

Cement ribs in place. Add leading edge, top trailing edge piece, top spar. Dihedral brace, full depth, requires center and adjacent ribs be cut to accept it. Cement brace to both spars, allow sufficient time for all joints to dry. Other wing half is built directly onto the first. Tip up partially completed half to provide correct dihedral angle; with brace flat on the bench, glue bottom spar to it. Proceed as for first half. Soft 1/16" top sheeting is added to each half while it is pinned to bench. Narrower bottom sheet is added after frame is removed from table as is center sheeting and capstrips. Carve tips from very soft balsa blocks. Hollowing, optional, is determined by weight of wood used.

A note on dihedral angle . . . some observers thought it a bit shallow. Small planes can be pretty jumpy in the turns. To smooth them out, I resort to a minimum of dihedral. This reduces lateral stability and the abruptness with which the plane wants to return to level flight when rudder is neutralized. If you are real keen on snap rolls, raise each tip an additional 1/2".

The fuselage "V" bottom was to eliminate any boxy feeling. The open cockpit and pilot provide that lightplane look; side mounted engine and dummy cylinder enhance appearance.

I used medium soft 3/32" x 4" sheets for the sides. If only a harder grade is available 1/16" sheets will have to do even though the thicker softer sheet absorbs more punishment. When cutting one side include bottom keel then use other side as template in cutting it off. This will insure a good keel-to-former fit.

Reports Aubrey Kochman:

Along with the .010 and .020 engines has come the small "backyard" R/C model. Experience gained with "Styro-Mite" (August 1961 A.M.) indicated that the weight factor for an .020 job is not nearly as important as it is for the smaller .01 engine.

After many successful flights with this little .01 "Styro-Mite," I mounted a Tee-Dee .020 on it. The results were fantastic! The first flight was a fy-away. Not just a plain old radio failure fly-away either. It left my hand like a hi-start glider. Keeping the plane over the field was quite a chore. To be honest I wasn't exactly flying her . . . I guess you might say she was flying me. But I had the little beast in sight and up wind, worth an A-for-effort in any league.

Then the engine cut coming out of a left turn and the rudder failed to neutralize completely. Little ole heaven-bent Styro-Mite pulled up in a tight left spiralling climb and disappeared. She was returned to me about two weeks later, still in good shape, with the escapement rubber band completely wound out.

Back home with the help of a voltmeter, the real culprit was uncovered. Low voltage caused by a loose battery fit in the battery box made the escapement chatter and skip, unwinding the rubber with sickening speed.

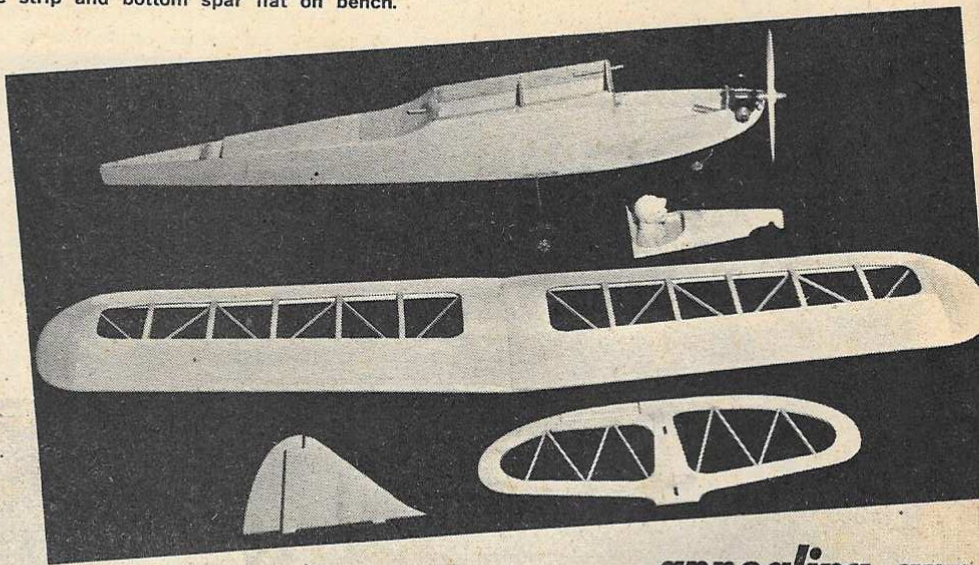
Subsequent flights with normal voltage, 3 degrees added downthrust and the prop on backwards, Styro-Mite became quite a mild tempered performer. But why waste power? Why not a design to handle the full power of the .02? The results? "Pipsqueak," a pretty model (so I'm prejudiced).

I obtained one of the first Otation model 0-21 tone receivers and Polk's provided an Otation #2705 toggle switch. To these lightweights I added a Citizen-Ship SN escapement for faster response and to gain the extra commands available with this type over a compound with its limited-length escapement rubber. Two Eveready #904 batteries and an Acme #913 battery box complete the radio set-up for a substantial saving in weight.

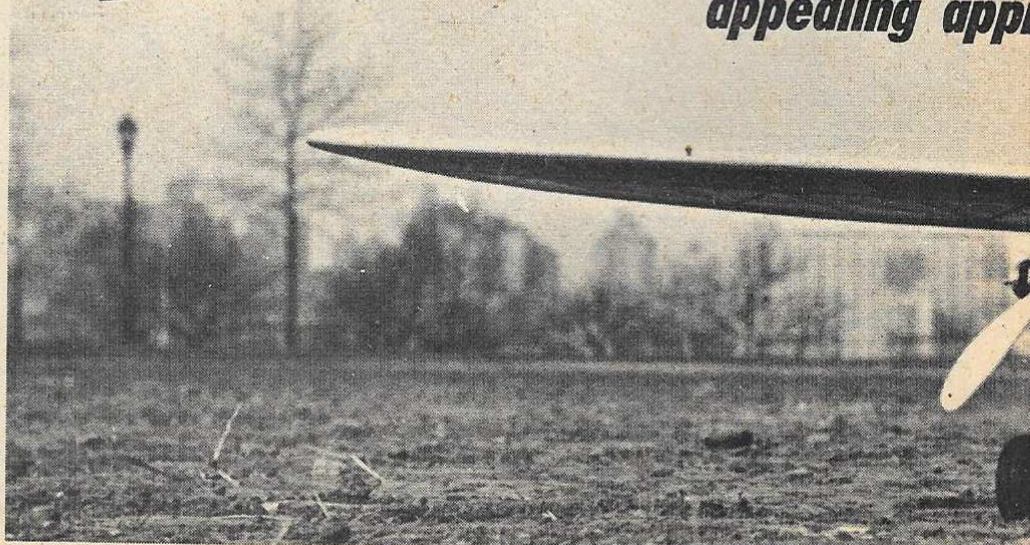
The lighter equipment was purposely offset in the form of sturdier construction and a tricycle gear. Even so, all-up flying weight of Pipsqueak is only 12 ounces. Sig balsa was used throughout. I would not recommend anything over 15 ounces without adding area (via a straight wing instead of the tapered one shown). Stick close to the grade and sizes of balsa noted, flying weight and balance point should come out about right.

That tapered wing is strictly for appearance. Start by cutting accurate templates of center and tip ribs from 1/16" plywood. Cut eight 3/4" x 7" strips from medium sheet 1/16" balsa. Pin strip "block" together with plywood template on each side. Carve and sand excess balsa for straight taper from template to template. Use sharp blade and straight edge to make necessary cuts for leading edge, spars and bottom trailing edge. For other wing half follow same procedure.

Wing is built in halves. Pin bottom trailing edge strip and bottom spar flat on bench.



appealing app



Tabs and notches in formers 1, 2, 3 should be snug fits. Cement them together and add $\frac{1}{8}$ " sheet gussets behind former 1, check #1 for proper downthrust angle. Former 3 gives right thrust. Former 2 of this sub-assembly along with former 4 cement to side sheets. When dry, pinch tail together and cement sides to $\frac{1}{8}$ "-sq tailpost. Add built-up $\frac{1}{16}$ " x $\frac{1}{4}$ " formers. Cement sides to formers 1 and 3, add lower nose block.

Before closing in fuselage, install escape-ment and torque rod. This unit mounts on a hard sheet of $\frac{3}{32}$ " balsa; a similar piece forms receiver compartment which is large enough to accommodate most small relayless receivers. Install nose gear and main gear. Mount latter to $\frac{1}{8}$ " plywood top and bottom sheets note grain direction.

Build removable cowl/cockpit on the thus far completed fuselage for proper fit.

Start planking with two lower side strips and top center strip. Carefully cut and fit each plank working up from the bottom one at a time alternating sides. To prevent planks from being glued to former 1, cover it with a narrow strip of bond or wax paper. When completely planked, sand to conform to fuselage, then cut out cockpit area. Strips of $\frac{1}{16}$ "-sq keep cowl aligned— $\frac{3}{32}$ " sheet cemented to front of former 2 will keep it from popping out on hard landings.

Trial mount motor, make necessary clearance cuts. To gain access to lower mounting screw, we cut a hole in nose front to admit a small screwdriver.

Make sure tail surfaces are in alignment. Use medium soft balsa. Trim tab will prove helpful in final trim. I cemented stab to

fuselage; if you prefer removable tail surfaces, add necessary dowels to fuselage.

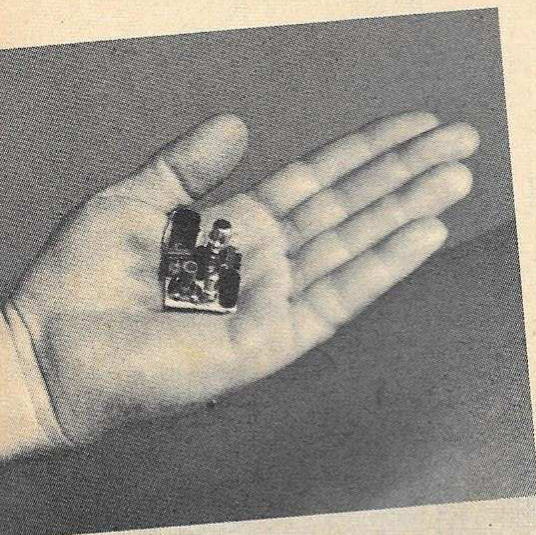
For a colorful finish I used silk and jap tissue. One coat of well-sanded balsa filler went over all wood surfaces that contact the covering material. This tames the grain and evens out balsa coloration. Sig lightweight yellow silk, on wing and stabilizer, has a fairly open weave. Care is required to prevent pulling it apart. Dilute first several coats of clear dope about 50%; it is sort of lightly scrubbed in, not flowed on. While no castor oil is required in wing dope, a few drops per ounce should be added when dopping stabilizer and rudder.

Fuselage, fin rudder were covered with blue and yellow tissue. Those black pin stripes are $\frac{1}{32}$ " wide Chart-Pak tape; art supply stores have it in small rolls.

Those who build Pipsqueak as their first small R/C job should adjust for a fast straight glide with no mush or stall. A plastic $\frac{5}{3}$ prop and the thrust angles shown proved best, but do not hesitate to alter these if necessary.

A few hops with short engine run and prop on backwards should get you beyond first flight jitters. Remember to wind escape-ment rubber before each flight. Check battery voltage every five flights.

With its modest 32" span rudder-only R/C Pipsqueak is a sturdy craft. Shown at left is Otarion Electronics' tiny Model O-21 relayless receiver which tested out perfectly in Kochman's latest radio controlled plane. Bill of materials on pg. 51. Full size plans are on Hobby Helpers' Group #462.



ach to "O20" radio control Planes "Pipsqueak"

