

Photos by Al Novotnik

The big "Gere"

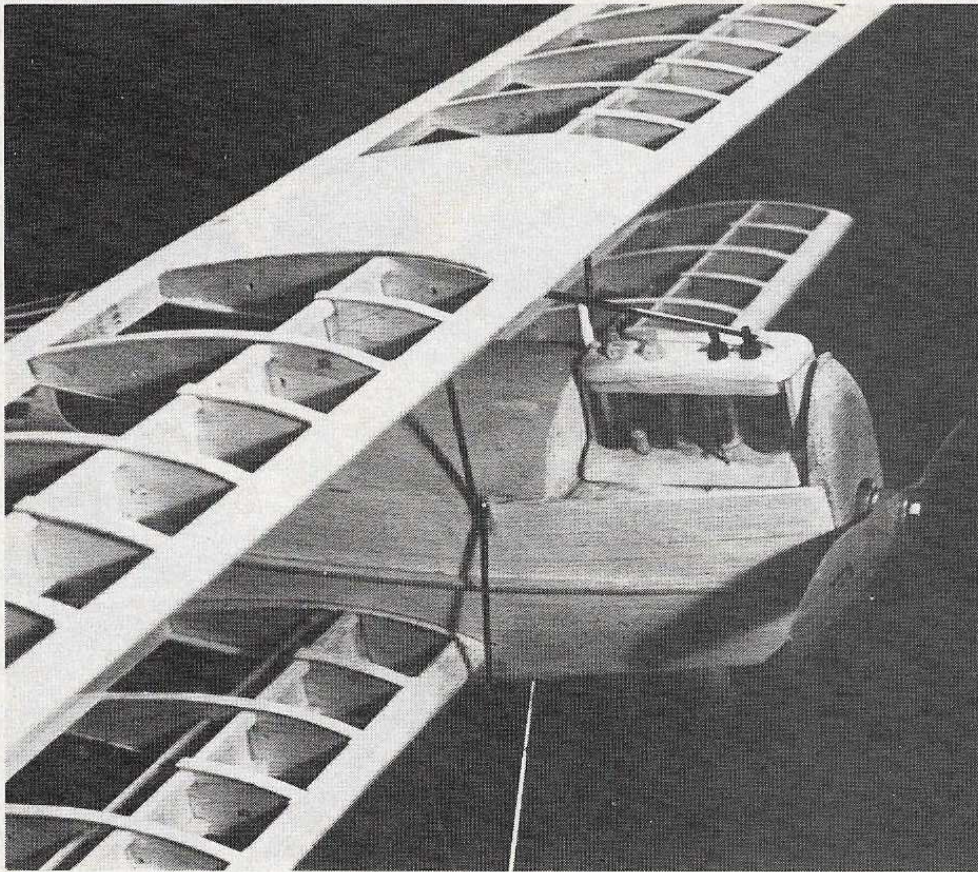
Here's the "Gere Sport" in a .60 Stand-Off Scale R/C version. **by Joe Makovich**

The depression atmosphere of the early thirties era encouraged homebuilts. The "Gere Sport" never as popular as the "Heath Parasol" or "Pietenpol Aircamper," was still a prettier plane. The original "Gere" was designed by nineteen year old Bud Gere, who died before his creation flew, killed piloting an experimental iceboat he designed.

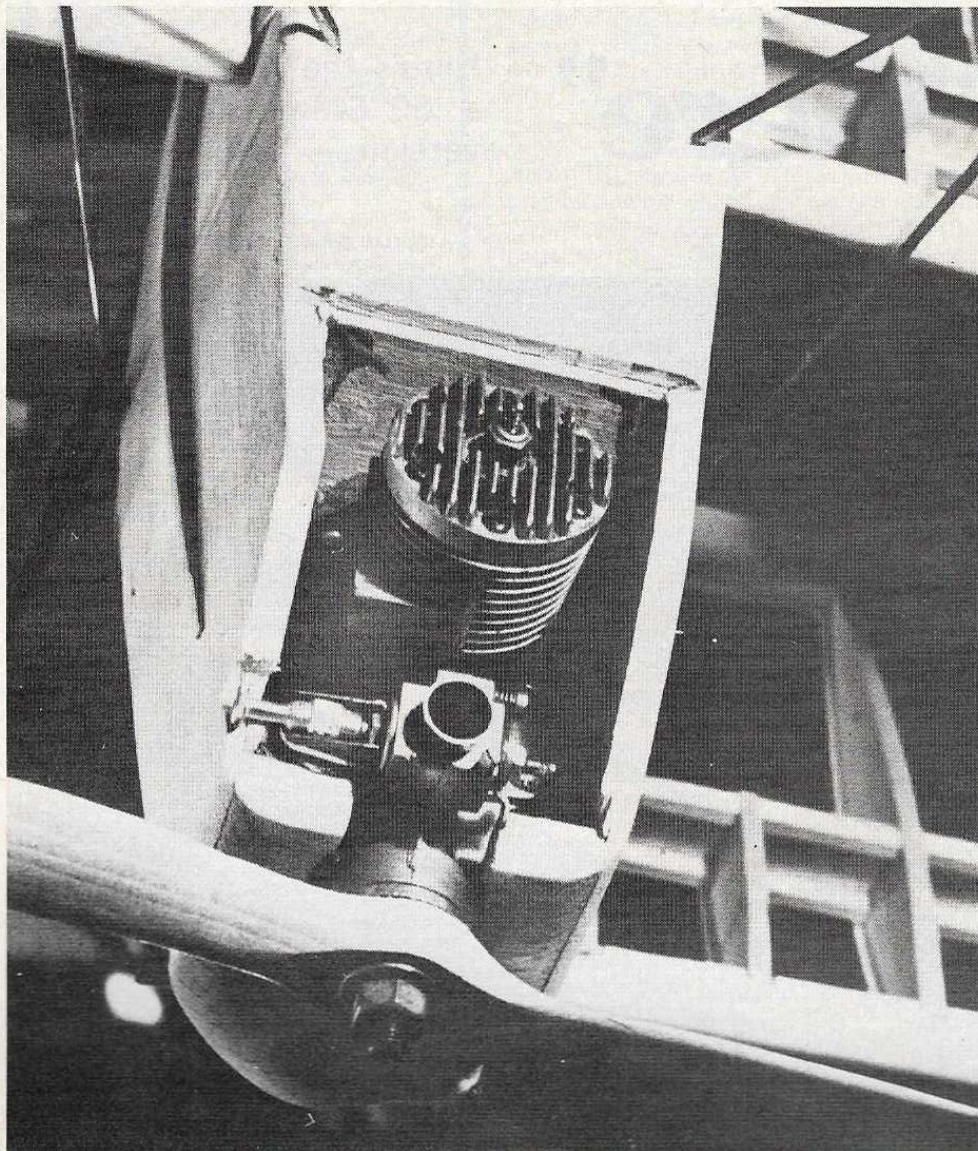
So well designed that it inspired the "E.A.A. Biplane" 30 years later, the "Gere Sport" had a fairly high aspect ratio, good gap chord ratio, large ailerons and tail surfaces and simple lines. It could be built easily of straight tubes, spruce, and was very strong for its size. The plane was fabric covered, muslin doped was cheapest, and power was supplied from either a 1927 four cylinder Chevrolet engine or a '29 Model A Ford. The latter was more reliable and powerful. The landing gear used Goodyear low pressure donut wheels. These tires were favored by early homebuilders because no shock absorbing devices were needed and they were great from muddy runways. The wings look like a R.O.G. stick model. Ribs were constant chord; 12" apart and squared with no fancy tips. Spruce ribs and spars were easy to fabricate. The scale drawings circa 1933 featured a Ford A engine, for increased performance, cooled by an underslung radiator. Wingspan was 19 feet, length



Some welding rods bend up to form the cabane struts, easily enough. The landing gear is routine. **Below:** Boxy in line perhaps, this due to its home-built heritage. Trexler wheels are a natural.



An old Ford powerplant is simulated here, but any .60 will pull it through the sky pretty nicely. **Beneath:** Cowling in the engine is no big deal on this simple design. It's a fast ship to build.



16, wing area 111 sq. feet. Empty weight was 605 lbs. and gross 875 lbs. Speed was 50 mph. with a 19 horse Chevrolet engine, 60 mph. with a 40 horsepower Ford.

The Fuselage Structure

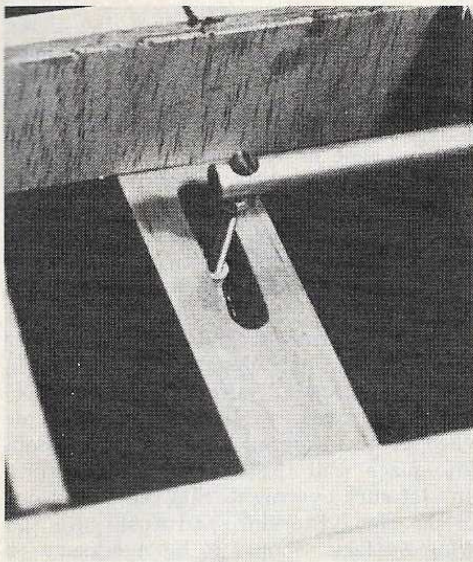
The "Gere Sport" is not a beginner's model as it requires experience in parts fabrication and construction techniques. A fuselage jig, and large "C" clamps are helpful as is a small band or jig saw. Fuselage bulkheads and doublers are $\frac{1}{8}$ " plywood and are difficult to cut without proper tools.

Fuselage construction is most challenging. The bulkheads taper from top to bottom making a compound bend with the fuselage sides. The firewall is $\frac{1}{4}$ " aircraft ply; all other bulkheads are $\frac{1}{8}$ " poplar plywood, stiffened at the bottom and top edge of the sides with $\frac{1}{4}$ " square crossmembers. Cut sides from two pieces of $\frac{1}{8}$ "x3"x36" hard balsa and splice and glue doublers in place. Pre-drill and mount blind $\frac{6}{32}$ nuts to accommodate the Kraft engine mounted to the firewall. The original is powered by an inverted K&B .61 with a Murphy Muffler. Do not bend the sides from firewall to the nose block until the rest of the fuselage has been built and dried. Use epoxy between all bulkheads and sides, then bend the forward fuselage to the $\frac{1}{4}$ " pine noseblock, clamp and epoxy together. Mount the engine and make cut-outs for needle valve and exhaust, then build the cabane struts. They are bent from welding rods purchased from a local welding firm. Remove the white flux and bend to shape. Welding rod is stiff enough for strength, yet bends easily. Carefully bend loops at ends of cabane struts through which $\frac{6}{32}$ nylon allen head screws pass to fasten on the upper wing. After front and rear struts are bent to shape, cut $\frac{1}{2}$ " square maple cross members, groove ends, wire wrap and epoxy cabane to front and rear cross members. Next bend the side cross braces of the N-strut cabanes, and assemble by wrapping joints with fine copper wire. Carefully level and true the entire cabane structure on the workbench, then silver solder all joints. The finished unit can now be epoxied to the fuselage. Check alignment before epoxy sets.

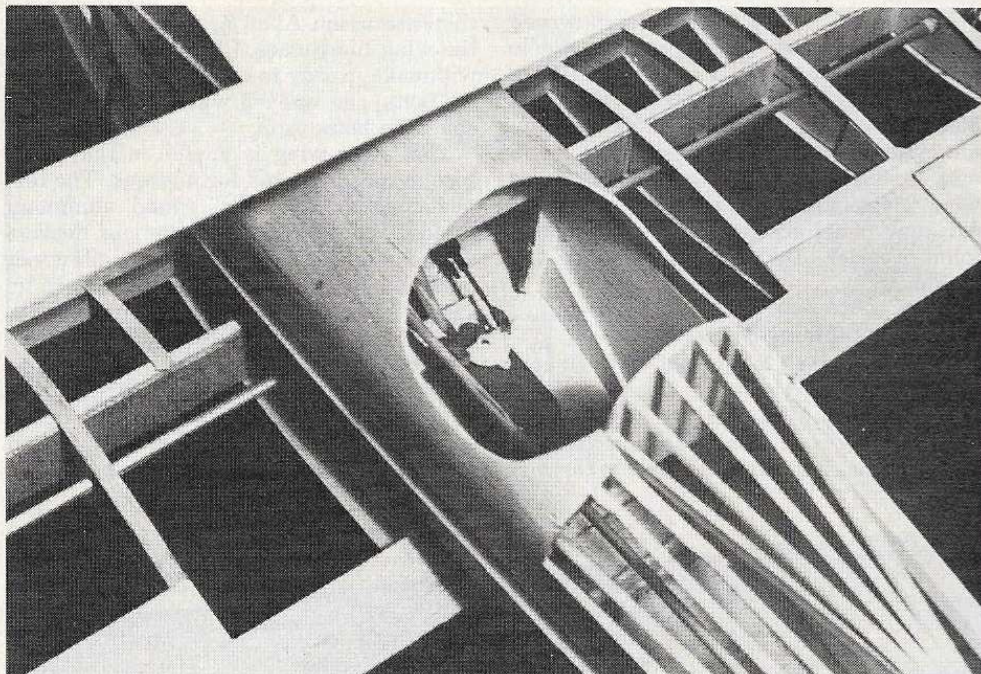
The landing gear installation is next. After bending upper and lower struts, wire wrap the upper strut to the front maple cabane cross member and epoxy. The shorter lower strut is "J" bolted to bulkhead #2.

Wire wrap axle joints and silver solder together. The third strut is not made until the aircraft is completed. Since it intersects the fuselage bottom under the lower wing, it is made removable and non-functional. Flatten a brass tube 2" long on one end and drill a $\frac{5}{32}$ " dia. hole in the flat to slide over the axle. Make two. Bend strut to shape, slide ends into tubing, align and either sweat solder the brass tube to strut or secure with Zap. To hold strut to fuselage bottom, yet allow ease of wing removal, loop an elastic to the center portion of the strut and secure it to an open screw eyelet in the midline of the firewall behind the cylinder head. This is a simple installation, however you may choose to discard the strut when flying.

Before planking the fuselage forward



Torque rod to the ailerons is an aluminum tube, bolts forming the horn linkage. Simple, sturdy. **Right:** A few stringers fair in the headrest and turtledeck. Nothing is difficult to fabricate.



of the cockpit to firewall, mount a 12 oz. Sullivan tank and side rails for the radio installation.

The rudder and elevator controls are scale. Conventional pushrods pass through the fuselage sides can be used. However, the scale controls take only a short time to fabricate and are silky smooth. The aft elevator control horn is installed before turtledeck stringers are cemented in place. The pushrod passes inside the fuselage from servo to the leading edge of the elevator where two pieces of 1/8 I.D. brass tubing are epoxied through each side of the fuselage with 1/4" space between the ends at the centerline. Place a length of 1/8" O.D. brass tubing through the epoxied tubes and slip a 1/4x1"x16" brass horn between the inside ends. Carefully solder to 1/8" O.D. brass tube. Be sure to drill a 1/16" dia. hole in the other end of the

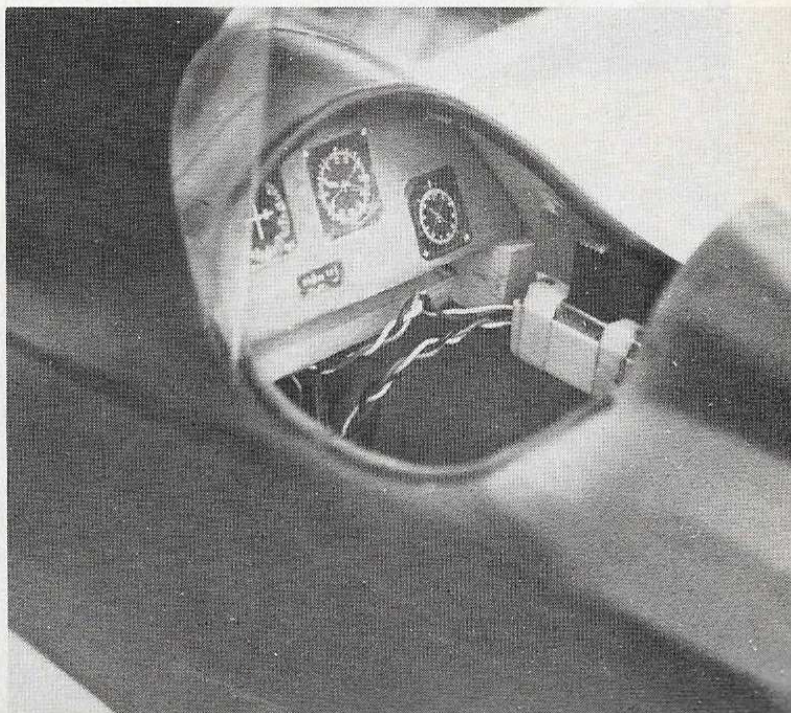
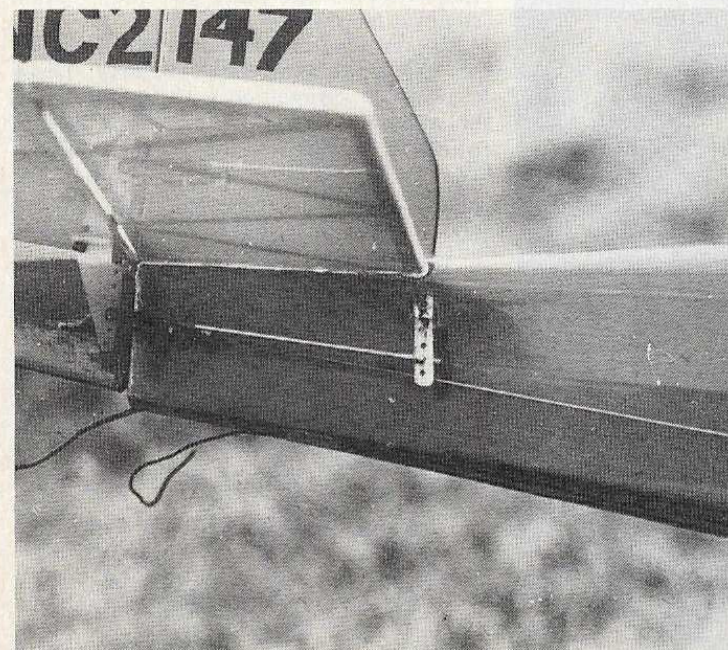
horn to accept the pushrod clevis. Another brass horn 1/4"x1"x16" is now soldered to the left end of the inner brass tube outside the fuselage. Drill several 5/64" dia. holes in the horn to accommodate a pushrod with a "Z" bend which connects with a clevis to the elevator horn. The unit allows smooth operation and easy adjustments and no exit slots in the fuselage sides.

The rudder controls are made of two lengths of controline cable. Cut four pushrods 1 1/2" below the threads and wire wrap and solder one to each end of the cable. Attach to servo arm or wheel. Drill and force an 8" length of inside "Golden Rod" tubing through fuselage side, allowing the end to protrude about 1/8" beyond the covering and epoxy to the inside of the fuselage. The other end is not attached inside the fuselage. Pass the control wire

through the plastic tube to the exterior, then measure, cut, wire wrap the pushrod to the control wire and solder. This attaches to the rudder horn. Make two, one for each side. The rudder control horn is made of 1/16" phenolic or fibreglass board epoxied in place. It is absolutely necessary to place a lock 4-40 nut on all rudder pushrods to prevent vibration from rotating the control wire loosening the tension. Again this installation is worth the effort. The aft stringers can now be cemented into place.

A single 1/8"x1/4" stringer runs the length of the fuselage side and is tapered fore and aft. Coverite was used on the fuselage. Attach the Coverite with a hot iron to the upper and lower edges of the fuselage sides to simulate scale appearance. Plank the fuselage top from firewall to back of cockpit.

At right: Just the basic instrumentation, and enough detail for a start. **Below:** The elevator link-up, as visible on the plans, it's an easy tail.



The original "Gere Sport" was powered by a four-cylinder Chevrolet automobile engine or a Model A Ford engine. Construct a fake "A" from sheet balsa for the block and head; 1/2" round pine molding for cylinders and brass tubing for manifold, carburetor and coolant line to upper wing. Dowels simulate exhaust stacks and old glow plugs are used for spark plugs. Paint it black. Detail here is left to the builder.

Flying Surfaces

The upper wing is straight-forward construction. Align the wing on the cabane struts, then drill and epoxy 5/32 tee-nuts into the plywood center-section. Run a 5/32 tap through the tee nuts to clean threads

then use nylon Allen head bolts to secure the wing to cabanes. Cleaning the threads will make it easy to finger tighten the nylon bolts, the wrench will only be used to snug the bolts tight.

The lower wing is unique in that scale torque rods are used for ailerons. The torque rods are 1/4" dia. round aluminum tubing. Make bearings in the ribs nearest each end of the rods using either plywood, burnishing the holes smooth or plastic sheet. Make certain the rod turns easily. Drill 5/64" dia. holes in each end of the torque rod and screw thread a 4-40 bolt into the holes. Lock into place with a nut or Zap. The aileron pushrods to the servo are Rocket City Clevis types that thread onto the 4-40 bolt. The other end protrudes

through the lower surface of the wing. Thread a plastic connector for a pushrod clevis to the bolt. Bend a pushrod to connect to the aileron horn. You will be delighted with the smoothness of torque rods and the ease of adjusting.

The interplane "N" struts are non-functional. Make them of 3/16"x5/16" pine, sand to streamline shape, glue and wrap joints with thread, then paint with clear dope and taper the ends slightly. Note that small boxes are built into the wing where struts attach. Mount uncovered upper and lower wings and adjust wings until they are in perfect alignment, after which the "N" struts are ready to be installed. Wax or vaseline the tapered ends and tape them into place. Fill the boxes with Epoxylite and let cure overnight. Slip the struts out of the Epoxylite and sand flush with the wing surface. Should it be necessary to adjust the incidence in either wing with shims or washers, the "N" struts will not interfere with slight changes in position.

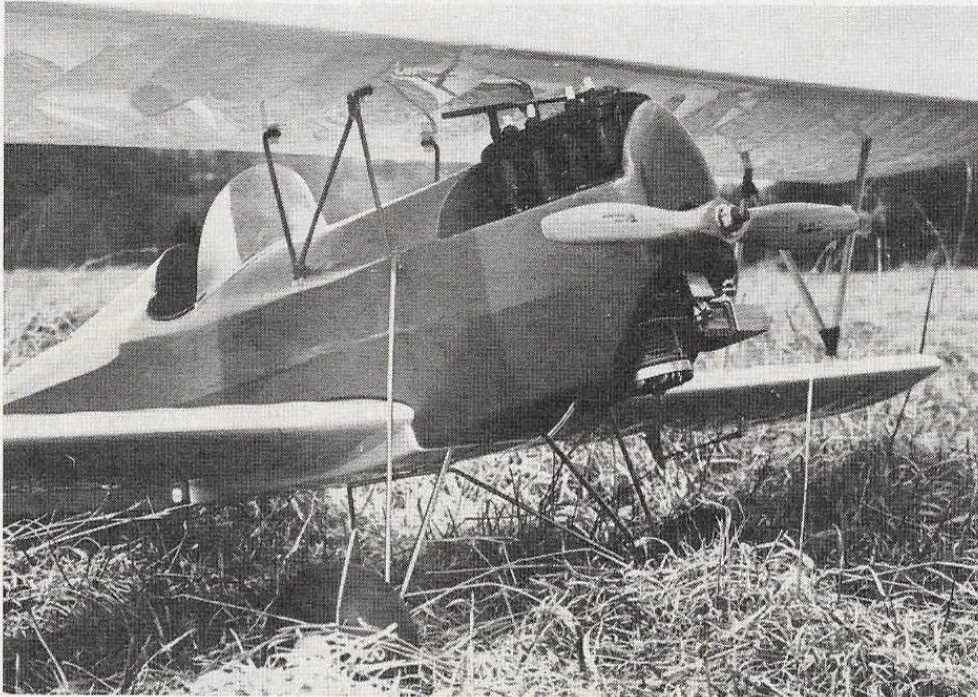
Final Rigging

The wings and elevator are covered with MonoKote. The lower wing has a positive incidence while the upper wing is a zero incidence; the theory being that the lower wing will stall first and then you will be flying a single wing parasol. The model airfoil is a symmetrical section while the original used a U.S.A. 27 airfoil. Interplane bracing wires are optional. Heavy elastic thread is satisfactory, however it is a nuisance if the model has to be disassembled to fit into a car.

The wheels are 4" Trexler balloon tires. These tires have a small rubber tube that is wrapped around the wooden hub after inflation. Blowing them up by mouth is difficult while they are on the axle and to solve the problem they are made to be removable. Enlarge the hole in a 5/32 tee-nut to fit the landing gear axle. File off the prongs and countersink a hole 1/8" to 3/16" into the inside of the hub that matches the O.D. of the tee-nut. Press the tee-nut into place and secure it with Zap. Slide the wheel on the axle with the tee-nut next to the strut, then bend .020 dia. music wire per plans and solder it to the strut. Music wire engages the tee-nut disc and holds the wheel on the axle, yet allows rapid removal for inflation.

The fuselage and rudder are covered with Coverite and red Hobbyoxy. Three coats were sprayed on with light sanding between coats. The cockpit edges are finished by splitting 1/8" black fuel tubing. Tape in place and carefully run Zap in the joint. The windscreen is cut from .030 Sig plastic sheet. Use masking tape to hold it in place and flow Zap into the joint. Care must be taken to prevent the cyanoacrylate Zap from running onto the finish as it will blemish the surface. The instrument panel was detailed by cutting out instruments from an ad in Flying magazine. The license numbers are cut from black MonoKote and placed on the upper left and under the lower right wing panels as well as on the rudder.

Fire up the engine, range check the equipment and enjoy a biplane. Nice slow passes at first to get the feel. Land with low power on, then try some tricks. I hope you will enjoy the "Gere Sport" as much as I do.



Dr. Makovich is an ardent flyer, Stand-Off Scale buff. The "Gere Sport" makes a durable biplane. At top: One demerit to photogs who plant 'em in the hay. Symmetrical airfoils for inverted stuff.

