SIMPLE T-CRAFT 25

This simple version of Duane Cole's airshow Taylorcraft is a real "hot dogger."

By Fred Reese

Several years ago, I designed and published in RCM several 1/2A models called the Simple Series. The Simple Citabria, Simple Cub, and Simple Duster all used the Ace R/C 35" mini foam wings and Cox TD .049 engines. Ace R/C continues to sell the wings and a complete hardware pack for these models. The fuselages had scale like side views, but were just simple balsa box structures. The Simple Series models were cute, fast, and agile, and could be built in a few evenings for a very few dollars.

The Simple T-Craft 25 is the same concept, just enlarged a bit to handle .15-.25 sized engines. The fuselage is a simple balsa box that looks like a Taylorcraft from the side. I chose the Duane Cole paint scheme, as the airplane has flown in many airshows and is readily recognized as a Taylorcraft. The name, Duane Cole, is written right side up on the right side of the aircraft and upside down on the left side. He wants people to be able to read his name as he passes the grandstand whether he is upright or inverted.

The basis of the earlier 1/2A series was the Ace R/C mini foam wing set which greatly simplified the models. For the Simple T-Craft 25 I wanted a commercially available wing kit. The wing kit would provide die-cut ribs and all of the spars and other wood parts needed in a single package. I chose the Ace R/C "Alpha 15" wing because it is available separately as a

SIMPLE T-CRAFT 25
Designed By:
Fred Reese
TYPE AIRCRAFT
Sport
WINGSPAN
49 Inches
WING CHORD
8½ Inches
TOTAL WING AREA
415 Sq. In.
WING LOCATION
High Wing
AIRFOIL
Semi-Symmetrical
WING PLANFORM
Constant Chord
DIHEDRAL, EACH TIP
1 Inch
OVERALL FUSELAGE LENGTH
36 Inches
RADIO COMPARTMENT SIZE
(L) 12" x (W) 2½" x (H) 4½"
STABILIZER SPAN
16 Inches
STABILIZER CHORD (incl. elev.)
5 Inches
STABILIZER AREA
80 Sq. In.
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage
VERTICAL FIN HEIGHT
6⅛ Inches
VERTICAL FIN WIDTH (incl. rud.)
7½ Inches
REC. ENGINE SIZE
.15-.25 2-stroke; .20-.26 4-stroke
FUEL TANK SIZE
4-6 Oz.
LANDING GEAR
Fixed Taildragger
REC. NO. OF CHANNELS
4
CONTROL FUNCTIONS
Rud., Elev., Throt., Ail.
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa & Ply
Wing ..... Balsa & Spruce
Empennage ..... Balsa
Wt. Ready To Fly . 44 Ozs. (2 Lbs. 12 Ozs.)
Wing Loading ..... 15 Oz./Sq. Ft.

wing kit for only $12.95, including the plan and instructions to build it. The wing has a thick, semi-symmetrical airfoil that allows the model to fly inverted as easily as right side up. For those not wanting to buy the wing kit, the wing plan and parts are included on the plan.

While the original "Alpha 15" was designed by Tom Runge to be a trainer or sport model with a .15 engine, the T-Craft is intended to be a lot more exciting. The T-Craft is the same size as some of the .20 sized trainers and has the same gentle characteristics at reduced throttle settings. Although the T-Craft is a high wing aircraft and looks like a trainer, it is quite fast with a .25 engine. It is, what I call a "hot dog" type model, small, quick, and fully aerobatic, a model to tear up the sky.

The secret of this good time model is plenty of power and light weight. The

T-Craft 25 only weighs 2¾ lbs. ready to fly.

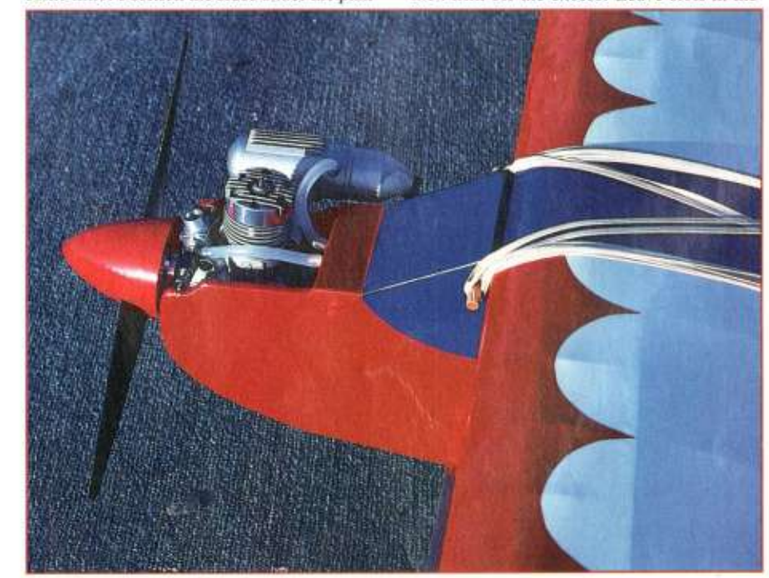
CONSTRUCTION

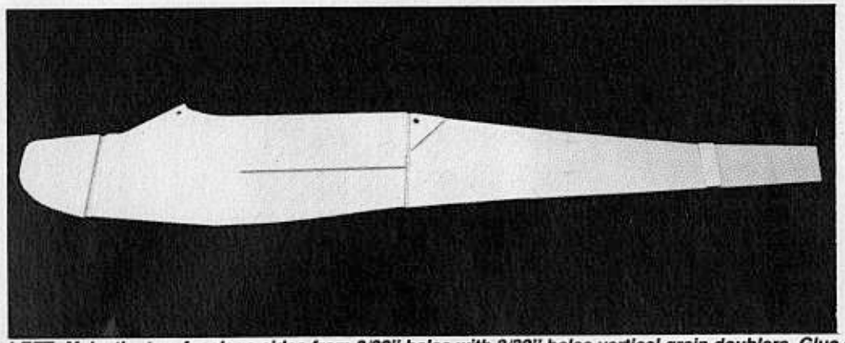
The T-Craft 25 is quick to build, too. The wing builds easily without some of the usual complicating steps and the fuselage is as simple as is possible.

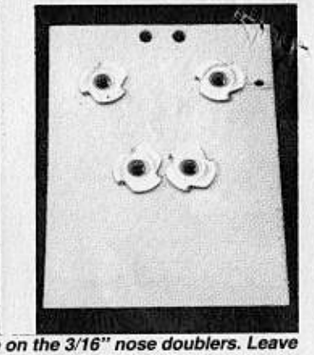
"The name, Duane Cole, is written right side up on the right side of the aircraft and upside down on the left side. He wants people to be able to read his name as he passes the grandstand whether he is upright or inverted."

Fuselage:

Begin by making the two fuselage sides from 3/32" medium balsa, which requires adding a 3/4" wide strip top and bottom to a 3" wide sheet for the deepest part of the fuselage. With just a dot of glue in the front and back, glue the two fuselage sides together so they can be cut to shape at the same time. Position the sides under the plan side view and pin the plan to the sides so it can't shift. Mark the outline of the fuselage sides by making pin holes through the plan into the wood. I make a pin hole about every 1/4"-1/2" in the curved areas, but only make a single hole at intersecting straight lines. Also mark the positions of the fire wall, bulkheads, dowel holes, and servo rail supports. Remove the plan and connect the dots on the fuselage sides and cut to shape. Glue on the vertical grain balsa doublers through the cabin area and 3/16" balsa doubler in the cowl. Add the doublers by gluing on oversize pieces of sheet balsa and then trim off the excess. Leave slots in the



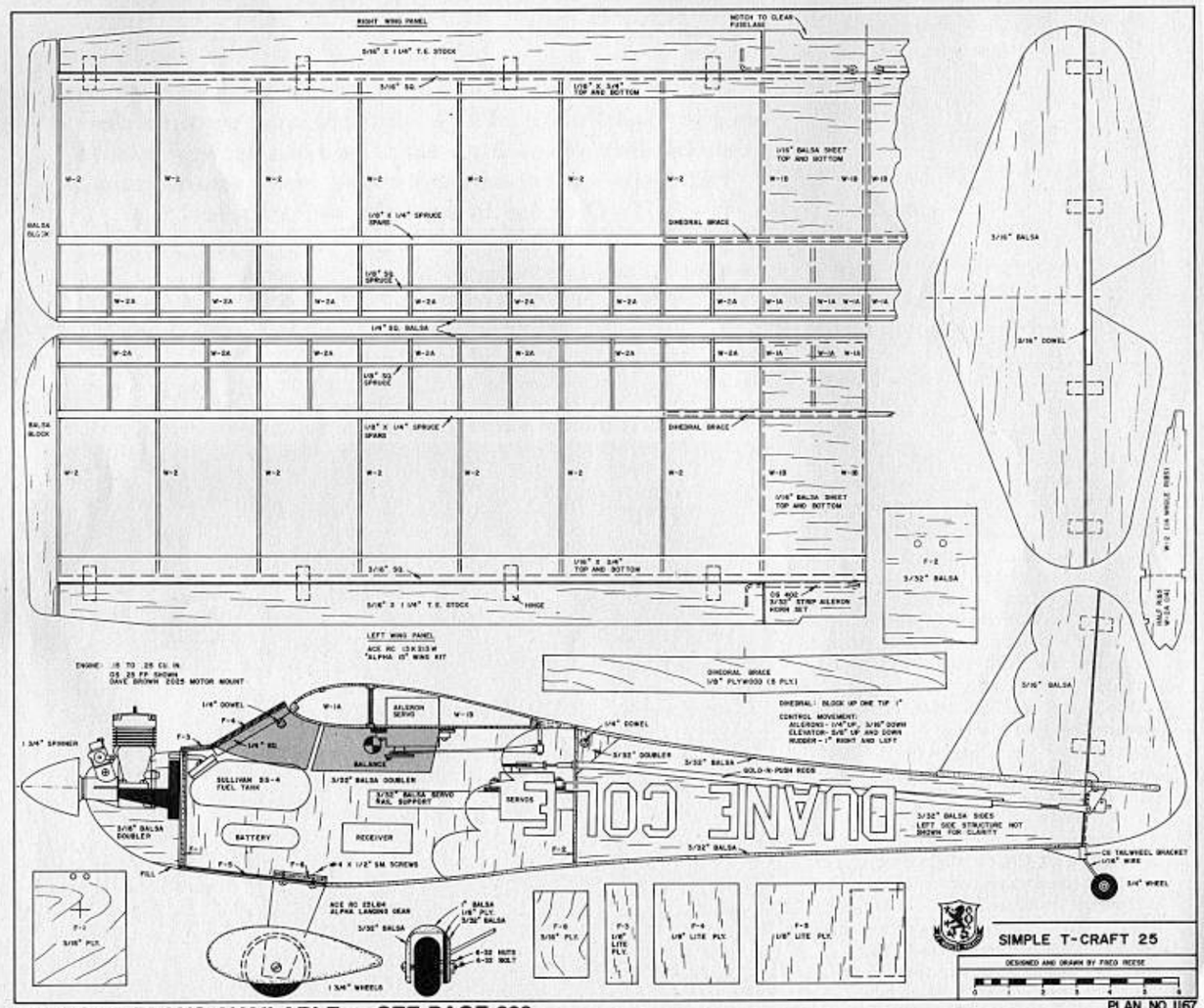




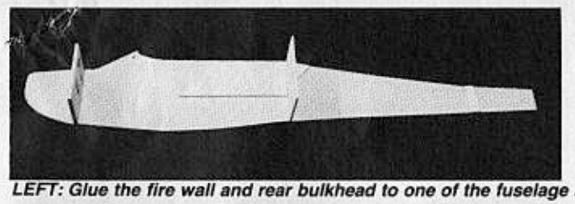
LEFT: Make the two fuselage sides from 3/32" balsa with 3/32" balsa vertical grain doublers. Glue on the 3/16" nose doublers. Leave slots between the doubler segments for the fire wall and rear bulkhead. Glue on the servo rail guides. RIGHT: Drill the fire wall for the motor mount bolts and set the blind nuts. Drill the holes for the fuel lines and the throttle pushrod.

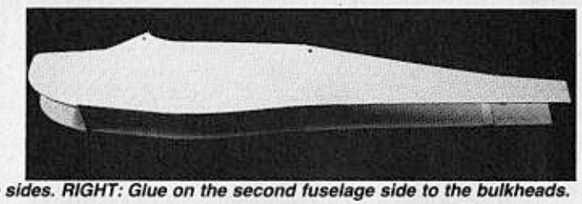
doublers for the fire wall and bulkhead. Glue on the servo rail guides.

Separate the fuselage sides. Mount the motor mount and set the blind nuts in the fire wall and drill the holes for the fuel lines and throttle pushrod. Glue the fire wall and bulkhead to one of the fuselage sides using a square. Glue on the other fuselage side. Glue on the 1/8" lite ply top, front and bottom with the 3/16" plywood landing gear mount. Add the 1/4" square reinforcements under the windshield piece. Pull the tail together and glue. Add the remainder of the top and bottom, 3/32" balsa sheeting. Fit the cowl for the muffler and needle valve. Drill and fit the landing gear. Sand the fuselage and apply a coat of Balsarite in preparation for covering. All of the parts are covered and decorated separately before gluing onto the fuselage.

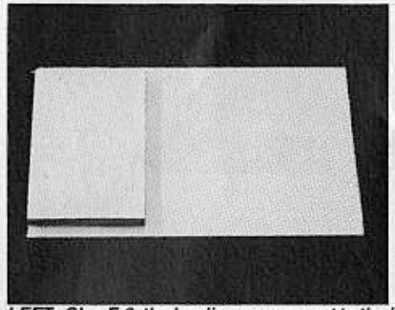


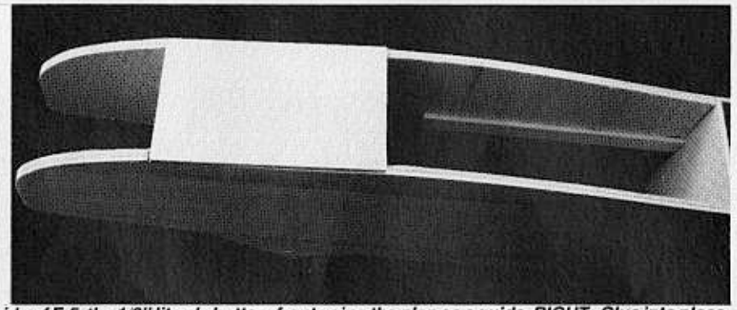
FULL SIZE PLANS AVAILABLE — SEE PAGE 209





LEFT: Glue the fire wall and rear bulkhead to one of the fuselage sides. RIGHT: Glue on the second fuselage side to the bulkheads.





LEFT: Glue F-6, the landing gear mount to the inside of F-5, the 1/8" lite ply bottom front using the plan as a guide. RIGHT: Glue into place.

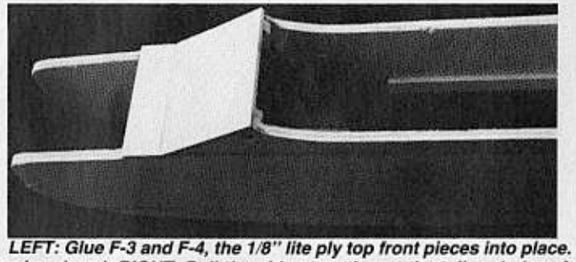
Tail:

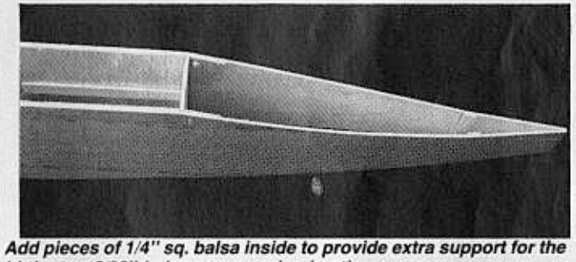
Cut out the tail parts, join the elevator halves with 3/16" dowel, and sand to shape. Apply a coat of Balsarite.

Wing:

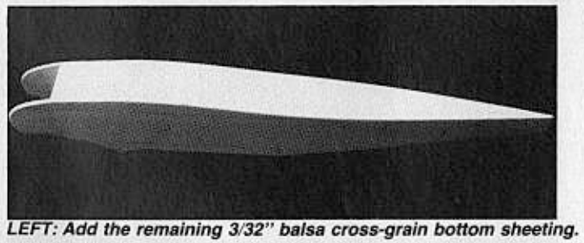
Lay the wing plan on a flat surface that can be pinned into and cover it with plastic food wrap or waxed paper. Starting with the left wing panel, pin a 1/16" x 3/4" x 24" bottom rear sheeting onto the plan. Note: place all sheeting pieces, spars, etc., flush with the center of the wing, so the second wing panel can be built directly onto the first panel. Position the lower main spar on the plan using the first full inboard rib and tip rib as guides. Do not pin into the spar. Glue all of the full ribs into place and add the bottom, center 1/16" sheeting. The photographs show the wing being built over the Ace R/C wing plan.

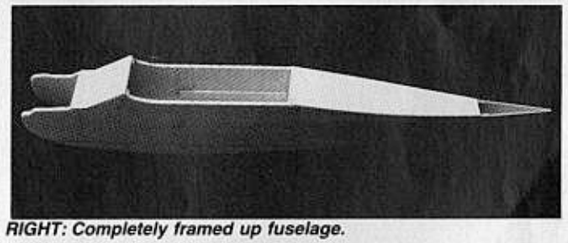
Glue the plywood dihedral brace onto the lower wing spar, centered on the spar and butted to the #3 rib. Glue on the half-ribs ahead of the dihedral brace and behind the



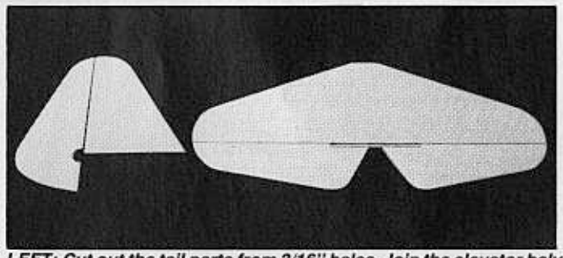


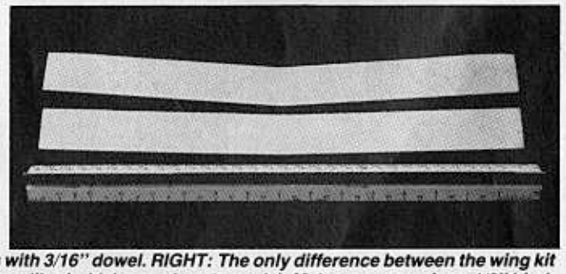
LEFT: Glue F-3 and F-4, the 1/8" lite ply top front pieces into place. Add pieces of 1/4" sq. balsa inside to provide extra support for the wing dowel. RIGHT: Pull the sides together at the tail and glue. Add the top 3/32" balsa cross-grain sheeting.



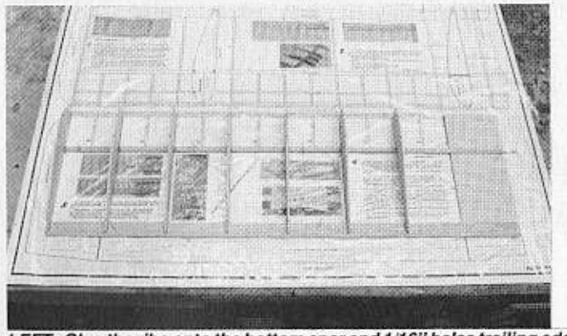


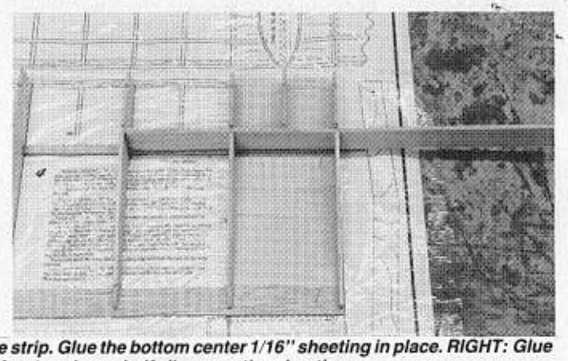
LEFT: Add the remaining 3/32" balsa cross-grain bottom sheeting. RIGHT: Completely framed up fuselage.





LEFT: Cut out the tail parts from 3/16" balsa. Join the elevator halves with 3/16" dowel. RIGHT: The only difference between the wing kit from Ace R/C and this model is the dihedral brace. The T-Craft has less dihedral (shown close to scale). Make a new one from 1/8" birch plywood.





LEFT: Glue the ribs onto the bottom spar and 1/16" balsa trailing edge strip. Glue the bottom center 1/16" sheeting in place. RIGHT: Glue the dihedral brace in place, centered on the bottom spar. Add the front and rear half ribs over the sheeting.

dihedral brace onto the bottom sheeting. Note that the center rib is angled about 1/16'' at the top for the dihedral angle.

Glue the 3/16'' sq. trailing edge strip onto the bottom, rear sheeting, flush with the ends of the ribs. Glue on the top, rear 1/16'' x 3/4'' x 24'' strip. Glue the top spar and 1/4'' sq. leading edge into place. Glue in the remaining half-ribs. When the wing panel is dry, remove from the plan.

Build the second wing panel in the same order but join with the first panel as you build. Block up the first panel for the dihedral angle which is 1'' under the tip. The Ace R/C plan shows 4'' dihedral for the Alpha 15, but that is too much for an aerobatic model.

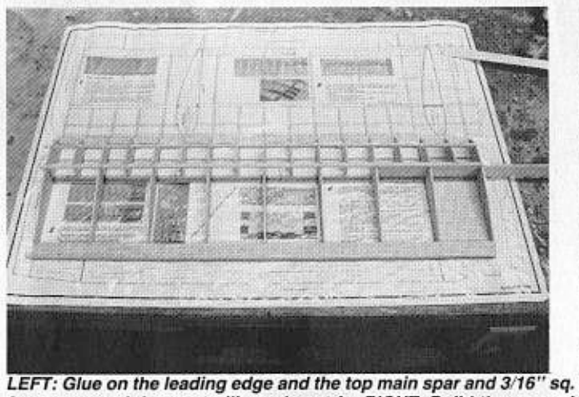
Complete the center sheeting, add the wingtips and fit the ailerons. Use C.G. 3/32'' strip aileron hardware for the linkage. Sand the leading edge round to match the plan. Finish shaping the wingtips and finish sand the entire wing in preparation for covering. Notch the trailing edge in the center to fit the wing into the fuselage.

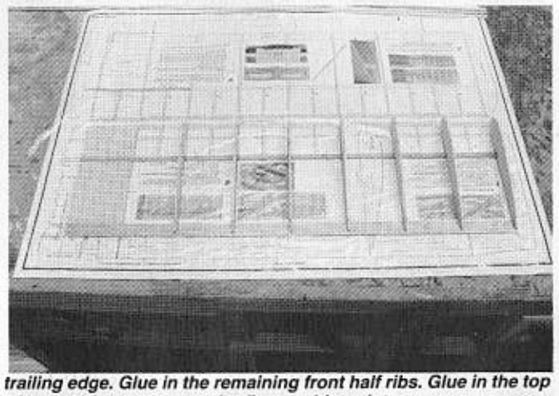
Finishing:

I finished my T-Craft with Goldberg's UltraCote in red and white. This time I followed the covering instructions and used the recommended temperature settings for each phase of the covering process and it worked great. Covering with UltraCote is different than with MonoKote or other films but in many ways is easier. UltraCote can be applied over itself at low temperatures without bubbling which makes fancy color schemes much easier and nicer.

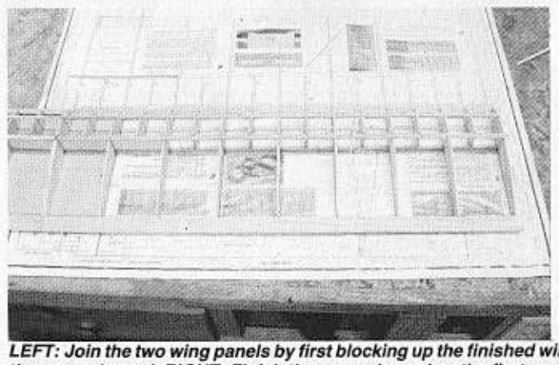
The fuselage was covered in the rear with white UltraCote. The scallop pattern was marked and all but 1/4'' overlap was cut away. Make a bond paper template for the scallop pattern and use it to cut the red covering. The red side pieces are cut oversize except for the scallops at the rear. Mark the window outlines and cut away the centers, leaving 1/4'' overlap. Iron on the windows from black, blue, or silver UltraCote.

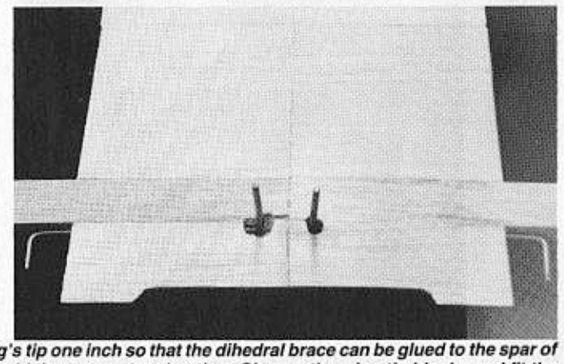
The Duane Cole lettering was cut from red UltraCote and ironed on at low



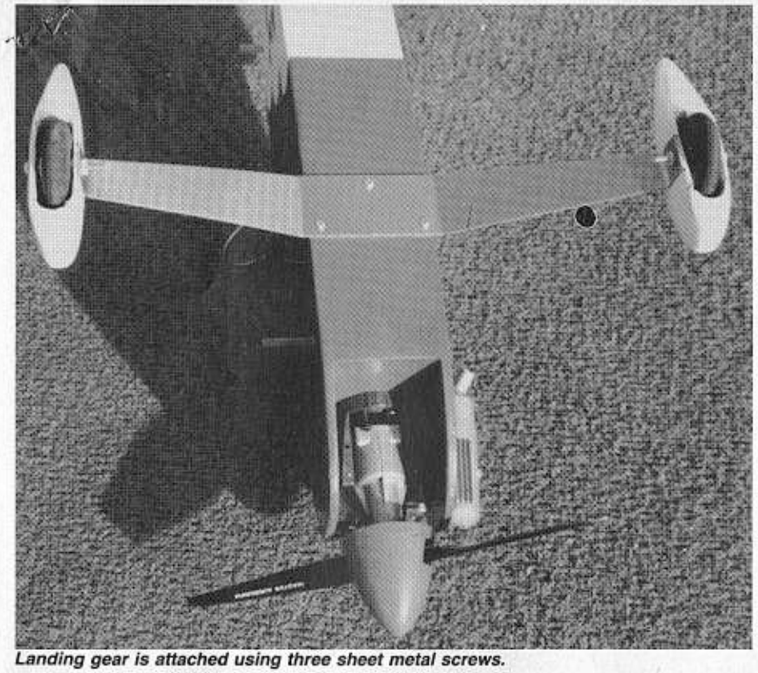


LEFT: Glue on the leading edge and the top main spar and 3/16" sq. trailing edge. Glue in the remaining front half ribs. Glue in the top front spar and the top trailing edge strip. RIGHT: Build the second wing panel the same as the first to this point.

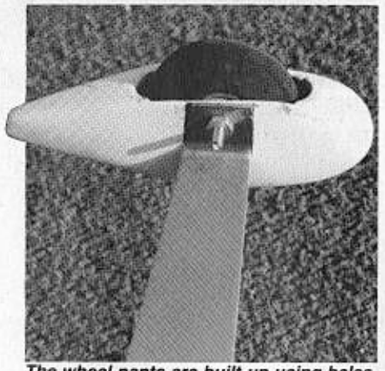




LEFT: Join the two wing panels by first blocking up the finished wing's tip one inch so that the dihedral brace can be glued to the spar of the second panel. RIGHT: Finish the second panel as the first, and add the top center sheeting. Glue on the wing tip blocks and fit the ailerons and aileron torque rod linkage. Notch the trailing edge in the center to fit the fuselage.



Landing gear is attached using three sheet metal screws.



The wheel pants are built-up using balsa and plywood. Paint or cover to finish.

temperature. To make the letters, cut out 1'' x 1½'' rectangles from the red UltraCote. From these rectangles make the letters by clipping the corners and cutting out the centers with a sharp razor blade.

Cover, trim, and hinge the tail parts. Cut away the covering on the top of the stabilizer for the rudder and the bottom of the stabilizer for the fuselage glue joints. Glue the tail parts onto the fuselage.

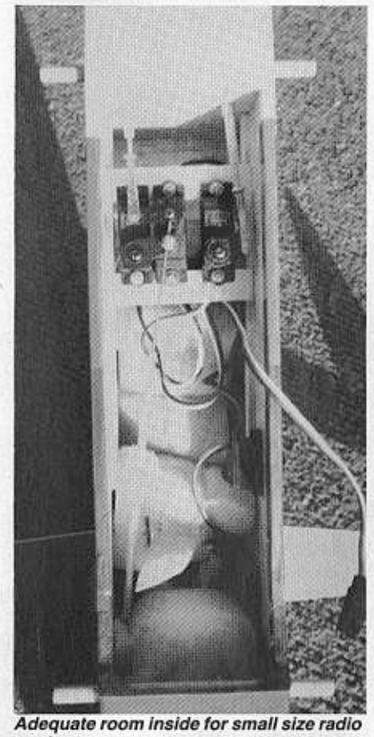
Cover the bottom of the wing first with red. Cover the top of the wing forward to the 1/8'' sq. spar with white. Again using a paper template to cut out the scallop pattern in red UltraCote, iron on the top leading edge.

Make the wheel pants from balsa and plywood. Carve to shape and cover with red UltraCote or paint.

Mount the landing gear, engine, fuel tank, and servos. Install the pushrods and control horns. Note that the rudder control horn is placed over the tail wheel wire. Set the controls to move the elevator 5/8'' up and down, rudder 3/4'' right and left, and the ailerons 3/16'' up and 1/8'' down. Set the engine to idle with the trim centered and to quit when the trim is full down. Pad the fuel tank to prevent fuel foaming.

Flying:

Take-offs are quick. Give full throttle, push in a little right rudder, feed in a bit of up elevator and in as much time as it takes to read it, the T-Craft is flying. Climb to a comfortable altitude and adjust the trims for straight and level flight. Now have fun ripping around the sky, shoot some touch and go's, practice your IMAC pattern and land at your feet. As you walk back to the pits, you will be asked ''What engine do you have in that thing?'' ''Oh, it's just a little .25,'' you will reply, smiling smugly to yourself. □



Adequate room inside for small size radio equipment.

LEFT: Nylon type pushrods allow quick set-up and easy adjustment. Note antenna routing. RIGHT: Clean and simple engine installation. O.S. 25 FP used in author's original. Easy access to everything!