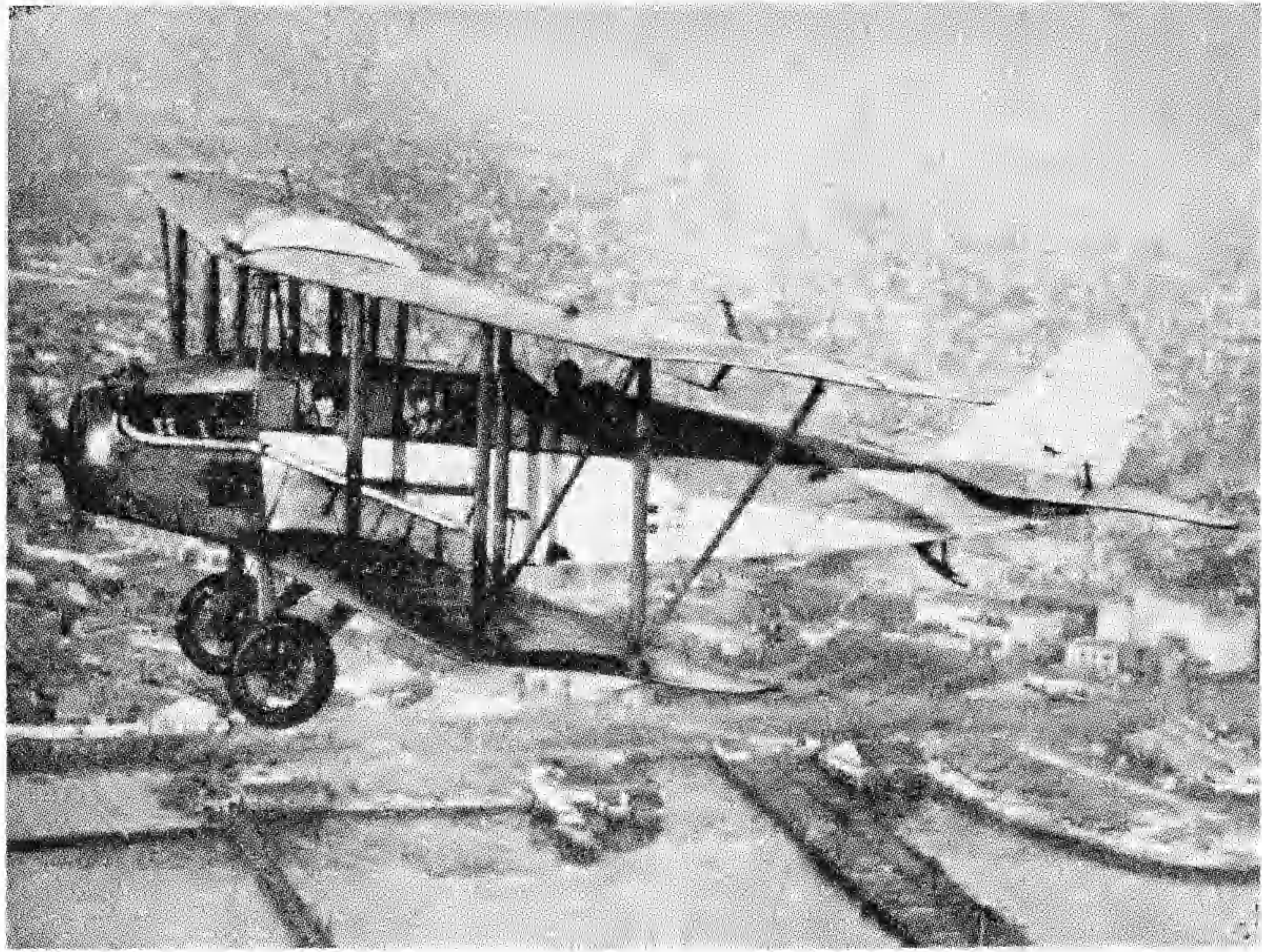


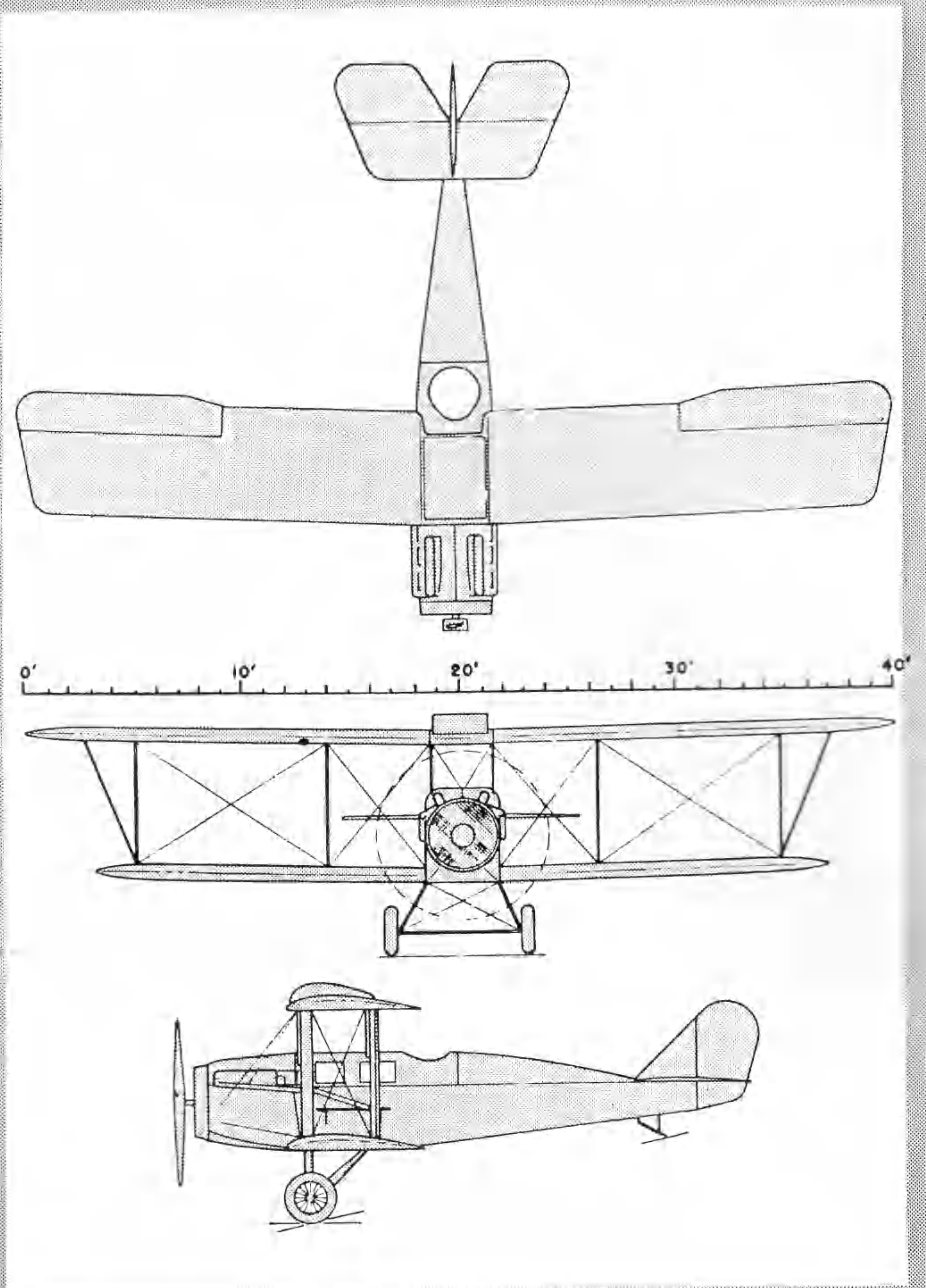
**RYAN
PLANE
PORTRAITS**



1925

Ryan-Standard

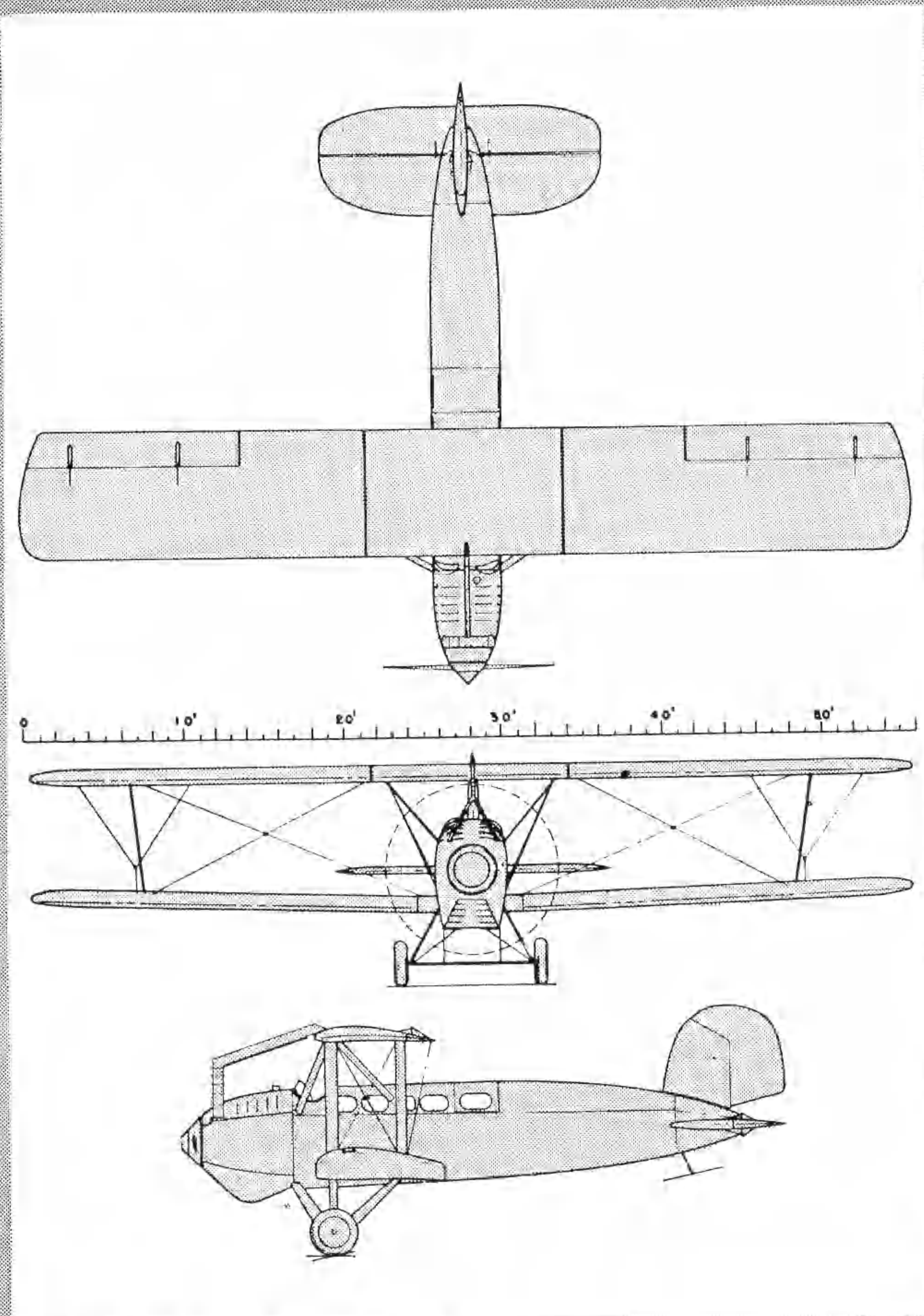
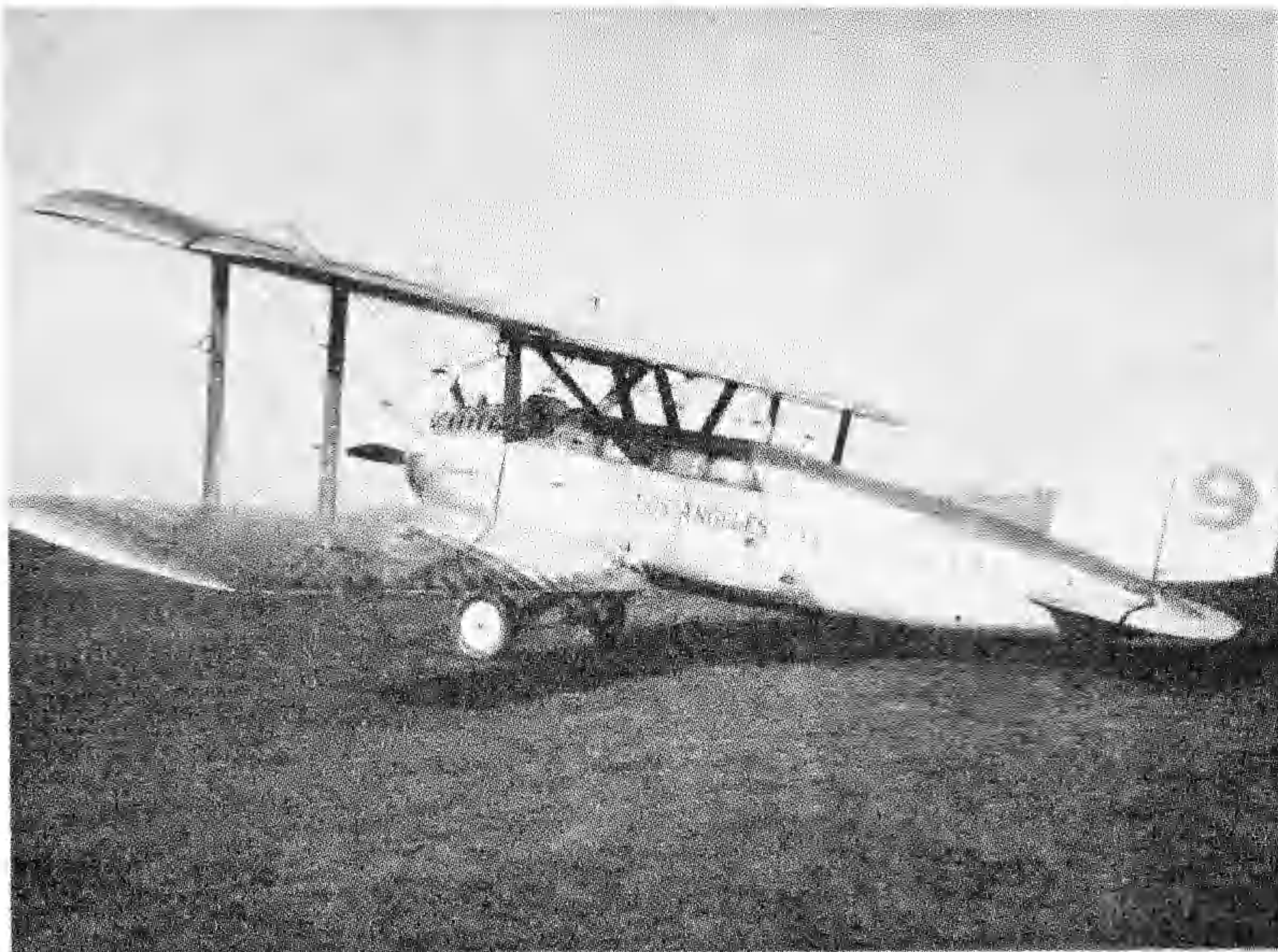
First in the long line of Ryan airplanes was this conversion of World War I surplus Standard biplanes, which were redesigned and rebuilt into five-place cabin jobs. Old engines were replaced with 150 horsepower Hispano-Suiza power plants. Re-named Ryan-Standards, these reliable passenger biplanes were used to pioneer "Los Angeles - San Diego Air Line" which inaugurated regular Ryan Airlines, Inc., service in March, 1925.



1926

Cloudster

Second plane redesigned by Ryan organization was Cloudster, first of many famous planes built by Donald Douglas. Needed for the expanding Ryan Airlines operation, the Cloudster had three open cockpits, two holding three people, while the pilot's cockpit held two more passengers. The plane was rebuilt in Ryan's shops with cabin to accommodate ten passengers, with cockpit forward for pilot and mechanic, or co-pilot.

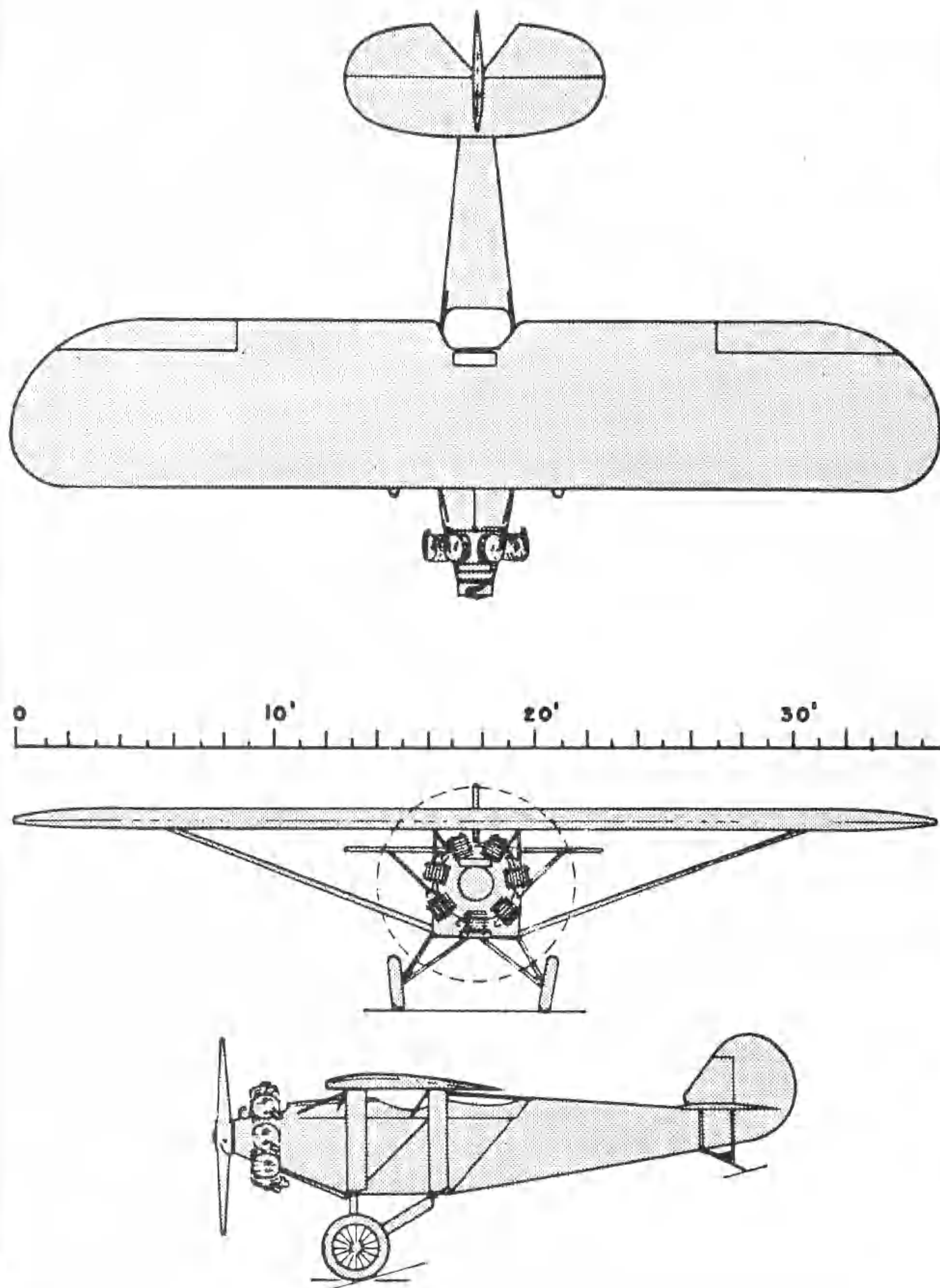




1926

Ryan M-1

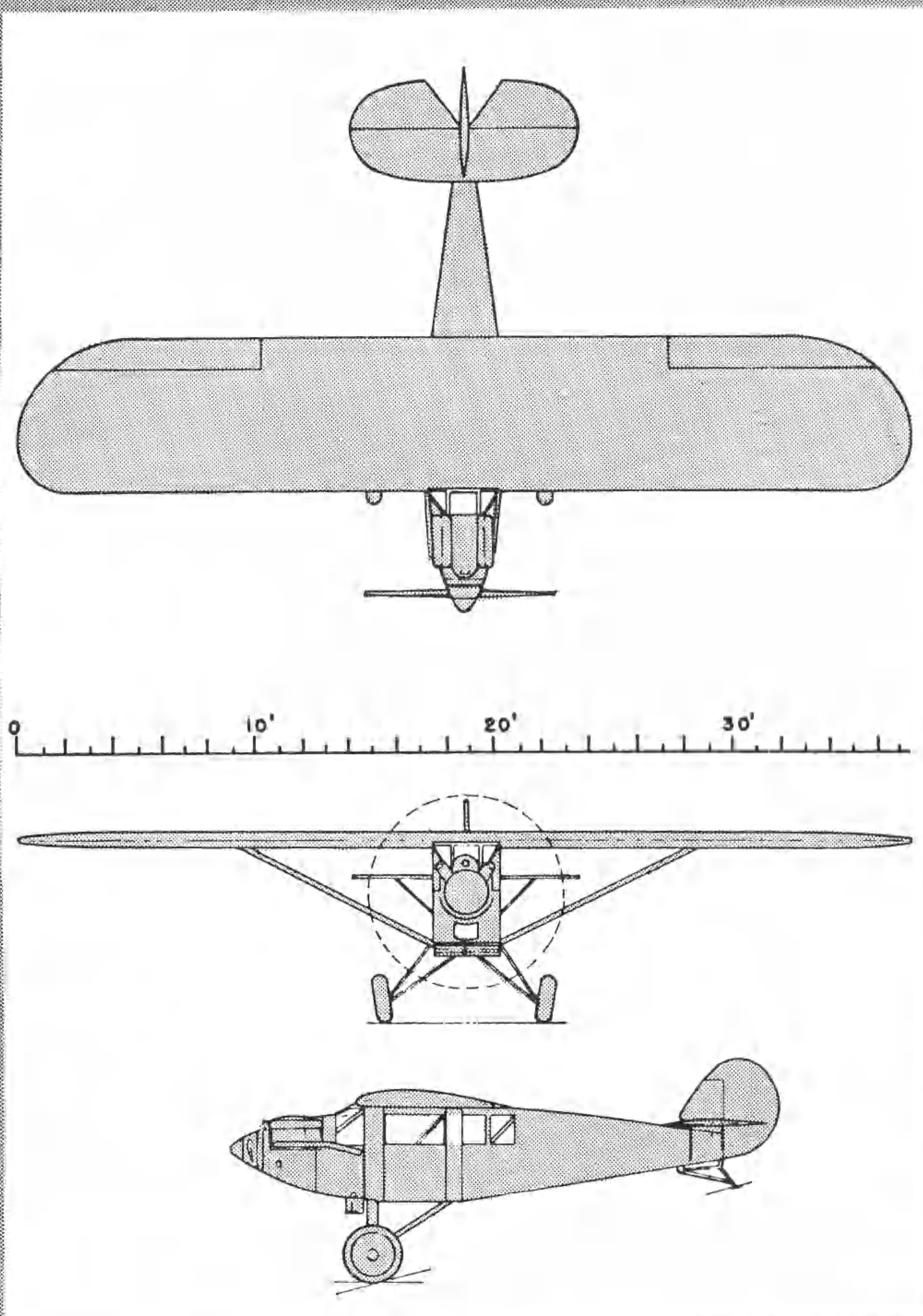
Pioneer mail plane and the first volume production monoplane in the United States was the M-1, the first airplane which in design and construction was Ryan's own creation right from the start. High-wing and three-place, the M-1 was powered by Wright Whirlwind 200 h.p. engine, but also available with Hispano-Suiza, Super Rhone and Curtiss OX-5 power plants. First M-1s were used on mail routes of Pacific Air Transport.

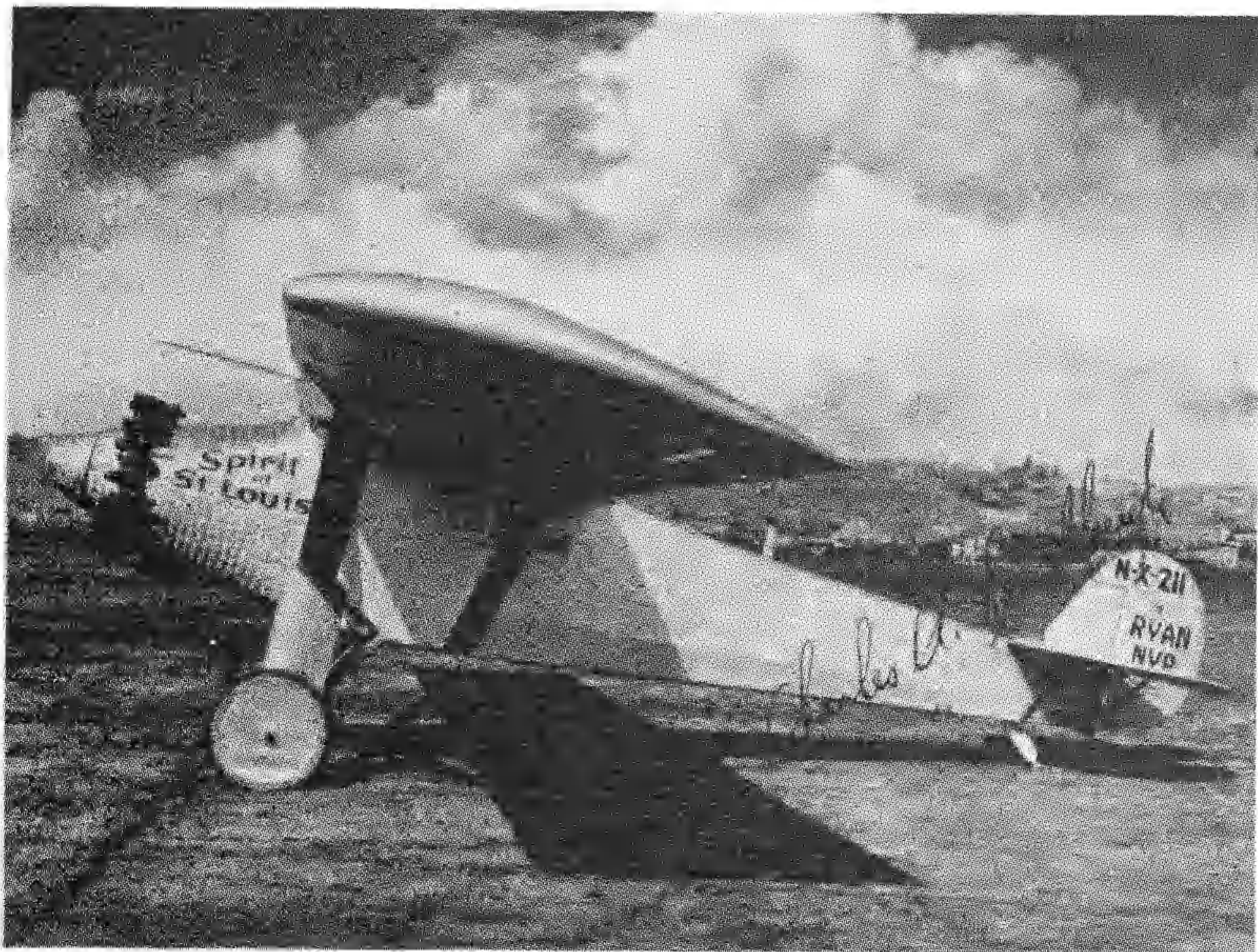


1926

Ryan M-2 Bluebird

An advance version of the M-1 was the M-2 "Bluebird" first cabin monoplane to be built by the budding Ryan manufacturing organization. This series of monoplanes, still further refined in design and appointments, became well known in later years as the "Broughams," first of which was built on special order for famed speed flier Frank Hawks. Broughams pioneered air service in Latin America, Canada, many other remote spots.

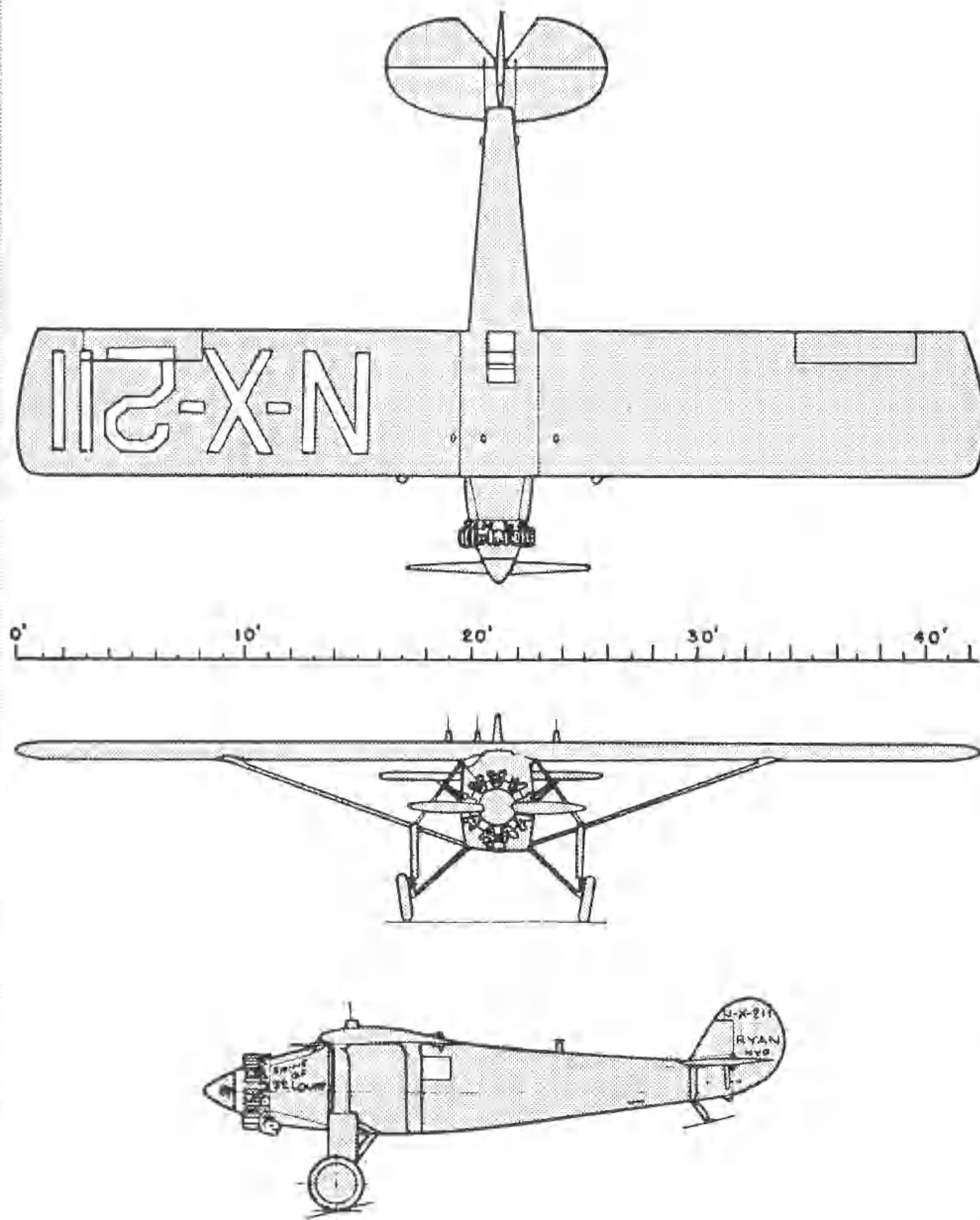




1927

Ryan Brougham

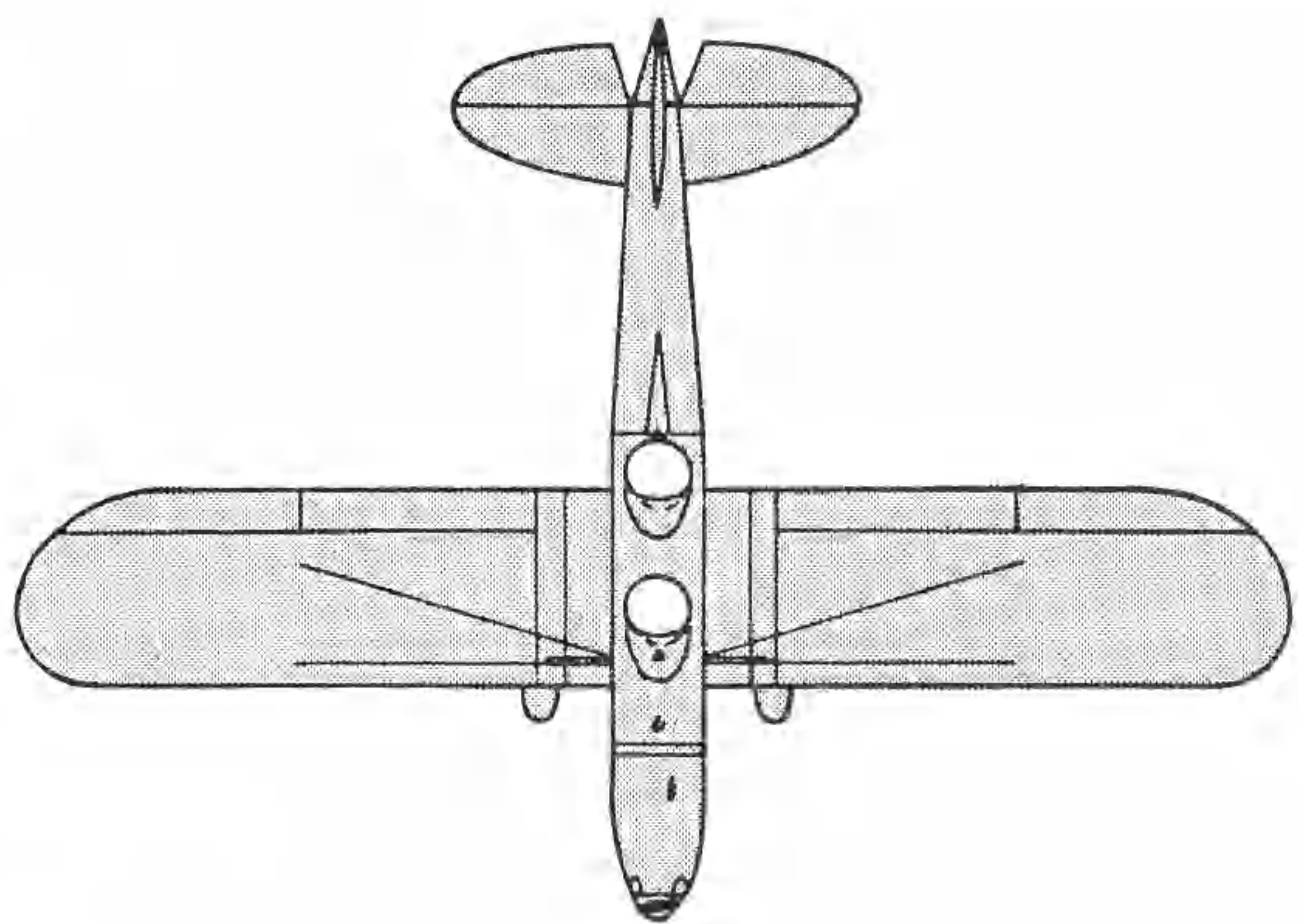
Most famous plane in aviation history was the Ryan "Spirit of St. Louis" monoplane built on special order for an unknown airmail pilot named Charles A. Lindbergh. Engine: 223 h.p. Wright J-5-C. Span was 46 feet; length 27½ feet; wing area 319 square feet; gross weight 5250 pounds; range 4110 miles. Plane took off with 450 gallons, flew non-stop New York to Paris, a distance of 3610 miles, in 33½ hours May 20-21, 1927.

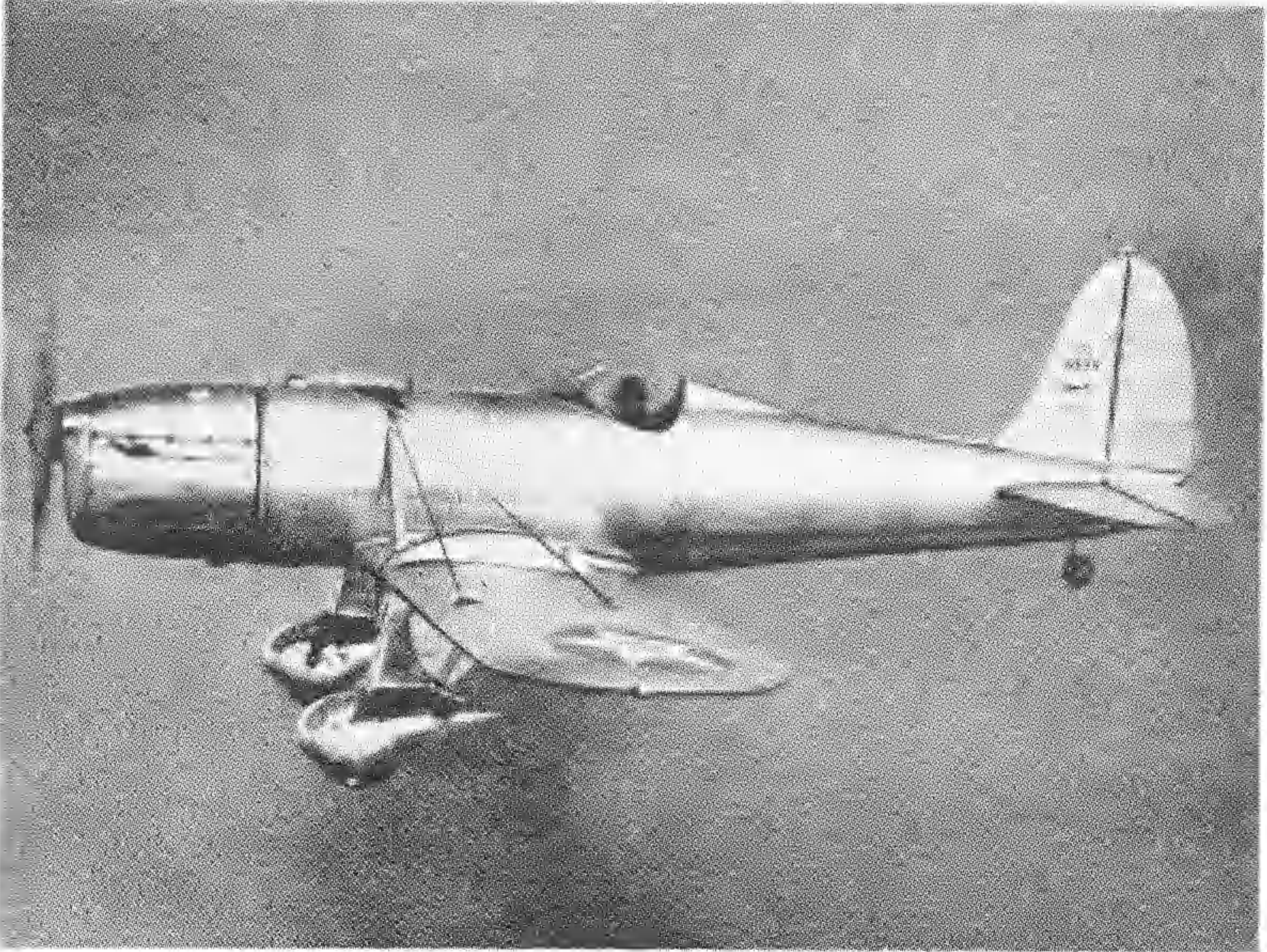


1934

Ryan S-T

Few planes have won the popular approval and acceptance enjoyed by the Ryan S-T series of monoplanes, originally developed for sport-flying and pilot training. First models were powered with 125 h.p. Menasco in-line engines; later 150 h.p. supercharged engines were installed. S-Ts cruised at 125 m.p.h.; landed at 42 m.p.h. Construction featured metal fuselage, low-wing design, streamlined wheel fairings, flaps to shorten landing.

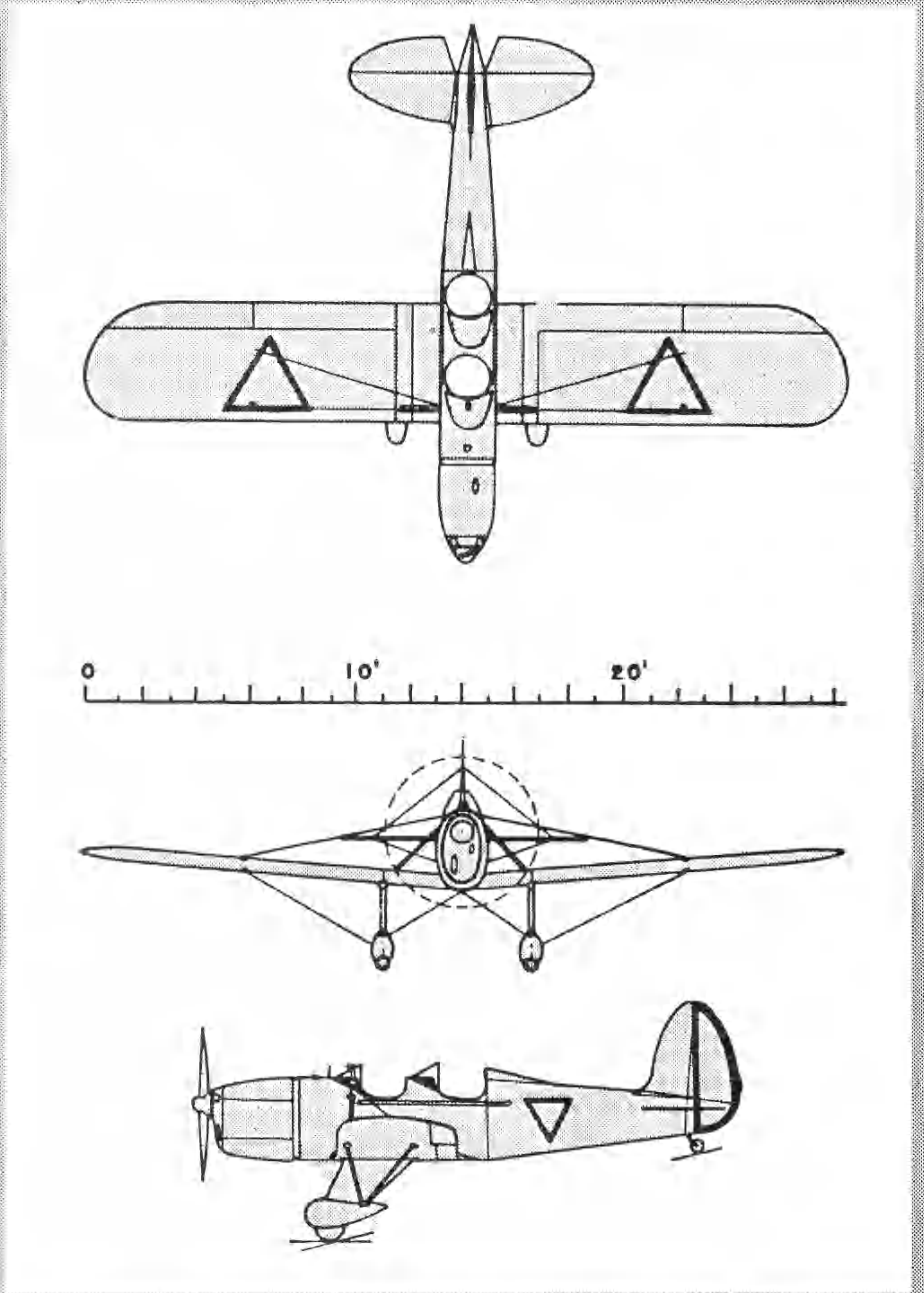




1938

Ryan STM

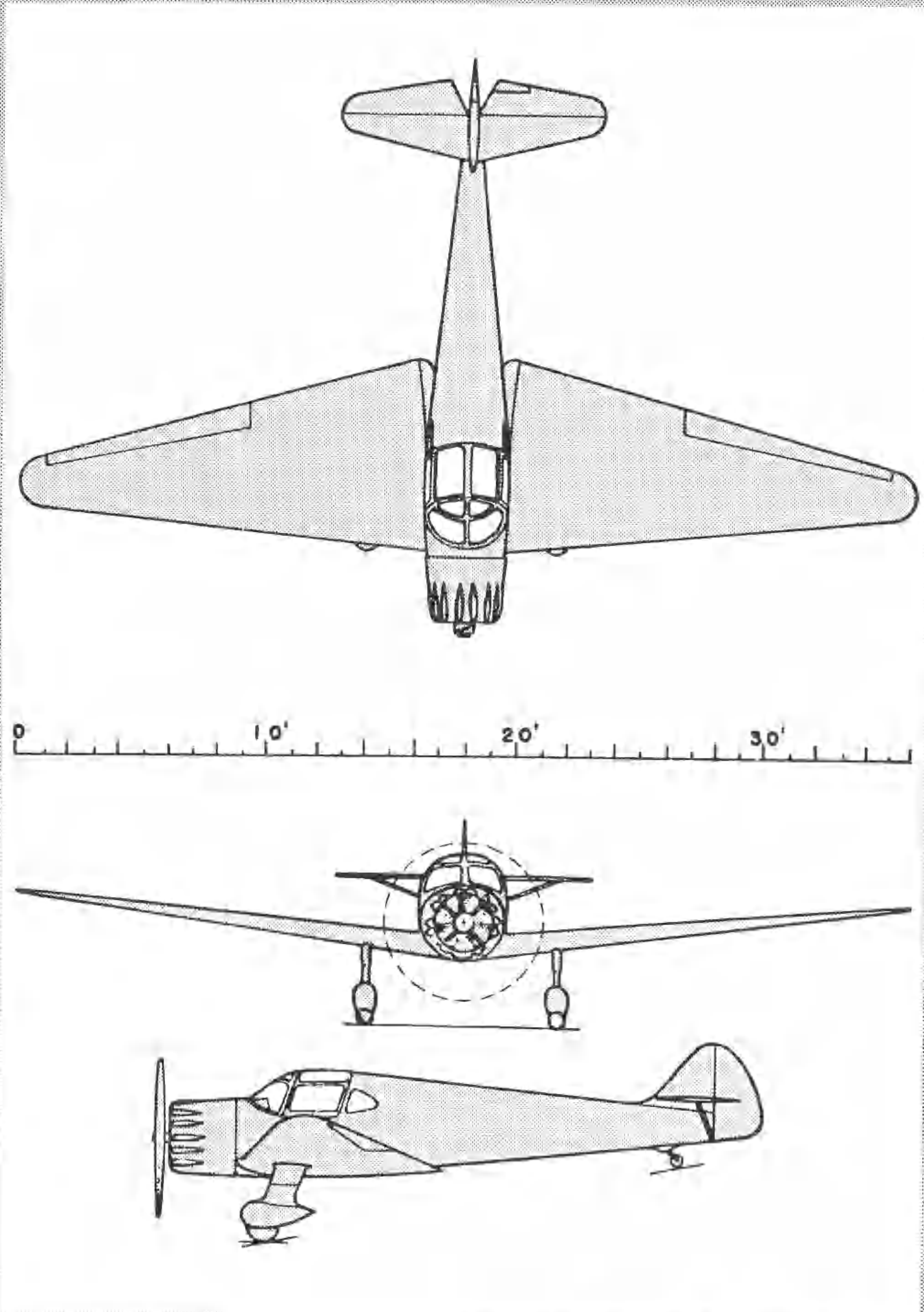
Foreign countries soon adopted Ryan S-Ts for military training. Planes for Honduras Air Force, shown here, were single-seat and mounted machine guns in wings. Mexico and Guatemala also used the 150 h.p. military STMs. Later model, STM-2E of 1941, based on U. S. Army PT-20 version of basic S-T, was exported in large numbers to Netherlands East Indies and to Republic of China, training fliers for combat against the Japs.



1938

Ryan S-C

In design, engineering and manufacture, the Ryan S-C was the first private-owner cabin plane to take full advantage of all-metal construction and full-cantilever low-wing efficiency. Powered with 145 h.p. Warner radial engine, the S-C cruised at 135 m.p.h., had top speed of 150 m.p.h. Wing span was 37 feet 6 inches; length 25 feet 5 inches. Prototype of the S-C had a 150 h.p. Menasco in-line engine, the same as S-T models.

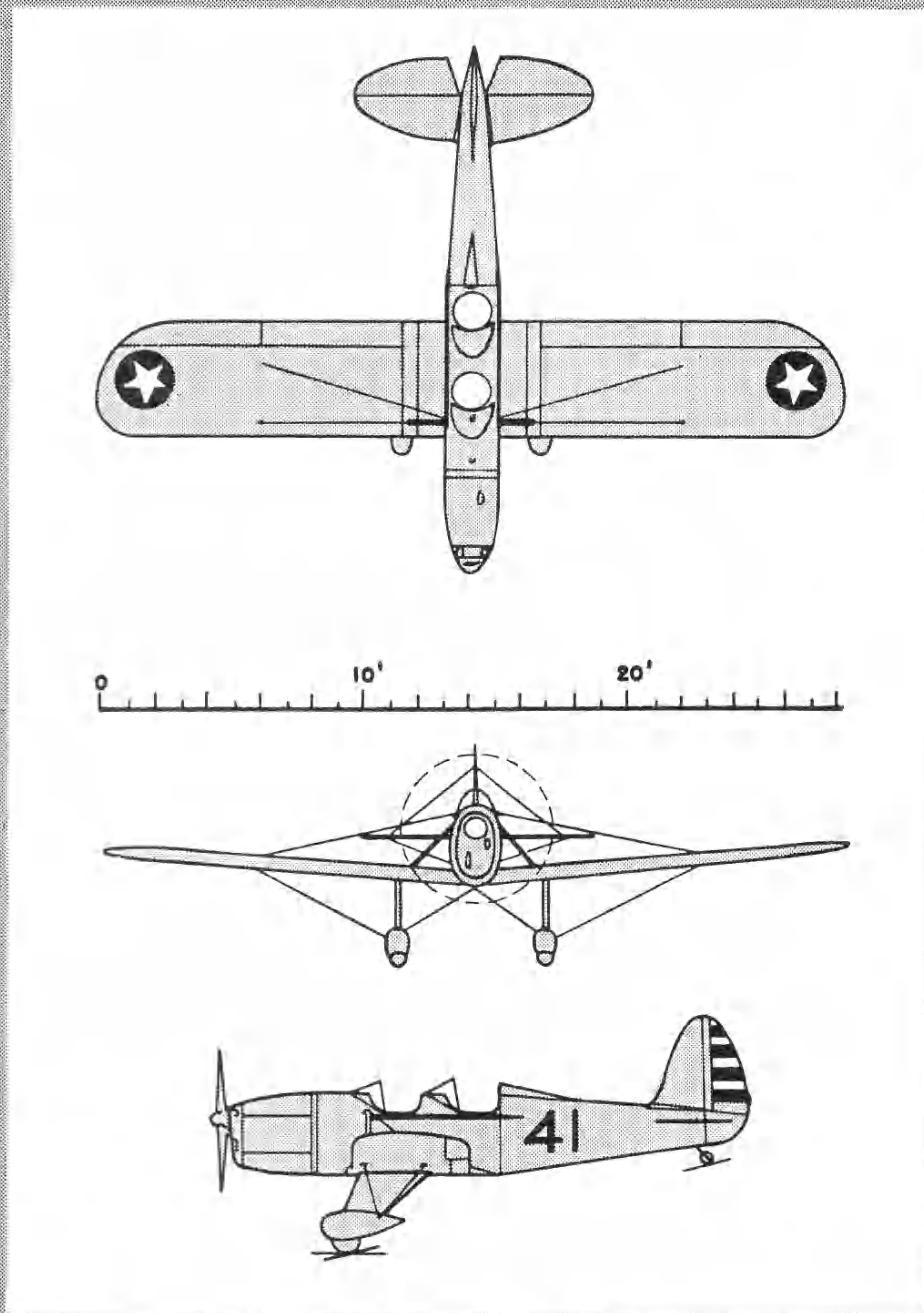




1939

Ryan PT-20

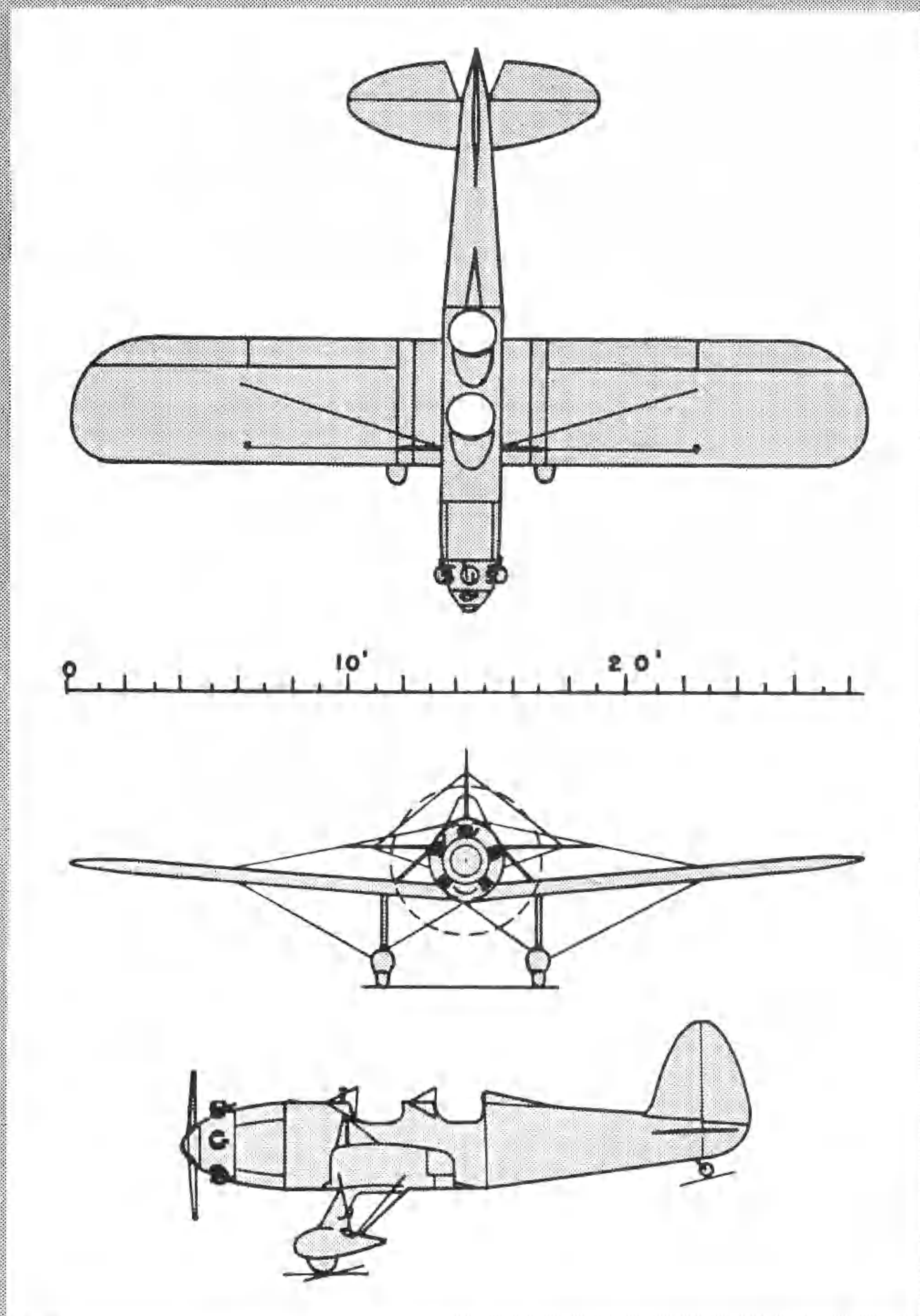
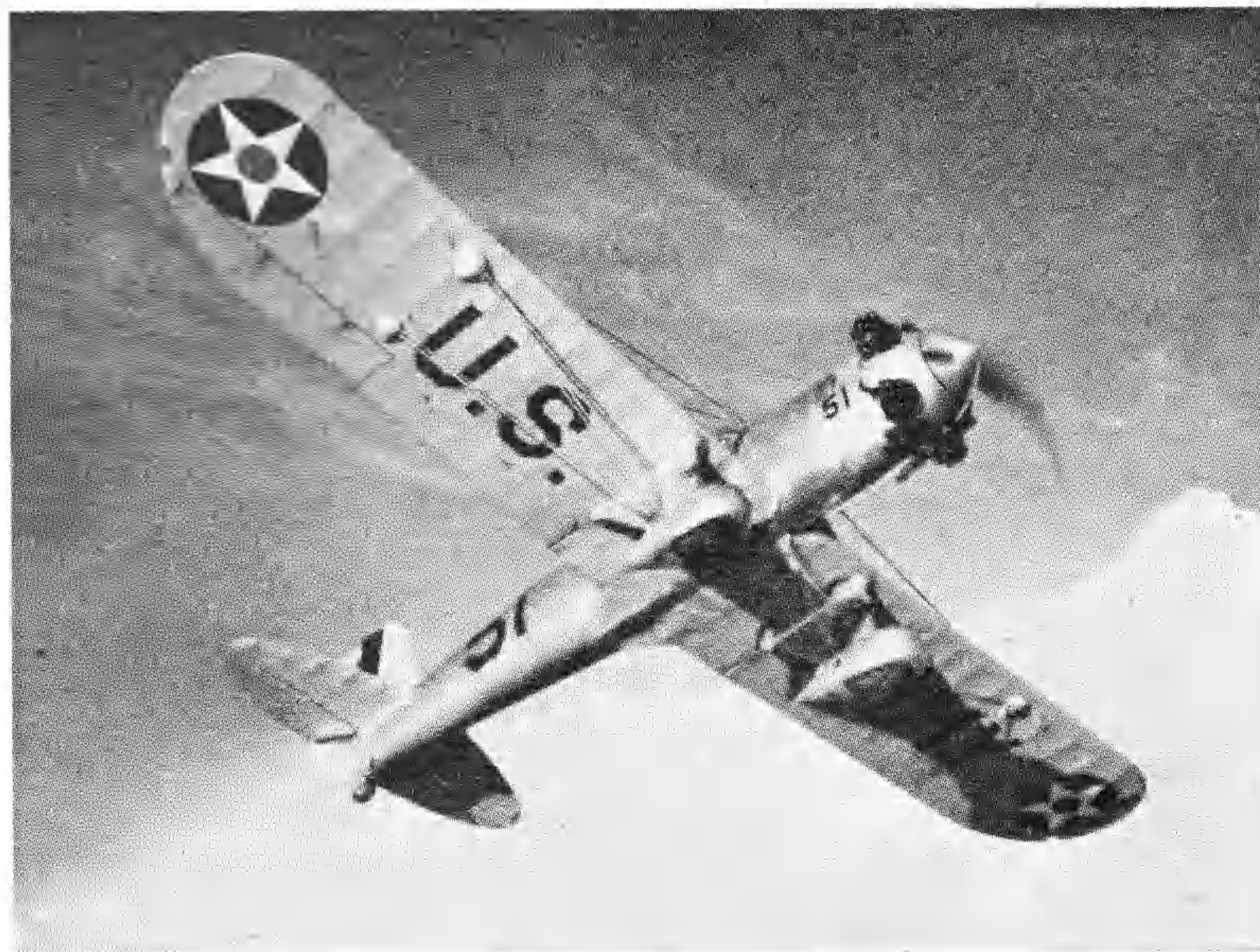
First low-wing planes ever used by U. S. Army Air Force for primary instruction of aviation cadets were military versions of popular Ryan S-T sport trainer. Both the PT-16 and PT-20 were powered with Menasco 125 h.p. C-4 in-line engine. Principal difference in two models was the larger cockpit opening of the PT-20, by placement of longerons on fuselage exterior, to make it easier to enter the trainer with a parachute.



1940

Ryan PT-20A

This version of Ryan primary trainer was the basic PT-20 with a Kinner 125 h.p. radial engine installed in place of the in-line Menasco. There was also a PT-16A model converted to Kinner engines from original PT-16s. The P-T series of Ryan trainers gained wide recognition for unexcelled flying characteristics. At minimum cost, they gave experience in low-wing planes, such as later flown in advanced training.



Thumbnail History of RYAN PLANES

**In thirty-two of flying's first fifty years, Ryan has
contributed many "firsts" to aviation**

THE story of Ryan is one of broad diversification, with major pioneering contributions to many of the related fields of aviation. Ryan activities today and in the past thirty-two years reflect interest in piloted and pilotless military aircraft, personal planes, basic aeronautical research and development, scheduled air transportation, training, rocket engines, high temperature metallurgy, airframe components manufacture and many other fields.

Of these, perhaps Ryan's most outstanding—and favorite—role is that of aircraft manufacturer. In this capacity, Ryan has contributed many aviation "firsts"—some of which are presented on the following pages.

It all began in the early twenties when T. Claude Ryan, the young owner of a small but flourishing flying service, decided to expand his flying equipment from a JN4-D "Jenny" to a fleet of six war-surplus Standard biplanes. He converted these open-cockpit, two-place airplanes into five-place enclosed cabin "transports" and used them in his newly established "Los Angeles-San Diego Air Line," the first regularly scheduled year 'round passenger airline in the United States.

These early Ryan-Standards marked Ryan's entry into the aircraft manufacturing field. For several years an important segment of Ryan's business was buying

surplus, or used, planes and remodeling them to good operating standards to satisfy the wishes of private owners.

The first strictly Ryan creation was the M-1, a spectacularly successful monoplane designed for the air mail service and destined to become the first volume production monoplane in America. In the first year of quantity production, 23 were turned out—a remarkable number of commercial planes for any factory in the 1920's.

Well established in the transport field, the M-1 was constantly improved. Its successors included the M-2 "Bluebird," first of the Ryan Broughams. The latter were to pioneer air line routes in Latin America, Canada and Alaska, as well as in the United States. The Brougham had another distinction—it provided the basis for the design of Lindbergh's "Spirit of St. Louis," built in the Ryan Airlines, Inc. plant for the now-famous airmail pilot who was attracted by the renown of the Ryan mail planes.

In the early thirties Ryan developed what was to become the country's outstanding sport-trainer. Designated the S-T, this low-wing, all-metal, two-place airplane set acrobatic and efficiency records throughout the world. By 1935, the S-T's were so popular that they were being turned out of the Ryan factory at Lindbergh Field on what was then considered virtually a production line basis.

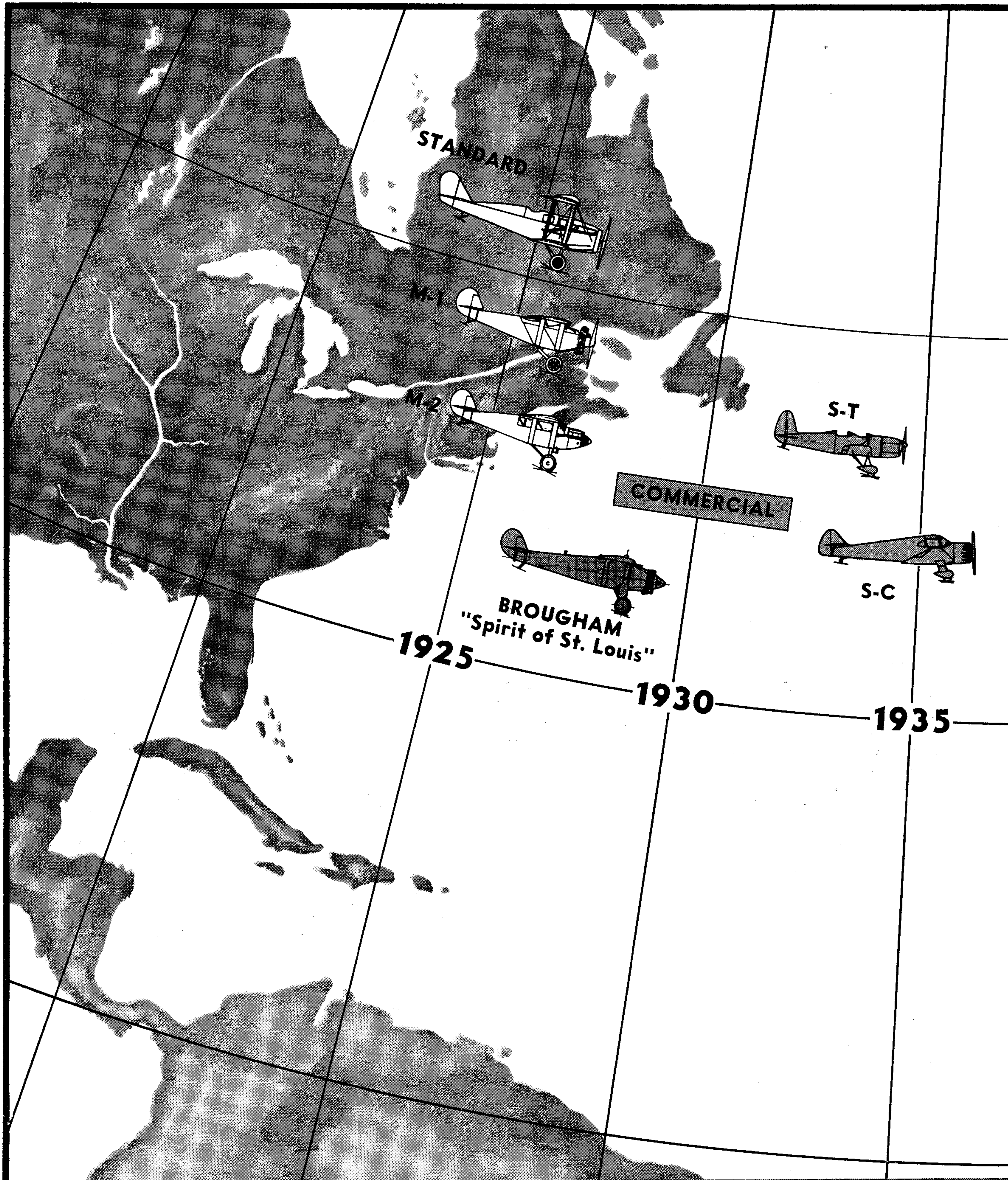
From the open cockpit S-T, the development of the enclosed S-C was a logical step forward. Produced late in 1937, the S-C metal cabin plane was the first private owner type which took full advantage of modern metal construction features and full cantilever low-wing streamlined efficiency.

Prior to the United States entrance into World War II, Ryan, with a military version of its 125 h.p. STA, won a design competition for a military trainer. In the Ryan PT-16, the Army got its first low-wing primary trainer, which was a major departure from a 30-year precedent of using only biplanes for initial instruction of aviation cadets.

This early model and the PT-20's were followed by the best known of the PT's, the PT-22 Recruit, of which more than a thousand were built for primary training of aviation cadets. Many of the Ryan PT's were utilized by the Ryan School of Aeronautics located in San Diego and Hemet, California, and Tucson, Arizona in training more than 14,000 pilots during the war years.

Export versions of the PT-20's, known as STM's, were shipped overseas in 1940 and 1941 for use by the Chinese Air Force and Netherlands East Indies Air Force. Another model, the STM-S2 seaplane trainer with twin floats, was developed and supplied to the Dutch East Indies Navy.

(Continued on Third Following Page)



STANDARD

M-1

M-2

COMMERCIAL

S-T

S-C

BROUGHAM
"Spirit of St. Louis"

1925

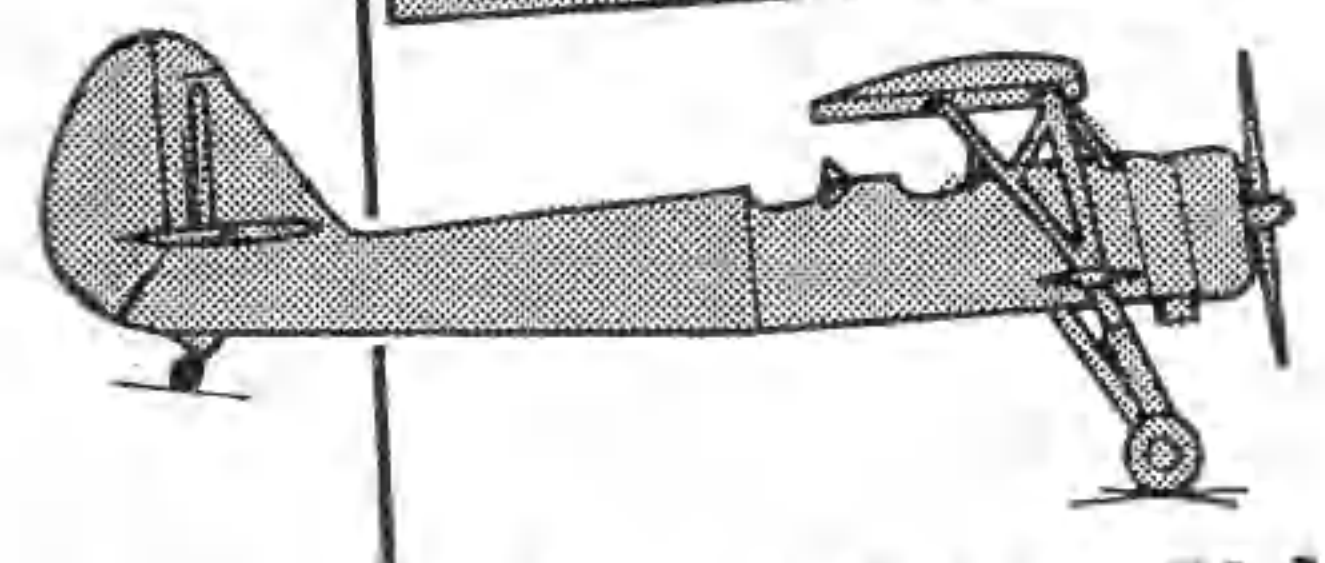
1930

1935

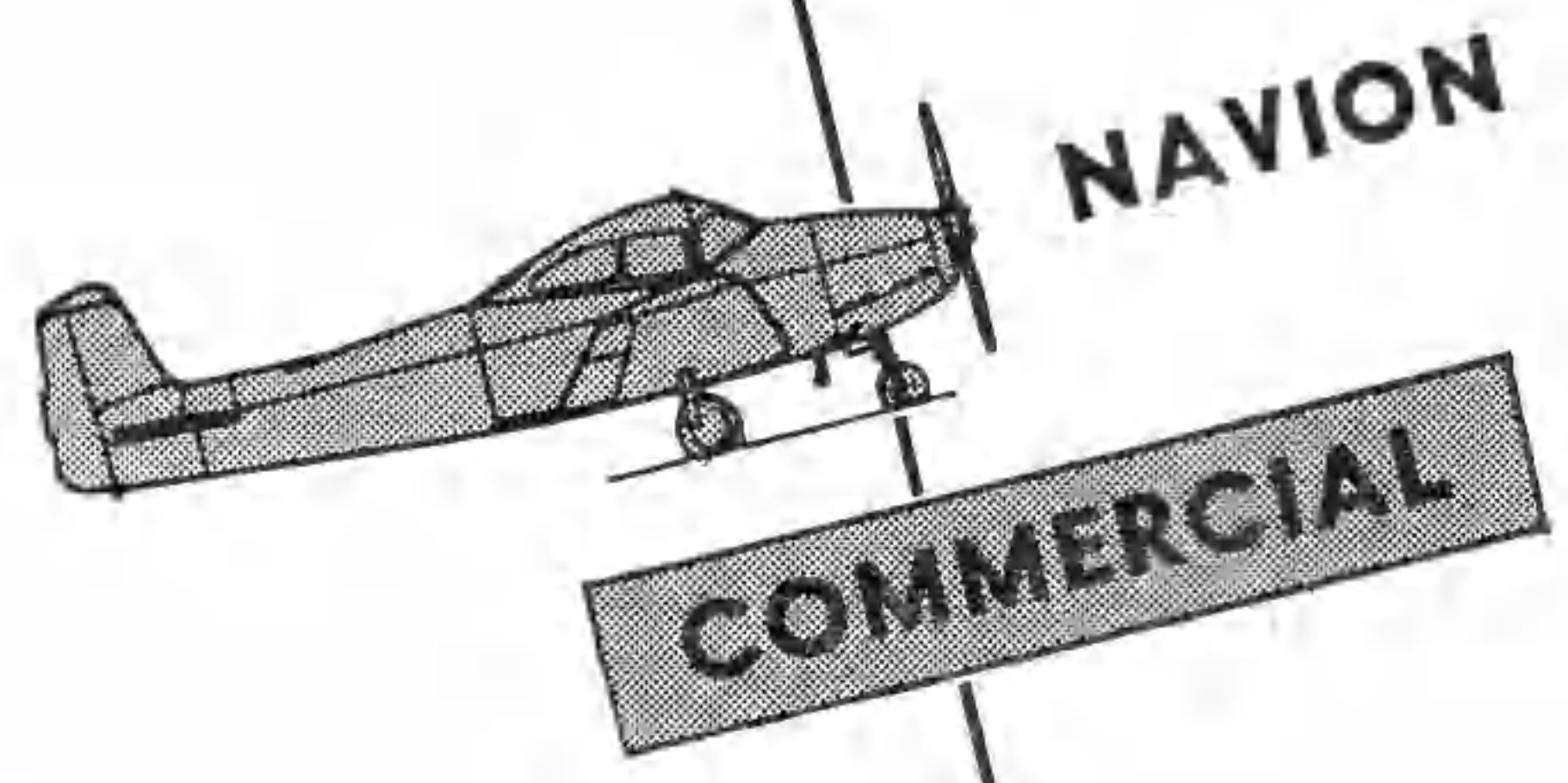


GENEALOGY OF

OBSERVATION



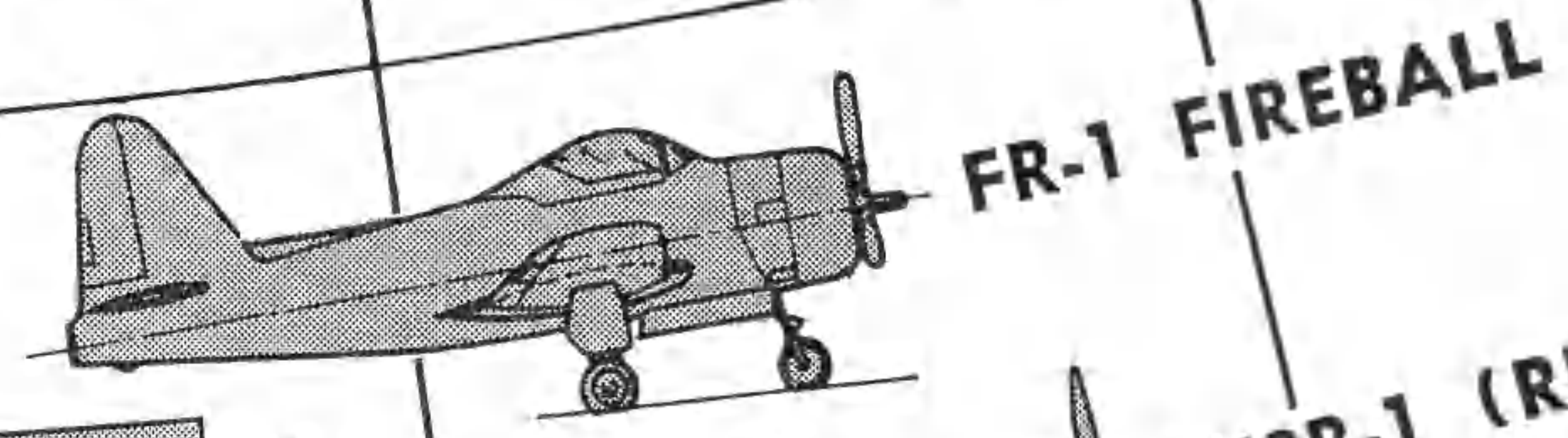
YO-51 DRAGONFLY



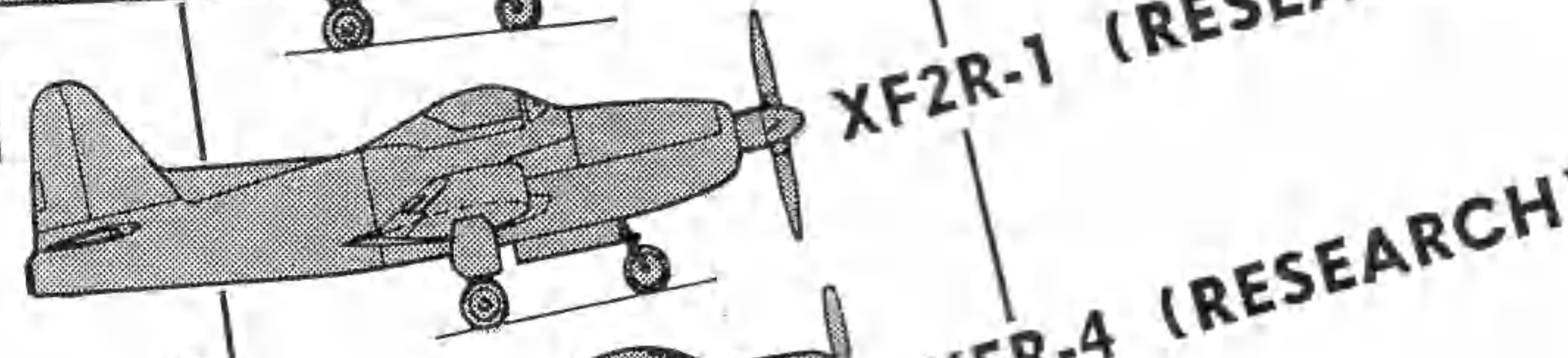
NAVION

COMMERCIAL

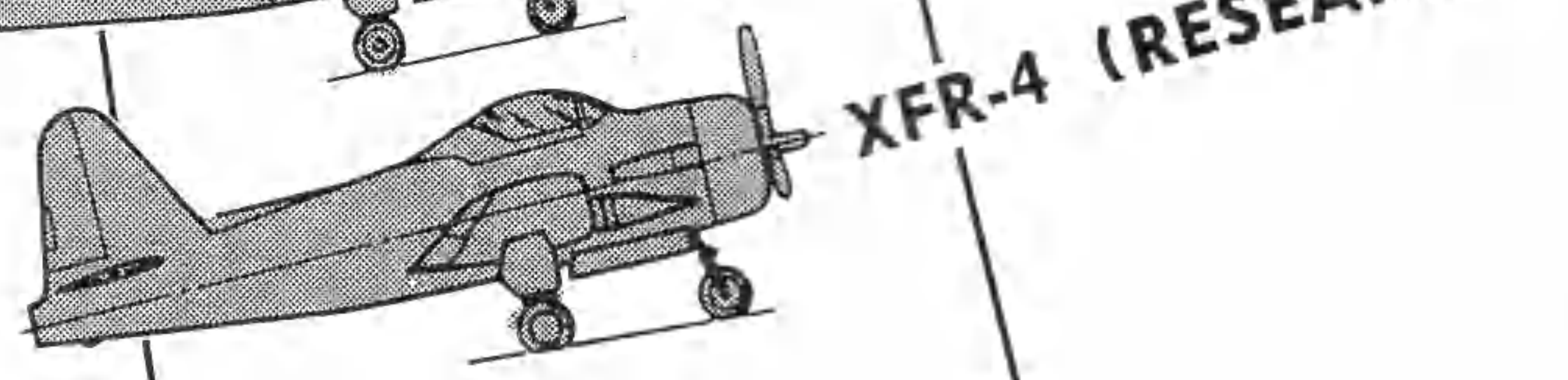
FIGHTERS



FR-1 FIREBALL



XF2R-1 (RESEARCH)



XFR-4 (RESEARCH)

CLASSIFIED

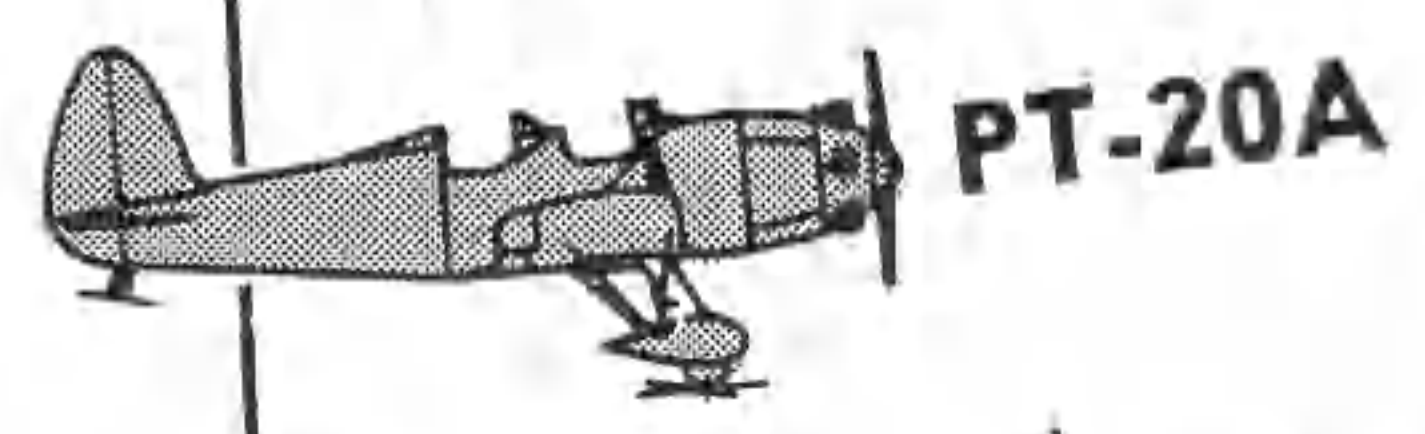
1940



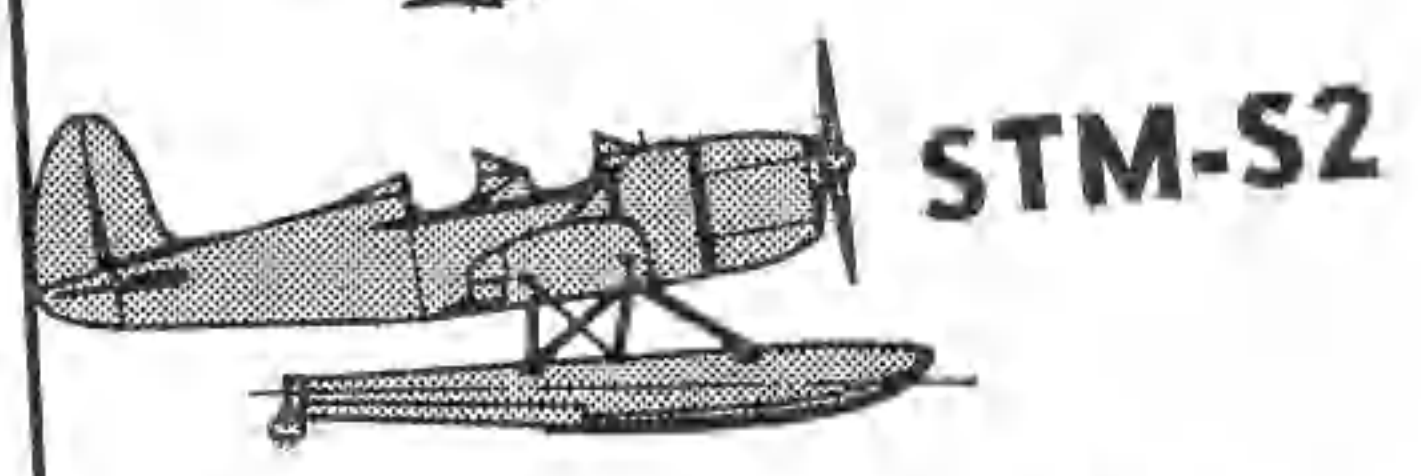
STM



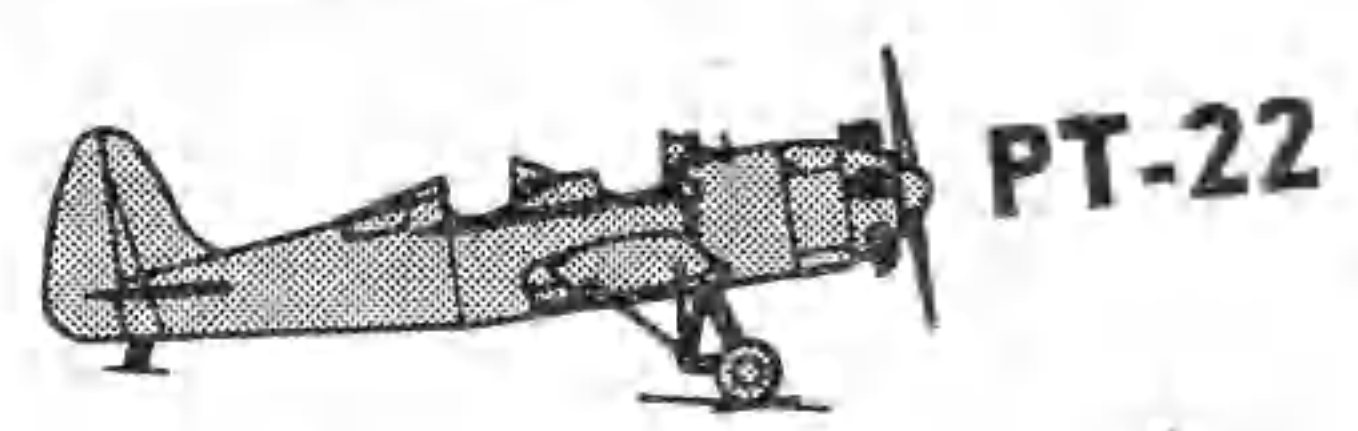
PT-20



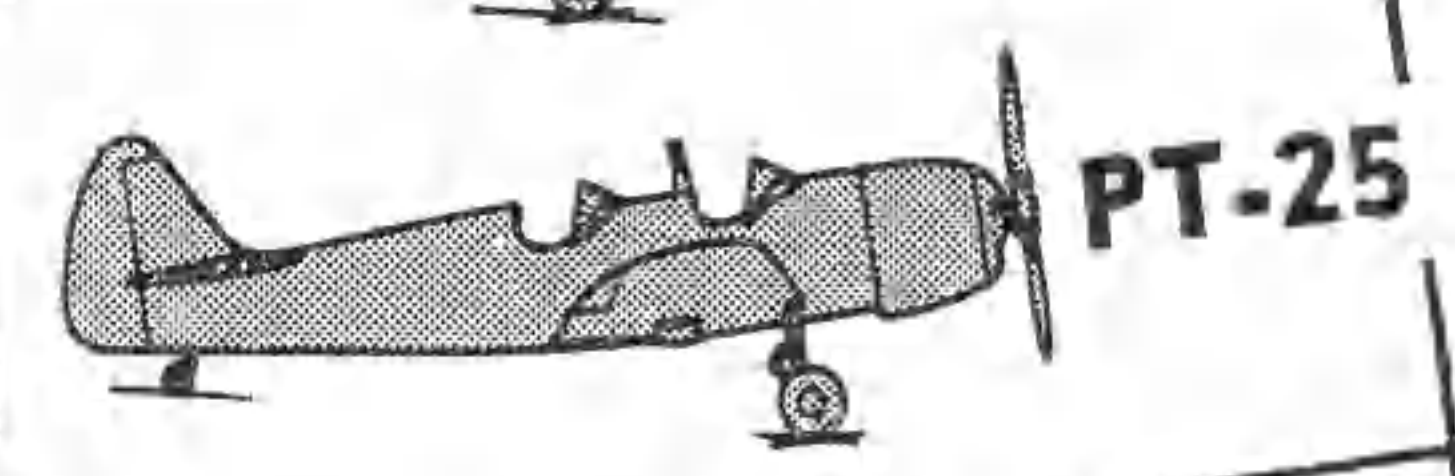
PT-20A



STM-S2



PT-22



PT-25

TRAINERS

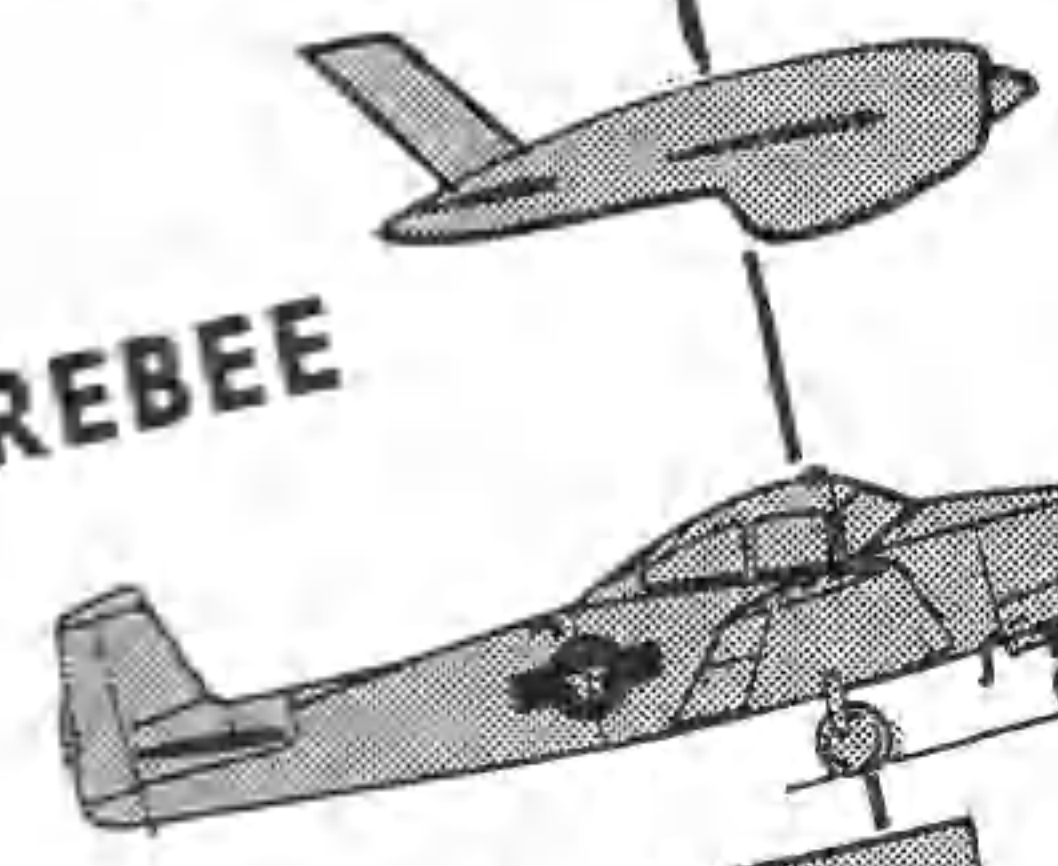
1945

PILOTLESS

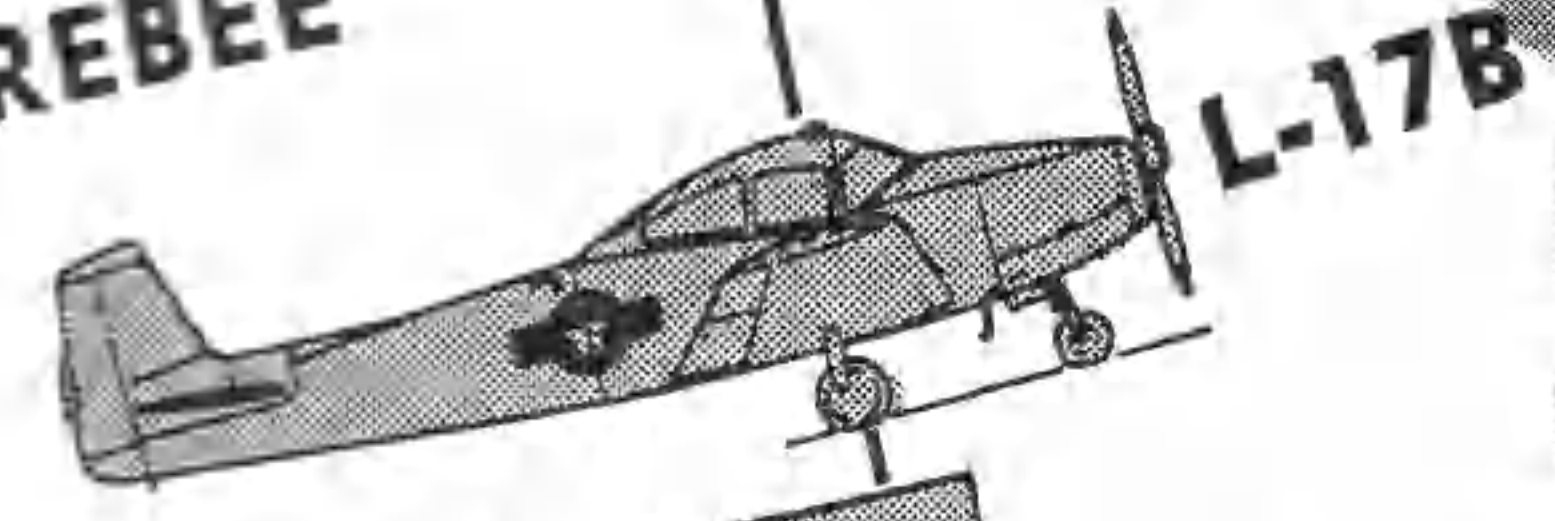


FIREBIRD

FIREBEE



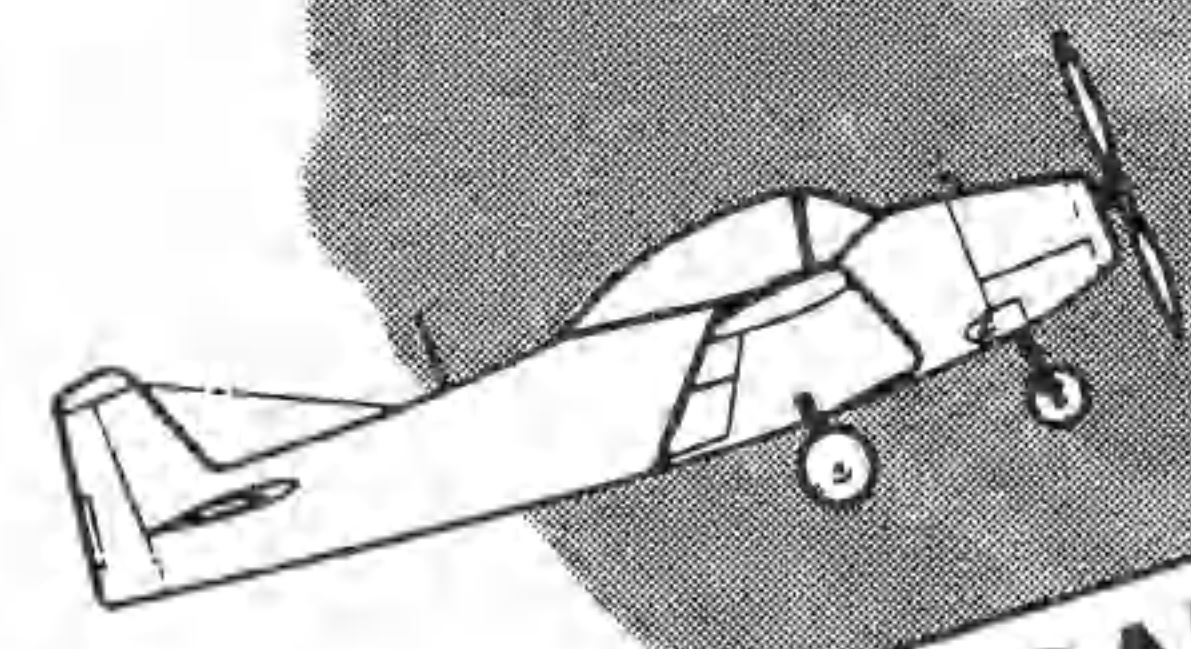
LIAISON



L-17B

1950

MODEL 72



TRAINER

1955

RYAN AIRCRAFT

Because of the critical aluminum supply in 1942, the Army asked Ryan to develop an entirely new trainer—a plywood plane making minimum use of metals. The two-place open cockpit PT-25 was an entirely new military airplane in design, construction and materials. Aluminum alloys and all strategic materials were almost entirely eliminated, with the exception of the engine cowling which represented less than two per cent of the total weight of the airframe.

Another assignment from the U. S. Army was for the development and limited production of an experimental short-range liaison observation plane. This resulted in the Ryan YO-51 "Dragonfly," which was capable of virtually hovering in flight. With slots along the entire leading edge and a Fowler-type flap along the entire length of the trailing edge, the Dragonfly was able to take off and clear a fifty-foot obstacle within 350 feet, and could maintain a minimum flight speed of 32 miles an hour while holding a chosen altitude. It could land almost in its own length.

In late 1942, the Navy Bureau of Aeronautics asked Ryan to design and produce the FR-1, a new combat plane which would combine the advantages of both piston engine and jet power plant in a single configuration.

The Ryan Fireball was not only the first plane in the world to combine reciprocating engine power with jet propulsion, but was also the Navy's first jet airplane, thereby pioneering the use of jet aircraft on carriers. Of almost equal importance, it was the first tricycle-gear aircraft qualified for carrier operations.

To enable Navy pilots to fly efficiently on the jet engine alone, the Fireball was equipped with first full-feathering propeller used on single piston-engined air-

craft. The original Fireball was powered with a 1300 horsepower Wright Cyclone R-1820 piston engine turning a propeller, and a 1600-pound thrust General Electric I-16 jet engine in the aft fuselage.

A later version of the Fireball series, the XF2R-1 Dark Shark, substituted a General Electric TG-100 turbo-prop engine for the forward piston-type power plant. This was the Navy's first turbo-prop airplane and the first turbo-prop-powered airplane to make a cross-country flight. Still another version was the XFR-4 with the first flush-entry ducts; and using a Westinghouse 24-C as the aft engine.

After World War II, the Ryan organization returned to one of its first loves in aviation—the private plane field—with acquisition of the design and manufacturing rights of the Navion from North American Aviation, Inc. Refinements, based on the company's long knowledge of safety and reliability features wanted by private owners, were immediately incorporated, and the big, rugged, fast, safe and easy-to-fly Ryan Navion found rapidly increasing favor.

The L-17B liaison plane, a military version of the four-place, all-metal commercial Ryan Navion, saw extensive service in Korea. Procured "off-the-shelf" with no special expenditure for new design, the L-17B's proved their ability to perform light transport missions, aerial reconnaissance, artillery spotting, fighter plane target direction and the transport of field commanders.

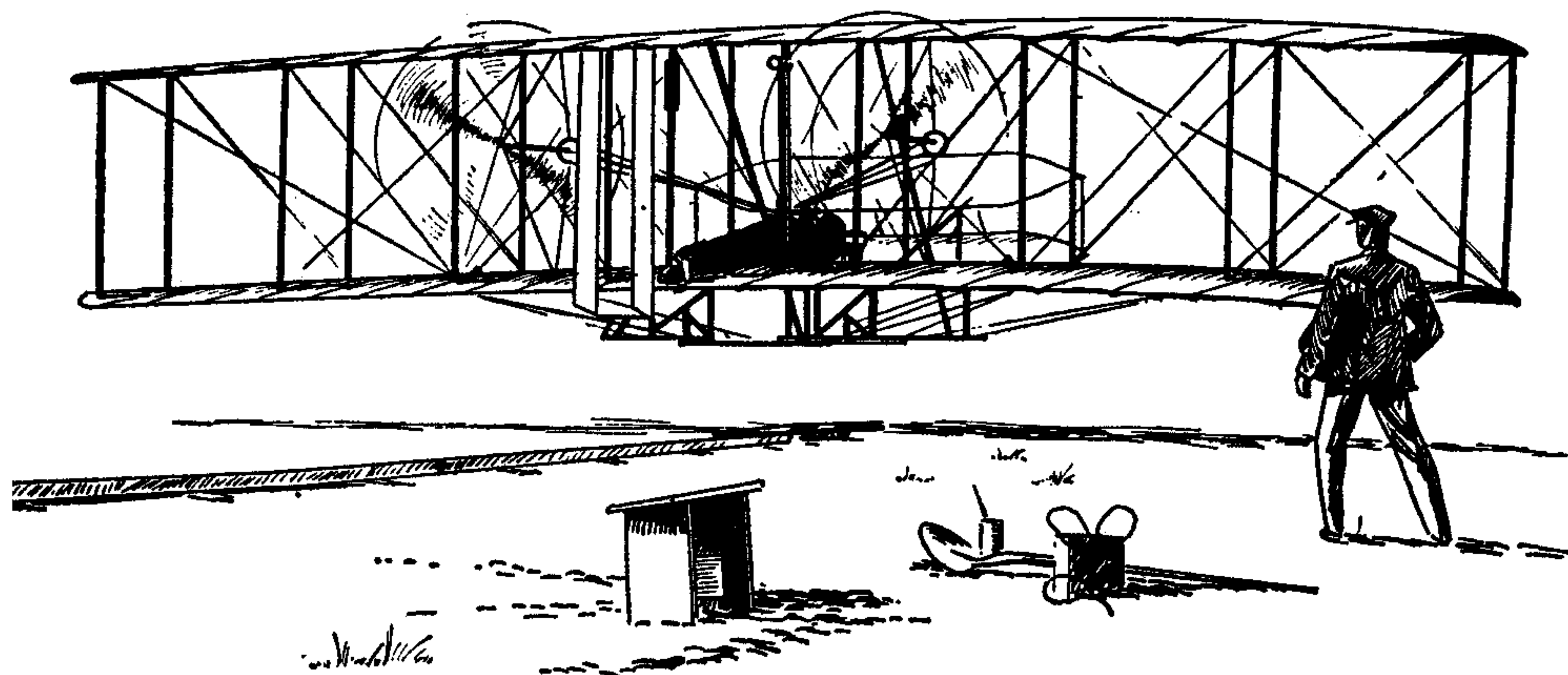
In 1949, Ryan completed successful research on the first air-to-air guided missile for the Air Force. The result of more than two years flight testing, this 10-foot-long, rocket-propelled projectile was designated the Ryan XAAM-A-1 "Firebird." It was designed to track enemy aircraft by means of complex radar navigation and electronic systems.

Shortly after the completion of the Firebird experimental project, Ryan developed the Firebee pilotless jet target drone under the joint sponsorship of the Air Force, Army and Navy. Designed for anti-aircraft and aerial gunnery training, for use in combat plane interception problems and in guided missile target work, the Ryan Firebee is a mid-wing, all-metal pilotless aircraft with sharply swept-back wings and tail surfaces. Power plant is either a Fairchild J-44 or Continental-Marbore J-69; both of approximately 1000 pounds thrust.

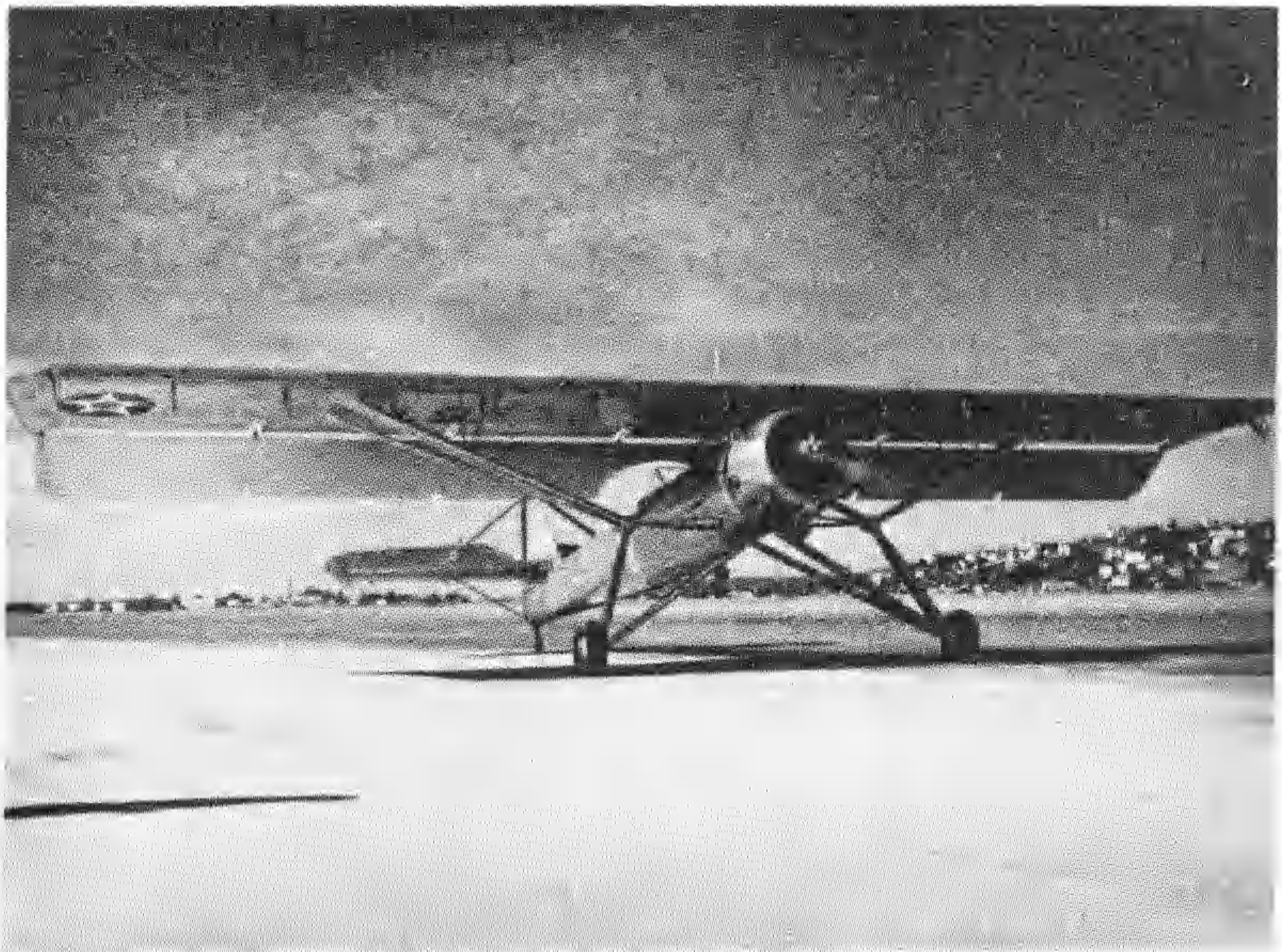
The remote-controlled Firebee is capable of near-sonic speeds and has performance characteristics similar to those of current American jet fighter aircraft. It can be launched either from the ground or in the air from a "mother" plane. At the end of each flight the target drones are recovered by a self-contained two-stage parachute which permits the repeated use of the Firebees.

Ryan recently introduced a new approach to the primary training of military pilots with the "Model 72" side-by-side primary trainer. Based on the highly practical advantages of having the instructor and student seated side-by-side rather than in the conventional "fore and aft" tandem arrangement, the Model 72 is a commercial Ryan Navion redesigned to military training standards.

In its present role as a Weapons System Contractor for the U. S. Government, Ryan continues to enlarge the scope of its research and development effort to keep pace with and contribute to the technological advances in the field of aviation. With work underway on many new and challenging projects, Ryan engineers are looking ahead to the development of still more revolutionary Ryan aircraft to carry on a proud tradition.

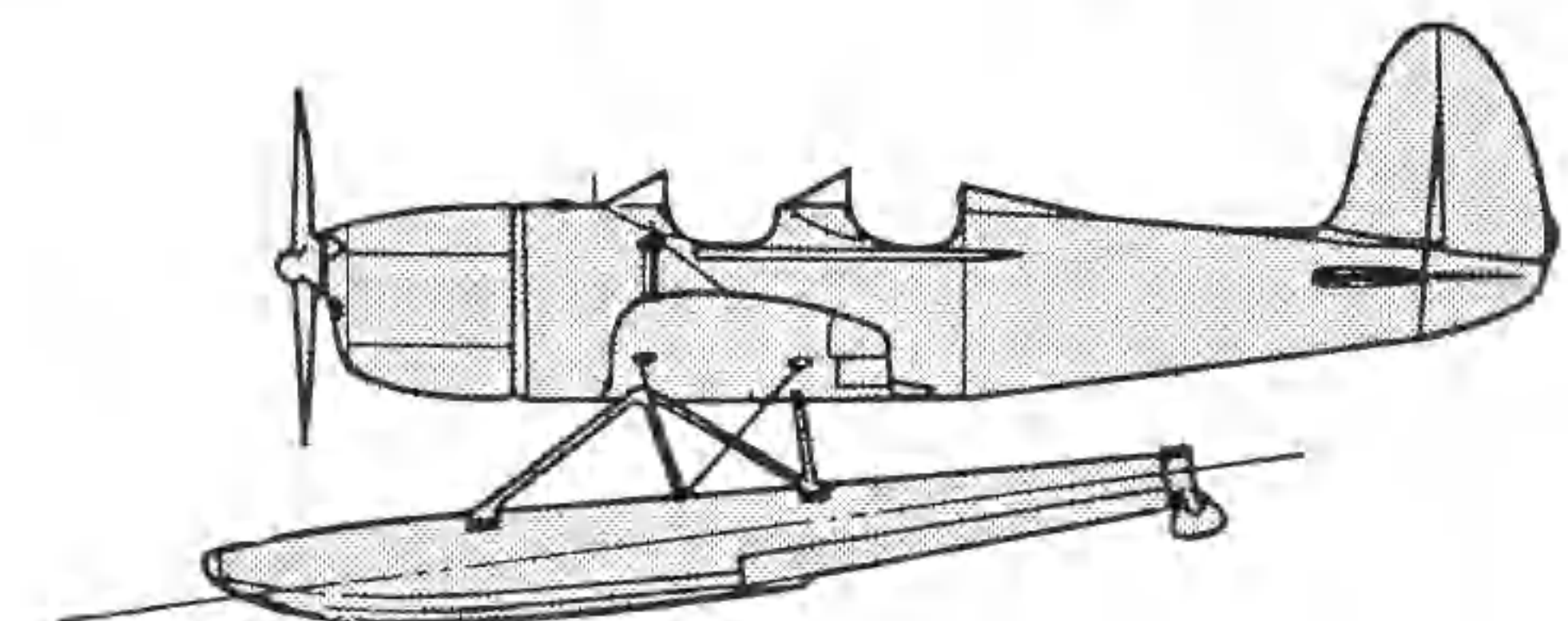
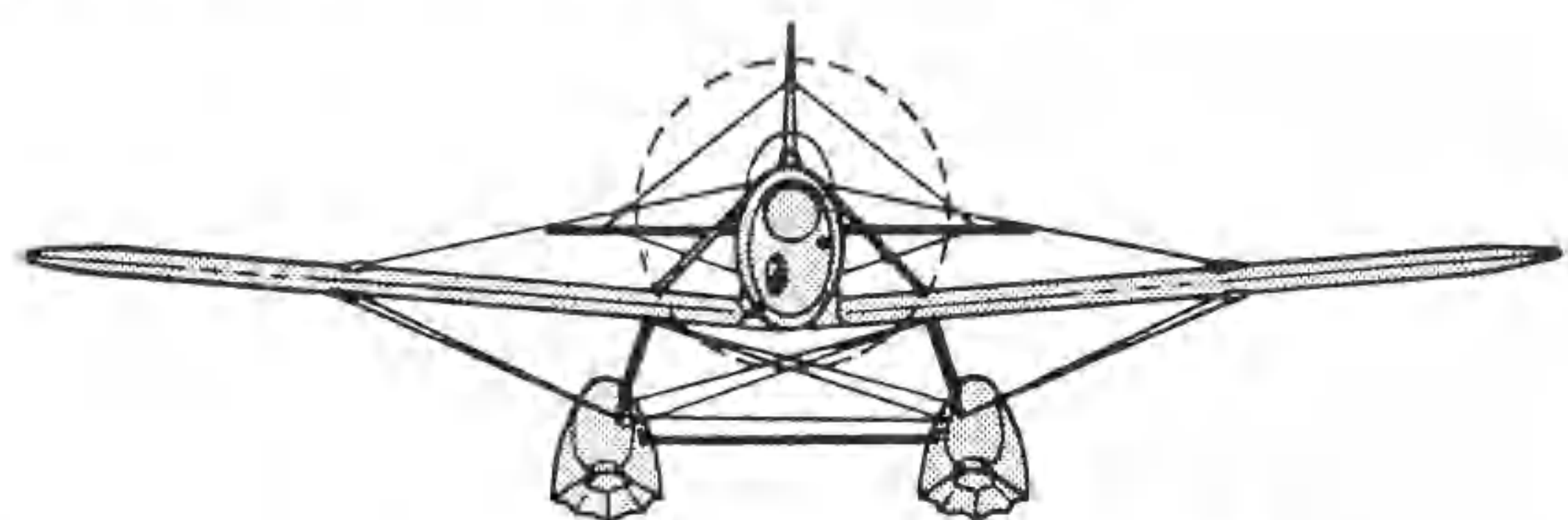
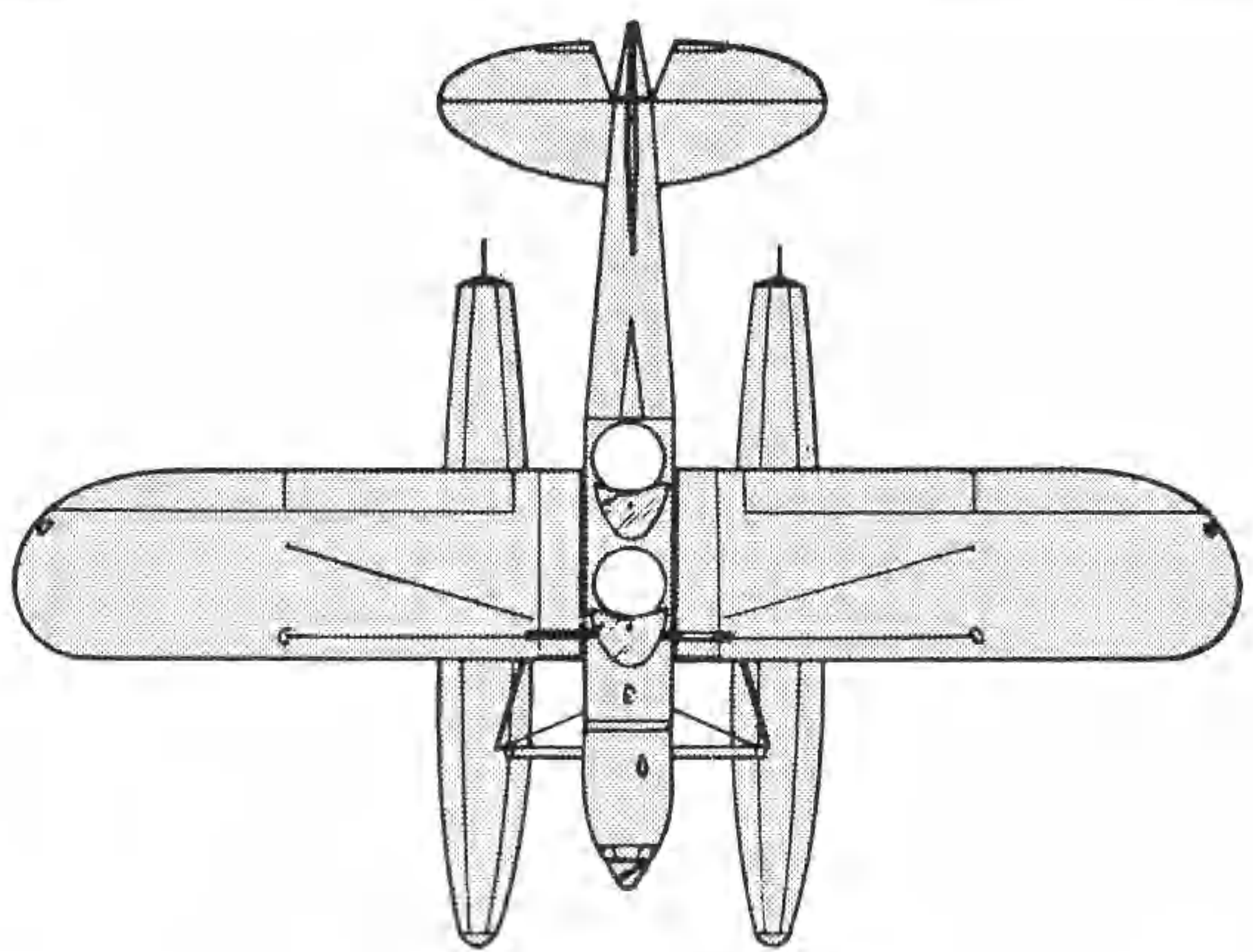
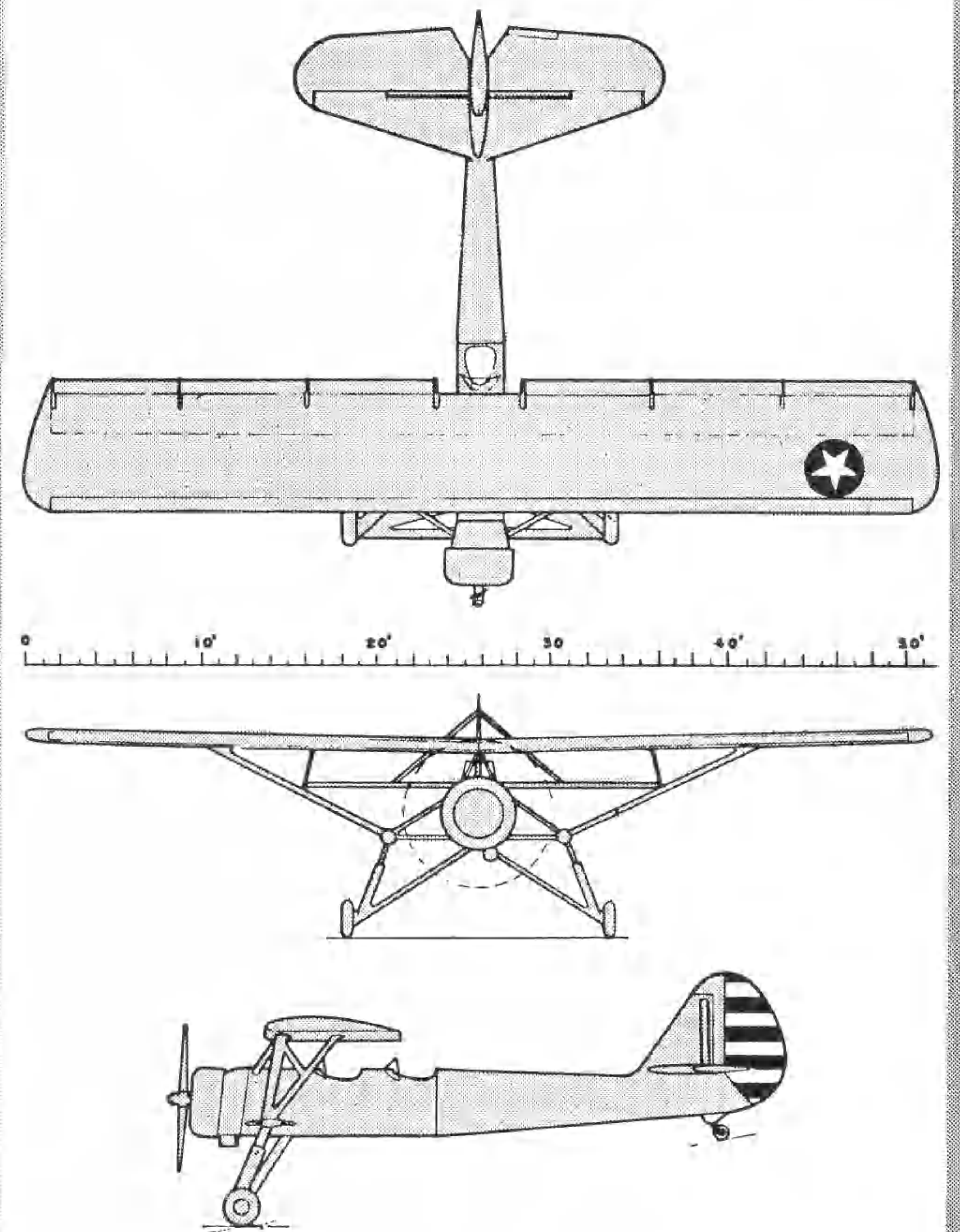


Ryan began commercial aviation operation nineteen years after this historic first flight of the Wright Brothers' biplane in 1903.



1940 Ryan YO-51 Dragonfly

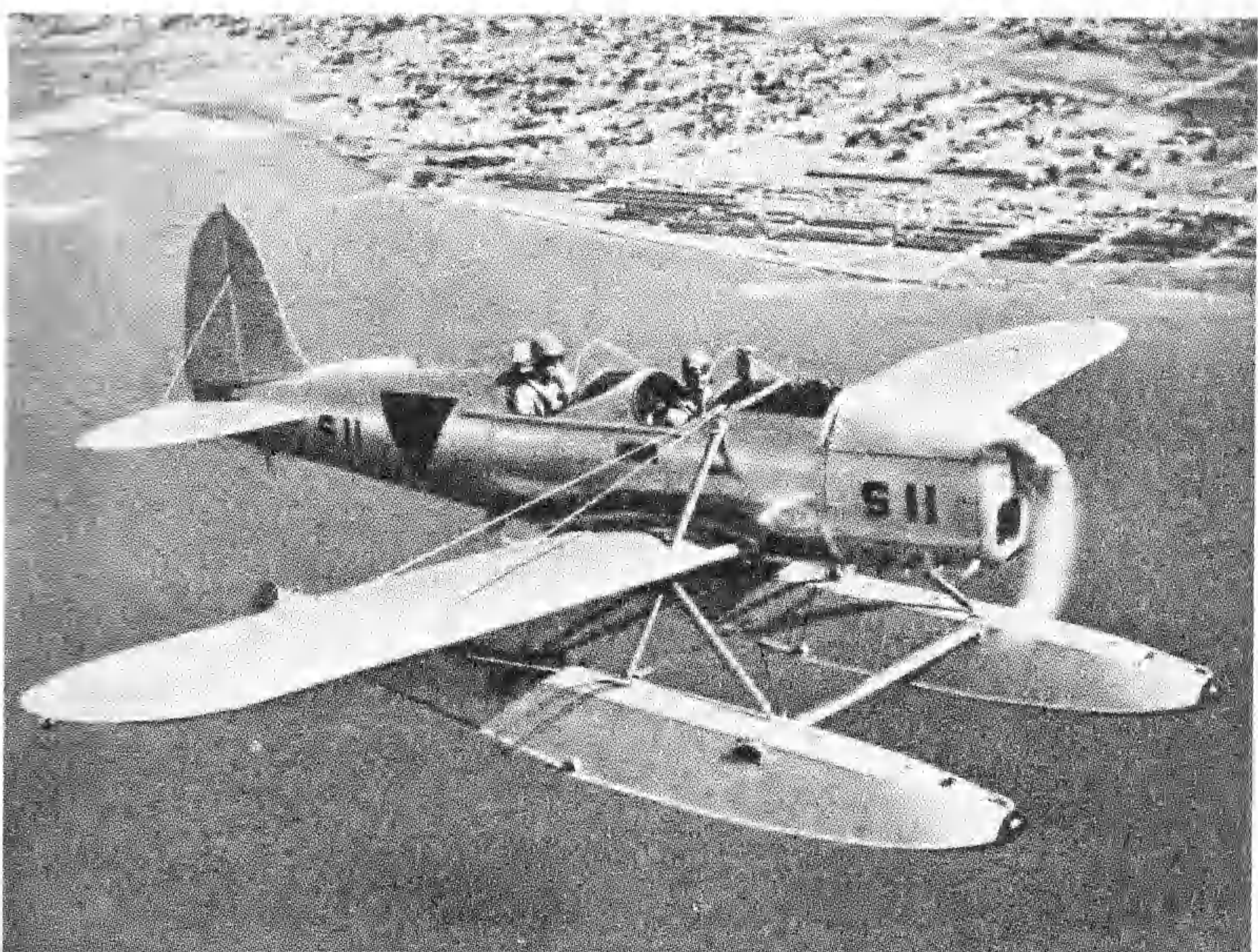
Unusual flight characteristics and sensational ability to make short, steep take-offs and nearly vertical landings, featured the Ryan YO-51 "Dragonfly" short range observation plane. Developed for liaison work for the U. S. Army, the YO-51 was capable of clearing a 50-foot obstacle 350 feet from take-off, and maintaining minimum speed of 32 m.p.h. Slots were along entire leading edge; flaps along entire trailing edge of wing.



1941

Ryan STM-S2

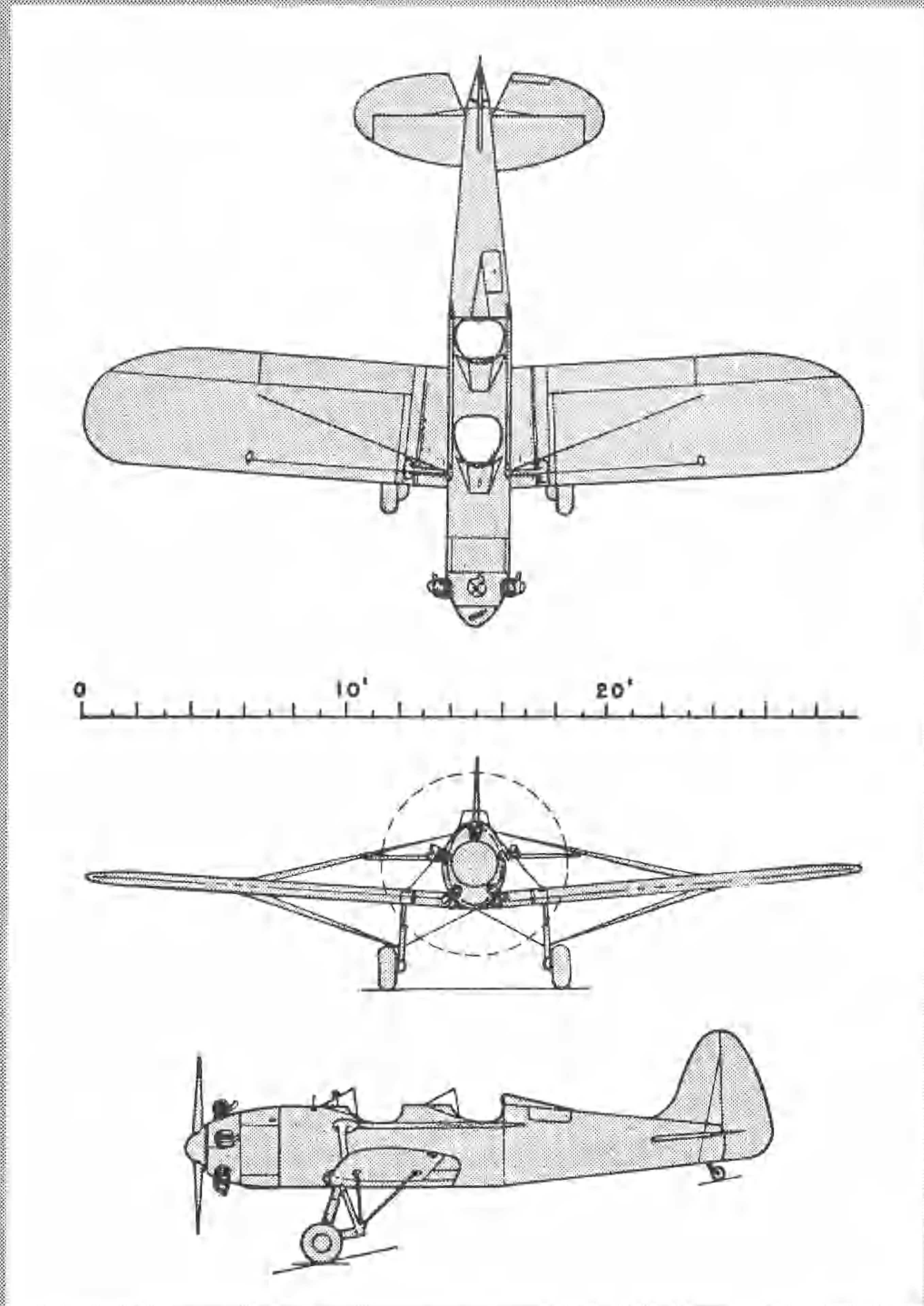
For Netherlands East Indies Navy, Ryan built 50 seaplane versions of its basic PT-20 military trainer model. Powered with Menasco 150 h.p. C-45 supercharged in-line engines, the seaplane trainers were operated from naval base at Surabaya, Java, known to U. S. flight instructors as "Little Pensacola." Refugee Hollanders trained on STM-S2s then went direct to twin-engine patrol boats with Dutch squadrons of RAF Coastal Command.





1942 Ryan PT-22 Recruit

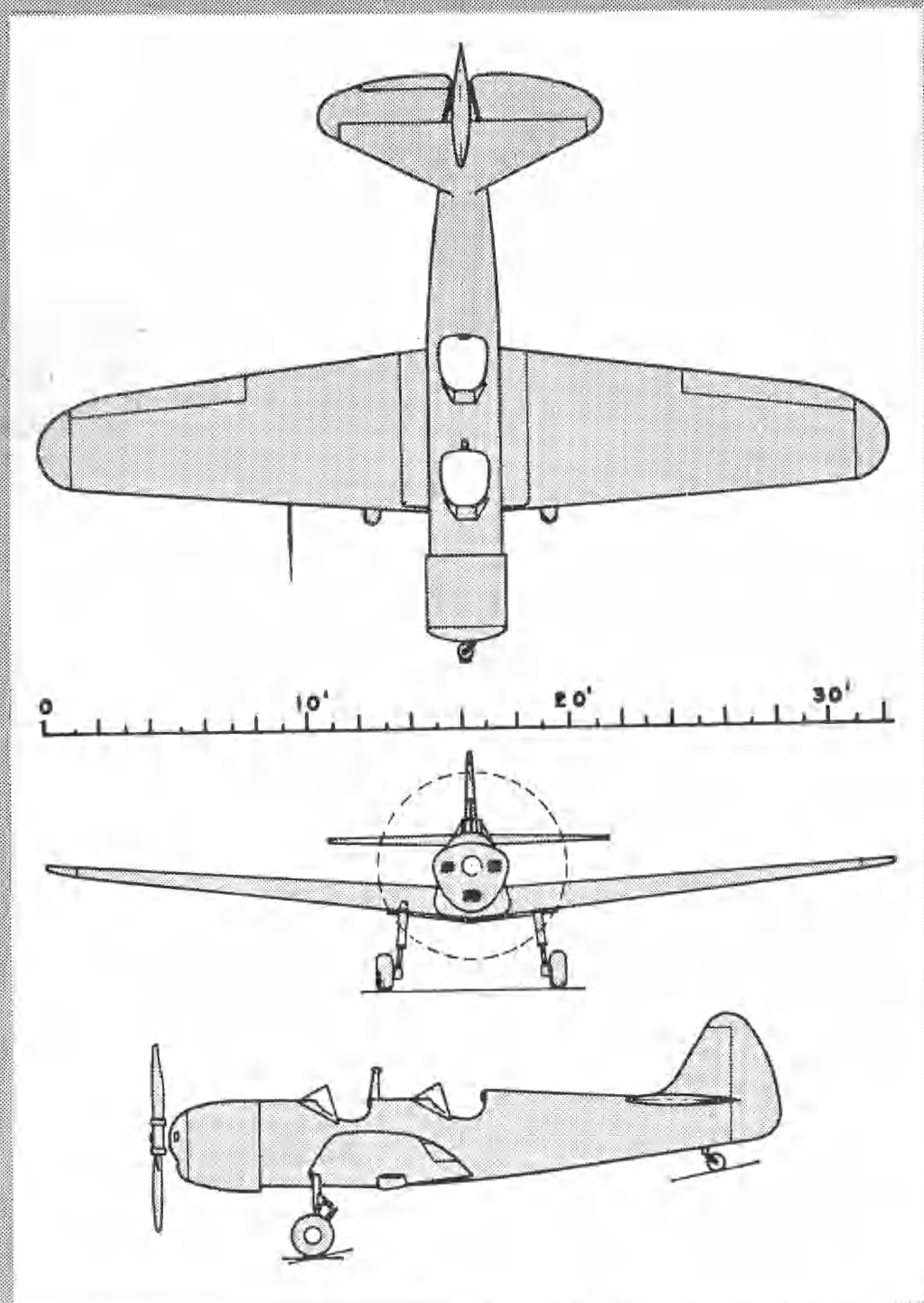
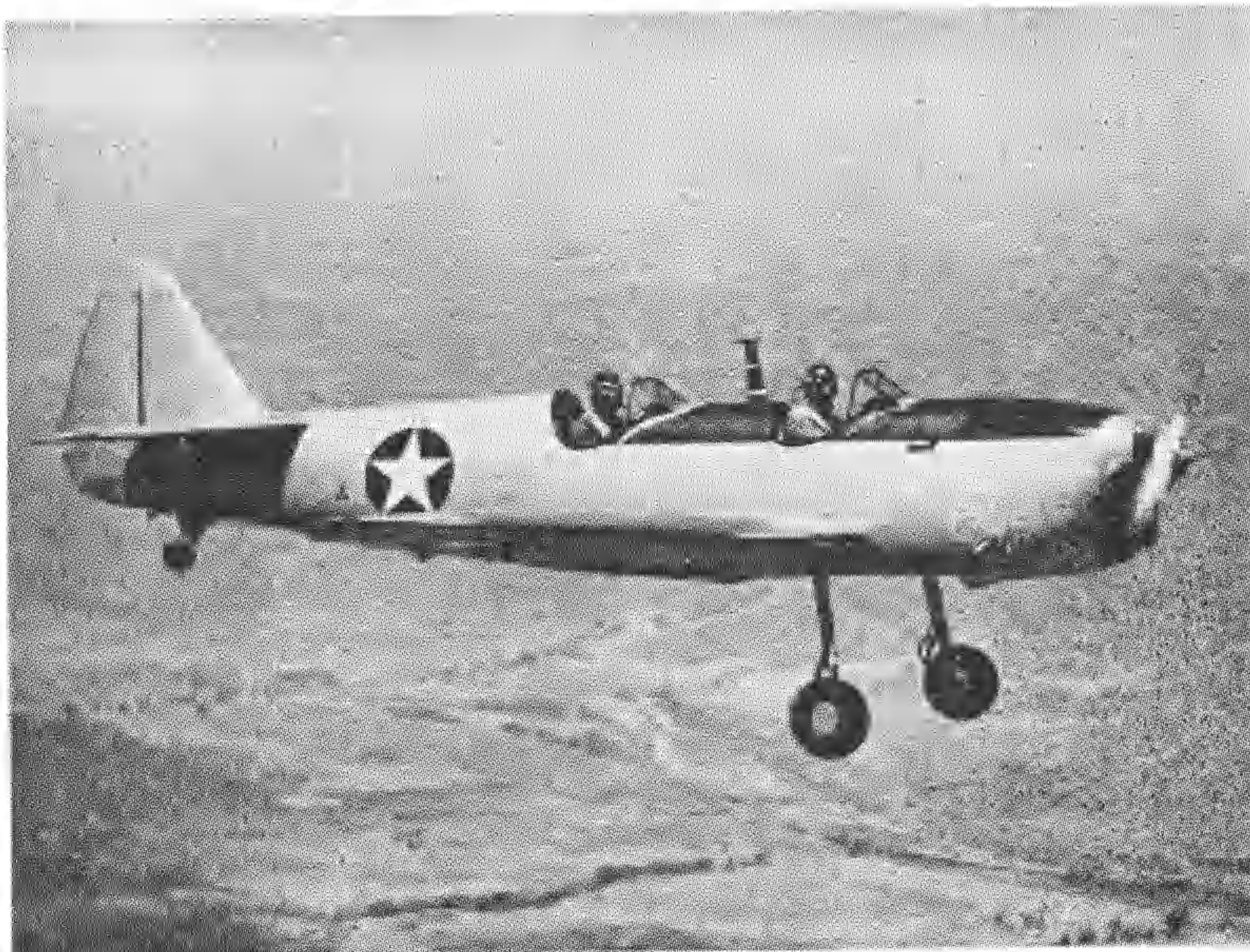
Largest number of trainers of any one model built by Ryan were 1000 PT-22s for U. S. Army, some of which were later reassigned to Chinese Air Force. PT-22 had 160 h.p. Kinner radial engine. Similar models, the PT-21 Army trainer and NR-1 Navy trainer, had 132 h.p. Kinner engine and landing gear wheel fairings. These planes were commercial model ST-3 and widely used post-war for civil flying. Cruising speed 116 mph, landing 54 mph.

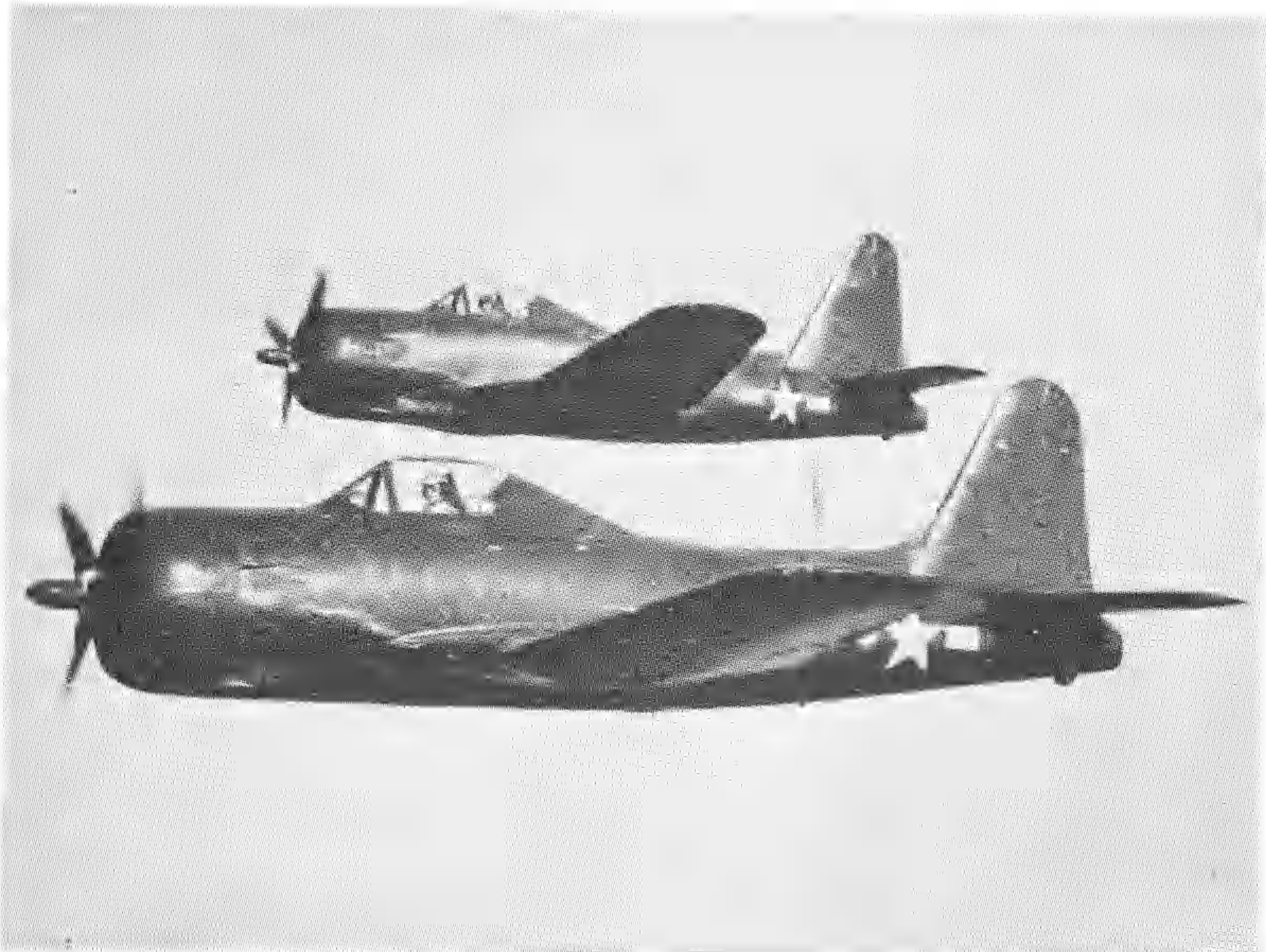


1943

Ryan PT-25

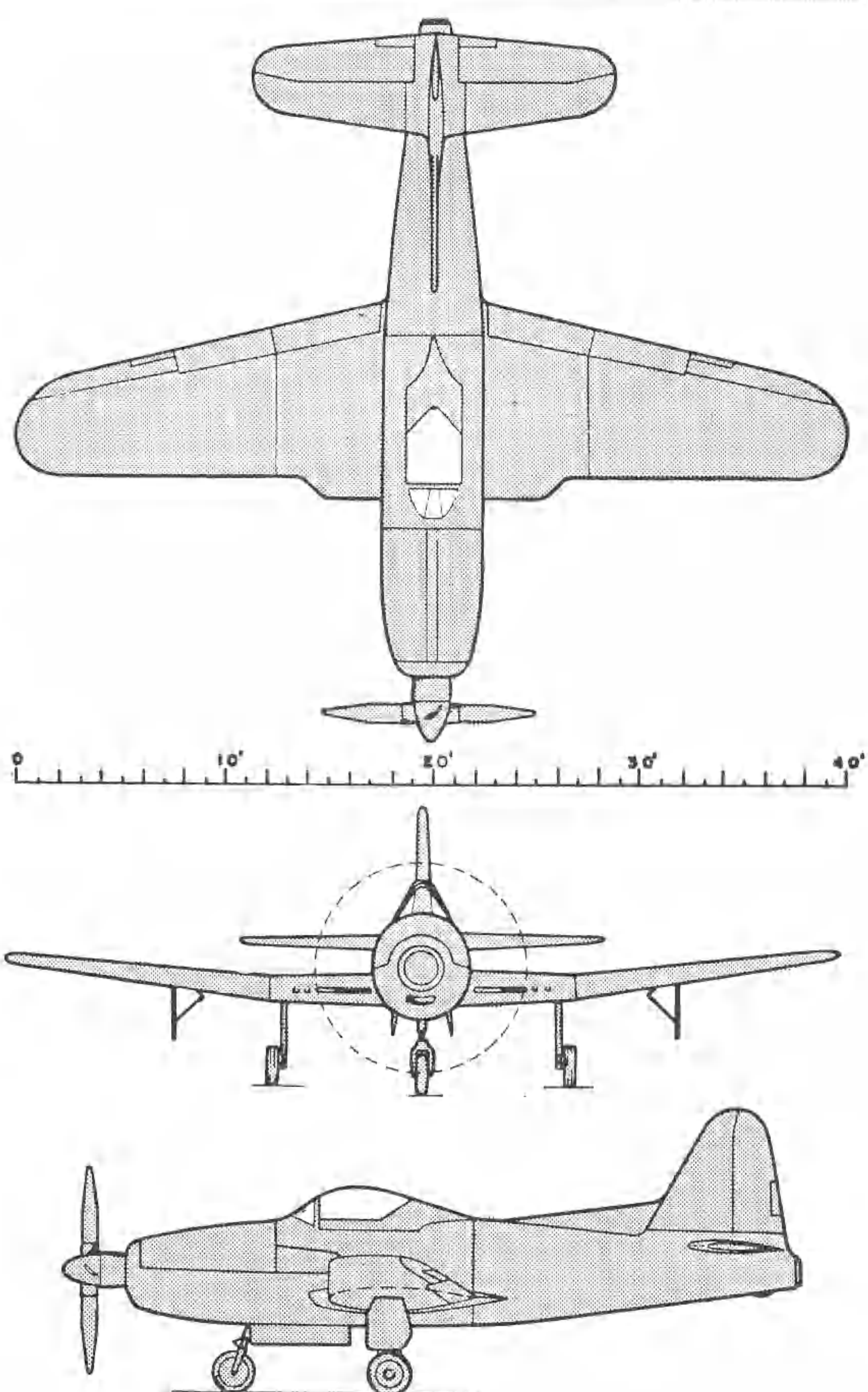
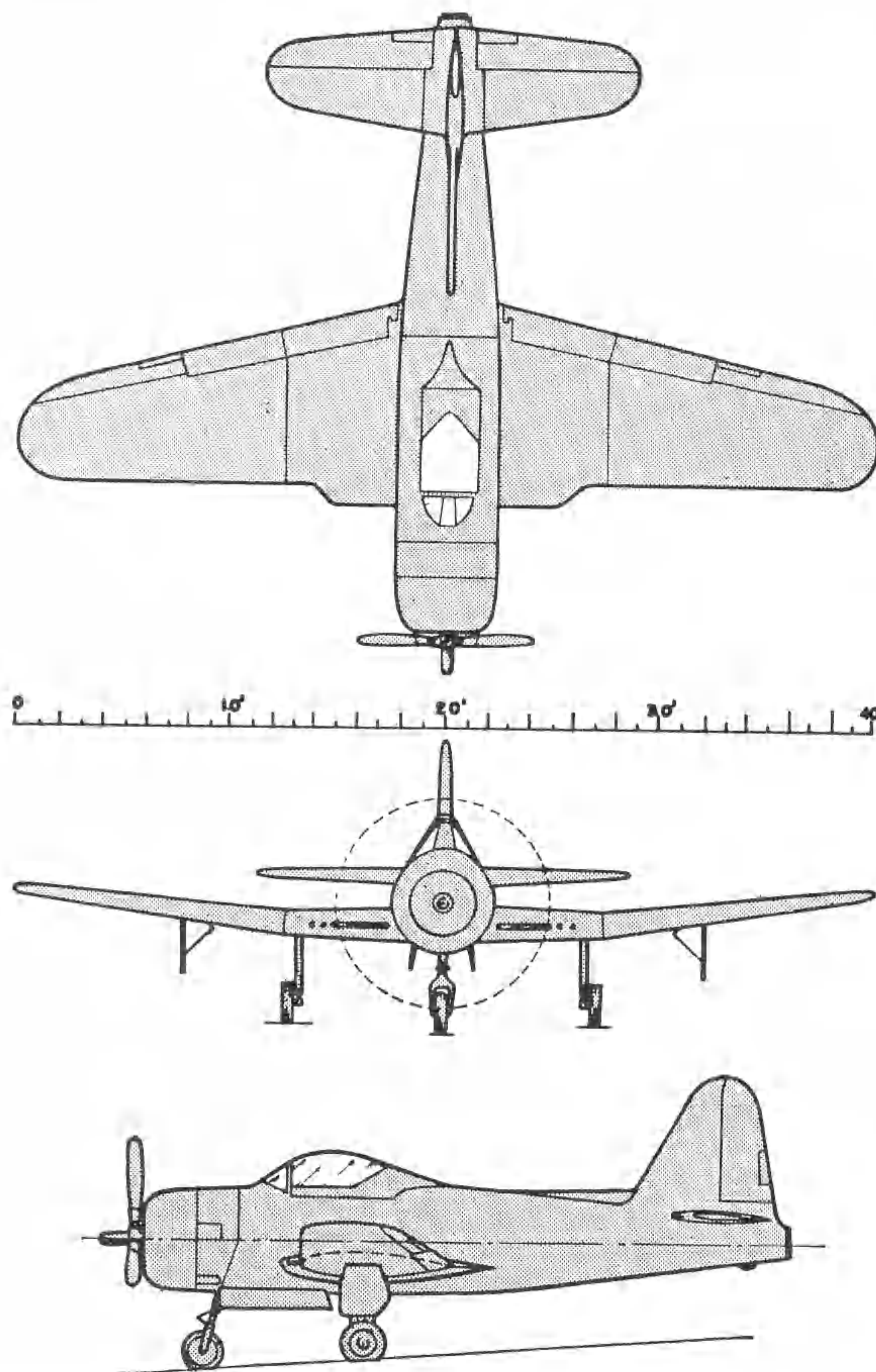
To offset critical aluminum shortage in second year of war, Ryan was asked by Army to develop this plastic bonded plywood primary-basic trainer so maximum amount of strategic metal could be diverted to combat plane production. PT-25 was powered with 185 h.p. Lycoming 6-cylinder air-cooled engine. PT-25 cruised at 135 m.p.h., had top speed of 150 m.p.h., landed at 54 m.p.h. and had 1600 feet-per-second rate of climb.





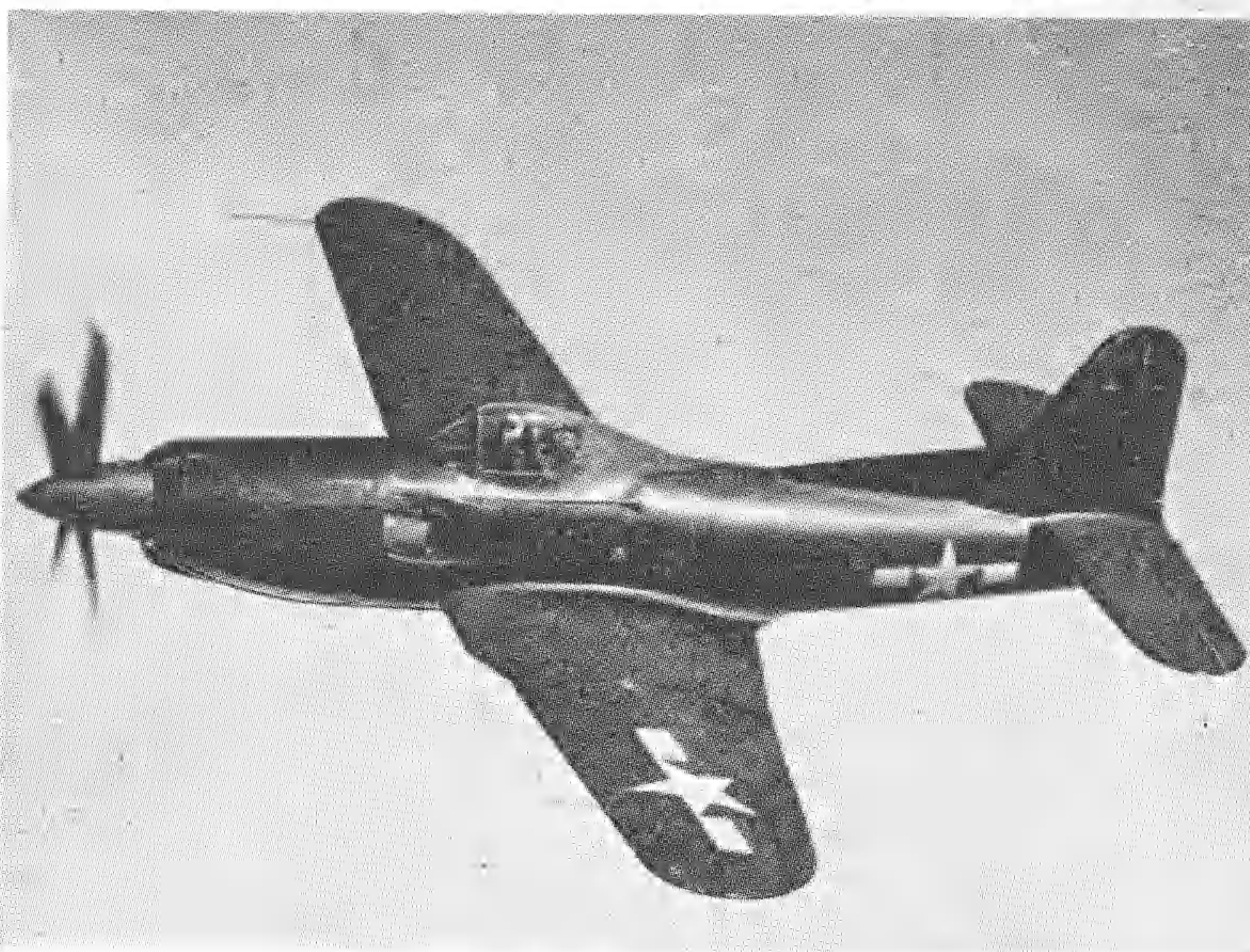
1945 Ryan FR-1 Fireball

World's first jet-plus-propeller airplane and first plane of U. S. Navy to use jet propulsion was the Ryan FR-1 Fireball. Front engine was Wright Cyclone 1300 h.p. piston type, while General Electric I-16 of 1600 lbs. thrust was installed in aft fuselage. FR-1 could operate on either engine alone and used two power sources together for peak performance. Plane was very maneuverable and had high sustained rate of climb.



1946 XF2R-1 Dark Shark

Another composite-engined Fireball was XF2R-1 "Dark Shark," all-turbine Navy research plane with G.E. TG-100 turbo-prop in nose replacing piston engine. First Navy plane to use gas turbine turning a propeller, XF2R-1 was in 500 m.p.h. class. New nose section of XF2R-1 increased Fireball length by four feet. Greater vertical fin area was provided by dorsal fin. XFR-4 model had Westinghouse 24-C jet in place of G.E. I-16.

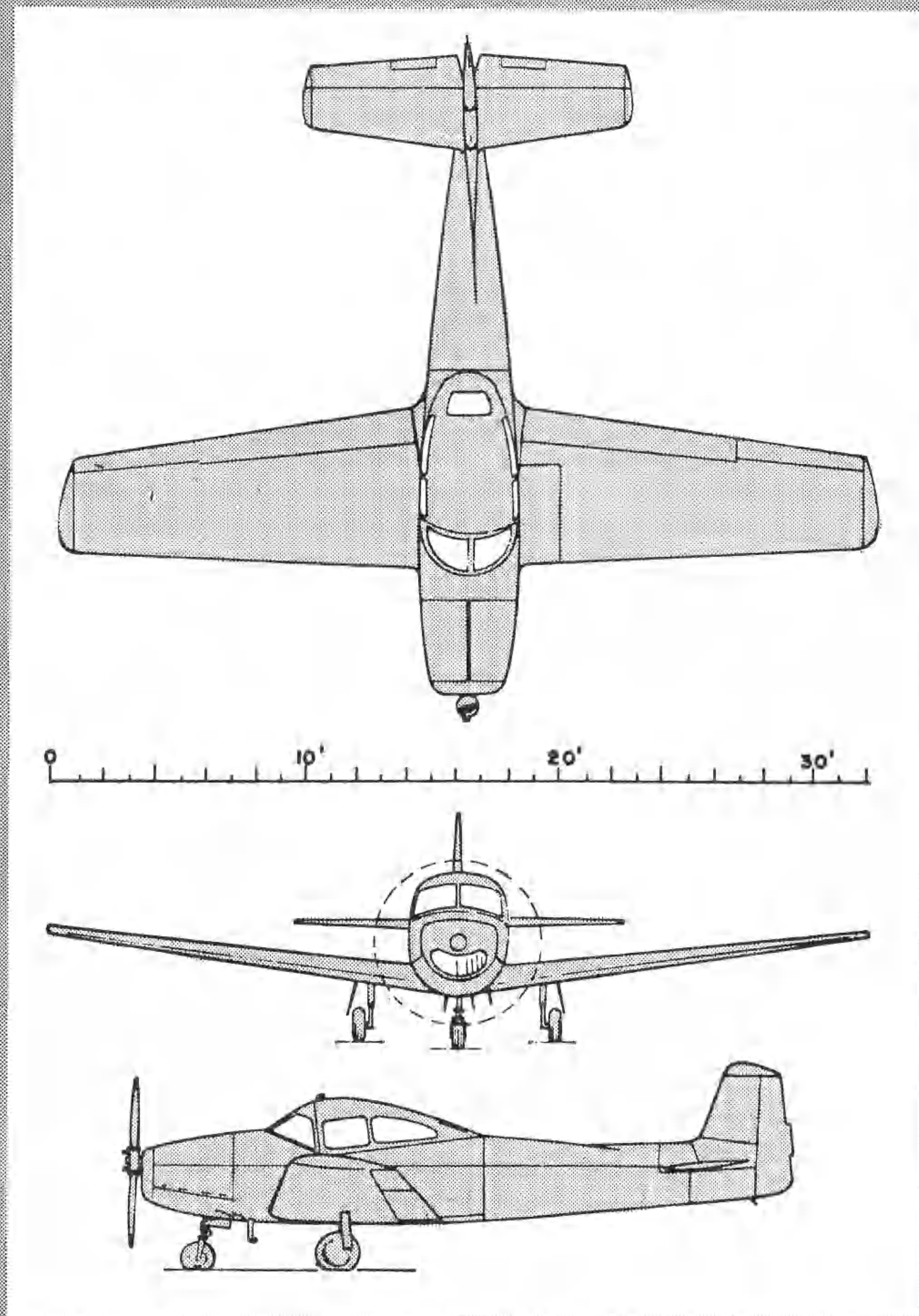




1948

Ryan Navion

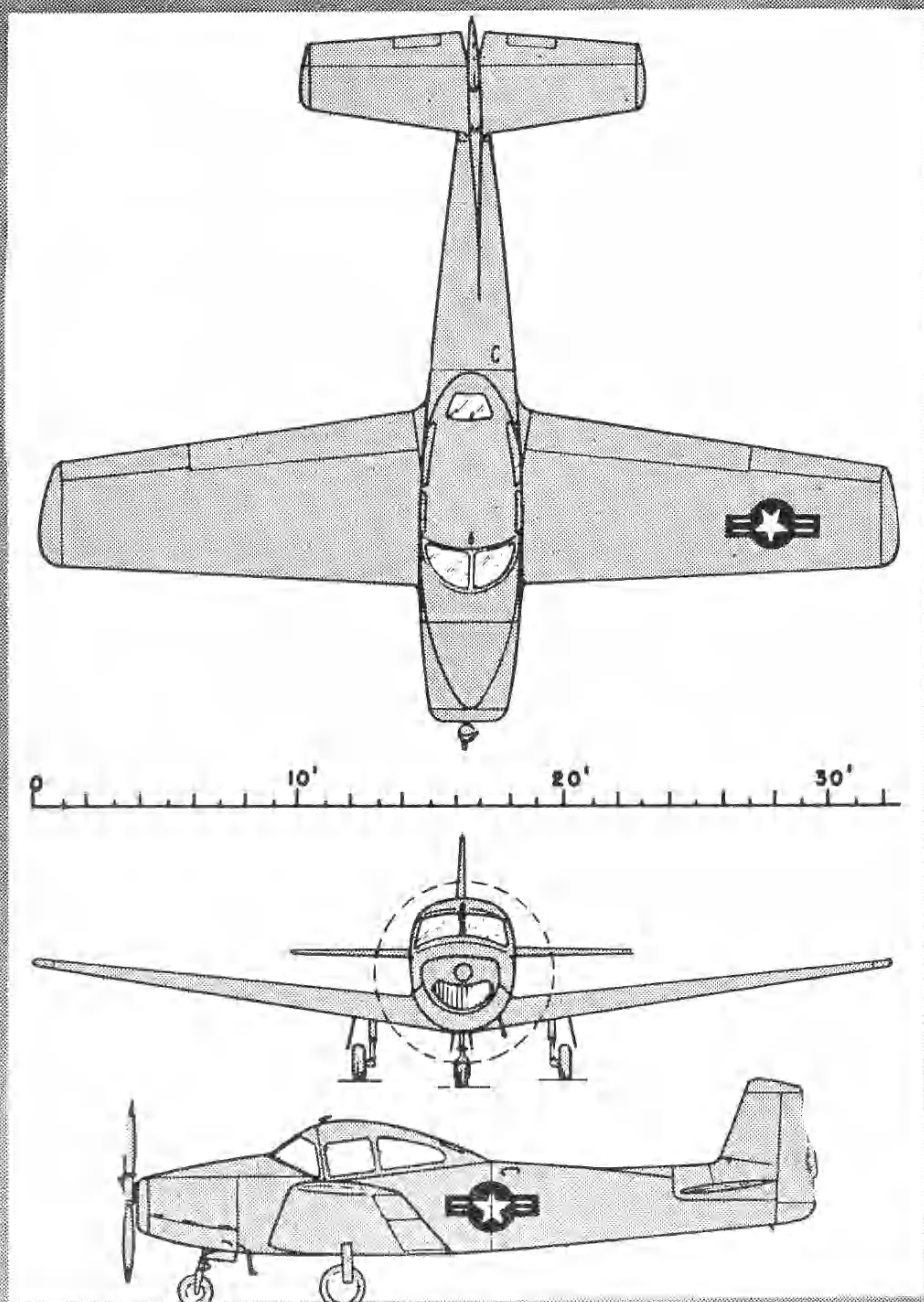
Latest, highest performance Navion is the 170 m.p.h. Super 260 cross-country executive plane. Sparkling performance is provided by 260 h.p. Lycoming engine which shortens take-off and increases climb. DeLuxe Ryan Navion with 205 h.p. Continental engine cruises at 155 m.p.h. No plane combines so many features so well as the big, rugged, fast, safe and easy-to-fly Navion which is favorite for business, pleasure flying.

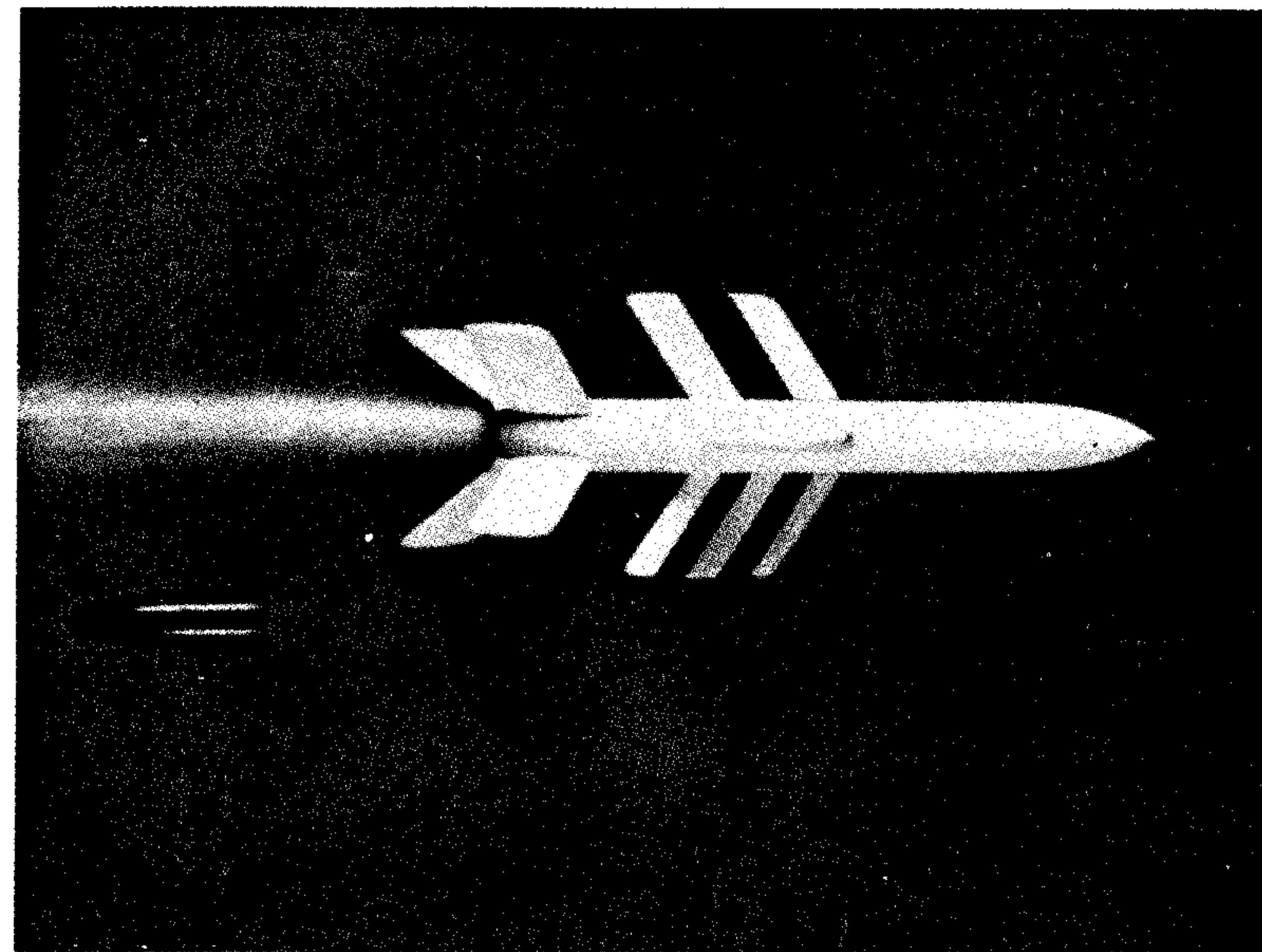


1949

Ryan Navion L-17B

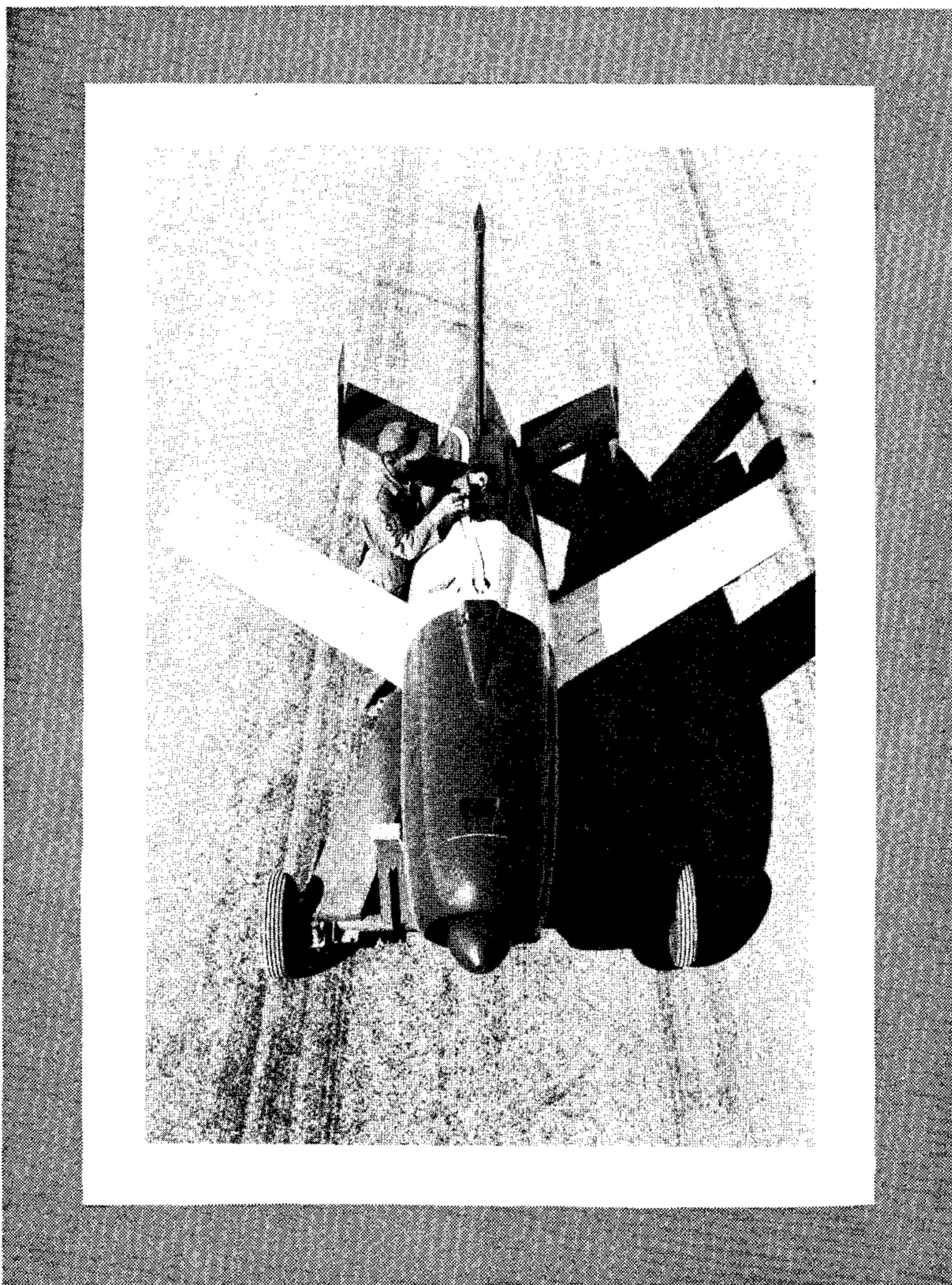
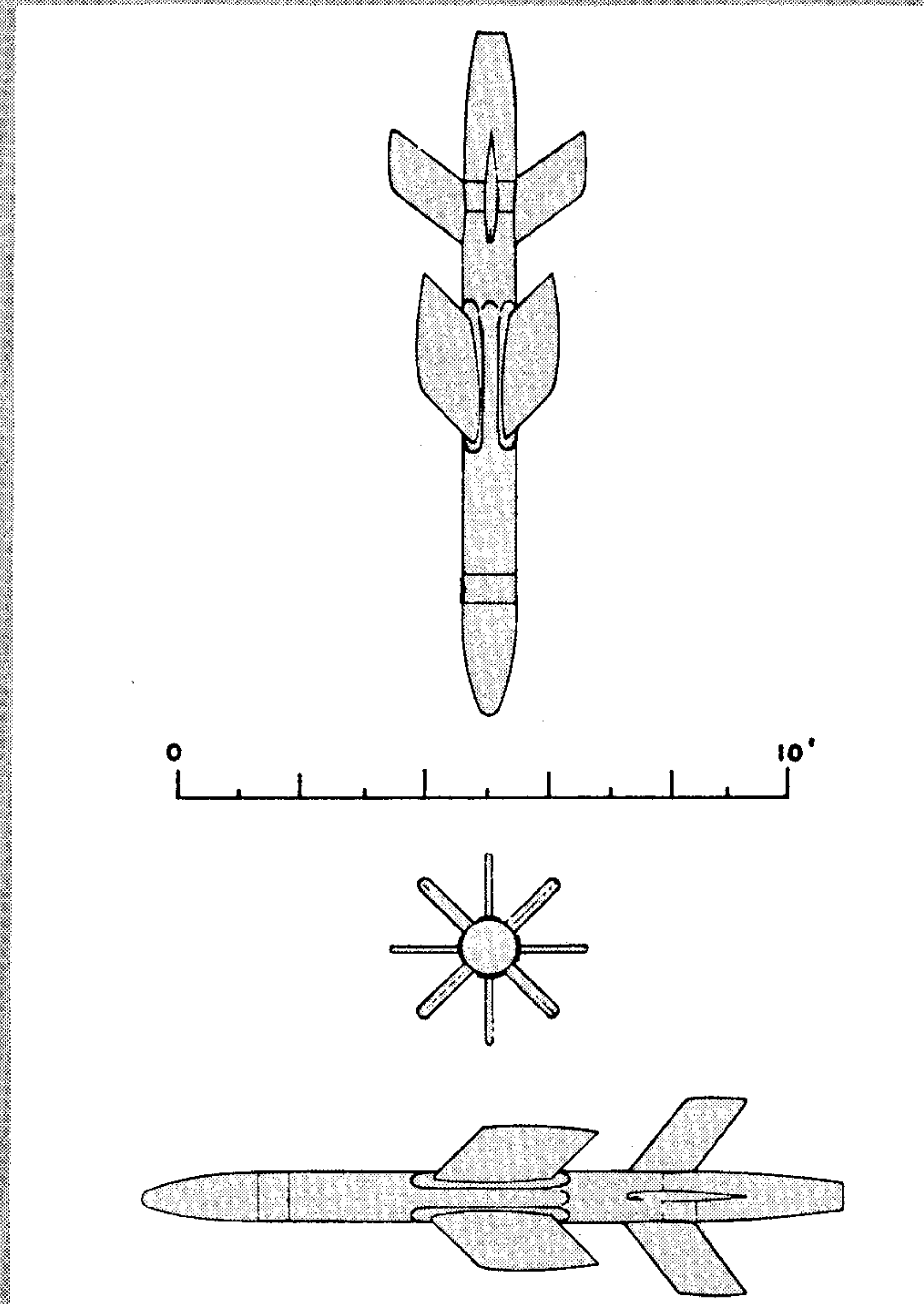
Flying staff car of the Army Field Forces and National Guard is the multi-purpose Ryan Navion L-17B. One of the basic requirements of four-place liaison planes is ability to operate from small, rough strips in combat areas. Rugged construction, large cargo capacity, unexcelled vision have all contributed to Navion's fine record in Korean War where L-17s are used for spotting, and for transport of field commanders and cargo.





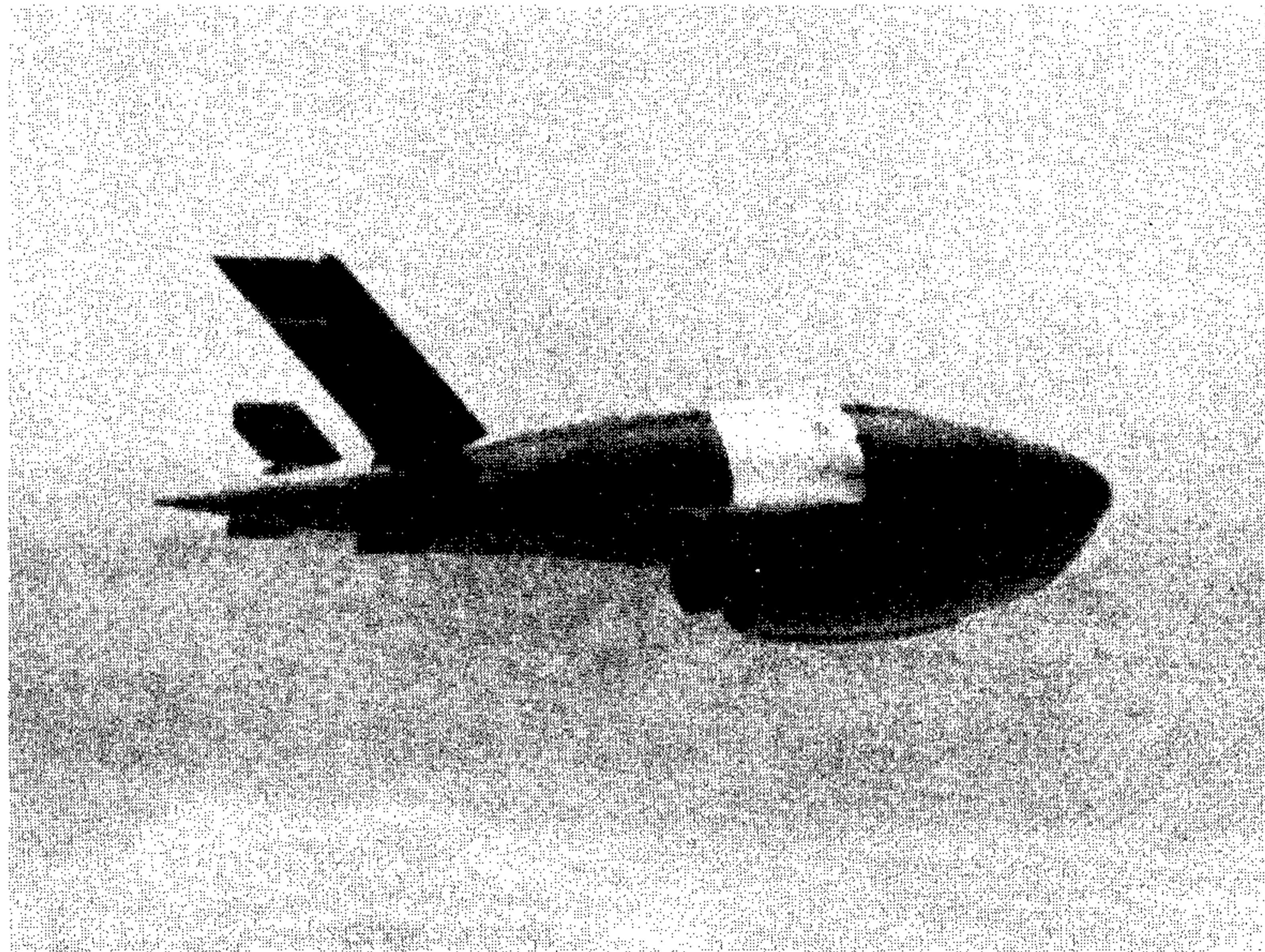
1949 XAAM-A-1 Firebird

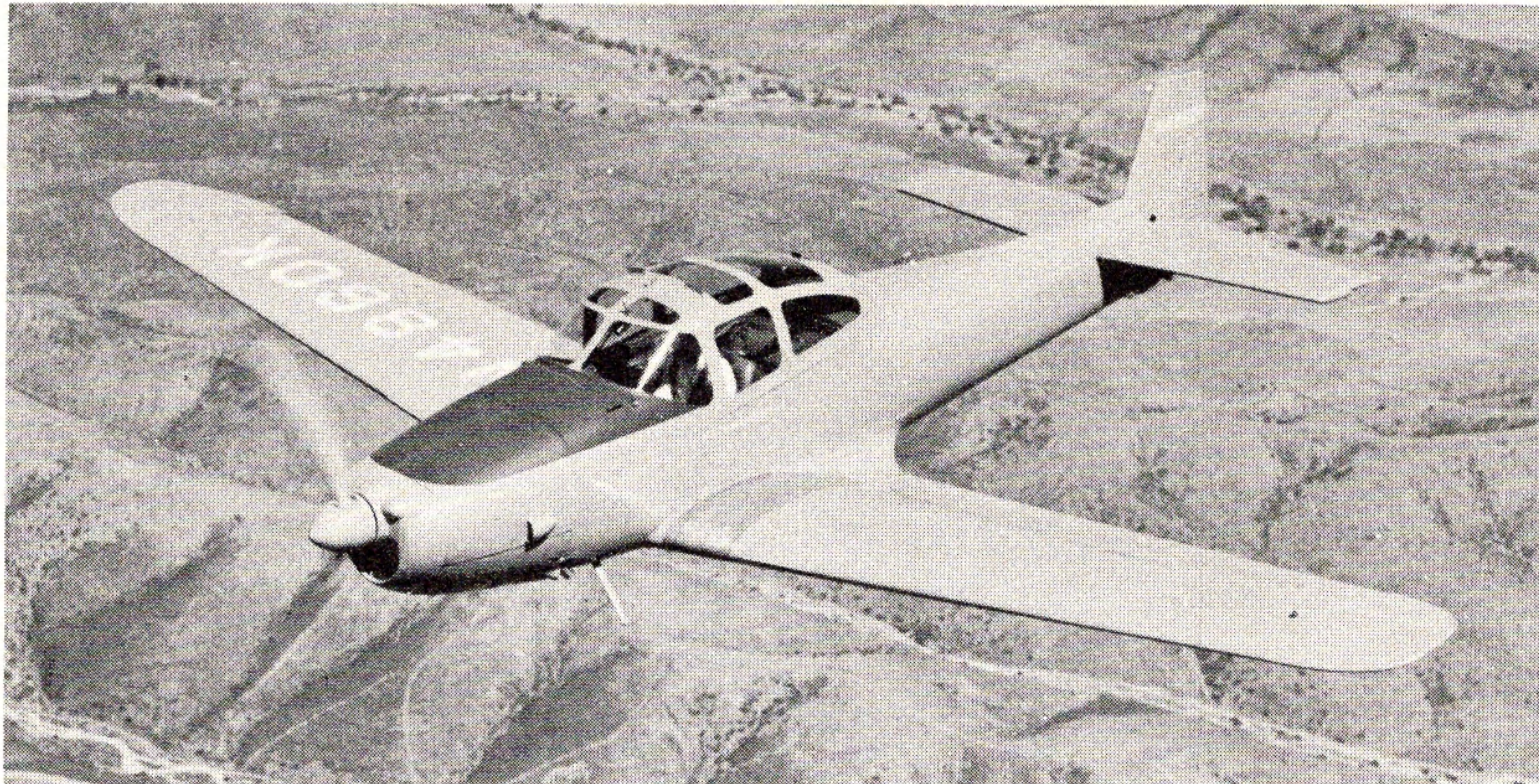
First air-to-air guided missile announced by Air Force was rocket-powered Ryan XAAM-A-1 Firebird. Extremely compact, Firebird had complex radar navigational and electronic system. Launched from "mother plane," booster rocket was fired, then when maximum speed was reached, booster was jettisoned and flight rockets took over as missile sped toward target. Ten feet long, Firebird had wings and fins like double cruciform.



1951 Ryan Firebee Drone

The Ryan Firebee is a remote-controlled target drone, powered by a 1000-pound thrust jet engine. The drones can be launched either from the ground or by a mother plane. These high speed pilotless aircraft are less than half the size of jet fighters but have comparable performance. They are designed for combat plane interception problems; and for anti-aircraft and aerial gunnery training by the U.S. Air Force, Army and Navy.





1953

Ryan Military Trainer

Newest primary military training plane is Ryan's Model 72 which for the first time features a side-by-side seating arrangement for instructor and student. A military version of the famed Navion, the new Model 72 offers advantages in training techniques which have been proved by Ryan in checking out hundreds of private pilots in the commercial Navion executive-utility airplane.



RYAN AERONAUTICAL COMPANY
LINDBERGH FIELD • SAN DIEGO 12, CALIFORNIA