

TRAVEL AIR D4D

By BILL SEIDLER . . . One of the sexiest looking biplanes out of the Golden Era, and a natural for modeling. The author is quite familiar with the design . . . he restores the full-size machines!!

• "Travel Air" is a name that means an instant trip back into the past, into a network of wires and cabanes, a wide front cockpit and pilot behind. It was quite conventional, and it met the requirements of the goggled, helmeted pilots of the day who thought fliers had to sit in the open air. The Travel Air Manufacturing Company, of Wichita, Kansas, was incorporated early in 1925, with Walter Beech, Clyde Cessna, and Lloyd Stearman as the principal directors. (Those names may be familiar to you!)

The Travel Air series of biplanes established Wichita as the first main center of aviation in the United States. They were used for mail planes, dusters, and the like. In the movies, as Fokker D-VII's, they were called "Wichita Fokkers".

Travel Airs played both sides in war films in the 20's and 30's; they were in "Hell's Angels" and "Dawn Patrol". They were very popular with the early Hollywood set. Both Wallace Beery, aviator/actor, and Robert Montgomery, another MGM actor of great fame, had Travel Air 4D's. It was a very strong and sleek airplane, perhaps one of the main reasons they were so popular. Wiley Post had his first job as an executive pilot for F.C. Hall, the Oklahoma oilman, in a 1928 Travel Air 4000. I haven't adequate words to describe their airplanes and the lasting effect on the pilots who have flown them.

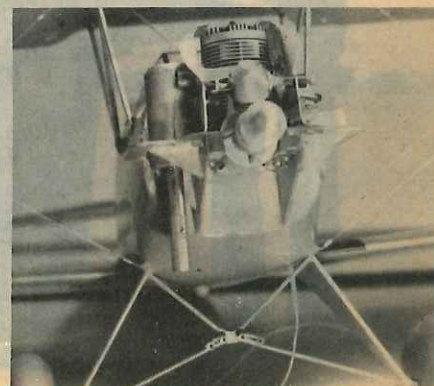
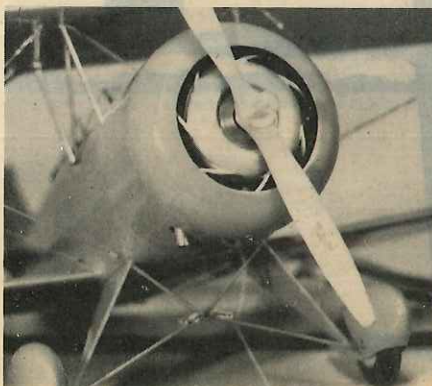
I received my license back in 1937 in a Travel Air B4000, NC174V, with a 220 hp-J5. It belonged to my high school teacher, Mr. Matty Mack, of Haaron High School, in New York. When I saw pictures of Wendell Reid's Travel Air D4D, in an old *Air Progress* (October 1969), the need

for me to build a model of it was overwhelming. The easy part of it was data and blueprints, which I have used for the restoration of full-size Travel Airs. All I had to do was scale it down to 2 in./1 ft. Here is some information on Travel Airs that should help a scale builder.

The Travel Air biplane was designed in 1924 by Mr. Lloyd Stearman, and he did such an excellent job of designing that, throughout its life, the basic dimensions of the fuselage were never changed. An outrigger gear was added later to the B4000, BM4000 and D4000. Standard and Speedwing versions, both with Frieze ailerons, and a larger steel tail section for the outrigger gear models, were manufactured. All of these wings and tail sections were interchangeable with all fuselages. The Standard wings, with balanced ailerons ("elephant ears"), installed on the fuselage, have an upper wing span of 34 ft. 8 in., a lower wing span of 28 ft. 10 in., an upper wing chord of 66 in., and a lower wing chord of 56 in. Wings, including ailerons, have 296 sq. ft. of

area. The ailerons alone have an area of 27.5 sq. ft.

The Standard wing with Frieze ailerons, when installed on the fuselage, has an upper wing span of 33 ft., a lower wing span of 28 ft. 10 in., an upper chord of 66 in., and a lower wing chord of 56 in. These wings, including ailerons, have 289 sq. ft. of area. The ailerons by themselves have 19.5 sq. ft. of area. The Speedwing wings, with Frieze ailerons, when installed on the fuselage, have an upper wing span of 26 ft., an upper wing chord of 64 in., and a lower wing chord of 53 in. The wings, including ailerons, have 151.7 sq. ft. in the upper wing, 98.4 sq. ft. in the lower wing, and 20.4 sq. ft. in the ailerons. There were nine different wing center section struts and flying wire arrangements. The airfoil of the balanced aileron wing ("elephant ear") is a modified British Fage and Collins airfoil, which was later listed in the FAA records as the Travel Air No. 1 Airfoil. Both of the Standard wings use Travel Air No. 1 airfoils, and have the same dimensions, except for a change in the



Even though cowl and exhaust collector ring completely cover the Webra .90, the aluminum shroud forces cooling air around cylinder.

bow and aileron brackets on the Frieze aileron wing.

Not all of the Speedwings were 4000 series airplanes. The Speedwing is different in several ways. The wings are clipped (as were many Standard models for racing) and have Frieze ailerons. The determining factors between a clipped Travel Air Standard and a genuine Speedwing is that the latter's airfoil is slightly thinner and flat on the bottom, and the chord is narrower. They were small differences, but enough to make the Travel Air Speedwing one of the fastest planes of her day. The Speedwing was designated by the prefix D (such as D4000), and the later deluxe Speedwings were designated D4D. Speed with the reasoning, but beauty was the result. The D4D is one of the raciest-looking biwing machines ever produced. The final production version of the Travel Air 4000 was produced by Curtiss Wright as the D4D.

About 25 D4D's were built, and there are three left that are flying, and I mean *flying*! They do skywriting and airshows, and for a plane made in 1929, that's darn good! They belong to Nick Rezick, of Rockford, Ill., who does a lot of EAA air shows (it is something to see him do his thing in his D4D and talk with him); Jack Strazer and his Pepsi Cola-skywriting D4D; and Lane Leonard, a retired American Airlines captain from Los Angeles, California. Why the aerobatic boys have not learned of the outstanding performance of the D4D is hard to understand. It has the structure, power, and maneuverability qualifications. It will do the entire routine of airshow maneuvers from level flight, and can gain 1000 ft. while doing three Cuban Eights. It takes very little effort to perform an entire show routine other than a little elevator pressure. The D4D cruises at 130 mph + and makes an excellent cross country airplane.

A good print of the Travel Air 2000 is put out by Peter Westburg (July '75 MB). From it, you can make just about all models just by modifying engine and wings, if you know the airframe number and year. The model here is Wendell Reid's Travel Air D4D (CF-JLW). The Frieze-type ailerons are built to scale, with all hinges exactly like the real aircraft. I use Williams Bros. aileron hinges for the slotted ailerons, and they work out very well. For trim, the stab moves up and down 3/4 of an inch with a servo. It works superbly. The wings have a scale airfoil and are very thin. I set up the aileron controls the same as the full-size aircraft, and it worked very well. She has a full-swiveling tailwheel, but there are no

problems in ground handling because the rudder is very effective (just like the full-size ship). It also has shock struts and shock cords. The plane does not wander on take-offs or landings. The only word for it is SMOOTH.

For power, use a .60 to .78, or even a .90. I use the extra power to swing a scale-size 16-inch prop. I found that the big prop at 5000 rpm is all you need. A Fox .78 R/C with a Kavan carb will run at 9000 and get a real good idle (which, incidentally, must be real low or the plane will keep on flying!). The fuel I use is FA1 80-20 castor oil. My model uses a Webra .90 (all the power you will ever need); with a 16 - 4-1/2, it will run at 10,700 rpm, and at full power, it will take this 10-lb. plane straight up and out of sight. I think the big prop works very well.

CONSTRUCTION

Construction involves fairly straightforward all-balsa and ply techniques. Start with the cowl by making two 1/16 x 1/4 ply rings. Epoxy two 4-1/4 x 12-inch pieces of 1/32 ply together so it becomes 4-1/4 x 24 inches; then fit it around rings. Take the rings out and epoxy the seam; when it has set, put the rings back in and epoxy them into place. Glue some soft balsa blocks together for the front of the cowl (I used 1-1/2 x 3-inch blocks). Rough-cut the inside and outside dimensions, epoxy it on, and finish it by sanding. Cover the cowl with 3/4 oz. glass cloth and two coats of resin, and sand it smooth.

Make the cowl tracks. Glue 1/16 and 1/8 ply together, and epoxy it into the cowl. Note that the top of the inside track is on the center line. I closed in the front of the cowl with a fiberglass exhaust collector ring. Inside the cowl are seven 2-inch scale radial engine cylinders. The only cooling air that goes in is through two openings on either side of the top dummy cylinder. An aluminum shroud is used on the engine cylinder to make the best use of the little incoming air.

Make up the fuselage subassemblies. Start by forming the cabane struts and landing gear legs, and cut out all plywood parts, balsa formers, and the 1/8 sheet sides. Laminate the cabane strut boxes from 1/16 ply and 1/8 balsa. Assemble the maple motor mounts with formers No. 1, 2, and 3, and complete the fuel tank box. Glue the top 1/4 sq. longerons in place and put in the cabane strut subassemblies. Glue the 1/32 ply doublers to the inside of the 1/8 sheet sides; then glue them onto formers No. 1, 2, and 3, making sure that it is square; allow the glue to dry

completely. Glue the 1/4 sq. bottom longeron from 5B to the tailpost support. Put in the 1/4 x 1/8 cross braces and form the sheet top decks.

Epoxy the ply cowl support tracks in place. Now fit landing gear and solder.

Cut out all stab, elevator, fin, and rudder parts; glue all 1/8 x 3/8 and 1/8 sq. strips onto the stab, elevator, and rudder. The fin is different only because the t.e. is a solid 1/4 x 3/8 basswood piece, and is butt-glued to the rear edge of the fin. Now you can put in the scale hinges, as per plan, or use the hinges you like best. As for the moving stab, I think there is nothing like it... try it, you'll like it. Glue stab into place; now you can put the remaining top stringers on.

I don't think there will be any problems building the wings as per the plan. The top wing has no dihedral. The front spars are 3/16 sq. spruce, and the rear spars are 3/8 x 1/4 spruce. The bottom wing has 1-1/2° dihedral; and the spars are 3/16 sq. and 1/4 sq. The ailerons are covered with 1/16 sheet and have Williams Bros. aileron hinges. The N-Struts are 3/8-inch K&S streamline aluminum tubing, and the cabane struts are 3/8 streamline aluminum tubing over 1/8 M.W.

Covering is Super Coverite. I used three coats of clear nitrate dope and one coat of Pettit Hobbypoxy (no filler of any kind). Note: don't paint over dope for 72 hours or more, or the epoxy paint will stay sticky. Flying wires are Sullivan .021-inch diameter, and they work real well.

To make fillets out of micro balloons, proceed as follows: First, temporarily cover the bottom wing center section out past the fillet line with Monokote or equivalent, and mount the wing; referring to the plan and Travel Air 2000 3-view, mask off the shape of the fillet, mix the micro balloons, and fill the area; when set hard, pop the wing off and do the final sanding.

FLYING

This is an excellent, realistic flying model when it is rigged right (warpless) and the CG is in the right location. So please, before your first flight, make sure that all of these things are correct. Since this airplane will stay airborne on very little power, a reliable low idle is essential. Don't chop all power until you are ready to flair, and you will set it down on three points.

I hope you have as much fun building and flying your Travel Air as I do.

**MODEL
BUILDER**