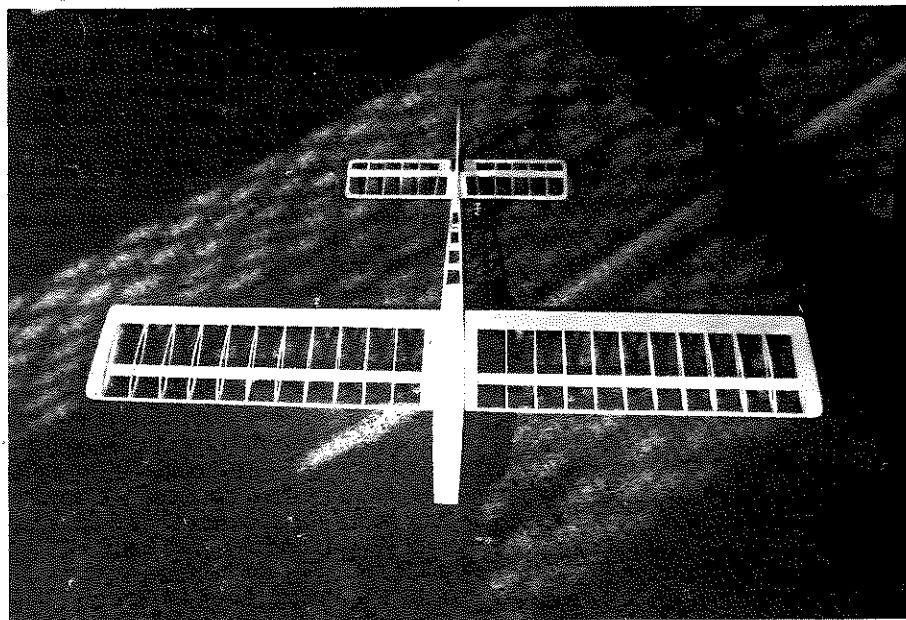


# THE MICRO GIANT

## An Out-of-the-Ordinary R/C .049 Speedster

By TYRONE PARKER... A hot performing, well-designed little .049 two-channel flyer, this is another delightful project from the Wizard of Washington State. Give it a try, if you aren't faint of heart... it really moves!



Bones of the Micro Giant reveal its light construction, which contributes to its lightning-fast flying speed. Step-by-step text is helpful in recreating your version of this .049 speedster.

- Because this little plane is only powered by a Cox 21924 (21-9-24) factory reed valve .049 engine with a balloon-type fuel supply cell, do not think that it is not fast and maneuverable.

About 3/4 oz. of fuel will get you seven minutes of non-stop knee-shaking, high velocity action. A SR 150 battery pack feeding a Cannon Super Micro receiver and two CE-9 micro servos will keep you in control for about 10 flights a session... if you don't get a heart attack!

Micro Giant is not for the inexperienced, so if you're not really feeling like Ace Hot Rock don't even bother to try.

### CHOOSING YOUR WOOD

Tough, stringy, and flexible medium-hard balsa was used for most of the construction, with the exception of the wing ribs and wing center sheeting, which are cut from medium balsa. Light sheet balsa for wingtips, and extra hard balsa strips for the stabilizer, elevator, and fin ribs.

I used white glue to glue the parts together, followed by a coat of Super Jet, simply holding the parts firmly in place

for the few moments it takes the Super Jet to secure things. 5 min. epoxy was used inside the fuel cell compartment and to secure the landing gear.

The plane is covered with clear Mica-film, 3 coats of 50/50 Aerogloss clear dope and thinner and a coat of clear Black Baron pre-mixed brush-on epoxy. The epoxy paint does add a little extra initial weight but is highly resistant to engine exhaust residue and easy to keep clean, while the lightweight dope finishes tend to soak up the exhaust and just keep getting heavier and heavier.

If you're really feeling up to it, begin construction by cutting the wing spar halves, spar braces, wing leading edge braces, and trailing edge brace from 1/16-inch basswood.

### BUILDING THE WING

Glue the wing spar halves inside ends together. Round the ends of the spar braces to get a more shock-absorbing joint and glue in place on both sides of the spar joint.

Trim the leading edge of a 36-inch, 3/8 x 3/4-inch medium-hard balsa aileron with a balsa stripper to get your 5/16 x 5/8 wing trailing edge and glue the wing trailing edge brace in place.

Glue the bottom leading edge brace to the 36-inch 1/4 x 1/4 hard balsa leading edge, following with the top wing leading edge brace which overlaps the top edge of the bottom brace as shown on plan side view.

Mark rib locations on the back of the spar, the front of the trailing edge and the back top side of the wing leading edge.

Cut wing ribs from medium sheet balsa as shown on plan.

Glue the front ends of ribs W-2B to the back of the wing spar then glue the front of the trailing edge to the back of ribs W-2B.

Check assembly with ruler and triangle to be sure things are parallel and square, then glue in tip ribs W-5B and continue to check for squareness. Glue in remaining B ribs.

Ribs W-1B are a bit longer than the others as they are glued in at a slight angle to follow the taper of the fuselage as shown on plan top view.

Now glue the back ends of ribs W-1A to the front of the spar using the B ribs as alignment guides, and glue the wing leading edge to the fronts of ribs W-1A. Glue the W-3A tip ribs in place following with the remaining A ribs.

Sheet the wing center section with 1/16 medium balsa.

Cut the wing tips from light 1/4-inch sheet balsa and glue in place.

Cut back wingtip gussets from 3/32-sheet balsa and glue in place.

Cut front wingtip gussets from 1/8-sheet balsa. Bevel front edges to fit back of wing leading edge as shown on plan wingtip interior detail. Glue in place and sand tops to contour of wingtip ribs.

Bend wing landing gears to shape from .055-inch music wire. Cut wing gear cores from 1/16 bass.

Trace wing gear ends outline onto cores,

then slot cores to fit gear. Cut wing gear covers from 1/32 ply.

Glue cores to back covers. Set gears in place and sand core fronts flush to wing gear wires. Glue front gear covers to cores and pull wing gear wires out. The wing gears will later be epoxied back in place when the wing has been covered and finished, and the wheels attached to the gear.

Glue the wing gear mounts into the appropriate slots in wing ribs W-3B and W-4B.

Cut gear mount braces W-7 from 3/32 sheet balsa and glue in place.

Cut landing gear mount rib braces W-6 from 3/32 sheet balsa and glue in place between ribs W-3B and W-4B and along center front of trailing edge as shown on plan.

Round leading edge and wingtip edges and sand complete wing smooth.

I use #80 3M production paper to lightly shape things and grind edges flush, followed by #220 to smooth things over and a final polish with #600.

Cut out wing top front center section as shown on plan top view to later receive receiver.

Cut out top and bottom of back center section for aileron and elevator servos.

### FUSELAGE

Cut front fuselage sides from 1/16th sheet medium-hard balsa. Do not make switch cutout till doublers have been attached. Cut out fuselage doublers and aileron torque bar. Cut out doublers from 1/64 ply.

Lay fuselage sides inside up on a flat surface. Attach both sets of doublers with white glue and stack a couple of pounds of magazines on top to hold things in place till dry.

When dry, use switch cover plate to mark inside left side. Cut out switch cut out and drill 3/32 dia. switch mounting holes.

Glue top sub longeron to fuselage top, outside flush with fuselage.

Glue top longeron to top sub longeron from front hatch separation line forward and from back hatch separation line back. Tack glue a couple of spots in between just to maintain position.

Glue bottom longeron to fuselage bottom-outside flush with fuselage outside.

Cut fuselage tail sideplate F-10 from 1/16-medium-hard sheet balsa and glue in place.

Cut front and back fuselage uprights to fit from 1/16 x 1/8 hard balsa strips and glue in place.

Mark remaining uprights' position on fuselage longerons. Cut uprights to fit from 1/8 x 1/8 medium-hard balsa strips and glue in place.

Cut diagonals to fit from 1/16 x 1/8 hard balsa strips and glue in place.

Cut fuselage gussets from 1/8th medium-hard balsa sheet and glue in place. Use sandpaper wrapped around a dowel to shape gussets inside edges. These little gussets really strengthen points of high stress and help keep the covering smooth,

so don't neglect them.

Build the right fuselage side by this same described procedure and sand the outsides of both sides smooth.

Trim back one inch of front top left and right longerons 1/16th deep for front top plate. Trim back 1-1/4 inch of front bottom left and right longerons 1/16th deep to receive front bottom plate. Bevel fuselage tail insides as shown on plan top view.

Slide fuselage sides onto wing and tack glue at spar top and bottom and at leading edge.

Glue fuselage tail insides together and tack glue at wing trailing edge.

Cut former F-1 from 1/8-lite ply—bevel sides slightly so right side fits 1/32-inch back from right fuselage front to give about 2 degrees right thrust. Glue in place and trim right fuselage side front flush to former F-1 front.

Cut 1/4 x 3/8 triangular bass nose gear blocks to fit in corners behind F-1 and against fuselage doublers and glue in place.

Check that fuselage curvature is symmetrical and sides are perpendicular to wing. Put a little fillet of white glue all around wing center section against both fuselage insides and outsides.

Cut former F-2 from 3/32 sheet balsa and glue in place.

Cut two identical F-2A formers from 3/32 bass. Glue the front one to the top of F-2 and leaning forward between the top longerons and top sub longerons as shown on plan side view. The top of F-2A should be 1/16 inch below the top of the top longeron to allow for the 1/16 top sheeting which will be glued in between the top longerons and flush with the top of the top longerons. Whew!

Put a little white glue on the top 1/8th inch of both sides of the back F-2A former and set in place against the front F-2A former so that it is glued between the top longerons only, as it will separate with the hatch. It rests between the top sub longerons only to maintain position. Secure to top longerons with Super Jet.

Cut hatch formers F-3 and F-4 from 3/32 sheet balsa and glue in place as shown between top longerons—recessing tops 1/16th to allow for top sheeting and being careful not to glue them to the top sub longerons.

Cut F-5 from 1/16 bass and glue in place on top wing sheeting and between fuselage sides and top sub longerons.

Cut F-7 from 3/32 sheet balsa and glue in place as shown on plan.

Using a single-edge razor blade and being careful not to cut into the sub longerons, cut both top longerons between formers F-2A. They will probably spring up a little along with the back F-2A former. Leave them temporarily up.

Cut front fuselage top plate from 1/16 ply and glue in place on the recesses you've cut into the top front of the top fuselage longerons. Trim and sand edges flush with F-1 former front and top longerons outsides.

Cut 1/16 medium-hard balsa top sheeting and trim to fit tightly but not to distort



between top fuselage longerons. Glue in place flush with top of top longerons from back edge of fuselage front top plate to back top edge of front former F-2A.

Trim sheeting edge to fit flush with angle of back surface of front former F-2A and top longerons.

#### BUILDING THE HATCH

Tack glue hatch longerons back into position against sub longerons. Trim front edge of hatch sheeting to fit the edge you just trimmed and glue in sheeting from front hatch separation to front back fuselage top crossmember position. Cut front and back fuselage top crossmember to fit from 1/16 x 3/16 hard balsa strip and glue in place.

Mark back hatch separation lines across top and down through top longerons, but not into sub longerons. Using a metal straightedge and single-edge razor blade, cut back hatch separation lines. Cut hatch tack points loose and remove hatch.

Put a coat of CyA all along the inside edges of the fuselage top sheeting.

Cut hatch tongue from 1/64 ply. Sand smooth and glue into inside hatch back with tongue protruding 3/16 beyond hatch back edge. Cut F-6 from 3/32 sheet balsa and glue in place on hatch tongue and between longerons at hatch inside back. Put a coat of Super Jet all around the inside edges of the hatch sheeting.

Examine plan hatch latch detail. This little spring-loaded hatch latch is kind of an extra-effort item but it really makes a satisfying click when you snap it. The action is positive and reliable and there are no detachable parts to get lost.

Cut parts out from materials designated on plan detail and proceed.

Round dowel pin back and slot dowel 1/16-inch wide and 1/16-inch deep to receive pin handle. Glue pin handle into pin pinhandle slot.

Lay hatch latch box top inside front fuselage top along centerline with the slotted end against F-2A. Mark slot outline onto fuselage inside top, remove hatch latch box top and cut slot in fuselage top. Roll a scrap of #220 sandpaper into a tiny little tube to smooth inside slot edges.

Lay a ballpoint pen spring on the hatch latch box top inside centerline and glue the hatch latch box sides to the top along side the spring.

Glue the spring stop to the inside top front and between the sides.

Slip the spring over the pin front until it rests against the pin handle front. Set the spring and pin assembly in the box.

Compress spring and note where the handle front and slot front are.

Trim spring till pin handle front and slot front are in line when spring is at maximum compression.

Remove spring and pin assembly, turn assembly over and put the handle through the slot while compressing spring with fingertip and sliding it in against the spring stop. Hold the handle firmly, as when the spring expands it pushes back and down. Operate the action to see that the tension is right.

Keeping a finger on the spring and pin, put the assembly up inside the fuselage at

an angle so that the rounded dowel pin back will slip up into the hole in F-2A as the handle arcs up and through the slot in the fuselage top.

Check the action and see that the back pin end is inside the back surface of F-2A when the spring is compressed.

Hold compressed position—put the hatch tongue under the top fuselage sheeting lip, close hatch and operate pin action to see that everything is smooth. Secure and properly aligned.

Set hatch latch box bottom in place. Trim for tight fit and glue to box bottom side edges and spring-stop bottom edge. Remove hatch and tip hatch latch box assembly down and out.

Sand box smooth. Give the edges an extra coat of Super Jet and set aside till fuselage top has been sanded.

Cut fuselage front bottom plate from 1/16 ply—cut out 5/8 dia. fuel cell hole and sand edge smoothly. Examine front fuselage bottom. Note where nose gear blocks fit against F-1 and fuselage doublers.

Drill a 1/16-inch diameter hole into each of these intersections to a depth of 3/4 inch to receive nose gear wire ends. Bend nose gear to shape around nose wheel from .055-inch music wire as shown on plan detail.

Bend one leg as shown. Slip the nose wheel on, and getting as close as you can get to the wheel with the thinnest pliers you have, bend the other leg up over the outside edge of the pliers. Trim end and smooth both ends with a small, flat file. Check fit and set aside.

Measure in from front of F-1 to center of nosegear holes and in from both bottom fuselage longerons outside edges.

Glue front fuselage bottom plate in place. Trim and sand edges flush with front of F-1 and bottom longerons outside edges. Transfer the nosegear holes location measurements you just took to the bottom plate. Drill nosegear holes in bottom plate—test fit nosegear. Remove and set aside.

Sheet fuselage bottom with 1/16-inch medium-hard balsa from back of former F-2 to back fuselage bottom front crossmember location. Cut fuselage back bottom front crossmember to fit from 1/16 x 3/16 hard balsa strip and glue in place.

Put a coat of Super Jet along inside bottom sheeting edges.

Cut F-8 from 3/32 medium-hard sheet balsa and glue between bottom longerons at fuselage tail.

Cut F-9 from 1/16 medium-hard sheet balsa and glue between top longerons at fuselage tail.

Cut 1/8 x 3/16 medium-balsa crossmembers to fit and glue in place between the fuselage longerons.

Give all your inside back fuselage joints an extra coat of Super Jet. Put hatch on and tack glue at front bottom sides. Radius fuselage edges 1/16 inch along tops and bottoms of both sides and sand complete fuselage smooth.

Cut firewall plates from 1/16-inch ply—laminates with white glue. Seal edges with Super Jet—glue to F-1. Trim edges and

sand flush to fuselage edges and round front edges slightly.

Cut tacks loose, remove hatch and glue hatch latch box in place. Check fit, remove hatch and set aside.

Cut 1/16-inch medium-hard balsa front bottom sheet to fit between back edge of fuselage front bottom plate and front of F-2 and between the bottom longerons. Remove and coat inside fuel cell compartment and top of bottom sheet with 5 min. epoxy. Replace bottom sheet carefully so as not to push it in too far and tack with glue. When dry, seal and sand smooth.

#### STAB AND ELEVATOR

Cut stabilizer frame and assemble as shown on plan. Add center section and gussets. Cut and assemble elevator frames, center sections and gussets.

Cut elevator joiner from 1/8 x 3/16 bass. Notch elevator frames as shown on plan and glue joiner to elevator frames. Tack glue elevator to stabilizer. Cut 1/16 x 1/8 hard balsa stabilizer and elevator ribs to fit and glue in place.

Sand assembly smooth and round edges except for inside elevator ends and back of joiner.

Cut elevator control horn from 1/16 ply—drill 1/32 diameter hole to receive control wire end. Sand and coat edges with Super Jet. Coat the control end hole edge with glue to provide a nice little hard bushing.

Slot elevator to receive control horn with notch in horn base fitting against the back of and over the top of the elevator joiner. Test fit control horn and set aside.

Mark and drill 1/32-inch diameter hinge holes in stabilizer and elevator spars. Separate where tacked together. Round front edge of elevator spar and ease back edges of stabilizer spar leaving back pretty much flat. Slide stabilizer into fuselage tail slots—check alignment and tack glue lightly in place.

Drill 1/8-inch diameter hole in fuselage at angle shown on plan side view and about 1/32 up into stabilizer bottom center section and back of leading edge.

Cut an end of a 1-inch length of 1/8 diameter dowel to angle shown. Fit in through hole and up into stabilizer bottom and mark around protruding end flush with fuselage bottom. Remove dowel, cut across square at the long end of your mark. Drill a 1/32-diameter hole into the end center to a depth of 1/2 inch. Bevel end to your trim mark. Cut a 2-inch length of .032 music wire. Round ends with small flat file. Press wire end into dowel hole, and press dowel into place. Trim and sand dowel end smooth with fuselage bottom. Remove and set aside.

Note elevator control tube exit. You need quite an elongated gouge into and inside the right fuselage tail side. Practice on a scrap of 1/16th sheet balsa till you're sure you've got the technique then drill the fuselage side.

Cut and assemble fin frame. As this plane has no rudder control, glue spars together.

Cut and glue gussets in place. Smooth frame inside with sandpaper wrapped around dowel. Cut 3/32 x 3/32 hard balsa

ribs to fit and glue in place.

Sand smooth and round edges except where attached to fuselage.

Test fit, making sure elevator joiner has sufficient clearance through hole in fin spar. Mark position around fin on fuselage top and set aside.

Mark around stabilizer next to both fuselage sides—cut tacks loose, remove and set aside.

#### AILERONS

Cut ailerons from 3/32 medium-hard sheet balsa.

Cut aileron torque bars from 3/32 x 1/4 bass as shown on plan. Notch ailerons as shown and glue aileron torque bars in place. Sand smooth and round edges except inside aileron ends and torque bar backs and ends.

Cut aileron control horns from 1/16 ply. Drill 1/32 diameter control end holes. Sand and seal edges with Super Jet, test fit and set aside.

Tape ailerons in place. Mark and drill 1/32 diameter hinge holes in wing trailing edge and in ailerons. Remove ailerons and set aside.

If you ever get this far you're doing really good and you're ready to cover your plane with clear Micafilm.

#### COVERING YOUR MICRO GIANT

Cut both Micafilm fuselage side covers about 1/4-inch oversize all around.

Make a paper pattern to get a close fit around the wing.

Brush on Balsarite to fuselage sheeting, plates, and longeron outsides.

Iron on side covers. Iron edges over onto longerons inside edges. Brush Balsarite onto top and bottom edges. Cut out top and bottom covers, slit top cover to fit around hatch latch pin handle, and iron on covers. Seal edges with glue and shrink-cover with low temperature heat gun.

Make a paper pattern to get a close fit along fuselage at wing top and cut out wing covers.

Balsarite wing and iron on wing top covers. Iron edges over all around and trim to about 1/8 inch. Cut bottom wing covers, iron on, trim along leading and trailing edges. Iron tips over, trim to about 1/8. Balsarite tip edges, cut and iron on wing tip covers, trim edges, seal all seams with

CyA and heat shrink wing covering.

Check for warps—if necessary heat and twist till your wing is really straight so your plane will fly right.

Balsarite and Micafilm ailerons, stabilizer, elevator, and fin, seal all edges and seams making sure to keep everything straight and flat.

Cut canopy sides from gray tissue and glue in place with thin white glue. Smooth top edges over and trim edges along inside edges of top longerons.

Cut canopy top from gray tissue, slit to fit around hatch latch pin handle, glue in place and trim edges.

Cut canopy edge trim from black tissue and glue in place.

Carefully slit tissue and Micafilm along hatch separation. Remove hatch and seal fuselage and hatch edges with CyA.

Brush on two coats of 30/70 dope and thinner and give tissue trim areas a couple extra coats to really seal the edges. Sand lightly with worn but clean #600 sandpaper. Brush on another coat of dope/thinner and sand lightly again.

Trim covering away from stabilizer center section where it fits into the fuselage tail slots and, checking alignment carefully, glue stabilizer in place.

Epoxy tailskid wire into dowel. Coat hole in fuselage tail bottom with white glue. Press into place, wipe off excess glue and seal with CyA.

Cut Micafilm away from top elevator control horn slot and joiner top and glue elevator control horn in place.

Make two U-shaped wires 3/8-inch wide and 1/2-inch wide from paper clips and temporarily attach elevator to stabilizer by pressing U-wires through left and right center hinge holes. Adjust to leave about 1/16 gap between spars.

Trim the Micafilm from the fin outline you made on the fuselage tail top and keeping it straight, glue fin in place.

Working in from the tip, give an aileron a coat of Black Baron clear pre-mixed brush-on epoxy paint to where the torque bars protrude inside the fuselage.

Holding by dry torque bar end, push a straight pin through the hinge hole in the torque bar and into the end of a 6-inch piece of 1/8 x 1/8 balsa. Put the balsa strip on a table or bench top with a weight on

it so that the aileron hangs down and gets dry. Repeat procedure for other aileron.

Fill nose gear holes in front fuselage bottom with 5 min epoxy. Sand nose gear wire ends, coat with epoxy, press into place and wipe off excess epoxy.

Adjust your U wires so you can get in between the spars and between the elevator joiner and the hole in the fin. Brush epoxy paint onto tail surfaces and continue up fuselage to wing leading edge. Hold fuselage front to brush finish onto wings then hold by nose gear to finish fuselage front and firewall. Hang plane up by nose gear to dry.

Finish hatch and set on a block to dry.

Make a soldering heat shield from .020 sheet aluminum as shown on plan landing gear detail. Put a wing wheel on the end of a wing gear wire—slide the shield on so the end of the slot is against the wire and the back of the shield is against the top of the wheel.

Press a washer onto the wire and with washer against shield trim and file wire end to about 1/32 from washer.

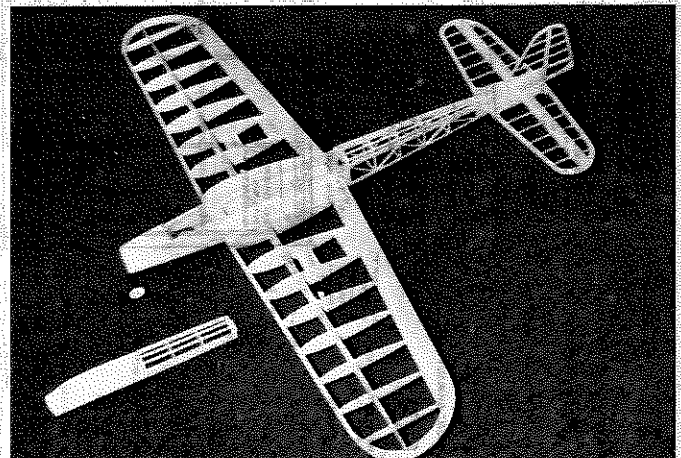
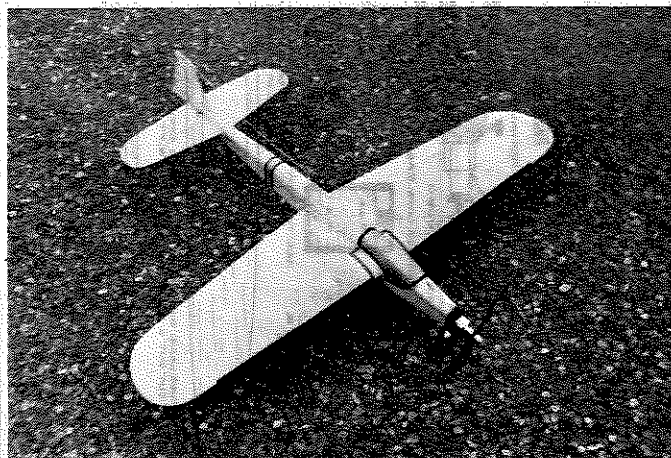
Clamp or weight assembly in place. Apply paste soldering flux to wire end and washer. Apply soldering iron to wire tip, apply low temperature thin wire 60/40 rosin core solder. Remove solder and iron, let cool, slide shield out and check that washer is parallel with wheel side. I used Peck-Polymers PA-31 1/8-inch diameter x .050 brass washers drilled out to .055 inch. Repeat procedure for other gear and set both aside.

When epoxy paint is dry, remove U pins and working from inside out, sew elevator to stabilizer using white nylon upholstery thread figure-eight hinges as shown on plan detail.

Slide an aileron into position, tip to full up, slide control horn on and adjust position and alignment. Mark and remove and glue back into place. Repeat procedure for other aileron.

Give the control horns and torque bar ends a few coats of clear dope/thinner. When dry, and working from inside out, hinge ailerons to wing trailing edge as was done with elevator to stabilizer.

Cut aileron servo-mount block and plate as shown on plan. Attach a 3/4 x 3/4



And...yet another from the Micro family of fine flying aircraft...this one the Micro Cobra, .049-powered, and, like its brothers, a real zippy mover in flight. All use balloon-type fuel cells, Cannon Super Micro receiver and micro servos, which contribute to lightness of model.



square of servo tape to the right side of the aileron servo.

The servo-mount block fits in against the right inside wing rib W-1B and between the top and bottom wing center section sheeting.

The servo mount plate fits against the block and on the fuselage inside bottom. Set block, plate, and servo in place. Check that servo is in fuselage center. Trim block if necessary—glue block and plate in place—coat plate with 5 min. epoxy and when dry remove servo tape backing and attach servo to plate.

The elevator servo attaches directly to the inside of the wing rib.

Apply servo tape to elevator servo. Test fit and apply 5 min. epoxy to attachment area. When dry attach elevator servo.

Drill 5/64-diameter antenna mast hole in fuselage top as shown on plan.

Drill a 5/64-diameter hole in bottom wing center section sheeting under front receiver position to receive antenna.

Coat inside front left wing rib W-1A receiver attachment area and when dry run antenna down through hole and pull out to the front. Attach receiver to rib with servo tape at angle shown on plan side view so servo connection wiring will pass smoothly back out over the wing spar.

Drop antenna end back under wing and back through the hole in the bottom of F-7. Clasp antenna with plastic tweezers, pull up and thread through antenna mast hole. Slip a 2-1/2-inch piece of small cable control cover tube over the antenna end, then down through the antenna mast hole and down to the hole at the bottom of F-7.

Clear tape antenna to fin top with just enough tension to get the slack out and to hold the mast tube against the back of F-7.

Coat inside-left-fuselage-doubler battery-pack attachment area with 5 min. epoxy and when dry install switch and attach battery pack with servo tape.

Cut two aileron control tubes from 1/16th diameter brass tube and make 4 "Z" bend control ends from #73C paper clips as shown on plan detail.

Solder front Z-bend ends into control tube fronts. Remove aileron servo control arm—attach Z-bend end-tube assemblies and replace control arm.

Fit back Z-bend ends into aileron con-

rol horns. Tip left aileron down, thread left Z-bend end shank into tube, bring aileron to level and tape temporarily in place. Solder Z-bend end-tube connection and repeat procedure to connect right aileron.

Remove tape, connect your servos and battery pack to your receiver. Switch Tx and Rx on and check aileron control for alignment and smooth operation.

Adjust linkage if necessary by resoldering as necessary.

Push your elevator control tube through the opening in the fuselage right side tail and up to F-5. Push end through hole in F-5 till it protrudes about 1/8-inch and seal with CyA. Pull tube tight at tail, seal with CyA and trim end.

Cut two collars from 1/16th diameter brass tube and make two Z-bend control ends from #73 C paper clips as shown on plan detail.

Slip collar over front cable end, thread Z-bend shank into collar front and solder. A block base with two alligator clamps spaced about 1/2-inch apart is helpful here: one clamp to hold the Z-bend end and one to hold the cable.

Thread the other end of the cable into the tube. Remove the elevator servo control wheel. Attach the Z-bend end and replace the servo control wheel.

Attach the back Z-bend end to the elevator control horn. Tape elevator in neutral. Slide the back collar over the cable end and up to the tube (just in case the cable frays a little when you trim it). Hold Z-bend shank up and trim cable end to leave about a 1/32-inch gap between cable end and Z-bend shank end.

Slide the collar down the cable and onto the Z-bend shank end to cover the gap and solder.

Remove tape, check elevator control for alignment and smooth operation.

Cut Micafilm away from wing landing gear slots and epoxy wing landing gear in place. Both nose and wing gear should be checked at each landing and touched up with CyA if necessary.

#### FUEL CELLS

Assemble a few balloon-type fuel cells as shown on plan detail. Snip the digits off latex household gloves for the "balloons."

Press a 3/8-inch piece of 3/32-diameter

brass tube into and to the center of a 4-1/2-inch piece of silicone fuel line with a piece of 3/32 music wire.

Put the fuel line in the glove digit so that the end of the fuel line is about 1/8-inch from the back of the glove digit. Adjust brass tube position so that the balloon front is about 1/4-inch over in front of the brass tube. Pinch the balloon to the fuel line over the brass tube, fold and squeeze the edges of the balloon in. Wrap with white nylon upholstery thread. Tie off with a square knot, trim ends and seal knot with a micro drop of CyA.

You'll need a fuel intake extension for your Cox 21924 factory .049 engine. Press a 1/2-inch piece of plastic fuel line over the engine fuel intake tube and press a 5/8-inch piece of 3/32 brass tube into the plastic tube.

Attach engine to firewall with #2 x 3/8 sheet metal screws. Push fuel cell up into fuel cell compartment and connect fuel line to engine.

When you get to the field disconnect and fill fuel cell with a fuel bulb. Pinch off fuel line. Hold plane nose down over fuel can so air in fuel cell will be at top. Release fuel line so air and fuel spurts back down into fuel can and as fuel begins to pour back into fuel can in a steady stream. Just before it slows to a trickle, pinch off fuel line and connect to engine. This is not a pressure system and you want just enough fuel to fill the cell but not to stretch it.

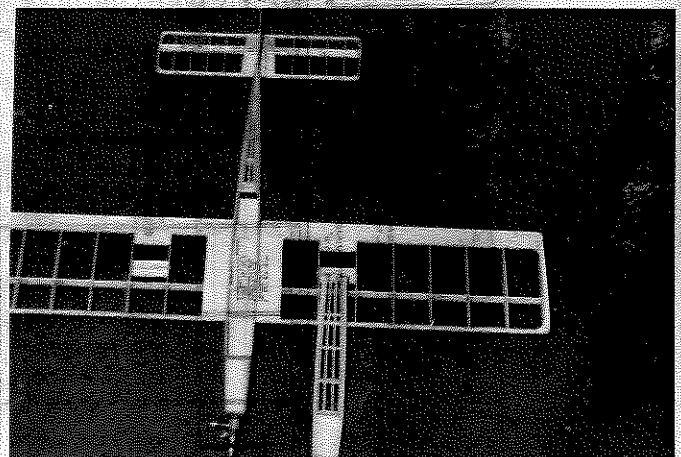
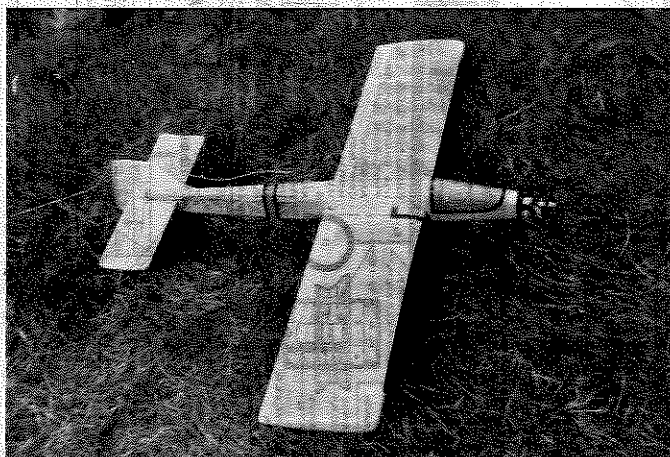
Air can't get into the cell so the fuel won't slosh and foam, and if you use 15% nitro fuel and balanced Cox black nylon 6 x 3 propellers your engine will run fast and smooth to the last drop.

#### FLYING

Hand launch into the wind and don't give it too much up till you get some straight-out-and-away air speed. You'll want your engine set back a bit from maximum top speed at launch as it will lean out a bit as it becomes airborne.

Micro Giant floats like a glider when the engine runs out of fuel. If you make it through the first flight you'll really like it and want to do it again!

Tyrone Parker, 16206 S. A' St., Sp. H, Spanaway, Washington 98387.



Still another variant of the Micro Giant, this is called the .049 Micro Sportster. The prolific author has designed and built many versions of this same basic aircraft, with different engines and subtle design changes. Most have been very successful performers. Give one a try yourself!