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the center section. After forming the landing gear of ¼ inch spring steel, slide it into the first three ribs of each panel. The ¼ inch white pine (yardstick) is then slid into place followed by addition of the trailing edge, leading edge, remaining ribs and secondary spars.

The gear isn't fastened down with J-bolts until the wing is ready for leading edge planking. By leaving the gear loose, construction can be accomplished on a flat surface thus preventing warps. Be sure and add the 1/16 inch sheet plywood brace at the bottom and perpendicular to the main spar and some extra bracing if you are going to fly off rough terrain or expect a lot of rough landings. The wing tip braces are 1/16 inch sheet strips sanded to the proper shape after drying in place.

The rudder, stabilizer and elevator are made of ½ inch sheet. After shaping the wood to the proper airfoil, cut the center out of each section and insert 1/16 sheet ribs into place. The ribs can be sanded to the proper airfoil after drying. It should be noted that the stabilizer and elevator has a symmetrical airfoil while the rudder is flat on the outboard side and curved on the inboard. This is called a lifting rudder so named because it lifts the tail of the plane to the inside of the circle—thus the nose is held out.

The fuselage is typical with ¼ inch sheet sides with formers spaced between. A piece of ½ inch sheet forms the top with 1/16 inch sheet cross grain planking on the bottom. A Froom T 21D tank fits perfectly after the filler tube has been moved ¼ inch toward the center so as to clear the motor mounts. A home-made tank of comparable dimensions will work equally well if a baffle plate is installed about one inch from the rear of the tank. In either case check the tank thoroughly for leaks by submerging in water and forcing air into one vent with the rest closed. Any leaks can readily be identified by bubbles. The tank is then installed permanently and the rest of the fuselage constructed around it. Be sure and add the 1/16 sheet doublers after inserting the wing. The purpose of the ¼ inch square strips at each corner of the fuselage is to allow for more rounding of the corners without sacrifice of strength.

The swivel tail wheel is quite simple but not seen very often. It consists of a 1/16 inch wire bent to the appropriate shape extending through the center of a piece of hardwood. A washer is soldered on each end in contact with the hardwood to hold the wire in place and yet allow the system to swivel. Once the front gear is aligned to track properly the tail wheel will fall right in line. I accidentally discovered that this swivel tail wheel enables the flier to make the plane go backwards by walking the handle in the direction he desires to make the plane move. This is not only good for a laugh but convenient when flying with a stooge.

A cowling not only adds to the appearance but cuts down on drag and helps cool the engine. I have used partial and complete cowls with equal success on Ruffys. My only reason for abandoning the Stuka type was the fact that it is almost impossible to keep from occasionally scratching the bottom on concrete flying sites. The type shown is made of ¼ inch thick blocks which are carved to fit close to the engine and are scooped out in front and rear to help air flow. The construction of the cowl and entire nose section are purposely of light construction. For this reason it is necessary to cover the entire nose section with fiber glass. Ruffy II did not have this reinforcement which resulted in a rebuilding job at 105 flights. Ruffy III has

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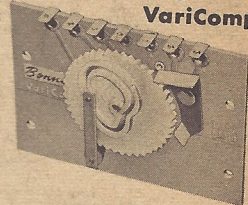
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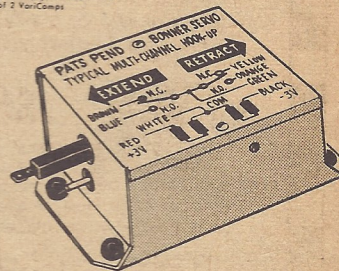
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