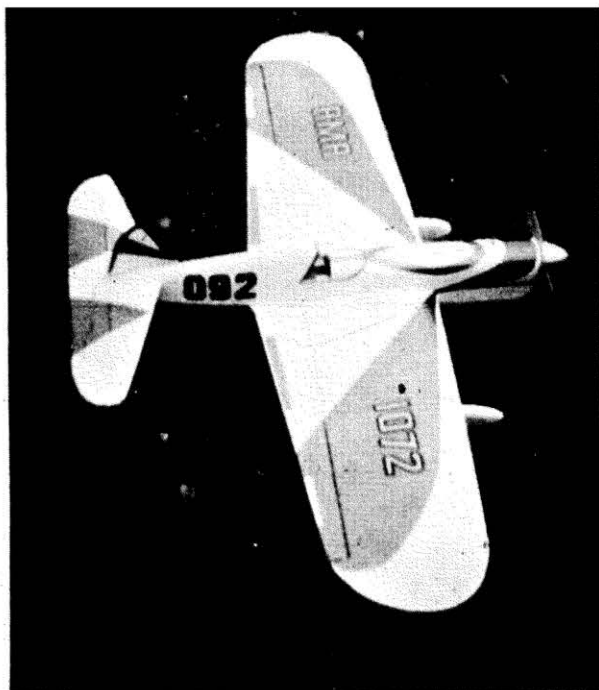




bluebird

by Charles A. Mackey

A model designed to the taste and the requirements of exacting stunt flyers

● There are many types of model builders and among them is the strange creature called the stunt flier. There are also many types of stunt fliers and these can be broken down into three classes. First, there is the competitor. He demands the best in his stunt ship. Next, there is the "Sunday" flier. He has passed the profile stage and wants something pretty to look at and easy to fly. We envy this type of flier—he probably has the most fun!) Then, there are the experimenters. For some reason, we find ourselves in this last class. There are many combinations of the three. We hope the "Bluebird" will please all!

As a rule, the experimenters are confused (or go through a confused period) and for good reason. We pick up an article on stunt ship design and read that flaps are not necessary for top performance, so we cut them off—only to find our stunt ship won't stunt! We read that a long tail moment is required for good stability and square maneuvers. We build an extra long one and find it takes 180° for a verticle eight. Time and time again we read the importance of a light wing loading. We skimp and save on cement and dope and weigh our sawdust to see how much weight we can save and then read where a guy wins the "Nats" with a 50-55 oz. airplane no larger than ours. Is it any wonder that we are confused?

Is everybody right? No, it can't be! Is everybody wrong? No, that can't be right either! Well, what's the story? Maybe everybody is right, when they are speaking of their own airplane. There are so many things that affect the flight of a stunt ship that two ships

of the same design rarely fly identically; however, if we are careful we can come close. A stunt ship is a combination of theories and ideas that work together. To change or rearrange any of these ideas will change the flying characteristics. Stunt ships have been around for some time now and it looks as if someone should have found the perfect set-up. We think hundreds have, but only to their own personal satisfaction. You are as likely to see everyone flying the same type of airplane as you are to see all the ladies in the Easter Parade wearing the same hat!

The "Bluebird" is approximately the twelfth in a series of designs of smaller-sized stunt ships — the idea being to use standard-size wood and cut costs and required space without loss in appearance or sacrifice in performance. We will give you the ideas that went into the "Bluebird," but we do not mean to imply that they will hold true on any stunt ship.

The wing was worked out with the standard 36" length of balsa in mind so no splicing was necessary. The "D" tube structure was chosen for its light weight and extra strength, which is
(Please turn to Page 39)



Above: Author Chuck Mackey gets ready to fuel up the original model. The ship can be flown fast or slow, depending on the propeller used, the needle valve setting, and your own stunting style.

required to support the landing gear. Oversized flaps were used to compensate for the smaller wing area with the movement cut down to 20° in each direction to prevent stalling. With this method, you get the lift when you need it. We think this gives better results than the larger ship without flaps that has a lighter wing loading, especially in the wind.

We have read that a 25% symmetrical airfoil has little more drag than a 15% foil. In practice, however, the thicker wing ship seems much slower. We use a thick wing section for slower speed and extra lift. We have had no trouble with high speed stalling on this design. The taper in the leading edge is strictly for appearance. We have found that the straight leading edge with blunt tips has a tendency to flop around in a small radius. The "Bluebird" was designed around a Fox .29 and a Froom tank. Since then, "Bluebirds" have been flown with .19, .29, and .35 displacement engines. A .23 or .25 should work excellently. You can usually adjust your speed by a change in fuel, prop, plug or needle valve setting. Usually we find it takes two or more changes to make the desired adjustment. If you prefer extra slow flying, we suggest a small spinner or a drag tab on the outside wing tip. If .35 engines are used, add tail weight as necessary. We think we are safe in saying proper balancing and trimming is just as important on stunt ships as it is on Free-flight models.

There are many ideas (literally) going around about moments and we don't disagree with any of them. We would like to say that moments on the "Bluebird" have proven favorable to all that have flown the ships. The elevator requires 40° to 45° movement in each direction to compensate for the smaller tail section and short length.

BILL OF MATERIALS (Balsa unless otherwise specified)

4- $\frac{1}{16}$ " x $\frac{3}{16}$ " x 36"	Rib cap strips
2- $\frac{1}{16}$ " x 1" x 36"	Wing spar webbing
3- $\frac{1}{16}$ " x $\frac{1}{8}$ " x 36"	Wing trailing edge
3- $\frac{1}{16}$ " x $\frac{3}{16}$ " x 36"	Wing spars, leading edge
1- $\frac{1}{4}$ " x $\frac{1}{4}$ " x 36"	Engine mount bracing
1- $\frac{3}{8}$ " x $\frac{3}{8}$ " x 12"	(bass) Engine mounts
6- $\frac{1}{16}$ " x 3" x 36"	Wing ribs, tip, leading and trailing edge sheeting
2- $\frac{3}{32}$ " x 3" x 36"	Fuselage sheeting
2- $\frac{1}{8}$ " x 3" x 36"	Wing tips, fuselage sides
2- $\frac{1}{4}$ " x 3" x 36"	Stabilizer, elevator, wing flaps, fuselage rear
1- $\frac{1}{2}$ " x 2" x 36"	Wheel pants

$\frac{3}{4}$ " x 2 $\frac{1}{2}$ " x 12" balsa block; $\frac{1}{16}$ " plywood; $\frac{1}{8}$ " plywood; $\frac{1}{16}$ " diam. wire; $\frac{3}{32}$ " diam. wire; 2 Veco control horns; 3" bellcrank; Froom 21C fuel tank; nylon hinge material; Silk-Span or similar covering material; celluloid; 2" spinner; "J" bolts; .19 to .35 engine; propeller to suit; mounting bolts; clear dope; colored fuel-proof dope; cement.