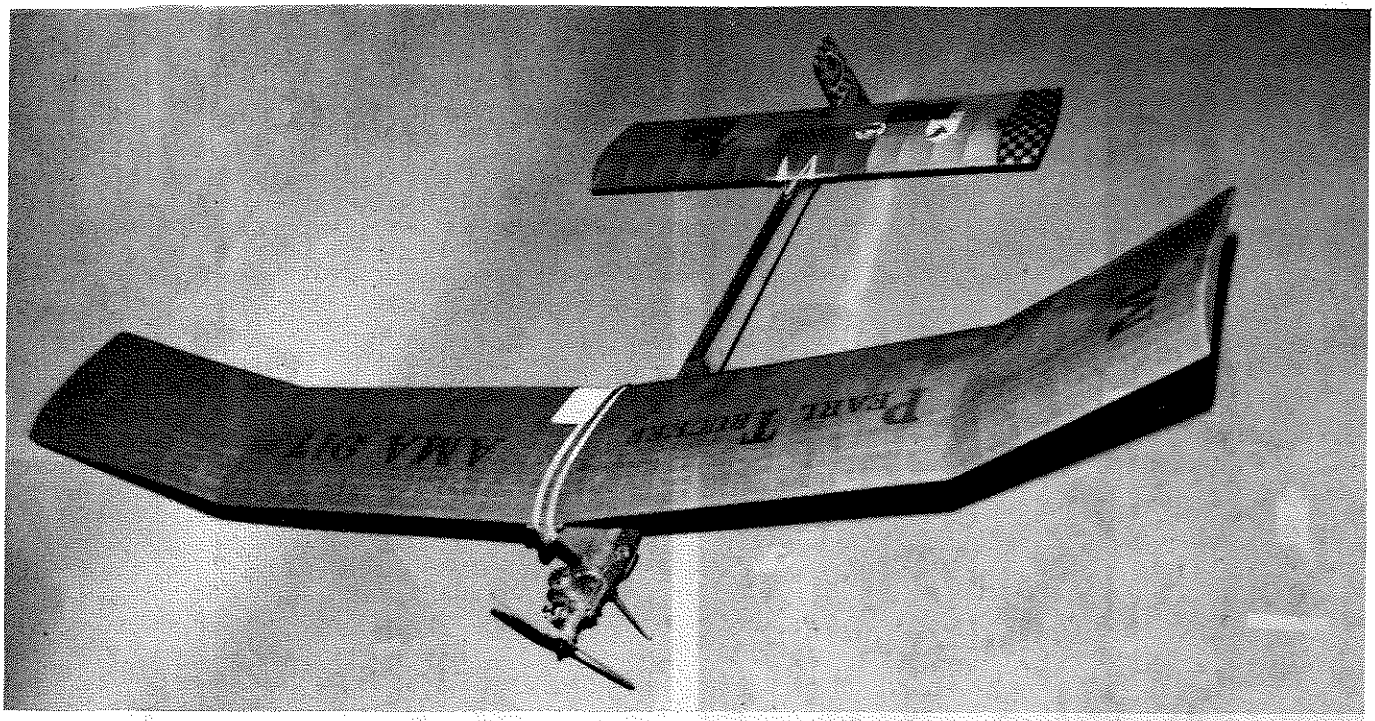


The 'PEARL TRUCKER'

By JERRY MURPHY . . . A high-performance A/B gas model with an unusual design and performance history. Wanna win First Place at a Nats? Let someone else fly it for you! No auto surfaces necessary.

• The Pearl Trucker is a high-formance A/B gas model with a very unusual history.

The model was designed after I moved to Colorado Springs from Dallas, in 1972. I knew that internal combustion engines suffered a considerable power loss with increasing altitude, but mine flew like the prop was on backwards at our 6,000 plus altitude. And the thin mountain air had less drag, which was good, but it also produced less lift, resulting in a glide much like that of a lead brick. You should try HLG here. I could never get one so high back in Dallas, but I still can't beat 40 seconds in dead air. Well, this change in flying field altitude produced a need for a new gas model. In order to obtain the performance I desired, this new model must have a low power loading and low drag in the climb, coupled with a good glide.

In order to obtain the desired glide performance, a light wing loading of 5-1/2 ounces-per-square-foot or less was needed, so for a .19 to .23, that meant an all-up weight of approximately 23 ounces and 540 squares. In order to obtain low drag, an aspect ratio of 6.67 was chosen. To make it stable, a 36% stab worked out nicely. This works out to be a model that looks much like a cross between my good friend Bill Chenault's "Pearl" and Sal Taibi's "Starduster."

The parts of this design that are truly original are the moments and sections. The wing airfoil is an original 7% undercambered section that has a good mixture of high speed performance to help produce the desired climb, and a good glide.

The rather thick (9%) stab airfoil produces enough lift in the power phase to force the undercambered wing into its zero lift angle without the complexity of auto surfaces. Don't attempt to reduce the induced drag of this stab by thinning the section without going to auto surfaces.

How well did this all work, you ask? Well, the early trim flights here went very well, and the model won B Gas at Grand Junction and placed second in A Gas at the Rocky Mountain Championships. Its first attempt at sea level flying in 1974 was at the Lake Charles Nats, where it looked like a gas-powered ornithopter. The wing flutter was so bad that it continued even after the engine cut. So, back home in Colorado, the anti-flutter braces were added and the original silk covering was replaced by double tissue.

In 1975, it was back to Lake Charles, and now everything was fine on the test flights. But when A Gas day came, everything wasn't right with me. I was sick in bed, in the dorm, with the flu. Because our team, the Cliff Cloud Climbers, was in a very close race with the Dixie Whiz Kids, and my A Gas event was one of our declared events, my teammates asked to proxy fly the event. Homer Smith agreed after studying the rule book, and the rest is history. In the capable hands of Mike Fedor, assisted by Mike Ransom, Curt Sanford, and Joe Fedor, the Pearl Trucker won A Gas. All this while I was trying to die back in the dorm. The Dixie Whiz Kids went on to win the team championships.

A Super Tigre G-21 .19, swinging a Cox Gray 8 x 4, was used in Lake Charles. The fuel was Casey Hornbeck's 15P Windx. A K-Mart camera timer was used in a pinch-off mode. In order to get good engine stopping, a check-valve should be used in the pressure line.

The Super Tigre was lost in a fly-away at the 1971 Chicago Nats. In November of that year, I received a letter from a young man who found my model while walking his dog. After 3-1/2 months in the trees, the Super Tigre looked pretty sad, but with the help of WD-40, it cleaned up well enough to win the Nats.

Let's get on with the building of this model. I always like to start with the fuselage. The basic construction is very simple, if you have ever built a "Starduster." First, cut the pylon from 1/4 inch sheet and the fin from 3/32

#2783

sheet. The rear part of the fin goes through the fuselage. Draw the side on a good straight sheet of 1/8 sheet and cut it out. Using the bottom view as a guide, cut the notch for the fin in the 1/8 x 3/4 top and bottom parts. Note that the fin aft of the T.E. of the stab (with its grain shown vertical) is one piece. The sub-fin, which is under the stab, is a second part which is glued to the bottom of the fuselage. Now pin the right hand side down to the plans and install the 1/4 x 1/8 stringers under the pylon. After these are dry, install the pylon, fin, and 1/8 x 3/4 stringers.

After all that has had time to dry, add the left hand side. Now remove the fuselage from the plans and add the 1/8 plywood firewall. Be sure to drill the holes for the mounting bolts and install the blind nuts before the firewall is installed.

If you are going to use a metal tank, now is the time to install it in the right hand side of the fuselage. Cut the nose blocks from 1/2 inch thick balsa and tack them in place. Mark them for the firewall and gas tank. Then remove them for carving. Don't forget to leave a flat area for the timer. Add the 1/8 plywood landing skid mount and final 1/8 plywood firewall. Wrap the nose with fiberglass and give it a good coating of fiberglass resin.

I finished my Pearl Trucker with red tissue and NFFS Supply chrome mylar.

The stab is built directly over the plans, and no special instructions should be needed. My original used "Starduster" type tips, but I have switched to the simpler type shown on the plans. The stab is finished with tissue. I don't feel that the iron-on coverings should be used here, due to their weight. The stab on my original weighed in at 1.4 ounces, or 39.4 grams, for you metric types.

The most important part of a free flight model is the wing, so here we go on it. Lay out the L.E. and T.E. on the plans. Jack up the inboard or leading edge side of the T.E. stock with 1/16 sheet balsa scraps. Now install two ribs in each panel, and after they are dry (Hot Stuff makes this go real fast), slide in the bottom main spar and rear spar. Glue these in place and then add shims along their length to prevent any sag. Now add the ribs, spars, and plywood dihedral braces. After everything is dry, mount the tip panels to the main panels. Note the tip washout as called out on the plans. This will help your model fly in rough thermal air.

Now add the center section dihedral. Once all of this is dry, add the 1/16 sheet shear webbing and 1/16 x 1/8 anti-flutter braces. One note about the tissue slightly oversize and laying it in place. Now, starting at the main spar, use thinner to lay it down. Work first toward the L.E., then T.E. from the main spar. After the tissue is down, apply a very thin coat of clear dope. After the second layer of tissue is installed, finish the wing as if it were single covered.

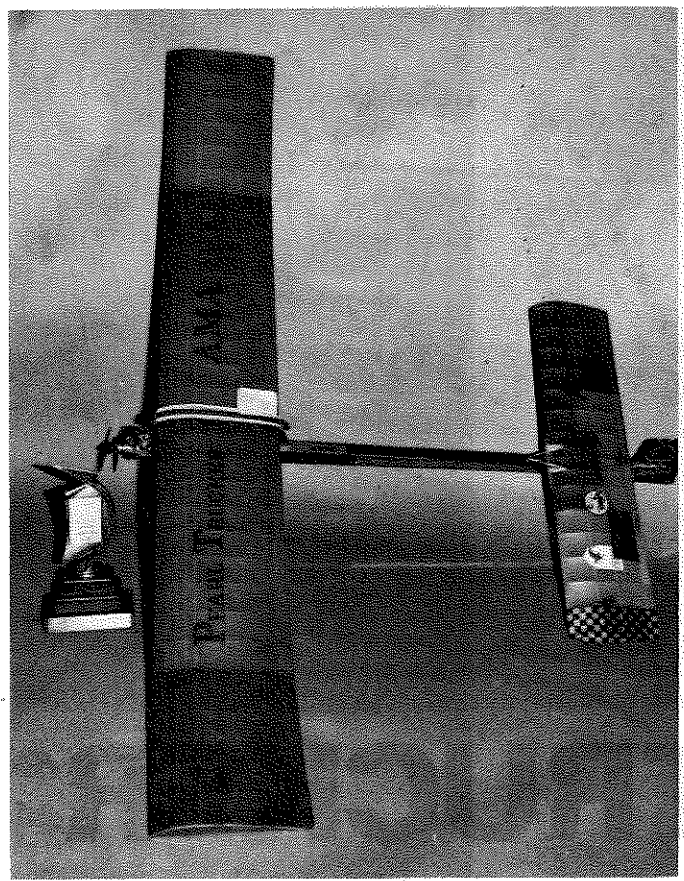
FLYING

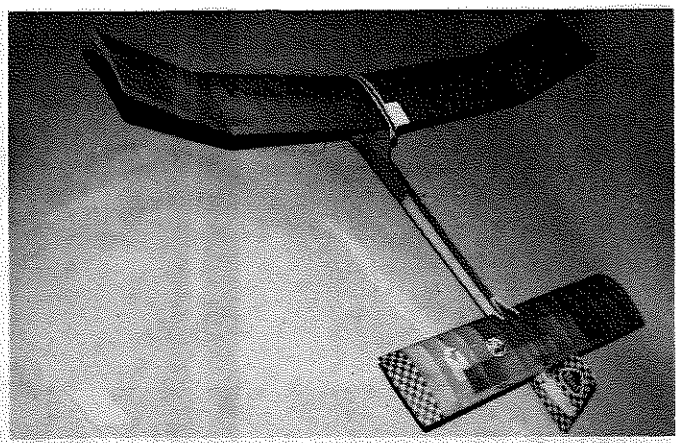
Check that the CG is located as shown on the plans. Check for warps and for the "English" as shown on the plans, ie., wing wash-in. Before you go on to the "tall grass", as called out in every construction article, make sure your fuel system and timer are operational. The only good check for this is a test run at home.

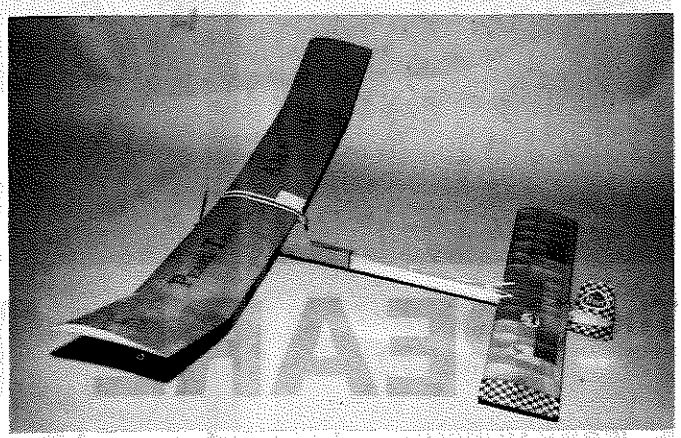
Now if everything is okay in the powerplant department, go out and find that tall grass. Shim the stab until a smooth glide is obtained.

My Pearl Trucker flies a very steep right/right pattern. The trim is right stab tilt, 5 degrees left thrust, and no down thrust. Once you are happy with the hand glides, fire it up for about 5 seconds full power and let her rip. Mine flew off the board, with only a little right rudder required. A good way to add rudder is to glue T.E. stock to the fin. I suggest not using more than a 1/4 inch at a time. A little bit goes a long way on a high speed model like this. •

MODEL BUILDER







Three different views of the "Pearl Trucker". It is a cross between Bill Chenault's "Pearl" series and Sal Taibi's "Starduster". Designed for flying at Denver's mile high altitude, it climbs like a rocket at normal levels. Thick stab (9%) eliminates need for auto-surfaces.

#1 2783