One of the nice things about modeling is that guys and gals can have fun in so many ways. Our author has had a rewarding experience in modifying an excellent RC sport model kit for more advanced flying. You might say that this Eaglet has bared its talons.

John Hunton

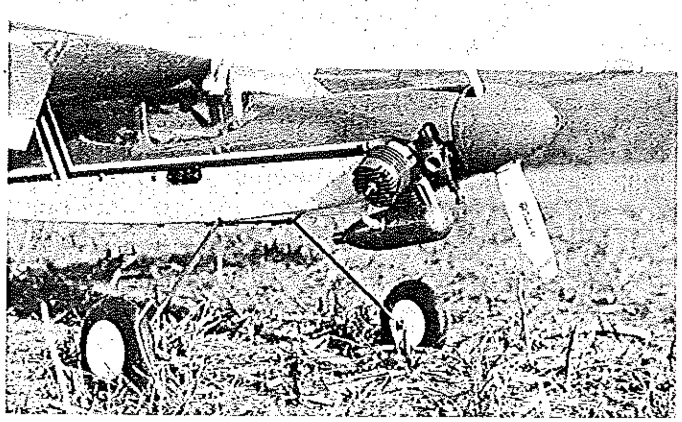
Screami

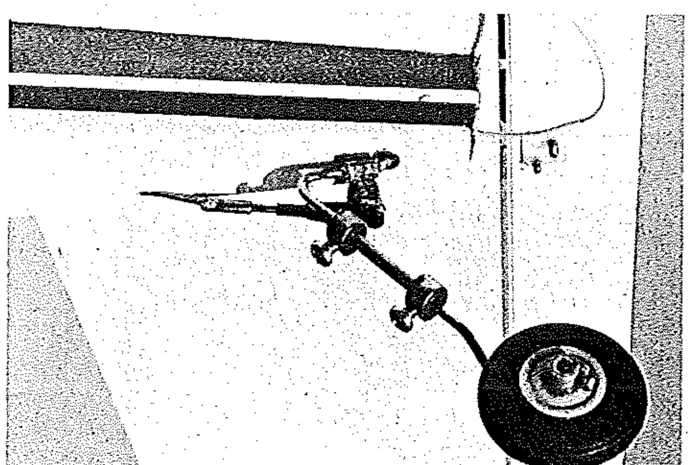
Faired-in nose, two-wheel landing gear, and a .25 engine provide snappy performance. The structure has been beefed-up sufficiently to take the higher loads that result. The author, an architect by profession, is the designer of the National Center for Aeromodeling.

448

THE EAGLET by Carl Goldberg Models is one of the most popular sport trainers on the market today, and for good reasons. The Eaglet is very easy to build, it is elegant looking, and it is a good, solid-flying sport trainer.

If you have progressed beyond the trainer stage and want to build a model with higher performance that is capable of inverted flight (but is still simple to build, and looks even better to those of a nostalgic bent—tail-dragger lovers, like Bill Winter, for instance) build another Eaglet with the following modifications: 1) Faired-in nose, for more streamlining; 2) Tail-dragger, for less drag and weight; 3) Enlarged rudder, for better ground handling; 4) Enlarged ailerons, for a faster





Left: The downward-slanted engine and large spinner provide a sleek installation. Right: Detail of the adjustable-length tail wheel. When the wheel is fully extended, the handling characteristics are very similar to a standard tricycle gear.

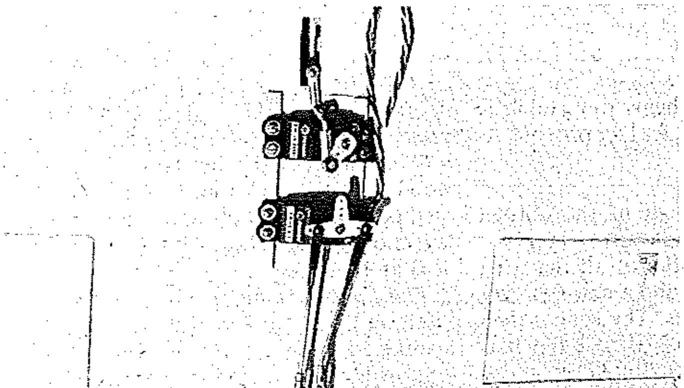
n' Eaglet

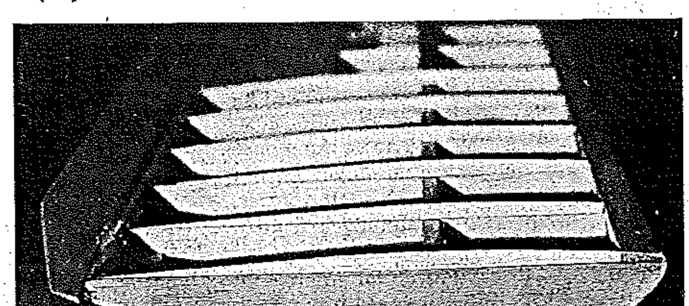
The wing flaps are fully extended in this view. Deploying the flaps will slow the model considerably and allow a steeper glide. Note the text cautions, however, when putting on or taking off the action of the flaps. All photos by Bernie Stuecker.

roll rate; 5) Modified airfoil, for improved inverted flight; 6) Wing flaps, for slower flight and a steeper glide; 7) .25 engine, for higher speeds and steeper climbs; 8) Beefed-up structure, to take higher "G" forces.

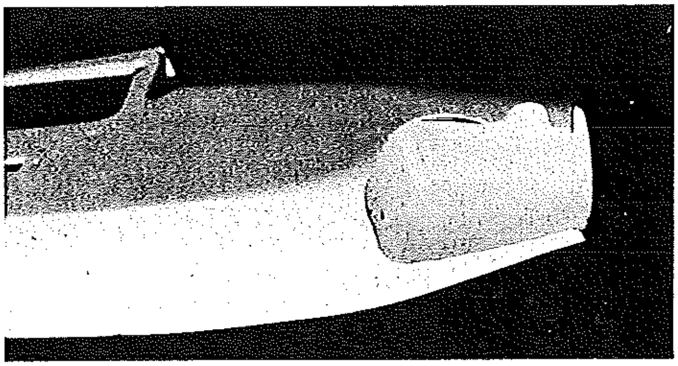
The real joy of flying the Screamin' Eaglet is the contrast between high-speed and low-speed capabilities. A fast model can perform large, graceful maneuvers, penetrate a strong wind, and cover a lot of sky. With the flaps down, many things change.

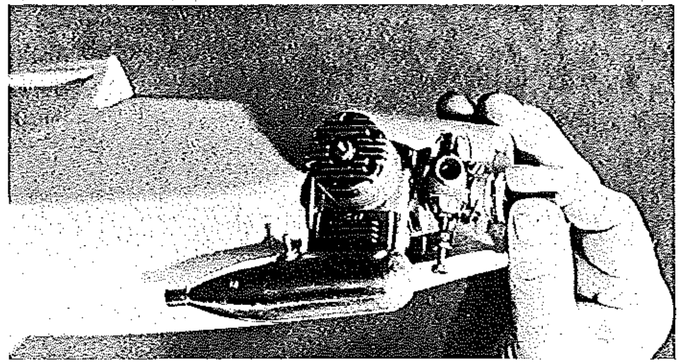
Wing flaps increase the coefficient of lift of an airfoil. With flaps down, the model will take off after a shorter roll, climb at a steeper angle, glide with a steeper angle of descent (important with the suggested streamlining), turn and loop much tighter, and have improved stall characteristics. With flaps down you can horse the model off the ground and go through sharp turns with little concern of a stall. Of course, the better technique is to increase the use of rudder control vs. ailerons at low speeds for turns and corrections especially during takeoff. Be



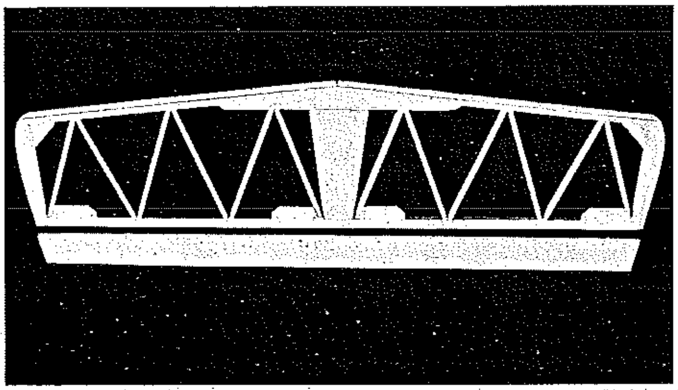


Left: Mounting detail of the servos for the flaps and ailerons. Above: This bottom view of the wing structure shows part of the airfoil modifications. Trim off ¼ in. from the rib tops and add it to the rib bottoms after the wing has been built in the normal fashion.

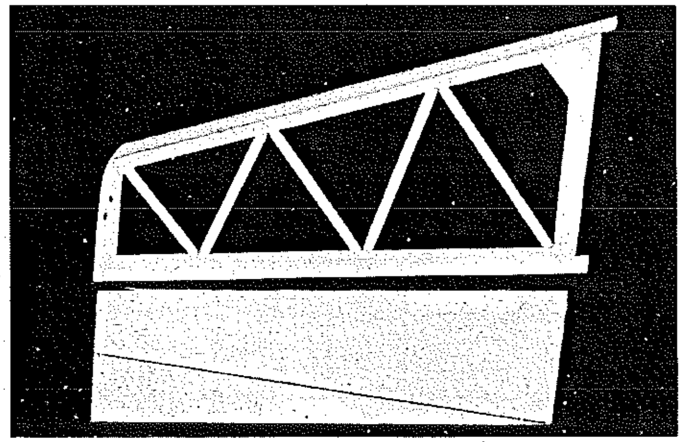


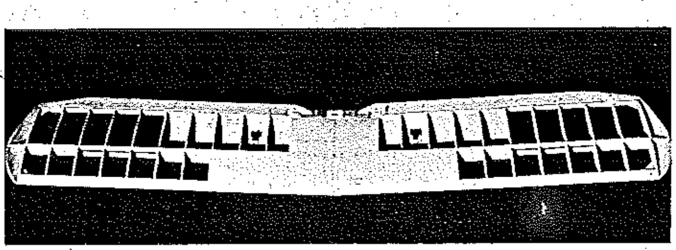


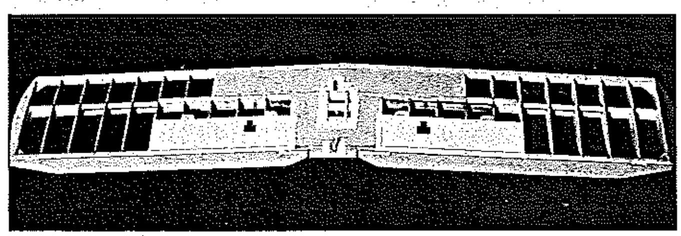
Left: The nose is modified to fair-in smoothly with a large spinner. As shown, the nose has been prepared for a firewall-type engine mount. Right: The mounting angle chosen places the muffler of the O.S. .25 FSR at the bottom-center of the fuselage.



Addition of dowel stock to the leading edge of the stabilizer (above) and the vertical fin (right) provides increased structural stiffness.







Overall views of the wing from the top (left) and bottom (right) show the servo mounting, additional sheeting, extra-wide ailerons, and flap wells. If you like to modify kits, as so many guys do, the tricks played on this Eaglet may be just your cup of tea.

forewarned that the application of full flaps increases the effective angle of attack of the wing and, thus, greatly affects trim. When you pop flaps on, be ready to apply down-elevator or be flying very slowly. Conversely, when you take the flaps off, have plenty of altitude and speed, because the nose will tend to drop.

If you have not flown a tail-dragger, this is an ideal model for learning. Carl Goldberg's basic design is long and slim with plenty of inertia about the yaw (rudder control) axis. Most fears of tail-draggers come from experiences with short-coupled models (this one isn't). An adjustable-length tail wheel is shown on the plan. If you haven't flown a tail-dragger, start with the tail wheel fully extended. With the long tail wheel and the flaps up, the model will have to attain an airspeed well over stall to become airborne. Rudder control on takeoff is similar to the handling of nose-draggers because of good airflow over the rudder with full power.

Landings, however, are different. The engine is idling, and airflow over the rudder is poor. When on final approach, use rudder to steer with and aileron to cancel out any crosswind, even if you must land with one wing low. Once you contact the ground, it is important to stay with the rudder control. With the extended tail wheel, the tail wheel will contact the ground first and pitch the model slightly down; this will kill the wing's lift and provide good contact and steering. As your tail-dragging skills increase, shorten the tail wheel for quicker takeoffs. If the model tends to porpoise on landing, lengthen the tail wheel slightly. The use of flaps during landing helps tremendously by slowing the plane and improving its stall characteristics.

Construction. Follow all of the normal steps, except for the following changes:

Wing. The top profile of all the wing ribs must be modified and a new spar slot cut as per the templates. The wing is then built by the instructions with a flat bottom, except for the leading edge, which can be hung over the edge of the workbench and pinned to the ribs. Note that additional doublers have been shown for the leading and trailing edges, and that the leading edge sheeting extends farther out the wing.

After building the basic wing panels, the secondary lower spar (partial span) can be added, and new bottom wing rib contours, flap rigging, flap well sheeting, and bottom leading edge sheeting can be installed. The plastic wing tips supplied with the kit cannot be used. Build new balsa tips from the template shown.

Cut new ailerons from 1¼-in. balsa stock. Taper the inboard ends to standard size. At the tips, after cutting the plan shape, taper the bottom surface up, thus providing more washout at the tips.

Wing flaps. Build the flaps of 1/16 plywood with a 1/16 balsa infill. An alternate method of construction is to laminate two layers of 1/32 balsa sheet with the grain biased at 45 degrees.

The fin and stabilizer are modified by insetting 3/16-in. hardwood dowels into the leading edges to improve structural stiffness. Add to the rudder area as shown.

Fuselage. Decide whether you want to use the beam engine mounts supplied with the kit or a radial mount. Use of the radial mount will require doubling the thickness

1/2A	None
A	None
B	No Juniors
D	No Juniors
1/2A Profile Proto	Juniors only

Unlimited Class—No Juniors

Event	Restrictions
1/2A	None
A	None
B	No Seniors
D	No Seniors
Jet	No Seniors

In addition, I think that the 1984-1985 AMA rule book, paragraph 17 of Section 23 (CL Speed) needs to be revised by adding the following sentence just before the last sentence of the paragraph: "In addition, models should maintain a flight altitude which is generally at (or above) the height of the pilot's hand holding the control handle." The last sentence of the paragraph would then be revised to read: "Maintenance of flight outside of these limits, as specified for the various classes, for more than one-half lap shall constitute a foul."

I still think we need a class limited to a specific engine—and maybe a specific plane, as well—for the beginners.

You do a good job with your column. Keep up the good work.

That's all for this month. Comments on Ross' letter should be sent to me.

Gene Hempel, 301 N. Yale Dr., Garland, TX 75042.

Civy Boy CO-2/Lidberg

Continued from page 84

the copies over the tissue, and then cut out the letters using a metal straightedge to guide a sharp #11 X-Acto blade.

Adhere the letters with thinner applied with a small brush. The original Civy Boy 74 in the *MAN* article featured "Atwood Triumph" lettering on the wing's underside; that's why my model says "Telco CO-2." I don't work for Telco, so this is a free plug, but I do want to encourage use of CO-2 motors.

You don't have to install the dethermalizer (DT), but it would be a shame to lose the model needlessly in a thermal. Install the 1/16 dowel, the fuse snuffer tube, and the wire hooks as shown on the plan. A piece of strong thread or .008 to .012-in. Control Line wire is used as a limit string so the tail will pop up to about 40°. If thread is used, be sure it won't contact the fuse, or the tail will pop off instead of up.

Check over each panel of the wing and tail for warps, and steam them flat if necessary. Assemble the model. It must balance at the wing's TE. For adjustment, move the tank forward or aft. Small bits of clay ballast may also be used. When the tank is located correctly, brace it in place and make the bond paper hatch cover.

Begin test glides with a 1/16 shim under the stab TE. A bit more thickness will probably be needed for a good glide. Move the tail assembly around a bit so there's just a hint of a left glide turn; then add some 1/16 sq. by 1/8-in.-long keys to position the stab on the platform. Make sure the keys are glued to the stab and that the stab is still free to pop up.

Try some low-power flights. The Civy Boy should climb gently to the right even at a low setting. If it won't, there's a warp, or rudder or engine offset that needs to be taken care of. Work up slowly to more power, using the throttle. Most of my CO-2 models fly best when using less than full power.

Hope you enjoy the Civy Boy replica. I believe you'll find it to be a relaxing and rewarding type of modeling.

Screamin' Eaglet/Hunton

Continued from page 91

much more sensitive and responsive as compared to the stock kit Eaglet. You may want to get an experienced pilot to help check out and trim your new model; however, you will quickly become acclimated and appreciative of this higher-performance variation.

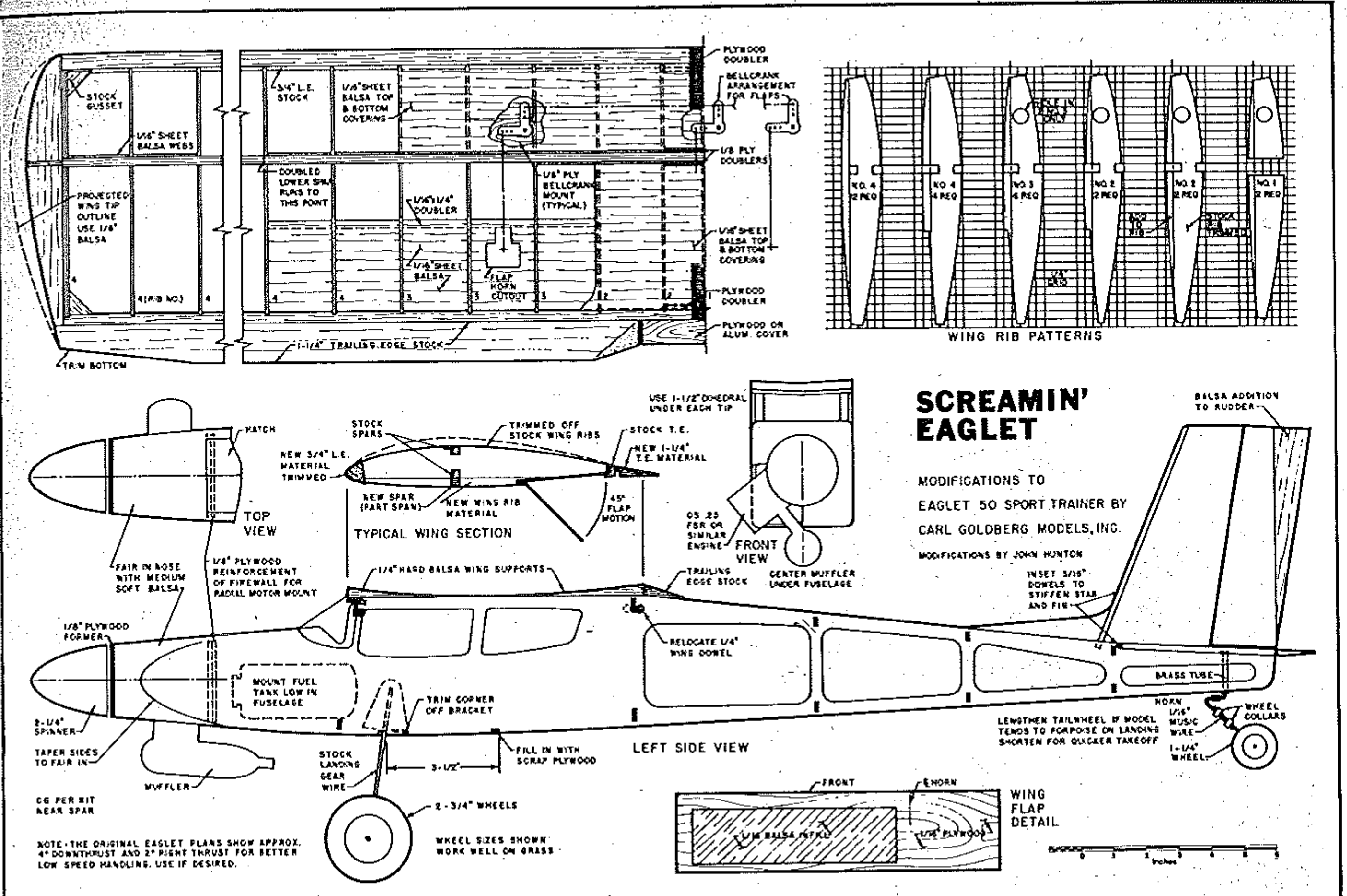
Softee/Johnson

Continued from page 95

everything is built onto it for simplicity and accuracy. The 3/8 sheet should be cut roughly to shape, having been traced from the plan with carbon paper.

The stabilizer-elevator assembly needs to be cut out, sanded, and pre-hinged in this technique. If the hinge centerlines are dipped in warmed Vaseline, the adhesives and paint won't stick to them. The assembled unit is carefully placed over the crutch; when properly aligned, it is CyA-glued. Use scraps of 3/8 sheet to make absolutely sure the stab-elevator assembly is level.

Pin the crutch flat over the drawing, using the extension lines to locate the position of the formers. The Lite Ply should have the engine mounts epoxied to them at this time. With 5-min. epoxy, assemble the bulkheads and sides over



of the firewall. Also, decide if you want to use right and down thrust (as shown on the plan) to improve low-speed handling characteristics, particularly during takeoff, or if you want to optimize for maximum speed with the engine set straight ahead. If you use the semi-inverted engine installation shown on the modifications plan, the fuel tank must be located low in the fuselage.

After you have built the basic fuselage, install the engine in preparation for fairing-in the nose. Attach the new round nose former temporarily to the engine shaft, while leaving sufficient clearance for the spinner. Fill in around the engine with ¼-in. sheet balsa laminations. Remove the engine, then shape the nose area to fair the box fuselage smoothly to the nose former. Shape and smooth the engine compartment.

Recut the main landing gear slot 3½ in. forward of the kit location. Fill in the original gear slot. Trim the landing gear side brackets to tilt the gear wire slightly foward, and install the brackets at the new location.

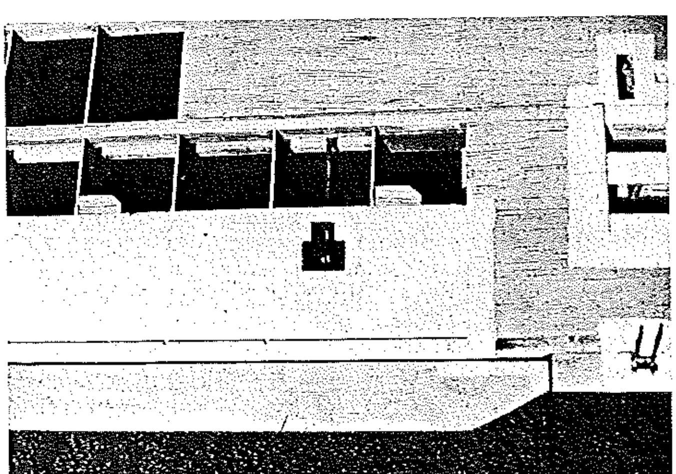
Relocate the rear wing hold-down dowel to behind the former to improve rubberband holding geometry. Add hard balsa wing seat fillers.

Install a brass tube of 1/16-in. inside diameter in the rear fuselage, and epoxy it to the bottom sheeting and elevator mount. After the fuselage is covered, install the adjustable tail wheel, retaining it with soldered washers at each end of the brass tube. Fabricate a tail wheel control arm of approx. .020 brass; solder it to the tail wheel wire, and rig it to the rudder servo.

If you use an OS .25 FSR, try an 8.5-in. diameter, 5-in. pitch propeller. If the engine is new, do not expect it to develop full power until after considerable running time, but it is a fine power plant.

With the improved roll rate and higher speeds, the Screamin' Eaglet will seem

Continued on page 167



Left: The center of attention here is the flap well, but do note that the areas subject to fuel seepage have been pre-doped. Right: Author John Hunton readying for a flight in cold weather.