

LES LONG'S

# WIMPY

By LE GRAY . . . Large scale models need not be heavy and/or fly with monster engines. The Wimpy, as built from Le's plans by Curtis Christen, weighs under 8 lbs, with electric power. This is Mammoth Scale!

• Wimpy is a lightplane creation by Oregonian Les Long that was almost a half-century ahead of its time. A grass-roots vehicle of the mid-thirties, Wimpy is a design that still warrants serious consideration by the homebuilding enthusiast. It is an interesting and functional machine, quite in keeping with today's needs for an inexpensive sport/recreational airplane.

The basic welded steel tube fuselage is of straight line geometry. Landing gear struts are a welded continuation of the fuselage structure and offer no shock absorbing qualities. Rather, they provide an inverted pylon as anchor for the wing's flying wire braces. Landingshocks were absorbed . . . hopefully adequately . . . by large, low-pressure tires. Piper's Vagabond and Pete Bower's Fly Baby utilize similar solid strut/air wheel shock systems.

The Wimpy wing was of classic,

wooden construction. External wire bracing was simple and light compared to more conventional tubular struts or cantilever construction. Drag? Who cares at 80 mph? Strength? The Ryan ST and PT-20 and -22 series utilized an almost identical arrangement, and they were fully aerobatic.

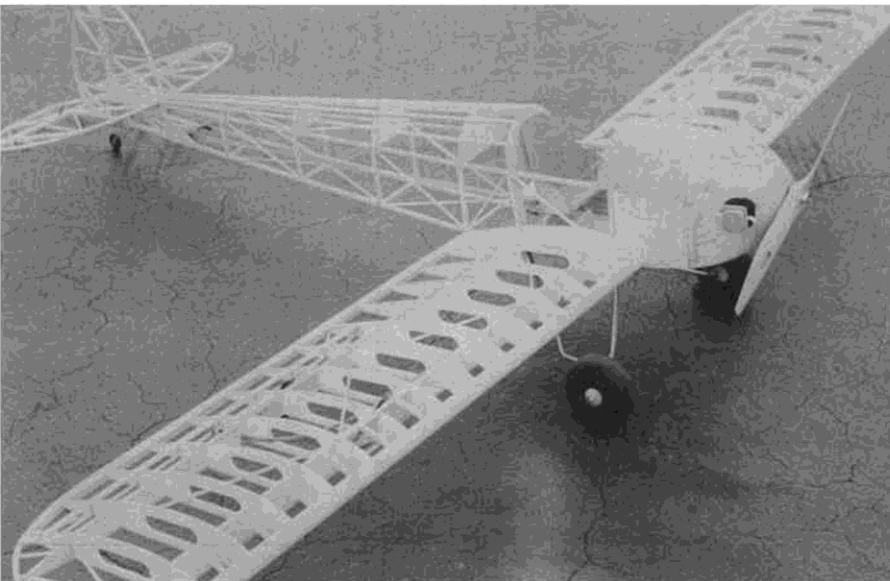
Wimpy was undoubtedly planned around a contemporary air-cooled powerplant. Most likely candidate would have been Long's own Harlequin, a 30-hp opposed twin incorporating cylinders from a Harley-Davidson motorcycle engine. Another candidate would have been the twin-cylinder Aeronca engine offering from 26 to 36-hp, depending on the model. Even the new, single-ignition, four-cylinder Continental rated at 37 hp would have been available. Any of these would have been exciting possibilities to the lightplane designer of the 1930's, but they must

have been heavy. Just look at the short nose moments of the various aircraft that they powered: Aeronca C-2 and C-3, Heath Parasol and Mid-Wing, Long's Longster and Wimpy. But still, what an improvement compared to converted Ford Model T or A engines . . . or the overly expensive but unreliable imports of the day.

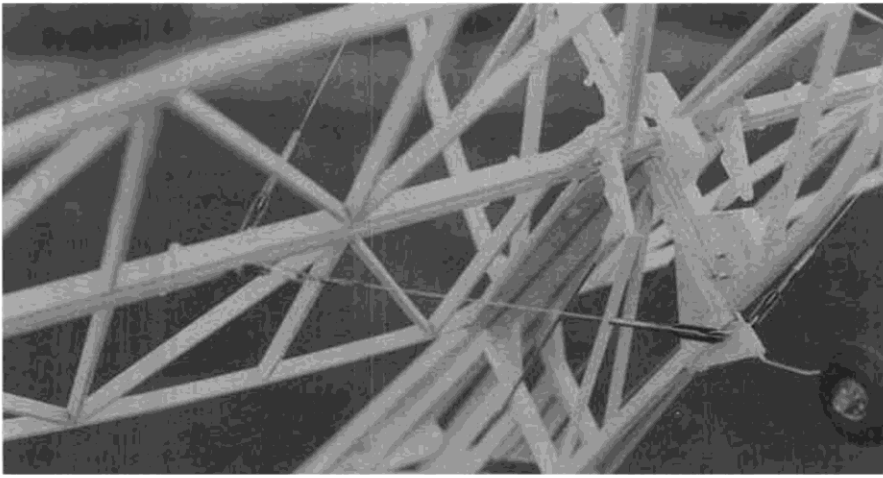
The few published photos of the Wimpy confirm that several were built. Different powerplants were used, and no two installations or cowlings are alike. Some variations in fuselage form also can be noted. One example utilized a rear turtledeck of a rather extreme half-ellipse, almost triangular cross-section rather than the more common semi-circular bulkheads. Another interesting version featured a higher turtledeck that came forward to a fully enclosed cockpit. Nothing fancy, just straight lines from the fuselage station immediately aft of the cockpit to immediately forward of the empennage. It seems that full-scale homebuilders are much like modelers . . . each believes he can improve any design.

As with many of the successful early homebuilts, Wimpy features a high aspect ratio wing with resulting low span loading. This sailplane-like characteristic is common with Heath, Aeronca, and other Long designs, and provides reasonable flight performance with relatively low power. An ideal format for electric-powered Quarter Scale.

Development of the associated plans, working primarily from Walt Mooney's Half-A free-flight version published in *Model Airplane News*, September, 1954, was a fascinating project in imagineering. Assuming Walt's three-view arrangement was basically accurate and utilizing available photos, published specifications, and other examples of Long's work, we tried to visualize what Long's thought pattern or reasoning



Simple, straightforward structure is evident in this pic. Lightness is a primary concern when building this model, especially when electric power is used; 7-1/2 lbs. is max.



Tail structure (above and right). Laminated outlines make it strong, light, and add to the scale appearance. Wire bracing is functional. Four bolts hold stab to fuselage.

might have been when he was laying out the original design. Undoubtedly, major dimensions would have been in nice, round numbers with logical spacing for components. Would a man in a barn some 45 years ago, designing with yardstick in hand, lay out structural elements on 17-1/2 or on 18-inch centers? We assumed the latter to be more plausible, and made our drawings accordingly each time an option was encountered. Interestingly, components and major structural positions seemed to fall into place . . . as if we were right. Really right. Actually gave a weird feeling at times.

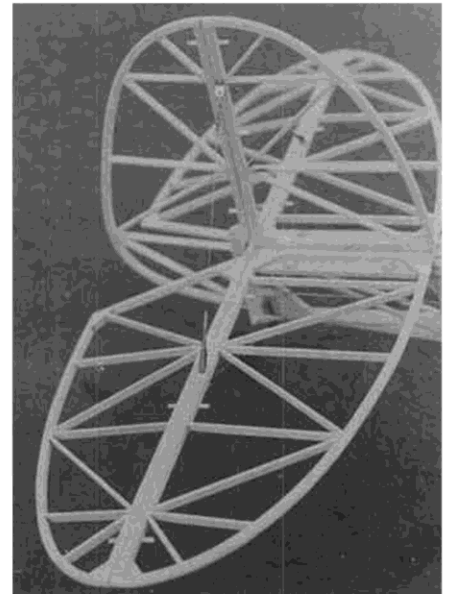
The plans presented are believed to be a fair representation of what the actual structure might have been . . . or, more reasonably, could have been. Now, this bit of homey philosophy might be tough to sell to some hard-nosed scale judge, but this is for fun. And it is fun!

Certain details in the photos are not consistent with the drawings. Simple explanation: the plans incorporate changes/improvements resulting from the prototype model. A major item to keep in mind is weight . . . minimum weight. With the electric motor/propeller specified, 7-1/4 lbs. is the absolute maximum for safety. And 3 lbs. thrust . . . that's "pull" measured with a fish scale hooked to the tailskid . . . must be

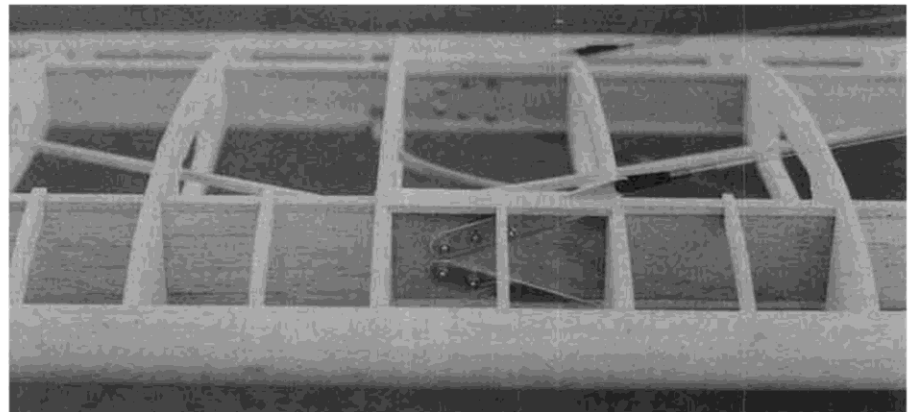
available at takeoff.

From the instant the tail came up on the first takeoff run, flight performance of the model Wimpy has been the most beautifully realistic we have ever witnessed. Absolutely fantastic. Les Long obviously knew how to lay out an aerodynamic force arrangement that was right or "right on," depending on your date of birth. No adjustments or changes, other than a minor weight reduction program to reduce from 7-1/2 lbs., have been made. We did try an 18x8 prop on one flight. Don't.

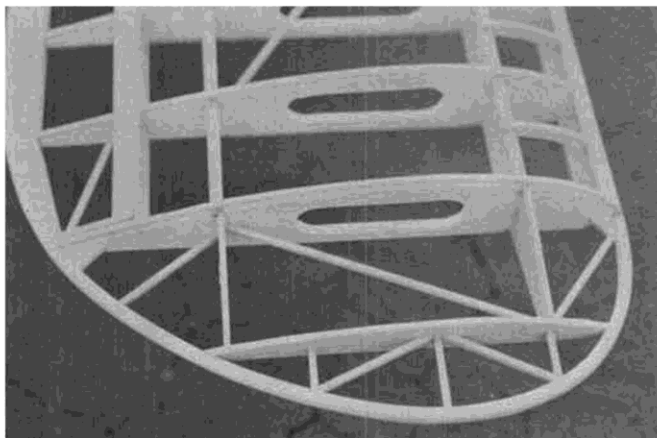
If you elect to power Wimpy with an



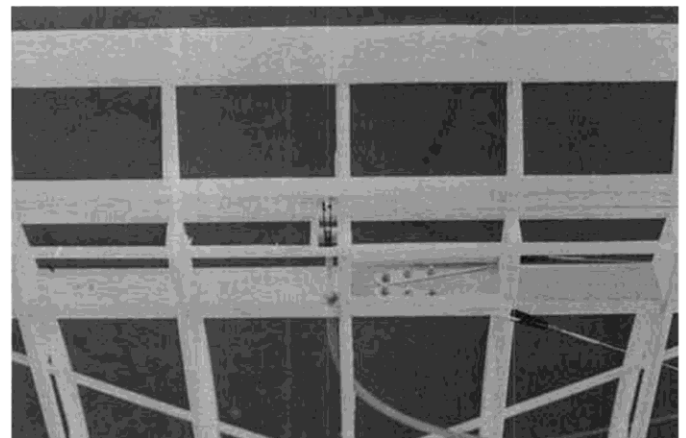
internal combustion engine, there is ample margin to strengthen the front end of the fuselage to handle all that vibration and such. Better to build in beef than to take dumb lead ballast for an airplane ride. Our electric power system installation totaled 3-1/2 lbs., so a more conventional engine installation should allow a couple of pounds to be put into the structure. A large (.45 to .60) engine would be all right if overpropped to reduce power and add to realism. Little propellers look dumb on big scale



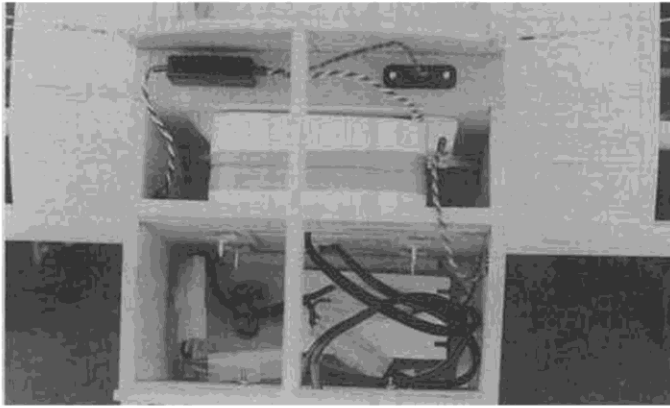
Wing bracing wires use spring steel pushrod devices to connect to metal fittings, which are in turn bolted to a plywood shear web between spars.



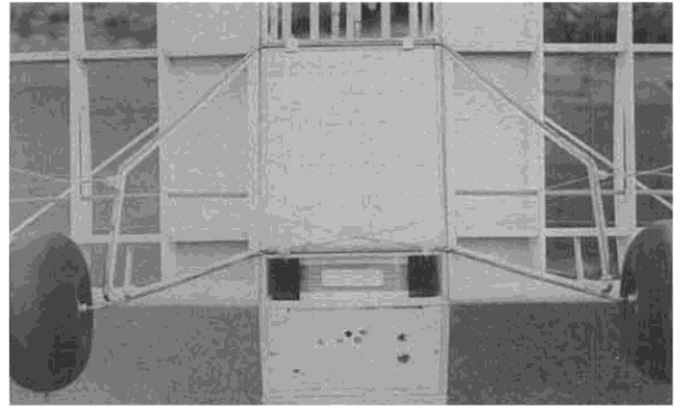
Wing tips are laminated similar to the stab. Ribs on original model are Foamcore with balsa cap strips. Note inset spars.



Flexible plastic pushrods are used to drive the ailerons . . . lighter and simpler than solid pushrods and bellcranks.



Astro 25 battery packs are placed one on top of the other between ply bulkheads, motor speed control in front of batteries.



Landing gear is held on with metal straps and screws. Gear is wire braced and rigid; Trexler airwheels provide shock absorption.

models, anyhow. Actual power requirements demand nothing more than the output of a healthy .29. Please don't make a bomb out of Wimpy by overpowering. Its big, thick wing section just begs to loaf through the air . . . low, slow and easy. Maybe a steep turn or a slow-motion type loop, but go easy on the aerobatics. Try spot landings, instead.

The Wimpy flies by forward thrust pulling a lifting surface through the air to overcome the forces of gravity on a given mass. This will be a surprise and a bit of a challenge to modelers used to high power/weight ratios. Wimpy's power/weight ratio is just slightly higher than a Schweizer 1-26, so relax and fly in the real and realistic sense. Just like Quarter Scale oughta be.

**CONSTRUCTION**

The construction techniques used in building Wimpy are very conventional and simple. It is to be remembered, however, that this is an electric model and must be built as lightly as possible. Select all wood either for strength or weight, depending upon use in the structure. The top and bottom fuselage longerons should be straight, hard balsa. Use epoxy only where absolutely necessary and Titebond and Hot Stuff or equivalent wherever possible.

Begin construction by cutting templates for tail surfaces and wing tip outlines from foam board. Laminate outlines from medium 1/16x1/4 balsa. Lamination strips may be glued together wet or dry. Either works equally well.

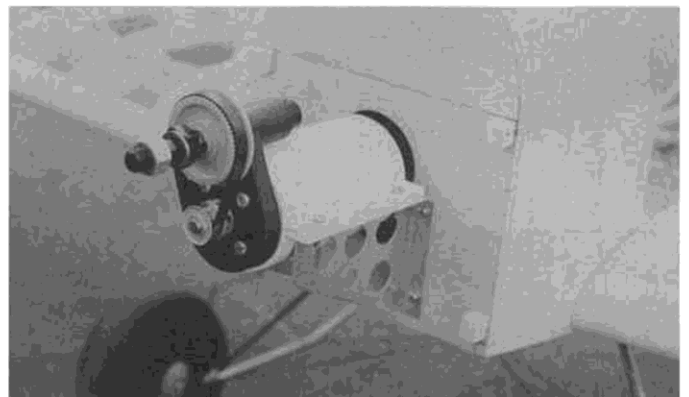
Make a 3/32 or 1/8 plywood wing rib template with all notches, lightening

and root rib mounting holes. When cutting foam board wing ribs, use only a sharp blade. Otherwise, you get a lot of paper covered, crushed foam. Take special care to get a good fit on all joints and spar webs, as this requires less glue for maximum strength. Foam board, known commercially as "Foamcore" and other names, should be available at well-stocked art supply stores or departments.

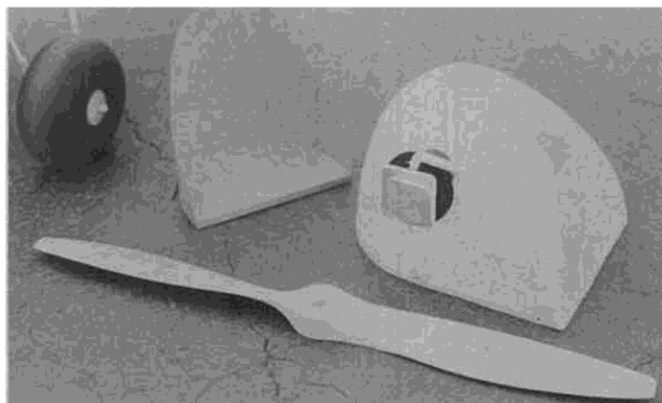
Fuselage construction starts by making two side structures directly over the plans and each other. Continue framing directly over fuselage top view with sides inverted. Add all bulkheads, frames and diagonals possible while anchored in this position. When dry, remove from board and add turtledeck formers and stringers, stabilizer mounting plate, and



No shortage of radio mounting room in the Wimpy! Note the 1/4-inch tubes that locate wing to fuse, also hooks for rubber bands.



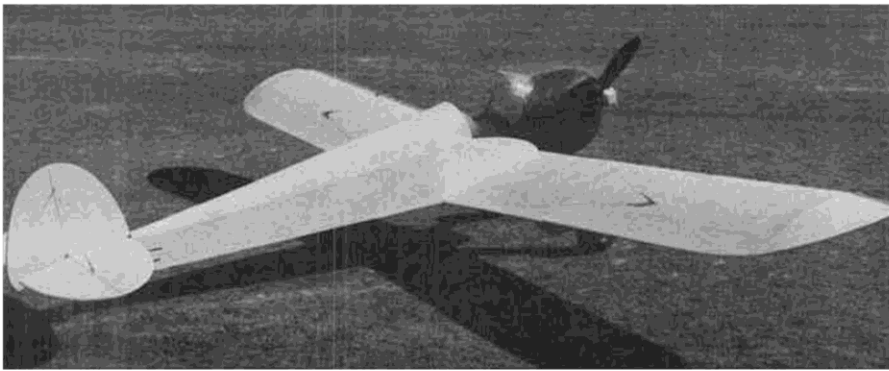
Astro 25 with speed reducer fits into Astro Flight mount, then bolted to homemade aluminum bearers. Swings 18 X 10 prop.



Cowl is fiberglass, made over a foam plug, or carve one from black balsa if you prefer. Pilot's seat can be made from 1/64 ply.



All set to go flyin'. Original model was finished in cream and maroon Monokote, recommended for strength and light weight.



One of the reasons the Wimpy is so easy to fly is the long tail moment. Now you can see why it is so important to keep the tail as light as possible, and keep all the heavy stuff forward.



At 7-1/2 lbs., Wimpy is definitely not a windy weather model. But the light weight permits slow, realistic, enjoyable, safe flights. It's the way a Quarter Scale model *ought* to fly.

other details.

Bend landing gear components, wrap all joints with one layer of one strand from Half-A control line wire, and solder. Mount to fuselage, checking for true alignment.

Mate all flying surfaces to fuselage with care to proper fit and incidence. Fabricate the flying and landing wires and fittings per drawing, and carefully rig surfaces. Remember, the wire braces are functional and carry flight and landing loads. Check control surface movements for values noted on the plans.

The engine cowl is fabricated over a foam plug carved to match the fuselage. Use one layer of 2-oz. fiberglass cloth and three coats of epoxy, sanded between coats. Motor cylinders are made from file folder card stock and balsa.

The radio flight battery may be eliminated by building a voltage regulator to run from the motor batteries. Use two 5-volt, 1-watt, 3-lead regulators (Radio Shack No. 7805) in parallel. These regulators must be attached to the motor mount, in the airstream to provide a heat sink. This alternate power source will supply at least five minutes for the radio system after the batteries will no longer drive the flight motor.

The completed model should not weigh more than 7-1/2 lbs., and lighter is better. Check the balance and shift battery and radio equipment as necessary to fix the CG between 25 and 30 percent of wing chord. The original cream and maroon model was covered with Monokote, which is recommended for maximum strength and minimum weight.

Flying the model is somewhat unconventional. It is very slow and realistic and not at all like most powered models. Let Wimpy fly its own way ... climbing on wing lift rather than prop blast. We think you'll enjoy.

