'WAR BABY'

Designed for modelers hampered by wartime shortages, this gassie still competes with the best

by FRANK V. B. EHLING

IT IS becoming more and more difficult for the civilian to suppress his optimism about an early end to the war. We seem to be getting nearer and nearer to it all the time. The end of the war will mean motors, coils, condensers and other gas engine supplies plus plenty of balsa, tissue, cement, rubber wheels, metal fittings, etc. It may seem to most that since the war situation is constantly improving, so, too, is the model supply situation. However, that just isn't so as many modelers in small towns and outlying districts have found.

To meet this shortage of critical materials, the *War Baby* was designed almost entirely of "non-strategic" items. The structure is entirely of bass and the beauty of this project is that the plane has been designed expressly for this purpose. Cut everything to the shape shown using the exact sizes noted. This eliminates the bother of "adding 25% more thickness" and other vague instructions for substitutes on balsa drawings.

I spent some time trying to figure out a way of building a gas model without a gas engine but I finally gave up; that's one very small strategic situation you'll have to solve yourself. I have specified brass for the landing gear tie-down supports, but any metal, even "tin can metal," may be used.

Another "strategic" item left out of *War Baby* is the usual series of graceful curves. Beginners and lazy builders will love this omission but, surprisingly enough, the plane will still look plenty good floating around up in the blue.

CONSTRUCTION - If possible, try to obtain a selection of clear-grained bass. Any bass (or other hardwood) can be used and performance will suffer little, but if you have any choice in the matter choose the best of the lot because straight, clear grain is very important in the hardwoods since the sizes are so small the pieces must carry a greater proportion of the load.

WING - Start the wing construction by cutting out the ribs. All the ribs may be made alike (except for chord length) as shown, or an aerodynamic "twist" may be incorporated. The purpose of this twist is to improve the stalling

characteristics of the wing. By "twisting" the wings, they may be so constructed that a part of them will stall before the remainder. As soon as a portion of the wing loses lift the plane will begin to "settle," thereby increasing the angle of attack and restoring lift to the whole wing. Either the tips or the roots of the wing may be made to stall first. By lining up the ribs so their upper surfaces are in a line, a "washin" is created thereby causing the roots to stall first. By lining up the bottoms of the ribs, a "washout' effect is created causing the tips to stall first. Both effects are now in use in several large airplanes and there seems to be little to choose between them. From a construction point of view the first case is more simple to build: make the required number of ribs, all exactly alike. Sand them in a group so their curvatures are identical. Make the tip ribs by cutting off the bottoms of the ribs as shown by the dotted line on the rib drawing. When assembled on the spar, the ribs will have a "wash in" effect. Try this as an experiment and we'll bet *War Baby* won't stall, even if you try!

During assembly, use plenty of cement as hardwood doesn't absorb it as well as balsa and you'll need good, strong joints to bring out the full value of the stronger wood.

After the two wing halves have been completed, assemble them with the wing gusset shown by the dotted lines in the small front view.

FUSELAGE - Tack down the plan and assemble the various parts. Place cement between the joints and hold them in place by pins on both sides of the pieces. After the side frame has dried, lay down another set of pieces directly on top of the first and assemble. After this second frame has dried thoroughly, remove the pins and cut the two frames apart with a thin razor blade. In this manner the two sides will be identical. Join the two sideframes into a fuselage by cementing the crosspieces in place. These are best held together during drying by driving pins directly through the frame wood into the crossbrace lengthwise. After drying, remove the pins and the fuselage is complete. Bolt the landing gear in place as shown on the drawing. Cut the engine bearers to the required length and cement in place. Use plenty of cement on these as they must withstand the vibration of the engine.

TAIL SURFACES - The stabilizer is of simple construction and should be thoroughly dried before removing as a warped stabilizer will play hob with a flying model. The rudder is made next by assembling the various pieces shown. Cover and assemble.

COVERING AND FINISH - Cover the wings and fuselage using only tiny "dabs" of cement or dope on the structure members to hold the covering in place. After covering, water dope throughout letting each coat dry thoroughly before applying the next. Inspect the model closely to prevent the covering from shrinking and warping the model out of line. After the covering is thoroughly dry, apply the first coat of dope. Use as many coats as necessary because dope will greatly increase the strength of the covering.

FLYING - Try to subdue your enthusiasm to fly *War Baby* long enough to give her a few preliminary gliding trials. Toss the plane from about waist height first to ascertain if she floats. If she dives over on her nose, add a little weight to the tail, move the wing forward or move the battery box to the rear. Try it from shoulder height and if the plane swoops up into a quick stall, do the reverse of the above. After a number of these glide tests, and not until you are absolutely certain of the correct balance, start up the engine, retard it down to about one-third power and let her go! *War Baby* should climb to the right under power and circle to the left without power. If she doesn't, adjust the rudder until she does!

After a smooth flight is obtained, give 'er the gun and watch *War Baby* cut a figure eight in the blue!