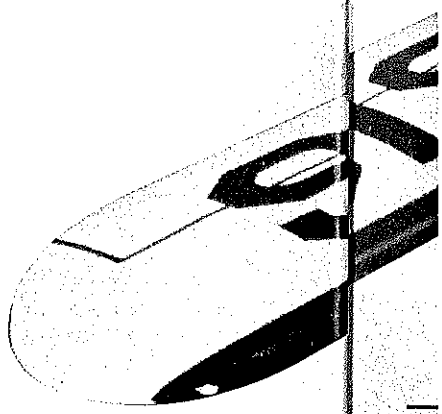
LONGSTER WIMPY

■ Frank Beatty



THE LONGSTER WIMPY: Amateur aircraft builders of the late '20s and early '30s faced many difficulties. Among these were the lack of light, cheap, reliable engines, a dearth of technical design engineering data, and restrictive (or outright prohibitive) government policies.

Despite this, Leslie Long and his brother (co-proprietors of a radio factory in Oregon) designed, built, and flew at least *nine* different home-built aircraft over a ten-year period. The most-successful and best-known of these was the Longster Wimpy.

The Wimpy appeared in 1935. Its original powerplant, a Harlequin, was soon replaced with the newly developed Aeronca E-107 aircraft engine. The Wimpy could "race" along at 90 mph, cruise at 75 mph, and land at 30 mph when so powered. Its distinctive Cub-like wing with huge fillets spanned 31 feet 6 inches. Another distinguishing feature, the unusual rigid trusslike undercarriage structure, provided an anchor for the wing-rigging brace wires. Sixteen-inch-diameter balloon-type air wheels provided shock-absorbing cushioning for landing loads.

Only a few photos of the Wimpy have surfaced, and few details of its history have been documented. The February 1955 issue of *Experimenter Magazine* reported that the Wimpy was still flying, though it was much-modified with a 65-horsepower Lycoming engine, new wings,

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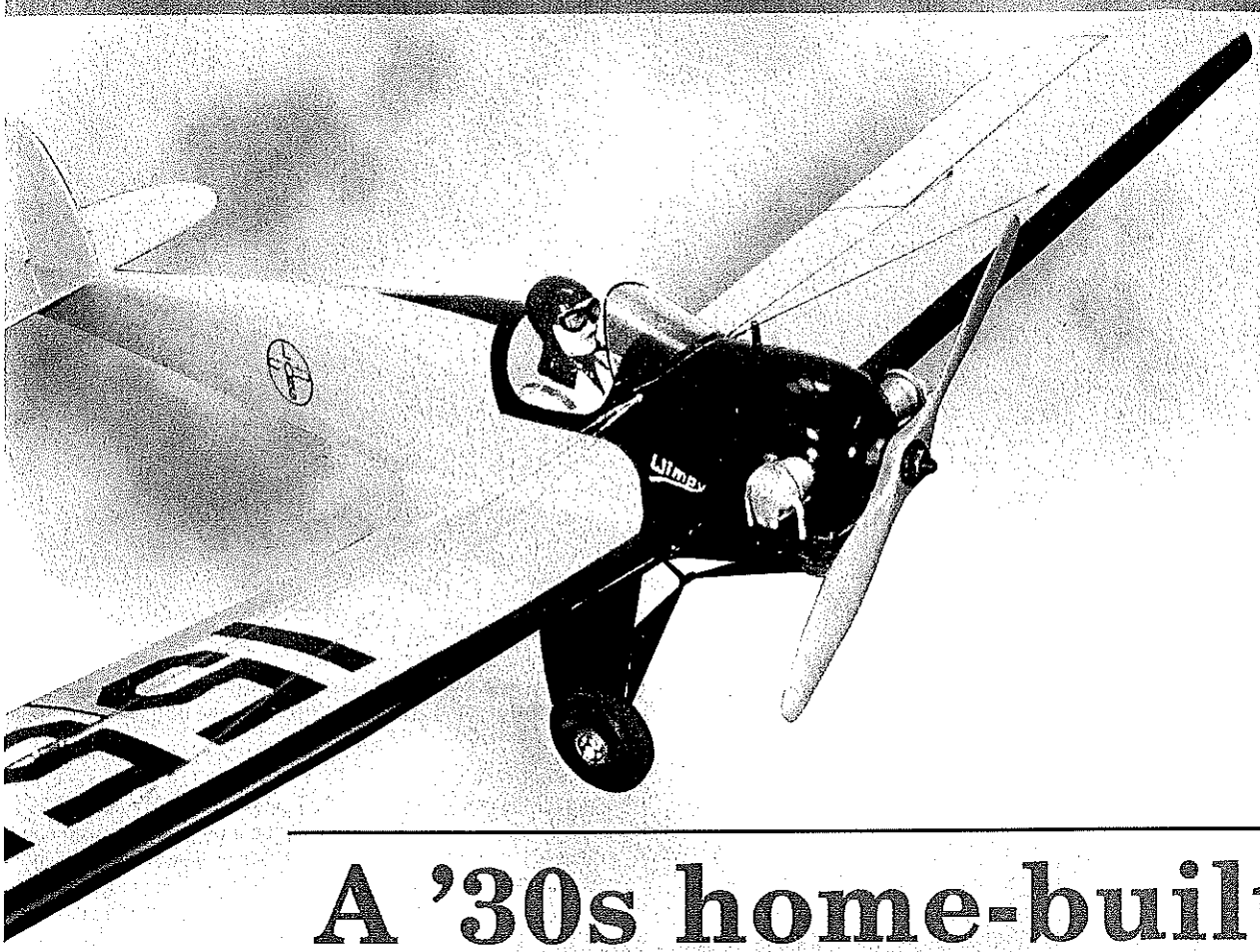


A '30s home-built for .09-.10 Control Line

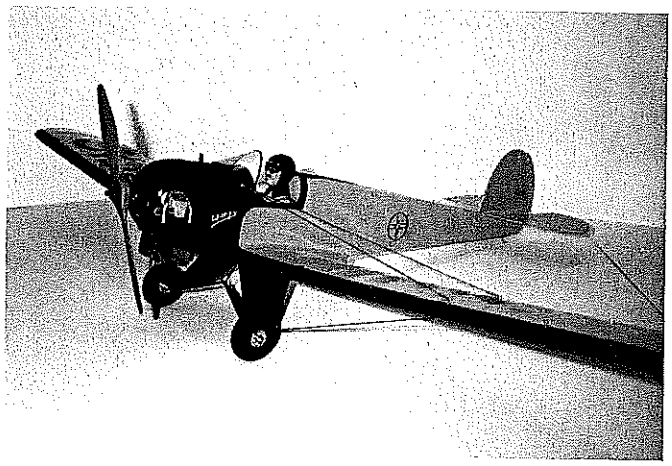
nd a revamped turtledeck.

A three-view and photo of the Wimpy ame from the Winter 1969 issue of *Air 'rogress-Sport Aircraft*; drawings of an arly Aeronca aircraft engine came from *'AA Aircraft Engines Volume 1*. These /ere the references used for the onstruction drawings, detailing, and iarkings of the model. A Free Flight iodel construction article by Walt Aooney from the September 1954 issue of *Aodel Airplane News* and an Electric RC onstruction article by Le Gray in the Aarch 1980 *Model Builder* were also seful reference sources.

call the Wimpy an "advanced beginner" roject; by that I mean that the model has a very basic airframe that a novice could gain experience on if some of the details and markings were omitted. (These extras, however, are really not all that difficult.) If the builder chooses to challenge his abilities, he can incorporate all of the details and markings to produce a dynamite-looking model.

The Longster Wimpy has been built to a scale of 1⅛ inches = 1 foot. The model has a 35-inch wingspan, a 21¼-inch length, a wing area of 140 square inches, a weight of 17 ounces, and a wing loading of 12 ounces per 100 square inches of wing area. The model is powered by a K&B .15, selected from my collection of old engines. Currently available engines in the .09 or .10 sizes from O.S., Enya, Cox,

LONGSTER WIMPY



The Wimpy is a good "advanced beginner" project. The model has straightforward construction and can be detailed to suit the builder's skills.

or Royal would be suitable power plants for the Wimpy. These newer engines with less displacement turn higher rpm and deliver about as much power as my old K&B. They also include mufflers that would provide ballast in the model's nose to help balance it properly.

Be advised—this is a small, clean, light model that can be airborne and can fly faster than you might expect. Moreover, the model has largish elevators and responds quickly to small control-handle inputs. Hotshot fliers can have a ball flying a high-performance, responsive model. The pushrod location in the elevator horn crank determines how fast the elevators move and how sensitive the model will be to fly. Less-skilled fliers should consider installing this in the less-sensitive pushrod location. If desired, it can be relocated after experience and confidence are acquired.

The Wimpy has a tail moment that is 3.7 times longer than the nose moment arm. The model's tail should be kept as light as is reasonably possible, and some ballast will almost surely be required in the model's nose. Approximately 1½ ounces of weight were required in my Wimpy's nose.

I like to install a temporary screw eye in the top of the model's fuselage on the centerline at the designated center of gravity (CG) location. During the building process, the model can be suspended from that point regularly to check its balance. The screw eye can be removed and the hole can be easily patched after the model is finished and is balanced to satisfaction. This procedure beats the usual method of suspending the model on my fingers by its wingtips.

This model may appeal to (and be built by) relatively inexperienced fliers, so I must stress that it *must not be flown* unless it is balanced properly. It should hang in a somewhat nose-down attitude when suspended from the designated CG location.

LONGSTER WIMPY

Type: CL Scale

Wingspan: 35 inches

Engine: .09-.10 glow (K&B .15 shown)

Flying Weight: 17 ounces

Construction: Built-up

Covering/Finish: Doped silk or silkspan

CONSTRUCTION

Since the wing assembly also incorporates the bellcrank-control system and the undercarriage, it will be the trickiest part of the model to build. When this assembly is complete, you will be on the downhill side of the airframe-construction phase. If you can build the wing successfully, the rest of the model will be a piece of cake.

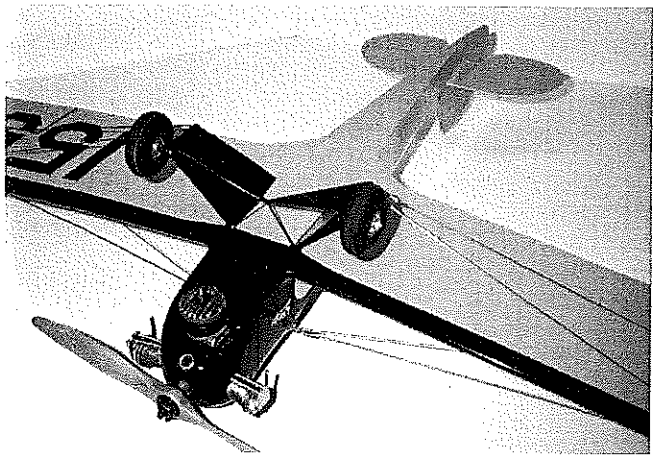
Wing: Make the center section by first cutting out the leading and trailing edges from balsa leading- and trailing-edge stock. Cut out the 3/32 plywood forward- and rear-spar joiners and two of the A ribs. Cover the plans with plastic or waxed paper and pin the leading and trailing edges to it. Use 3/32 balsa shims to raise the spars and ribs above the board's work surface. Cement all these parts well. When dry, this subassembly can be lifted off the board and set aside.

Begin construction of the outer panels by cutting out all of the ribs. Cement the spruce (or basswood) rigging locator blocks to the C ribs and sand them flush with the top and bottom surfaces of the ribs. The leading and trailing edges must be notched for the ribs. These four pieces can be taped together and notched neatly and accurately at one time with a razor saw, or better yet, with a Dremel table saw. Cut out the balsa tips.

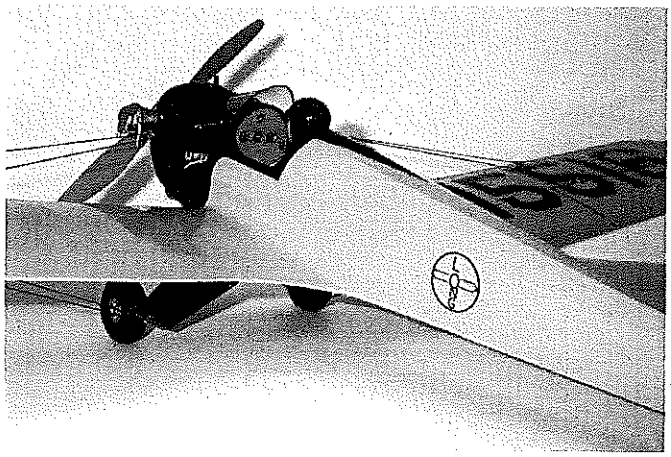
Pin the leading and trailing edges to the building surface. Locate and cement the tips and all B, C, and D ribs into position. When dry, these assemblies can be removed from the building surface.

The center section is joined to the outer panels by first pinning the center section over the plans. Blocks 17/32 thick are located at each wingtip. Secure these blocks in position with tape or pins so that they cannot shift.

Bevel the butt ends of the leading and trailing edges on the outer panels approximately 8°. Align the center-section spar joiners with the outer-panel leading and trailing edges. Pin the wingtips to the dihedral-alignment blocks. Cement the spars and remaining A ribs in



ıe distinctive rigid trusslike undercarriage structure also ·ovides an anchor for the wing-rigging brace wires.



The Wimpy has a tail moment that is 3.7 times longer than the nose moment arm—a good reason to keep the tail end light!

›sition. When the wing is dry, lift it from the building board and :t it aside.

ndercarriage: Cut out the 3/32-plywood landing-gear mounting ate and drill the four rows of 1/16 holes. Use an X-Acto knife or a remel burr to cut shallow grooves between adjacent pairs of holes ı the bottom side of the plate. These grooves will allow the thread at binds the gear to the plate to be flush with the surface. They will so simplify finishing that surface later.

Study the first three steps of the undercarriage assembly ·ocedure on the drawings. Step One: Bend up and bind the main :ar members (including the V strut) to the platform with button read and cement everything well. Step Two: Bind the remaining 2 music wire members with fine wire and solder them. Step Three: t the plywood fairings to the gear as shown and epoxy everything ell. The 3/16 x 1/2 spruce (or basswood) bellcrank support and bolt n be cemented to the platform at this time.

Fit and cement the landing-gear platform to the wing center ction. Make up the bellcrank and leadout wire assembly. Pass the adouts through the inboard wing ribs and bolt the bellcrank in ace. Bend the loops in the leadout wire ends now, or cover the arp ends with tape to prevent injuries. Mount a one-ounce lead eight on the outboard wingtip. Drill 1/32 holes through the rigging-ire locator blocks. Cover the top and bottom of the wing's center ction with 1/16 sheet balsa. Carve, shape, and sand the wing, then t it aside until final assembly.

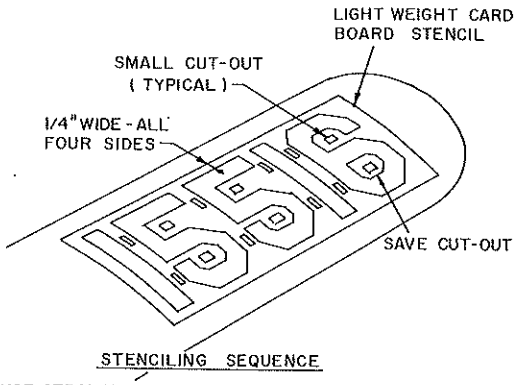
ıselage: Cut out the 3/32 balsa fuselage sides and mark all of the :lkhead locations on the inside surfaces. Cut out all of the .lkheads. You may need to modify the spacing of the engine-ɔunt cutouts in bulkheads 1 and 2 to suit the engine you are using.

Cement bulkheads 1, 2, and 3 between the fuselage sides. Make re that the sides are aligned and assembly is square. Chamfer the selage ends and then cement these well. Fit and cement the naining bulkheads into position. Slip the 3/8-square maple engine ɔunts through bulkheads 1 and 2 and epoxy them in place. (Fill the aces between the engine mounts and the fuselage sides with balsa r extra strength.) Add filler-pipe extensions to your fuel tank, if cessary. Locate the tank's position; balsa wedges and epoxy will :k it in place.

Drill a 1/16 hole through the center, or cut a 1/16 x 1/16 groove one side of a 1/4-square x 1 3/4 piece of spruce (or basswood) d cement it to bulkhead 2 as a rigging locator. Set the fuselage aside for now.

Tail Surfaces: All of the tail surfaces are cut from 3/32 sheet balsa. Install a Midwest 1/2A control horn in the elevators. I used a tubing-and-wire hinge system; that installation is shown on the drawings. Some readers might prefer to use Klett RK-4 flex-point plastic hinges. These are lighter (important for reducing ballast in the model's nose) and perhaps easier for some of us to use. It's your choice. Cover the rudder, fin, stabilizer, and elevators with silkspan or silk and set them aside.

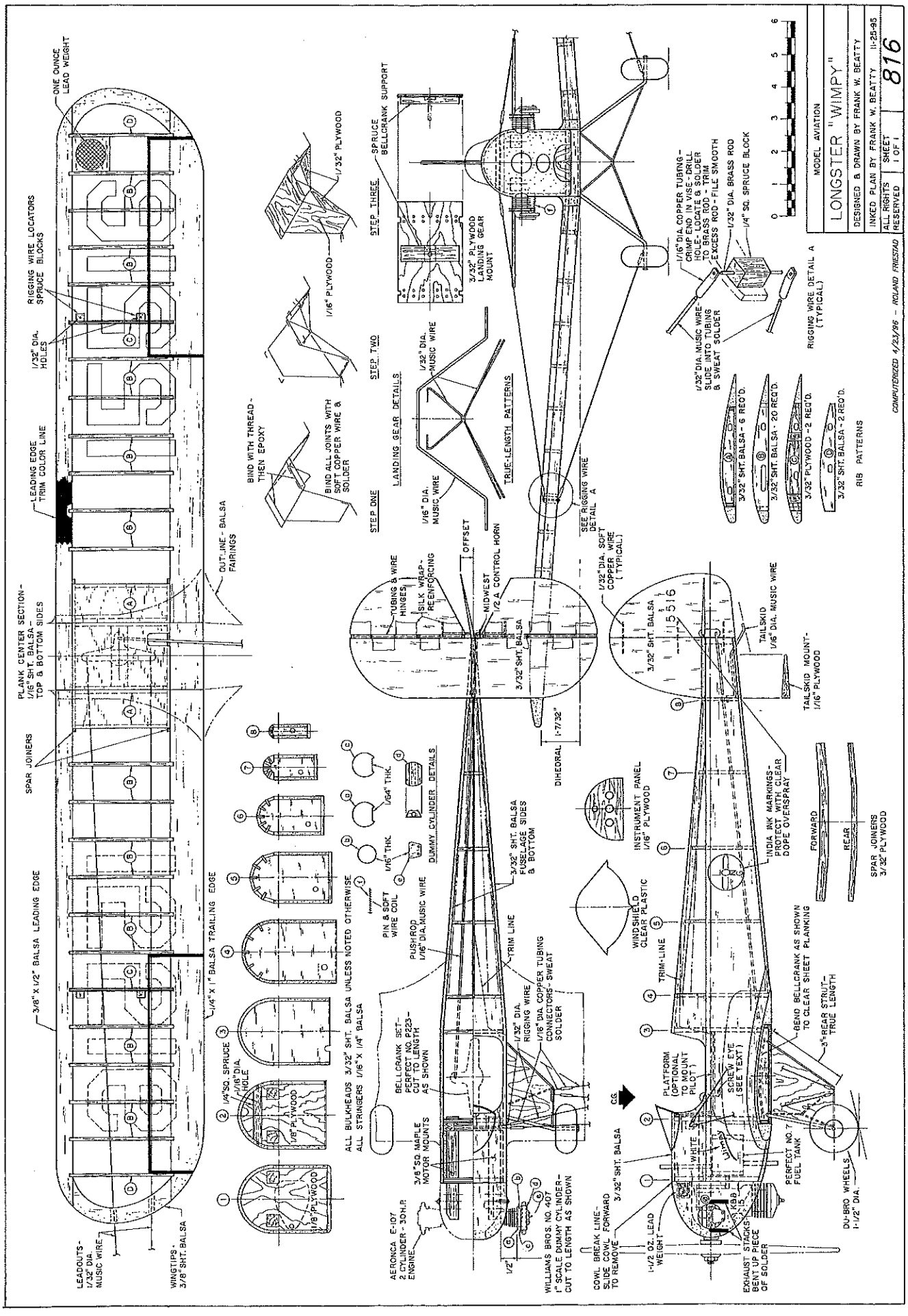
Assembly: Fit the wing and stabilizer to the fuselage, check for alignment, and cement them in place. Make up and install the elevator pushrod. Make sure that the control system does not bind anywhere. The tail-skid assembly and all of the fuselage bottom sheeting can be added. If you plan to have a pilot in the cockpit,



STENCILING SEQUENCE

1. USE STRAIGHT-EDGE & X-ACTO KNIFE TO CUT-OUT NUMBERS
2. CUT OUT ADDITIONAL SMALL SQUARES & RECTANGLES
3. LOCATE ON WING & TAPE AROUND PERIMETER
4. COVER SMALL CUT-OUTS WITH TAPE & PRESS FIRMLY
5. MASK OFF REMAINDER OF MODEL
6. SPRAY PAINT & REMOVE STENCIL
7. USE RUBBING COMPOUND TO REMOVE ANY PAINT OVER-SPRAY AROUND NUMBERS

FRANK W. BEATTY



:tall the mounting platform now. Add the :elage top sheeting and stringers. The :elage wing fairings are made up of a mbination of sheet balsa, balsa blocks, d Hobbico Hobbylite Filler. Cement the in place.

›wling: The cowling is a combination of :et balsa sides and balsa blocks. The :ces are shaped and hollowed out to suit engine and its needle-valve and exhaust touts. Two ½-inch-long wood screws ›rk as the cowling hold-downs.

nishing: Fill all of the dings and pinholes th Hobbico Filler. Sand the model ıooth and brush on two to four coats of :ar dope. Sand it smooth, and cover the tire model with silkspan or silk. (I always : silk.) Brush on six coats of clear dope. ray on six coats of thinned-out balsa ler-coat primer. Spray on four to eight ats of yellow dope. Throughout this ›cedure I wet-sand the model with 400- t wet-or-dry sandpaper after every two three coats. The last coat is hand-rubbed ing a soft diaper (or an undershirt) and ›. 7 Heavy-Duty Rubbing Compound that ·ought at Kmart. Now you can apply the m and markings.

im: Whenever possible, I cut stencils d spray the registration numbers on my ›dels. Use light cardboard similar to 4 x nch index-card material. Trace the mber outlines, and use a straightedge and X-Acto knife to cut them out. :member to save the center of the number :ut-out. Leave a ¼-inch-wide border ›und all sides of this group of numbers, :n cut out approximately 14 ⅛ x ⅜ :tangles. These will be strategically :ated between the numbers and at other y spots.

Tape around the four sides of the stencil hold it onto the model's wing, then use s of tape over each of the ⅛ x ⅜ cutouts hold the stencil in the desired location. :e tape should be Scotch 3M No. 320 afting Tape; it leaves a minimum of sidue and doesn't lift previous coats of int when it's removed. Mask off the rest the wing and fuselage to prevent any

overspray.

I spray light (nearly dry) dusting coats of paint at right angles to the surface and the stenciled areas. I don't worry if the stencil flutters up and down a bit; that ensures that the wet paint won't bond the stencil to the painted surfaces. There will probably be some overspray or fuzzy edges; judicious use of rubbing compound will remove the unwanted paint and leave crisply outlined numbers. Four coats of black should be about right. Remove all of the masking tape and rub the entire model down with No. 7 White Polishing Compound, also obtained at Kmart.

The "Long" fuselage logo and the rudder registration numbers were put on with a technical pen, draftsman's templates, and black india ink. A Berol R-40 circle template, a Berol R-960 Vertical Lettering Guide, and an Alvin Reform Refograph No. 2 technical pen were used. The india ink markings will smudge unless they are protected with a clear dope overspray.

The white "Wimpy" was hand-painted with thinned white dope and a 6/0 Bettebyrd Aqua-Sable Liner 400 brush (while I quite literally held my breath!). An alternate method would be to use a Pentel White 100WS marker.

The aileron outlines were made from 1/16-wide strips of dope that were lifted from a soaped glass panel that had been sprayed with black dope. (For more information on this technique, see the Hot Canary article in the March 1996 *Model Aviation*.)

Rigging Wires: Lengths of 1/32 brass wire should be passed through the fuselage and wing rigging-wire locator blocks. Then 1/16 diameter copper (or brass) tubing fittings can be fabricated, as shown in Detail A on the drawings. Use a small punch to mark the drilling points on the fittings so that the 1/32 drill bit will not wander when you drill these holes.

Align and fit the components of the upper sets of bracing wires and tubing fittings; solder these *only* at the wing-panel locators. Turn the model over, align everything, and fit the wires and fittings. Solder the parts together, but again, only at

e wing-panel locators.

Obtain two kitchen chairs, preferably ith padded seats, and space them about 26 ches apart. Place the model between the ıairs, resting on its wingtips. Have an sistant press down lightly on the model, ıd sweat-solder the wire and tubing fittings ar the fuselage. Turn the model on its back ıd repeat the procedure. Nothing looks ore unsightly than rigging wires that sag or ex. Yours, however, are quite taut, and ere easily accomplished.

nal Details: The dummy engine cylinders ere made from cut-down Williams Bros. linders (No. 407) and various odd pieces. I led the cylinders with lead, and the dummy haust stacks were made from solder to add ittle ballast.

Now the cylinders, windshield, strument panel, rudder, and wheels are ted to the model. Bolt the engine, opeller, and cowling to the model. Now spend the completed model from the screw e. If it does not hang in a slightly nose- wn attitude, it's tail heavy and will be an stable flier. If the model is tail heavy, uge out the cowling with a Dremel burr d add lead weight in the cavity until proper lance is achieved. If your engine has a uffler fitted to it, this extra ballast may be necessary.

ying: You have created a small, clean, ht airplane that will fly fast and respond ickly to control-handle inputs. The largish heels are open, widely spaced, and well ward of the model's CG, so landings ould be a piece of cake. Proper flying-wire ngths and diameters will depend on the gine you install. Have a more-experienced er or a hobby shop proprietor advise you out this.

If you have followed all of the steps scribed in this article, you will have been posed to and will have tackled techniques it took me decades (quite literally) to ster. Best of all, these techniques can be plied to every model you build in the ure.

w, don't you feel good? ✈

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