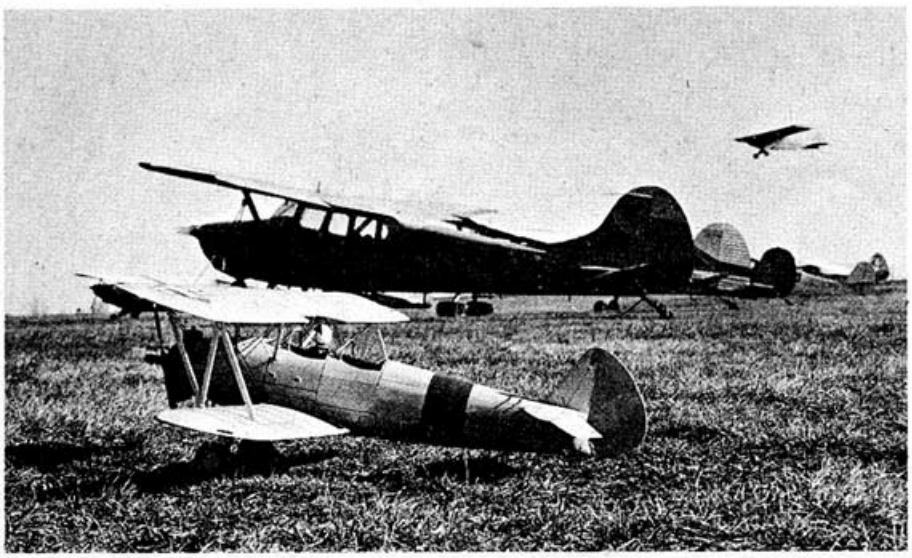
Our builder-flier-author, brother-in-law of the designer, assumes usual proud pose and self-conscious grin with his well built and finished scale-liner complete with many fine scale details.

# STEARMAN PT-17 KAYDET

SCALE CONTROL LINER OF ONE OF WORLD WAR II'S TRAINERS THAT PUT PLENTY OF OUR FLEDGLING FLIERS INTO THE AIR. LIKE ALL BIPES OUR TRAINER HAS ALL THE EXCITEMENT AND GLAMOUR FOR GOOD SCALE FLYING.



On the ready line — or is it, full scale craft are tied down but Stearman ready to go.

**by DON CARKHUFF & EDWARD L. PRICE**

► We'll leave the multi-engined, bomb dropping, gear retracting ships to the fellows that can endure this type of frustration. We like them simple and easy to fly and believe that it is better to build a small ship to a large scale than vice-versa. In this way we do not all have to be watchmakers to get the small detail, and our ships are not huge models that are difficult to transport.

Our Stearman falls in this category: An airplane reasonably simple to construct and fly. One that looks good on the ground as well as in the air.

The original model was scaled from two Stearmans that have been kept at one of our local airports. This then accounts for some of the differences in the construction detail between the photos and the drawings. These ships were probably rebuilt several times, and I confess that the original model suffered a crackup at the 1960 Mirror Meet and was also rebuilt. The mishap was due to the builders' inexperience in control-line flying and by a slippery runway.

The drawings for the model show the construction as the airplane would have appeared factory-built back in 1942-1944.

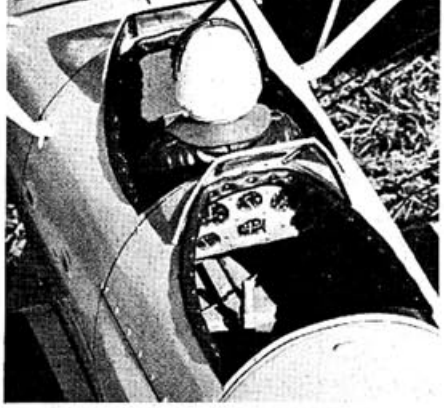
The Kaydet was the last biplane built for the Army and Navy and was the standard primary trainer for these Services. At that time, its color scheme was all silver. Other color schemes were yellow wings and tail with blue fuselage for Army, all yellow for the Navy ("Yellow Peril" as it was named) and of course, any color scheme for the surplus.

The radial engine was first intended to be covered by a cowl to hide the K&B head. However, it was found that the cylinders from Monogram plastic kit of the Curtiss Wright radial engine were practically to our scale. Parts of this kit were used to build a radial engine (Lycoming) that provides a "spectacular" front end for the Kaydet, even with one oversize K&B head protruding.

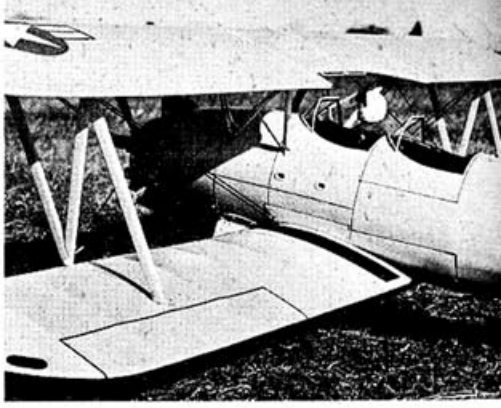
The original model had only a detailed rear cockpit, the front houses the bellcrank, which was camouflaged by the use of half the figure of a modified plastic jet pilot making for further realism in the over-all picture.

All full scale flying and control cables were made of 1/2A flexible lead-out wire. These wires were spring-loaded to prevent any possibility of sagging. Wing tip lights were taken from a ship model—very convenient and real. All details are fully described and covered in the full-size plans, per se—exact size of N struts, type of material to use, etc. Adherence to the plans will result in a sturdy, good flying, exact scale-ship. One point to remember, do not take the chance of damaging or destroying your labors by *(Continued on next page)*

Note: even with the Torp sticking up its head the scale engine details are very outstanding.



Bolt on wing struts add authenticity, also attention to rivet details give it extra scale points.



Cockpit details are real point getters—note rivet detail for cockpit coaming and instrument panel.

## Stearman PT-17 . . . Continued

flying a tail heavy biplane; bring that nose down by adding the required weight to secure the proper CG. The winter 1961-1962 edition of Air Progress magazine can give the builder additional scale detail.

*Construction*

The construction of this model is not as difficult as it is time consuming, mainly for the reason that most biplanes designs depend on the cabane and interplane struts as the method of attaching the top wing, leaving the rigging as nothing more than scale decor. On our model, both the struts and rigging are used in the same manner as the Proto type. The struts align and locate the top wing (as well as securing it) and the rigging (in tension) tie the two planes and the fuselage together in a rigid unit. As you can see on the drawings, adequate means have been made throughout the air-frame for securing the rigging. These provisions, mainly cotter pins and the strut mounting fittings, are the only taxing part of the model. This arrangement has another virtue other than its strength; it provides a method of assembling the top wing, the rigging and interplane struts after the final finish has been applied.

*Fuselage*

Start by cutting out the ½ inch plywood motor mount (be sure to drill hole for bellcrank) and formers F1, F2 & F3. Cut these formers in two halves by cutting along the horizontal center line and gluing them together again with the motor mount in place. Install the fuel tank now. The landing gear and cabane strut plates are now added. Do not glue strut plates at this time and be sure to bevel landing gear plates so that they rest flush against motor mount. This unit should now be sanded or ground so that all the edges of the plates and formers are beveled to suit fuselage contour.

The strut plates are now removed and the cabane struts secured to them. The struts are now sanded to an airfoil shape with only the ends (*Continued on page* 52)

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(*Continued from page 12*)

glued and bolted remaining rectangular in section. These two units (one right and one left hand) can now be glued in place.

The landing gear is formed in two halves with an ⅛ in. I.D. and 3/32 in. I.D. brass tube connecting them. After forming the four wire struts (two ⅛" dia. and two 3/32" dia.), locate and drill two holes in each gear plate to allow the top of the formed wires to extend thru and slip into the brass tubing, (there is not much, if any, load on these tubes; they provide only a means of preventing the gear from twisting in the "J" bolts). Add the eight "J" bolts and sweat solder the wires in the tubes. The landing gear legs are now wrapped and soldered together at the bottom.

The keels and remaining formers are now cut out and glued in place. Be sure to form and assemble the tail wheel strut to former F9 before gluing to keel.

The stringers can be added starting from the rear and working forward. Glue the side stringers in place first, then the top and finish with bottom; this procedure will prevent distorting the fuselage.

Before planking is started, drill two holes in each landing gear plate for the 1/16" O.D. brass tubes that extend thru this section of the fuselage (these tubes are used for rigging at location "A"). Add former F10 and plank the nose and top of the fuselage with ⅛" x ¼" planking strips. A word of caution here—in order to install the two cotter pins (cable eyes) on the top forward section, it is necessary to plank about ½ inch either side of the center line, install the plywood and cotter pin units, then continue planking.

The ½ inch sheet sides and bottom block (where the trailing edge rests) are cut out and glued in place after removing section of the lower keel as noted on plans. Add the ½ inch sheet nose, fill in between the stringers and add the block at the aft end. Drill hole thru fuselage (where the sheet fill was added) and insert brass tubing. This tube is used for the tail assembly rigging.

When sanding the fuselage, continue the stringer lines in the ½ inch sheet sides; these lines should terminate at the lower wing. The cotter pins at location B and lead out eyelets are now installed. This about completes the fuselage, except for the landing gear fairings (you may wish to build these in place after the fuselage has been silk covered). Use as much carved balsa as possible in the large fillets where the fairings come in contact with the fuselage. This fillet is smoothed over with plastic balsa.

*Tail Surfaces*

These units are simple and will not require much explanation. It was decided to use the same building technique here that is commonly used on large stunt ships. Rather than cutting out the ribs, it is much easier to build these units without an airfoil section and to sand the desired section in after they are assembled. This type of construction works out very well and requires less time (especially if one owns a belt sander). The elevator and main spar are glued together in halves with the fabric hinge sandwiched between them, this avoids finishing problems. However, your own favorite method of attaching an elevator will work as well. Remember, as is noted on the drawing, hardwood is used where the brass tubing is inserted and the rudder will have to be hollowed out to clear the bell-horn travel.

*Wings*

As you can see on the drawings, a large number of ribs are used in constructing the two wings. However, with the exception of the tip ribs, the rib outline can all be stack-cut on a jig saw, separated in groups and then cut into the finished rib outlines as illustrated. Much time can be saved by cutting the ribs in this manner; however,

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you will also have a lot of waste.

Cut out the plywood plates at the strut locations and imbed the 4-40 blind nuts in them. These plates are glued into the adjoining ribs before assembling to spars. Once this has been done, the remaining ribs are added. The leading edge for the top wing will have to be grooved and notched at the cabane strut locations. The trailing edge and tips are added and the center sections sheet covered. Add the hardwood blocks and drill the necessary holes for the cotter pins. These pins should not be installed until the framework has been sanded.

Both the top and lower wings are constructed in the same manner with one exception—the aileron on the lower wing is built as a separate unit and glued in place after the final finish has been applied.

*Struts*

The strut mounting tabs are cut from 1/32" thick aluminum sheet; these tabs are illustrated in their true plane on the drawings. Bend the tabs as noted (refer to front view for the amount of bending required). The cabane struts that are fixed in the fuselage should now be beveled so that the outer skin of the wing rests flush against them. Assemble the cabane strut tabs in the top wing and rest the wing on top of the struts with the tabs hanging down in front of them. Mark the struts for the depth of the slot. Saw the slot into the cabane struts, (a fine tooth hacksaw will give the correct width). The struts should now have a groove cut around them to allow for the wrapping. The wing, tabs, and struts can now be assembled; bind the struts to the aluminum tabs with dacron line.

The interplane struts with the lower wing in place are now assembled in the same fashion. Although these struts are shown in their true plane on the drawing, it is wise to cut them a little longer than required, and work down to the length that suits your model.

*Rigging, wheels, etc.*

Before covering your fuselage, install the bellcrank (this can be done thru the open cockpits), pushrod, and horizontal tail assembly. You may wish to install the pushrod in two parts with brass tubing connecting them; this is by far the easiest method of getting the elevator and bellcrank in neutral position. After your model has been assembled and the final finish applied, the rigging can be installed. Use 60 lb. Perfect lead-out wire for all rigging, this line has good soldering qualities which is a must in this application. 1/32" I.D. brass tubing cut in lengths of ¼ inch is used to connect the looped ends of the lines. Some difficulty may be found in getting two diameters of cable into the brass tube; this can be accomplished by pressing the tube into a slightly oval shape or by reaming out the tube with a number 60 (.040) drill.

Austin Craft 3" balloon tires are used. These are perfect scale and offer the cushioning effect our stiff-legged model requires. The hubs and caps are turned from hardwood; the caps are glued in place after the wheel has been assembled to the axle.

Before building the dummy engine, check to see how your model is balanced. You may need some weight in the nose, depending on how much dope was used in your finish. If weight is required, drill holes in the seven hardwood cylinder cores and fill with lead. You should be able to bring your model to balance in this manner. The construction of the dummy engine is simple. The cylinder cores and crankcase are turned from hardwood; ¼ dia. dowels for exhaust tubes. The remaining parts are taken from Monogram's Cyclone plastic engine kit.

Now, with the addition of the windshields, round aluminum cover plates and whatever detail you may wish to use, your Stearman model is ready for flight.