



The Thunderbird

BY JAMES E. DUNAVENT

Although this disclosure may shake the Ford Motor Company to its corporate roots, it was not the first to produce Thunderbirds...an aircraft of that name was being turned out in respectable numbers as far back as 1926 by the W.F.W. Airplane Company of Glendale, California. However, it may be some small consolation to the Ford boys to know that the California article was just as dashing and advanced, stylewise, as their more widely touted Dearborn status symbol.

The 1926 Thunderbird was conceived as an improvement over the converted Standard trainers then being used for commercial passenger carrying. Between 40 and 50 of these clean-lined three-place biplanes were built before a split in company management, followed by the 1929 slump, brought production to a complete halt. They were a familiar sight at fields in Southern

California during the late '20s and early '30s; many an old, bold pilot, who learned the stick-and-rudder trade in the Los Angeles area at that time, remembers the T'birds operated by the Warren School of Aeronautics from Burdette Field, which was located on Western Avenue just south of Imperial Highway...almost completely open country then and ideal for flying operations. Today, the same area is completely overgrown by sprawling suburbia.

Commercial aircraft construction in California was unorganized and sporadic until 1925. During World War I, a small volume of Jennys and a few flying boats had been produced in the San Francisco Bay region and at Santa Barbara by Howel and Lesser, Liberty Iron, Fowler, and the Loughhead brothers, but these firms did not attempt continued production after the Armistice. In 1923 Douglas established its first small factory

at Clover Field, Santa Monica, for construction of the famed Army World Cruisers and the first Navy DT torpedo planes. A number of interesting civil craft had been built as early as 1919 by individuals and by small companies, but none reached any self-sustaining status. These shoestring ventures inevitably folded after a few short months, as the market was then saturated with surplus aircraft that could be purchased for a few cents on the original dollar value. By the mid-'20s, however, the glut of war-surplus Jennys and Standards had noticeably thinned out; this, plus the fact that some of the early OX-

Above: Manufactured by the W.F.W. Airplane Company of Glendale, California, these clean-lined three-place biplanes were a familiar sight at Southern California fields in the early '30s.

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In this photo from the EAA Archives, the Hisso-powered version of the Thunderbird soars over the Los Angeles area during the late 1920s.

EAA ARCHIVES

powered Eaglerocks and Swallows were beginning to be flown in over the mountains, soon convinced the flying fraternity that their slow-climbing, lumbering surplus aircraft were definitely outmoded, even for casual passenger work.

Some operators in Southern California had successfully modified Standard SJ-1s to carry two or more passengers in addition to the pilot, by fitting more powerful engines and widening the original fuselage. Although this increased the available payload, it did not provide either the extended range or additional speed so desirable in scheduled service or charter work. During the summer of 1925 Jack Frye, who later was to found Standard Airlines and head up the combined airline that eventually became TWA, was operating a flying service and school at Burdette Field. Believing that such an aircraft would be of use for charter work, he asked Theodore Woolsey, a young pilot with a strong bent

for engineering, to design high-lift wings and a new fuselage structure for one of these Standards. Once the work had been started, it soon became apparent that an entirely new aircraft would be more feasible for proposed operations—one with increased speed, range, and ceiling to get over the mountains.

The problem of financing the development of an entirely new craft was solved when Paul Whittier, a young man of independent means who was being taught to fly by Frye, came forward with an offer to underwrite the cost. A short time later the preliminary design drawings were finished by Woolsey and promptly approved by Frye and Whittier. As it was expected that such an aircraft would find a ready market, the W.F.W. Airplane Company was formed, and a small rented building at 6100 South Manhattan Ave. became the headquarters and “factory.” The prototype Thunderbird was rolled out early in July 1926, and shortly afterward,

on Sunday, July 11, Frye took it aloft on a 45-minute test flight.

After first making a few taxi runs to get the feel of the ship, Frye lifted it from the hard-packed dirt strip in less than 100 feet after the throttle was opened. The Thunderbird gained 2,000 feet of sky in less than three minutes, and during the ensuing half-hour Frye cavorted all over the sky, giving the ship a prime “wringing out” to show its aerobatic and handling characteristics. Once the initial show was over, the Thunderbird was put to work almost immediately, there being no federal requirement for air traffic control (ATC) approval in those easygoing days...if an aircraft could stagger off the ground, it was flown.

The Thunderbird was a good-looking ship, having better lines than most of the early OX-5-powered light biplanes. Particular attention was paid to fairing in the lower wing root-fuselage junction and to cleanly cowling in the en-

gine. Although the airframe was stressed to take powerplants of up to 225 hp, a used, overhauled OX-5 was installed in the prototype from the standpoint of economy and to demonstrate the performance that could be obtained with the lower-powered engine. The engine could be detached from the main airframe by removing four retaining pins, and a new engine of the same or different type could be mounted in less than one-half hour. Later Thunderbirds were fitted with a variety of the engines then available—the 150-hp Hisso “A” vee-type liquid-cooled powerplant and some less well-known types, such as the 125-hp Bailey Bull’s-Eye or the 140-hp Floco air-cooled or the 95-hp Dayton Bear taken from a defunct prop-driven iceboat in one of the northern states. The first Bailey-powered ship was test-flown by Earl Chubb at Burdette Field in September 1927.

When Department of Commerce licensing became mandatory in early 1927, the Thunderbird received ATC approval under DC Memo No. 2-141, covering all current engine installations other than the one with the Dayton Bear, which was reportedly flown only a few times on an unlicensed, bootleg basis before it ground-looped into a threshing combine in Montana and was wrecked beyond repair.

Early Thunderbirds incorporated welded steel tube fuselages braced with steel wire and cable trusses; this was changed in later ships to diagonal steel tube bracing. Some minor dimensional changes are also noted; there was a 33-foot and a 31-foot span T’bird, and the aspect ratio of the fin and rudder was increased to provide increased directional stability. Wing structure in early models was entirely of wood, with solid spruce spars routed to an I-section. The tip structure and spars were then redesigned to use steel tubing for the tip bows and tip ribs, plus stamped aluminum sheet nose ribs attached directly to

the forward spar; the remainder of the ribs were conventional wooden webs. A five-piece laminated spar structure was also incorporated in place of the solid beams that had previously been used. Both upper wing panels were joined at the centerline and formed a continuous spar. Lower wing panels were hinged to a fuselage stub wing), which was an integral part of the fuselage framing.

The tail assembly was welded steel tube, and the pilot could ad-

Early Thunderbirds incorporated welded steel tube fuselages braced with steel wire and cable trusses . . .

just the stabilizer in flight to compensate for trim with various loads. The radiator was built into the leading edge of the upper center section and faired into the upper wing curve. The main landing gear and tailskid were sprung by shock cord, and brakes were not fitted. These, plus an improved “oil-draulic” shock system, were planned as standard and optional equipment respectively on subsequent production aircraft, but it is doubtful if any such equipment was actually installed except as owner-made modifications during later years. The thickened fairings over the inner landing-gear struts were a hallmark of later-production Thunderbirds and contained the shock absorber cord wrapping.

The OX-5 Thunderbird W-14-O was listed at \$2,950 less engine, and standard equipment included dual controls, a Story wood propeller, and wiring for navigation lights. Edo or Hamilton floats were available for an extra \$1,100. The W-14-O delivered a phenomenal performance with the relatively

low-powered OX-5 engine . . . a 95-mph high speed was guaranteed (this was given in cruising aircraft performance tables published in 1928 by some aeronautical magazines). Also, as irrefutable proof, the company test pilot, Clint Burrows, flew a three-year-old stock Thunderbird to an average 119.4 mph pace over four timed speed runs, upward and downward, at the National Guard Field in Los Angeles on November 21, 1927. The same ship had previously won a trophy in the event for light commercial aircraft under 100 hp at the 1927 Santa Ana air meet, where it averaged 114 mph over a triangular course.

With its 12-to-1 factor of safety, the T’bird could perform the most violent aerobatics then known, being limited only by the inability of an OX-5 to run satisfactorily under negative G or inverted conditions.

The 43-gallon fuel tank gave it a nominal range of 440 miles at an average 10-gallon-per-hour (gph) fuel consumption. Gross weight was 2,248 pounds; of this, 815 pounds was disposable load including a 340-pound payload. Empty weight was 1,433 pounds. Climbing ability was listed as 700 feet per minute (fpm) for the first 5,000 feet; the service ceiling was 15,000 feet. It required 20 minutes to get the ship to its rated absolute ceiling—approximately 17,000 feet.

The Hisso-powered W-14-H was somewhat heavier, and all performance figures were slightly better... a 135-mph top and 110-mph cruise; 1,000-fpm initial climb with a 500-pound payload; and the service and absolute ceiling were increased by about 2,000 feet. A 60-gallon tank provided the same range as shown for the lighter ship, the added capacity being required to satisfy the 15-gph fuel consumption rate of the more powerful engine.

By 1927 production of Thunderbirds was in full swing, and they were beginning to appear in increasing numbers at the various

fields in Southern California and on the West Coast. Principal distributors in California were Cliff and Phil Henderson, a dealer in Oregon handled sales in the Pacific Northwest region, and Lee Schlens was named the southwestern distributor, covering Arizona, Nevada, and contiguous states other than Southern California. Mr. Woolsey recalled that several Thunderbirds were sold in Canada and states east of the Rockies, and one or two were exported to the Philippine Islands, reportedly being flown there until the Japanese invasion. Several of the small flying schools in the Los Angeles area, located at Dycer, Rogers, and the old Angeles Mesa Field later taken over by Western Air Express, operated Thunderbirds at one time or another, and according to Mr. Woolsey, two were sold to a gentleman who intended to use them for filming an unidentified World War I air epic. Roscoe Turner had a stock Thunderbird modified at the factory to incorporate a 50-foot diameter parachute packed in a center-section compartment, and later he used the aircraft, which was given license number NX-9830 due to the experimental nature of the modifications, for his attempts at parachuting the entire aircraft safely to the ground.

During 1926 Jack Frye, Walter Hamilton, Paul Richter, Monte Edwards, and Theodore Woolsey formed the Aero Corporation of California and moved to a field at 106th and Western, just north of Burdette Field. This operation quickly became devoted to scheduled transportation, rather than sales and service, so it was decided to separate the two. Frye and Paul Whittier turned their interest in the Thunderbird over to Theodore Woolsey, who remained with Aero Corporation as secretary and chief engineer, although in a rather inactive capacity. The Thunderbird Aircraft corporation was reorganized, and manufacturing activities were moved to a new and larger factory building at 900

North Allen St. in Glendale.

In reorganizing the company, Woolsey had brought in new capital and taken in several partners to handle the business end while he was concerned with the technical and manufacturing side of the business. Several sizable orders had been received, including one for 50 aircraft from Lee Schlens, the southwestern distributor. While he was engrossed with production and with obtaining a valid approved type certification for the Thunderbird, two of the partners made a power play to take over the operation through a forced sale. As things were by that time in a legal tangle, Woolsey obtained new backing from Maj. C.C. Moseley, William Henry of the Los Angeles Times, and E.C. LeMunyon of Rocky Mountain Steel Products, and when the assets of Thunderbird Inc. were put on sale, successfully outbid his previous associates. A new corporation was to have been formed, which would be known as Moseley Aircraft, and one of the first items of business was to design a military trainer version of the Thunderbird for submittal to the Army Air Corps. However, by that time the 1929 business slump was beginning to have disastrous consequences in the aircraft industry, so it was decided to shelve the project, and no further aircraft were built under the Moseley trademark. Woolsey, who had built his first airplane—a Curtiss-type pusher—at the age of 15, barnstormed Jennys while barely out of high school, and raised the Thunderbird from a nestling, went to work for Douglas as a design engineer until prosperity should again come back from around the corner. In the late '30s, he designed the Interstate Cadet, which was used in the Civilian Pilot Training Program by a number of flying schools just prior to our entry into World War II. One example of the Thunderbird is known to exist today—an OX-5 W-14-O that was restored and is being flown on occasion around Ontario, California.

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Dennis Trone's Thunderbird

BY H.G. FRAUTSCHY

About a year ago I spent a very enjoyable Sunday afternoon hanging out with Dennis Trone at the Brodhead, Wisconsin, airport. Denny was airing out a couple of his old biplanes, including one I didn't know much about, the Thunderbird W-14. The biplane was tall, and a little intimidating. I got to be the prop-flipper each time Denny needed a re-

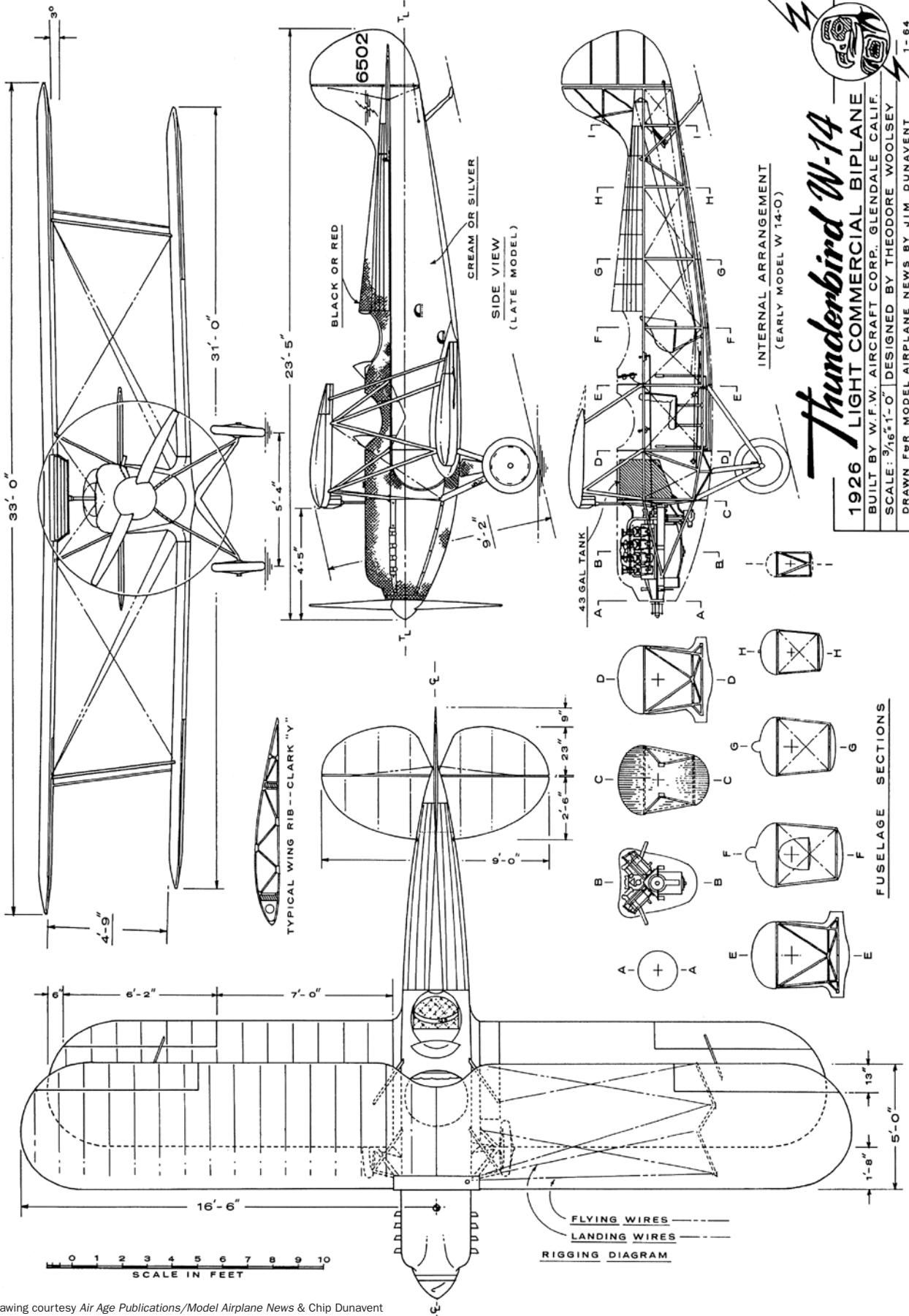
start after doing a bit of engine maintenance that early-fall day. Propping a little Sensenich on a Continental bolted to the front of a Cub is one thing, but that big propeller on the front of that OX-5 was something else! I need not have worried; Denny was an old hand at expertly getting it ready to go so that all I had to do was take a short walk while

pulling the prop down, and as I let go, Denny would have the engine controls set just so and the Curtiss V-8 would rumble to life. Denny loved the really old stuff and was an expert at creating ways that made it easier and safer to operate many of the old engines he loved. Unfortunately, Denny passed away earlier this year, before we could fill in some

A view of the Thunderbird in action at Brodhead, Wisconsin, on a beautiful early fall day in 2007.



H.G. FRAUTSCHY



Thunderbird W-14
 1926 LIGHT COMMERCIAL BIPLANE
 BUILT BY W.F.W. AIRCRAFT CORP., GLENDALE CALIF.
 SCALE: 3/16"=1'-0" DESIGNED BY THEODORE WOOLSEY
 DRAWN FOR MODEL AIRPLANE NEWS BY JIM DUNAVENT



1-64

Drawing courtesy Air Age Publications/Model Airplane News & Chip Dunavent



H.G. FRAUTSCHY

The late Denny Trone, antique-airplane man.

Denny was airing out a couple of his old biplanes, including one I didn't know much about, the Thunderbird W-14.



H.G. FRAUTSCHY

of the blanks on the history of his Thunderbird.

In a wonderful coincidence, this summer I was thumbing through a collection of old model-airplane newsletters from the early 1970s, published by the North American Aviation Flightmasters scale model-airplane club, and lo and behold, there was a three-view of the Thunderbird. I realized that the artist who created the artwork was none other than Jim Dunavent, now deceased, whose Stinson artwork had been a part of our coverage of John Seibold's Stinson SM-1 in the November 2007 issue.

Jim's artwork was done in conjunction with an article he wrote on the history of the Thunderbird, published in the August 1964 issue of *Model Airplane News* (MAN). Thanks to the generosity of the folks at Air Age Publications, the publishers of MAN, and Chip Dunavent, Jim's son, we've been given permission to republish this (see page 19) and others in the MAN Historical Aircraft series from the 1960s.

After passing, his widow, Elizabeth, put the collection up for sale, and the Thunderbird is going to a new home in Pennsylvania at George Jenkins' museum on Merritt Field, in Eagles Mere, Pennsylvania.



MIKE NAASS

The instrument panel of the Thunderbird.