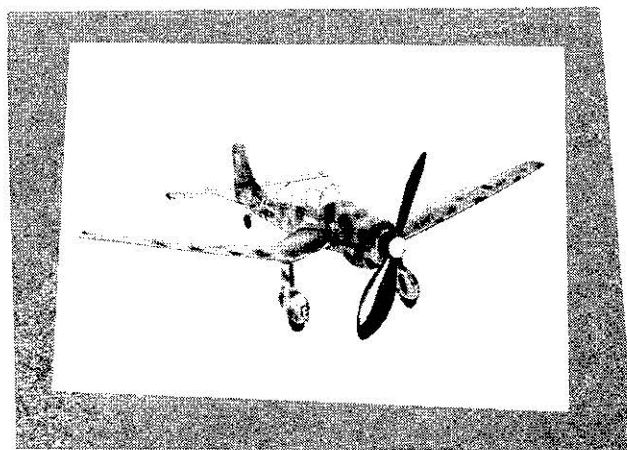
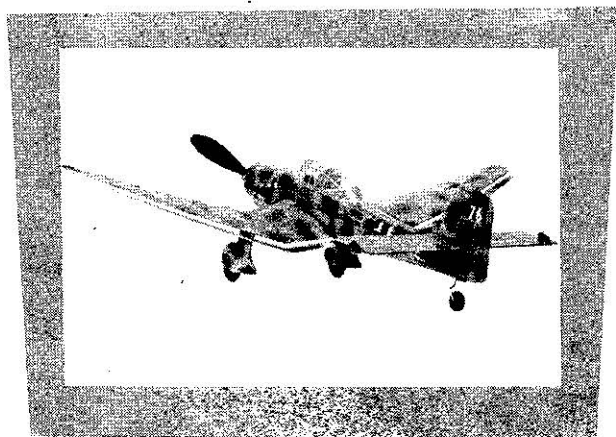




STUKA

by Paul Del Gatto

Eye-catching, appealing and liked by modellers everywhere



The Junkers-Ju 87D Stuka has been a favorite with modellers for years. Here you see it from enough angles to point up why. Full-size plans accompany this article. Wanta try a Baby-Bee?

● Rubber-powered scale models are better than ever! Recently when we designed and built the Focke-Wulf Stosser we did not envision that our interest in rubber models would prevail upon us to do another project so soon.

This time we decided on a low wing beauty, the never to be forgotten "Stuka," which made its mark in the early days of World War II in the battle for Britain.

It may be true that low wing models never have enjoyed the success that high wing models have, when it comes to flying. Yet, there remains the con-

stant fascination of a low wing design, enhanced by a sleek looking appearance and authentically reproduced color schemes and markings.

When it comes to performance, it is never the length of time low wing beauty stays in the air, but rather its zooming take-off and climb and the fast penetrating glide which is very typical of the way these aircraft would generally fly.

Other model builders must share our enthusiasm, for since we did the "Stosser" there has been an awakening interest shown by many model builders.

Construction of the model is similar to that of the Stosser, but because of its natural configuration it worked out even easier, without losing any of its realism, and still keeping it nice and light.

CONSTRUCTION: Start by constructing the fuselage. First, cut the fuselage side pieces as indicated on the plan. The formers are all cut from $\frac{1}{16}$ " sheet and are made in halves, which means the fuselage must be built in two sections. The keel pieces are cut from $\frac{1}{16}$ " x $\frac{1}{8}$ " hard balsa.

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Begin assembly by pinning down the keel strips and adding the formers. After this has dried, remove the assembly from the plan and add the remaining former halves to the opposite side.

Begin adding the $\frac{1}{8}$ " stringers in matching pairs, one on each side. Cement them in the rear former notches first and then secure them gradually toward the front. This helps reduce the possibility of building a distorted fuselage. Next, add the $\frac{1}{8}$ " sheet sides in position. Here again, it would be best to do both sides together, securing them gradually in place.

The nose piece is laminated from $\frac{1}{8}$ " sheet cross-grained, and provision should be made so that it is easily removed for winding the rubber motor. Install the rubber motor at this time as it will simplify things later on. We found that four strands of $\frac{1}{8}$ " flat brown rubber 11" long is ample for long cruising flights. For the rapid take-off and zooming climb, we would recommend six strands of $\frac{1}{8}$ " flat 11" long, or its equivalent.

The tail surfaces require little explanation, as they are built from strip stock, directly over the plan. Once dry, they are removed carefully, sanded to shape and cleaned up. The joints are then given another light coat of cement to provide added strength.

The wing assembly, because of its dihedral shape, may give the less experienced model builder some difficulty, however, if particular care is exercised it will mean nothing but a little extra time.

The most important thing of course is the tapered spar assembly to which the wire landing gear struts are bound and fastened. We would advise that the wing halves be assembled in a standard manner, building the wing directly over the plan, minus the main spar assembly. After each finished wing half has dried, slit the leading and trailing edge at R-3 and re-cement at the required dihedral angle, then install the completed main spar assembly.

Carving a propeller appears to be a tedious job, and generally it is for someone who has not as yet undergone his first experience. We suggest that you make the effort even if you find it somewhat difficult at first. The advantage of a carved balsa propeller is its lighter weight, which will compensate for even a poorly carved propeller.

Blank out the propeller as indicated on the drawing and remove the portions which are shown shaded. Since the propeller will rotate counter-clockwise while unwinding. The propeller leading edge is always on the left-hand side, looking from the front. Mark the ends of the block to serve as a guide, for carving the propeller correctly.

Begin rough carving the underside
(Please turn Page)

of both propeller blades until much of the excess has been removed and all that remains is to sand it smooth and add a slight bit of undercamber.

The upper camber of each blade can now be carved roughly to shape. When the approximate airfoil appears to be taking shape, it would be best to start using varying grades of sandpaper to remove the remaining balsa, trimming the propeller down to the desired airfoil shape. Then, round off the blade tips of the propeller and sand the propeller tips again, trimming them down to restore the desired airfoil shape.

At this time, it would be best to complete the propeller assembly, main landing gear and tail strut installation, and also add whatever balsa fill-in and planking is required on the fuselage, preparatory to covering.

Begin covering with the tail assembly. Coat the outlines with a mixture of half dope and half cement, then apply the tissue over the surface being covered and smooth out the wrinkles by pulling the tissue taut on all edges. Allow the adhesive to dry. Then, trim off the excess paper with a sharp razor blade.

Install the complete tail assembly in position; in order to permit the fuselage to be covered smoothly at the junction of the tail surface to the fuselage. Begin covering the fuselage with the top stringered portion of the fuselage, as this is the most difficult part which has to be done. To prevent excessive wrinkling it will be necessary to cover only a few sections at a time. The best way to check the length required, is to cut a piece for a proposed area and lay it against it, if it cannot be covered without excessive wrinkling then you are in all probability trying to cover too much of a curved area at one time.

Repeat this same procedure for the bottom stringered portion of the fuselage. The flat fuselage sides are then covered with one strip, running the complete length of the fuselage. However, after the sides have been covered, trim away much of the paper at the junction of the wing panels and the fuselage. This will insure a firm bond when the wing panels are cemented in place.

Because of the inverted gull wing, it will be necessary to cover the wing with eight strips of paper. As with the fuselage, begin covering with the most difficult portion first, which in this case happens to be the top surface of the wing. Start by covering the root section and then by covering the main top wing panel out towards the wing tip. When all the surfaces have been covered, spray them with a light coat of water sufficient enough to dampen the paper.

The flaps are cut from $\frac{1}{32}$ " hard balsa, and secured in place on the wing bottom with thin wire supports. These too are then covered with tissue, bonded to the entire upper and lower surface. The canopy consists of four pieces of this celluloid, cemented in their respective positions. The win-

dow framing is cut from gummed silver "Scotch" brand tape.

Complete the model's assembly by installing the two wing panels into the notches in the fuselage sides. Check the proper alignment while they are drying. Add the remaining trim details, such as, simulated exhaust stacks, masts and struts. When completed, brush on two or three coats of clear dope, sanding gently between coats for a smooth finish. If you would like to try to simulate camouflage such as we have done, we would suggest that a small spray atomizer be used. When this is completed, add remaining details, such as, numbers, insignia and control surface outlines.

FLYING: The model is powered with 6 to 8 strands of $\frac{1}{8}$ " flat T-56 rubber made into a motor 11" long. After the motor has been made up it should be washed to remove storage powder and dust and then should be dried and lubricated. We suggest lubricating with a thin coating of castor oil or a mixture of green soap and glycerine (50-50 mixture) before attempting to fly the model. Check to see whether it is properly balanced. The most desirable position is shown on the plan.

If your model doesn't balance close to that point it would be best to add some temporary clay ballast, fore or aft, depending on the situation. Test glide the model and observe its tendencies. If the model stalls, then add ballast to the nose section. If it should dive then add ballast.

When you feel the glide is satisfactory, wind the propeller up about 50 turns and then gently hand launch the model at a level angle. Observe the flight path and the attitude of the model. If it shows no tendency to turn either to the right or to the left, then on successive test flights gradually bend the rudder to the right or to the left until a gentle circle in the climb has been established. If the model stalls under power, you may have to tilt the nose block down, by adding a shim of balsa between the nose block and the top of the fuselage; this produces a downward effect under power, better known as "downthrust." Remember to apply all adjustments with care and to increase the power slowly.

BILL OF MATERIALS

(Balsa unless otherwise specified)

1- $\frac{1}{2}$ " x 3" x 18"	Fuselage planking, wing flaps
3- $\frac{1}{16}$ " x 3" x 36"	Fuselage sides, formers, wing ribs, wing spar, wheel plants, fill-in
1- $\frac{1}{8}$ " x 3" x 18"	Laminated nose piece wheel pants, struts, spinner
4- $\frac{1}{16}$ " x $\frac{1}{8}$ " x 36"	Fuselage stringers, tail surfaces
2- $\frac{1}{16}$ " x $\frac{1}{8}$ " x 36"	Fuselage keel, tail surfaces
1- $\frac{1}{8}$ " x $\frac{1}{8}$ " x 18"	Wing leading edge
1- $\frac{1}{16}$ " x $\frac{1}{4}$ " x 36"	Wing trailing edge, tail surfaces

Balsa prop block; $\frac{1}{16}$ " diameter hardwood wheels; .032", .040", .049" diameter wire; six feet of $\frac{1}{8}$ " flat brown rubber; thrust button; washers; tissue paper covering; clear dope and cement; celluloid canopy; sandpaper; decals.