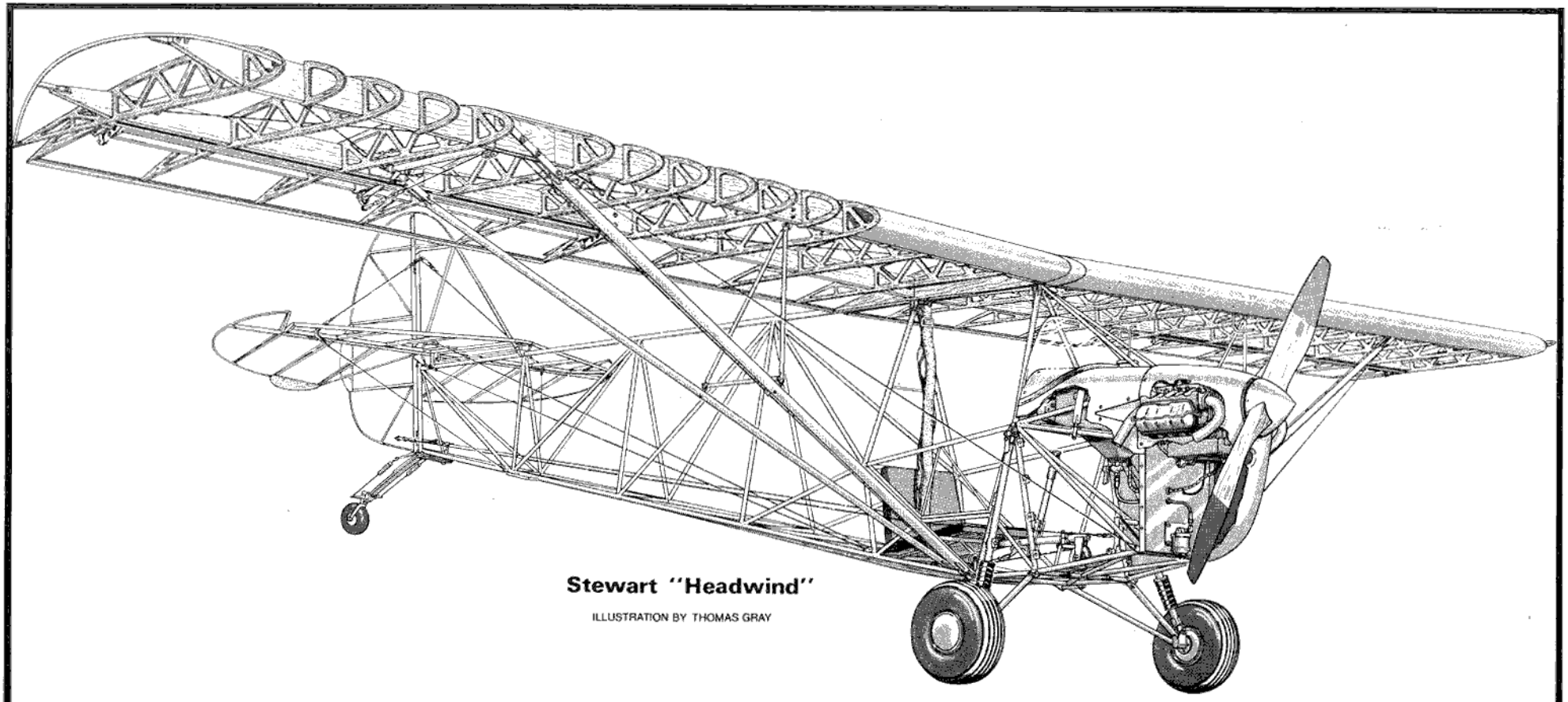


Stewart "Headwind"

ILLUSTRATION BY THOMAS GRAY

HEADWIND "B"

THIS ONE QUARTER SCALE PRESENTATION OF DON STEWART'S HOME-BUILT MAKES AN EXCELLENT PROJECT TO GET INTO THE LARGE SIZE MODELS. POWERED BY A .61 ENGINE, PLUS BEING INEXPENSIVE TO BUILD, IT FLIES LIKE THE FULL SIZE ONE

BY PAUL DENSON

The Headwind, designed by airline pilot Don Stewart, was the first V.W. engine powered home-built in the United States. Granted, planes such as the Jodel Bebe, the Turbulent and the Fournier, built in Europe, were flown with V.W engines prior to 1961 when the first Headwind was built. In 1962 the Headwind was saluted with EAA's Best Auto Powered Aircraft award. By 1973 thousands of sets of plans had been sold and at least 30 planes were already airborne.

It was in the February 1972 "Sports Aviation", the journal of the Experimental Aircraft Association, that the Headwind first came to my attention. I really fell for that stubby nosed offspring of the Aeronca C-3 and it became my scale RC dream. I ordered the information literature mentioned in the Steward Aircraft Co. advertisement in the magazine. When the literature, pictures and three views arrived they were for the new Headwind "B" which sported — among other things — four extra feet of wingspan, a new airfoil, nine more inches of landing clearance and a rounded fin and rudder. In fact the "B" had lost its C-3 look and has become a right pretty airplane on its own. This information was put aside for more pressing tasks but was never completely out of mind.

In 1975, Headwind appeared in Flying Models as a construction article by Al Wolsky. Here was my chance to build one without all the design headaches. My .15 powered Headwind flew fantastically, but my dreams were not really fulfilled, it was too small and didn't have ailerons. Again the plans were put aside.

Then the Quarter Scale thing started hitting the market. Well, let us say it began getting publicity because, to my knowledge, 5 years ago at the LSF National Championship contest, Quarter Scale was thoroughly

Posed with author's prototype is Miss Sue Burwig

HEADWIND "B"

Designed By : Paul Denson

TYPE AIRCRAFT
1/4 Scale Homebuilt
WINGSPAN
93 Inches
WING CHORD
12 Inches
TOTAL WING AREA
1116 Square Inches
WING LOCATION
Top Of Fuselage
AIRFOIL
Clark Y
WING PLANFORM
Constant Chord
DIHEDRAL, EACH TIP
1¼ Inch

O.A. FUSELAGE LENGTH
52" (Incl. Spinner)
RADIO COMPARTMENT AREA
(L) 8" X (W) 4½" X (H) 5"
STABILIZER SPAN
22 Inches
STABILIZER CHORD (incl. elev.)
8" (Avg.)
STABILIZER AREA
176 Square Inches
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage

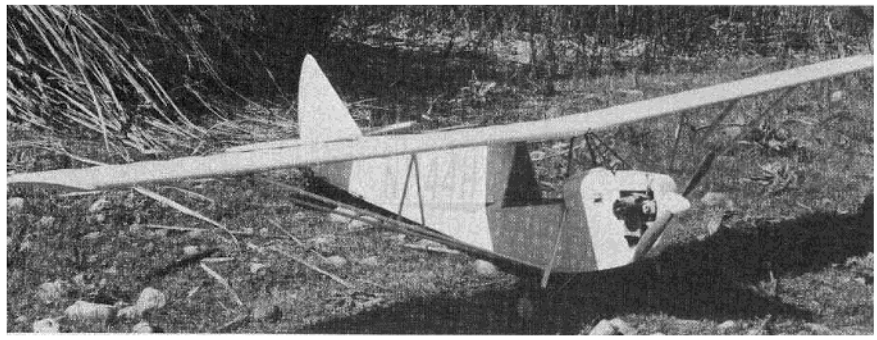
VERTICAL FIN HEIGHT
13 Inches
VERTICAL FIN WIDTH (incl. rud.)
8½" (Avg.)
REC. ENGINE SIZE
.40-.60 Cubic Inch
REC. FUEL TANK SIZE
10-12 Ounces
LANDING GEAR
Conventional
REC. NO. OF CHANNELS
4
CONTROL FUNCTIONS
Rud., Elev., Ail. & Throt.
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa, Ply & Spruce
Wing ..... Balsa, Ply & Spruce
Empennage ..... Balsa & Spruce
Weight Ready-To-Fly ..... 120 Ounces
Wing Loading ..... 15.4 Oz./Sq. Ft.

discussed during the interminable time spent between rounds waiting to fly. It was felt that Quarter Scale would be the up and coming thing. It kinda took a temporary back seat to helicopters, but it is now on its own and "out in front" part of modeling. Let's take the dream out of the hip pocket & do something with it, build a Quarter Scale Headwind.

Back there a few years ago, I did build a Quarter Scale Longster and the construction methods I acquired from a tattered copy of the 1932 Handbook of Homebuilts and from another model builder, Lou Proctor, have helped time and time again with the Headwind. I cannot fail to credit Lou for the many construction methods I acquired while building his kits which he, in turn, learned while building full size planes and numerous models. If you have ever built one of his Antics, you will immediately recognize these techniques used in the Headwind.

Quarter Scale is extremely popular because the larger the plane, the more realistic the flight. The Headwind weighs 7½ pounds and has a wing area of 1116 square inches which gives a respectable 15 oz./sq. ft. Most of the mass is concentrated well under the Center of Gravity which will make this plane the most stable configuration you could build short of a parasol. A .60 really isn't necessary — a .40 would be adequate — but the .60's run and idle so well and slow speed is where you will do most of your flying. Except for take-off and emergencies you will probably not fly above half throttle. The weight of the .60 up front on this short moment arm will keep you from having to add weight to get the Center of Gravity right.

A big advantage of Quarter Scale is the ease by which detail is added, things are big enough so you don't have to work with a 10X magnifying glass and tweezers. It is good to have a razor saw and disc sander to finish the ends of the 1/4" square stock. For awhile it is going to feel as if you are working with 4" x 4" lumber and the ends must be square or the glue joints won't hold. You will, by necessity, have to look beyond your local hobby shop for some materials. Your welding shop can furnish the 1/16" brazing rods and the hinges necessary for the wing struts were purchased at a hardware store. While most of the wood stock will be available in the better stocked hobby shops, the 3/4" wide wing spars, etc, will have to be cut on a table saw. If you can choose your own wood, pick lightweight straight grained wood. Spruce is called out and would be preferred, but it is not usually available. Your lumber yard has in stock trim lumber cut from white pine. It is called a batt and is usually 5/16" x 2½" in 6' and 8' lengths. It is most convenient and may be re-sawed to necessary dimensions. For years I have re-sawed this white



pine lumber and have used it in both power plane and glider wings and have never had a failure.

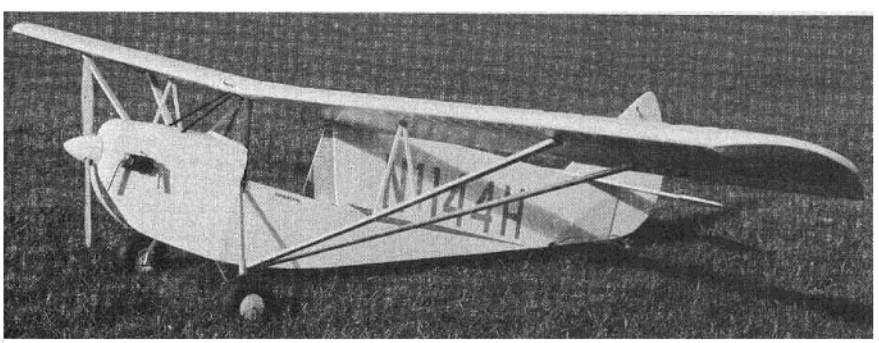
Fuselage: The fuselage is started like any stick model --- build two sides over the plans. Because of the large size of the longerons, uprights, and diagonals, it is not recommended that you build one side over the other. Cut the uprights and diagonals slightly long, in a miter box with a razor saw, sand the fuzz off one end then sand the other end to exact length using a sanding disc. The longerons are made of spruce, the uprights and diagonals are made of balsa for the most part. Cut the cockpit rail splice before it is glued in place --- the aft end of this piece will be balsa and is put in place after the sides are joined at the top. At this point the sides will be rather floppy but will be strengthened when the fuselage is assembled. Drill the 1/16" holes in former #1 which will be used later when you sew on the landing gear. Pin the bottom longerons to the top view of the plans, insert the formers in place and glue. When dry, add the cockpit rail extension, which will pass outside the first upright and will join in at the second. Glue it at the crossover using a 3/16" balsa wedge to fill the gap.

Even before the first piece was cut, the problem of building the sides flat, then tapering them together at the top, was given considerable thought. It was felt that the 5/32" difference was inconsequential. The only problem it might have caused was the alignment of the wing and stab. Since they are 0°-0°, a straight-edge along the top of the fuselage will help you when you align the wing root block.

The engine mount and firewall assembly is built from a number of pieces cut from 3/16" and 1/4" aircraft ply. The patterns are on the side and top view of the plans. The engine mounts are rock hard maple. Notice the 3° right and down thrust. Before attaching this assembly to the front of the fuselage, it will be necessary to cut and crack the longerons just ahead of former #1 so they will bend to conform to the lines of the top view. This is a weak spot in the fuselage and it will be necessary to strengthen this area with triangular ply fillets. Do not add the triangular fillets where the landing gear exits until the landing gear has been sewn to former #1 with copper wire and given a liberal coating of epoxy.

The servo tray was designed to the full size of the cockpit opening to stop torsion or twisting motion of the fuselage. It should be cut out of lite ply and installed at this time. Unless you cut the center notches in the servo tray as shown on the plans, no way are you going to get it into its place. Even so, it takes a bit of forcing. Determine the size of your fuel tank and build the tank compartment --- remember, keep the C/L of the tank just below the engine throttle level. Drill holes for the fuel lines and throttle pushrods in the firewall.

Trace the outline of the wing root block on two pieces of 1/4" aircraft ply and one piece of 1/2" pine, spruce, mahongany, etc. Cut these out, tack glue together and sand to shape. Separate and cut out the center of the 1/2" piece as shown. This will facilitate drilling the hole for the wing joiner rod. Because of the short length of the usual drills, it will be necessary to drill from the front and back into the center opening. Take care and get the holes in line so the wing joiner rod will pass through the whole block on the



C/L. Epoxy the whole thing into a sandwich with the 1/4" ply on the outside. The square holes are cut through the ply pieces large enough so that the metal wing joiner plates will pass through and meet the ones from the other wing on the C/L. When the rod is pushed through the block it will pass through the centerhole of all eight pieces. If you work carefully it will work and you will be as surprised as I was.

Install the wing root block on former #2 using a 1" wide piece of aluminum angle stock. Fasten to the former with 3/4" 4-40 machine screws and blind mounting nuts. Use wood screws into the wing root block.

The side cabanes are constructed from 1/4" O.D. brass tubing with 7/32" sleeves in each end. Equip your vise with wooden block inserts and flatten 1½" of one end and 1¼" of the other end. Round the ends and drill holes as indicated. Bend the cabane struts in such a way that the long flat will fit against the fuselage and the short flat will fit tight against the wing root block just forward of the wing joiner holes. Fasten the bottom end to the fuselage upright just aft of former #1 with 3/4" 4-40 machine screws and nuts. Place a long straight-edge parallel to the top of the fuselage allowing it to overlap the wing root block. Insure the root block is 0° to the top of the fuselage then insert the top two screws of the cabane. Fabricate the two front cabane struts in the same manner — dimensions are on the plans. They fasten to the underside of the front of the wing root block and on the backside of the firewall. They will have to be removed when you are installing the 1/32" ply cowl. The Headwind is covered from the nose back to former #1 on the outside with 1/32" ply and on the inside from former #1 back to former #2. I cut the ply cockpit panels to size then stained them. At the same time I stained the remainder of the cockpit installing the panels when they were dry. The whole interior was then given two coats of polyurethane varnish.

Wings: If you have built one of Lou Proctor's Antic kits you are going to look at this wing and say "By Golly!" or some such exclamation. Lou learned the technique from homebuilts and passed it on through his kits. It is a good technique and if you order the scale verification kit from Stewart Aircraft you will find the same building methods used in the original Headwind.

Measure the diameter of the holes in the wing rib then go to your hobby shop, hardware store, and even junk yard, and find pieces of thin wall metal tubing to match all the holes. Sharpen the ends of the tubing and you are ready to cut the wing ribs. From a sheet of 1/16" aircraft ply cut a wing rib pattern, drill out the holes. Don't use your pieces of tubing --- use a twist drill, then using sandpaper wrapped around dowels, sand the holes to the same diameter as the O.D. of your tubing drills.

Push a couple of short thumb tacks through the template near each end and Hot Stuff them in place. When you place the template down on a piece of 1/16" sheet it won't slip and slide around --- later when you wish to place a rib in register with the template the holes will be there in the rib to guide you. Cut 35 or 36 ribs, a few extra is always a good idea. Find a 2" cube of soft balsa, turn it on end so the end grain will become your anvil. Hold the template and a rib together, push the tubing through its hole and, with a twisting motion, cut a hole in the rib. Do this for all the ribs, then take another piece of tubing and cut all that size holes in the ribs and so forth. When all the holes are cut, take a ruler, or other template, and cut tangents between the holes and remove the scrap.

It is best to put the cap strips on the wings using a jig. Acquire a flat piece of 3/4" lumber 6" wide and 13"-14" long. Glue two of the extra ribs to the board so one has the left side up, the other the right side. Glue two pieces of 3/32" balsa up to this template rib exactly where the spars will pass through. These pieces will locate exactly every rib when you are applying cap strips --- this way they will be identical. Cut your cap strips which are 3/16" wide from a piece of 1/32" ply.

Cut four strips of 1/8" square spruce to about 14". These strips are to sandwich the cap strips to the edge of the wing rib. They should be pinned in place with the pins on the outside of the strips: these are your wing rib jigs.

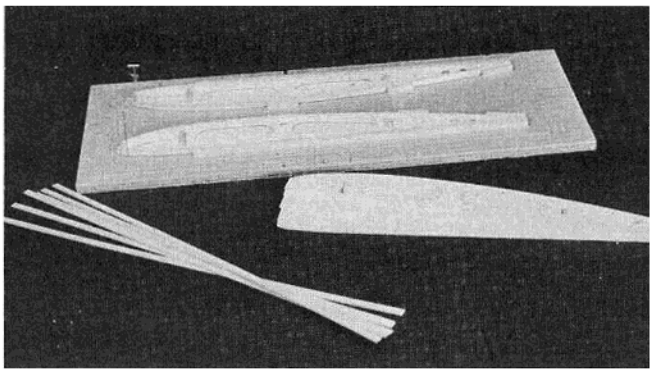
Wet four cap strips, remove excess water and lay them in the grooves you have just made. Bring the nose ends of the 1/8" square spruce strips together and pin them so they will hold the capstrips tight against the edge of the wing ribs. Apply a bead of white glue to the junction between the capstrip and the rib; allow to dry. When dry enough so they will not pop apart, trade the two ribs, squeeze down the spruce strips and apply glue to the other side. Six months later you will have your 30 or so wing ribs all capstripped. I actually made six jigs which hurried the job. I'll guarantee you if you do other work while the strips are drying you will be amazed how fast the ribs pile up. The false ribs are made in the same manner, however, if you look at the picture of the templates you will see how you can make two at a time. I had four sets of these templates so I actually made eight ribs at a time. The first set of fifteen ribs were made before a builder friends's wife asked me if I wet the strips before bending. I embarassingly admitted I hadn't. She will know who she is if she reads this article. The next fifteen went much easier.

When you have fifteen of the ribs capstripped you may start a wing half. Place a 12" piece of 2" x 2" lumber, or similar substitute, parallel to, and exactly at, the edge of the inboard rib to act as a building stop. Pin the built-up first rib to this block, insert each of the spars into its proper hole in rib #1 and apply glue. The 1/4" spar should have its corners rounded so it passes easily through the hole in each rib. Slide the ribs on the spars one at a time stopping when they are in place as shown on the plans. Brace them with pins, then glue them in place, putting fillets of glue in the angle where the spars and ribs meet. Later you can turn the wing over and make the bottom fillets. Allow the wing to dry completely. If you have a grocery that caters to Chinese food in your area, procure a bundle of 12" bamboo slivers, used in making shish kabobs. If these are not available, your hobby shop may stock 3/32" square basswood strips. The welding shop should stock 5/64" aluminum brazing rods or, as a last resort, you could glue toothpicks together end to end with Hot Stuff. You failed to procure any of the above? Why not do as the homebuilders do, use steel cable --- steel cable? Buy a roll (25 ft.) of 20 to 30 lb. test stainless steel fishing leader wire; while in the bait and tackle store, purchase the swages for this size wire. Using fittings which may be purchased from Proctor Enterprises, make your own drag braces from cable.

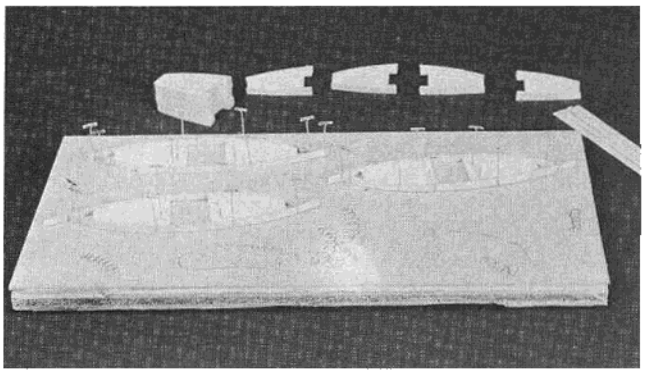
Most of the remainder of the wing is detailed on the plans. The tip may involve some problem; cut a form from a piece of 3/4" scrap lumber and nail it to a larger section of the same board. Cut five strips of 1/16" balsa 3/16" x 14", soak them in hot water for 5 minutes, dry with a paper towel, apply white glue and laminate them around the waxed form. If you are in a hurry, pop the whole mess into a 200° oven and bake till done, cover with Hollandaise sauce and serve piping hot, will serve a family of four.

Build up the outer end of each spar as indicated and trim the ends in accordance with the plans. Trim the wing tip and fit to the end of the wing. Part of each spar or the build up of the spar should touch and be glued to the wing tip. The top edge should be level with the top camber of the ribs. With a sharp knife, cut the top of the wing tip to match the contour of the top of the wing. Even though it doesn't look like it, the bottom of the wing tip is a flat taper from the last rib. Using the bottom of the last rib for a guide, cut and sand the wing tip so it resembles the various stations on the plans.

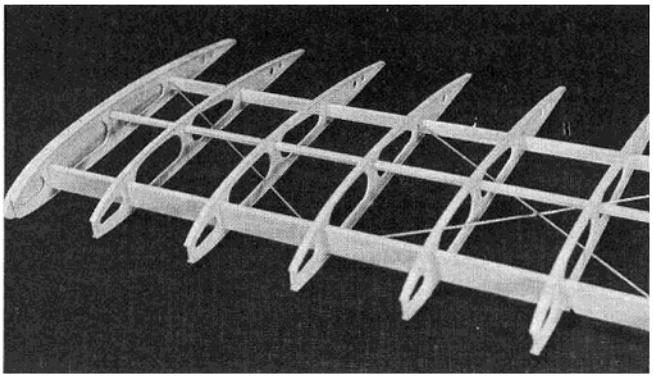
Make the trailing edge one piece, do not cut it until you are ready to cover the wing, build in the ailerons as you go. There is a jig pattern for cutting the aileron ribs on the plans. Make a copy



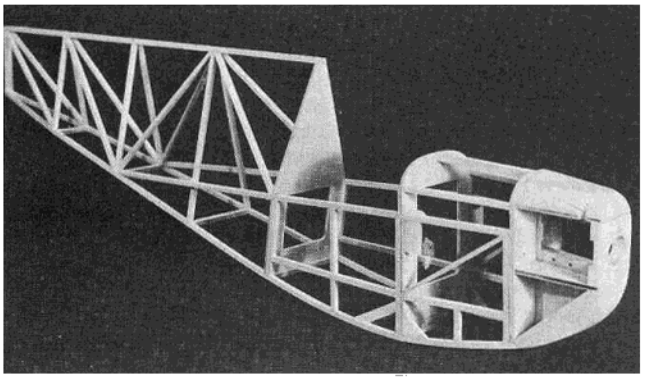
Ribs being capstripped on jig.



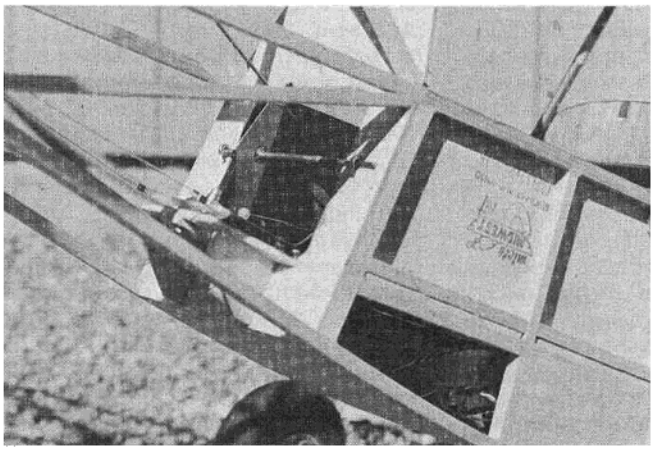
False ribs being capstripped.



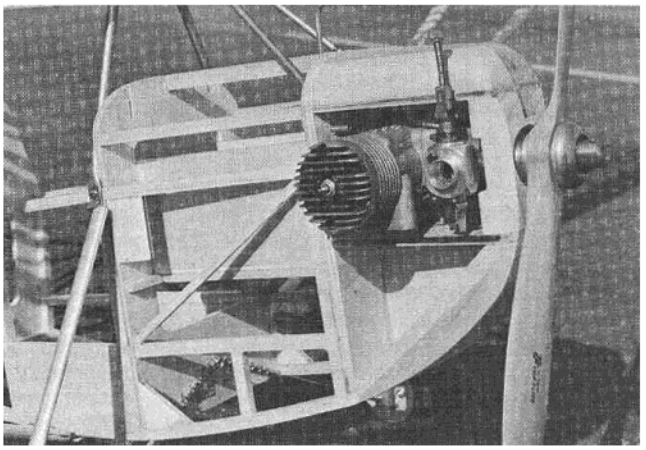
Partial completed wing panel. Note internal bracing.



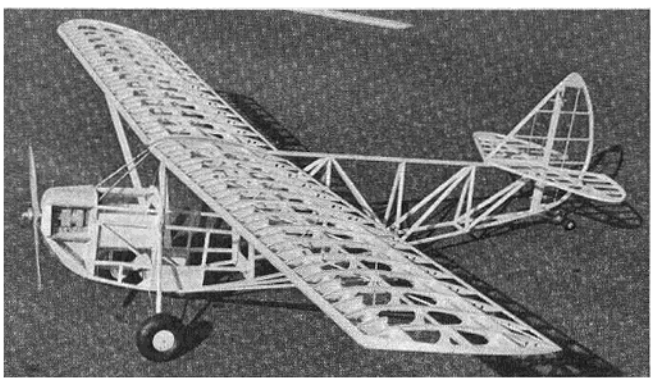
Basic fuselage construction complete.



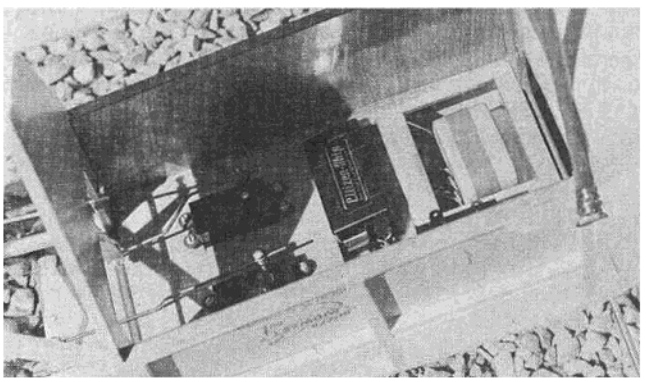
Close-up of rudder and elevator bellcranks.



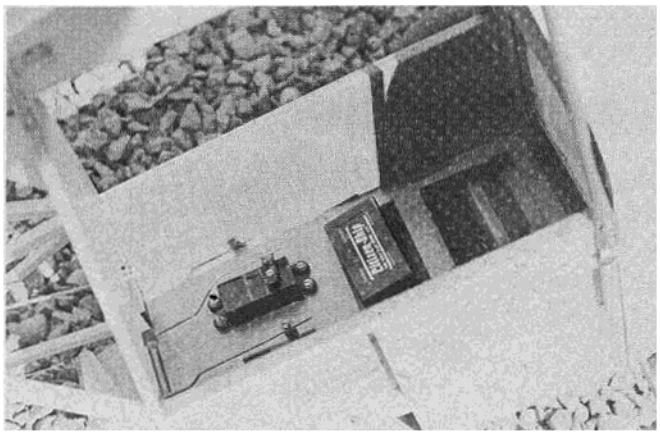
Solid engine installation.



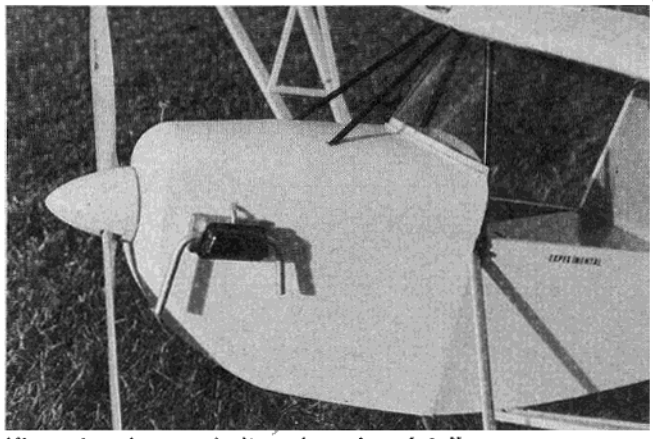
Our beauty ready to cover.



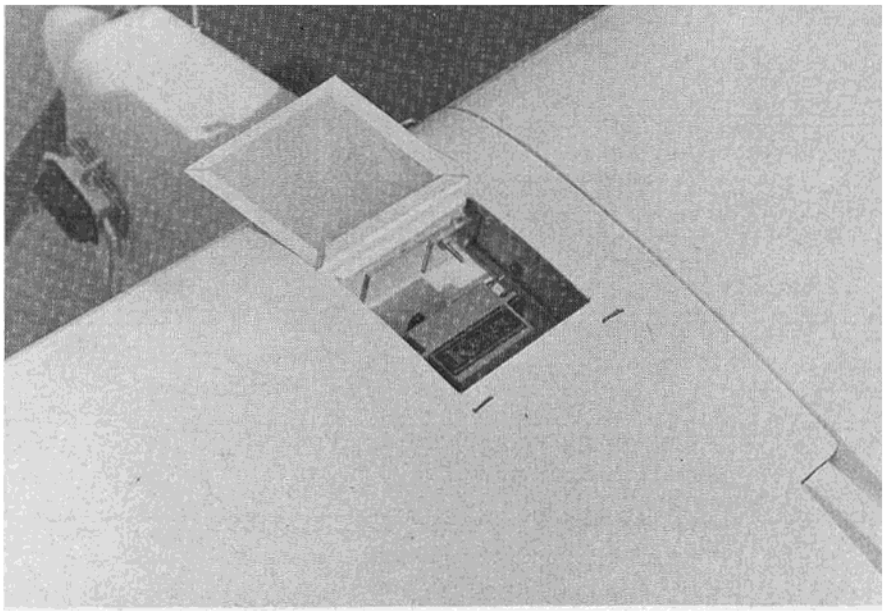
Note servo pushrods to bellcranks.



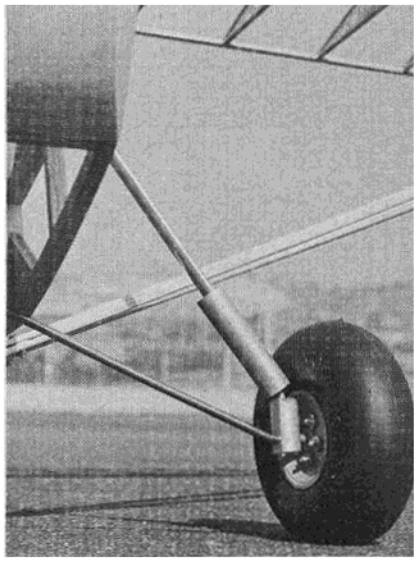
Any size radio will fit.



View showing cockpit and engine detail.



Access hatch for aileron servo.



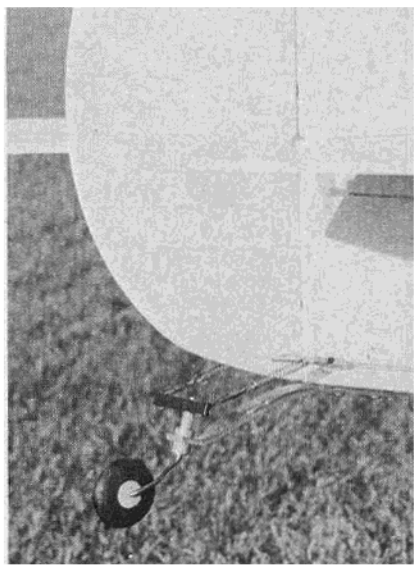
Close-up of main landing gear strut.

and use it to cut the aileron ribs to length. Cut the aileron end ribs from 3/16" soft balsa. Build in the floor for the aileron servo compartment and cover the first wing bay with 1/64" ply, leave the aileron hatch uncovered.

From the local hardware store, buy four sets of hinges as called out on the plans (or equivalents). The heavier hinges go on the fuselage, the ligher ones on the wing.

Make the wing struts from 1/4" x 3/4" white pine, the airfoil shape is cut with a plane or on a sander. Cut a 1½" slot in each end with a razor saw, then assemble as per plans. I would make them 1/4" to 3/8" long so they may be adjusted to your plane. Since you are going to read these instructions through carefully before you start, you will not make the same mistake I did and wait until the wings are finished before you add the wing connector plates. It can be done but with great difficulty --- the biggest problem is drilling the holes through the spar for the 3/4" 4-40 machine screws. Note that the wing connector plates on one wing are shimmed out 1/16" so they will fit on the outside of the plates on the other wing.

Now comes the moment you have been waiting for --- will the wing joiner rod pass through the hole in each of the eight joiner plates? Will it find the hole in the middle of the root block? Install the wing halves, brace up the tips so you have 1¼" dihedral under each tip and shove the joiner rod home. **It fits!! It fits!!** It may be necesary to remove the wing root block and bevel slightly for the dihedral. A small gap on each side is acceptable. Turn the plane upside down and rest the wing root on a block of wood 1¼" thick, block up the tail until the top of the fuselage is exactly parallel to the table. Allow the wing tips to rest on the table, this will automatically put in the



Built up tail wheel assembly.

proper amount of dihedral. The wing is long enough that it will twist and since the trailing edge is heavy, it will attempt to droop. If you install the wing struts with the wing in this position you will have exaggerated washout in the wings (as I did). Shim the wing tips in such a manner as to **insure** the bottom of the last rib is parallel to the table and the root rib. Screw the wing hinges to the ply hinge mounts and screw the large hinges to the bottom of the fuselage. Trim the wing struts to fit, slide the hinges into the slots and bolt in place with 1/2" 2-54 machine screws at the wing end and 1/2" 4-40 machine screws at the fuselage end.

During a test hop, in a new land development where only the streets were finished, I hit a curb on take-off — strictly pilot error — the landing gear strut was bent and both wing struts on one side were broken. To avoid the calamity that would ensue were wing struts broken when airborne, I added a 1/32" music wire doubler to the front strut on each side. I made an eye in the end of the wire, put it under the washer at the bottom and reinstalled the nut. The wire was held under tension and wrapped around the machine screw at the wing end of the strut, the excess was cut off. An eye was formed and washer and nut were replaced. White electricians tape sealed it to the strut full length.

With the wing struts in place, you can turn the plane over and see the 8' wing in all its glory, would you believe 7'6"? Fills the whole room doesn't it? But it will all fit in a Volkswagon. Check each wing for washout. If there is washout you can shorten the back strut. To correct washin, shorten the front strut.

The struts will now fold flat along the underside of the wing for storage if you allowed the strut wing hinge pivot point to extend about 1/8" above the wing surface. Remove the hinge from the fuselage, use a drift pin, knock out the hinge pin, drill to 1/8" and make your own safety pin using 1/8" brass rod. To remove the wings, disconnect the pushrods from the servo, disconnect the servo wires, pull the safety pin on the struts and, finally, remove the wing joiner rod. Reverse this technique to assemble the plane.

Empennage: The empennage is straightforward and according to the plans. It would be best to trial assemble the whole tail section before covering. There are quite a number of holes to be drilled and fittings to be affixed (the holes can be opened after covering). Support and hold-down of the whole tail section is accomplished with wires. If you can find "Sevenstrand" stainless steel leader wire of 20-30 lb. test, you will amaze yourself with how many ways you can use it in model building. Be sure, when you purchase the wire, you also purchase a package of the swages recommended for the wire. They are phosphor-bronze and, when squeezed tight with Vise Grips, hold the wire permanently in position. The fin and stab are keyed to the fuselage with three bamboo posts; they are held firmly in place and adjusted with the plastic coated stainless steel wire and turnbuckles. You will need eight #130 Proctor brass fittings, two on either side of the top of the fin, two on each end of the stab and two on the fuselage as shown. The turnbuckles used for adjustment were #5C clevis end which lock with a pin to the end of the brass fittings. A turnbuckle is located on each side of the fin and each side of the fuselage. The wire that attaches to the other end of the turnbuckle terminates at the brass fitting on the end of the stab. If you set it up in this manner, the fin may be adjusted independently of the stab and vice versa.

The rudder is also cable controlled. It is best to run these cables before covering the fuselage. After cutting to length, they may be coiled and taped aft of the NyRod guides. The normal steps for swaging a loop in the end of a piece of the stainless steel wire are as follows: run the wire through a swage, through the hole in the bellcrank, around the back side of the bellcrank through the hole in the opposite direction through the swage in the opposide direction and crimp with Vise Grips. The figure '8' is best where there is movement to stop fraying. In the wing or tail assembly a loop is sufficient, pull tight with pliers and crimp.

Tailwheel: The tailwheel is almost a duplicate of the one on the full size Headwind. I used some tempered sheet aluminum for the spring. It is made up of five pieces; only three are full length. They were drilled, bolted, and clamped, then the edges were filed smooth for looks. The axle housing at the end was a piece of outside threaded aluminum tubing; the bellcrank was cut from 1/32" sheet brass and soldered to a 5/32" wheel lock. The control springs were from a ballpoint pen. The turnbuckles, while unnecessary, were extra ones I had so I used them to extend the springs. A solid link between the wheel and rudder is impractical because the springy up and down motion would be transmitted to the rudder. Check the plans and pictures for help in building the tailwheel assembly.

The shocks are not functional, just decorative. The internal friction of their movement would help a little but the 5/32" landing gear wire and the large Du-Bro wheels take up the majority of the landing shock. The whole strut works around the aluminum landing gear strut block. It was made from a 1" piece of 1/2" aluminum rod, filed flat on each side until it is 3/8" thick (see plans). A 5/32" hole is drilled through from one flat side for the landing gear wire. A 1/8" hole is drilled in the rounded top for the strut rod. Holes are drilled in from the rounded side which are tapped for set screws to hold everything in place. To make the struts you will need from the hobby shop tubing rack: one length of 3/8" airfoil aluminum strut stock, two pieces of 5/32" O.D. brass tubing, one 12" length of 1/8" brass rod and one length of 1/2" O.D. aluminum tubing.

Cut two 6½" lengths of the strut stock, two 6½" lengths of the brass tubing, two 2" lengths of the 1/2" aluminum tubing, and cut the brass rod into four 3" pieces. Bend a 1/4" right angle in two of the brass rods and a 5/8" slight bend in the other two. Ready to assemble? Solder the right angle bend brass rod in one end of the 5/32" brass tubing allowing it to stick out about 1/8". Push the brass tubing into the aluminum strut stock, it fits exactly. A little silicone adhesive squeezed into the strut stock back of the tubing stops rotation. I used a one hole laboratory stopper to fill the bottom 3/8" of the aluminum tubing — hardwood dowel would work — then I wet and slid the brass rod up through the stopper and out the top of the aluminum tubing. This brass rod then went into the bottom of the tubing in the strut. Voila! It is done.

The brass rod at the bottom of this assembly fits into the top of the landing gear-strut block and at the top fits under a 'U' shaped brass fitting at the base of the cabane.

Incidentals: My Headwind was covered with three rolls of Permagloss Coverite and I used Permagloss trim sheets for the numbers. Covers for the servo hatch in the top of the wing and bellcrank access in the bottom of the wing were made of 1/32" ply covered with the covering materials. Aileron hinges are also Coverite while the rudder and stab used Sig hinges.

The wing strut brace was half of a Sig hinge epoxied in a slot at the top, the other half hinge was epoxied between 3/32" balsa squares which were epoxied to rib #6. This hinge half stuck out far enough so that the wing strut brace folds flat under the wing strut. The bottom of the wing strut brace has two small screw eyes in the bottom edge which pass through the wing strut and both are anchored with a piece of 1/32" music wire.

A 1/16" ply sheet, with 1/8" sq. spruce strips around the bottom, is fitted into the top of the cockpit; the flight pack switch and charging jack are located in this cover. The main purpose of this cover is to keep exhaust oil out of the cockpit. It may be readily removed to be cleaned with the rest of the plane at the end of the flying session.

As a result of the minor collision with a sidewalk curb previously mentioned, it was determined that a back brace was

necessary to strengthen the landing gear. This may be bent, wired, and soldered to the main gear. The other end should be fastened with a loop to one of the screws that holds the strut hinge on the bottom of the fuselage.

If you mount your engine exactly horizontal, there is a possibility your muffler may not fit. It may be necessary to rotate the engine mount a few degrees clockwise — looking at the spinner — to obtain sufficient muffler clearance. The only problem this could cause would be with the 1/2" balsa fill on the top of the nose.

Verification: When you order your plans for the Headwind "B" from RCM, it would be advisable to order the scale verification kit from Stewart Aircraft Corporation, 11420 State Route 165, Salem, Ohio 44460. This is the same kit that is sent to people interested in building the full size Headwind "B". It contains 8 x 10 reproductions of each sheet of the plans for building the full size Headwind. Also included are 3-views, a drawing of a complete full size without covering, and other incidental pictures --- it is well worth the $5.00 asking price. This kit was not available when I drew the plans (they were taken from a larger blue line from which the 3-view in the packet was taken). This Headwind is only Stand-Off Scale --- if you want to go exact scale, the verification kit is a necessity. □

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