HISTORICAL DESIGN SECTION

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IN the following pages the progress of American aircraft design is illustrated.

It has been the aim to trace significant phases in the development of the art from the time the Wright Brothers made the first flight.

Even in so new an industry, records of early achievements have been scattered, but with the assistance of Orville Wright, Glenn H. Curtiss, Glen L. Martin, Edson Gallaudet and other pioneers, the compilers of this volume are able to present what is believed to be a fair graphic history of our development.

The gliders built and demonstrated by the Wrights are illustrated as the final steps preparatory to the historic flights at Kitty Hawk, N. C.

Langley's "Aerodrome" is given a place of honor, as it was built the same year the Wrights flew, but was not demonstrated until eleven years later, when Mr. Curtiss attached pontoons and took it up at Lake Keuka. Prof. Samuel Pierpont Longley, the designer, who died amid the ridicule of the undiscerning mind of his day, was thus vindicated.

But nothing, of course, can diminish the obligations which the art owes to Wilbur and Orville Wright. It was Orville Wright who made the first flight on the morning of December 17, 1903. He describes it as follows:

"The course of the flight up and down was exceedingly erratic, partly due to the irregularity of the air, and partly to lack of experience in handling this machine. The control of the front rudder was difficult on account of its being balanced too near the center. This gave it a tendency to turn itself when started, so that it turned too far on one side and then too far on the other. As a result, the machine would rise suddenly to about ten feet and then as suddenly dart for the ground. A sudden dart when a little over a hundred feet from the end of the track or a little over 120 feet from the point at which it rose into the air, ended the flight. As the velocity of the wind was over 35 feet per second and the speed of the machine over the ground against this wind ten feet per second, the speed of the machine relative to the air was over 45 feet per second, and the length of the flight was equivalent to a flight of 540 feet made in the calm air. The flight lasted only twelve seconds, but it was nevertheless the first in the history of the world in which a machine carrying a man had raised itself by its own power into the air in full flight, had sailed forward without reduction of speed, and had finally landed at a point as high as that from which it started."

It was not until five or six years afterward that the United States government became sufficiently interested to call for the design and construction of an airplane. The one thus built was flown, as the first American military machine, at Fort Myer, near Washington, Sept. 9, 1909.

In the meantime Glenn H. Curtiss, alone and through the Aerial Experiment Association, had been carrying on his work with airplanes and engines, and on July 4, 1908, made the first publicly announced flight in the history of the art. This was made at Hammondsport, N. Y., in the " June Bug," which was destined to be the first of a long line of practical machines bearing Mr. Curtiss' name, one of which made the first flight across the Atlantic. Mr. Curtiss describes this famous flight as follows:

"The 'June Bug' was brought out of its tent and the motor given a try-out. It worked all right. The course was measured and a flag put up to mark the end. Everything was ready and about seven o'clock in the evening the motor was started and I climbed into the seat. When I gave the word to 'let go' the 'June Bug' skimmed along over the old race track for perhaps two hundred feet and then rose gracefully into the air. The crowd set up a hearty cheer, as I was told later — for I could hear nothing but the roar of the motor and I saw nothing except the course and the flag marking a distance of one kilometer. The flag was quickly reached and passed and still I kept the airplane up, flying as far as the open fields would permit, and finally coming down safely in a meadow, fully a mile from the starting place. I had thus exceeded the requirements and had won the *Scientific American* Trophy for the first time. I might have gone a great deal farther, as the motor was working beautifully and I had the machine under perfect control, but to have prolonged the flight would have meant to turn in the air or passing over a number of large trees. The speed of this first official flight was closely computed at thirty-nine miles an hour."

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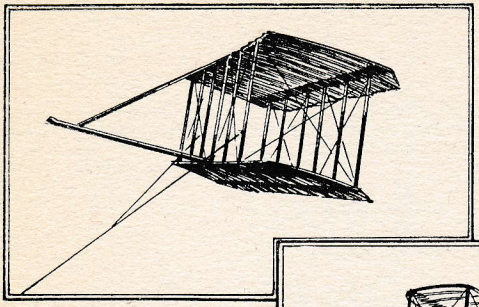
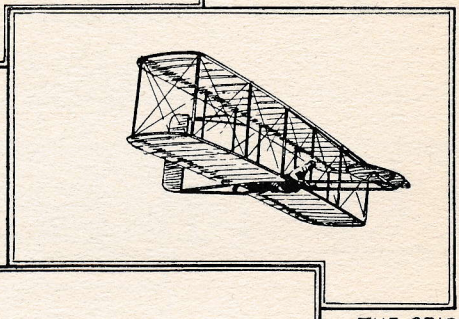
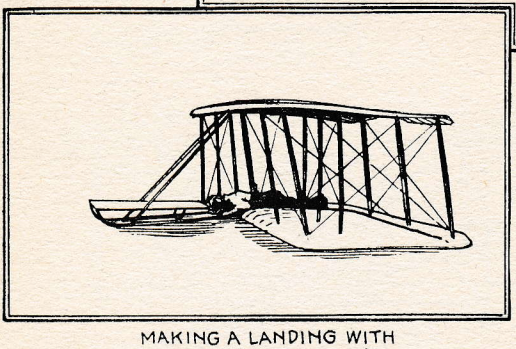


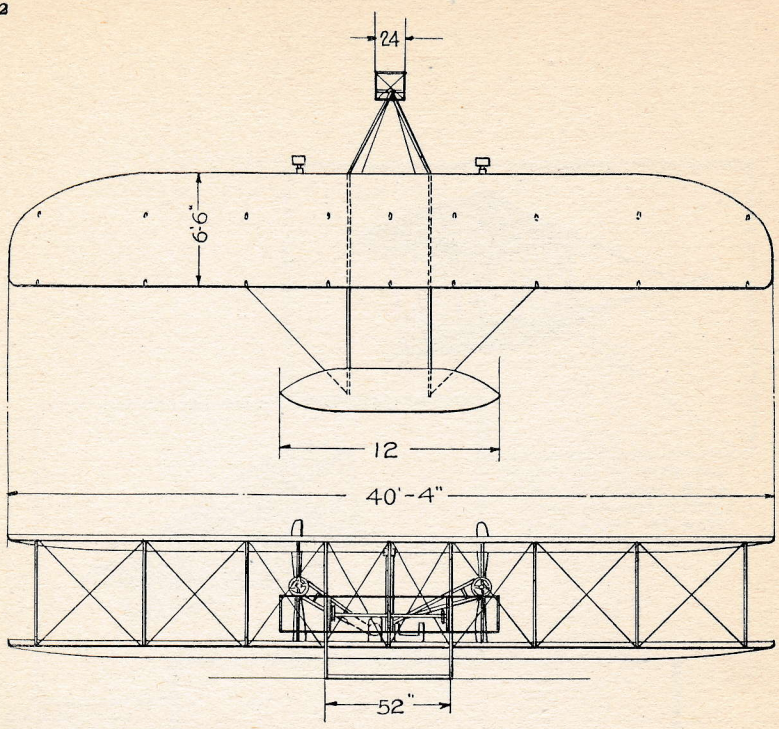
THE WRIGHT BROTHERS' KITE USED IN MAKING EXPERIMENTS WITH HEAVIER-THAN-AIR CRAFT

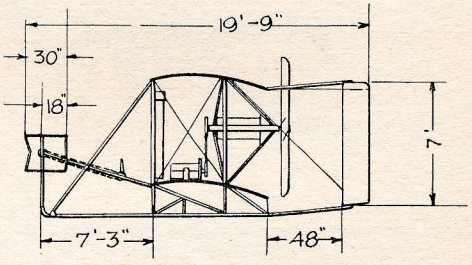


THE ORIGINAL WRIGHT GLIDER 1900



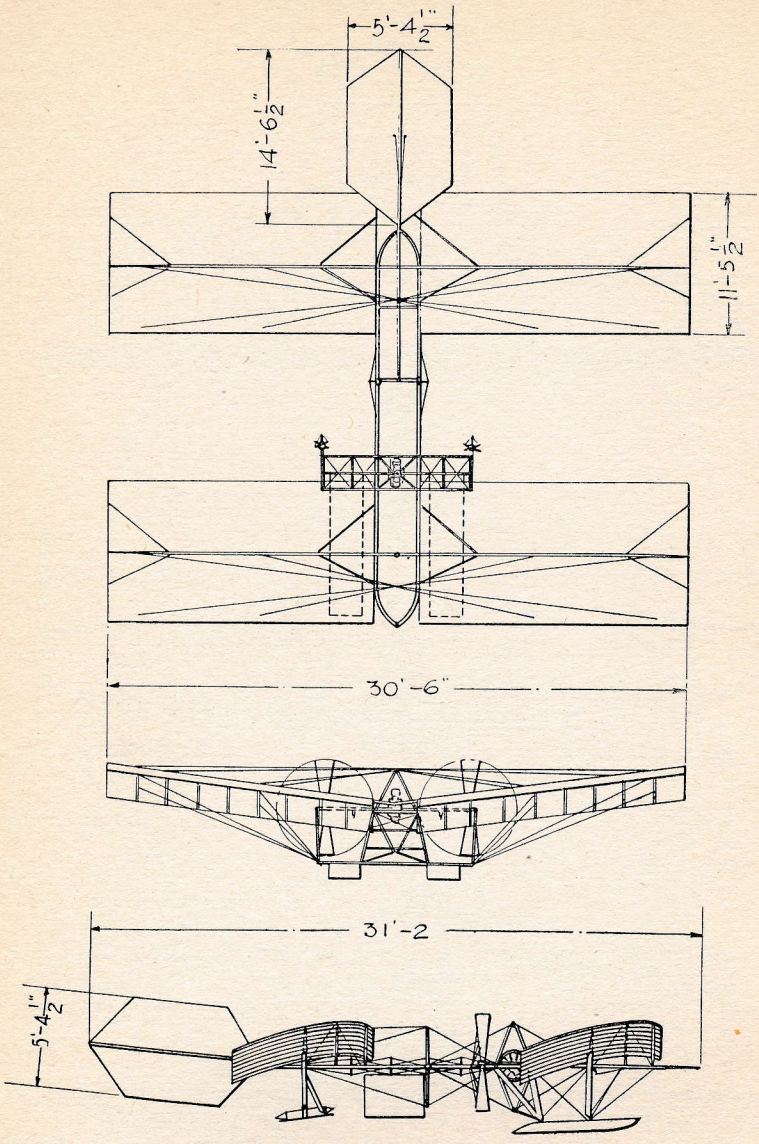
MAKING A LANDING WITH THE ORIGINAL GLIDER.





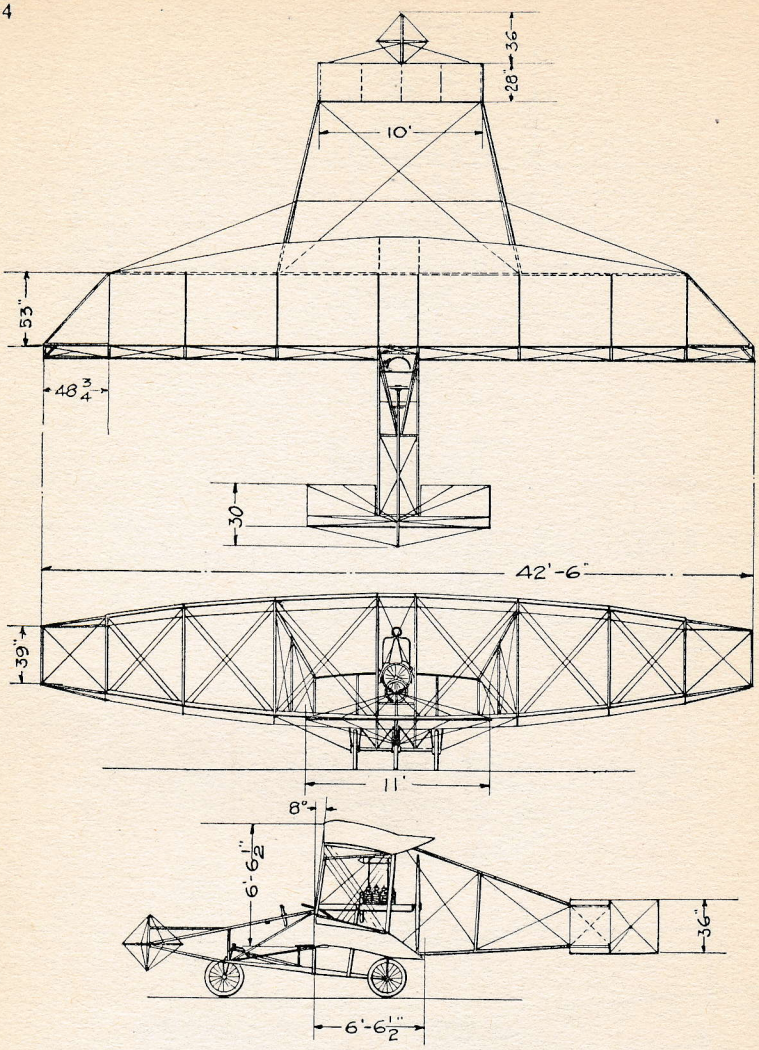
ORVILLE & WILBUR WRIGHT

"KITTY HAWK" ORIGINAL WRIGHT BROS. BIPLANE—DEC. 17, 1903— FIRST MACHINE TO MAKE SUCCESSFUL FLIGHT WRIGHT BROS 12 H.P. MOTOR.



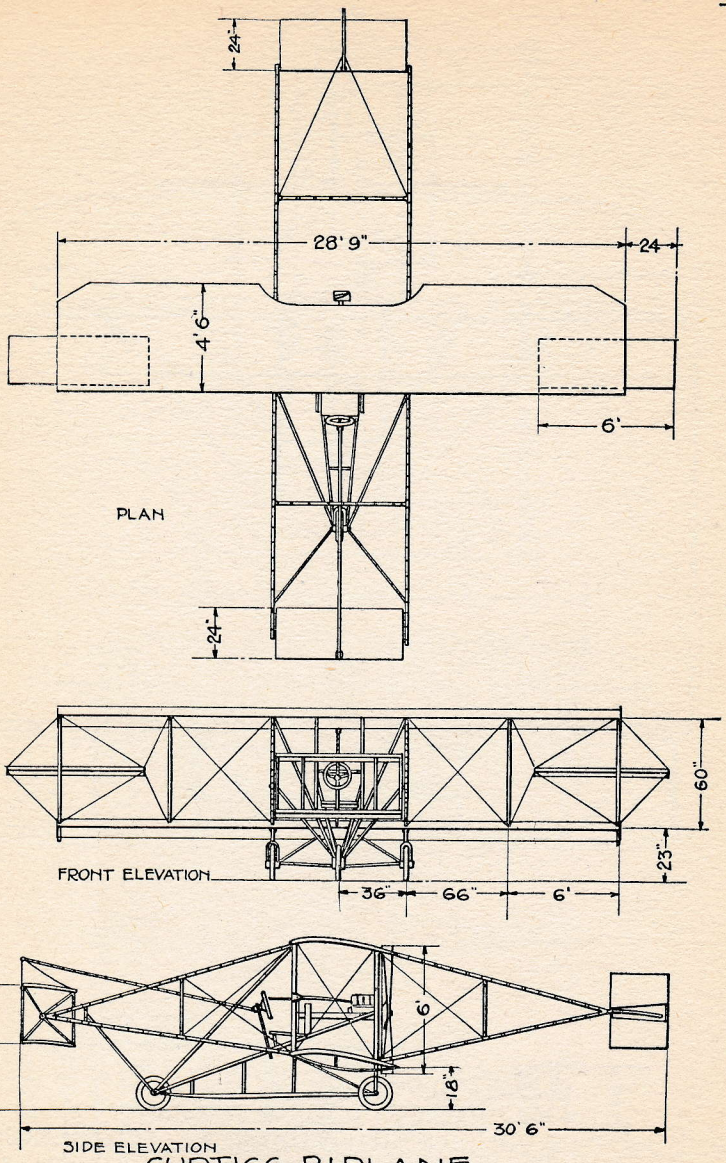
LANGLEY AERODROME

BUILT BY PROF. SAMUEL PIERPONT LANGLEY, OF SMITHSONIAN INSTITUTION. IN 1903 - NOT FLOWN UNTIL AFTER HIS DEATH WHEN GLENN H. CURTISS ATTACHED PONTOONS AND TOOK IT UP AT LAKE KEUKA N.Y. MAY 28, 1914



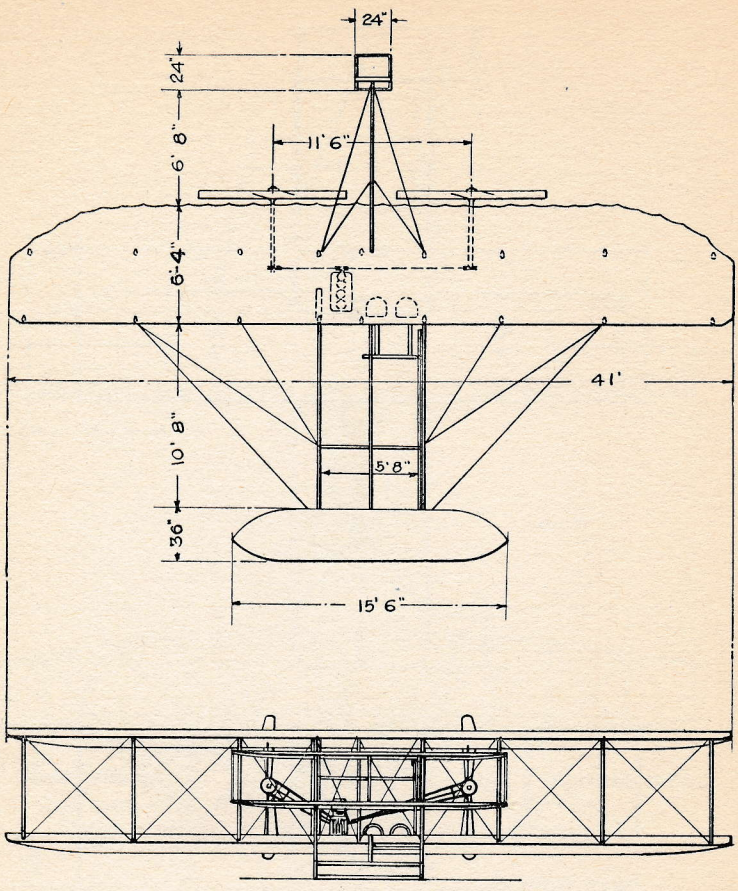
"JUNE BUG"

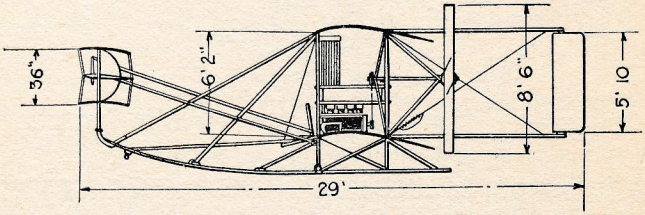
THE FIRST MACHINE IN AMERICA TO MAKE A PREVIOUSLY ANNOUNCED PUBLIC FLIGHT-WINNER OF SCIENTIFIC AMERICAN TROPHY FOR FLIGHT OF 1 Km., JULY 4, 1908. DESIGNED BY DR. A. G. BELL, LT. SELFRIDGE, F. W. BALDWIN, J. A. D. McCURDY & G. H. CURTISS-AERIAL EXPERIMENT ASSOCIATION. CURTISS 8 CYL. AIR COOLED MOTOR.



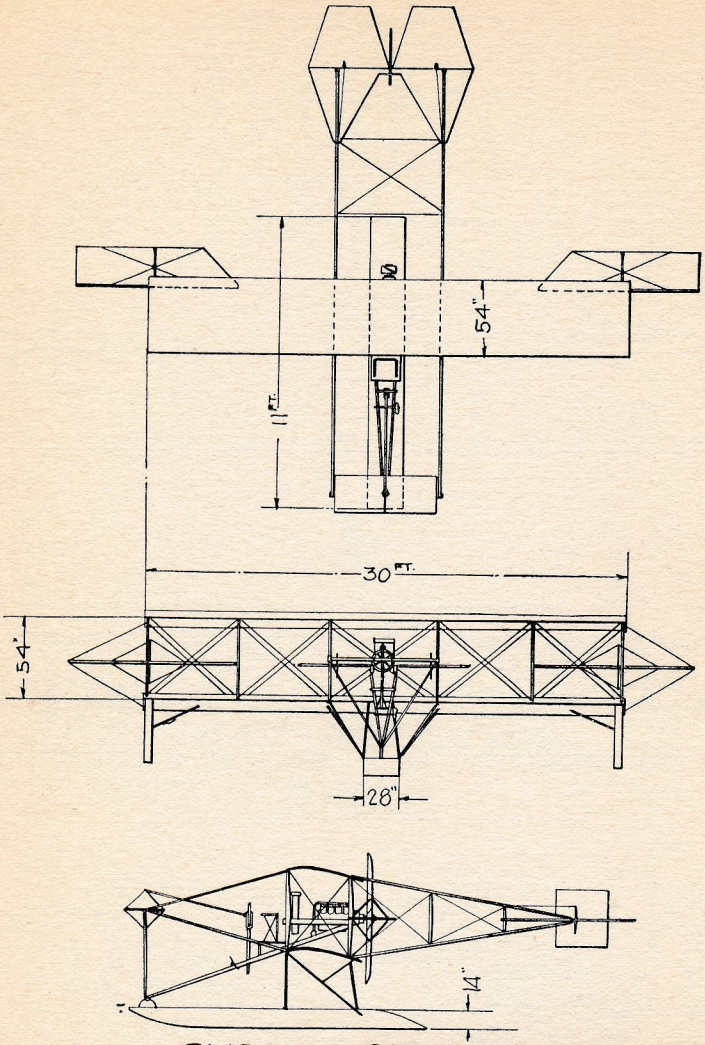
CURTISS BIPLANE

THE FIRST WINNER OF GORDON-BENNETT SPEED TROPHY 46½ M.P.H. AT RHEIMS, FRANCE AUG. 29, 1909. DESIGNED AND FLOWN BY G.H. CURTISS—CURTISS 8 CYL. 50 H.P. WATER COOLED MOTOR.





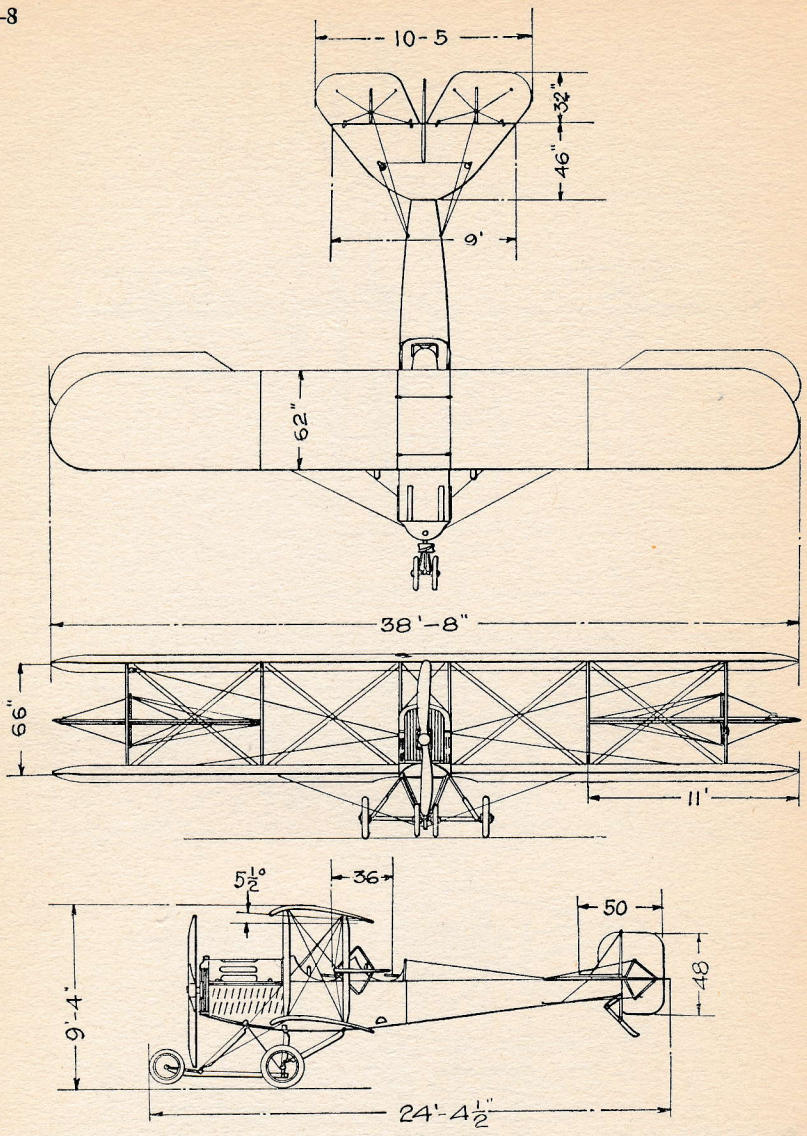
ORVILLE & WILBUR WRIGHT
EARLY WRIGHT BIPLANE MODEL "B"—FLOWN
AT FORT MYER VA. SEPT. 9, 1909



CURTISS SEAPLANE

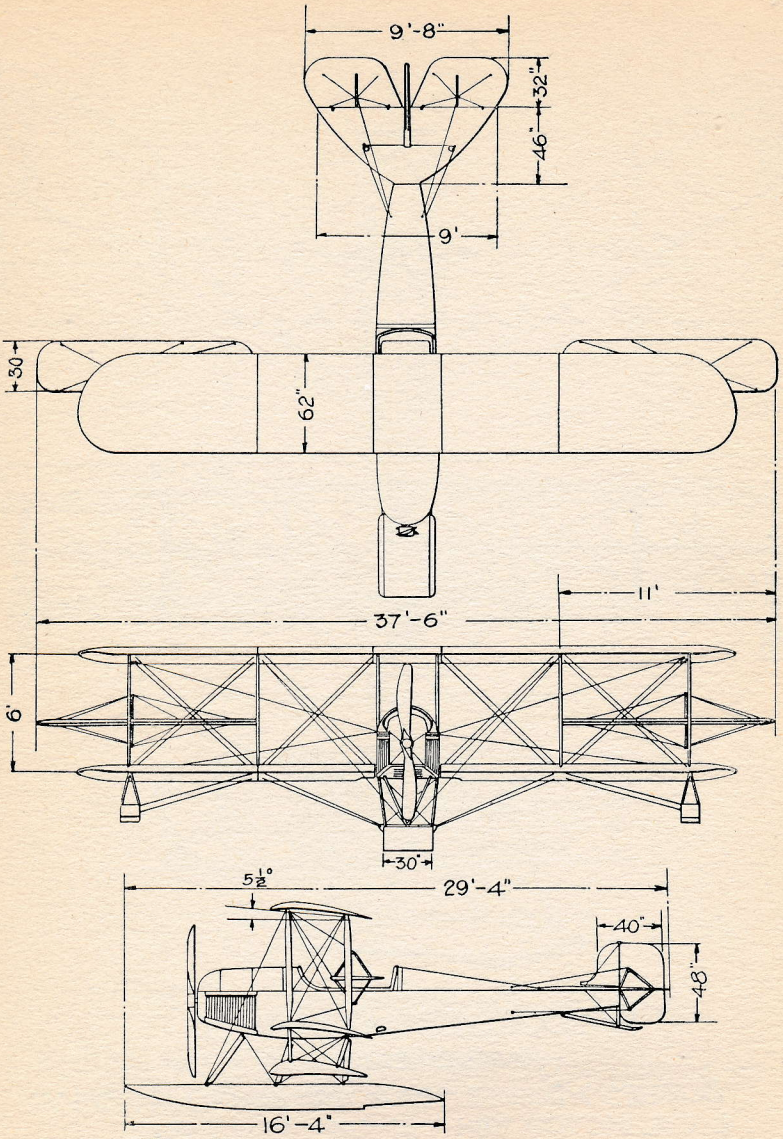
GLENN H. CURTISS INVENTOR

EXPERIMENTAL MODEL BUILT IN 1910-FIRST SUCCESSFUL FLIGHT JAN. 1911-DEMONSTRATIONS TO ARMY & NAVY & MANY PUBLIC FLIGHTS IN JAN. & FEB. 1911.

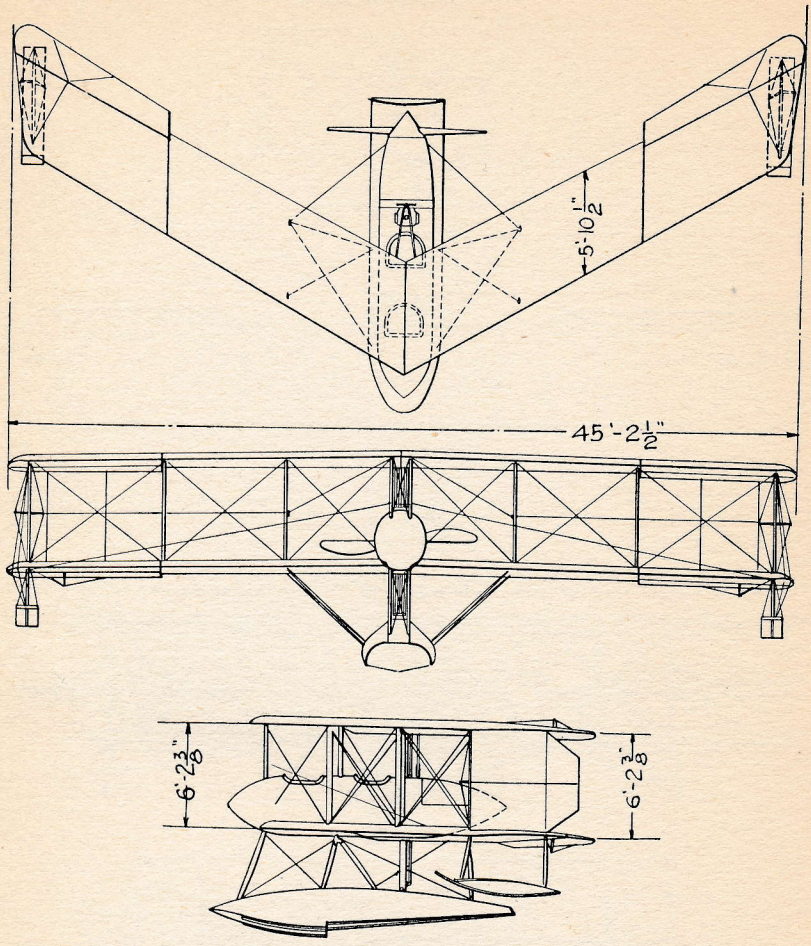


THE GLENN L. MARTIN COMPANY
CLEVELAND, OHIO.

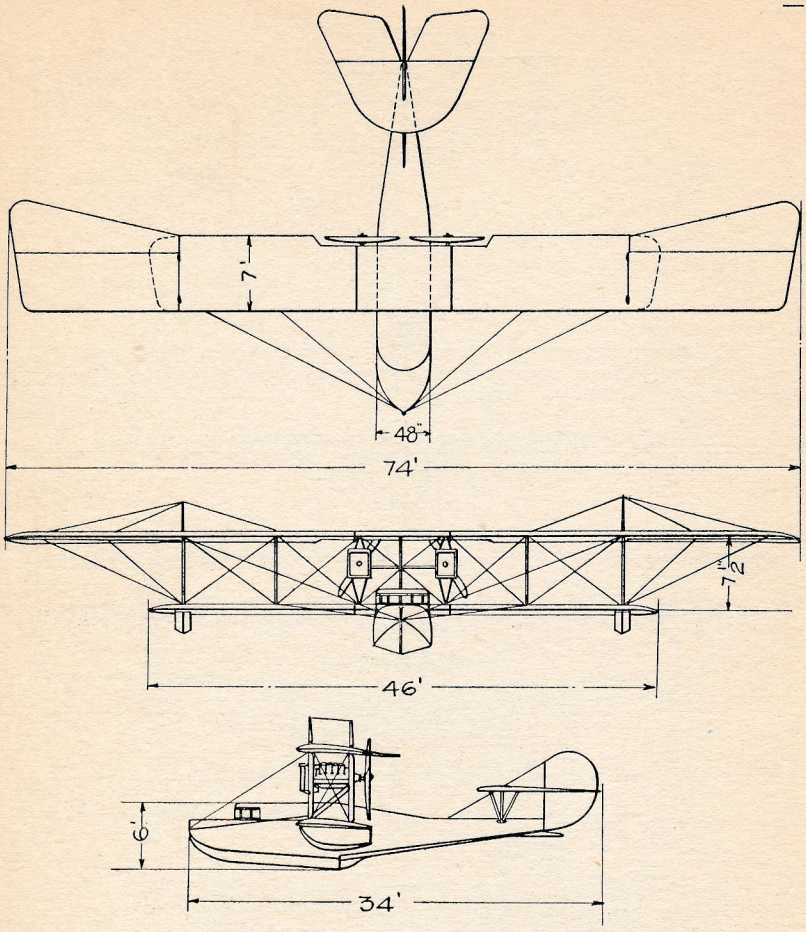
MODEL "TT" 1913 - CURTISS "OX 2" 80 H.P. 100 M.P.H.
TRAINING PLANE IN WHICH MANY OLDER U.S. AIR
SERVICE OFFICERS RECEIVED INSTRUCTION



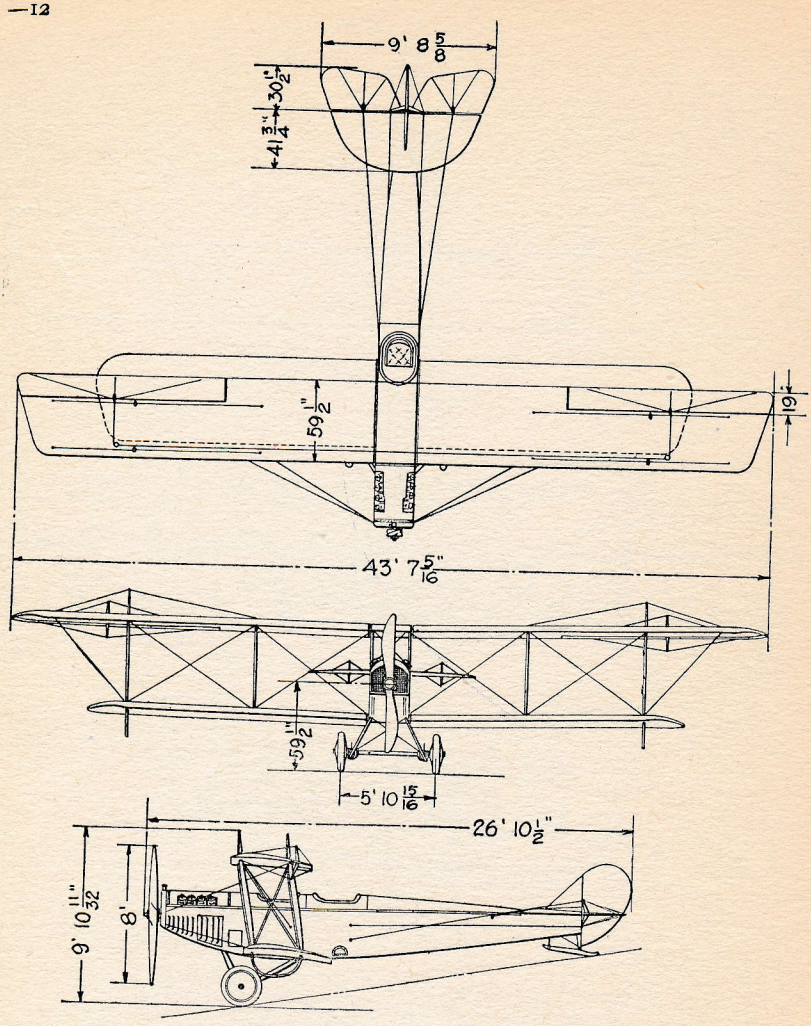
THE GLENN L. MARTIN COMPANY
CLEVELAND, OHIO.
MODEL "T.T" HYDROAIRPLANE-1913- CURTISS 80 H.P. O-X. MOTOR
65 M.P.H. WON CURTISS MARINE TROPHY



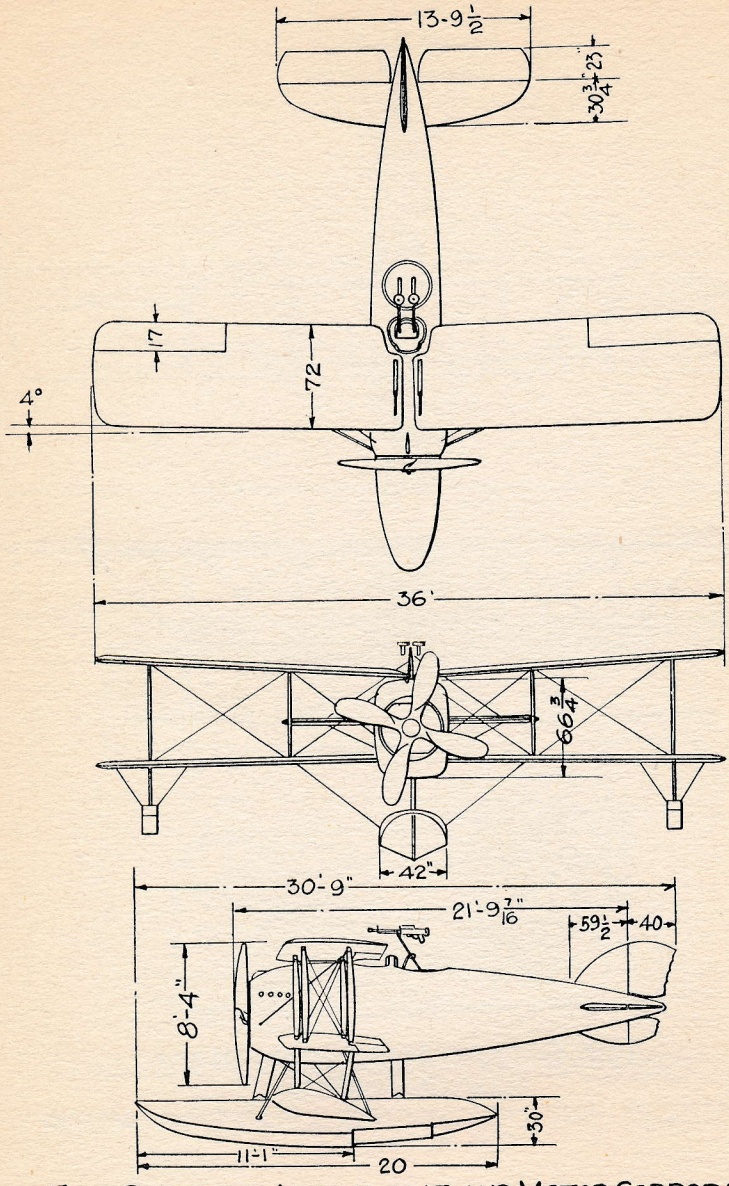
THE BURGESS COMPANY
MARBLEHEAD, MASS.
BURGESS-DUNNE SEAPLANE 1914-CURTISS VX
8 CYL. MOTOR 200 H.P. 90 M.P.H. BUILT FOR
U.S. NAVY.



THE CURTISS AEROPLANE COMPANY
HAMMONDSPORT, N.Y.
FLYING BOAT "AMERICA" 1914 - 2 CURTISS "OX. 90
H.P. MOTORS

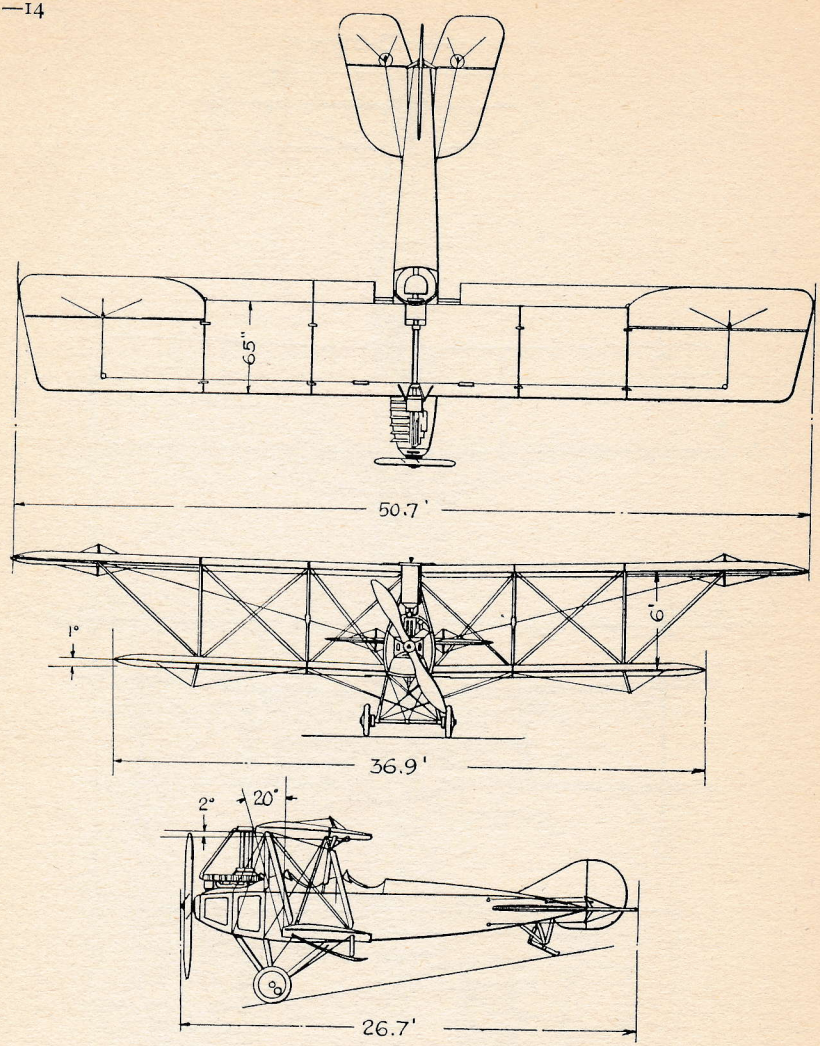


THE CURTISS AEROPLANE AND MOTOR CORPORATION
GARDEN CITY L.I.N.Y.
MODEL J.N.-4-"JENNIE"-1916-8 CYL. MOTOR "OX-5" 90 H.P.-70. M.P.H.

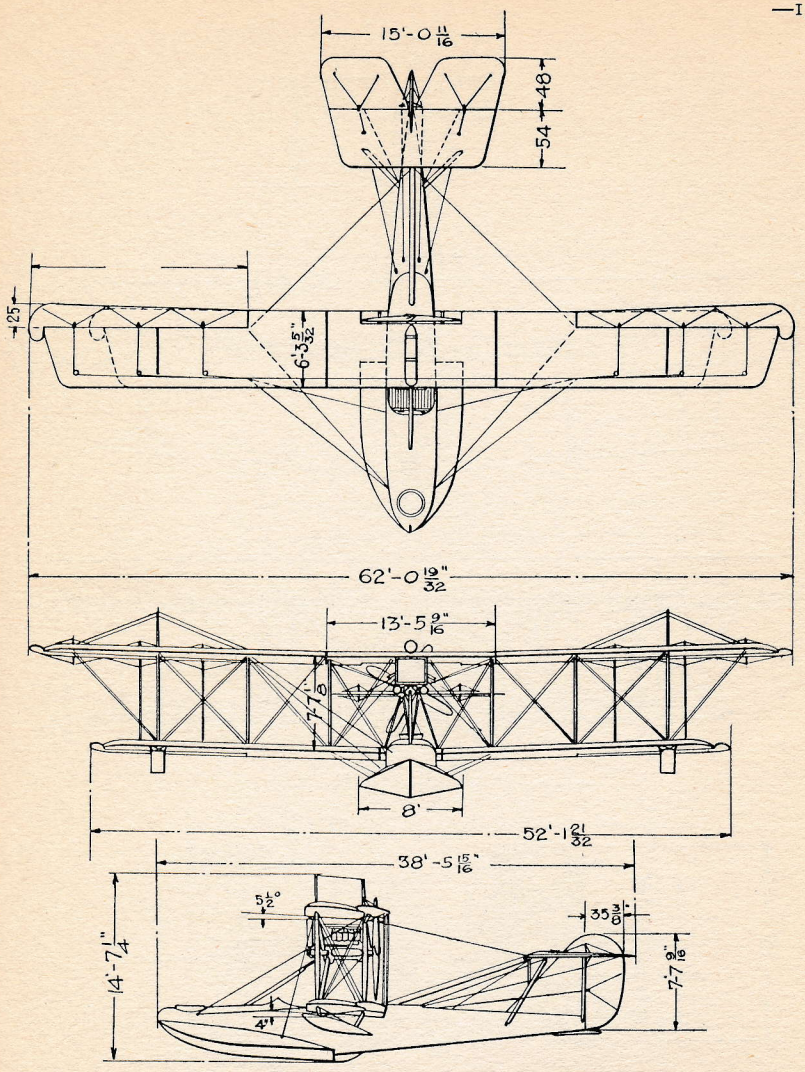


THE CURTISS AEROPLANE AND MOTOR CORPORATION
GARDEN CITY, L.I.N.Y.

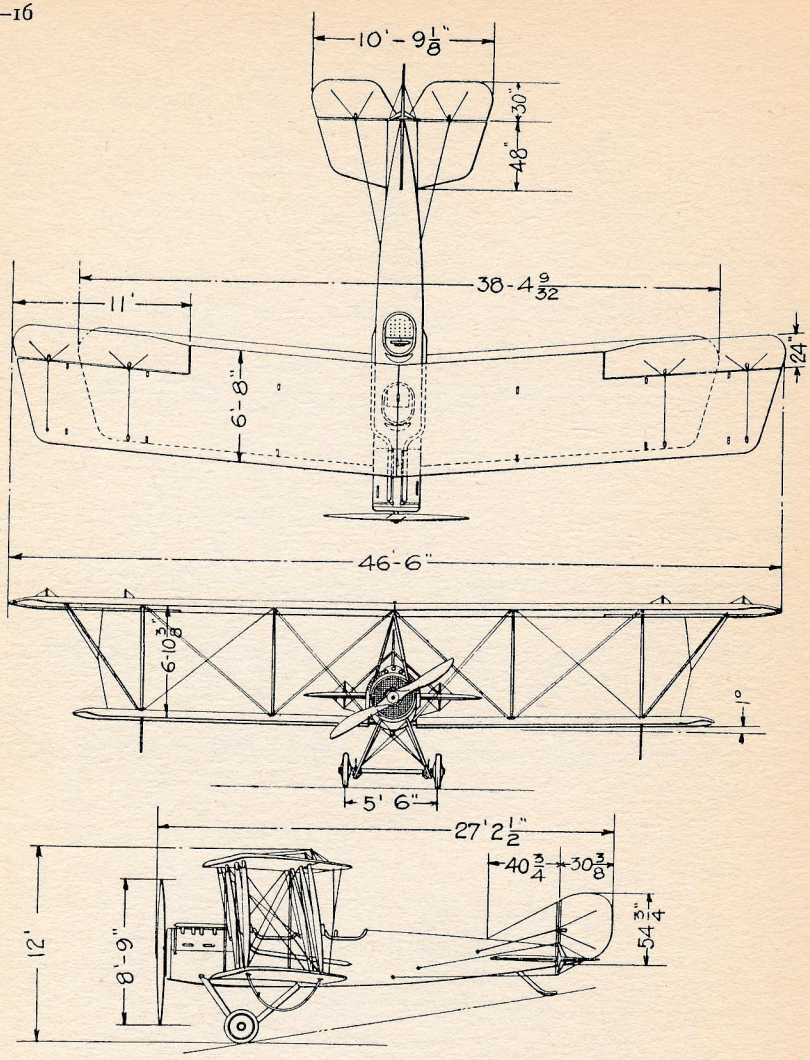
MODEL "H.A." NAVY BATTLE PLANE-1916-LIBERTY 12 CYL. 400 H.P. MOTOR-130 M.P.H.



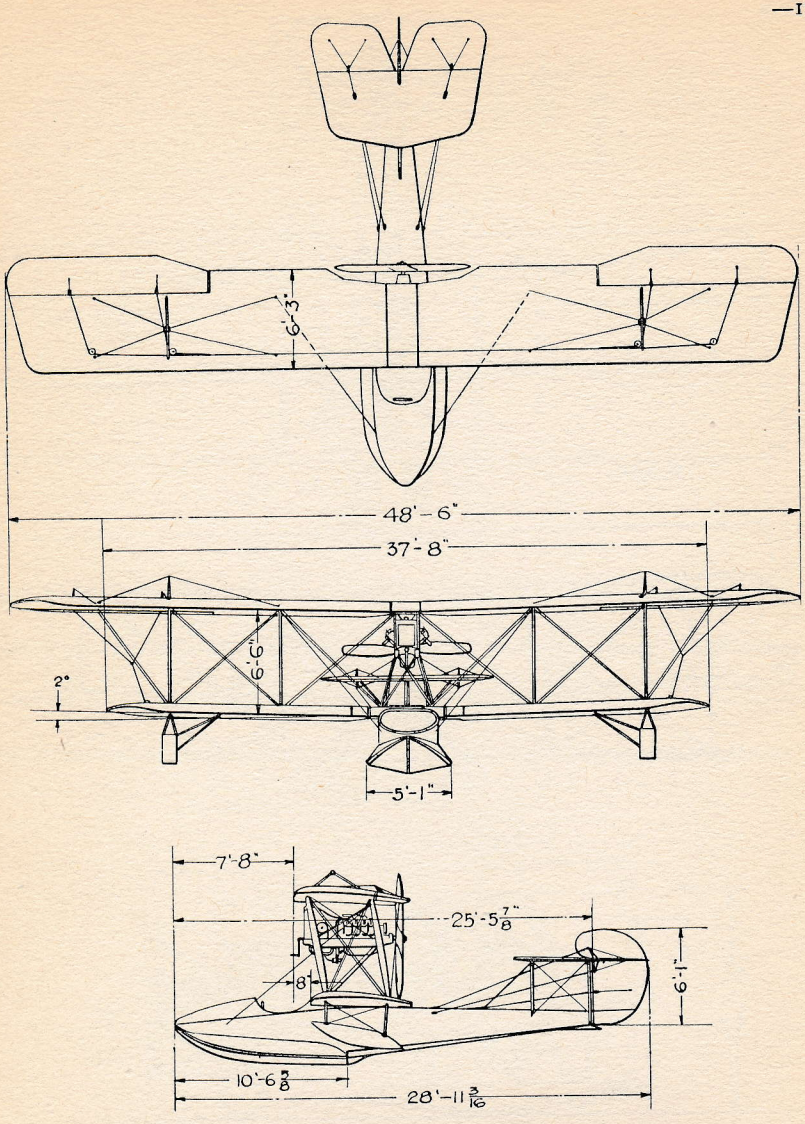
THE GLENN L. MARTIN COMPANY
CLEVELAND, OHIO.
MODEL "R" 1916 – HALL-SCOTT A.5-A 150 H.P. MOTOR
88 M.P.H.



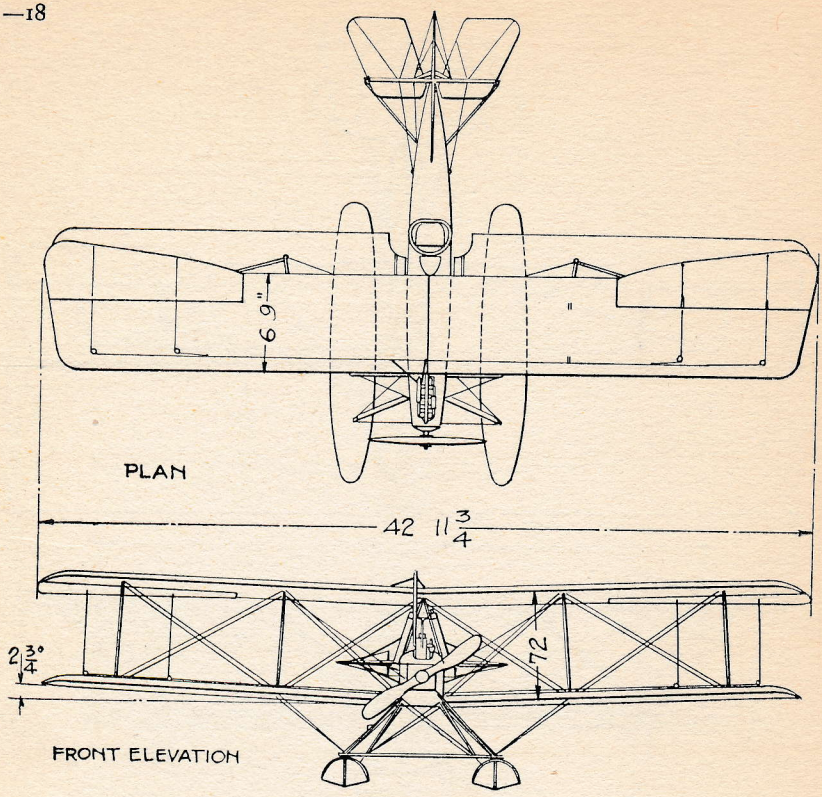
THE CURTISS AEROPLANE & MOTOR CORPORATION
GARDEN CITY L.I.N.Y.
MODEL H.S.1-L. 1917 "LIBERTY 12" 400 H.P. MOTOR-80 M.P.H.

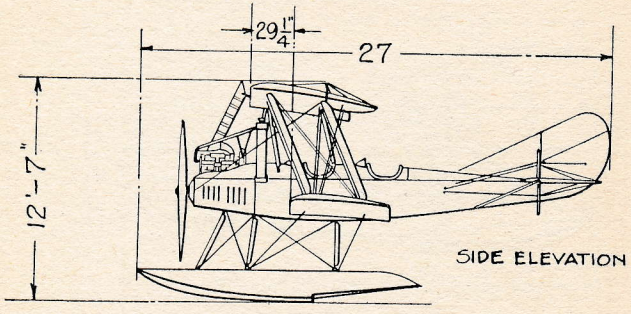


L.W.F. ENGINEERING COMPANY.
NEW YORK – COLLEGE POINT, L.I.N.Y.
MODEL "V" 1917—THOMAS 8 CYL 135 H.P. MOTOR



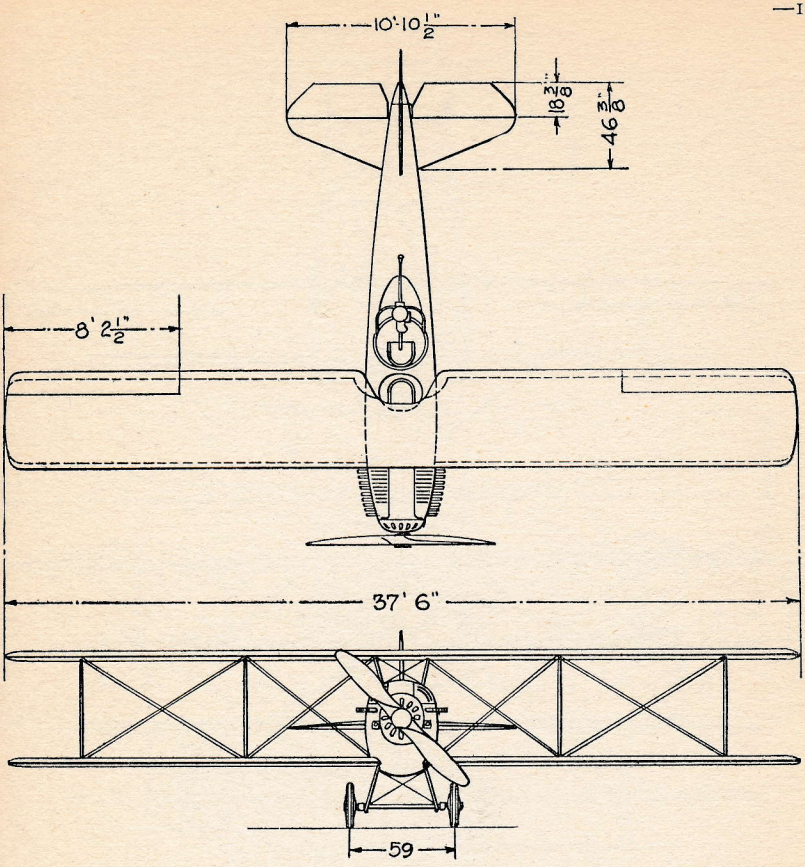
AEROMARINE PLANE & MOTOR COMPANY
KEYPORT, N.J.
MODEL "40-C"-1918-AEROMARINE "U-6. 150 H.P.
MOTOR 75 M.P.H.

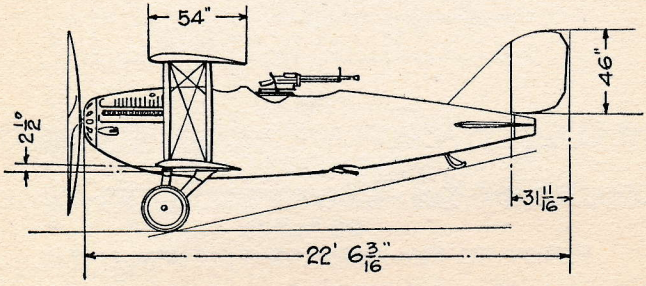




BOEING AIRPLANE COMPANY
SEATTLE, WASH.

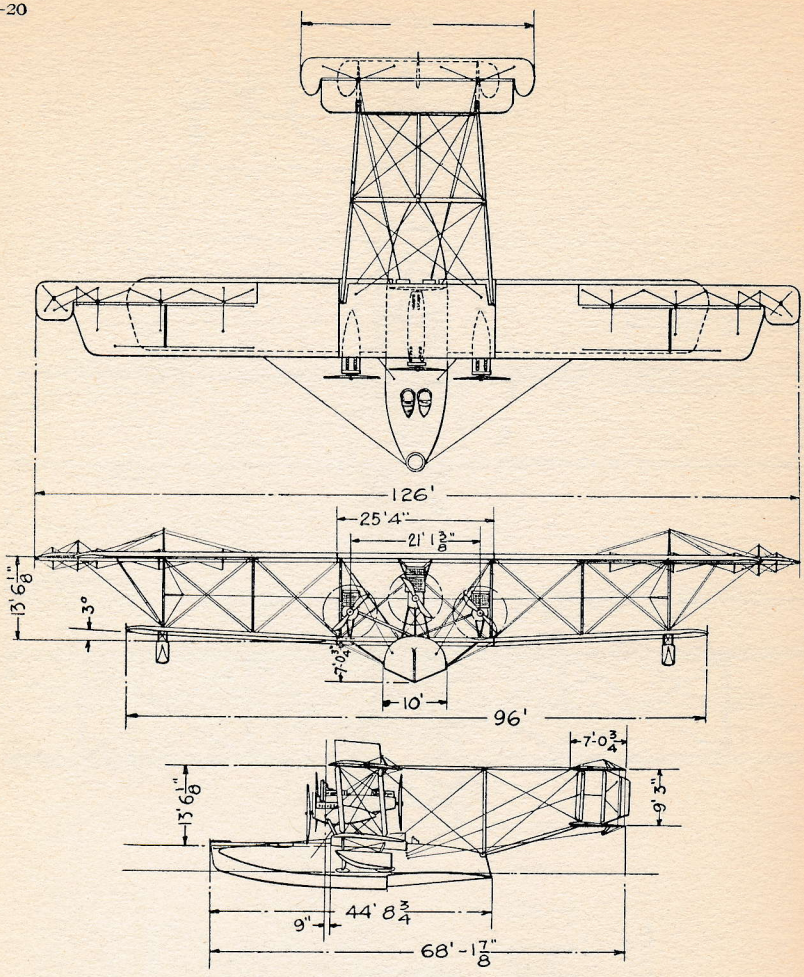
MODEL "C" 1918— HALL-SCOTT "A.7-A" 4 CYL. MOTOR
100 H.P.-73 M.P.H.



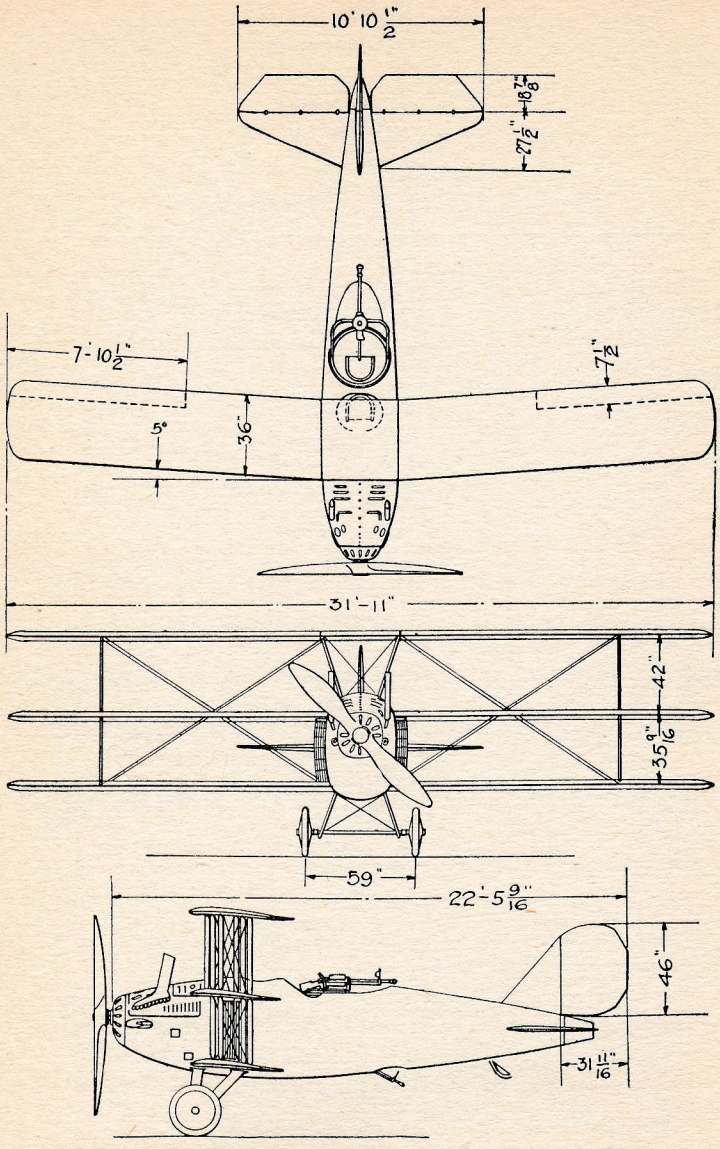


THE CURTISS AEROPLANE AND MOTOR CORPORATION
GARDEN CITY, L.I.N.Y.

THE CURTISS BATTLE PLANE "HORNET 1918-CURTISS "K-12" 400 H.P. MOTOR 162 M.P.H.

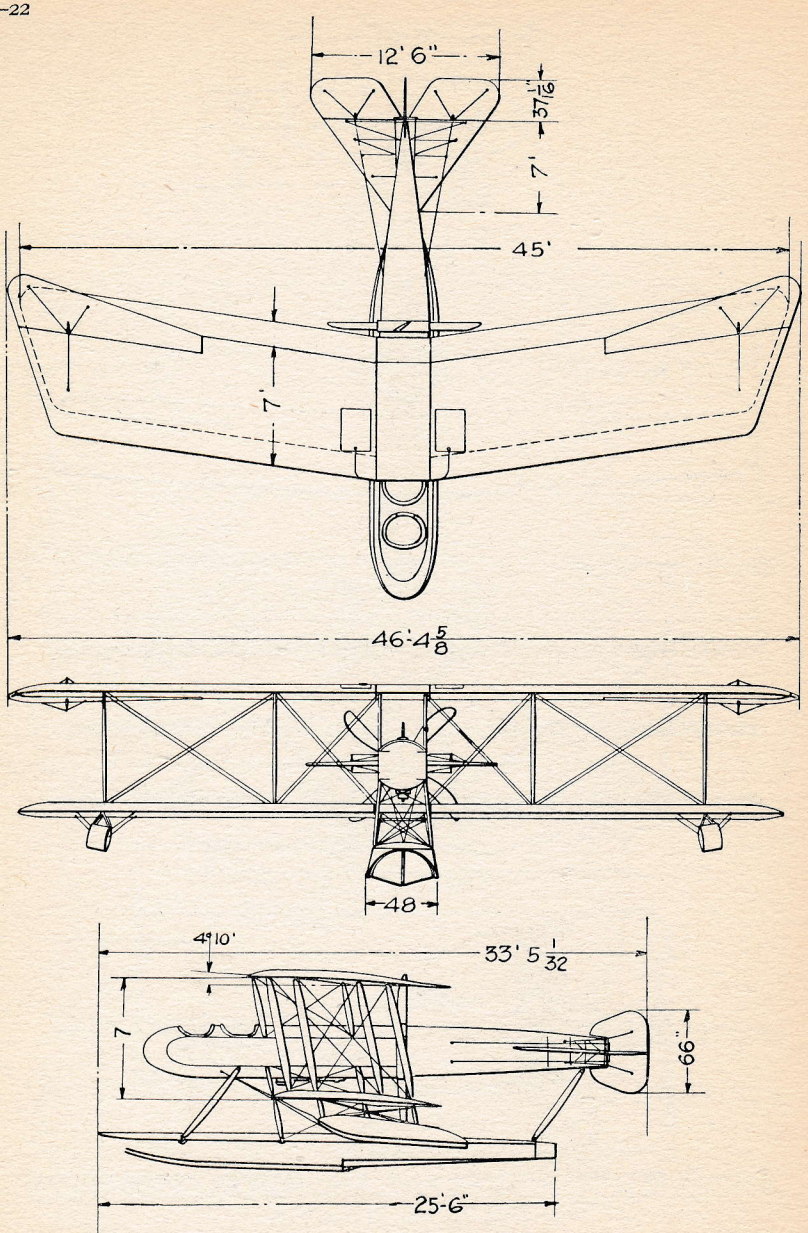


THE CURTISS AEROPLANE AND MOTOR CORPORATION
GARDEN CITY, L.I. N.Y.
MODEL N.C.-4-F-1919 - 4 LIBERTY 12 CYL. MOTORS - 400 H.P. EACH.
95 M.P.H.
FIRST TO FLY ACROSS THE ATLANTIC.

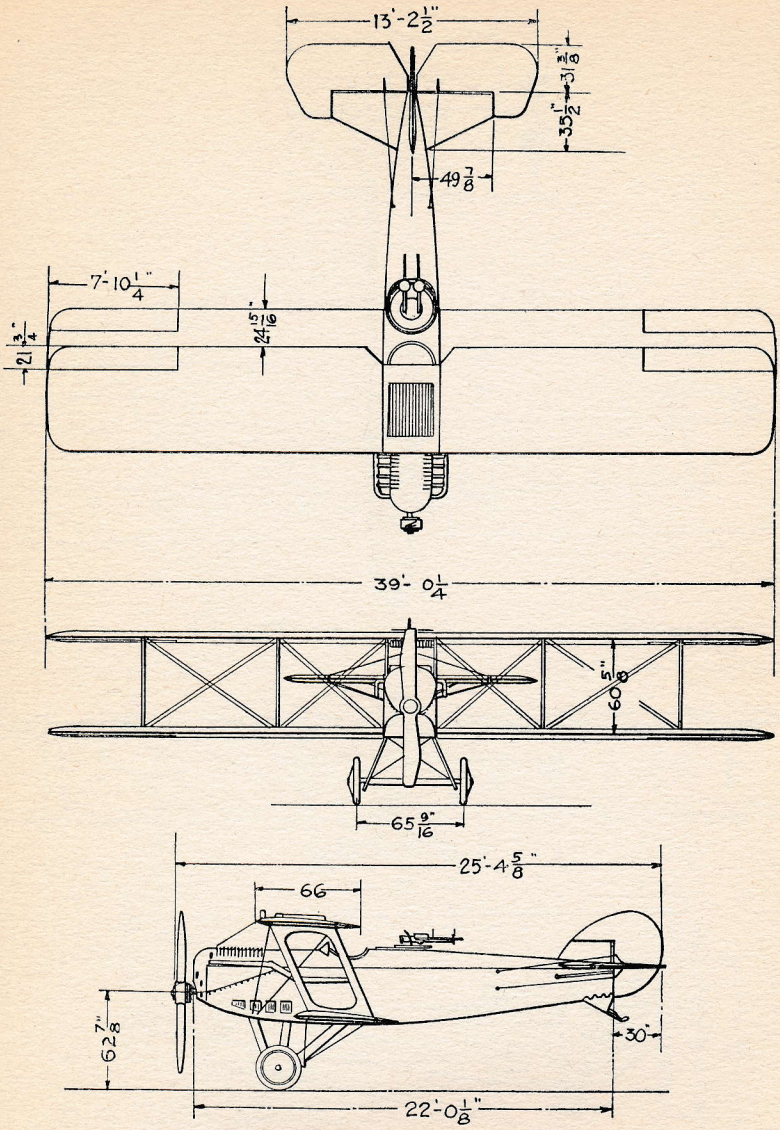


THE CURTISS AEROPLANE AND MOTOR CORPORATION.
GARDEN CITY, L.I. N.Y.

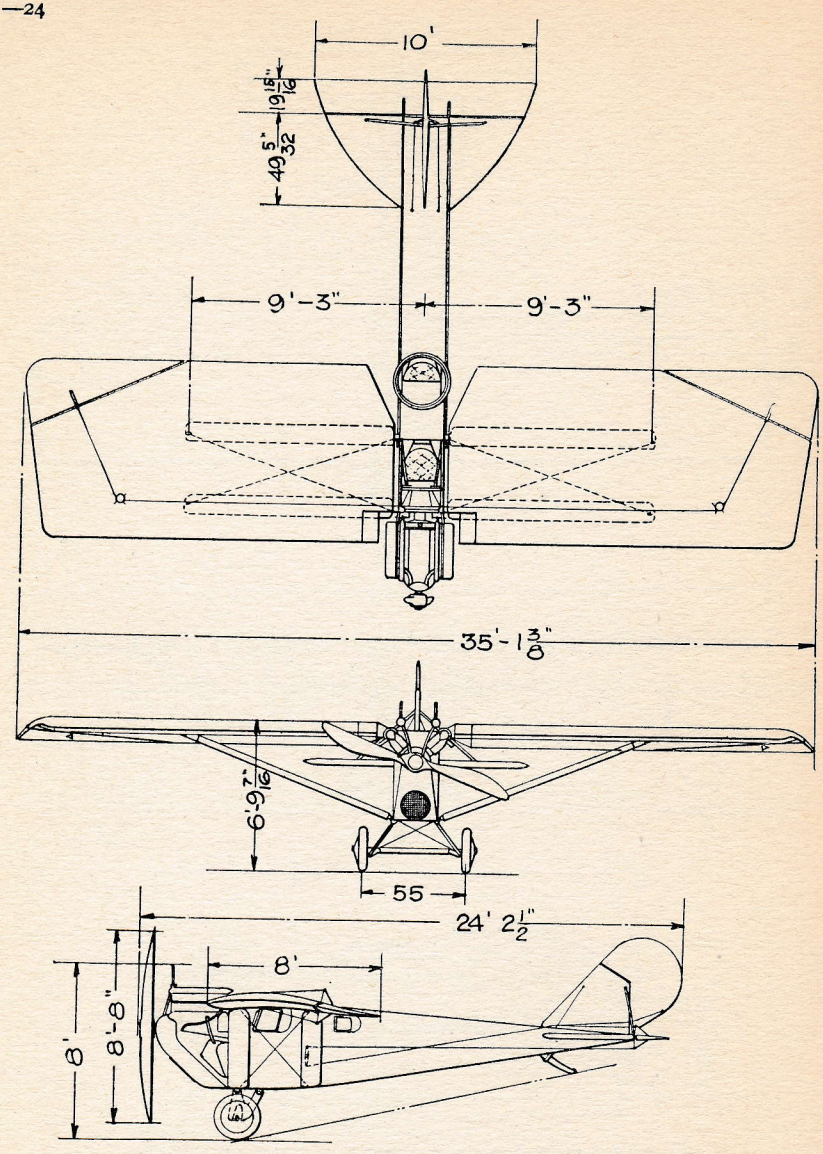
THE CURTISS BATTLE PLANE "WASP" 1918-CURTISS "K-12" 400 H.P. MOTOR-162 M.P.H.



GALLAUDET AIRCRAFT CORPORATION
EAST GREENWICH, R.I.
MODEL "D-4" 1918-LIBERTY-12 400 H.P. MOTOR
126 M.P.H.



PACKARD MOTOR CAR COMPANY
DETROIT, MICH.
"PACKARD LEPERE"-1918 U.S. AIR SERVICE-"LIBERTY 12" 400 H.P. MOTOR-136 M.P.H.



LOENING AERONAUTICAL ENGINEERING CORPORATION
NEW YORK CITY
MODEL M.8-O OCT, 1918 - WRIGHT 8 CYL. MOTOR - 300 H.P.
151 M.P.H.