TWIN MUSTANG F-82

By S. CALHOUN SMITH

Been seeking a good twin engine model? Have you wanted to try your hand with a fighter? Well, gather up the glue and sticks, brother—here's a project to keep you busy for a while. Difficult? Not too much. Slab-side body, wing à la "Fireball"

■ Air war demands for a long range fighter dictated the design of the North American F-82. Serving in the interim Air Force as an effective all-weather fighter, the Twin Mustang has more recently shown its versatility as a fighter-bomber in the Korean war.

Long-range escort work was the primary task of the F-82 since it has a maximum range of about 3,000 miles. The ship holds the distinction of the longest non-stop flight on record for its type. Early in 1947 an F-82 was fitted with auxiliary tanks totaling 1,540 gallons. This enabled the now famous "Betty Jo" to fly 5,000 miles non-stop from Hawaii to New York. The flight took 14 hours and 33 minutes.

Various combinations of armament and auxiliary fuel tanks have been fitted on the F-82 making possible its employment as an all-weather fighter, fighter-bomber and escort fighter. Six .50 cal. guns are carried in the center section as standard armament. An eight-gun pod may be attached under the center section with rocket clusters and bombs carried under outer wing panels.

Another combination can utilize rocket clusters alone totaling 25 5-inch HVAR's, making it a formidable ground attack weapon. This combination can be varied with 1,000-lb. bombs in place of rocket clusters. The all-weather fighter version utilizes a large radome pod hung under the center section with standard gun installation. Its ceiling is 45,000 ft., span 51 ft. 3 in., length 38 ft. 3 in. The twin fuselages are almost identical except for the cockpits.

Power was two glow-plugged O&R 23's swinging 9/6 Top Flite props (the 8½ inch job on cutaway is for exhibition scale). O&R 29's or K&B 29's or 32's can be used with minor modifications on the nose section. Fuel cut-offs can be rigged similar to type used in team racing, but a good positive action is a

must. The original ship had a slightly larger tank for the left engine and the right engine was started first to insure its stopping first. Excellent control resulted with only the left engine running. This method can be used, or two helpers can fill both tanks after both engines are running to get proper fuel quantity.

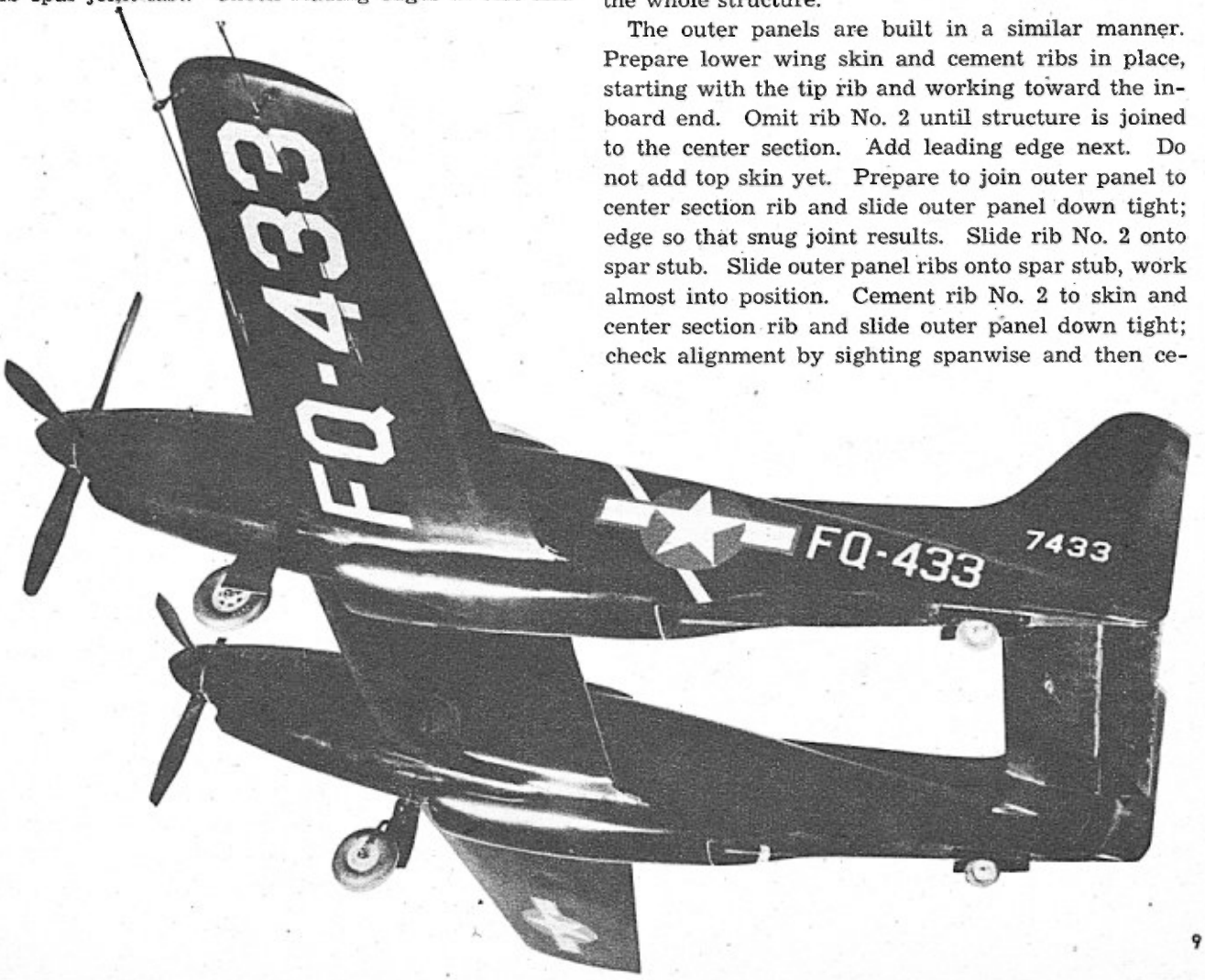
The long nose moment arm makes for fairly nose-heavy trim if larger engines are installed. So it may be necessary to add weight to the tail. Balance as shown.

Construction starts with the wing. Note that the center section skin is 3/32″ sheet and the outer wing panels use 1/16″ sheet covering. Use 6″ wide sheets if available; if not, build up to necessary widths from 3″ wide sheets. Cut out the required number of ribs and the ⅛″ sheet hard spar. Punch holes for line leads in ribs for the left outer panel. Begin by building the center section. Slide the ribs into place on the spar—do not cement now.

Cement the ribs to the lower skin, one at a time, aligning carefully. Pin through skin into ribs. Cement rib-spar joint last. Check leading edges of ribs and skin, smooth with sandpaper, then cement ¼″ x ½″ leading edge in place. Bevel trailing edge of the lower skin when the assembly is thoroughly dry. Prepare the upper skin by beveling trailing and leading edges so that good fit is made. Check before cementing permanently in place. When dry, complete wing by rounding off leading edge and sanding the whole structure.

The big F-82 is powered with two 2,200 hp in-line Allison V-1710 engines; speed tops 475 mph. Pilot flies from left-hand cockpit; other cockpit can be equipped for co-pilot, radar operator or gunner.

The outer panels are built in a similar manner. Prepare lower wing skin and cement ribs in place, starting with the tip rib and working toward the inboard end. Omit rib No. 2 until structure is joined to the center section. Add leading edge next. Do not add top skin yet. Prepare to join outer panel to center section rib and slide outer panel down tight; edge so that snug joint results. Slide rib No. 2 onto spar stub. Slide outer panel ribs onto spar stub, work almost into position. Cement rib No. 2 to skin and center section rib and slide outer panel down tight; check alignment by sighting spanwise and then ce-



F-82 Twin Mustang

ment spar stub to ribs. Use plenty of glue here.

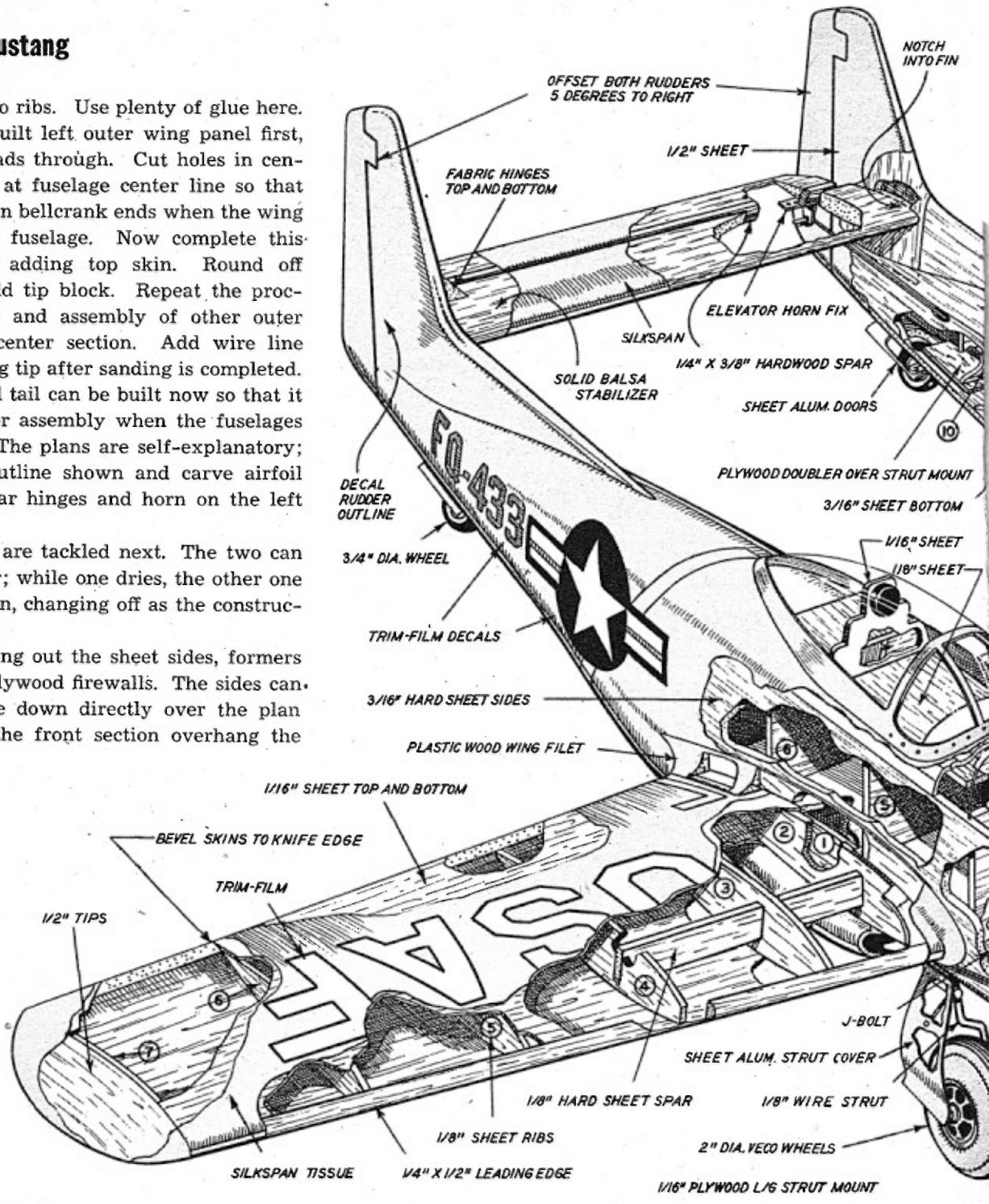
If you have built left outer wing panel first, now run line leads through. Cut holes in center section skin at fuselage center line so that line leads can join bellcrank ends when the wing is joined to the fuselage. Now complete this outer panel by adding top skin. Round off leading edge, add tip block. Repeat the process for building and assembly of other outer wing panel to center section. Add wire line guide to left wing tip after sanding is completed.

The horizontal tail can be built now so that it will be ready for assembly when the fuselages are completed. The plans are self-explanatory; simply cut to outline shown and carve airfoil section. Add spar hinges and horn on the left underside.

The fuselages are tackled next. The two can be built together; while one dries, the other one can be worked on, changing off as the construction progresses.

Begin by cutting out the sheet sides, formers and hardwood plywood firewalls. The sides can be placed upside down directly over the plan top view. Let the front section overhang the workboard edge a bit so that the firewall can be installed easily. Glue the firewall and triangular gussets in place with hard glue (Weldwood). Add formers starting from the front and work toward the rear. Jig up the sides so that they are square, check alignment as work progresses. The rear sheet bottom can be added now. Install the tailwheel wire and mount as this is being done.

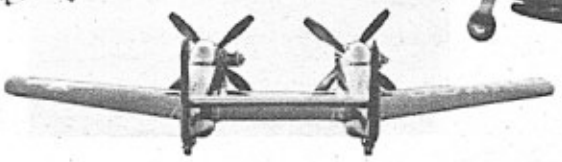
When this assembly is dry it can be removed from the workboard to permit the top structure being added. The air scoop and landing gear are added later after the wing is joined to the fuselage.



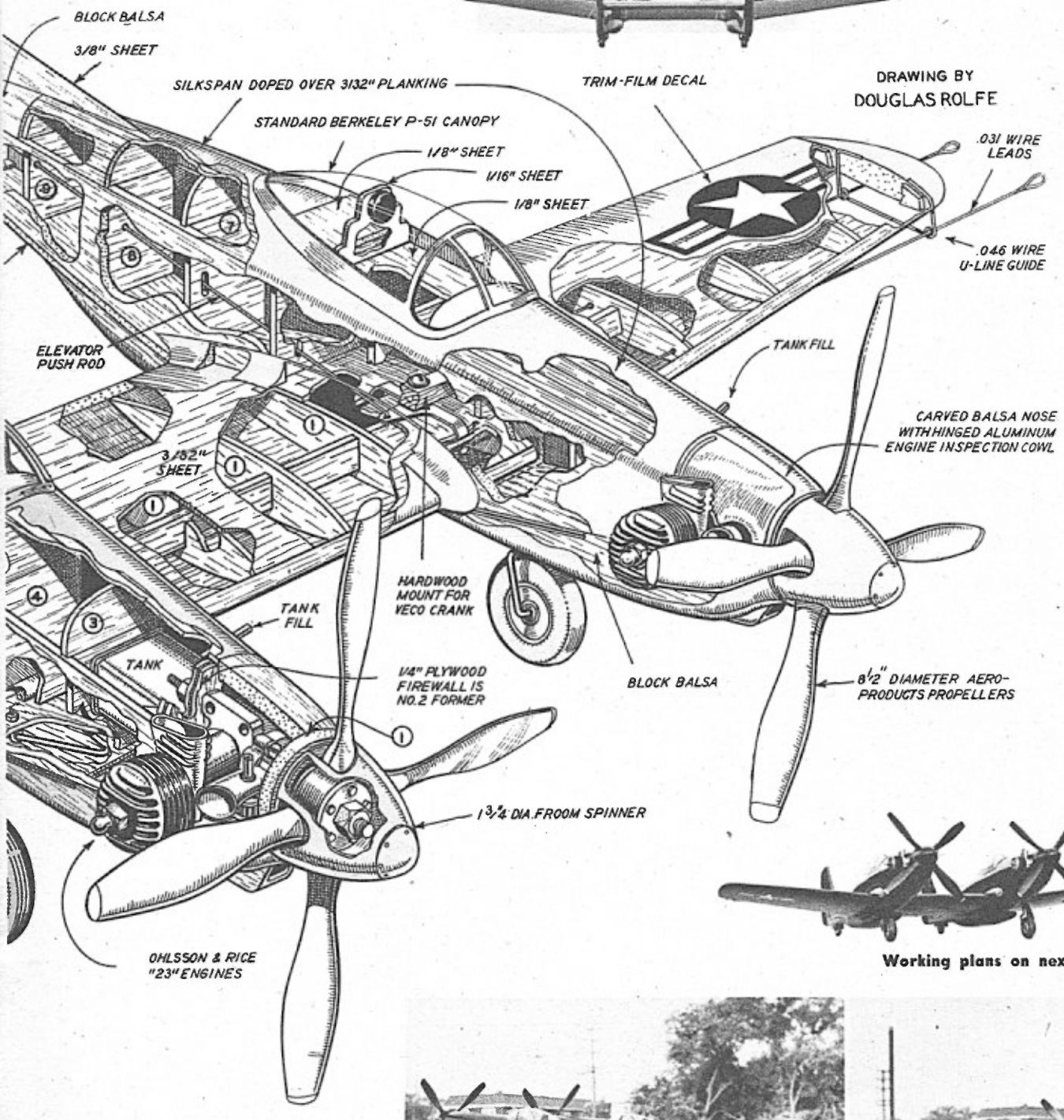
Install the bellcrank and the pushrod in the left fuselage next. Punch holes in the formers to allow passage of the pushrod. The pushrod passes through the fuselage side at former 10 to join the elevator horn outside the tail structure. Length can be determined when the tail is joined to fuselage during final assembly. Simply make sure that the pushrod and bellcrank work freely inside the fuselage.

Top structure can be added. Cement top rounded portion of formers into place and add 3/32" x ¼" planking strips. The dorsal fin, fin and rudder are carved to shape and cemented (*Continued on page 86*)

A Beauty From Every Angle!



DRAWING BY
DOUGLAS ROLFE



Working plans on next pages.

Model is scaled 3/4 inch to the foot directly from factory 3-views. Wing span is 38.75 in. Wing area is 237 sq. in. All-up weight of the original model was 44 oz. giving a wing loading of 18.5 oz./100 sq. in., a little heavy for stunting.

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(*Continued from page 10*)

in place. Offset rudders about 5 degrees to the right. Note block balsa extending from former aft along the dorsal fin. The fuselage bulge along here flairs gently into the fin, becoming flat at about the center of the fin. Use Plastic Wood or some wood filler to get a smooth fillet job here.

No attempt was made to duplicate the interior. A ⅛" sheet platform was added level with the lower edge of the canopy, extending completely across the fuselage top.

The nose section is formed from block balsa. It should be tack-glued in place and the exterior carved to shape. Remove and hollow to about ¼" thickness, notch for the engine cylinder. The firewall can be drilled for radial engine mounting and engine can be temporarily installed to check fit with cowling. Use O&R 60 crankcase bolts cut down to 1¾" or 1⅞" long to allow room for nuts on the rear of the firewall. Use standard nuts topped with Elastic Stop Nuts on each mounting bolt. This will prevent loosening from vibration. Fuel tank can be installed now. Be sure fuel line has no kinks between tank and carburetor; drill firewall as necessary.

When engine installation is checked and cowling fitted, the cowling blocks can be glued permanently in place. Use hard glue such as Weldwood. Some builders may wish to make engine installation permanent at this time. If so, simply cover exhaust and carburetor openings with Scotch Tape to prevent dust and dirt from getting into the engine, covering fuel tank vents as well. If desired the top cowling may be made removable for overhaul and cleaning later. Make this top from block extending from front back to former 3 along the top edge of the fuselage side. Use your favorite method of cowl hold-down.

The original model had engines installed with heads facing each other, so remember to make provision for this when drilling firewalls and carving cowlings unless you follow the set-up shown in the cutaway.

While the fuselages are still unattached, so to speak, it is desirable to complete sanding and apply part of the filling and priming. The original model had two coats of clear dope, two coats of filler and layer of lightweight paper applied before final finish was put on. This also can be applied to the wing and horizontal tail at this time.

"Frankly, sir, the War Department had enough trouble with flying saucers. I don't know what we can do with your flying cup."

Final assembly can be undertaken next. Naturally a snug fit at fuselage-wing junction is important. Check fit of left fuselage first. Connect line leads from wing to bellcrank. Cut top wing skin as needed to allow bellcrank to swing freely when wing and fuselage are together.

The inside surface of the fin is routed a bit to receive the end of the stabilizer. Pin the stab in place and check the length of the pushrod with the elevator in neutral. Make bend for this rear connection with bellcrank in neutral. Check the whole system for proper freedom before wing and tail are joined to fuselage permanently. When everything is O.K. in the control department, assembly is started.

Clamp the wing down on the workboard, block up center section leading and trailing edges so that wing is in level attitude. Cement the left fuselage in place, block tail end up. Check alignment with wing center section by holding a triangle or square against fuselage side and sighting over other edge along center section leading edge. The right fuselage and the horizontal tail are added. Block fuselage rear up to the same height as the left fuselage. Check heights of tails, ends of stab and prop shafts from the work board surface. Sight spanwise over both fuselages; check for right angle between fuselage and center section. Be sure everything is lined up properly so that there is no difference in thrust lines or stablizer incidence.

When the whole assembly is thor-

oughly dry, it can be taken up from the workboard and work on the fuselage bottoms completed. The landing gear legs should be bent to shape and attached to the plywood mounts. Make one right and one left. The gear legs extend downward at the outboard sides of both fuselages. The plywood mount is cemented directly to the bottom edges of the sheet sides. Notch the leading edge of the wing to make a snug fit. The bottom blocks can be added and carved. Note carefully the cross-sections at 4, 5 and 6. The air scoop has a rather tricky shape above the front opening. Add the block over the bottom wing surface, leave uncarved aft of former 5. Carve the block for the scoop, from 5 to 7, fit temporarily and carve first block to join the scoop block. Then remove scoop block and hollow for lightness. Scoop block aft of former 7 can now be added, carved and hollowed. Note inset area at rear, which simulates the exhaust door.

With all bottom carving and sanding completed, a Plastic Wood fillet can be built up around wing fuselage junction. This has a radius of about ¼" on the outboard fuselage side and about ⅜" on the inboard side.

Fill and prime fuselage bottom area as already described for other surfaces. Dummy pilot and co-pilot can be placed in the cockpits now and bubbles added. You may prefer to do this after final finish is applied.

The original model had two coats of automobile primer applied and rubbed down with wet garnet paper. Black dope was sprayed on and rubbed down between coats. About 1½ pints were used.

Seal Sure fuel proofer was applied after all trim and details were added. Don't forget the inside area around engines.

Details such as exhaust stacks and strut cover doors can be added now. Trim-Film was employed for all insignia and numerals. The designations are typical of aircraft used by the 52nd Fighter Wing.

The radome was omitted to save weight and because no accurate details were available as to its size. The outlines shown have been guesstimated from photographs. If installed, it is

recommended that the radome be carved from soft balsa with a plywood keel extending up into the center section. The radome would make a good skid to prevent nose-over landings on rough ground, if you don't mind a little patching and repainting. Bomb racks and rocket cluster rack details have been included. Information on these items is scanty also, and though drawing accuracy is not guaranteed, it is very close, so you can be fairly accurate.

Some fighter-bomber versions of the Twin Mustang have natural metal finish with dark green anti-glare panel on nose and black lettering with standard insignia. These aircraft do not carry the radome, but are equipped with bombs and rocket clusters as described in the first part of the article. Scale four-bladed Aeroproducts propellers are all black with yellow tips on both fighter bomber and all-weather versions.

Bill of Materials—F-82

(Balsa unless otherwise specified)

4 pcs 3/16" x 3" x 36", fuselage sides, bottom. 2 pcs ⅛" x 3" x 36", formers, wing ribs. 2 pcs 3/32" x 6" x 36", center section skin. 2 pcs 1/16" x 6" x 36", outer panel skin. 1 pc ½" x 3" x 36", tail surfaces, wing tips. 6 pcs 3/32" x ¼" x 36", fuselage planking. 1 pc ¼" x ½" x 36", leading edge. 1 pc ¼" x ⅜" x 11" (hardwood), elevator spar.

Block balsa for cowling and scoop as required. Scrap plywood for firewall and mounts as required. 20" ⅛" dia. steel wire, landing gear. 24" 1/16" dia. steel wire, pushrod, tailwheel strut. 36" 1/32" dia. steel wire (or flexible cable) line leads. Veco 3" bellcrank. Veco 2" wheels, Veco ¾" wheels. Two 1¾" dia. Froom spinners. Eye or "J" bolts for landing gear.

Cement, Weldwood, clear dope, wood filler, lightweight tissue, auto primer, black dope, fuel proofer, red, white, blue Trim-Film as required.