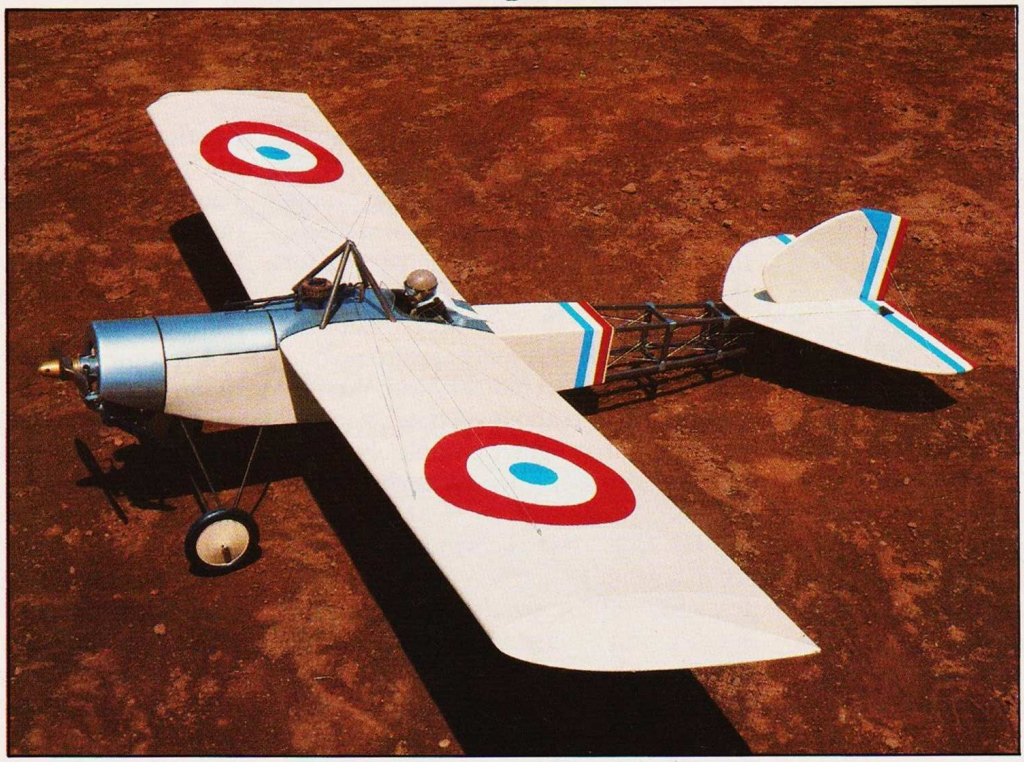
TOP FLITE Elder



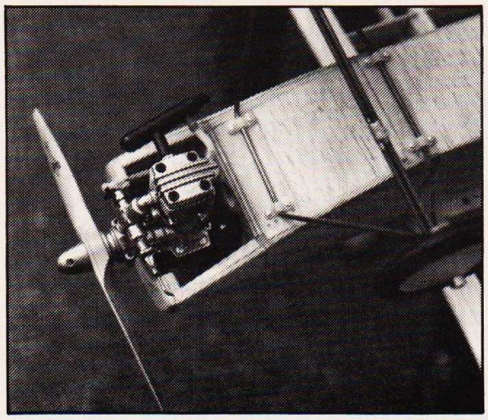
A classic design with a velvet touch.

by GEORGE WOODS

"TOP Flite Models* felt that it might be a refreshing break from the 'norm' to come up with an airplane that was specifically designed for fun."

The above is the introductory paragraph of the instruction manual that comes with the Elder, and it's exactly what I found this kit to be. Building, detailing, and flying were all fun.

The Elder is a realistic, scale-like, vintage-style model intended for both the novice and more advanced builder and flier, one who is looking for a leisurely, fun model that's capable of gentle maneuvers.



Lower view showing engine and gear mounting method.

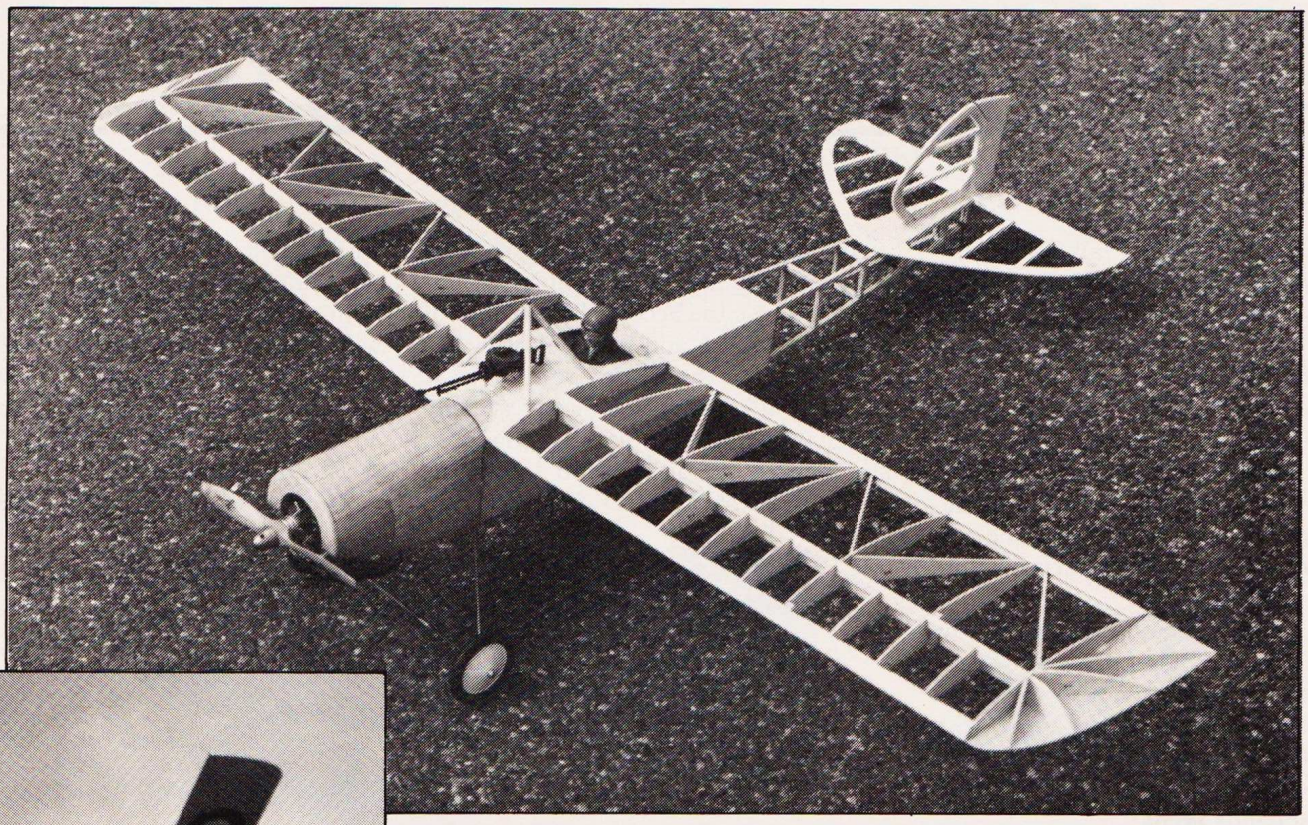
Although the design has a scale-like appearance, if you analyze the configuration it turns out to have the traditional elements of a typical trainer. You'll see long nose and tail moments for pitch stability, generous wing area for its designed weight, and a 12% flat bottom airfoil to provide plenty of lift and good slow-speed characteristics for gentle landings.

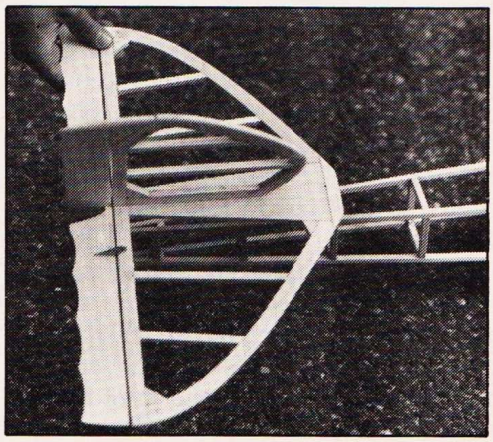
THE KIT. The Elder comes packaged in a corrugated carton with two large color photos of the aircraft in one of the suggested World War I color schemes.

Opening the box you find the usual Top Flite quality packing and material selection. All sheet balsa is paper-banded together in a package and all strip wood is rubber-banded together to prevent shipping damage. Full-size plans are rolled. A nice feature is that the entire wing structure is shown, allowing construction of the complete wing at one time. All the necessary hardware is included, even a .19-size engine mount. The uniquely designed landing gear is wrapped in tissue to prevent damage to other parts.

Finally, there is a 12-page construction manual that covers all aspects of building, finishing, equipment installation, and flying. The quality of this manual and its diagrams is such that a first-time builder should be able to complete the model without getting into trouble.

My experiences have taught me that light airplanes fly better than heavy ones, and I've found cyanoacrylate glues allow light construction without sacrificing strength. For this project I used Zap-A-Gap CA+ from Pacer*, along with Zip-Kicker to speed construction time. The entire airplane was completed with a 1-ounce bottle of





adhesive and a partial bottle of the accelerator.

CONSTRUCTION. I started with the wing assembly, which consists of three separate parts, a left and a right wing panel, and a center section.

The wing is built directly over the plans, which should be covered with MonoKote backing or plastic wrap. Build the center section first, using 3/32-inch sheet balsa for the bottom of the center section, then gluing the leading and trailing edges to the sheet, along with the center dihedral brace, and finally the forward and rear half-ribs. Next install a shaped hardwood wing bolt insert. This completes the center section for the time being.

Construct the two wing panels using the die-cut ribs, upper and lower 1/4x3/8-inch spars, 3/8x1/2-inch leading edges, and 3/32x1-inch trailing edges. Add the die-cut wing tips and shape the leading edge with a razor plane and sanding block.

If you intend to add the decorative flying wires shown on the plans, install small pieces of 1/4-inch square spruce where shown to provide anchor points for the wires. This completes the wing construction. Joining the panels will be done later in the construction sequence.

The tail group is next and is straightforward frame construction using strip wood and die-cut curved parts. When the framing is completed, round all edges with sandpaper. There are a few options open to the builder regarding the shape of these surfaces. I chose to use the scalloped trailing edges as shown in the photos.

Construction of the fuselage is somewhat unconventional by today's standards. The basic structure is comprised of a 1/4-inch square strip wood framework, balsa at the forward end and spruce aft of the wing trailing edge to provide strength in the open bays.

Start construction by building two framework sides directly over the plans, the second side directly on top of

the first. Use MonoKote backing or plastic food wrap between the frames to prevent their sticking together. It is important to make good joints here for a strong structure.

When the side frames are completed, remove them from the plans and install them to the firewall and cross braces to complete the basic framework. Fit the tank now and locate the tube outlets in the firewall. Also locate the engine mount in the firewall at this time, along with the throttle tube.

Next sheet the bottom, sides, and nose with 3/32-inch balsa, which completes the basic structure.

Fit the wing center section to the fuselage and locate wing hold-down bolts and the leading edge dowel hold-down.

Finally sand the entire structure. Use plywood gussets on all joints on the exposed structure at the aft end of the ship to provide additional strength to these joints and also to enhance the appearance. Although the instructions suggested installing these at this point in the construction sequence, I opted to leave them off until after painting the rear framework, in order to get a neat color separation of the contrasting gussets and framework.

Now sheet the wing center section top, and make the cockpit cutout. Join the two wing panels to the center section with 1¾-inch high blocks at the wing tips to provide the required dihedral angle.

The landing gear and tail skids are the last assemblies to be made. Wire parts for these are pre-bent and only require wire wrapping and soldering.

The basic structure is complete and the radio installation should be done now before finishing. I used an Ace* Silver Seven receiver and Ace Bantam servos mounted in a mounting tray. Secure ¼x½-inch balsa rails along both sides of the fuselage and fasten hardwood cross rails to these at the appropriate spacing to accept the servo tray. The receiver is located directly in front of the servo tray and the battery pack can be mounted either under the receiver, at the rear of the servos, or under the tank, whichever results in the best CG location.

The plans for the Elder detail an engine installation for a typical .15 to .25 size two-stroke engine and also an installation for the HP 21 four-stroke engine. If you use an HP 21, you'll have to supply a

F&B: ELDER

.40-size engine mount in place of the one supplied with the kit.

I used the HP 21 and because it is somewhat heavier than most two-strokes, I ended up mounting the battery pack aft of the servos in order to get the proper CG location.

The finishing was the phase of the project I enjoyed most. You can let your imagination go wild and finish the aircraft in any of a variety of World War I schemes or in pre-war civilian markings. I selected a scheme similar to the one shown on the kit label, a WW I Allied fighter.

In order to keep the airplane light I covered the structure with one roll of cream-colored MonoKote, and trimmed it with red, white, and blue EconoKote. I painted the open structure at the rear fuselage tail with dark brown butyrate dope and applied silver gussets. I also painted the cowling with silver dope. To get the flavor of a WW I fighter, I installed a Williams Brothers* 2-inch scale pilot (complete with fur collar and scarf) and a 2-inch scale Lewis machine gun. The 3⅛-inch vintage-style wheels with cream-colored hubs were also Williams Brothers.

The plans show installation of a triangular king post in front of the cockpit for attachment of the decorative flying wires. This not only adds to the authentic appearance of the ship, but also provides a convenient way to carry the plane.

Things were looking so good at this point I decided to use control cables instead of pushrods. This adds to the scale-like appearance and also gives a more solid response than pushrods do.

FLYING. With the airplane completed and the radio and engine installed, I weighed the model to check the wing loading. It checked out to be 50 ounces, only 2 ounces over the minimum specified on the plans, which gives the model a 14.2 ounce per square foot wing loading. I was concerned with the weight because the .21 four-stroke would not produce the kind of power a .25 or .30 two-stroke engine would. As it turned out, the .21 flies the Elder in a most realistic and quiet manner.

First flights with the Elder were late in the day before our club's first annual four-stroke meet.

Together with other club members I lined the Elder up in the center of the runway and advanced the throttle. The model tracked straight down the strip and rose into a graceful, shallow climb-out.

A few figure eights around the field indicated all trim was right on the money, with no adjustments necessary. After a few minutes of getting used to the airplane, we tried a few maneuvers to test the airplane's capability. Inside loops, wing-overs, and rudder rolls were all done with ease and at a constant speed through the maneuvers.

The four-stroke engines are deceiving until you get used to them. Their sound does not reflect their power and thrust potential, and it seems unreal to see the aircraft pulling through vertical maneuvers when it sounds like the engine is only idling.

If you are looking for an aircraft that looks different than the usual trainer, flies majestically at slower speeds, and is relatively easy and fast to build, than I highly recommend the Elder.

**The following are the addresses of the companies mentioned in this article:*

Top Flite Models Inc., 2635 S. Wabash Ave., Chicago, IL 60616.

Pacer Technology & Resources, 1600 Dell Ave., Campbell, CA 95008.

Ace R/C Inc., Box 511C, Higginsville, MO 64037.

Williams Brothers, Inc., 181 Pawnee St., San Marcos, CA 92069. ■