



Albatros D.V

In other days German fighter planes plagued Allied pilots over the Western Front. Here's a model of one of their best



PRIOR to the outbreak of World War I much discussion was rampant as to the military value of aircraft. Obvious as it may now appear in the light of subsequent events' few -foresaw the amazing development of air power or the neck-to-neck race for air supremacy that was to start in 1914 and extend through two bitter wars.

In the first war no overwhelming advantage was ever attained by either side through progress of design or production. If at any time a machine of exceptionally high performance appeared, it was not long before the other side copied and improved on its best features. This holds true even today, for while the Luftwaffe has been dealt a severe lashing, largely through numerical superiority of the Allies, no one who has met their aircraft in combat will concede that they are possessed of inferior fighting capabilities.

Today's Messerschmitts and Focke-Wulfs, outstanding fighters of the Luftwaffe, have their counterparts in the notorious Fokkers and Albatrosses of the German Imperial Air Corps of the first World War. During the early part of the struggle little was heard of Albatros planes, but in 1916 their fast, shark-like bodied fighters made their appearance and amassed considerable destruction on Allied air power. It was in an Albatros that Germany's top ace, Baron von Richthofen, scored most of his 80 confirmed victories.

Perhaps the best known of the Albatros scouts was the D-3 of 1916-17 and the later model D-5. The D-5 had a 225 hp water-cooled Mercedes engine and a speed of 140 mph was credited to it. This was remarkable speed for a fighter of that day and somewhat alleviated the plane's disadvantage of reduced maneuverability caused by its considerable weight. The operating ceiling was more than 18,000 ft. and it could attain the first 10,000 ft. of altitude in 13 minutes. Useful load of the craft was 517 pounds.

Most unique feature of the ship was the advanced aerodynamic and structural characteristics of the fuselage. Sleek and shaped like a fat cigar, the body was of three-ply wood construction. Except for the exposed cylinders of the engine, this presented clean, unbroken lines to the slipstream and undoubtedly contributed to the overall efficiency of the craft. Wing and empennage were of conventional wood and cloth construction. Wingspan was 29 ft. 8 in., and length of the plane 24 ft.

In remarkable contrast to the withering volume of fire-power spewed from the eight-gunned P-47's, or cannon and rocket-firing Typhoons of this war, the Albatros mounted two Spandau guns of small bore synchronized to fire through the whirling propeller blades. Likewise there was no protection for the pilot since his plane had no armor plate nor self-sealing fuel tanks. Indeed, so extensive has been the progress in improving planes that the fighter pilot of today, fearless as he is in combat, would scarcely consider it safe to even fly an Albatros or similar World War I plane around the air field.

Interest among model builders in these old planes has always been great so we take considerable pleasure in offering a trim little flying scale model of the famous Albatros D-5a of 1918. Proportions of the prototype make it ideally suited for reproduction in the form of a flying miniature. If carefully constructed from the plans and instructions presented here, the builder will find he has a model that is not only an excellent flyer but a picture when on display.

Conventional construction methods are employed throughout but be sure to follow the plans closely and read the written instructions. Balsa wood is preferable but white pine may be substituted if the lighter wood is not available. Colorless model-airplane cement is used as adhesive to join the parts.

Construction of the two wings is a good start. Ribs are shown full size and the number of each type indicated should be cut from 1/32" sheet; note that three of No. 6, ten No. 7 and two No. 8 are needed. Cut the ribs with accuracy and sand them smooth. The trailing edges and tips are cut from sheets of 3/32" thick stock. It is not difficult to reproduce the scalloped effect found on the trailing edges of the real ship's wings. Make a sanding block as shown in the sketch and lightly sand the wood to the required shape. Only the right half of each wing is shown. It is best if a whole wing plan is made so the parts may be assembled right over it. Leading edges are 1/8" sq. strips and the spars are hard grade 1/16" sq. Assemble the parts carefully using pins to hold them in place until the cement hardens. The lower wing is cracked in the center and the tips raised 5/8" for correct dihedral. Tips are raised the same amount on the top wing but the dihedral breaks are at the first No. 2 rib from the centerline; remember to cement the breaks firmly. Be sure to shape the edges and tips carefully so a neat covering job can later be made.

The manner of fuselage construction calls for the use of four keels cut to shape from 1/16" sheet. To obtain their patterns trace the top, bottom and side outlines of the body. Bulkheads, likewise 1/16" sheet, are cut in accordance with the patterns given. Cut only the notches shown leaving the others to be cut as a later operation; however, their position should be marked as reference.

Pin the top and bottom keels to position over the side view and cement half of the bulkheads in place. Attach a side keel and then, when dry, remove the structure from the plan and add the remaining bulkheads and keel. Stringers are 1/16" sq. stock. Attach the ones nearest the side keels first, cutting notches as required. Always attach stringers to corresponding positions on each side at the same time to prevent pulling the body out of line.

Between formers C and D, where the wing fits in, curved pieces are cut from 1/16" balsa sheet and shaped so as to make the fuselage sides fit to the curvature of the wing. Other items to be assembled to the fuselage are the piece of 1/32" sheet between-formers D and E which has the center removed and thus forms the cockpit and the small blocks of very hard sheet stock in the rear which anchor the rubber motor.

The nose block, just forward of bulkhead A, is made from two pieces of 1/8" sheet cemented cross-grain. Cut out the center of the nose plug, then roughly carve to shape before cementing to the nose for final finishing by rough and then fine sandpaper.

Few details are required to outline the method of constructing the tail surfaces. Study the plans and note that both the stabilizer and rudder are made in like manner from 1/16" thick stock of the indicated width. Make flat frames of both (the stabilizer is made in one piece), then when the cement has set, remove from the jigs and attach the soft 1/16" sq. strips to each side of each rib. These are trimmed to the streamline shape indicated and the edges are tapered to conform to the rib shape.

Select a very hard balsa or soft white pine block of correct size for the flying propeller. Drill a tiny hole for the shaft, then cut out the blank as shown. A right hand prop is to be carved. Cut away the back face of the blank first until it is as

desired, then cut away the front until the blades are of the proper thickness. Reduce the depth of the hub about a third, and neatly round the tips of the blades so an effective unit will be had. With first rough and then fine sandpaper, smooth the propeller to a finish. Shape the spinner from a soft block of balsa and then notch it to fit over the prop hub. Before the spinner is attached permanently the type of free-wheel gadget, if any, to be used should be considered and provisions made for it. Apply several coats of clear dope with light sanding between each to smooth-and harden the surface.

The removable nose plug is shown in perspective. A disc of 1/32" plywood forms the front portion and the back is laminated squares of 1/8" sheet. Fix the line of thrust by cementing washers to the front and back of the plug.

For the propeller shaft use .040 music wire. A loop into which a mechanical winder can be hooked should be bent on the front of the shaft. Place several washers on the shaft, between the propeller and nose plug to reduce friction.

Like most all old-time planes, the Albatros has a landing gear which incorporates a spreader bar type axle. A sturdy reproduction of the undercarriage is made from struts bent from .028 music wire. The front and rear struts are shown full size on the plan, while the axle is simply a straight length of wire 4" long. Bend them from .028 wire and attach the front one to former B by sewing with needle and thread about the wire and right through the wood. Since the rear strut is attached to the trailing edge of the lower wing it can not be placed until the parts are covered and partly assembled.

Lightweight wheels can be purchased or may easily be made from laminated discs of 1/8" sheet balsa. Washers or bearings should be attached to each wheel so they will revolve freely and accurately.

Work over the entire structure with fine sandpaper to properly prepare for a neat covering job. Regular colored tissue or silkspan is used, and thinned dope or banana oil is the adhesive. Use individual pieces of tissue for each flat section of wings, tail surfaces, tips, etc. In covering the fuselage it will be necessary to use numerous small sections of tissue in order to work around the curved parts without wrinkles; the tissue must be lapped neatly to assure a neat job. Lightly cover the parts with a spray of water to tighten the tissue. The flying surfaces must be supported level so they will not warp while drying.

Assemble the various units in this manner: Fit the lower wing into the recess and cement it fast; if the fuselage has been made with accuracy it will automatically have the correct incidence. The upper wing is supported entirely on struts. Make the cabane struts from very hard balsa and shape the cross-section as shown. Now to assure the correct incidence for the top surface I suggest that a cardboard jig be made to aid in achieving the utmost accuracy. Trace the outline of the top keel and the wing's exact position on the cardboard, then cut it out so the bottom edge of the pattern will rest on the model's top keel and the top will have a recessed notch into which the wing will set. Using this jig to assure the correct incidence, cement the cabane struts from the stringers to the ribs. Junction of the struts is indicated by an "X" on the wing plan. Outer wing struts are shown in broken lines; they are of approximate length but must be fitted accurately by the "cut and try" method. Incidentally, when attaching the struts be sure to cut away the tissue at the junction to assure a solid fit. Rudder, sub-rudder and stabilizer are cemented fast at the exact positions shown; be careful to align them properly. Any wrinkles in the covering should again be moistened with water and permitted to dry before the entire model is given a coat or two of clear dope.

The landing gear should now be finished. The rear strut is sewed to the front of the notched trailing edge section. Front and rear struts as well as the axle are best joined by solder but thread wrappings, firmly cemented, will prove satisfactory. To attain the scale width of the struts, 1/16" thick balsa splints may be cemented to the wires. Wheels should be colored before they are attached to the axles by a drop of solder.

Numerous other minor details may be added without impairing the model's flying capabilities. The Mercedes engine can easily be represented by cylinders of balsa made from scraps; exhaust stacks and rocker boxes are likewise made from scraps. The engine unit is colored black. A tiny windshield cut from thin celluloid to the shape shown will enhance the appearance. Scale model fans will note that the shape of the real propeller is given as well as the enlarged flying model one. Control surface outlines are simply thin strips of black tissue doped to the covering. The black German crosses are cut from tissue and attached to the covering.

Finished weight of the model will determine the amount of power required to fly it. Six strands of 1/8" flat brown rubber should be right for the average ship. It is best to lubricate the motor with a mixture of glycerine and tincture of green soap before placing it within the fuselage; incidentally, wipe off the excess lube otherwise it will make unsightly splashes on the sides. Hook the strands to the prop shaft and then drop the other ends through the fuselage. It may be necessary to remove a small section of covering in the rear in order to gather the strands into position to be held by the removable bamboo pin.

First flights are best made over a field of soft grass, but if none is available try rise-off-ground tests with but a few turns. In all probability the model will be slightly out of balance so add a small weight to the nose or tail as the case may be. Off-setting the thrust line will control the amount of circle in either direction and by tilting the nose plug down (small sliver of wood between top of nose plug and nose block) a tendency to stall may be eliminated. As correct balance and stability are attained, power may be gradually increased. For maximum performance stretch the rubber motor out the nose and store up power with the aid of a mechanical winder. Good luck!

VICTORY

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