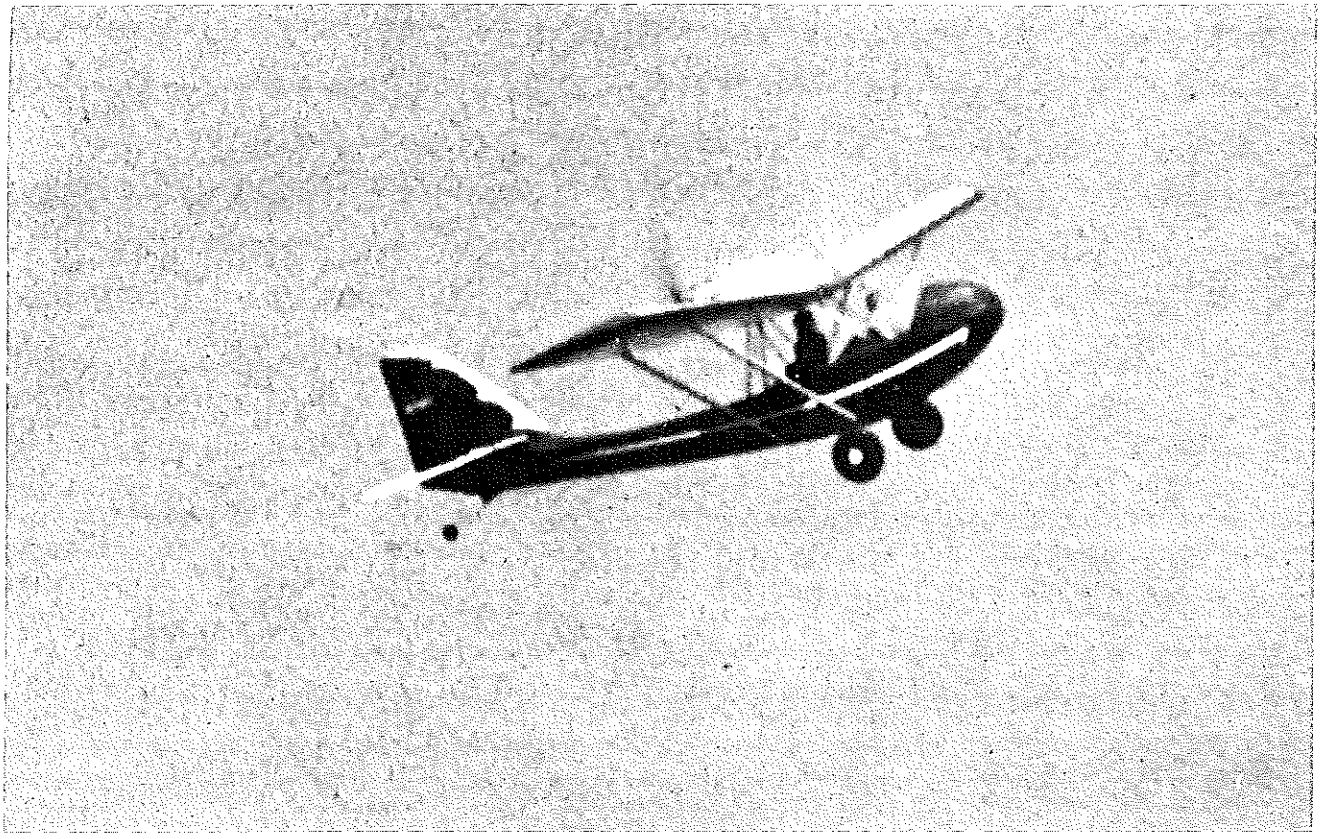
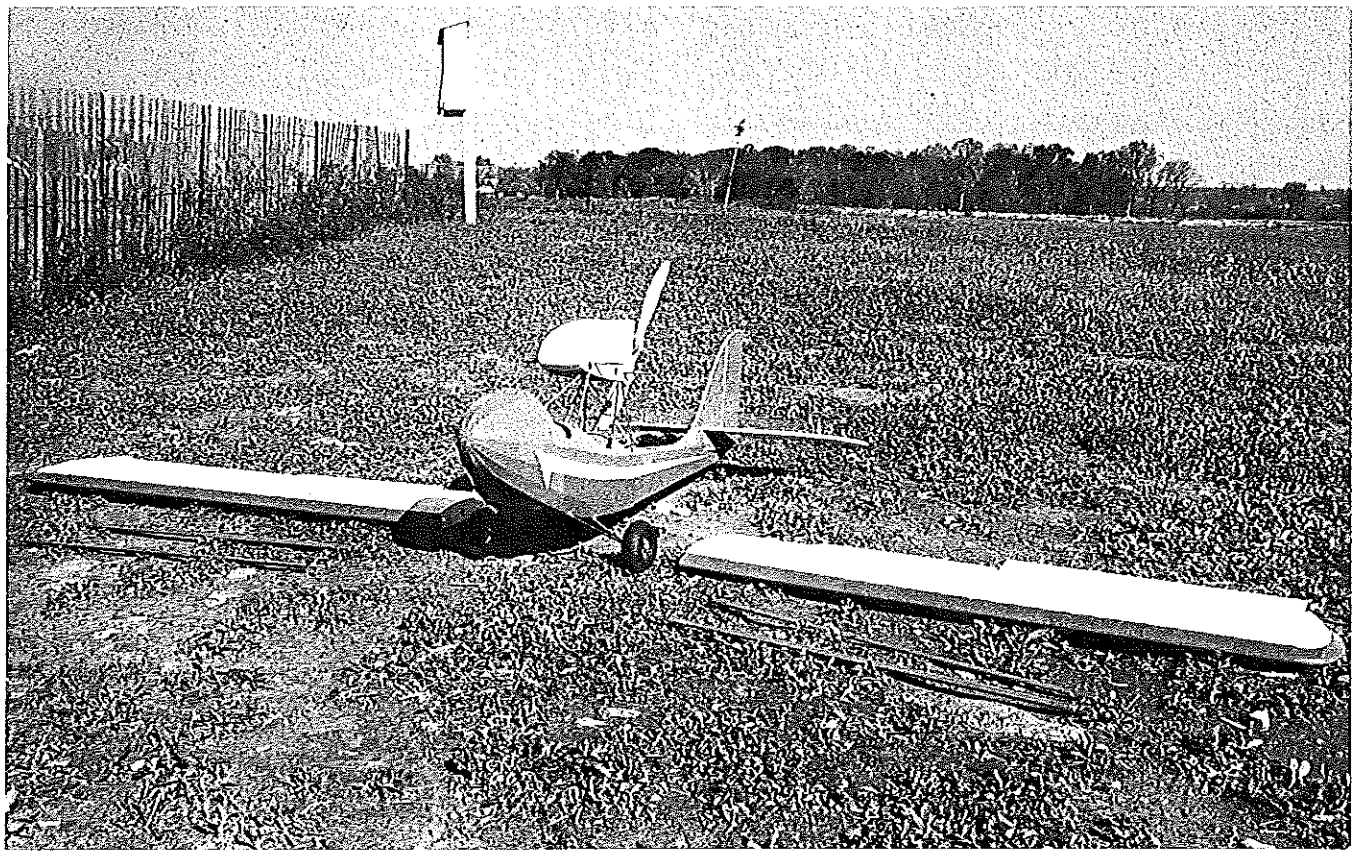


Bob Karlsson's CW Junior putts by for the camera. Ship is a slow, realistic flier. Landings, surprisingly are best made with a little power on.

CURTISS·WRIGHT JUNIOR, CW·1

An out-of-the-rut scale model that is easy to fly. As stable and forgiving as it is unique and interesting..... destined to put prop manufacturers out of business. Try it.....you'll like it!! Designed by Ralph Fidance

Close up shot reveals an extra strut added on by Ralph Fidance to beef up the landing gear for rough field landings. Ain't that a little cupcake?



OK, who sneezed? With or without the help of a sneeze the CW dismantles nicely for transporting to and from the field.

Photos by Cubbage Brown

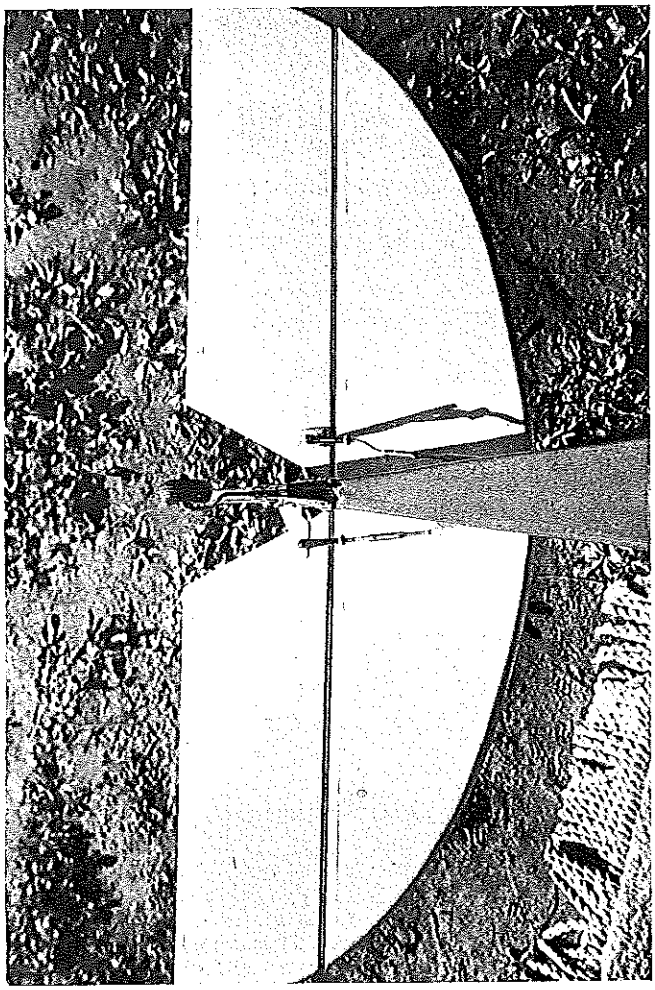
● The Curtiss-Wright Junior is one of those "cute" airplanes that looks as though the designer had modelers in mind when creating it. With a 7½ to 1 aspect ratio wing spanning 39 feet, and a 3 cylinder, 40 H.P. Le Blond or 45 H.P. Szekley engine, the CW-1 falls (or floats) into the powered glider category, along with the early Aeronca C-3 and Longster.

The "rocking horse" fuselage has a turned-up nose that gives the pilot a front porch view. This made the Junior a popular plane for aerial photography and hunting.

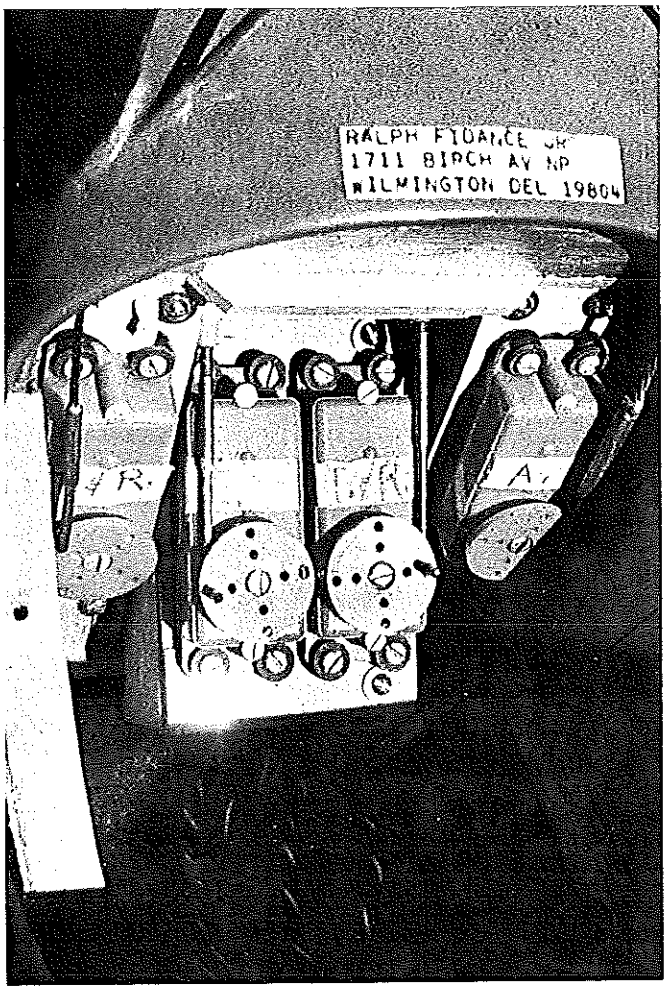
During the years 1930 and 1931, 270 CW-1 "Juniors" were built, and the selling price was only $1500. They cruised at 70 mph, maxed at 80, and landed at 32 mph. The gas consumption at cruising speed was 2¾ gallons per hour, or about 25 miles to the gallon.

As a modeling project, the Junior is out-of-the-rut in construction, appearance, and performance. The high thrust line pusher engine and parasol wing combination calls for some fancy wire bending and the use of functional struts. Its appearance at the flying field should be a welcome change from the usual run of

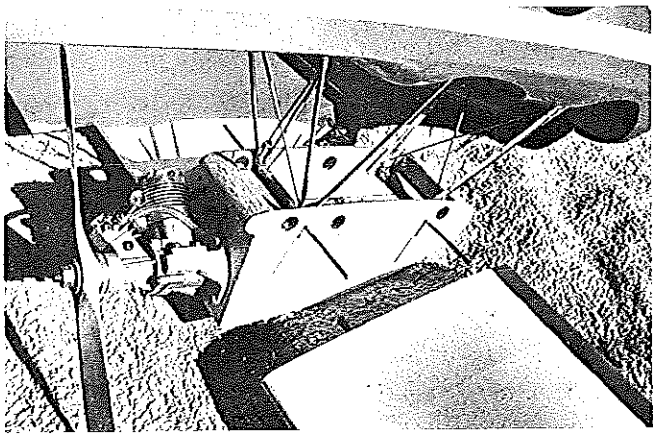
Bob Karlsson, Graham Lomax, and Ralph Fidance have all built and flown Juniors from the plans drawn by Ralph, pictured above



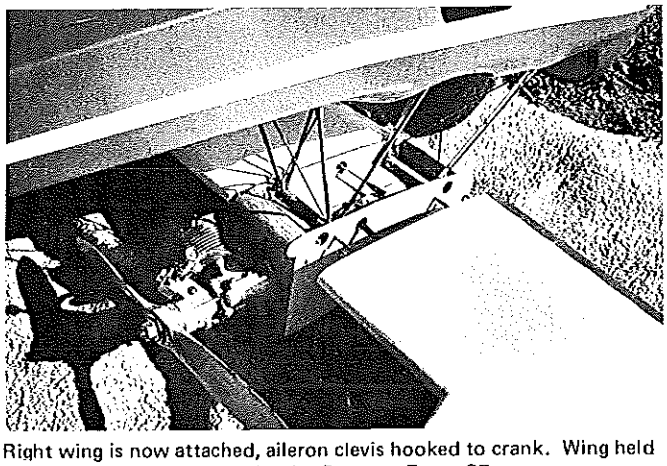
Tail surface control linkages from Nyrod tubes are conventional. The curved outlines are easily formed by laminating strips of balsa.



The "office" with Micro-Avionics servos. Outboard servos move cables leading to throttle and aileron controls in engine nacelle. Simple rig.



View of underside of centersection, with wing panels ready for hook-up. Note left-hand prop which was hand carved. Not really difficult.



Right wing is now attached, aileron clevis hooked to crank. Wing held on by rubber bands to cup hooks. Power is Enya .35.

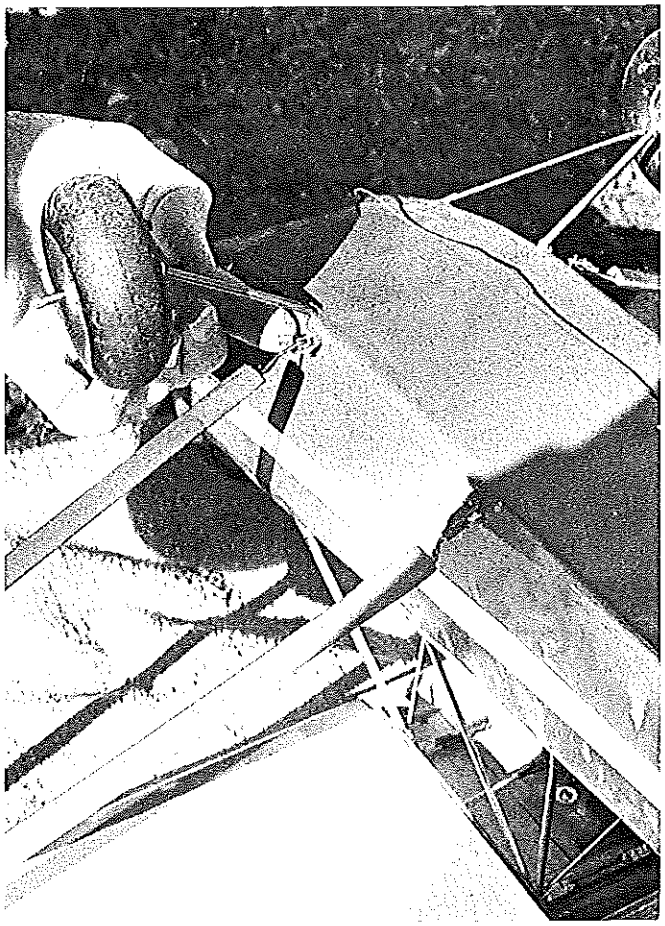
nameless toads. As for flight characteristics, there should be no doubt about its ability to putt around realistically. Just one thing to watch. It can use a little power on landings. If you come in deadstick, keep up flying speed with a steep approach until you're ready for the touch-down flare.

Construction

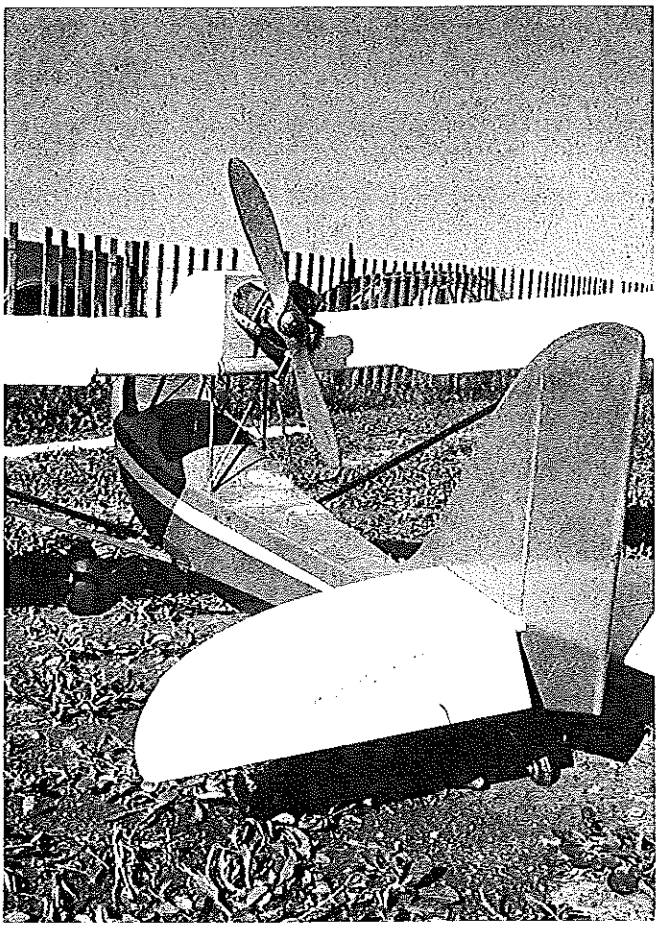
Everyone has their favorite method of building a model. Some start with the fuselage, which is usually considered the most difficult, and then keep building and adding parts until the plane is complete. Others prefer to get the tedious part out of the way first; the wings, then the fuselage, and finally, the tail (which seems logical since it usually comes last).

Our own preference is to start with the fin, rudder, stab, and elevator. This sort of eases you into the project, as material and tool requirements are rather uncomplicated, the structure usually doesn't take too long to get together, and when you finish them, you sort of have the feeling that you're well along with the project. Nowadays they call this psyching yourself for the job.

The tail surfaces of the C.W. Junior are basically a ¼ inch thick framework. The curved portions of the surface outlines are made up by laminating four 1/16 x 1/4 inch strips. After making the four-layer sandwiches of balsa and glue, curve them to the outline and pin



Functional wing struts are hooked on using Rand keepers. "Z" bend in 1/16 inch wire provides adjustment for length. Note receiver antenna.



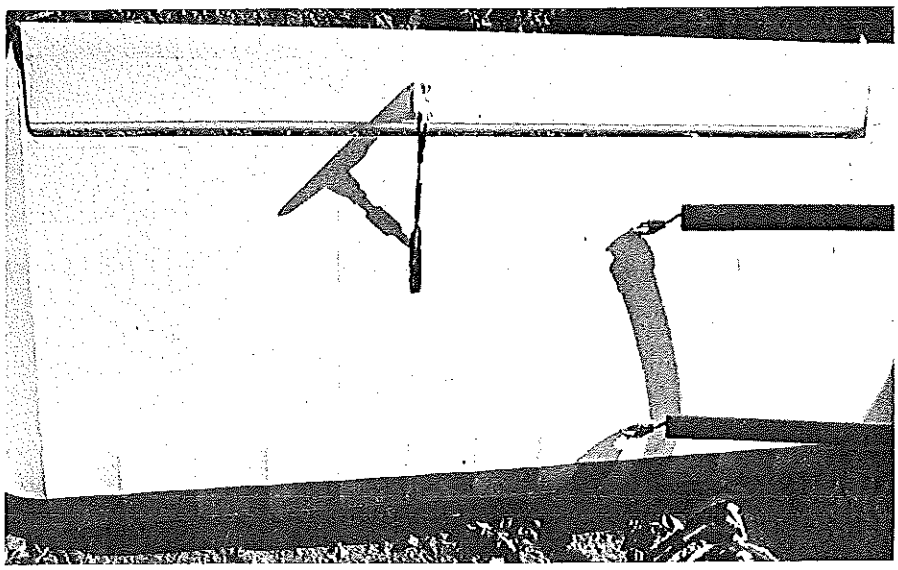
Here's a good view of left-hand prop. You can get left-hand cranks for some engines, but carving a prop isn't bad. It'll last for ever.

in place. Allow these to dry and take a set before trimming off the excess and completing the framework.

Fuselage construction is of the traditional framework type, with 1/4 inch square longerons trussed with 1/4 square and 3/16 square verticals, diagonals, and cross pieces. Note that all of the 3/16 inch square truss members aft of the side stringers are installed flush to the *inside* of the longerons. This provides a raised frame, which will ensure a smooth, bump-free covering job.

Forward of station E, the framework curves inward rather severely and may require some special treatment. We would suggest a series of vertical saw cuts part way through all members, on the inside, about a half inch apart, starting at E and working forward to station A. Just before pulling the sides together with crosspieces inserted, force Titebond or epoxy glue into all of the saw cuts to recover the strength.

The tail surfaces are mounted on a carved fairing block. Best bet is to band or jig-saw the block to the profile, draw a centerline along the top, hold the fin in place and trace around it. Now glue the block in place and start carving. A No. 26 X-acto blade (of course in a handle, Dum Dum!) is real handy for this. For final shaping, the fairing should be convexed somewhat, as shown on the drawing.



Shot of wing strut linkage. Spade bolts bedded in ply mounts. Conventional aileron hook-up.

The center section and cabane struts are sort of the keystone to the whole airplane, and though they look complicated, they can be assembled without too much trouble. We won't go into the whole science of accurate wire bending, but since the wire cabane struts determine the final alignment of surfaces, some suggestions will be made.

First of all, and let's take strut No. 3 for an example, don't start at one end and work your way around. Rather, determine the total length of wire required for the strut, divide the figure in

Continued on page 46

will allow many more turns to be wound into the motor and give much longer flights than simple hand winding of the propeller with the noseblock in place on the front of the fuselage.

Seventh, there should be no warps or twists in any of the flying surfaces. With this type of wing strut, a warp is hard to remove after the struts are installed, so carefully check the wings before installing the struts.

We've had a lot of fun with our Lairds, happy flying with yours.●

C W Junior . . *Continued from page 13*

half, add an inch for good measure (looks like about 11½ inches), and start by making the two bends that will give you the two main legs and the part across the top. Now measure 8¼ inches down each leg, make the right-angle bends and cut off the excess. At this point, and no sooner, you can cut out the plywood strut supports, altering the slot positions in accordance with how your bends came out.

Incidentally, if you don't have the use of a table saw for routing the grooves in 3/16 inch ply, build up the strut supports from 1/16 and 1/8 ply, using epoxy for the assembly.

The center section/engine nacelle is made up of plywood and balsa. The bottom, under the 3/32 inch ply floor is open. This area houses the aileron bellcrank which links the individual wing-mounted pushrods to the nylon tube and cable pushrod from the fuselage mounted servo. This area under the floor also provides access for attaching the wing hold-on rubber bands to the root rib cup-hooks. Note that the 1/16 inch ply sides of the nacelle must be slipped over the wire wing dowels *before* assembly of the nacelle.

Depending on the engine used, a left-hand prop may be necessary. For some engines, you can obtain a left-hand crank. If not, it isn't all that bad to carve your own prop, and chances are you'll never need more than one. If you still have your September 1969 M.A.N. around, you'll find an excellent article on prop carving by Chuck Gill. Grish makes 8 x 6, 9 x 6, and 10 x 6 pusher props, but a low pitch, large diameter prop seems better for this model.

The wings are standard construction with two inner main spars, false ribs, and a sturdy leading edge set diagonally. The dowel supports are hardwood pieces drilled to take 1/8 inch inside diameter brass tubing. The plug-in design may seem inadequate at first glance, but remember, the wings aren't cantilevered in the same fashion as most gliders, but are supported by very functional struts.

The best way to position the dowel support blocks is to install them loosely, block the wings up on a flat surface with the proper dihedral, and insert temporary 1/8 inch music wire dowels. When everything is in alignment, sock the epoxy to it.

Radio-electronic supply houses usually carry spade bolts, if you can't find them in the hobby shops. These are installed in well-epoxied plywood beds to hold the strut ends.

When building the struts, first rig up the wings and block them into proper alignment and dihedral. Now, with the plane in front of you as a guide to proper strut length, you can make up the four required. Unless you're an absolute perfectionist, none of the four struts will come out the same length. When

they're all in place and adjusted to length (small changes can be made by bending the 1/16 inch wire ends), remove them one at a time and scribe identification marks on one end of each dowel. We use FR, FL, RR, and RL. The balsa streamline fairing is a final touch that is not necessary, but certainly improves the appearance.

The landing gear is scale in size and position. When flown from grass fields the plane will sometimes ride up on its nose, mostly due to the high thrust line. If you feel this will be a problem, the gear could be moved forward; however, generous portions of up-elevator when first applying power will usually overcome the problem.

The plane as shown is very close to scale. Karlstrom 3-views were published in the July 1957 M.A.N., and U.S. Civil Aircraft Vol. IV by J.P. Juptner has the full particulars. Whether you build it for scale competition or not, putt-putting around with the C.W. Junior is different, relaxing, and just plain fun . . . and one prop can last forever. ●

Pylon . . . . . .

Continued from page 22

Availability of kits is still pretty slim. Airtrol will have a plastic T-tail Rivets soon. Sig's "Doubler" can be converted to a "Little Gem" Goodyear racer. Francis Products has a Minnow and P-51 with fiberglass fuselages.

The O.S. 15 R/C engine is the most popular so far. The Supertigre 15 won the big race in October. A three-ounce tank is about right.

One aileron is sufficient for control. Less work to build, less linkage. Doesn't seem to matter on which wing it is used.

Two-pylon race course works very well, even for big open pylon races. It is a much safer arrangement as only the pilots and helpers are on the field.

Here are some design optimums that have been developed by the Mentor group:

Prop to C.G., 9 inches.

C.G. to elevator hinge, 21 inches.

C.G. at 25 to 30 percent of wing chord.

Landing gear axle under leading edge or about 2 inches ahead of C.G.

Symmetrical airfoil, with sharp leading edge. Average wing is 8 x 40 inches.

Zero decalage. No dihedral except for appearance.

Stab area, 50 to 60 square inches.

Elevator is just under one-fourth of total stabilizer area.

Vertical stabilizer is 25 sq. in. area with rudder one-fourth of total area.

Aileron is 10 sq. in. each for two, 15 sq. in. for one.

Control surface travel, 1/8 inch.

Wash out wing panels 1/16 to 3/32 inch each.

Q.M. rules for 1972 will require power-on landing for heat to count. Failure to do so will cause 30 second penalty (!).

Winner is best two times, averaged.

What about the San Francisco QMers? Let's hear from you. ●

Free Flight . . . . . .

Continued from page 16

Flight Contest Board has decided that both classes should use the same flyoff system. Otherwise Cat. 1 designs will not be suitable for Cat. 2 competition.

If Cat. 1 rules stayed the same, models for this class would grow in size. Cat. 2 models would shrink at the same time. Since flying fields are getting smaller, Cat. 2 contests will become dominant. The FFCB agreed that we must change the Cat. 1 rules at the same time we change the Cat. 2 rules, to prevent obsolescence and dilution of design effort. Cat. 1 models should be competitive in Cat. 2 and vice versa.

How can you get prepared for the 1972 season? The same way thousands of others have prepared for the Nationals the last three years. Competition Model's Stardusters and Kyosho Galaxy's are still placing at Chicago. And if your bag is scratch building, study the designs flown by expert flyers such as Jim Clem, Dick Mathis, Dave Linstrum and Bill Chenault.