEWISE MARKED. FABRIC OF FUSELAGE AT POINTS SHOWN WAS FASTENED IN EYELETS AT CORNERS FOR ACCESS TO STAB. MOUNTING.

PLAN VIEW SHOWING NOSE COWLS



WEIGHTS:

DIMENSIONS:

WINGSPAN, UPPER PLANE.	29' 3 1/2"
" " LOWER "	23' 3 1/2"
CHORD, UPPER PLANE.	5' 3"
" " LOWER "	4' 0"
OVERALL LENGTH.	22' 11 1/2"
GAP BETWEEN PLANES (AT BODY SIDE).	4' 3 1/4"

AREAS:

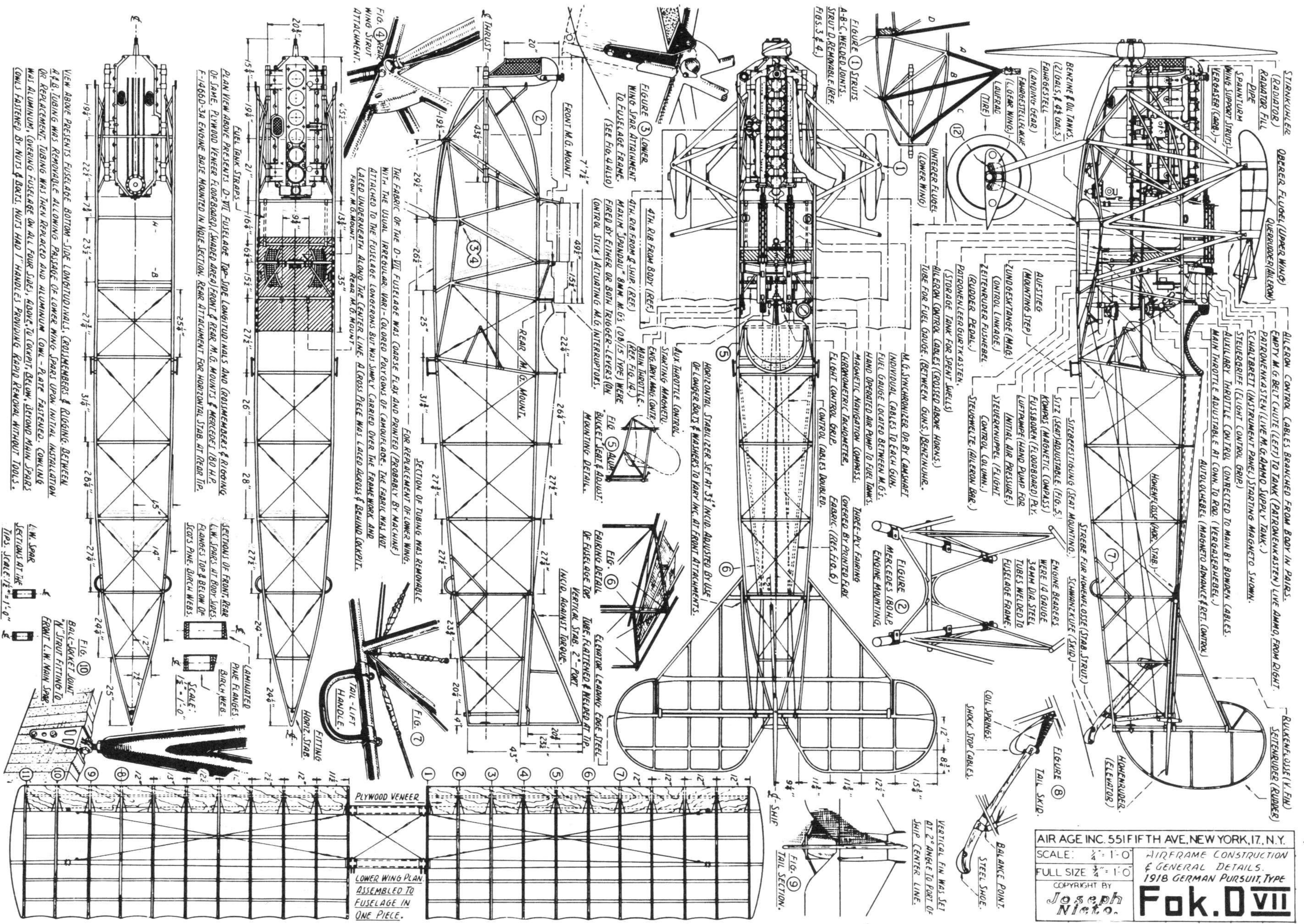
UPPER PLANE INCLUDING AILERONS.	140.7 SQ. FT.
LOWER PLANE.	78.3 "
AILERONS (TOTAL OF TWO).	11.4 "
BALANCED PART OF AILERONS.	.5 "
STABILIZER.	21.1 "
ELEVATORS (TOTAL OF TWO).	15.2 "

BALANCED PART OF ELEVATORS.	1.1 SQ. FT.
VERTICAL FIN.	2.8 "
RUDDER.	5.9 "
HORIZONTAL AREA OF BODY.	35.6 "
VERTICAL " " "	58.6 "
PLANE BETWEEN WHEELS.	12.4 "

FUSELAGE (COMPLETE WITH ENGINE, ETC.)	1,322.2 LBS.
UPPER WING, WITH AILERONS.	167.2 "
LOWER WING.	99.0 "
TAIL SURFACES (COMPLETE).	34.1 "
TOTAL WEIGHT (EMPTY).	1,622.5 "
USEFUL LOAD (APPROXIMATELY)	395.0 "

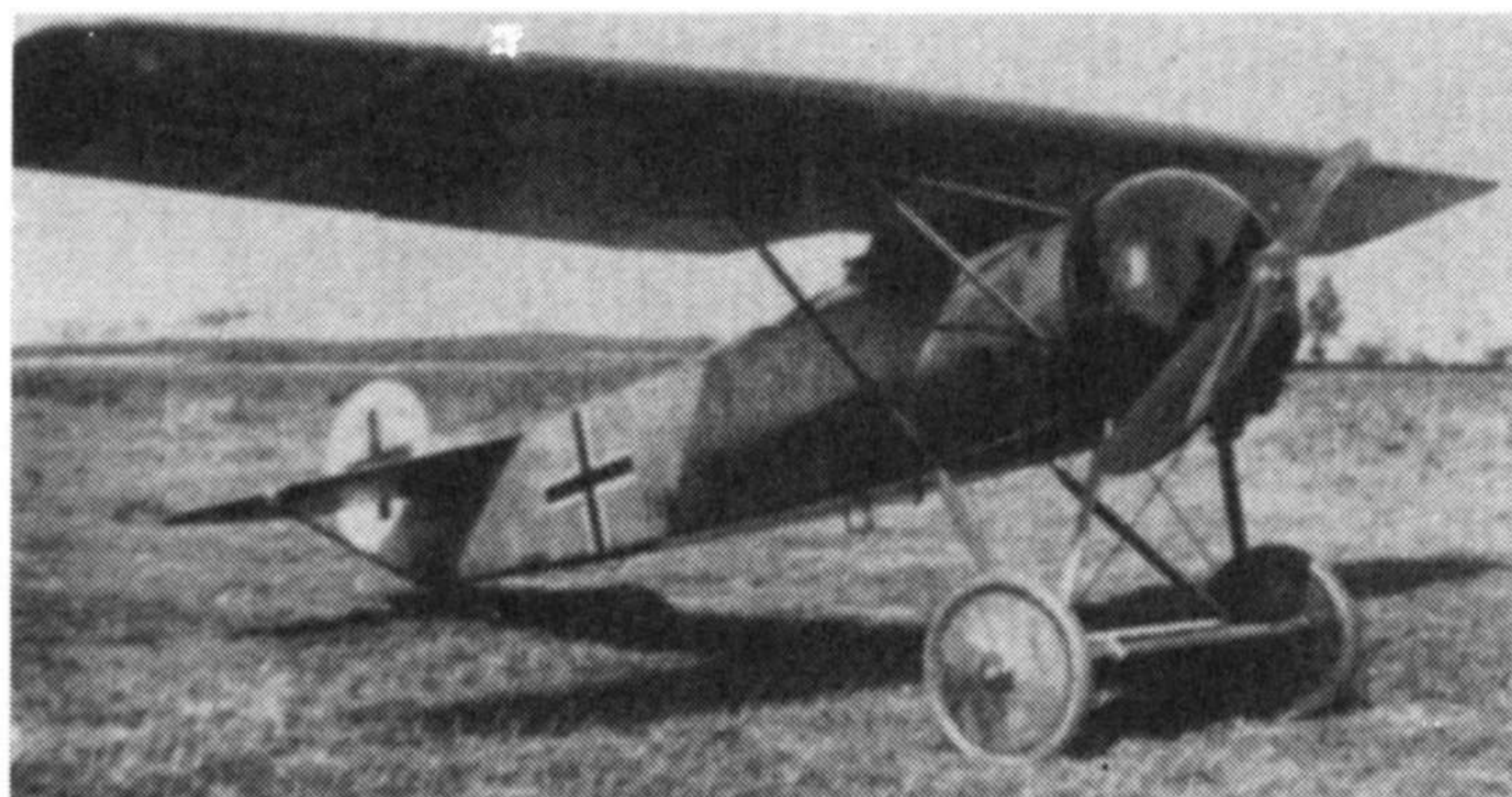
THE THIN, STRAIGHT, BLACK CROSS INSIGNIA AS SHOWN IN SIDE VIEW DIRECTLY ABOVE, WAS THE LATEST TYPE USED BY GERMANY IN 1918. NARROW WHITE BORDER TRIM.

AIR AGE INC. 551 FIFTH AVE., NEW YORK, N. Y.
 SCALE: 1/4" = 1'-0"
 FULL SIZE 3/4" = 1'-0"
 COPYRIGHT BY
 Joseph Nico
Fok. D VII
 AIRFRAME CONSTRUCTION
 & GENERAL DETAILS
 1918 GERMAN PURSUIT, TYPE



Fokker E.V/D.VIII

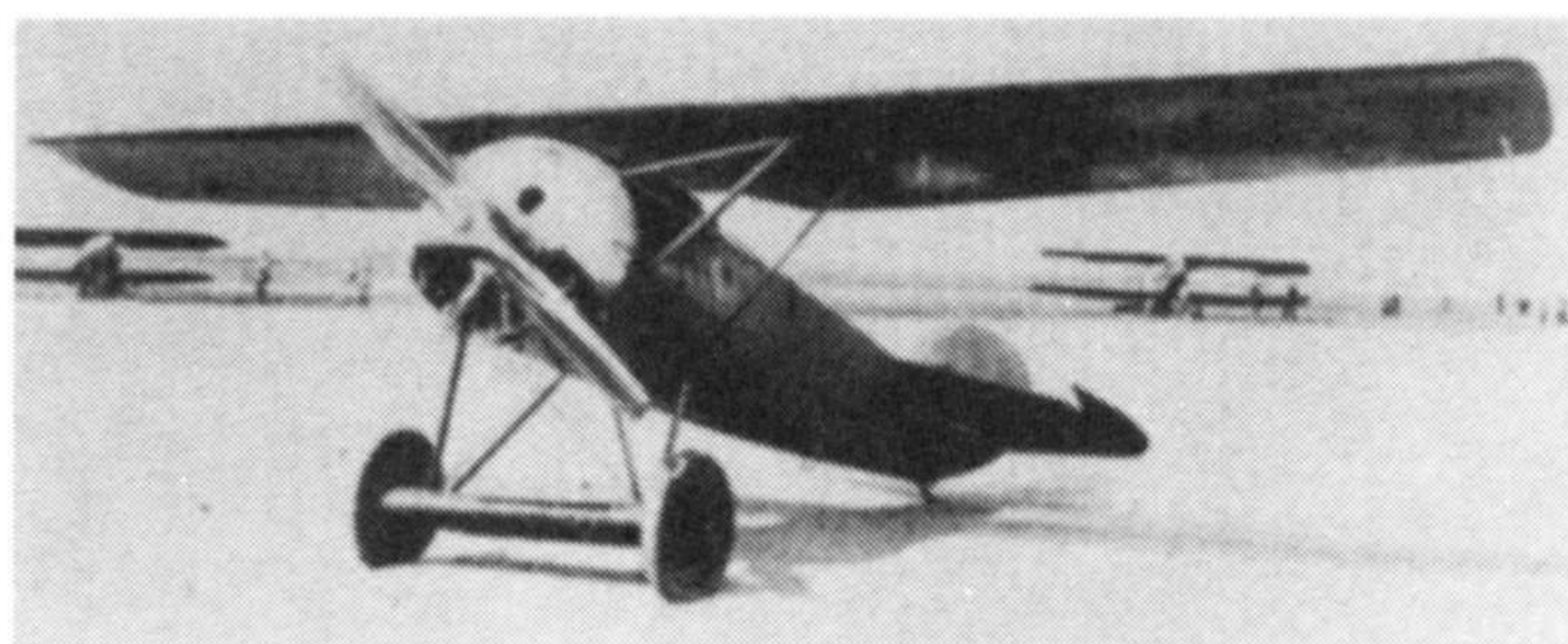
drawings by PHILLIP DREWS



The Fokker D.VIII was unique in several respects. Full cantilever wing, no struts and good performance gave its pilots a tremendous advantage over their foes. Photo courtesy of "Fokker, the Man and the Aircraft."



The 110-hp Oberursel rotary, Siemens-Halske, Goebel, and Le Rhone engines were used on various versions of the D.VIII.



An extremely clean design for WW I, the Fokker D.VIII was a formidable weapon in the hands of German pilots.

DURING the closing weeks of WW I, there appeared over the front lines a nimble little monoplane that is generally credited as being the finest fighter of its day. This was the famous Fokker D.VIII of the German Imperial Air Force.

Powered by a rotary Oberursel engine of 110 hp, the D.VIII had a speed of 127 mph. It climbed at a rate of 1,500 fpm and could ascend over 4 miles high. In its ability to maneuver and dive it was unequalled. The first production E.V's (called D.VIII) were so badly built by the Fokker factory that several crashes resulted, and the type was grounded until the defects could be located and remedied. By the time proper construction procedures were established at the factory, the War was almost over; the D.VIII saw almost no service.

Also known as the Fokker E.V and the "Flying Razor," it gained much of its reputation in the hands of the famous German pilot Ernst Udet. Even after the war Udet toured small German towns giving mock demonstrations of aerial dog fights. Strangely, these illegal performances were not detected by the Allied Occupation authorities.

Of the many designs credited to Anthony Fokker, the D.VIII or E.V was probably one of the best—and most controversial.

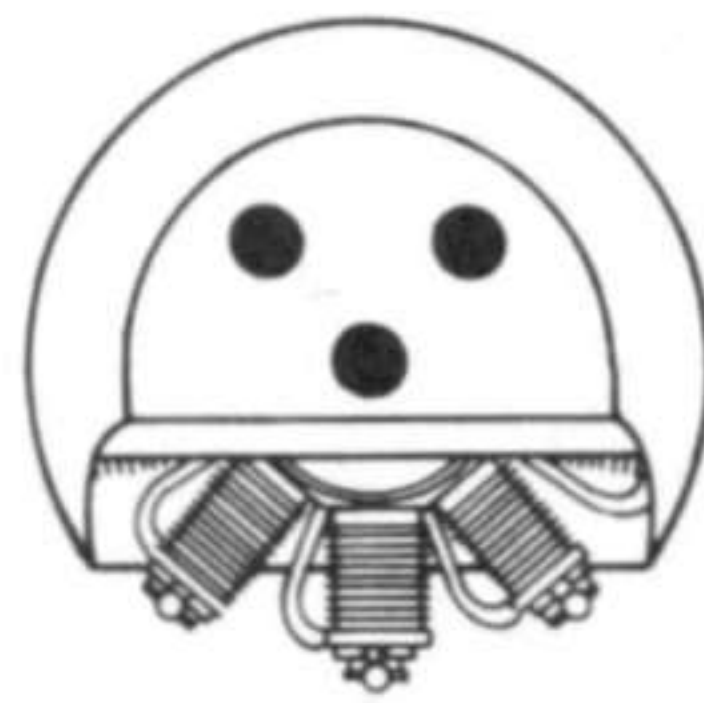
Note: recent research has shown that the two spars in each wing were not parallel, as in Drews' drawing, but tapered together toward each tip—and each spar was made in one piece.

One D.VIII survives, now on exhibition in Italy. □

ENGINE DATA

V26 PROTOTYPE	OBERURSEL UR II	110HP
V28 PROTOTYPE	OBERURSEL UR III	145HP
	GOEBEL GOE III	160HP
EV	LE RHONE	110HP
	OBERURSEL UR II	110HP
D VIII	SAME AS EV	
D VIIIe	OBERURSEL UR III	145HP
D VIIIg	GOEBEL GOE IIIa	200HP
D VIIIh	SIEMENS-HALSKE SH IIIa	220HP

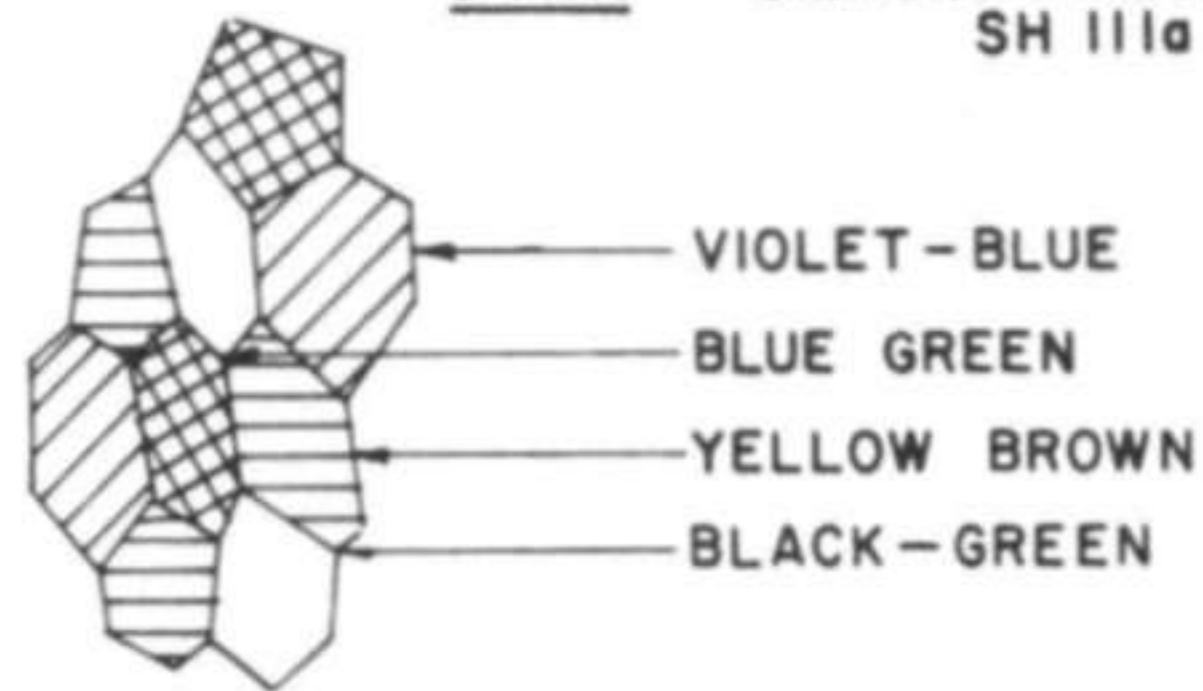
NATURAL ALUMINUM FINISH
(ALL EXAMPLES)



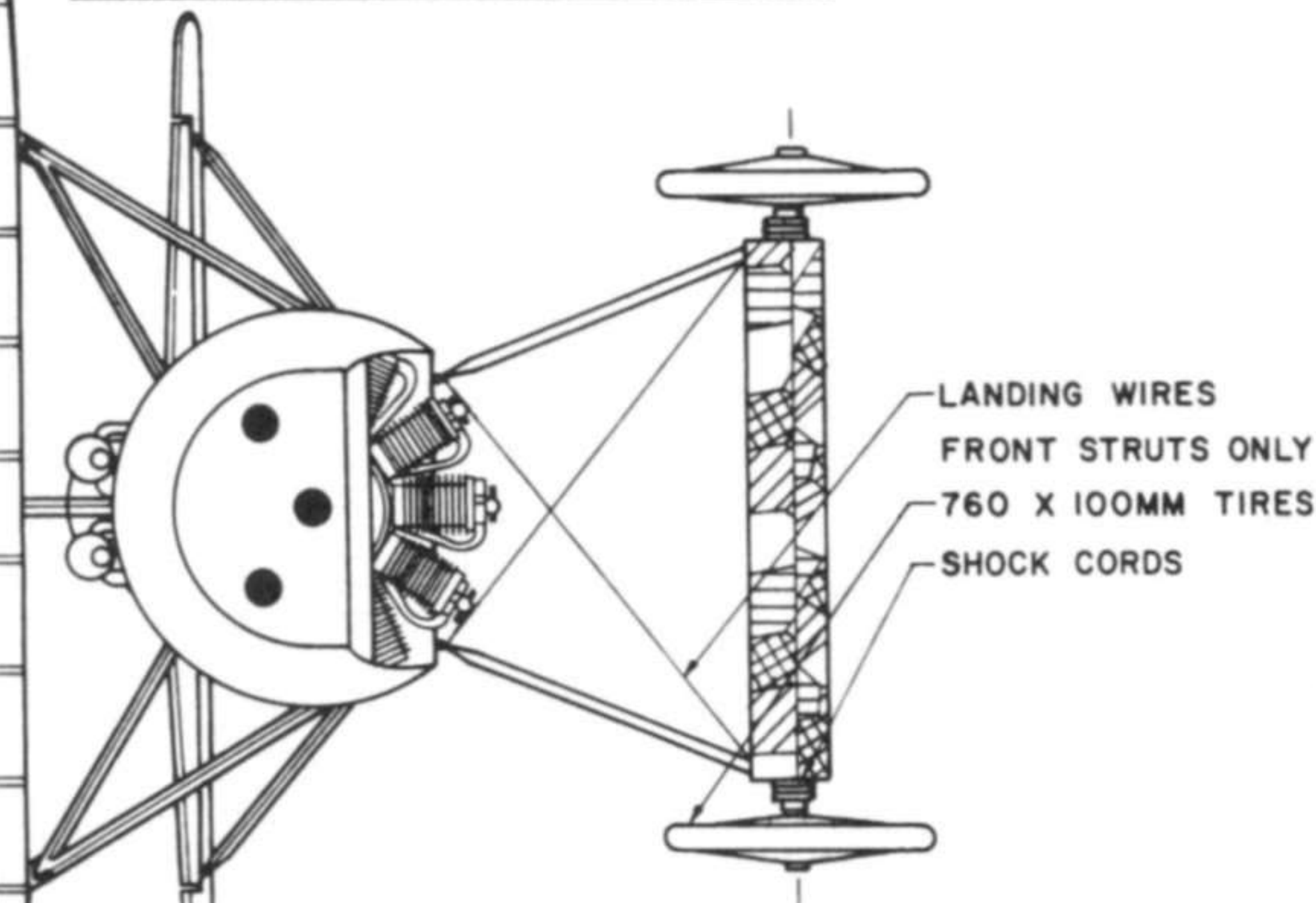
110HP OBERURSEL EXAMPLE

NOTE
ALL STRUTS AND PLYWOOD
PANELS WERE PAINTED
DARK GREEN.

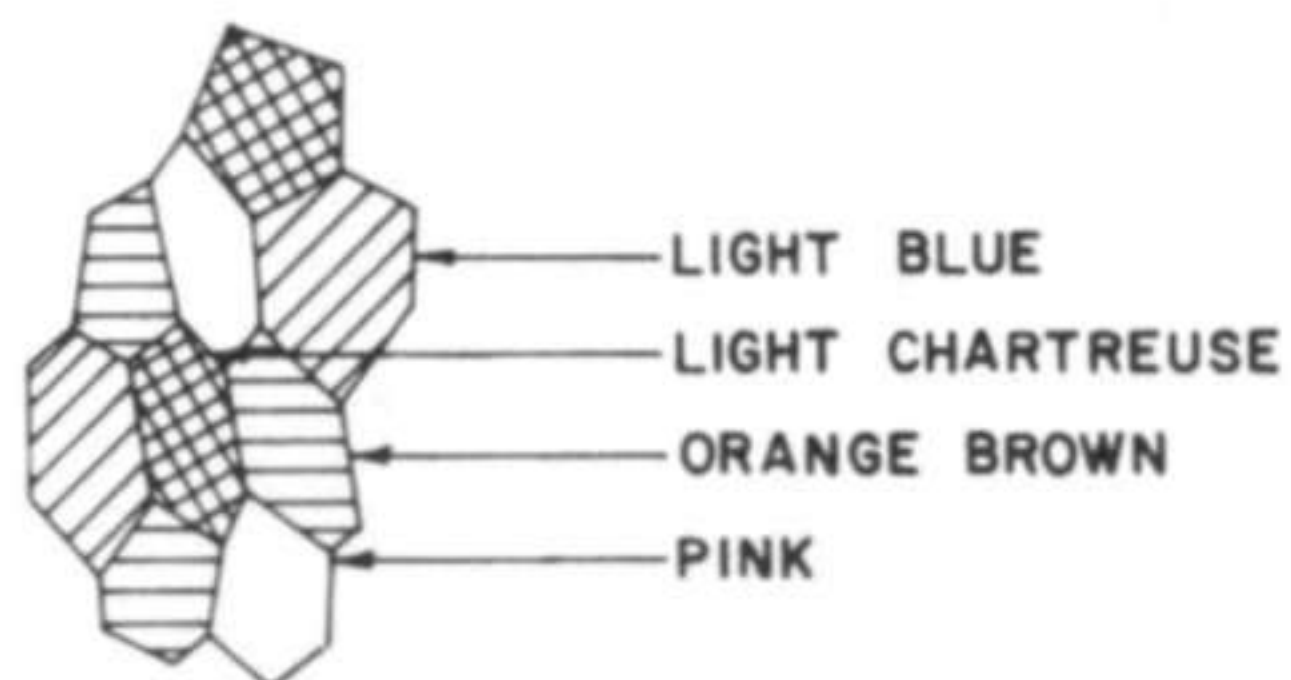
NOTE
WING SURFACES,
UPPER AND LOWER,
WERE PAINTED
DARK GREEN.



UPPERSURFACE FABRIC COLOR SCHEME



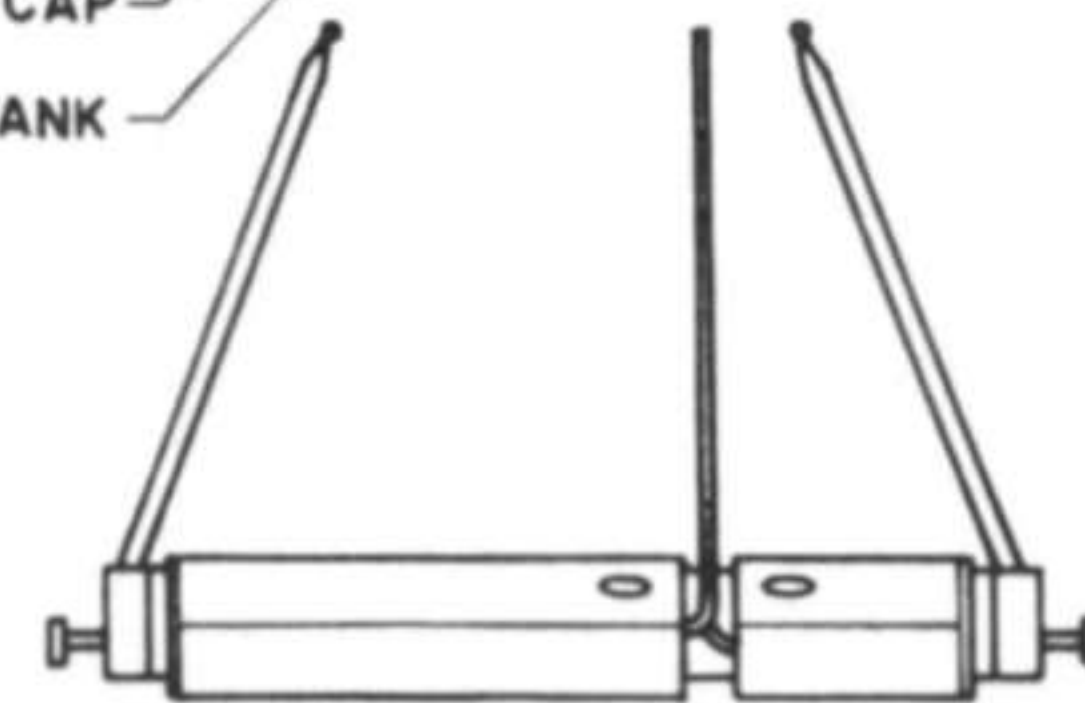
11 CYLINDER 145 HP OBERURSEL EXAMPLE



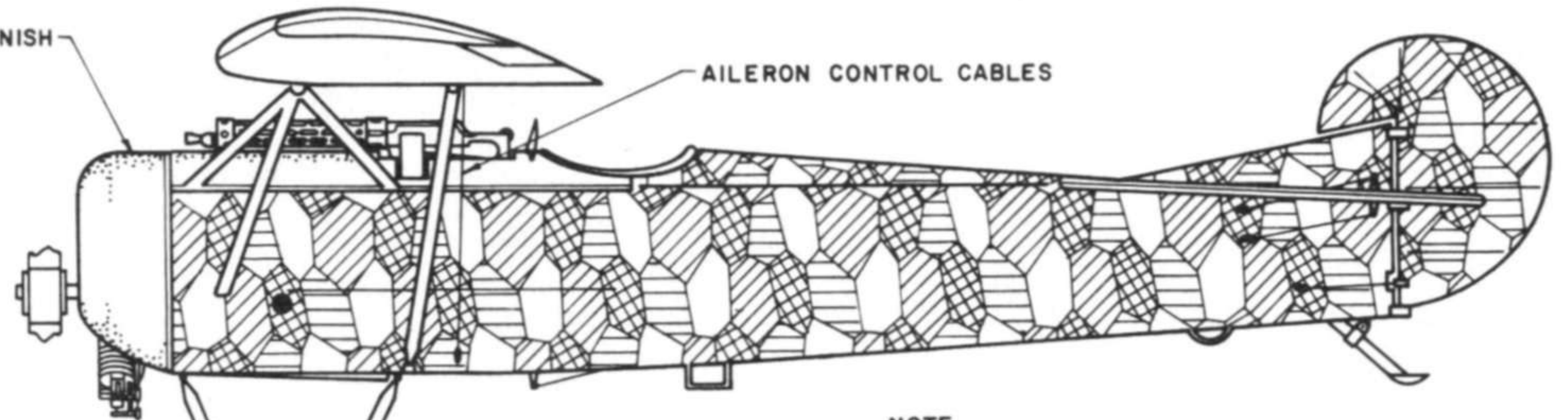
UNDERSURFACE FABRIC COLOR SCHEME

NOTE
COLOR DESCRIPTIONS ARE ONLY APPROXIMATE.
THE APPLICATION OF DOPES AND VARNISHES
TENDED TO GIVE ALL COLORS A BROWNISH
TINT.

GAS TANK
FUEL LINES
GAS FILLER CAP
OIL LINES
OIL FILLER CAP
OIL TANK



SUBWING TANK INSTALLATION OF EV 238/18
(PLYWOOD SKIN REMOVED)

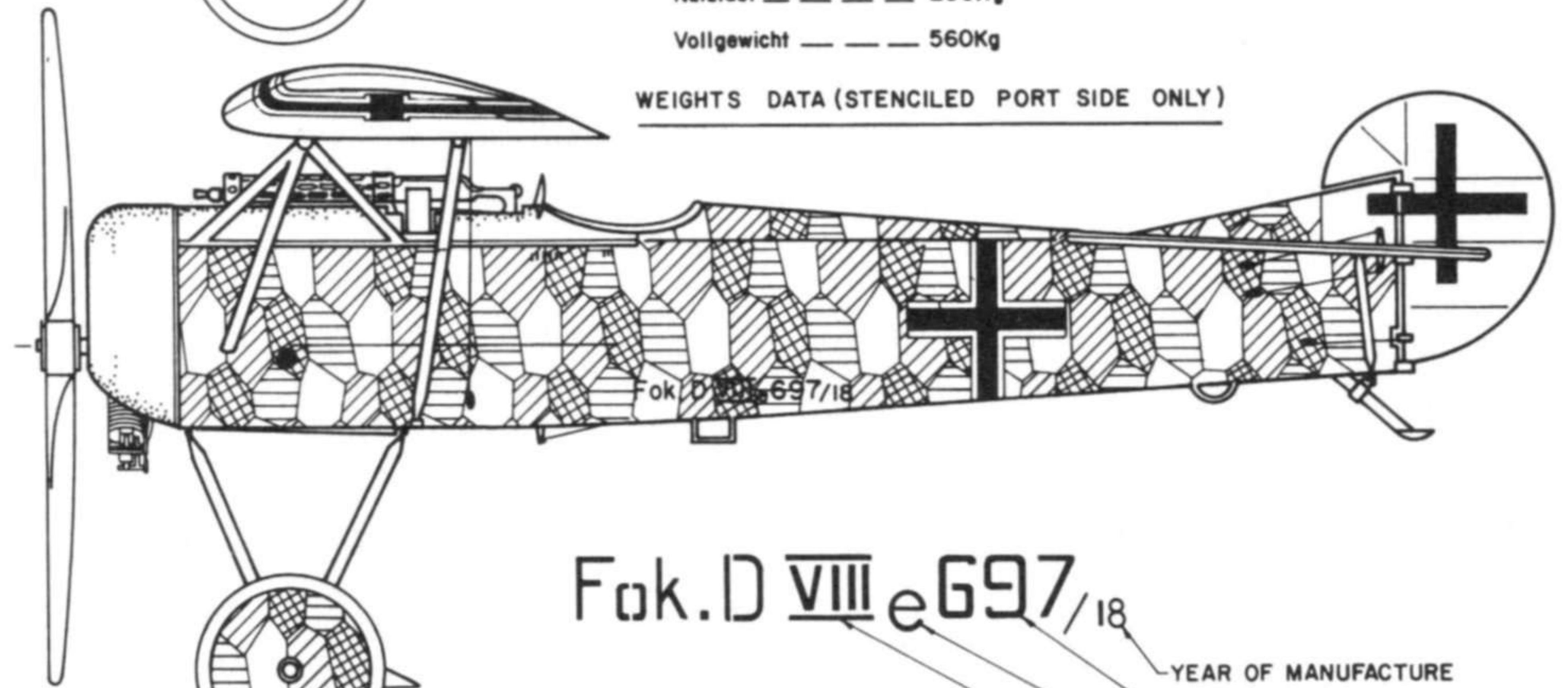


V26 PROTOTYPE

NOTE
THE V26 LACKED THE TAILPLANE BRACE
OF THE V28 AND SUBSEQUENT PRODUCTION
AIRCRAFT.

Leergewicht — — — 360Kg
Nutzlast — — — — 200Kg
Vollgewicht — — — — 560Kg

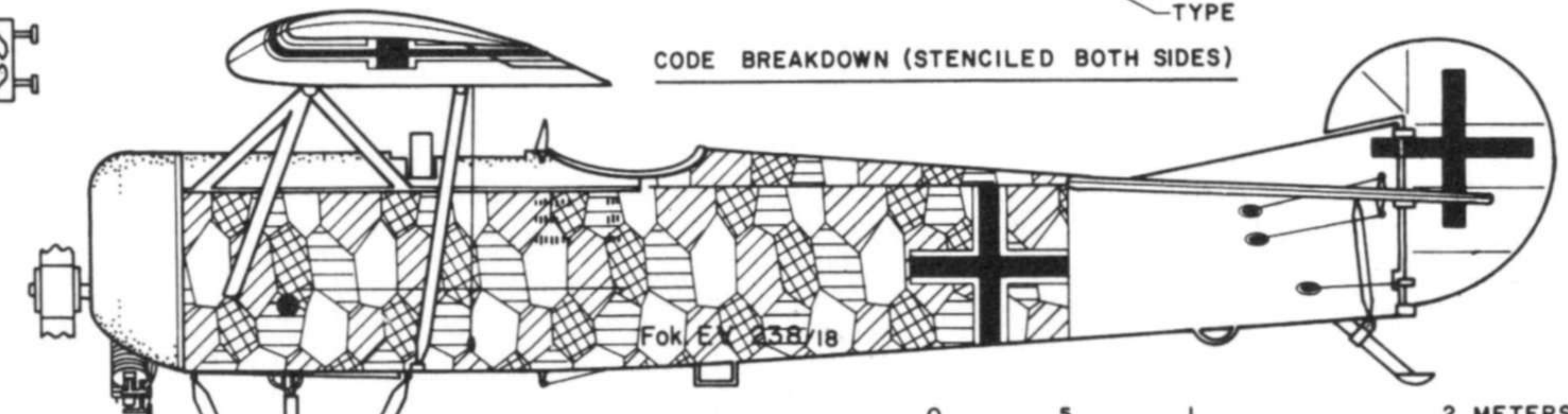
WEIGHTS DATA (STENCILED PORT SIDE ONLY)



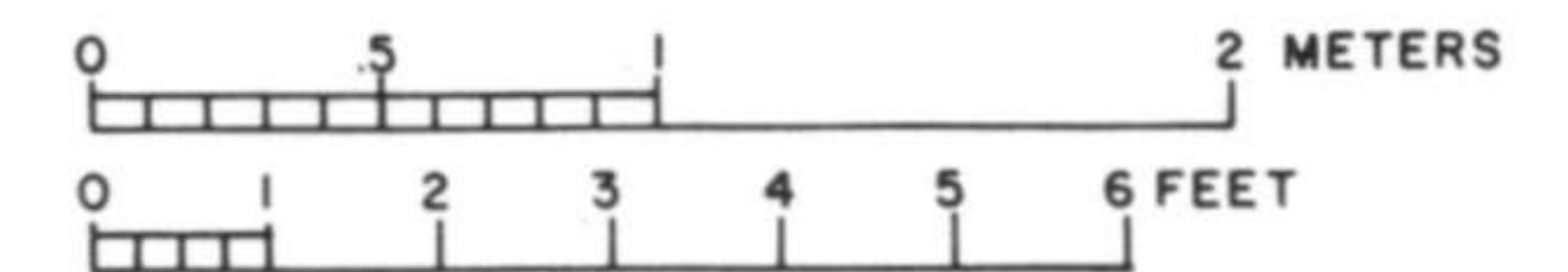
Fok. D VIII e 697/18

YEAR OF MANUFACTURE
BESTELNUMMERN
OBERURSEL VARIANT
TYPE

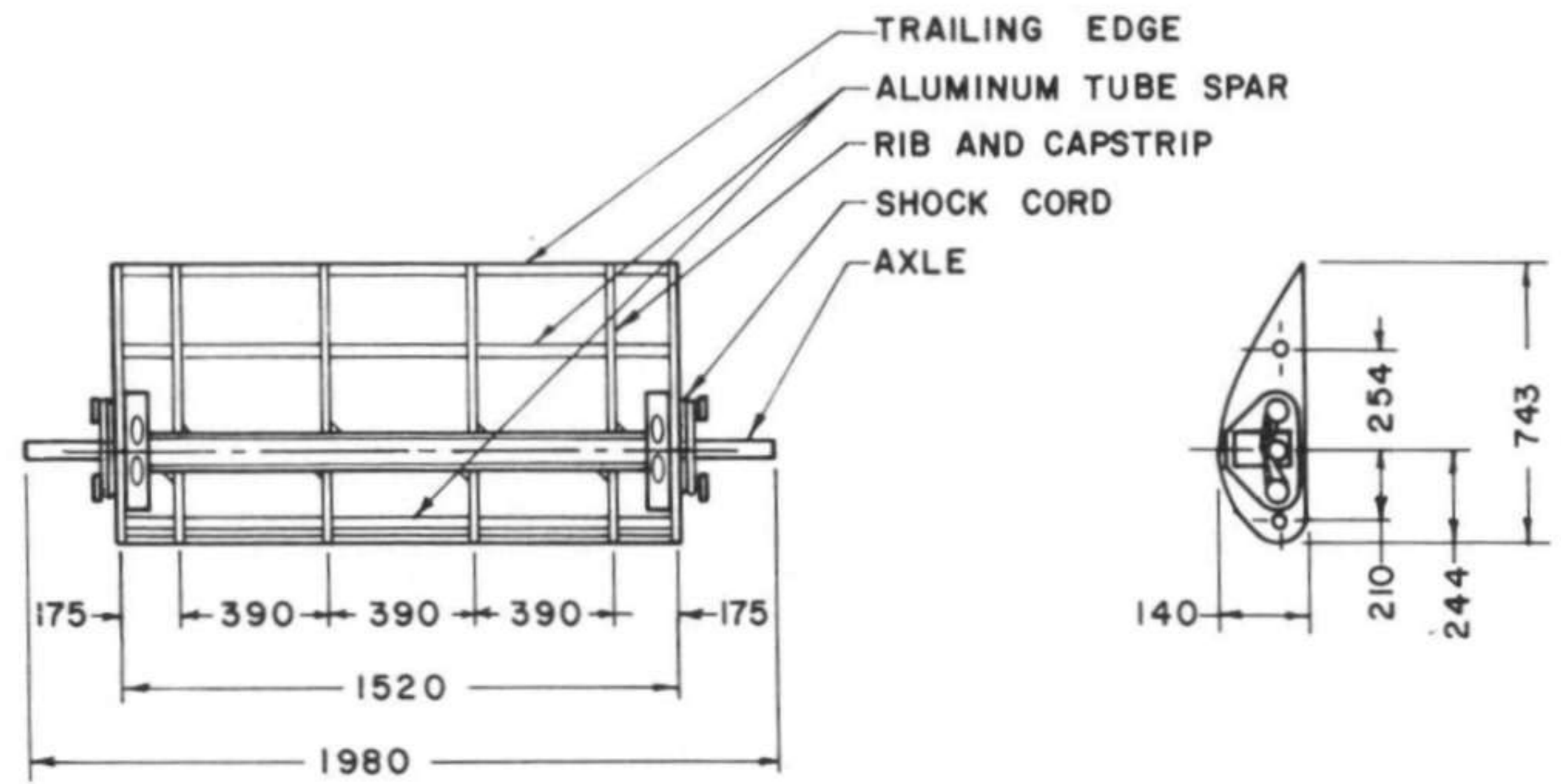
CODE BREAKDOWN (STENCILED BOTH SIDES)



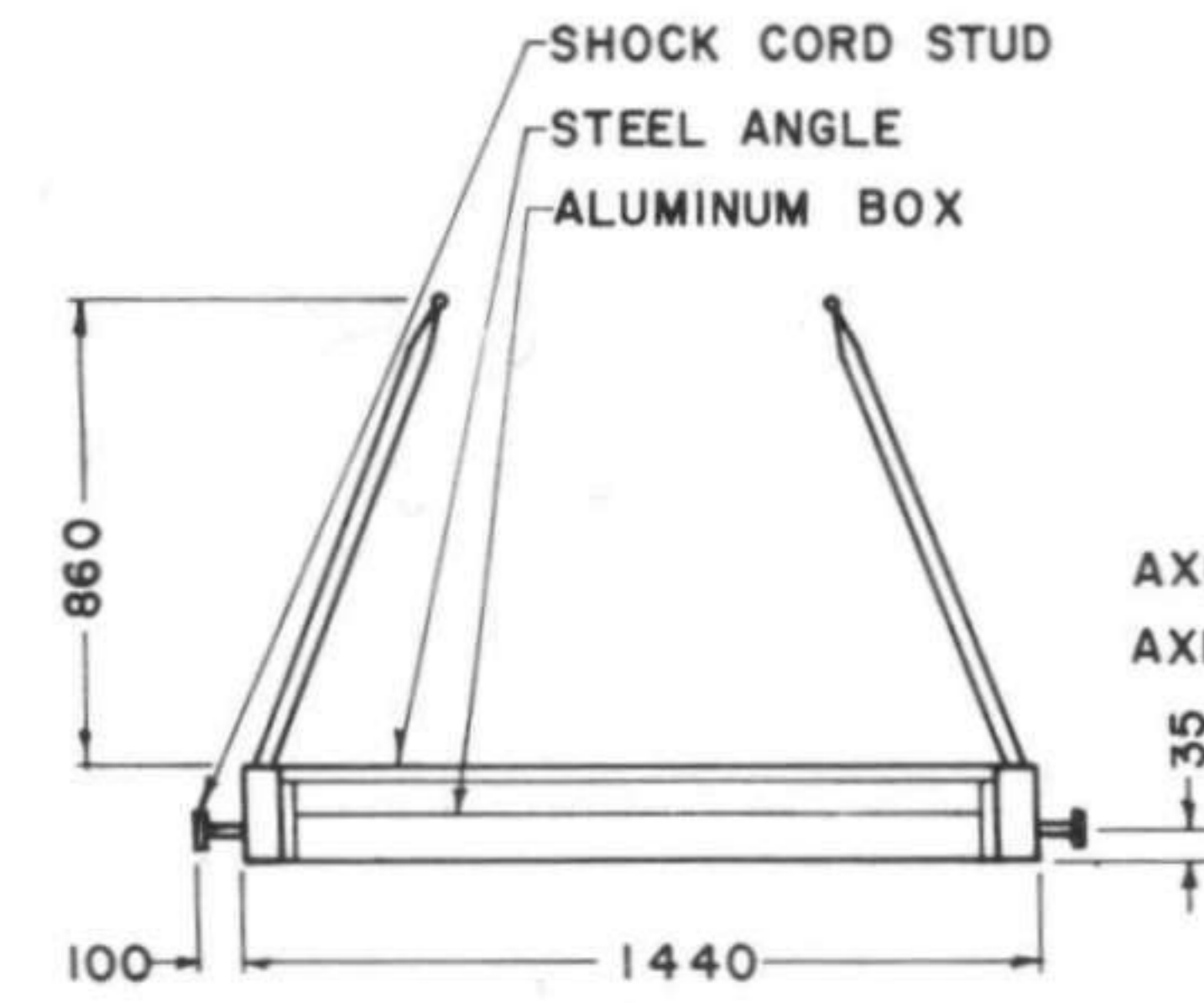
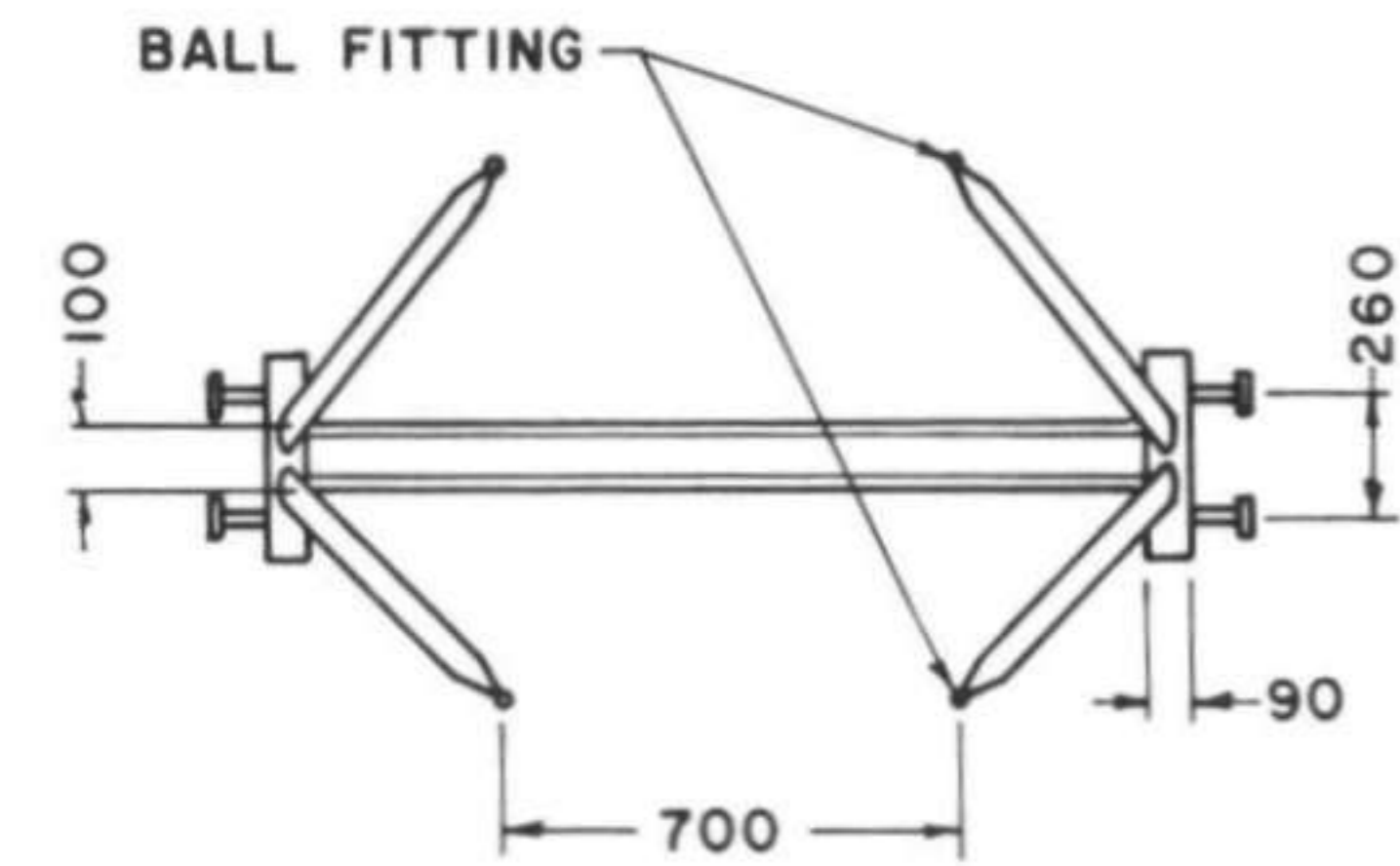
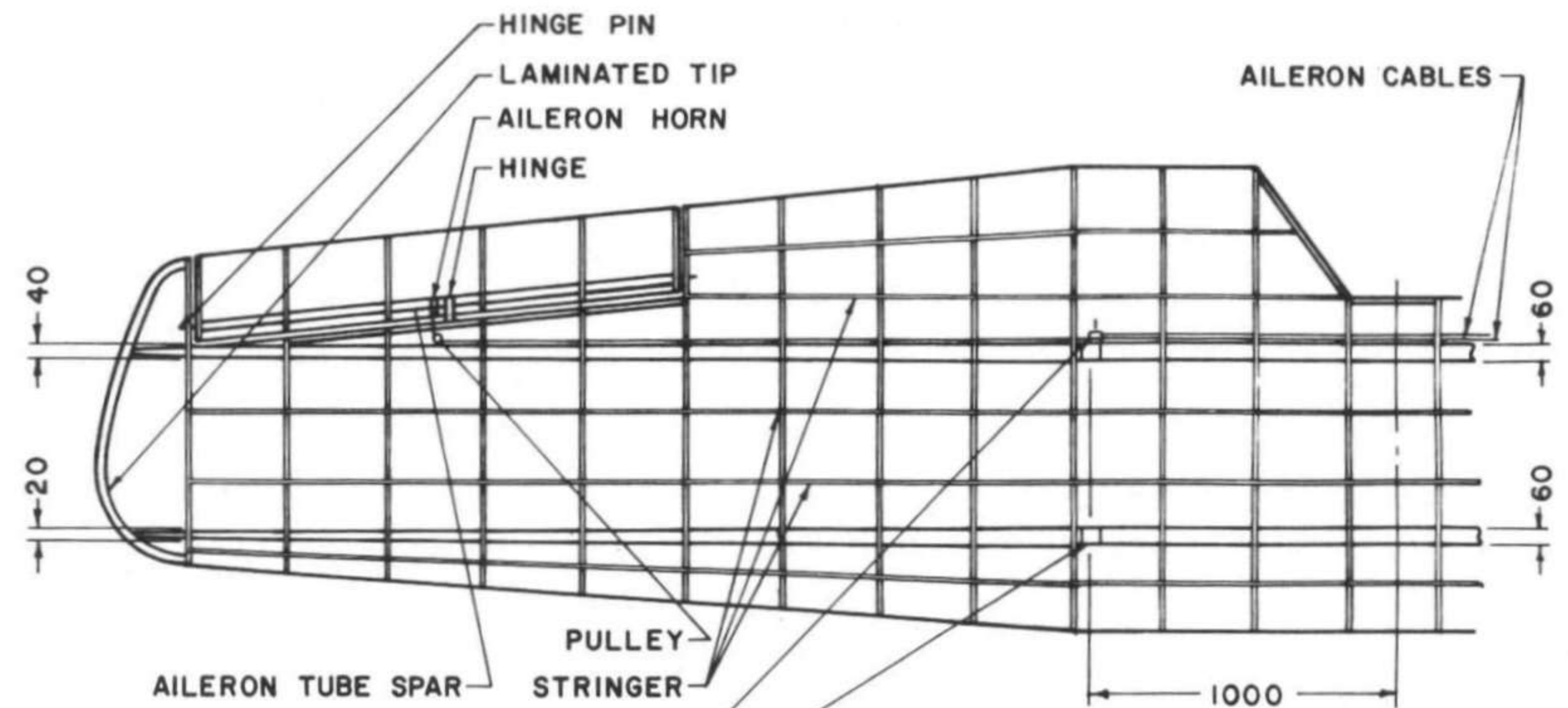
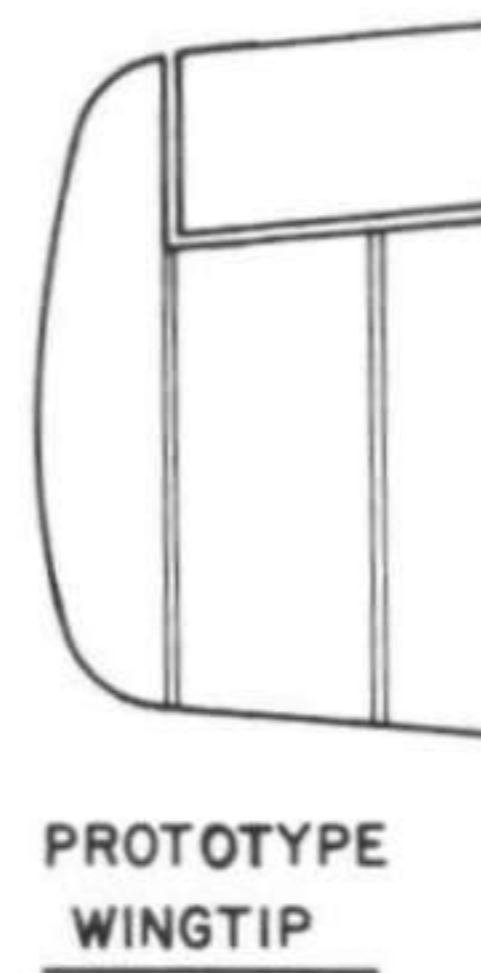
NOTE
EV 238/18 WAS INTENDED
FOR ERNST UDET AND WAS
FLOWN BY HIM, MINUS GUNS
AS SHOWN, AFTER THE WAR
IN AIR SHOWS ACROSS
EUROPE. TAIL ASSEMBLY
AND WHEEL COVERS WERE
PAINTED BRIGHT BLUE.



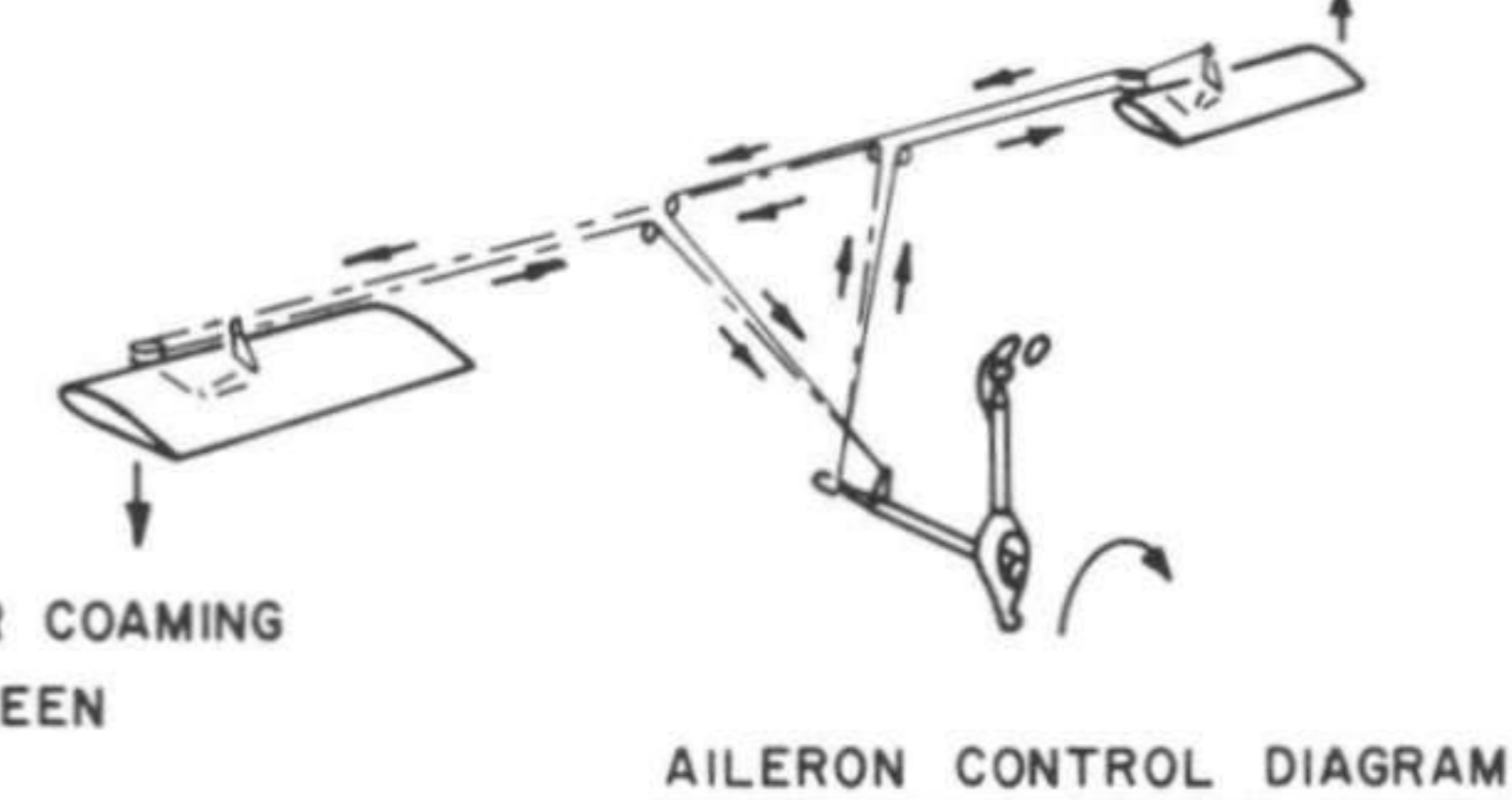
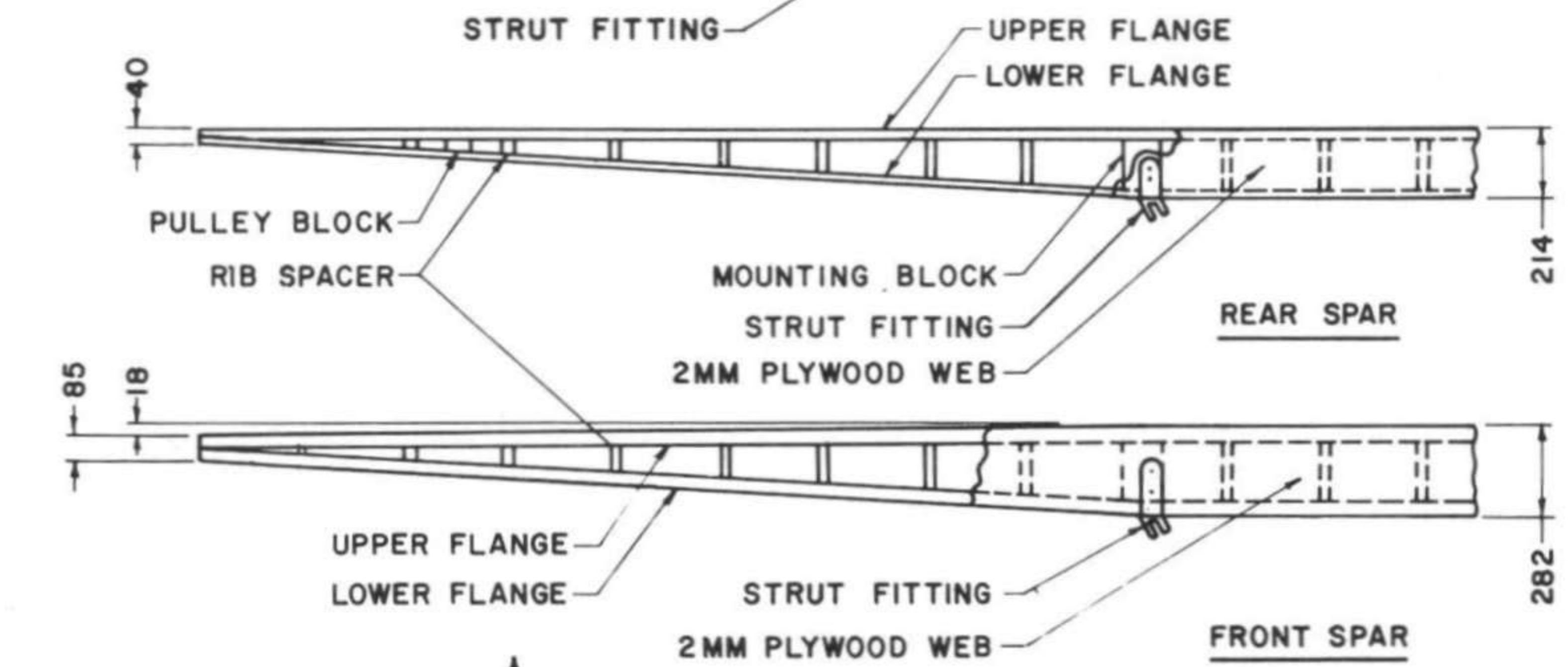
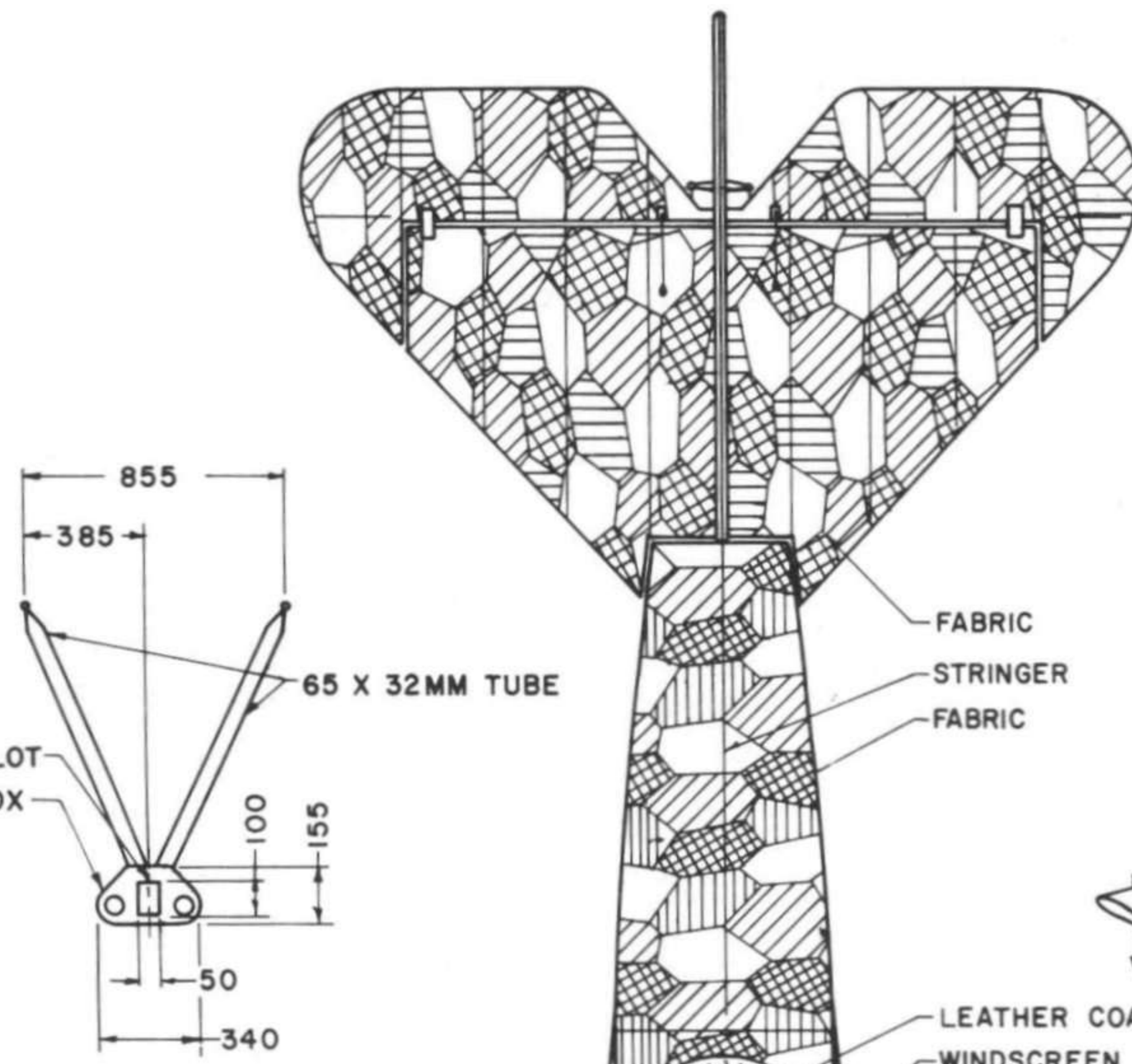
DRAWN BY: PHILLIP DREWS	1918 FOKKER EV/DVIII GENERAL ARRANGEMENTS
DATE: FEBRUARY 1973	



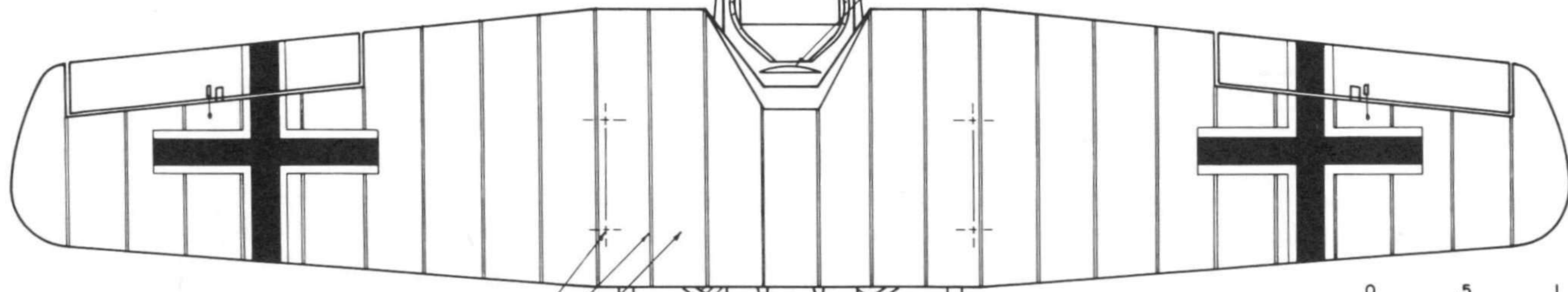
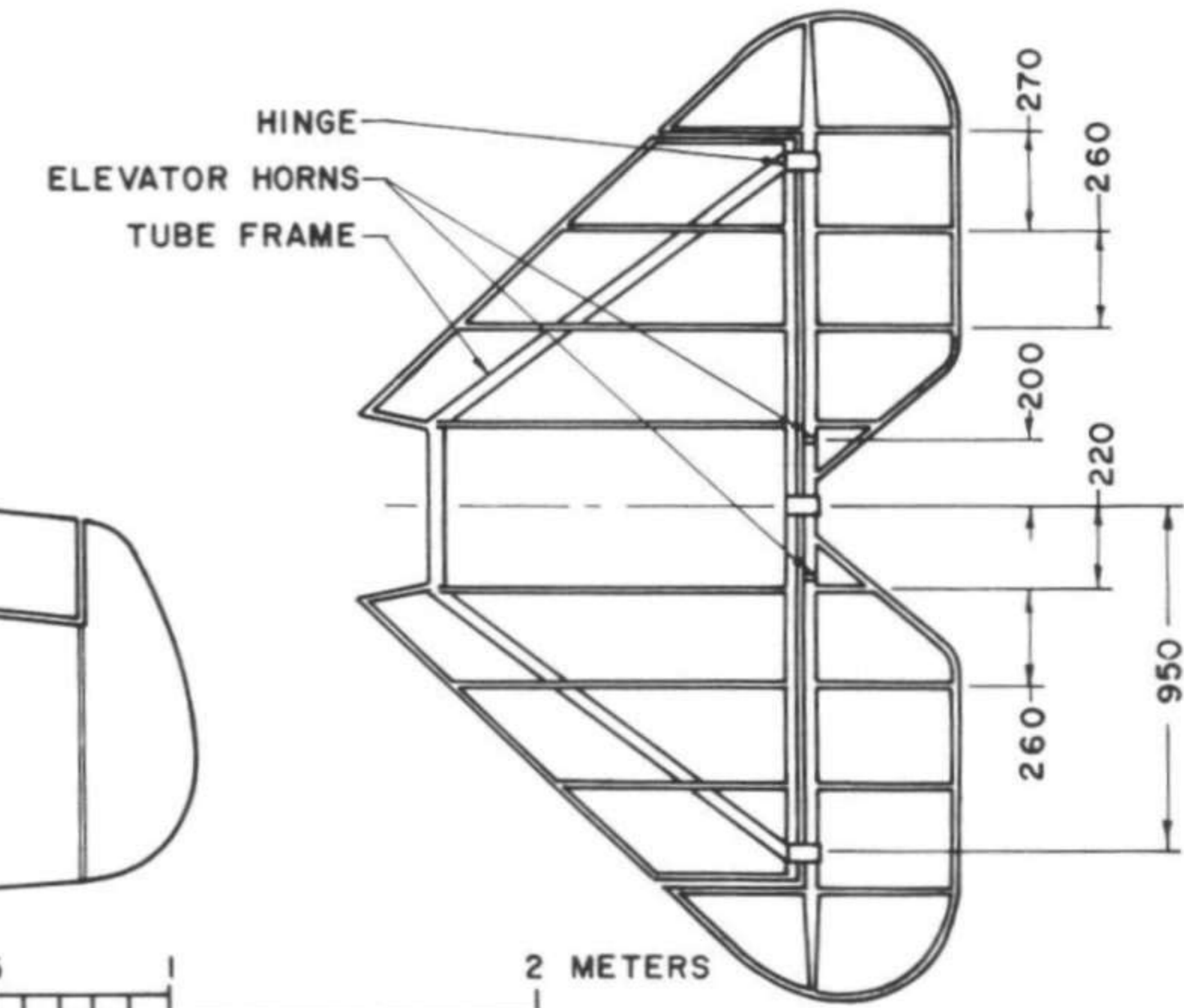
SUBWING LAYOUT



LANDING GEAR LAYOUT



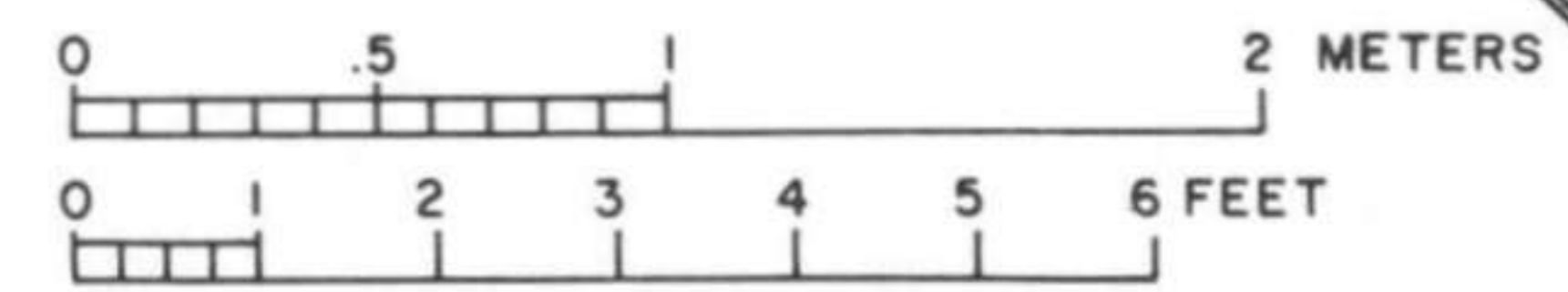
AILERON CONTROL DIAGRAM



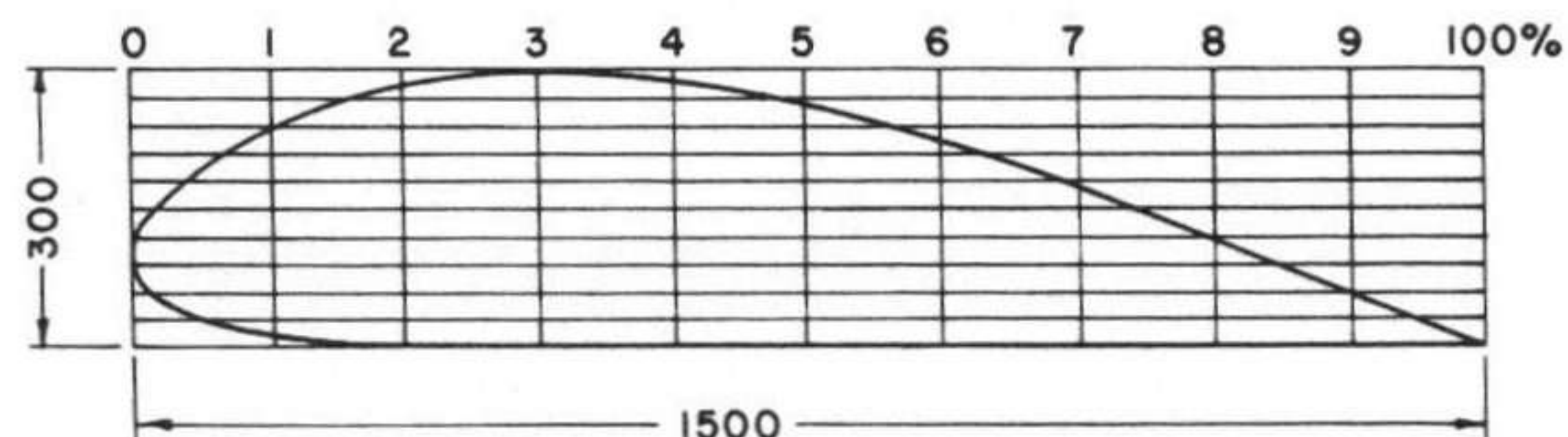
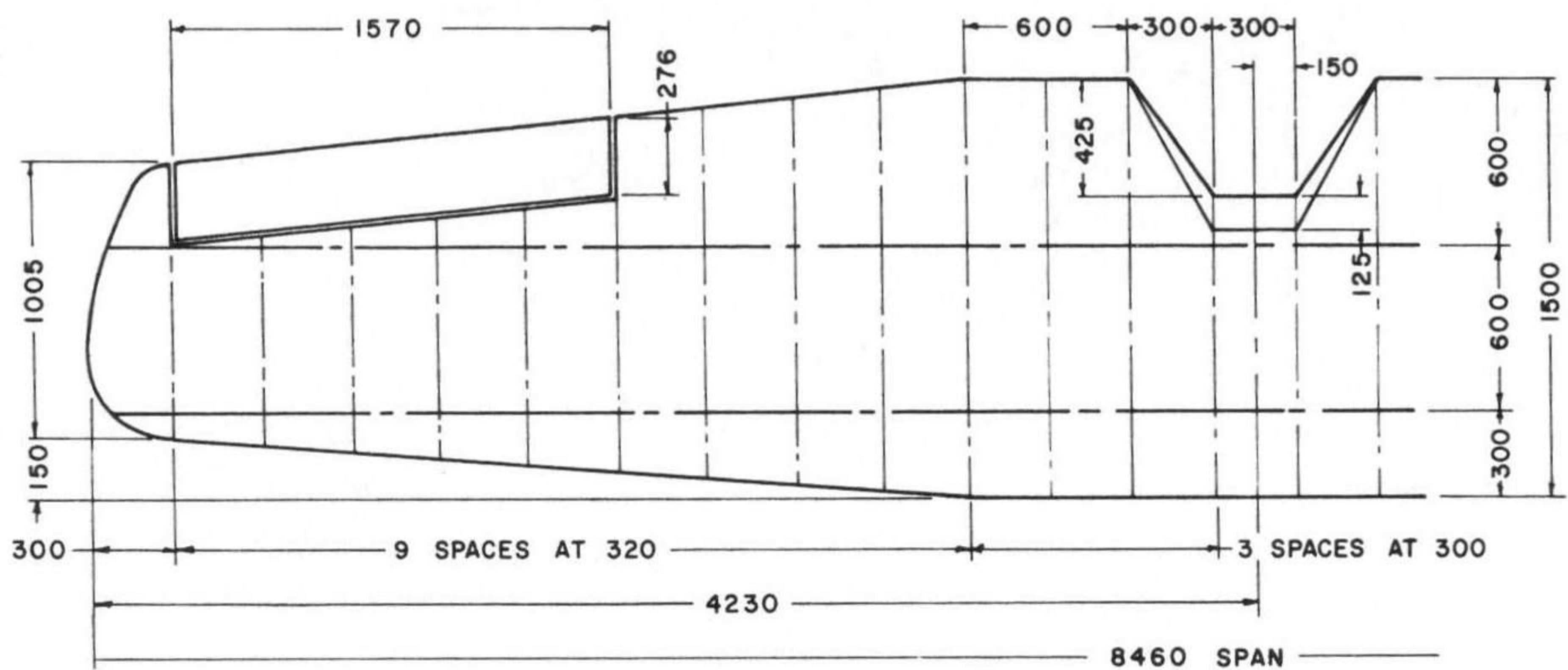
- STRUT POSITIONS
- CLOTH TAPE
- 1.5MM PLYWOOD COVERING
- PLYWOOD PANEL
- COWLING STRAP

NOTE
AILERONS WERE CUT FROM THE PRIMARY STRUCTURE PRIOR TO COVERING. A STEEL TUBE SERVED AS A SPAR AND PINS AT BOTH ENDS HINGED THEM TO THE MAINPLANE.

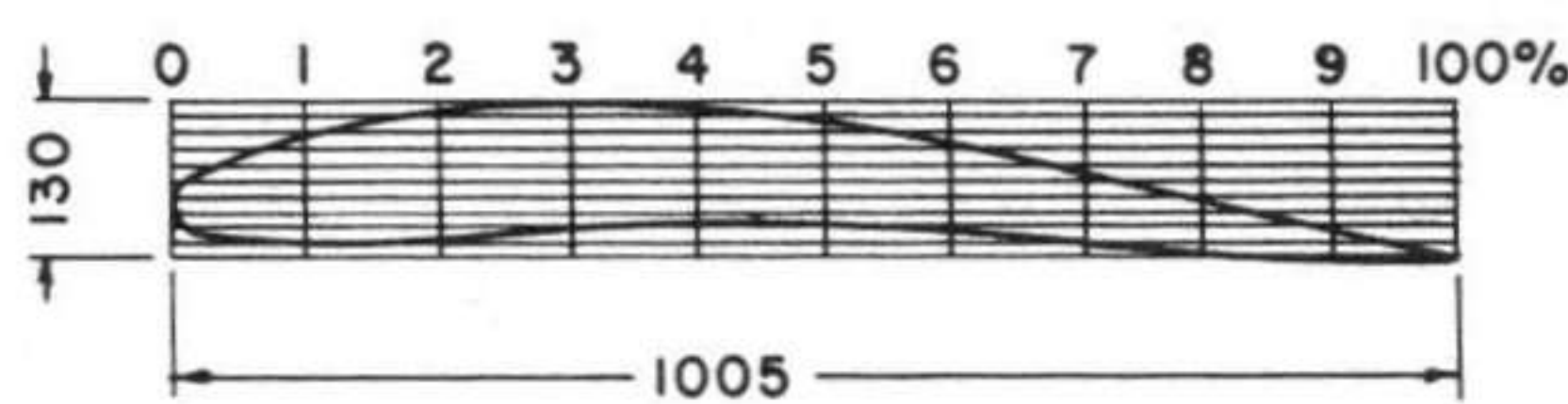
NOTE
INITIAL PRODUCTION AIRCRAFT WERE DESIGNATED EV. AFTER A SERIES OF WING FAILURES DUE TO POOR WORKMANSHIP, THE SPARS WERE STRENGTHENED. SUBSEQUENT AIRCRAFT AND THOSE REFITTED WITH THE MODIFIED WINGS WERE DESIGNATED D.VIII.



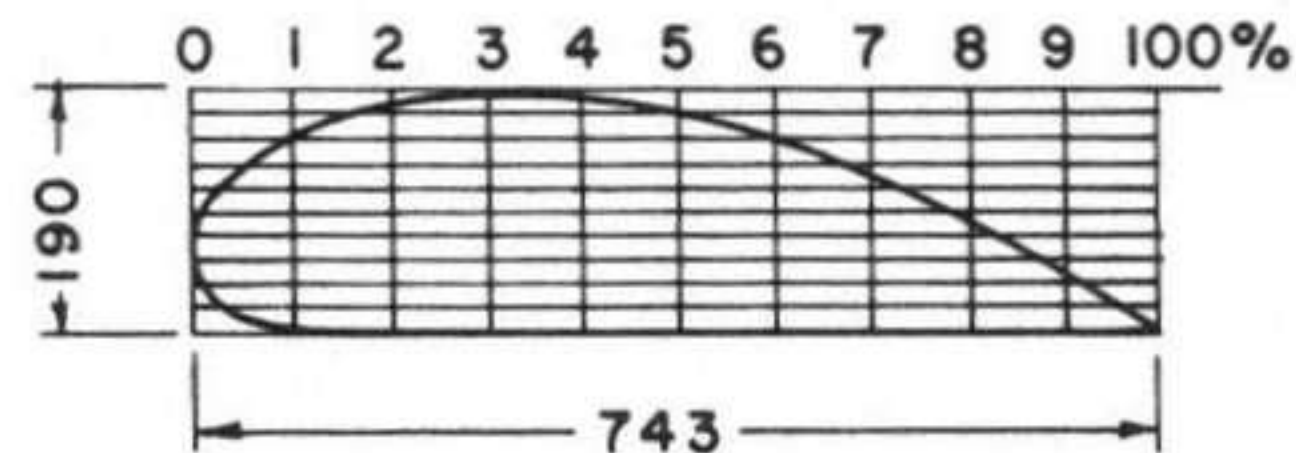
DRAWN BY PHILLIP DREWS	1918 FOKKER EV/D.VIII
DATE: FEBRUARY 1973	WING AND LANDING GEAR DETAILS



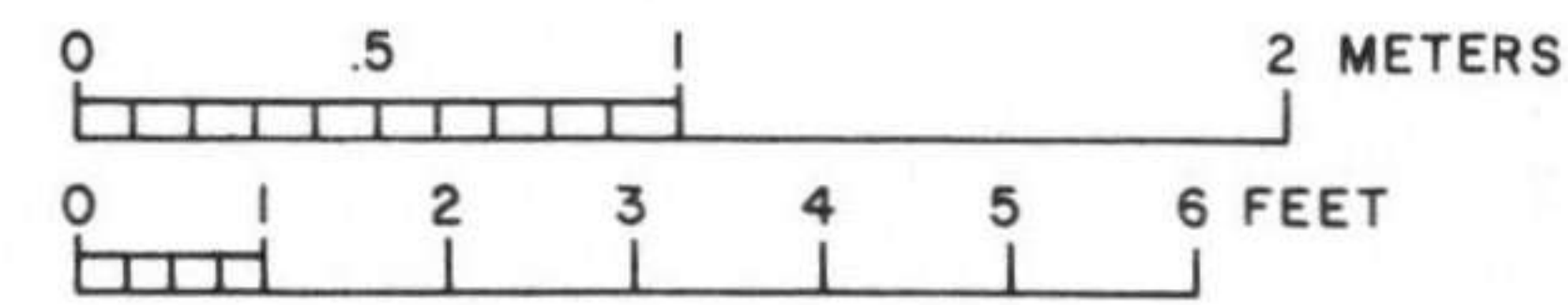
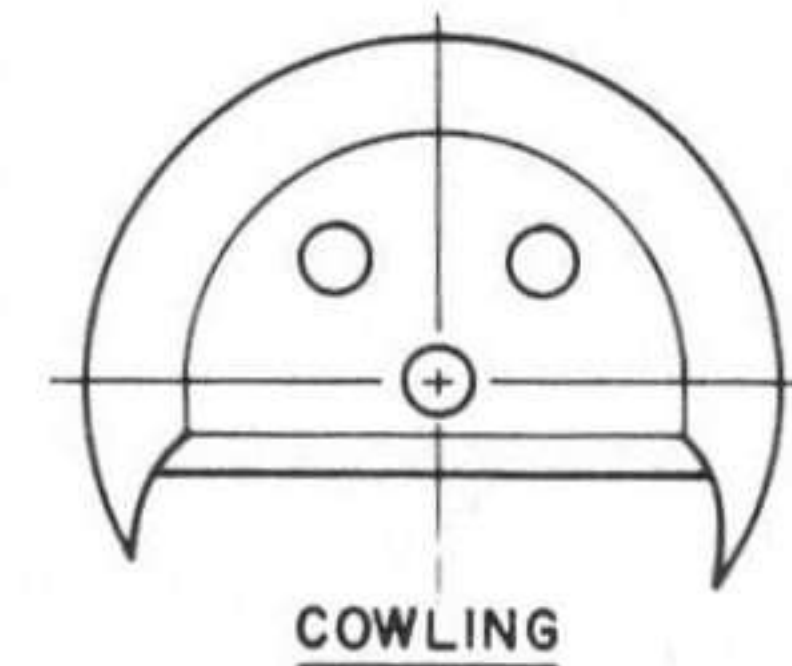
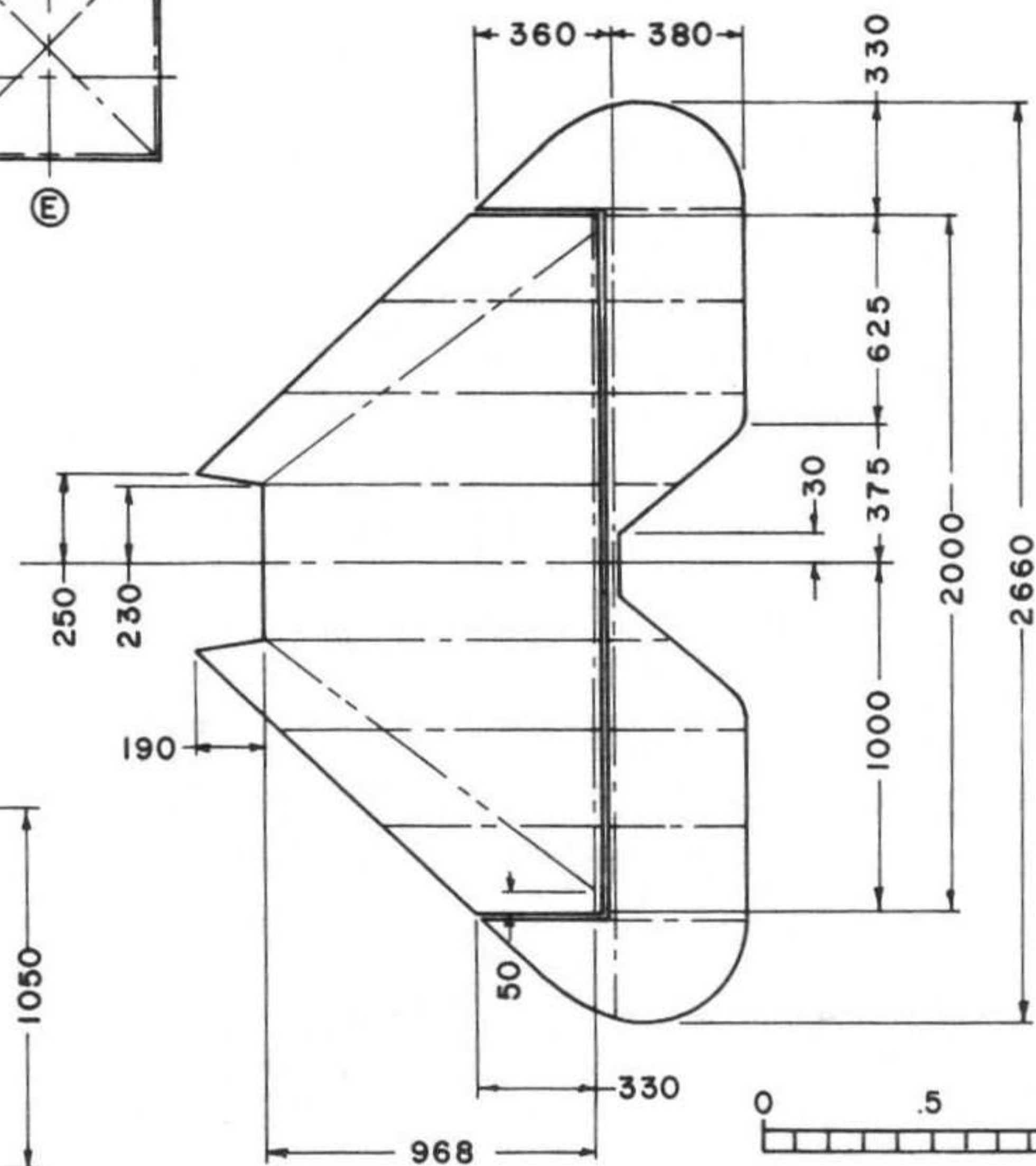
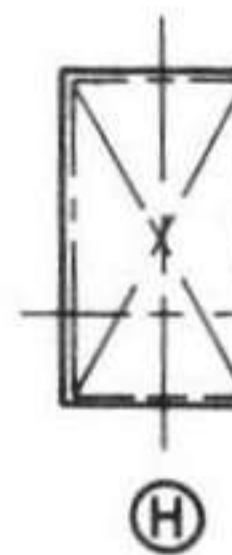
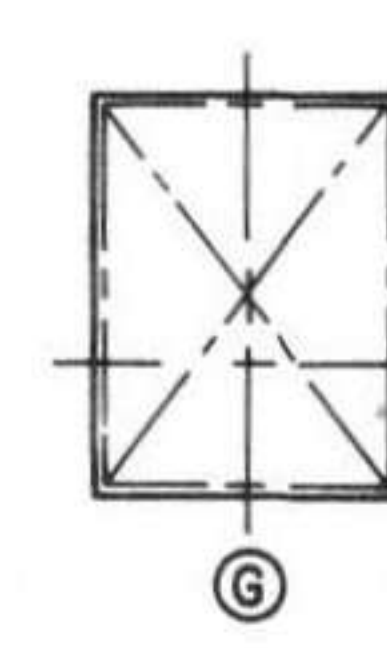
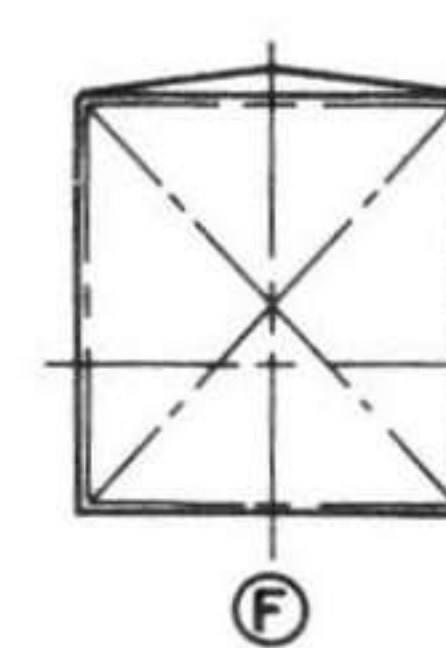
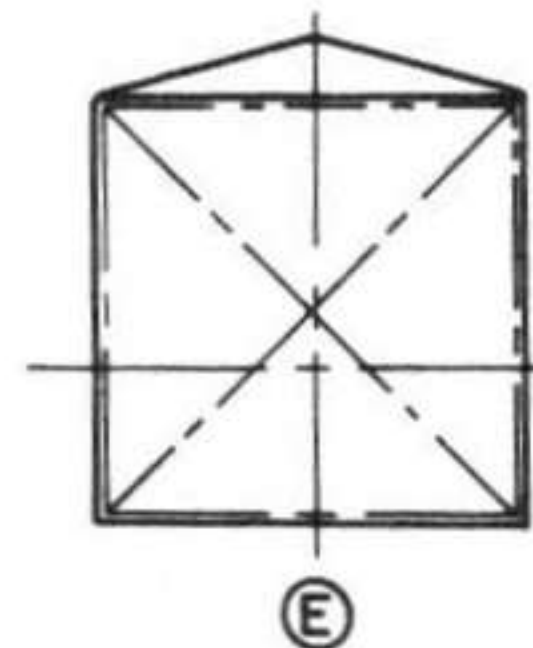
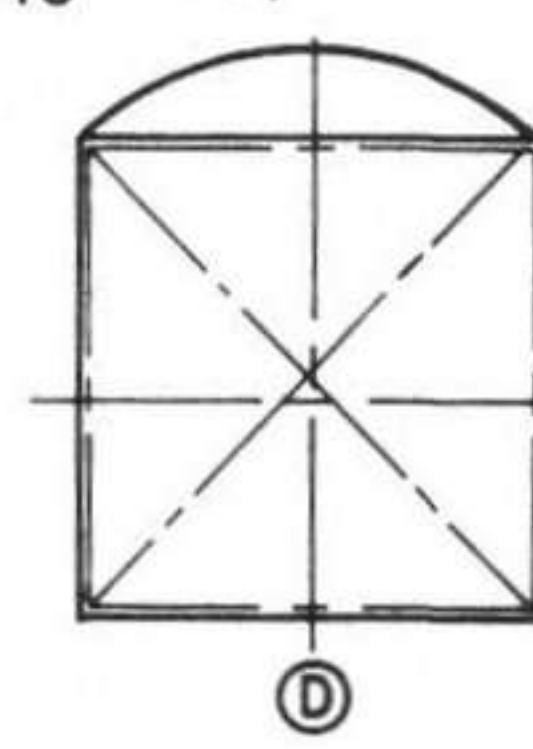
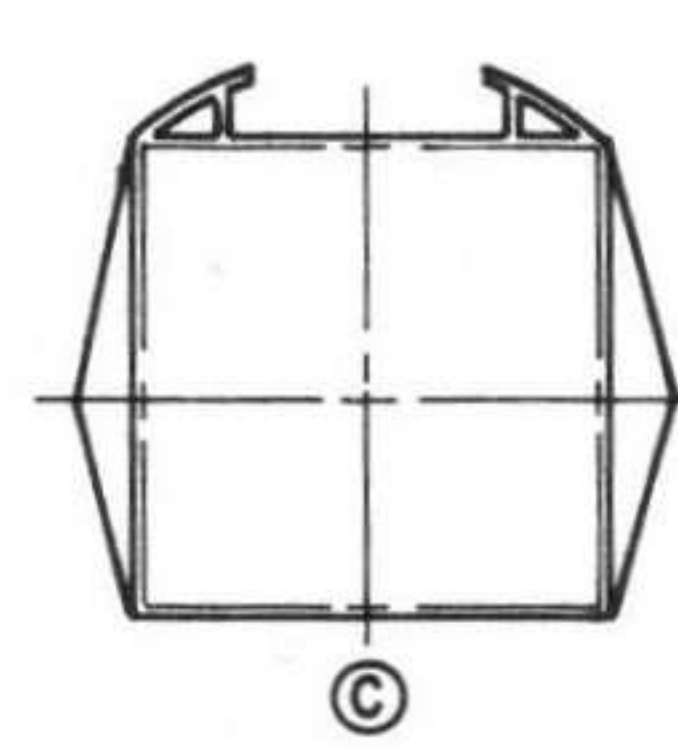
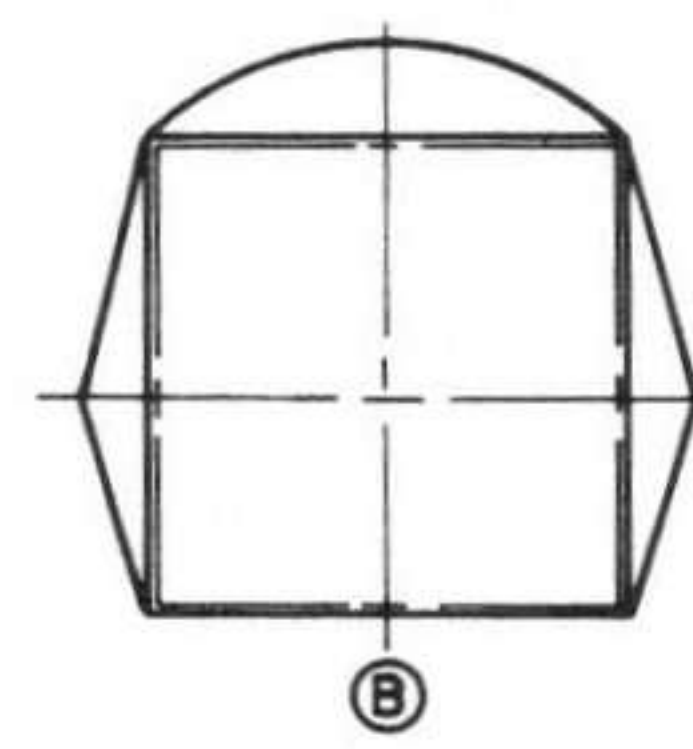
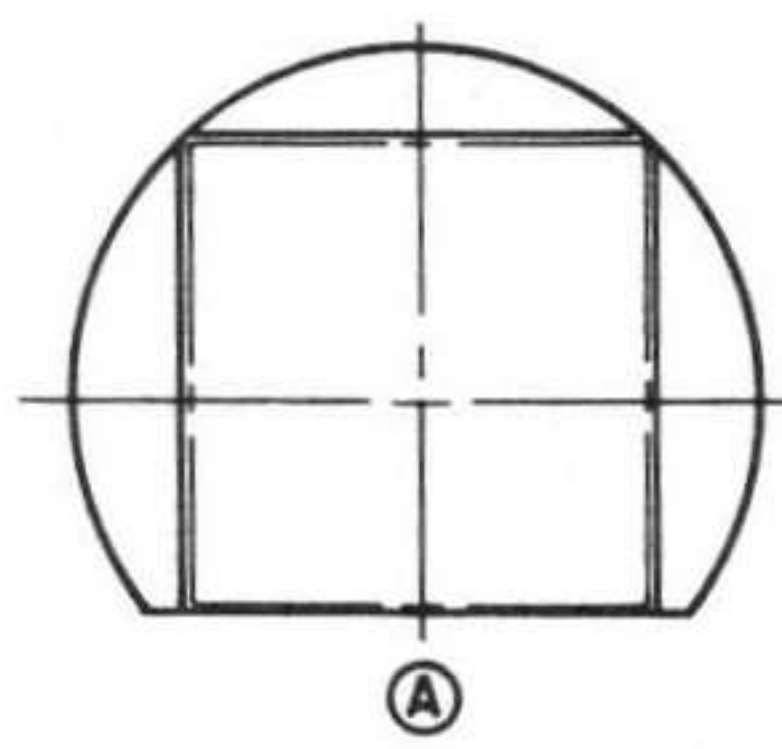
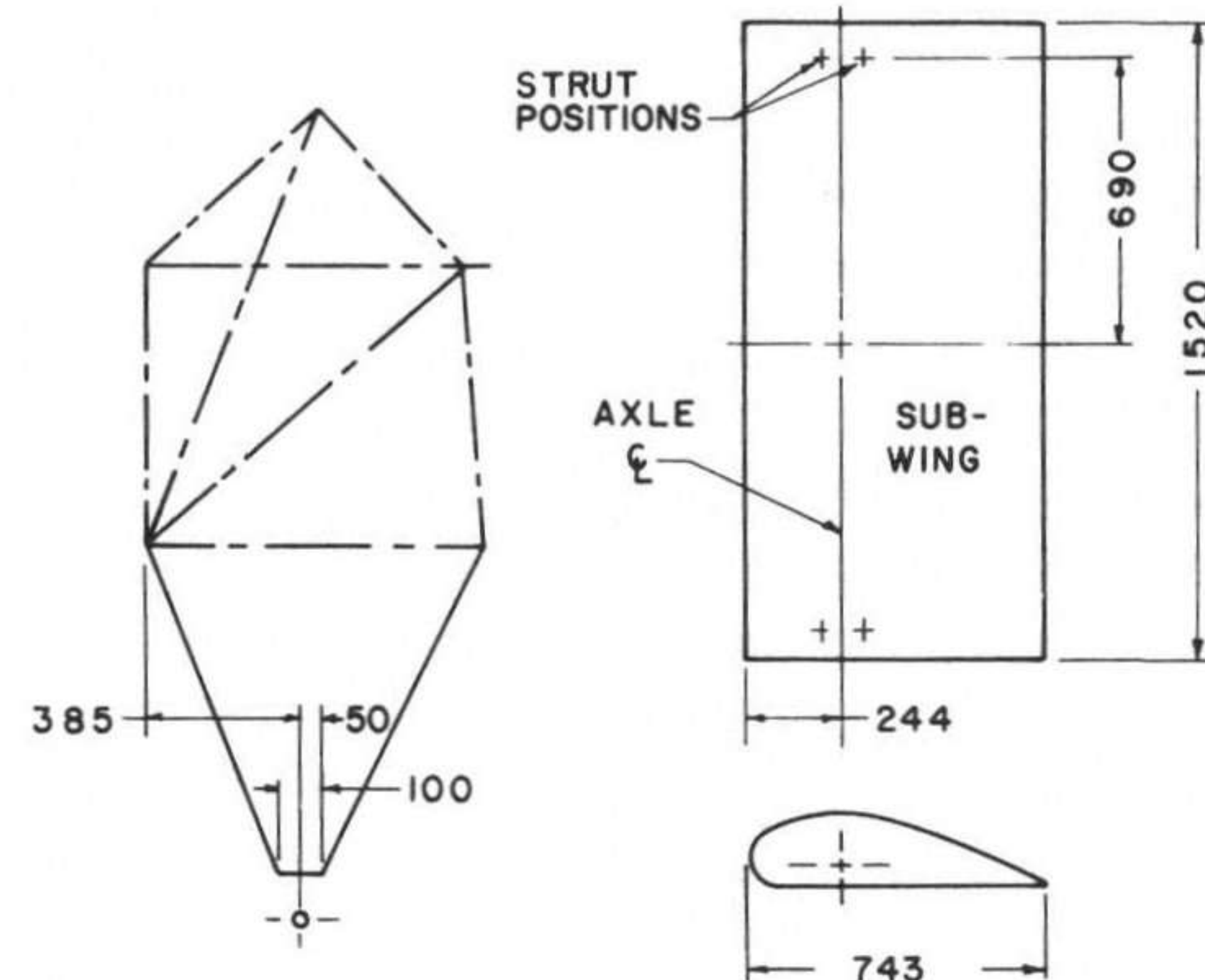
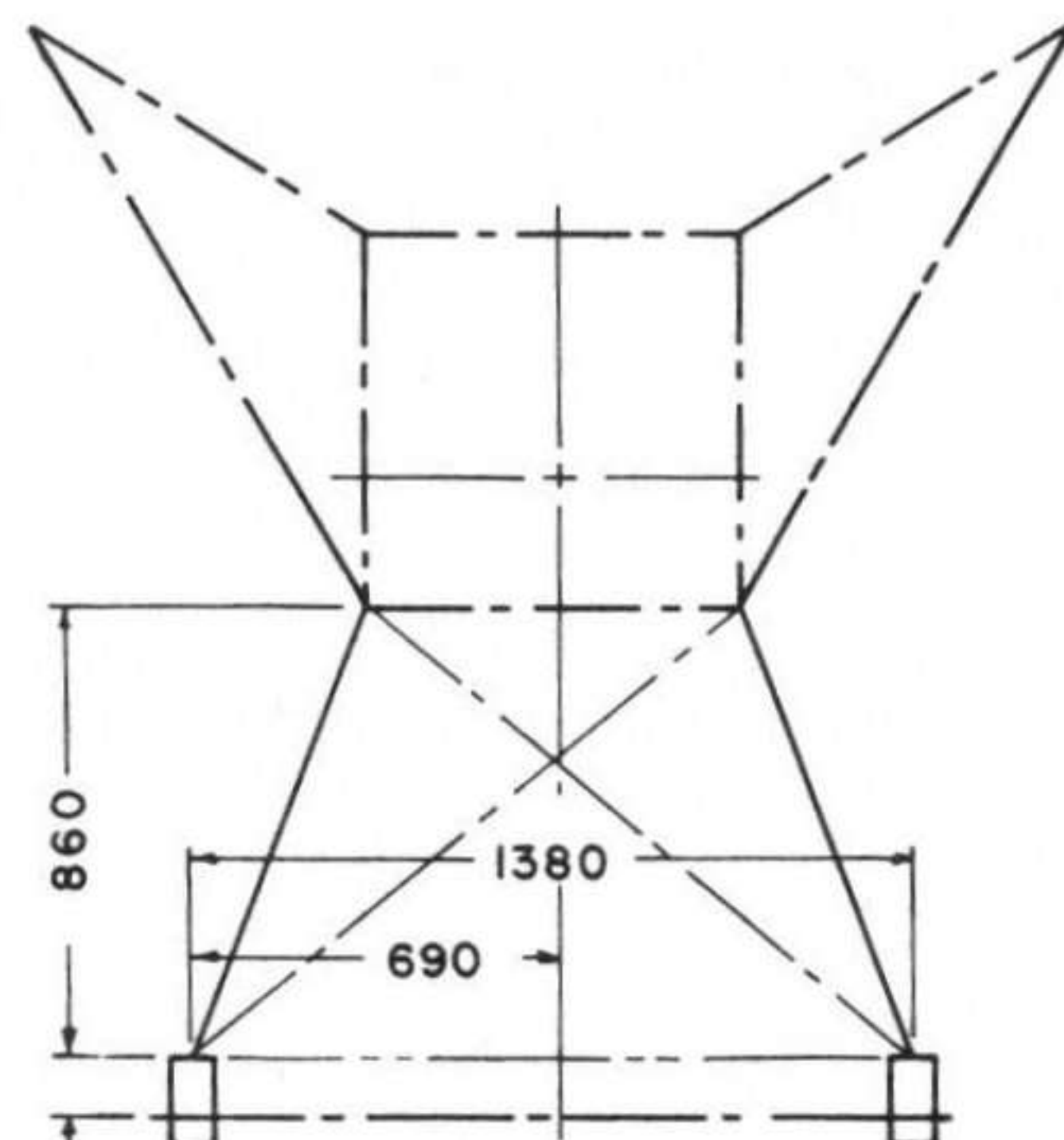
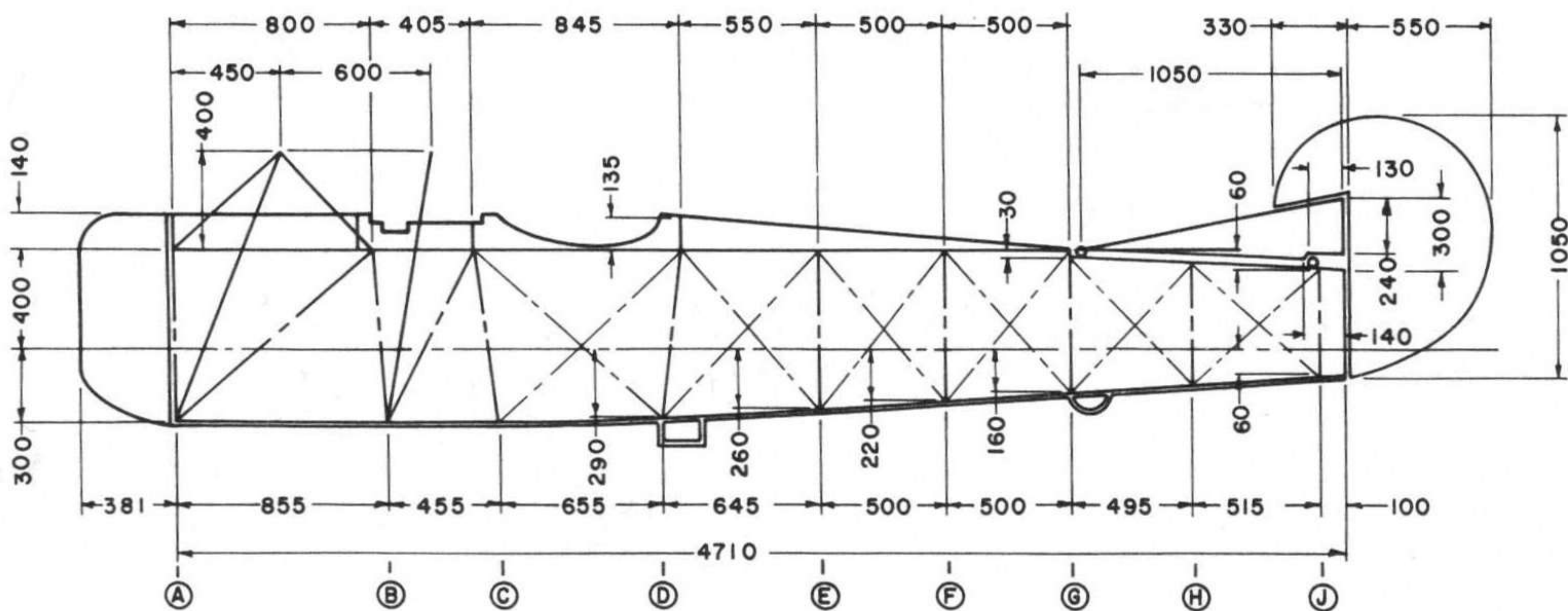
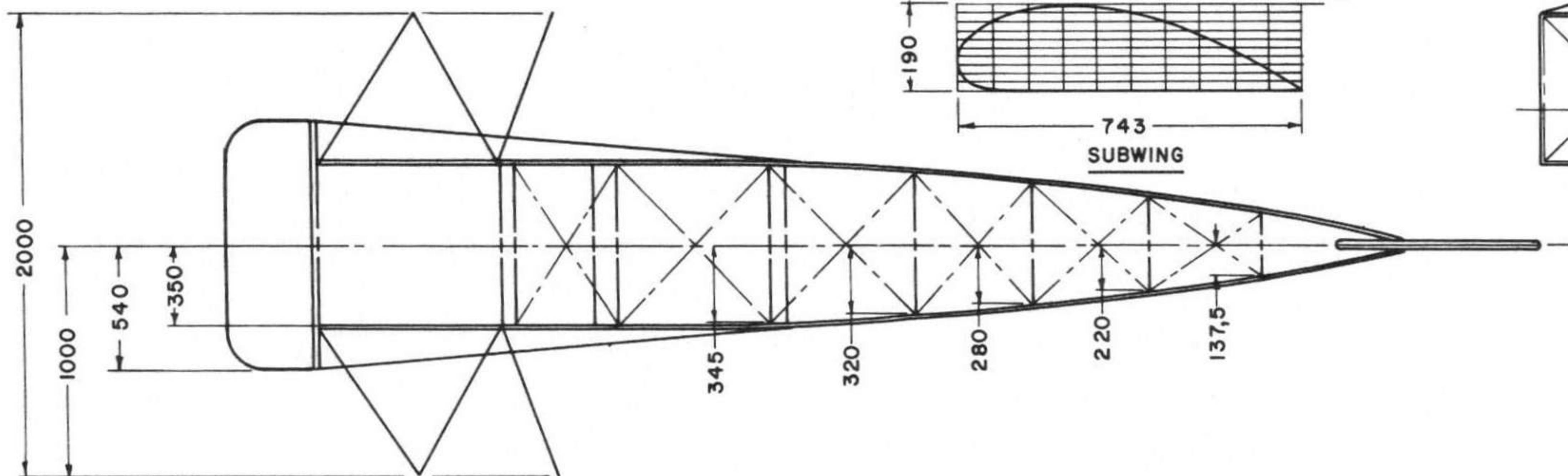
WING RIB AT STRUT ATTACHMENT POINTS



WING RIB AT TIP



SUBWING



DRAWN BY: PHILLIP DREWS	1918 FOKKER EV/DVIII
DATE: FEBRUARY 1973	GENERAL LAYOUT

Hansa-Brandenburg

drawings by WILLIS NYE

C.I

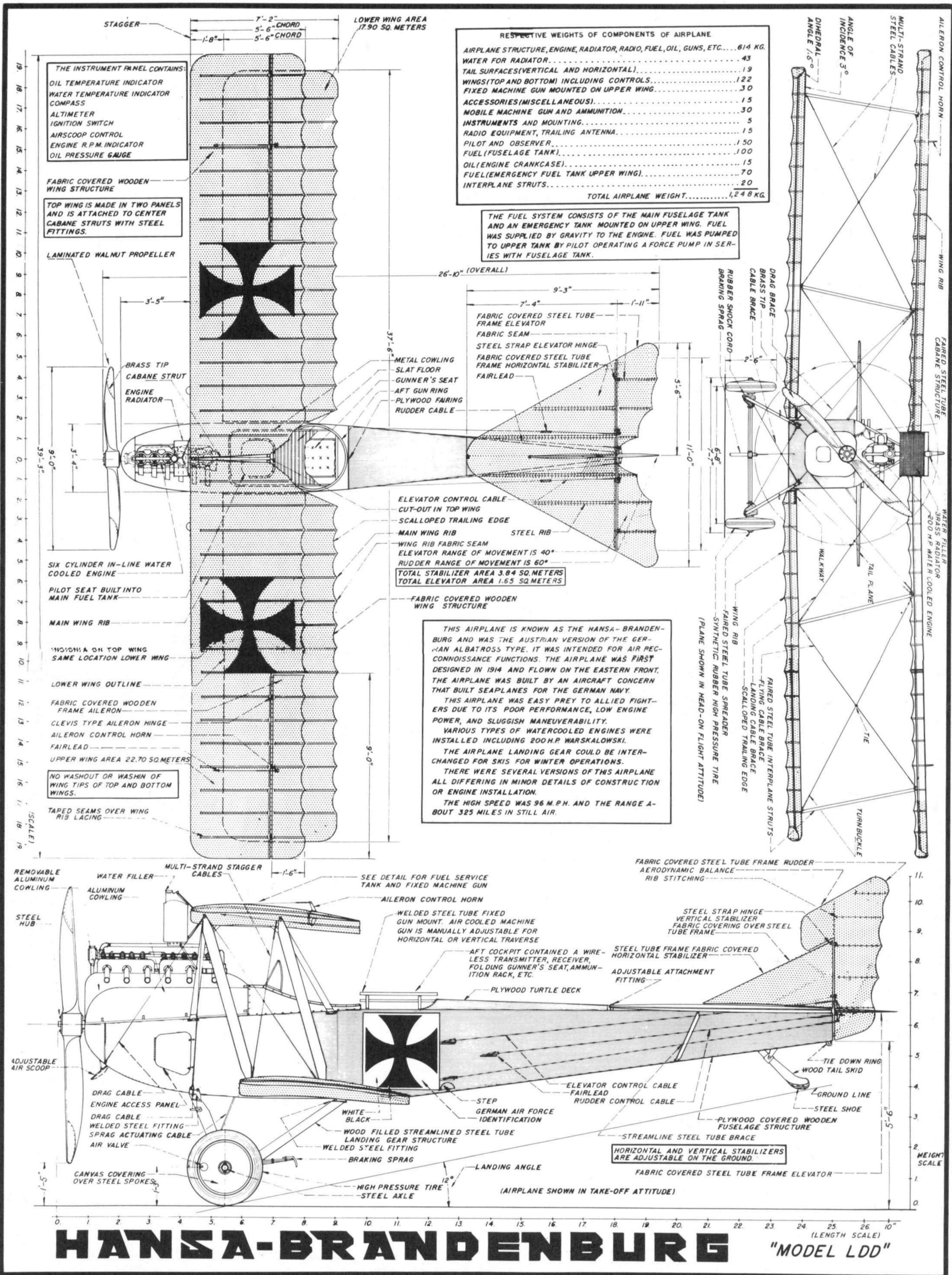


Having a top speed of a little over 100 mph, the C.I was still able to carry a heavy load but was vulnerable to Allied fighters. Photo courtesy of Leonard Opdycke, World War I Aeroplanes.

ERNST HEINKEL designed this big two-seater for the German Brandenburg firm, and it was built under license in Austria. Powered by a variety of engines of 160-230 hp, the C.I carried a heavy load with good performance, cruising at over 100 mph.

Willis Nye's drawing is mistitled Brandenburg LDD: this was a smaller Austrian two-seater, sometimes referred to as "The Little Brandenburg," to distinguish it from the C.I, "The Big Brandenburg."

There are none left. □



HANSA-BRANDENBURG

"MODEL LDD"

Hansa-Brandenburg

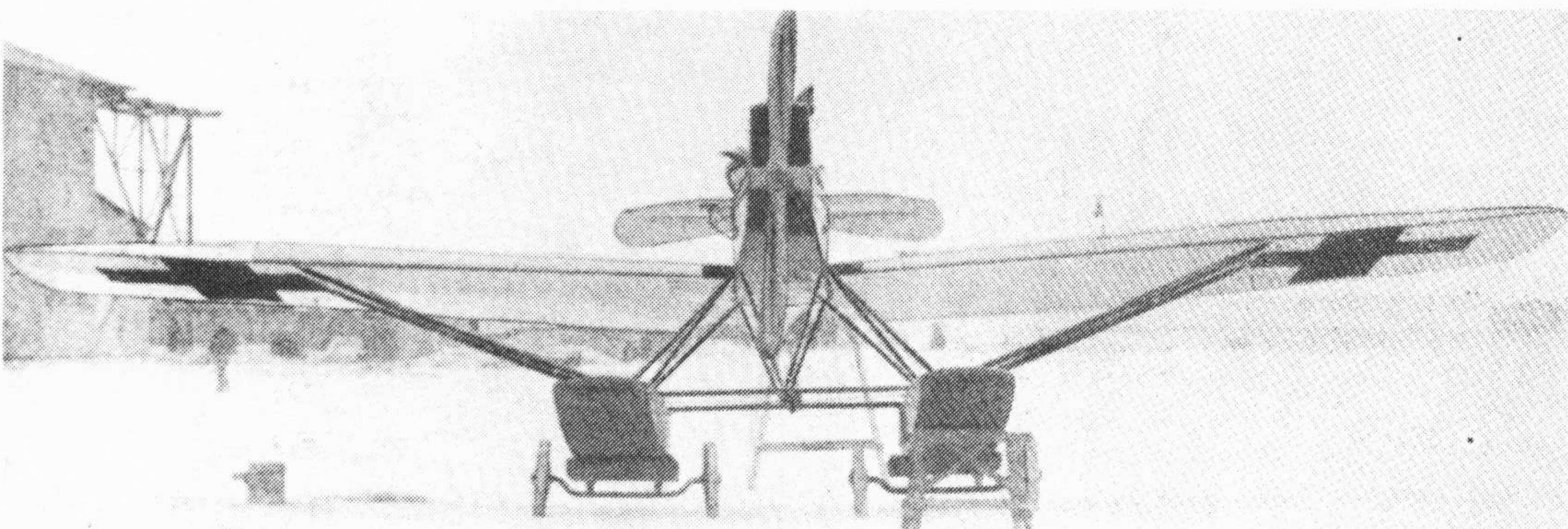
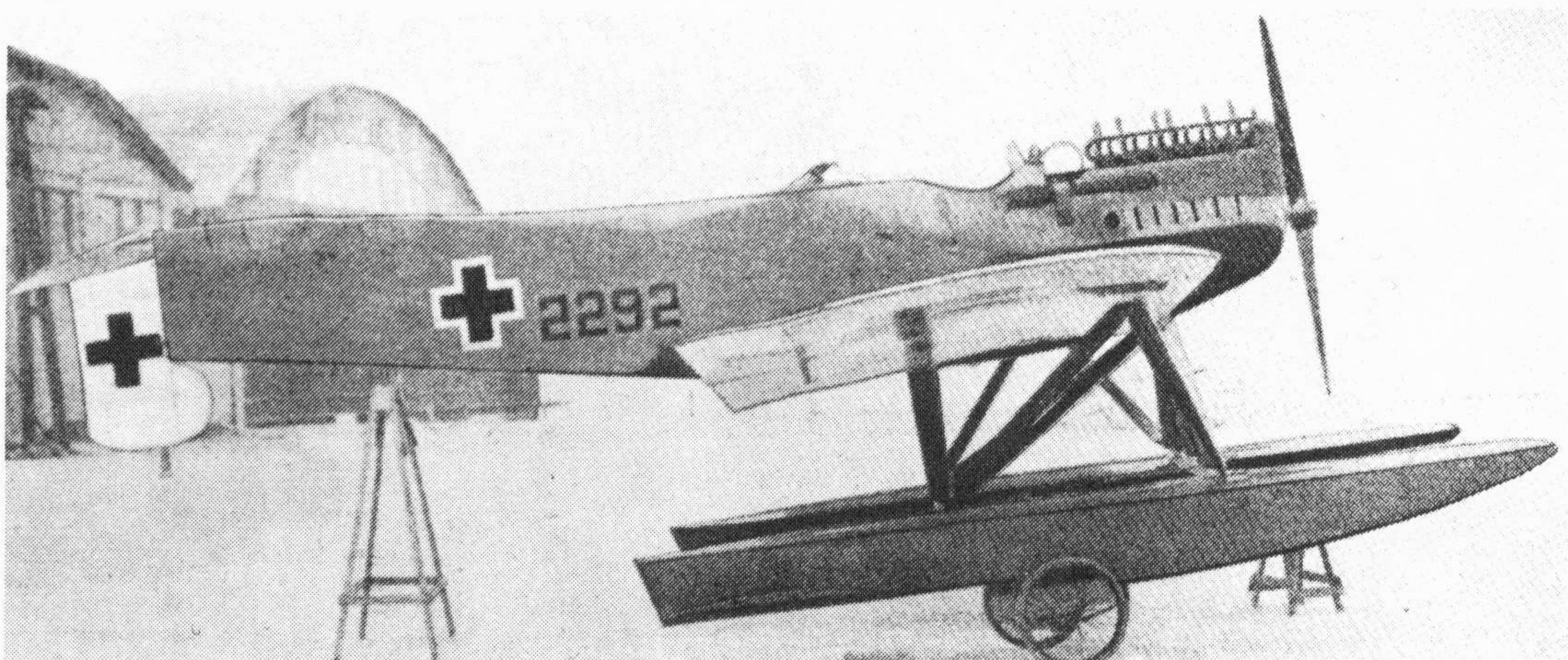
drawings by TAGE LARSEN

W.29

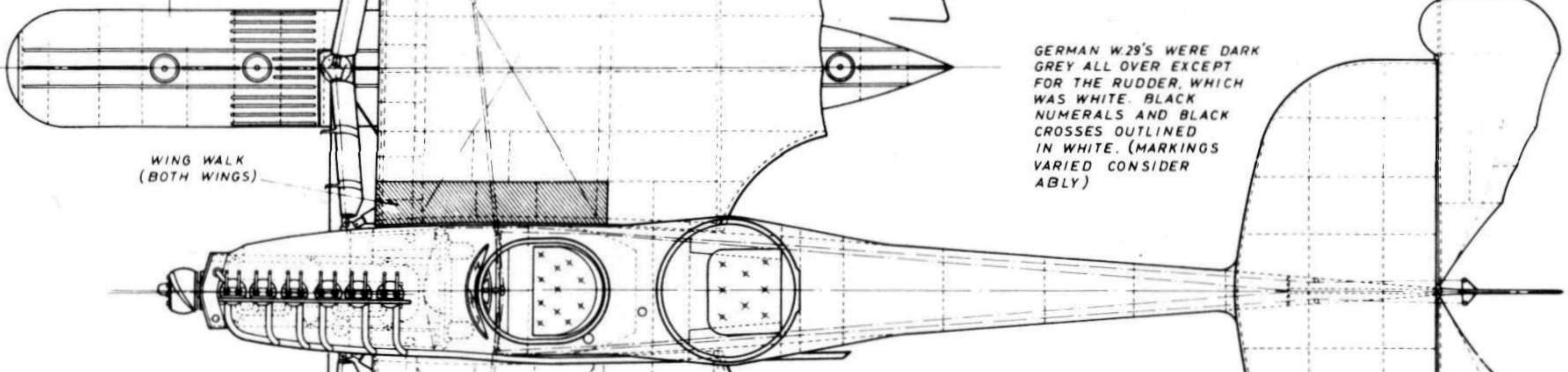
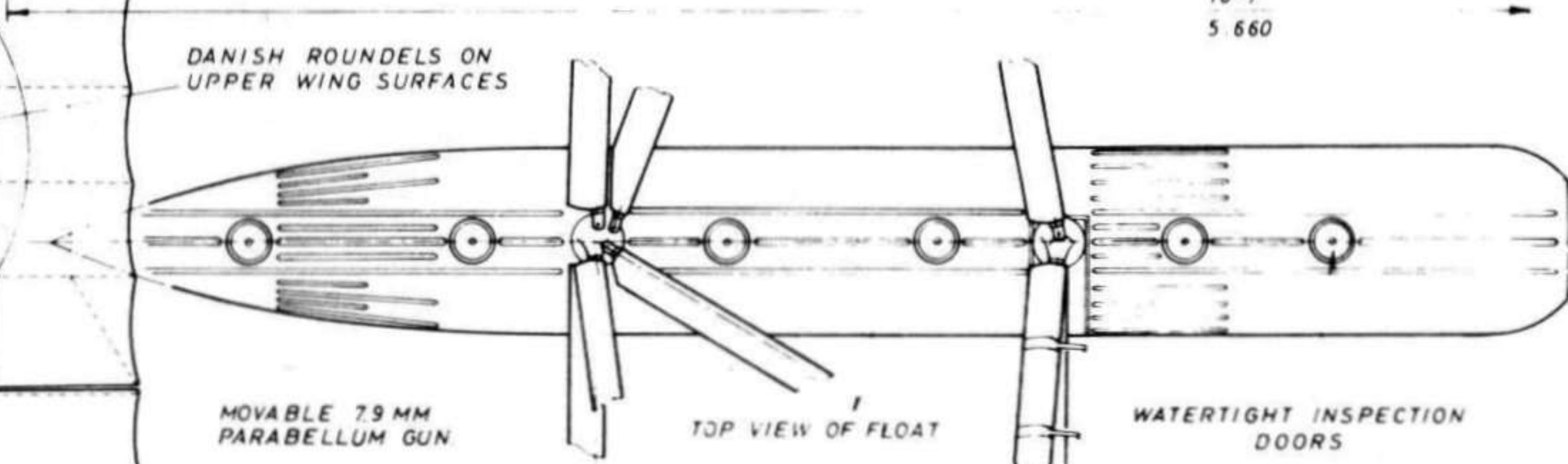
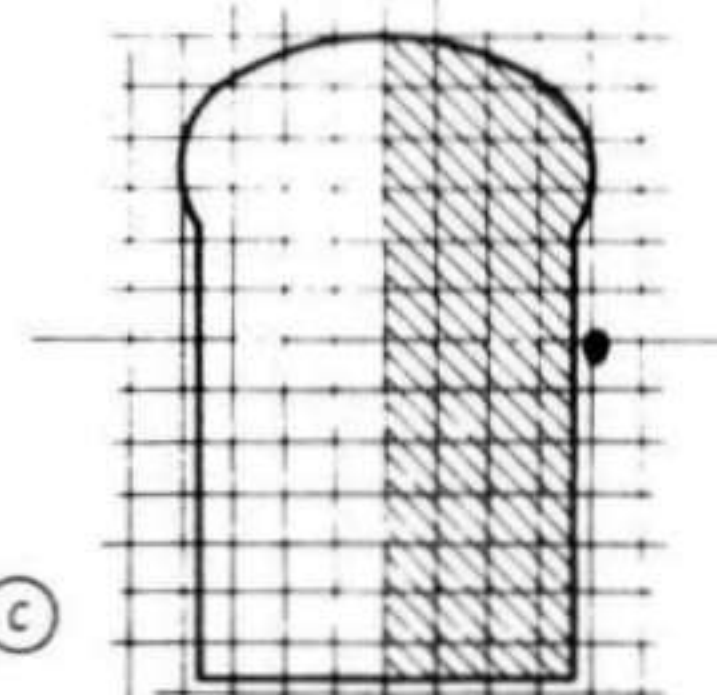
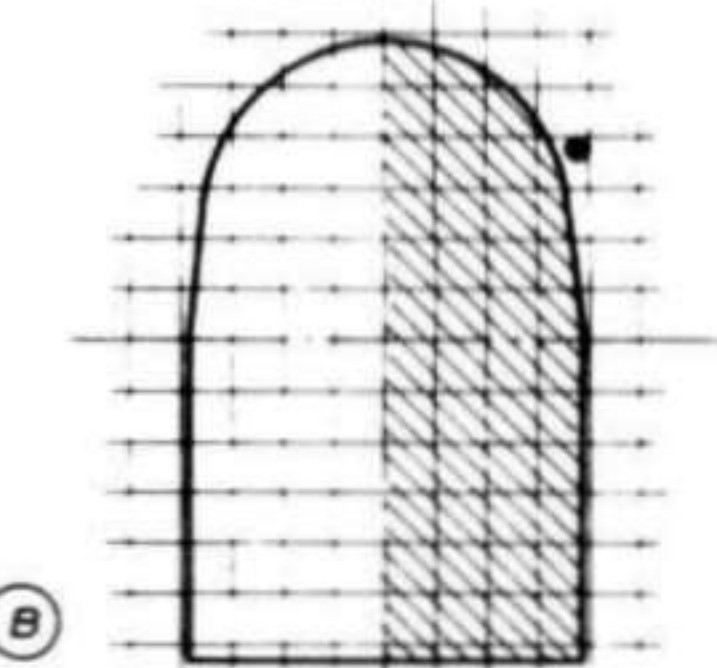
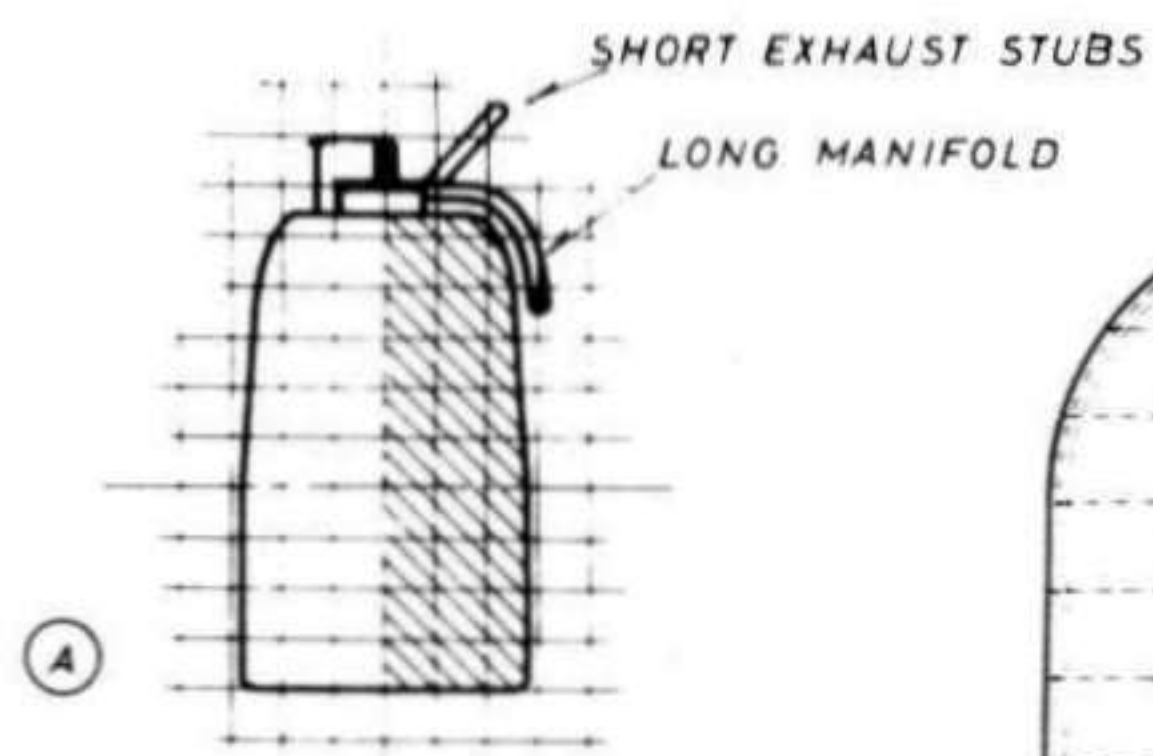
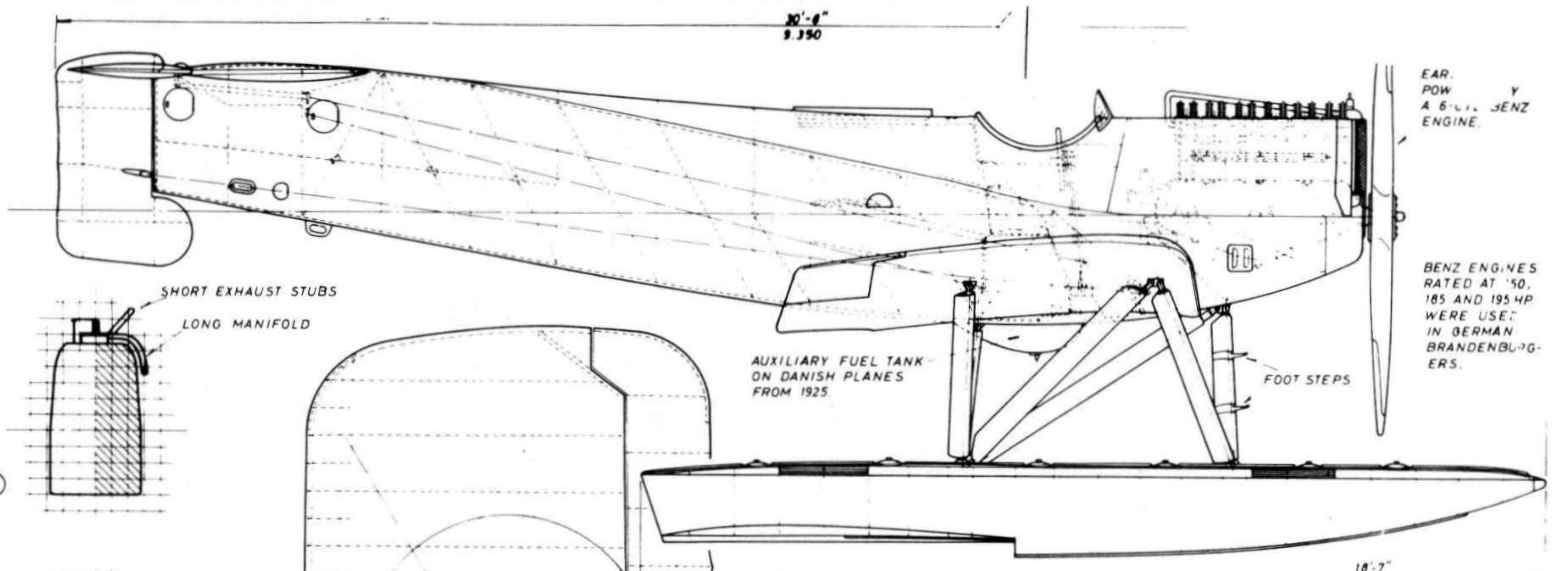
ERNST Heinkel designed the W.29 for the Brandenburg factory in 1918. It was used on the North Sea, its most famous pilot being Oberleutenant Christensen. It was later built in Denmark and served

several countries in modified forms almost until WW II.

One Brandenburg seaplane, the later W.33, is being restored in Finland. □

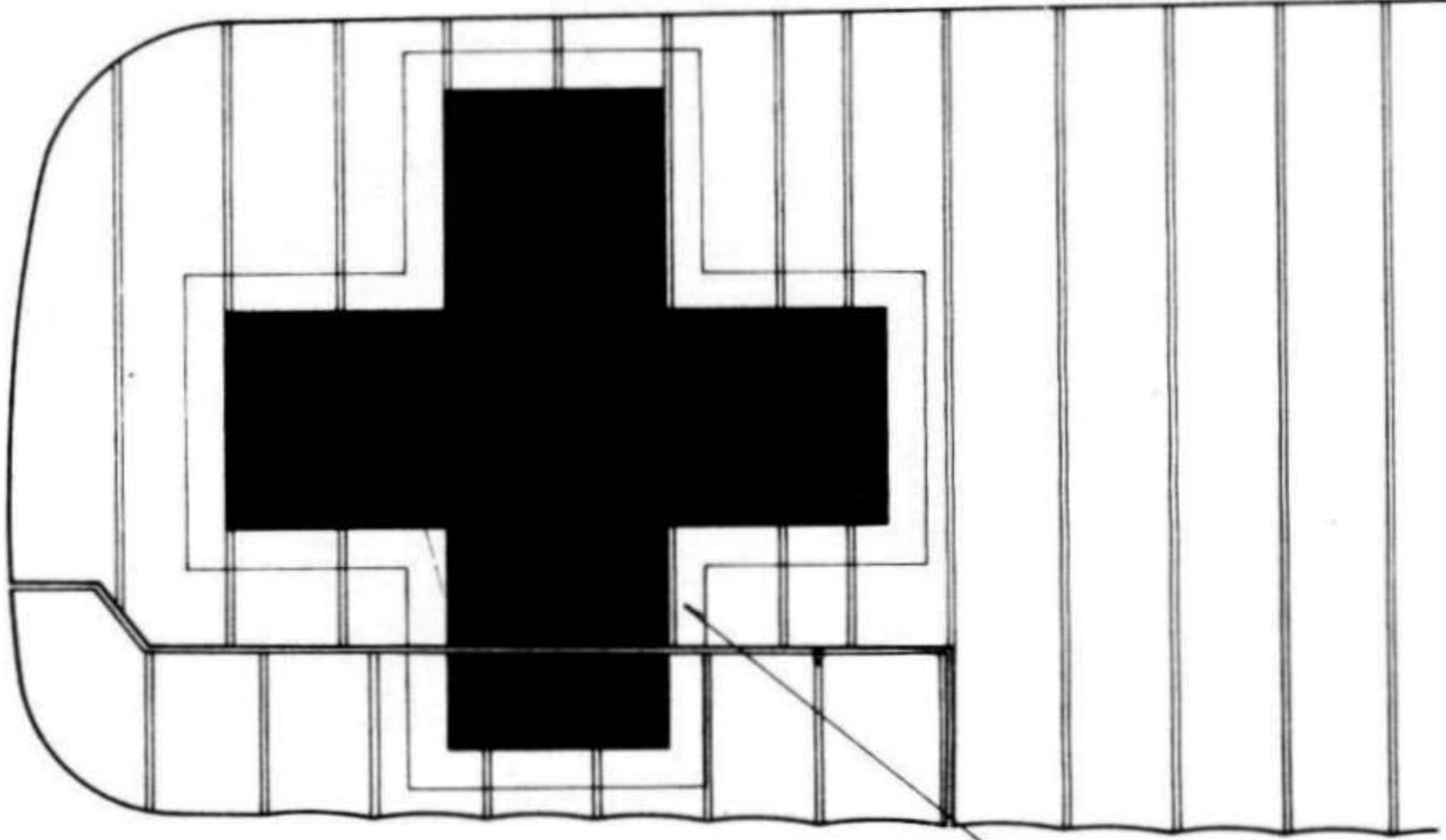
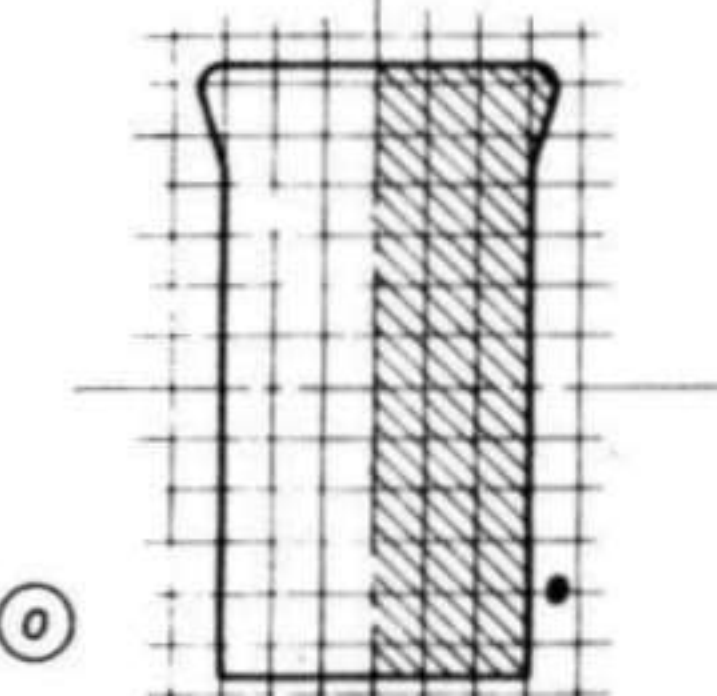
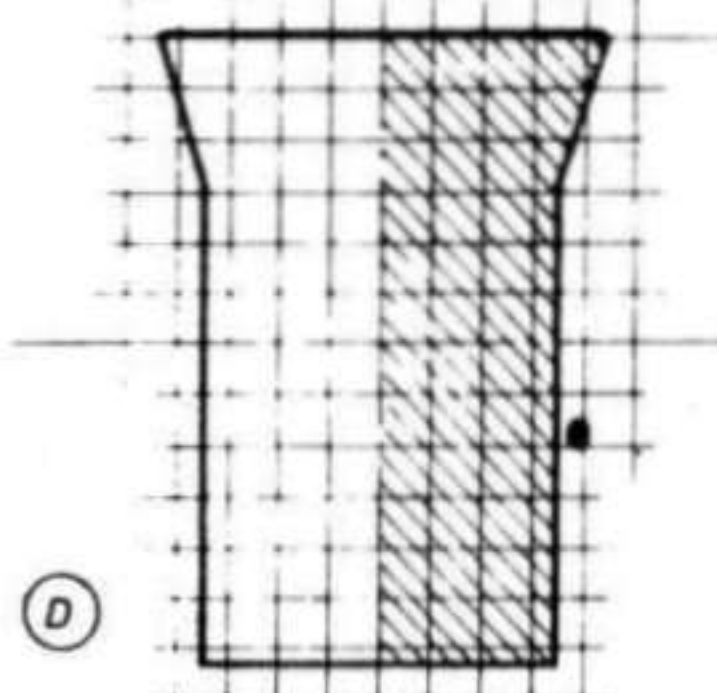


The Hansa-Brandenburg W.29 had several unique design features for its time. The structure was almost entirely from wood and explored the cantilever concept. "Jane's History of Aviation" photo.

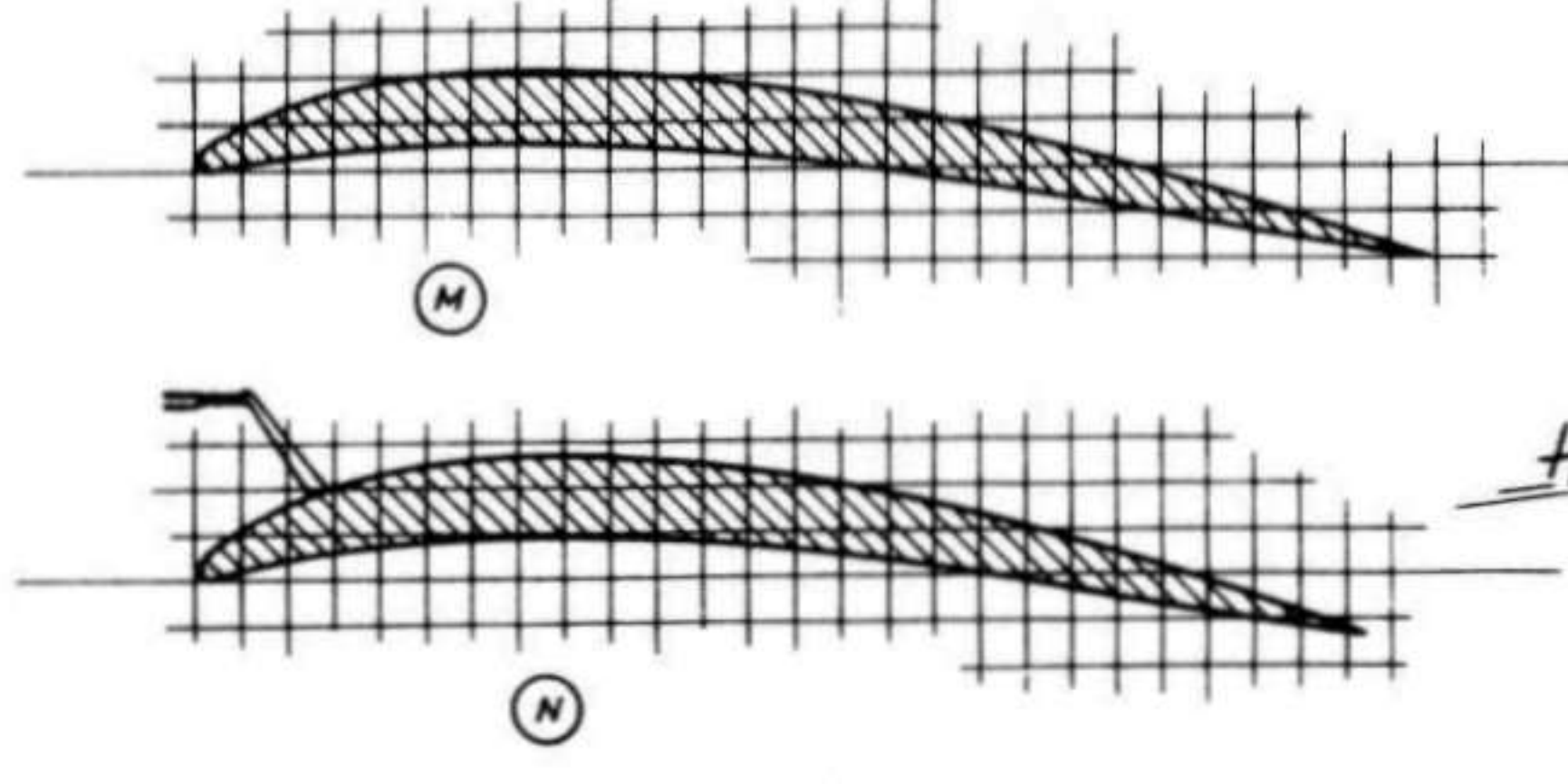


EMPTY WEIGHT	2 200 LBS
	998 KG
LOADED WEIGHT	3 285 LBS
	1 490 KG

TOP SPD	103 MPH	165 KM/H
CRUISING	87 ---	140 ---
LANDING	47 ---	75 ---
RANGE	326 MLS	525 KM

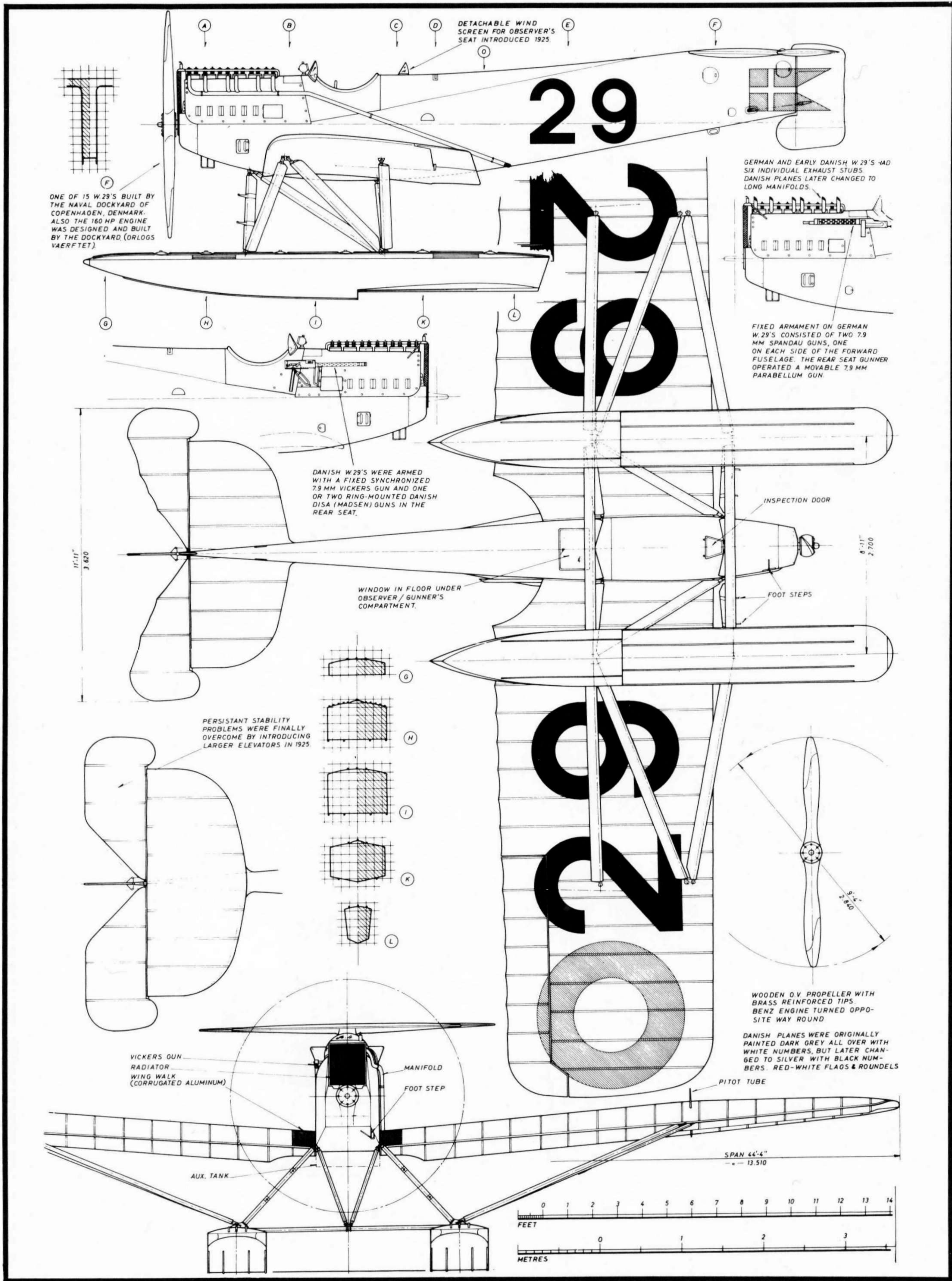


GERMAN MARKINGS IN
SAME POSITION ABOVE
AND BELOW WING.



Hansa-Brandenburg
Wi.29 (H.M.I.)

Age

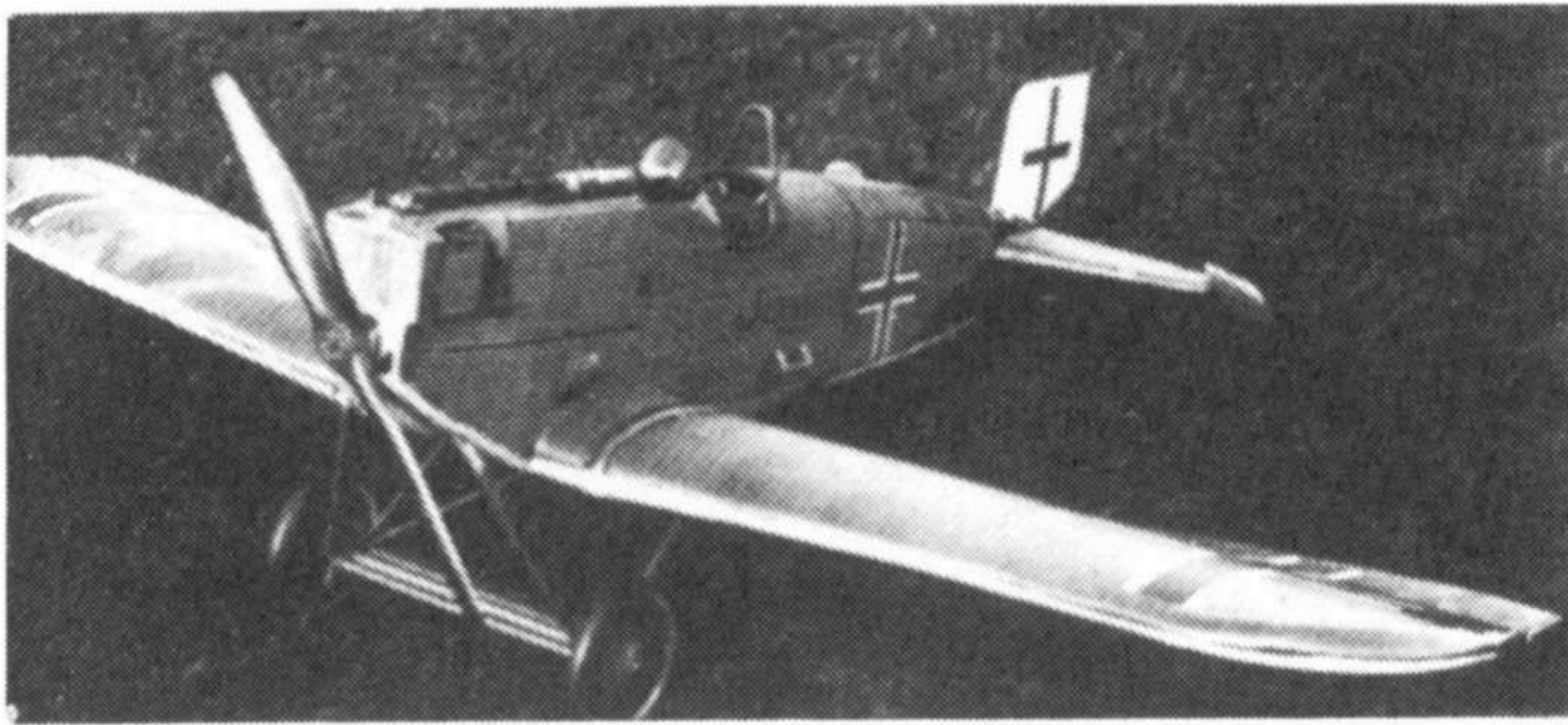


Junkers D.I

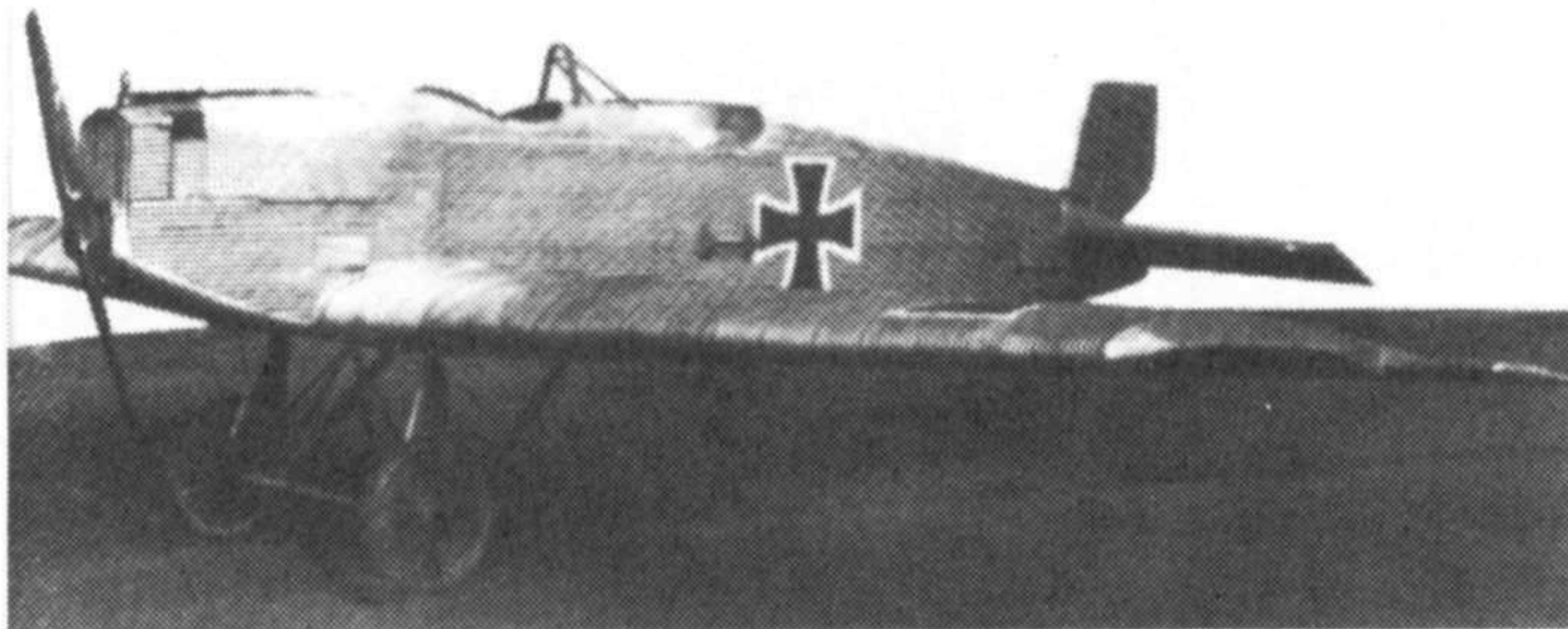
drawing by CHARLES GRAHAM



Junkers first design, the J 1, paved the way to success for the firm.



The Junkers D.I, above and below, was all-metal with full cantilever wings. "Jane's Encyclopedia of the World's Aircraft" photo.



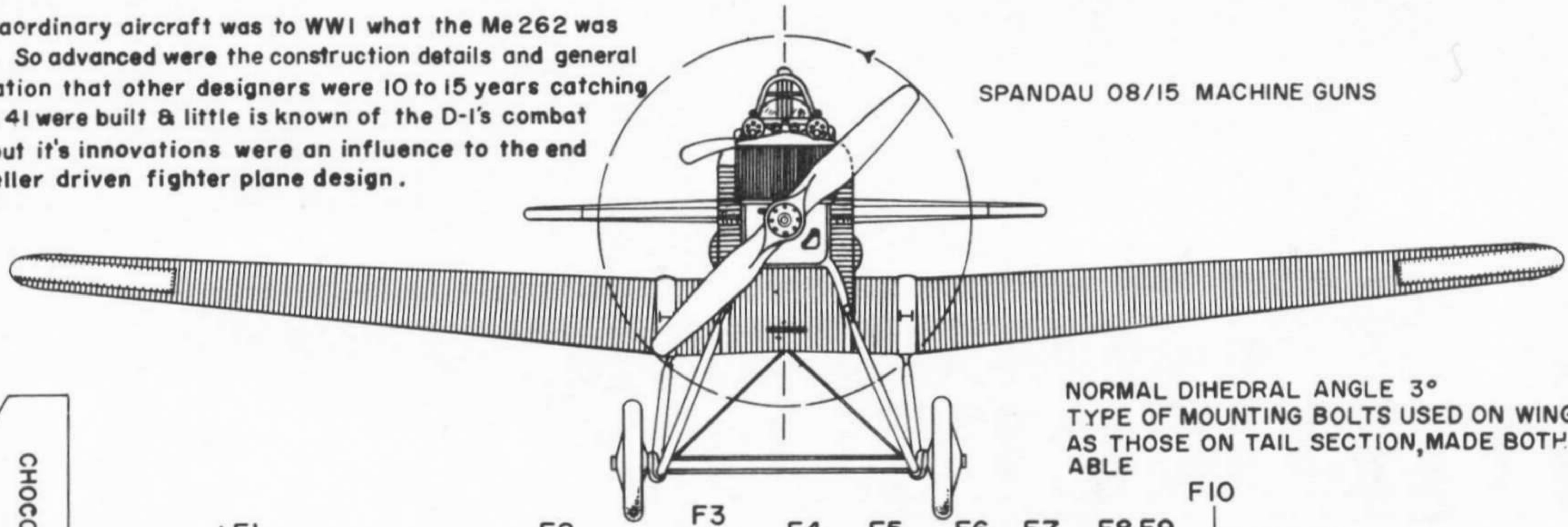
THE FIRST JUNKERS factory design was the J 1 (Army designation E.I); it was known as The Tin Donkey, and only one was built. The 9th Junkers design, the J 9, appeared in October 1917, and with its 160 hp Mercedes was entered in the fighter competitions of 1918. The Army ordered it built as the D.I. Armament consisted of a pair of fixed, forward-firing Spandau guns ahead of the cockpit.

Because of lack of experience with the aircraft's then-unconventional metal construction, only forty-one D. Is were completed and delivered to the Front before the Armistice in November 1918. The aircraft featured a number of unique innovations, one of which was a full cantilever wing.

Four Junkers all-metal monoplanes of the WW I period survive in museums. □

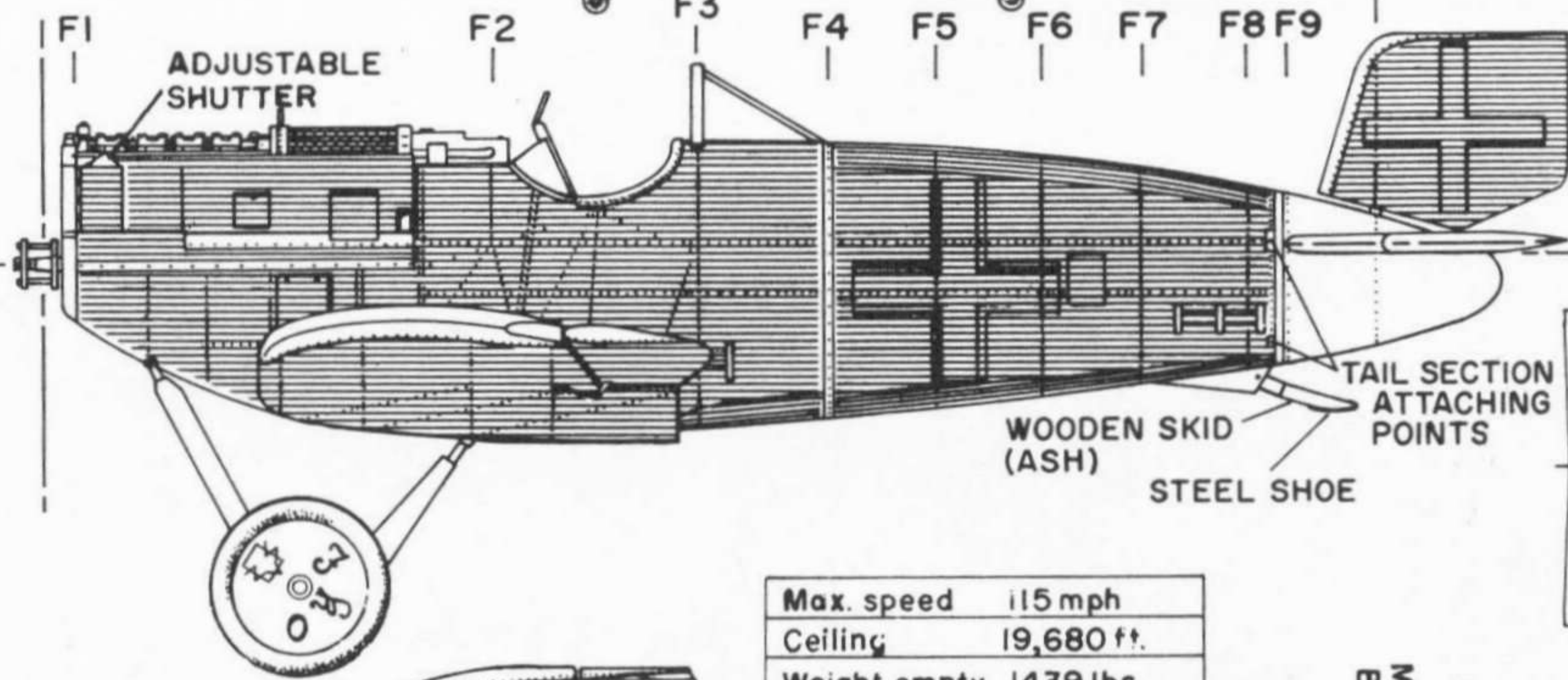
This extraordinary aircraft was to WWI what the Me262 was to WWII. So advanced were the construction details and general configuration that other designers were 10 to 15 years catching up. Only 41 were built & little is known of the D-1's combat record, but it's innovations were an influence to the end of propeller driven fighter plane design.

SPANDAU 08/15 MACHINE GUNS

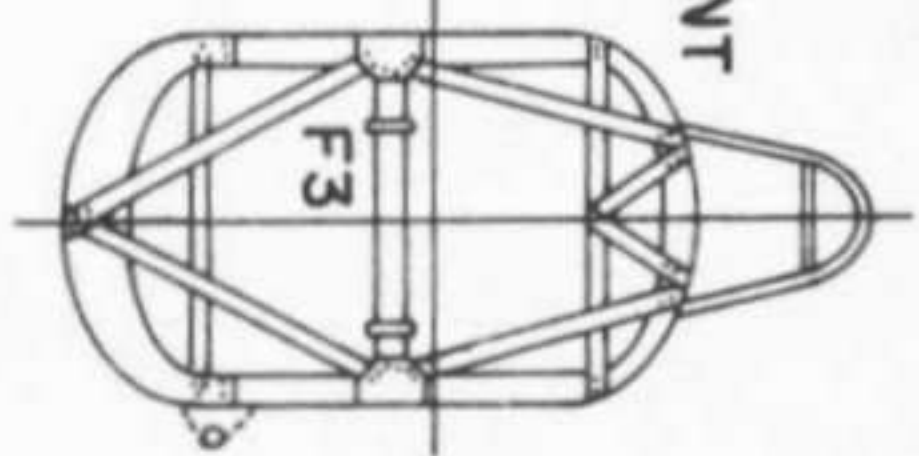
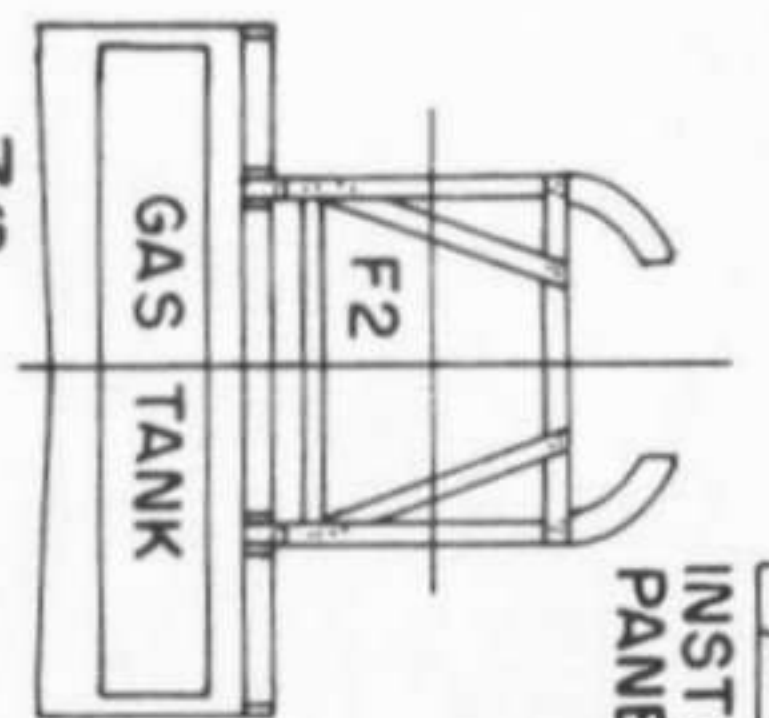


NORMAL DIHEDRAL ANGLE 3°
TYPE OF MOUNTING BOLTS USED ON WINGS, AS WELL AS THOSE ON TAIL SECTION, MADE BOTH ADJUSTABLE

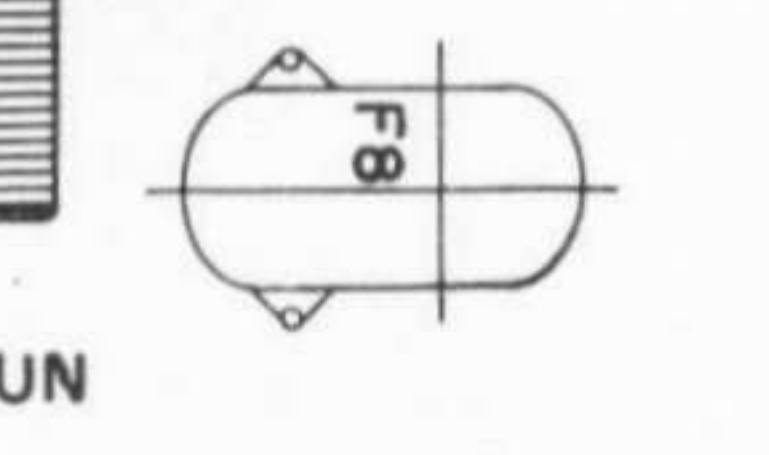
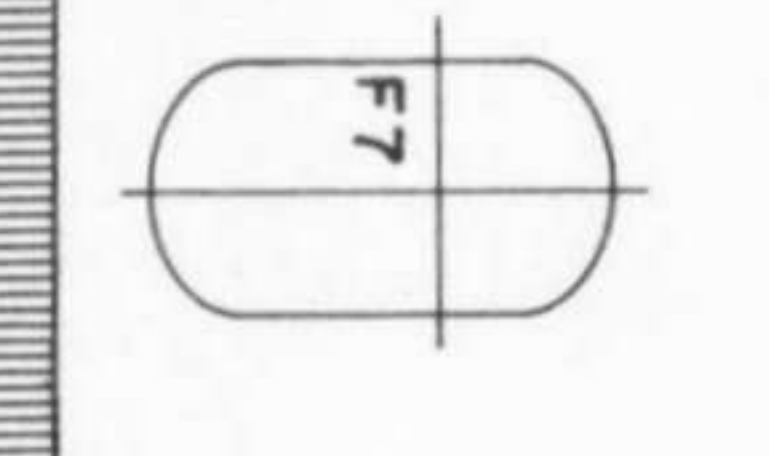
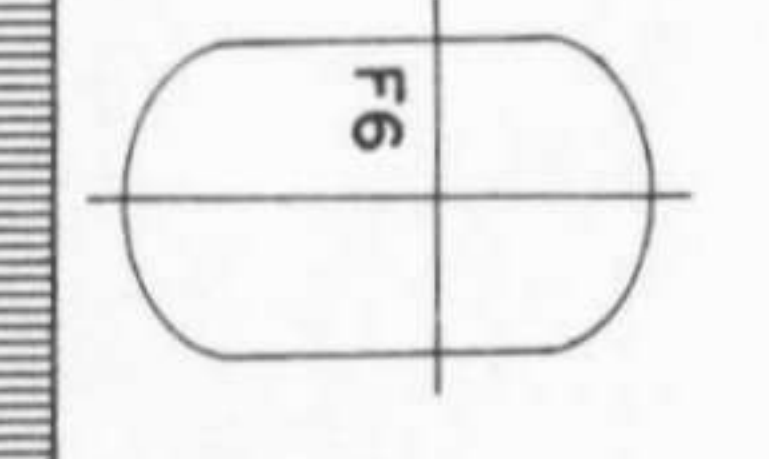
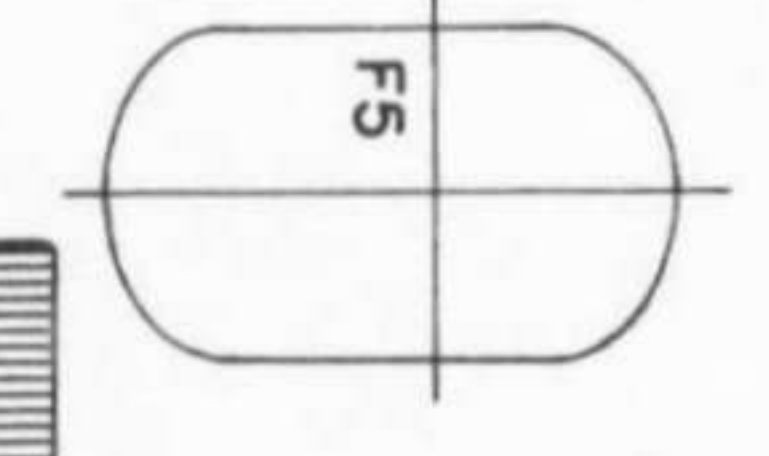
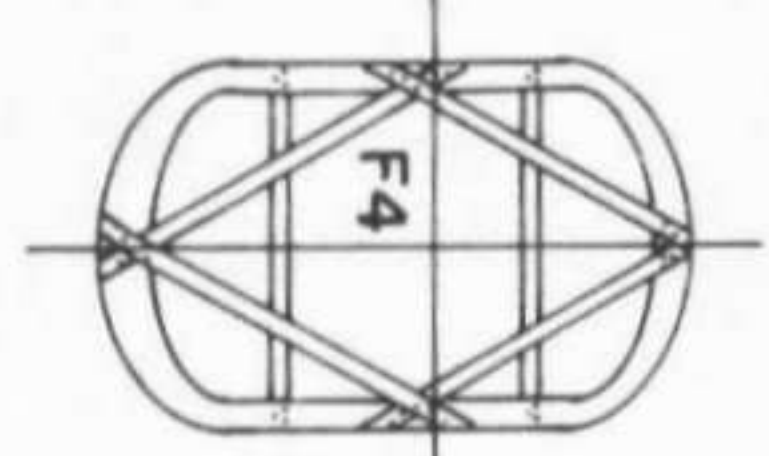
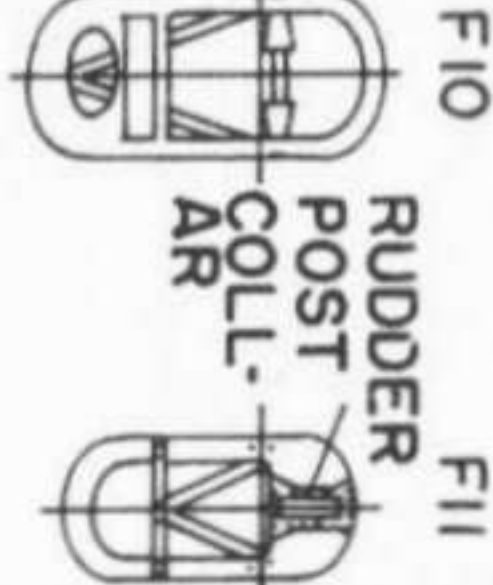
CHOCOLATE BROWN
WHITE UNDERSIDE COLOR LINE
STRUTS & WHEEL COVERS ARE PALE GREEN
ELEVATOR IS WHITE
ENTIRE RUDDER



Max. speed	115 mph
Ceiling	19,680 ft.
Weight empty	1439 lbs.
" gross	1841 "
Time/Ht.	5.8/6500
	9.8/9800
	14.8/13,100
	22.17/16,400

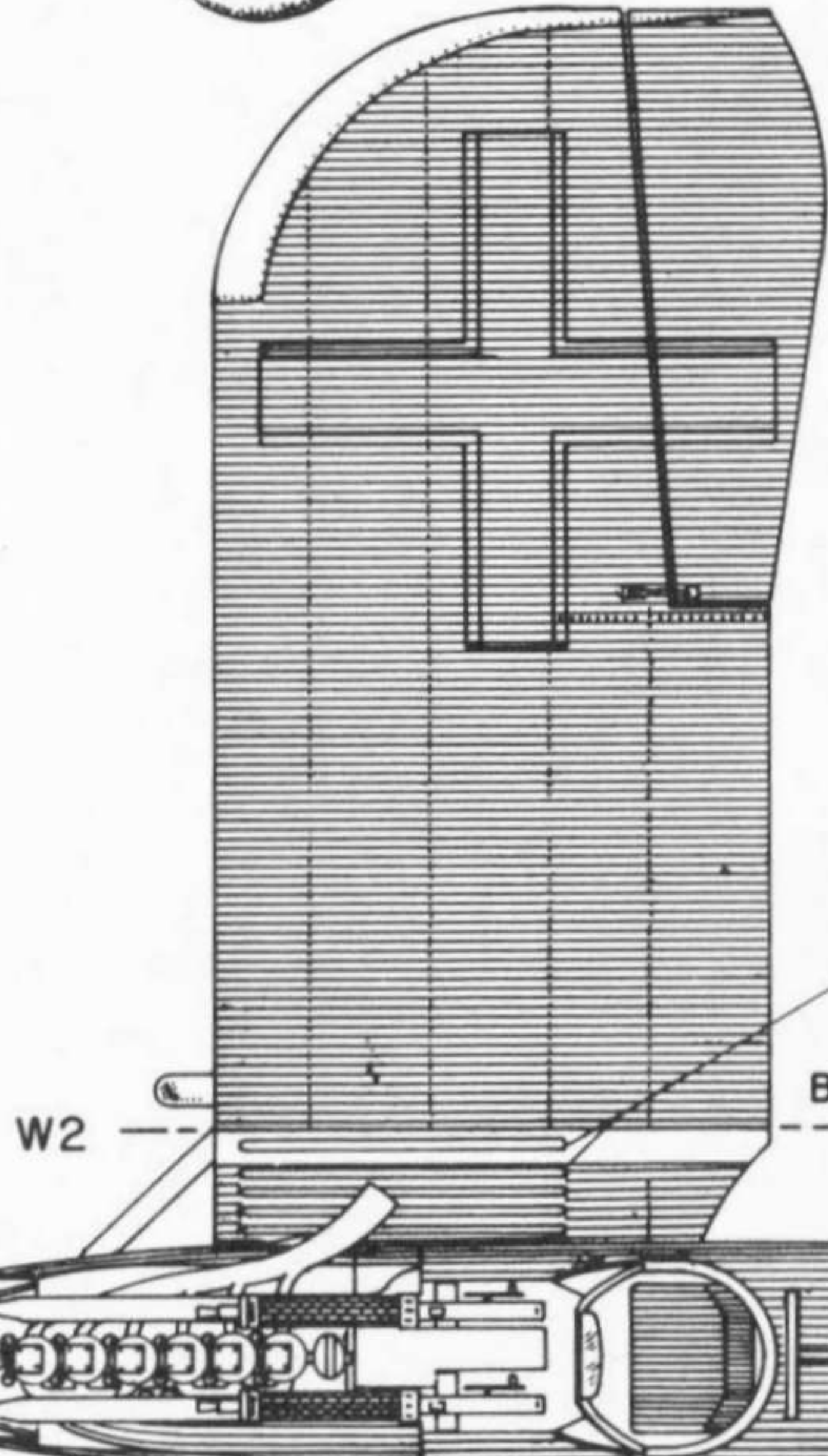
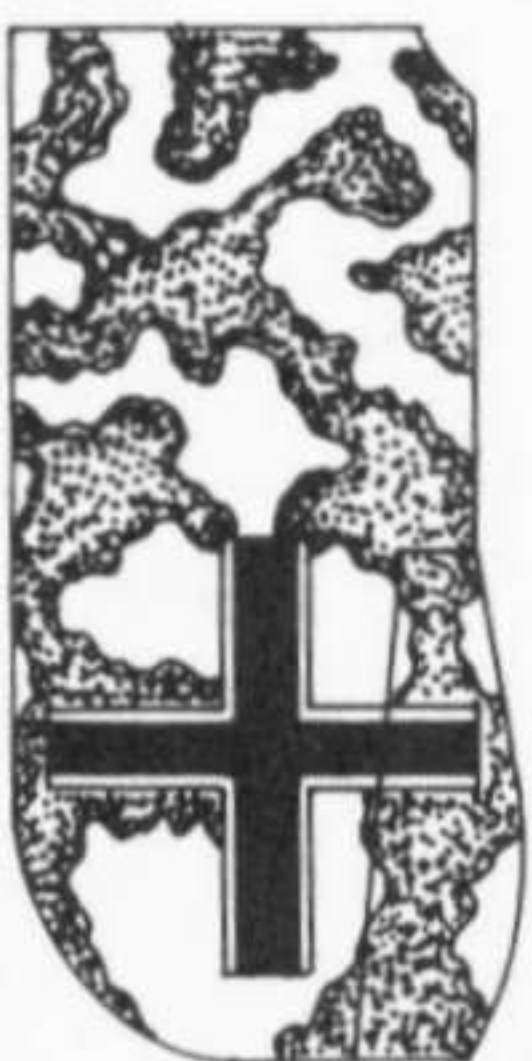


VIEW OF F9 IS
LOOKING FORWARD

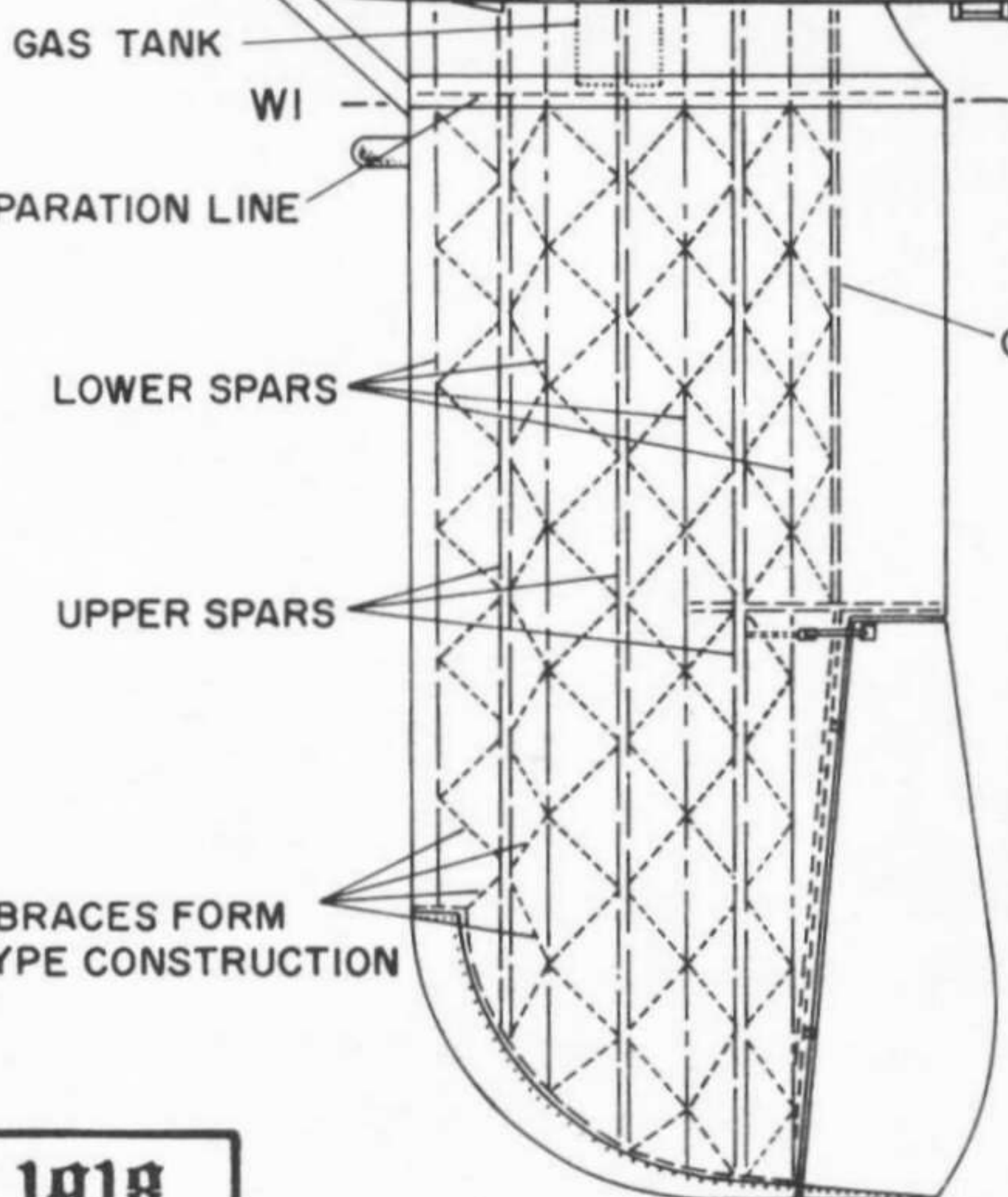
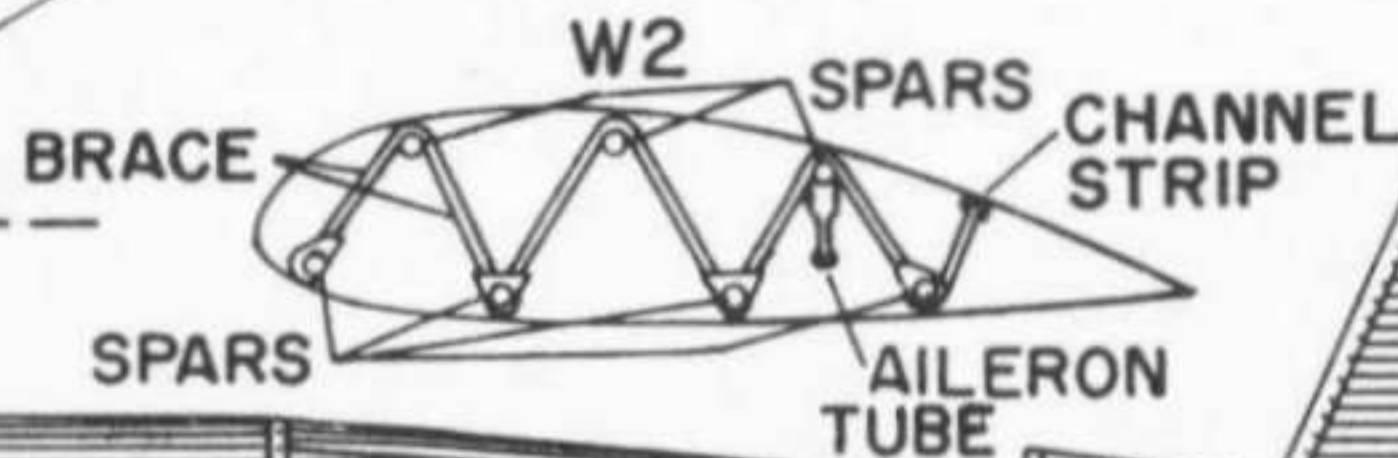


CONSTRUCTION OF F5 THRU F8, IS SIMILAR TO F4

BASE COLOR IS PALE GREEN, IRREGULAR PATCHES: LIGHT MAUVE
BLACK CROSS OUTLINED IN WHITE, SINCE UNDERSIDE IS WHITE,
THE CROSS HAS NO OUTLINE



WOODEN STRIPS (WING WALK)



WING SEPARATION LINE

LOWER SPARS

UPPER SPARS

INTERCONNECTING BRACES FORM WARREN GIRDER TYPE CONSTRUCTION

FOOT STIRRUP HAND HOLDS



GAS TANK

CHANNEL STRIP



THROTTLE CONTROL

RUDDER BAR

ADJUSTABLE RUDDER CABLE

ELEVATOR TUBE (ADJUSTABLE)

AILERON TUBE

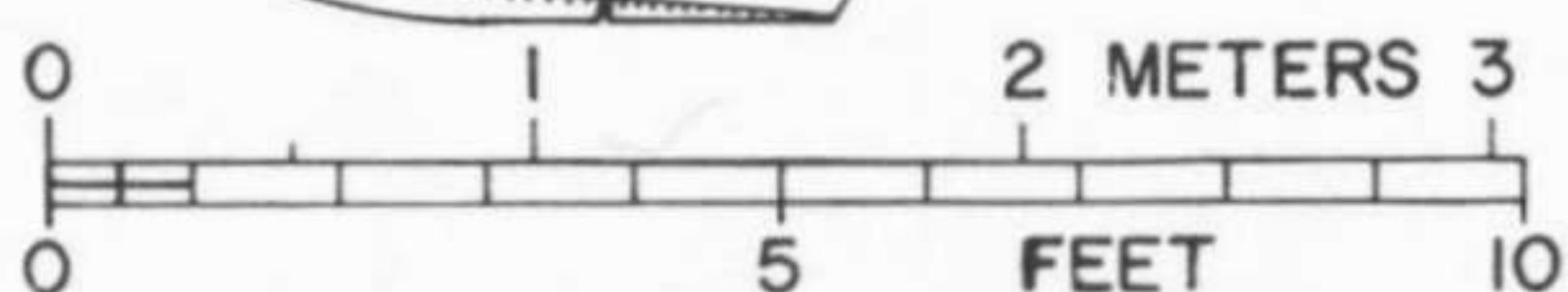
For more info on the engine see M.A.N. Aug. '48, for Wylam's plans of the Mercedes F-1466D3A

Junkers D-1. 1918

Drawn by C. Graham

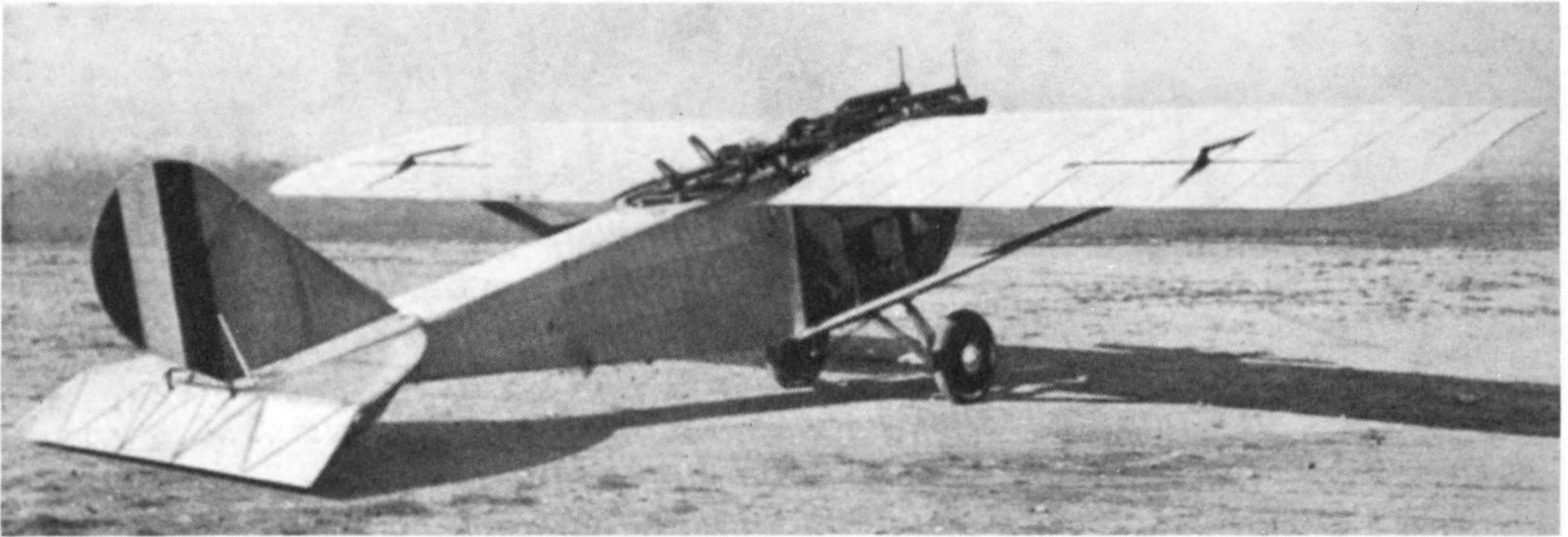
Engine: 180h.p. Mercedes

Designed by: Prof. Hugo Junkers



Loening M-8

drawings by TOM STARK



Although too late to see action in WW I, the Loening M-8 was to establish several world aviation records. "Jane's All the World's Aircraft" photo.

THE LOENING M-8 was described by Grover Loening as "nearer to being inspired than anything I ever did." While its pot-bellied appearance may be anything but inspired by modern standards, when it was designed it represented quite an advancement over the biplanes that dominated that era. It pioneered the strut-braced high-wing configuration and the use of lifting struts that characterized so many commercial airplanes a few years later, including Lindberg's Ryan NYP.

The M-8 was designed near the close of World War I and grew out of America's desire to contribute first line fighting airplanes to the war. The American aircraft industry had not been able to develop and build combat airplanes, and our pilots flew French and British designs in combat. The two-place Bristol Fighter served as the model for the M-8, but was a model in capability and characteristics only, since the M-8 had another requirement—ease of rapid manufacture. In this it succeeded very well, having only one-fifth the number of fittings and requiring only one-fourth the manufacturing time as the Bristol. In addition, it weighed 500 pounds less than

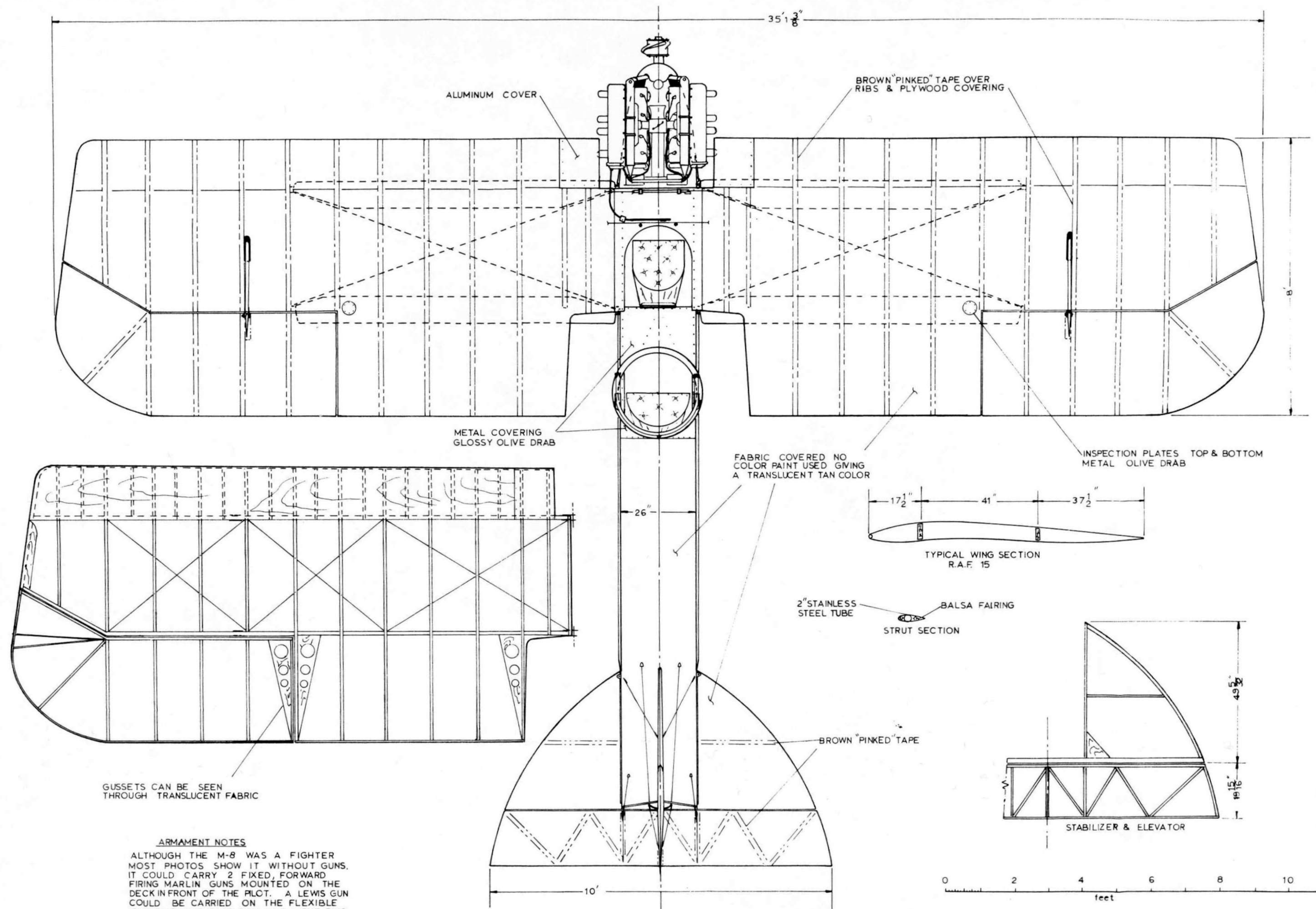


Lifting strut wing braces designed for the M-8 were a breakthrough that has been carried over into lightplane designs of current manufacturing.

the Bristol while carrying the same military load, but at a speed 30 mph faster.

By the time the prototype was flying, the Armistice was signed and plans to build 5,000 M-8s were dropped. Only two were built for the Army and four for the Navy, and they served as engine test-beds, racing planes, and research vehicles. In December 1918, one broke the world's altitude record for carrying one and two passengers.

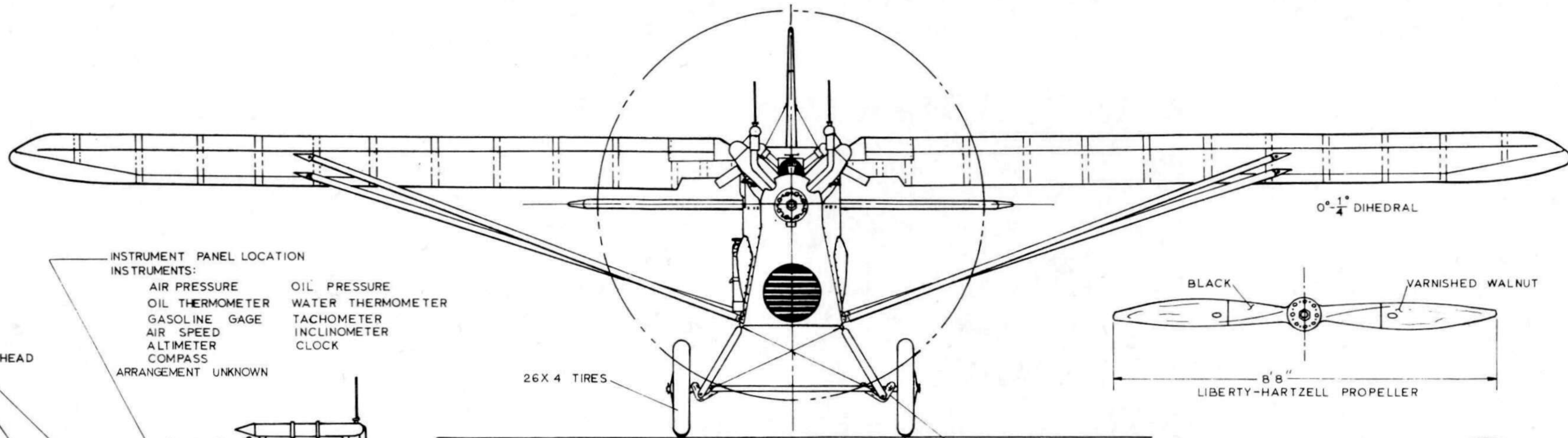
None survive. □



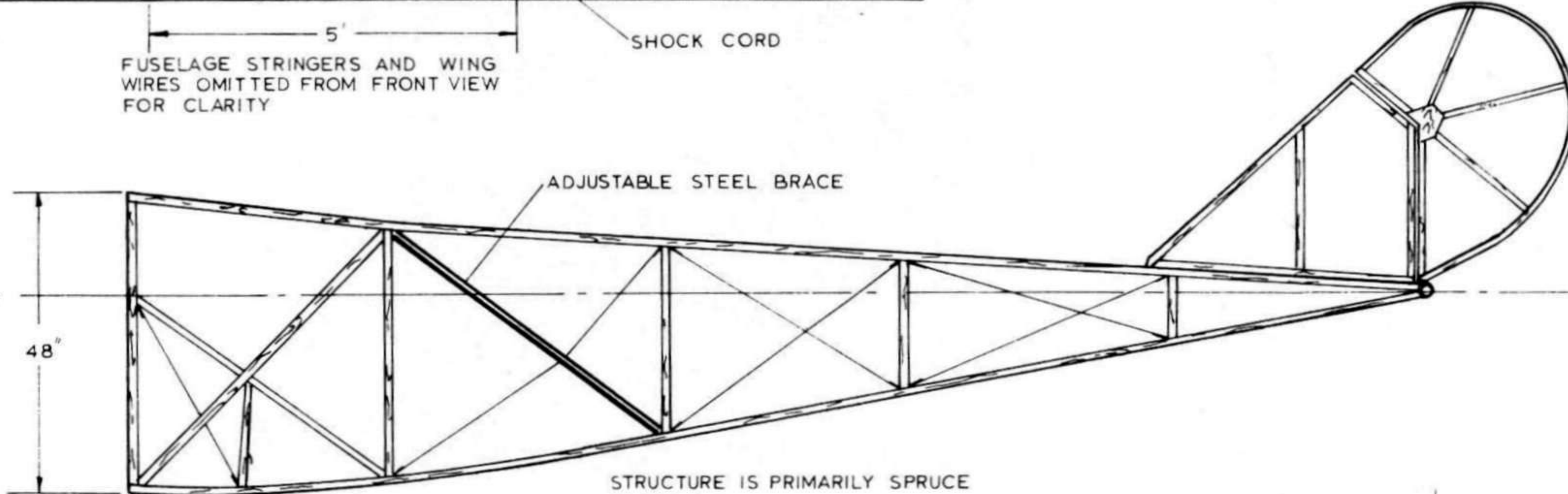
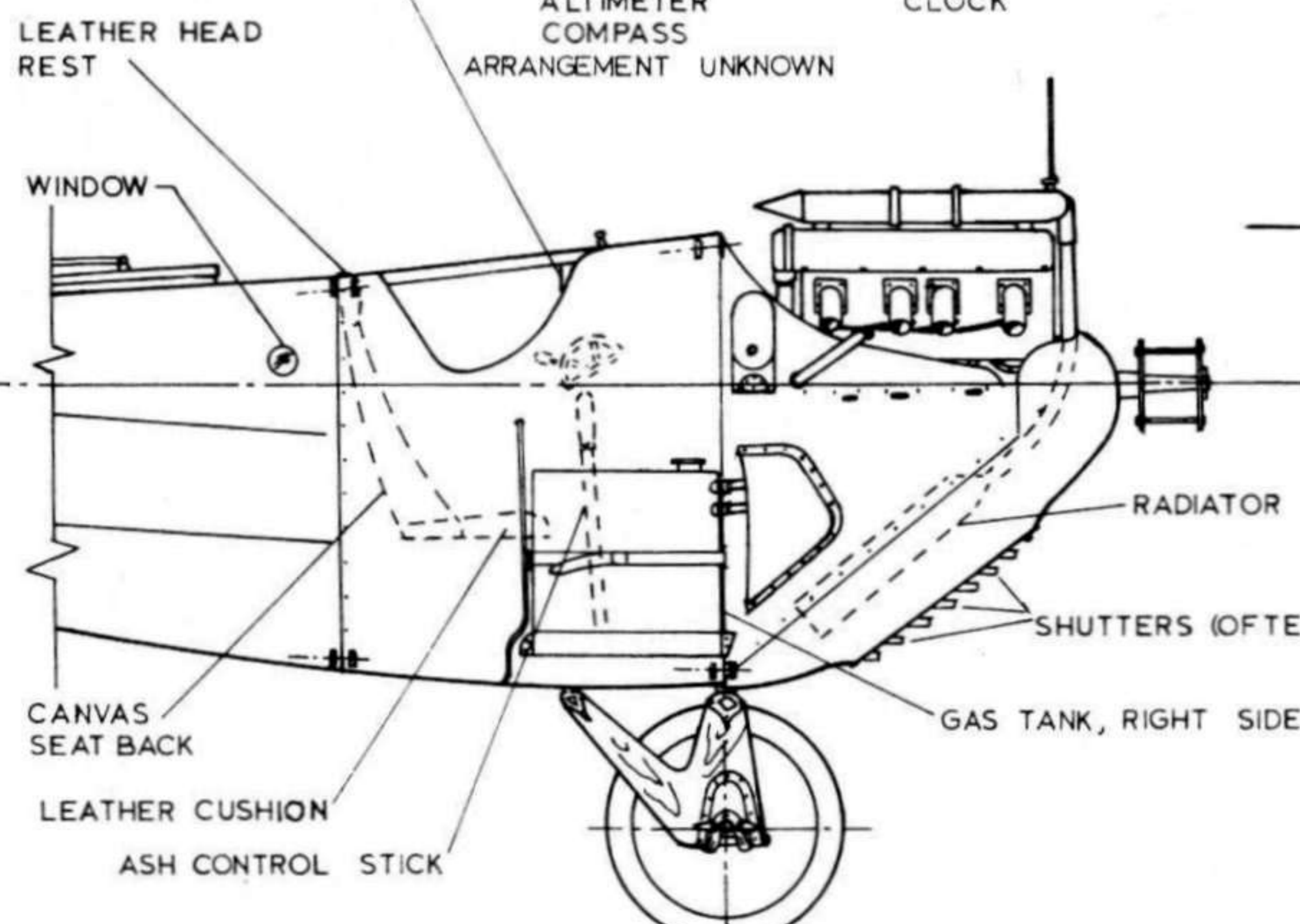
GUSSETS CAN BE SEEN THROUGH TRANSLUCENT FABRIC

ARMAMENT NOTES
 ALTHOUGH THE M-8 WAS A FIGHTER MOST PHOTOS SHOW IT WITHOUT GUNS. IT COULD CARRY 2 FIXED, FORWARD FIRING MARLIN GUNS MOUNTED ON THE DECK IN FRONT OF THE PILOT. A LEWIS GUN COULD BE CARRIED ON THE FLEXIBLE GUN RING BUT IT SELDOM WAS. THE RING WAS ALWAYS MOUNTED FOR BALANCE.

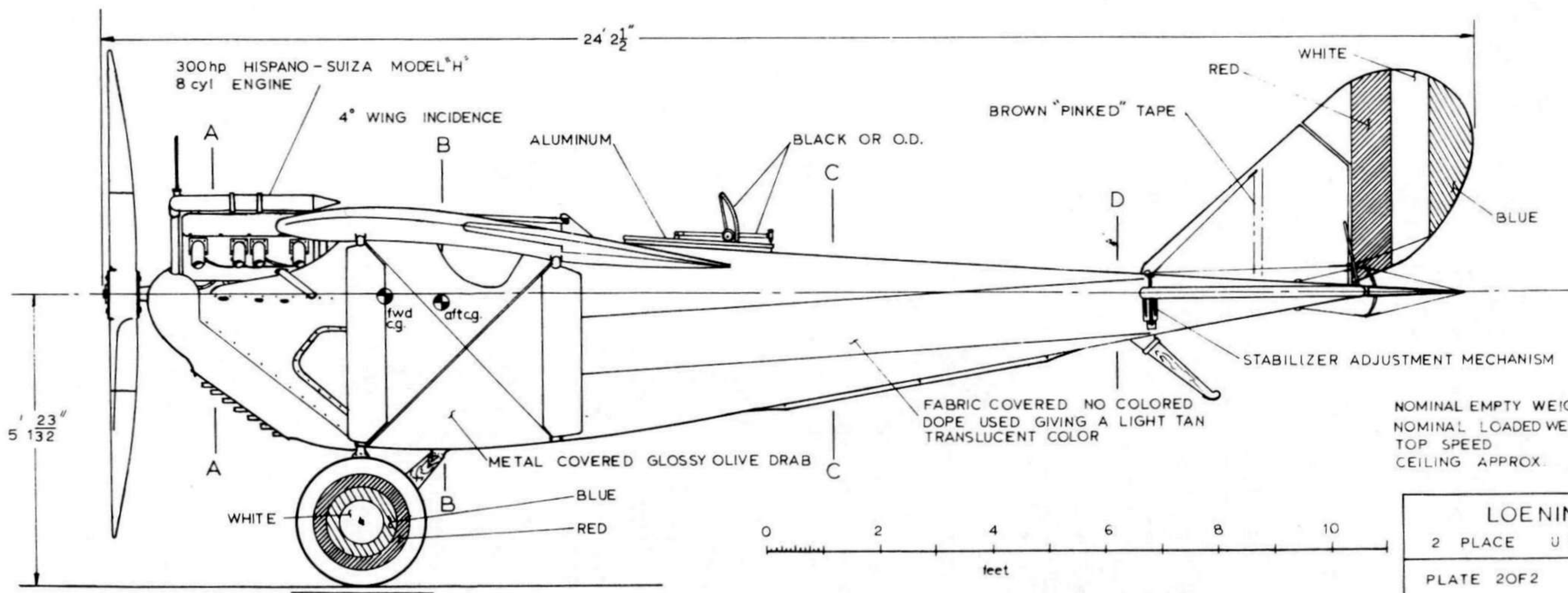
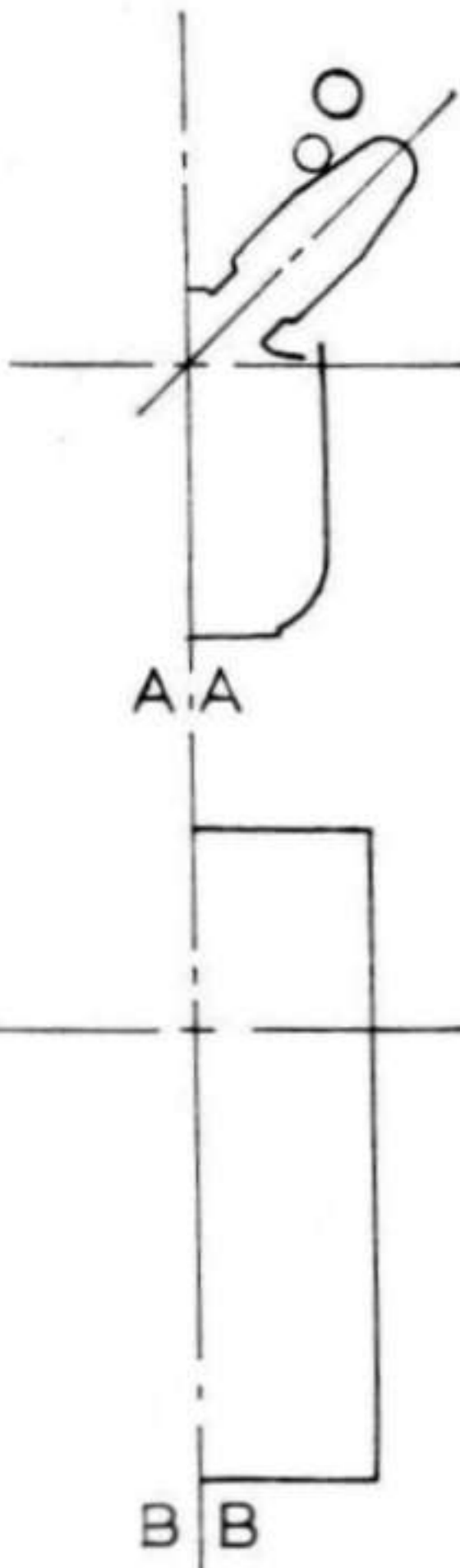
LOENING M-8's ALSO CALLED WRIGHT-MARTIN M-8's WERE BUILT IN LIMITED NUMBERS FOR THE ARMY AND NAVY. THERE WERE VARIATIONS BETWEEN INDIVIDUAL AIRPLANES AND AIRPLANES UNDERWENT MODIFICATIONS IN SERVICE. VISIBLE VARIATIONS WERE: WING TIP SHAPE, ROOT CUT-OUT, SPAN, CHORD, OVERALL COLOR SCHEME, WINDOWS, COWL DETAILS, AND CONTROL CABLE RUNS. DRAWING IS ARMY M-8 AS IT WAS WHEN PHOTOS USAF NEG. #'s 1777 THRU 1780 WERE TAKEN.



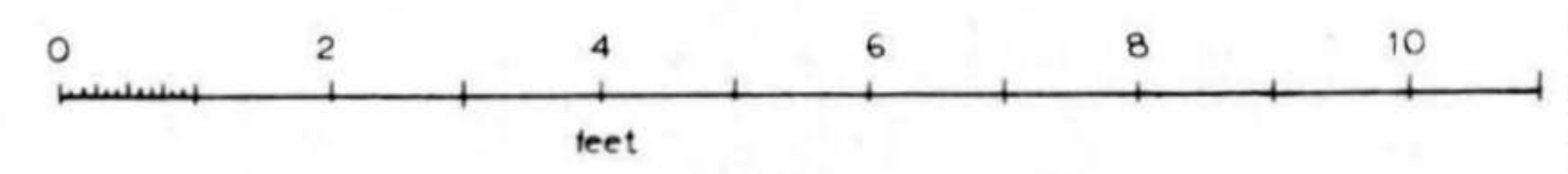
- INSTRUMENT PANEL LOCATION
INSTRUMENTS:
- | | |
|---------------------|-------------------|
| AIR PRESSURE | OIL PRESSURE |
| OIL THERMOMETER | WATER THERMOMETER |
| GASOLINE GAGE | TACHOMETER |
| AIR SPEED | INCLINOMETER |
| ALTIMETER | CLOCK |
| COMPASS | |
| ARRANGEMENT UNKNOWN | |



LEFT WHEEL AND LANDING GEAR ONLY SHOWN



NOMINAL EMPTY WEIGHT	1660 #
NOMINAL LOADED WEIGHT	2600 #
TOP SPEED	45 mph
CEILING APPROX.	20,000 ft.



LOENING M-8
2 PLACE U.S. ARMY FIGHTER 1918
PLATE 20F2 DRAWN BY *[Signature]* 28 DEC. 69

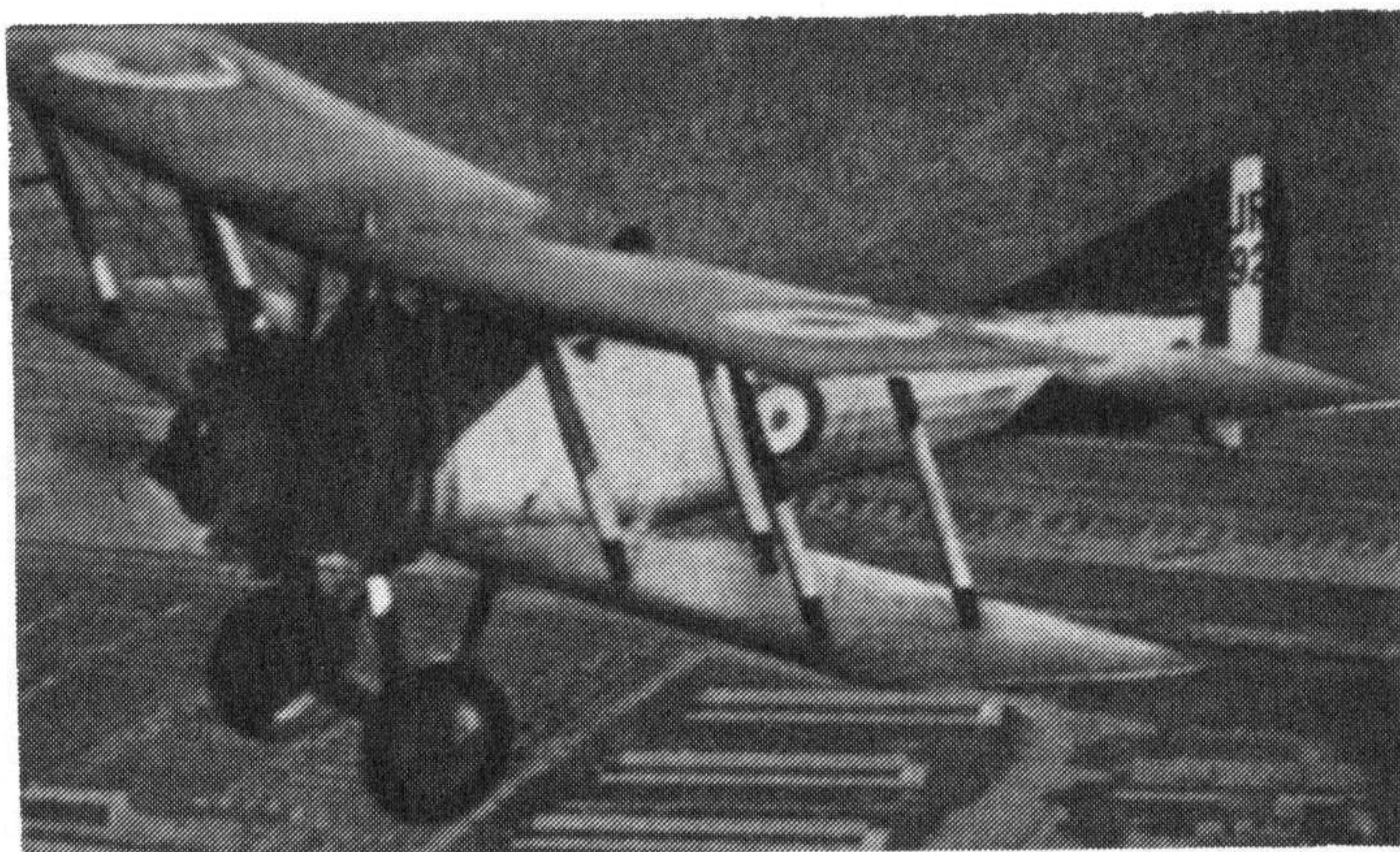
Nieuport Nighthawk

drawings by JOSEPH NIETO

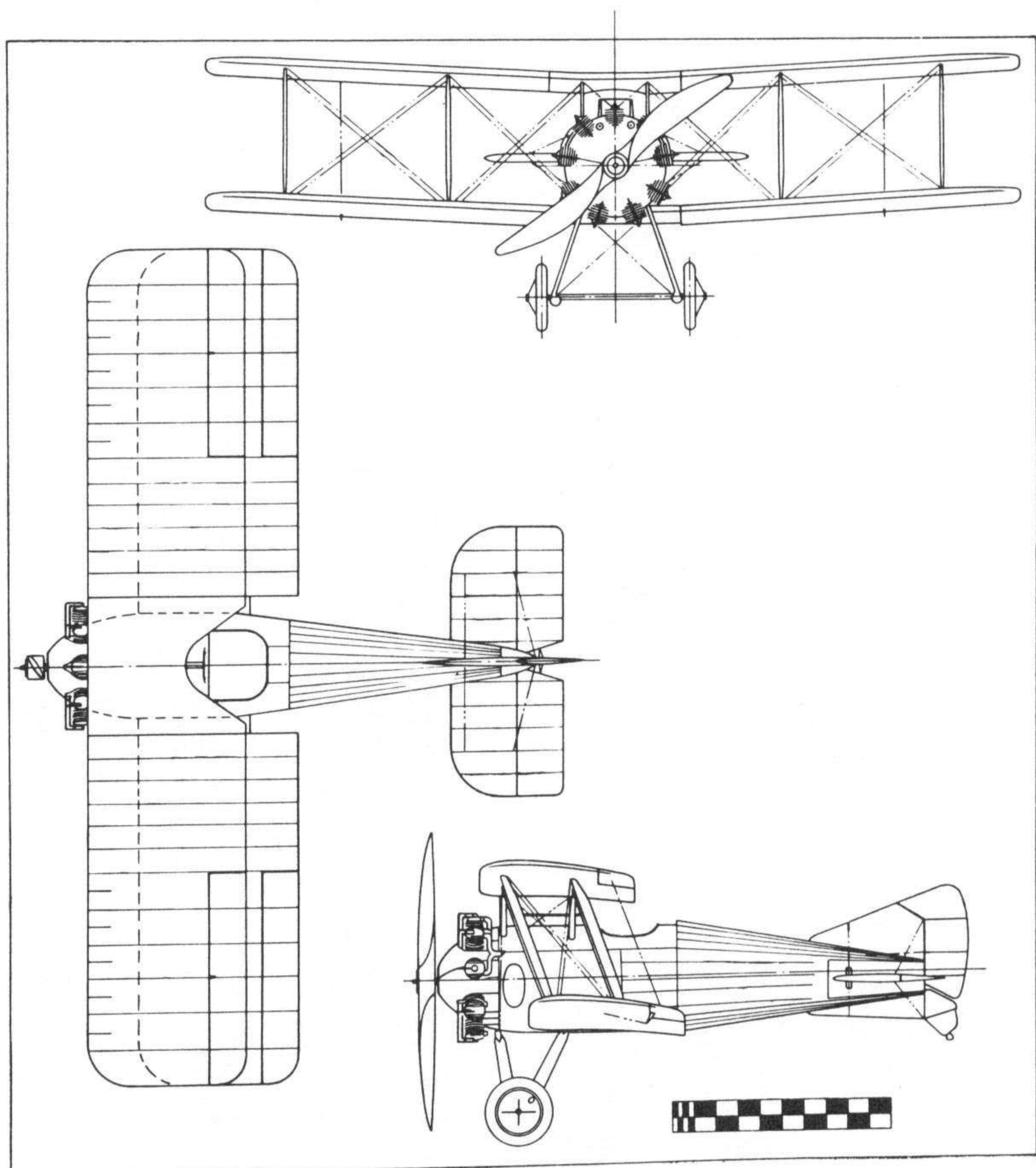
THE BRITISH Nieuport Nighthawk was chosen for mass production by the Royal Air Force because of its remarkable performance and because it had been designed to use many S.E.5 parts. It also met the strength requirements as demonstrated by load tests throughout the entire machine. The general arrangements regarding position and accessibility of guns, instruments, etc., provided the facilities most suitable to combat conditions, aided by a minimum "blind" area. Intended for quick mass production of a "knock-out-punch" fighter to finish up the war, it was a bit late for front line service before the armistice. The Nighthawk was fully capable of carrying on for the RAF where the S.E.5 and Snipe had left off. As the RAF's first truly modern radial-powered production airplane, the Nighthawk was powered by a 9-cylinder 320-hp A.B.C. Dragonfly air-cooled engine, giving it a climb rate of 1,500 fpm and a top speed of 151 mph.

Built by Nieuport and the General Aircraft Co. Ltd. of Cricklewood, London, it was designed by H.P. Folland, formerly of the Royal Aircraft Factory.

The nearest thing to a surviving Nighthawk is one of the existing seven S.E.5a's. □

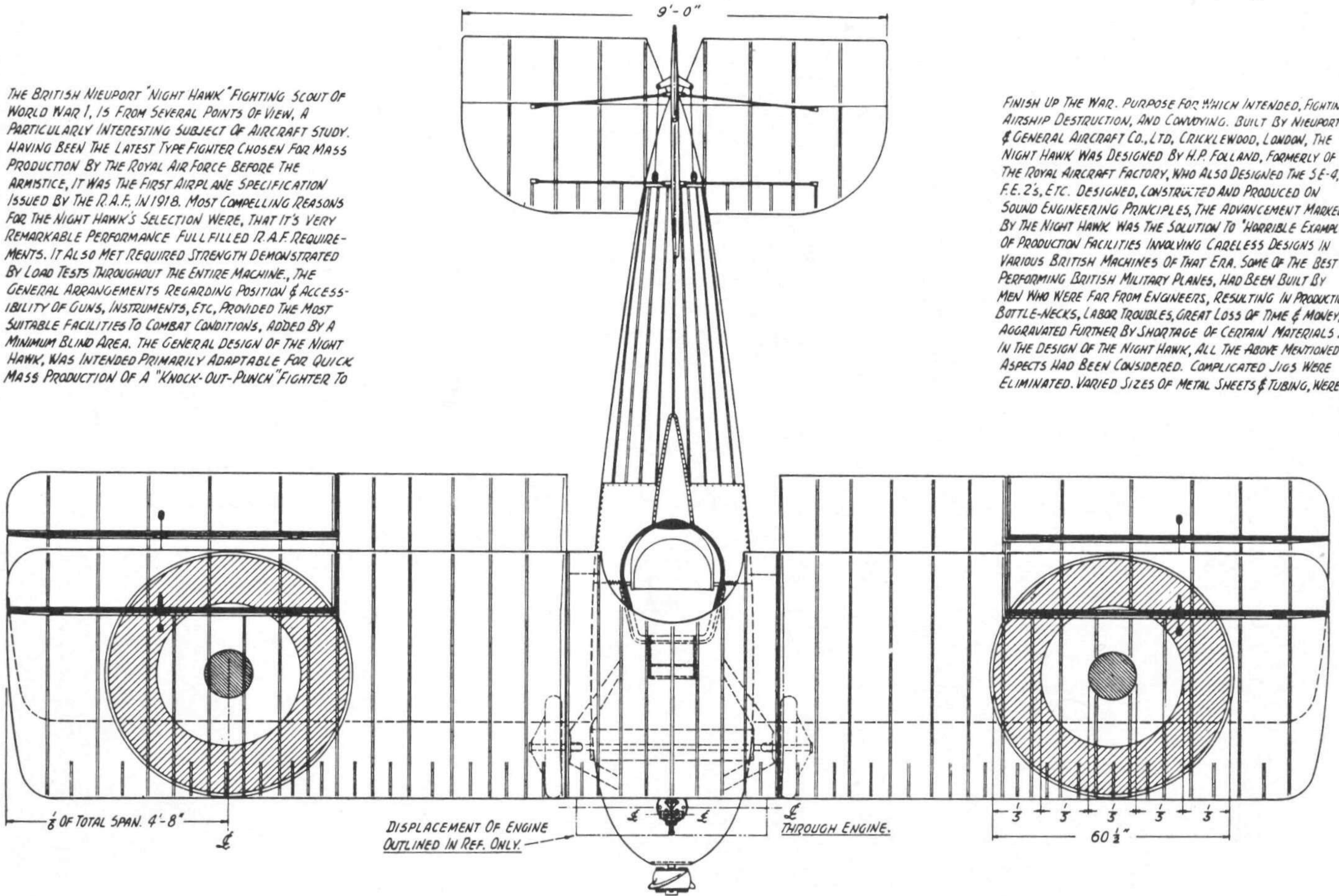


Too late to see service in WW I, the Nieuport Nighthawk carried British fighter pilots for nearly a decade, almost into WW II. "Aircraft of the Royal Air Force, 1918-1957" photo.



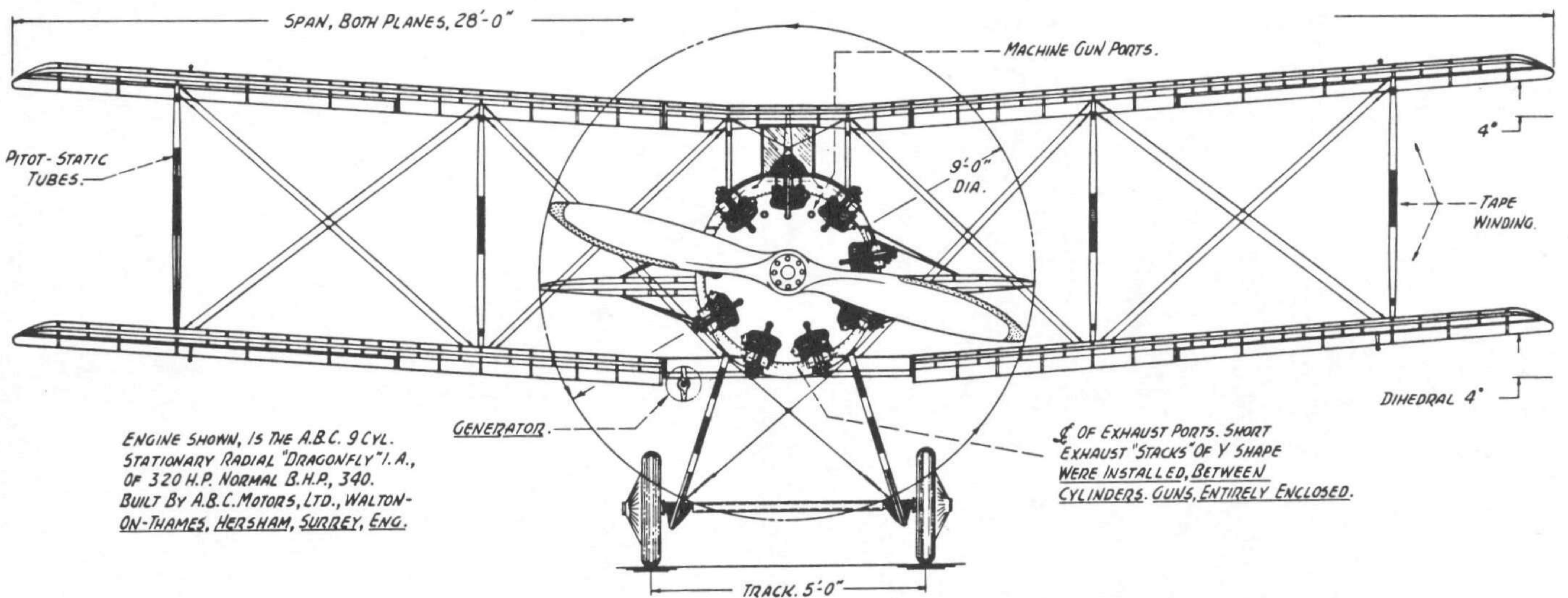
THE BRITISH NIEUPORT "NIGHT HAWK" FIGHTING SCOUT OF WORLD WAR I, IS FROM SEVERAL POINTS OF VIEW, A PARTICULARLY INTERESTING SUBJECT OF AIRCRAFT STUDY. HAVING BEEN THE LATEST TYPE FIGHTER CHOSEN FOR MASS PRODUCTION BY THE ROYAL AIR FORCE BEFORE THE ARMISTICE, IT WAS THE FIRST AIRPLANE SPECIFICATION ISSUED BY THE R.A.F. IN 1918. MOST COMPELLING REASONS FOR THE NIGHT HAWK'S SELECTION WERE, THAT IT'S VERY REMARKABLE PERFORMANCE FULL FILLED R.A.F. REQUIREMENTS. IT ALSO MET REQUIRED STRENGTH DEMONSTRATED BY LOAD TESTS THROUGHOUT THE ENTIRE MACHINE, THE GENERAL ARRANGEMENTS REGARDING POSITION & ACCESSIBILITY OF GUNS, INSTRUMENTS, ETC., PROVIDED THE MOST SUITABLE FACILITIES TO COMBAT CONDITIONS, ADDED BY A MINIMUM BLIND AREA. THE GENERAL DESIGN OF THE NIGHT HAWK, WAS INTENDED PRIMARILY ADAPTABLE FOR QUICK MASS PRODUCTION OF A "KNOCK-OUT-PUNCH" FIGHTER TO

FINISH UP THE WAR. PURPOSE FOR WHICH INTENDED, FIGHTING, AIRSHIP DESTRUCTION, AND CONVOYING. BUILT BY NIEUPORT & GENERAL AIRCRAFT CO., LTD, CRICKLEWOOD, LONDON, THE NIGHT HAWK WAS DESIGNED BY H.P. FOLLAND, FORMERLY OF THE ROYAL AIRCRAFT FACTORY, WHO ALSO DESIGNED THE SE-4, 5, F.E. 2'S, ETC. DESIGNED, CONSTRUCTED AND PRODUCED ON SOUND ENGINEERING PRINCIPLES, THE ADVANCEMENT MARKED BY THE NIGHT HAWK WAS THE SOLUTION TO "HORRIBLE EXAMPLES" OF PRODUCTION FACILITIES INVOLVING CARELESS DESIGNS IN VARIOUS BRITISH MACHINES OF THAT ERA. SOME OF THE BEST PERFORMING BRITISH MILITARY PLANES, HAD BEEN BUILT BY MEN WHO WERE FAR FROM ENGINEERS, RESULTING IN PRODUCTION BOTTLE-NECKS, LABOR TROUBLES, GREAT LOSS OF TIME & MONEY, AGGRAVATED FURTHER BY SHORTAGE OF CERTAIN MATERIALS. IN THE DESIGN OF THE NIGHT HAWK, ALL THE ABOVE MENTIONED ASPECTS HAD BEEN CONSIDERED. COMPLICATED JIGS WERE ELIMINATED. VARIOUS SIZES OF METAL SHEETS & TUBING, WERE



NO LONGER A PRODUCTION HINDRANCE. QUANTITIES OF PLENTIFUL, STOCK PARTS & FITTINGS USED IN SE-5'S, WENT INTO THE NEW DESIGN. SCRAP MATERIALS, RESIDUAL FROM WING CONSTRUCTION, WERE USED IN THE FUSELAGE & TAIL FRAMES. BRIEFLY, STANDARDIZATION, SIMPLICITY & FLEXIBILITY OF PRODUCTION FACILITY INCORPORATED IN THE NIGHT HAWK, WAS FURTHER GRATIFIED BY IT'S EXCELLENT AND SPECIFIC PERFORMANCE. A BIT LATE FOR FRONT LINE SERVICE BEFORE THE

ARMISTICE WAS SIGNED, THE NIGHT HAWK WAS FULLY CAPABLE OF CARRYING ON FOR THE R.A.F., WHERE THE SE-5 AND THE "SNIPE" (WHICH IT RESEMBLED) HAD LEFT OFF, AND WAS AFTER "THE BIG FUSS," PRODUCED IN CONSIDERABLE QUANTITY, FOR THE AIR FORCE'S PEACE PROGRAM. AS THE R.A.F.'S FIRST TRULY MODERN, RADIAL POWERED PRODUCTION AIRPLANE, THE NIGHT HAWK WAS POWERED BY A 9 CYL. 320 H.P. "DRAGON-FLY" AIRCOOLED RADIAL ENGINE, GIVING IT A CLIMB OF APP. 1500 F.P.M.,

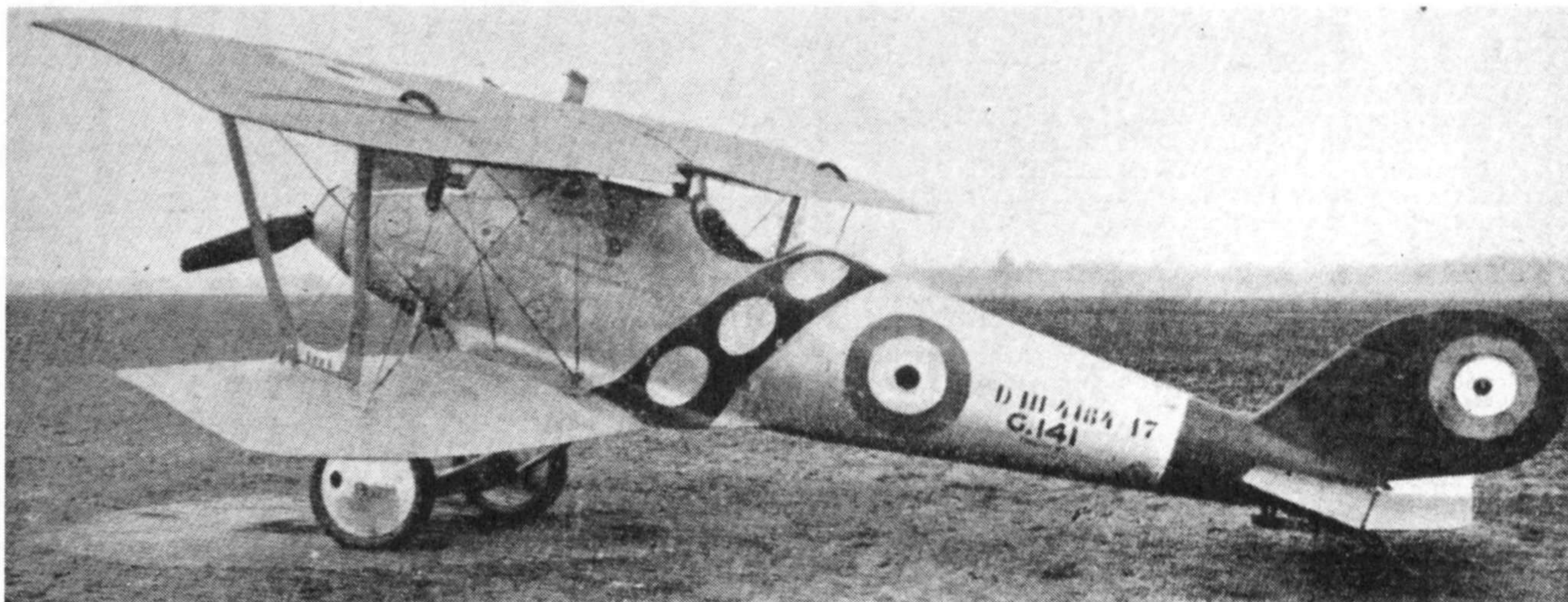


AND TOP SPEED OF 151 M.P.H. WITH ELECTRICAL CLOTHING HEATING EQUIPMENT, OXYGEN VAPORIZER FOR THE PILOT, THREE FUEL TANKS, ONE OIL, TWO AUTOMATIC GUNS, 2000 ROUNDS OF AMMO, & A MULTITUDE OF INSTRUMENTS, FITTINGS & FOUR 20 LB. BOMBS, SHE COULD CLIMB TO 28000 FEET IN 25 MIN. SPECIFICATIONS: SPAN, BOTH WINGS, 28'-0". O.A. LENGTH, 18'-6". MAX. HEIGHT, 9'-3" (LEV. FL. POS.) CHORD, BOTH, 63". INCIDENCE, 2 1/2 - 3". DIHEDRAL, BOTH, 4". GAP, 4'-6". WEIGHTS: EMPTY, 1500 LBS, WT. PER H.P. 6.62 LBS.

GROSS, LOADED, 2120 LBS. FUEL CAP. 40 GALS., OIL, 4 GALS. (LASTING 3 HRS. @ 20000 FT.) PERFORMANCE: SPEED, AT SEA LEVEL, 151 M.P.H. AT 10000, 140 M.P.H. AT 20000, 121 M.P.H. LANDING, 58 M.P.H. CLIMB, TO 5000, 3 MINS., TO 10000, 7 MIN., TO 20000, 20 MINS. DISPOSABLE LOAD APART FROM FUEL, 400 LBS. TOTAL AREA OF WINGS, 270 SQ. FT. TOTAL AREA OF TAIL, 28 SQ. FT. (ADDITIONAL REFERENCE AVAILABLE IN "JANES ALL THE WORLD'S AIRCRAFT" FOR 1919.)

Pfalz D.III

drawings by WILLIAM WYLAM



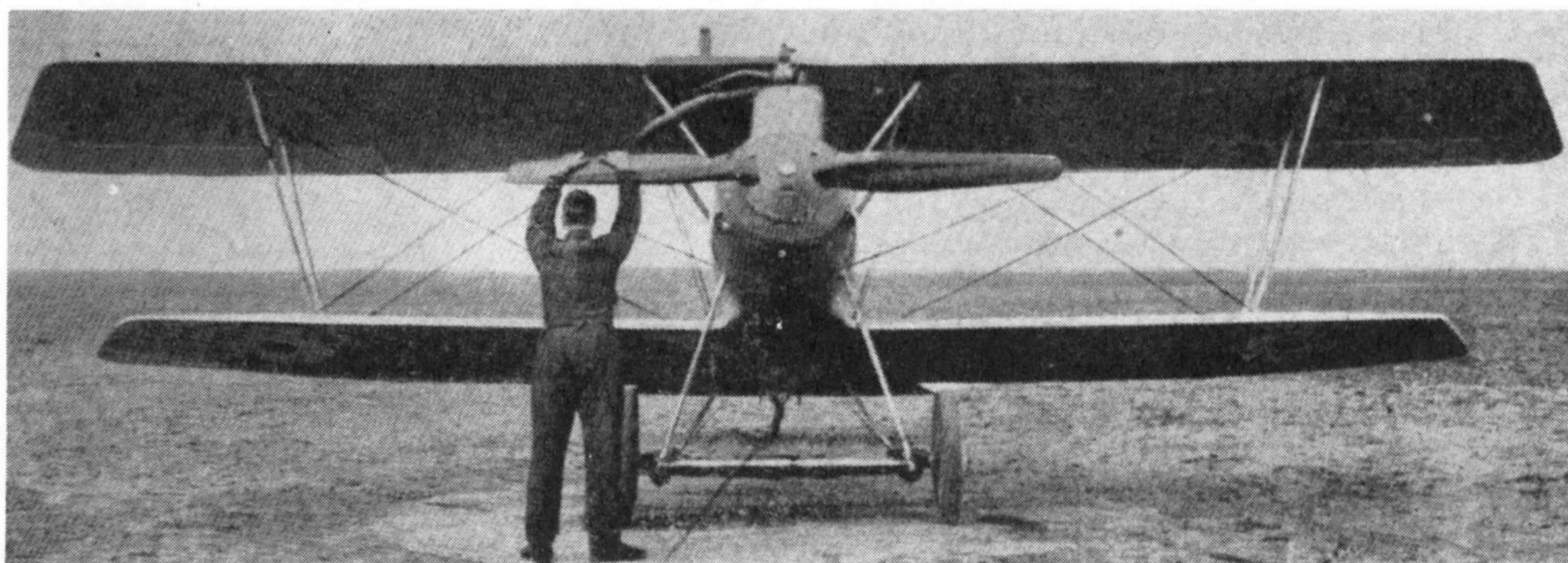
The Pfalz D.III was Germany's attempt to get an edge in the skies over Europe in WW I. Clean in design and very maneuverable, it was still outclassed by Allied aircraft of the era. "Jane's All the World's Aircraft" photos.

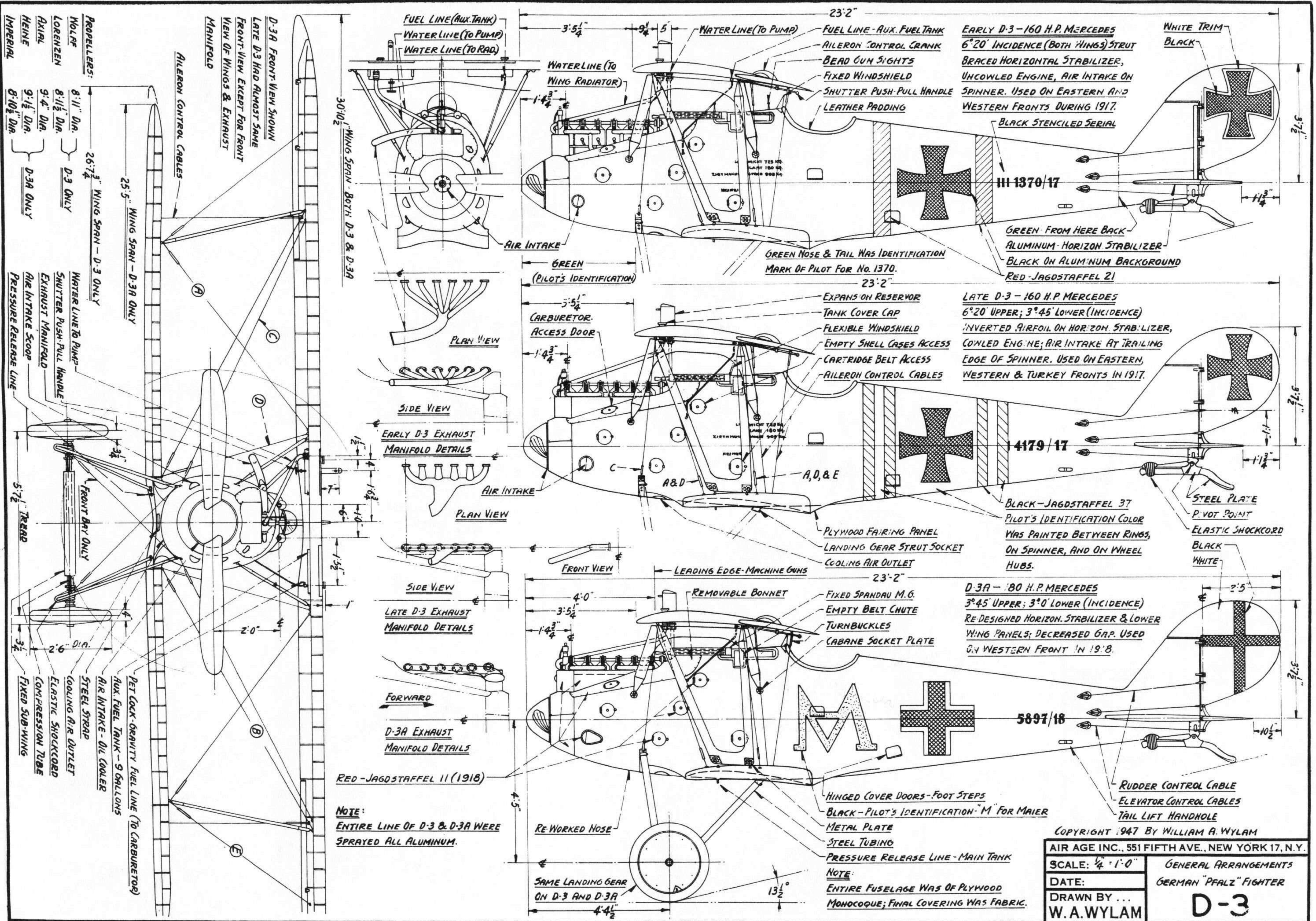
The Wylam drawings have been used by countless builders and by the producers of at least one D.III plastic kit. His forward fuselage line under the engine is too full, and the characteristic arrow-shaped profile of the original is lost.

AFTER A SERIES of monoplanes patterned after the French Morane-Saulniers, the D.III was Pfalz's first attempt at producing a modern, high-powered, single-seat fighter. It entered service in 1917 powered by a 160-hp Mercedes engine. Armament was comprised of the usual twin forward-firing Spandaus. Although useful for German units needing replacements, it was considered inferior to other types. None-

theless, several hundred were built. For the last months of WW I the D.IIIa became available, which was basically a refined D.III with a more powerful (180-hp) engine. Clean in design, light in weight, and very maneuverable, it was one of the first attempts at streamlining by the Germans in order to develop a scout machine with good performance.

No D.III's still exist. □





EARLY D-3 - 160 H.P. MERCEDES
 6°20' INCIDENCE (BOTH WINGS) STRUT
 BRACED HORIZONTAL STABILIZER,
 UNCOOLED ENGINE, AIR INTAKE ON
 SPINNER. USED ON EASTERN AND
 WESTERN FRONTS DURING 1917.

LATE D-3 - 160 H.P. MERCEDES
 6°20' UPPER; 3°45' LOWER (INCIDENCE)
 INVERTED AIRFOIL ON HORIZON. STABILIZER,
 COOLED ENGINE; AIR INTAKE AT TRAILING
 EDGE OF SPINNER. USED ON EASTERN,
 WESTERN & TURKEY FRONTS IN 1917.

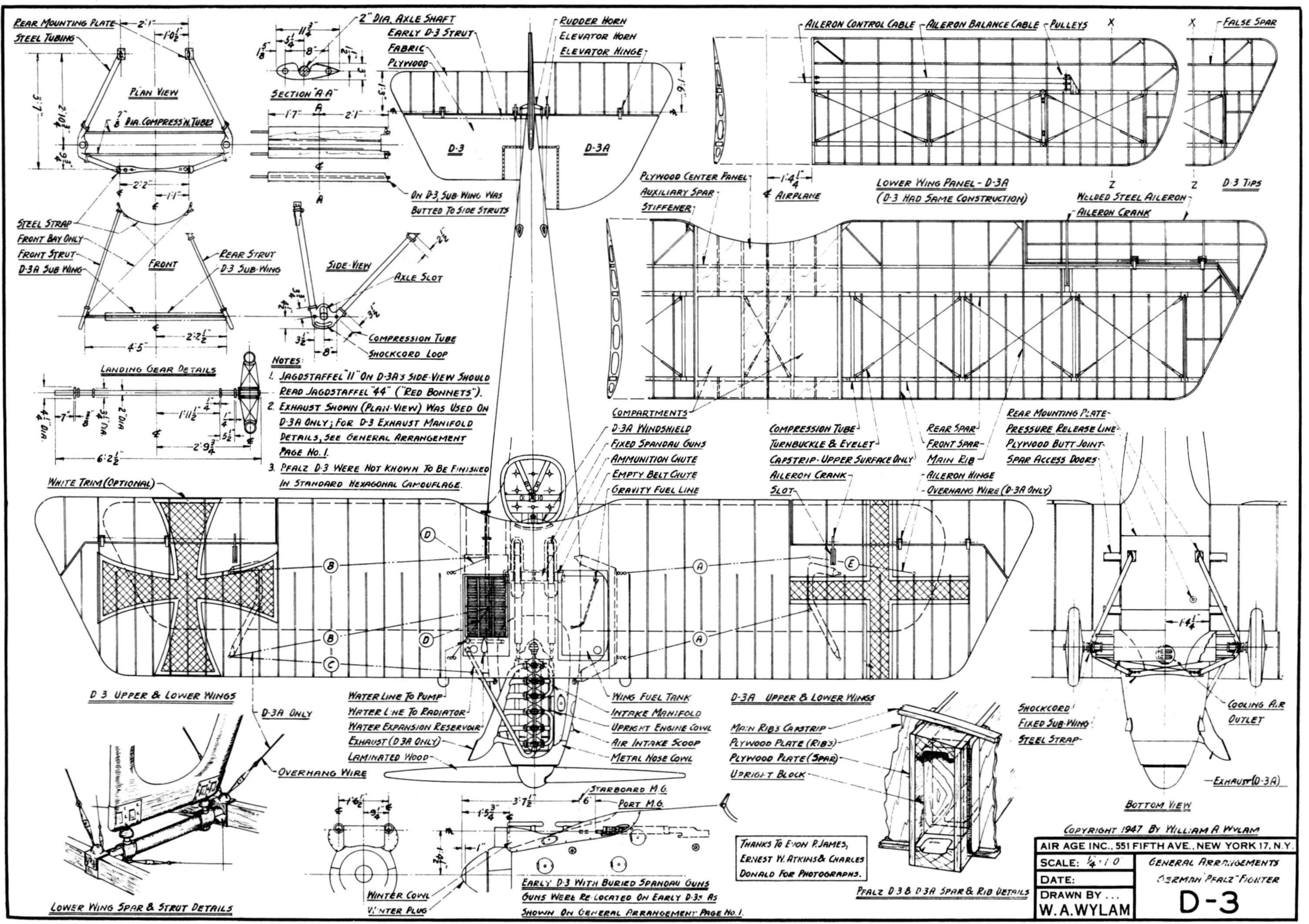
D-3A - 180 H.P. MERCEDES
 3°45' UPPER; 3°0' LOWER (INCIDENCE)
 RE DESIGNED HORIZON. STABILIZER & LOWER
 WING PANELS; DECREASED GAP. USED
 ON WESTERN FRONT IN 1918.

NOTE:
 ENTIRE LINE OF D-3 & D-3A WERE
 SPRAYED ALL ALUMINUM.

NOTE:
 ENTIRE FUSELAGE WAS OF PLYWOOD
 MONOCOQUE; FINAL COVERING WAS FABRIC.

COPYRIGHT 1947 BY WILLIAM A. WYLAM
 AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 1/4" = 1'-0"
 DATE:
 DRAWN BY ...
 W.A. WYLAM

GENERAL ARRANGEMENTS
 GERMAN "PALFZ" FIGHTER
D-3

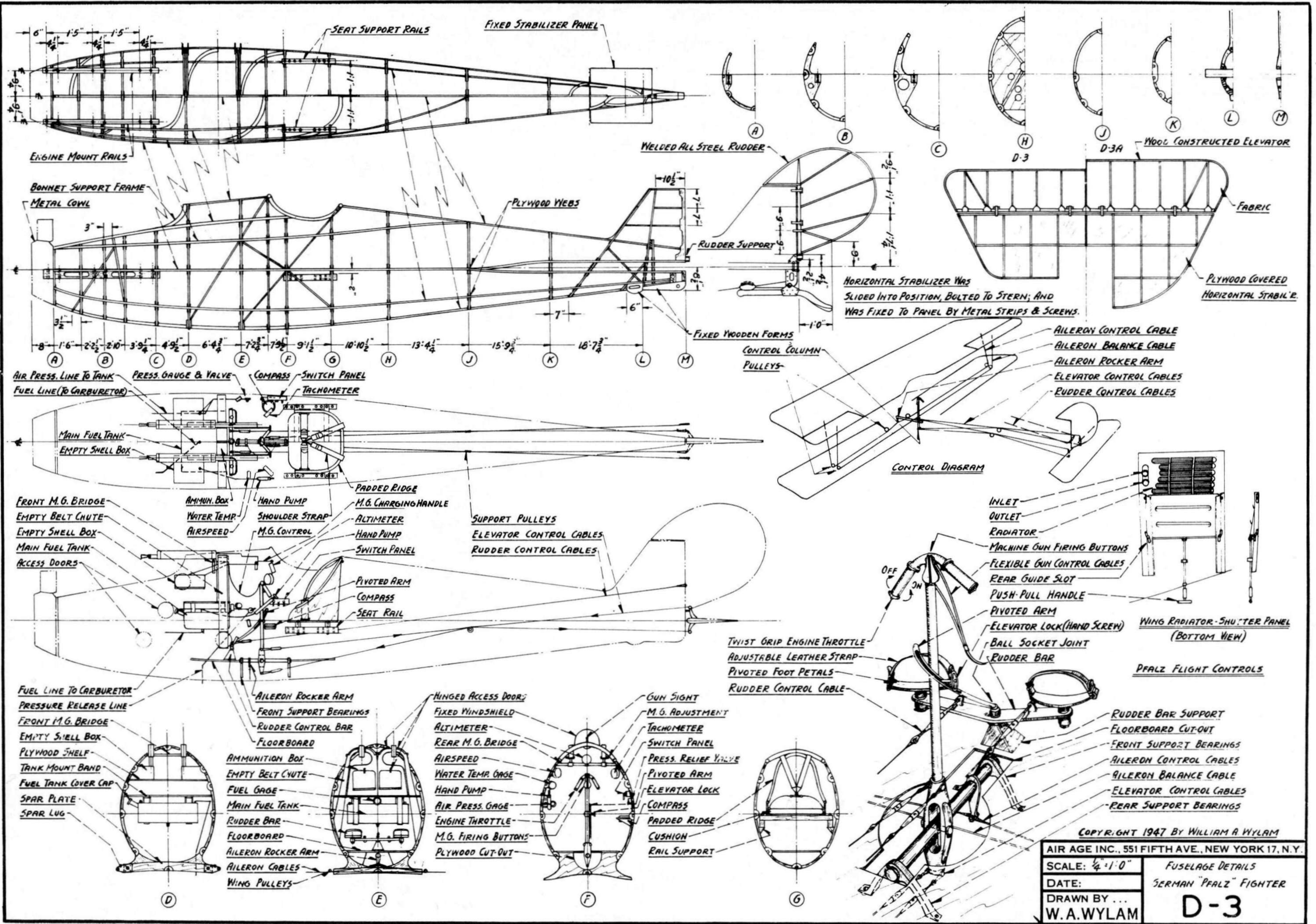


- NOTES:**
1. JAGSTAFFEL "II" ON D-3A'S SIDE-VIEW SHOULD READ JAGSTAFFEL "44" ("RED BONNETS").
 2. EXHAUST SHOWN (PLAN-VIEW) WAS USED ON D-3A ONLY; FOR D-3 EXHAUST MANIFOLD DETAILS, SEE GENERAL ARRANGEMENT PAGE No. 1.
 3. PFALZ D-3 WERE NOT KNOWN TO BE FINISHED IN STANDARD HEXAGONAL CAMOUFLAGE.

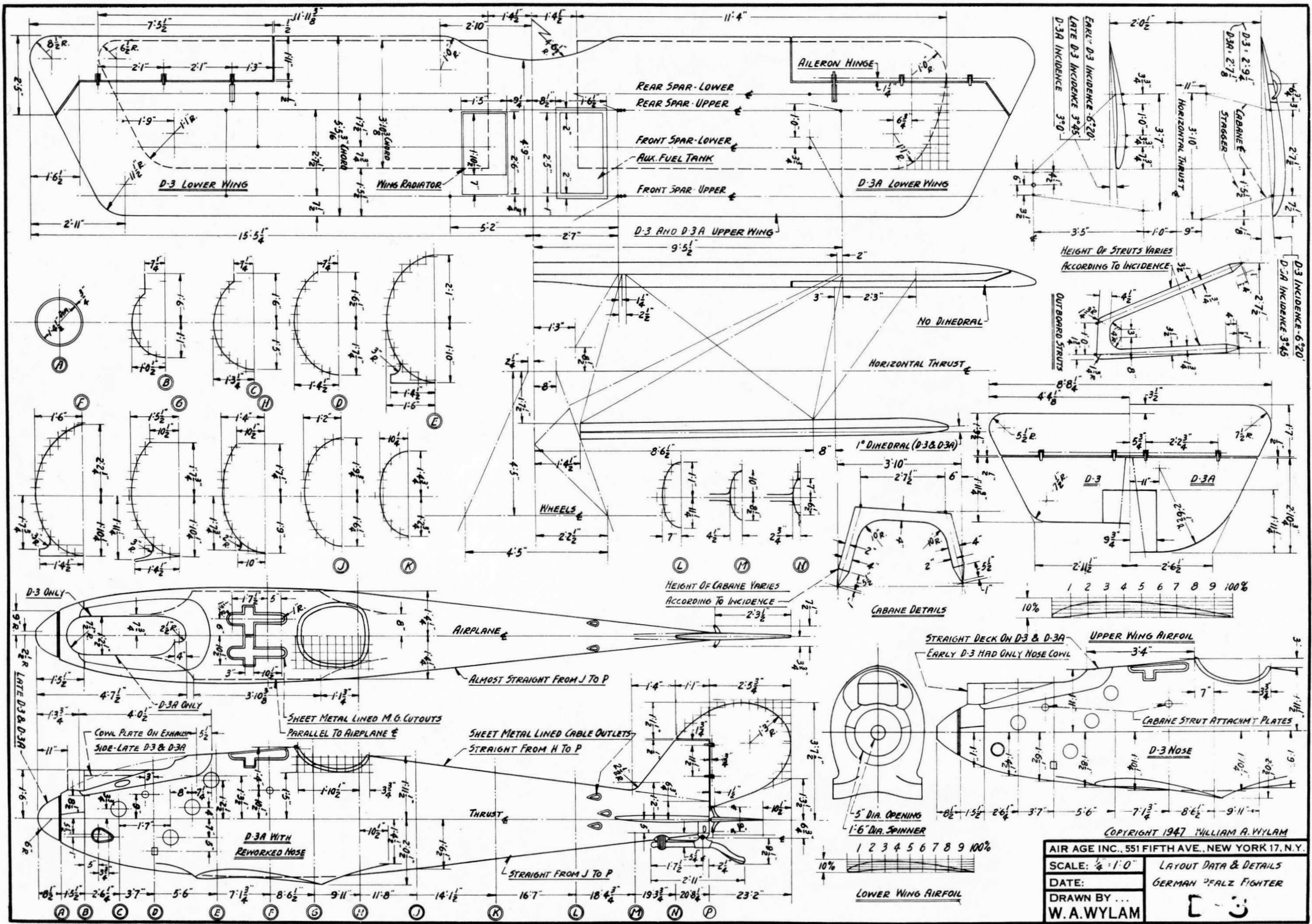
THANKS TO EVON P. JAMES, ERNEST W. ATKINS & CHARLES DONALD FOR PHOTOGRAPHS.

COPYRIGHT 1947 BY WILLIAM A. WYLAM
 AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 1/4" = 1'-0"
 DATE:
 DRAWN BY ...
 W.A. WYLAM

GENERAL ARRANGEMENTS
 GERMAN "PFALZ" FIGHTER
D-3



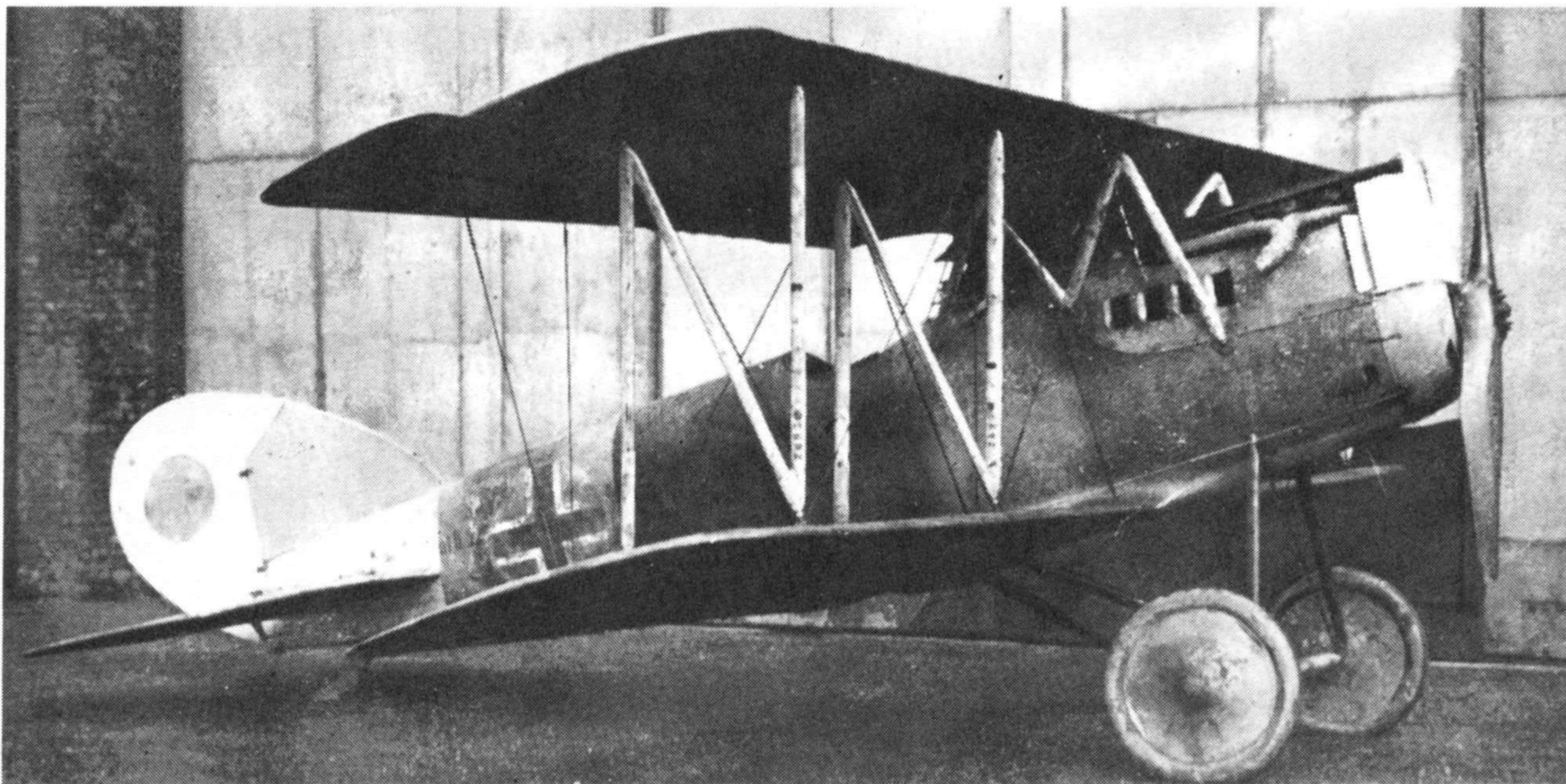
COPYRIGHT 1947 BY WILLIAM A WYLAM
 AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 1/4" = 1'-0"
 DATE:
 DRAWN BY ...
 W.A. WYLAM
 FUSELAGE DETAILS
 GERMAN "PFALZ" FIGHTER
 D-3



COPYRIGHT 1947 WILLIAM A. WYLAM
 AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 1/4" = 1'-0"
 DATE: _____
 DRAWN BY ...
 W.A. WYLAM
 LAYOUT DATA & DETAILS
 GERMAN FALZ FIGHTER

Pfalz D.XII

drawings by WILLIAM WYLAM



THE PFALZ D.XII was designed late in 1917 as a high-performance single-seat pursuit plane. Economy of construction was a prime prerequisite in view of Germany's increasing shortage of strategic materials, and the airplane was built largely of wood at a time when metal fabrication was coming into the picture. The fuselage utilized plywood skin.

Pilots found the D.XII to be a stable

airplane and easy to fly. It required little attention when cruising, although it was somewhat difficult to keep straight on the ground due to a sluggish rudder effect. But mechanics found its two-bay rigging difficult to keep in trim, especially when compared to the wire-less Fokker D.VII.

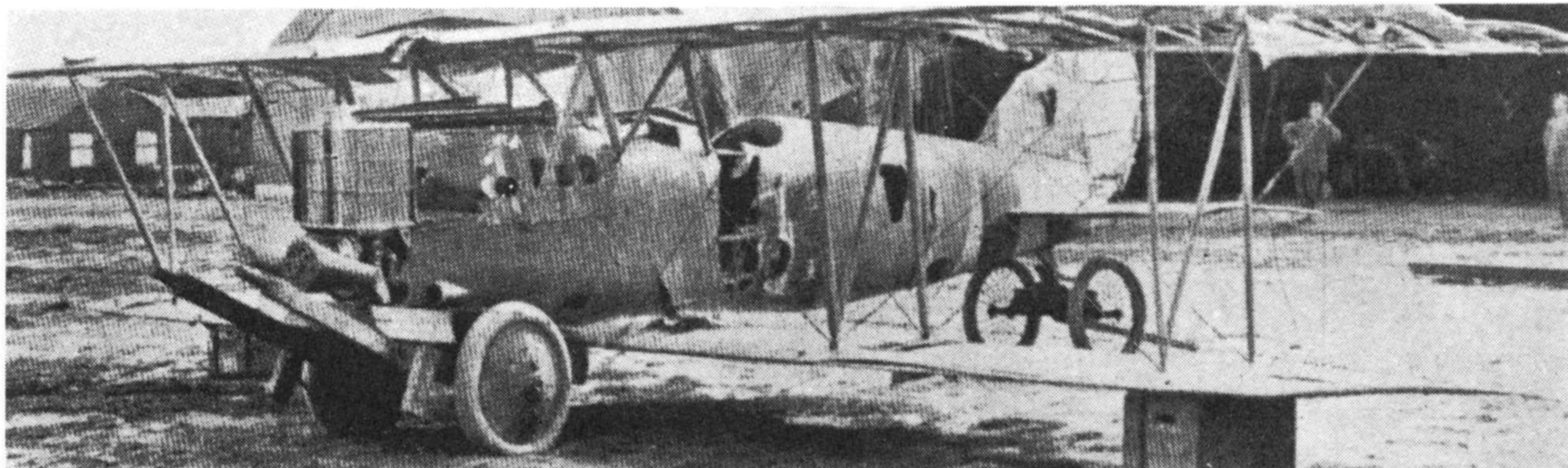
Beautiful in form, the D.XII was advanced for its time. Equipped with

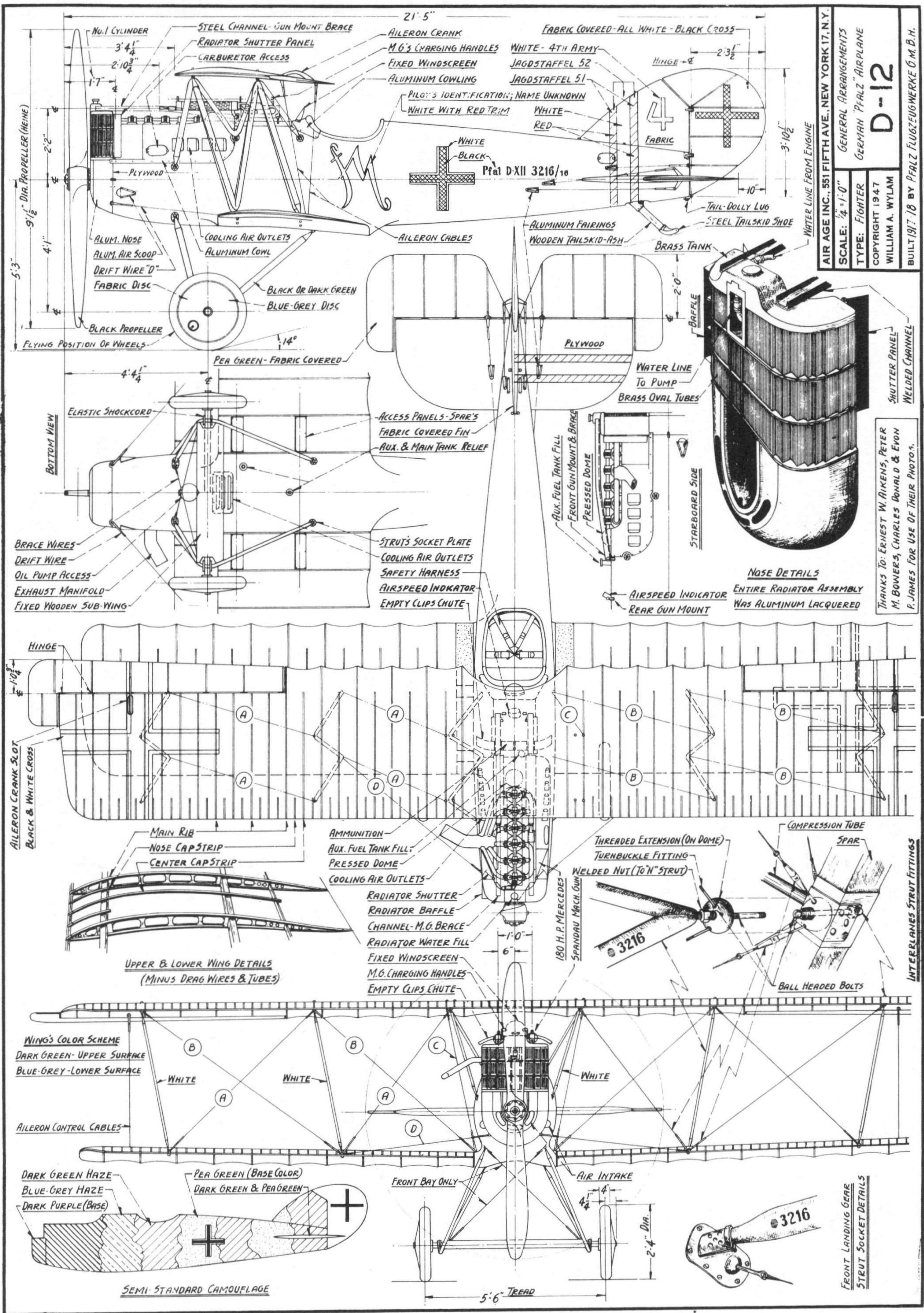
either a Mercedes 160- or 180-hp powerplant, depending on date of manufacture, the engine was cooled by a nose radiator located entirely above the propeller shaft. It had two fuel tanks located in the fuselage and worked under air pressure.

The D.XII reached the front too late in the war to make an imposing record for itself.

There are four left, all in museums. □

This Pfalz D.XII was a rugged design as seen in photo of wreckage below. "Jane's All the World's Aircraft" photos.





AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 1/4" = 1'-0"
 TYPE: FIGHTER
 COPYRIGHT 1947
 WILLIAM A. WYLAN

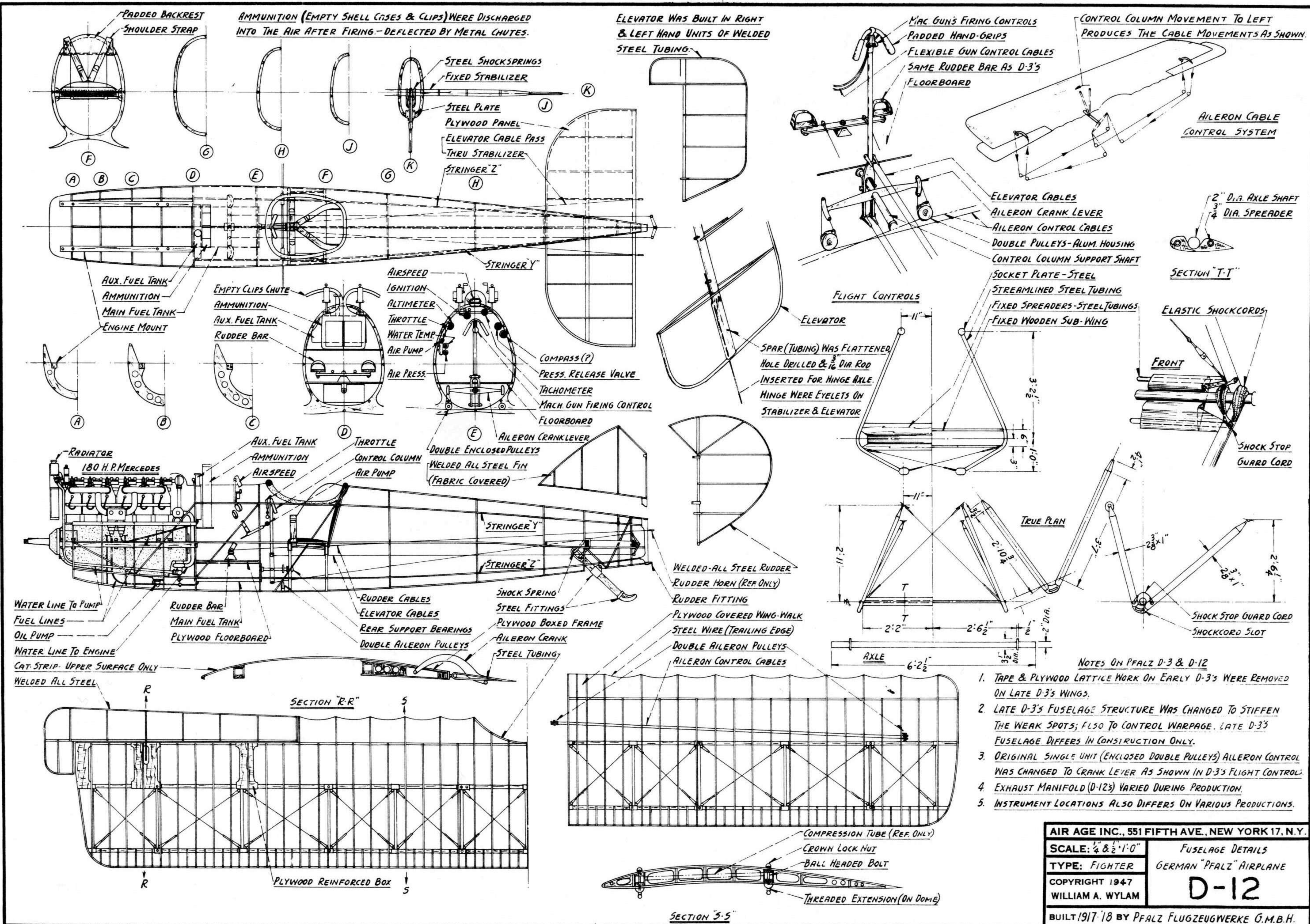
GENERAL ARRANGEMENTS
 GERMAN "PFALZ" AIRPLANE
 D-12

THANKS TO: ERNEST W. AIKENS, PETER M. BOWERS, CHARLES DONALD & EVON P. JAMES FOR USE OF THEIR PHOTOS.

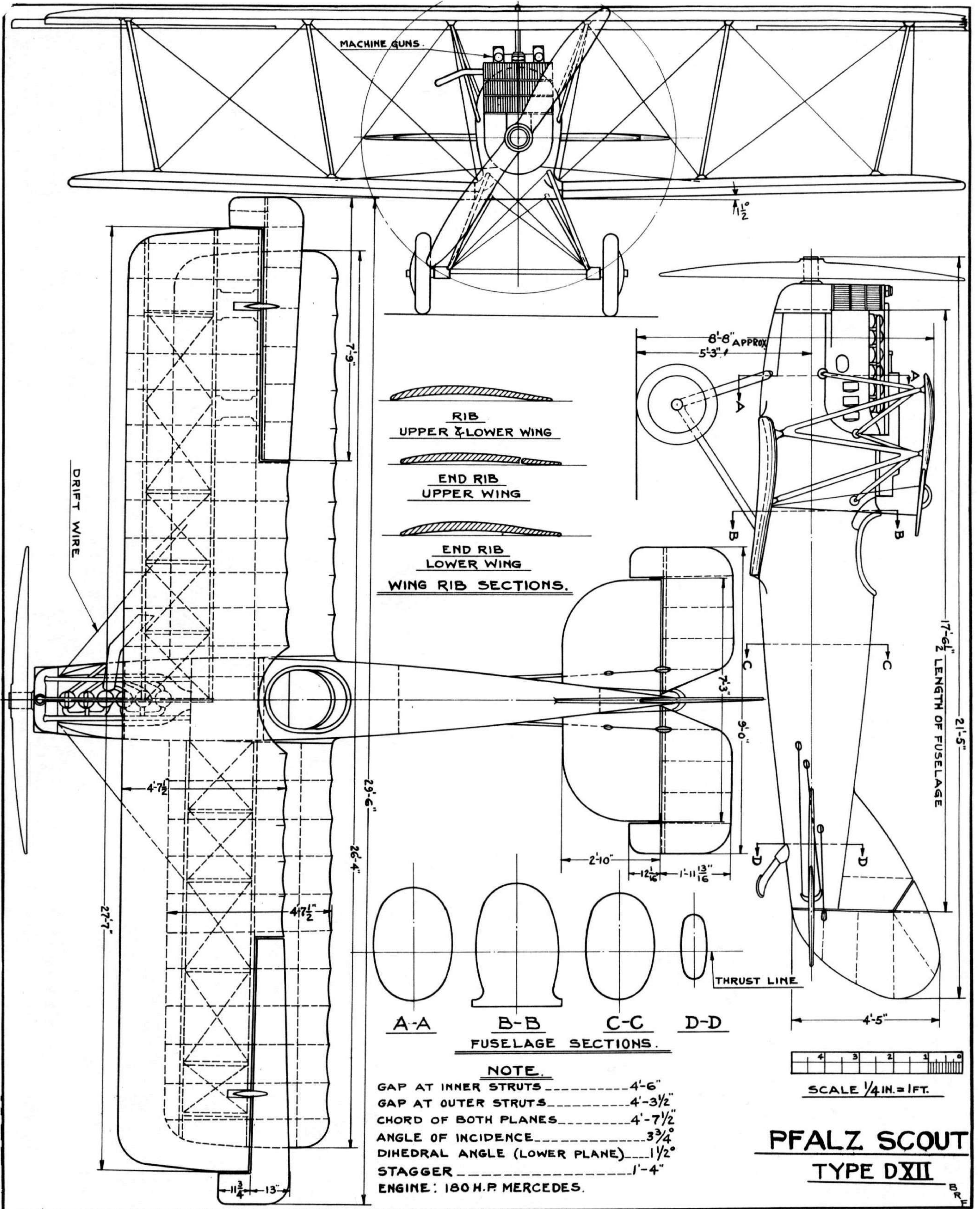
Nose Details
 ENTIRE RADIATOR ASSEMBLY WAS ALUMINUM LACQUERED

INTERPLANES STRUT FITTINGS

FRONT LANDING GEAR STRUT SOCKET DETAILS

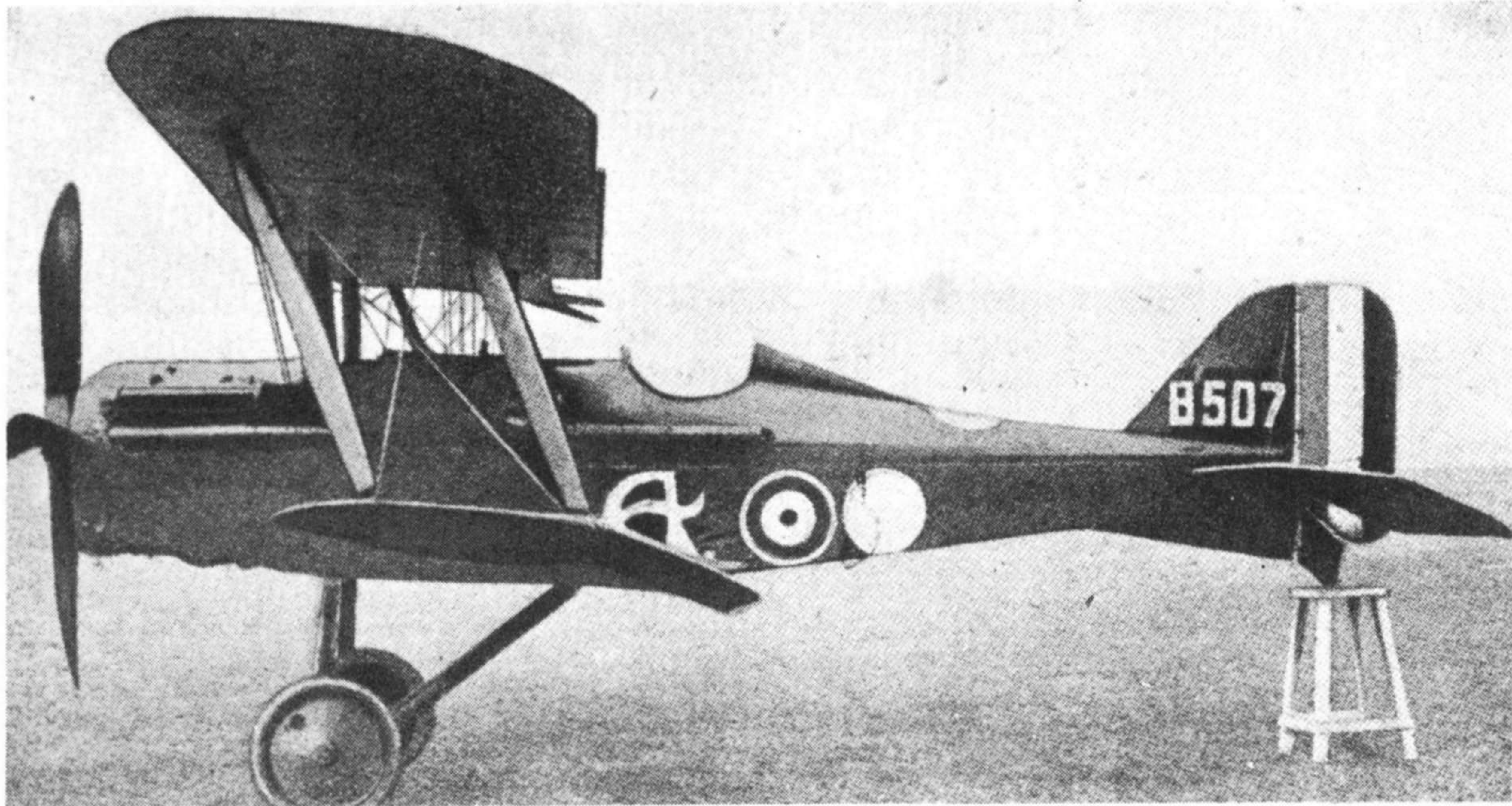


AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: 1/4" & 1/2" = 1'-0"	FUSELAGE DETAILS
TYPE: FIGHTER	GERMAN "PFALZ" AIRPLANE
COPYRIGHT 1947	D-12
WILLIAM A. WYLAM	
BUILT 1917-18 BY PFALZ FLUGZEUGWERKE G.M.B.H.	



RAF S.E.5a

drawings by WILLIAM WYLAM

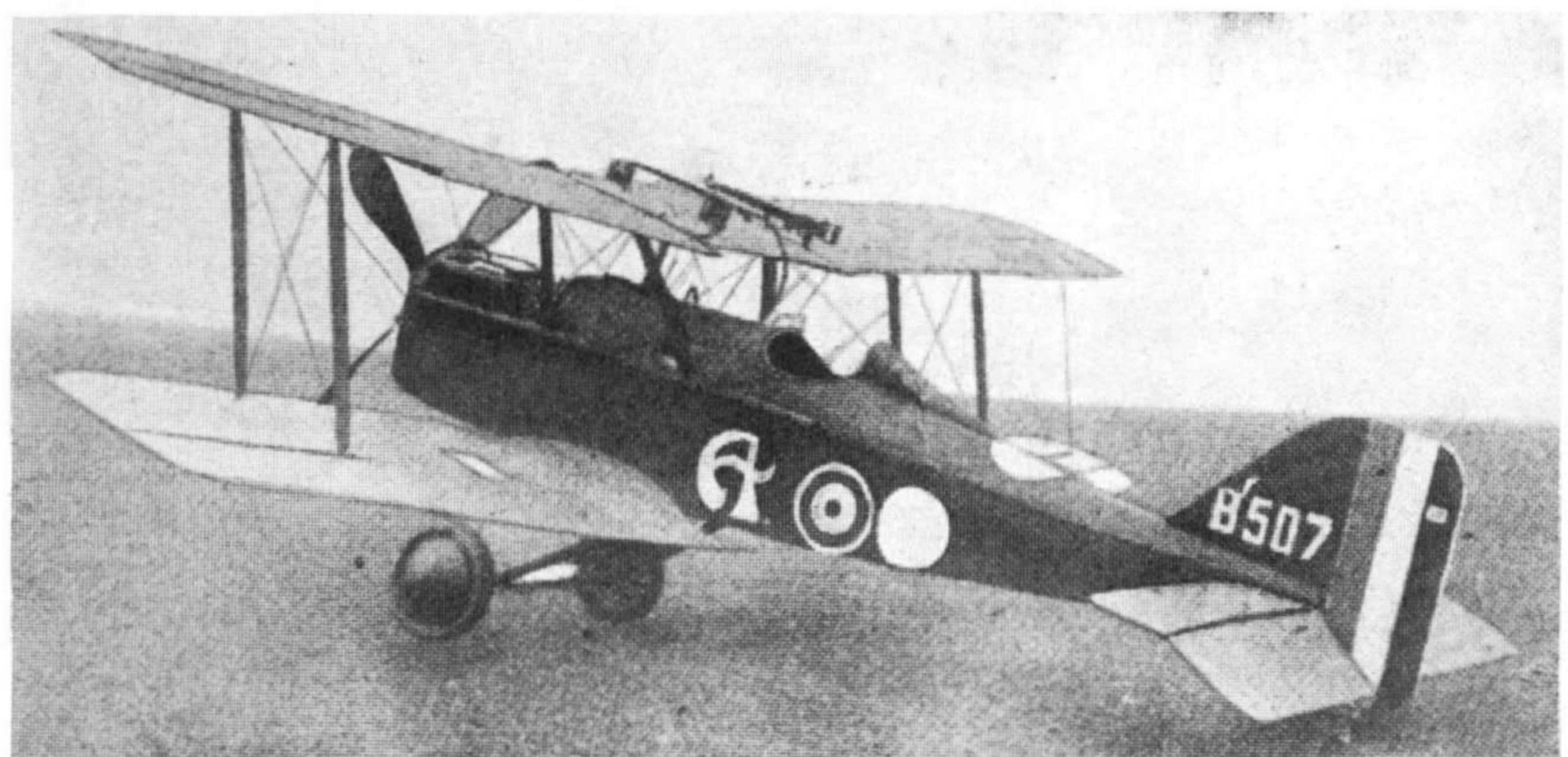


One of the most famous aircraft of WW I was the S.E.5a and it is credited with turning the tide in air supremacy over the Allied forces. "Jane's All the World's Aircraft" photos.

THE SCOUTING Experimental Number 5 was produced by the British Royal Aircraft Factory and appeared at the front during "bloody April" of 1917, the blackest month of the war in terms of casualties for the British RFC. Armed with either two Vickers guns or a Vickers and a Lewis gun, the Scout soon proved a match for the German Albatros, which up until that time had ruled the skies.

The S.E.5, and the later S.E.5a with a geared engine, was renowned for its ruggedness and proof of this fact came during a battle when a pilot actually flew an S.E.5 through the side of a house and emerged unhurt. It was also a favorite for fighter pilots of the Royal Flying Corps. Britain's leading Ace, Major Edward Mannock, scored 50 of his 73 victories while flying the S.E.5 Scout. William Bishop and Ray Collishaw also downed a majority of their credits in this aircraft.

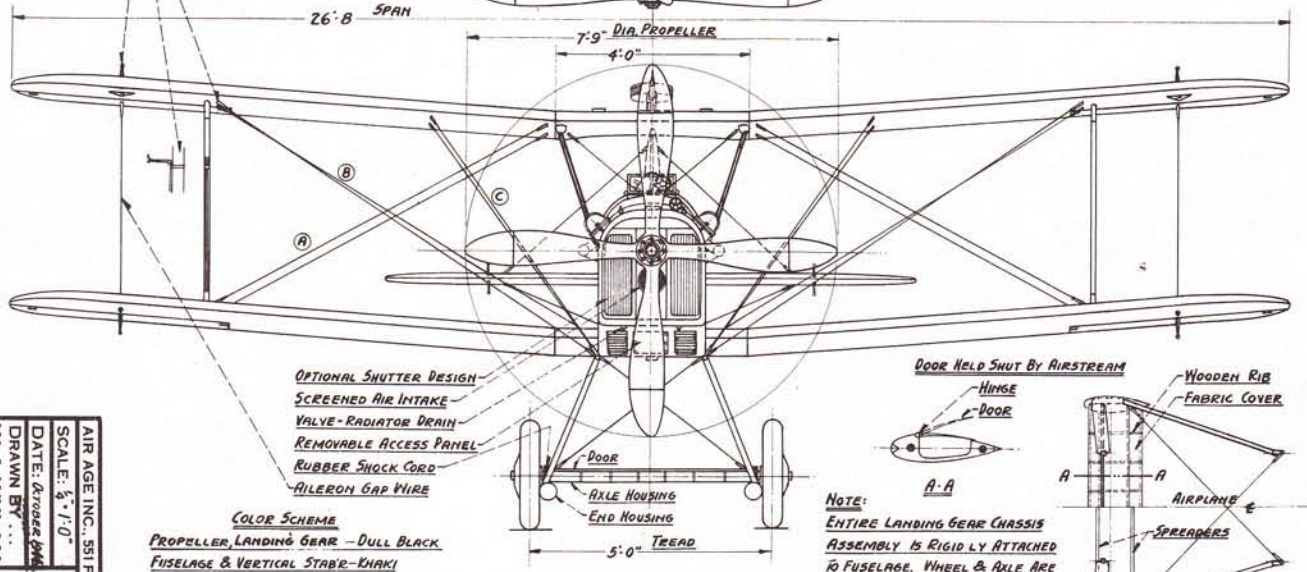
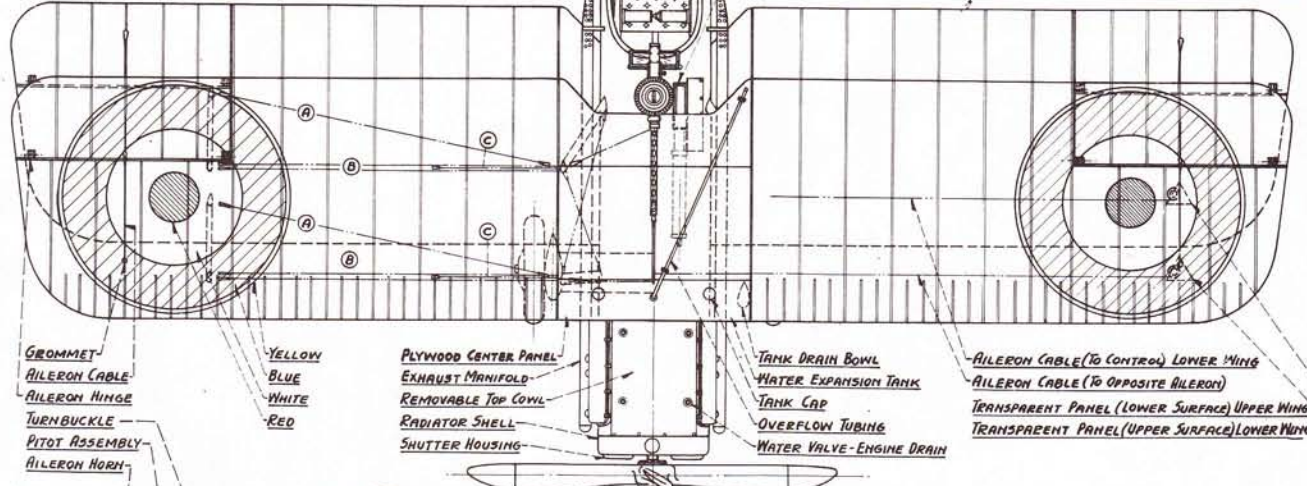
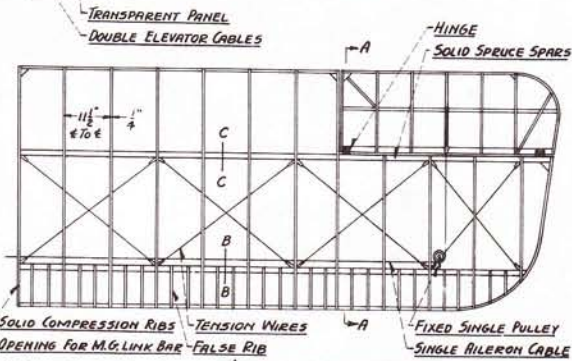
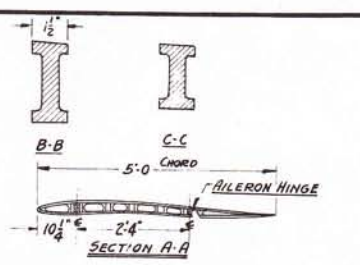
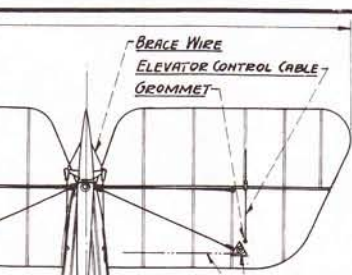
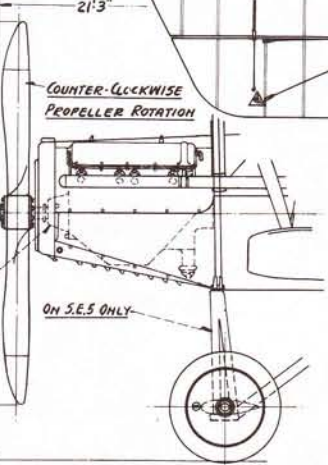
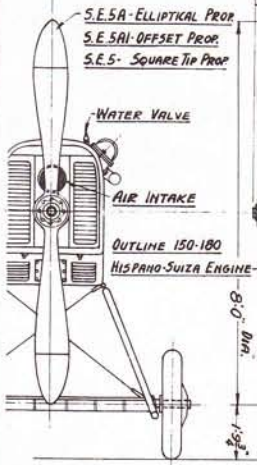
A major contribution to the war effort, the 25th Aero Squadron was formed at



Kelly Field in June 1917. The unit was made up of American pilots and ground personnel and their participation in the Great War has gone down in history as one of the turning points in favor of the Allies. The S.E.5 was a great aid to that end. In October 1918, no less than 16 units of the RFC were equipped with the

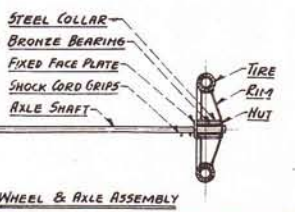
S.E.5 and 5a. The speed of the airplane was reported to be 132 mph at 6,500 feet, with a climb of 765 fpm and a service ceiling of 20,000 feet. □

MODEL	ENGINE	H.P.	GEARING	PROPELLER
S.E.5	HISPANO-SUIZA	150	DIRECT	2 BLADED
S.E.5A	HISPANO-SUIZA	180	DIRECT	2 BLADED
S.E.5A1	WOOLSEY "VIPER"	180	DIRECT	2 BLADED
S.E.5A2	HISPANO-SUIZA	220	REDUCTION	4 BLADED



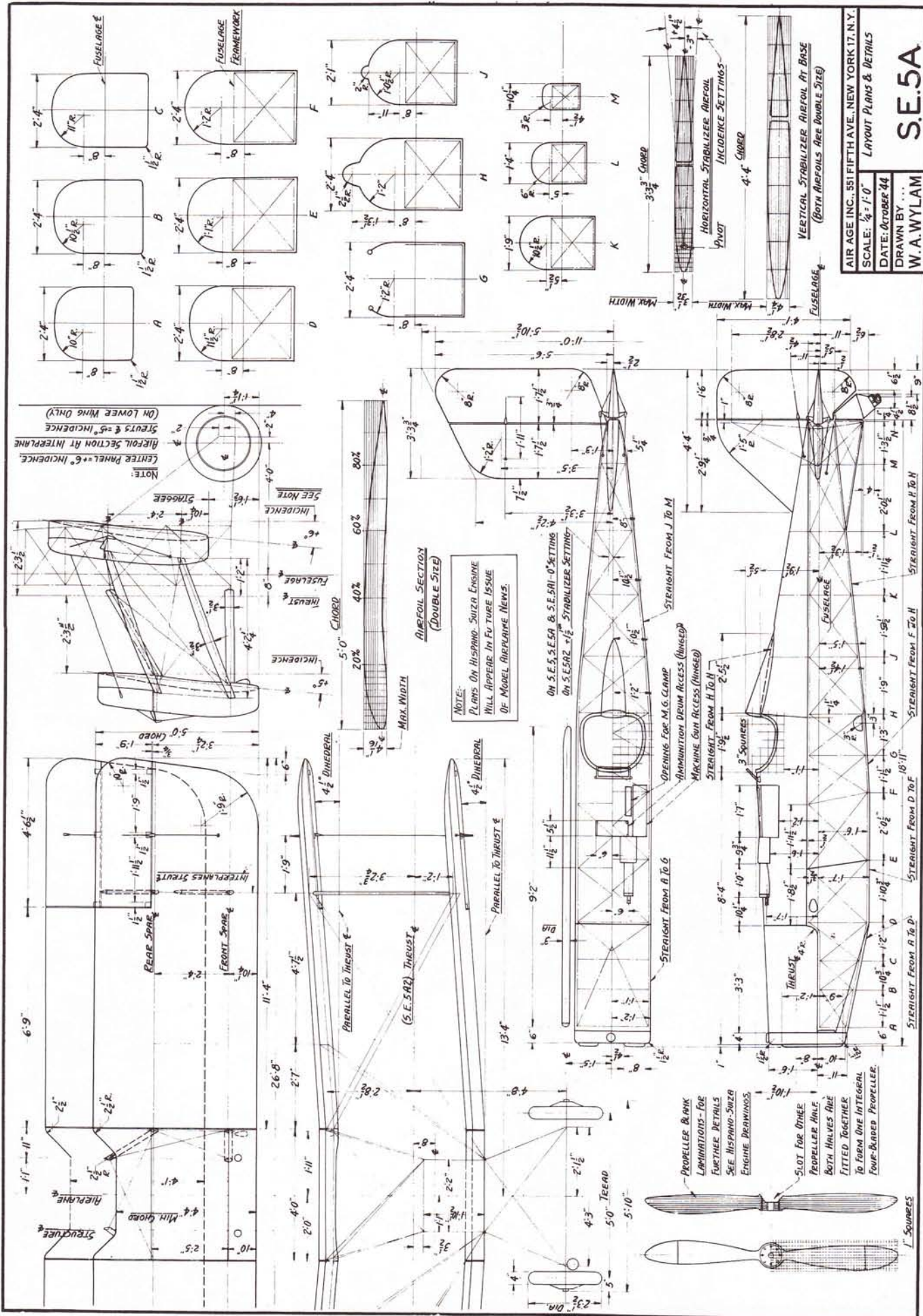
COLOR SCHEME

- PROPELLER, LANDING GEAR - DULL BLACK
- FUSELAGE & VERTICAL STABILIZER - KHAKI
- WINGS & HORIZONTAL STABILIZER - BUFF
- WING STRUTS, FUSELAGE FRAME - VARNISH
- TENSION WIRES, FITTINGS, ETC. - ALUMINUM



NOTE:
ENTIRE LANDING GEAR CHASSIS ASSEMBLY IS RIGIDLY ATTACHED TO FUSELAGE. WHEEL & AXLE ARE ONE ASSEMBLY. IT IS HELD TO CHASSIS BY RUBBER SHOCK CORDS.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
SCALE: 3/8" = 1'-0"
DATE: (insert date)
DRAWN BY: (insert name)
W.A. WYLAM
S.E.5A
GENERAL REARRANGEMENT

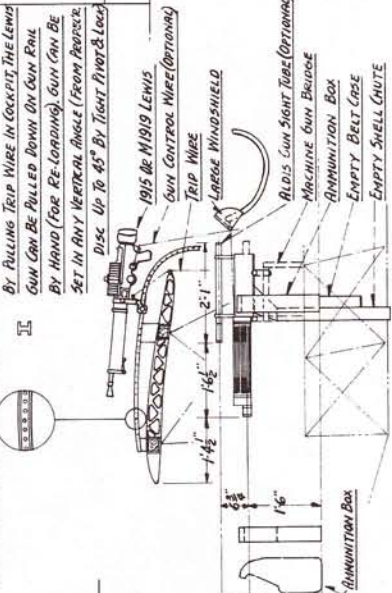


AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 1/4" = 1'-0"
 DATE: OCTOBER 44
 DRAWN BY ...
 W.A. WYLAM

S.E.5A

LAYOUT PLANS & DETAILS
 BOTH AIRFOILS ARE DOUBLE SIZE

THE TERM "S.E." MEANS SCOUTING EXPERIMENTAL, NOT SOPHISTICATED AS BELIEVED BY MOST W.W.I. FANS. SOPHISTICATED EXPERIMENTAL AS BELIEVED BY MOST W.W.I. FANS. SOPHISTICATED MEANS TO DO WITH THE S.E.-5; I WISH TO CORRECT THIS ERROR THAT WAS ON THE ORIGINAL DRAWINGS (DECEMBER 1944 M.A.N.). THE WING DIMENSIONS GIVEN IS CORRECT FOR THE S.E.-5A ONLY; THIS WAS DUE TO THE CLOSING OF THE GAPS () WHERE THE WING PANELS WERE ATTACHED TO THE FUSELAGE, AND TO THE CENTER PANEL. (SPARE ATTACHMENT FITTINGS WERE RE-DESIGNED FOR THE S.E.-5A).

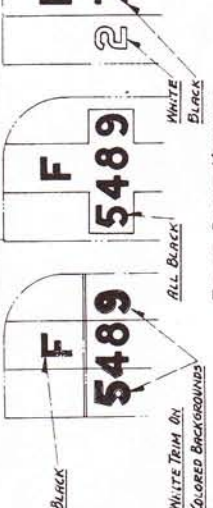


NOTES:
SERIAL NUMBERS WERE PRINTED ON THE FIN OR RUDDER, AND SOMETIMES ON THE FUSELAGE SIDES. FLIGHT COLORS WERE PRINTED ON SHUTTERS, ENGINE COWLS, RADIATOR SHIELD, OR WHEEL DISCS.

EITHER ALL BLACK WITH WHITE TRIM, ALL WHITE, OR ALL BLACK (INDEX LETTER WAS SEPARATED WHEN ENTIRE SERIAL NUMBER WAS ON ONE LINE)



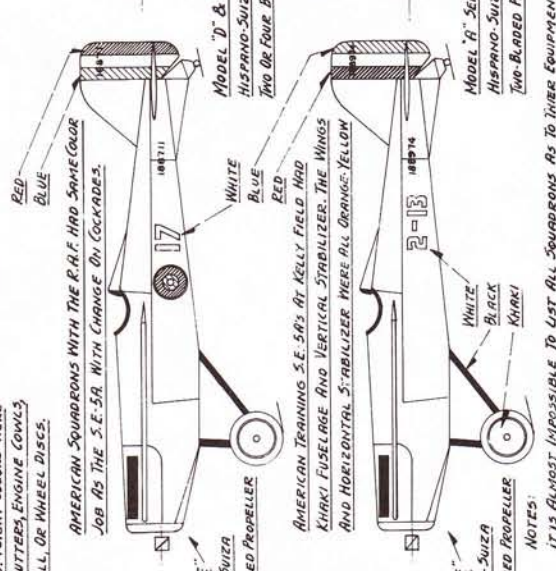
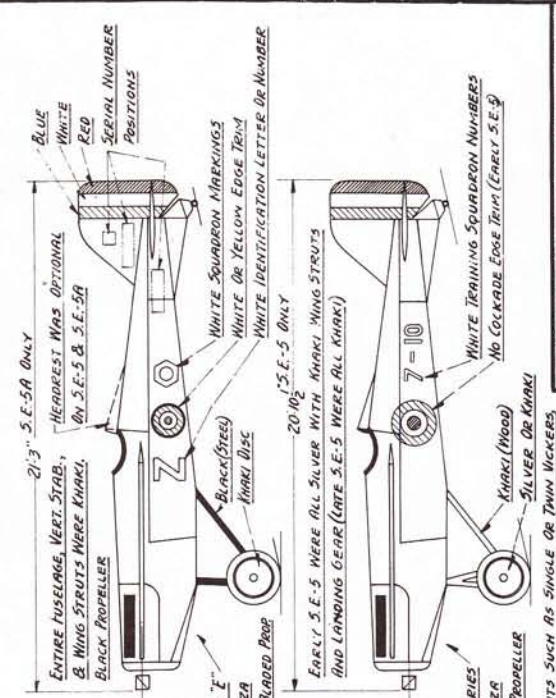
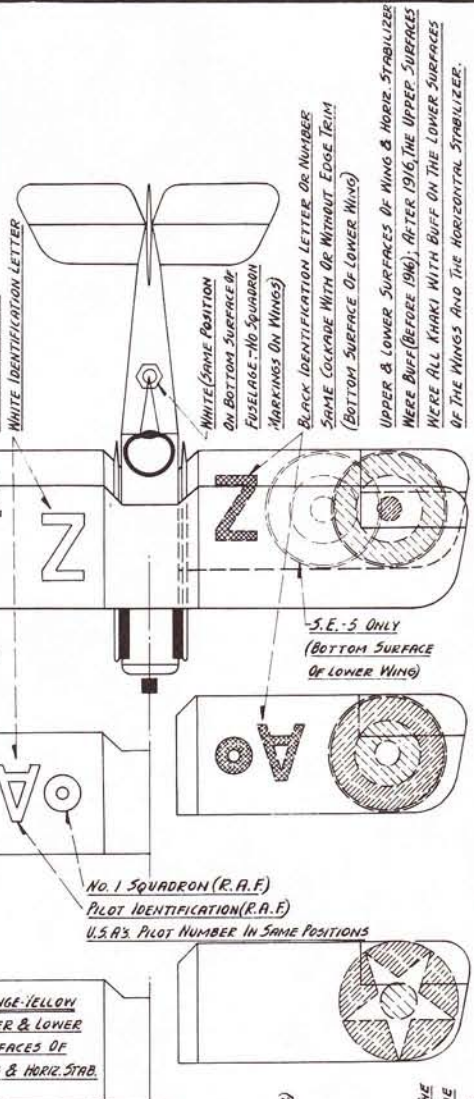
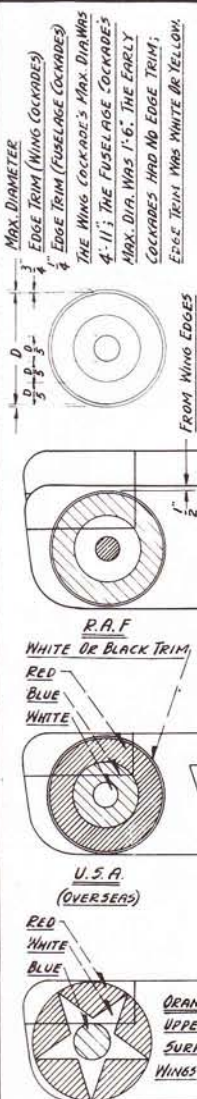
TYPICAL VERTICAL STABILIZER MARKINGS



TYPICAL RUDDER MARKINGS



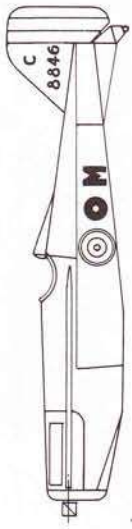
TYPICAL FUSELAGE MARKINGS (AFT OF COCKADE)



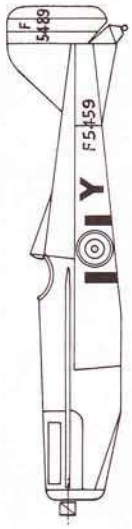
AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
SCALE: COLOR SCHEME DETAILS
U.S.A. AND R.A.F.
DRAWN BY...
W.A. WYLAM
S.F.-5

IT IS ALMOST IMPOSSIBLE TO LIST ALL SQUADRONS AS TO THEIR EQUIPMENTS SUCH AS SINGLE OR TWIN VICKERS, 1915 OR M1919 LEWIS, TWO OR FOUR BLADED PROPELLER, SMALL OR LARGE WINDSHIELD, DIRECT OR REDUCTION GEARED ENGINE (S.E.-5A OPTIONAL), WITH OR WITHOUT HEADREST, OR CORRECT SERIAL NUMBERS FOR THE MISSING SQUADRONS (WERE REMOVED FROM PHOTOGRAPHS BY CENSORS OF WORLD WAR I). THE KNOWN SQUADRONS, THEIR SERIAL NUMBERS, AND PILOT'S IDENTIFICATIONS & NUMBERS ARE ON THE SQUADRON MARKING PAGE. THANKS TO OWEN G. THEFOOD & LEONARD BERSEMAN OF PRODRATE & LONDON, ENGLAND.

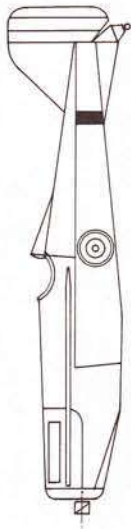
drawings by WILLIAM WYLAM RAF S.E.5a Squadron Markings



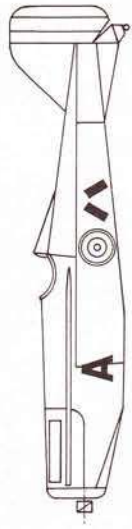
No. 1 SQUADRON



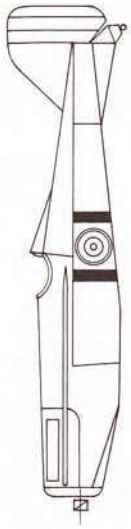
No. 24 SQUADRON



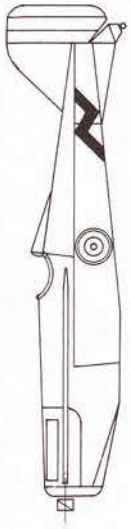
No. 29 SQUADRON



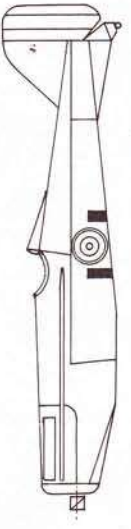
No. 32 SQUADRON



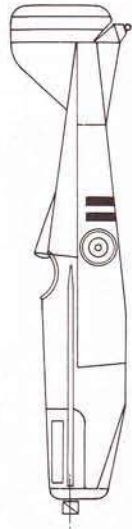
No. 40 SQUADRON



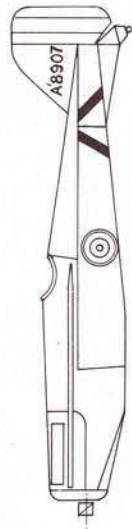
No. 40 SQUADRON



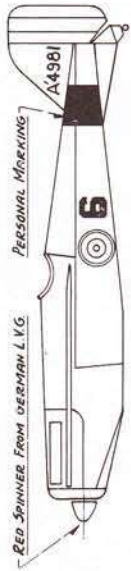
No. 41 SQUADRON



No. 41 SQUADRON

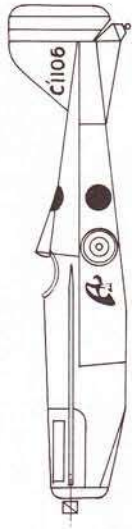


No. 56 SQUADRON

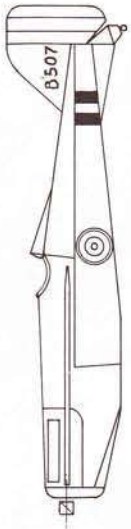


CAPTAIN BALL'S S.E.-5

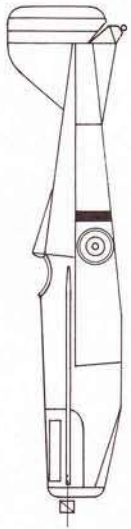
CAPTAIN McCUBBEN'S S.E.-5



No. 60 SQUADRON



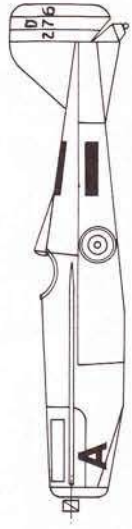
No. 60 SQUADRON



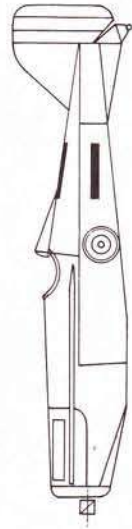
No. 64 SQUADRON



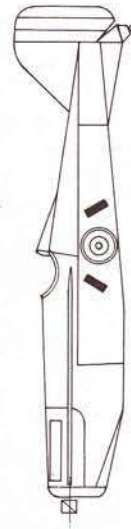
No. 68 SQUADRON



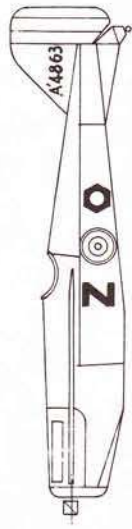
CAPTAIN MANNOCK'S S.E.-5A



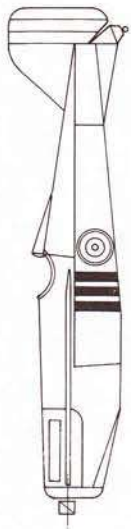
No. 84 SQUADRON



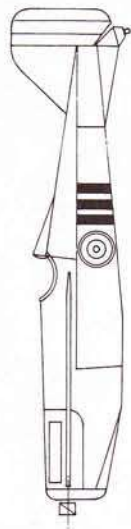
No. 84 SQUADRON



No. 85 SQUADRON



No. 92 SQUADRON



No. 94 SQUADRON



FULL CREDIT IS GIVEN TO MR. OWEN THEYER FOR THE PROBABLY, ENGLAND, FOR THIS TECHNICAL WORK.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.

SCALE: SQUADRON MARKINGS

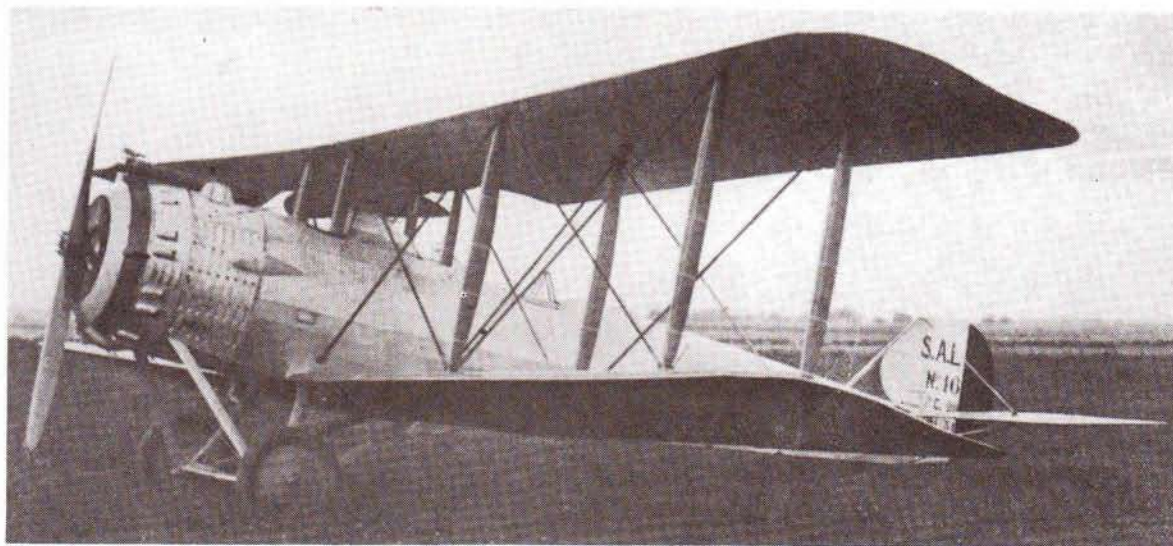
DATE: ROYAL AIR FORCE

DRAWN BY ... W.A. WYLAM

S.E.-5

Salmson Bomber 2 A.2

drawings by RICHARD ANDERSON



A brute in appearance, yet very maneuverable, the 2.A2 was known for its ability to fly and fly well. "A.A.H.S. Journal" photo.

BUILT by the French firm Societe des Moteurs Salmson, the 2 A.2 was considered by many to be one of the best two-seat fighters developed by any nation during the last half of WW I.

The aircraft featured dive-brakes between the landing gear legs under the fuselage, but the most unusual feature was the 9-cylinder water-cooled radial, the Salmson 9Z. When confronted by this new mechanical apparition, the French Air Ministry was somewhat taken aback, but still supported it, particularly because financing was accomplished entirely through private channels.

The 2 A.2 was intended for use as an Army cooperation type, to carry out any one of several jobs as required. In this respect it was intended to take up where the Sopwith 1½ Strutter left off and to carry on to meet advanced specifications.

The vast majority of pilots who flew it during WW I agree that it was a first-class airplane with few faults and lots of "flyability." Takeoff was relatively short, and the ship landed at about 45 mph tail high and at 40 mph, three-point. What

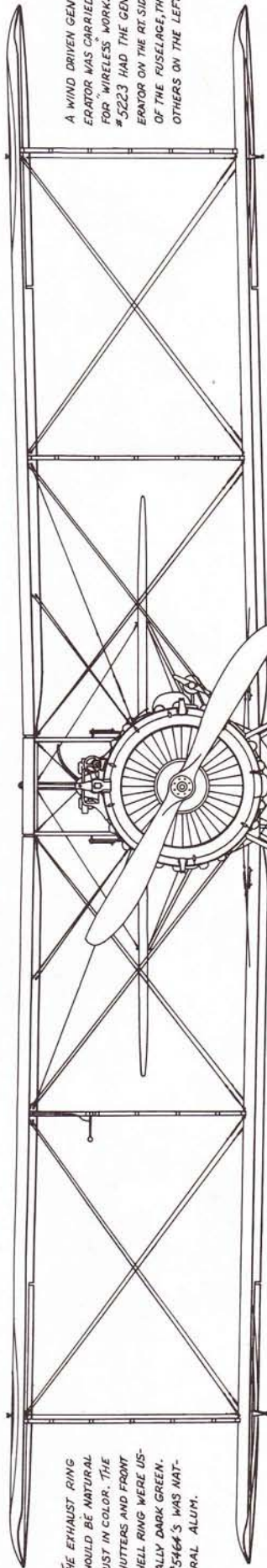


endeared it most to pilots was its long, flat glide, which saved many a crew who lost an engine far out over the lines.

Two survive; one in Belgium, the other in Japan. □

The Salmson 2A.2 was a large airplane that proved a favorite due to its good handling qualities. "A.A.H.S. Journal" photograph.

THE AMERICANIZED SALMSONS SHOWN HERE WERE IDENTIFIED WITH U.S. ROUNDELS, I.E. OUTER CIRCLE RED, THEN MEDIUM BLUE, AND A WHITE CENTER. THE FORWARD RUDDER STRIPE WAS RED, CENTER WHITE, AND TRAILING STRIPE BLUE. CABANE AND INTERPLANE STRUTS WERE OF WOOD & DARKLY VARNISHED.



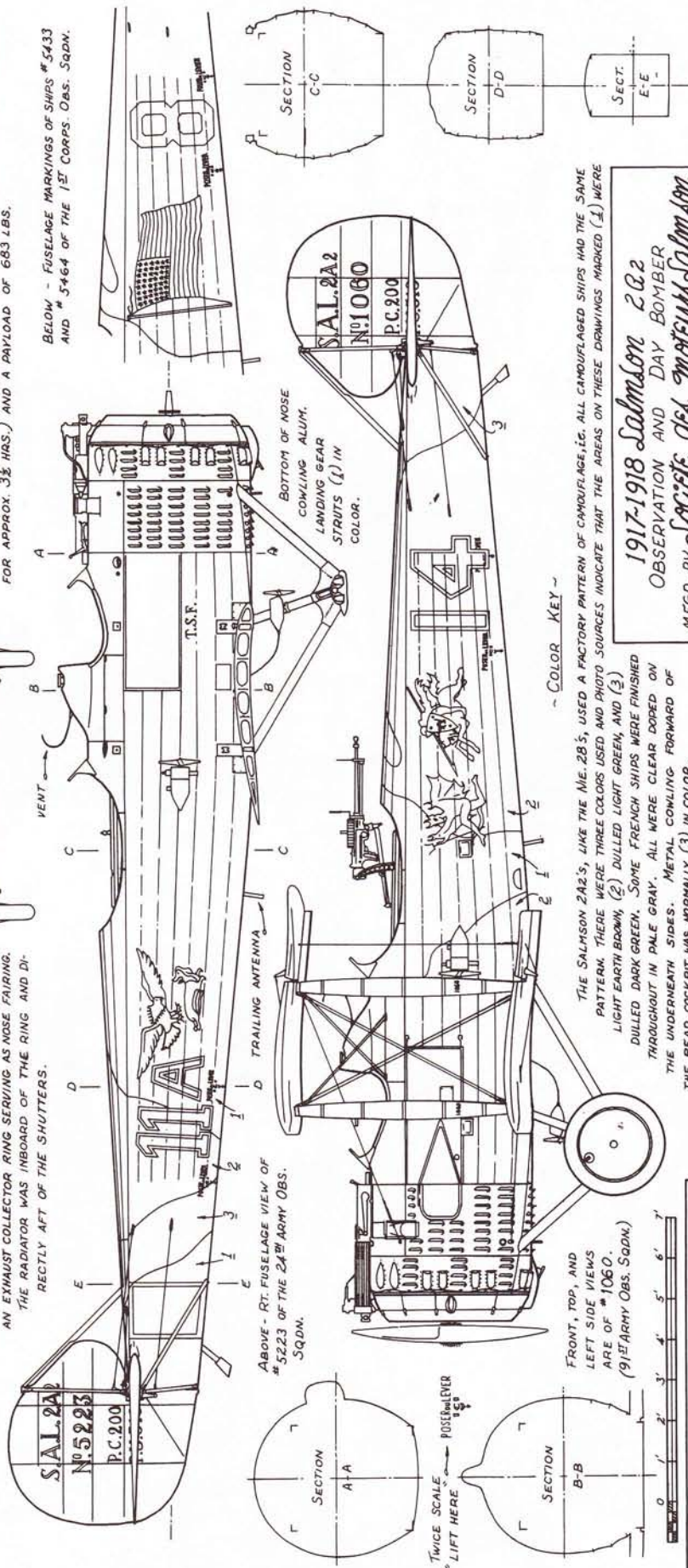
THE EXHAUST RING SHOULD BE NATURAL RUST IN COLOR. THE SHUTTERS AND FRONT SHELL RING WERE USUALLY DARK GREEN. #5433 WAS NATURAL ALUM.

A WIND DRIVEN GENERATOR WAS CARRIED FOR WIRELESS WORK. #5223 HAD THE GENERATOR ON THE REVERSE OF THE FUSELAGE, THE OTHERS ON THE LEFT.

THE SALMSON 2A2 WAS DESIGNED AROUND ITS POWER PLANT. IT WAS A WATER COOLED 9-CYL. RADIAL DEVELOPING 260 H.P. AT 1600 RPM. FROM A CUR. DISR. OF 1146. THE SALMSON Z-9 ENGINE INSTALLATION WAS UNIQUE IN HAVING AN EXHAUST COLLECTOR RING SERVING AS NOSE FAIRING. THE RADIATOR WAS INBOARD OF THE RING AND DIRECTLY AFT OF THE SHUTTERS.

PERFORMANCE : MAX. SPEED - 116 M.P.H. CRUISING SPEED - 103 M.P.H. RATE OF CLIMB - 6560' IN 8 MIN. 13,120' IN 21 MIN. THE RUDDER MARKINGS 'PC.200' AND 'BU.310' INDICATE THAT THE 2A2 HAD A 441 LB. FUEL AND OIL SUPPLY (ENOUGH FOR APPROX. 3 1/2 HRS.) AND A PAYLOAD OF 683 LBS.

BELOW - FUSELAGE MARKINGS OF SHIPS #5433 AND #5464 OF THE 1ST CORPS OBS. SQDN.



ABOVE - RT. FUSELAGE VIEW OF #5223 OF THE 24TH ARMY OBS. SQDN.

BOTTOM OF NOSE COWLING ALUM. LANDING GEAR STRUTS (1) IN COLOR.

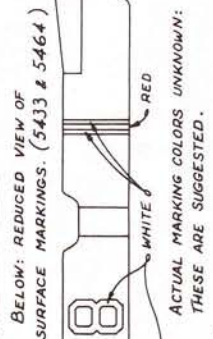
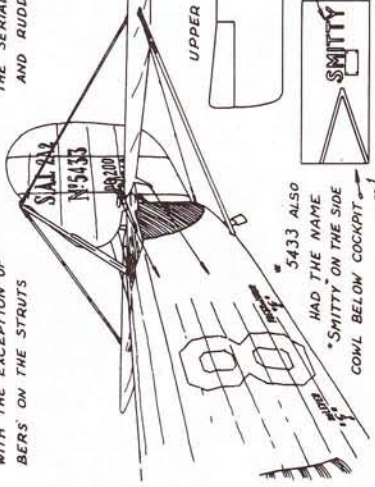
- COLOR KEY -

THE SALMSON 2A2'S, LIKE THE ME. 28'S, USED A FACTORY PATTERN OF CAMOUFLAGE, I.E. ALL CAMOUFLAGED SHIPS HAD THE SAME PATTERN. THERE WERE THREE COLORS USED AND PHOTO SOURCES INDICATE THAT THE AREAS ON THESE DRAWINGS MARKED (1) WERE LIGHT EARTH BROWN, (2) DULLED LIGHT GREEN, AND (3) DULLED DARK GREEN. SOME FRENCH SHIPS WERE FINISHED THROUGHOUT IN PALE GRAY. ALL WERE CLEAR DOPED ON THE UNDERNEATH SIDES. METAL COWLING FORWARD OF THE REAR COCKPIT WAS NORMALLY (3) IN COLOR.

1917-1918 Salmson 2A2
OBSERVATION AND DAY BOMBER
MFG. BY Societe des Moteurs Salmson
OF Billancourt (Seine)

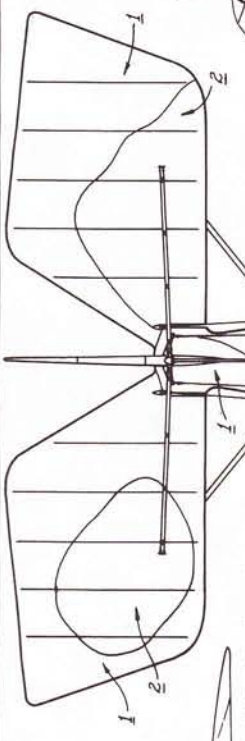
PLATE I OF 2 DRAWN BY R. Anderson

PERSPECTIVE VIEW OF STABILIZERLESS TAIL ASSY OF SHIP #5433 OF THE 1ST CORPS. OBS. SQDN. THERE WAS ANOTHER SHIP (#5464) THAT USED IDENTICAL MARKINGS THROUGHOUT WITH THE EXCEPTION OF THE SERIAL NUMBERS ON THE STRUTS AND RUDDER.



#5433 ALSO HAD THE NAME "SMITTY" ON THE SIDE OF THE COCKPIT

ACTUAL MARKING COLORS UNKNOWN: THESE ARE SUGGESTED.



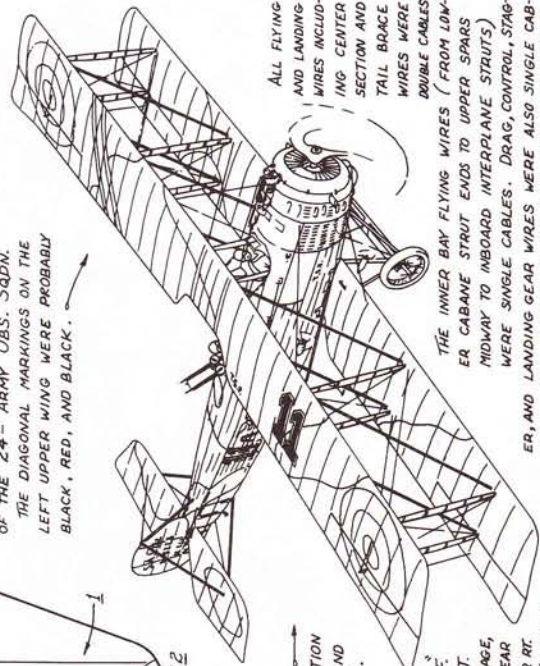
THE NUMERALS "11" AND "11A" APPEAR TO BE BLACK WITH A WHITE PIN STRIPE. RUDDER IDENTIFICATION AND DATA NUMERALS AND LETTERS WERE BLACK.

THE LETTERS "T.S.F." LOCATED ON THE RT. SIDE OF THE FUSELAGE, LEFT LOWER WING NEAR FUSELAGE, AND UPPER RT. WING NEAR OBSERVERS POSITION. THE CENTER SECTION CABLES WERE SEPARATED AND STREAMLINED WITH A 1" (APPROX.) STRIP OF WOOD AND TAPE AT ABOUT 10" INTERVALS.

ON SHIP #1060 THE NUMERALS "14" APPEAR TO BE BLACK WITH A WHITE EDGE. THE WING IDENT. STRIPES; BLACK, WHITE, BLACK, (ETC.). THIS PATTERN WAS USUALLY REVERSED ON BOTTOM SURFACE OF THE LOWER WINGS, THAT IS, THE SAME MARKINGS BUT ON OPPOSITE WINGS.

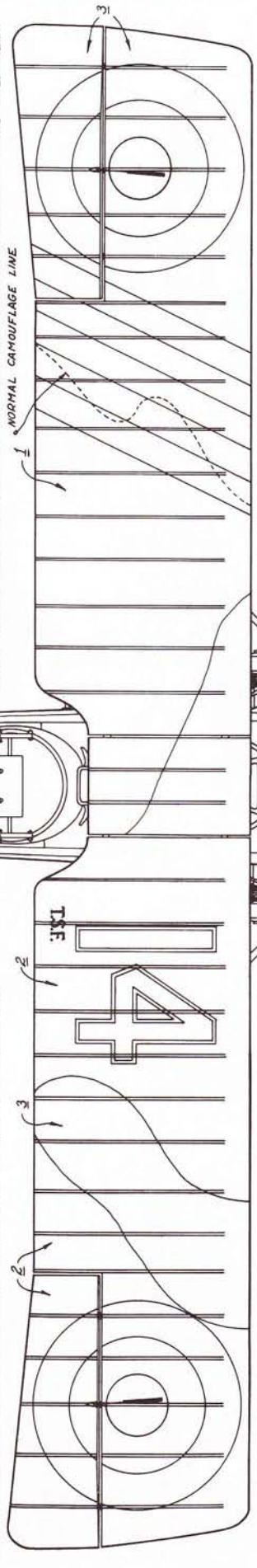
MOST SALSOMSON PHOTOGRAPHS SHOW A CONSIDERABLE AMOUNT OF "WASHOUT" INCORPORATED IN THE OUTER THREE RIB BAYS OF ALL FOUR AILERONS AS ILLUSTRATED IN THE OTHER VIEWS.

PERSPECTIVE VIEW OF SHIP #3223 OF THE 24TH ARMY OBS. SQDN. THE DIAGONAL MARKINGS ON THE LEFT UPPER WING WERE PROBABLY BLACK, RED, AND BLACK.



ALL FLYING AND LANDING WIRES INCLUDING CENTER SECTION AND TAIL BRACE WERE DOUBLE CABLES.

THE INNER BAY FLYING WIRES (FROM LOWER CABANE STRUT ENDS TO UPPER SPARS MIDWAY TO INBOARD INTERPLANE STRUTS) WERE SINGLE CABLES. DRAG CONTROL, STABBER, AND LANDING GEAR WIRES WERE ALSO SINGLE CABLES. ALL DOUBLE CABLES WITH THE EXCEPTION OF THE CENTER SECTION CABLES WERE SEPARATED AND STREAMLINED WITH A 1" (APPROX.) STRIP OF WOOD AND TAPE AT ABOUT 10" INTERVALS.



VIEW OF LOWER WING PANEL. CAMOUFLAGE PATTERN AND THE "T.S.F." LOCATION ON THE LEFT LOWER WING ARE SHOWN IN THIS VIEW WITH DOTTED LINES.

PRINCIPAL DIMENSIONS

WINGSPAN	38'-7"	WHEEL TREAD	6'-3"
CHORD	5'-6"	PROPELLER DIA.	9'-1"
GAP	5'-7"	WING AREA	403 sq.
LENGTH	27'-8 1/2"	GROSS WEIGHT (APPROX.)	2840 LBS.
HEIGHT	9'-6 1/2"		
ELEVATOR SPAN	14'-4"		
ELEVATOR CHORD	4'-2"		

OVER 700 SALSOMSON 2A2s WERE PROCURED FROM FRANCE BY THE A.E.F. MAKING THE TYPE SECOND ONLY TO THE SPAD XIII IN NUMBERS USED BY AMERICANS. THE 2A2 ENJOYED A GOOD REPUTATION. IT HELD TOGETHER WELL AND WAS VERY RUGGED AND DEPENDABLE. AVERAGE IN SPEED, THE 2A2 WAS A WORK HORSE BUT HAS NOT EXPERIENCED THE FICTIONAL GLAMOUR OF SOME OF THE OTHER TYPES SUCH AS THE DH-4. IT HAD A SIMILARLY LONG POSTWAR EXISTENCE.

1917-1918 Salsomson 2A2
PLATE 2 OF 2 DRAWN BY R. Anderson

Siemens-Schuckert

drawings by WILLIAM WYLAM

D.IV

AS A FIGHTING machine, the SS D.IV was as potent as anything developed by the warring nations of WWI. By skillful and sometimes ingenious methods, Siemens engineers produced an airplane weighing no more than its predecessor, the D.III, but with a reduced wing area and a much higher combat performance, mostly due to a new engine, the 200-hp Siemens Halske SH.IIIa. Many experts believe that without this engine the D.IV would have been just another airplane. The engine was unique among rotaries in that the crankshaft revolved in one direction and the cylinders and crankcase revolved in the opposite direction, thus giving an equivalent engine speed of 1,800 rpm with a propeller speed of 900 rpm, a direct 2-1 reduction. This feature allowed the use of a huge four-bladed propeller that was streamlined with a spun aluminum spinner.

From the pilot's standpoint, the Siemens-Schuckert D.IV was an excellent airplane in which to go to war. Its ability to climb rapidly at high altitudes where other aircraft were sluggish was one of its best attributes. It was easily controlled



and very responsive, although according to pilot reports it had a nasty stall.

Because it was produced in the last stages of WWI, it was too late arriving to have much influence over the fate of the Germans.

An Albatros-built experimental model with long wings for high-altitude flight is stored in Poland. □

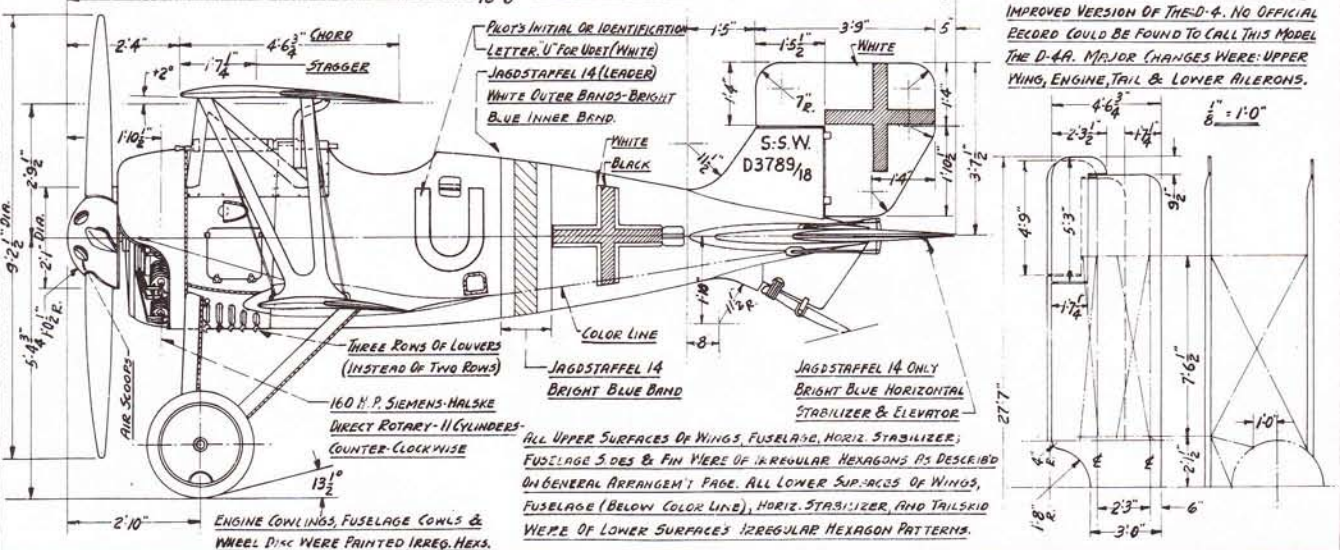
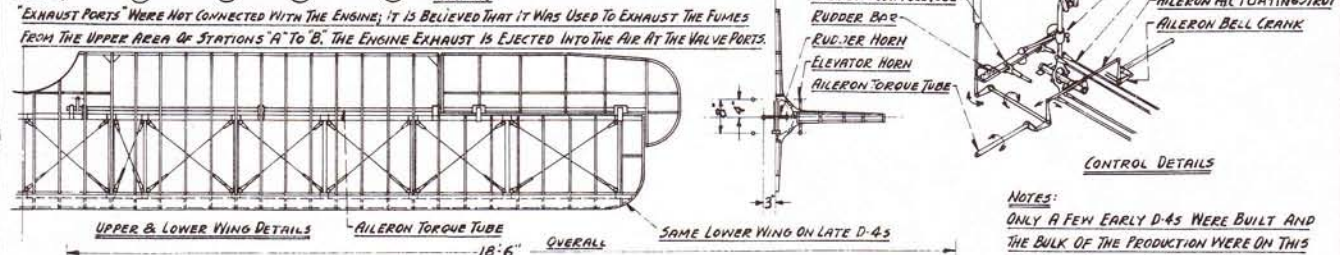
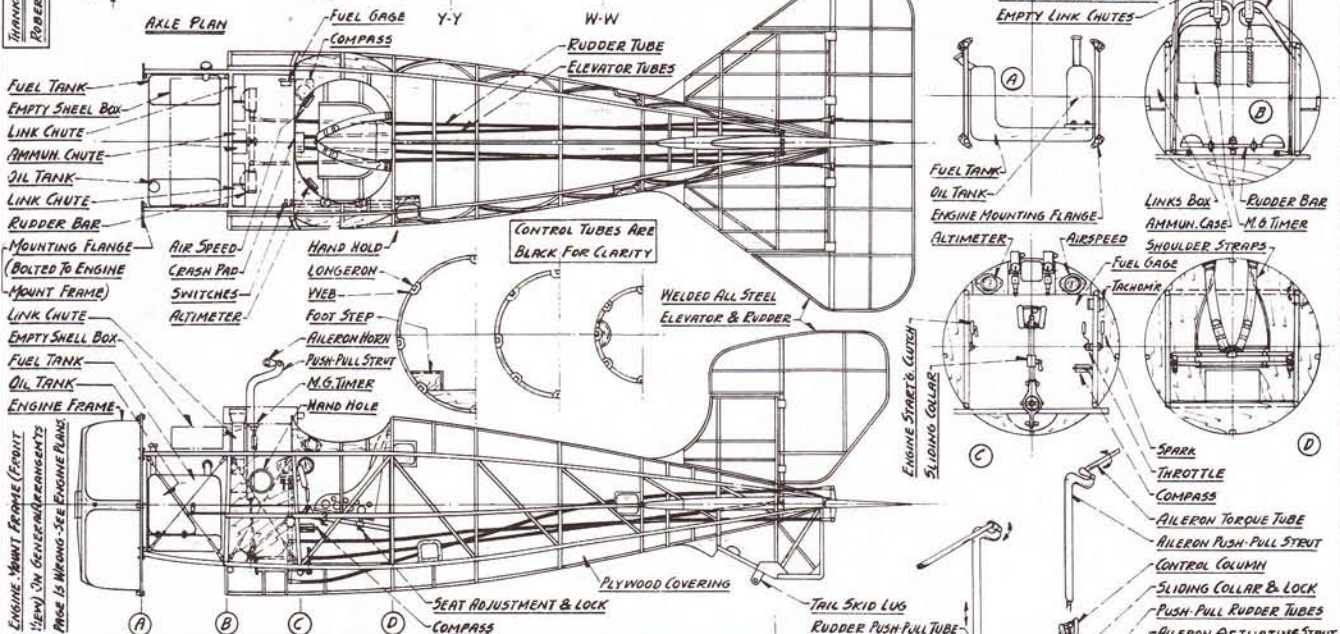
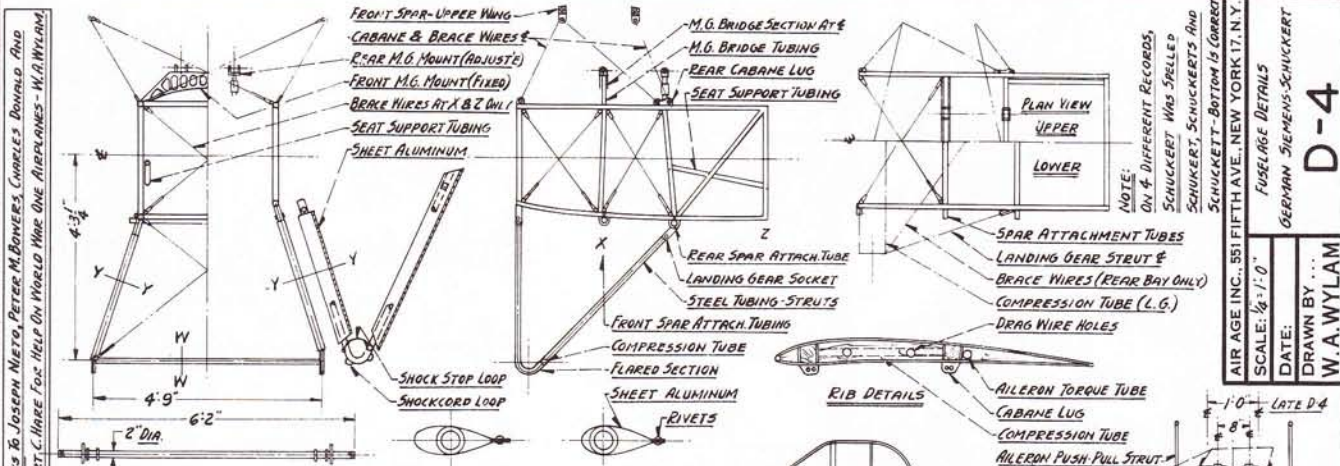
Utilizing a rotary engine and a huge reverse rotating propeller, the D.IV could out-climb its adversaries.



Profile view of the D.IV shows the stubbiness of the design, almost bulldog-like. "Jane's All the World's Aircraft" photos.

THANKS TO JOSEPH NIETO, PETER M. BOWERS, CHARLES DONALD, AND ROBERT C. HARE FOR HELP ON WORLD WAR ONE AIRPLANES - W.A. WYLAM

NOTE:
ON 4 DIFFERENT RECORDS
SCHUCKERT WAS SPELLLED
SCHUCKERT, SCHUCKERTS AND
SCHUCKETT - BOTTOM IS CORRECT
AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
SCALE: 1/8" = 1'-0"
DATE: ...
DRAWN BY: ...
GERHARD SIEMENS-SCHUCKERT
D-4



NOTES:
ONLY A FEW EARLY D-4S WERE BUILT AND THE BULK OF THE PRODUCTION WERE ON THIS IMPROVED VERSION OF THE D-4. NO OFFICIAL RECORD COULD BE FOUND TO CALL THIS MODEL THE D-4A. MAJOR CHANGES WERE: UPPER WING, ENGINE, TAIL & LOWER AILERONS.

ALL UPPER SURFACES OF WINGS, FUSELAGE, HORIZ. STABILIZER, FUSELAGE SIDES & FIN WERE OF IRREGULAR HEXAGONS AS DESCRIBED ON GENERAL ARRANGEMENT PAGE. ALL LOWER SURFACES OF WINGS, FUSELAGE (BELOW COLOR LINE), HORIZ. STABILIZER, AND TAILSKID WERE OF LOWER SURFACES IRREGULAR HEXAGON PATTERNS.

Sopwith Camel

drawings by WILLIAM WYLAM

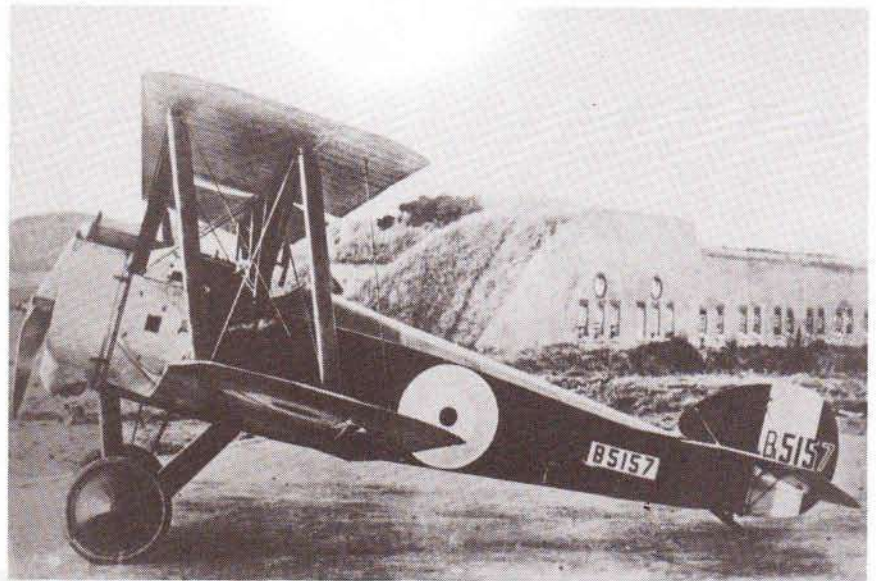
THE SOPWITH Camel was the most widely and most numerous produced aircraft of WW I. A total of 5,490 Camels were constructed by at least nine manufacturers and the design was considered to be one of the best dog fighters of the 1914-1918 conflict. The Camel was responsible for the destruction of more German aircraft than any other design and was the first British aircraft designed for two forward-firing machine guns. Two versions, the F.1 and the 2F.1, were produced, the latter for the Royal Navy with shorter wings, smaller tail surfaces, and a larger engine. It changed the course of Naval aviation. Needing a weapon to counter the activities of German dirigibles that had previously exercised surveillance of British Naval activities without jeopardy, the Camel was to become the first successful attempt to counter the high-flying Germans. On August 11, 1918, Sub-Lieutenant Stuart D. Culley, an American-born member of the British Royal Air Force, took off from a platform in tow by a British destroyer and climbed to 18,000 feet in pursuit of the German dirigible L.53.

Finding the dirigible in his sights at 19,000 feet, Culley's Camel staggered and strained to maintain flight as he emptied his guns upward and directly at the dirigible. The L.53 seemed unaffected until suddenly it burst into flames and dropped into the sea. This was the first aerial victory by a shipboard aircraft.

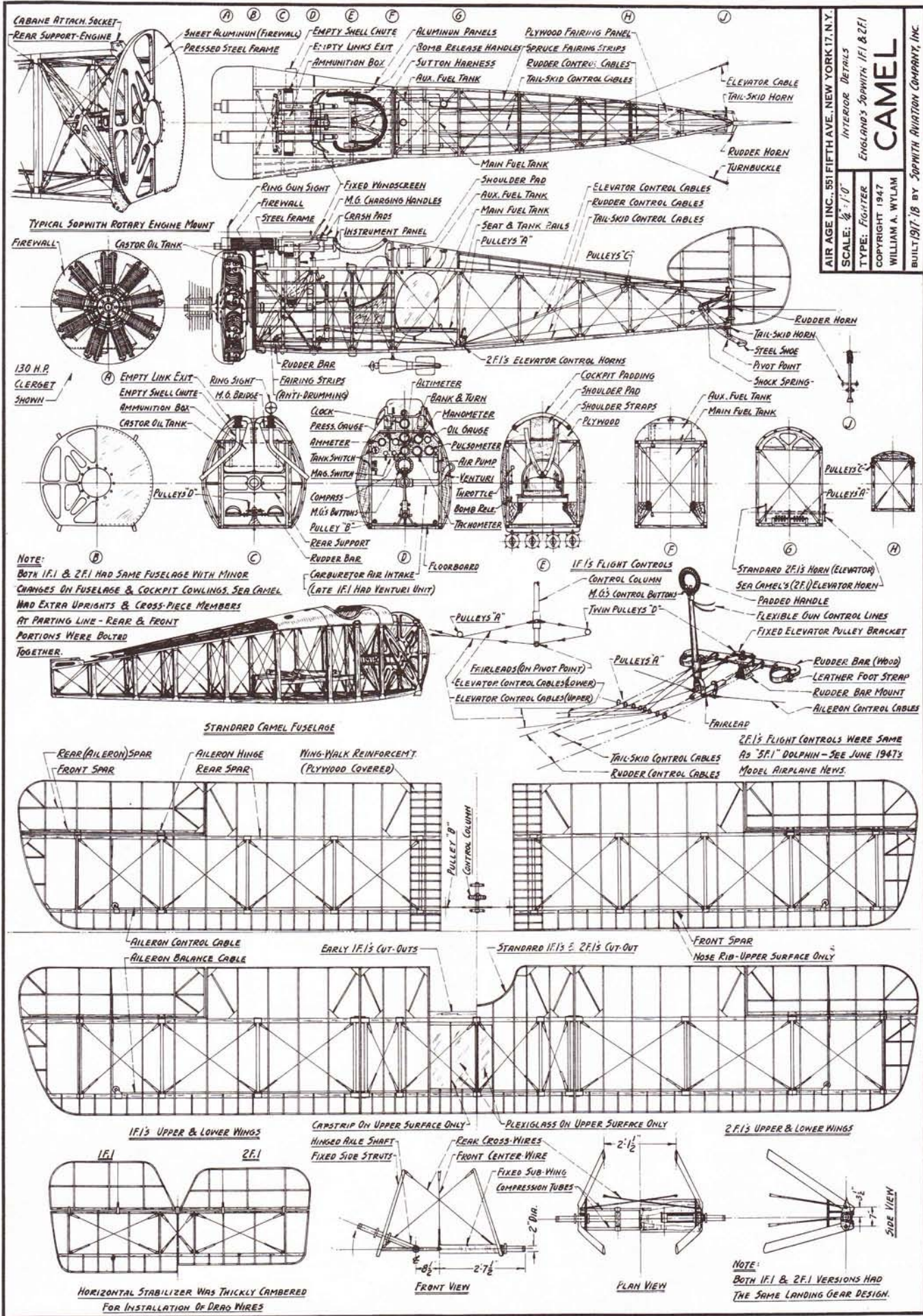
Culley's Camel is now exhibited at London's Imperial War Museum: there are five other Camels in other museums. □



The Sopwith Camel was produced in large quantities during WW I. Air Age file photo.



Responsible for the destruction of more German aircraft than any other Allied design, the Sopwith Camel was also adapted for use by the Royal Navy. Photo courtesy of Leonard Opdycke, WW I Aeroplanes.



Sopwith Dolphin 5F.1

drawings by WILLIAM WYLAM



THE DESIGN of the Dolphin began as a scratch-pad doodle in the engineering rooms of Sopwith Aviation during the summer of 1916. The doodling engineers pointed with pride at their thumbnail sketches of what might be, if only a 190-hp water-cooled engine were available.

Then, like a bolt from the blue, word came that Wolsley Motors had obtained a license from Hispano-Suiza to manufacture their new 200-hp geared engine. With the promise of an appropriate powerplant, the doodle soon became an engineering project and the forces of Sopwith immediately went to work on Model 5F.1. It was nicknamed "Dolphin" in accordance with Sopwith's custom of naming their products after animals, fish, or fowl.

In performance, the production Dolphins left little to be desired for a 1918 service type. The first operational models

officially weighed in at 1,406 pounds empty and grossed 1,881 pounds. Fuel, weighing 194 pounds and sufficient for a 230-mile range, was included in this gross figure. The top speed was 136 mph at sea level and it had a landing speed of 40 mph.

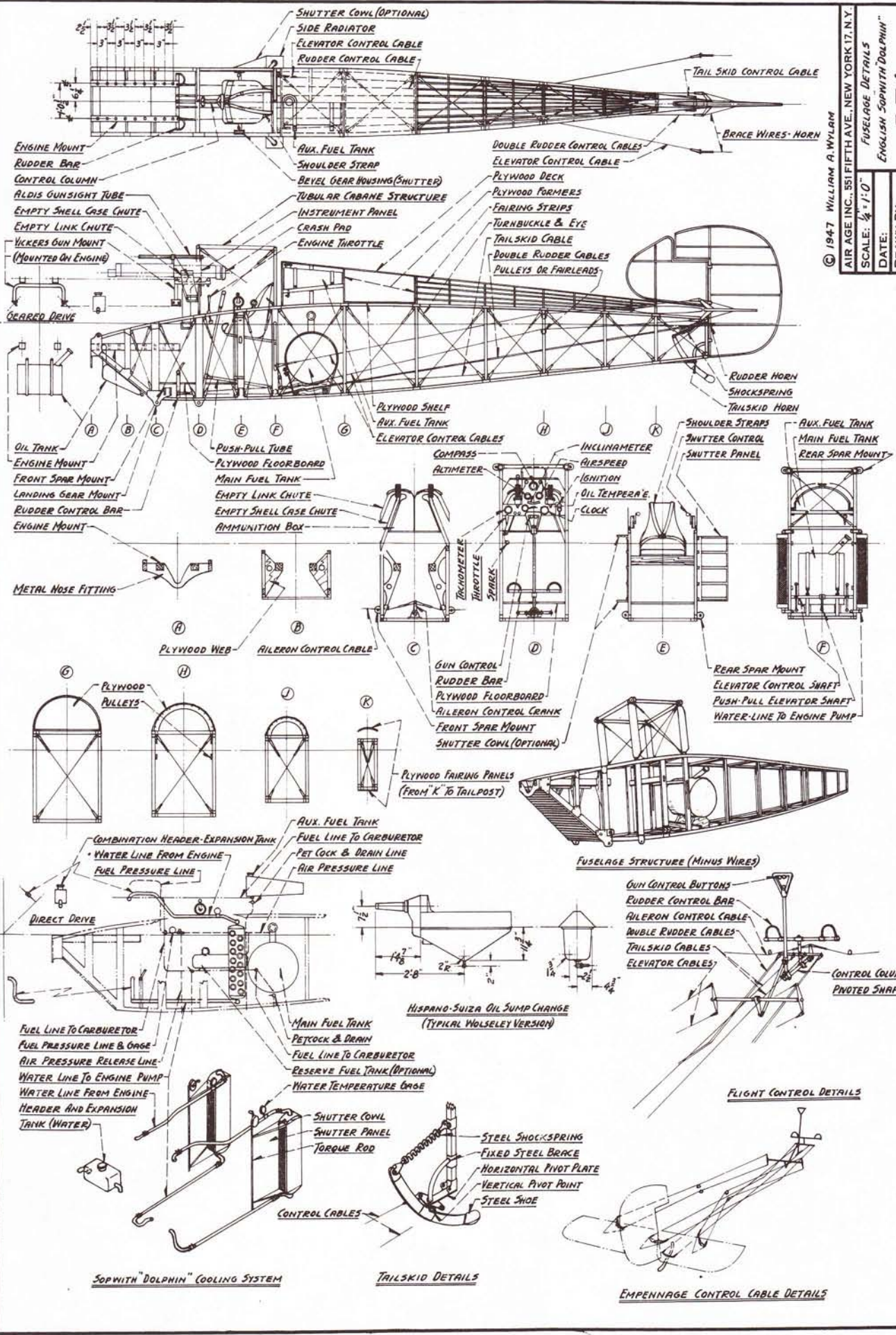
As an all-around single-seater, the Dolphin exceeded anything the British manufacturers were able to put out in squadron quantities before WWI ended. Other types perhaps bettered it in specific items of performance, but as a package the 5F.1 was hard to beat. It possessed enough good characteristics that a 300-hp version was built and tested for production in 1919 and which the U.S. and French air services were contracting at the time of the Armistice.

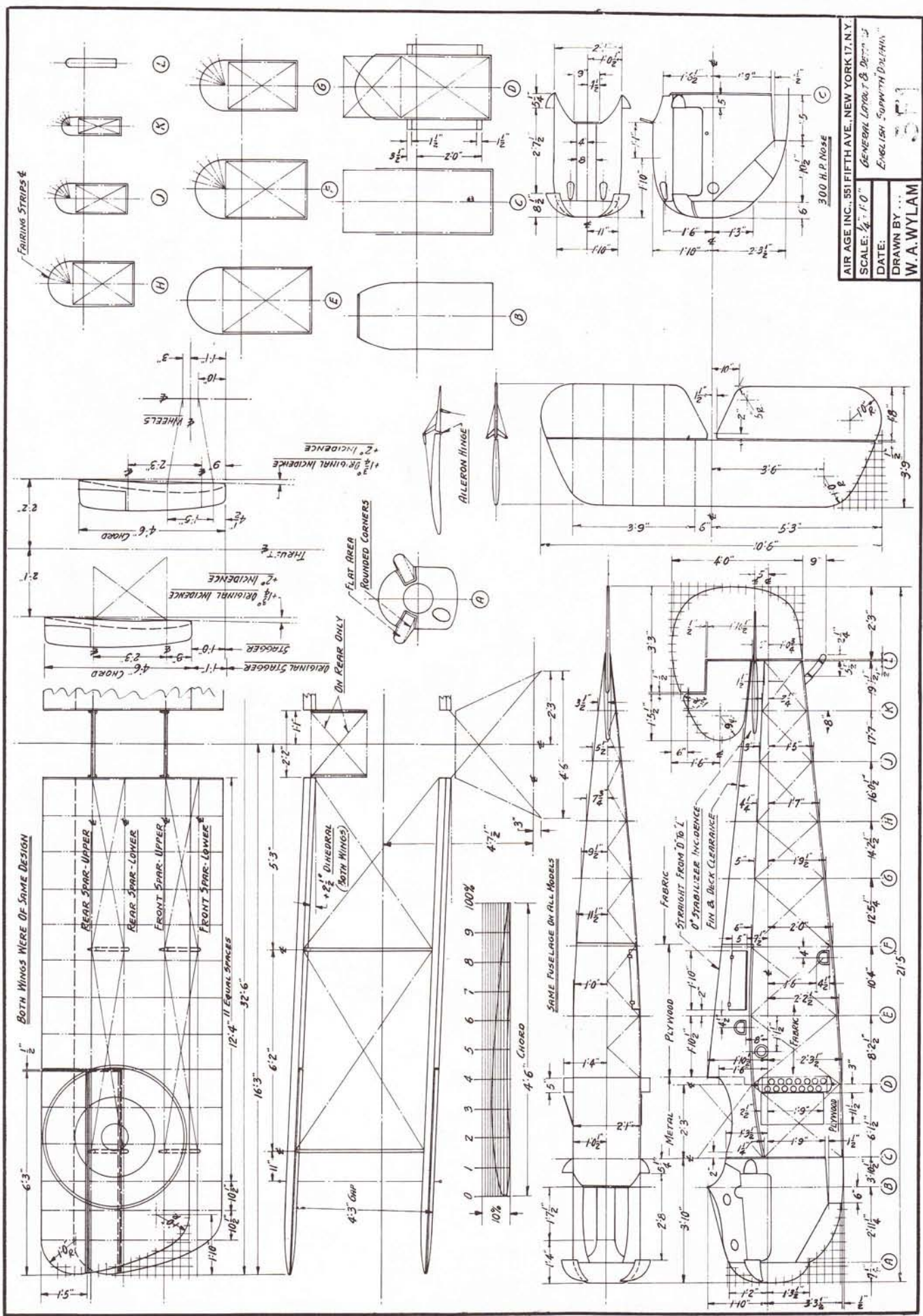
One Dolphin lives in the RAF Museum in London. □

Conceived in 1916 as an answer to Allied air squadrons' requirements for air superiority, the Sopwith Dolphin 5F.1 was slow in coming and hardly fulfilled its combat credentials. Air Age file photo.

© 1947 WILLIAM A. WYLAM
 AIR AGE INC. 551 FIFTH AVE., NEW YORK 17, N.Y.
 FUSELAGE DETAILS
 SCALE: 1/2" = 1'-0"
 DATE: ...
 DRAWN BY ...
 W. A. WYLAM

5F.1

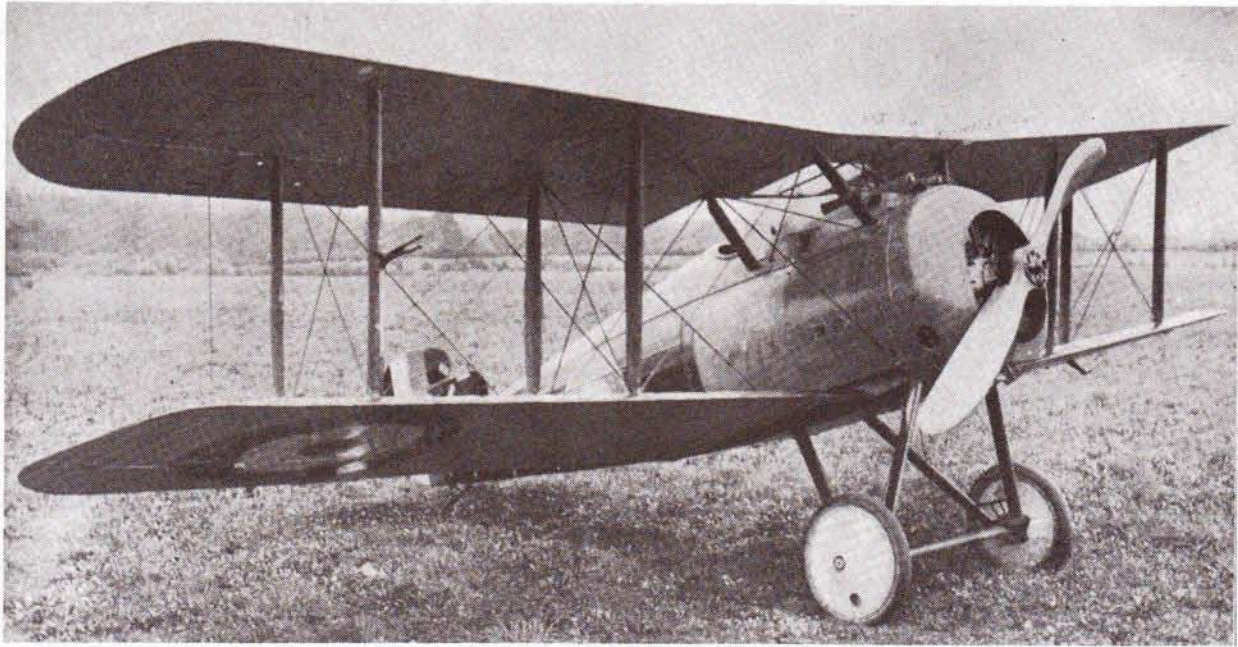




AIR AGE INC. 551 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 1/4" = 1'-0"
 DATE: ...
 DRAWN BY ...
 W. A. WYLAM

Sopwith Snipe 7F.1

drawings by JOSEPH NIETO



The Sopwith Snipe 7F.1 followed the successful Sopwith Camel and was used by the British until 1926. Air Age file photo.

INTRODUCED as a successor to the famous Sopwith Camel, the Snipe first reached the Western Front in September 1918. In the three months before the war's end it proved the best of the Allied fighters, though less than a hundred were in action. It was while flying a Snipe that Major W.G. Barker of No. 201 Squadron fought his celebrated single-handed engagement with 15 Fokker D.VIIIs on October 27, 1918, for which he was awarded the Victorian Cross. The fuselage of Barker's aircraft is to be seen at the Canadian War Museum in Ottawa.

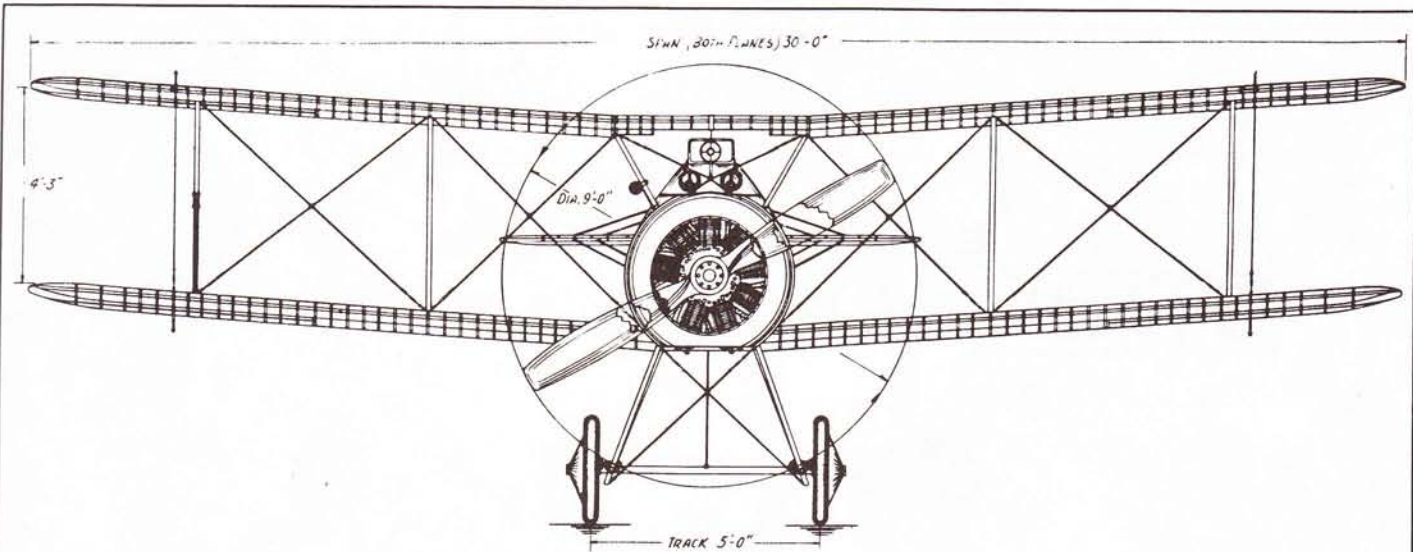


The prototype Snipe had single-bay wings. Photo courtesy of Leonard Opdycke, WW I Aeroplanes.

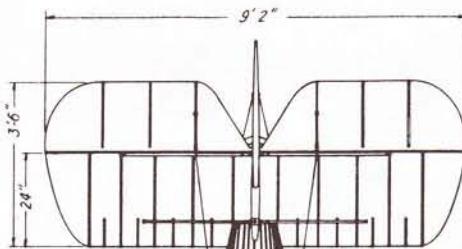
Of a wooden structure and fabric covering, the makers' designation of the aircraft was the Sopwith 7F.1. Powered by a Bentley B.R.2 engine that developed 230 hp, the Snipe was able to achieve a maximum speed of 121 mph at 10,000 feet and had a rate of climb of 970 fpm.

Due to financial stringencies applied to the British air services, the Snipe remained active with fighter squadrons until as late as 1926.

Four other Snipes can be seen in other museums. □



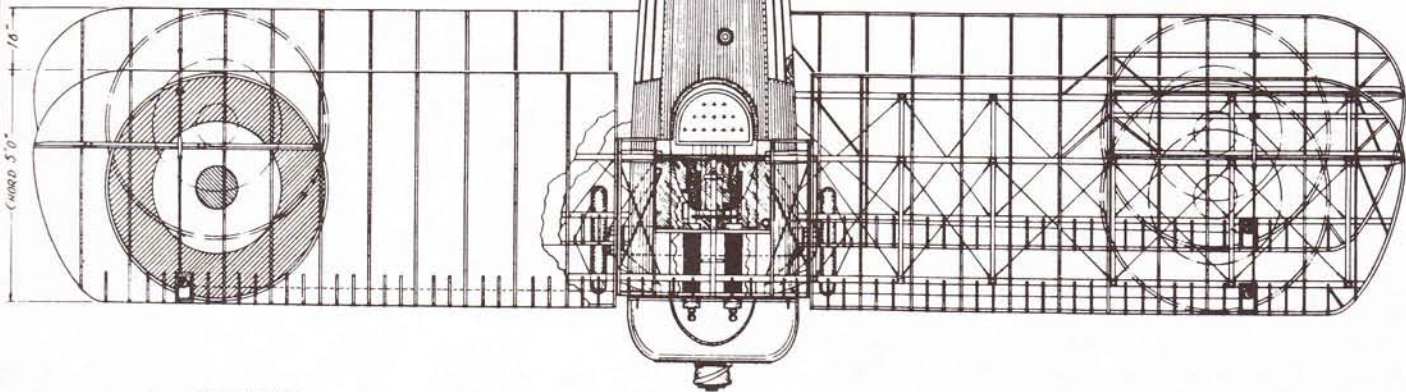
THE BRITISH SOPWITH "SNIPES" SINGLE SEATER FIGHTER TYPE 77-1 OF 1918, WAS BUILT BY SOPWITH AVIATION CO. LTD, KINGSTON ON THAMES, ENGLAND, AND IS REPUTED TO HAVE BEEN THE BEST ALL-ROUND FIGHTING SCOUT PRODUCED BY ANY NATION DURING THE FIRST WORLD WAR. IN DEFINING ITS APPROPRIATE NICKNAME, "TO SHOOT FROM A CONCEALED PLACE AT THOSE WHO BECAME DETACHED FROM A MAIN BODY OF FORCE", THE "SNIPES" WAS FIRST ATTACHED TO THE BRITISH R.F.C., FEB. 9, 1918, SERVING CONTINUOUSLY THROUGH NOV. 11, AND SUBSEQUENTLY CARRIED ON WITH K.A.F. FIGHTER SQUADRONS UNTIL THE MIDDLE THIRTIES. MASS PRODUCTION ON THE SNIPES WAS STARTED IN THE LATTER HALF OF 1918, AND BY DECEMBER OF THAT YEAR, 500 HAD BEEN BUILT. OF THAT NUMBER, 79 OF THEM WENT TO N° 43 SQDN. AT BOURNVCOURT, IN SEPT. 1918, REPLACING CAMELS, N° 71 SQDN. (N° 4 AUSTRALIAN, A.F.C.) AT ENNETIERES, IN NOVEMBER, IN PLACE OF CAMELS, N° 81 SQDN. (ARRIVING AT THE WESTERN FRONT IN SEPT. 1918 WITH SNIPES) N° 201 & 208 (B. NAVAL) BOTH REPLACING BENTLEY CAMELS. PERHAPS THE MOST FAMED SNIPES WAS THAT FLOWN BY MAJOR W.G. BARKER, WHILE C.O. OF N° 201, WHICH REPLACED CAMELS WITH SNIPES IN SEPT. 1918. BARKER RECEIVED THE LONEST VICTORIA CROSS AFTER BEING ATTACKED BY 60 GERMAN PLANES. HE FIGHT BACK, DOWNING 4 FOCKERS IN FLAMES AND PUT 10 OTHERS OUT OF CONTROL. HIS OFFICIAL RECORD FOR THE DAY WAS 4 VICTORIES, WHICH BROUGHT UP THE TOTAL TO 32. (BARKER'S SNIPES WAS IDENTIFIED BY A SINGLE WHITE, VERTICAL BAR JUST AFT OF THE FUSELAGE COCKPIT.) A SINGLE SNIPES SQUADRON ACCOUNTED FOR 36 ENEMY PLANES IN 4 DAYS, DOWNING 13 OF THESE IN ONE DAY. IN THE SHORT TIME OF ACTION WHICH THE SOPWITH SNIPES HAD AT ITS DISPOSAL IN 1918, IT MADE AN ENVIABLE REPUTATION FOR ITSELF WHICH BORE NO JOY FOR THE EXHAUSTED PILOTS OF THE GERMAN AIR SERVICE.



UNDOUBTEDLY, THE SNIPES SAW SERVICE IN OTHER SQUADRONS NOT RECORDED HEREWITH, AMONG THESE PERHAPS WERE N° 70 SQDN. FIRST TO GET CAMELS IN JULY, 1917, IN WHICH SERVED GERALD I. MUIR OF AUSTRALIA, A WAR I AVIATION PILOT, ILLUSTRATOR, PHOTOGRAPHER-COLLECTOR AND FRIEND OF THE AUTHOR, WHOSE SNIPES IS SHOWN IN THESE DRAWINGS WHILE N° 70 WAS CAMPED AT COLOGNE IN 1918. (NOTE: A SOP SNIPES, FITTED WITH AN A.B.C. ENGINE, ATTAINED A SPEED OF 156 M.P.H. AND CLIMBED TO 10,000 FT. IN 4 1/2 MIN.)

SPECIFICATIONS. (DOUBLE BAY VERSION.)

SPAN. (BOTH WINGS) VARIATIONS EXISTED.	30'-0"
OVERALL LENGTH.	19'-6"
HEIGHT AT CENTER SECTION.	8'-9"
WING TIPS.	9'-7"
WING SURFACE INCLUDING AILERONS.	256 sq.
DIHEDRAL ANGLE, BOTH WINGS.	4°
INCIDENCE.	1° 50'
CHORD.	5'-0"
GAP.	9'-9"
STABBER. (POSITIVE)	1'-9"
HORIZONTAL TAIL PLANE AREA, TOTAL.	26 sq.
VERTICAL.	11.75 sq.
WING LOADING. (IN POUNDS)	7.5 lb.
POWER LOADING. (IN POUNDS PER H.P.)	8.86
WEIGHT EMPTY.	1312 LBS.
OF FUEL & OIL. (38% PETROL & 7 GAL. OIL.)	343
MILITARY LOAD & CREW.	365
GROSS WEIGHT OF SHIP.	2020
ENGINE: 9 CYL. BENTLEY BR. 2 ROTARY OF 200-230 H.P.	



- PERFORMANCE -

NORMAL. BRAKE H.P. & R.P.M. @ GROUND LEVEL.		228 AT 13000'S.	
SPEED	TAKE OFF.	100 M.P.H.	AT 6500 FT.
.	.	116	- 10000 -
.	.	121	- 15000 -
.	.	113	- 16500 -
.	.	108.5	- LANDING -
.	.	40	AT 970 FT. PER MIN.
CLIMB.	6500 FT.	IN 5.2 MIN.	AT 710 -
.	.	9.4	- 190 -
.	.	18.5	- 260 -
.	.	23.6	- 285.5 FT. -
REVOLUTIONS PER MIN.			3463.
REVOLUTIONS PER MIN.			3200.
ARMAMENT			1000.
REMARKS			1000.

MANY, MOST SINCERE THANKS TO KENNY ERNST, INDIANAPOLIS, IND., PAUL R. MATT, CINCINNATI, OHIO, DAKE WILLIAMS, IOWA CITY, IOWA, & TO BOB LUK, BILL KEE, BERGEN HARDESTY, & PETER L. GREY, (LITTON BEDS ENG.) AND ALL OTHER SUCH AVID ENTHUSIASTS WHO HAVE SO GENEROUSLY COLLABORATED WITH ME IN THIS AND WORKS THAT FOLLOW. P. 7, 1946.

- CONSTRUCTION -

ENTIRE PLANE WAS FABRIC COVERED WOOD CONSTRUCTION. METAL NOSE CONE & SIDE ENGINE PANELS. PLY VENEER SIDES & REAR OF COCKPIT. EXTERNAL WING BRACING & TAIL, STREAMLINED STEEL CABLES (TIERODS.)

- COLOR SCHEME -

ENTIRE PLANE COLOURED OLIVE-DRAB (BRITISH KHAKI-GREEN.) METAL PARTS WERE EITHER POLISHED OR PAINTED LIGHT GRAY. LOWER SURFACE OF WINGS EITHER LEFT OLIVE-DRAB OR PAINTED LIGHT IVORY, CREAM, OR SKY BLUE, INSIGNIA COLOURING NOTED. NUMERALS BLACK & WHITE OUTLINE WHERE SO REQUIRED AS SHOWN. COST OF SOPWITH SNIPES TO R. A. F. £ 945. 17s.

ADDITIONAL DATA (UNQUOTE UNLESS SPECIFIC DIMENSIONS AS ON SE-5. (WORD BEING 00), LITERAL DIA OF COCKPIT, 59" WITH 1/2" CLEARANCE AT LOADING & TA. EDGES. WARDON ENCIRCLING WHITE RING, 3/4" WIDE, BLUE, WHITE & RED SECTIONS, EQUAL WIDTH OR 113". COCKPILES IN FUSELAGE SIDES WERE ROUGHLY HALVED.

Spad S.VII C.1

drawings by WILLIAM WYLAM



A very famous airplane, the French-built Spad VII had an excellent performance capability for WW I pilots. Air Age file photo.

IT WAS A nervous group of men that stood on Bleriot Field one morning in July 1916, when the first S.VII was about to demonstrate the theories of its engineers.

After successfully producing the Spad A.I to the order of the Russian government in early 1915, the designers rushed to their boards to reconfigure the platform for the then-radical engine designed by Marc Birkigt, the brilliant designer of engines for Hispano-Suiza motor car company. In addition, the youthful M. Bechereau, designer of Deperdussin's record-breaking racing monoplanes of 1912 and 1913 fame, and Louis Bleriot, famed Channel flier and aerodynamic progressive, were among the firm's design staff.

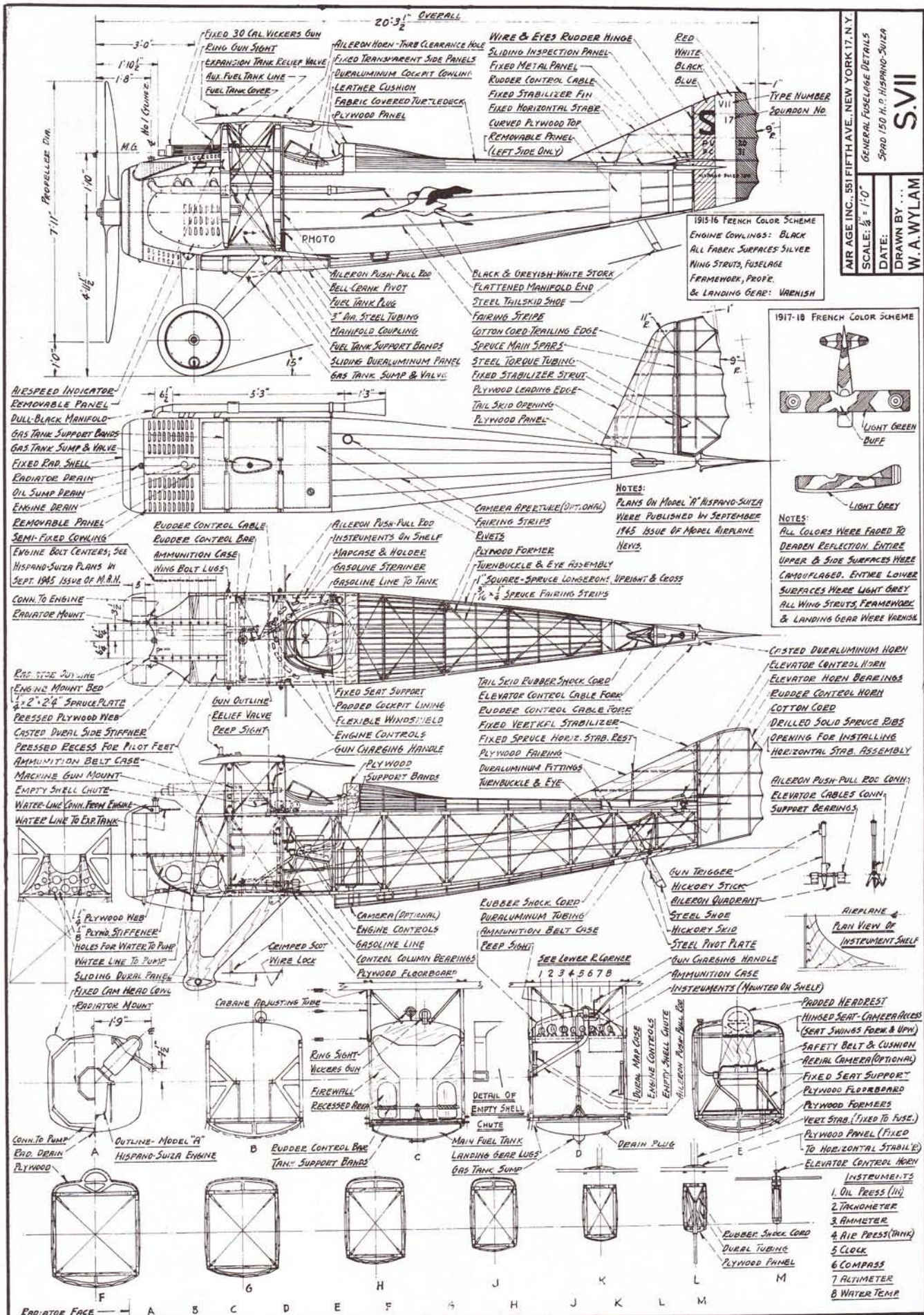
Bechereau was made chief engineer with a free hand as far as designs were concerned. The result was the Spad (Societe Pour Aviation et ses Derives)

S.VII.

At the conclusion of the first test flight the fears of the designers were dismissed. Sea-level speed proved to be 123.5 mph, about 5 mph more than anticipated. The rate of climb was quite good, as it attained an altitude of 10,000 feet in 9 minutes 50 seconds, and it found a service ceiling of 15,000 feet.

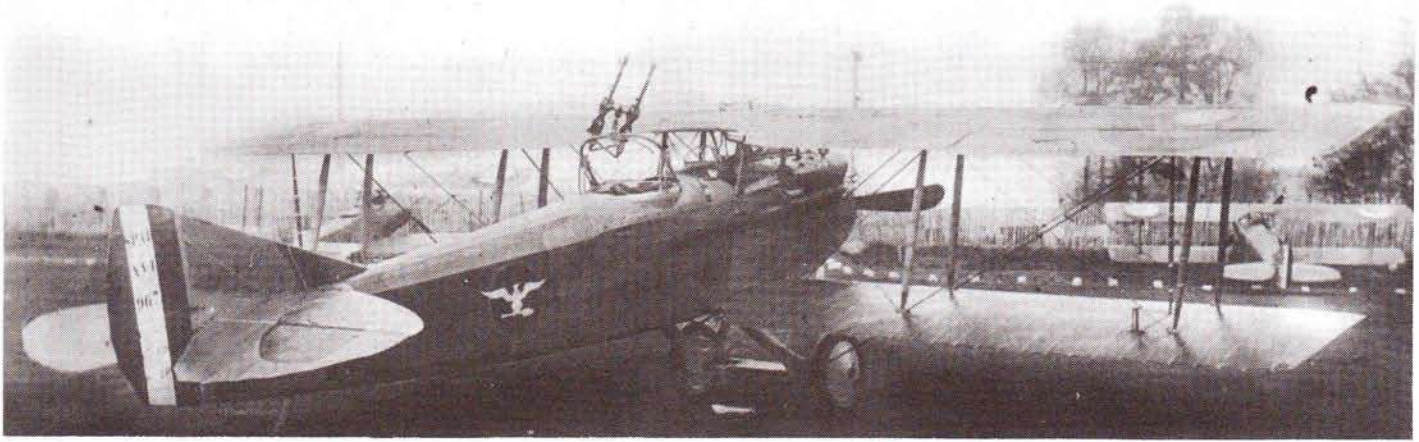
The Spad was retired from replacement stores early in 1918, although several squadrons continued to operate right up to the Armistice. Several hundred S.VIIs were constructed in England for the RAF and they were supplied in large numbers to other Allied forces.

Ten Spad VII's still exist. □



Spad S.XIA-2

drawings by WILLIAM WYLAM



FOLLOWING the great success of the Spad S.VII, French engineers developed from it a two-place reconnaissance version that was to fill a number of operational requirements, such as observation and light bombing. Powered by a 235-hp Hispano-Suiza engine, it entered service from 1917 with French, Belgian, and eventually AEF squadrons. Because of the additional weight gained with the increased size of the fuselage and the

addition of bombs, more armament, etc., performance suffered. It was no match for the German fighters and was an easy target, leading to a re-evaluation of its use.

The Hispano-Suiza engine was changed to a more powerful Lorraine-Dietrich type 8Bb which delivered 250 hp at only 1,650 rpm and redesignated as Spad XVIA-2, but retained the same construction and appearance of the type

XI.

Because it had a proven airframe, the uses and adaptations were many. Although generally disliked by pilots because of its vulnerability, the Spad XI and XVI gave good results in action.

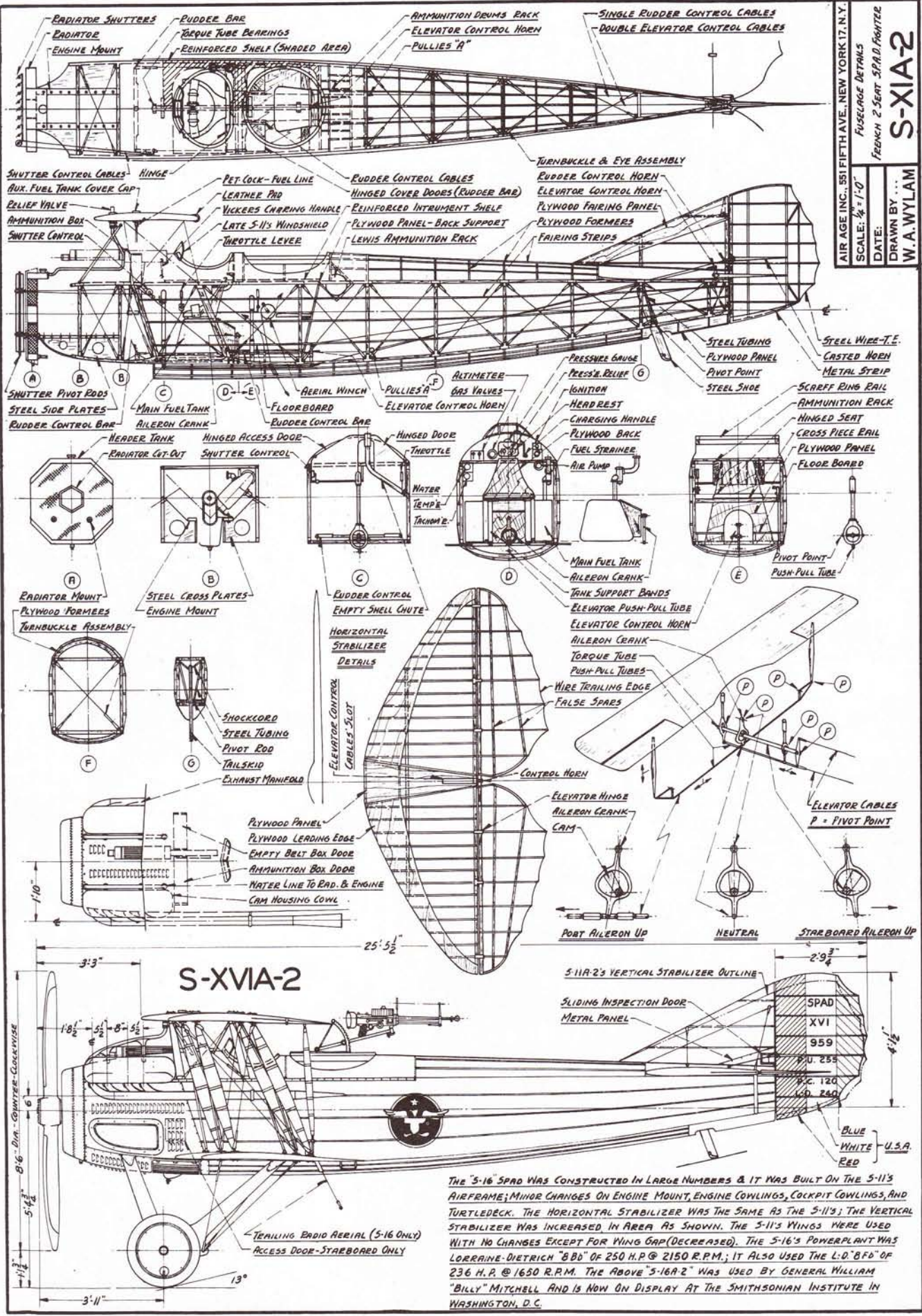
Billy Mitchell's S.XVIA-2 is on show at the National Air & Space Museum in Washington, DC. □



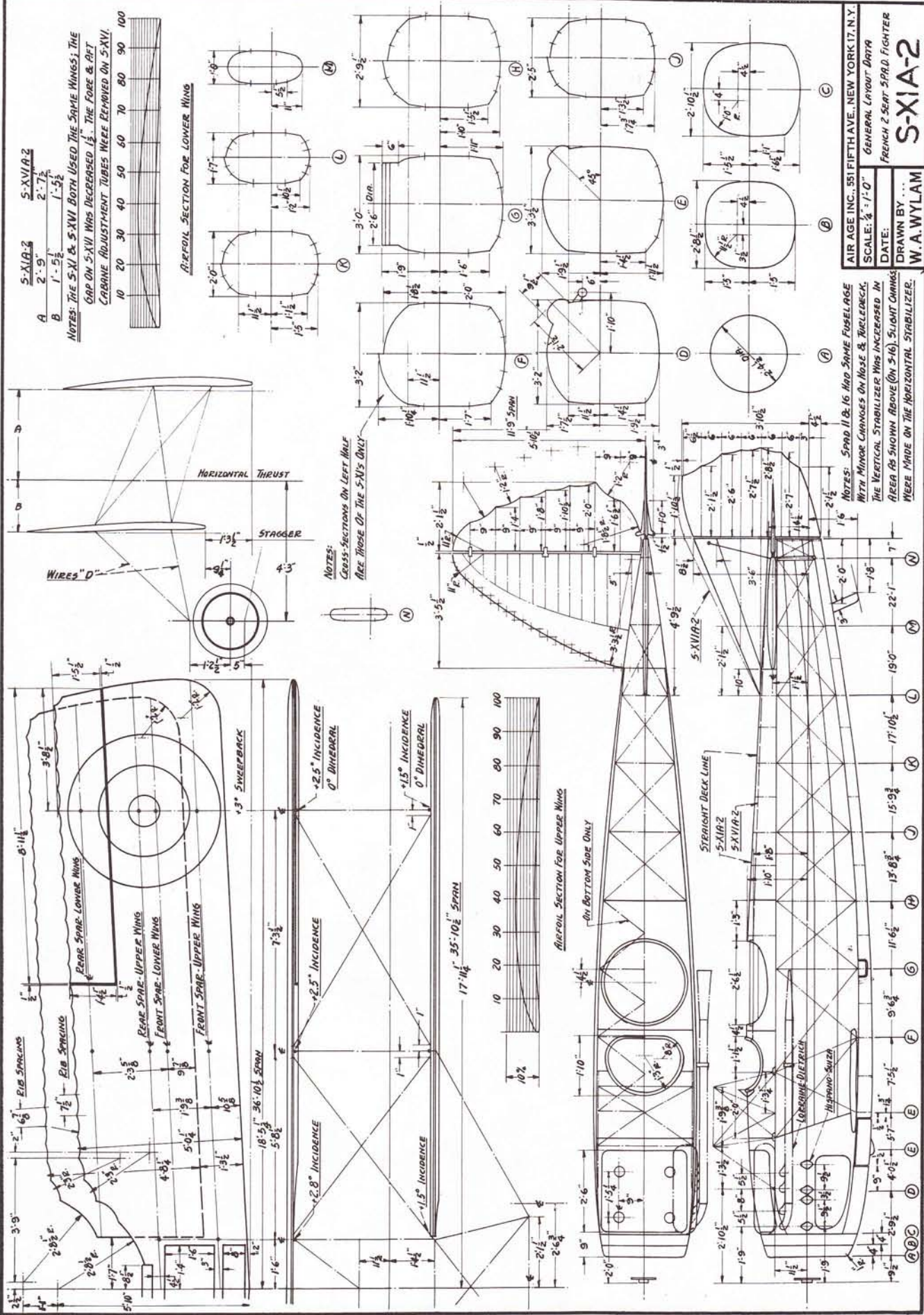
The Spad S.XIA-2 was a two-place airplane used for observation and light bombing by the Allies. Air Age file photo.

AIR AGE INC. 351 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 1/2" = 1'-0"
 DATE: ...
 DRAWN BY: W.A. WYLAM

S-XIA-2
 FUSELAGE DETAILS
 FRENCH 2 SEAT SPAD FIGHTER



The "S-16" Spad was constructed in large numbers & it was built on the S-11's airframe; minor changes on engine mount, engine cowlings, cockpit cowlings, and turtledeck. The horizontal stabilizer was the same as the S-11's; the vertical stabilizer was increased in area as shown. The S-11's wings were used with no changes except for wing gap (decreased). The S-16's powerplant was Lorraine-Dietrich "8Bb" of 250 H.P. @ 2150 R.P.M.; it also used the L.D. "8Fb" of 236 H.P. @ 1650 R.P.M. The above "S-16A-2" was used by General William "Billy" Mitchell and is now on display at the Smithsonian Institute in Washington, D.C.

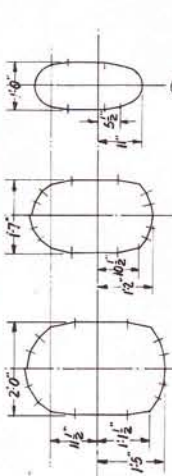


S-XIA-2		S-XVIA-2	
A	2'-9"		
B	1'-5 1/2"		
			1'-5 1/2"

NOTES: THE S-XI & S-XVI BOTH USED THE SAME WINGS; THE GAP ON S-XVI WAS DECREASED 1/8". THE FORE & AFT CARABINE ADJUSTMENT TUBES WERE REMOVED ON S-XVI.



AIRFOIL SECTION FOR LOWER WING



AIRFOIL SECTION FOR UPPER WING

NOTES: CROSS-SECTIONS ON LEFT HALF ARE THOSE OF THE S-XI'S ONLY

AIR AGE INC. 55 FIFTH AVE., NEW YORK 17, N.Y.
 GENERAL LAYOUT DATA
 SCALE: 1/4" = 1'-0"
 DATE: FRENCH 2 SEAT SPAD FIGHTER
 DRAWN BY: W. A. WYLAM
S-XIA-2

NOTES: SPAD II B-16 HAD SAME FUSELAGE WITH MINOR CHANGES ON NOSE & WINGLEADS. THE VERTICAL STABILIZER WAS INCREASED IN AREA AS SHOWN ABOVE (ON S-16) SLIGHT CHANGES WERE MADE ON THE HORIZONTAL STABILIZER.

Spad S.XIII C.1

drawings by WILLIAM WYLAM



MORE NOTED for its speed and strength than for its maneuverability or climb, the Spad XIII was a definite favorite because of one other very important characteristic—it was easy to fly. The Spad XIII was one of the best-liked Allied aircraft to see service in 1917-1918.

Like all other good fighting ships, it was a compromise between climb, speed, maneuverability, ease of construction, and maintenance. But the airplane proved itself over and over again where it counted—in the air and in battle. The first French squadron to be completely equipped with the new XIII was the Escadrille S.3 “Les Cigognes” (The Storks) of which the great French Ace Georges Guynemer was top ranking member. Killed in the XIII under mysterious circumstances, Guynemer never achieved a victory in the plane and an omen of bad luck was to prevail, although no basis in fact was ever established to substantiate it. In fact, the war records of the Spad XIII speak well for themselves.

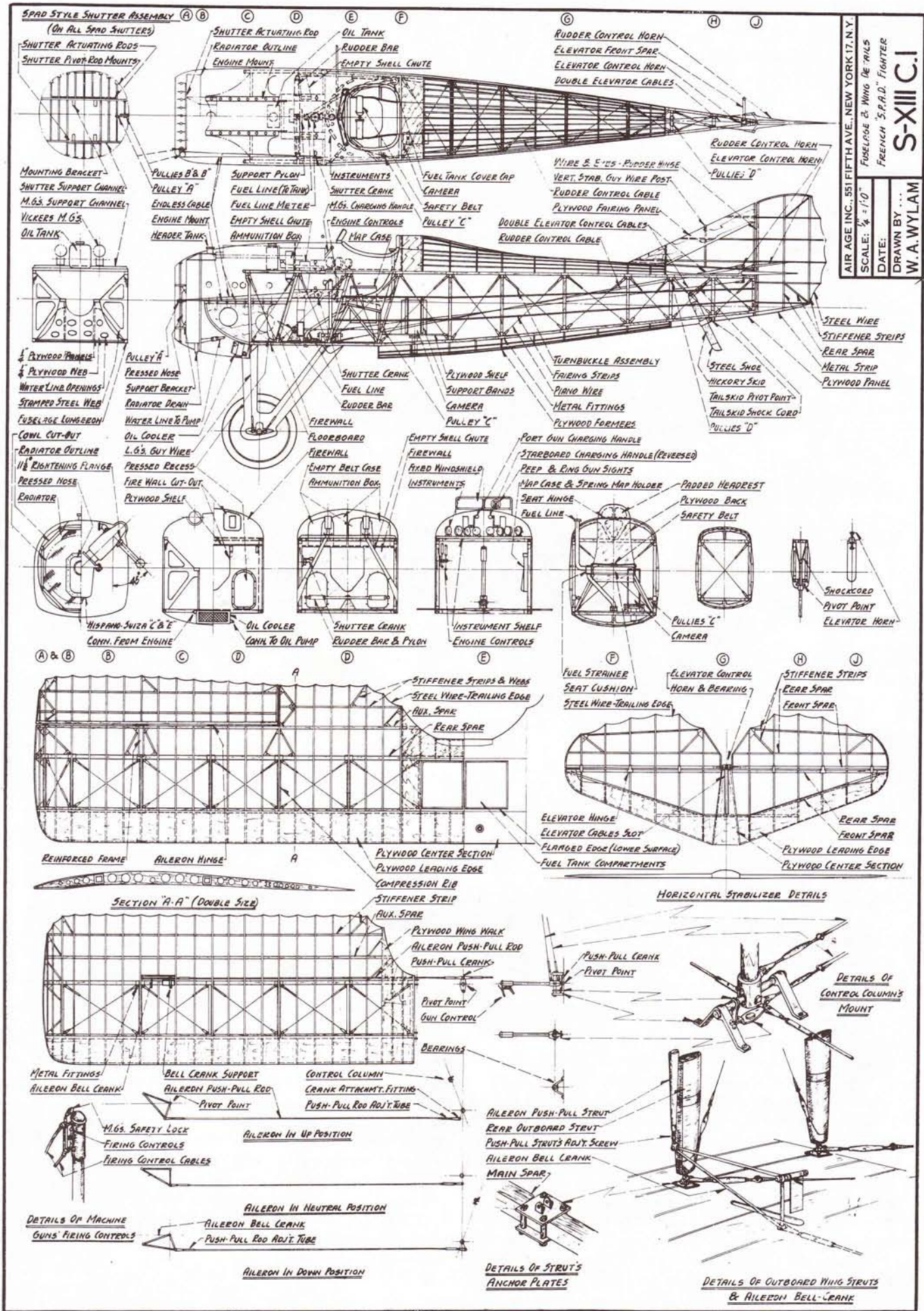
The original models were powered by Hispano-Suiza type 8Ba eight-cylinder



V-type engines which at first delivered 200 hp and were soon improved to 220 hp at sea level. Among the most streamlined of WW I airplanes, it had a top speed of 134.5 mph. It could climb to 6,500 feet in 5 minutes 17 seconds and could reach a ceiling of slightly over 22,000 feet.

Six XIII C.1's still survive, one of them Guynemer's in Paris, another Ray Brooks' in Washington D.C. □

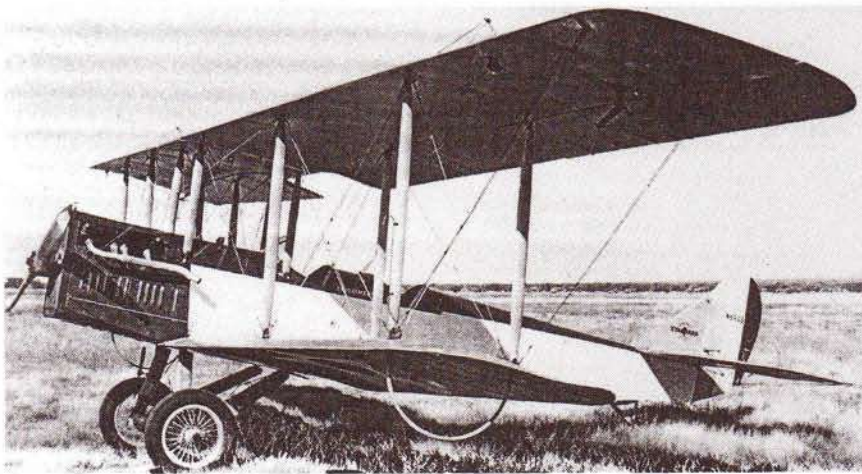
Considered easy to fly, the Spad S.XIII C.1 was a favorite mount for Allied pilots. It was a fighter that could take a hard punch and still remain air-worthy. Air Age file photos.



AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 1/8" = 1'-0"
 DATE: _____
 DRAWN BY: _____
 W. A. WYLAM
 S-XIII C.I.
 FRENCH "SPAD" FIGHTER
 FUSELAGE & WING DETAILS

Standard Model J

drawings by WILLIS NYE



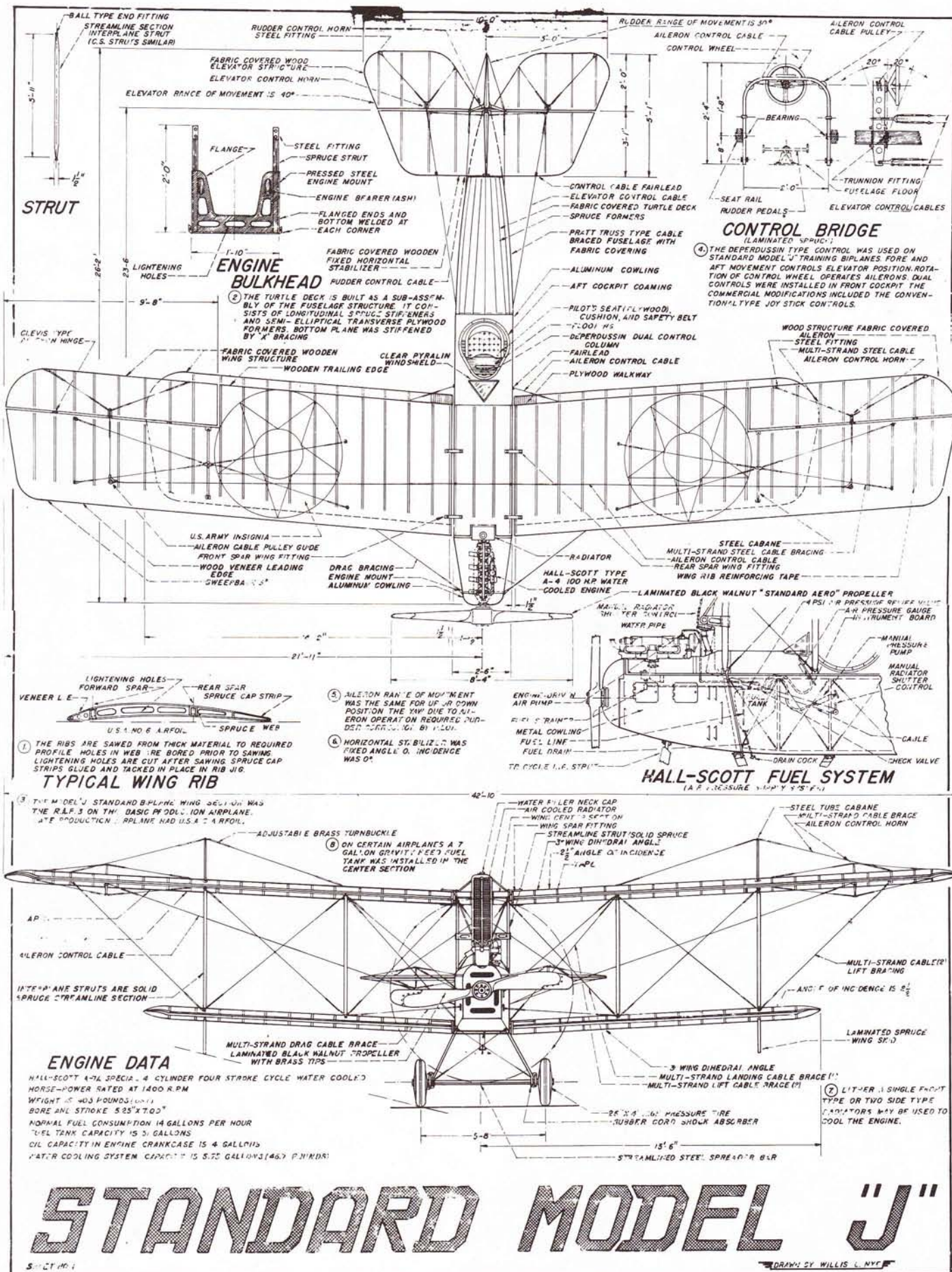
Standard J-1 with 180-hp Hisso engine.

DEVELOPED from the Standard H series biplanes designed in 1916, the J series aircraft were part of the USA's effort to produce machines as trainers for the war in Europe. A tandem two-seater, it was initially powered by the Hall-Scott 100-hp A-7A engine. It proved to be somewhat underpowered and so the J-1 was introduced, powered by a 175-hp engine, also from Hall-Scott. The H-S A-5A engine gave the airplane a maximum speed of 95 mph and was used for training and barnstorming as long after the war as the Jenny was.

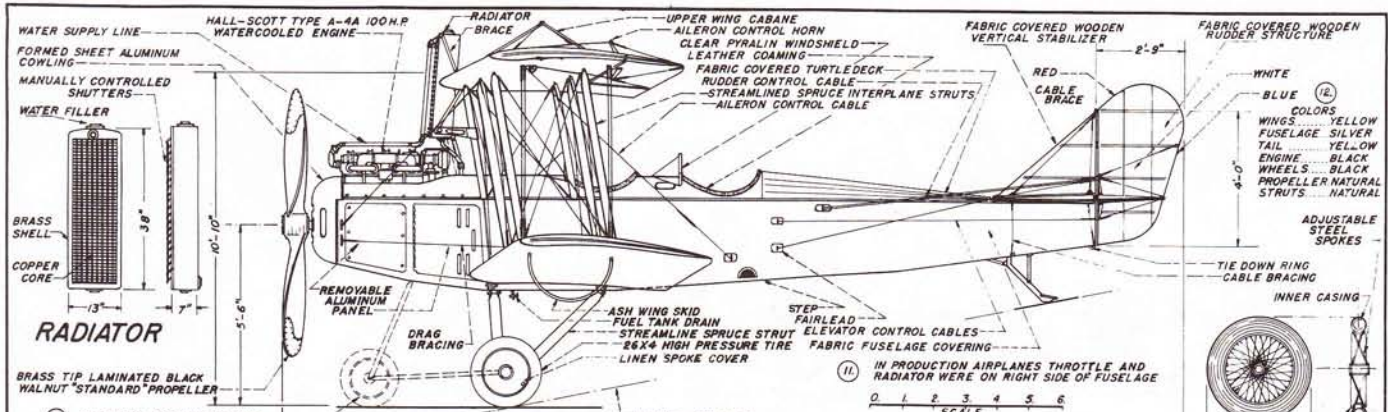
Many J-1s are still flying or are in museums. □



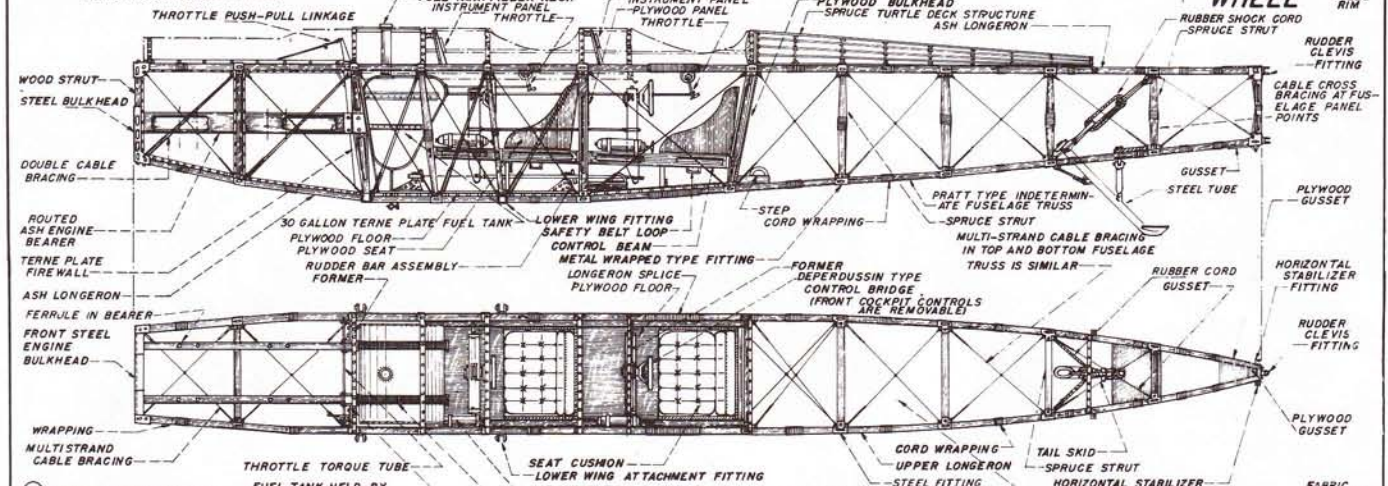
*Standard J-1 with Curtiss OX5 engine.
Photos courtesy of Leonard Opdycke, WW I
Aeroplanes.*



STANDARD MODEL "J"

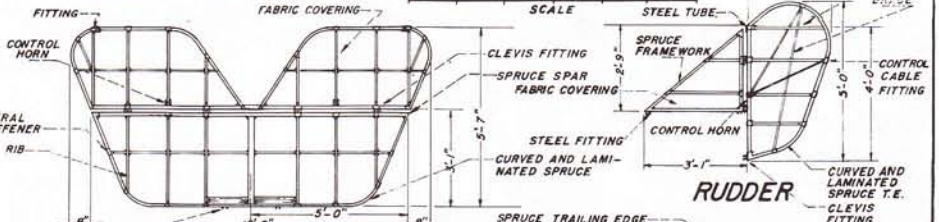


7 THE FIXED NOSE WHEEL WAS INSTALLED ON PROTOTYPE TRAINER MODEL ONLY.



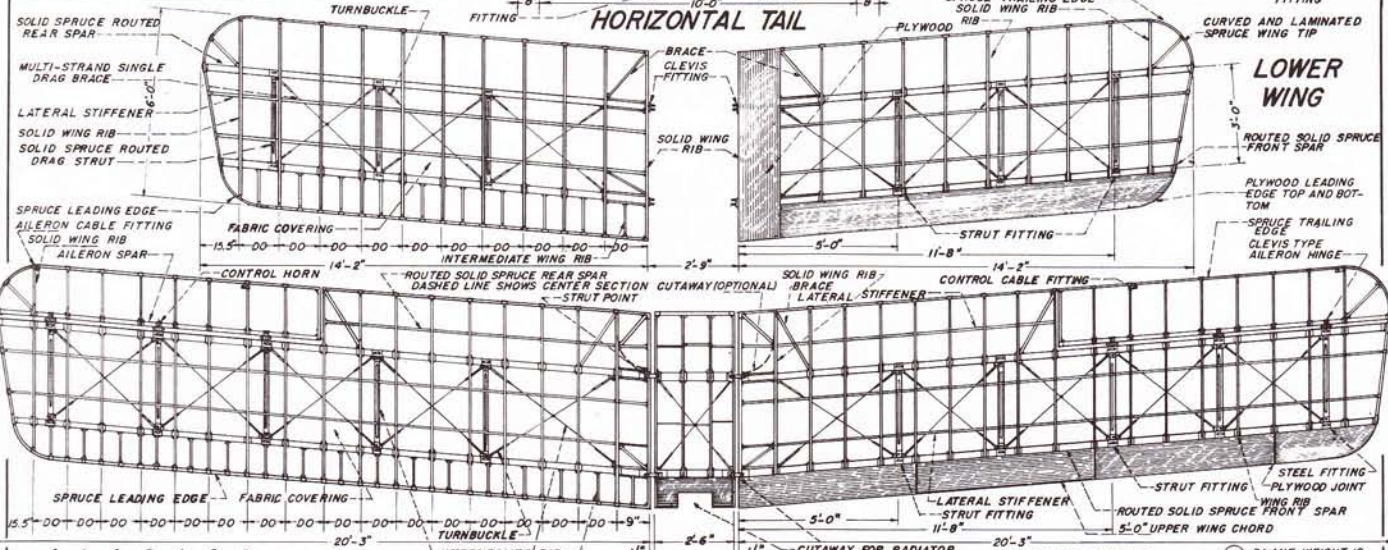
8 ENGINE CRANKCASE HOLDS 3 GALLONS OF LUBRICATING OIL.

FUSELAGE DETAILS
(RECONSTRUCTED FROM PHOTOGRAPHS)



MISCELLANEOUS DATA

UPPER WING AREA.....	258 SQ FT	
LOWER WING AREA.....	159 SQ FT	
TOTAL.....	417 SQ FT	
AILERON AREA (TOTAL).....	42 SQ FT	
HORIZONTAL STABILIZER.....	24 SQ FT	
VERTICAL STABILIZER (TOTAL).....	10 SQ FT	
ELEVATORS (TOTAL).....	22 SQ FT	
RUDDER.....	10 SQ FT	
WING LOADING.....	4.7 LBS SOFT	LATERAL STIFFENER
POWER LOADING.....	21.6 LBS H.P.	RIB
ENGINE POWER (1400 RPM).....	90 H.P.	
FUEL CONSUMPTION PER HOUR.....	9.5 GAL	
RANGE.....	350 MILES	
GLIDING ANGLE.....	8 TO 1	
HIGH SPEED.....	72 M.P.H.	
LANDING SPEED.....	40 M.P.H.	



9 PLANE WEIGHT IS 1950 POUNDS LOADED. EMPTY WEIGHT IS 1350 POUNDS.

THE STANDARD TRAINING BIPLANE MODEL "J" PROTOTYPE WAS BUILT BY THE STANDARD AIRCRAFT CORPORATION OF ELIZABETH, NEW JERSEY, IN 1916. THE PLANE WAS DESIGNED BY CHARLES HEALY DAY. THE W.W.I. PROGRAM COMPRIZED A TOTAL OF 1601 AIRPLANES BUILT UNDER LICENSE BY THREE PRIME CONTRACTORS.

THESE AIRPLANES WERE BUILT IN COMMERCIAL OPERATIONS UNTIL 1930. MANY COMMERCIAL VERSIONS WERE BUILT. SEVERAL "MISSO" POWERED PLANES WERE OPERATED IN AIRLINE USE BY RYAN AIR LINES BETWEEN SAN DIEGO AND LOS ANGELES, CALIFORNIA. COMMERCIAL VERSIONS HAD JOYSTICK CONTROLS.

STANDARD AIRCRAFT CORPORATION
ELIZABETH, NEW JERSEY
SHEET NO. 2
DRAWN BY WILLIS L. NYE

Thomas Morse S-4C & E

drawings by WILLIS NYE

THE THOMAS Morse S-4C was a single-seat advanced trainer of which about 600 were built. Most went to the U.S. Army Air Service but a few also went to the U.S. Navy from 1917. They were powered by the 80-hp LeRhone rotary engine and also used the 100-hp Gnome rotary in some models.

Nicknamed "Tommy," the S-4C represented to student pursuit pilots all that was to be expected of a single-seat fighter by way of feel and appearance, plus a lot of gentleness that some combat types of WW I lacked. It was not considered



Designed as an advanced single-seat trainer for WW I fighter pilots, over 1,000 "Tommys" were built. This is the S-4B. Photo courtesy of Leonard Opdycke, WW I Aeroplanes.



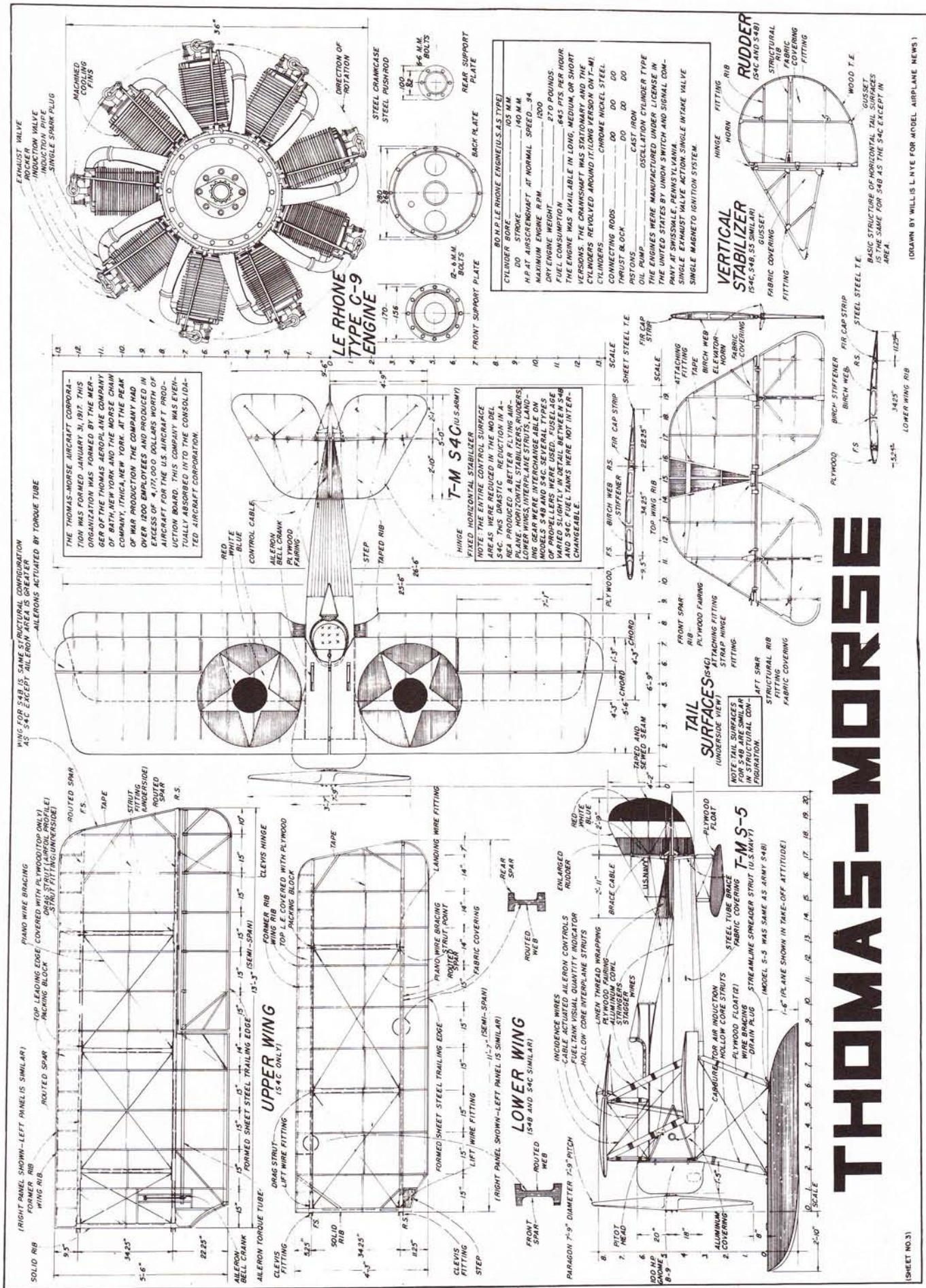
The S-4E above and the S-4C below were to be seen by thousands of movie buffs when Hollywood used the airplane in their celluloid wars. "Jane's All the World's Aircraft" photos.



good enough, either in performance or handling qualities to be used as a fighter. It never went overseas and was relegated to training fields during WW I.

Over 1,000 were built and, following the Armistice, were declared surplus and purchased by sportsman pilots and barnstormers during the early '20s. The busy roar of its rotary engine that had echoed from dozens of training fields all over the country during the war continued to be heard until about 1930. The motion picture industry used a great many Tommys after that in Hollywood air epics.

Only one S-4B is left, at Cole Palen's Old Rhinebeck Aerodrome; four -C's are in museums, and there are no more -E's. □



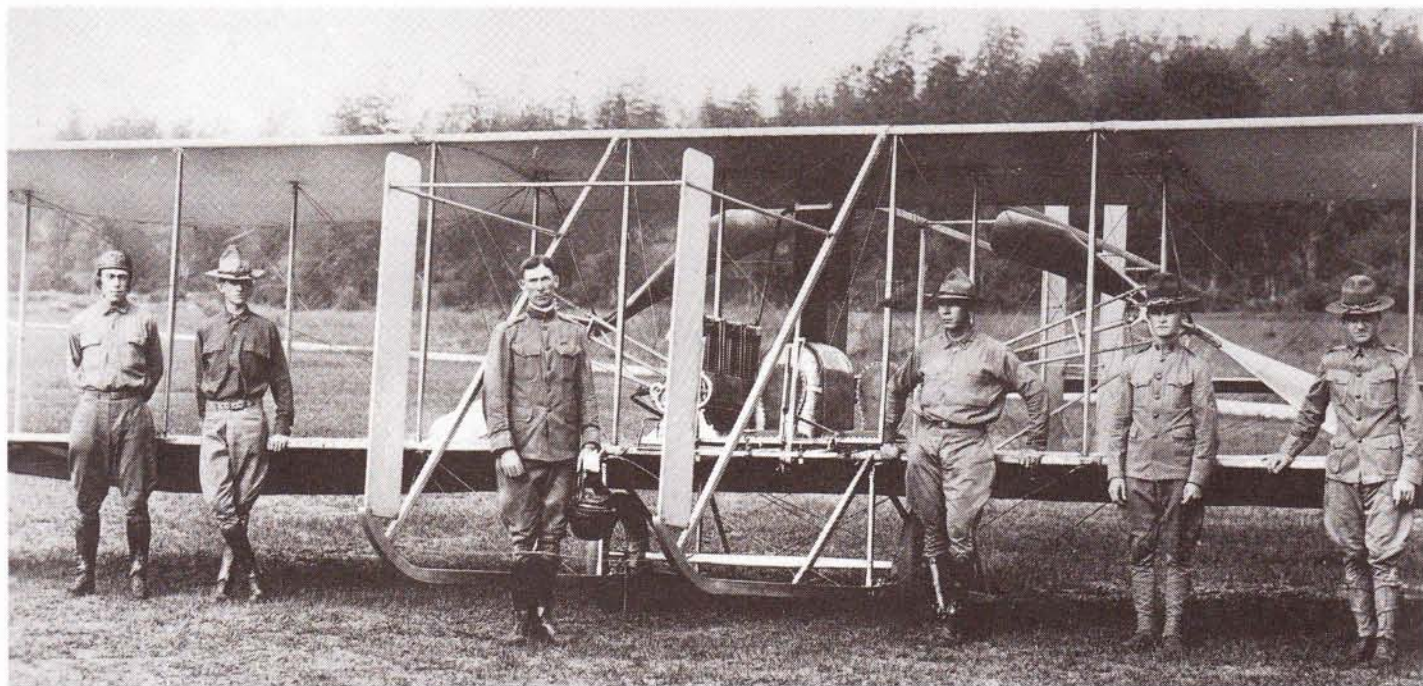
(SHEET NO. 3)

(DRAWN BY WILLIS L. NITE FOR MODEL AIRPLANE NEWS)

Wright Brothers

drawings by WILLIAM WYLAM

1903 Flyer, Model A, Model B



The Wright Brothers airplane was the first man-carrying aircraft in which the Army Signal Corp expressed an interest. Air Age file photo.

AT 10:35 a.m. on Thursday, December 17, 1903, at Kill Devil Hills in Kitty Hawk, North Carolina, Orville Wright piloted the Flyer on a flight that lasted just 12 seconds and covered about 120 feet. In doing so, the world's first powered, sustained, and controllable flight of a man-carrying airplane was recorded. The 12-hp engine and airframe were of Orville and Wilbur Wright's design and manufacture. The fourth and last flight that day—and of the Flyer ever—covered over 800 feet.

The use of wing warping, and the connection between it and the rudders, was the secret of the Flyer's controllability—the Wright's secret.

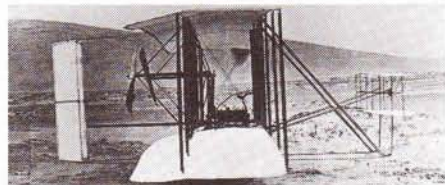
Not satisfied, the brothers set about modifying their design and thus developed the Wright Model A.

The Model A was similar to the original Flyer, the most noticeable dif-



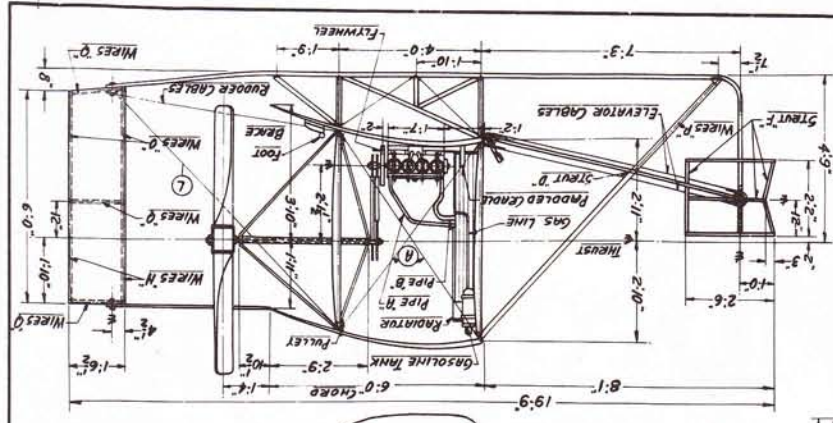
ference being the addition of seats for pilot and passenger. This airplane paved the way for the Model B, which was accepted as a flying machine for the Army Signal Corps.

The 1903 Flyer has just been restored at the National Air & Space Museum in Washington, DC; seven other powered Wrights are on exhibit in various museums. □



Left: The Wright Brothers assembled their famous aircraft with little fanfare in this building. Smithsonian photo. Above: Side view of the original Wright airplane, 1903, at Kitty Hawk. Photo courtesy of Leonard Opdycke, WW I Aeroplanes.

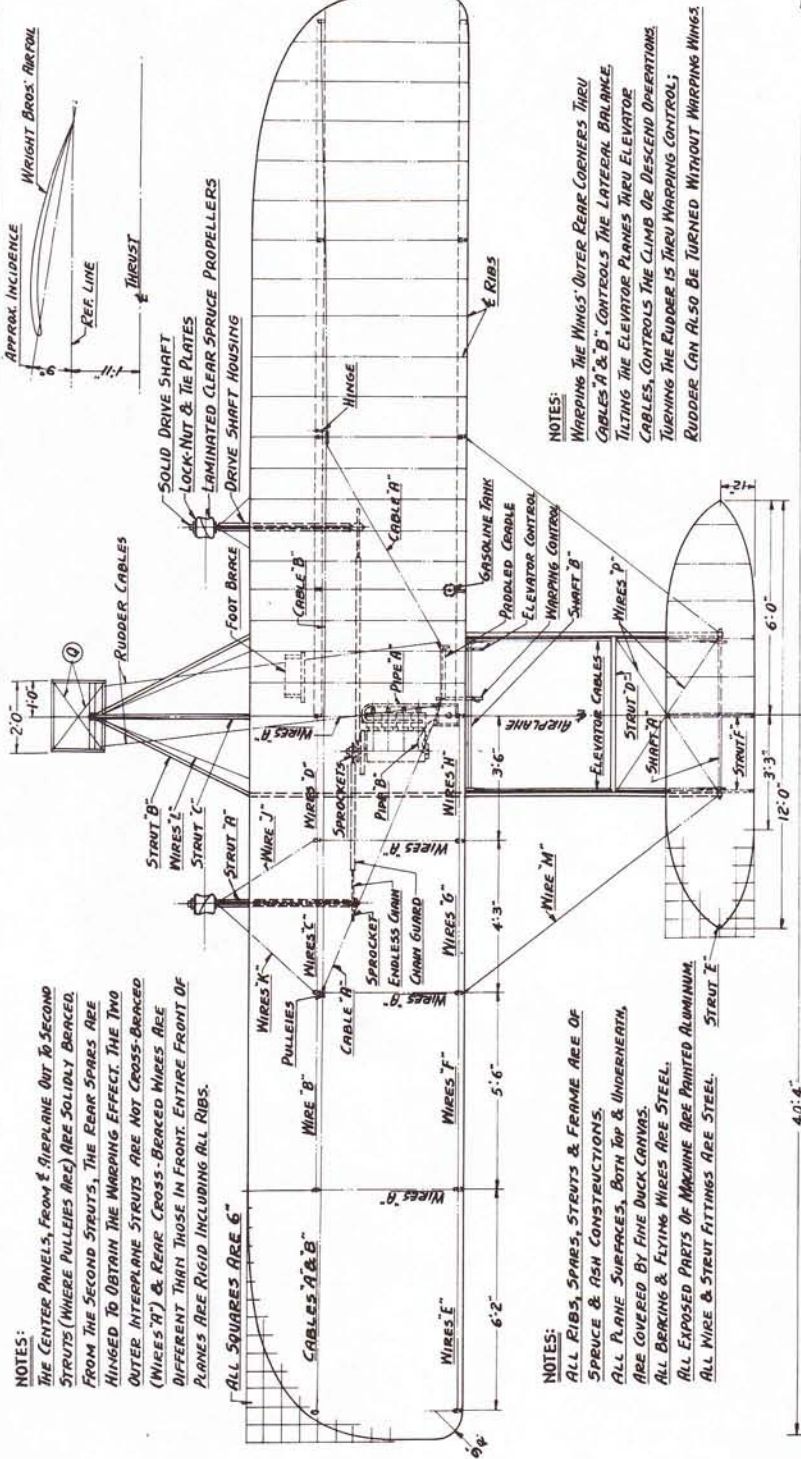




NOTES:
 ENGINE IS 4 CYLINDER WATER COOLED &
 MADE BY WRIGHT BROTHERS. IT IS RATED
 16 H.P. @ 400 R.P.M. IT IS MOUNTED ON THE
 SIDE & IT DRIVES TWO PROPELLERS
 IN OPPOSITE DIRECTIONS.

SCALE: 1/8" = 1'-0"
 DATE: NOV. 1943
 DRAWN BY...
 W. A. WYLAN

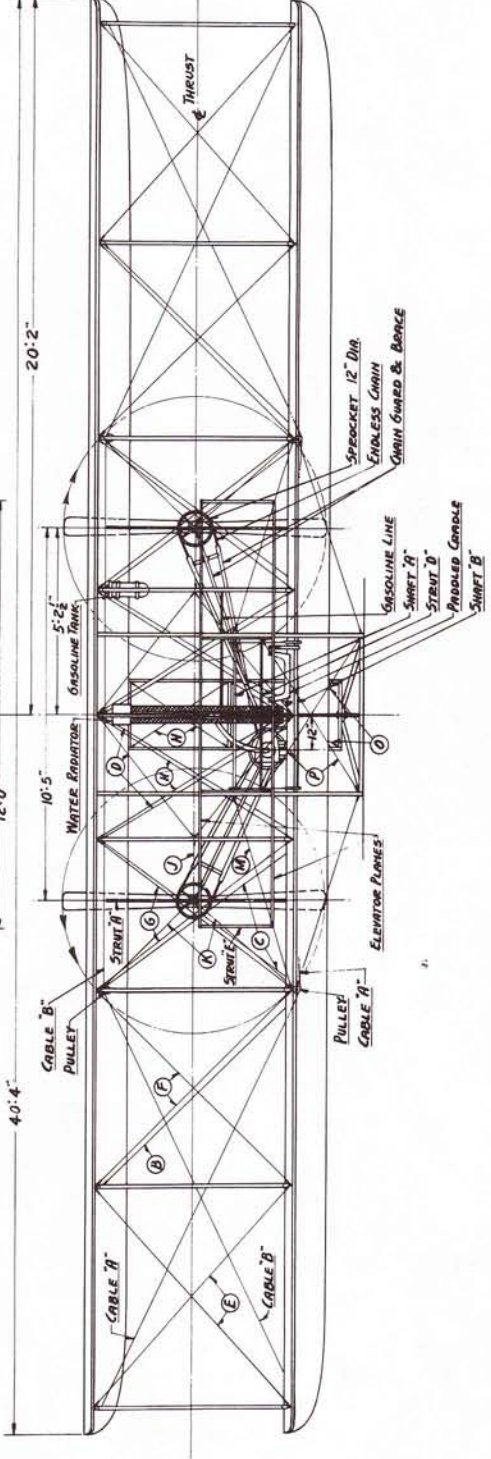
GENERAL ARRANGEMENT
 WRIGHT BROTHERS ORIGINAL
 "FLIER"

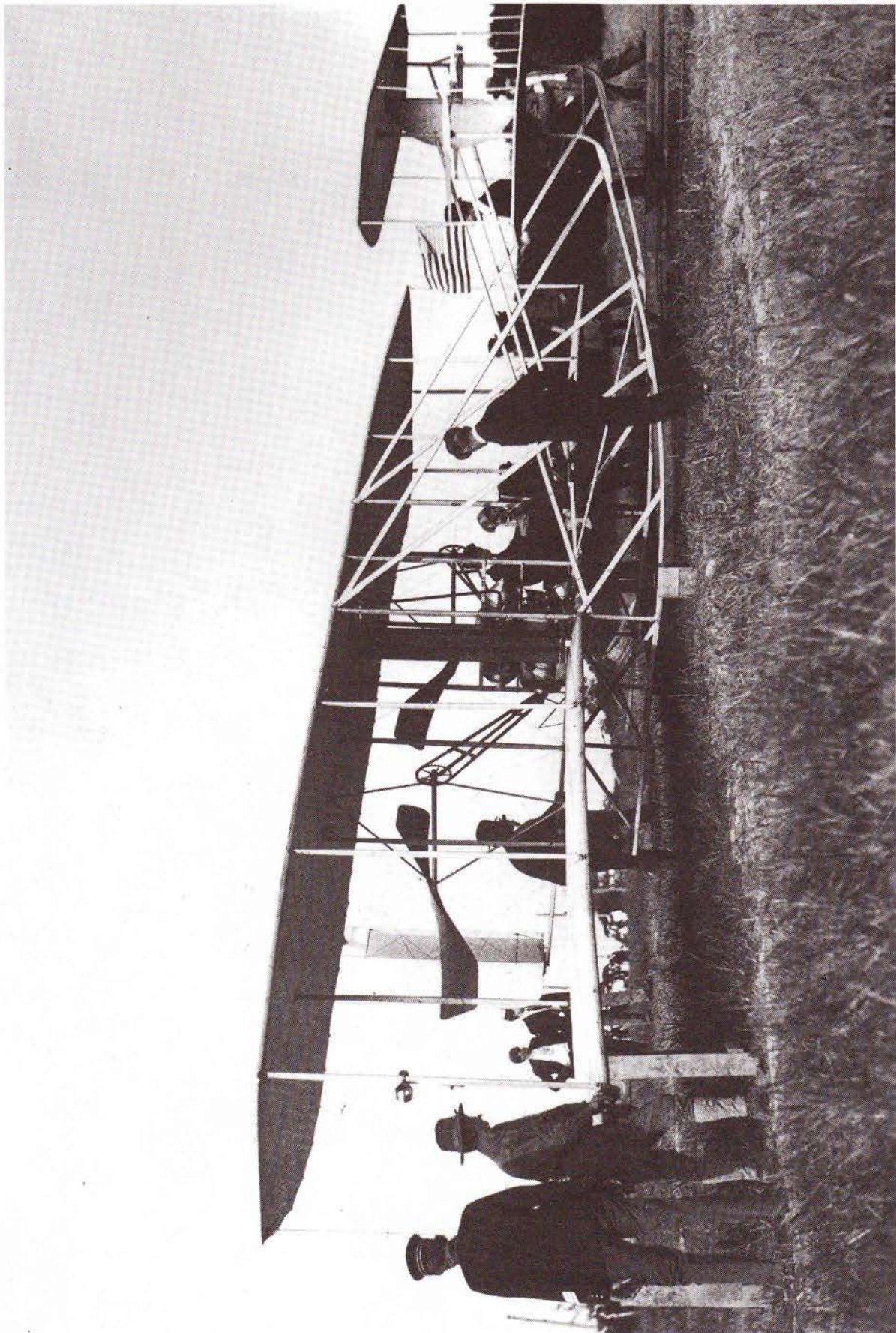


NOTES:
 WRAPPING THE WINGS OUTER REAR CORNERS THRU
 CABLES 'A' & 'B', CONTROLS THE LATERAL BALANCE.
 TILTING THE ELEVATOR PLANS THRU ELEVATOR
 CABLES, CONTROLS THE CLIMB OR DESCEND OPERATIONS.
 TURNING THE RUDDER IS THRU WRAPPING CONTROL;
 RUDDER CAN ALSO BE TURNED WITHOUT WRAPPING WINGS.

NOTES:
 THE CENTER PANELS, FROM 1st AIRPLANE OUT TO SECOND
 STRUTS (WHERE PULLEYS ARE) ARE SOLIDLY BRACED.
 FROM THE SECOND STRUTS, THE REAR SPARS ARE
 HINGED TO OBTAIN THE WRAPPING EFFECT. THE TWO
 OUTER INTERPLANE STRUTS ARE NOT CROSS-BRACED
 (WIRES 'A' & 'B' CROSS-BRACED WIRES ARE
 DIFFERENT THAN THOSE IN FRONT. ENTIRE FRONT OF
 PLANES ARE RIGID INCLUDING ALL RIBS.
 ALL SQUARES ARE 6"

NOTES:
 ALL RIBS, SPARS, STRUTS & FRAME ARE OF
 SPRUCE & ASH CONSTRUCTIONS.
 ALL PLANE SURFACES, BOTH TOP & UNDERNEATH,
 ARE COVERED BY FINE DUCK CANVAS.
 ALL BRACING & FLYING WIRES ARE STEEL.
 ALL EXPOSED PARTS OF MACHINE ARE PAINTED ALUMINUM.
 ALL WIRE & STRUT FITTINGS ARE STEEL.





Wright Brothers 1908 Military. Orville Wright leaning over pilot's seat. Photo courtesy of the Smithsonian Institution.

Engines

Clerget

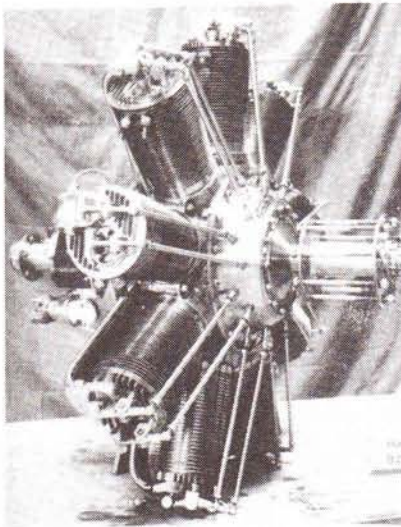
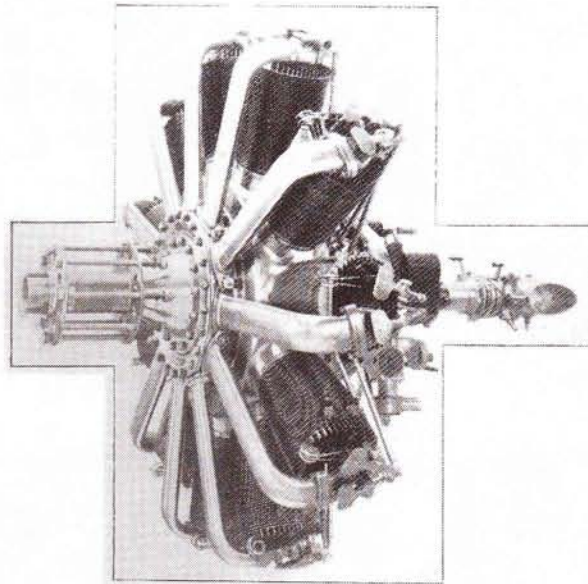
drawing by WILLIAM WYLAM

ONE OF THE most successful engines of WW I was the rotary Clerget. The crankshaft remained fixed during operation and the entire engine rotated around it. This feature provided a number of advantages, one being easy maintenance. Another was the relatively light weight of the engines. Produced in 7- and 9-cylinder versions, the Clerget Company also produced limited quantities of 11- and even 16-cylinder rotary engines, the latter producing as much as 420 hp at 1,600 rpm with a weight of only 750 pounds. The Type 11EB of 11-cylinder configuration weighed 507 pounds and produced 210 hp at 1,300 rpm and the Type 9BF with 9 cylinders weighed 381 pounds and put out 153 hp at 1,250 rpm, according to *Jane's All the World's Aircraft* of 1919.

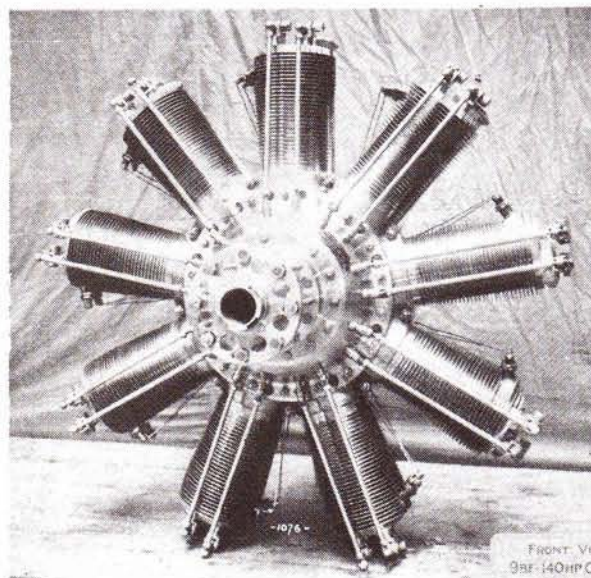
Manufactured in France by Clerget Blin Et Cie, it was also manufactured under a license agreement by Gwynnes Ltd. of London and was used in many different Allied aircraft, such as the Sopwith Camel, Beardmore, and others.

The rotary engine was little-used after WW I. Following the development of more powerful, liquid-cooled, rotating crankshaft style engines by Mercedes, Rolls Royce, Liberty, and Hispano-Suiza, the rotary engine became obsolete and production halted around 1925. A few were rebuilt as stationary radial engines after the war. □

The Type 9B.F. weighed 381 pounds and developed 140 hp at 1,250 rpm.

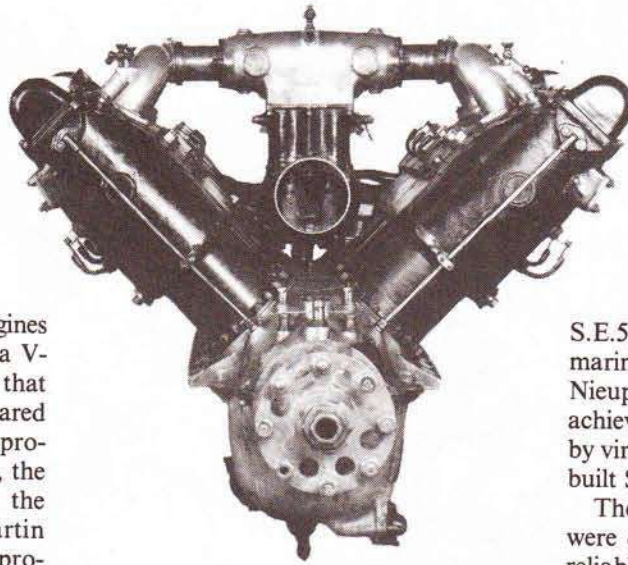


Above: Type 11E.B. developed 200 hp at 1,300 rpm. Left: Type 9Z. was rated at 110 hp at 1,180 rpm.



Hispano-Suiza

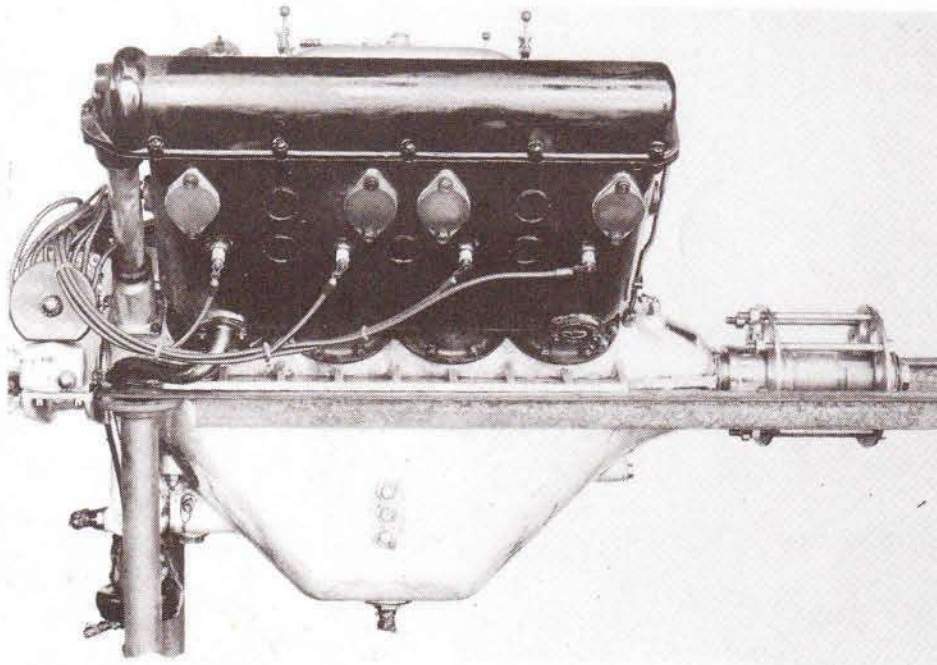
drawings by WILLIAM WYLAM

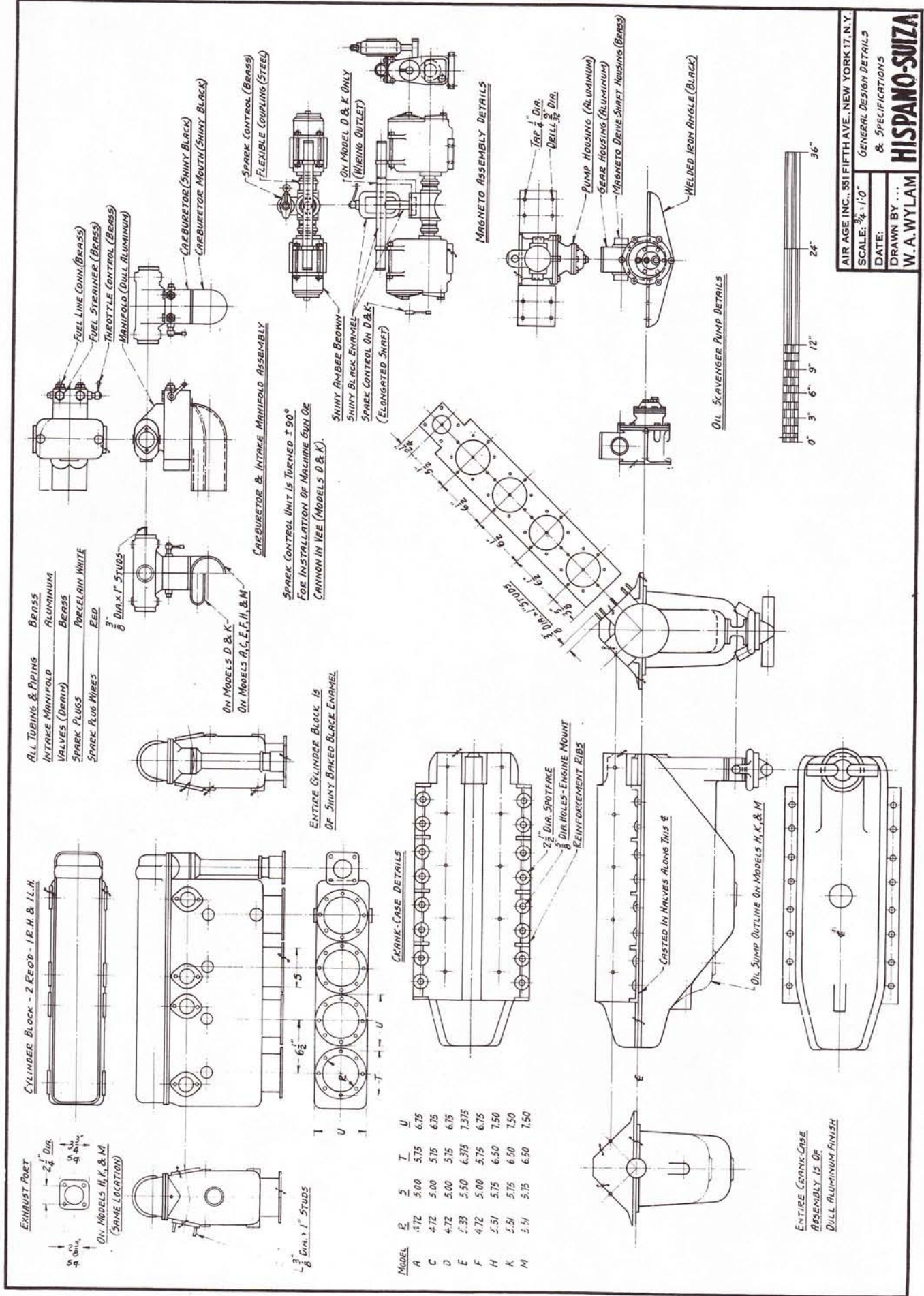


ONE OF THE MOST successful engines of its time, the Hispano-Suiza was a V-type 8 cylinder, liquid-cooled engine that was produced in both direct and geared drive configurations. With the main production facility in Barcelona, Spain, the engine was also manufactured in the United States by the Wright-Martin Company and versions were also produced in France and England. Eight models were made with the M version producing as much as 400 hp. Used in such aircraft as the British Beardmore,

S.E.5, Sage, Sopwith Dolphin, Supermarine, the French-built DeMarcay, and Nieuport variants, the engine probably achieved more recognition than any other by virtue of its use in the famous French-built Spad fighter plane.

The Hispano-Suiza engines, which were developed as early as 1916, had a reliable design and provided a sound basis for the company which is still in business producing jet engines under the name of SNECMA in Paris, France. □





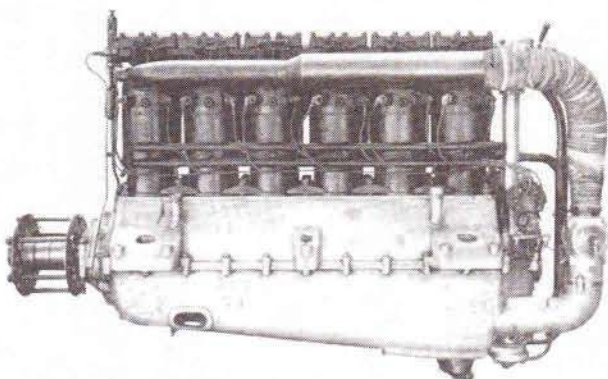
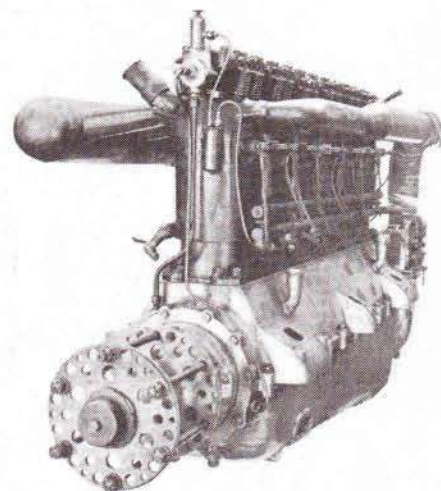
AIR AGE INC., 351 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 3/4" = 1'-0"
 GENERAL DESIGN DETAILS
 & SPECIFICATIONS
 DRAWN BY...
W. A. WYLAM
HISPANO-SUIZA

Mercedes 160 hp & 180 hp

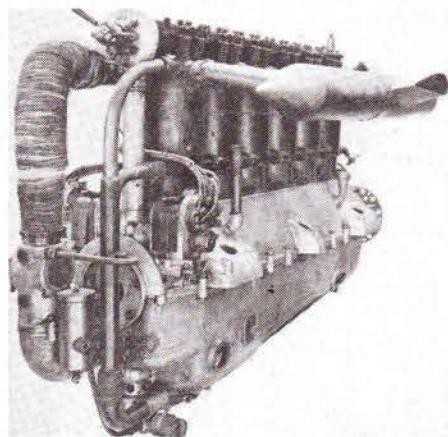
drawings by WILLIAM WYLAM

DESCRIBED as very reliable, the Mercedes engine was developed for the Automobile Technical Society prize of 5,000 pounds sterling during 1911. The 100-hp model won the chief prize in the Kaiser engine competition in 1912 and the Mercedes-Daimler Motoren Gesellschaft, Stuttgart, Germany, firm went on to produce even larger engines and automobiles. Produced between 1914 and 1918, the 160- and 180-hp versions were

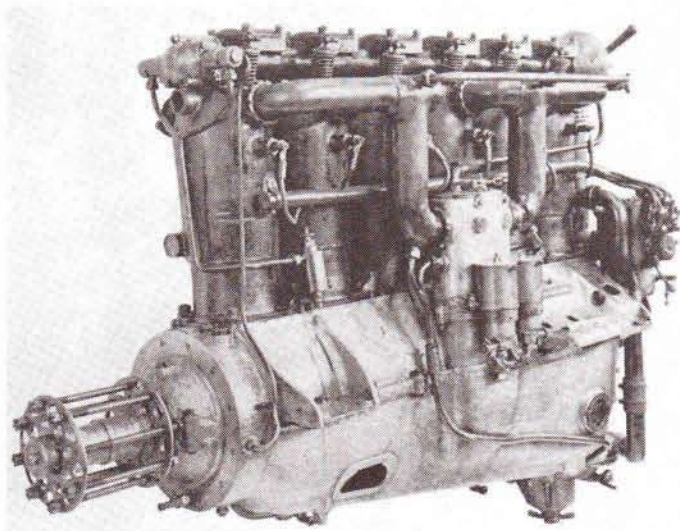
used in a wide variety of German aircraft, such as the Albatros D.III and the Fokker D.VII. The F-1466 engine had a rating of 160 hp at 1,400 rpm and the F-1466D-3A was rated at 180 hp at 1,400 rpm. These were liquid-cooled engines and were known for their reliability and excellent durability due to the fine craftsmanship insisted upon by the company, a feature that is still held to modern times. □

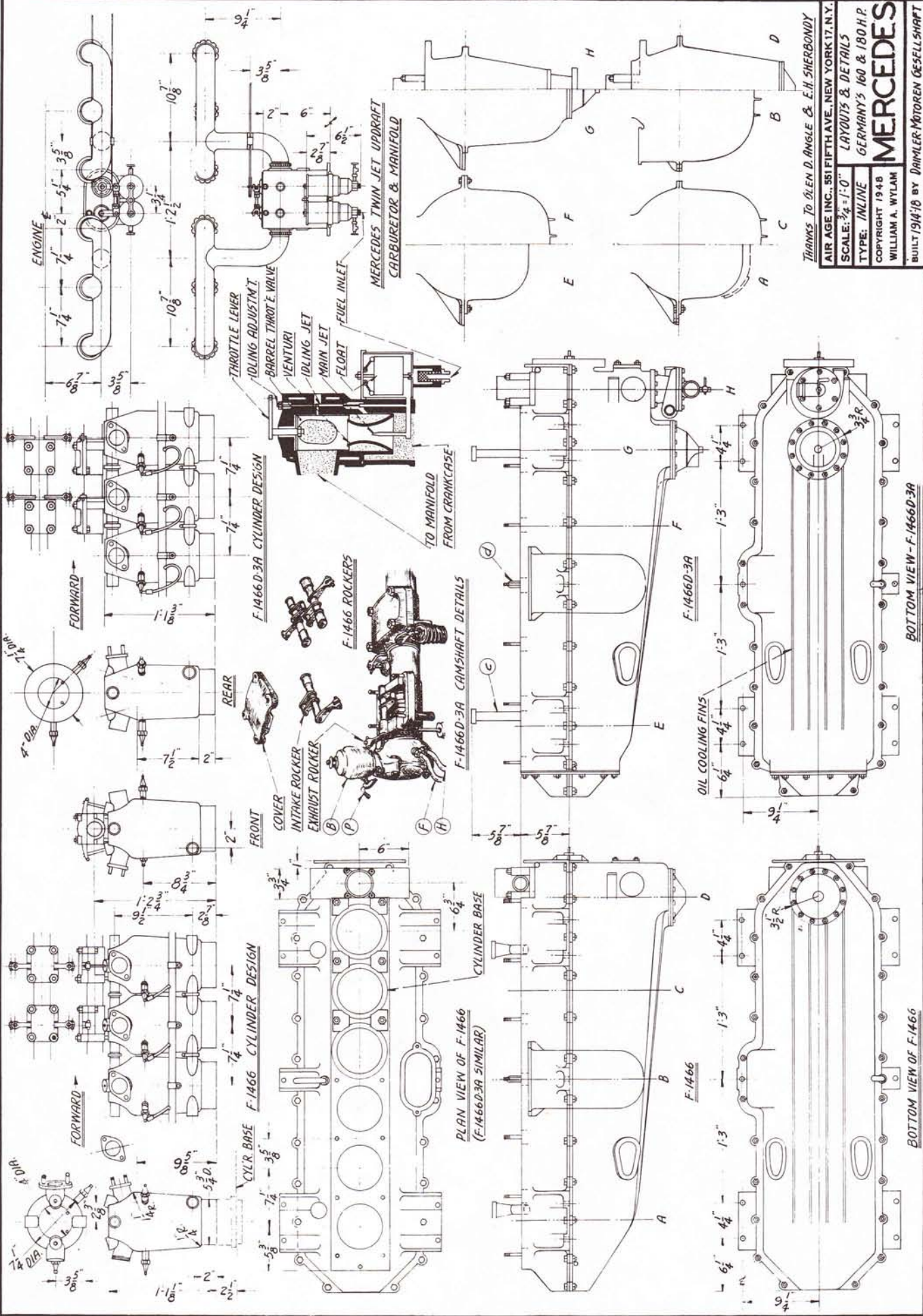


Left and below: Mercedes engines were known for their ruggedness and low maintenance requirements.



Above: Front and rear views of the Mercedes demonstrate the thin profile which allowed for streamlining of the airframe design. "Jane's All the World's Aircraft" photos.





THANKS TO GLEN D. ANGLE & E.H. SHERBONDY
 AIR AGE INC., 351 FIFTH AVE., NEW YORK 17, N.Y.
 SCALE: 3/4" = 1" 0"
 TYPE: INLINE
 GERMANY'S 160 & 180 HP
MERCEDES
 COPYRIGHT 1948
 WILLIAM A. WYLAN
 BUILT 1948 BY DAIMLER-MOTOREN-GESELLSCHAFT

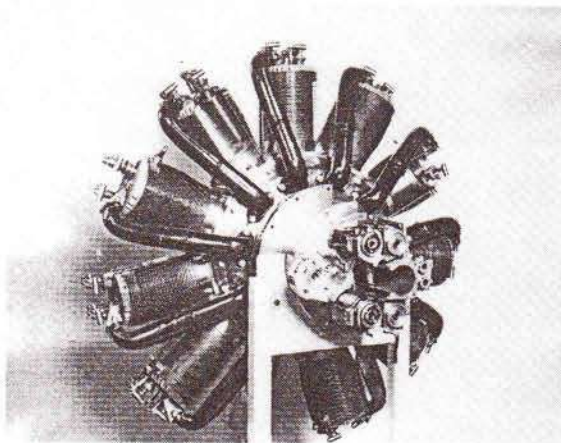
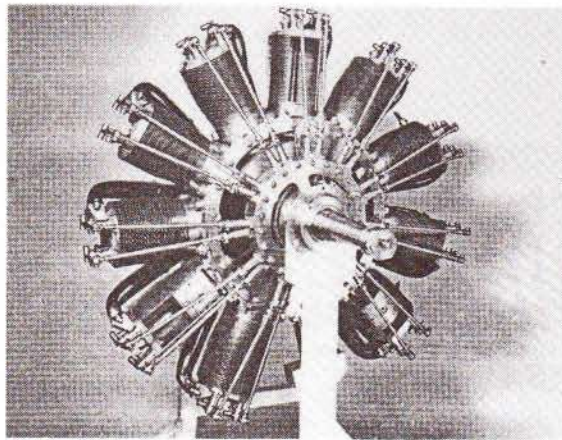
BOTTOM VIEW - F-1466 D-3A

BOTTOM VIEW OF F-1466

Siemens-Halske

drawing by WILLIAM WYLAM

THE SIEMENS & HALSKE Aero Engine Department, Berliner Chausse, Berlin-Spandau, engaged in the manufacturing of aero-engines before WW I. Toward the end of the war, they designed and manufactured rotary engines in which the crankcase and the crankshaft were geared together, so that each rotated at half-engine speed in opposite directions. For the time, this engine made some very remarkable climbs to high altitudes. For high-altitude performance, the engine was fitted with high-compression cylinders. Used in such airplanes as the Roland Parasol and the Siemens-Schuckert bi-planes, the engine had the capability of turning huge, four-bladed props due to the unique nature of the engine gearing, giving the aircraft equipped with them some very powerful and maneuverable machines. □



The Siemens-Halske Sh.III contra-rotary, on exhibit at the Science Museum in S. Kensington, England. Science Museum photo.

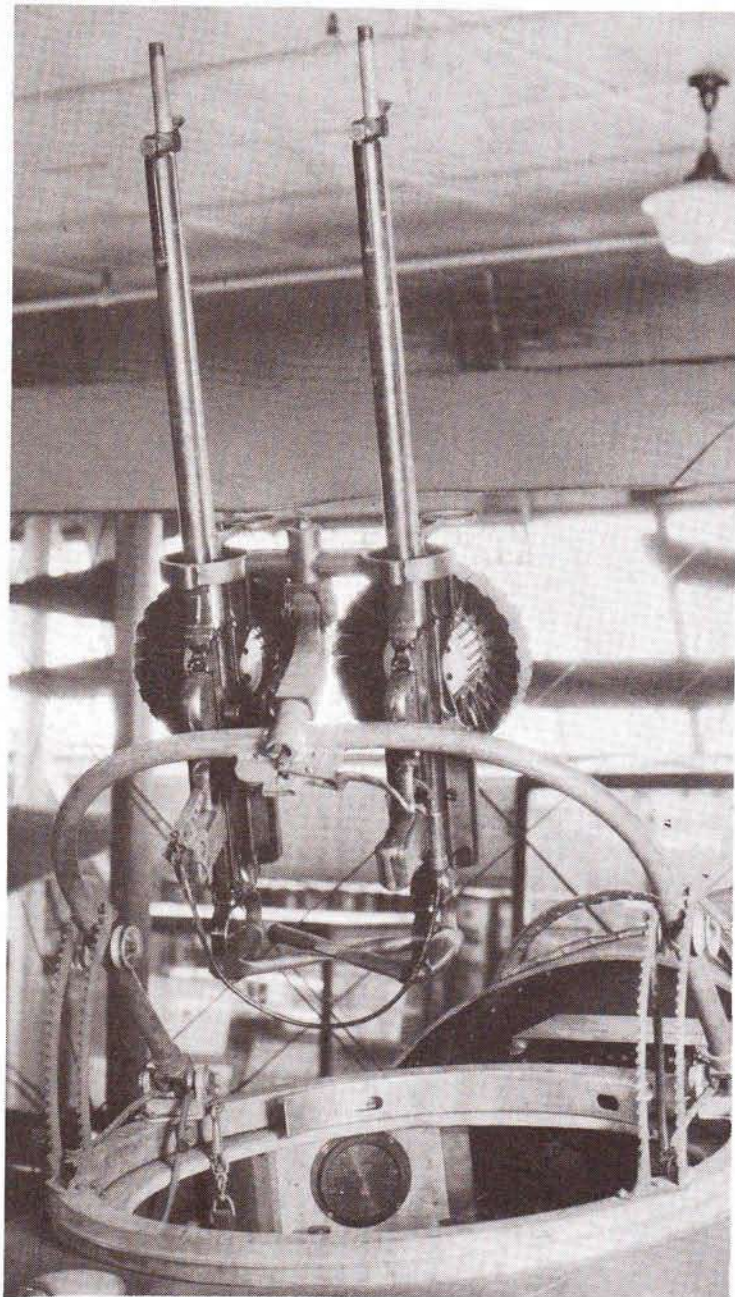
Armament

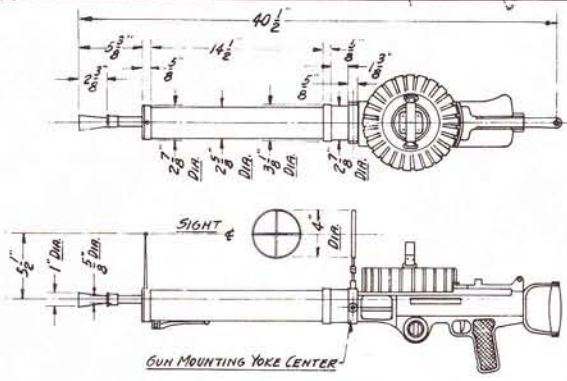
Lewis Machine Gun

drawing by WILLIAM WYLAM

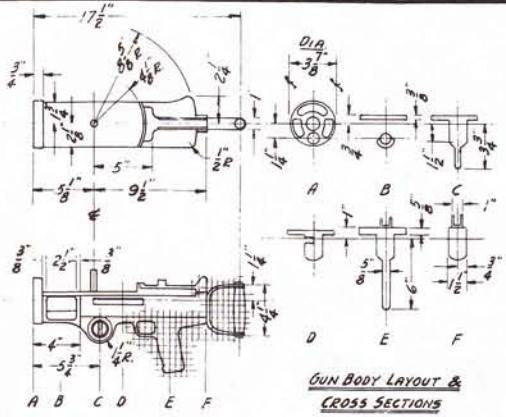
AS IN ANY WAR, the unfortunate method of force comes from firepower or killing power. Early pilots of WW I observation aircraft soon discovered that they were sitting ducks for ground fire. Following a number of casualties, pilots began to carry side-arm weapons and even rifles. The concept of fixed guns on aircraft came as a result of the pilot's inability to fly his aircraft and fire his weapon with any authority by leaning over the side of his airplane. As this approach to aircraft weaponry developed, so did the need for faster firing guns. The Lewis Machine Gun, Model 1918, was an outgrowth of the infantry type machine gun used by ground personnel, and was attached with a flexible mount atop the wings of many Allied aircraft, as well as being located in the rear of the aircraft for use by an aerial gunner. Being fully automatic and gas-operated, the Lewis provided a formidable new fighting tool for the Allies in the air. □

A pair of Lewises mounted on a Scarff ring in the rear cockpit. It is the same mounting as the one in the drawing.

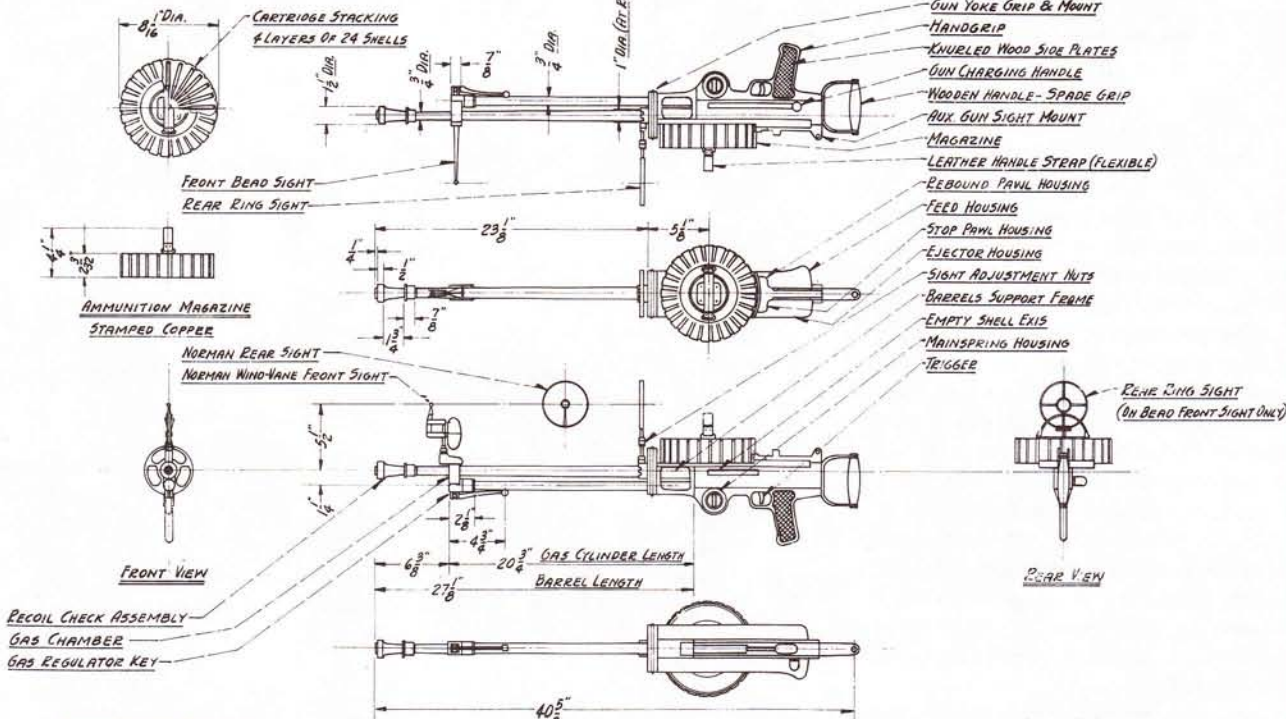




1915 LEWIS .30 CAL. AIRCRAFT MACHINE GUN



GUN BODY LAYOUT & CROSS SECTIONS

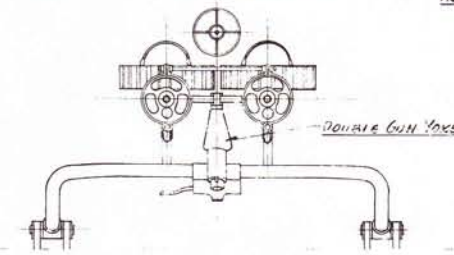


M1918 LEWIS .30 CAL. AIRCRAFT FLEXIBLE MACHINE GUN

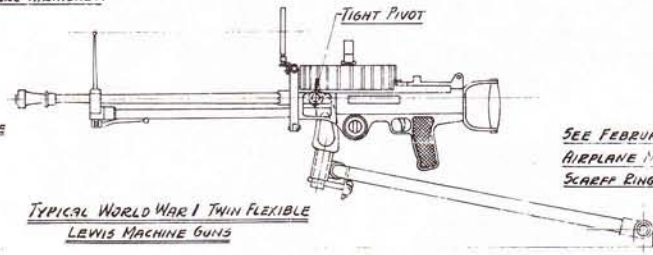
NOTES ON LEWIS OPERATIONS
 THIS TYPE OF MACHINE GUN WAS GAS OPERATED, FULLY AUTOMATIC, AND AIR COOLED. IT FUNCTIONS ON THE POWER PRODUCED BY THE EXPANSION OF GAS. THIS GAS WAS CREATED BY THE FIRING OF THE CARTRIDGE WHICH DRIVES THE BULLET OUT THRU THE BARREL. WHEN THE BULLET PASSED THE PORTHOLE IN THE GAS CHAMBER, THE GAS IS EXPANDED INTO A DRIVING FORCE. THIS DRIVES THE PISTON & SHAFT BACK TOWARD THE REAR. THIS BACKWARD MOVEMENT IN THE GAS CYLINDER CAUSED THE CARTRIDGE TO UNLOCK & TO DROP INTO THE HOLD, EXTRACT THE EMPTY SHELL CASE AND TO THROW IT OUT THRU THE EMPTY SHELL EXIS, ROTATE THE MAGAZINE, AND TO WIND UP THE MAINSPRING. THE FORWARD MOVEMENT OF THE PISTON & SHAFT WAS CAUSED BY THE MAINSPRING PRESSURE WHICH FEEDS AND LOCKS THE CARTRIDGE IN THE FIRING CHAMBER; AND FIRES THE CARTRIDGE WHEN THE TRIGGER IS PRESSED.

NOTE:
 LEWIS GUNS CAN NOT BE SYNCHRONIZED FOR FIRING THRU PROPELLER. IT CAN BE USED ONLY FOR FREE OR FLEXIBLE MOUNTINGS.

ENTIRE GUN WITH EXCEPTION OF MAGAZINES, WOOD HANDLES, & MOVING PARTS WERE OF NON-EUST DULL BLACK. MAGAZINES WERE COPPER FINISHED, LEATHER STRAPS WERE BROWN; AND WOOD PARTS WERE VARNISHED.



DOUBLE GUN YOKE



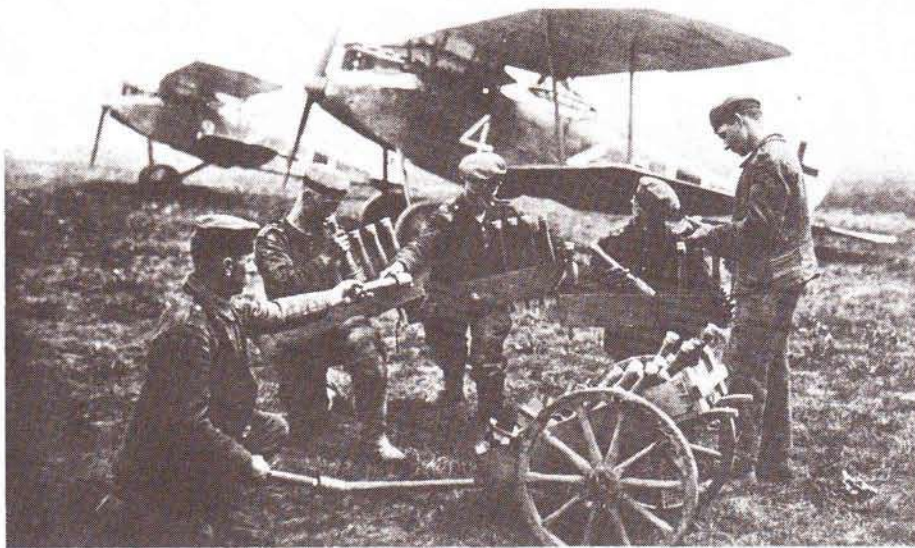
TYPICAL WORLD WAR I TWIN FLEXIBLE LEWIS MACHINE GUNS

SEE FEBRUARY 1946 MODEL AIRPLANE NEWS FOR DETAILS ON SCARF RING MOUNT & YOKE.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N. Y.
 SCALE: 3/8" = 1'-0"
 GENERAL ARRANGEMENTS
 30 CAL. AIRCRAFT MACHINE GUN
 DRAWN BY...
 W. A. WYLAH

Air Bombs

drawing by WILLIAM WYLAM



Bombs being loaded into German Halberstadt CL.II light bombers.

ONE OF THE FIRST bombs to fall from an aircraft on an enemy was a glass jar filled with petrol, nails, and powder. The airplane in war was seen as providing a better vantage point in observing enemy troop movements.

The first bombing equipment was nothing more than a pilot with a satchel with a few lightweight bombs made from artillery shells or hand grenades that he simply tossed over the side. Encouraged with this new way of creating havoc on

the ground, aircraft were soon equipped with racks under the aircraft, a release mechanism in the cockpit for the pilot to activate, and even additional crew members to assume the tasks of gunner and bombardier.

Shortly after the end of WW I, General Billy Mitchell managed to sink a battleship in a test for the Navy using only bombs. □

\$17.95

2013



ISBN: 0-911295-02-X



9 780911 295023

