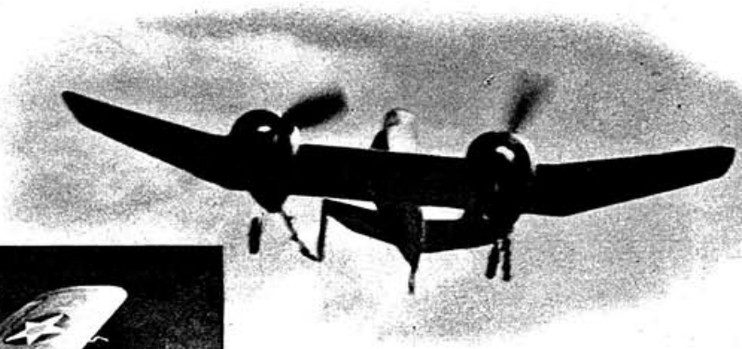
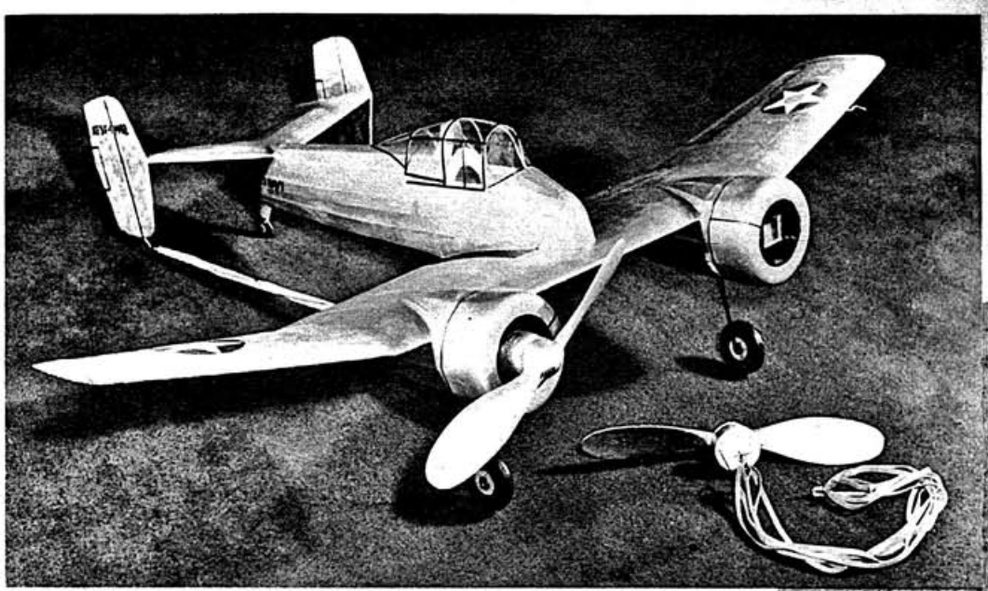
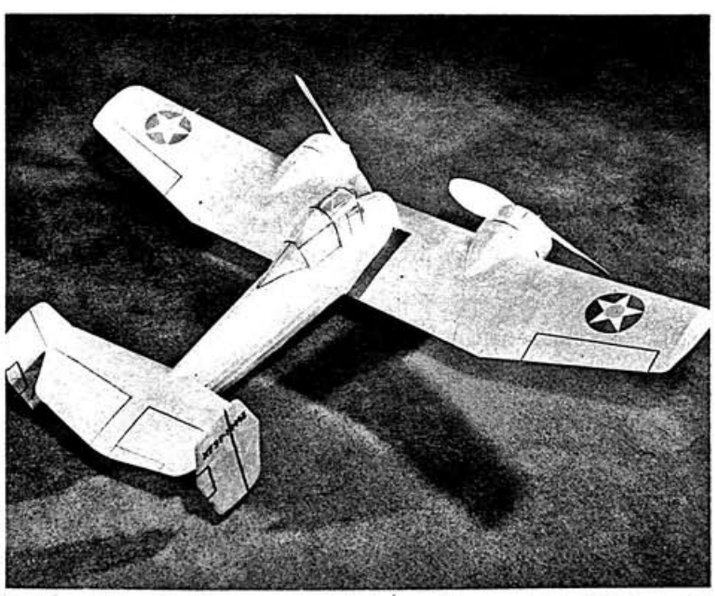
SKYROCKET



BY SID STRUHL

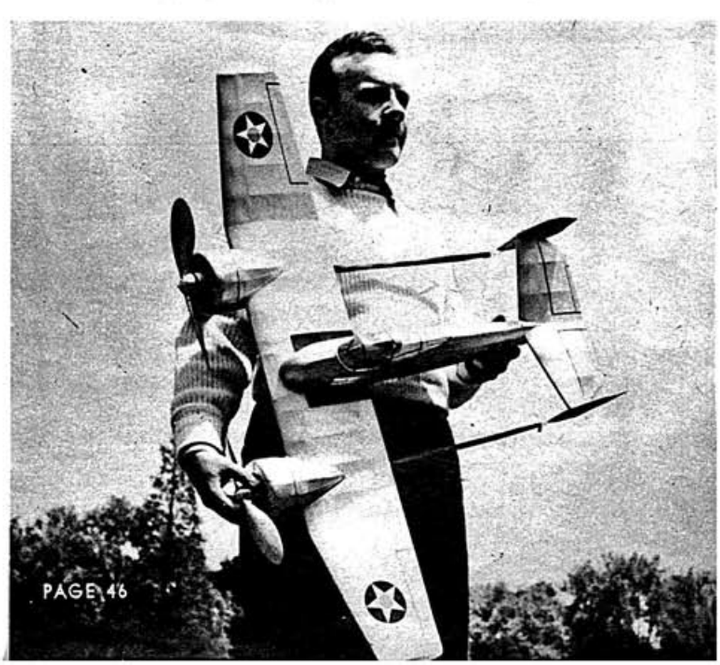


Built to the exact scale of an inch to the foot, only dihedral and lower rudders were changed for flyability. Rubber motors detach for appearance.



Scale stabilizer is thirty percent of wing, making a stable flying model. Though built as strongly as a Wakefield model, weight is only five ounces.

Two twelve-inch props turn in opposite directions to counteract the torque.



Skyrocket coming up! Model does two minutes in calm air, winder wound.

This flying scale Grumman Skyrocket will hit the clouds if you don't watch out!

WE are presenting this month for our flying scale fans a most unusual model. The Grumman Skyrocket! Although performance figures are, of course, a military secret, the ship is believed to attain a top speed of at least 450 miles per hour, and climb in the neighborhood of 6,000 feet per minute—which is straight up! The cruising range of the Skyrocket is just as startling. It is more than 1,200 miles. Carrying two cannons and four heavy machine guns, the Skyrocket is just about the most heavily armed fighter in the world.

The model used by the navy employs two Wright Double Row Cyclone 14 engines, model Gr-2600-a5d, each developing 1,200 horsepower at 2,300 r.p.m. at 8,000 feet. This engine makes 1,500 horsepower available for the take-off and for a five-minute-maximum engine-run time. The army version of the Grumman Skyrocket will be powered by two in-line Allisons.

Our model of the Skyrocket is built to the exact scale of 1 inch to 1 foot with but a slight variation in *(Turn to page 64)*

The Skyrocket

(Continued from page 46)

the dihedral of the wing and the lengthening of the lower portion of the rudders. The alteration was necessary on the rudders to provide an even line of thrust.

Although our model is a little larger than the average flying scale model, having a wingspan of 42 inches, nevertheless the flights are something to behold. As you can well imagine, the climb is terrific, due to the thrust of two 12-inch propellers. Torque is eliminated by having the propellers revolve in opposite directions, which is a great boost to stability. Flights are very stable, thanks to the general set-up of the plane. The scale stabilizer is of ample size, 30 percent of the wing area, and we made it more effective by using a lifting airfoil. Tip spillage is at a minimum at the stabilizer tips because of the twin rudders.

Construction used on the model is comparable to the strongest Wakefield entry and yet the weight of the finished model was only 5 ounces, dope and all. This is not up to weight rule, because there are 220 square inches in the wing.

After glancing at the plans you will note that although the ship is strong the construction is rather simple. However, the working time is increased over the average scale model by its size.

CONSTRUCTION

When working from the magazine plans it will be necessary to increase them to full scale.

The fuselage is built on two side keels which we shall call the master stringers. Cut two of these master stringers as shown on the plans from full-cut 1/8" sheet balsa and mark the position of the fuselage bulkheads upon them. Now cut the fuselage bulkheads as shown from 1/16" sheet balsa. Since the bulkheads are so wide you will have to cement two sheets together to obtain the necessary width. Cement the bulkheads in their proper positions on the master stringers and allow to dry. Keep a check to make sure that they are at right angles to master stringers. You may now add the other fuselage stringers, which are 1/16 x 1/8" strips set on edge. Carve the nose block and the tail block to rough shape and cement the nose block to "A" and the tail block to "H." After the cement has set, you may finish them off with sandpaper. Note the 1/16" sheet fill-in between stringers just below the stabilizer, at the wing-fuselage joint and at the cockpit.

Make the tail wheel as shown in the plans, but do not install it until after the fuselage is covered. The bamboo framework of the cockpit inclosure is not made until the fuselage is covered.

The fuselage is covered with wet Silkspan. When using Silkspan wet, large areas may be covered with one piece of paper. Thus you will need only one piece of paper for each side of the fuselage. The bottom of the fuselage from "D" forward is not covered until the wing is cemented in place.

The motor nacelles are constructed in much the same manner as the fuselage. Of course, two nacelles are required. Note how the rear blocks of the nacelles are carved out to allow passage of the rubber motors from the prop shafts to the rear hooks located at the bottom of the rudders.

All nacelle stringers are 1/16 x 1/8" except the stringer that rests upon the bottom of the wing, this being 1/8" square. You will note that the stringers on the top of the wing behind bulkhead "L" are installed after the nacelles are cemented to the completed wing. The front section of the nacelles is covered with soft 1/16" sheet balsa wrapped around the front to simulate the cowling.

Bend the landing gear to the shape shown in the plans from .049 music wire and cement the front strut to "L" and the rear strut to "M." When the cement has set, sew right through the bulkheads with needle and thread to make a very strong joint. Then add several more coats of glue. The wheels are 2 1/4" in diameter and are of 11/16" thick laminated balsa. Cement large-faced bushings to each side of the wheels to form a bearing. A drop of cement at the end of each axle will keep the wheels in place.

Cover the nacelles in the same manner as the fuselage.

The complete wing plan is shown on the plans, so you may build it directly upon them. Structure member sizes are given in the plans. Pin the trailing edge and the center spar on the plans. Cut the necessary wing ribs from quarter-grained 1/16" sheet stock. Cement the ribs in place and then add the leading edge. After the cement has set, remove the structure from the plans and install 2 1/2" dihedral at each wing tip. Now add the two smaller spars of 1/16 x 1/8" strips of balsa. Add the wing tips, which are shaped from very soft and light balsa. The 1/64" sheet covering of the leading edge is now cemented into place.

Cover the wing with Silkspan, using one piece of paper for each wing panel. After the covering is sprayed with water and has dried, brush two coats of clear dope on the covering. Now cut a section to match the fuselage contour at the wing center section. Cement bulkhead "C" to the top of the trailing edge, cement bulkhead "B" to the front part of the wing spar running completely to the bottom of the spar, and cement the bottom of the nose block to the sheet covering of the leading edge. If the plans are followed accurately all these members will line up perfectly.

The stabilizer is built in much the same way as the wing. Remember that the stabilizer has 1" dihedral at each tip. Note the 1/8" square antitwist strut which is put in after the stabilizer is completed. It is advisable to put more 1/8" square diagonal braces in the stabilizer than shown for the extra strength that is needed. Remember that the stabilizer has to stand the strain of the two tightly wound motors.

Two rudders are required and they may be built directly upon the plans. Use 1/8" flat stock throughout. Bend two rear hooks to the shape shown and cement very firmly to the bottom of the rudders as indicated in the plans.

Cover the stabilizer and rudders with Silkspan in the usual manner. Cement the rudders to the ends of the stabilizer very securely. Now cement the stabilizer to the fuselage. It would be wise to put a slight degree of positive incidence in the stabilizer to do away with some of the balancing weight in the nose of the model.

Carve two propellers from blocks of balsa 1 1/4 x 1 5/8 x 12". Shape the blocks to the plan shown and then proceed to carve a right and a left-handed propeller. That is, be sure that the propellers revolve in opposite directions. Leave the blades rather thick for the extra strength and extra weight in the nose. Add a spinner to each propeller hub from hard balsa. Use some sort of free-wheeling on the propellers to improve the glide.

Make two nose plugs from hard balsa as shown in the side view of the nacelle. The plug is removable and is held in place by a balsa square to fit snugly into bulkhead "K." Cement large-faced bushings in the front of the nose plug and to the back of the propeller spinner. Bend a prop shaft from .049 music wire, slip through the nose plug, insert several washers and then into the propeller.

When the model is completely covered and assembled, brush on two coats of clear dope. All exposed wood parts such as the propellers are given more coats of clear dope. When the dope has dried, sand the fuzz off with fine sandpaper such as 10/0. Now brush on two coats of very thin silver dope. Keep the dope thin enough to give a solid coat of color. All details are in black dope, such as the wing walk and the motor fronts. Elevator, rudders and ailerons are shown by doping strips of black over the covering.

FLYING

The original model was powered by eight strands of 3/16" flat brown rubber, due to the lightness of the wood used. For the average model ten strands of 3/16" flat rubber should be enough power to take it plenty high.

It will be necessary to bend two S hooks to hook the motors onto the rear hooks. To wind the ship up is a two-man job. Have your helper hold the ship by the props and stretch the motors out past the tail and hook them to a double winder such as used on twin-pushers.

Before any test flights are made, glide the model over tall grass to adjust the glide. In all probability the ship will be slightly tail-heavy; that is, it stalls or mushes in the glide. Add the required weight to the front of the motor nacelles until the glide is smooth.

Starting with about seventy-five or 100 turns in the motor, try several R. O. G. flights until you have all of the bugs ironed out. Adjust the rudders to have the model circle. It does not matter what direction the turn is, because there is no torque. Under full power the model is capable of flights close to two minutes in calm air. And with strong thermals present—well, who knows!