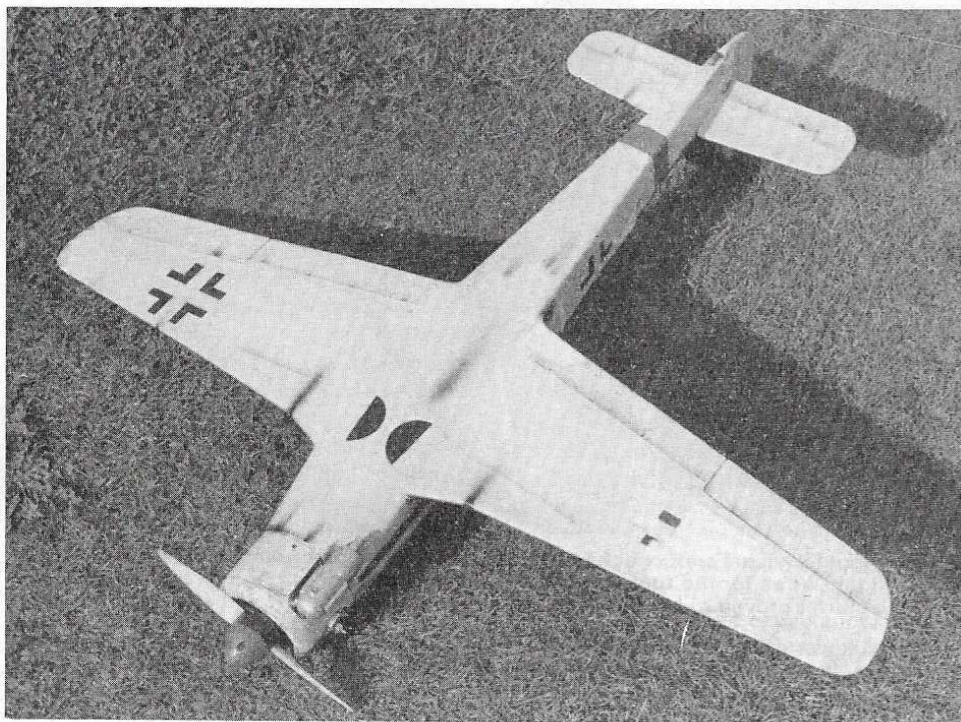


DOGGING



Top: The author's nicely-detailed FW 190D. Both this plane and the P-47 on the next page are designed for either a .10 or .15-size engine and a simple, two-channel radio. A third channel could be added for throttle control, but since the 190D and the P-47 are at their best when chasing each other around, a throttle really isn't missed. Above: A view of the sleek underside you get on a plane that's made to be hand-launched and landed in the grass.

Focke-Wulf 190D

IN ITS RADIAL-ENGINEED version, this is one of the best-known and greatest fighters of WW II. Flown by many of the leading aces of the Luftwaffe and used in most of the major theaters of operations, it will go down in the annals of aviation and military flying as a brilliant design. Cleverly shaped to a delicately proportioned slim airframe behind the blunt large diameter BMW radial, they were initially mistakenly identified as French Curtiss Hawks in use by the Luftwaffe.

This mistake was quickly realized during early operational combat where it easily outperformed the then-current Spitfire V. In fact the Spitfire was hastily modified with the early Griffon engine especially to counter the FW 190 threat until the later refined and improved Mk IX came into service.

Despite the 190's early superiority, its most serious drawback was in high-altitude performance, which left a little to be desired. This was acknowledged by the design

■ **Clive Smalley**

HIT DUO



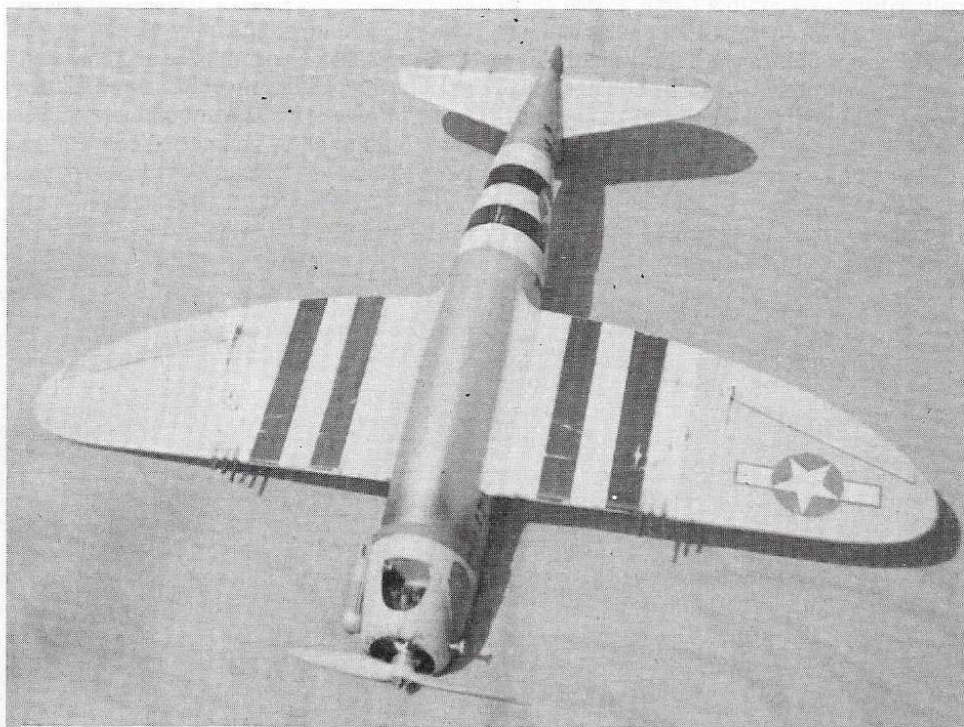
Two of World War II's most famous fighter planes, the Focke-Wulf 190D and the P-47 Thunderbolt, seemed like such a natural combination that our author decided to include them both in the same construction article. After all, what good is a fighter plane without an adversary? Adding this pair of opposing warbirds to the flock would enhance anybody's collection. Each is for a .10 to .15 engine and a simple two-channel radio.

team even before the plane entered service, and the airframe was redesigned to take an in-line engine. Three versions were designed: FW 190B, C, and D. The D version with the Junkers Jumo engine easily proved to be the best, and the B and C types were quickly abandoned.

Incorporating an annular radiator in the nose of the 190D, the appearance still suggested a slim radial engine, but the in-line-type exhausts were the giveaway. The in-line engine, naturally, was longer than a radial, and the increase was compensated for at the tail by inserting an additional fuselage bay just in front of the fin. The wing remained basically the same layout as the first one.

The increased nose length of the D version led me to model it in the small size as shown in the pictures and plans. (In retrospect, the model initially was nose-heavy, so it now seems apparent that the radial-engine version would be satisfactory for a small model if the radio gear were properly placed.)

The idea behind this model was to produce good scalelike appearance with simple, all-sheet construction, a two-channel radio, and no landing gear (for realistic appearance when airborne). Two prototypes were built. The first was powered by an O.S. .15 and the second by an O.S. .10. Both performed very well, the .10-size



Top and Above: The P-47 Thunderbolt was one of the most active fighters in World War II. It became legendary for its ruggedness and reliability. Since the full-size plane sported many colorful marking schemes, it makes a great project for trying your hand at decorating.

engine providing adequate power at the model's flying weight of 2 lb.

One of the greatest thrills with these small models is to do low-level runs moderately close in, rolling as you go past and pulling up into a combat climb. If you have micro-sized airborne radio equipment, it would be possible to use a third channel for throttle control. However, neither of my prototypes had throttle control, and I do not feel that the extra bother (and weight of the model) would be worthwhile. This is a *fun* machine!

Construction. The sequence with a one-

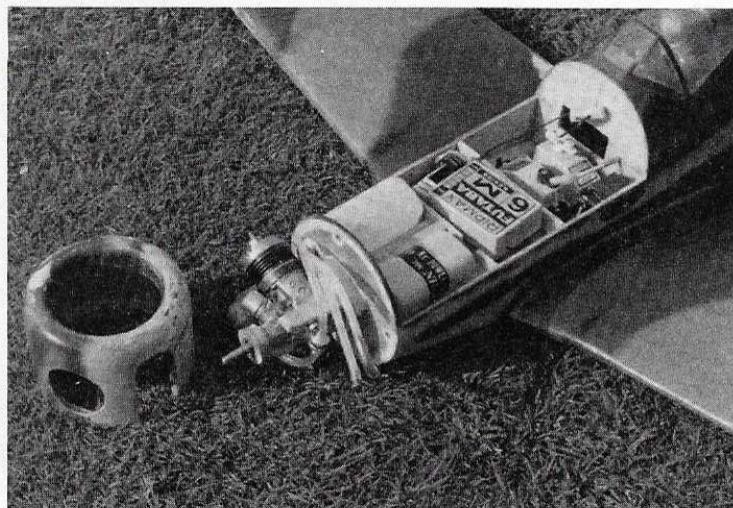
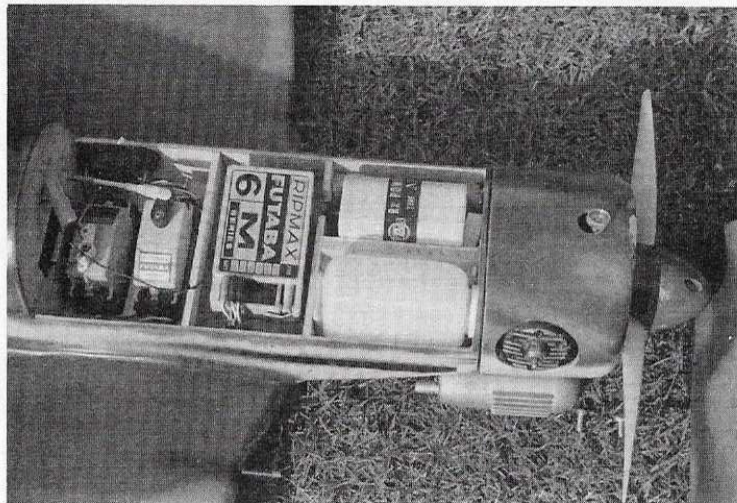
piece model is relatively important, as very little of the fuselage can be built before it is necessary to assemble the wing and tail surfaces. Therefore, I suggest that you build the model in the sequential order of the text.

Tail surfaces. The stabilizer and elevators are simply cut from sheet balsa and sanded smooth. Use a cut-down commercial elevator horn to allow an internal connection. Adjustments can be made at the servo end.

Build the vertical fin and rudder separately to give a better scale effect. The fin is

built over the skin of one side, and although it has an unusual section, no problems should be encountered. Omit the block leading edge part until after assembly to the fuselage. Round off the rudder leading edge, and glue it to the fin post.

Wing. It is basically built atop the bottom skin. Cut out a 1/16 sheet skin to the outline of the plans (not including the wing tip block). Mark the spar and rib positions on the sheet, and pin it down flat. Glue the main spar in position, followed by the leading edge, aileron leading edge (pre-



Above: Neat radio installation on the FW 190D. The cowl can be made from fiberglass or built-up from ply and balsa rings. The O.S. 15 shown here fits neatly inside. (Ripmax is the British importer of Futaba radios, and that gives away any secret about this plane's origin.)

drilled for the torque rod), rear sub-spar, and finally the wing ribs (cutting them to fit on either side of the spar).

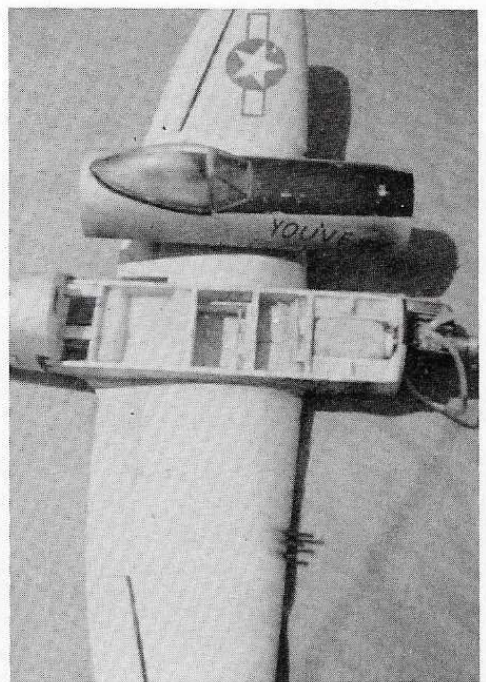
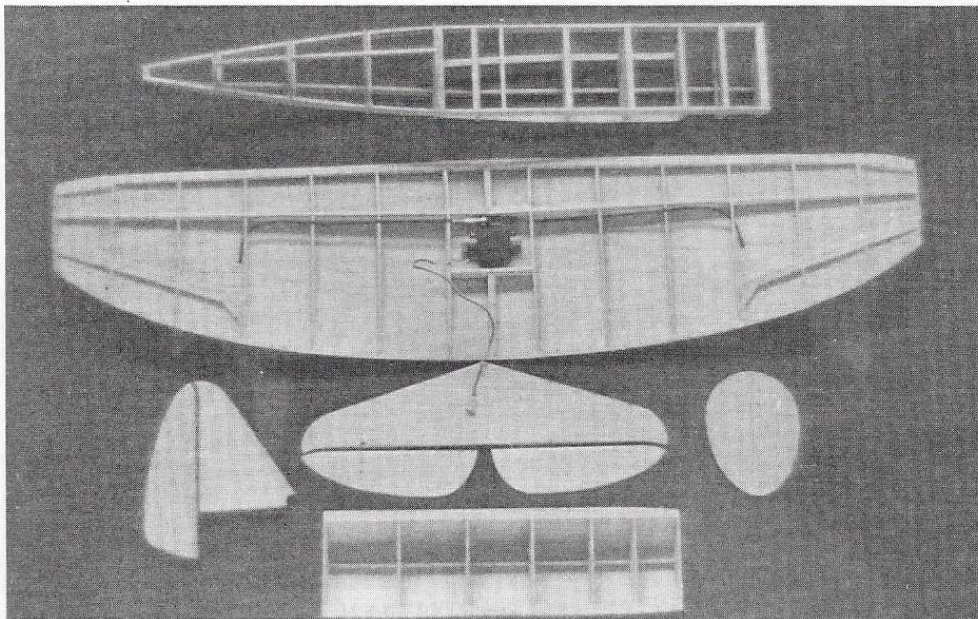
Fit the pre-formed aileron torque rods and bearings, but do not glue to the aileron spar yet. Remove the panel from the building board, and plane and sand the leading edge to match the rib curvature. Do not round off the front edge until after the upper wing skin is in place.

Cut out the top skin from 1/16 sheet, allowing it to be a little oversize in the chord direction to allow for the rib curvature. Using white glue or contact cement, place the top skin in position, lining up with the bottom skin at the trailing edge. Immediately set up the wing on the building board as shown on the plan to incorporate the washout. Leave the panel mounted like that for at least 24 hours to allow the glue to dry

thoroughly. The panel can then be removed and the tip blocks added.

Build the second wing panel to this stage, checking that the washout is identical in each panel. It is more important to have equal washout than it is to have exactly the amount shown on the plan. At the relative

Continued on page 157



Left: The framed-up components of the P-47. Construction of the fuselage is somewhat different from the FW, as the sides aren't flat. Start with a horizontal crutch built over the plans, then add formers and planking. **Right:** A close look at the radio compartment of the P-47.

Dogfight Duo/Smalley

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scale and flight speed of a model of this size, a pronounced rolling motion is likely to result from unequal washout. The leading edge, except for the center section, can now be rounded off.

Carefully mark the ailerons, and cut them away from the wing. Round the leading edge of the ailerons to allow adequate movement, and cut the hinge slots. Epoxy-glue the aileron torque rods at the same time you are hinging the ailerons.

Join the wing panels, and cut out the top skins to clear the servos. You could complete the servo linkage at this time. Finally, remove the servo, and sand the wing smooth all over.

Fuselage. Construction is conventional. Assemble the sides, doublers, and Formers F1 to F9. Add the strip keel pieces. Spot-cement the H1 to H4 hatch formers in position, followed by the crutch and keel pieces. Fit F10, followed by F4a and F5a. If you are using Ny-Rod-type cable for the elevator, this should be installed now. Epoxy the stabilizer in position, and hook up the control cable or pushrod.

The fuselage assembly can now be epoxied to the wing structure, carefully checking squareness in all directions. Plank the fuselage deck, hatch, and under the nose, and sheet the rear underside. Epoxy the fin to the stabilizer, and add the soft sheet leading edge to the fin, together with the upper rear fuselage block. Carve and sand to give a continuous flowing curve between the fuselage decking and leading edge of the fin. Sand overall to a smooth finish.

Cut away the spot-cementing to release the hatch. Fiberglass the inside of the lower nose area with lightweight glass cloth/resin.

Use a commercial engine mount, drilling any holes needed for fuel tubing, etc. The engine can be mounted at any angle to accommodate the particular muffler you are using. Paint the cockpit interior, add a pilot figure, and glue on the canopy. The last thing to do here is to make the wing fillets from 1/16 sheet and card stock.

Cowl. This can be made from fiberglass (better and stronger) or built-up from plywood and balsa rings. The cowl flaps are set slightly open to allow cooling air to exit from the engine compartment. The reference sources at the end can provide information for detailing dummy exhaust stacks, etc.

Covering and finishing. Plastic film could be used, but I prefer the traditional dope-and-tissue method. Apply two coats of sanding sealer, sanding between each coat, and then dope on lightweight tissue. Paint the model with a matte-finish enamel or dope and fuel-proof it. I used a clear matte polyurethane for a realistic finish. Fit the

engine and RC gear—and you have one FW 190D ready for 'combat.'

Flying. The most difficult part with this type of small model is at the initial hand launch. It is preferable to have a helper launch for you, especially for the test flights, so that you can pay full attention to the controls. Providing the model is built square and free of warps, with equal washout, and the center of gravity (CG) is per the plans, no undue difficulty should arise.

Although there is sufficient power for this model with a .10 engine, you should realize that a hand launch is a commitment to flight. A sick engine at launch could be disaster.

With a two-channel radio, landings are always dead-stick. When you think the tank is nearly dry, get enough altitude to give you time to get your approach planned and lined up. You only have one chance! Do not attempt to stretch the glide, as this will stall the model. Keep an adequate airspeed.

Since it is a small model, try to keep your flying relatively close to the transmitter. Otherwise, it rapidly becomes very small, and you may 'lose it.' Other than these points, you can have a 'ball' flying it. The building effort is minimal, and it is very rewarding to see the model in the air.

References. This list, which also includes the FW 190A, is not meant to be exhaustive.

1. Kookaburra FW 190 Pts. 1 and 2.
2. Aero Books, Vol. 18, FW 190.
3. Profiles No. 3, 94.
4. Squadron/Signal Vol. 19, FW 190.
5. Harleyford, FW 190—A Famous German Fighter.
6. War Planes of the Third Reich.
7. M.A.P. (Aero Modeller) Plan Packs, FW 190A.
8. Various books on Luftwaffe camouflage and markings by Kookaburra, Ries, Monogram, etc.
9. FW 190 Manual.
10. Scale Models magazine, FW 190A.

P-47 Thunderbolt

DEVELOPED FROM a string of previous fighter designs, the P-47 became a formidable escort fighter and ground-attack plane. Known as the 'Juggernaut' or simply 'Jug' due to its shape and size, P-47 exploits became legion all over the world. Time and again, badly-damaged machines brought pilots back home—shaken, maybe, but ready to go again—where lesser types would have failed.

Its ruggedness became a by-word with American and British pilots who, having gotten to know its ways and sorted out its combat role, came to love it. Many of the top American aces flew this airplane, and from its widespread use there are many highly-colorful marking schemes to choose from that are well-documented in books and magazines.

The model P-47 Thunderbolt presented
Continued on page 160



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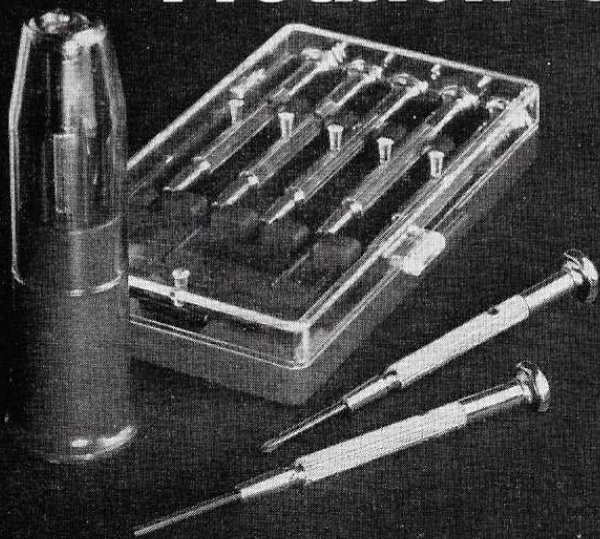
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Dogfight Duo/Smalley

Continued from page 157

here is No. 2 in my series of WW II fighters and is as accurate in outline as I could make it. The only obvious deviations from scale are the airfoil section and omission of small detailing. The latter could be included if the builder wished to do so. As with the FW 190D, three-channel controls could be used (to include throttle control), although only two channels (for elevator and aileron) were used on the prototype model.

Construction of the P-47 is similar to the FW 190D. Wings are much the same except the P-47 has cable-in-tube aileron controls whereas the FW 190D has torque rods. The major difference is in the fuselage. Again, there is logic to the building sequence, which should be in the order of the text.

Wing and tail. The wing is constructed over the bottom skin as per the FW 190D. The washout in the wing is *vital* and must

be equal in each panel. The tail surfaces can be built-up as per the plan for a nice scale effect, though you could save time by simply cutting the fin, rudder, stabilizer, and elevators all from 3/16 sheet balsa.

Fuselage. This has no flat side areas (as the FW 190D has), so it starts with a horizontal crutch built over the plan. Add the half formers to the top and bottom, leaving F5 and F6 at full size for the time being. Add the wing support saddles, keel members, and a few strips of planking for support. Cut away F5 and F6, and epoxy the wing in position. Fit the stabilizer supports (F13), and epoxy the horizontal tail in position. Similarly fit and glue the fin/rudder, assuring that the elevator horn has the necessary clearance.

Glue on the belly block, but do not carve it until the planking is complete. Now, plank or sheet the fuselage (using pre-curved strips either wetted on the outside or doped on the inside). Carve and sand the belly block to match the planking, and sand everything smooth. Fit the engine mount,

hatch retainers, servo mounts, canopy, etc.

Cowl, finishing, flying. The comments/suggestions for the FW 190D apply equally to the P-47. The prototype model P-47 came out at 1 lb., 15 oz., and used an O.S. .15 for power.

References. Just a few of the many:

1. Kookaburra, P-47, Pts. 1 and 2.
2. P-47 in Action, Squadron/Signal.
3. Aces of the Eighth.
3. Aces of the Ninth, Twelfth, and Fifteenth Air Forces.
5. Ninth Air Force History.
6. Checkertail Clan.
7. Slybird Group.
8. Thunderbolt at War.
9. Thunderbolt—A Documentary History.
10. Morgan P-47.
11. Aero Modeller Plan Pack.
12. Profiles No. 7, 262.
13. Aero Books, No. 6, P-47.

These models, both the FW 190D and the P-47 are really great fun to fly with a minimum outlay of time and cash. P-47 pilots, remember: Beware of that FW 190 in the sun!

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