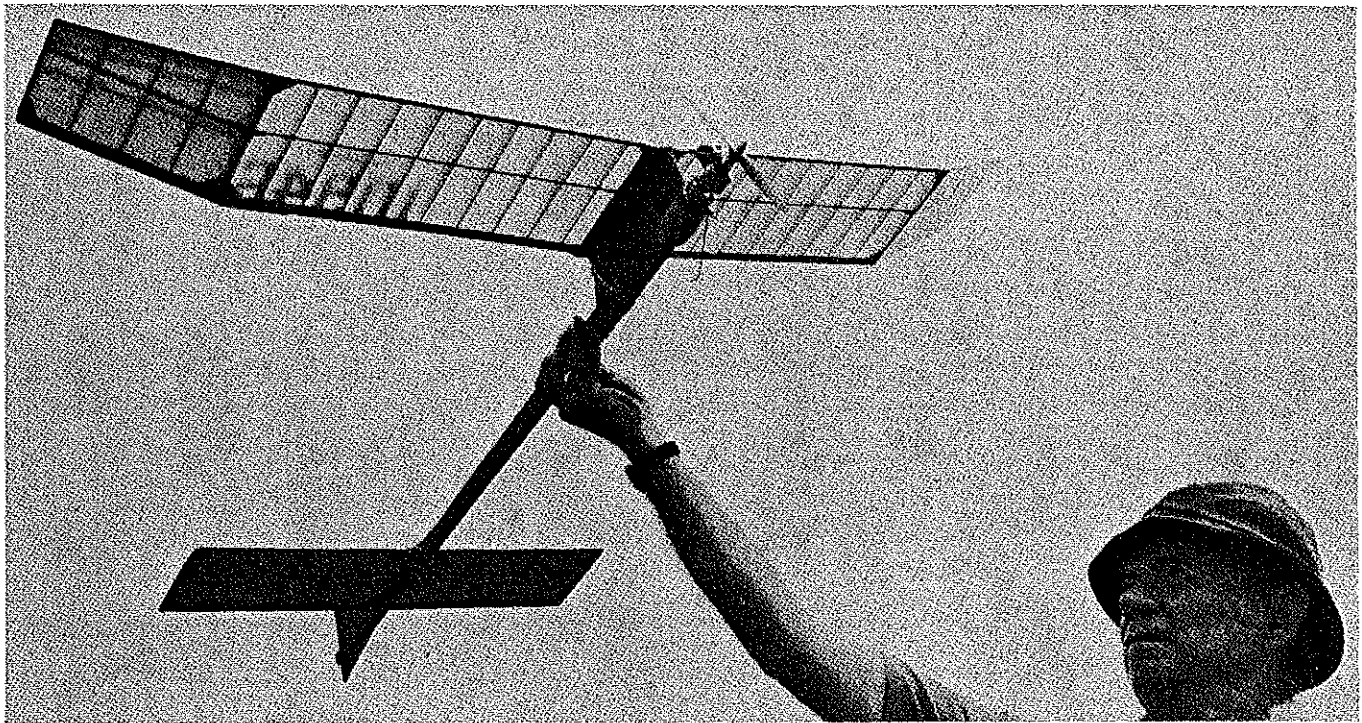


This Half-A has a pedigree that will satisfy the most discriminating free/flyer. 178

Design by Jim Clem

Text and Photos by Larry Kruse



Jim and the "C.B." Many experts fly his designs, a tribute to his reputation of many years standing. The C.B. is a big '76 winner.

JUST AS SURELY as names like "Citation" and "Whirlaway" and "Bold Ruler" and "Foolish Pleasure" conjure up glimpses of power and motion in the minds of horse race fans, so names like "Witch Doctor" and "Scrambler" and "Fire Wagon" and "Okie Bird" set free visions of swiftness and grace in the minds of free flyers. Make no mistake about it, blood lines tell in any sort of competition.

Jim Clem's newest, the "Country Boy," is the latest in a proven blood line marked by contest wins all the way from the smallest local meet to consecutive placings at the Nationals over a ten-year period.

The "C.B." (more than a timely abbreviation) began curiously enough, not as a successor to the currently popular "Okie Bird" series, but as a favor for a friend.

Bob Frazier, who had been instrumental in the development of the original Witch Doctor 800, had been inactive as a modeler for several years and early in 1976 decided to get back on the competition trail. Jim responded with the Country Boy, the first version of which was more or less a refined version of the Fire Wagon, only with the rudder placed atop the stabilizer. In conferring with Jim about the design, Bob liked everything about it except the rudder location which was difficult to keep in trim, so the two friends sat down at the drawing board and Jim drew while Bob provided counsel. The present configuration with its aft rudder was the end product.

The overall parameters of the ship were within what Jim has come to consider over



a number of years as an ideal compromise for 1/2A. With a relatively high aspect ratio (7.5 to 1), a good gliding airfoil (Lucky Lindy), and 275 sq. in. of wing area, the plane is small enough to climb swiftly and yet glide well, weighing in at 7 oz. or lighter if built judiciously.

The Country Boy is, if anything, an upstart on the contest circuit. While the first C.B. was built in April of '76, it has been widely tested and refined regionally since then by Ed Cadwell and Bob Frazier of Houston, Bill Jenkins of Memphis, Jim O'Reilly and John Epley of Wichita. It

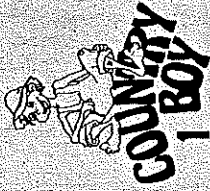
boasts, albeit modestly at this time, of first place wins in both 1/2A and A at the Fall Freeflight Bash in Houston, first at the Tulsa Glue Dobbers Freeflight Fling, first at the Wichihawks Annual Fall Rally, and fifth at the '76 Nationals in Springfield, despite a five second engine run on the fourth flight. Future winning potential comes built-in as part of the Country Boy's plans.

#### Construction

Although "cut and paste" instructions aren't necessary in building the C.B., some commentary on specific areas might be of help.

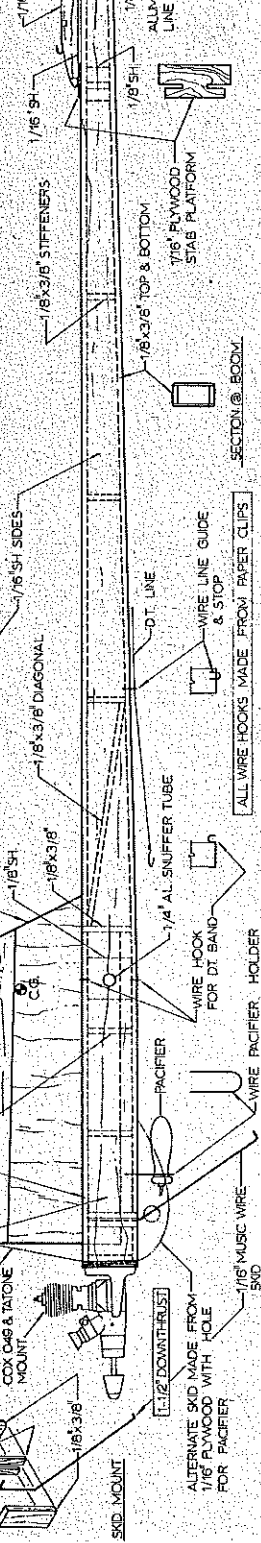
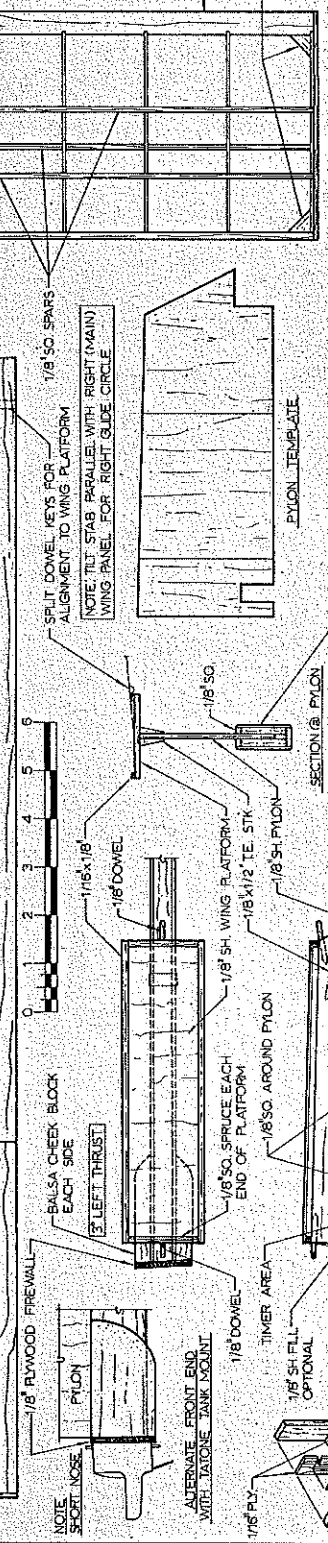
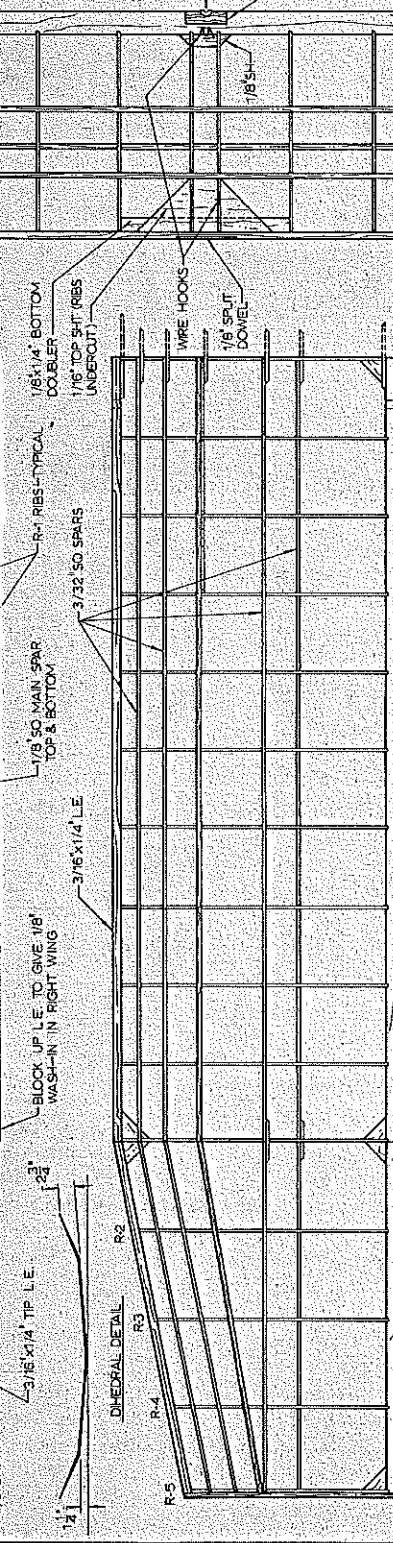
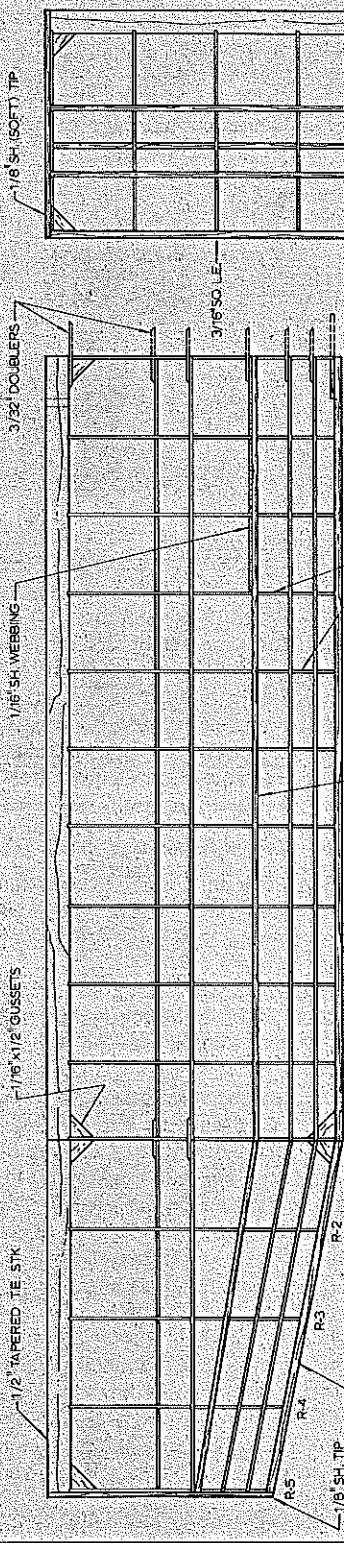
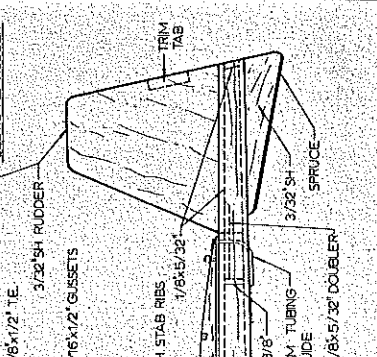
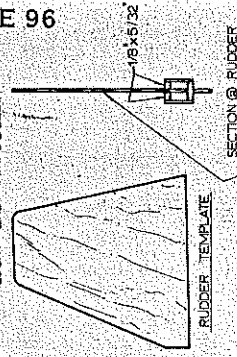
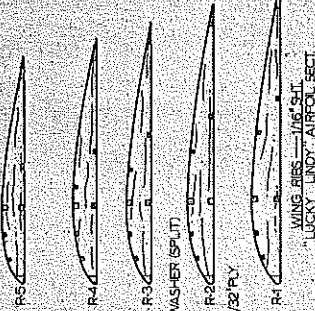
The wing is built flat on the board in conventional fashion; however, the right wing main panel should have 1/8" wash-in built in (L.E. blocked up 1/8" higher than the T.E. at the polyhedral break). It is well to frame the wing with the L.E., T.E. and most of the ribs, omitting all spars and the ribs at the center dihedral break until after the wing panels are assembled at the proper dihedral and polyhedral angles. This procedure makes it particularly important that no twist is built into the wing (an easy thing to do!) as the top and bottom spars are added. In short, pin down each panel as the spars are installed, supporting the other panels by blocking them up appropriately to prevent over-stressing previously formed joints. Gussets and 1/16" sheet webbing (optional) complete the basic framework.

The stabilizer construction differs from the wing only in that the bottom spar is



Designed By JIM CLEM

WING AREA - 278.56 sq. in.  
WEIGHT - 20.02 oz.  
RIGHT POWER - RIGHT GLIDE



INKED BY: BILL BLANCHARD DEC 1976

## Country Boy

placed on the plan along with the leading and trailing edges. The ribs, top spars, and sheeted portion of the front center can now be set together, with the sheeting providing the necessary strength for the D-T hooks. The remaining construction is detailed on the plans.

The fuselage, likewise, presents no surprises, except that the basic framework of  $\frac{1}{8} \times \frac{3}{8}$ " longerons and vertical members,  $\frac{1}{8}$ " sq. strips in the pylon area, and  $\frac{1}{8} \times \frac{5}{32}$ " strips in the rudder area are all assembled (complete with the pylon and the rudder, of course) directly on the plan, sans sheet fuselage sides, at the moment. Pay particular attention to perfectly aligning the rudder and the pylon during the basic framing process. Any misalignment will show up quickly (you'd be amazed *how* quickly!) in later flight testing.

When the fuselage framework is dry, remove it from the plans and use it as a template to trace the  $\frac{1}{16}$ " sheet sides. Use Tite Bond or some other aliphatic resin glue to cement both sides in place at the same time and weight them down 'til they're dry.

The firewall, depending on which motor mount is chosen, and the nose blocks can be epoxied in place. It is extremely important to get the firewall set in at the correct left and downthrust angles. One tip that might be useful would be to make templates of the correct thrust angles from  $\frac{1}{32}$ " plywood, and carefully sand those angles into the front of the fuselage before epoxying the firewall in place. If you feel confident in simply laying the fuselage over the plan to get the correct angles that's fine, but you'll put a lot of work into the C.B. only to see it screw itself into the ground if those thrust angles aren't accurate.

The entire ship, fuselage included, can be sanded, doped and covered with Japanese tissue or your favorite covering material. One new slant that might be of interest is the finish used by Jim on the original Country Boy. The ship was covered with the aforementioned Japanese tissue, water-shrunk, and then given three coats of clear nitrate dope. The nitrate dope was then covered with one coat of clear epoxy paint for fuel proofing. After an entire contest season of high-nitro fuels, the plane shows no fuel soaking and has picked up no weight from fuel residues penetrating the finish. The finish is simple, painless and effective, without a weight penalty to pay.

### Flight Trimming

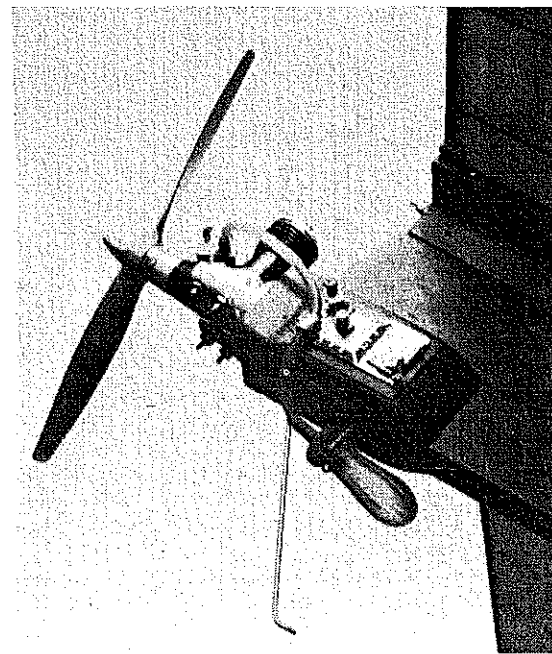
Before flying, check the airplane carefully for unwanted warps. All flying surfaces should be flat with the exception of the right wing which should have  $\frac{1}{8}$ " wash-in. Check the balance point; it should be at the C.G. location shown on the plan. If necessary, use lead to correct for any imbalance. Make sure the model has the left



Nose up and with engine running, Jim tops off the fuel. The ship in the picture does not have a pacifier tank as shown on the plan.

Right: Tatone TickOff Half-A timer pinches off fuel line from pacifier tank held by U-shape wire holder. Engine has left thrust.

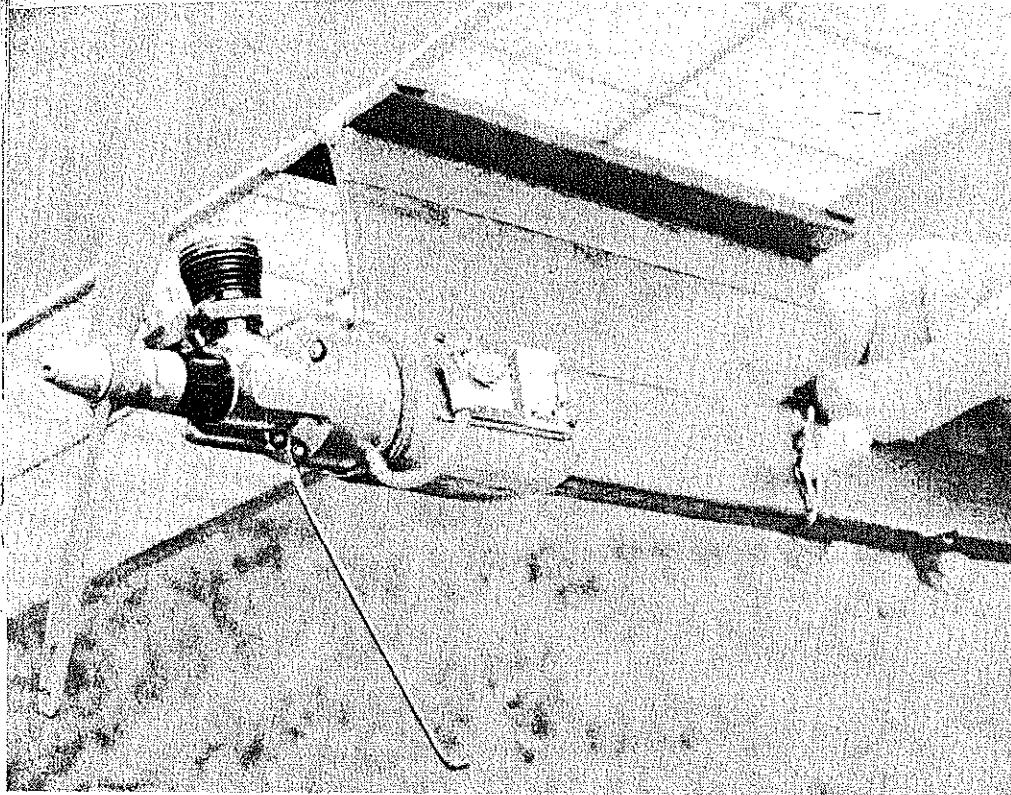
Below: Principal difference between C.B. and earlier Firewagon series, is that an aft vertical tail replaces previous bottom location. At right dihedral break there is  $\frac{1}{8}$ " wash-in.



engine thrust shown on the plan.

Pick a time when the winds are calm and hand glide the plane several times. It should have a long flat glide with a gentle right turn. Stabilizer tilt is used for the turn (right tip high looking from the rear). If stalling or diving occurs and the C.G. is correct, add or remove incidence from the rear of the stabilizer accordingly.

When the glide looks pretty good, and you have plenty of courage, it's time for the first power run. (You can make the final glide adjustments after a few power flights.) The first flight should have a power run of two or three seconds, prop on forwards, engine running top speed. Launch the ship at a steep angle ( $75$  to  $80^\circ$ ) slightly to the right of the wind. It should go slightly to the right and keep its



Another way to go is the metal Tatone tank mount as shown here. Snuffer tube and fuse show clearly. Final wing has multi spars.

## Country Boy

nose up. Watch for any looping tendency or zeroing out. Either one of these problems can be corrected by removing or adding balsa ( $1/32$ " increments) to the  $1/16$ " incidence block under the trailing edge of the stab.

The Country Boy should climb steeply to the right and make one or one and a half turns in nine seconds. Transition from power to glide should be smooth without any loss of altitude. The transition should be as good on a 4.5-second run as it is on a longer run.

Trimming problems often arise when flying a new airplane for the first time. If a model is to "fly off the board," all of the

built-in adjustments must be in the right proportion to one another at the outset. This most likely will not happen. There will be some adjustments necessary before the ship is flying at its full potential. Knowing precisely what adjustments to make to solve a particular power problem can sometimes be a challenge. To help you deal with some of these situations, listed below are power problems and the adjust-

Well, the caption info indicates that Jim is holding "both" versions of the Country Boy. But it was taken during a test session and job at right has bottom fin and multi-spar wing while one at left has simpler structure.



ments necessary to correct them. Much of this information has been covered before in other construction articles relating to flying and trimming low thrust designs, but may serve as a welcome review.

**Problem:** Under full power, the airplane begins climbing steeply to the right. As the speed builds up, the right wing drops and the ship levels out.

**Solution:** This is caused by one or a combination of the following: Not enough left engine thrust, not enough wash-in on the right main wing panel, too much right rudder or too much incidence. Keep the latter very much in mind. If you built in the left-thrust shown on the plan and you have the right amount of wash-in called for, remove  $1/32$ " from the incidence block under the rear of the stab. This will probably cure the problem. However, you may have to add a small amount of weight to the tail to compensate for the glide. So, in effect what has happened, the C.G. has been moved aft to get the desired climb. Too far aft, however, and the ship will level out and dive. Another point to remember is that when you remove balsa from under the rear of the stab, it removes some of the right turn. Conversely, when you add incidence, right turn is increased.

**Problem:** The airplane leaves your hand at full power and within a few seconds the right wing comes up and the plane rolls to the left.

**Solution:** This is caused by too much wash-in on the right wing panel. Excessive left engine thrust and left rudder can add to the problem. Make one adjustment at a time, however. Remove any excessive wash-in and try again. If this does not work, try removing some left engine thrust. If it still has a left tendency, try right rudder tab at  $1/64$ " increments. For accurate rudder tab adjustments use strips of balsa and taper to trailing edge shape. Usually, a strip  $1/4$ " wide and  $3/8$ " long will suffice. Glue the strip to the right side of the rudder with the wide edge flush with the rear of the rudder. Remember, too, that rudder tab adjustments will not only affect the turn under power but the climb angle as well. When right rudder is added, the climb angle will decrease; conversely, when right rudder is decreased, the climb angle will increase.

**Problem:** Under full power, the ship dips to the right before assuming its correct power pattern.

**Solution:** Additional left-thrust will eliminate this problem. Once trimming is complete, the only other ingredient that requires particular attention is practice. When you like the way the C.B. flies, practice with it until you feel confident of its performance and confident in your own pre-flight routine. The combination of a well-tuned airplane and a practiced flier will serve to enhance the winning tradition of the Country Boy.