

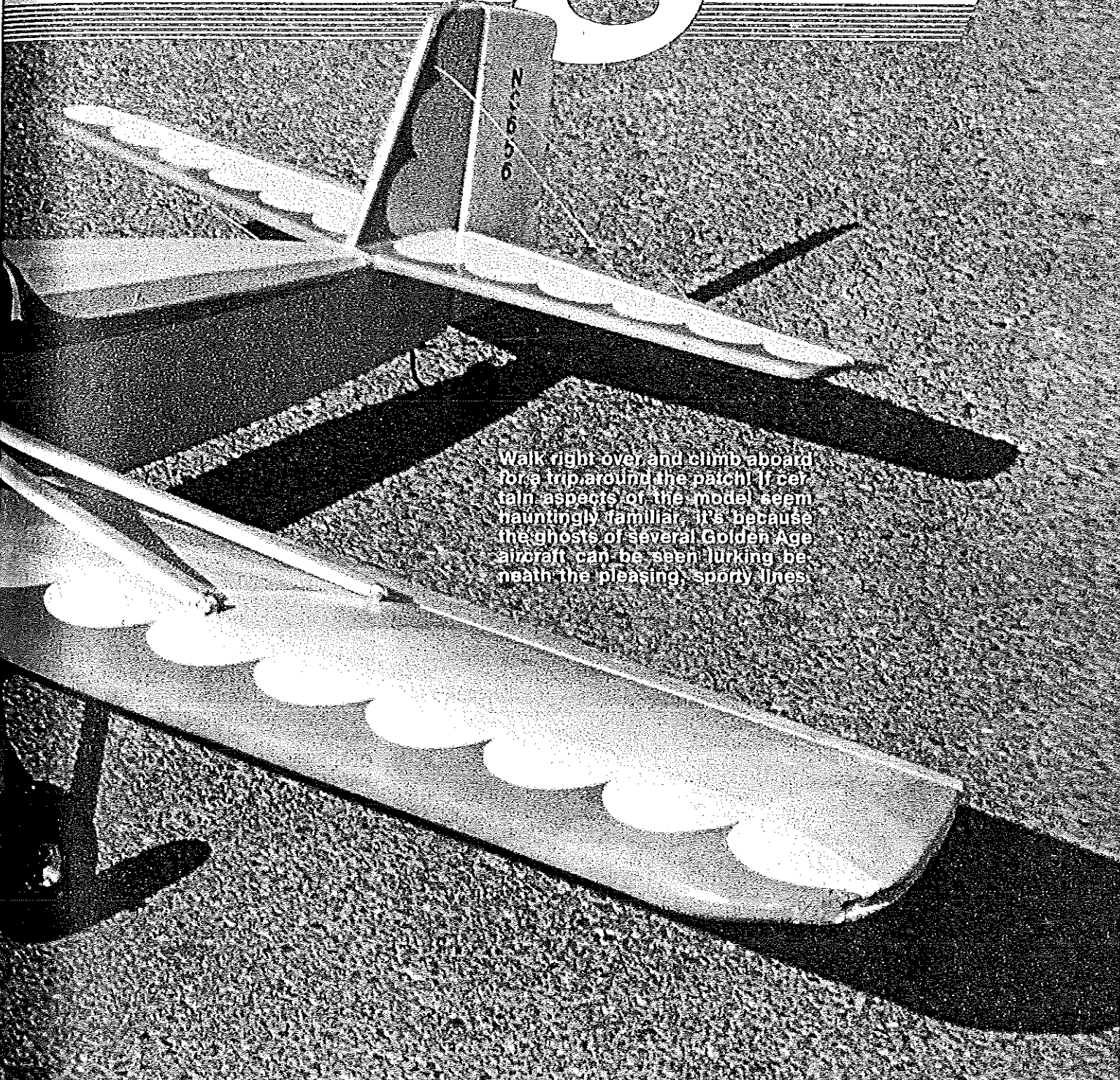
Goldener

482

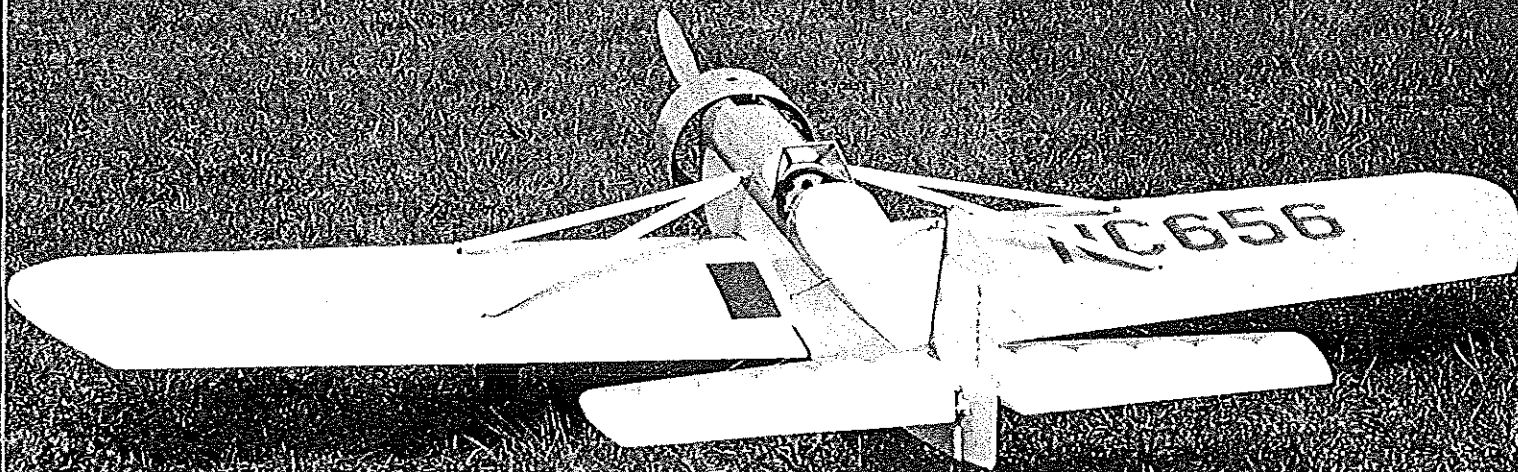


According to many aviation enthusiasts, airplane styling reached its peak during the 1930s. Radial engines, open cockpits, and a national craze for racing all combined to inspire some of the most eye-appealing aircraft ever designed. This airplane, for a .60 engine and a four-channel radio, represents the author's combination of some of his favorite aspects of these planes, and it seems to come out just as aesthetic as its inspirations. ■ Clarence Haught.

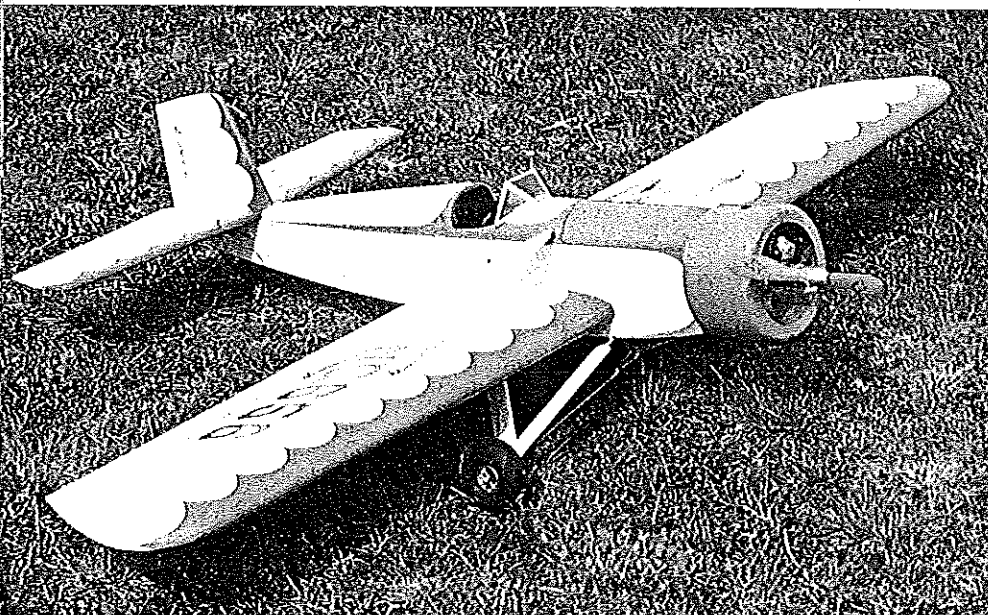
n-Ager



Walk right over and climb aboard for a trip around the patch! If certain aspects of the model seem hauntingly familiar, it's because the ghosts of several Golden Age aircraft can be seen lurking beneath the pleasing, sporty lines.



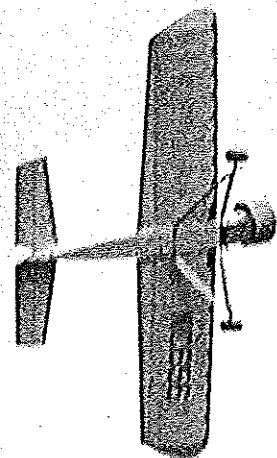
Large wing and over-sized stabilizer provide lots of flying surface area. The classical design embodying a radial engine cowling and lift struts produces an airplane that always manages to get noticed. Even though the struts are non-functional (and are somewhat of a bother when removing the wing), they are well worth the trouble when their nice appearance is taken into account. Don't skimp and omit them.



Scalloped leading edges were masked with contact paper from a local hardware store. A pinstripe separating the cream base from the orange trim would be a nice touch to add.



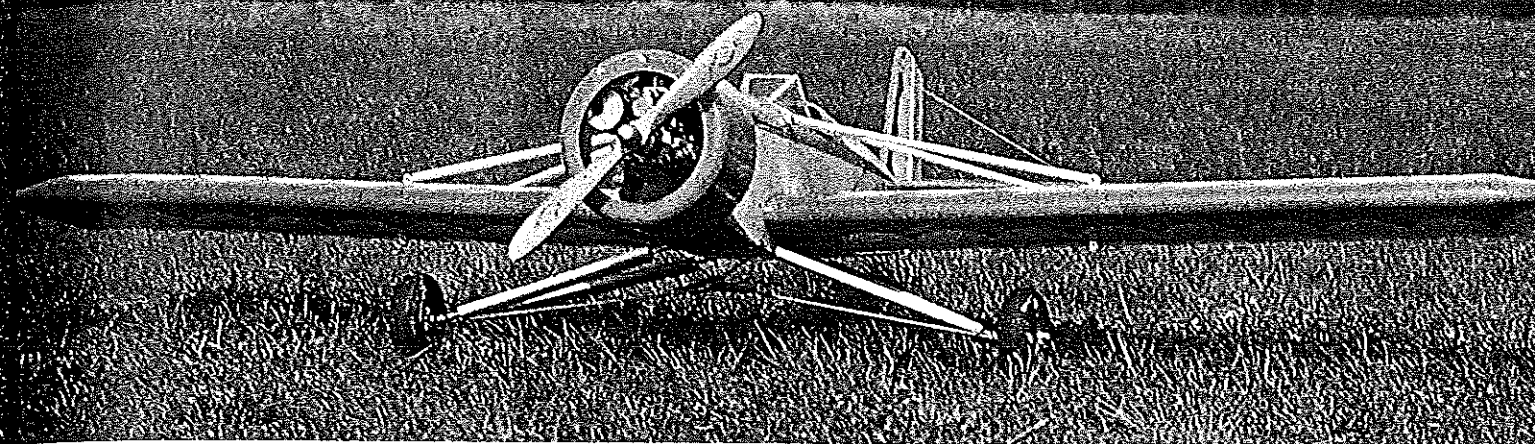
A three-quarter view reveals the very close-coupled tail moment that the author borrowed from his days of flying Control Line Stunt. The large horizontal stabilizer produces a ship that is extremely stable and also very maneuverable. The "NC" on the wing stood for "Normal Category" back in the Thirties. No fuselage registration numbers were required then.



ONE CAN FIND a great deal of interest and support for all of the general classifications of aircraft: WW I, racing, sport, commercial, and on and on. It's incredible when you think about the vast number of designs that have actually reached the flight stage let alone the quantity produced of all the successful ones. This makes it easy, or difficult, as the case may be, to find a favorite "look" or category of aviation.

One of my favorite eras is the so-called Golden Age Era of the 1930s. I like this era because of the classic look of the designs of this period. Being partial to "round engines" cinches it for me.

The Golden Ager is not a Scale model.



Wide-spread landing gear aids in directional control on the ground and enhances the model's sleekness. Landing gear wires are faired with balsa to help reduce drag and improve the appearance. Lots of frontal area helps absorb the .60's power so that the model flies very realistically. When the engine is throttled back, the plane slows very quickly, so be sure to keep up the speed in landing approaches.

It is a composite of features of several airplanes of the Thirties, including a radial engine cowling. Wing struts, faired landing gear, and tail brace wires add to the nostalgic appearance. Certain design features were borrowed from many years of Control Line Stunt experience. The short tail moment, made possible by the large stabilizer, full span tapered ailerons, and a long nose moment were all part of an experiment that proved effective for an RC sport model.

An open cockpit was a must for me, although one could use a cockpit enclosure made from a stock canopy. The original has a classic windshield frame painstakingly cut from .040-in. aluminum sheet using a drill and file. A little cockpit detail and a fancy paint scheme all contribute to the effect desired. The Golden Ager never fails to attract attention both on the ground and in the air. It does need a pilot to look right when it is in flight.

The plans show some improvements over the original in the photographs. Most notable is the incorporation of a steerable tail wheel. The original is usually flown from a grass field (which makes taxiing difficult), so the fixed wheel was no problem and even assisted in directional control during takeoff. I do recommend the steerable tail wheel. The plans show a built-up cowling, which was destroyed in a collision with a pump house on the field. It was replaced with a cowl made from a 6-in. aluminum saucepan; it works fine but does not have the class of the built-up version. Finally, the sharp-eyed will notice the extension of the wing strut fittings below the wing. These provide the upper anchor point for a pair of shock struts which attached to the axles. The struts looked good but were always needing maintenance due to hard landings or vibration. They were finally given up after a year of headaches.

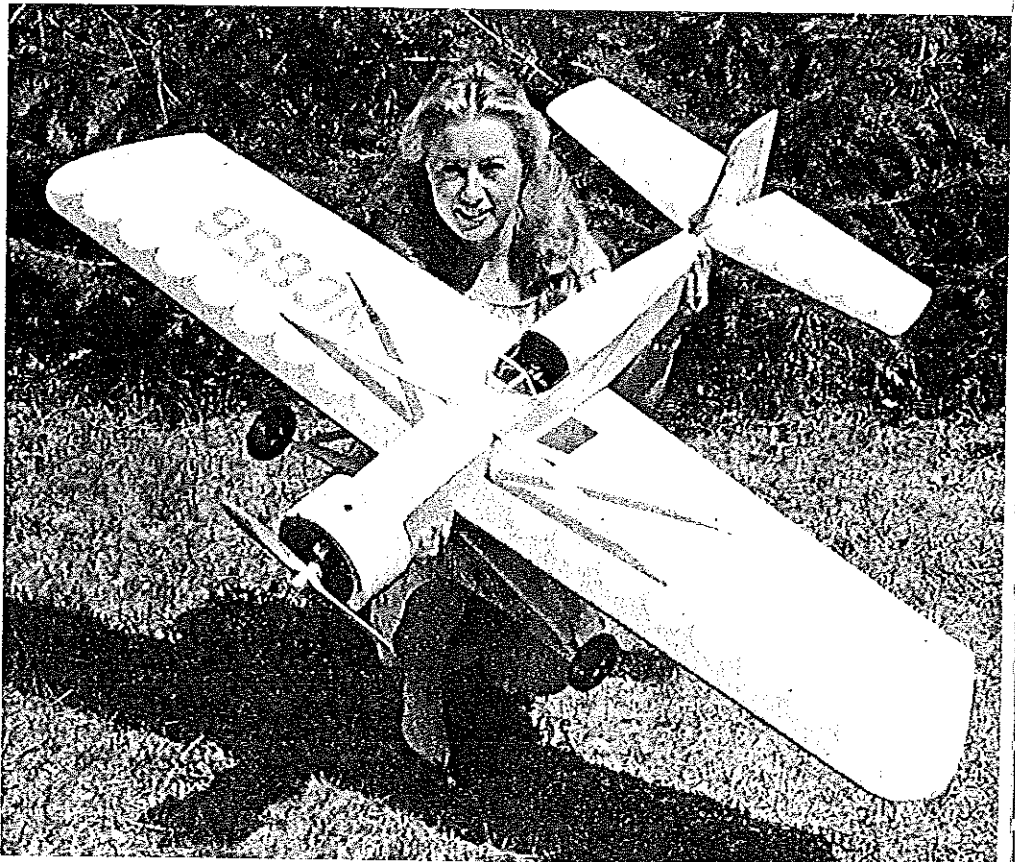
Wing. Construction should begin here so the structure can be used to fine-tune the fit with the fuselage sides. Cut 22 full ribs and two nose ribs from $\frac{1}{2}$ sheet. Pin the $\frac{1}{2} \times 1\frac{1}{2}$ -in. trailing edge to the plans, and

glue the ribs to it, omitting the two center ribs. Add the $\frac{1}{2} \times 1$ -in. leading edge supported by blocking. Install the top spar and top of the trailing edge.

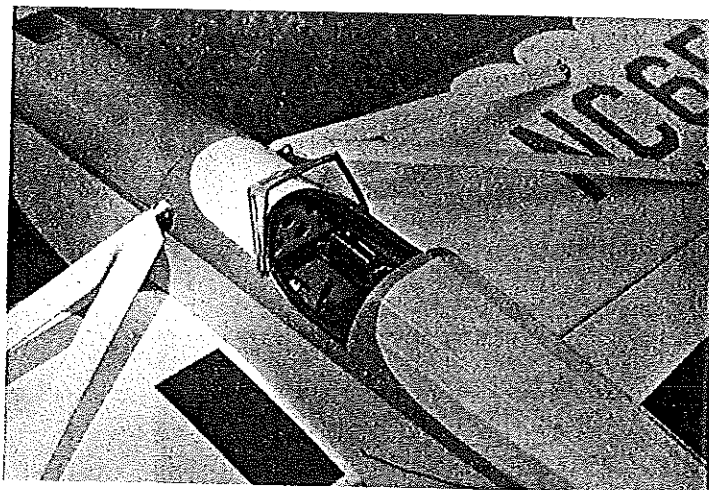
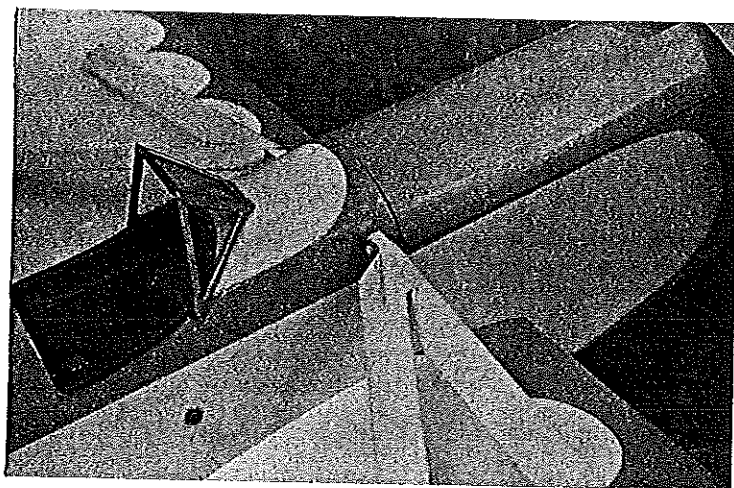
When dry, remove from the plan, and glue in the bottom spar. Construct the left wing using the right wing plan, as they are identical at this point. Join the wing panels with dihedral braces, and add the center ribs, cutting them to fit around the dihedral braces. Fit the $\frac{1}{4}$ -in. dowel to the leading edge and center ribs. Reinforce with the two nose ribs. Install solid balsa fill between the trailing edges at the wing attachment bolt location.

Place filler blocks between the spars and between the trailing edges at the wing

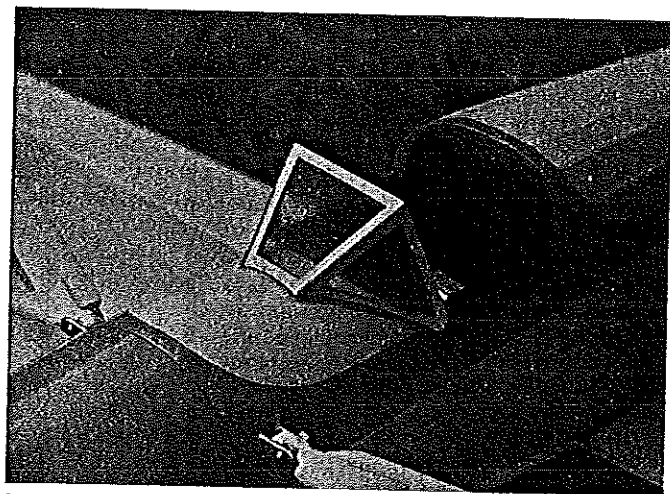
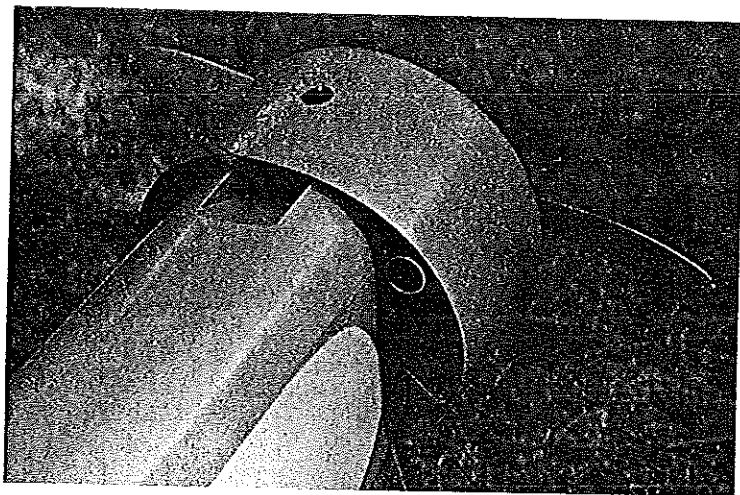
strut attachment locations. Fabricate strut fittings, and bolt them to the filler blocks. Add $\frac{1}{4} \times \frac{1}{4}$ webbing between the trailing edge pieces with the grain spanwise. Sheet the leading edges and center section. Install the $\frac{1}{2}$ -in. sheet wing tips, and cap with $\frac{1}{4} \times \frac{1}{2}$ -in. balsa, soaking it to make bending easier; secure with white glue. Sheet the leading edge of the tip to match the rest of the wing. Attach cap strips to the ribs, and cap the trailing edge with $\frac{1}{4} \times \frac{1}{2}$ -in. strips. Plane and sand the leading edge contour. Sand the wing to final shape. Shape the ailerons from $\frac{1}{4}$ -in. sheet, and temporarily hinge them as shown. Fit the servo mount to the center section sheeting, and make up the aileron



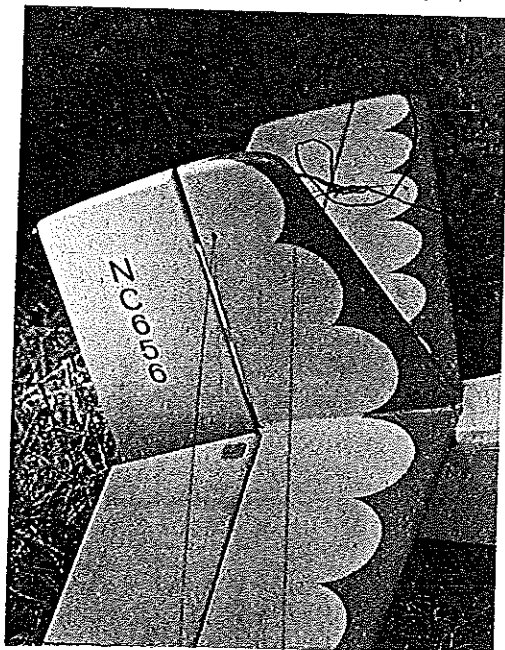
The author's daughter, Debra Menkeley, holds the Golden-Ager to give us some idea of the model's actual size. Haught notes that the model would look much better with a pilot figure.



Left: Wing struts bolt to the aluminum fittings with 3-48 screws and stop nuts. Note plywood reinforcement plates at the strut junction. The forward removable hatch allows access to the fuel tank. **Right:** A detailed cockpit adds to the realism, and it is a good place to conceal the radio switch and battery charging jack. The wing-walk strip is cut from #220-grit wet-or-dry sandpaper and glued atop the covering.



Left: The engine cowling suggests a radial engine common to Golden Age aircraft. The cooling air outlet is necessary to ensure a cool engine head temperature. The fuel filler line (shown here) slips down out of sight after use. The cowling provides ample room for almost any muffler. **Right:** The windshield becomes the focal point on a model of this type, and the time spent on filling the frame from .032 aluminum is worth the effort. A simpler version could be made by using a heavy plastic frame and trimming it with aluminum tape or paint.



Tail brace wires are control line cable. They add character but are non-functional. The tail surfaces are reinforced where the wires pass through. The license numbers are press-ons obtained from a local stationery store. A coating of wax provides protection.

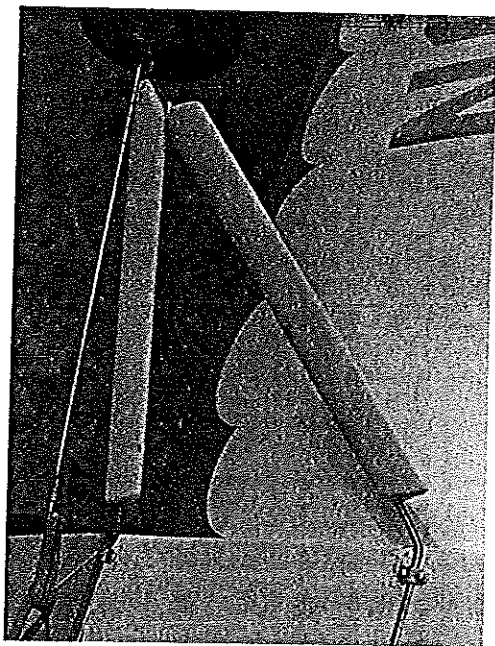
linkage. Check for proper action with your RC unit.

Tail surfaces should be built next. The fin and stabilizer are simply cut from lightweight 1/8-in. sheet balsa. Tail weight is not overly critical on this model, due to its short tail moment, but use the best wood you can find. Note the 1/8-in. dowel reinforcements for the tail brace wires.

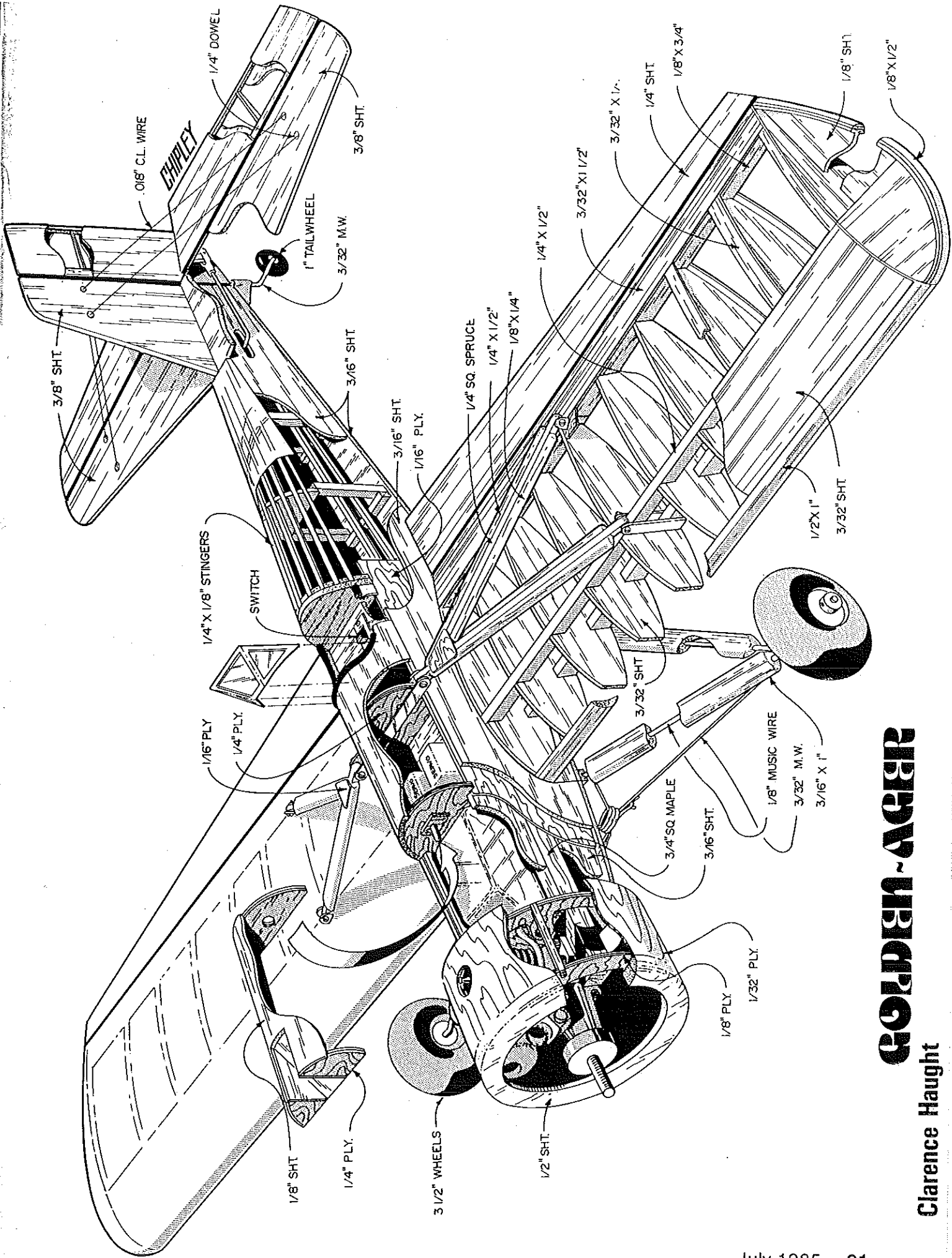
The rudder and elevators are constructed by cutting 1/8-in. balsa sheet to shape, laying it in place on the plan, and adding the structure as indicated. When dry, sand to a triangular cross section, and add the top sheeting. Round the leading edges. Connect the elevators with a wire joiner, and fit the hinges temporarily. Give the tail surfaces a final sanding.

Fuselage. Begin construction by cutting 1/8 sheet sides and all formers and doublers from the indicated material.

Glue Doubler A to the sides using contact cement. The fuselage sides are not the same, so be sure and make a left and a right. Add the engine mounts, being careful that they are parallel to the fuselage top edge. Glue Doublers B, C, and D in

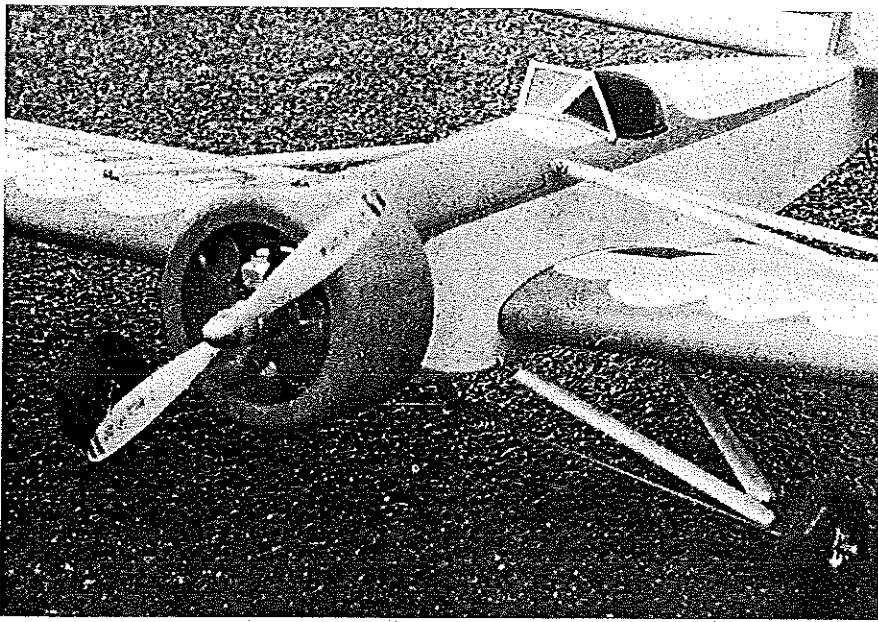


The balsa landing gear fairing is glued on with CyA. The gear is a three-wire system with the third one held by rubberbands to provide some extra give for a hard landing. The entire assembly is secured to the hardwood gear blocks with screws and straps.

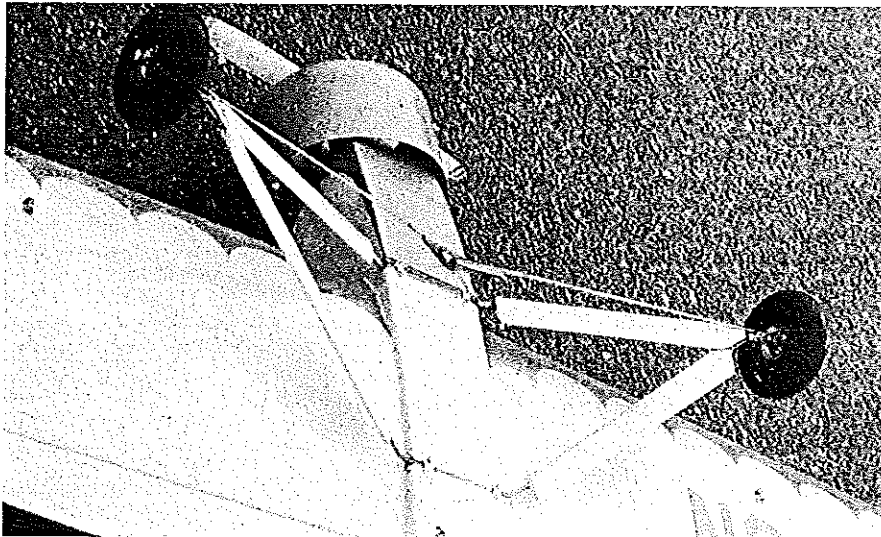


GOLDEN-AGGER

Clarence Haught



Radial engine cowling provides lots of air for cooling. A .60-size engine gives more than ample power. The model will cruise at half-throttle; however, the reserve power of a large engine is nice for grass-field takeoffs (if you spend much more time flying than mowing!).

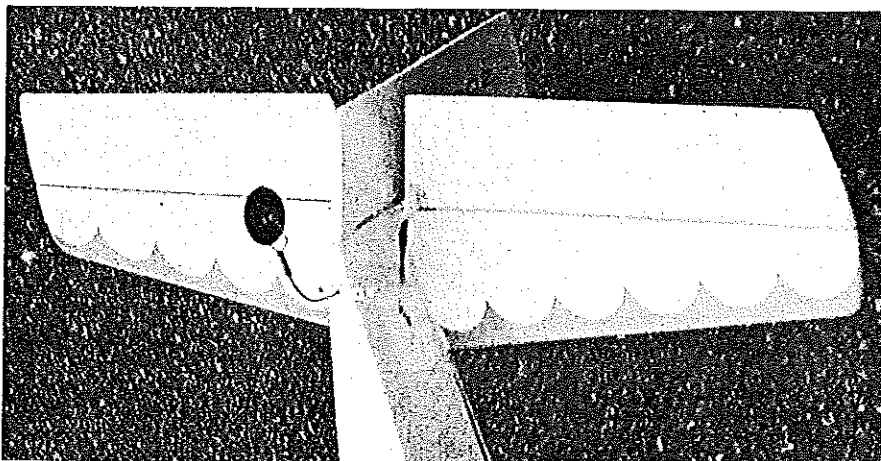


A close look at the landing gear's third (shock-absorbing) wire. The rubberbands provide enough force to prevent the gear from sagging and enough give to smooth out the bumps.

place, leaving clearance for Former 5.

Assemble the fuselage sides upside down on your bench, joining them with

Formers 4 and 5 and using the $\frac{1}{8}$ sheet servo floor resting on top of Doubler D for alignment. Install the wing mount



Control horns are exposed for easy adjustment. Tail brace wires run through hard points in the stab and fin and are crimped in place with aluminum tubing. Plans show steerable tail.

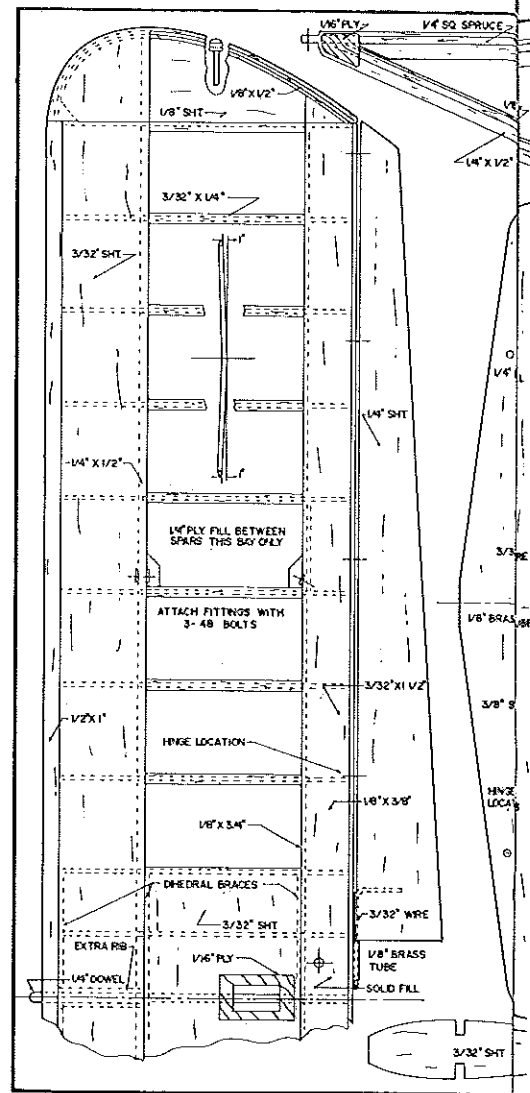
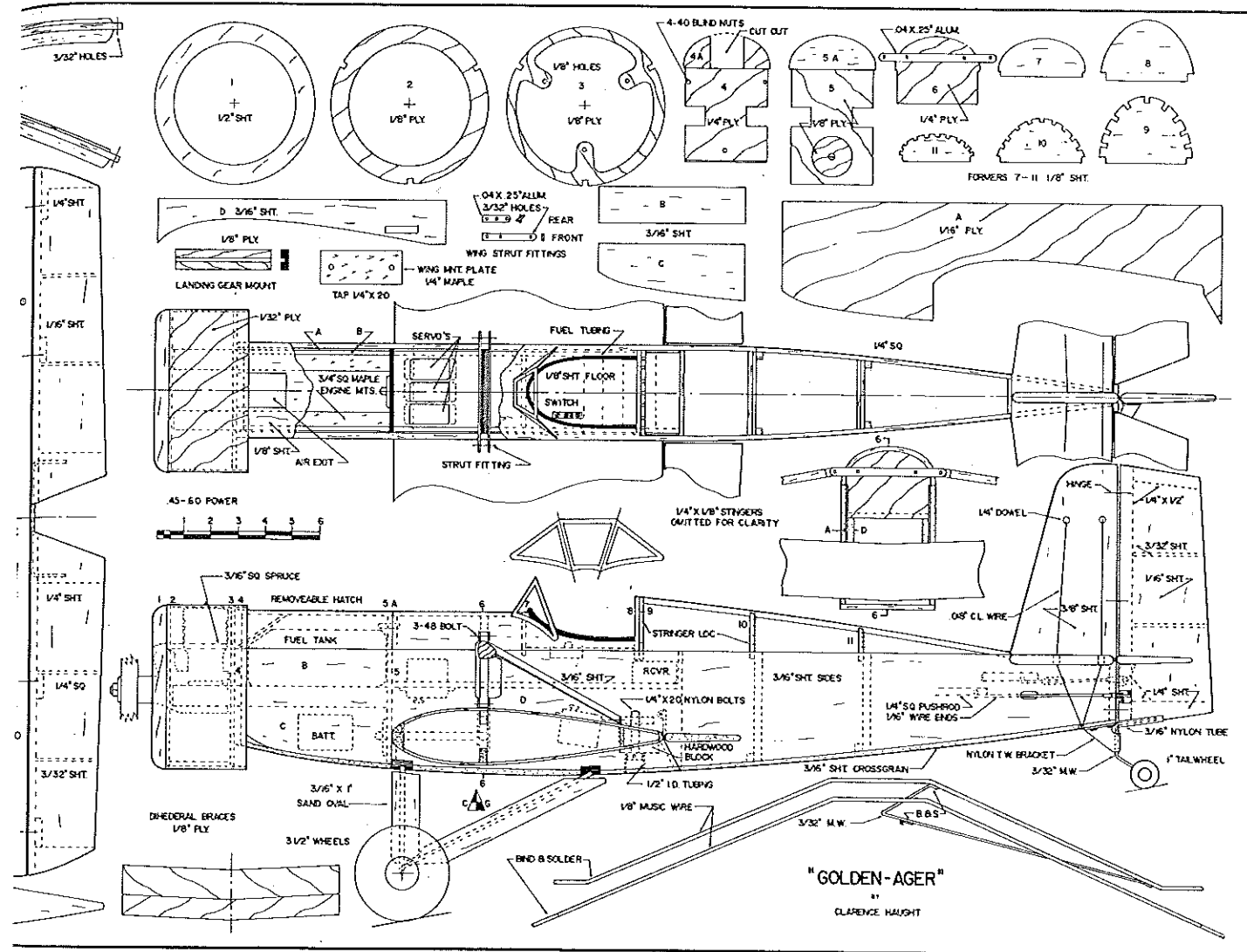


plate.

Pull the fuselage sides together, and join them with the $\frac{1}{4}$ sq. tail post. The rear fuselage formers are built-up from $\frac{1}{4}$ sq. pieces on the sides and bottom, with round sheet formers on top. Leave off the sheet formers for now, and install temporary $\frac{1}{4}$ sq. pieces in their place.

With fuselage laying upside down on the bench, fit the completed wing into the fuselage sides and Doubler D. Trim as necessary and/or fill voids with scrap. Be sure the wing is level, square with the fuselage, and has no incidence. The wing alignment dowel should be a good fit in Former 5, but you may enlarge the hole if necessary to attain proper alignment. When satisfied all is well, add the dowel reinforcement to the front of Former 5, being sure the fit is snug. Install a hardwood block to the wing trailing edge, and drill through the block, wing, and wing mounting plate with a $\frac{1}{8}$ -in. drill. Remove the wing, and re-drill the wing with a $\frac{1}{4}$ -in. bit. Thread $\frac{1}{8}$ -in. holes in the wing mounting plate with a $\frac{1}{4}$ -in. x 20 tap.

Reinstall the wing, and build-up any required fuselage extension directly to wing. Install the landing gear mounts. Glue filler blocks at the front and rear of the fuselage extension to fit the existing fuselage sides.



Install the fuselage bottom sheeting.

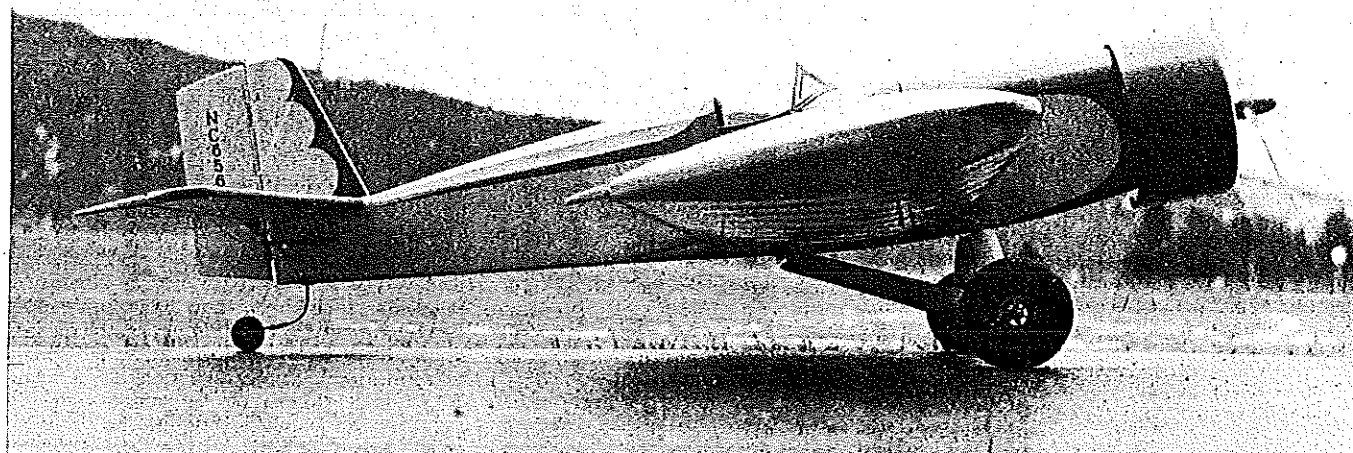
Cement the stabilizer-elevator assembly to the fuselage, checking alignment carefully. Add the rudder and fin. Select your favorite pushrod assembly, and install the servos. Hook up the controls, and check them out using your radio.

Install the rear top fuselage formers and stringers. Fabricate the wing strut fittings, and bolt them to Former 6. Glue Formers

5A, 6 and 7 in place. Install the cockpit floor, and make provisions for mounting the radio switch. Sheet over Formers 5-7 using ammonia water (Windex) applied to the outer side to aid in bending the 1/4-in. sheeting to shape. Build the removable hatch in the same manner. Use a 1/4-in. dowel for alignment at the rear and a bike spoke (or commercial cowl latch) at the front. Note the cooling air exit.

Landing gear. Bend the components from music wire of the specified size. Install the gear in appropriate mount blocks with commercial nylon straps and screws. Bind the wire together with copper wire, and solder the joints securely. Add 3/32-in. wire shock struts to the front landing gear wire. The landing gear is streamlined by sandwiching the wire between two pieces

Continued on page 162

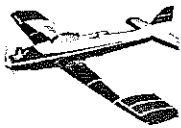


Thick low wing provides lots of "ground cushion" during landings, and the large "donut" tires remove any roughness that the landing gear doesn't handle. The fuselage is simple box construction with stringers and a rounded top. All photography by Clarence Haught.


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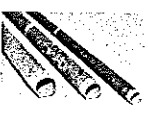
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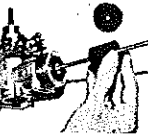
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Outside Loops. Too much straight flight following the half roll technically makes two maneuvers out of one, and should be downgraded.

6) The Top Hat is a square maneuver, as opposed to being tall, and the vertical and horizontal legs should be equal in length.

7) The Top Hat with 1/4 Rolls is a wind correction maneuver, and the length of the top is the pilot's option, but it should be long enough to establish straight level inverted flight.

8) The angles in the Six-Sided Loop are 60° angles, not 45° angles, and 60° angles appear quite steep.

9) The straight flight on top of the Double Immelmann should not be prolonged and is now defined as being equal to the diameter of the half loops.

10) The pause between the rolls in the Two Rolls in Opposite Direction figure should be very brief, just long enough for the judge to observe if the wings stopped level.

11) The Inverted Three-Turn Spin should end with an established vertical down-line as spin rotation stops. Fully stalled rotation should score the highest. Rotating on ailerons-alone is to be downgraded.

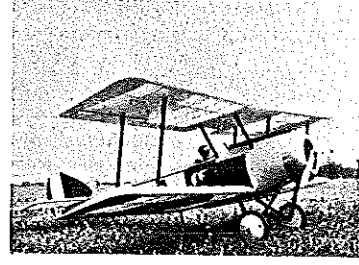
In discussion or training of pilots and or judges, it is highly desirable to have large drawings or an overhead projection so that the maneuvers can be dissected part-by-part and fully discussed.

A nice touch at the end of the school was the formal presentation of the completion diplomas by Ron Chidgey.

The USPJA Newsletter, *Points*, will also carry information and be a source of securing the drawings and other described information. The USPJA sent along "Love a Judge" pins for the participants, and they turned out to be one of the unexpected highlights after the school. In fact, there were more requests than pins available and more pins were ordered and sent to those who missed out. Thanks for the pins go to USPJA President Howard Crispin (he authorized their procurement) and to Suzi Stream (who obtained them).

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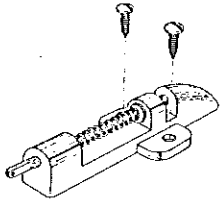
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Golden-Ager/Haught

Continued from page 93

of 1/4 x 1-in. balsa and sanding to shape. Install the tail wheel assembly, using a commercial nylon tail wheel bracket.

Cowl. Build it by joining Formers 2 and 3 with 1/8 spruce stringers. Cut a piece of 1/2 plywood to size, and soak it in water for 15 minutes. Roll the wet ply around the former assembly, and allow it to dry overnight. When the ply is basically dry, glue it permanently to the former assembly. Place the joint over the bottom stringer. Add Former 1, and sand to shape.

Assemble the wing struts over the plan. Cut the 1/4-in. spruce members slightly long for final fitting to the model. Join the spruce with plywood reinforcers, and add balsa fairing stock. Sand to a stream-

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line shape. Attach the wing to the fuselage, and fit the struts for proper length. Mark and drill the bolt holes.

Finishing/covering. Give model a final sanding. Select your favorite covering. The original has nylon on the wing and turtledeck and silkspan over the wood parts for added strength and ease of filling wood grain. To utilize this method, proceed as follows.

Give the entire model two coats of clear butyrate dope, sanding lightly between coats. Cut nylon to the approximate size, and lay it on the structure. Spray the fabric with water, and smooth out any wrinkles. The wet material will cling to structure, aiding in proper placement. When satisfied, lift the edges of the covering, and apply dope for adhesion. Smooth the cloth as you proceed. Trim excess cloth with a single-edge razor blade. Apply the first coat of dope with a "foam" brush to prevent working the dope clear through the fabric. (Dope must penetrate the fabric, but if it is allowed to soak through, it will run down the back side and cause unsightly "blisters.")

Silkspan may be laid in place dry over sheeted surfaces and adhered by working highly thinned dope (75% thinner, 25% dope) through the paper to soften dope previously applied to the structure.

Build up a clear dope base finish until a good gloss appears (five to seven coats). Apply pigmented dope, preferably with a spray gun, to suit your fancy.

Detailing. Final touches involve installing the cockpit coaming (made from black fuel tubing or windshield wiper hose from an auto parts store) and a windshield to suit. Heavy plastic framed with paint or tape will suffice for the latter, or a metal frame can be made as desired. Tail brace wires are made from .018-in. control line cable. Just drill small holes through the reinforcing dowels, and thread the cable through. Anchor it under the tail wheel bracket screw heads. Just form a loop secured by a short length of 1/2 aluminum tubing, and crimp with pliers.

Installations. Put in the radio, engine, etc., and assemble the complete aircraft. Check for balance as indicated on the plan. If ballast is needed to correct the center of gravity (CG), secure it well. Don't fly without the proper CG. This model has large control surfaces so limit travel to ± 1/2 in. on ailerons, ± 1/2 in. on elevators, and 1 in. left and right for the rudder. All measurements are at the trailing edges.

Flying the Golden Ager is pure joy. You will find it stable and docile, yet it will perform aerobatics quite well. If you are not an experienced RCer, you should find an experienced RCer to test hop your model for you. Low flyby passes are its greatest forte! Everyone can admire it when it goes by low and slow.