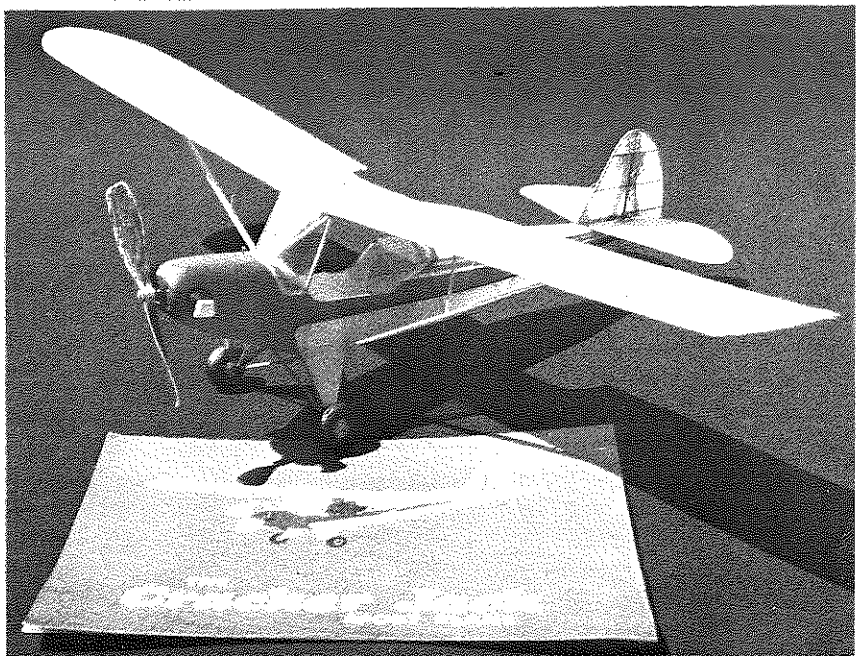


THE CRACKER JACK

By WALT MOONEY . . . Here's another two-for-one Peanut or Rubber Scale airplane that will please the free flight modelers among us. The full-size *Cracker Jack* is a home-built . . . which just happens to scale down perfectly without any modifications.



• Occasionally, comments are made about what it was that inspired the building of a particular model. "It was interesting," "It was different," "It was obscure," etc. This one was built because the designer/builder of the real aircraft sent in a brochure and suggested that a Peanut scale be built. The brochure supplied by Pete Plumb has a three-view that is Peanut scale size. It has all the detail and color information needed to make a good scale presentation.

This brochure is available from Wood Wing Specialty, Building H-2 Fantasy Haven Airport, P.O. Box 1258, Tehachapi, California 93561. The brochure costs \$5.00, and if you send him five dollars, Pete will send you one.

This model was drawn up by making a normal and a reverse copy of the three-view, and pasting it up into the Peanut scale format for the magazine. Then, it was blown up to twice-size on a XEROX 2080 machine. The model structure was then drawn in on the blown-up as near to the scale structural arrangement as possible. The model in the photographs

is twice Peanut size, and is powered by Bill Brown's fabulous CO₂ twin cylinder engine. As it was built essentially over an original three-view, it has no intentional deviations from exact scale. The color scheme matches that of the prototype. It is all white with red trim and a blue upper stripe and a blue Cracker Jack sailor (and his dog) on the vertical tail. Luckily, the Sailor on the foil package of a Cracker Jack is exactly the right size for a pattern for the double Peanut size model.

As I said before, there are no intentional deviations from exact scale, including the rather thick airfoil section used on the real airplane. There are two thread turbulator strips which were added after initial glide tests showed the model with its smooth leading edge sheeting on the scale airfoil wing was suffering from a low Reynolds number laminar separation. Its glide was less than two to one, before turbulation, and is about five to one afterwards. Hence the alternate airfoils shown on the plan for those who want to avoid added thread turbulators. Note that the real

airplane does not have this problem because it is flying so much faster than the model and is larger too.

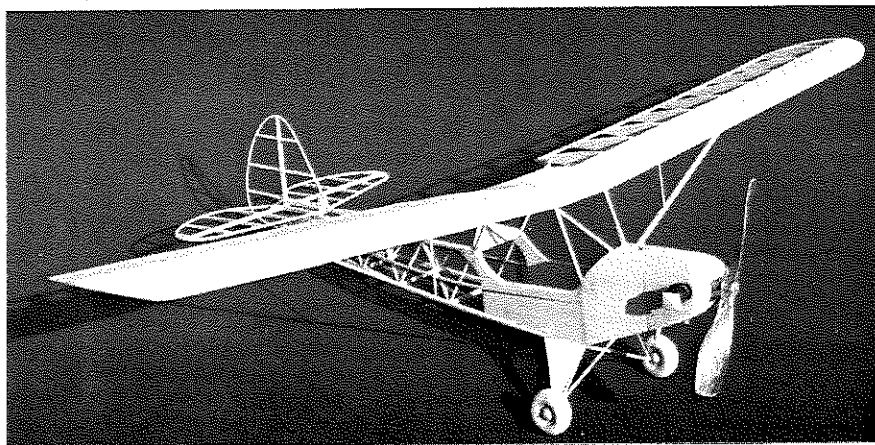
While the original model was built for the Brown twin, the plan will be published as a Peanut in **Model Builder** magazine. For this reason and because there may be some who even want to build the larger version for rubber power, an alternate nose and a rear peg installation is shown on the plan. (Full-size CO₂ or rubber power plans are available from **Model Builder** for \$2.50. wrf)

Construction of the model follows tried and true conventional procedures. Keep it light and it has a better chance of flying well.

Laminated wing tips and tail outlines are used. They look more realistic than sheet outlines, but sheet outlines will work OK if laminations seem difficult.

Obviously, the small model uses smaller dimensioned structural pieces than the large ones, so no sizes are called out on the plan. Just match your sticks to the size shown on the plan you select and the model will turn out OK. The cabane struts on the large model are made from 1/16 diameter birch dowel. On the smaller model, I would suggest using the thin bamboo dowel that is available from Peck-Polymers (see their ad).

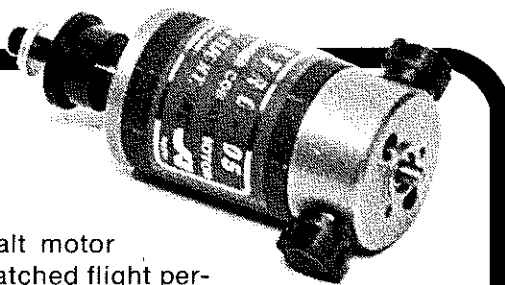
The most critical area of a CO₂ powered model is the engine installation, and the most critical part of the engine installation in my experience is the support of the CO₂ filler valve. Make sure that the support blocks on each side of the filler are hard balsa and they reach clear down to the bottom fuselage planking. It takes considerable force to push the filler down over the valve, and this part of the installation must be strong enough to resist that force. Make all bends in the tubing with a fairly large



Just to give you an idea of what the *Cracker Jack* looks like without the tissue covering, we present this nude version of the model.

Continued on page 86

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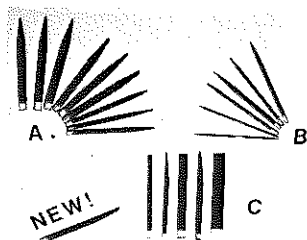
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they wouldn't pop loose at some inopportune time.

ENGINE

The extremely light weight of the model means that an expensive, high revving, fire snorting engine is not required. In fact, the MRC Cessna uses a rather humble, lapped piston Enya .35. This relatively small engine, swinging a 11-5 prop pulls the Cessna with authority . . . no VTOS, but neither does it require that you dive to get up enough steam for a realistic loop or roll.

The Enya .35 comes with the MRC Skyhawk II and with instructions provided by the Enya company, plus some operating hints by MRC. It is somewhat reminiscent of the old Veco .45, which early R/Cers will remember as the engine. It also used sleeve bearings, no rings, and it took a week's production of K&B 500 to get it broken in, but once there, it ran its heart out for you, fast, slow, or in between. Break this Enya in as recommended, always treat it properly, and I doubt if you'll ever be able to wear

it out, no matter how much flying you do.

CONSTRUCTION HINTS

The instructions are a happy combination . . . thorough, without being wordy. I can only add a couple of suggestions. First, the all important center wing joint. The procedure as outlined by MRC works, except that I believe a better foam-to-foam joint will result if the molded surfaces are sanded. Better glue penetration should result on the sanded porous surfaces than on the smooth molded surfaces. So, sand the wing centers, test for fit and dihedral, and follow the rest of the instructions.

After the wing is complete, don't forget the step that is important to all models, the lateral balance. If necessary, add weight to the light wing tip until the wing remains level when supported in the center (longitudinal axis). This will keep you from having to fly around with a lot of drag producing trim cranked in.

This is also a good time to check the model for its proper balance point,

often called "CG." It is mentioned in the instructions as being at 33% of the wing chord. With everything in place, without fuel, mine came out about 1/2-inch forward, close enough on a model of this design and size. Unless your radio system is considerably different from the norm, yours should also balance within acceptable limits without the need of any weight anywhere. Should a small forward adjustment be necessary, I'd consider moving the battery pack out of its molded cavity and up under the tank rather than add dead weight (lead) up front.

No engine thrust adjustments are necessary, though it would be a good idea to check the side thrust. From a point on the rudder to the prop tips, there should be 1/8 to 1/4-inch less distance at the right tip, looking at the model from the rear. If necessary, loosen the engine screws and rotate the engine as far right as it will go. This is also a good time to install the muffler extension and muffler, per the instructions. A small drop of thread sealant on each screw (such as Pacer's Zap-Lock) will insure you against playing "bomber" with your muffler sometime during your flying.

Thread sealant should also be used on the main gear axle screws. A short length of 5/32 OD tubing for a bushing is needed on the nose wheel. A flat spot filed or ground on the wire axle there will keep the wheel collar screw from loosening.

FLYING

Light and big means a tendency to weathervane on takeoff if there is any breeze at all. Other than that, flying the MRC Cessna requires nothing other than a fine touch on the sticks. With the controls set up as recommended in the instructions, the model is agile enough to allow overcontrolling, without being unacceptably sensitive. It'll do the basic maneuvers with ease, and landings are a cinch, positive all the way to the ground, with no tendency to snap or stall.

That long wing is apparently stronger than it seems, but if you decide to increase the control throws for more violent maneuvers, a lengthwise strap of filament tape on the underside for added strength would not be a bad idea.

It'll take you longer to charge the batteries than it will to get the MRC Cessna Skyhawk II ready for flight. And flight is exactly what you will get out of it, and after all, that's what the hobby is all about, isn't it? ●

Cracker Jack . . . Continued from page 49

radius, kinks are a real "no-no". To prevent the tubing from fatiguing due to vibration, tie it down from place to place with silicone bathtub sealer. Tie the aft end of the tank to the fuselage bottom with sealer also. Don't forget to balance your propeller to reduce the level of engine vibration.

The cabane struts are pointed and

pushed into the balsa structure of the wing and fuselage. Do this carefully so that the wing is properly aligned.

The side and bottom fuselage stringers (for the large model) are 1/16 x 1/8 balsa sticks. They are mounted on edge, are full-depth at the location of the wing strut, and smoothly taper to nothing forward and aft of this point.

Covering follows standard procedures. Cover the entire model with white tissue, and after it has been water shrunk, give it about three coats of thin dope. The color trim is put on using colored tissue doped on over the base white tissue. The Sailor and his dog are an intricate pattern to cut out of tissue. Their dark parts are blue. Use a thin pen for the Cracker Jack box he is holding in his hand.

The following adjustments are made for flying the model. Make sure the model balances level when supported at the extreme wingtips. Mine needed some weight added at the tail end. Remove any gross warps in the wings or tail and make sure each wing has about an eighth of an inch of washout. Test glide the model to determine if some elevator and rudder adjustments are required. Try for a straight, smooth glide. Until the original model had the turbulator strips added, it glided very poorly. Adjust your engine for fairly low RPM and try a flight. The original model tended to spiral in to the left and required some right rudder to overcome this tendency. The right rudder will give you a right turn in the glide. If saving the model from a left spiral dive under power with the rudder results in a right spiral dive in the glide, you will have to resort to some right thrust adjustment.

Side windows (non-scale) or a profile pilot in the cockpit will probably reduce the model's tendency to spiral. Have fun with your Cracker Jack!

Diamond Continued from page 38

the incidence of the wing rather than resort to any great change in the position of the wing. The usual incidence used is raising the leading edge 1/8-inch above the trailing edge. The center of gravity should be at the center of the wing.

Start the power flights only after the glide is satisfactory. Try about 100 turns for the first flight. Then increase the number of turns to about 250. Bad adjustments will be revealed during a flight under this amount of power. Correct any stalling tendency by increasing the negative thrust. This is conveniently done by changing the angle of the nose block. Insert small slivers of balsa between the top of the block and the first fuselage cross brace. Cement these blocks to the nosing as soon as you are satisfied with the adjustment.

About two degrees downthrust and one degree right thrust are used on the Diamond. The rudder is given a slight turn to the right and the model flies in

right circles. The model hops off in about three or four inches and pulls up into a fast, steep climb for about the first 40 seconds of flight. After this the model gradually levels off and a short time later goes into its glide. Immediately after the takeoff, the model starts a right circle and continues through the flight and glide. For maximum flights, about 650 turns can be stored in a motor with two inches slack.

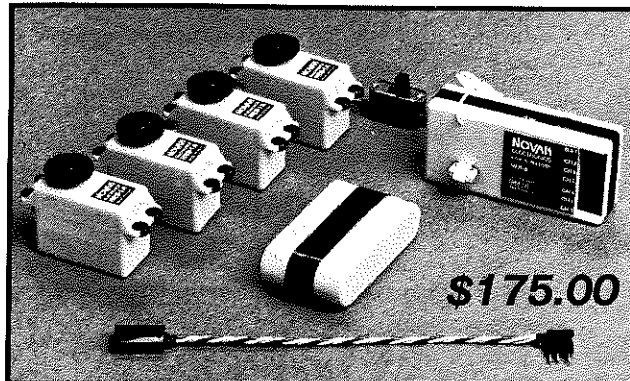
As usual, when researching one of these OT's, I start wandering through the other pages of the particular issue involved, and interesting things reappear. In this one, the 1937 Nationals were described, and the results posted (there were only 17 events altogether). Many familiar names were in the lists, but we'll mention a few who most everyone should recognize. For instance, in Outdoor Open Class Cabin, Dick Korda was first with 54:13, the next closest being a C. Sholes at 2:39.8! Chet Lanzo and Frank Zaic appeared in 9th and 5th respectively. In Senior Mulvihill, There was Earl Stahl (6th), Dick Everett (7th), Wally (K&S) Simmers (8th), Mike Roll and Hewitt Phillips.

How about Indoor Stick Senior? Wally Simmers again, in first. Hewitt Phillips (6th), Sid Axelrod (12th). Indoor Stick Open? Carl Goldberg was second, and one Walt Good (!) was in 6th. Yes, and Walt was also 9th in Indoor Cabin. About that?! In Gas Model Open, Maxwell Bassett was first, with Carl Goldberg in 2nd. In Gas Model Senior, we see Fisk Hanley in first, Sid Axelrod (Top Flite's leader for many years) in 7th place, Bob Long (Long Cabin), Chuck Tracy, current Sam President Mike Granier, Vern Krehbiel (VK Models), and Hewitt Phillips. And in Radio Control, from 1st to 6th place, it was Chet Lanzo, Pat Sweeney, E. Wasman, Walt Good, Leo Weiss, and B. Schiffman.

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your wife) a *Diamond* for her next birthday. Just think of the fun she'll have retrieving it while you fly it for her!

Volts Wagon . . Continued from page 28

thing, send for the plans immediately before the rush commences. Even with the best of service, it'll take **Model Builder** a week or two to get them into your hands. (Include First Class postage for the fastest return. wrf) That's OK, because you have some homework to do: while you're waiting, go back through all your back issues of **MB** for 1983, starting with December, then November, etc., and read each of Mitch Poling's columns until you've read everything from 1983. When you're done with that, find everything you can by Larry Jolly (also in **MB**). You'll have to read his stuff twice, or however many times it takes you to understand it. His literary style is a bit quirky, but it is worth the effort . . . he knows what he's talking about!

If the plans still are not back, go back to 1982 and read Poling's columns for