Left: The size of this month's featured RC model becomes apparent when it is held by the author, Fred Reese. He's getting ready for a flight from Jackson Lake in Grand Teton National Park, Wyoming. Bruce James photo. In the big picture, below, the Cub is just as pretty on wheels as it is on floats, we think. This picture was taken at the Jackson Airport in Grand Teton National Park.

THE PIPER CUB, next to the P-51 Mustang, is probably the second-most popular aircraft ever modeled. This particular Cub has a 44-in. wingspan and is for .10 cu. in. engines. The model can be built with floats, wheels, or both.

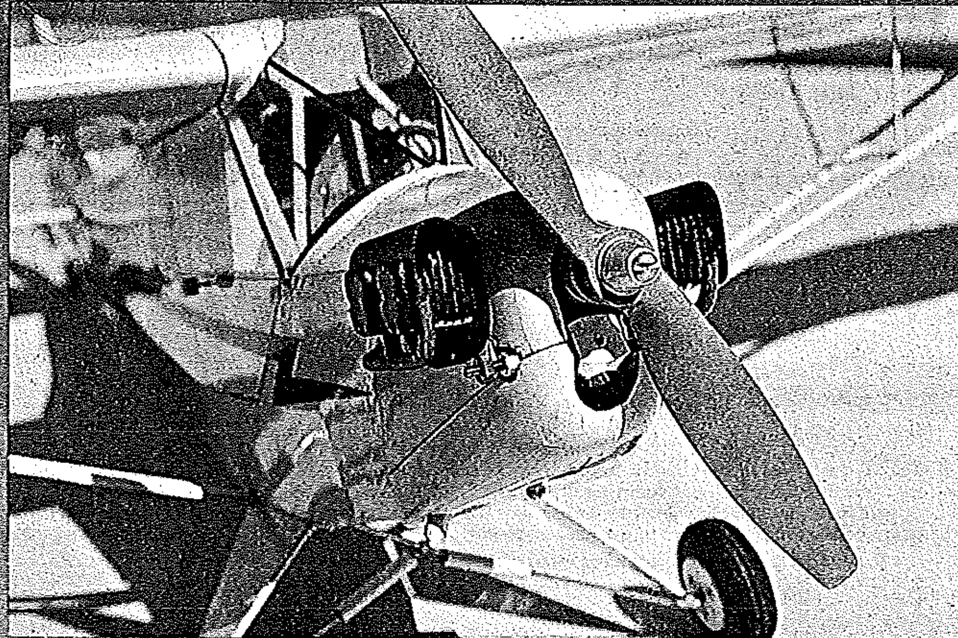
The Piper Cub celebrated its

piper j-3 cub

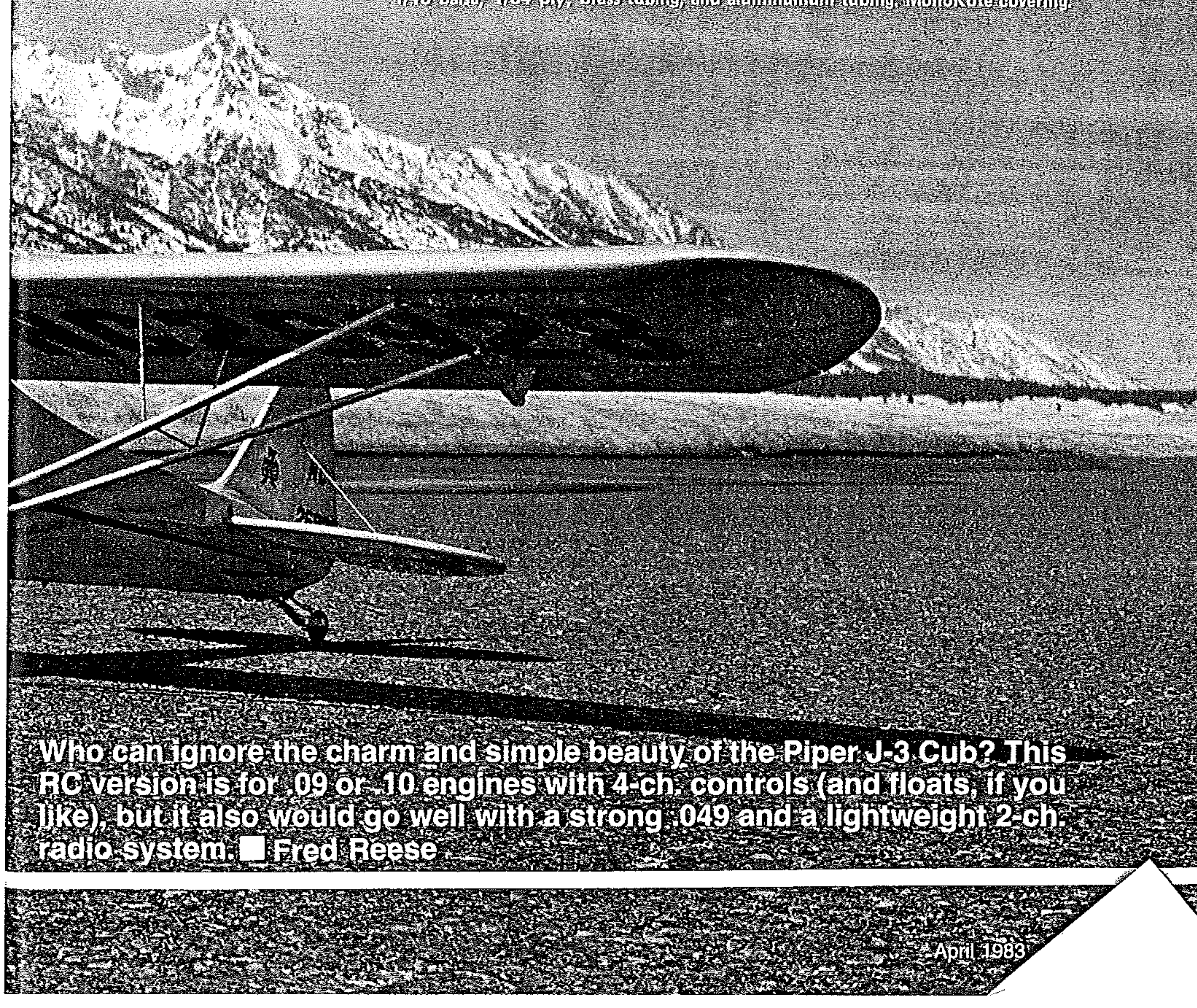
50th anniversary in 1981. The Cub was designed by C. G. Taylor in 1931 as the Taylor E-2 Cub. William T. Piper formed a partnership with Taylor in 1929 and bought him out in 1935, as Taylor was ready to form his own new company and produce new designs. The Taylorcraft was Taylor's extension of the Cub.

When Piper took over, he enclosed the cockpit and made some other refinements, and the E-2 became the J-2. The J-2 was further refined, and the J-3 Cub as we know it was certified in October 1937. The first Cub rolled out of the new Lockhaven plant in 1938 and sold for only $1,300.

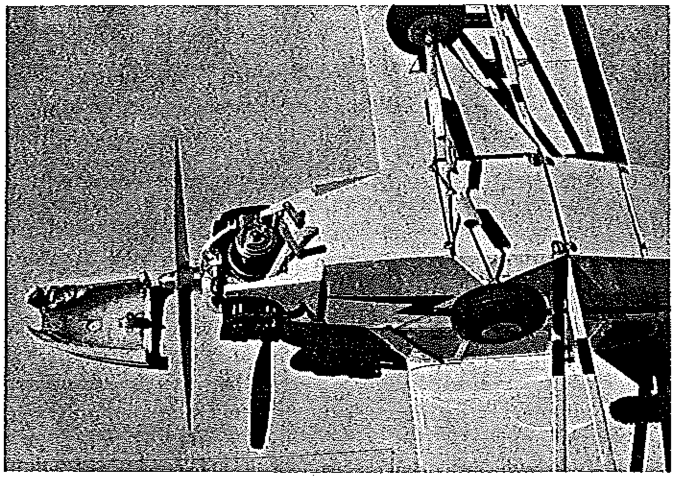
People loved the new Piper Cub.



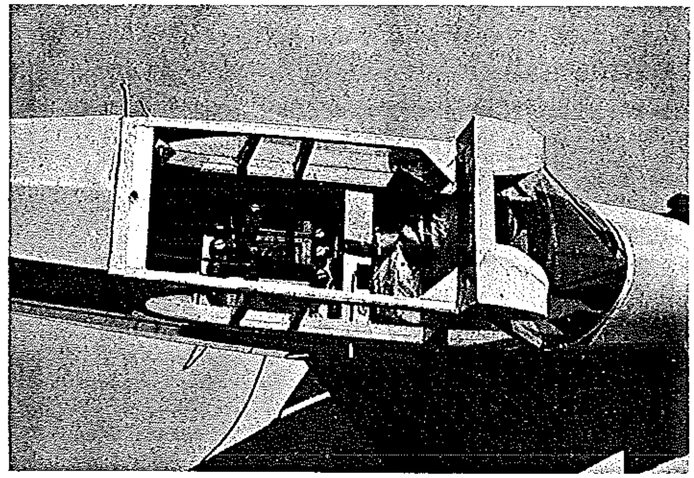
Cox TD .09 with Tarno RC carburetor installs neatly. Dummy engine is made from 1/16 balsa, 1/64 ply, brass tubing, and aluminumum tubing. MonoKote covering.



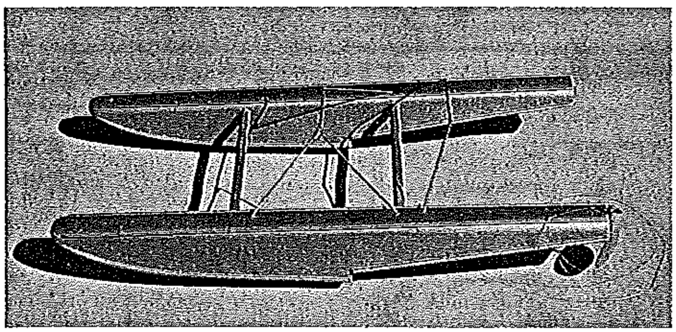
Who can ignore the charm and simple beauty of the Piper J-3 Cub? This RC version is for .09 or .10 engines with 4-ch. controls (and floats, if you like), but it also would go well with a strong .049 and a lightweight 2-ch. radio system. ■ **Fred Reese**



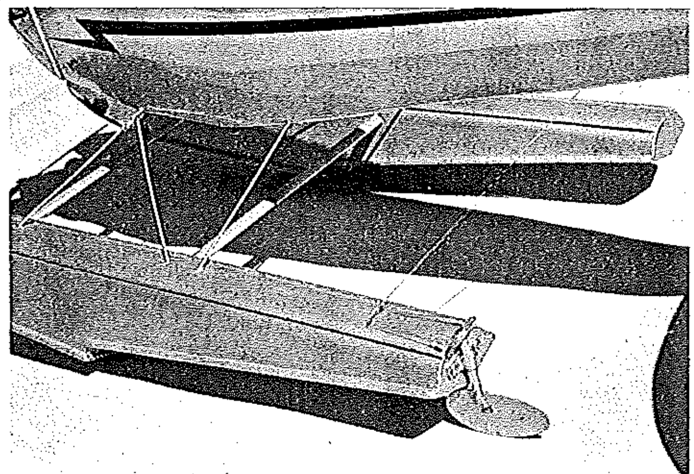
The TD .09 is well-hidden by the cowl. Larger .10 engines would need to protrude through cowl—but could also be mounted upright or sideways. Streamlined aluminum tube bungee covers slide over rubberband landing gear shock absorbers similar to the full-size prototype.



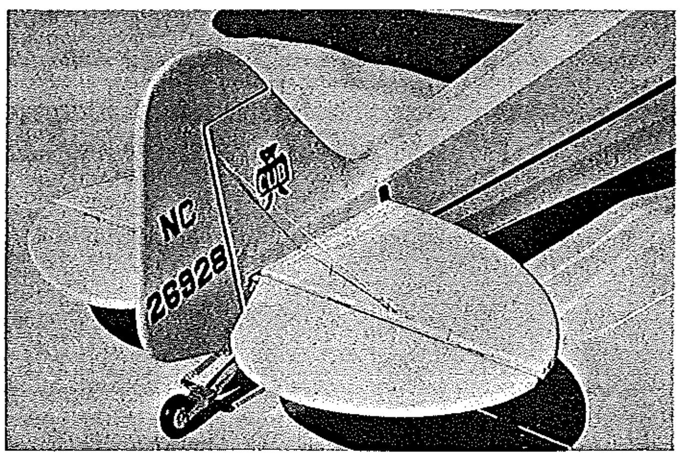
Fuselage width is just enough for three small servos. The 225 mAh battery is under the fuel tank, and the receiver stands up between the fuel tank and servos. Switch mount is 1/16 plywood. Triangular gussets add strength at the top of the fuselage around F-4.



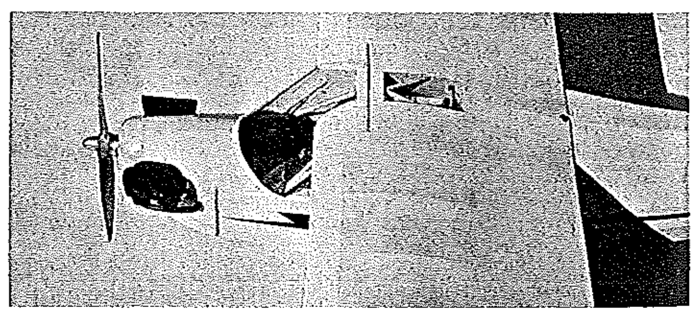
Lightweight balsa floats are covered with ¾-oz. fiberglass cloth and resin. They weigh only 2 oz. more than the wheeled gear. K&S streamlined aluminum tubing is used for the float spreaders.



Water rudder on the float looks realistic, but unfortunately it picks up everything that's on the surface of the water. Really not needed.

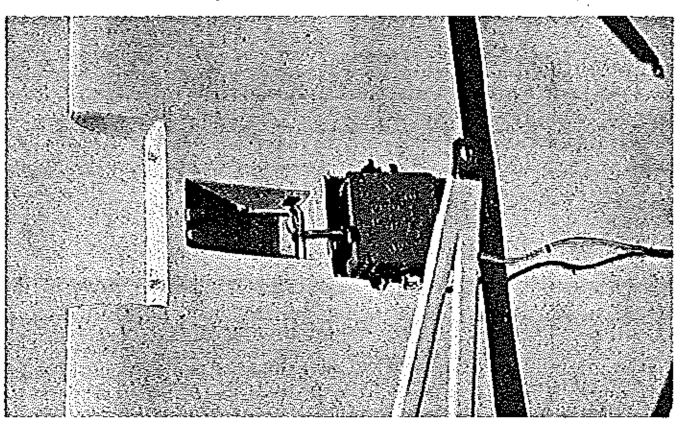


Simulated wire suports between the stab and fin are 4-lb.-test monofilament fishing line with crimped 1/16-in. aluminum tube connectors. Bent pin hooks pass through the fin and stab. Tail wheel gear is made from brass sheets and a 3/32-in. wheel collar.

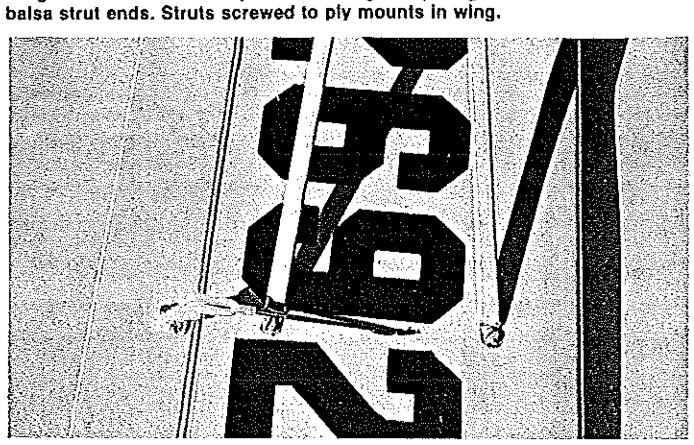


Careful attention to detail pays off with a good wing-to-fuselage fit. The top window is MonoKote wiped clear with acetone.

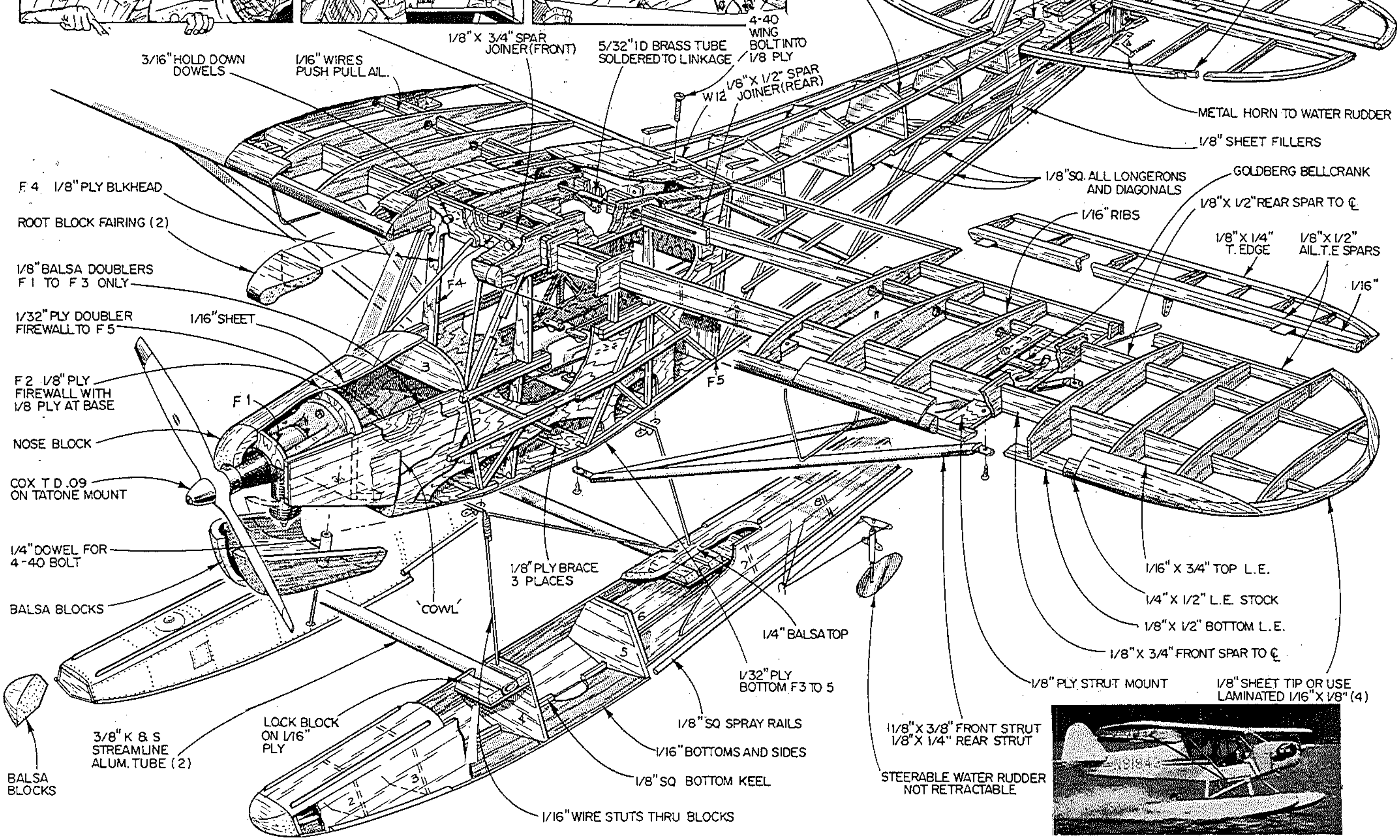
Aileron servo is held in place with foam tape. If you're to fly from water, be sure to seal the wood before installing the servo. Wire link from servo arm is soldered to aileron pushrods inside 5/32-in. I.D. brass tubing.

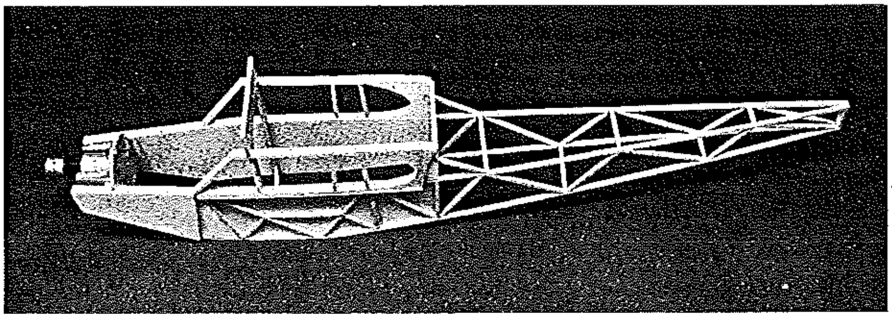


Goldberg 1/16-in. aileron pushrods exit through curved slots cut in the wing. Thin aluminum tabs (from a beverage can) are glued into slots in the balsa strut ends. Struts screwed to ply mounts in wing.

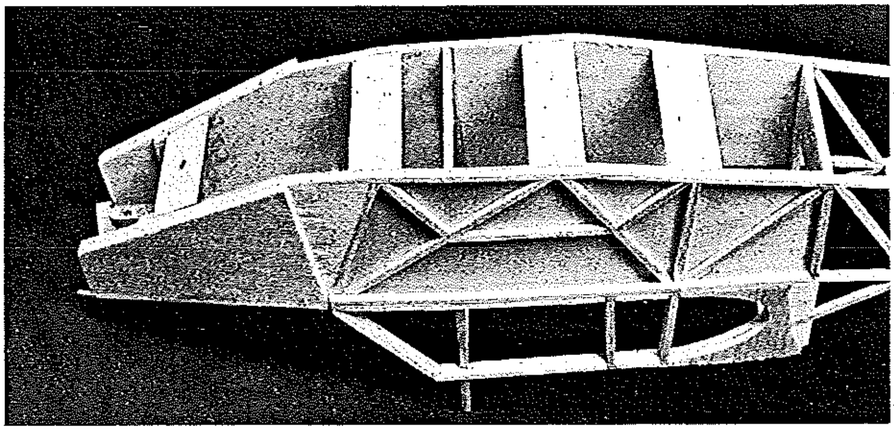



CHUCK WOOD by Hank Clark
HEY LOOK HERE! 'OL' HANK BUILT A J-3 CUB! YOU MAKE THIS WHILE I WAS IN ARABIA?
NOPE - THAT'S FRED REESE'S! A DEAD RINGER OF MINE - ALL IT NEEDS IS "ART BY" ON IT!
O.K. WHY NOT BUILD THIS AND FLY IT OFF LAKE GEORGE NEXT YEAR-
SURE-SURE! THAT GOES IN THE AIR WHILE I SIT IN A BOAT! BIG DEAL!!
DON'T BE DENSE! IT GOES UP-YOU GO UP! IN THE CUB-WHEN ITS DONE -FLY ALONG SIDE IT! JOY OF JOYS!!
OH FAR OUT!!!

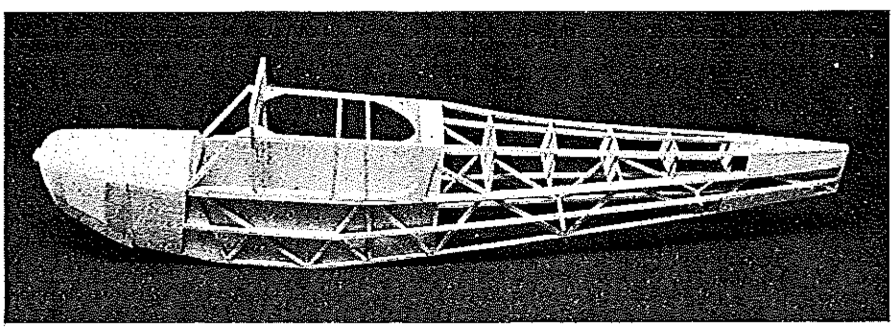

3/16" SHEET
1/8" SHEET
3/16" SQ. FOR ALL RUDDER OUTLINE
1/16" X 3/16" RIBS
3/16" SQ. POSTS
1/16" X 3/16" LAMINATIONS
1/16" FORMERS
METAL HORN TO WATER RUDDER
1/8" SHEET FILLERS
4-40 WING BOLT INTO 1/8 PLY
1/8" X 3/4" SPAR JOINER (FRONT)
5/32" ID BRASS TUBE SOLDERED TO LINKAGE
W12
1/8" X 1/2" SPAR JOINER (REAR)
3/16" HOLD DOWN DOWELS
1/16" WIRES PUSH PULL AIL.
1/8" SQ. ALL LONGERONS AND DIAGONALS
GOLDBERG BELLCRANK
F 4 1/8" PLY BLKHEAD
1/8" X 1/2" REAR SPAR TO ℄
ROOT BLOCK FAIRING (2)
1/16" RIBS
1/8" X 1/4" T. EDGE
1/8" X 1/2" AIL. T.E SPARS
1/8" BALSA DOUBLERS F 1 TO F 3 ONLY
F4
1/16"
1/32" PLY DOUBLER FIREWALL TO F 5
1/16" SHEET
F 2 1/8" PLY FIREWALL WITH 1/8 PLY AT BASE
F 1
F5
NOSE BLOCK
COX T D .09 ON TATONE MOUNT
1/4" DOWEL FOR 4-40 BOLT
1/8" PLY BRACE 3 PLACES
1/16" X 3/4" TOP L.E.
1/4" X 1/2" L.E. STOCK
BALSA BLOCKS
'COWL'
1/4" BALSA TOP
1/8" X 1/2" BOTTOM L.E.
1/8" X 3/4" FRONT SPAR TO ℄
1/32" PLY BOTTOM F3 TO 5
1/8" PLY STRUT MOUNT
1/8" SHEET TIP OR USE LAMINATED 1/16" X 1/8" (4)
LOCK BLOCK ON 1/16" PLY
1/8" SQ SPRAY RAILS
1/8" X 3/8" FRONT STRUT
1/8" X 1/4" REAR STRUT
3/8" K & S STREAMLINE ALUM. TUBE (2)
1/16" BOTTOMS AND SIDES
BALSA BLOCKS
1/8" SQ BOTTOM KEEL
STEERABLE WATER RUDDER NOT RETRACTABLE
1/16" WIRE STUTS THRU BLOCKS



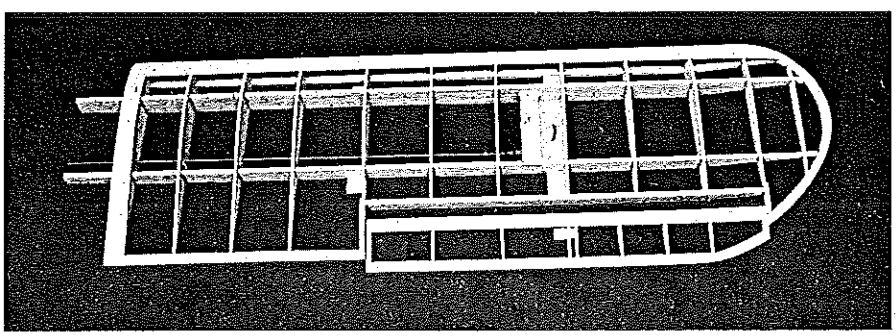
The basic fuselage box starts with ⅛ balsa sides as per shaded are of the plans. Doublers of 1/32 ply on the inside front and ⅛ balsa on the outside give strength where needed the most.



Wide crosspieces on the fuselage bottom front are ⅛ ply for landing gear mounts, holding cowl.



Formers, stringers, nose sheeting, and nose block in place, the fuselage structure is complete. When the 1/16 ply cabin is glued on, leave slots between the pieces for the landing gear wire.

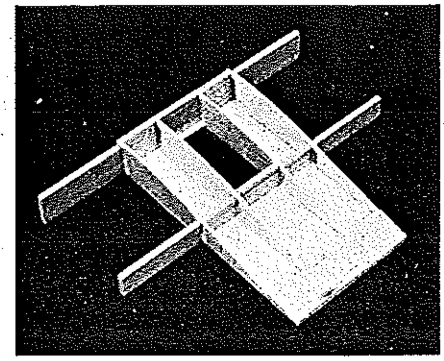


Nothing unusual about the wing construction. The ailerons are built at the same time as the main wing panels. After the whole wing panels are sanded, the ailerons are cut out.

Flying schools quickly accepted the Cub for its easy flying ability, and there are reports of new pilots soloing with it after less than three hours of instruction. The market boomed. Piper sold over 8,000 Cubs in the next three years.

During the war Piper built another 6,000 Cubs as the L-4 for the military. After the war, another 720 Cubs were built before the company realized the boom was over. Piper regrouped; in 1947 the little, low-priced Vagabond was born, and the Cub was left behind. Only the PA-18 Super Cub remained in production as the last of the Cub line until 1981. The tooling and remaining parts were sold and the Super Cub is now back in production by a company in Texas.

In its original form the J-3 was powered by a 40-hp Continental engine (J3C-40). A year later the 50 and 65-hp Continental engines were introduced, and the Cubs were certified as the J3C-50 and J3C-65. At the



Fit the center wing section to the wing panels before applying the top sheeting. Epoxy the wing panels to the center section after blocking up the tips for the proper dihedral.

same time the Cub was certified with the Franklin engines as the J3F-50 and J3F-65. Thirty Cubs were powered with the three-cylinder radial Lenape Papoose engine of 50-hp (J3P-50).

A few months later, the Cub was certified with the Lycoming engines (J3L-50, 55, and 65). The Cubs were also certified and delivered on Edo 54-1140 or 60-1320 twin floats. A picture of the J3L-65 Cub modeled in this article is shown on pages 311 and 340 of Vol. 7 of *U.S. Civil Aircraft* by Juptner.

For many years I have wanted to build a Cub on floats, but sometimes we need a little push. The push for me was George Wilson's article in *Model Builder* on floats for the Sig Cub. Unfortunately, George's floats, scaled down, would not float this model; the stabilizer was under water. I redesigned the floats, using strips of Styrofoam, until flotation was adequate.

The Cub at a scale of 1¼ in. to the foot spans 44 in. and has 280 sq. in. wing area—perfect for an .09 or .10. I have used Cox TD and Medallion .09 engines for years, and I like their smaller size and lighter weight as compared to the newer .10s. Tarno is now making an RC carburetor for the TD.09 to be used with the Cox muffler. As you can see by the pictures, this combination makes a very neat installation with the head completely cowled. Only the tip of the muffler protrudes out the side.

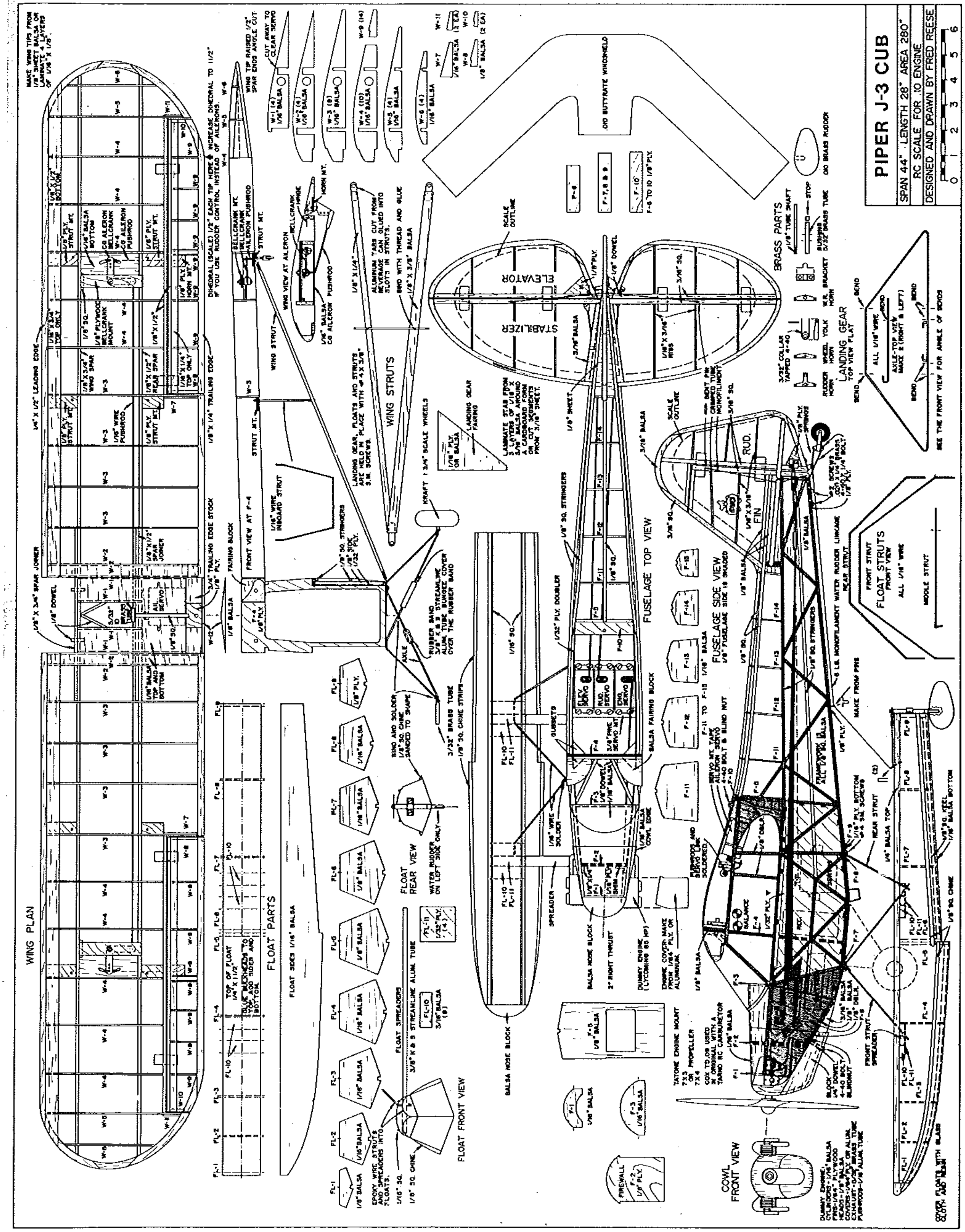
Originally this model was to scale dimensions in all outlines; however, it was not stable enough. Consequently, the tail surfaces have been enlarged, but they are still scale in shape.

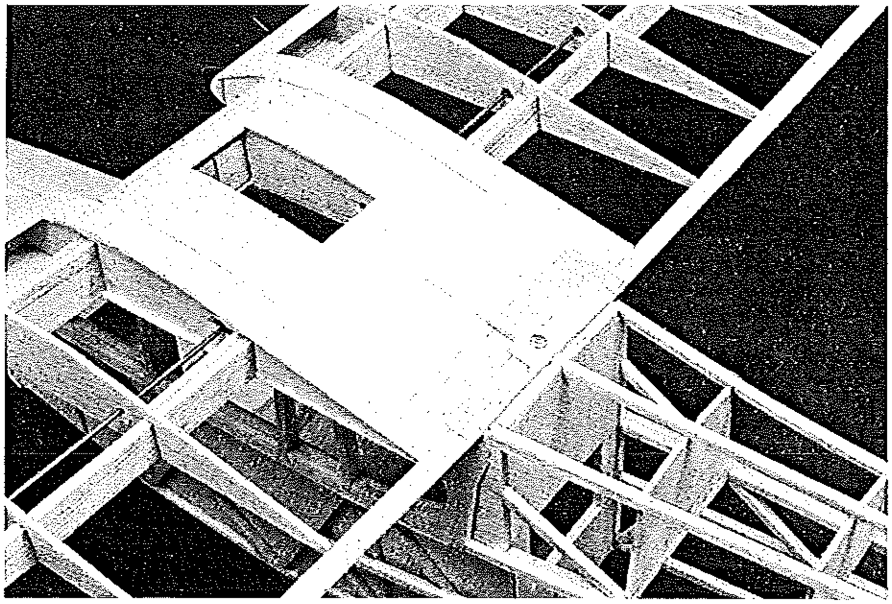
Weight is an important factor with this type of model. I feel that 33 oz. with floats is about the maximum. I built what I consider a very lightweight structure, but the RC equipment adds much weight. I used a four-channel radio with a 225 mAh battery pack; this weighed 11 oz.

Use of a micro-type radio system could reduce the weight by 4 oz. and greatly improve performance. In fact, using a TD .049 and two channels would accomplish the same; without floats, the model should weigh 25 oz., and it would perform well.

The floats add a new dimension to flying. They are both fun and challenging. The model will convert from land plane to floats in just a few minutes. It needs about 150 feet

FULL-SIZE PLANS AVAILABLE...SEE PAGE 164





Fit the wing to the fuselage. Add the front hold-down dowels through the holes in F-4. Glue on W-12, the 1/8 plywood screw support, and the 1/8 sq. top stringer.

to take off from water. The model is quickly up on the step, and it gradually builds up speed until it lifts off. The takeoffs from water are very realistic and exciting.

The floats are 1/4 in. wider than scale, and the rear portion of the floats is enlarged (but not lengthened) to provide adequate flotation. Surprisingly, the floats only weigh two ounces more than the wheeled landing gear. Rubber wheels are heavy, and the floats are very light.

Fuselage Construction. Using the shaded guide on the plan, build two fuselage sides from 1/8 sq. balsa and 1/8 sheet balsa. Glue the 1/32 ply doublers to the inside of the cabin area and the 1/8 balsa nose doublers over the outside from the nose to the windshield. Join the fuselage sides with bulkheads F-4 and F-5. Glue the tail together, and add the 1/8 sq. crosspieces.

Mount the engine, and epoxy in the firewall. Glue in the 1/8 ply cowl and landing gear mounts, F-6, 7, 8, and 9. Glue on the 1/16 ply cabin floor pieces, leaving 1/16-in. slots between the pieces for the 1/16-in. wire landing gear. Add the 1/8 balsa doublers around the window areas, overlapping the joints.

Glue on the two 1/8 sq. side stringers; the top one is glued right over the fuselage side. Glue in 1/8 balsa triangular gussets at the top of the cabin frame and bulkhead F-4. Glue in bulkheads F-1 and F-3, and add the top 1/16-in. sheeting. Trim the front of the 1/16-in. sheeting, and glue on the front cowl block.

Glue on 1-in. strips of 1/16 balsa to the sides of the cowl to give definition to the rear cowl edge. Most of this 1/16-in. sheet is sanded away later during shaping. Sand the bottom of the engine compartment true with a large, flat sanding block.

Begin the removable cowl hold-down by epoxying a 4-40 blind nut in a 1/8-in. hole centered in F-6. Drill a 1/8-in. hole down the center of a 1/4-in. dowel, and then cut off a 9/16-in. length. Run a 3/4-in. 4-40 bolt through the dowel and into the blind nut in F-6, and tighten it.

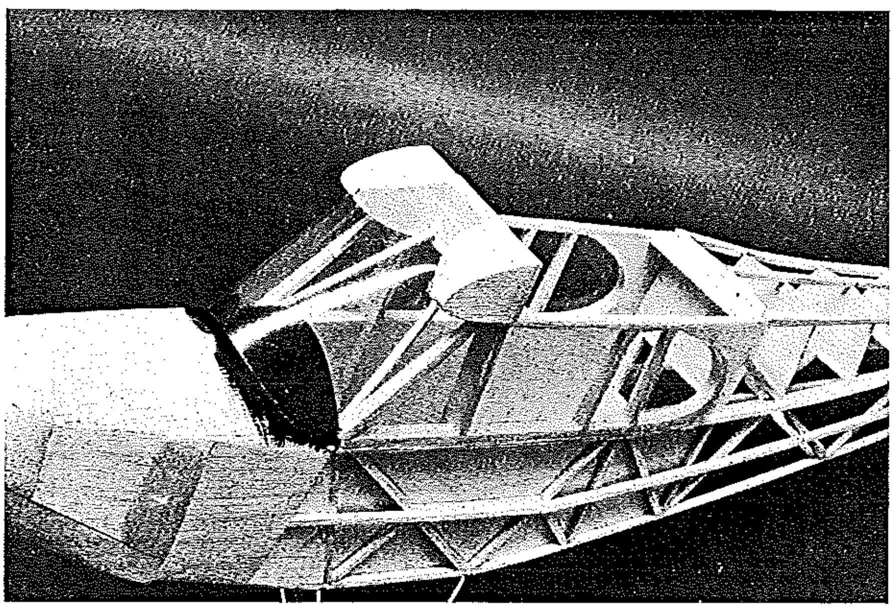
Drill a 1/4-in. hole in the cowl block for the hold-down dowel and screw, and then epoxy the dowel into the hole while holding the block tight to the fuselage. Trim the back of the cowl block to line up with the cowl edge on the sides, and glue on the 3/16 balsa wedges behind the cowl. These wedges complete the fuselage side profile and form a duct for the engine cooling air. Shape the outside of the cowl and then hollow the inside to clear the engine.

Glue on bulkheads F-11 through F-15 and the two top, side stringers. Glue in 1/8 balsa between the top stringers for the rudder and stab mounts. The side sheets are slotted later for the stab. Also glue in pieces of 1/8 sheet between the two side stringers for the pushrod exits. Add the top, center 1/8 sq. stringer. Glue in F-10, and sand the fuselage to final shape. The 1/8-in. doublers around the windows are flat-sanded to zero at the top to match the cross section of F-4.

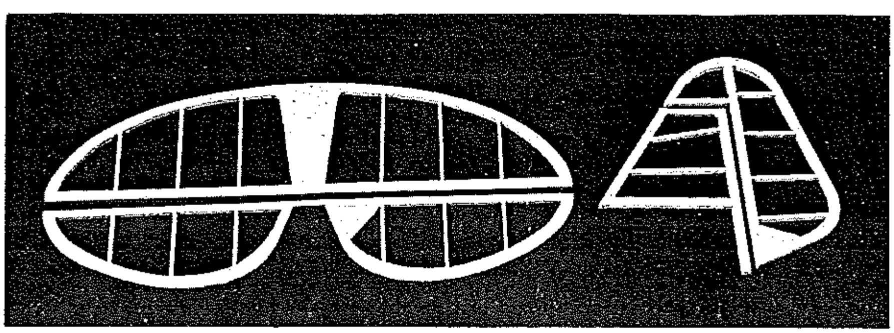
The wing is built by gluing the ribs over the spars. Add the leading edge, trailing edge, and wing tips. Build in the ailerons by gluing in the 1/8 × 1/2 in. aileron spars. Pin the 1/8 × 1/2 in. aileron leading edges in places, and glue in the aileron ribs. Sand the wing to shape, and then cut out the ailerons. Glue in the 1/8 ply aileron bellcrank mounts and the 1/16 balsa sheet under the bellcrank mounts.

Glue in all of the 1/8 ply strut and horn mounts. Slip in the 1/16-in. wire pushrods with a clevis soldered at one end for the bellcrank. Mount the Goldberg aileron bell-

Continued on page 118



Fit the window blocks, paint the inside of the cabin, and add 1/8-in. dowel supports. Fit the windshield and epoxy it in place in three steps, starting with the front.



Curved outlines of tail surfaces on author's model were cut from 3/16 sheet, but they could be laminated from three layers of 1/16 × 3/16 balsa bent around a cardboard form. Control horn mounts are 1/8 ply. Horns screwed to mounts with short 2-56 bolts in 1/16 holes with glue drop.

Safety/Preston

Continued from page 14

The best spot to mount the switch is on the servo tray inside the fuselage . . . Almost always the switch that fails is mounted on the side of the fuse."

While the majority of radio manufacturers provide servo trays that have a location for mounting the switch, many of the articles we've seen that instruct beginners on how to install the radio show the receiver switch located in the fuselage side. We would like to ask our readers if, in their opinion, a switch mounted that way is more prone to failure than one mounted in the servo tray. The only rationale that we can think of that would cause premature failure of a switch in the fuselage side is the increased likelihood that the contacts may become dirty.

It seems like we're forever mentioning something about the hazards of propellers. In a letter from Murray Gransback, he included a propeller safety tip. We're not sure whether we have previously mentioned this. "Another hint about safety with wood props is not to tighten the prop nut too much and thereby crush the wood at the center, causing the prop (blades) to fly off in two directions when the engine is running. I think a lot of beginners tend to do this."

We suggest that, if you don't already own a four-way prop wrench, you should buy one. The chance of overtightening a prop nut will be increased if you use a six- or seven-in.-long, open-ended wrench rather than the shorter, four-way wrench. Similarly, if you are using an "AMA-style" acorn prop nut that requires a 5/32-in. diameter steel rod for tightening, keep the length of the rod to about four or five in.

Another letter on the subject of props comes from Phillip Nickell of Longmont, CO. Phillip included some charts and formulas that give the prop tip speed and theoretical forward speed of a model with respect to prop diameter, rpm, and prop pitch. Since the forward travel speed for a given prop pitch and rpm is a somewhat controversial issue, we are not going to touch on it here. However, we are including the chart which illustrates the prop tip speed for a range of prop diameters and rpms. Perhaps the next time you tweak the needle valve for ultimate top-end performance, you will think about the speed of that piece of wood or plastic that's only a fraction of an inch away from your fingers!

While we are on the subject of prop tip speed, did you ever think about the prop as a noise-producing component of your model? We recently attended an AMA Executive Council meeting at which Ed Izzo, VP for District I and chairman of the AMA's Noise Committee, talked about the suppression of model aircraft noise. The committee has constructed a "quiet" Pattern model that features, among other things, a three-bladed prop. By reducing the prop diameter and adding an extra blade, you can move the same amount of air at some given rpm with a reduction in prop tip speed and a consequent reduction in prop noise. Since most of us use ineffective mufflers, all we hear is engine exhaust noise. According to Ed, engine exhaust noise is the easiest thing to reduce in the quest for tranquility at the flying field. (Muffler manufacturers take note: some of the products you sell under the label of "muffler" are nothing short of a joke.) In the opinion of this writer, we are long overdue in establishing maximum sound output levels for model aircraft engines. Perhaps Ed's committee will help in achieving this goal.

Since the previous paragraph has probably made us public enemy No. 1 with the muffler manufacturers, let's see if we can upset a few model magazine publishers, too (with the exception of *MA's*, however!).

Ron Sebosky (Advance, NC) sent us a clipping from a recent issue of one of the model magazines (no, not *MA*) that was part of a construction article on an RC Scale model. The author of the article stated: "In fact, I often fly it in the local supermarket parking lot." I agree with Ron that such a flying site leaves something to be desired, from the safety point of view, and it might be prudent if the publishers of magazines delete such statements made by their contributors, lest others get the idea their club should solve their flying site problems by moving in on the parking lot of the local supermarket chain. True, the model in the construction article was a small one, 38-in.-winspan with a ½A for power, but it could still cause a serious injury if it should hit a person who could be totally unaware that the parking lot is being used as an airport rather than just a place for parking one's car.

One last item to round out this month's epistle comes from *Flight Line News*, the newsletter of the Conejo RC Modelers, edited by Art Addington. The title is "Safety, First Flight Courtesy."

"Some time ago, we adopted a rule that the first flight of an aircraft would be done solo—no other aircraft in the sky. As most rules go, this one has slowly lost its presence, and the result of the erosion was evident two weeks ago.

"A young man asked if I would help him with his first flight. I did a safety check, took the wing off and even had another flier check the controls, to make sure they were properly rigged.

"Two other fliers were up. The takeoff was a little wild (the nose steering was too sensitive). To say the least, we made ourselves known to those other two fliers. The plane was so far out of trim that it would climb even at idle, and there was very little roll control. I landed the plane dead-stick, pushing forward on the elevator control.

"A little work in the pits, and another flier helped put the new plane up. The takeoff scared the H--- out of the one other flier up. The new model almost hit him, and did the same thing twice trying to land. That flier's comment was: 'Why don't you put that plane in the pits and leave it there?'

"Good advice. Leave it there until you can fly it by its lonesome. I learned a lesson, hope telling it here will save an accident."

We also hope that by relating the story in this column, other clubs might give some thought to a requirement that first-flights on any model should be performed when no others are in the air.

Have a safe month.

John Preston, 7012 Elvira Ct., Falls Church, VA 22042.

Piper Cub J-3/Reese

Continued from page 28

cranks, and drill down through the outer hole in the bellcrank with a 1/16-in. drill through the balsa bottom. With the drill running, rotate the bellcrank gently to cut a curved slot for the pushrod exit.

Build the wing center section by stacking the ribs and spar joiners on the 1/16-in. balsa bottom. Trial-fit the wing panels into the center section. When everything fits easily, add the top 1/16 sheeting to the center section. Epoxy the wing panels to the center, blocking up each wing tip ½ in. Use 1½ in. under each tip if you don't use ailerons.

Sand off the bottom edges of the spar joiners even with the spars.

Fit the wing to the fuselage. Drill two 1/8-in. holes into the wing through F-4, and glue 1/2-in. lengths of 1/8-in. dowel into the holes in the wing, leaving 1/8-in. protruding for the front hold-down. Glue on W-12, the 1/8 ply screw support, and the 1/8-in. sq. top stringer. Drill and install a #4 sheet-metal screw to hold the wing in place.

Glue a piece of 1/8 balsa over the top front of F-4 to cover the dowel holes. Glue on the two balsa fairing blocks, and sand them to shape. Paint the inside of the cabin yellow and the area over the instrument panel flat black. Add the 1/8-in. dowel cabin supports, which also are painted yellow.

Using the pattern, cut out the windshield from clear butyrate (available from Sig Manufacturing Co.). Fit it to the fuselage. Epoxy the windshield in place in three steps, starting with the front.

Make the tail surface outlines from 3/16 sheet, or laminate the outlines with three layers of 1/16 × 3/16 balsa soaked for a few minutes in hot water and wrapped around a cardboard form with white glue between the layers. Hold the laminations together with pins until dry. Add the 1/16 × 3/16 ribs.

Join the elevator halves with a length of 1/8-in. dowel, and glue in the 1/8 ply horn mounts. Sand the edges round. Cover the stabilizer and elevator, and install the hinges.

Cut a slot in the fuselage for the stabilizer. Trim away the covering in the center of the stabilizer even with the sides of the fuselage, and glue the stabilizer in place.

Give the entire structure a coat of Balsarite to seal the wood. In spite of the best intentions, occasionally everything gets wet.

Cover the rest of the model with Yellow MonoKote or EconoKote, and use the matching yellow MonoKote trim over the window areas and the edges of the iron-on covering. The heat of the iron will melt the windows, so iron the covering just to the edge of the windows.

Use black MonoKote trim for the side stripe and the numbers. The little Cub logo on the rudder was hand-painted using Pactra Namel for plastic models.

The tail wheel unit is made from thin sheet brass and a 3/32-in. wheel collar tapped for a 4-40 bolt. The wheel yoke and horn are soldered to the wheel collar. The completed assembly is attached to the brass arm with a 1/4-in. 4-40 bolt.

I screw the tail wheel on tight, as the model will ground-loop if it swivels. Tail wheels are locked on the full-size Cub for takeoffs.

Use electric motor brush springs to connect the rudder horn and the wheel horn. These springs are soft and will allow the rudder to move even with the tail wheel locked. (The engine doesn't idle slowly enough when inverted to taxi, anyway.)

The main landing gear is an exercise in wire bending with 1/16-in. piano wire. Take your time, and make each bend carefully. Adjust the bends until it will sit flat on a table, and then screw it to the fuselage before soldering. Bind all of the junctions with fine copper wire and solder.

Solder on the 3/32-in. brass tubes over the axles. I used Kraft 1¾-in. wheels because of the smooth hubs. The hubs are sanded and painted yellow with a 1/8-in black edge to make the hubs appear smaller. The word "Cub" is hand-painted in the center of each hub with a fine brush in black.

Cut two 1-in. lengths of 3/8-in. K&S streamlined aluminum tube covered with yellow trim for the bungee covers. Wrap the hooks of the landing gear with rubberbands. The bulk of the rubberbands will hold the bungee covers in place.

The floats are built with 1/4 × 2-in. balsa tops with 1/16 balsa bulkheads, sides and bottom. Lay the 1/4 × 2 × 18-in. tops over the plan, mark the bulkhead locations, and draw a center line. Glue the bulkheads in place, and add the 1/8 sq. keel. Glue in the FL-10s and FL-11s to make boxed slots for the aluminum spreader tubes.

Glue on the float sides and bottom. Glue on the nose blocks and sand to shape. Cover the floats with 3/4-oz. K&B glass cloth and resin. Use toilet paper to blot away the excess resin. If the resin is too thick, add a little acetone to make it easier to work. When dry, sand lightly, and glue on the 1/8 sq. balsa chines and 1/16 sq. top rails. Prime and paint the floats silver.

Cut the slots for the spreaders, and join the floats and spreaders with epoxy. Mount the 1/16-in. wire float struts to the fuselage. Epoxy the wire struts into holes drilled into the floats. Solder the middle strut to the front strut at the top.

I made the steerable float rudder that works from the rudder with 4-lb. monofilament fishing line linkage. However, I don't use it, as it picks up any weed or algae on the water during the takeoff run, and this prevents takeoff. The steering does work,

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and you can make it if you want. It looks great, and it is easily removed if it is a problem for you as it was for me.

If you fly from water it is important to protect your radio. The Cub is small and does not lend itself to a waterproof compartment. Therefore, I recommend that you read and follow the directions for waterproofing your radio in the "Radio Technique" column by George Myers in the February 1982 issue of *Model Aviation.*,

The ideal prop for the Cox TD .09 is the old Cox 7 × 3½ (which they no longer make). A 7 × 4 is a little too much prop for the TD .09, so it should be cut down to about 6½ in. and rebalanced—or use a 7 × 3.

The model Cub flies pretty fast for a Cub, but the control response is very good. Aileron response on a slow-flying, high-winged airplane is usually sluggish, so flying the Cub a little faster keeps the response normal. Remember, don't try to rush the Cub off the water; it will take off when it is ready.

Enjoy your Cub. There is always something special about a Piper Cub, no matter how large or small it is.

Radio Technique/Myers

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coreless-motor servo is higher (more inch-ounces per Watt, with equal transit times), so if you are into duration flying you want coreless-motor servos.

Although I can't prove it with test data, the fact that the basket of the CM is so much lighter than the armature of a conventional motor leads me to suspect that the CM will resist shock and vibration damage better. The potential advantage is there, but reality rests on design and manufacturing techniques.

A NEW RADIO, NEW RC CHANNELS

First look at the Tower 500. If you're like me, you aren't inclined to take the new crop of low-priced radios very seriously. A case in point is the new Tower "Gold System 500," which offers a plug-in crystal right on the front panel, dual rates on aileron and elevator, servo-reversing on aileron, elevator, rudder and throttle, electric trims, a trainer button, an output meter, all Ni-Cds, charger, receiver, and four servos for less than $150. (I paid more than that for just the *receiver* in my 1971 Pro-Line!)

As a matter of fact, I wouldn't be looking at *this* one, if it hadn't been sent to me by Tower Hobbies along with what was essentially a challenge to "Try it before you make up your mind." It came with crystals on both ends of the 72MHz band, and one right in the middle (channels 12, 40 and 56, to be exact). According to Tower's Bill Baxter, the sets come in without crystals, and Tower plugs in whatever you request (from a stock of .001% crystals). Then they check for a 100-ft. ground range (transmitter antenna collapsed, receiver antenna dangling out of the box) inside their warehouse.

Never one to take advertising too seriously, I tried the same thing. They're right! Testing with transmitters on the nearest RC channels (and setting the exposed transmitter antennae to the same lengths), I found that when I had the Tower transmitter as far away as possible, then moved in with the adjacent-channel transmitter until the servos just began to jitter, the distance ratio was 20:1, which equates to very good performance. They don't claim narrowband performance, but I say its narrow enough for today.

My son, Tim, screwed the Tower Gold 500 into his well-used "Quickee 500" and we went out for some flight tests. We didn't try everything in the book, but Tim did take his plane up so high that it was hard to see (maybe 2,000 feet), then I collapsed the antenna. He retained full control with the antenna down to 3 in. exposed!

Since I was testing servos for this column, I tested the Tower TSS-50 servo and found it to be better than average. Output torque was 40 in.-oz., and 90° reversed-cycling transit time was .5 seconds.

Airtronics servo number	94551	94554	
Torque to turn Output Wheel (no volts)	26 ± 2	4 ± 0.6	inch-ounces
Idle current (no control pulse)	7	7	milliamps
90° Reversed Cycling transit time	0.5	0.5	seconds
Free-running current	120	40	milliamps
Stall current	600	800	milliamps
Volts at stall	4.8	4.8	VDC
Stall Torque	35	60	inch-ounces
Motor type	Conventional	Coreless	