



The completed model, accurate to scale and an exceptionally fine flier when fitted with the flying propeller

# Build and Fly the Potez 37R-2

How You Can Create a Realistic Scale Model of a Famous French Pursuit Plane That Will Have Excellent Flying Qualities

By **NICK LIMBER**

MANY model builders who prefer building the latest airplanes often sit up and take notice of an older plane which they have overlooked. This month we are presenting just such an airplane. The Potez 37R-2 is not an old plane but it has been overlooked by the model builders. Plans for this ship were kept strictly confidential by the French Air Ministry until a short time ago. When the ship was first introduced by Potez, people outside of official circles believed the ship to have a speed of 133 m.p.h. Today we know that it can fly at 164 m.p.h. when fully loaded. It is of all metal construction, including the covering. It has a total weight of 5,558.73 lbs. and has a 24,606 ft. ceiling. If we stop for a moment to consider, we can easily understand why a ship of this type has been popular in the French Air Force. It is the type of ship that the model builders have been waiting for. The type of ship that flies even better than it looks and you must admit it is a trim-looking bus at that. Before you attempt to construct your model might I suggest you make sure you understand the drawings completely. This will help you work more smoothly once you have started.

## Fuselage Construction

Cut all the fuselage forms front 1/16" sheet balsa. Drawings of the forms appear on plates A and B. By referring to plate A you will notice that the main part of the fuselage is constructed in two pieces. Forms for the lower part must first be made and glued to 1/16" sq. longerons. Once the two main longerons or stringers have been glued, the auxiliary stringers are glued in the notches of the forms. The same procedure is followed in the construction of the upper part with the exception that the two cockpits are made of 1/32" sheet balsa and glued between the proper forms. The gunners' pit may prove a bit difficult but if you wet your sheet before you try to shape it in cylindrical form, it will prove to be very simple indeed. We now may glue the two parts of our fuselage. The two main longerons are used as the parts of the fuselage that hold the two shells of the body together.

When the main part of the fuselage has been completed we turn our attention to the nose of the ship. The nose is carved of two soft balsa blocks that are glued together after they have been given the desired shape and thickness. The blocks we use must each be 3-5/8" x 2-3/8" x 13/16". The side view is traced front plate A and the top view from plate B. You may construct each part or half of

the nose separately or you may glue the two blocks lightly together and then shape them. The correct shape of the nose may be obtained from the body forms A and F and the nose plug arrest shown in plate A. You use sandpaper to form the nose. Once the proper outer shape has been obtained, you take the blocks apart (if you have glued them lightly together as suggested). By using a sharp knife with a narrow blade you will be able to carve out the inner portion of the block. Finish the inner surface with sandpaper and be sure that the walls are no thicker than 1/8". With this operation completed you then reglue the two pieces together and the nose block is finished and ready to be cemented to the already completed portion of the body.

Now turn your attention to the tail boom. The boom is constructed of two balsa blocks that have been shaped, hollowed out and then glued together. The drawings of the tail boom are on plates C and D. Plate C shows the side view and the cross section of the portion of the boom that we glue to body forms E and K. The balsa blocks that are used for the tail boom construction are 4-1/8" x 5/8" x 3/4". After you have shaped the blocks as required, you proceed hollowing out the inner portion. Hollow this until the

walls are slightly over 1/16" in thickness. A pencil with thin sandpaper wrapped around it will prove very useful in sanding down the inner surface of the walls. Before we glue the two pieces together, we must glue two pieces of hard strip balsa in the tail boom so as the tail plug will not spin when we start to wind the ship. The ends of the strips must come flush with the end of the tail boom. When you have finished gluing these strips you glue the two halves of the boom together and cement it to the fuselage. Please note that the strips you glue as tail plug arrests are 1/16" in thickness and that they are glued straight and not at an angle.

Our next step is to make the motor hoods for the nose of the ship. Drawings of these will be found on plate E. Two hoods are required and if the model builder wishes to reduce the weight he may hollow them out. If you are not a person who has been building models for a long time, I would not advise hollowing the motor hoods. When you have completed them by referring to the front view of the ship, which is also on plate E, you will see just at what angle to glue them on the nose. If you place a bit of excess content around the hoods you will be surprised at the swell fillet it makes. Our attention is now focused on plate A and the nose plug arrest. This arrest is carved from 1/16" sheet balsa and glued to the forward part of the nose. We are now ready to cover our fuselage. If you wish you may use sanded 1/32" sheet balsa covering as the model in the photographs. If however, you are not accustomed to covering ships with balsa, use tissue. Be sure however, that you avoid wrinkles as they ruin the beauty of the ship. Regardless of your choice for covering material, dope the fuselage. More dope is applied if you have chosen tissue, if you have used balsa, sand the surface between each coat of dope. I would suggest three coats if a fine finish is desired.

Now that our fuselage is finished, or almost finished I would suggest constructing the tail surfaces.

## **Tail Assembly and Mounting**

For drawings of the tail we turn to plate B. Let us first construct the elevators and then the rudder. The elevators are constructed in two pieces and are then glued to the base of the rudder. The leading edge of the elevators is 1/8" x 1/8" sanded. The ribs are of 1/16" sheet balsa and the spars of thin bamboo. The tip and trailing edge is also of bamboo. In constructing the elevators first cut out and glue the ribs to the spars the proper distance apart as shown in the drawing. Then we shape the leading edge and glue that to the ribs. Our final step is to steam the bamboo trailing edge and glue that into place. A candle flame will prove useful in shaping the edge. After you have completed both sides, allow to dry and proceed with the rudder. The base of the rudder is of 1/16" sheet balsa and the bracing of 1/16" sq. strip. The leading edge is of bamboo that is a little thicker than that used for the trailing edge. When both the rudder and elevators have been completed, cover them with tissue and dope lightly. Allow the dope to dry and then glue the elevators to the base of the rudder. The entire tail unit is then glued to the tail boom as illustrated in plate C. We also construct the tail struts that appear on the same plate and glue them to the tail boom and elevators.

## **Wing Construction**

It is now necessary for us to construct the wing. The ribs appear on plate C and are made of 1/16" sheet balsa. The wing tip also appears on the same plate and it is advisable to construct that as soon as you have carved the ribs. The tip is carved from a hard balsa sheet that is thick enough to give you the proper cross sections. By applying dope to the tips you can make them stronger and prevent them from breaking. For a top view of the wing, turn to plate D. Although this view is not full size it will help you construct the wing. The wing spars used must be 1/16" x 1/8". The ribs are first glued to the spars at one inch intervals. After the ribs have been glued, shape your leading edge as shown on the drawings of the ribs and glue it to the ribs. A 1/4" sq. strip will be the right size wood to use for the leading edge. A bamboo trailing edge is used at the center section and the

true shape of the curve employed may be found on plate B. The rest of the trailing edge may be of 1/16" balsa. Our next step is to cement the tips on our wings and then we are ready to cover them. Tissue is used to cover the wings and care must be taken that no wrinkles are present. Once we have covered both halves of the wing, we dope it and allow to dry. When the dope is dry we proceed to cement the two halves together. It is important to have 3/4" dihedral at each tip when you glue the halves together. If a small wedge shaped piece of balsa is put between the two halves you will find that you will be able to retain the proper dihedral angle.

## **Strut Assembly**

We put our wing aside and prepare to make our struts. First we make the N struts as shown in plate E. After they are made, we glue them to the fuselage and allow the cement to dry. Once the cement is dry glue the wing to the struts. The ends of the struts are glued to rib 2. While we are waiting for the wing to dry properly on the struts, we turn to making of the wing struts. When the wing struts are finished we glue them from rib 6 to the fuselage. Struts M and S are then constructed and cemented in place. Our landing gear struts are next in line and after they have been constructed, cement them to the fuselage. Be sure that the wood chosen for landing gear struts is the hardest available. Bamboo strips are now placed between the N struts and we may start work on the wheel pants.

## **Finishing the Model**

The wheel pants are constructed of three pieces of sheet balsa glued together after shaped as shown in plate E. Once the glue hardens you may shape the pants as illustrated in the top and front view of the same. Wheels are then made or bought and placed in the pants. The shock absorbers are of .028 music wire and are shaped as shown on plate D. Insert the long end of the shock absorber into strut P and cement. Cement also the same at the sides of the wheel pants. We now turn to plate C and make our tail skid. The tail skid is then cemented to the tail

boom and allowed to harden. The tail and nose plugs are next in line for construction. Drawings appear on plate C and A. Use very hard wood when constructing the plugs and you will never regret it. The rubber hook used at the tail plug is of

.028 wire. Also note that you must use very hard strips of balsa as arrests on the nose plug. The tail plug omits these arrests but employs notches into which the balsa strips already cemented to the inside of the boom fit and thus prevent the plug from spinning.

Our next concern is to place the minor details such as the radiator, exhaust stacks and cooling fins Q and R on the fuselage. The cooling fins and radiator are made of thin cardboard. Twelve pieces are required to complete the radiator. If you turn to plate A you will notice that a 1/16" sheet balsa form is cemented directly behind the gunners' pit. After carving this piece out, cement it as shown in the side view.

Next we construct the machine-gun. Drawings appear on plate D. If you follow the drawings closely in the construction of the gun you will be proud of it. Notice that the gun is mounted on a semicircular piece of .028 wire. This wire in turn is

cemented to the gunners' pit. The windshield is then made and placed before the forward pit.

Now that our model is almost completed we turn to constructing the props. If you wish to fly the model, construct the flying prop which appears on plate D. A 2" x 3/4" x 7" block is used for the prop. The true shape of the prop is obtained by first using a sharp knife and then sandpaper. Be sure that you properly balance the prop before you apply dope to it. The proper balance is essential to the performance of the model. It is of course necessary to locate the shaft in the prop then place a loose washer between the prop and the plug before you bend the .028 wire in hook form. The forward end must have an L shape so that it permits a firm hold in the prop base. When this has been completed, the model is finished. If however, you wish to use the ship for display purposes only, then make the scale prop as shown on plate C. A prop spinner and spinner tip is required with the scale prop. The model may also be painted if you wish it so.

The builders who wish to fly their model but also wish to paint it may use colored tissue for the wings and tail and lightly color the fuselage.

The struts and gun are painted black; the fuselage, olive drab and the wings and tail orange. The French red, white and blue insignia may be placed on the tail and wings. The scale prop is painted silver with black tips. The wheel pants are also painted silver. The radiator and cooling fins, black.

If you are to fly the model, use eight strands of 1/8 flat brown rubber lubricated. An S hook will also be required.

### **Flight Directions**

Glide the model over soft ground first and if it is balanced, you may wind her up and let her go. If however, it is not balanced, you may balance it with the use of a bit of weight or by warping the controls. Once the model is properly balanced, you may fly it to your heart's content. It will prove a very stable little ship and probably surprise you with its endurance. I would suggest however, that you examine the ship after every landing it makes. In this way you will be able to discover if any damage has been done and repair it before the next flight. If you practice this, you will be able to enjoy your model much longer and it will give you many hours of extra flying thrills.

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