E.A.A. "Headwind"

by Al Wolsky

If man was intended to fly he'd have wings. Some E.A.A.'s solve this oversight by building their own. This Stand-Off R/C replica of one such Sunday bird does it all on a .15.

The Stewart "Headwind" is an airplane for the home-builder. A little V.W. powered simple flying machine to haul a guy around for a few pennies. Don Stewart is the designer, an airline pilot type who hails from Salem, Ohio. The wingspan ticks off to 24 feet and a 53 hp. V.W. engine cruises it along at 80mph.

The original "Headwind" took to the air in 1962 and proved to be the very first Volks-powered aircraft designed in the United States. The Experimental Aircraft Association chose the "Headwind" for the "Best Auto-Powered Aircraft" award at it's 1962 gathering at Rockford, Illinois. Such aircraft are usually powered by converted V.W. engines, although 65 hp. Lycomings have been used. The total cost of constructing one is about $1,000.

As for an R/C model, if you have been looking for an R/C model that is easy to build and yet fly out of the local ball-field sized sites, then look no further. The E.A.A. "Headwind" may be for you. With a .15 aboard it climbs out quite fast and when it reaches altitude you can drop it back to low-motor for some peaceful cruising. The design drinks a minimum amount of fuel, so if rising costs are a consideration for you, this is a subject to fill the void. The plans for the model were developed from information supplied by Don Stewart.

The model of the "Headwind" as presented here is simple to construct and could be called "Stand-Off Scale." Changes in the nose area of the prototypes exist in many photos I have seen, so this can be carried over to the model and still not really matter since it is a home-built and no two would be exactly identical.

In flight the model is stable and needs no more power than a .15 for realistic flights. The original has only motor and rudder control and is still flying after over 50 flights. I feel that a good .09 could be used with light radio gear. The original used an old G-G pulse system with a Rand actuator. The latest model has a digital system using three servos for rudder, elevator and motor control.

Fuselage Construction

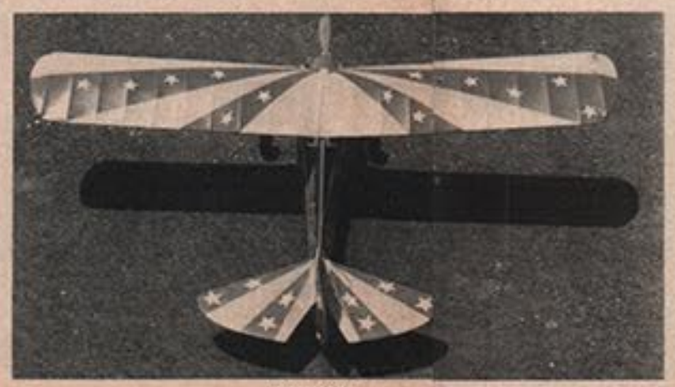
Trace the side view onto two 1/8" x 6" x 36" sheets. It will be noted that the sheet is not quite wide enough in the area below the cabin. This may be widened with the left over piece cut from the tail area forward. Butt cement the pieces together and allow to dry. Note on the side view the lines to the rear of the cabin opening that require scoring on the outside with a sharp razor. Be careful not to cut too deeply through the sheet while so doing. It is intended that the stresses in the sheet be relieved to allow the sides to take on the desired shape when cementing the formers in place. Note the 3/16" square pieces that are cemented on the insides to add strength. Cut out the firewall and formers B and C. At this point you may decide what type tank you would like to use. A two ounce bottle tank if used requires cutting holes in former B and the firewall. Another tank that could be chosen is a metal U-Control type tank which may be fitted between the firewall and former B on a floor, during the assembly of the forward section. If the bottle tank is the one selected, it is a snug fit when inserted from the cabin through holes in the formers, with the front of the tank extending through the firewall itself.

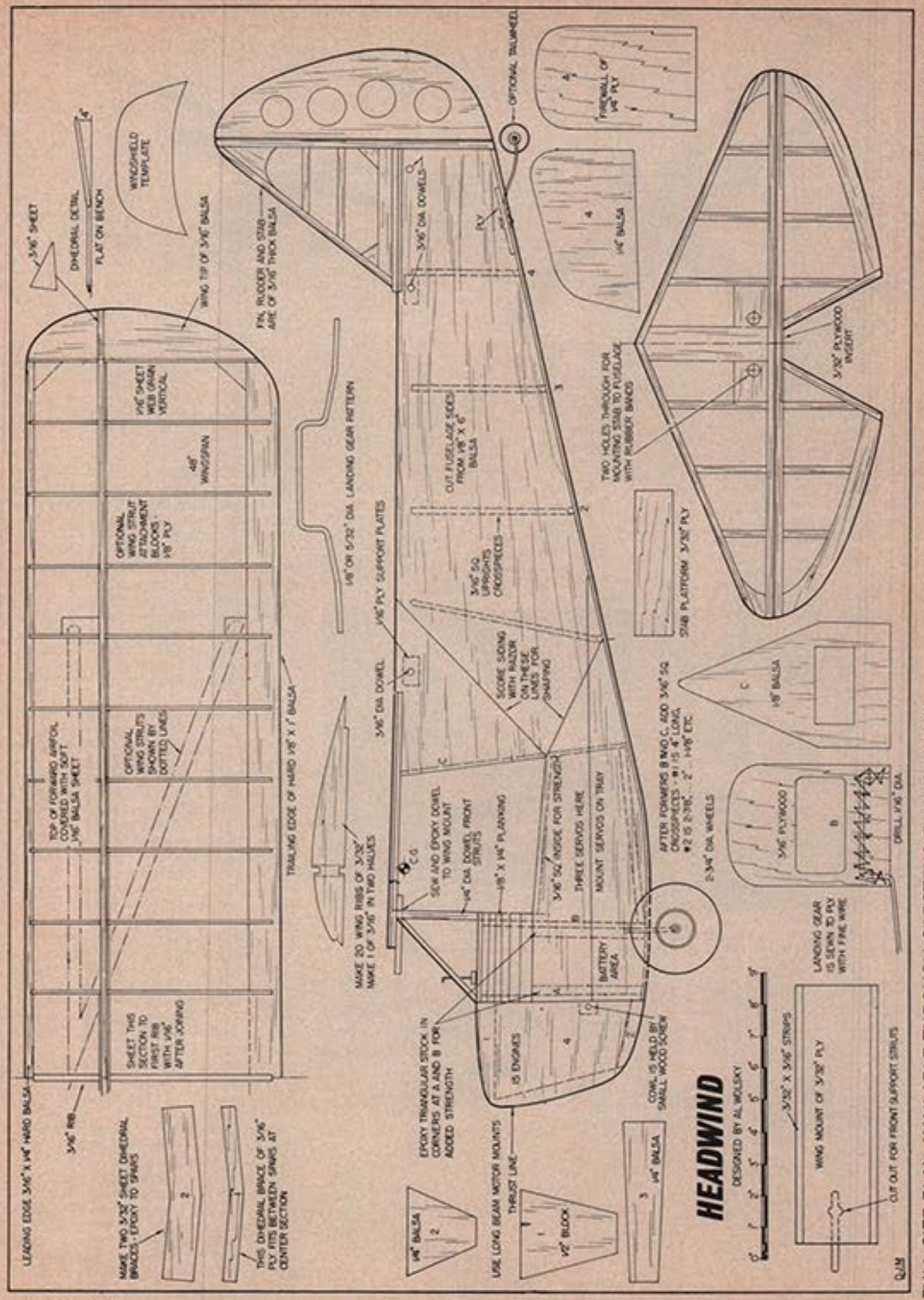
Getting back to the assembly techniques on the fuselage, slightly bevel the insides of both sides at the top, to the tail. The shape of the fuselage within this section is a triangle. Cement the two sides together only at the top.

Bend the landing gear to shape as shown,

FM Photos: Jim Boyd

Two are twice as good, unless they hit head-on. At right: Al's "Headwind" has a C-3 flavoring. Below: Boring past our office. A fun-machine.





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It almost floats. Light loading, economical on fuel, easily framed out. **Left**. A lot going for it. Stand-Off realism, mild manners and low cost.

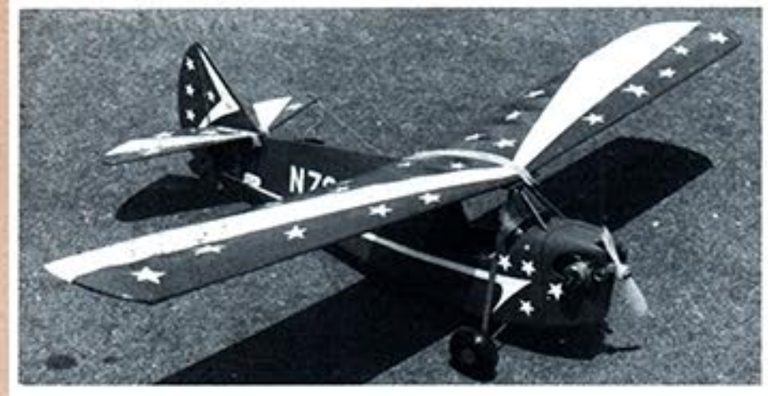
minimize warpage. They could also be cut from soft 3/16" sheet and really not add much weight. I have not tried this, but either way, do not omit the 3/32" plywood piece that is recessed in the elevator center-section as this adds strength to this area.

Wing Assembly

Start by cutting out 20 wing ribs of 3/32" sheet and one partial rib of 3/16" sheet for the center-section. Also cut two 1" wide trailing edge pieces from hard 1/8" balsa sheet. Pin these down on the plan along with the 3/16" square bottom spar. Cement all the ribs in position at this time. The top 3/16" sq. spar is now added and also the 3/16" x 1/4" leading edge. Allow all to dry, then remove half of the wing and assemble the opposite panel in like manner.

The dihedral bracing is cut from 3/16" plywood. Join the two wing panels together on the building board with the left panel pinned down. You will note that the dihedral brace fits between the top and bottom spar. Measuring from the bottom of the last rib, raise the right panel up 4" and add the two 3/16" sheet pieces to the spar at the center-section front and back for additional strength.

Cut out the tips from 3/16" sheet and cement them in place at the bottom of the last rib with the tip angled up to meet the tip gussets. Add the 1/16" webbing between ribs (with the grain running vertically). The top of the wing back to the spar is sheeted with 1/16" stock. Center-section is also sheeted top and bottom with 1/16" balsa. Wing strut blocks may be added if struts are desired for scale appearance: The wing does not require struts for bracing from the standpoint of flight-worthiness, but only if you wish a more realistic appearance.



Warning: If the finish is still sticky and you fly too late in the twilight, it gets stars struck. **Beneath:** I bet M.A.N. can't fly at the office. Our rural setting was too much for Al to resist.

Completion of the Model

Sand all parts of the framework until smooth and round off the corners. The choice of covering material is left up to the builder. The two prototypes I have built were covered with Silray and finished with dope. MonoKote or any other material would work equally well. Scale item such as a dummy V.W. engine, windshield and struts can be added. These all add up to the attractive appearance of the model.

Flying this aircraft is no problem if the model is made to balance at the point indicated on the plan. Both models which I have built required only a slight amount of downthrust of engine. Other than this, they flew off the proverbial drawing board.

To all who build the "Headwind," I know you will be pleased with it's appearance and flying ability. It's a real fun-type plane and it stands up to rigors of a season at the field. Fly it safely, clear of the pits.

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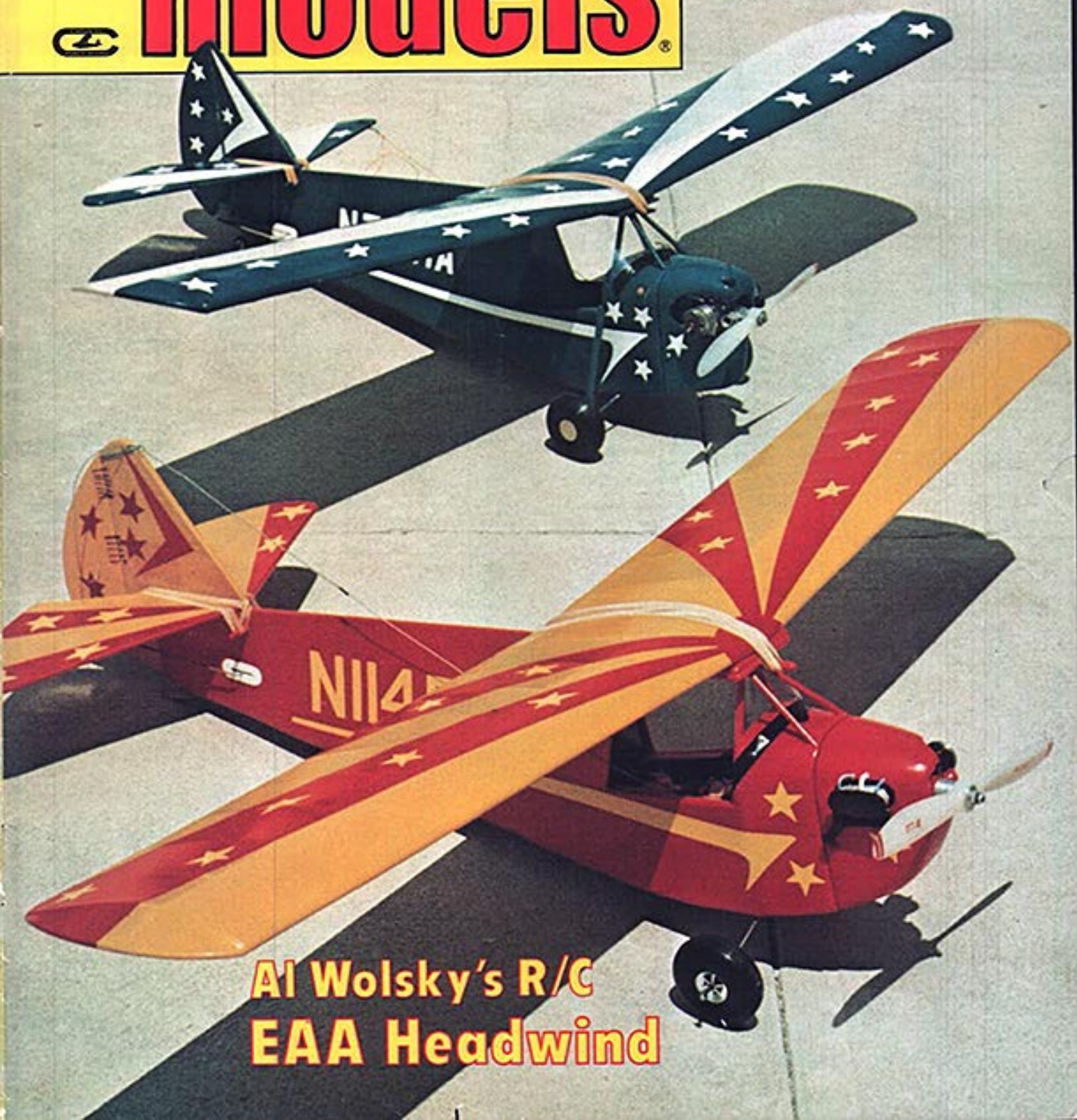
FM Ektachrome: Jim Boyd



Al Wolsky's R/C EAA Headwind