

They used to say of the Jenny that if you released a bird between wings and it got away, you had a loose wire. Our Jenny has all the wires—tight.

## THE JENNY

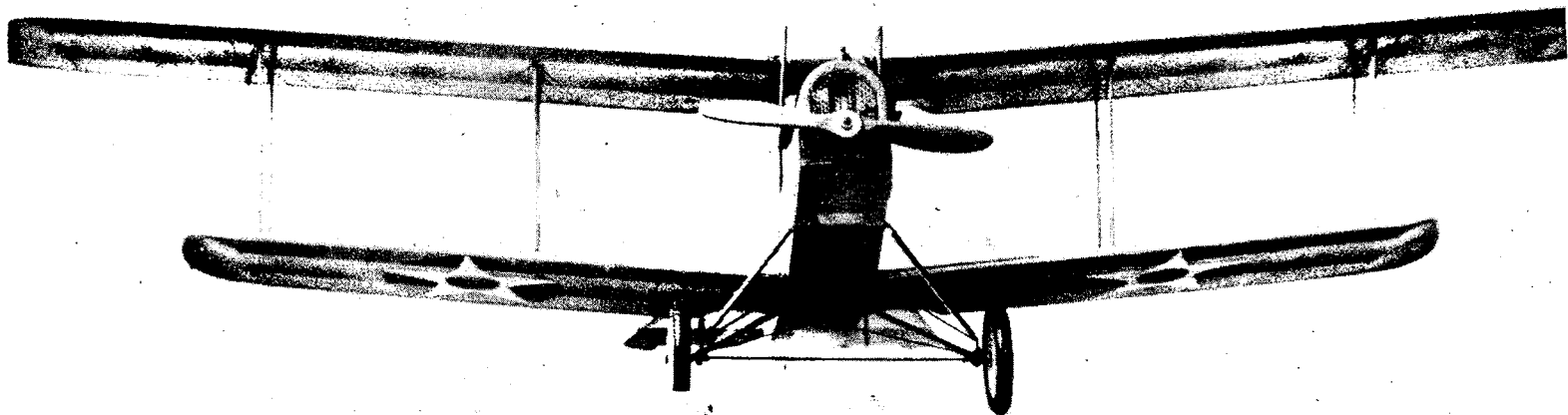


by HERBERT KELLEY

*Who can forget the romantic Curtiss JN-4D, the World War I trainer that became the most sworn at and revered plane in history? This fine flying replica is for the .045's and .049's.*

► This model was designed for authentic appearance and reliable flying. Although scale sizes could be used, wing and landing gear positions were changed to improve flight and landing characteristics.

Wet the lower longeron before bending to shape on the plan; this reduces stresses in the finished fuselage. The sides are assembled on the top view, starting from the nose and working aft. Check frequently for squareness. Cowling formers are next; those for the turtleback are notched. Cowling is cut from 1/32 sheet, wet and taped to a shaped block. When dry, the preformed cowl is cemented to the fuselage. This cowl extends from the firewall to the turtleback. Sand lightly and give a coat of cut dope to seal and stiffen it. The cockpits are traced from the plan with carbon paper and cut out with a pointed blade. Sand raw edges smooth and dope to seal them. Install turtleback formers of 1/16 x 1/16 balsa as indicated on plan; cut the louvre slots 3/32 wide, and bevel the forward edge ready to install the ears or flaps. These were considered necessary to help the airflow from the engine section. The firewall for the .045 *Spitfire* was made from 1/4 x 1/2 basswood or white pine. The modeler will have to adopt this area to his own engine, but be careful to place the motor in the same relation to the reference centers. Check and recement all the joints. Lightly sand



Cow's-eye view of the great post-war barnstormer as it glided, strutting wires, into a pasture. The prop standing still? Dead stick, that's all.

the whole fuselage and give one coat of cut dope to seal the structure.

The landing gear is bent to shape from one length of wire starting from the center of the front and working carefully around the whole gear. It was found best not to bend the axle guides down until the gear was installed on the fuselage. Groove the cross members of the fuselage before binding and cementing the landing gear in place. Be careful to true up gear so that fuselage sets square on a flat surface and the axle is square with the reference line of the fuselage. The tailskid is bent to shape from wire, then bound and cemented to the fuselage. Shape 1/8 x 1/4 balsa to a streamline shape, groove the front edge, and cement to the landing gear wire. Use plenty of cement in thin coats to make sure of a good bond. Make the lower wing tabs of 1/8 sheet balsa and cement in the place in the bottom of the fuselage. A 1/8 sq. piece of balsa is put under the front edge to give the proper angle of incidence to the lower wing. Next, 1/8 x 1/8 hard balsa pieces are cemented in the fuselage as shown on the plan to provide an anchor for the center section strut wires. These are gusseted and cross braced as shown. Bend center section wires to shape as shown, cut small holes in the cowl and bind and cement in place. Be careful to line the struts and square with fuselage before cementing.

Streamline is installed in the same way as for the landing gear. Diagonal bracing can be used in the fuselage for added strength but has not proved to be necessary for other than scale. Now the fuselage can be covered with *Silkspan*. Wet lightly with water to draw fabric taut and when dry, give one coat of cut dope.

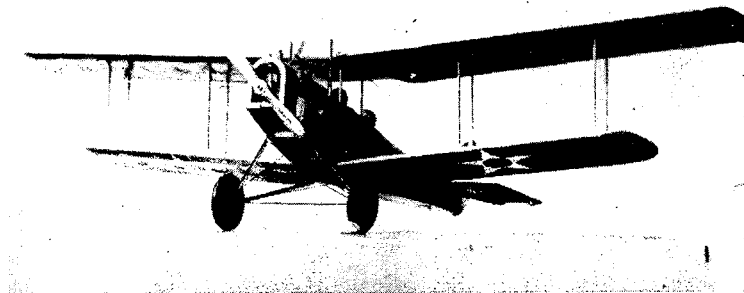
The control tabs of 1/8" sheet are installed with a hinge of copper sheet, cemented into slots cut in the wood. When dry, sand the wood flush to the surrounding surfaces and give a sealer coat of cut dope. The tail surfaces are cemented to the fuselage. Be sure this assembly lines up. Cut out all the ribs from 1/16 sheet stock, notching for the spars. Cut the rib template from a piece of aluminum. All the ribs for one panel were pinned together and sanded as a unit. Cut leading, trailing edges to length and

notch for ribs. Cut an oval hole in every other rib between the spar notches to allow the drag bracing to pass through. The bottom spars and the trailing edge are pinned in place on the plan and the ribs cemented in place. The upper spars and the leading edge are next. The drag bracing of 1/16 x 1/16 is cemented into the structure diagonally from a bottom spar to a top spar. Make and install the formed trailing edge (cut outs above the pilots' seats); and then wingtips. Remove panel from the plan and recement all the joints; place on a flat surface to dry. Make four panels, two left upper and lower, and two right upper and lower.

When the frames are thoroughly dry, sand all over. Cut a slot in the first two root ribs of each panel for the tab supports. Each panel is then fitted to its respective tab until it slides on and off easily. Be sure that the bottom of the airfoil is parallel to the sides of the slot. This is to insure that the angle of incidence is correct. Now cover the bottom of the top wings, and the top of the bottom wings. Do not shrink the *Silkspan* yet. Cut the struts to length from 1/16" hardwood doweling and put the wings on support tabs. Block fuselage up into flying position so the reference center is level, then secure in place. Block upper wings in proper position to give 1-1/2" of dihedral at the tip; secure in place. Block up lower wings so they are parallel to upper wings and secure in place. Now check the entire assembly to make sure it is square and lined up correctly in all respects. This is important. The wing struts are now put into place and secured by binding with thread and cement. Small wedge shaped blocks are used where necessary to make a good fit with the spars because the struts are staggered. When this was dry compression members, made from 1/16 sheet, were cemented alongside the struts between the spars to further strengthen the assembly. Cement 1/16 x 1/16 alongside the support tabs to insure a good fit in between the spars. Cement in the 1/16 in dowel cabane struts on the upper wings. Take plane out of jig and cover the rest of the panels. Place back in jig and spray water on the panels to shrink the fabric. When dry, apply a sealer coat of cut dope. The plane can now be removed and painted. (Continued on page 37)

Wings on each side are assembled as a set and are mounted by tongue-and-box method to knock off easily, undamaged, in a crack-up.

Acres of wing area make the author's *Jenny* an easy model to adjust and fly. Old style star insignia, Army colors, make a gay ship.



## The Jenny

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The cockades were cut out of a piece of cardboard and then outlined on the top of the upper wings and on the bottom of the lower wings, and colored with red, white and blue dope, as shown. Vertical stripes are ruled on the rudder and colored red, white and blue. The rest of the plane is colored silver or aluminum except the cylinder heads, exhaust pipes, and radiator, which are copper, and the tires, which are full black. Outline all control surface joints with a ruling pen and India ink. The lettering is done with a medium nib lettering pen.

Engine cylinder heads are shaped from 1/4 x 1/2 balsa blocks and cemented in place. Exhaust pipes are made from 1/8 x 1/4 balsa sanded to oval shape and cemented in place. The top engine cowling and radiator are made into a single unit. The 1/32 sheet is wet and preformed on the shaped block while making the radiator from 1/4 sheet medium balsa. The 1/16 x 1/16 balsa strips are cemented to the back of the radiator to provide guides for holding it in the fuselage, and to provide bearing surface to cement cowl to. Hole was cut in the cowl to provide room for the cylinder head to stick through. Copper screening was used for the radiator core, and to the inside of the shell. After assembly, a slot was cut in the bottom of the radiator so the unit could slide into place on the nose, over the crankshaft of the motor. This piece was cemented on the front of the fuselage. Cut another hole in the cowl to be able to prime the motor for starting.

The cockpit coaming is made from split black tubing. Squeeze into the tube and install over the edge of the cowl. The joint was made at the front of the cockpit. Windshields are cut from plastic, heated in hot water to make pliable and taped to the cowl block to preform them. When cool, they are cemented to the front of the cockpits.

Build up the center section around the wing support tab and install on the center section struts. Care must be taken to line it up with the fuselage, and to make sure the bottom of the airfoil is parallel with the reference centers. This is to give the upper wing no angle of incidence. Use plenty of cement in thin layers to get a good joint. The center section can now be covered, the bottom with 1/32 sheet balsa and the top with *Silkspan*. Shrink with water and apply one coat of cut dope to seal.

The axle is 1/16 piano wire. Solder washers to the wire so that it centers on the landing gear struts. Install wheels and solder washers to the end of the wire. Secure the axle to the struts with rubber bands; these act as shock absorbers. Secure double brace wires of silk thread to the landing gear struts with clove hitches. The clove hitch is used because it can be tightened as it is tied and does not loosen. Knots are doped before trimming off the ends of the thread. Information on the clove hitch can be obtained from any Boy Scout Handbook.

Both the tail surfaces are made in like manner. Movable control tabs were inset in the trailing edges of the surfaces instead of using the large scale surfaces. It was thought that adjustments for flying would be too delicate to be practical. The surfaces are built as one unit about the spar. Strip 1/16 balsa sheet into 1/4 strips to make the ribs. Assemble the unit on the plan, cement, and when dry, remove and recement all the joints before sanding to shape. Make a flat sandpaper block about 2 wide by 6 long by cementing sandpaper to a block of wood. In this way, sanding can be done uniformly over a wide area. After sanding to shape, dope the frame with a coat of cut dope to seal it, and lay flat to dry. Be careful of warps here because a bent frame causes bad flying characteristics. The control horns are sanded to shape and cemented in place before covering the surfaces. Cover with *Silkspan* that has been slightly dampened and finish off with a coat of cut dope when dry. It might be well to lay a weight or two on the frame to keep it from warping.

All control and bracing wires are now installed. Heavy silk thread was used. It is best

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to put in the drag and anti-drag wires between the struts first. These are secured with a clove hitch; put a drop of dope on the knot to hold it. Landing and flying wires are next. Start by cementing a length of thread to the wing root ribs. When dry, slip the wings on the tab supports, and then tie threads to the struts, alternate top and bottom. Do not pull threads too tight because it will pull the wing panels out of line. Use a long thin darning needle to run thread through the fabric of balsa surfaces as necessary. When the rigging job is complete, apply a coat of fuel proofer to the whole structure; a double coat was put on the engine space and the bottom of the fuselage. A spray gun was found to give the best finish, but a good wide brush used rapidly gives a good job.

Pilots are carved from balsa blocks and hollowed inside for lightness. The method described by the Cleveland Model Airplane Company on all of their plans was used. Pilots are given one light coat of dope to seal the wood, and painted with water colors to give a lifelike appearance. Give them a coat of fuel proofer, and when dry, cement them in the cockpits.

The motor has one degree downthrust and one degree right-thrust. The downthrust helps to make the gliding angle better and the right-thrust helps to counteract the torque.

The model was tested in a field of tall grass for the best glide, and when a nice even glide was obtained, was flown with power. Make the first flight of short motor run, and with the mixture very rich to cut down power and rpm. As adjustments were made to correct the flight characteristics, the motor gradually leaned out until it was operating under full power. Do not hurry this process because it often leads to a bad crackup.