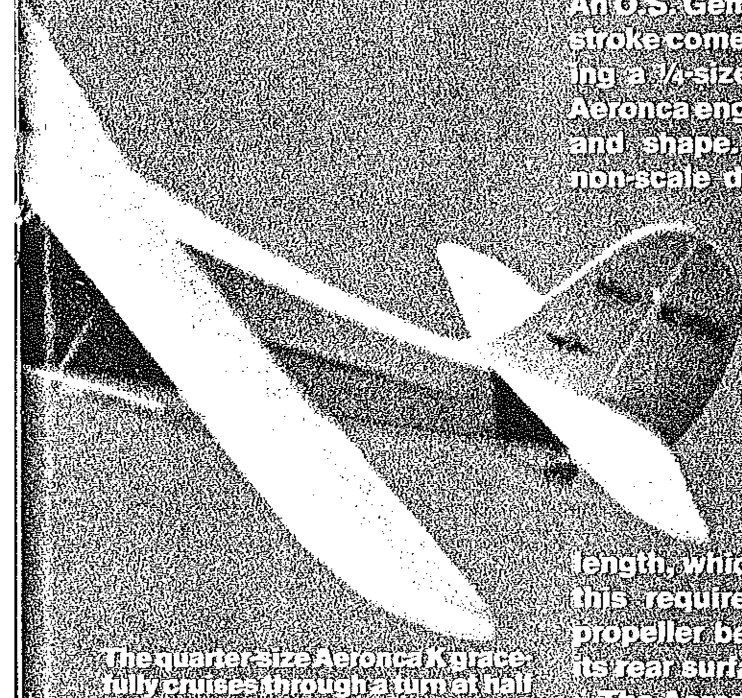
THE 1937 AERONCA K was an airplane commonly used for low cost flight training, at a time when the 40-hp J-3 Piper Cub was its competitor. The Aeronca was also a favorite of the new breed of sportsman pilot who wanted the joy of flight without all the expense attached to the maintenance of large airplanes and their fuel-hungry radial engines. The K was the first of the Aeroncas to have the appearance of a cabin airplane, and it represented a break from the traditional Aeronca bathtub style C-2 and C-3 that were its predecessors. Only the two-cylinder Aeronca-built engine and the wing dimensions were carried over from earlier production, although the horsepower was increased from 36 to 40. The distinctive sound of its engine couldn't be mistaken for that of any other aircraft.

The first 50 hours of my flight training were taken in an Aeronca K that was owned in partnership with a couple of Scale modeling friends. The airplane had its limitations, particularly in ground handling, due to the

# AERONCA K

**The prototype was one of the more popular flight trainers during the late Thirties and Forties and an all-time favorite of those who flew just for the love of it. The Quarter Scale, 9-ft. version featured here, with its realistic flight and sound (when powered by the O.S. Gemini twin), lets you see why the full-size plane had so much appeal. Detail the model to the limits of your abilities. The author won first in Giant Scale with his at the 1984 National Contest. ■Bob Wischer**



The quarter-size Aeronca K gracefully cruises through a turn at half throttle while only a low murmur comes from the fine Gemini Twin.

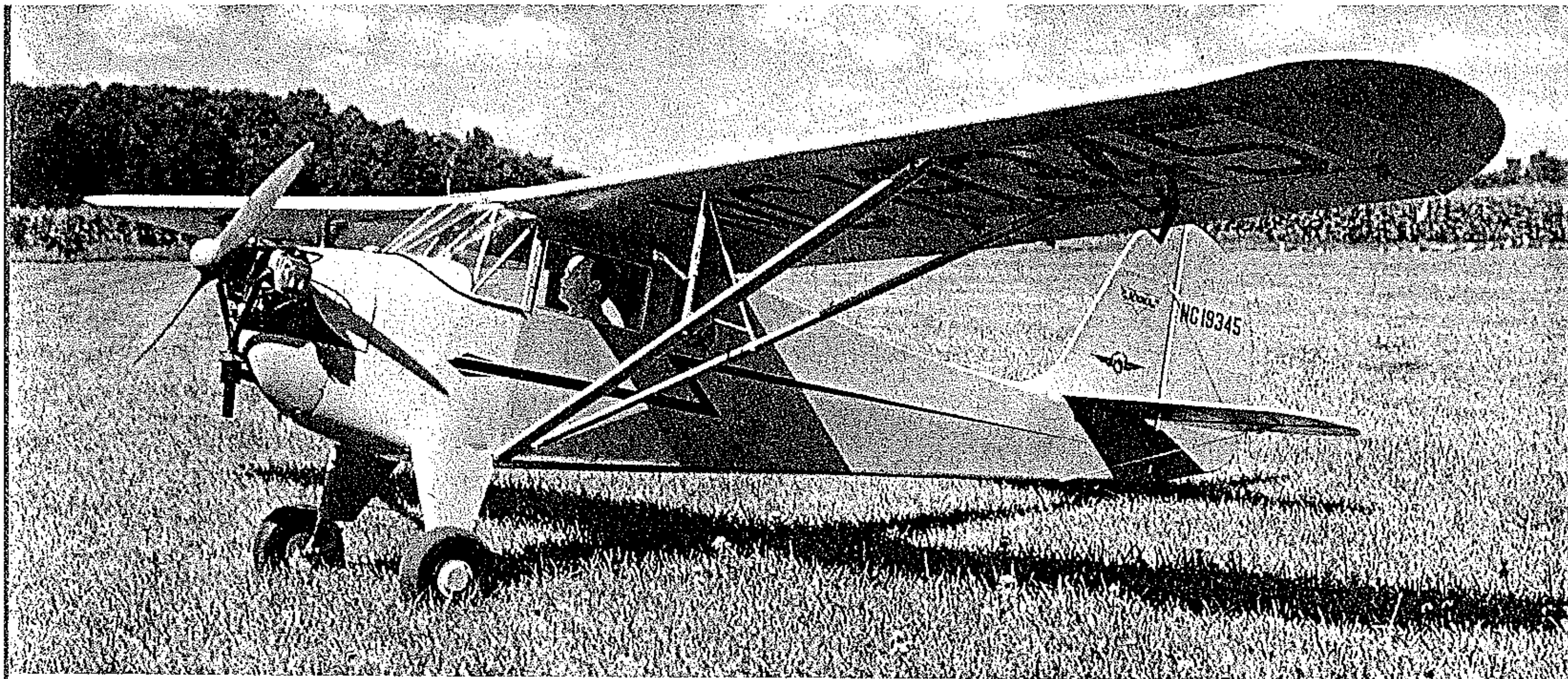
absence of wheel brakes. This wasn't all bad, though, as it taught the rudiments of handling an airplane like a sailboat rather than a car. Engine reliability wasn't a problem. Sketches of the airplane's structure were made in 1941, but construction of the ¼-scale, 9-ft.-span model was delayed for 41 years.

A true-scale model of an Aeronca K needs to duplicate all of its distinctive features. An O.S. Gemini 1.20 twin four-stroke comes very close to being a ¼-size duplicate of the Aeronca engine in dimensions and shape. Its only serious non-scale dimension is shaft length, which is a bit too long; this required that the scale propeller be counterbored on its rear surface.

The Aeronca came from the factory with 16-in. or 18-in. balloon tires having a smooth tread. Our airplane had the 18-in. size, so the model's lightweight tires are 4½-in. dia, with the tread ground smooth on a sanding disc. The working, shock-absorbing landing gear legs help to eliminate some of the stiffness and bouncy landings.

The fuselage, in the cabin area, is wider at the top than at the bottom. At the wing trailing edge, the cross section is basically rectangular, but it changes rapidly to a shape narrow at the top and almost double width at the bottom, near the tail. Where the fin and dorsal join the fuselage, there is a fabric fillet. The covering fabric is fastened to the lower longeron, center rib, and leading edge of the fin; in between it is unsupported. This smoothly-flowing fillet on a model is the mark of authenticity.

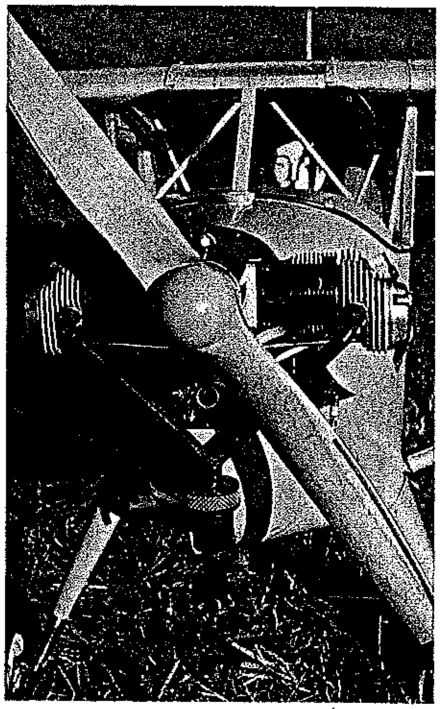
Along the lower longeron, just aft of the cabin, the fabric cover is stretched over an elongated triangle of fuselage framework that has the appearance of skin over bones, and this is another of those peculiarities of the Aeronca K. Where the landing gear fairings meet the fuselage, there are small fabric fillets, easily duplicated by using a heat-shrink covering material, such as Sig Koverall. Another earmark of the K is that aileron ribs don't line up with wing ribs (the ailerons have one less rib), and the aileron middle hinge is supported on a steel tube extending beneath the wing. Broad wing struts are streamlined aluminum tubing, where other aircraft of the era used steel tube.



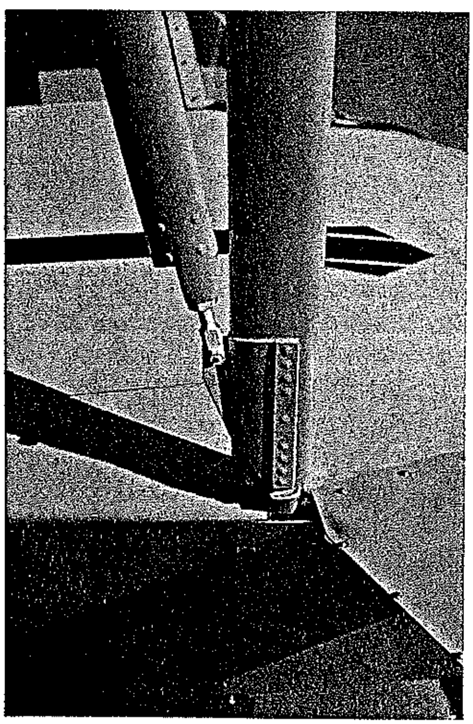

**The simple yellow and black color scheme of the prototype gives the model great visibility in the sky, and it is one of the easiest to duplicate. If it weren't for the pilot figure, it would be very difficult, indeed, to tell if what you see is the full-size version or the model.**

The O.S. Gemini 1.20 twin proved to be a wise choice for the K at its 12-lb. weight. Power is adequate for normal climb and maneuvers. The new O.S. 1.60 twin could also be used, as its overall dimensions are nearly identical to the 1.20. Flying the Aeronca at high altitude in the Reno Nats, I could have used the extra power of the 1.60. Under ordinary flying circumstances the 1.20 four-stroke in either single or twin cylinder is sufficient.

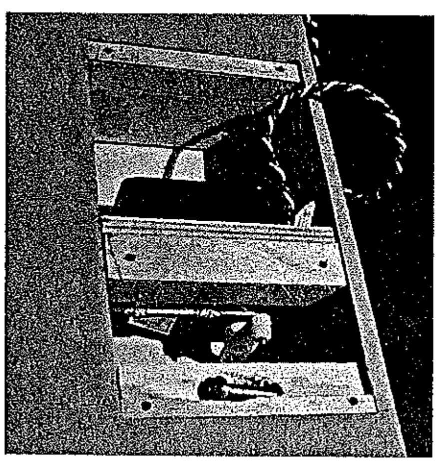
Because the Aeronca is light in weight and it flies quite slowly with the 1.20 engine, there is no need for special, high-energy servos. The servos that I used are Tech RC Titans with 38 in.-oz. output torque, and there has been no problem with control surface travel. One servo for each of the large ailerons assures full travel. Mounting these servos near the wing root shortens the extension cord, which passes upward behind the cabin rear bulkhead and then over the cabin roof to a Y connection. The cord becomes a part of the airplane structure, as it is



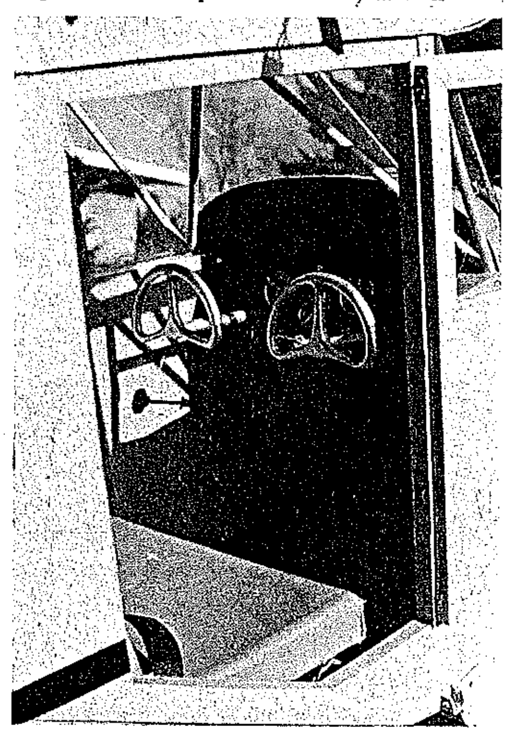
**Y-shaped exhaust pipe is brass tubing silver soldered to the stub exhausts of the Gemini. The combination air cleaner and carburetor heater on the pipe becomes a muffler on the model. A plane with this much exquisite detail is nicely complimented by the scalelike appearance of the four-stroke Gemini Twin.**



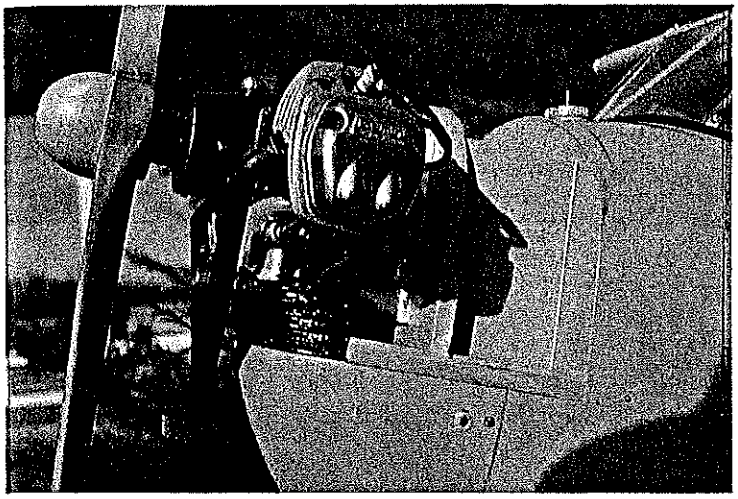
**Bottom view of the wing strut attachment to the fuselage shows the wing-warp adjustment setup on the rear strut. This is functional on the model, a great help in trimming.**



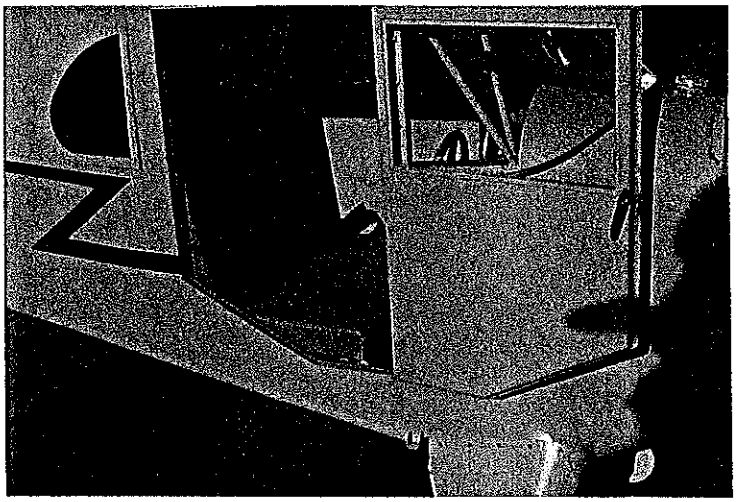
**Aileron servos are located in each of the wing roots and are hooked to the receiver with a Y connection. An aluminum access panel can be removed to service the servo.**

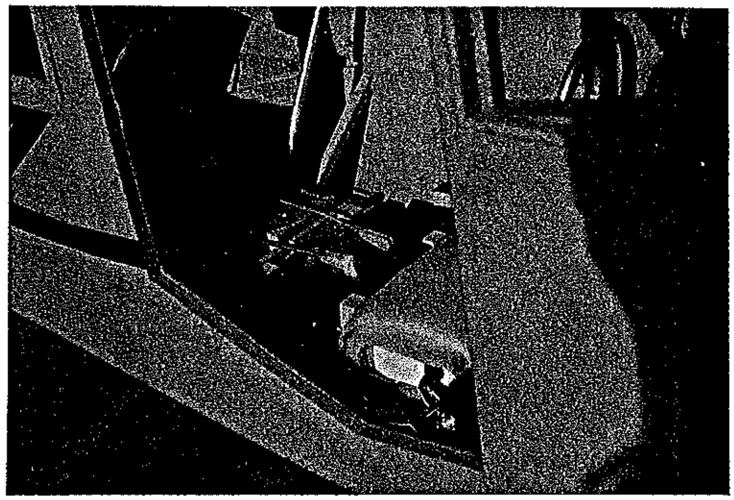


**Cabin interior is quite complete. Here, the control wheels, push-pull throttle, and instrument panel are visible. The hinges on the door were for doll houses, but work well.**

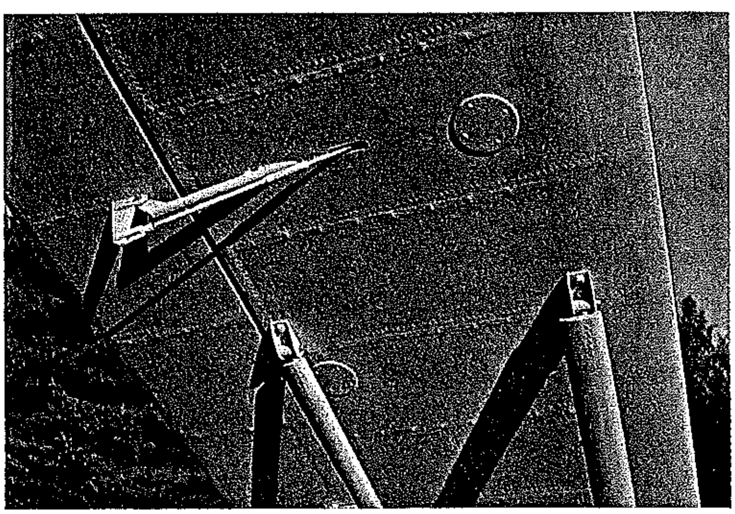


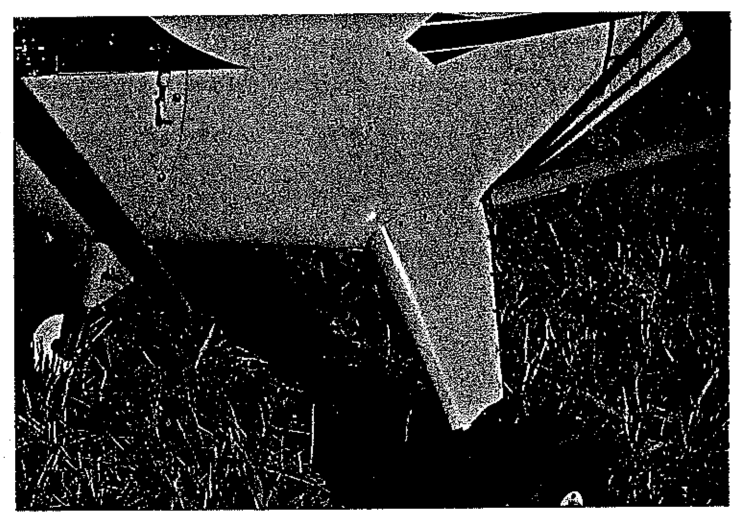
Left: The O.S. Gemini 1.20 engine appears to have been made for an Aeronca K. The crankcase has been shrouded in a tapered aluminum tube to simulate an Aeronca engine's shape. Right: A half-dozen fins beneath the Gemini further disguise it as an Aeronca E-113C.





Left: The seat belt and leather-covered seat are visible through the open door, the inside surface of which is fabric covered. Note the door latch. Right: The servos for the rudder and elevator, completely hidden by the seat, can be reached through the large cabin door.





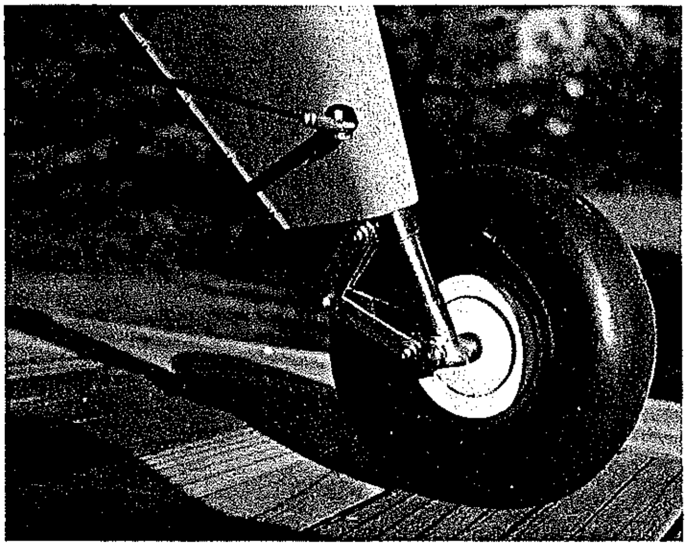
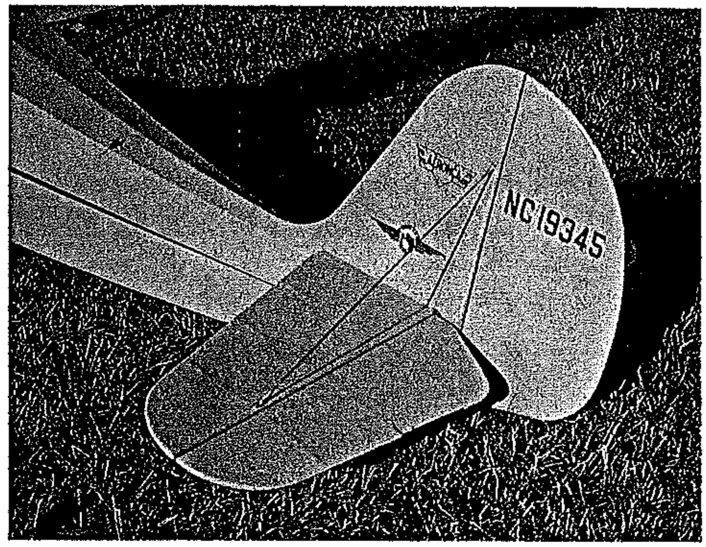
Left: Rib stitching, rib tapes, aileron horn, strut brackets, and inspection covers are all shown in this bottom view of the right wing. Right: The small fabric fillet at the top of each landing gear fairing is true to scale; it is the natural shape that is taken by the covering.

buried beneath the covering fabric.

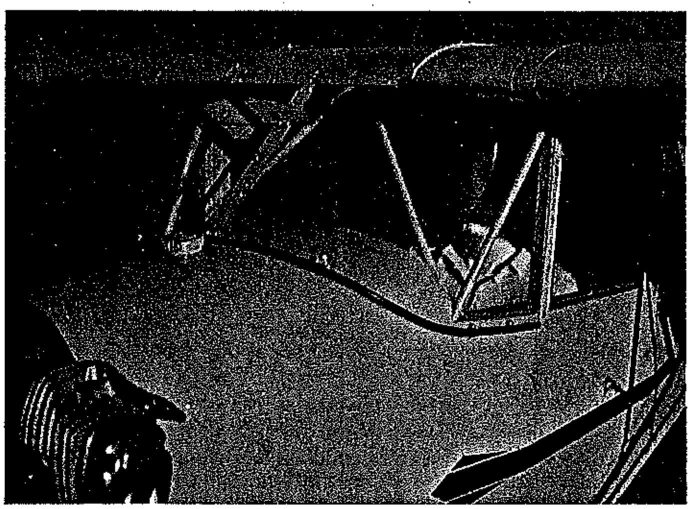
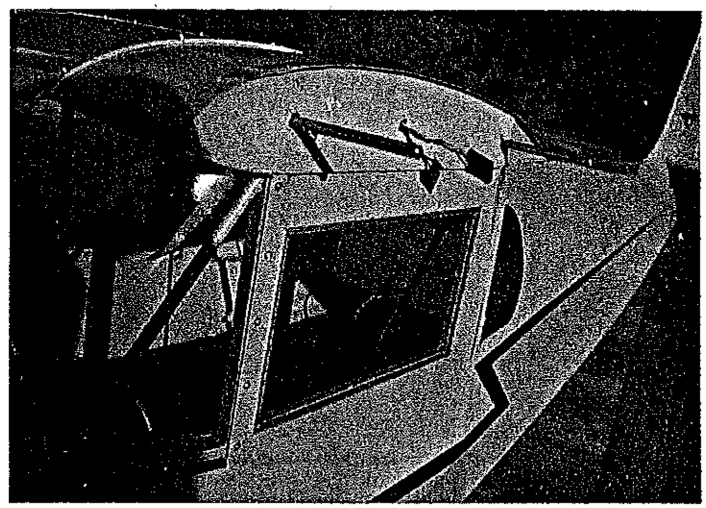
Elevator and rudder servos are located beneath the cabin seat, as are the receiver and battery. The throttle servo is mounted just behind the engine, with a short length of flexible pushrod to the carburetor. An extension cord from this servo passes beneath the cabin floor to the receiver. In this manner, all of the RC equipment is hidden from view, and the cockpit can be completely finished with controls, instrument panel, and seat.

The basic fuselage structure of the full-size and the model is a triangular truss, faired out with formers and stringers. The triangular cross section was first used on the Aeronca C series, then on the K, and on the subsequent Chief and Champion airplanes. Nose substructure and cabin sides of the model are plywood for strength.

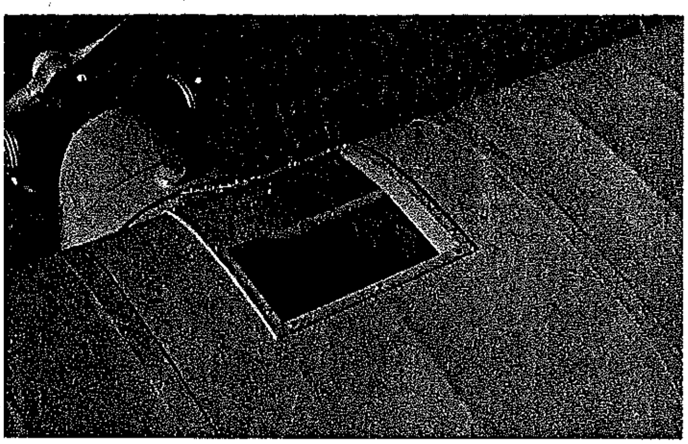
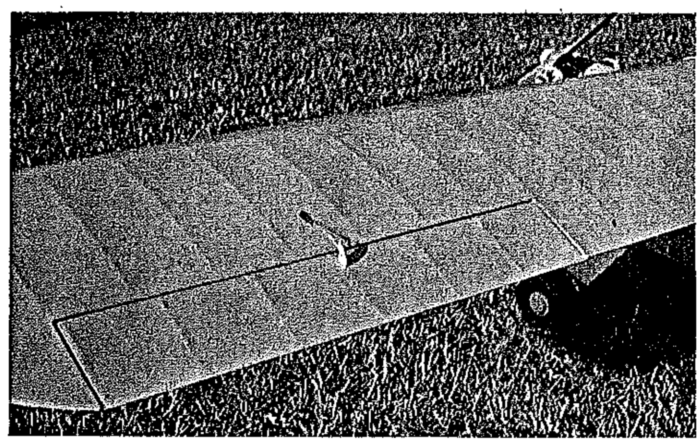
**Construction:** The following steps are recommended as the proper assembly sequence. Begin the fuselage structure by


Left: Working shock absorbers within the landing gear legs and operating scissors are functional and realistic details, but the text also describes alternate methods if you do not wish to invest the time to construct these. Right: Tail surfaces are braced by functional streamlined wires that are fastened to the surfaces by miniature hexagonal screws. License number was on the author's full-size K.

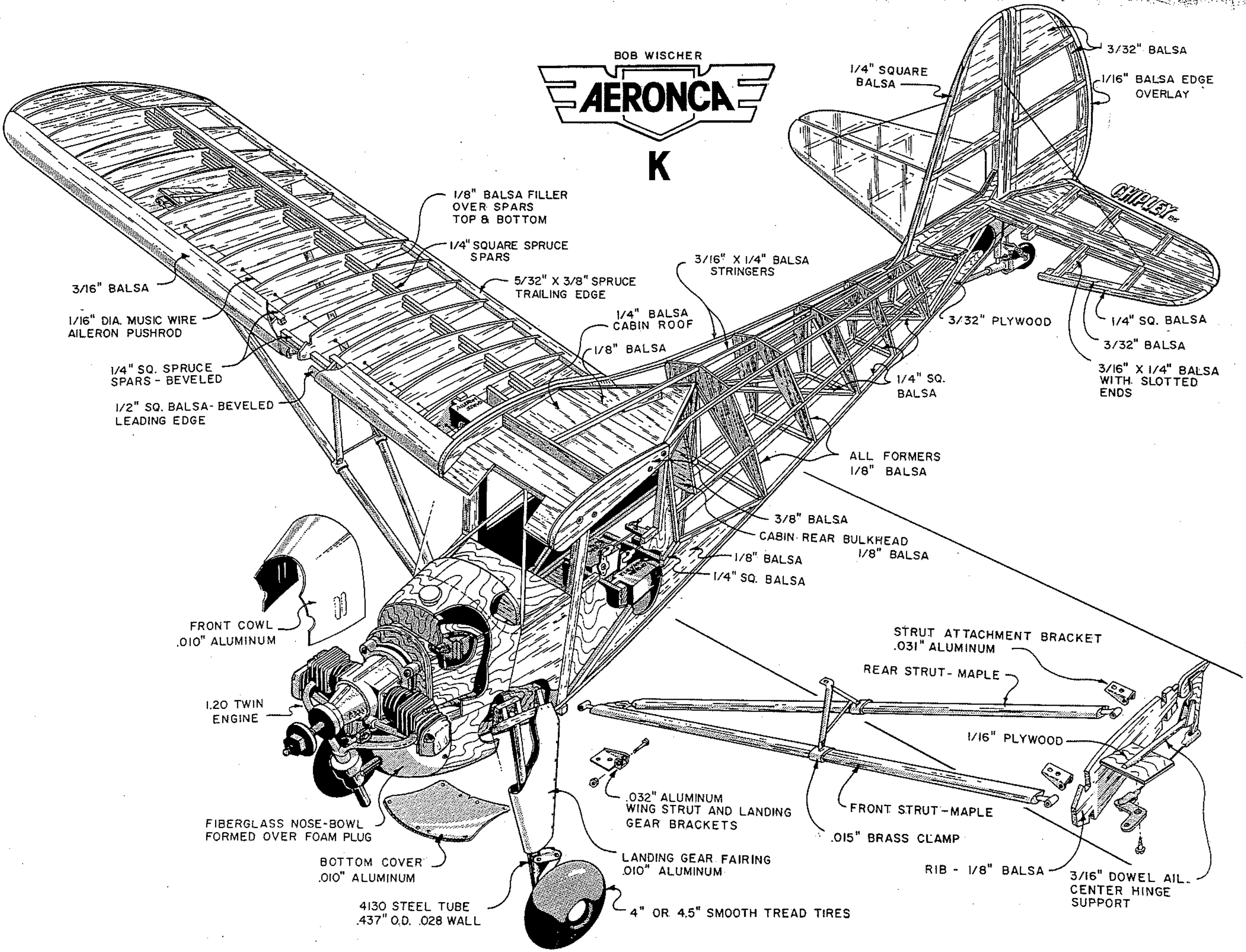



Left: The windshield is fastened, as on the prototype, with aluminum strips and rows of 0-80 and 00-90 machine and wood screws. Dowel internal fuselage bracing represents steel tubing in the cabin. Right: Wings are held in alignment by music wire pins, shown extending from their tube guides. Aileron servo connector is an extension cord hidden in the cabin roof. Note the aluminum frames around the windshield and side window edges. All this is typical of the detailing one should strive for in contest work—not necessary to just have fun.

Left: The acrylic (Plexiglas) skylight is fastened in prototypical manner with an aluminum framework. Aluminum strips cover the fuselage-to-wing joint. Right: A dummy control horn adds realism. Note in this view that the aileron ribs are not aligned with the wing ribs.

building the basic A-frame of lower longerons and crosspieces, which differs from the usual method of building-up joined sides. This is necessary because the fuselage cross section changes drastically from front to rear. The triangular upper structure is added vertically above the A-frame with formers and cabin floor added. Plywood cabin sides are cut out, and the framing balsa is added to their external surfaces. The two birch dowels are drilled axially for the brass tube inserts that will mount the wings. Cabin sides are then assembled with the tubes through the sides for alignment. This sub-assembly is set loosely on the A-frame and blocked to be certain of angular equality in all directions. Use thin cyanoacrylate (CyA) ce-


BOB WISCHER
AERONCA
K
1/8" BALSA FILLER OVER SPARS TOP & BOTTOM
1/4" SQUARE SPRUCE SPARS
3/16" BALSA
5/32" X 3/8" SPRUCE TRAILING EDGE
1/16" DIA. MUSIC WIRE AILERON PUSHROD
1/4" BALSA CABIN ROOF
1/8" BALSA
1/4" SQ. SPRUCE SPARS - BEVELED
1/2" SQ. BALSA - BEVELED LEADING EDGE
3/16" X 1/4" BALSA STRINGERS
1/4" SQUARE BALSA
3/32" BALSA
1/16" BALSA EDGE OVERLAY
3/32" PLYWOOD
1/4" SQ. BALSA
3/32" BALSA
3/16" X 1/4" BALSA WITH SLOTTED ENDS
1/4" SQ. BALSA
ALL FORMERS 1/8" BALSA
3/8" BALSA
CABIN REAR BULKHEAD 1/8" BALSA
1/8" BALSA
1/4" SQ. BALSA
FRONT COWL .010" ALUMINUM
1.20 TWIN ENGINE
FIBERGLASS NOSE-BOWL FORMED OVER FOAM PLUG
BOTTOM COVER .010" ALUMINUM
4130 STEEL TUBE .437" O.D. .028 WALL
4" OR 4.5" SMOOTH TREAD TIRES
LANDING GEAR FAIRING .010" ALUMINUM
.032" ALUMINUM WING STRUT AND LANDING GEAR BRACKETS
.015" BRASS CLAMP
FRONT STRUT - MAPLE
REAR STRUT - MAPLE
STRUT ATTACHMENT BRACKET .031" ALUMINUM
1/16" PLYWOOD
RIB - 1/8" BALSA
3/16" DOWEL AIL. CENTER HINGE SUPPORT

ment to freeze the joints at the dowel ends and at the bottom where the cabin sides meet the A-frame. Before removing the supporting blocks, add the balsa cabin roof and the rear triangular bracing to join the sides to the A-frame structure.

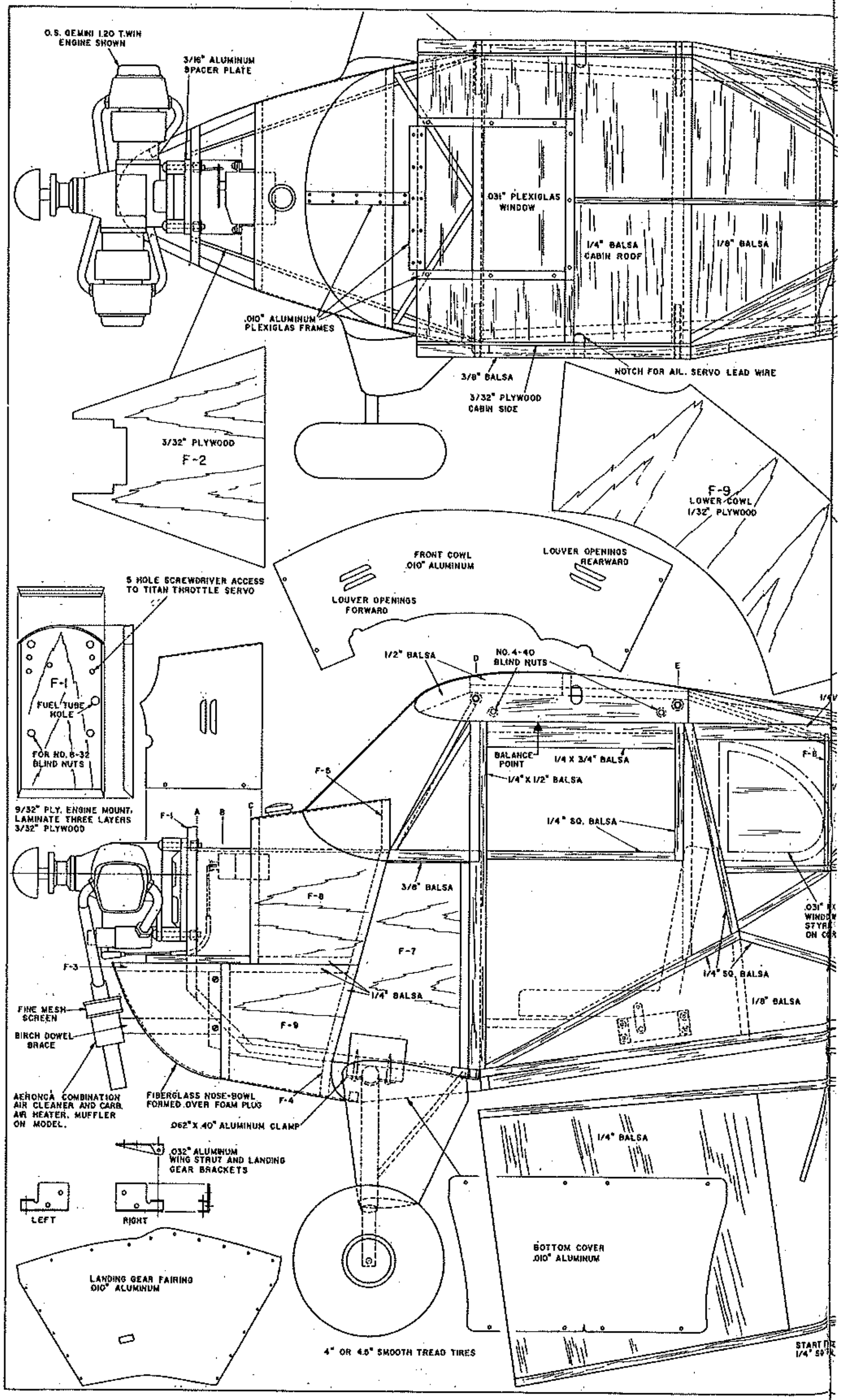
The fuselage has now become a rigid assembly that can be handled for the addition of ⅛-in. balsa stiffeners in the top area and along the lower longerons. Airfoil-shaped blocks of ¾-in. balsa are now cemented together to form the angle as shown in the fuselage top view, and these are then assembled to the cabin sides. The stringers, tail post, and plywood stabilizer keel are added next, followed by fin ribs and the leading edge.

The plywood nose sub-structure is assembled as a unit and cemented to the inside edges of the fuselage front with epoxy. The basswood gusset strips on the sides will act as an alignment fixture when cementing. The balsa floor of the nose section is next in the sequence, followed by formers, plywood cowlings, and rear landing gear support.

**Landing gear.** In order to complete the fuselage, the steel tube landing gear is needed next. A decision needs to be made at this point regarding the shock-absorbing feature in the landing gear. A simplified, non-shock gear is shown for anyone who prefers to evade the extra labor. The tubing I used is aircraft quality 4130 chrome-molybdenum steel, but any tubing with a wall thickness of .035 would be suitable. To avoid the necessity for elaborate fixturing on the brazed joints, the tube should be notched rather than cut through completely. The tube is then bent, held together by the remaining metal, to the proper angle so that the gap is closed, or nearly so. Braze with bronze rod, which will fill any gaps in the joint. I used a Tuf-Grind AC-4 wheel in a Dremel grinder to cut the notch, but this could also be done with a hacksaw. The 3/32-in. music wire brace is also brazed to the main gear, paying particular attention to the difference in level of the two parts as shown on the drawing, sheet 1.

The landing gear can now be set into its grooved supports and the metal clamps fabricated to secure it in place. Balsa fairing support blocks are tack-cemented to the gear legs and gussets added to anchor the blocks to the nose sub-structure. Once these fairing blocks are located in final position, the landing gear can be removed by breaking the tack-cemented joints.

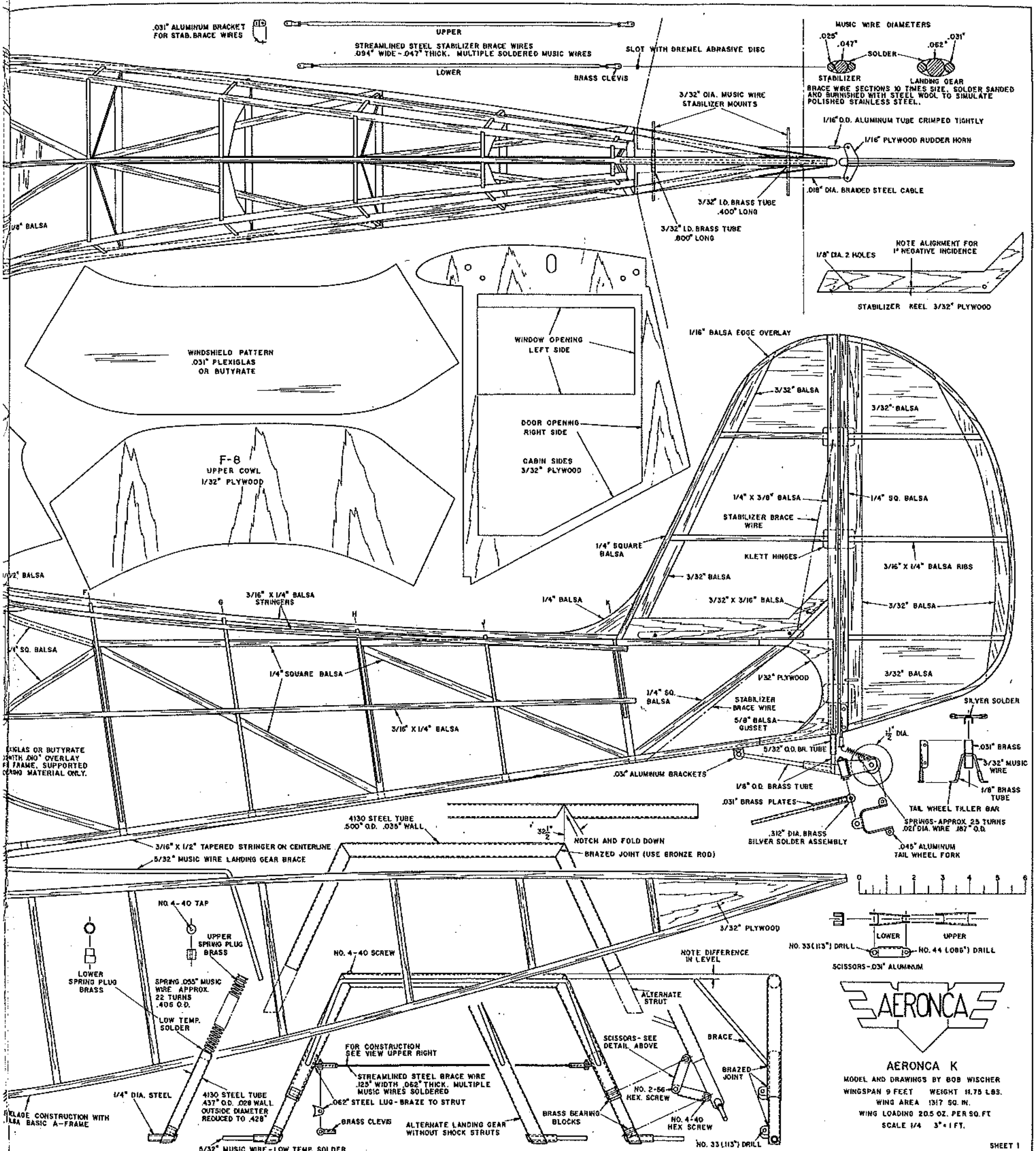
The landing gear can now be completed. Lower legs are also made from aircraft steel, turned down to a slide fit inside the upper legs. The spring is wound from .055 music wire, which is a standard size in hobby shops that carry the K&S line of products. In some areas, the local Ace Hardware Stores also have a wide selection of ready-made springs, and a pair can be chosen that will support a 12-lb. airplane. Each spring should have a load of about 6 lb. with a deflection of ⅛ to 3/16




in. Brass plugs are low-temperature-soldered into the spring ends. No brazing here, as the heat will alter the music wire so that it is no longer a spring. A machine screw at the top secures the spring and lower leg into the upper leg. The brass blocks for the scissors are subject to abuse in hard landings, and they should be brazed in position.

The alternate landing gear consists of 4130 tubing with longer legs. For either type, a short tube is brazed into the lower end to accept a 3/32-in. music wire stub axle. It is reasoned that a hard landing could bend the wire; it should be easily replaceable, so it is soft-soldered into the tube. An even more simple landing gear could be formed from a single piece of bent ¼ or 3/16-in. dia. rod. However, there is some hazard of damage to the landing gear fairings due to deflection of this type of gear in a hard landing. The tie rod

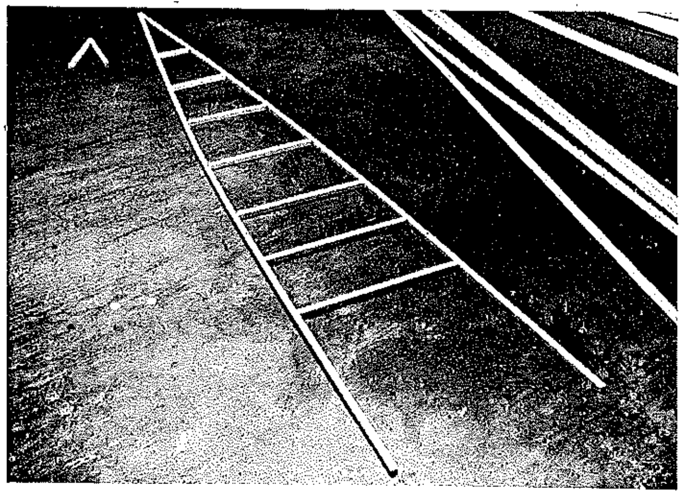
Full-Size Plans Available . . . See Page 156

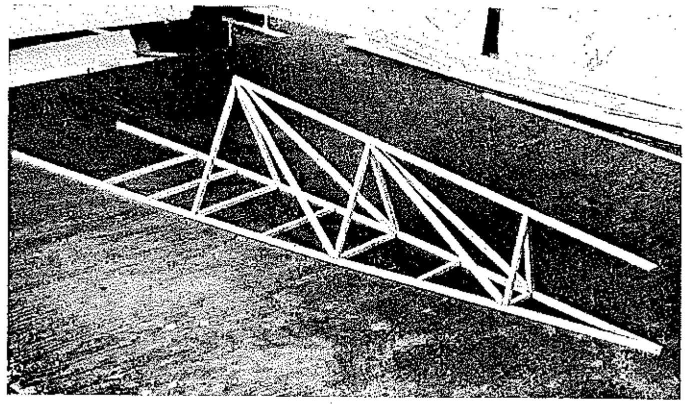



shown across the gear legs in the drawings is mostly cosmetic for the rigid tubing gear, but it would become a functional necessity with a smaller diameter rod-type arrangement. The tube-type landing gear follows full-scale construction closely.

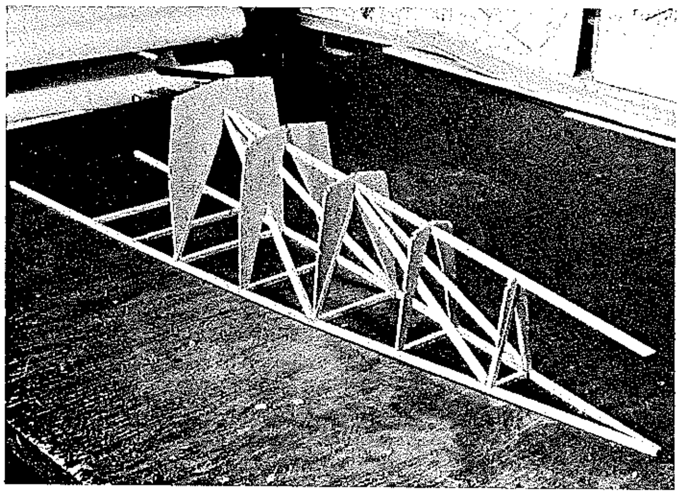
**Engine Mount.** The Gemini is furnished with an aluminum radial mount that can't be used in the Aeronca because of its excessive overall dimensions. However, I didn't wish to subject the engine mounting lugs to undue loads from uneven tightening of the mounting bolts on a wood surface, so I chose to mount the engine on a 3⁄16-in. aluminum plate. This is a worthwhile addition to prevent breaking a lug from the horribly expensive (over $60) crankcase rear housing. Handle a Gemini carefully, as though it were one of the family jewels.

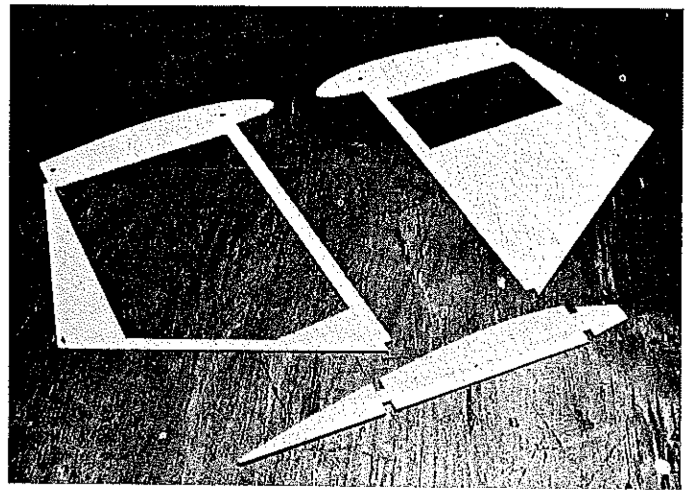
**The four-spar wings** are of simple and basic construction. Spars are spruce, but hard balsa is an acceptable substitute. Front spars are beveled to match the slope of the leading edge balsa sheeting. If a table saw can be used for beveling, the angles are 8° for the lower spar and 17° for the upper. Rear spars are set beneath the surface so that the covering fabric will not touch them, and in consequence, small blocks are fitted into the gaps above



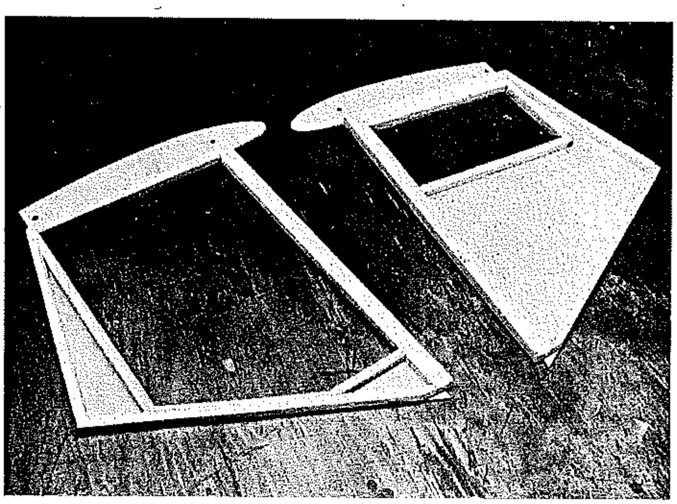


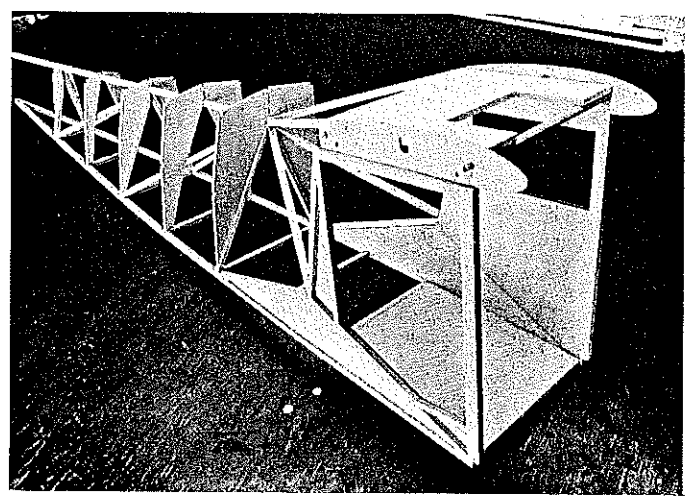
Left: Fuselage construction is begun with the basic A-frame of 1/4 sq. balsa lower longerons and crosspieces. Above: Triangular uprights and diagonal bracing follow the pattern of the full-size Aeronca K fuselage and form the basic skeleton of the model.





Left: Balsa formers fill out the shape. Cyanoacrylate cement speeds-up building time in all phases. Right: Plywood cabin sides have a door opening in the right side and window in the left. The plywood template that was used for cutting the wing ribs is also shown.





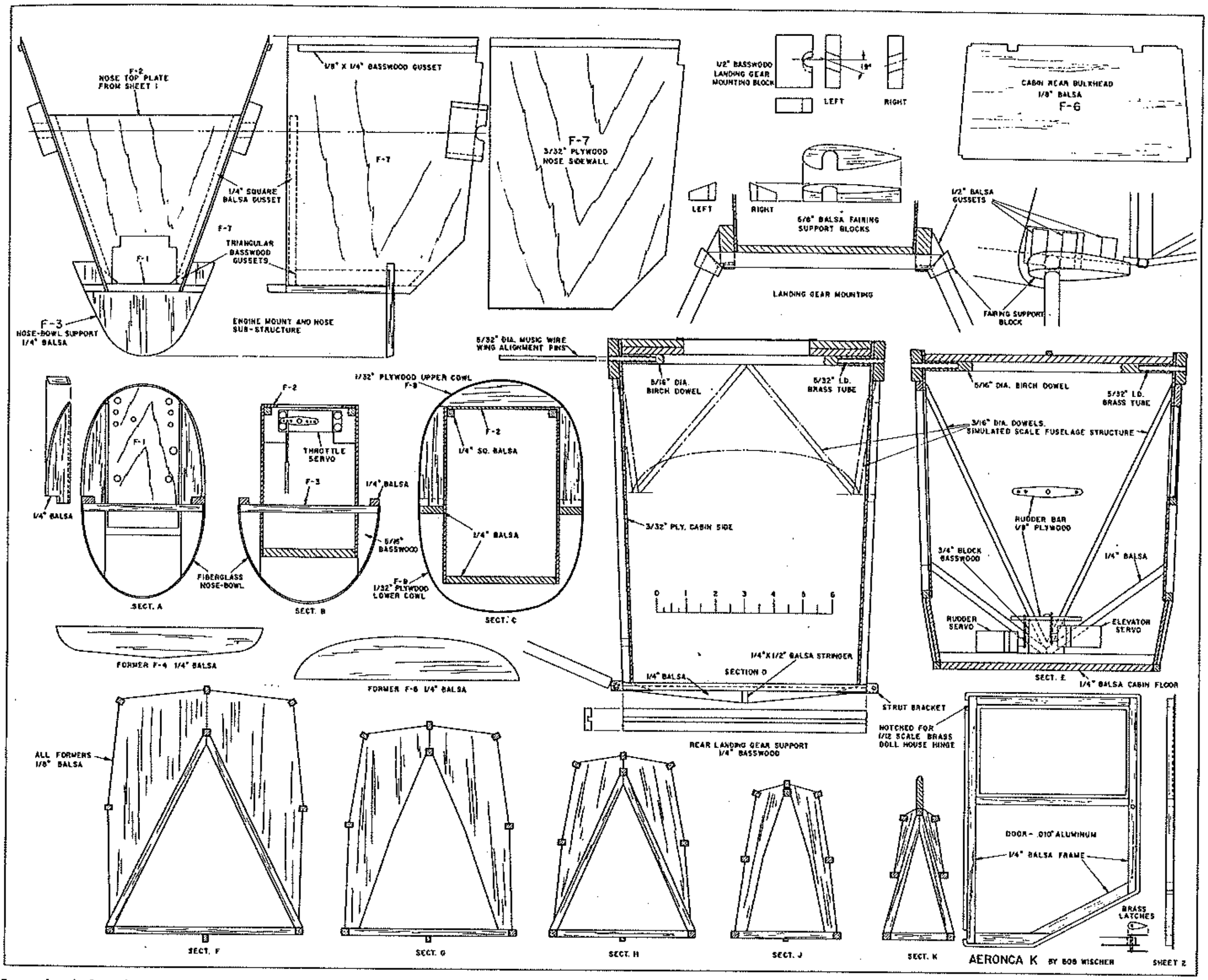
Left: Plywood cabin sides after they've had the balsa framework cemented to their external surfaces. Right: The cabin sides (with the dowel wing supports) have been erected over the fuselage framework. The cabin floor, roof, and diagonal bracing have also been added. The dowels represent the tubing structure of the prototype and will be drilled axially for the brass inserts that will mount the wing.

the spars at each rib position. The angled tail of the root ribs should exactly match the angle of the airfoil-shaped blocks on the cabin sides. To be certain of exact alignment of the brass tubes in the wing with those in the fuselage, the following procedure will be helpful, and this step is to be completed before adding the balsa sheeting on the wing bottom surface.

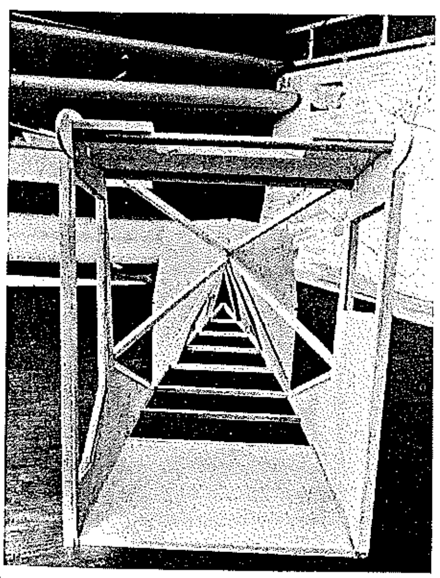
The fuselage is blocked up in the inverted position so that the wings, when plugged into the music wire alignment pins, have the proper dihedral angle. While being held firmly in this position, tapered balsa blocks are epoxied above and below the brass tubes to fill the gaps between tube and front spars. Tapered blocks are also used at the rear spars, but these are epoxied to the spar front surfaces. The plywood gusset plates and balsa blocks between the rear spars are then added. The wing bottom surface will be left uncovered, between the first two ribs and between spars, for servo access. A cover for this area is made from .010 aluminum, held in place with small wood screws; this is one of the few places on the model that deviates from true-scale appearance.

The Aeronca K has friese-type ailerons with hinges located below the aileron surface. The aileron nose (leading edge) then dips below the lower wing surface when that aileron is raised for banking in a turn.

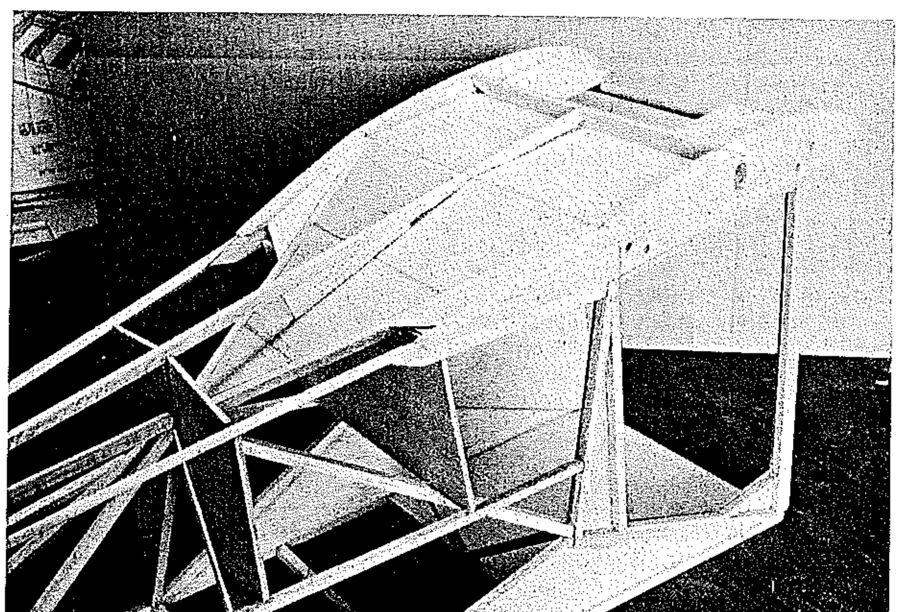
Full-Size Plans Available . . . See Page 156




In principle, the portion that dips down is intended to induce drag that counteracts adverse yaw (the tendency of an airplane to yaw in a direction opposite the turn). There is some doubt about the effectiveness of friese ailerons on a model, but our Aeronca is supposedly a true-scale aircraft; therefore, they are necessary. The model's aileron hinges are actually a metal-on-wood bearing surface, and if we were concerned about unlimited life or wear, the hinges would be considered un-



This view shows the drastic shape change that occurs from front to rear of the fuselage. The cabin sides are not parallel, being somewhat narrower at the bottom than at the top.



Cabin roof to the rear and the triangle at the lower longerons are filled-in with sheet balsa. The wing root balsa blocks are shaped to the airfoil and are then cemented to the sides.

suitable. I have used wood for surface bearings in the past, though, and have found that wear, if it occurs, is on the metal part and not on the wood. The hinge will outlast the model.

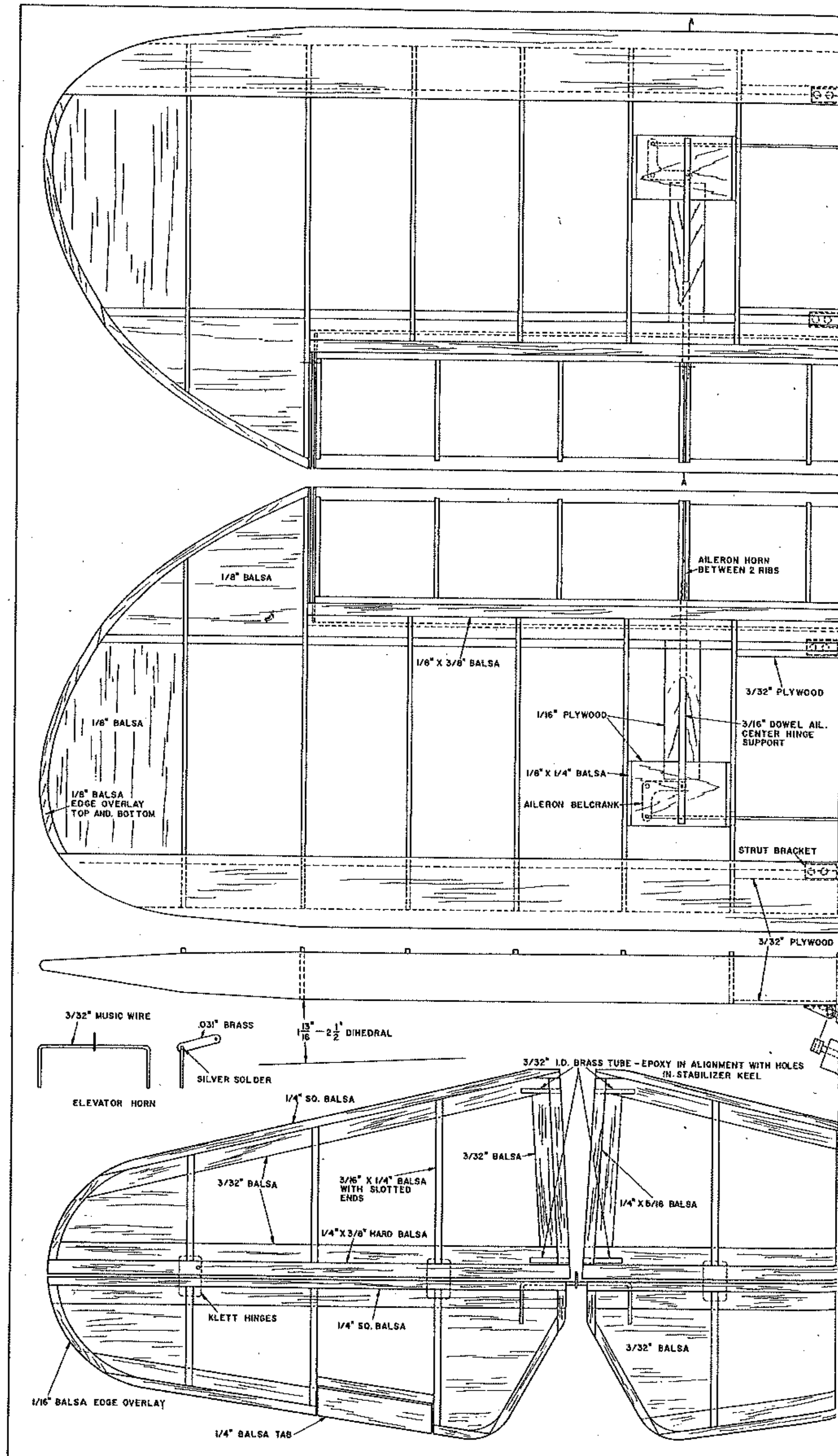
**Wing struts** on my model are made from scrap soft maple purchased for pennies from a local furniture factory. Not really easy to carve into a streamlined shape, most of the excess material was removed by successive cuts on the table saw. The struts could be made from bass, spruce, or even very hard balsa. The strut ends are made from round brass rod with holes drilled and tapped for a brass machine screw. The screw is silver-soldered into the brass rod, screw head removed, and the rod is drilled axially for the fastening screw.

The threaded end is epoxy-cemented into a deep hole drilled in the strut end for a very permanent joint. The inner end of the rear strut is made adjustable with two pieces. The head is removed from a No. 10 brass screw, and a hole is bored down its center; it is then tapped with a No. 6-32 thread and epoxied into the strut end. The brass clevis has a No. 6-32 thread and is locked with a nut. Turning the clevis provides adjustment of twist in the wing panel in exactly the same manner as on the prototype. The adjustment can be a blessing if the model tends to turn in flight with neutral rudder and ailerons.

**Tail surfaces** of an Aeronca are thin and flat without an airfoil shape. Leading and trailing edges are of smaller diameter tubing than at the hinge line. On the model, sand the balsa edge material to simulate the smaller diameter, especially along the trailing edge. On the prototype, connection of the stabilizer to the fuselage is by means of telescoping tubes, with the external wire bracing as the principal support. The model's stabilizer halves are supported in a similar manner, with tubes and music wire pins at the inner end and functional streamlined steel wires to carry the load at the outer extremities.

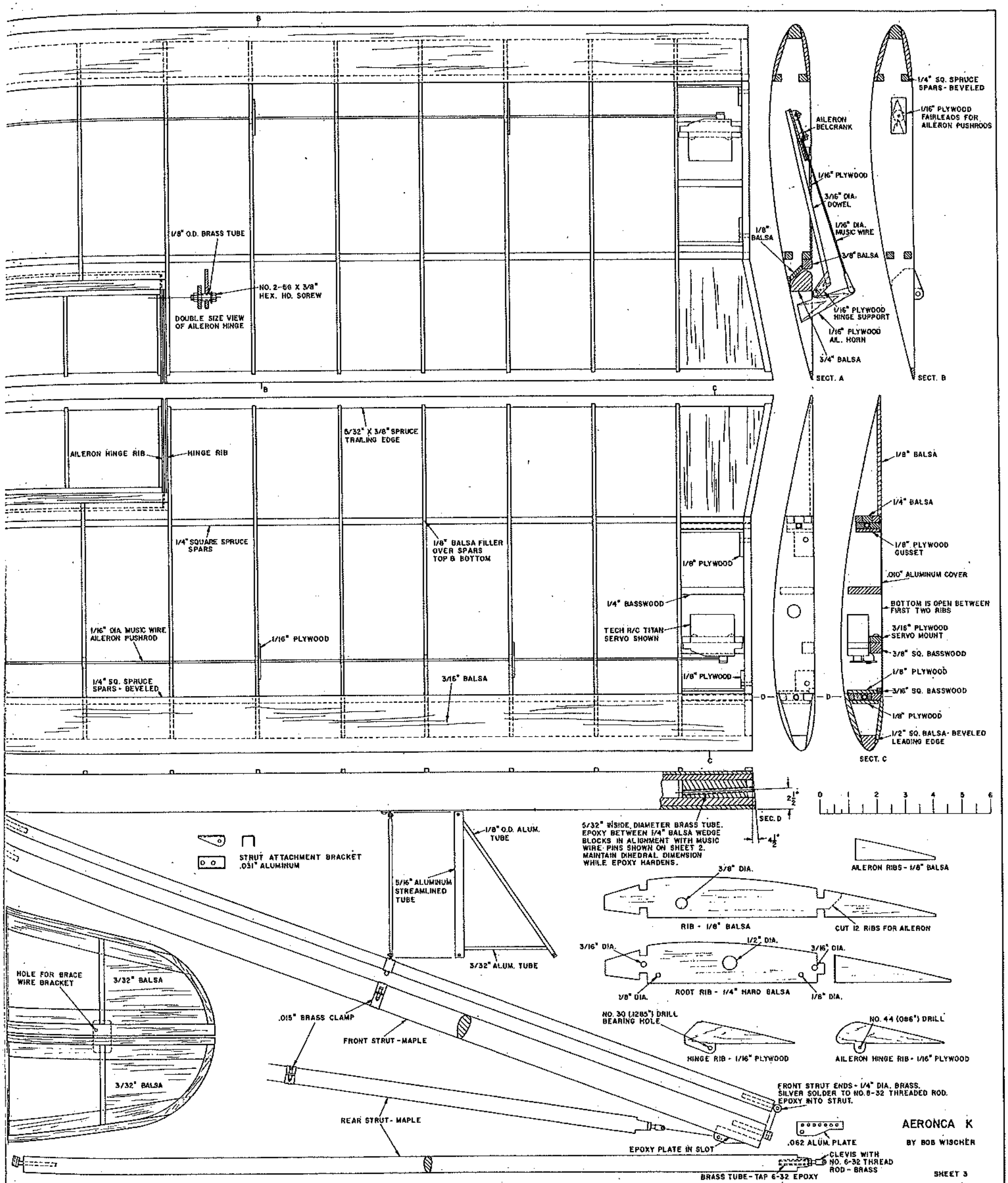
The stabilizer tubes must exactly match those in the plywood stabilizer keel of the fuselage. Tubes in the keel are of the length shown on sheet 1 of the drawings so that the tube ends will just touch the stretched fabric of the fuselage sides. They must be exactly parallel, when viewed vertically and horizontally, with the wing mounting. Parallelism can be checked dimensionally by inserting 1-ft. lengths of $\frac{3}{32}$-in. music wire into the keel tubes before freezing them in position with CyA. The stabilizer halves are then assembled on short music wire pins and blocked into position while the tubes are epoxy-cemented. This sequence assures alignment so that the stabilizer can be freely inserted over the pins in final assembly, without binding. On the model, only the brace wires actually hold the stabilizer halves tightly against the fuselage.

As shown on the drawing, sheet 1, the



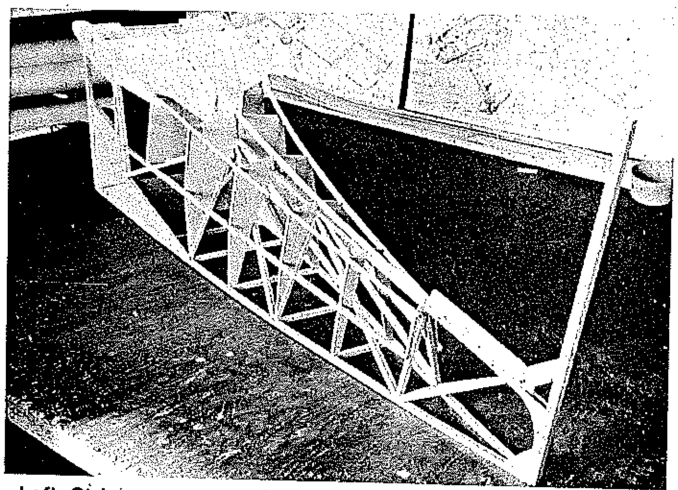

brace wires are made from music wire of two different diameters, soldered together on a board to prevent warping. They are then sanded and burnished with steel wool to bring them to a polish with the appearance of stainless steel. Solder with at least 50% tin content will provide the best finish. Ends of the central music wire are then soldered into brass clevises which are pinned to brackets that mount on the tail surfaces. By melting the solder in the clevises, the wires can be adjusted in length to make them quite tight after assembly to the model. Clamp a heat sink to the polished portion of the wire to avoid melting.

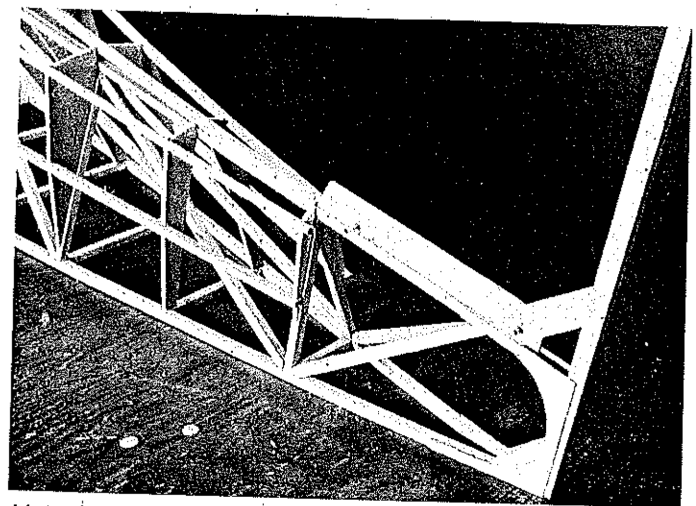
Full-Size Plans Available . . . See Page 156



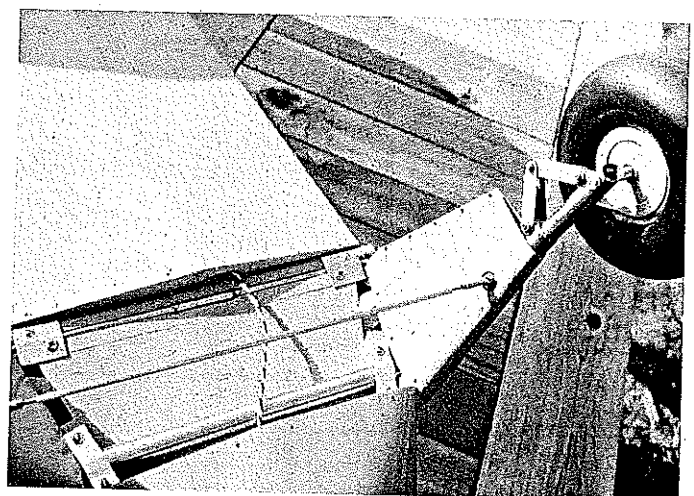

**Covering** material for my Aeronca is Sig Koverall, producing a very scalelike finish. It is particularly well-suited for making the fabric fillets at the small dorsal fin and at the front edge of the landing gear fairings. All wood surfaces that will come in contact with covering material are given three coats of heavy dope. The fuselage sides, top, and the fin were covered with two pieces of Koverall (one for each side and joined at the top stringer). The bottom is a separate piece, though it would have been a small challenge to have included it in the side pieces.

A small heat sealing tool, set at *medium* heat, was used to shrink the Koverall to a smooth cover, and the fillets were formed without special effort. Sig recommends nitrate clear dope. However, I brushed three coats of non-tautening butyrate, instead, and can see no ill effects. The Koverall is already tight when the dope is applied. Simulated rib stitching, made with Wilhold R/C-56 glue, was applied





Left: Stringers are added to the sides and top of the framework, fitted into the notches, and the tail post is added. The rear diagonal bracing provides rigidity. At this point, the fuselage weighed only 14 oz. Right: The plywood stabilizer keel is cemented in place with brass tubes for stab support. Ply and balsa gussets strengthen the tail post; they are very light, so the model is slightly nose-heavy.

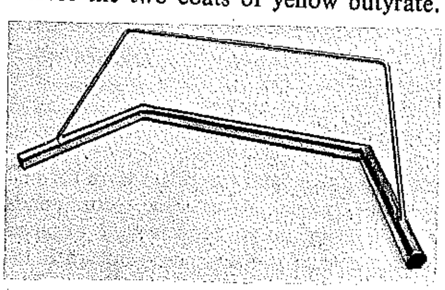


Left: The plywood nose sub-structure with the engine mount and landing gear grooved supports in place. Use epoxy cement in this area for maximum strength. Right: Bottom view with the cover removed to show the landing gear mounting. Aluminum clamps secure the gear in the grooves. The shock-absorbing landing gear helps to keep the model from bouncing, or from being damaged, on rough landings. The throttle servo wire is routed beneath the cabin floor to keep the interior looking neat. All photos by the author.

over the wing and tail surface ribs.

All wear points in the fabric, such as ribs, stringers, leading edges, trailing edges, and longerons, were covered with pinked tape. The material I used is self-adhesive 3M Hair Setting Tape, purchased from the drug store. Its serrations are a bit too large to be strictly scale size, but all static judging in every class of competition is done from a distance, and finer serrations would not be visible. All tape was given one coat of clear dope.

One additional coat of clear butyrate, mixed with aluminum powder, was sprayed before the two coats of yellow butyrate.



Upper portion of the tubular landing gear has been brazed with bronze brazing rod at the angled joints and also at the points where the rear brace meets the tubing.

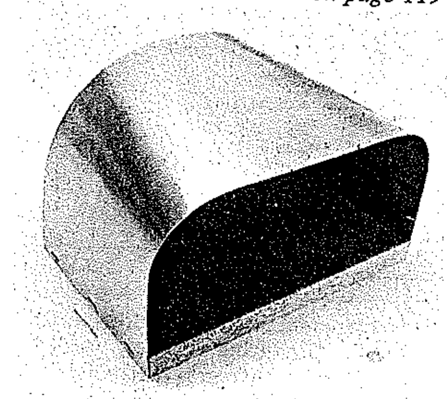
The standard color from the factory was Loening Yellow, a color not commonly found today. I used Randolph's Lockhaven Yellow as a convenient substitute. The Loening Yellow had a tinge of green, slightly different from Lockhaven. To enhance appearance, the inside of the cabin door was also covered and painted.

**The fiberglass nose-bowl** is formed over a plug of blue insulation styrene foam, sanded to shape slightly undersize, and then coated with vinyl spackling compound to protect the foam from polyester resin that followed. Several layers of 6-oz. fiberglass cloth, impregnated with polyester finishing resin, were laid over the plug, with a final layer of lighter cloth (finer weave). I used a screwdriver as a digging tool to remove the foam plug. Coarse sandpaper removed the last bits of foam and smoothed the interior. Removing the foam is a simple task in a matter of minutes. (Don't believe the stories about dissolving the foam with gasoline or dope thinner. It wastes expensive thinner, is hazardous, and leaves a sticky mess to be cleaned out of the bowl afterward.)

**Detailing.** Door hinges are brass butt-type that came from a hobby shop that carried a line of doll house supplies. They are 1/12-scale and are nearly the correct size for a quarter-scale airplane. The same shop also had tiny piano hinges for the elevator trim tab of the Aeronca.

The acrylic (Plexiglas) windshield and

*Continued on page 119*



The windshield form of aluminum litho-plate, stapled to a block. Note the change in shape from round to semi-rectangular with rounded corners. Hints for obtaining this kind of shape are contained in the text.

## Safety/Preston

*Continued from page 20*

**One last tip** to those who own a transmitter with switches for dual rate, mixers, servo reversing, etc. This comes from *The Guy Wire,* newsletter of the Daytona Beach RC Association (editor: Bill Bradford). Every month the club president, Steve Searle, Jr., has "A Message From The Left Seat" on the first page. In the April 1985 issue, his message concerns safety, and he included a preflight check list. Item No. 3 on this list is: "DOUBLE CHECK: All bells and whistles on your transmitter before flying." You'd be surprised how many reports I've seen of crashes that were caused by inadvertent switching of one of the "bells and whistles" switches.

Don't *you* be one of the humans that makes an error this month! Have a safe one.

*John Preston, 12235 Tildenwood Dr., Rockville, MD 20852.*

## Aeronca K/Wischer

*Continued from page 34*

skylight window were drape-formed over aluminum sheet forms made from printer's litho plate. The plastic is laid across the form, balanced along its centerline, and placed in a pre-heated oven at 250°F. The forming takes but a minute or two. Remove the form from the oven, wait another minute for cooling, and the plastic retains the shape. I prefer to cut the plastic to its final shape after forming. Use the pattern shown on the drawing to determine beforehand whether it will fit the fuselage. Make corrections, if necessary, or make a new pattern, before cutting into your precious windshield blank. If in doubt about the exact bent shape of the windshield form, use the pattern to cut a dummy windshield from aluminum sheet. Bend the dummy to fit the fuselage, and then use it to shape the form. That's an extra step, but it may save time in the end.

**Flying:** The Aeronca is one of the few airplanes I have built that is slightly nose-heavy in spite of its long tail and short nose moments. No ballast has been added, as it flies very well in its present balance condition, which is shown on the drawing. It will perform a tail-spin very well, and I see no reason to add tail weight. Had the model been reluctant to enter a spin, some extra weight would have been required in the tail. The spin is one of the few aerobatic maneuvers the K was capable of performing, and this is of some concern to anyone thinking of competition. The full-size plane was no ball-of-fire and could only perform a simple loop, split-S, wing-over, and spin.

Elevator travel is measured on the model as 1½ in. up and 1⅞ in. down. The extra down-motion is the result of the elevator horn being swept forward for clearance reasons and isn't required for flight. Down-elevator is a rather useless control in most Scale models. My aileron travel is 1 in. in each direction and could be increased a bit, possibly to 1¼ in. Rudder travel is the maximum allowable at 3 in. in each direction. At this dimension, the rudder comes very close to touching the elevator.

Wheels of the Aeronca are quite far forward. The effect on landings is a tendency to bounce if a three-pointer is attempted under any but ideal conditions. To be certain of a bounce-free landing, I bring it in a bit fast and land on the main wheels. This also applied to flying the full-size ship, although I was expected to make every landing a three-pointer during training. Takeoff requires very little rudder. With the narrow landing gear, a crosswind takeoff or landing can be quite an adventure. It's best to be lined up directly into the wind. No model I have ever built is easier to fly.

A highly detailed three-view documentation drawing of Aeronca K NC 19345, which was our license number, is available in ¹⁄₂₄th-scale (½ in. = 1 ft.) from Paul Matt's Historical Aviation Album. Price is $5.00 postpaid. Drawing number is 15-103-A. For competition document pur-

*Continued on page 122*

## Aeronca K/Wischer

*Continued from page 119*

poses, the drawing should be changed to show one less aileron rib. As indicated on my construction drawing, aileron ribs aren't in line with wing ribs. This is a small change, and possibly Paul Matt can be convinced to correct his original artwork. My sketches of the Aeronca, made for modeling purposes in 1941, contain accurate measurements of the wing and aileron rib spacing and positions. Paul's address: Historical Aviation Album, P.O. Box 33, Temple City, CA 91780.

## RC Scale/Wischers

*Continued from page 43*

the plane's weight was only seven pounds.

In the past, Roger Brennom has won first places in Stand-off Scale at the Nats and Toledo with his Northrop P-61 Black Widows, which he has built in a series. His newest P-61 was entered in the Precision class because of the increase in exterior detail. The new model had electrically-operated retracting landing gear. At a weight of 25 lbs., and with OS .90 engines, the eight-foot-span night fighter fits the Giant Scale class.

Hal Parenti's new Savoia-Marchetti S.M. 79 trimotor Italian bomber is intended for FAI competition, to be in contention against such airplanes as Sauger's Stinson and Skip Mast's Hercules. The Savoia uses three OS .25 engines and weighs 12.5 lbs. Finish is a combination of FabriKote and silk with K&B epoxy. Hal's ability as an old-time Pattern flier is his secret weapon in the competition wars.

Several planes built from kits were displayed among the scratch-built Precision class models. Ed Wisser had returned with another DH Tiger Moth from a Bud Barkley kit, in ¼-scale. During construction and finishing, Ed had worked closely with the lady who was owner and restorer of the full-size airplane, who was subsequently killed in the crash of the Moth.

Another kit-built model was John Revello's Cessna L-19 Bird Dog, using an OS 1.20 Gemini twin. The model originated from a Circus Hobbies kit.

**The Stand-off Scale classes** produced an array of quality aircraft and some surprises. In the Non-Military group, the winner was a 1928 Heath Super-Parasol equipped with a Saito four-stroke FA 1.20. A large model at 35% scale and 104-in. wingspan, it followed full-scale practice to a great extent. For example, the external aileron cable controls were faithfully reproduced in working order. Only the exposed Saito engine relegated the Heath to Stand-off class.

In second place was a German primary glider built by Jeff Troy. Surrounded as it was by soaring gliders, the model hardly seemed in contention for a prize. It was constructed to follow full-scale fabrication in every possible respect. All controls were through cables, exposed to view. The fuselage on a primary glider-type machine is an exposed skeleton, and the model's framework was of authentic, laminated-form wooden members. In competition against some rather astoundingly impressive Giant Scale entries, the glider's high placing was a real surprise—and well-deserved.

The Military Stand-off Scale winner was a finely-camouflaged Fiesler Storch, again a small model among the giants displayed, built by Jim Suchy. At 70-in. span, the model wasn't really small, except by comparison with its competitors. It featured working slats and flaps as on the original STOL aircraft. Jim had built the model from Dennis Bryant drawings, available in the U.S. from Bob Holman Plans. Operational slats are seldom seen on models. In second place was Frank Hoffer and his German WW I Albatross D III. A small airplane with wingspan of only 59 in., it was almost hidden in the overwhelming mass of larger display craft. Frank is one of the Toledo regulars who has something new to exhibit each year, mostly of WW I vintage and out-of-ordinary.

Keith Shaw is an electric-power enthusiast who had previously shown a Spitfire