

Aircraft modeling's most creative, also innovative designer has, as usual, come up with a subject that will stir plenty of modelers to build it!

Blohm und Voss BV-141-B

BY NICK ZIROLI

• Early in 1937, a specification was issued for the design of a short range reconnaissance aircraft that could also be used for light bombing and ground attack. Among the requirements was the desire for a single engine aircraft with the same field of fire and vision as a twin engine aircraft. Dr. Richard Vogt of Blohm und Voss decided that this would call for new and truly unorthodox approach. Thus the asymmetrical BV-141 series was born.

The first one flew in 1938 with Major General Ernest Udet at the controls. It

proved to be quite successful, so much so that an order was placed for three planes including the original, since that one was built with private funds. The original BV-141-V and A models had a conventional stabilizer.

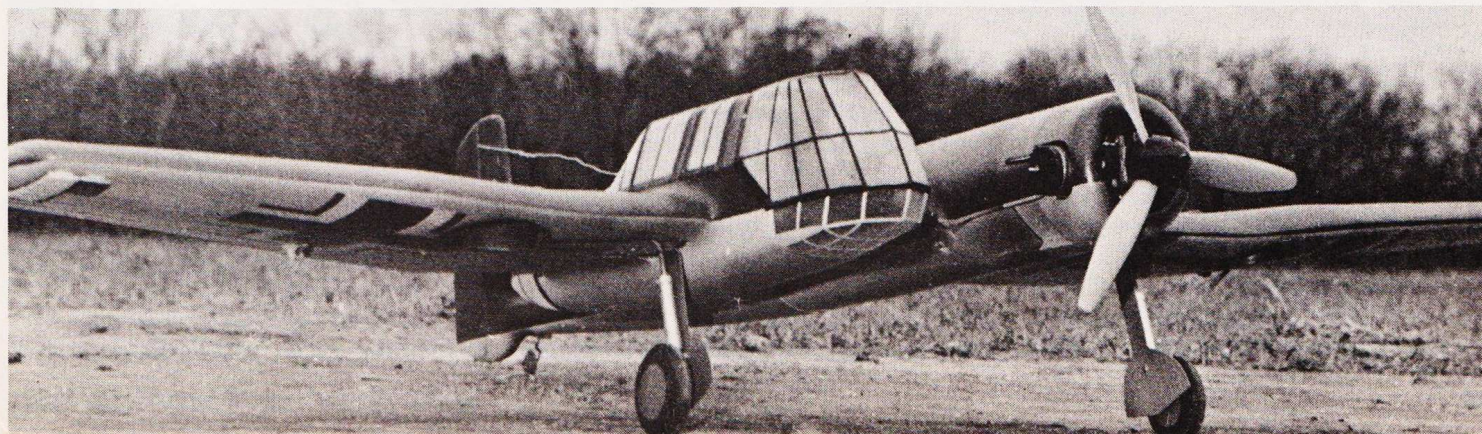
For one reason or another, large production contracts were never awarded. One of the main reasons, it seems, was the success of the FW-189 "Owl" which fulfilled the same role with engines that were not in such demand as those of

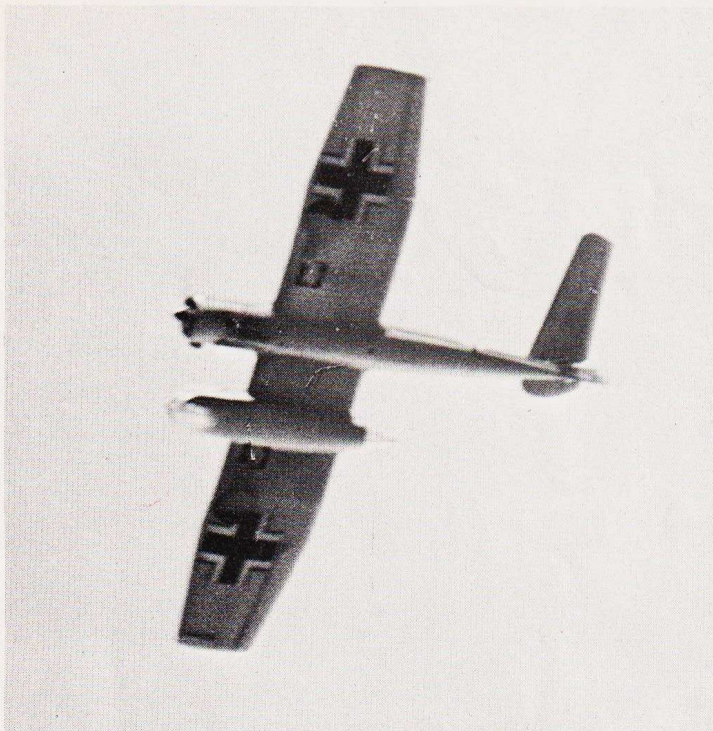
the BV-141. A total of about 12 various models of the BV-141's were built. Five BV-141's were made and saw limited service on the Eastern front, the last delivered in 1943.

The final BV-141-B is the version that I chose as a model because there seemed to be more information available on it, especially since fellow modeler and club member (Long Island Radio Control Society) Carlo Masullo came up with a large set of plans for an old rubber-powered BV-141-B. He knew I

World War II's most unusual and controversial reconnaissance aircraft makes an excellent R/C Scale subject — its asymmetrical greenhouse and stabilizer will grab interest.

At rest on the tarmac, it certainly looks as though someone sure made some mistakes when they had it in building jig—note large greenhouse.





This flight shot from beneath shows asymmetrical stabilizer and greenhouse to better effect — looks as though it had been in a dog fight.



In a banked turn, the BV-141-B displays an ugly sort of grace—haven't the foggiest idea if they ever thought to christen it the Ugly Duckling.

BLOHM UND VOSS BV-141-B . . .

was interested in building a model of it, and this is what got the project going. Also Airfix has a 1/72nd plastic model that is a help for details.

The "B" version was desired because it has the offset stabilizer that the others did not have. This was a "must" to make it as unorthodox as possible. The model was scaled approximately 1"—1'. This gives a wing span of 54" and area of 540 sq. in., a size that I figured would be about right for the new Testor's .40 we would be testing. Also to be flight-tested were a pair of Carl Goldberg retract gears actuated by a World Engine's S5-R 180° retract servo. The new Heathkit miniature GDA-19-41 and sub-miniature GDA-19-42 servos were used along with GD-19 control system. These will be covered in more detail later.

Then there is the question "why?" Why put all that work into a model that might not get off the ground, or, if it does, would chase its tail around uncontrollably as was predicted by some people. The simple answer is "just to be different." I enjoy flying a one-of-a-kind model, especially something as strange as this, that looks as though it won't fly. The fact is, if I didn't think a plane would fly I wouldn't build it . . . after a long careful look at a three view drawing, I felt sure that the asymmetrical plan form would perform satisfactorily.

Basically, I looked at it like this: the engine mounted off to the left and the drag of the crew nacelle will pull the plane to the right; engine torque and fuselage-stabilizer drag will pull the plane left. The center of the wing is about 1/2" away from the fuselage.

With this in mind, it was decided that the drag of the nacelle versus the fuselage drag just about cancelled each other out. However, it was felt that torque would not quite balance out the off-center engine, so a little left thrust was put in, about one of two degrees. Weight must be added to the right wing tip so it balances in the center. My only concern was for the offset elevator. Would it have a great turning tendency when used to any large degree? The answer proved there to be very little.

The first flight was preceded by some fast taxi tests to find out how it tracked on the ground. There was a slight tendency to turn to the right when accelerating fast. Yet in the air a little left trim was required. This, when I thought about it, led me to believe that I was probably instinctively holding a little right while advancing the throttle as is normally required with a tail dragger. In the air, performance is about the same as any conventional plane just Sport flying. However, rolling maneuvers are not all that could be desired. It will roll, but not a smooth axial type since it does not truly rotate around the fuselage.

So far, only a few flights have been made, eight to be exact. This has been enough to prove the operation of the test articles but only many flights under good and bad conditions can tell how they will stand up in every day use.

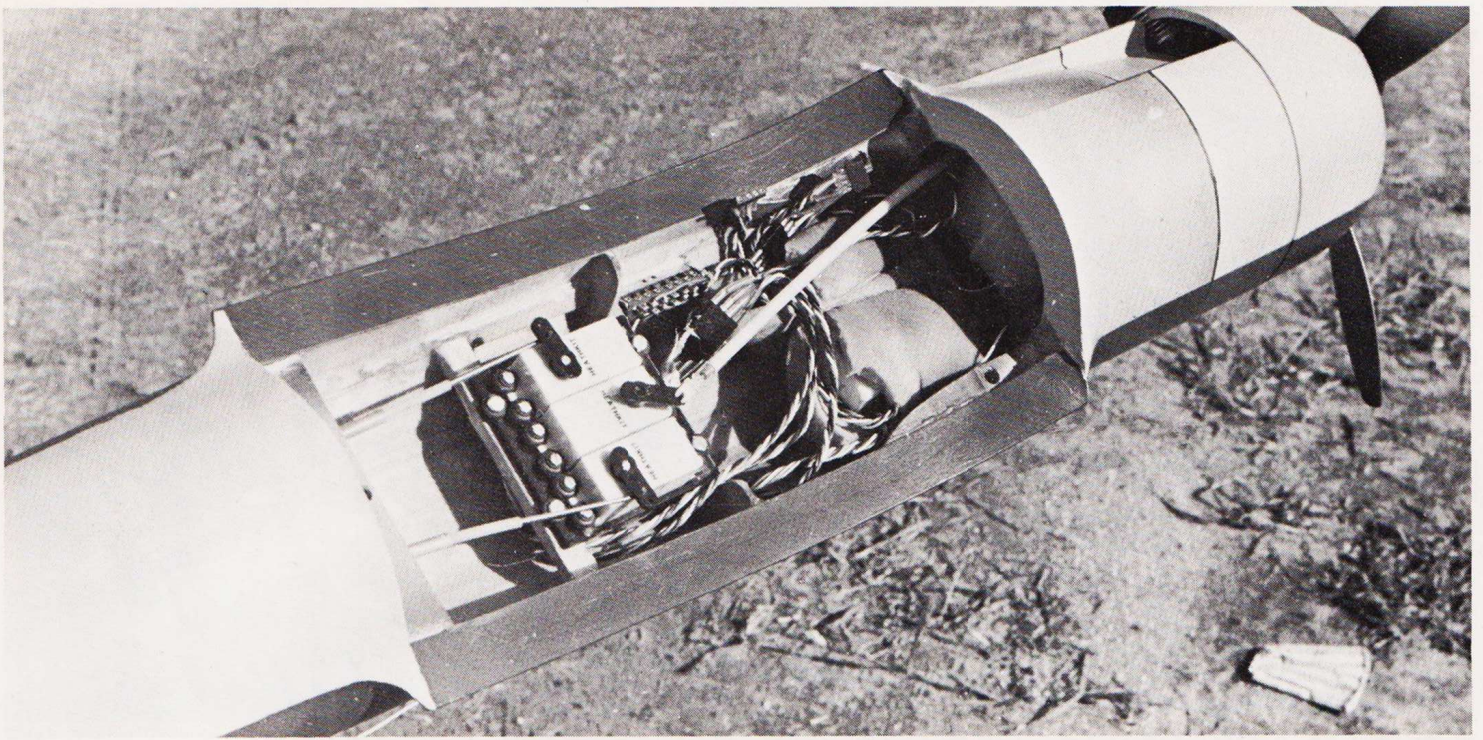
First, let's take a look at the engine, the new Testor's McCoy 40 R/C. Actually I don't know whether to call it a Testor's .40 or a McCoy .40. Whatever it's called, it's the series 21 and you can't mistake its appearance. The finned

crankcase gives it a distinctive look all its own. However, an engine can't be rated on looks alone, performance is what counts.

It features a Dykes-type pressure actuated ring and a Perry carburetor. An idle bar plug is included. Not to go unmentioned is the most complete and explicit 14-page instruction book I have ever seen included with an engine, covering everything a beginner would have to know to successfully operate the engine even if he had never seen or heard one run. There is even a cross-torquing diagram for tightening the head screws. I did find one fault with the instructions—that was the needle valve setting for starting the engine. They call for one turn open; I found about three turns necessary. This is a very small discrepancy that would be overlooked by the average modeler, but could cause a rank beginner failure in starting the engine. Possibly this applied only to the engine I obtained. Also included is a die-cut cardboard engine mounting template for laying out mounting holes.

The engine was taken from the box, mounted in the plane, taken to the field and flown. It started easily, though heavy priming was required, probably due to the cold weather. The needle valve adjusts easily and the idle was perfect right out of the box. I used an 11/4 Top Flite prop, a little less pitch than normal but I wanted to keep the model in low gear for the test flights. Later flights were made with a three-bladed 10-6 Tornado prop. This performed very well.

A tank of fuel was run through the engine for initial check out and taxi



A look inside of capacious equipment compartment—small Heath servos fit three abreast with room to spare. Batteries and receiver behind tank.

tests. After that it was adjusted for a rich two-cycle and flown. The first two flights were terminated early with what was thought to be a sagging engine. Actually, it was going rich because the needle valve was backing out. A short piece of fuel line was placed over the needle valve and spring to help hold the setting. This corrected the problem and all the following runs were good.

The technical information (horsepower, rpm, timing, etc.) will have to be left to the very capable Peter Chinn and his fine Engine Review column. I feel it must be rated as one of the finest economy, plain bearing, engines available.

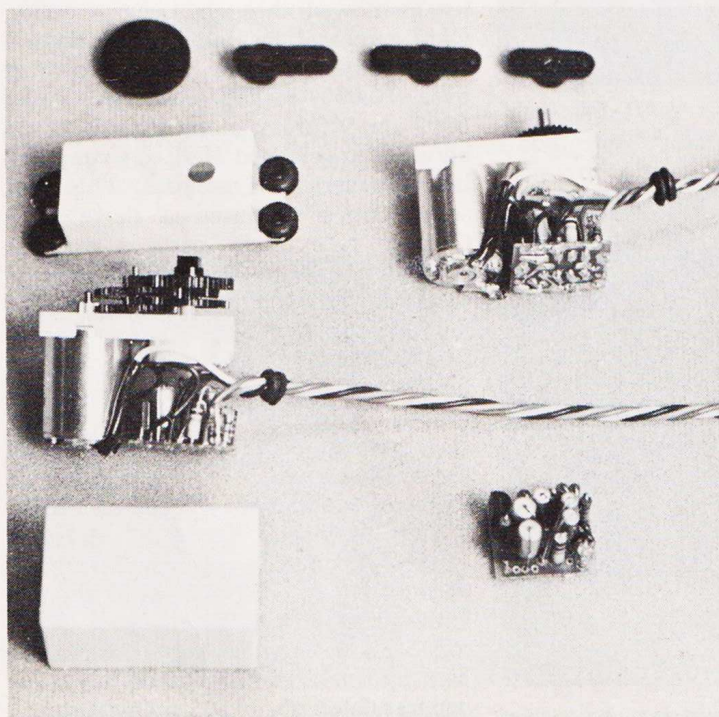
At \$25.95 the Sport flyer definitely should consider the Testor's McCoy .40 R/C. The new series 21 is also available in a .19, .29 and .35 both with and without a throttle.

Next is the retractable landing gear. These are the latest addition to Carl Goldberg's fine line of kits and accessories. Quality and thoughtful engineering have always been evident in C.G. Models' products. I built many of their kits going back to the old Control Line "Globug" and "Nifty" (remember them?) and have never been disappointed. The retracts were no exception.

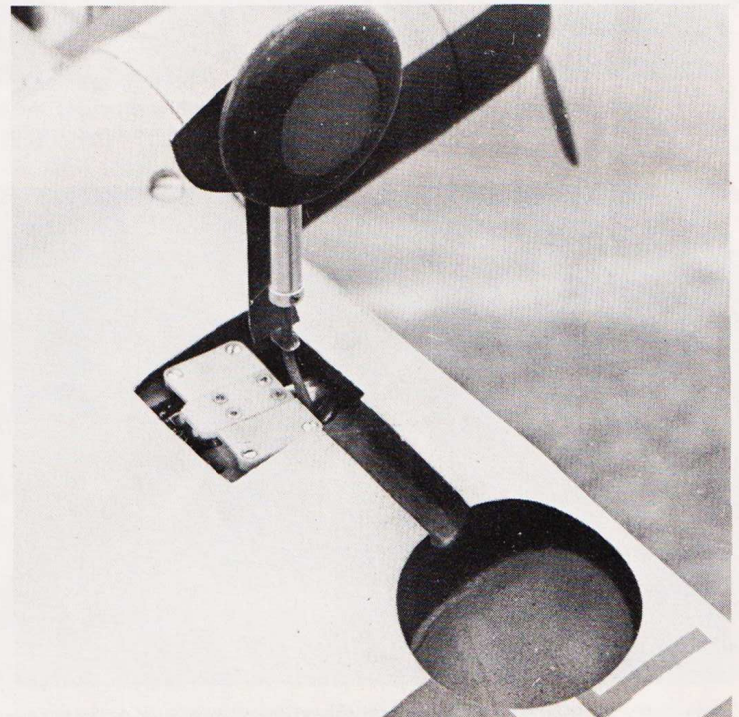
Since we did not obtain a nose gear retract we will only discuss the

mains. These are so simple and functional that one must wonder why we had to wait so long for them. Actually the concept is not new. It simply took someone like Carl to simplify and refine them to their present form. Each main gear contains six parts and four screws. Three of the parts are molded nylon and appear to be very tough. This is what helps make the low price possible.

The units are operated by an auxiliary servo or geared down motor actuator. Pushrod travel must be between 3/4" and 13/16" so extended arms will be required on most servos. Double locks



Heath's GDA-19-42 rotary output servos part of this construction project.



Goldberg retract servos with short leg add to efficiency of BV-141-B.

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Blohm und Voss BV-141-B

hold each leg securely in both the up and down position. A balance spring must be adjusted to compensate for the weight of different wheels. Also any change in strut length must be compensated for by spring adjustment.

This caused some problems in our installation. The legs had to be lengthened 1 5/8" for the model to look right sitting on the ground. Actually they should be about a 1/2" longer to be scale length. The scale-like strut that was used to extend the legs compounded the problem of balance but looked so good I had to use them. These were donated to the project by club member Al Monte after the crash of his beautiful twin engine Grumman S2F-1 "Tracker."

The added weight of the legs made adjusting the balance springs very critical. A lot of tension was required, and this loaded the pivot mechanism to a point where a standard servo would not operate them reliably.

The problem was solved by the use of the new World Engine's S5R retract servo. This new servo is the brain child of Stash Tosio, resident servo expert at World Engines, and is the answer to servo-operated retract problems. Transit time is about two seconds to travel 180°. There are two additional sets of gears over a standard S-5 servo. This multiplies the torque tremendously, giving more than enough power for most retract installations. Gears have been beefed up to take the additional strain. Dimensions of the new servo are the same as the standard S-5 except for the height. It is a little taller to house the extra gears.

The beauty of using an adequately powerful servo over an actuator is the absence of additional batteries and switches. This makes installation a simple matter. However, some precautions must be taken. The most important is to be sure that the servo is not under any load in either the extended or retracted position. A heavy load will leave the servo in a stalled condition causing a heavy drain on the airborne battery pack. Prolonged use like this will inevitably cause a crash that will no doubt be diagnosed as equipment failure.

In summing up, I found the C.G. retracts and the World Engine S5-R servo to be a good match. Both perform their intended functions without fault. C.G. is soon going to have available special struts for tail draggers.

The remaining radio equipment is Heathkit. Transmitter and receiver are my two-year-old GD-19, still going strong. The servos are three sub-miniature GDA-19-42 and one miniature GDA-19-41. These, of course, were built from kits.

Heath has done their usual fine job of producing a practical kit that anyone can assemble. That is, *almost* anyone. The ham-fisted solderer may be up against it with the small printed circuit boards used. However, anyone who is willing to take the time to do the job right should have no trouble producing a fine servo. The integrated circuit saves many solder joints. It also permits a more compact servo.

The secret of any good kit is the instructions. Here is where Heath excels. If you can read and follow simple pictures, you can't go wrong if you follow the instructions *to the letter*.

I did take one exception to the instructions. This concerned the installation of the feedback pot wiper shaft. I permanently installed the shaft, gear and wiper before the pot element was in place. The instructions direct you to install the shaft and wiper, then later pull it out to install the #2 idler gear. The shaft is then to be pushed back into the wiper assembly blind. This is what I didn't like doing—I didn't know if the wiper was being mashed against the pot. However, the first servo was assembled according to instructions and works fine, so maybe I worry too much.

The GDA-19-42 is strictly a rotary output servo, weighs 1.25 oz. with three lbs. of thrust. The outward appearance is similar to the Kraft KPS-12. GDA-19-42 servos have the option of using either rotary or linear outputs. The top cover must be changed to make use of either one or the other. Both are included in the kit. The GDA-19-41 weighs 1.75 oz., offers four lbs. of thrust and is similar in appearance to the Kraft KPS-11. It is good to know that Heathkit servos will fit Kraft servo mounting trays.

I have put many flights on both the older GD-47 and the newer GD-19 with never a radio-related problem. The GD-19, one of the earliest ones on 72 mhz, did require a receiver modification kit to sharpen up selectivity. Other than that, neither set has ever required any maintenance or returning. I have always been more than satisfied with any Heathkit product I've built, which includes color TV, stereo tuners, thumb tach and various test equipment.

Building a servo can save you \$15.00 over a comparable assembled servo. It would be a good thing to know with what other systems the Heathkit servos would operate. With this knowledge, owners of other make systems could put the Heathkit servos to use and save money. Three kits for about the price of two built-up servos isn't bad.

CONSTRUCTION

As far as construction of the model goes, it is pretty much standard. The assemblies just go in different positions than

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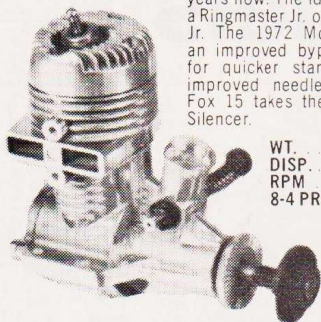
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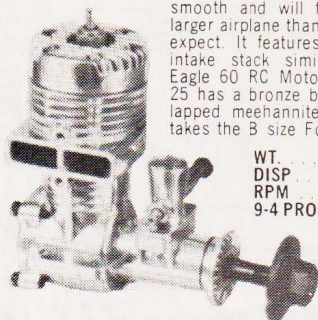
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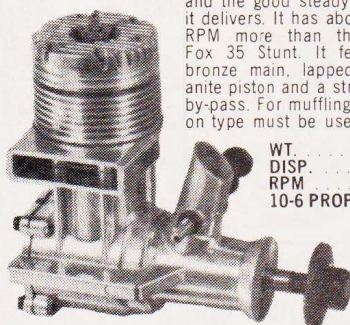
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usual. Fuselage sides, top and bottom are 1½" wide. Cut these from two selected sheets of 1/4" x 3" sheet. In this way they will all be the same. The plans show an extended nose. This change is shown to allow more room for the fuel tank, a Sullivan SS-6 or 8. Also nose weight was required in the original model. The longer nose will reduce this. A standard Tatone engine mount has the right amount of offset built into it for the required left thrust.

F-8 must be installed with the top edge parallel to the top of the fuselage between F-1 and F-4. To obtain this, set the fuselage upside down on two equal blocks at F-1 and F-4 so the top of F-8 will just clear the bench. Place shims under F-8 so it is in position and also parallel to the bench. Taper the rear of the sides so they are 1/8" thick at the tail. With the extended nose a small piece will have to be spliced into the tail end of the sides. After the fuselage is planked, cement F-9 in place, square to the fuselage from the front, and cover the stabilizer pylon with 1/16" sheet.

When installing the stabilizer, again set up the fuselage blocks, this time at the wing saddle. Epoxy (five minute) the stab in place with each tip the same distance off the bench. Also make sure it is square to the center line of the fuselage.

The wing is built in three pieces. Join the panels with 1/4" dihedral at each wing tip. Ailerons are built as part of the wing and cut out after sheeting. Two ounces of weight is built into the right wing tip. More will be required for final trim but this will be buried in the tip block later.

Standard landing gear blocks are used for a fixed gear installation. Retracts are mounted on 3/8" x 1/2" hard wood blocks epoxied to the plywood ribs. The retracts are positioned so the legs fold back toward the center of the wing. This places the wheels in a toed-out position when they are extended. Twist the strut to align the wheels. Follow the instructions for push-rod installation; I ran them through a plastic straw built into the wing so they could be pulled out and pushed back in without hanging up on the ribs.

The crew nacelle is built in place on the wing. Mark the location of the sides and formers on the wing. Cut out the trailing edge for N-6 and cement in place. Assemble N-1R, L and N-2 together into a sub-assembly. Join the two sides to the sub-assembly and cement it all in place on the wing along with the formers. The bottom is planked with 1/8" x 3/8" strips. Window areas can be vacuumed-formed over carved blocks or covered over with 1/8" sheet and blocks. If sheet is used, the formers must be cut down 1/8" in outline in the

window areas. The centers would not have to be cut out, either. Use black or silver paint to simulate the window areas.

The cowl is made from quarter circle of 1/2" sheet balsa glued up on C-1. Three screws through C-1 into the firewall hold the cowl in place. Cut holes to clear the engine after the cowl is completed.

Finish and paint in the manner you prefer. I covered the entire model with Silkspan after a couple of coats of clear dope had been applied and sanded. More dope and sanding was applied and then the color. The color scheme was taken from an article in the Feb. 1971 issue of Scale Modeler. There is also an excellent three-view of the BV-141-B in this issue.

The colors are a light blue-grey bottom with dark green and very dark green splinter pattern on the top. Try using contact paper for masking the crosses. I have found it to be far superior to masking tape. It has relatively low tack and dope will not bleed under it. One word of caution: don't pile up too much dope on it or it may start to melt. This is not as bad as it sounds as it takes quite a pile to affect it. When completed and ready to fly, balance at the point indicated on the plan.

Balance both fore and aft as well as spanwise. Drill holes in the right wing tip and melt lead into them as required to balance the wing.

Fly as you would any R/C model. It has no bad handling tendencies. If you enjoy flying an attention-getting model of a little known plane, this is the one. However, it would be a good idea to pick up the book "Bombers and Reconnaissance Aircraft," Vol. 8, by William Green, and study the story of the BV-141. You will then be prepared to answer the many questions you will be asked about this strange model. ■

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