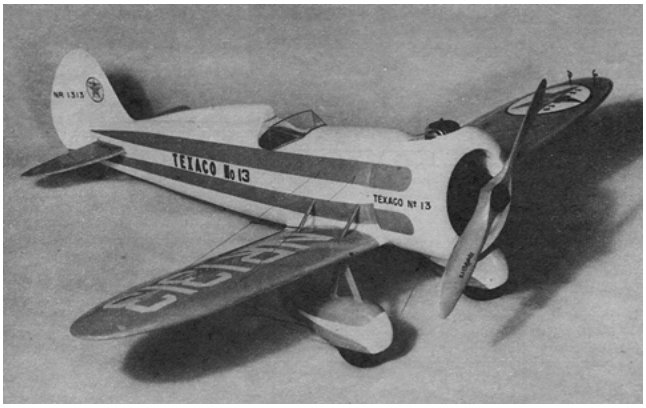
Travel Air Mystery Ship



Frank Hawks' Travelaire Mystery Ship, a famous racing plane, comes back to life as a U controller by Walter A. Musciano.

The almost legendary figure of Commander Frank M. Hawks remains in the memory of all persons interested in aviation. His famous Travelaire “Mystery Ship” established many inter-city records, and its design set the pattern for many future racing planes. It was in this Wright R-975 powered craft that Commander Hawks first attained world fame as a record smasher. The Texas Company sponsored the craft, so “Texaco No. 13” was an appropriate name. Frank Hawks selected the “No. 13” and obtained the double “13” license number to “thumb his nose at superstition."

These are some of the flights made by Hawks in his famous speed plane: On August 6, 1930, a westbound U.S. transcontinental record of 14 hrs., 50 mins, and 43 sec. was established in a flight from New York to Los Angeles. By returning in 12 hrs., 25 mins, and 3 sec. on August 13, he set a new eastbound coast to coast record. Flying from London to Rome in 5 hrs. and 20 mins, and then from Rome to Paris in 4 hrs. and 32 mins., both on April 22, 1931, two European records were smashed. Another record was made when Hawks sped from London to Dublin in 1 hr. and 40 mins, on April 30, eight days later! And once again the Texaco 13 burned the skies in a flight from London to Berlin on May 12, 1931. With Hawks at the controls, this record flight took 2 hrs. and 57 mins.

We wish to express our appreciation to D. W. Stewart and the Texas Company for their cooperation in furnishing valuable data on the Travelaire Mystery Ship.

It is advisable to begin construction with the fuselage and empennage. Cut the keel from 3/32" hard sheet balsa and cut away for the engine mounts, control horn and bell crank mount. Cement the engine and bell crank mounts securely in place and add the 1/2" sheet with 1/8" sheet cemented to it at station B. Cut out the remaining formers and cement in place on the keel. The elevator and stabilizer are cut from soft 3/16" sheet and sanded to the cross section shown.

Add the spar, hinges and control horn (which is bolted and cemented in place) and cement the stabilizer to the top of the keel. Install the bell crank, 1/16" control rod and .025" lead-out lines, and now the fuselage is ready for planking. Cement a vertical strip of 1/4"x1/8"x1 1/4" to the rear of the keel in order to keep the planking strips 1/4" apart, and fair into the rudder. A relatively slow-drying cement should be used.

Do not select rock hard balsa for planking strips, use medium soft balsa. You will find the fuselage of the “13” one of the easiest you ever planked, because there are virtually no curves from front to rear. When planking do not complete one whole side at a time. It is better to add one or two strips on each side as you work, in this way the fuselage will not have a tendency to bend out of shape. Let the planking dry for several hours and then sand smooth, using a sandpaper block. Clear dope twice and sand again. The cowl can be turned on a lathe or carved with a sharp knife from medium balsa. This is installed later.

Cut the medium balsa wing leading edge roughly to shape and cement the plywood joiner to it, obtaining the correct dihedral angle. This joint must be well cemented. Heavier plywood can be used but no lighter stock! Ribs No. 2 and the landing gear mount are now cut from plywood and securely cemented in place. The underside of the leading edge must be cut away where its path crosses the landing gear mount. While this is drying the wing covering can be cut out. Cement ribs No. 3 and 4 to the bottom covering and attach the covering to the leading edge assembly,

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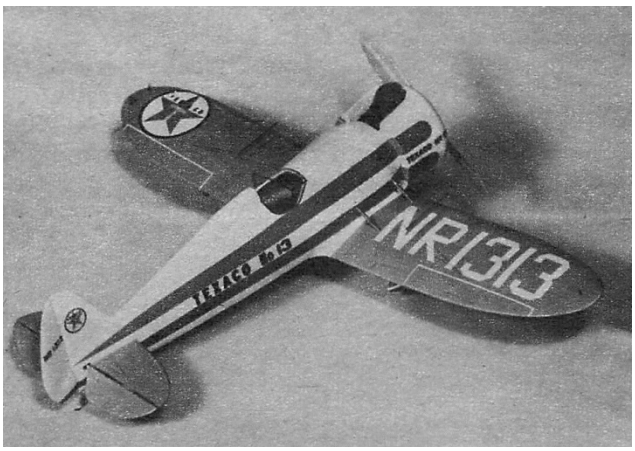

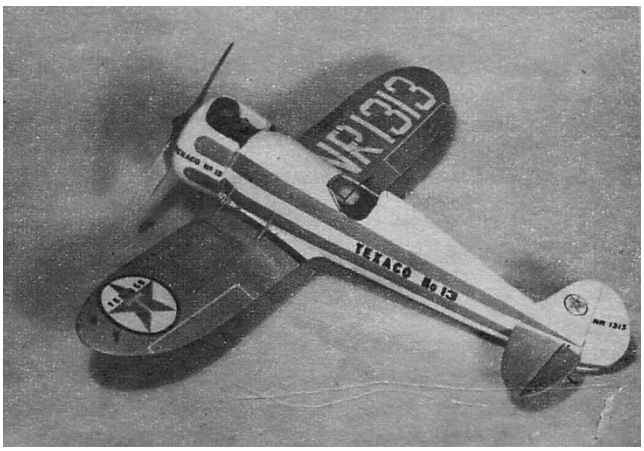

Could you ask for a prettier plane? Color scheme is red wing with white numerals, red stab, white fuselage with red trim, black letters.

Construction is not difficult. Fuselage planking is made easy by absence of curves; metal shop can help out on landing gear.

completing one side at a time. Cement all joints well and set aside to dry.

We tried bending the landing gear from the more conventional music wire, but found it to be an almost impossible task without deviating from scale appearance. Therefore we used the sheet brass type which has worked well for us, and although it is quite rigid the air wheels or semi-pneumatic wheels will absorb the shock of normal landings on smooth surfaces. Brass was selected because, while it is relatively easy to work with, it is quite tough and stands abuse. You can have this cut out at a metalworking shop, or your school shop teacher might assist you. If you do it yourself you'll need a drill, saw and light file. A vise is handy to hold the job but is not an absolute necessity. It is best to make both pieces at one time. Cut the sheet brass roughly to shape and bolt the two pieces together. These can be bolted through the five holes which will later hold the landing gear forks in place and also the landing gear itself.

Using the pattern on the plans, scratch the outline on the brass and drill small holes in the corners where the saw blade must change its direction. Now saw the struts to shape, being very careful not to make the struts too thin. When this operation is completed, file all edges smooth. Separate the two pieces and file and emery- paper the struts to a fairly streamline shape, but do not remove an excessive amount of brass.

Bend the flange on the landing gear to the correct angle to fit the wing dihedral and bolt it securely to the plywood support. Apply cement to the nuts to prevent the L.G. from loosening. Drive a wood screw' into the front hole. Be sure to cut away the bottom wing covering for the brass strut flange. The four brass wheel forks are now cut to shape in a similar manner, and after being bent to shape they are securely bolted to the struts.

File off the ends of the bolts protruding from the nuts and solder the bolt end to the nuts. Install the wheels at this time, using a bolt as the axle which must also be soldered to prevent loosening. Cut the soft balsa wheel covers and hollow for the wheel and fork. Cement these securely to the brass strut. The lightening holes help hold the covers in place because the cement can reach both wood surfaces of the wheel covers. When dry, the covers are sanded to shape and several coats of dope applied.

The bottom covering trailing edge must be beveled to continue the upper camber line of the ribs, then the top covering can' be added, with plenty of cement used. Add the solid wing tips and set aside to dry. Sand to shape and dope twice.

Cut the fin and rudder from 1/4”medium sheet and be sure to add the 1/8'' sheet to each side of the rudder in order to fair the fuselage into the rudder. See section F. Sand smooth and dope once. Cement this

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assembly in place on the fuselage and fillet with cement.

The wing can now be attached to the fuselage. Cut away the fuselage planking a little at a time until a good fit is obtained. A portion of the 1/2” and 1/8" sheet at section B must also be cut away to admit the wing leading edge. Apply liberal quantities of cement in this operation. Add the wing fillet and apply several coats of cement to the wing fuselage joint. Cement the hardwood cowl spacers to the engine mount and screw the cowl in place. Add the headrest and fillet well.

The entire model should now be well sanded with very fine sandpaper. Sand the cockpit edge carefully in order to produce the required shape. The cowl can also be cut to make room for the engine cylinder. Wood filler must be applied in order to get a good finish. Three coats with sanding after each were required. The model is painted red and white and the markings are shown in the photographs and plans. The star is red on a white circle, the “T” is green and "Texaco” within the star is black. Paint all the white areas first and then mask them off and apply the red paint. We used "Trim Film” for the red fuselage stripes and license numerals (black on fuselage, white on wing) as well as the Texaco insignia. Ordinary colored dope was used as paint and after it was rubbed down we applied a coat of clear fuel proofer. This must also be applied to the engine mounts and cowl interior and over the “Trim Film.”

With the addition of rigidly fastened control line guide, wing walk, pine struts, rigging, tail skid and celluloid windshield, the model is ready for flying.

The model must balance along the line indicated. The addition of lead weight in the nose ox tail will remedy any unbalanced condition. We used .012" lines 50 feet long and flew from a concrete surface. Engines from .19 to .29 displacement are recommended. If you are a novice it is suggested that the landing gear be moved 1/2" forward of the location shown on the plans. This will make landing easier. Our Texaco 13 was by no means sluggish, and care should be taken not to over control the craft.

Bill of Materials

Fuselage: 1 pc 3/32” x 2” x18” hard balsa, keel. 1 pc ⅛” x 2” x 24” medium balsa, formers. 26 pcs 3/32” x ⅜” x 18” medium soft, planking. 2 pcs 2” x 4” x 2¾” medium hard balsa, cowl. 1 pc 1/16” sheet dural, ¾” x 2”, bellcrank. 1 pc 1/16” dia. music wire, 14” long, control rod. 1 pc ½”x4”x4” medium balsa, former B. 1 pc ⅝” x ⅝” x 7” soft balsa, headrest. 2 pcs ¼” x ½” x 5” hardwood, engine mounts.
Wing: 1 pc ¾” x 1” x 24” medium balsa, leading edge. 1 pc 3/32” x 2” x 12” medium balsa, ribs. 1 pc 3/32 ” x 2” x 6” plywood, ribs. 1 pc 3/32” x 2¾” x 1⅝” plywood, L.G. mount. 2 pcs 4½” x 4” x 1/16” brass, L.G. strut. 4 pcs 3/32” x 2” x 24” medium soft balsa, wing covering. 2 pcs ⅝” x 2” x 3½” soft balsa, wing tips. 1 pc 3/32” x 7” x 1” plywood, wing joiner. 4 pcs ½” x 2” x 4½” soft balsa, wheel covers.
Empennage: 1 pc ¼” x 9” x 2” soft balsa, fin and rudder. 1 pc 3/16” x 3” x 18” soft balsa, stabilizer and elevator. 1 pc 3/16” x 3/16” x 10” pine, elevator spar. 1 pc 1/32” dural sheet, 1¼” x ¾”, control horn.
Miscellaneous: nuts, bolts, screws, wheels, lead-out lines, 6 oz. white dope, 4 oz. red dope, Trim Film, fine soft wire, celluloid, fuel proofer, rubbing compound, sandpaper, cement, clear dope, wood filler.

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