

This dramatically lighted photo brings out the esthetic beauty that is typical of rubber powered scale models. Ship is excellent flyer.

## OLE TIGER" IN THE SHELL

"Ole Tiger" is bigger than most Peanuts, but it's all legal! The racer's low aspect ratio wings cram a lot of area into the 13 inch span limit. What's more, it's a great flyer. By Walt Mooney

This is a model of a really sharp little racing airplane called "Ole Tiger" by its owner-pilot, Bob Downey. The real airplane started out its life as the Miller "Little Gem."

One of the problems facing the designer of Peanut Scale airplanes is the quest for sufficient area while still keeping within the thirteen inch wing span rule. Racing airplanes with their low aspect ratio wings are a great solution to this problem. The next problem is to find the racing airplane that can be turned into a stable model. Ole Tiger is a very good configuration in this respect and gives, in addition, a nice long fuselage for a fairly long motor. The propeller that can be installed is quite large and the basic structure is relatively simple. The color scheme is gaudy enough to suit anybody.

In order to get by with a small horizontal tail, it was decided to use a symmetrical wing section as on the original. This has resulted in a model that is easy to trim and looks like a racer should.

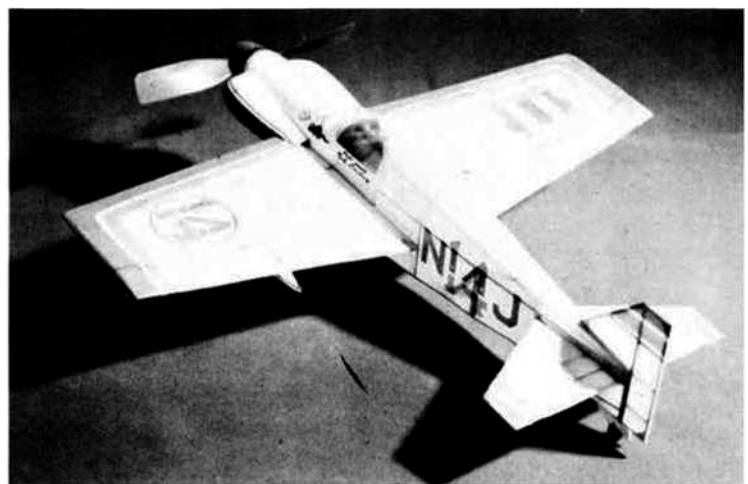
Structurally, the model consists of a slick balsa box fuselage with formers top and bottom and stringers over the formers to give the proper shape. Forward of the instrument panel, the top of the body is covered with 1/32 sheet balsa, and forward of the landing gear, the bottom of the body is carved from a solid block of balsa. On the model in the photos, the cowl cheeks are made of plastic formed over a balsa mold by means of a Vacu-form toy: however they can be carved from two balsa blocks with equal success.

The landing gear has a thin wire structure with sheet leg fairings and plastic wheel pants (On the model in the photos). Here again, balsa block wheel pants can be made with equal success, if plastic isn't your bag. A single half-shell mold is carved for the vacu-form operation. It is very important that this balsa form be exactly symmetrical about the wheel pant's horizontal axis if the plastic parts are to be usable as both the right and left halves of the pants. If there is any question as to whether your mold is symmetrical or not, its probably better to carve a left and a right mold and make sure they match.

The horizontal and vertical tails are simply made of 1/16 square sticks, directly over the plan.



Windshield, cheeks, and wheel pants were molded on Mattel Vacu-Form on the original. Pants and cheeks can be carved from balsa.



Short, stubby wings provide lots of area within 13 inch Peanut Scale limit. Plenty of stability in spite of small tail surfaces.

The wings are made with sheet balsa ribs, 1/16 square balsa spars on top and bottom, a 1/8 square leading edge, and a 1/16 by 1/8 trailing edge. Because the wing section is symmetrical, it is necessary to block up the leading and trailing edges above the surface of the plans while assembling the wings. The root rib is made of two layers of 1/16th. Most of the first piece is carved away to match the curvature of the sides of the fuselage. The wing tip is made from 1/8 square. The gussets on the wings and tail are extremely important if tissue wrinkling at the corners of the surfaces is to be avoided.

The nose block is made from two pieces of 1/8 sheet. One is circular to match the diameter of the spinner and the other is rectangular to fit into the front of the fuselage. Make the grain of the two pieces perpendicular to each other for maximum strength. I used a Peck Polymers thrust bearing and a North Pacific plastic propeller. The propeller hook is bent from 1/32 diameter wire. The rear motor peg is a straight pin; a length of wire will also do. Make sure the sharp ends are sanded off so your helpers won't get stabbed.

The spinner in the photo was made over a balsa mold on the vacu-form and again it can be made from a balsa block, if desired.

The fuselage is built up of two sides that are assembled over the plans. These are then made into a box structure by cementing them together at the tail post and adding cross braces at each upright. Formers are added and then the stringers are cemented in place. Only the top center stringer is notched into the formers, all the other stringers are cemented onto the outer edge of the formers. Both center stringers should be rather stiff 1/16 square balsa, the others are 1/16 by 1/32. After this assembly is dry, add 1/16 by 1/8 balsa doublers to the inside of the fuselage uprights where the leading edge, spars and trailing edge of the wings will attach. These three uprights on each side must be much stiffer than would be necessary on a more ordinary model because the rubber motor is directly in line with the wing and therefore there is no wing carry-through structure. All the wing loads, including impact loads have to be carried by these three fuselage uprights.

Before covering the model, all the structure should be carefully sanded. The leading edges of all the flying surfaces should be sanded to a rounded cross section and the trailing edges should be tapered. The wing tip has a rounded cross section but the tips of the tail should be left square.

All of the model is covered with white tissue. Water-shrink the tissue and when it is dry, give all the pieces a single coat of thin dope. The color trim on the wings, tail, and aft fuselage is red and blue tissue. Carefully lay it all out on a piece of transparent paper. Tape the colored tissue on a suitable cutting board and tape your layout paper over it. Using a razor blade, cut through every piece to get the trim and then

dope them in place.

Note that there is more than one of each piece of trim, so have enough layers of colored tissue under your layout to do the complete cutout job at one time.

The control surface outlines, the circle around the numbers on the wings, and the name on the cowling ahead of the windshield are drawn on with India ink. The color trim on the nose cowl, spinner, cheeks, and wheel pants is plastic model enamel. If these parts on your model are balsa, this trim can also be tissue or model airplane dope.

Note that at the aft end of the fuselage, the opening for the horizontal tail is triangular in shape so that the tail can be adjusted to help the flight trim of the model.

Start final assembly by cementing the wings in place to the sides of the fuselage. Each wing must have exactly the same angle of incidence and dihedral. Fit the cowl cheeks in place and cement them securely. Cement the vertical tail on the top of the fuselage and make sure it is aligned with the top stringer and is truly vertical. The landing gear wire should be cemented in place in the fuselage before covering.

The wheel pants and wheels are now installed. Five minute epoxy works well to hold the pants on the wire and the wheels are automatically held in place on the wire by the sides of the pants. Cut the wire fairings from thin sheet and cement them in place between the fuselage and the wheel pants.

The canopy was made on the vacu-form also, but again, it is possible to carve the top of the canopy from balsa, cement it to the former behind the cockpit, and then wrap the canopy around it from a single flat sheet of thin plastic.

The tail wheel is carved from scrap balsa.

The little stars in the trim are white. On the model, they were cut from a three inch sticky-backed American flag decal, and simply stuck in place.

The center of gravity of the model should be about a quarter of an inch ahead of the wing spar. The original model was nose heavy and required a lump of clay ballast at the tail for flying. One loop of 1/8th flat rubber a foot long will power the model, and flies the original in a mild manner. A loop of three sixteenths will result in a more sporty flight but the model is still very stable and easy to fly.

Racer planes of R.S. Hirsh, 8439 Dale Street, Buena Park, CA 90620 has a good 3 view for 50 cents. Racing Planes volume IV by Reed Kinert also has a three view and several photos of "Ole Tiger."