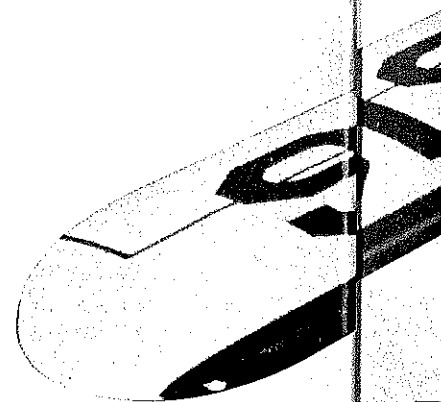


LONGSTER

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.

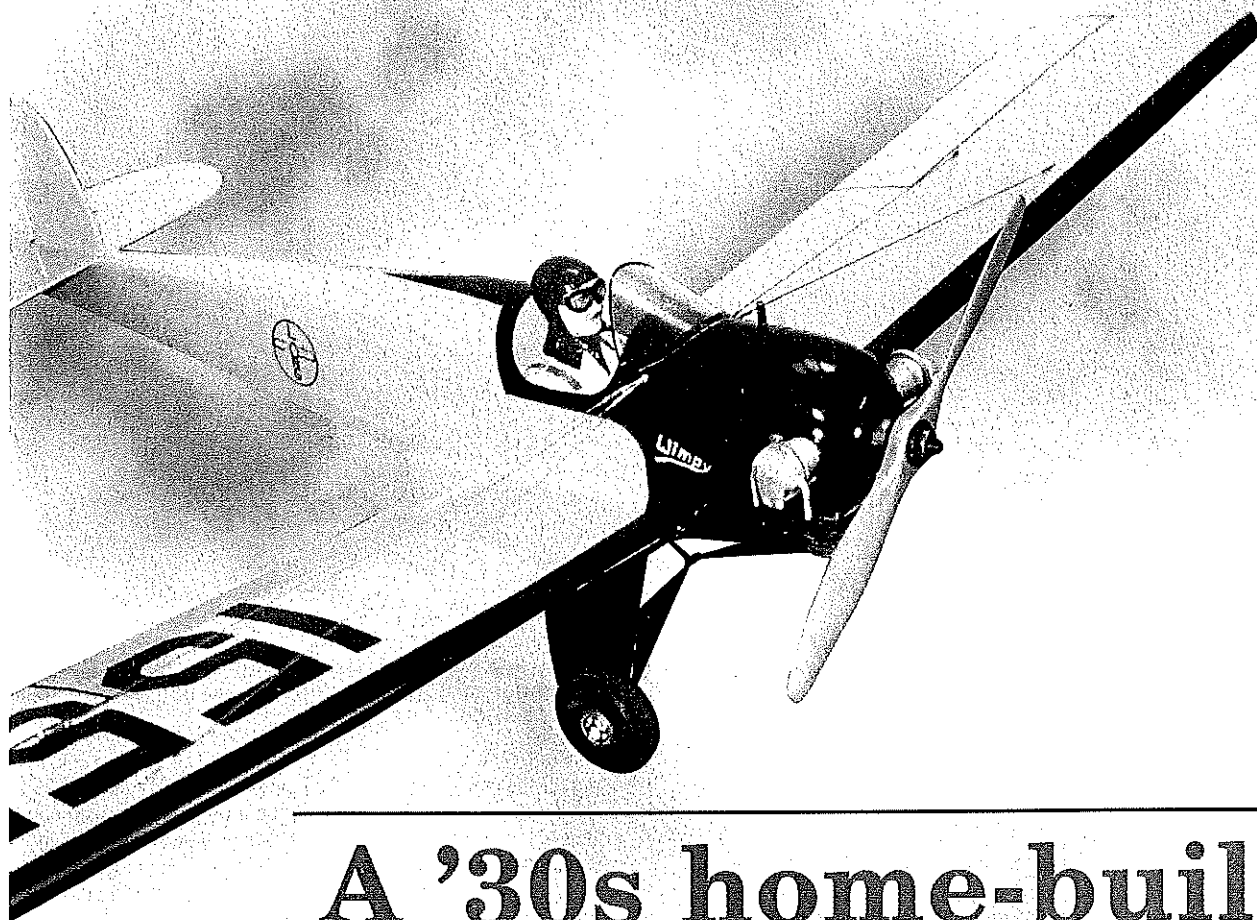
Despite this, Leslie Long and his brother (co-proprietors of a radio factory in Oregon) designed, built, and flew at least *nine* different home-built aircraft over a ten-year period. The most-successful and best-known of these was the Longster Wimpy.

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,

814



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

and a revamped turtledeck.

A three-view and photo of the Wimpy came from the Winter 1969 issue of *Air Progress-Sport Aircraft*; drawings of an early Aeronca aircraft engine came from *AA Aircraft Engines Volume 1*. These were the references used for the construction drawings, detailing, and markings of the model. A Free Flight model construction article by Walt Mooney from the September 1954 issue of *Model Airplane News* and an Electric RC construction article by Le Gray in the March 1980 *Model Builder* were also useful reference sources.

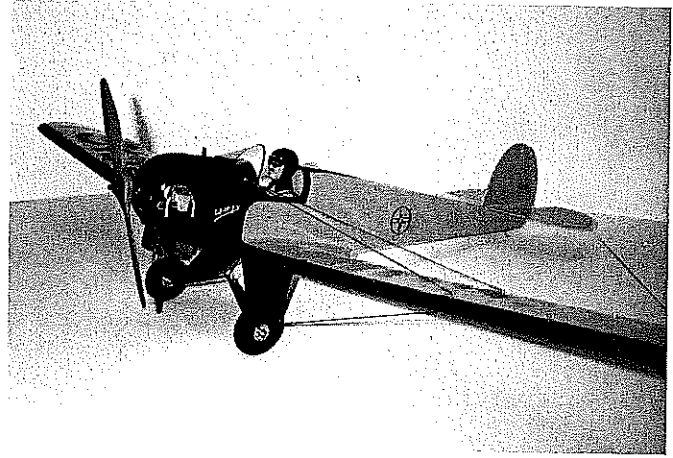
Don't call the Wimpy an "advanced beginner" project; by that I mean that the model has

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 $1\frac{1}{8}$ inches = 1 foot. The model has a 35-inch wingspan, a $21\frac{1}{4}$ -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.

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 $\frac{3}{32}$ 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 $\frac{3}{32}$ 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 $\frac{1}{32}$ 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

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

The pro

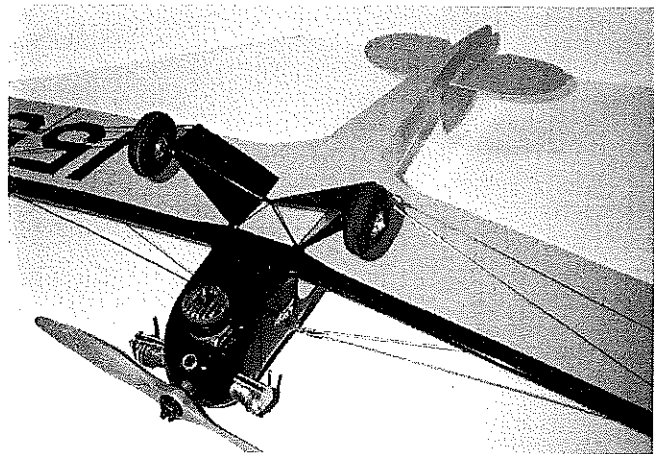
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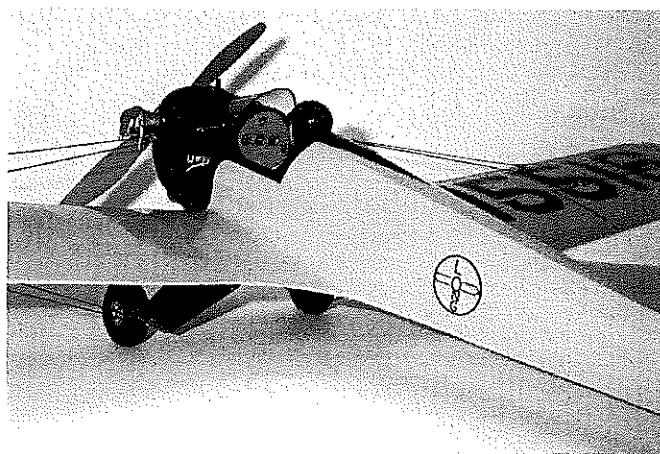
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The distinctive rigid trusslike undercarriage structure also provides an anchor for the wing-rigging brace wires.



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!

position. When the wing is dry, lift it from the building board and set it aside.

Undercarriage: Cut out the $\frac{3}{32}$ -plywood landing-gear mounting plate and drill the four rows of $\frac{1}{16}$ holes. Use an X-Acto knife or a remel burr to cut shallow grooves between adjacent pairs of holes on the bottom side of the plate. These grooves will allow the thread that binds the gear to the plate to be flush with the surface. They will also simplify finishing that surface later.

Study the first three steps of the undercarriage assembly procedure on the drawings. Step One: Bend up and bind the main spar members (including the V strut) to the platform with button thread and cement everything well. Step Two: Bind the remaining 2 music wire members with fine wire and solder them. Step Three: Fit the plywood fairings to the gear as shown and epoxy everything well. The $\frac{3}{16} \times \frac{1}{2}$ spruce (or basswood) bellcrank support and bolt must be cemented to the platform at this time.

Fit and cement the landing-gear platform to the wing center section. Make up the bellcrank and leadout wire assembly. Pass the leadouts through the inboard wing ribs and bolt the bellcrank in place. Bend the loops in the leadout wire ends now, or cover the sharp ends with tape to prevent injuries. Mount a one-ounce lead weight on the outboard wingtip. Drill $\frac{1}{32}$ holes through the rigging-wire locator blocks. Cover the top and bottom of the wing's center section with $\frac{1}{16}$ sheet balsa. Carve, shape, and sand the wing, then set it aside until final assembly.

Fuselage: Cut out the $\frac{3}{32}$ balsa fuselage sides and mark all of the bulkhead locations on the inside surfaces. Cut out all of the bulkheads. You may need to modify the spacing of the engine-mount cutouts in bulkheads 1 and 2 to suit the engine you are using.

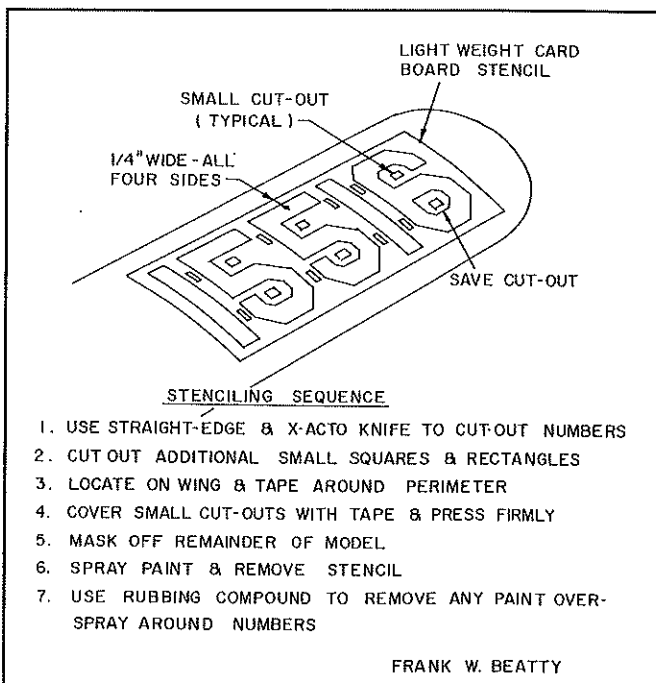
Cement bulkheads 1, 2, and 3 between the fuselage sides. Make sure that the sides are aligned and assembly is square. Chamfer the fuselage ends and then cement these well. Fit and cement the remaining bulkheads into position. Slip the $\frac{3}{8}$ -square maple engine mounts through bulkheads 1 and 2 and epoxy them in place. (Fill the spaces between the engine mounts and the fuselage sides with balsa for extra strength.) Add filler-pipe extensions to your fuel tank, if necessary. Locate the tank's position; balsa wedges and epoxy will stick it in place.

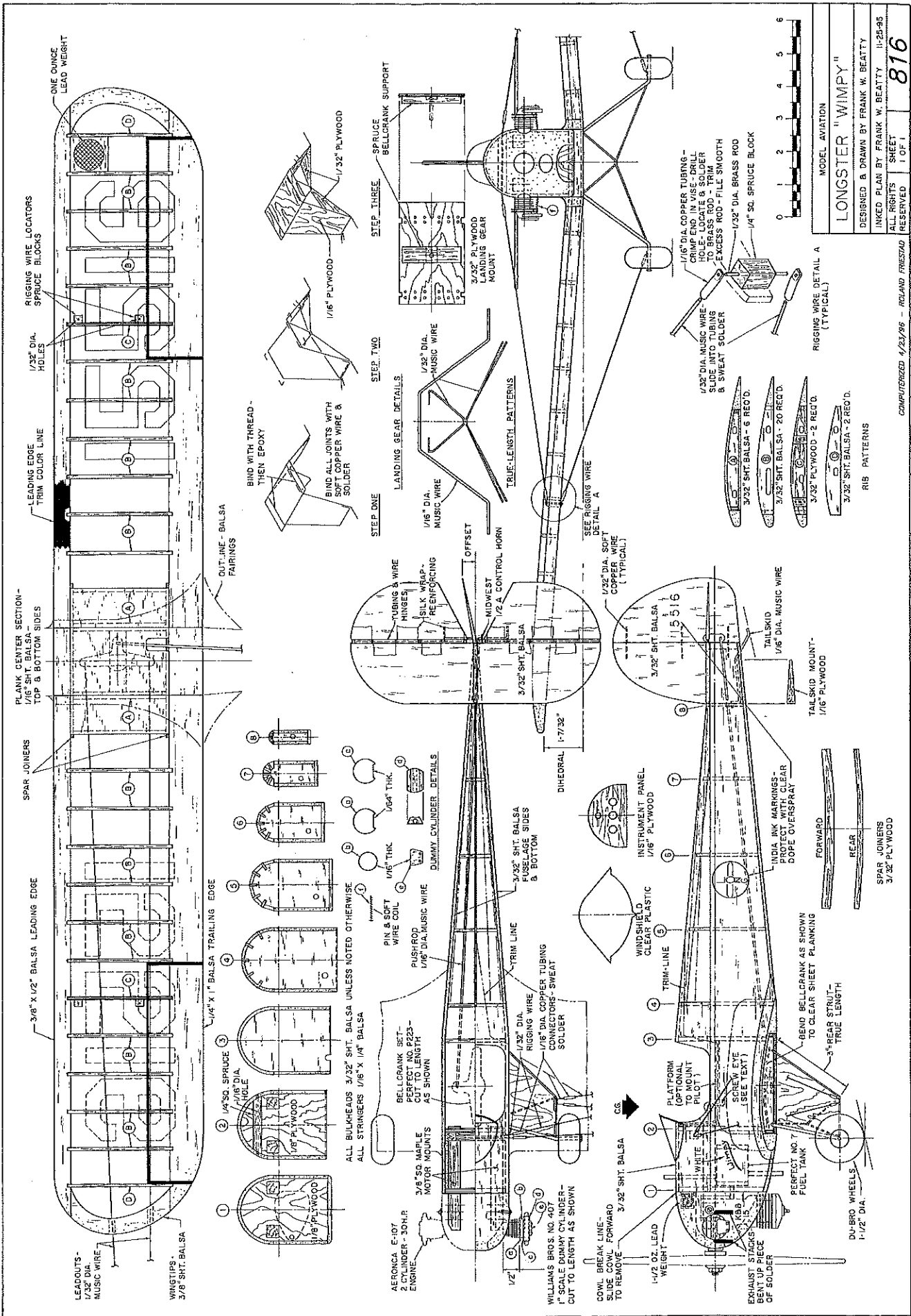
Drill a $\frac{1}{16}$ hole through the center, or cut a $\frac{1}{16} \times \frac{1}{16}$ groove on one side of a $\frac{1}{4}$ -square $\times 1\frac{3}{4}$ piece of spruce (or basswood) and cement it to bulkhead 2 as a rigging locator. Set the

fuselage aside for now.

Tail Surfaces: All of the tail surfaces are cut from $\frac{3}{32}$ sheet balsa. Install a Midwest $\frac{1}{2}$ A 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,





MODEL AVIATION	
LONGSTER "WIMPY"	
DESIGNED & DRAWN BY FRANK W. BEATTY	
IN KED PLAN BY FRANK W. BEATTY	11-25-85
ALL RIGHTS RESERVED	SHEET 1 OF 1
876	

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or

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

owling: The cowling is a combination of
et balsa sides and balsa blocks. The
ces are shaped and hollowed out to suit
e engine and its needle-valve and exhaust
outs. Two 1/2-inch-long wood screws
rk as the cowling hold-downs.

nishing: Fill all of the dings and pinholes
th Hobbico Filler. Sand the model
ooth and brush on two to four coats of
ar dope. Sand it smooth, and cover the
tire model with silkspan or silk. (I always
e 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
1. 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
odels. 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.
ember to save the center of the number
ut-out. Leave a 1/4-inch-wide border
und all sides of this group of numbers,
n cut out approximately 14 1/8 x 3/8
angles. 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 1/8 x 3/8 cutouts
hold the stencil in the desired location.
e tape should be Scotch 3M No. 320
afting Tape; it leaves a minimum of
idue and doesn't lift previous coats of
nt when it's removed. Mask off the rest
the wing and fuselage to prevent any

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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.

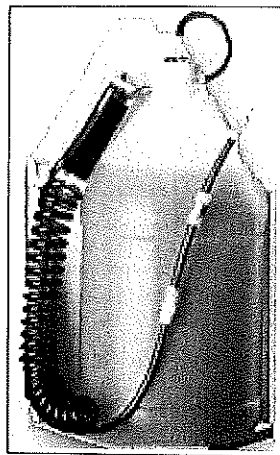
The "Long" fuselage logo and the rudder registration numbers were put on with a technical pen, draftsman's templates, and black india ink. A Berol R-40 circle template, a Berol R-960 Vertical Lettering Guide, and an Alvin Reform Refograph No. 2 technical pen were used. The india ink markings will smudge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



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e wing-panel locators.

Obtain two kitchen chairs, preferably with padded seats, and space them about 26 inches apart. Place the model between the chairs, resting on its wingtips. Have an assistant press down lightly on the model, and sweat-solder the wire and tubing fittings at the fuselage. Turn the model on its back and repeat the procedure. Nothing looks more unsightly than rigging wires that sag or sags. Yours, however, are quite taut, and are easily accomplished.

Final Details: The dummy engine cylinders are made from cut-down Williams Bros. cylinders (No. 407) and various odd pieces. I leaded the cylinders with lead, and the dummy exhaust stacks were made from solder to add little ballast.

Now the cylinders, windshield, instrument panel, rudder, and wheels are attached to the model. Bolt the engine, propeller, and cowling to the model. Now spend the completed model from the screwdriver. If it does not hang in a slightly nose-down attitude, it's tail heavy and will be an unstable flier. If the model is tail heavy, dig out the cowling with a Dremel burr and add lead weight in the cavity until proper balance is achieved. If your engine has a muffler fitted to it, this extra ballast may be necessary.

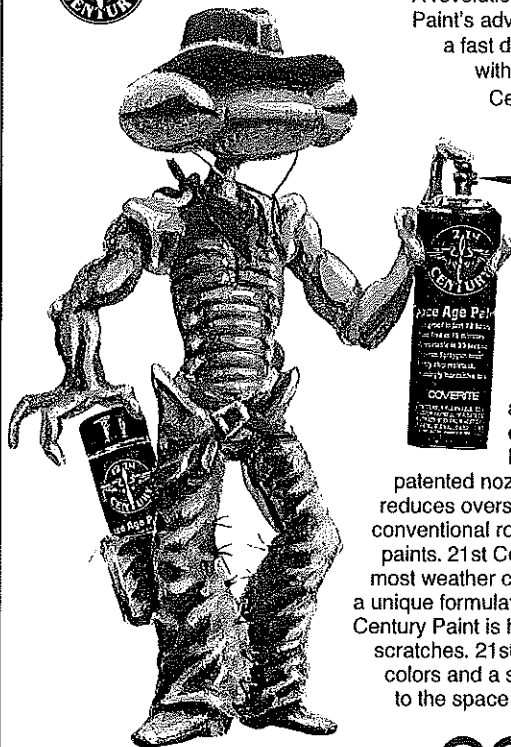
Finishing: You have created a small, clean, light airplane that will fly fast and respond quickly to control-handle inputs. The largish wheels are open, widely spaced, and well forward of the model's CG, so landings could be a piece of cake. Proper flying-wire lengths and diameters will depend on the engine you install. Have a more-experienced flier or a hobby shop proprietor advise you out this.

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

Now, don't you feel good? →

Frank W. Beatty
2608 Pontoon Rd.
Granite City IL 62040

SPRAYOUT AT THE O.K. CORRAL



A revolution in aerosol paint technology, 21st Century Paint's advanced formulation provides modelers with a fast drying, easy to apply finish, designed to withstand the punishment of R/C flying. 21st Century Paint dries dust-free in 15 minutes. Additional coats can be applied every

three minutes! Within 12 hours, 21st Century Paint is fuelproof up to 15% nitro, and can be masked, striped or decalced.

Only 21st Century Paint comes with a new hi-tech nozzle that sprays a fan pattern similar to an airbrush, and can be adjusted for either a vertical or horizontal fan spray. This unique patented nozzle system offers increased control, reduces overspray, and resists running better than conventional round pattern nozzles found on other paints. 21st Century is also amazingly insensitive to most weather conditions during application. Thanks to a unique formulation that gives it extra flexibility, 21st Century Paint is highly resistant to chips, cracks and scratches. 21st Century Paint is available in 18 colors and a sandable white primer. Welcome to the space age of model finishing!

COVERITE

420 BABYLON ROAD, HORSHAM, PA 19044



Airtrax!



Almost Ready to Cover (ARC) Sport Series Aircraft

MAT is proud to announce the return of the Airtrax series of High Performance Sport aircraft. New manufacturer, New lower price, Same great design. The Airtrax wide speed performance envelope, virtually unlimited aerobatic potential, and rock solid tracking characteristics set the Airtrax apart from any other plane in its class. Quick to build, Easy to fly and land, the Airtrax makes the average sport flier look like a pro.

Made in the USA!

Sport Series features: 75% Pre-built, Solid Balsa and Ply Construction. Pre-sheathed Foam Wings, Built Up Fuse, Built Up Tail Surfaces, Landing Gear and Instructions.

Airtrax 40	Airtrax 60/120	Airtrax GS	Airtrax Aggressor
Wing Span: 51"	Wing Span: 72"	Wing Span: 84"	Wing Span: 84"
Wing Area: 500 sq in	Wing Area: 800 sq in	Wing Area: 1280 sq in	Wing Area: 1280 sq in
Weight: 4 - 5 lbs	Weight: 6.5 - 9 lbs	Weight: 15 - 19 lbs	Weight: 19 - 21 lbs
Engine: .35 - .45	Engine: .61 - 1.20	Engine: 1.8 - 4.0 Gas/Glow	Engine: 3.0 - 4.2 Gas



MAT

P.O. Box 124, Woodbridge, NJ 07075

800-762-1950

BUY AMERICAN



BUY FOX!

FOX MANUFACTURING CO.

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