6731

WACO YKS-6

By BILL WARNER

One of my recent hang-ups is that I cannot build models that I find uninteresting. If I wanted to take the easy approach to contest FF Scale work, I think I'd build a simple homebuilt monoplane and just build it like the original. Most of us, however, don't work rationally when confronted with that LOVE-AT-FIRST-SIGHT 3-view or photo. When narrowing down subjects to build for a particular contest, I always very scientifically go through hundreds of subjects, narrowing down the choices by process of elimination. First, you throw out the ugly and common subjects. Next, you eliminate the ones on which you have too little data. Following that go the ones with paint schemes beyond your capabilities, ones with poor moments, high wing loadings, small stabs, ones which someone else has already built much better than you ever could, etc. Then you have a couple of beers and let a couple of your toughest competitors (Bobby Haight and Chuck West) talk you into a model which they just know will drive you up the wall. To compound the problem, buddies like this will also lay some nifty exterior and interior color photos of the real aircraft on you just to make sure that you can't resist! Clinching the whole thing was the great Paul Matt 3-view

The NATS in Chicago requires a bit different plane than the NATS in California. A light, fluffy antique which might do superbly at Los Al has no place in drawing with just enough detail to make it interesting, but not so much as to make your model look stark because you didn't put it all on.

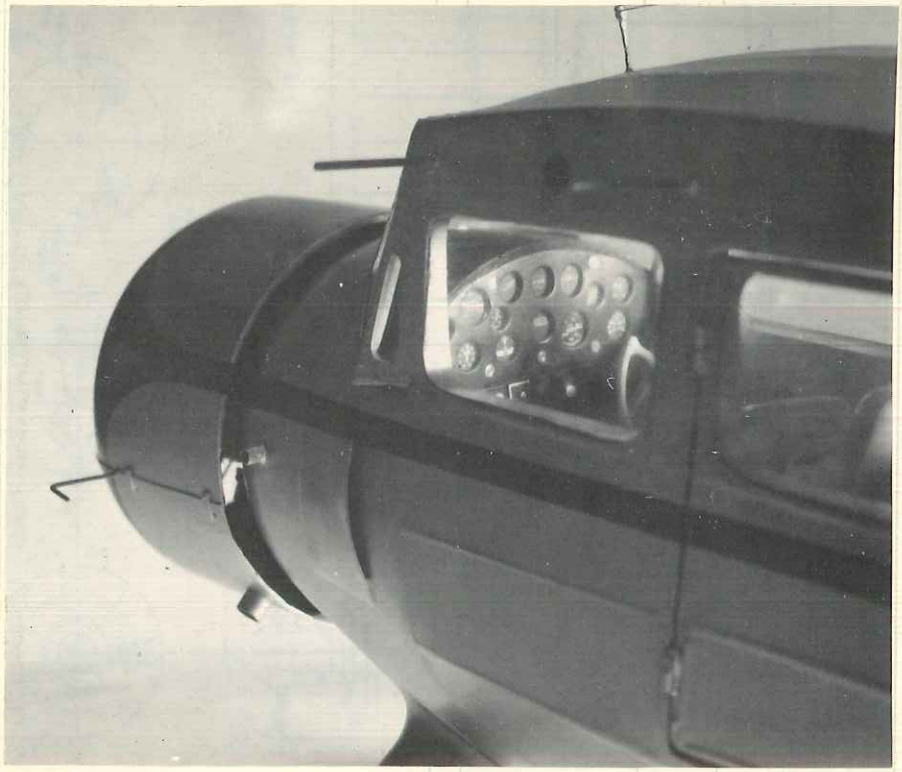
the rain and wind at Glenview. Taking a hint from the British, sturdiness was the byword from the beginning. Extra gussets, plywood reinforcements, and extra-hard fuselage-box longerons proved later to have been well worth the added weight. In test-flights and several crashes, the silk covering, knock-off wings, and strong firewall/cabin/undercart construction made those critical first few flights possible. A front-heavy, clean design also seemed to make sense considering the wind conditions expected.

Armed with instructions from WCN not to go into basics of construction, etc. as anyone attempting this model would be either a pretty experienced builder (or a nut), rendering any such coverage somewhat less than productive, I shall constrain myself from excess and superfluous verbosity in the interest of minimizing obfusction . . . *(Too late, Bill, you already done did it! — wcn).*

WINGS

Tips laminated with thinned white glue. I can't remember whether or not I used spruce for the spars, but if I didn't, the balsa I used was extra hard. The spars on top of the wing cost scale points, but sure keep that ol' wing from bowing upward. Making ailerons adjustable with bendable aluminum sheet (not soft wire) "hinges" is a must for on-the-spot flight trim. The wingtip lights may be easily made operating by using model railroad "grain-of-wheat" bulbs wired to a simple male-female plug at the wing root rib. Built it up from 1/32 inch (male) brass tubing fitting into 1/16 inch (female) tubing. Removable battery (9v transistor) and a simple pull switch on the panel will complete the set-up. Panel, tail, and cabin lights can be easily added to the circuit. Interplane struts are made of flattened aluminum tubing with Robart brand hinge points (nylon ball-socket pop-out) used for the attachment to the wings.

#6731



The "N" strut was originally fastened together with 1/16 inch thick double-sided tape, but silicone rubber tub caulking might be better.

FUSELAGE

Make sure front end is solid. Thin plywood (1/32 inch) firewall affixed to hollowed out block is adorned with angled platform for Kraft-Hayes beam motor mount. Use thin "tin-can" soldered nut-plates behind K-H firewall mounting. Actually, the amount of down-thrust shown on the plan could be increased by a degree or so. This was not possible on the original, as I had the dummy motor in the way of major adjustments, but it would improve the flight characteristics. A bit more right thrust might also help. Plywood gussets for the landing gear wire attachments are recommended.

INTERIOR

Lordy, Lordy, if you've never tried covering an airplane on the inside you are in for a treat! Silkspan cover inside to represent white naugahyde. Seats are vacu-formed (Mattel) to save weight. Window cranks and minor hardware are made by soldering a blob on a pin and filing to shape. The panel, which took about 20 hours to make, consists of a drilled plywood (1/64 inch thick) facing followed by a thin acetate sheet covering the instrument faces glued on a stiff balsa backing. The whole thing was held together with tiny flush model railroad screws. Some of the instruments were photographic reductions, while others, such as the radio dials, were made from artists scratchboard (available at art supply houses). Placing a tiny, folded map in the map pocket on the back of the pilot's seat and "sewing department" seat belts with heavy aluminum foil ends are nice additions. "Planting" wee plastic model railroad bolt-heads at appropriate points also catches the eye of the experienced scale judge.

The windows are mounted in thin frames of steamed veneer by flowing thinned, clear cement or dope around edges. Coating the frame first with cement, allowing to dry, and then mounting acetate window panes with film-splicing cement also works well. Take extra time and whittle windows to fit "just-below-flush".

EMPENNAGE

A removable tail-block is keyed into the rear of the fuselage and held on with a metal screw. The stab moves as an entirety, as does the fin/rudder. Moving just the elevator or rudder is much less efficient as altering the shape of the surface reduces its docility. Movement right or left of the fin/rudder pivoting on its vertical 1/8 inch hardwood dowel is accomplished by a nylon screw with its head caged in nested aluminum tubing working a nut affixed to a wire attached to the leading edge of the fin. The up-and-down movement of the leading edge of the stab is accomplished by two nylon screws in nuts epoxied into the tail block pushing the L.E. up against a couple of small coil springs pushing down on it from above. These screw adjustments are, in my view, the best approach to field adjustments for flight trim.

POWER/FLYING

I recommend that the model be flight tested only after extensive measurements of incidence angles, alignments, and de-warping of flying surfaces. Keeping wings at all times bound to 3/4 inch plywood boards to keep them flat is cheap flight insurance. Bind them down right after doping and keep them flat by constant inspection and de-warping over heat (twist in opposite direction from warp viewed along underside of wing or stab). For power I recommend a diesel. The .06 (1cc.) Rebell Diesel which carried the Waco was 10 years old when installed. Having gone from California dry sunshine to Chicago rain with a two week interval, the diesel started on the first flip. If an .06 is not available, a hot .049 or an .09 with a throttle would do, I think. An easily-removable cowl of fiberglass held on by 3 vinyl grommets pushed over aluminum stubs coming out of the firewall allows easy access to the motor.

The Waco seems to fly most comfortably in a wide left-hand circle with a right glide. Adjust glide circle with rudder, power circle with engine thurst changes. Ailerons may be dropped on "low" wings to bring plane into safe bank attitude. It is capable of beautiful R.O.G.'s, but may take a bit of a breeze blowing over the fin/rudder area to keep it from ground-looping.

DETAILING

Most details are better left until after test-flying damage is repaired. Save vacu-formed louvers, hypodermic white-glue dot "rivet heads" etc. until last. Color-doping before test flying is a waste. Clear dope will do. Finish plane only when you are satisifed that it is "ready for action".

FINAL NOTE

This plane should be considered "semi-scale". Many liberties have been taken to make it rugged, flyable, and easy to build. A "Superscale" model of this aircraft would be a joy to behold, but would give you ulcers crashing about in nasty flying conditions. Hang glider pilots recommend that you never fly higher than you would be willing to fall; I recommend that you never put more work into a scale model than you are willing to see go down the drain in one bad flight. Don't get discouraged, though. The Waco is gorgeous, it is forgiving, and as model subjects go, it exudes sex. Who can resist?

NOTE: Although the model now resides in Russ Barrera's Model Museum in San Marcos, the subject ship was destroyed some months ago when a crank let go, allowing the prop to slice through the cabin. A sad end to a beautiful matron of the North Las Vegas skies. ●

6731