FineScale Modeler MAGAZINE

Tips and techniques for creating better models

HOW TO BUILD BETTER AIRCRAFT

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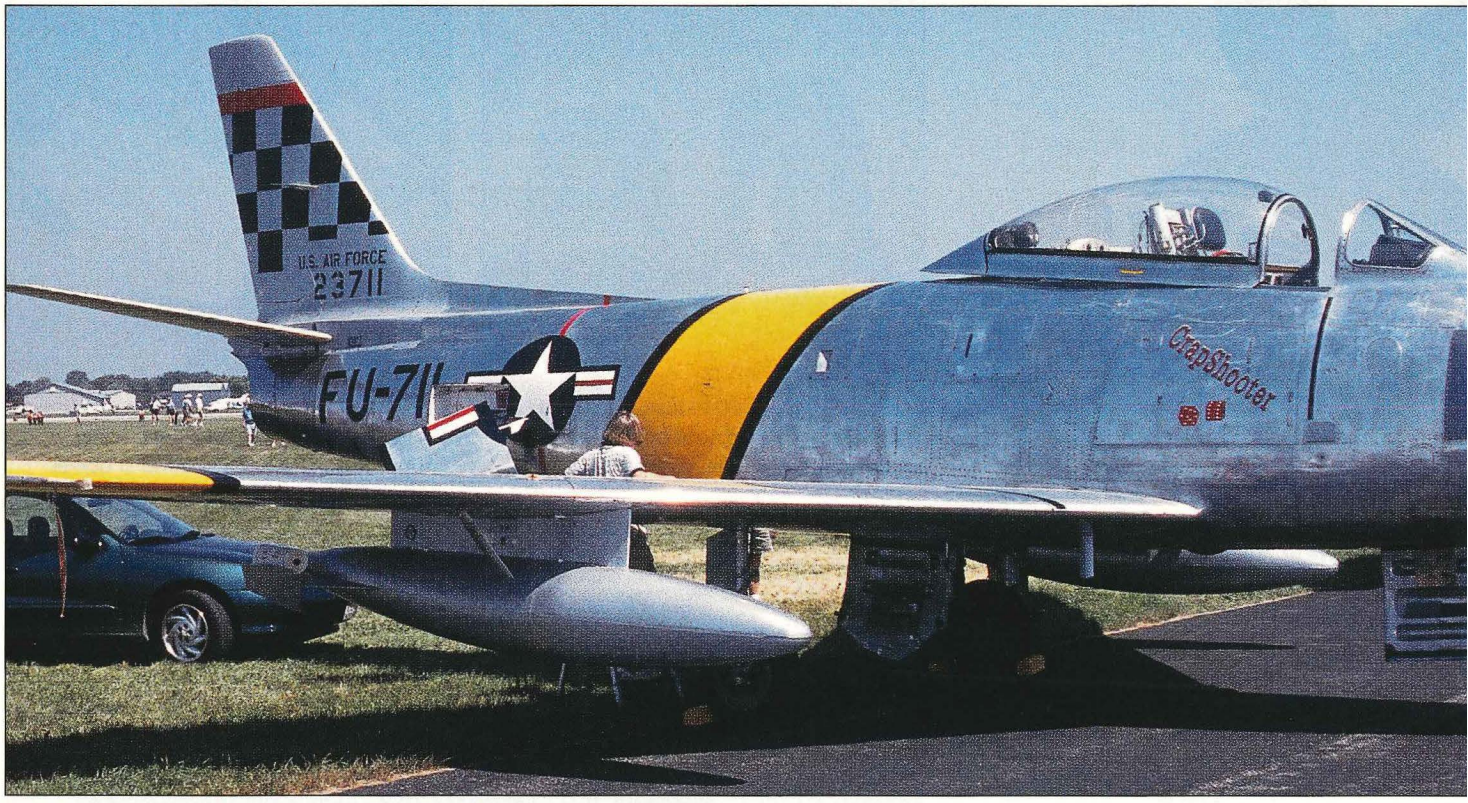

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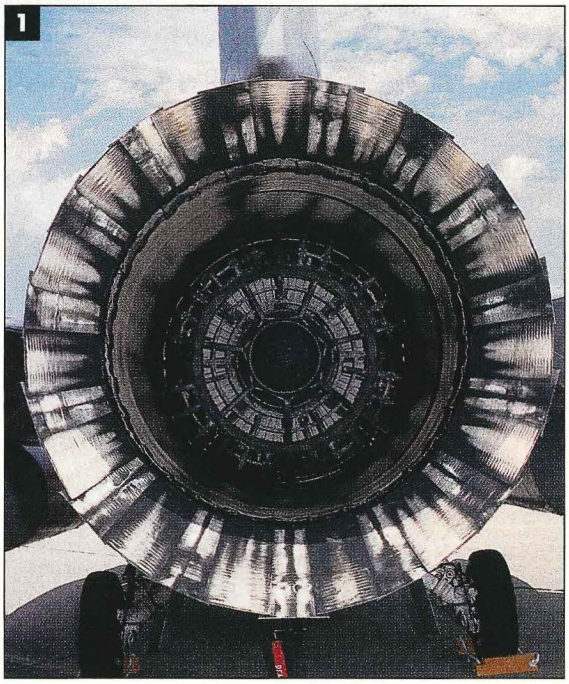
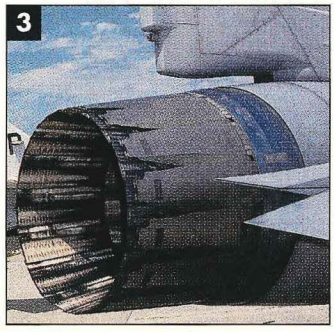
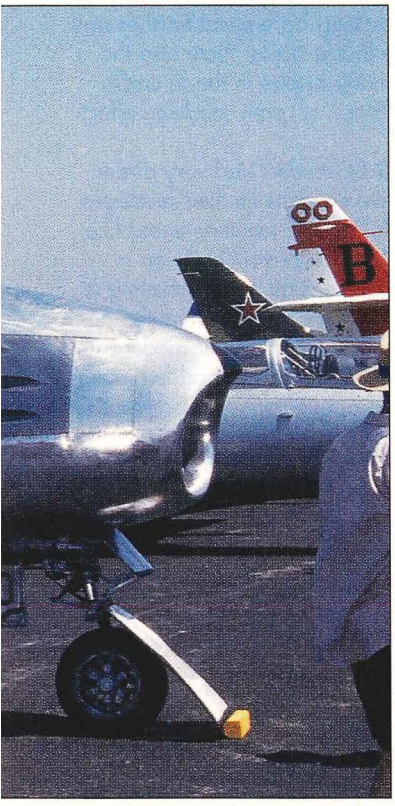




1 Deep inside this F-16's Pratt & Whitney F100-PW-200 are plenty of contrasting metal finishes. Try combining washes and drybrushing to create these effects.

2 Not all aircraft exhausts look the same. Note the contrast between this blackened F-4 exhaust and the whitish F-16 "can." It would take a bit of masking, but this Phantom's scalloped patchwork effect on the different metal panels is easily attainable. Try masking Metalizer paints with paper low-tack memo notes, then vary the shades to create the multi-panel effect.

3 Jet engine exhausts have several details to offer. Labeled with "no step" and "no push" markings, they're multi-toned, weathered titanium on the outside. Also, note the dirty panel lines on this F-16 Falcon; dirt also collects in the rivet depressions. A dark wash will add these details to your models.



Using references to add detail

By Chris Appoldt Photos by Terry Thompson

Just because the box top of an aircraft model you're considering shows an overall gray or natural metal paint job, it doesn't mean there isn't color and detail for you to add. Even aircraft with single-color schemes usually have their colorful areas.

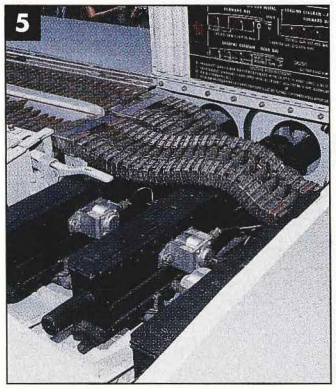
The subtle differences between the bare metal panels on this F-86 are easily seen once you take time to look. Reference photos such as these provide the modeler with accurate guides to realistically portraying the real deal, showing where the hidden colors are on those seemingly monochromatic aircraft.

Photo references are a great help in finding these details, and such reference sources for your modeling project can be found at a local library or bookstore, and even at a nearby airstrip's gift shop. But whatever you do, don't miss the chance to snap a few pictures at air shows, where military and civilian aircraft frequently show their true colors for the public to see.

The 1999 AirVenture show at Oshkosh, Wisconsin, was a perfect opportunity for just such an expedition. Look closely at the following photos; you might find a few unexpected and colorful details that will give your models that extra touch of realism. **FSM**

COLORS

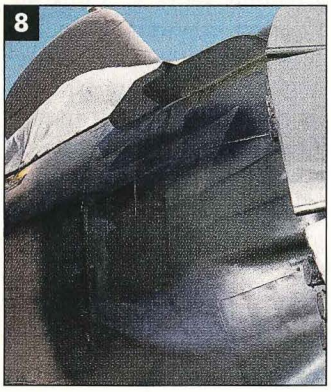
4 LANTIRN pods, as on this F-16, are frequently inspected and maintained – see how the crew's work keeps the bolts stripped of paint? Also note the bare metal tube and the pronounced panel lines.



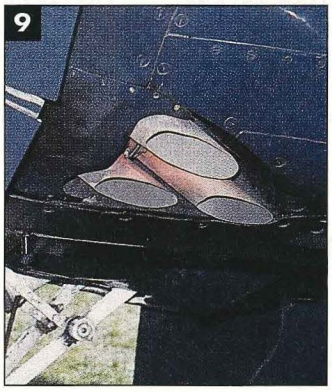
5 As seen on this P-51, opening a wing immediately adds detail and color to a model project. Within the gun bays, you should see contrasts of gunmetal, aluminum, brass, and copper.

6 Inside the engine cowling of this T-28 are cylinders and other colorful details a meticulous modeler could highlight with a light drybrushing of steel or aluminum paint.

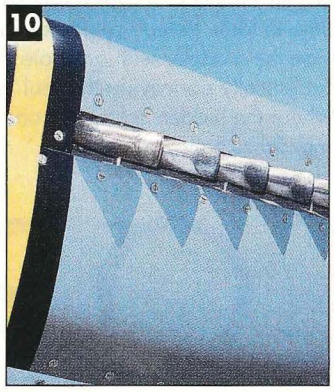
7 This Lockheed Constellation shows another example of contrasting bare metal finishes and exhaust stains. Note also the many ripples in the aircraft's "skin," a rarely modeled effect.



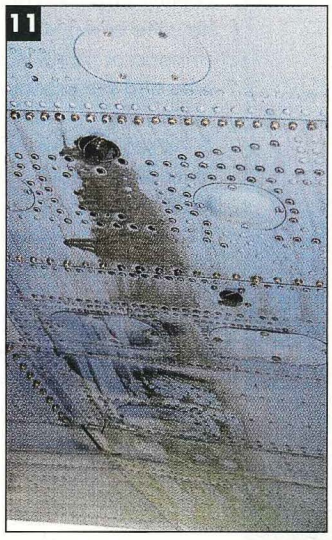
8 Skyraiders had very distinctive deposits on their fuselages. To make a feathery smear like this, rub pastel chalks on coarse sand paper, creating a powdery dust, then lightly streak it along your model with a small brush or padded make-up applicator.



9 This photo of an F4U-1 Corsair's exhaust is a perfect example of how you could take a small detail and turn it into a great highlight. The varying color of the exhaust pipes and the stains on the fuselage are found on most similar aircraft types.

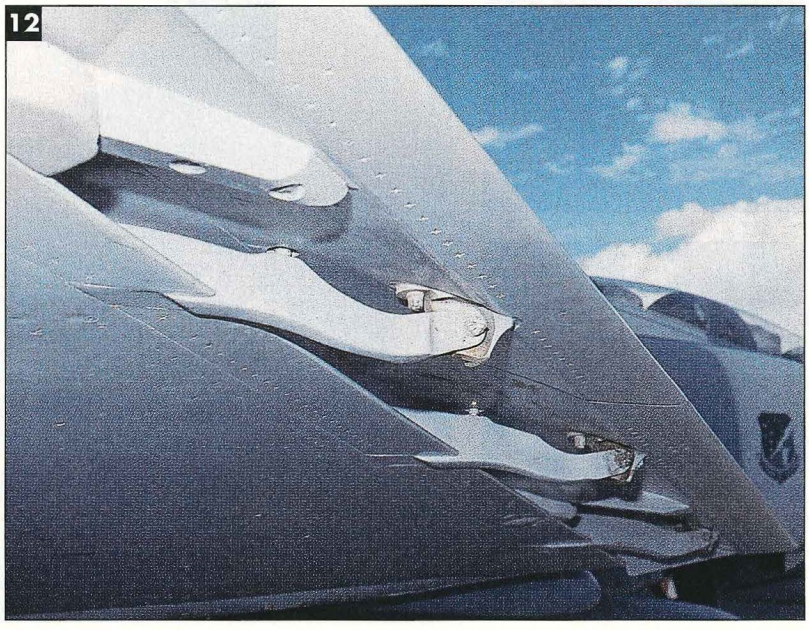


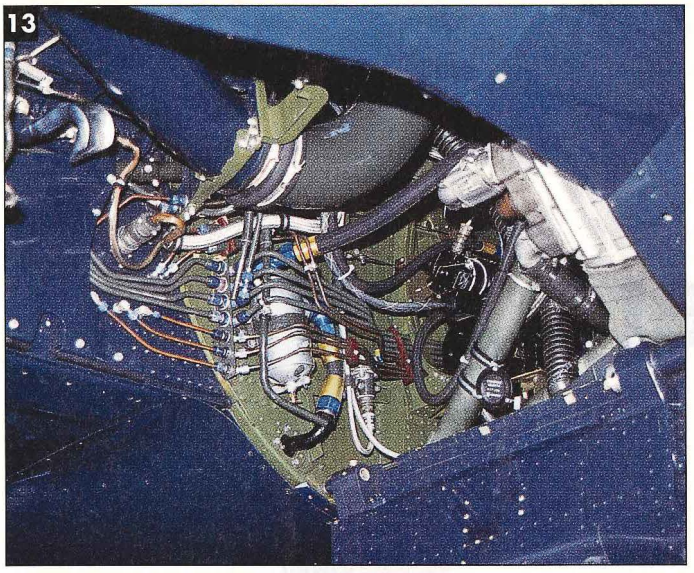
10 Prop-driven aircraft from World War II, like this Spitfire, had exhausts whose colors varied under the hot temperatures – they also frequently rusted from exposure to the elements. The engines were constantly being maintained, so screws and bolts are often stripped down to bare metal.

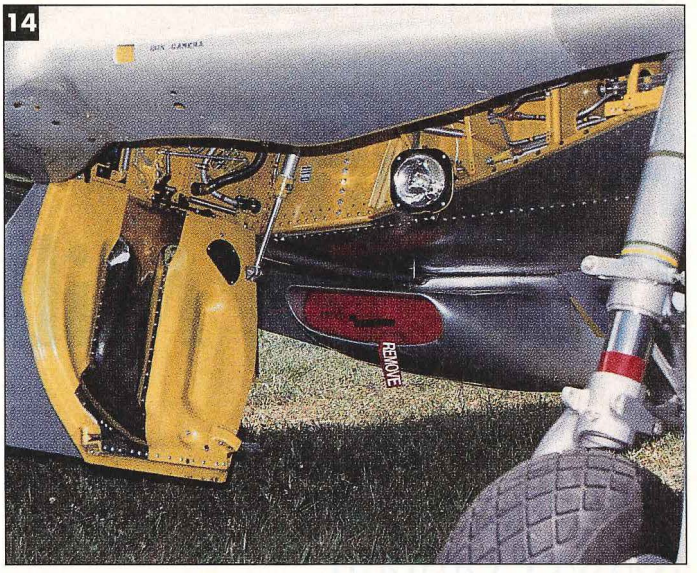


11 Fluids don't always stay where they belong on aircraft. When they do leak, air currents will usually spread them in peculiar patterns along the fuselage.

12 Joints and hinges collect residue on this otherwise immaculate F-4F. Lubricant and fluid stains are usually kept at a minimum on modern aircraft by maintenance crews.

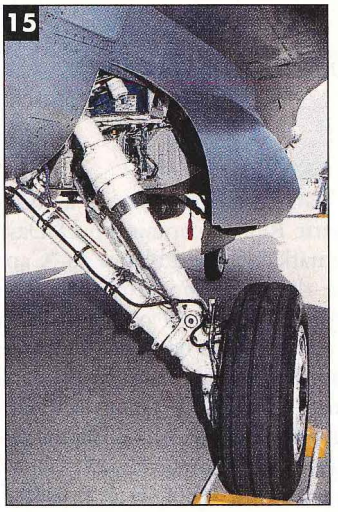




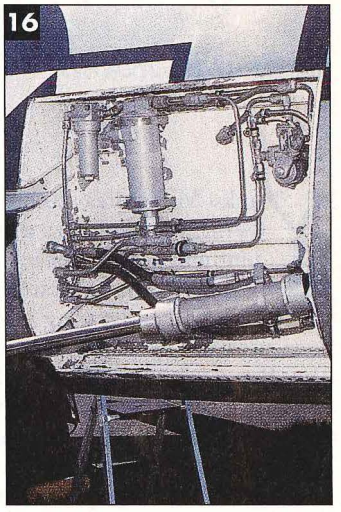


13 Older U.S. military aircraft, like this F8F, were painted with green or yellow zinc chromate inside the access panels and wheel wells; the hydraulics created even more eye-catching contrast against these colors.

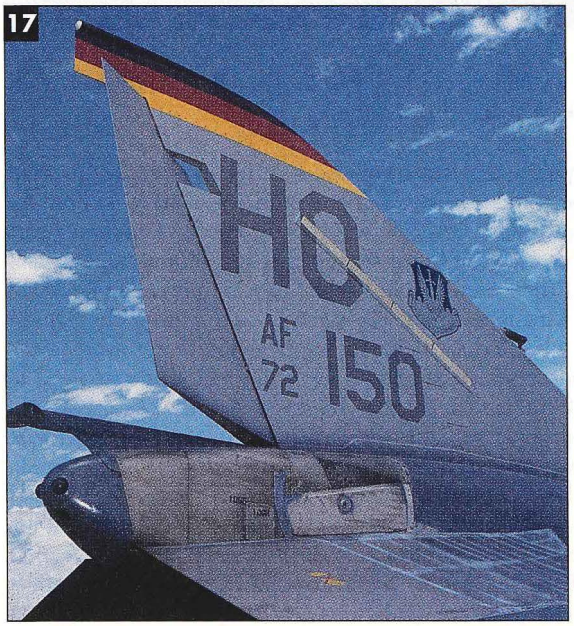
14 Wheel wells don't need to be bland, as this Mustang shows. Rivets, brake lines, and even tires add color and variety for the modeler.

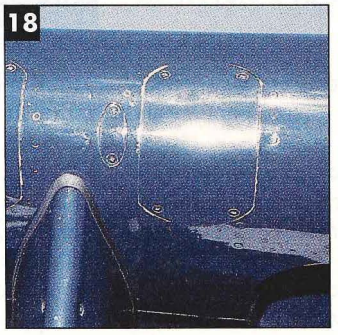


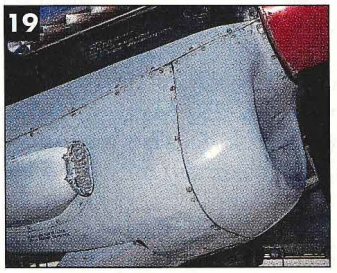
15 Tires are almost never truly black since they're picking up dust and dirt from the runways, as on this F-16. The brake lines create another contrasting detail.



16 The inside of most service panels are gloss white so that technicians can easily spot leaks. Note the detail you can create to an F-86 by painting your model's hydraulic lines.







17 Modern aircraft, like this F-4F, are usually meticulously maintained. Certain areas, though, do undergo a high degree of wear and tear – and it shows. Modeling to reflect an accurate finish can really make your kit an exceptional showpiece. Experiment to find some techniques that yield satisfactory results, and enjoy the art of detailing!

18 Panel lines on this F8F became prominent when they lost their paint to maintenance functions. A silver artist's pencil, found in most arts and crafts stores, can be sharpened to draw these on your project.

19 While models needn't have exaggerated, filthy panels, note on this He 111 that even "modern" classic airframes will collect dirt where panels meet.

7 Tips on Building Resin Aircr

There's good news, and then there's . . .

By Pat Hawkey

aft

How can you find a 1/48 scale photo-Crusader other than in resin? Pat's Monogram kit was converted with C&H's resin parts.

One reality of modeling is that some subjects are not popular enough to warrant expensive plastic injection-molded kits. Fortunately, that special model you've always wanted is probably out there, in resin. There are many cottage-industry manufacturers who make kits from polyurethane resin cast in silicone "rubber" molds. That's the good news.

The other news is that resin kits can be expensive (compared with most plastic kits), and they present their own building challenges.

I've built nearly 30 resin kits or major conversions, produced by seven different manufacturers. Some have been easier than others – all have been adventures.

Some resin kits are excellent, with great detail, fit, and accuracy, but others (even from the same manufacturer) may be poorly cast, with uneven fit and wildly inaccurate shapes.

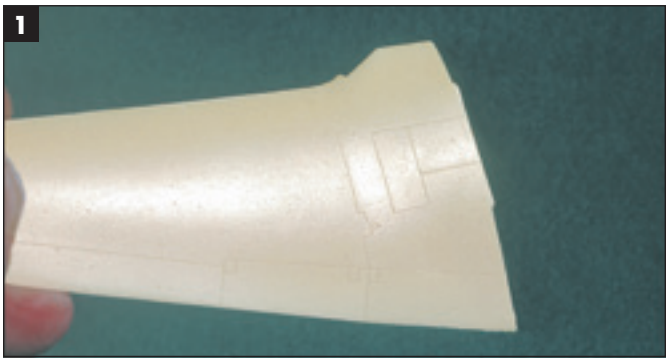
What is "resin"?

Polyurethane resin is a pourable plastic material. Cottage-industry manufacturers like it because it can make thin, detailed pieces and cures quickly at room temperature. It's workable and relatively inexpensive.

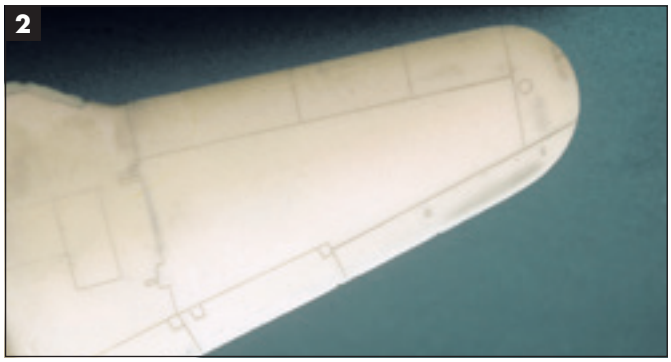
The material is supplied in two parts: liquid resin (isocyanate) and liquid hardener (polylol). They are labeled Part A and Part B, usually mixed in equal amounts; a chemical reaction starts, and the liquid hardens into a solid plastic-like material within minutes.

While polyurethane resin is not a particularly potent toxic material, it may cause respiratory irritation. Work on it while wearing a particle mask, safety goggles, and gloves.

– Pat Hawkey

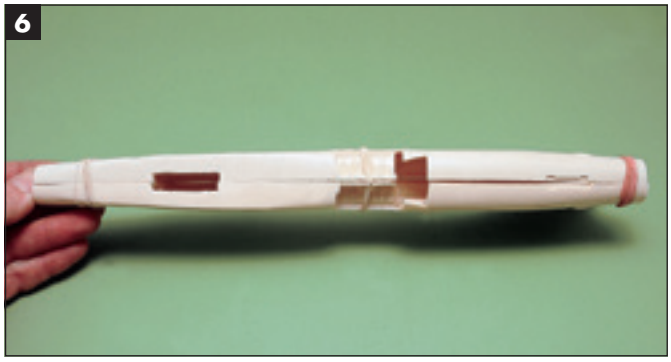


This Fireball wing has lots of tiny bubbles and irregularities.

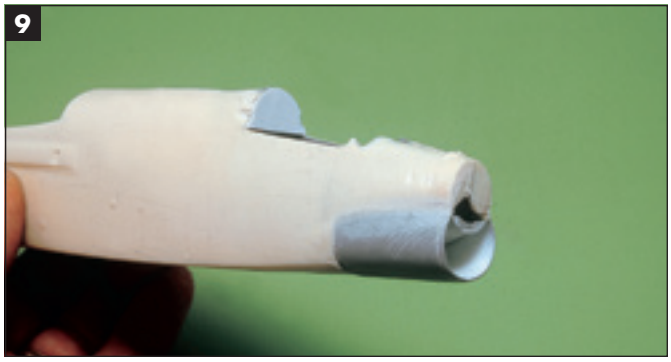


A few coats of primer and careful sanding show how the primer can fill the bubbles.

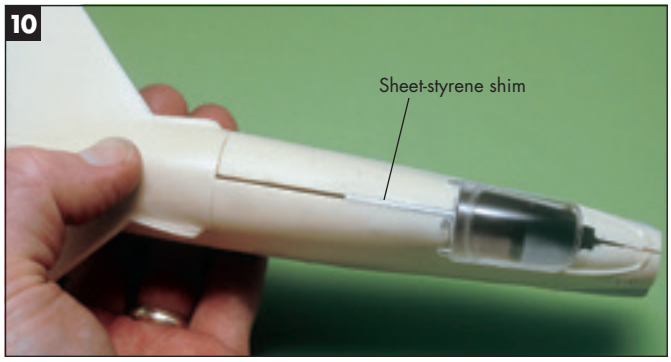
After scribing in control surfaces, the new wing looks as good as . . . new!



Shrinkage of resin material can cause some drastic mismatches, such as this one on a 1/48 scale F8U-1P Crusader.



The resin intake scoop suffered from air bubbles, so Pat simply replaced it with the Monogram scoop.



To fit the canopy, Pat had to wedge the resin fuselage halves apart with strip styrene.

Some resin-kit manufacturers try to engineer pieces similar to their plastic counterparts, but in my experience the fewer the parts, the more enjoyable the build. Further complicating things are the tricky vacuum-formed clear parts, and some cast white-metal details such as landing gear struts.

Here are a few problems you may encounter, and my solutions. Some of them may seem impractical, but they all worked for me!

1 Bubble trouble

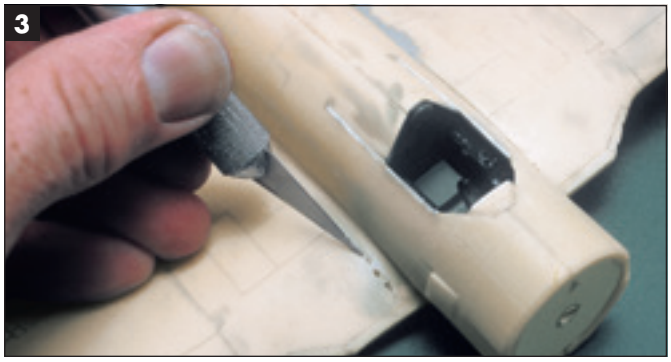
Air bubbles are probably the number one problem with cast resin parts. Air can be "swallowed" in the resin when the two-part liquid materials are mixed, or gasses can form in the liquid during the curing process. In either case, air sometimes can't escape before the resin sets, resulting in bubbles trapped on or just underneath the surface.

Photo **1** shows a badly pockmarked wing for a 1/48 scale FR-1 Fireball, the result of air bubbles on the surface when the resin cured. This is trouble if you're faced with a glossy or natural-metal paint job. If this were plastic, a simple sanding would likely fix it, but sanding down bubbles on the resin wing will likely uncover more bubbles lurking under the surface.

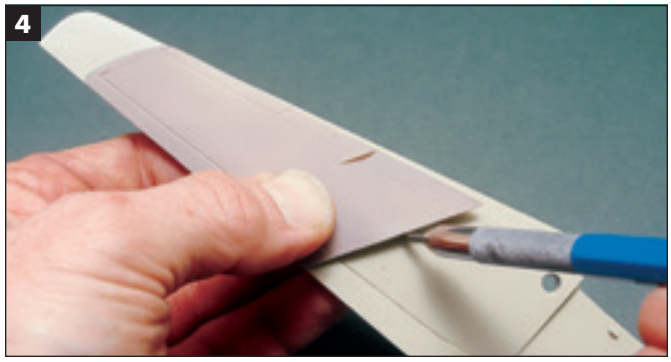
One solution is to apply several heavy coats of primer and sand the primer smooth. However, a coat of primer can fill up recessed panel detail.

Photo **2** shows the kit's opposite wing after I primed and sanded. The dark spots show the bubbles and low spots filled with primer. Note the trailing edge of the wing also suffers from air bubbles. I carefully filled them with gap-filling super glue and sanded them smooth.

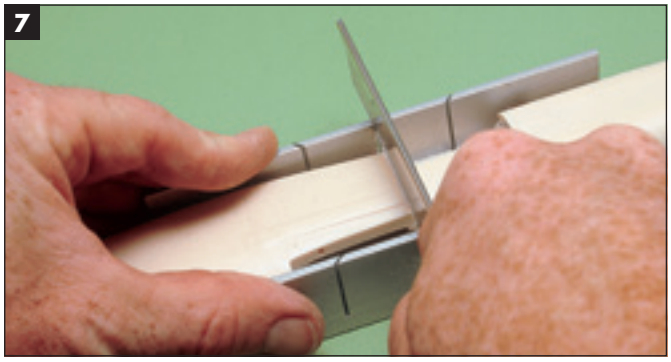
The bubble holes you see are only the tops of bigger and deeper bubbles, **3**. Smearing putty over them doesn't fill them as the air pocket underneath prevents the putty from anchoring. They have to be treated like cavities in teeth; you need to open them up before you can properly fill them.



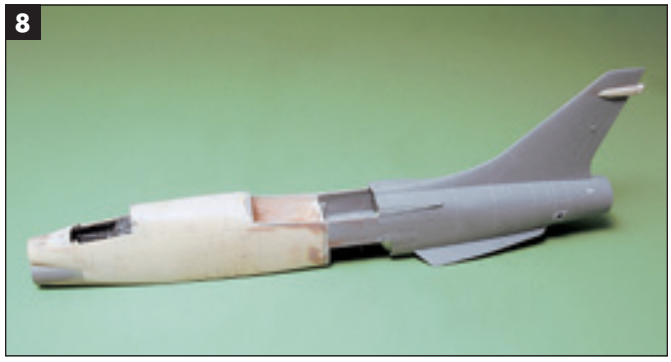
Larger surface bubbles must be "drilled out" like a cavity in a tooth in order for them to hold filler material.



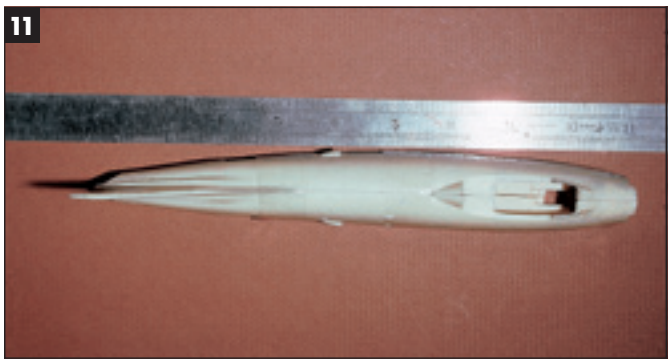
Pat used the X-2 kit wing as a template to cut a new piece from a spare F-111 wing.



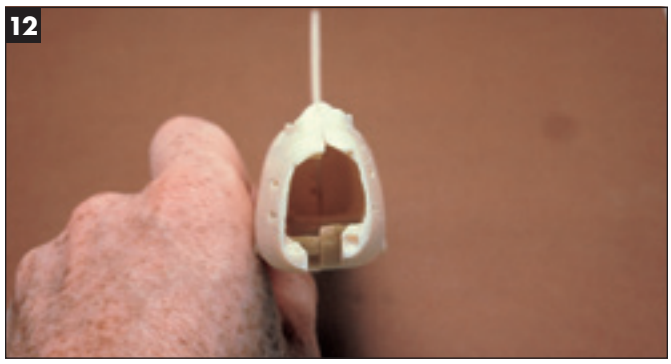
Pat separated the front of each Crusader fuselage half with a razor saw in a miter box.



Most of the mismatch problem was solved by marrying the front end of the resin conversion to the original Monogram fuselage.



Warpage can be a problem with resin castings such as these F-86H fuselage halves.



More trouble in the mismatched nose of the F-86H.

The resin wings for this 1/72 scale X-2 were so badly pocked that I chose to make new ones. I used the kit wing to trace the shape on a set of wings from a spare F-111 kit, **4**. The new wings were shaped with sandpaper, and the flap and aileron hinge lines were scribed using the original kit's wings as guides, **5**.

2 There's shrinkage!

Shrinkage and warpage are a fact of life in the resin curing process. For example, one half of this 1/48 scale RF-8 Crusader conversion fuselage is shorter than the other, **6**, or is one longer than the other? Fortunately, the conversion was based on an existing plastic kit, and I only needed the front half of each piece. However, throwing away the unused portions makes you think about the price you've paid for the conversion!

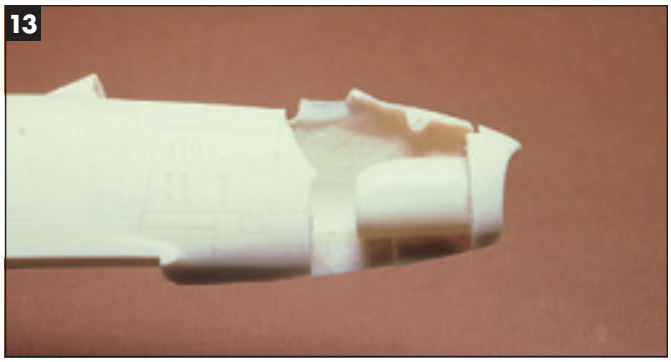
I was able to fit the fuselage halves in an X-Acto miter box and made perfectly aligned cuts with a razor saw, **7**. Here's how the merged fuselages look after assembly, **8**. The conversion's intake scoop had a lot of bubbles, so I cut it away and used the plastic kit's intake instead, **9**. A bit of epoxy putty filled in rough edges and restored contours.

While dry-fitting the fuselage halves, I found that the plastic kit's canopy was wider than the conversion fuselage. There was no way to cut down the canopy, so I had to shim the fuselage with strip styrene, **10**.

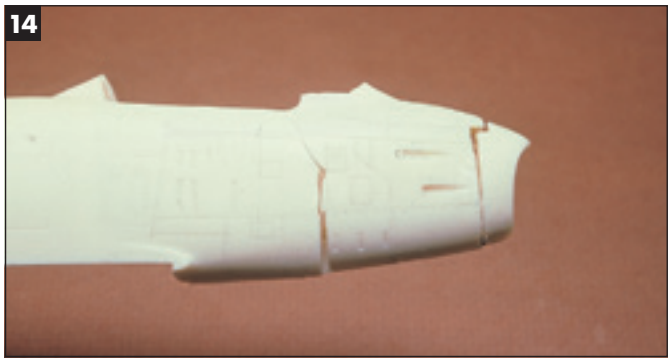
3 Warp factor

Check out the fuselage of this 1/48 scale F-86H Banana – er, Sabre, **11**. Fortunately, you can soften most resin parts in hot water and carefully straighten them. However, without a jig or a guide, it is possible to bend the part into another incorrect shape.

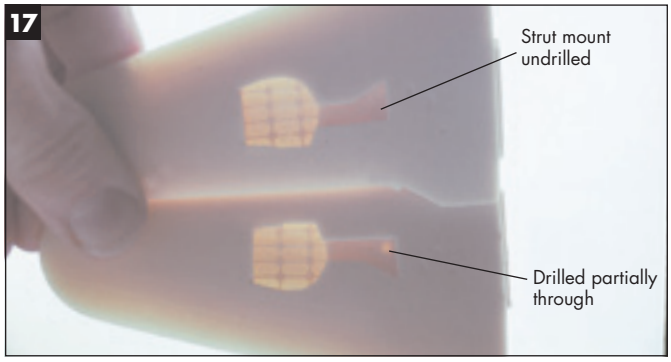
This is the front view of the same model, **12**. In this case, the left and right halves should match, and they both have to match a separate nosepiece. Since the nosepiece would be difficult to adjust, I determined the left fuselage half fit it best, then adjusted



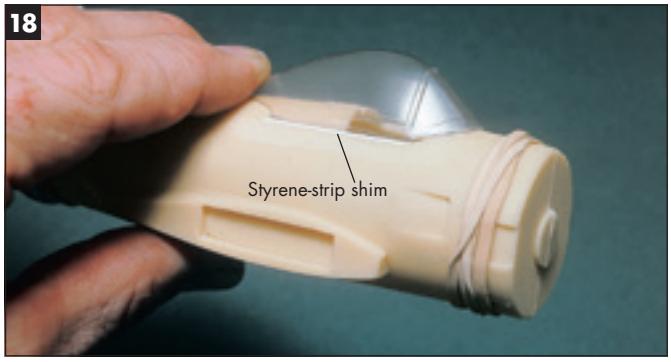
To get all the nose parts to fit and look right, Pat broke off the nose from the right fuselage half.



The broken-off part was reinstalled. Seams will be filled with epoxy putty.



Hold the resin parts to a bright light to gauge progress when drilling mounting holes.



Pat filled gaps around the Fireball canopy with styrene strips.

the other half. I felt that a surgical approach would work, so I broke and cut away the offending nose piece, **13**, then super glued it into a more-or-less correct position, **14**, filled with epoxy putty, and got busy with sandpaper.

Oh yeah – there was a wheel-well piece to work into the mix, **15**. Might be time to buy more epoxy putty.

4 Struttin' your stuff

Your resin kit will probably come with white-metal landing gear struts. Due to the weight of the finished model, a secure fit of the struts into the gear wells is important. For me, strength wins over accuracy. In the case of this F-86H, I super glued short sections of brass tube to provide stronger sockets for the gear struts, **16**.

Sometimes I use a drill bit to deepen strut mounts, but I have to be sure not to drill right through the upper wing surface. By holding the resin parts up to a light, I can gauge my progress. Here, the strut mount on one wing hasn't been drilled, but the other has, **17**. You can see a little light coming through the thinner resin.

Most resin landing-gear struts are too weak to hold the weight of the model, and even metal struts sometimes aren't strong enough. You can reinforce struts by drilling them out and super gluing in pieces of strong piano wire. If all else fails, you may have to hollow out solid-resin fuselage halves to decrease the weight of the model.

5 Clear problem

Usually, resin kits come with vacuum-formed canopies and transparencies. Sometimes, they fit fine, but sometimes they don't. The master used to make the canopy may have fit properly with the fuselage master, but after the resin parts were cast, they may have shrunk or warped.

That was the case with the Fireball canopy. I test-fitted it and found it joined at the front and back but left a significant gap along the sides. This was easy to fix with strips of styrene glued and faired into the fuselage, **18**.

6 Fine is not so fine

While big chunky objects translate well in poured resin, small, thin and detailed parts may not. They look great, but are fragile and easily warped. The selection of fine parts for the Fireball included the gear bay doors, control stick, flap hinges, and the fin fillet. I found it best to replace the fillet with sheet styrene, using the original piece as a cutting template, **19**.

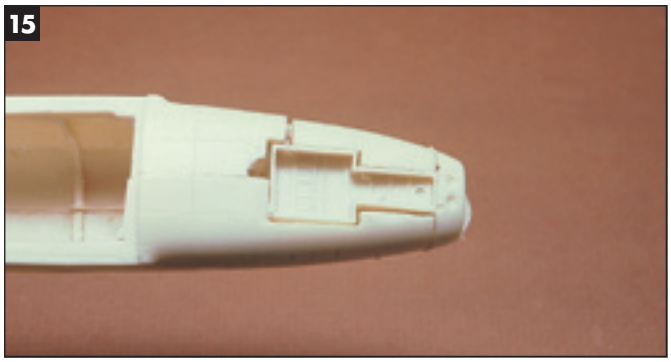
7 Paint adhesion

One more advisory on resin kits: Paint does not adhere to resin as well as it does to styrene. Resin parts tend to be slightly oily. According to Bill Cleary at Cass Polymers, the oiliness is caused by additives that leach to the surface of the cured polyurethane. He says, wiping the parts with acetone or alcohol helps.

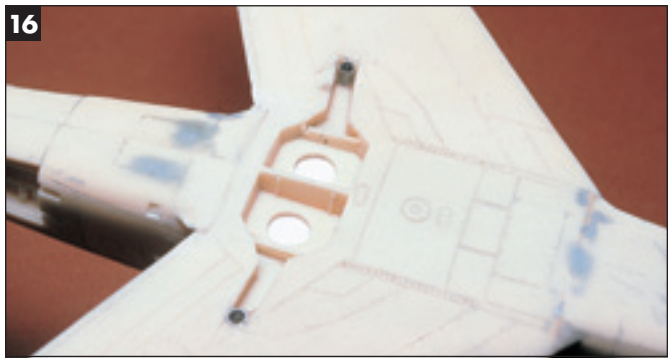
Since paint doesn't stick well, be careful masking, otherwise removing the mask may pull up the paint. Use low-tack tape and when you can, "paint" trim colors with solid-color decal material.

Resin kits can be made into beautiful models, but they may come at a high price in time and effort. I hope this article will help you save on both. There's a lot of nifty planes to be built!

FSM



The inclusion of the nose-wheel well complicated matters.



Pat inserted short sections of brass tubing to provide more stable mounts for the main gear.

This hybrid (reciprocating and jet engines) FR-1 Fireball was made from the out-of-production 1/48 scale Nero kit.

Pat had to make new wings for this Alliance 1/72 scale Bell X-2.

After some "rhinoplastic" surgery, Pat came up with a beautiful 1/48 scale F-86H Sabre from the Collect-Aire kit.

FOILED LIGHTNING

Technique

How to finish your plane with aluminum foil

Story and photos by Bucky Sheftall

Like other incurable perfectionists in our hobby, I was discouraged by modeling natural-metal finishes. Metallic paints never seemed convincing on anything much larger than a 1/48 scale landing gear strut.

About a year ago, I saw pictures of an aluminum-foil covered B-58 Hustler, and I was enthralled. I just had to try aluminum foil.

There are two ways to apply an aluminum foil finish. The easier method is to use a commercial adhesive foil product, such as Bare-Metal Foil (see sidebar on page 29). The more difficult way is to use household aluminum foil and apply adhesive yourself. This not only takes more time, but it creates more problems: applying the right amount of glue, keeping dust and dirt out of the glue, and so forth.

In either case, the application of foil is a challenging task, but the effect is worth the effort.

I use household aluminum foil and apply Microscale's Micro Metal Foil Adhesive with a brush. I will concentrate on basic foiling techniques in this article, especially the foiling of compound curved surfaces – a surface curving in more than one direction (a sphere is a perfect compound curve). The P-38 has plenty of compound curves.

Bucky Sheftall's 1/48 scale Hasegawa P-38J Lightning is covered with aluminum foil. The markings for "Si Si Señor" came from AeroMaster sheet No. 48-350.

Getting around it. The harsh reality of foiling is that you are trying to apply a two-dimensional material to a three-dimensional object. Household foil has almost no "stretchiness," and can be torn or wrinkled if forced around a sharp compound curve. Bare-Metal Foil stretches better over curves.

While it is desirable to minimize joints by using large pieces of foil on large, flat areas, such as wings or control surfaces, small curved items should be covered in small pieces to avoid wrinkles.

For my example, I'm going to foil over the teardrop-shaped P-38 150-gallon fuel tank first. There are plenty of curves here; it has a round cross-section, a blunt nose, and a radically tapered tail. Sweat beads begin to form on my brow just looking at the drop tank!

Ready ... set ... foil! The first step is to sand away all imperfections from the parts. Foil is not going to cover seams or irregularities – it's only going to make them look worse!

Once you have smoothed the item, wash it with soapy water so oils don't reduce adhesion of the foil. Remove any lint or sanding dust anywhere that could be conspicuously trapped by the foil.

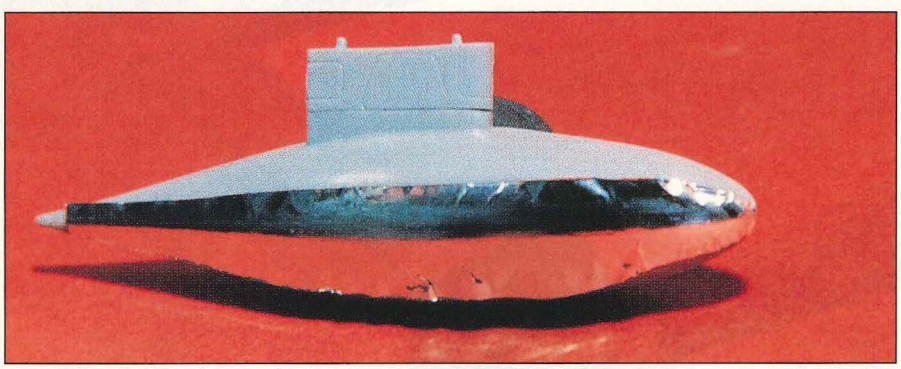
If you are using Bare-Metal Foil, you can skip this next step. When using household foil, cut a suitably sized piece and lay it on a clean work surface with the foil's matte side facing up. The fluid adhesive spreads better on the matte side. Don't worry about the overly shiny side of the foil; you'll be taking care of that later. Fold ¼" of one end over on itself to serve as a handle.

Material list

- either Bare-Metal Foil (regular "chrome" is best) or the thinnest aluminum foil you can find
- Microscale Metal Foil Adhesive
- a couple of flat artist's brushes, maybe 1.5cm (about ½") wide
- glass, Plexiglas, or coated, lint-free cardboard work surface
- scissors
- sharp hobby knife blades or razor blades
- fine steel wool (0000)
- cotton swabs
- round toothpicks
- rubbing alcohol
- facial tissues

Nothing looks more like aluminum than aluminum. Adhesive-backed aluminum foil is available in many hobby shops, or you can add adhesive to household foil.

1 If you aren't using Bare-Metal Foil, you'll need to brush Micro Metal Foil Adhesive on the matte side of household aluminum foil. The folded-over edge on the foil sheet serves as a handle.



2 Applying foil to compound curves, such as those of this P-38 drop tank, is the most difficult part of the process. Here's how to start: Cut a thin strip of foil and lightly press it onto the tank along the middle.

Apply Micro Metal Foil Adhesive with a flat brush. Keep brush strokes roughly parallel, pushing away from the handle to spread the liquid in a thin, even layer, **1**. Be careful not to let any dust get on the foil, especially while the adhesive is drying. When the milky liquid dries to an even Scotch-tape-like clear matte appearance, the pressure-activated adhesive is ready, and the foil can be applied to the model.

One piece at a time. Cut a strip of foil slightly longer than the tank and a width (varying with the shape of the tank) maybe one-sixth of the circumference. The fraction is not important, just try to keep the edges straight along the axis of the tank. Lightly press the strip onto the tank at the midpoint, and adjust the position, **2**. As you can see in the photo, wrinkles are already evident and will likely get worse as you work the foil down.

Burnish the strip onto the tank with a cotton swab, **3**. Increasing the pressure will activate the adhesive. The wrinkles on my tank weren't as bad as I thought they would be, and they were easy to rub out with toothpicks and steel wool.

Lightly sand the edges of the strip with 1,000-grit sandpaper or an ultrafine sanding stick. Sand perpendicular to the edge and push away from the edge of the foil strip. This will feather the edge, reducing the "cliff" and allowing the overlap of the next foil segment to become nearly invisible.

Continue laying strips, **4**, until the entire tank is covered, **5**. Thin (1/8"-wide) strips can be burnished over the prominent raised fuel tank seams.

Reducing the shine. A rub down (front to back) with 0000 steel wool gives a "grain" or patina to the too-shiny foil and makes it look more like real aircraft skin. The steel wool also helps obscure the fine edges of the foil segments, **6**.

After the tank and its pylon are completely foiled, wash it with warm soapy water to remove finger oils (which can oxidize on the foil and leave dark gray fingerprints) and remove the grains of aluminum dust generated by the sandpaper and steel wool. It is essential to remove this dust before the next step.

That's the basic technique for foiling, which is repeated over and over, with slight variations according to the shapes of the parts, **7** through **10**. Larger or flatter parts are easier to cover.

Tips for better foiling. When foiling a wing or stabilizer, wrap the top-surface foil over the leading edge, **11**,

so the seam is on the under-surface where it is less conspicuous, **12**.

Burnish foil over raised or recessed panel lines, and use those lines as trim points between pieces of foil. Use only a sharp blade to cut the foil along the panel lines. The adjacent piece of foil overlaps the panel line and should be trimmed in the same manner.

To cover small intake scoops such as the one on the side of the P-38 engine cowl, make a slit along the leading edge of the scoop before burnishing the foil. This will allow the foil to conform. Cover any "bald spots" with little "toupee strips" of foil, then burnish and polish with steel wool as usual, **13**.

If you find small unfoiled spots, cover them with small patches of foil, or touch up with slightly thinned aluminum paint after the model is finished.

Bursting bubbles. If you find an air bubble under the foil, slit it with a sharp blade, then burnish it with a toothpick. Be careful not to snag the edge of the slit with the toothpick, causing the foil to rip. Rub steel wool over the area, and the bubble and the slit will disappear.

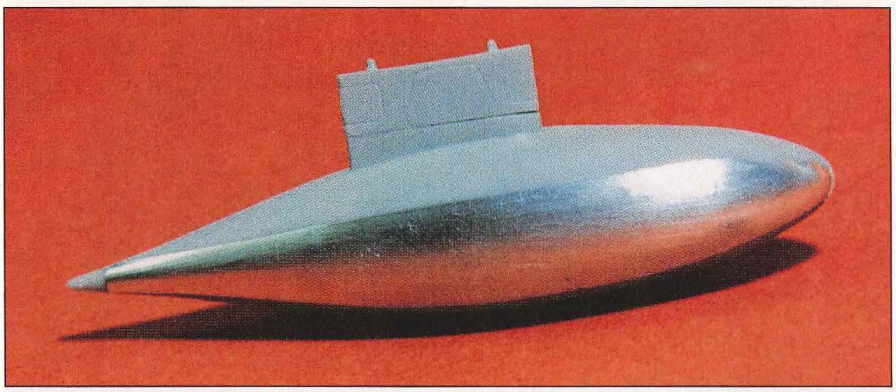
It's usually a good idea to foil subassemblies before attaching them to the model. Keep in mind, though, that the

Bare-Metal Foil

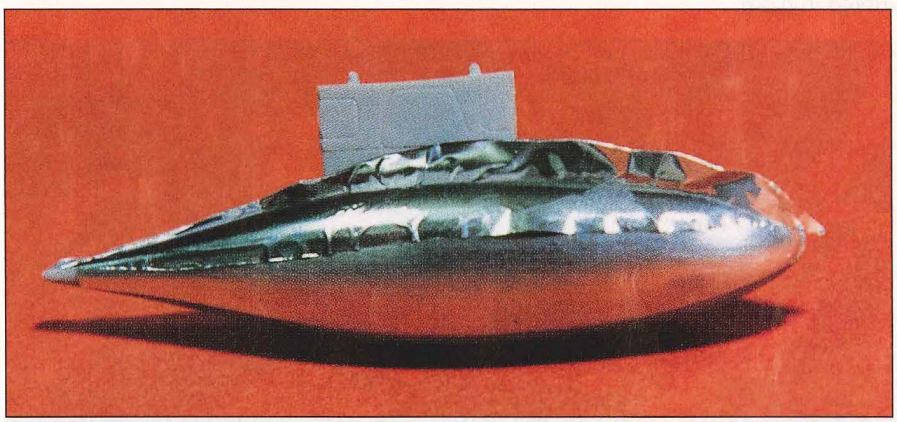
If you don't want the hassle of applying adhesive to foil, you can obtain ultra-thin aluminum foil with a pressure-sensitive adhesive already on it. Bare-Metal Foil was one of the original foils for modelers, developed in the early 1970s. Other brands of self-stick foils have come and gone, but Bare-Metal Foil is still around.

Bare-Metal Foil is an aluminum alloy that has more malleability than standard household foil, and it's thinner, too. It comes in 6" x 12" sheets, mounted on a waxy paper. You remove it by scoring through the foil with a sharp blade, peeling the foil from the paper with tweezers, and transferring it to the model.

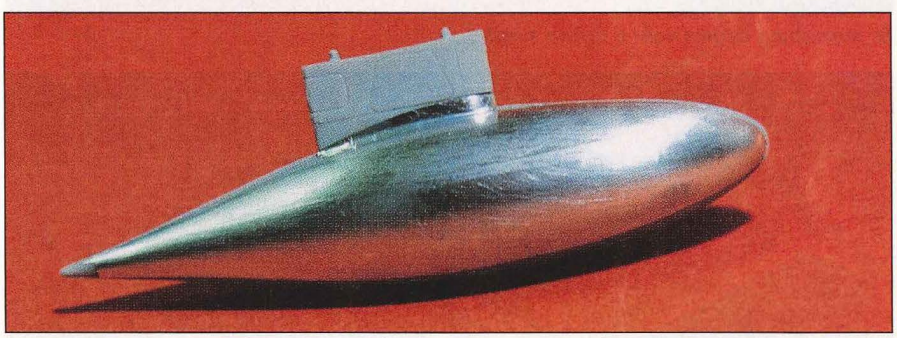
In addition to the regular chrome finish, BMF is also available in ultra-bright chrome, matte aluminum, black-chrome, real copper, and gold-colored versions.



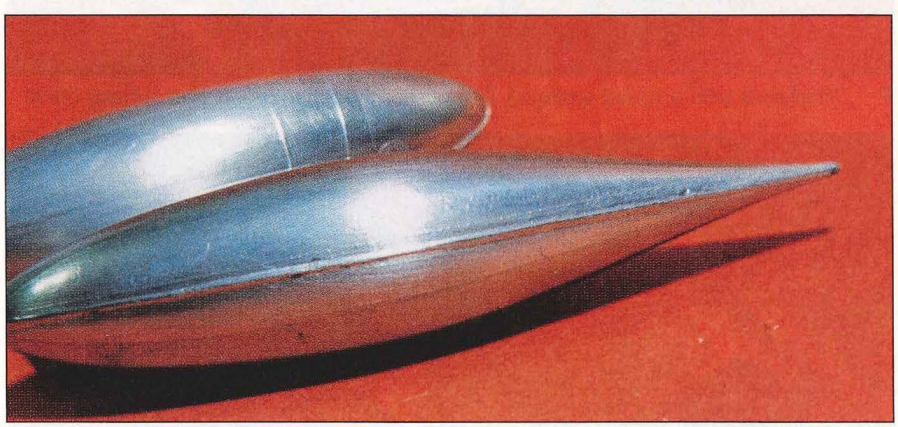
3 Burnish the strip onto the part with a cotton swab, then go over the edges with an ultra-fine sanding stick.



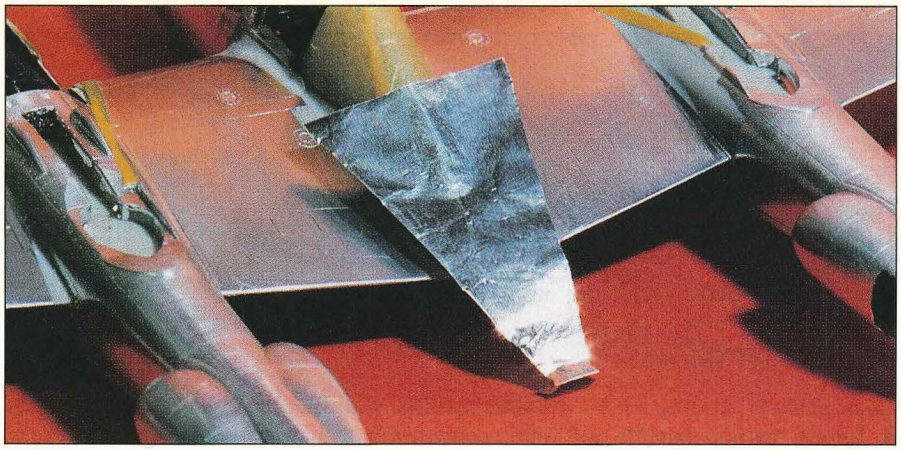
4 The next piece of foil overlaps the first and then is burnished in place.



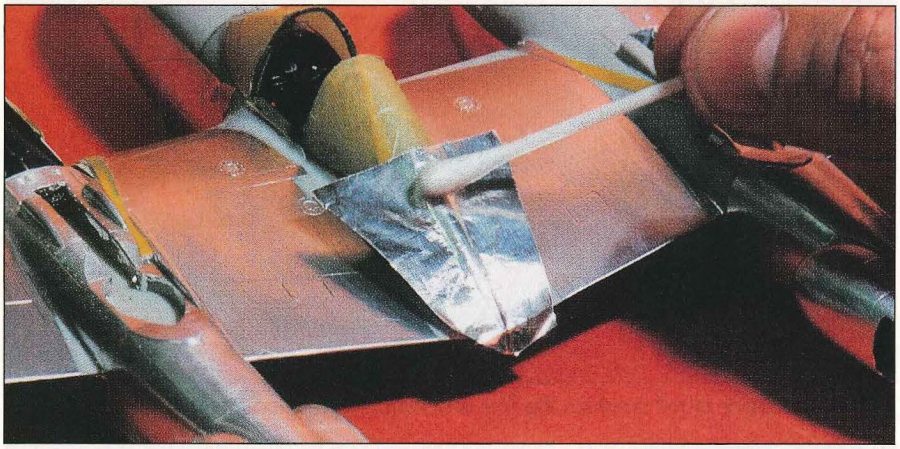
5 Lightly sanding the edges of the foil helps the next piece hide the overlap.



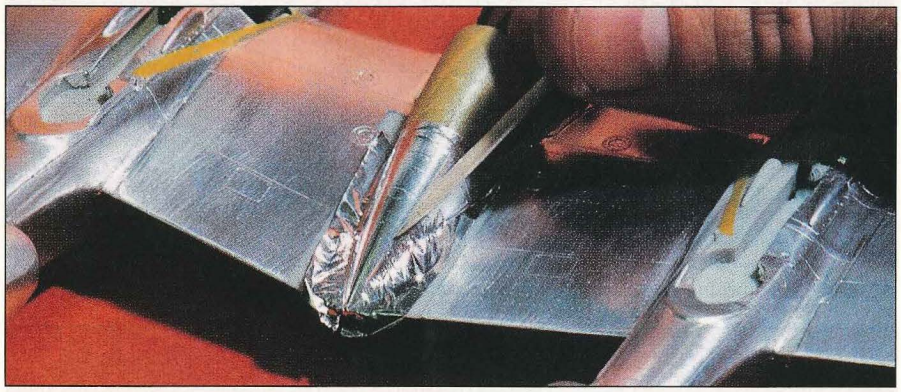
6 Once the covered tank is scoured with 0000 steel wool, the seams between the pieces of foil practically disappear.



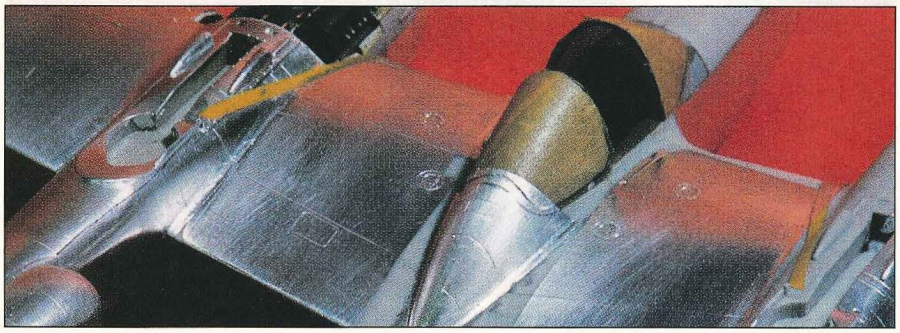
7 The rear of the Lightning's central pod is another curved area. The foil is lightly tacked in place.



8 Burnishing begins with a cotton swab ...



9 ... and ends with a round toothpick that pushes the foil into and over surface detail.



10 With the foil burnished in place, the edges can be trimmed with a sharp blade.

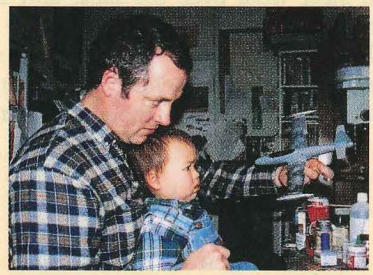
areas to be bonded must be free of foil. You can touch up the glue joints with bits of foil after final assembly.

Sealing the foil. After you "grain" the foil with steel wool, wipe away excess adhesive with a tissue dampened in rubbing alcohol. Next, wash the entire model with warm, soapy water, wipe away excess water, and let the model air-dry.

Apply several coats of Future acrylic floor polish with a flat, carefully cleaned brush or with an airbrush. Future seals the foil, protects it from oxidation, and forms a primer coat that is needed under any additional painting or weathering. (Enamels, artist's oils, lacquers, or acrylic paints don't adhere well to bare foil.) Future also adds to the luster of the metal, and forms a perfect surface for the application of decals.

Try it, you'll like it! To me, foil is the most realistic natural-metal finish. Well, outside of scratchbuilding from sheets of aluminum, that is. **FSM**

Meet Bucky Sheftall



Bucky Sheftall (seen here passing the torch to his son, Levi Riku) cut his modeling teeth in the late '60s and early '70s on Aurora, Monogram, and Lindberg plane and armor kits. Bucky watched his father make spectacularly detailed Napoleonic figures. After a ten-year hiatus, Bucky returned to modeling in the late '80s.

When he isn't modeling, Bucky is a professor of English at Tokoha Gakuen Tanki Daigaku, a private women's junior college in Shizuoka, Japan, where he has lived and worked since 1987. He is also a published English textbook author and a Japanese/English translator for Hasegawa Seisakusho Co. Ltd. His work has appeared in *Scale Aviation*, *Model Art*, *Tamiya News*, and other print and on-line publications.

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The Lockheed P-38 Lightning Warren M. Bodie, Widewing Publications, Hiawassee, Georgia, 1991

P-38 Lightning in Detail & Scale (Vols. 57 and 58) Bert Kinzey, Squadron/Signal Publications, Carrollton, Texas, 1998

SOURCES

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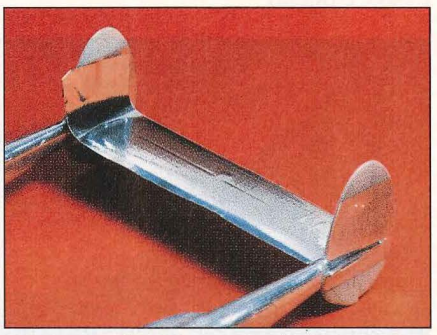
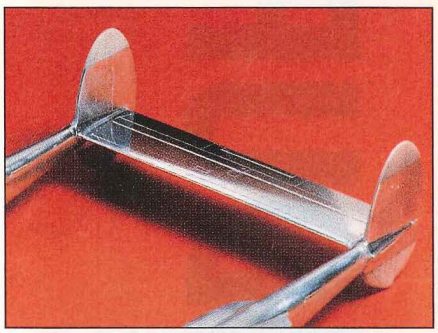
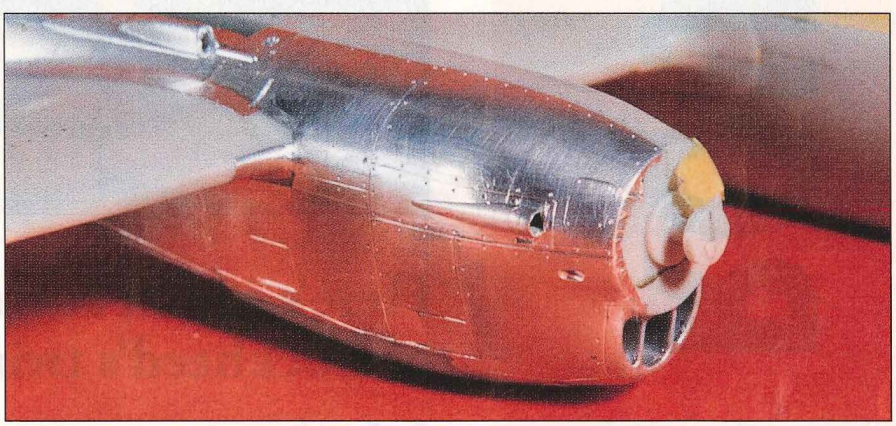
Adhesive Microscale Industries, 18435 Bandilier Circle, Fountain Valley, CA 92708, www.microscale.com



11 Large, flat areas are a little easier to foil. Here a strip has been gently laid onto the horizontal stabilizer. Excess foil will wrap around at the leading edge.



12 Now the foil has been burnished down, but it has yet to be scoured with steel wool.



13 Foiling over small scoops can be done with small strips of foil. Slicing through the foil at scoop openings allows the foil to work around the holes.

Bucky's foil-finished fighter looks like it is made of aluminum. But the metal is only skin deep.

Improving the Super Corsair

Correcting and detailing Aviation Usk's F2G

By Joe Hegedus

The "Super Corsair," had it gone into production, would have been the U.S. Navy's fastest climber. It was designed to combat the new Japanese threat, the Kamikaze. The end of the war brought about the cancellation of the F2G after seven pre-production examples and only 10 production machines were built.

Being a diehard Corsair fanatic, I was thrilled when Aviation Usk announced a 1/72 scale injection molded kit of the Goodyear F2G. Though only a small number were built, it's my favorite version of the "U-Bird".

Out of the box, the Aviation Usk kit builds into a model that is identifiable as an F2G, but there are several errors. I'll show you how I fixed them, and highlight the visible detail differences between the land-based F2G-1 and the carrier-capable F2G-2. These corrections are for the Navy aircraft and won't necessarily apply to the modified civilian racers.

The areas that need work are the engine, cockpit, wings, and fuselage. I know, that's just about the whole airplane. Well, let's get to it.

Wings. The kit wings are incorrect, representing the metal-skinned outer panels on F4U-5 and later models, but with the correct six-machine gun armament for the F2G-2. F2Gs used wings that had fabric-covered outer wing panels, just like all Corsairs through the F4U-4. You can either add the fabric detail or use wings from another kit that has the fabric detail. I kitbashed my F2G with the wings from a Hasegawa F4U-1D kit. (The wings from the new Academy kit could be used, too.)

To modify the Hasegawa wings, first cut away the area in front of the leading edge, and file off the bulges under the inner wing panels for the oil coolers, **1** and **2**. Also remove the tabs inside the upper and lower wing surfaces that position the oil cooler/intercooler detail – you'll need the clearance later. Carve the upper wing oil cooler intake lip slightly larger, **3**.

Trim the root ends of the upper wing panels, **4**. Take care not to cut all the way through the trailing-edge flap so you can

keep the bottom surface. Fill the step hole in the right flap; the F2G had a spring-loaded cover over the step. (The open step is a feature unique to the F4U-4 series.) Also, sand the fabric detail off the outer wing flaps. On the F2G, these were metal-skinned just like the inner two.

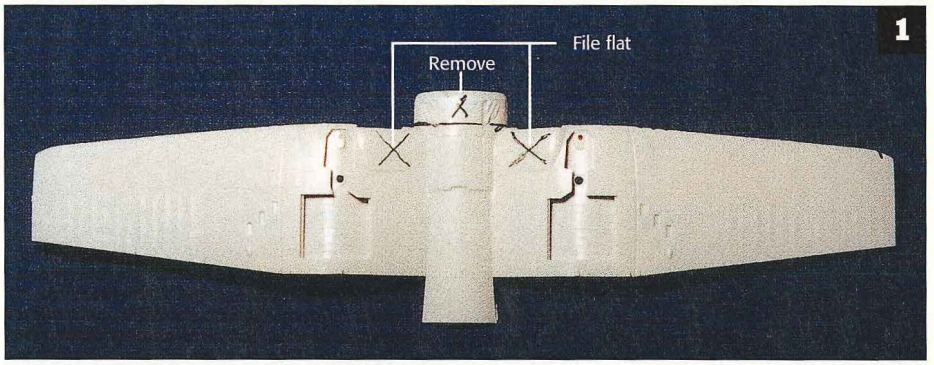
The F2G used a different oil cooler configuration than the F4U; the coolers were located in the wing root rather than in the wing inner sections. Also, the F2G's R-4360 had no intercooler. The wing root intakes of the F2G were therefore smaller and shaped differently than those of standard Corsairs. I used 1/8"-long sections of 5/32" brass tube for the intakes, cleaned up the edges, and flattened them to 1/8" high, **5**.

Install 5/32" x 7/16" sheet styrene backs for the intakes, then assemble the wings. Slide the new intakes into the oversize openings in the wings with the inboard end 1/2" from the fuselage centerline. Use gap-filling super glue to both secure the brass intakes to the wing and to fill the area around the intakes. When it sets up, file and sand the wing root smooth to match the rest of the wing, **6** and **7**. Use thin sheet styrene to add two vertical vanes in each intake, dividing the opening into thirds. These should have their forward edge about 1/32" back from the intake leading edge. Bevel the forward edge of the center wing section to make room for the lower exhaust pipes.

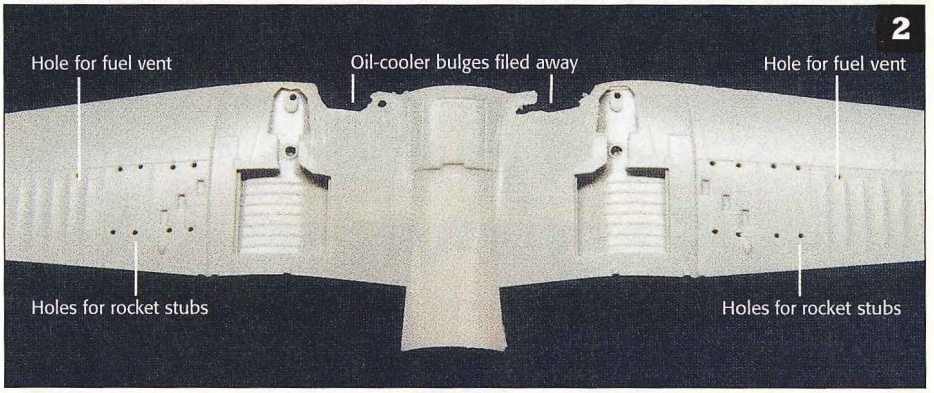
If you want underwing rocket stubs on your F2G, mark the locations (and perhaps drill mounting holes) according to drawing **8**. There are no stubs in the kit, so you'll either have to scratchbuild them or find some in your spares box as I did. Several F2Gs had fuel tanks installed inside the outer-wing leading edges, and had an underwing vent, **9**. Add rocket stubs and fuel vents during final assembly.

One of the big differences between the ground-based F2G-1 and the carrier-capable F2G-2 is the armament. The F2G-1 carried only four guns, the outboard guns deleted. The underwing shell-ejection ports for the missing guns may still have been there, so I didn't eliminate them. The F2G-2 carried six guns, just like standard F4U Corsairs.

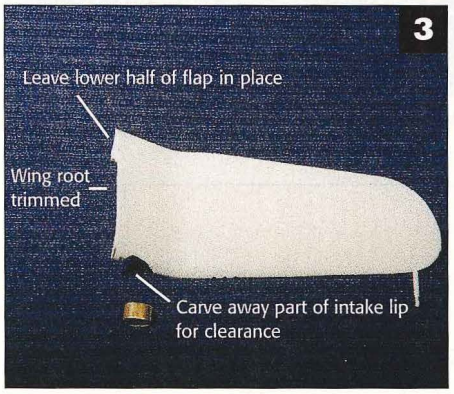
Wing pylons must be scratchbuilt, as there are no correct ones available. I laminated two pieces of .040" sheet styrene, then cut the pylons to shape, **10**. These will be added later in construction. Pylons were fitted to F2G-2s, but the prototypes



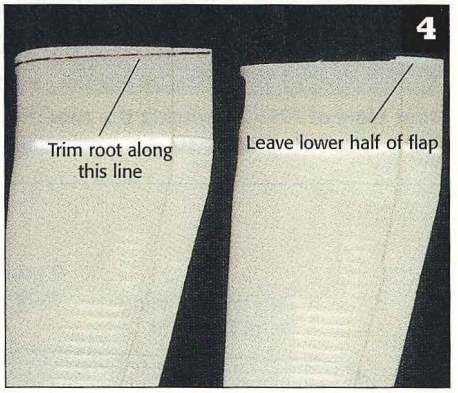
The underside of the Hasegawa wing showing the areas to be removed or cut down.



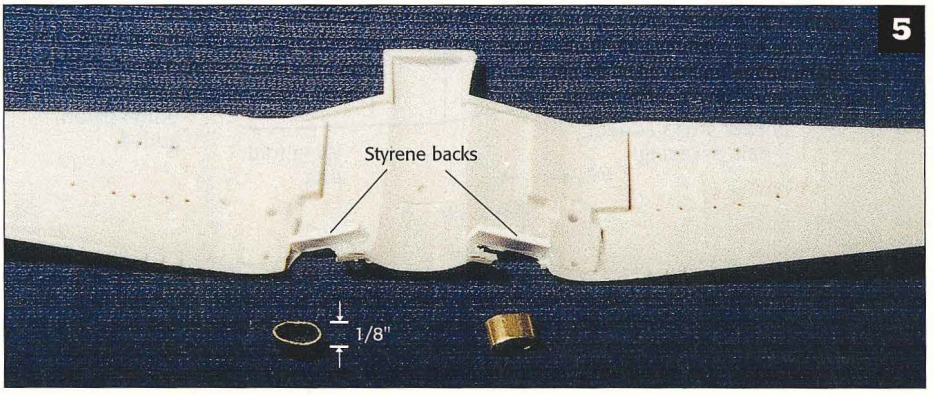
Holes for rocket stubs and fuel vents are drilled in the wing.



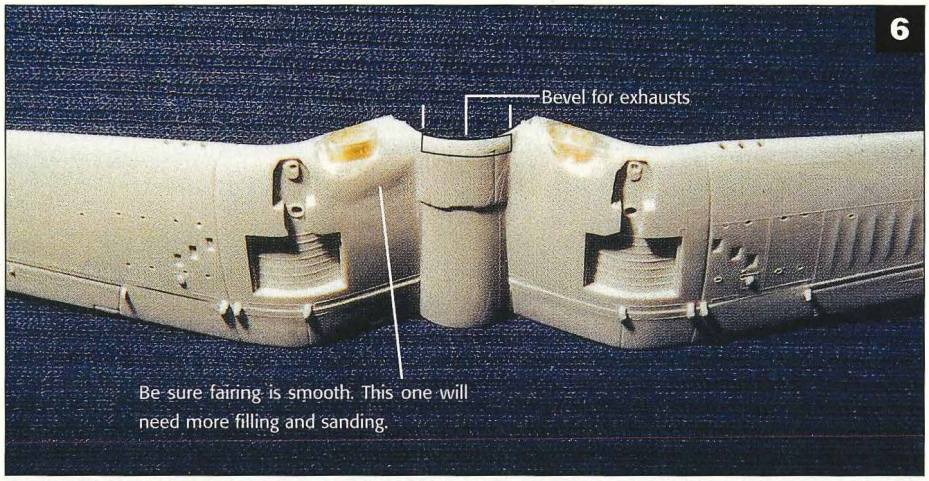
The oil cooler intake lip has been opened up to fit new cooler ducts. The upper wing root has also been trimmed.



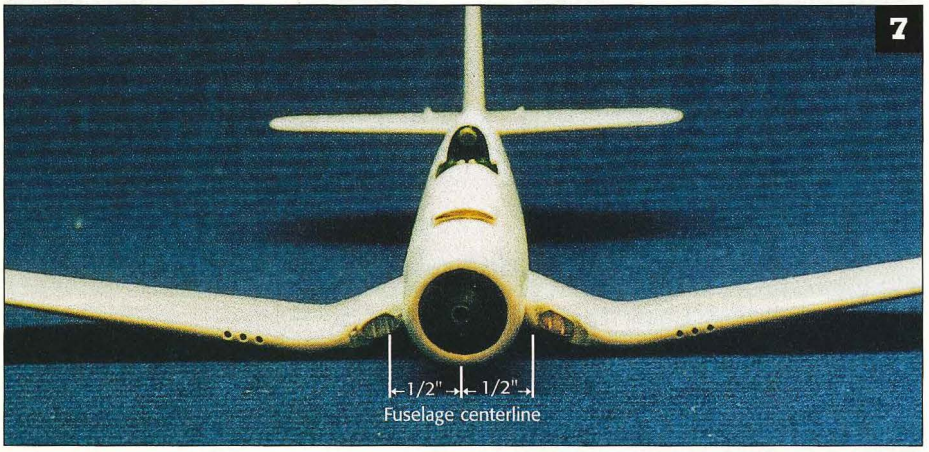
Before and after views of the Hasegawa left upper wing panels showing modifications made to the wing root.



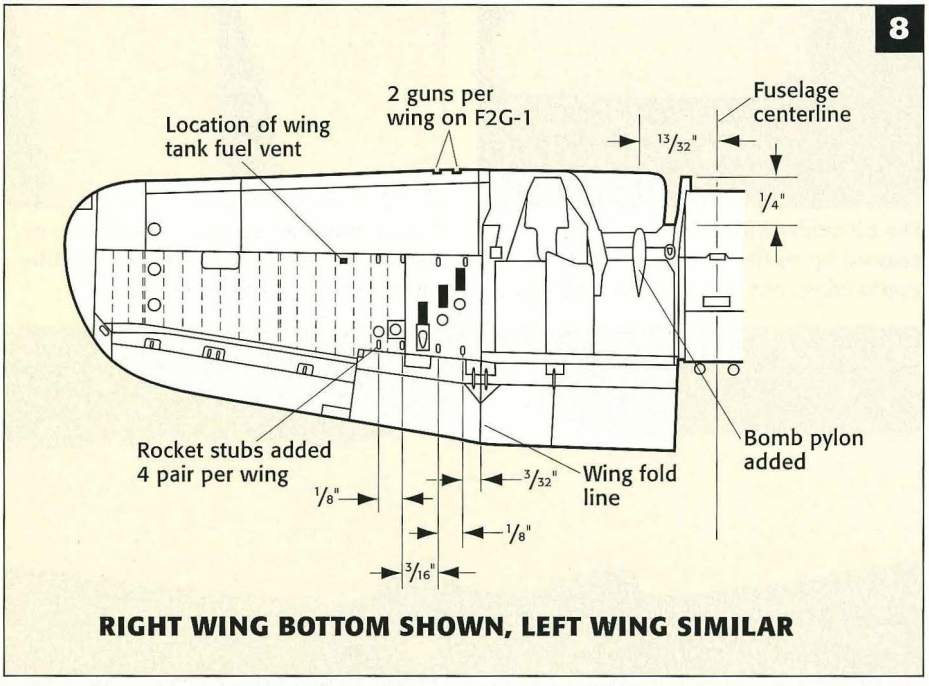
Sheet styrene backs the new brass-tube cooler ducts.



The wing underside after the intakes have been faired in with gap-filling super glue.



Front view of F2G-2 showing the modified oil cooler ducts. Note six-gun armament of F2G-2. The F2G-1 has two guns per wing.



F2G LOWER WING SURFACE This shows the location of pylons, rocket stubs, and fuel vents. Check text to see which versions carried these features.

and at least the first F2G-1 had none. When pylons were added to the F2G-1 (and at least one of the XF2G-1's), the designation became F2G-1D.

Engine and propeller. The main purpose of the F2G was to take advantage of the new 28-cylinder Pratt & Whitney R-3460 Wasp Major engine. Aviation Usk's engine represents the Pratt & Whitney 18-cylinder R-2800. The easiest way to correct this is to install a resin Engines and Things R-4360 (No. 72-003, available from Aviation Usk). This engine had to have the tops of the cylinders shaved off so it would fit in the cowl, **11**. The square-shaped protrusion on the front row of cylinders should point down when the engine is installed.

The kit propeller is usable after cleanup. The F2G-1 prop was 14' in diameter, and the kit prop is close. The F2G-2 used a smaller 13' 7" diameter prop. I used a white metal prop taken from the High Planes 1/72 F4U-5N kit for the F2G-2, rather than trim the kit prop.

Cockpit. The F2G cockpit was almost identical to that of the F4U-4. I chose the cleaner Hasegawa cockpit for both my F2Gs. Begin by removing the rudder pedals from the floor. The stock F2G seat was just a pan with an armored backrest, **12**. Make a new backrest from .010" sheet, 1/4" x 5/16". A pair of styrene strips represent the hinges that allow the armor plate to be moved for access to the aft fuselage.

Cut a new rear bulkhead/armored headrest from .020" styrene, and add that to the cockpit tub. The kit's armor headrest is undersize and positions the cushion too low relative to the seat. Carve a new cushion from sprue, or cut off the kit cushion and mount it on the new bulkhead.

Attach the rear bulkhead to the floor and the rear ends of the consoles. After painting the cockpit tub, add the console decals, the seat to the floor, then add the armored backrest to the seat and bulkhead. I added belts and harnesses from lead foil, but the kit photoetched harnesses could be used. The Hasegawa stick was installed.

The kit's photoetched instrument panel looks great, but the layout isn't correct for the F2G. I used it as a template to cut a new panel from sheet styrene. The gauges came from ProModeler's 1/72 scale U.S. Navy WWII fighter instrument panel decal sheet (No.

88101100200) for the F4U-4. I attached the photoetched rudder pedals to the back of the instrument panel. The cockpit was painted interior green below the consoles, black above, **13**.

Fuselage. The fuselage work is pretty straightforward. Carefully open the exhaust troughs under the cowl flaps with a sharp knife and files, and grind away the mold stubs from inside the cowling. You'll also need to extend the cockpit opening about 1/32" at the rear to allow the new armored headrest to fit.

Assemble the fuselage with the engine, cockpit, and tailwheel-well roof installed. Make sure the engine is centered in the cowl and the cylinders are aligned properly. I secured the engine with super glue around the aft cylinder bank, being careful not to use too much. You don't want to plug the exhaust troughs.

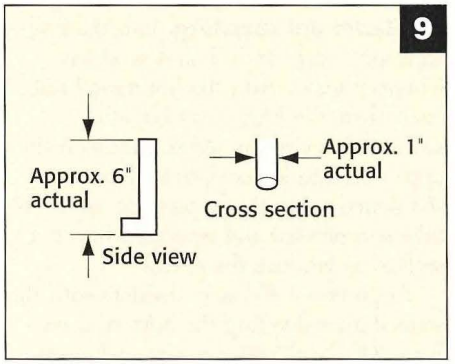
On the underside of the fuselage, remove the outer cowl flap from each side and fill the scribed lines between the remaining cowl flaps. The F2G had only three cowl flaps underneath rather than the four that remain after you've removed the outer ones. Scribe new cowl-flap divisions, so that you have three, equal-size flaps on the bottom.

The tailwheel-well roof will need trimming at its aft end to fit between the fuselage halves. Also, to model the F2G-2, you'll need to enlarge the rear of the opening to allow clearance for the hook.

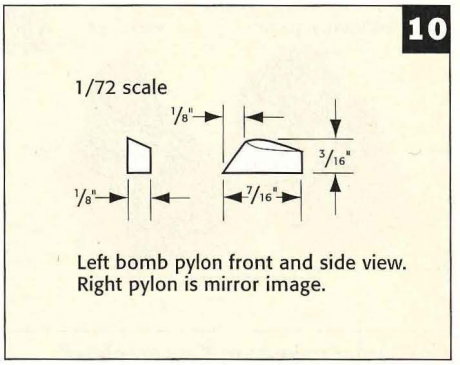
The F2G-1 did not have a tailhook, so the rear of the opening was faired over. The kit fairing is too short, but can be used with modifications. Place a strip of .010" sheet styrene under the kit part and fill the hook cutout with gap-filling super glue so that the aft fuselage is solid, **14**. The F2G-2 tailwheel well is the same as that of an F4U-1D.

If you want to pose the canopy open, remove the point from the rear of the kit canopy. This is actually part of the fuselage, and the canopy opens over it. You can either add the canopy point to the fuselage or carve a new fairing from plastic, **15**.

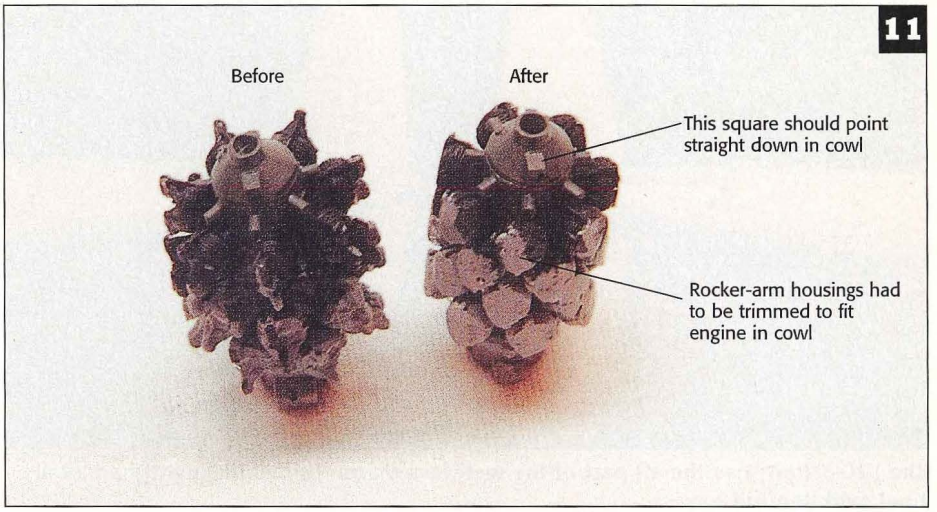
The rollover bars go from the fuselage just in front of this fairing to either side of the armor headrest (see 12), forming a V with the point to the rear. I made new bars from brass tube, but the kit rollover bars could be used. Separate the windscreen from the canopy, and add those to the appropriate positions during final assembly.



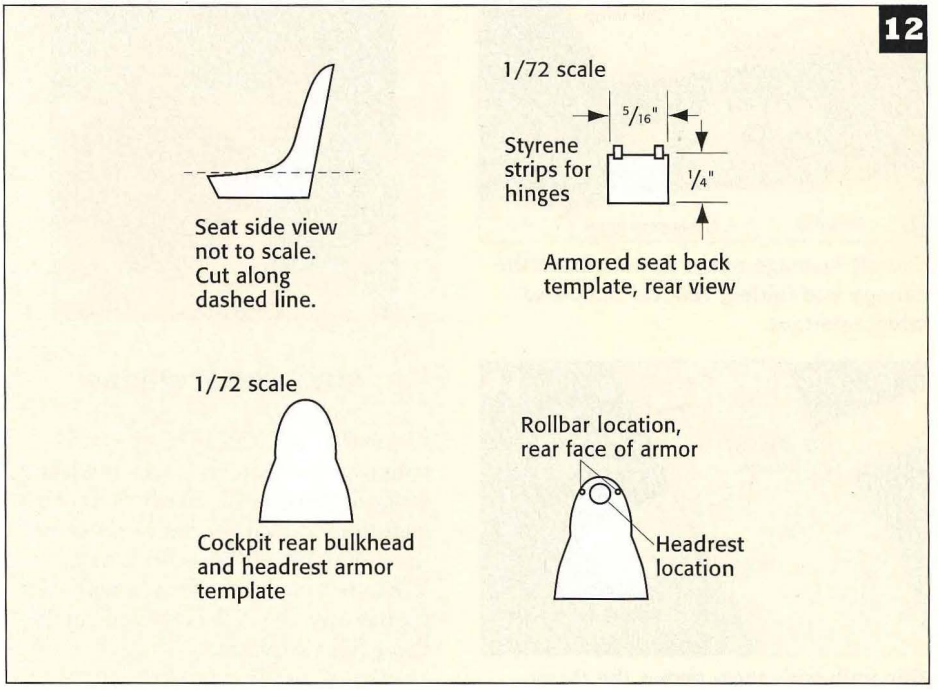
FUEL VENT: Dimensions are for the real item. Make from stretched sprue.



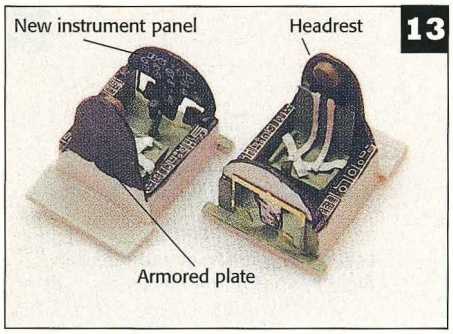
BOMB PYLON: These can carry fuel tanks or bombs under the inner wing sections.



It's easy to see why the Pratt & Whitney R-4360 Wasp Major engine was nicknamed the "corncob." Joe had to shave the tops of the Engines and Things resin engines so they would fit inside the cowl.



COCKPIT DETAILS: A new rear bulkhead, armor plate, and seat need to be made for the cockpit.



Fore and aft views of the completed cockpit tubs.

Main assembly. Join the fuselage and wings, and fill and sand any wingroot gaps. Add the horizontal stabilizers from the Hasegawa kit, after scribing five circular access panels on the upper left and lower right surfaces. I sharpened the end of a piece of 1/16" brass tube and pressed and twisted it into the surface to produce the circles.

Align two .040" strip dividers with the scribed lines dividing the bottom cowl flaps, **16**. Now add the wing pylons as shown in diagram 8.

Landing gear. I used Hasegawa's landing gear with True Details resin wheels, both improvements over the Aviation Usk parts. I extended the tail wheel strut 1/8" by replacing the kit portion with a piece of stainless steel tubing. If modeling the F2G-1, clip off the tailhook.

Paint and markings. My models represent an F2G-1 and an F2G-2 that were assigned to the Tactical Test Division of the Naval Air Test Center in 1946. Both are overall Glossy Sea Blue, but the F2G-2 has a yellow and blue checkerboard pattern on the cowl. I used Testor Model Master enamels, with Chrome Yellow and Blue Angels Blue on the cowl. I painted the cowl yellow first, and after it was dry, I cut tiny squares and wedges (for the front of the cowl) from masking tape, laid out the checkerboard pattern, and sprayed the blue. The landing gear struts for these particular F2G's were aluminum, and the instrument coamings flat black.

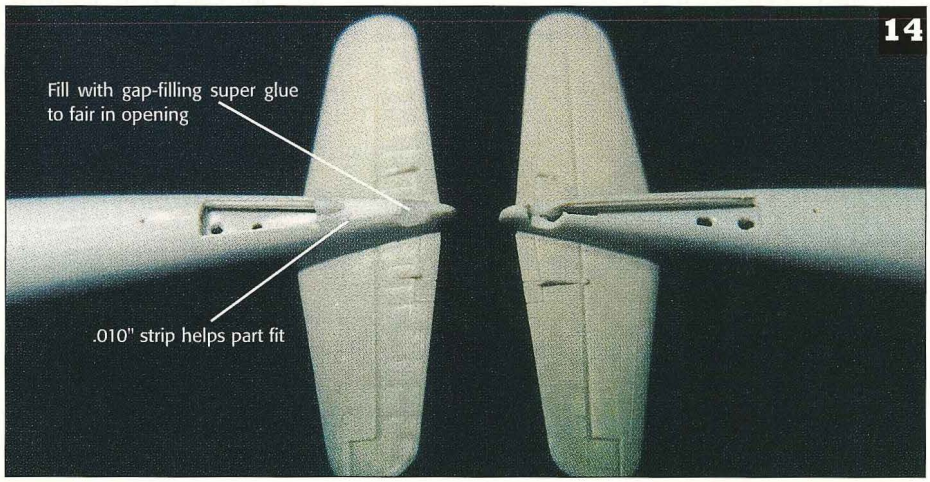
After painting, I applied two coats of Future floor polish, then applied the decals. The white letters and numbers are dry transfers applied to clear decal film and coated with Microscale Liquid Decal Film, then applied as a normal decal. The national insignia are from AeroMaster, but the kit decals could be used instead. A coat of Future over the decals sealed them and gave a uniform gloss to the airplanes.

Final assembly. Add the small parts – rocket stubs, fuel vents, and stores of your choice. I hung a drop tank from a 1/72 Monogram F8F Bearcat on the F2G-2, and Tiny Tim rockets made from 1/32 Hasegawa F6F Hellcat rockets on the F2G-1. They needed to be shortened 1/8" just in front of the fins to be the correct length for a 1/72 Tiny Tim.

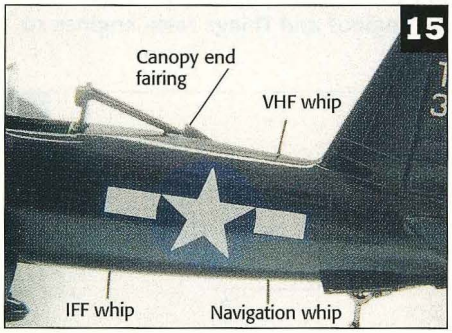
Make a set of exhaust pipes from 1/32" brass tube, rod, or stretched sprue. A pair of pipes go in each side and bottom trough, totaling 14 pipes.

I added a scrap plastic gunsight and gun switch boxes to the top of each instrument coaming. The forward antenna masts came from the Hasegawa kits, and whip antennas from stretched sprue (see **16**). Add the antenna wire from stretched sprue or monofiliment, then set your F2G on the shelf and admire it!

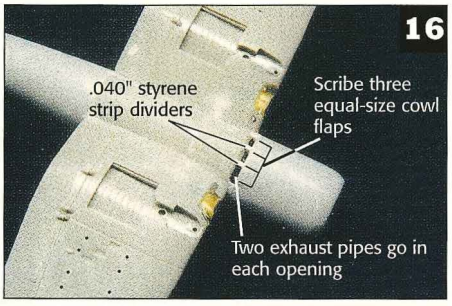
FSM



The F2G-1 (left) has the aft part of the well faired over. The F2G-2 (right) had a tail hook with the full bay.



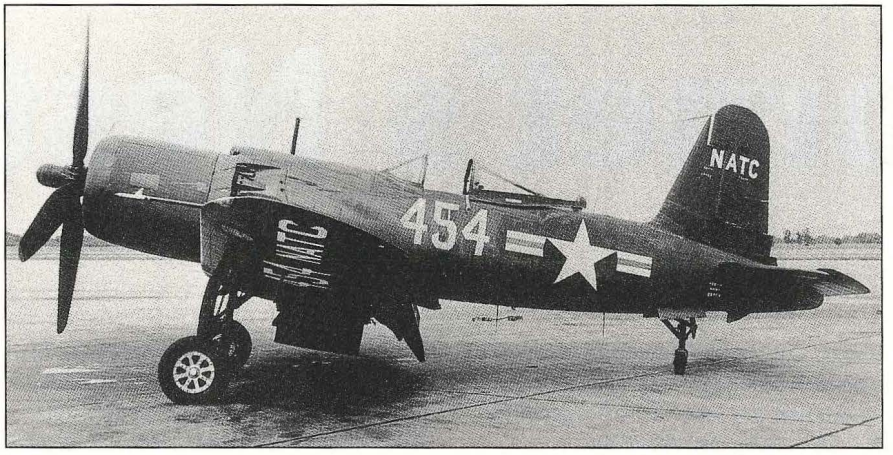
The aft fuselage of the F2G-2 shows the canopy end fairing, rollover bars, and whip antennas.



This underside view shows the three cowl flaps and dividers for lower exhaust troughs.

Meet Joe Hegedus

Joe lives in California, Maryland, with his wife Lisa. He's been modeling seriously since 1987, mostly Naval aircraft from WWII on, but he dabbles in other modeling areas for variety. When not modeling, Joe is a flight test engineer for the U.S. Navy and enjoys flying light airplanes.



The first production F2G-1 at the Naval Air Test Center at Patuxent River, Maryland, in 1947. U.S. Navy photo via National Museum of Naval Aviation and Bert Kinzey.

The Goodyear F2G

In the late years of World War II, the Japanese developed their Kamikaze corps, a group of dedicated pilots who would guide their bomb-laden aircraft directly into a target.

It turned out that the Kamikazes didn't make much difference in the course of the war, but their actions led the U.S. to attempt several efforts to eliminate the suicide planes before they could damage critical fleet assets. One of the efforts involved a fighter that could climb to combat altitude quickly, overtake the suicide planes with speed, and overwhelm them with firepower.

The U.S. Navy saw potential for just such an aircraft in the F4U Corsair. Powered by the new 28-cylinder R-4360 "Wasp Major" engine and featuring a cut-down fuselage spine and bubble canopy, the radically redisigned F2G Corsair proved to be just the right aircraft for the job. But the job changed before it could enter service.

The Navy had asked that the "Super Corsair" be ready for production in the spring of 1945, and an order was placed for the production of 418 F2Gs. After solving a few teething troubles with the seven XF2Gs, the Goodyear was ready for mass production.

The impending defeat of the Japanese and the advent of jet fighters spelled doom for the Super Corsair, however. When the order was cancelled on May 8, 1945, only the ten aircraft that were on the production line at the time were finished. Five were set up as ground-based F2G-1s, and five as carrier-capable F2G-2s. A couple of the aircraft were sold to air racers, and the first production F2G-1 was preserved and restored for display at the Champlin Fighter Museum in Mesa, Arizona. – *Paul Boyer*

SOURCES

F2G kit Aviation Usk, 602 Front St., P.O. Box 97, Usk, WA 99180, ✆509-445-1236

True Details wheels (No. 72025), Squadron Mail Order, P.O. Box 115010, Carrollton, TX 75011-5010, ✆972-242-8663

Engines and Things R-4360 (No. 72-003), Available from Aviation Usk.

Propeller Aeroclub four-blade Hamilton Standard prop (#AP045) or High Planes F4U-5N prop for F2G-2 Aeroclub available from Precision Enterprises Unlimited, P.O. Box 97, Springfield, VT 05156, ✆802-885-3094; High Planes prop available from Aviation Usk.

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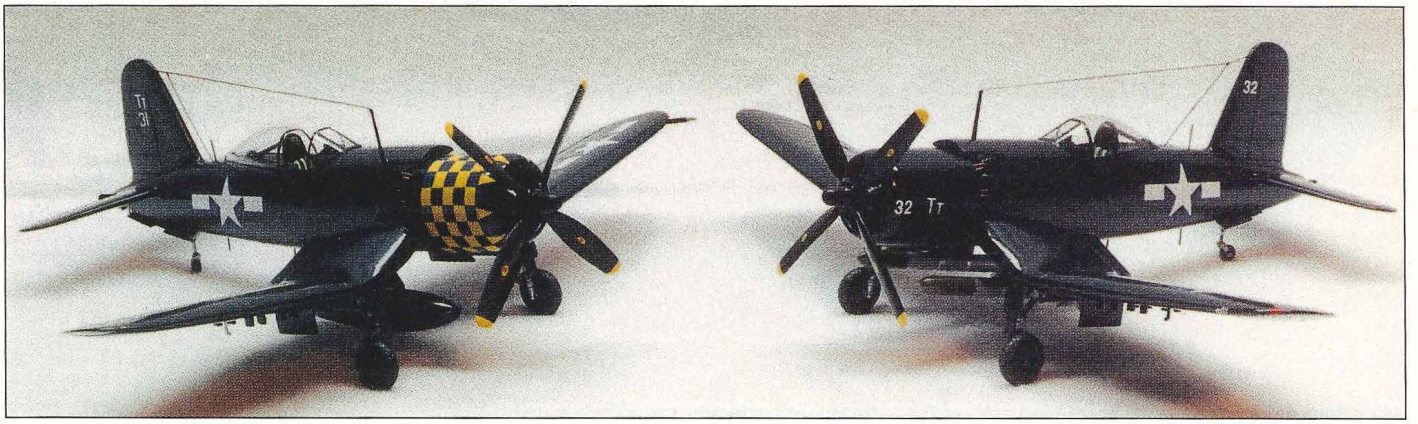
F4U Corsair in Detail and Scale Parts 1 and 2, Bert Kinzey, Squadron/Signal Publications, Carrollton, Texas, 1998

F4U Corsair In Action Numbers 29 and 145; Jim Sullivan, Squadron/Signal Publications, 1977 and 1994

F4U Corsair Warbird History Nicholas A. Veronico, John M. Campbell, and Donna Campbell, Motorbooks International, Osceola, Wisconsin, 1994

The Official Monogram US Navy & Marine Corps Aircraft Color Guide, Vol. 2 John M. Elliott, Monogram Aviation Publications, Sturbridge, Massachusetts, 1989

I Flew Them First Armstrong, Champlin Fighter Museum Press, Mesa, Arizona, 1994



Both the carrier-capable F2G-2 (left) and the ground-based F2G-1 can be built from modified Aviation Usk kits.