

PHOTOGRAPHY: BILL HANNAN

AM/FM

by Bill Hannan

This rubber powered ROG has the flavor of a French Antoinette. It flies fine.

Remember the movie "Those Magnificent Men in Their Flying Machines"? My favorite scene was the graceful Antoinette gently landing on the narrow English country road, to the astonishment of an elderly couple in their vintage auto. The motion picture aircraft was based upon the classic French pioneer Antoinettes of the 1909 era, which were very advanced for their time, particularly when compared with the biplanes against which they competed.

Although our little AM/FM is quite basic, we have tried to incorporate some of the "flavor" of the Antoinette. It does require more effort in construction than the usual r.o.g. because of its angle-cut joints, but offers more visual interest in exchange.

The plastic propeller and its bearing are from a North Pacific "Skeeter" ready-to-fly

model and may be used "as is". However, by replacing the propeller shaft and adding some brass or teflon thrust washers, efficiency may be improved.

Materials required include: Several $\frac{1}{20}$ " square balsa strips, $\frac{1}{4}$ " \times $\frac{1}{8}$ " balsa strip, lightweight covering tissue, .025 diameter music wire, and $\frac{3}{4}$ " diameter plastic wheels. (Note: $\frac{1}{20}$ " square strips are commonly used for Peanut Scale models, but may not be found at some hobby shops. In such a case they may be ordered by mail from Peck-Polymers, P.O. Box 2498, La Mesa, California 92041 or Mike Mulligan's Old Timer Models, P.O. Box 913, Westminster, California 92683.)

Firm lightweight $\frac{1}{16}$ " square balsa strips may be employed instead if desired.

Suggested tools include: single-edge razor blade, modeling knife with pointed blade,

sandpaper block or stick and straight pins.

Building may be done on a flat, soft surface such as insulation board into which pins may be easily pushed.

Construction

Although you could build directly over the full-size plans, why not buy a photocopy of the page and preserve your FLYING MODELS magazine? Remember, it may be a collector's item some day! Cover the plan with transparent kitchen wrap to prevent glue from adhering to it.

Wings

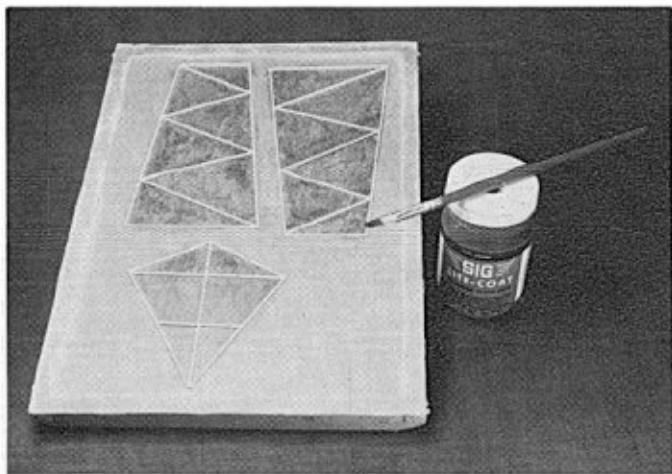
Construct the wing panels from firm straight balsa strips joined with your favorite glue. Cut the longest strips first to minimize waste. Try for concise, workman-like joints which not only appear better but contribute greater strength. Secure all strips in position while drying with common straight pin "Xed" over the strips rather than piercing them which could cause weak spots. Allow glued joints to dry thoroughly before removing panels from the building board.

Tailplanes

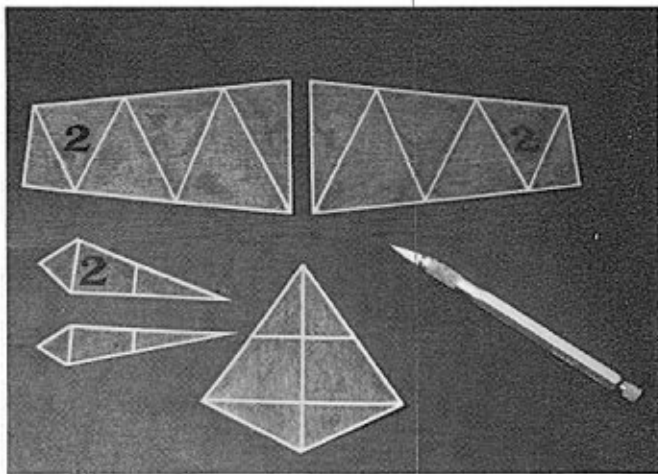
These are constructed in the same manner as the wings, but possibly with somewhat lighter wood, if available.

Fuselage

Cut the fuselage to shape from a firm, straight $\frac{1}{4}$ " \times $\frac{1}{8}$ " balsa strip. Note that the



Tissue is glued to wooden frame and shrunk with water (above). Parts are then doped to tissue. Process minimizes warps. Ultra-light.



Covered components ready for assembly (above). The AM/FM takes to the air (bottom). Simple construction, Plane looks scale.

angle at the rear determines the stabilizer incidence. A short section of the $\frac{1}{4} \times \frac{1}{8}$ " stock is cemented to the top front of the fuselage to form part of the dummy engine. Another portion of the same stock is cut-down and glued beneath the nose to serve as a spacer for the plastic propeller bearing, which should be a snug fit.

The rear motor hook is bent from thin music wire, inserted into the fuselage underside as shown, and secured with glue and thread binding.

Covering

Thin flat surfaces are prone to warping which, if severe, can cause flying difficulties. Therefore, every effort should be made to minimize them, and several approaches are possible. If the model is to be flown indoors or in mild outdoor climates, the tissue may be applied, left unshrunk and undoped. But if your model will be flown mostly outside and be subject to changes in temperature and humidity, consider a shrunk and clear-doped covering job. One method of doing this involves a simple covering aid. This can be an actual picture frame or one assembled from $\frac{1}{2}$ " square wooden strips. Tissue is applied to the frame with thinned white glue, allowed to dry, then water shrunk. Next, the model parts are attached to the tissue while it is still on the frame. A thinned coat of non-shrinking clear dope such as Sig Lite-Coat may then be applied and allowed to dry thoroughly . . . the longer the better.

A sharp blade may then be used to trim the model parts from the tissue-covered picture frame. Note that recent experiments conducted by Warren Shipp of the San Diego Scale Staffer club suggest that performance may be enhanced by covering wings on the bottom rather than the top. However, we stayed with the traditional fashion for better looks!

Prop up one wing tip as shown for dihedral and join the two panels.

Landing gear

Bend the landing gear legs to shape from music wire. Any wheels of approximately $\frac{3}{4}$ " diameter are suitable, but we used transparent wheels marketed by Peck-Polymers which give the visual effect of spoked wheels. Or, for truly elite appearance, consider Fulton Hungerford's genuine spoked wheels. Our transparent plastic wheels were a loose

fit on the axles, so small diameter tubing or eyelets served as bushings. Wheels may be retained by bending the axle ends, gluing on short lengths of wire insulation tubing, or simply with tiny globs of 5-minute epoxy.

Decor

Although the AM/FM could be built and flown without decorations, the small extra time investment involved can add greatly to the model's charm. Our wings and tail surfaces were covered with yellow tissue which makes a pleasing contrast to the fuselage, which was merely colored with a brown felt pen. Wings and tail numbers may be drawn on with a marking pen or cut from colored tissue and doped in position.

The dummy engine cylinders may be cut from a small dowel, balsa sanded round, or plastic rod or tubing. Incidentally, some of the original French Antoinettes employed V-8 engines rather than the 4-banger used on the "Mag Men" movie aircraft, so build the type you prefer! Paint as desired for greater realism.

The paper "hero pilot" may be brightened with color pencils or fine-tip fibre pens.

Assembly

Install the wing and tailplanes checking alignment carefully from both the top and rear. Secure the landing gear assembly to the fuselage with glue and thread binding.

Assemble and glue the paper pilot to the fuselage with one hand-wheel on each side.

Recheck wings for warps. If necessary, steam from a tea kettle may be used to correct them. However, if they are minor it is

sometimes possible to "overpower" their effect with other adjustments.

Flying

Install a short loop of $\frac{1}{16}$ " rubber for initial tests. With rubber in position the model should balance in a level attitude when supported by its wing-tips about $\frac{1}{2}$ " back of the leading edges. Individual models may vary in balance because of variations in material weights. For example, solid plastic wheels weigh considerably more than Hungerford spoked wheels. The balance may be corrected by adding clay ballast force or aft as required. In drastic cases of tail heaviness, the wing may be removed and remounted more rearward. For minor balance changes the landing gear legs may be bent forward or aft to suit.

Add a drop of oil to the propeller bearing to reduce friction. Test glide the model in a windless location. A soft landing area is desirable too but one must not be greedy, so given an either/or choice we'll take the windless location! If the model stalls, increase nose weight or bend landing gear forward. If it dives, add weight to the tail end or bend landing gear slightly aft. Repeat the tests with a few hand-winds of the propeller and watch the flight path carefully. If the model turns too tightly, try adding a bit of clay ballast to the wing-tip opposite the offending turn. Gradually increase the number of windings and readjust if necessary.

Replace the rubber motor with a longer, lubed loop (which may bring about the need for rebalancing) and use a mechanical winder for increased performance and duration.

