

Tips and techniques for creating better models

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## World War II escort carrier USS Salamaua Building large-scale ships

#### Story and photos by Rusty White

Today's high-tech wood ship kits are some of the most sophisticated projects around, with enormous detailing possibilities to provide the skilled modeler with a challenging and worthwhile experience.

When a client hired me to build a Bluejacket Shipcrafters 1/96 scale model, I expected a plank-on-frame rigged sailing vessel. Instead, I received a slick kit of the USS *Gambier Bay*, a World War II *Casablanca*-class escort carrier that my client wanted built as the USS *Salamaua*.

While inspecting the kit's contents, I realized just how fun this project was

going to be. The 32" solid basswood hull was cut on computer-controlled machinery. The kit included everything to complete the model, down to the finest details: several bags of beautifully cast Britannia metal parts, chain, several sizes of brass tubing, wood dowels, styrene sheets, basswood blocks, and a detailed 55-page instruction book.

The basswood hull was the only precut piece in the kit. All the other components had to be made using the plans provided. It was time to go to work.

Glues, sealers, and Bondo. If your modeling skills are above average, you

shouldn't have problems with intermediate-level wood kits. I found the only real difference lies in the glues and finishes.

I used super glue to attach the metal and plastic parts to the wood. Wood glue, which is stronger than white glue, bonded the larger wood pieces, **1**.

Sanding sealer worked to seal the soft, porous basswood and gave it a smooth surface. Auto primer also aided the sealing process, and a tube of Bondo glazing and spot putty helped seal dents and dings in the wood pieces.

**References.** For a good reference on *Casablanca*-class carriers, check the

#### 1/96 Scale



Rusty spent over 300 hours on this exquisite model of the USS *Salamaua*. Made mostly from basswood, it is a superb example of the art of wood shipbuilding.

Anatomy of the Ship volume by Al Ross. The book covers every angle of the USS Gambier Bay, with many photos and illustrations. Al designed the USS Gambier Bay Bluejacket kit and wrote the instruction book.

The Squadron/Signal Publications book *Escort Carriers in Action* has valuable information, too, **2**.

I rounded out my references with the Snyder and Short Enterprises color chips for U.S. Navy WWII ship colors, **3**.

**The hull truth.** Although the hull came "pre-cut" close to the correct shape, it required a lot of sanding, filling, and sealing to protect the basswood.

I built the hull in subassemblies. The forecastle, the forward upper deck of the ship, required the most work, especially around the thick spray shields, **4**. I used a motor tool with a woodcarving tip to shave the shields from  $\frac{1}{2}$ " to  $\frac{1}{16}$ ", then super glued all the necessary cast-metal parts to the forecastle, **5**.

The hull sponsons were cut and shaped from basswood blocks according to the plans and fastened with wood glue. After fairing the propeller shaft housings into the hull, I smoothed the hull with 60-grit sandpaper followed by 100-grit.

The hull had a number of dents, scratches, and dings that needed filling. I applied Bondo putty to those areas with an applicator, let it dry overnight, and sanded it with 100-grit sandpaper, which exposed the remaining blemishes in the wood. Another application of Bondo and more sanding took care of them.

I applied five coats of sanding sealer, sanding between layers with 100-grit paper. I finished with a thick coat of auto primer as the final sealer, let it dry for a full day, then wet-sanded with 400-grit paper to produce a super-smooth hull.

**Paint by measure.** My client furnished several good photos of the *Salamaua*, which provided me an accurate paint scheme. The actual *Salamaua* was painted in the Measure 32/15a scheme, but on the port side only. The starboard side was painted in a different gray-andblack paint scheme.

One reason for the paint discrepancy is the Salamaua may have been called to



Important ingredients for proper fit and finish include super glue, sanding sealer, wood glue, and filler putty.



Good references are the foundation for accurate models in any scale. Even though *Anatomy of the Ship: Gambier Bay* is out of print, it's worth finding.



Color chip reference sheets by Snyder and Short Enterprises guided Rusty in mixing accurate colors for this WWII vessel.

active duty at sea during repainting. I decided to paint the hull using the provided photos.

The decks were painted deck blue, while the hull was painted pale gray, ocean gray, light gray, and black (these were the U.S. Navy names at the time). I mixed Testor Model Master paints and matched them to the Snyder and Short paint chips.

I painted the waterline boot stripe black, then masked off the stripe. I painted the lower hull with a 50/50 mix of Testor Model Master flat red and rust, which produced the anti-fouling red color.

I painted the hull using a paint-bynumber scheme after first applying the lightest shade of gray. After it dried I drew paint lines and labeled the sections: MG (medium gray), DG (dark gray), and B (black), **6**. I masked the lightest sections first and painted the next darker color, progressively working towards the black portions.

Next, I added the paravane chain (an anti-mine device) to the bow, **7**. Lastly,



The filler putty (red), auto primer, and sanding sealer doing their jobs. Most of these blemishes weren't obvious to the touch.



Painting the hull camouflage was a grown-up version of a kid's paint-by-number set. Rusty masked each section carefully, burnishing the tape to get a crisp edge on each color.



Adding the complex details of the stern and bow sub-decks was time consuming. Since paint covered everything later, Rusty



The *Salamaua*'s completed forecastle, full of intricate detail, before paint. Unfortunately, most of it ended up covered by the flight deck after final assembly.



The finished hull was painted to match the Measure 32/15a U.S. Navy scheme. Rusty found it much easier to paint the hull before attaching the flight deck assembly.



made notes right on the plywood. Again, most of this wonderful detail was obscured after the flight deck was glued down.



The flight deck was assembled from textured plywood planking glued to the sub-deck. The square markings were for the arresting wire sheave plates made from sheet styrene, some of which have already been attached (top).



Rusty drew the flight deck numbers on artist's frisket, a light-tack masking film, then taped the frisket to the flight deck. He gently cut out the numbers with a hobby knife, lifted the numbers with



To make room for the sheave plates, Rusty cut away the plywood planking with a new hobby knife. The plates should be flush with the surface of the flight deck.



the knife tip, and airbrushed the deck. A sheet of paper protected the rest of the deck from overspray. Rusty removed the frisket immediately after airbrushing.

the entire hull received a coat of Model Master clear flat from a spray can.

To survive shipping to its new home, the hull needed to be securely anchored to the mahogany mounting base. I inserted long drywall screws through the base, through four brass-tube pedestals, and deep into the hull. When finished, the entire display weighed 30 pounds.

**Planking the flight deck.** The flight deck assembly was daunting, but it all went together well.

I cut the sub-decking from plywood and attached the gallery decks along the port and starboard sides. The sub-deck bow and stern details took 40 hours to build and fit, **8**. Drawing guidelines on the sub-deck plywood aided in placing the parts, **9**.

The flight deck surface was made

from thin plank-textured plywood cut into strips and glued to the sub-deck with wood glue, **10**. The planking was a bit out of scale, but it looked realistic. The kit cast-metal arresting wire sheave plates were too thick, so I scratchbuilt some from sheet styrene. After cutting sheave plate openings in the wood planking, **11**, I added the new flush sheave plates to the flight deck. Arresting wires were made from brass wire and attached to the sheave plates later.

I painted the flight deck Model Master deck blue. The kit contained a large "73" *Gambier Bay* decal, but I was modeling the "96" *Salamaua*. Making a decal this size would be difficult, so I decided to paint the numbers directly on the flight deck.

I checked my references and made a

master drawing of a "6" in the proper scale. Then I rotated it and copied it for the "9." The numbers were drawn on a sheet of low-tack frisket film and positioned on the flight deck. I carefully cut them out with a hobby knife, exposing the deck and then painted the numbers black, **12**. The result, **13**, looked just like the real thing.

I applied the photoetched crew gangways, guntub floors, and braces to the top of the gallery decks, **14**. The guntub splinter shields were made from plastic strip, following the kit's templates. After adding some details to the decks, I painted everything, **15**.

Finally, I glued the flight deck assembly to the hull with wood glue, stacking books on the deck to ensure a good bond. **The island.** The island subassembly

September 2003 www.finescale.com 35



The gallery decks and guntub bracing on the stern sub-deck can be seen here after painting. This level of detail is often encountered on this type of kit.



Rusty installed more decks and bracing on the bow sub-deck. It was critical to ensure the sub-deck was perfectly level before attaching the flight deck plywood planking.



A Waldron punch-and-die set has many uses on the modeler's workbench. For this project, Rusty used it to punch out portholes for the island from sheet styrene.



The island's huge SK air search radar is the prominent feature. Sailors nicknamed this early naval radar the "bedspring radar," for obvious reasons. Note the punched out portholes.

#### The Casablanca-class escort carriers

The *Casablanca*-class carriers, a result of wartime mass-production, were versatile ships that performed much-needed services despite being hampered by under-powered, obsolete engine technology.

The Navy quickly accepted the proposal by Henry J. Kaiser, owner of the Kaiser shipyards, to build and deliver 50 escort carriers in just 52 weeks. The speed was possible because the ships were built on the S4 Special merchant hull design already in production.

Depending upon the need of the

moment, these carriers could be used as aircraft transporters, strike carriers, or light fleet vessels. The ships lacked armor and carried only light 20mm and 40mm antiaircraft guns. Most of the *Casablanca* carriers served in the Pacific Theater.

Originally, half the *Casablanca*-class ships were to be transferred to the Royal Navy. However, the United States kept them, transferring instead the *Bogue*-class vessels, which became HMS *Attacker*-class ships. All of the *Casablanca*-class carriers were decommissioned immediately after WWII. Although some were redesignated as helicopter transports on paper, most never went to sea again before being discarded for scrap in 1959.

The USS Salamaua (CVE-55) was commissioned in May 1944. It survived a kamikaze hit in January 1945, while supporting the invasion of the Philippines, and also took part in Okinawa landings. It was decommissioned in May 1946 and scrapped the following year.

- Elizabeth Dooley

and mast structure was made from wood, brass, and plastic strips cut to scale, according to the plans. The core of the island is a basswood block cut to size. The horizontal platforms on the mast were provided as photoetched metal parts. I built the rest of the parts by hand and glued them into place. 18

The portholes were punched from sheet styrene using a Waldron punchand-die set, **16**. I added scratchbuilt fighting lights to the mast structure. The huge photoetched SK air search radar was the last part glued to the island subassembly, **17**. I painted the island haze gray and glued it to the platform using wood glue, then added rigging made from clear nylon thread and the U.S. flag that came with the kit, **18**.

**The aircraft.** The three TBM-1C Avengers and three FM-2 Wildcats are absolutely beautiful, with photoetched details and wonderful casting quality, **19**. I painted and placed decals according to the instructions but added an extra detail to the aircraft: squadron identification stripes on the vertical stabilizers.

Î've built many models over the years, but I can't think of one that gave me as much pleasure. It was very rewarding to ponder the finished *Salamaua* and know that nearly every detail was scratchbuilt.

From bow to stern, the only painful experience was packing it up and letting it go to its new owner. **FSM** 

#### SOURCES

Model Master paints and Pactra Aero

**Gloss sanding sealer** Testor Corp., 440 Blackhawk Ave., Rockford, IL 61104, 800-962-6654, www.testors.com

Bondo Glazing & Spot Putty (No. 907) Bondo Corp., 3700 Atlanta Industrial Parkway NW, Atlanta, GA 30331, 800-622-8754, www.bondo-online.com; available at hardware stores, Kmart, Wal-Mart, and Trak Auto

**U.S. Navy paint chips** Snyder and Short Enterprises, 9175 Kiefer Blvd., Sacramento, CA 95826-5105, 916-736-1918

**USS Gambier Bay (kit No. 1006)** Bluejacket Shipcrafters, P.O. Box 425, Stockton Springs, ME 049881, 1-800-448-5567, www.bluejacketinc.com

Waldron punch and die set, Waldron Model Products, P.O. Box 431, Merlin, OR 97532, 543-474-3226, available from www.brookhursthobbies.com

#### **ADDITIONAL REFERENCES**

www.hazegray.org/navhist/carriers www.ibiblio.org/hyperwar/USN/ships/danfs /CVE/cve96-history.html



The island is a complex subassembly of wood, brass, and plastic details on a basswood core. It was mostly scratchbuilt using the kit plans to cut and assemble the parts.



The finished air wing was ready to attack, with three Avengers and three Wildcats. The level of scale detail on the aircraft was outstanding.

SHIP HOW-TO

If you can't find that favorite ship subject in plastic, try building it in resin. Master modeler Rusty White's 1/350 scale Classic Warships USS *Salem* shows the postwar heavy cruiser with full armament.

### Resin Shipbuilding 101: Lessons from a master shipwright

By Rusty White Photos by the author

Ship modelers have long been at the bottom of the popularity list as far as new kits go. That's changing, however. Mostly due to thriving cottage industries, more new ship kits have become available in the last five years than in the previous 40 years combined. The proliferation of resin model kits has resulted in plenty of models to choose from, no matter what your interest.

The availability of new resin kits by scale follows the same proportional numbers as plastic ones: new 1/700 scale ship kits outnumber 1/350 ones by about five to one. This is mostly due to the cost of the average kit – while 1/700 scale models average about \$35 to \$120, 1/350 scale kits start at around \$75 and can cost up to \$900! Resin kits are produced in much smaller numbers than plastic ones, and that reason alone makes them more expensive to produce.

Most of these kits far surpass their plastic counterparts in detail and accuracy, and many now come as complete kits, combining highly detailed and accurate parts with photoetched detail sets and/or decals. This type of kit can be built into a real museum piece by an average modeler right out of the box – everything you need is already there. Many 1/350 scale kits are cast as waterline models, but can be purchased with a separate hull bottom allowing the modeler a choice of either full hull or waterline.

These tips can be applied to any resin kit, but for this article I'll be building the 1/350 scale USS *Indianapolis* kit from Classic Warships.

I build and paint my resin ships in subassemblies. Plastic models are quite light and easy to hold while painting in tight spots, but the resin *Indianapolis* weighs in at about seven pounds! For a ship this heavy, superstructure subassemblies are easier to assemble and paint before you glue them to the hull.

**Parts preparation.** In waterline kits, the hull and superstructure are cast as one large piece, which really shortens the assembly time. With two-piece full hull models, you'll need to remove the resin "overpour" and sand flush with the waterline boot.

I use a long piece of glass  $(1 \times 2 \text{ ft})$ with 60-grit sandpaper attached with duct tape to ensure even sanding of such a long piece. Resin sands quite easily, so proceed carefully and be sure to wear a dust mask when sanding these parts – the fine powder that results from sanding is easily inhaled, and can be very irritating and even harmful.

I sanded the upper hull of the Indianapolis in the same fashion and mated it to the lower hull, **1**. The result was not a perfect match in this case, but pretty close. This mating problem is common to resin models with large, two-piece hulls: Since the parts are different sizes, they cure at different rates, resulting in a less than perfect match.

**Warped parts.** The hull on my *Indianapolis* arrived slightly warped. Most warped parts can be straightened out by dipping them in hot water and gently twisting them to the correct shape, but large, thick pieces of resin require a more "hands on" approach. To fix this I sanded away the overpour and applied fiveminute epoxy to the hull halves.

Using C clamps with basswood in the jaws to protect the delicate detail on the deck, I carefully aligned the parts and

#### 1/350 Scale

**1** For Rusty's resin USS *Indianapolis,* also from Classic Warships, the upper and lower hulls of the ship are mated and joined together with five-minute epoxy. Inserting basswood between the clamp and the resin protects the delicate deck detail.

2 To repair this chipped bow piece, Rusty filled the gap with super glue, then carefully sanded it to shape. Wearing a mask helps protect you from the fine resin dust.

**3** Almost ready to paint. Squadron Green Putty, thinned with liquid glue, fills the gaps between the separately cast pieces of the two-part hull.

4 Parts missing? This resin casting kit allows you to reproduce virtually any model part in the event of any loss or damage.

5 Select the part you'd like to copy (be wary of mirror-image parts), and super glue it to a length of sprue.

clamped the stern halves together while I adjusted the bow. I let the assembly sit overnight, and the next day I was ready to continue with a nice straight hull.

**Glue.** Most resin kits are designated as "multimedia" kits. This means that you'll (usually) get resin, cast metal, and photoetched brass parts. With all these parts in different mediums, regular plastic modeling cement won't work. Super glue works very well on resin or metal parts, and using an accelerator will speed up the drying time.

Not only is super glue an adhesive, but it also makes a super-strong gap filler. I use extra thick super glue and apply it heavily into the gaps. This is where the accelerator comes in handy. A few sprays and the glue is ready to sand. It's best to do your sanding soon after the glue sets. While it feels hard to the touch, the glue is easier to shape at this time. Once I shape the glue to my liking, I fill the final small seams with putty and finish up with 400-grit wet/dry sandpaper.

**Repairing damage.** Resin is brittle, so chips and broken parts occur from time to time during construction or









while shipping. Damage can be easily repaired using super glue and accelerator, reversing the process described above. Spray the broken section with accelerator first, then dab extra thick super glue in the damaged spot. The accelerator will cause the glue to set instantly. Repeat the process until buildup occurs, then sand to shape with 100-grit sandpaper and smooth with 400-grit, **2**.

Some parts have small, almost microscopic pits caused by air bubbles in the resin. The holes are so small that putty can't get in them, so the answer is to thin the putty. Model Master liquid glue is an excellent thinner for Squadron Green putty. Put a small amount of the putty in a paint jar with several drops of the glue and blend them together with a toothpick. You can make it as thick or thin as you need. Keep in mind that the liquid glue will cause the putty to shrink, so you many need to make several applications. The more liquid glue you use to thin the putty, the more it will shrink. Use an old paintbrush to force the thinned putty into the tiny pinholes, and follow up with light sanding, 3.



#### **Casting for small parts.**

From time to time a part is left out of the kit or lost. My *Indianapolis* kit was missing a quad 40 A/A gun mount. I didn't want to wait for a replacement to be sent, so I cast my own. I keep an Ace Resin casting kit on my workbench for such emergencies, **4**. It comes with everything you need to cast your own parts and it's very easy to use.

For such a small part, I didn't need to make a mold. Using one of the parts supplied in the kit, I glued a section of plastic rod on the bottom, **5**, and gently pressed it into a dab of modeling clay, **6**. It was then a matter of pouring resin in the mold, **7**, and voilà! Fifteen minutes later I had a perfect duplicate.

**Painting.** It's much easier to paint the hull when you don't have to contend with any delicate parts. The model can be easily handled as well. The waterline boot is painted first so it can be masked off. Once that's dry, I mask off the boot with vinyl automotive pinstriping tape, **8**.

I painted the deck next. No need to be tidy here: It was all one color (see "Painting measure 22") so I airbrushed

#### **Painting measure 22**

The USS *Indianapolis* (but not the *Salem*) was painted measure 22, or Haze Gray on vertical surfaces deck one and up, with Navy Blue from deck one to the waterline boot. Horizontal surfaces were Deck Blue. All these colors are available in Polly Scale acrylics.

No one at this time makes US Navy nautical colors in enamels, so enamel painters will need a good reference. I used the Snyder and Short US Navy World War 2 Ship Colors to aid in mixing the colors.

A great match for Haze Gray is two parts Model Master Medium Gray (No. 1721, FS 35237) with one part Model Master Camouflage Gray (No. 1733, FS 36622). Medium Gray gives the color its characteristic blue tint. Add more Camouflage Grav for 1/700 scale for the "scale effect." Model Master Navy Gloss Gray (No. 1791, FS 16081) is almost a dead ringer for Navy Blue since it has a blue tint. I added a little Camouflage Gray for scale effect. The difference between Navy Blue and Deck Blue is slight, I can hardly tell one from the other, so I used the same for both. One goes on horizontal and the other on vertical surfaces, so the colors looked like different shades due to the way the light struck them. -Rusty White

the entire deck. It didn't matter if overspray found its way onto the surrounding bulkheads.

Next were the hull and superstructure above the waterline boot. To paint the hull, I hold my airbrush below the waterline at a 45 degree angle, pointing up as I spray. I hold the bottom of the hull in the other hand. With the airbrush at this angle the edges of the decks act as masks, allowing me to paint freely as long as I don't move the airbrush above deck one. The superstructure can also be painted in the same manner. The only area left to brush paint is the bulkheads next to the deck.

The final step is to mix and paint the anti-fouling red below the waterline boot. I mixed two parts Testor intermediate red to one part Testor rust. Remember to





10



mask off the hull above the waterline before spraying the red – you can hold the model by the upper hull.

Scratchbuilding mast structures. The *Indianapolis* is one of Classic Warships' earlier kits. While it's a well-detailed kit, it doesn't come with any parts for the tripod mast, so it's up to the modeler to make it from scratch. The instructions have drawings with dimensions that made the job easier (this takes me back to the days when I built balsa airplanes with my dad).

To make the tripod mast, I drew a simple pattern to 1/350 scale representing all three sides of the mast. It's now a matter of cutting various diameters of brass and plastic rod and gluing them together (just like building those balsa wings!). I built the right and left sections first then attached them to the brace that makes the forward point of the tripod, **9**. Everything was temporarily held in place with a dab of modeling clay. I could then reposition the parts and glue them in place. Once they were attached to the model, I measured and attached the bracing for the back of the mast, **10**.

**Extras.** There is no such thing as too much detail. I added Campbell Scale Models No. 256 chain to the forecastle of the *Indianapolis* for a very realistic look – nothing looks more like chain than chain, **11**. You can find many items like this at a railroad hobby shop. Chains and rigging can add incredible detail to any ship model.

**The base.** There are lots of ways to display ships. The top three I use in order of importance to me are natural

6 Press the master part into modeling clay to form a mold.

**7** Fill the mold with resin. When it cures, your duplicate part is ready.

8 Mask carefully to keep the waterline boot straight and consistent even around the stern. Vinyl pinstriping from an auto parts store is great for use on compound curves.

**9** This simple pattern, drawn in less than five minutes, is essential to building a perfect fitting tripod mast.

**10** The finished tripod mast on Rusty's USS *Indianapolis* is an exact scale replica of the one on the real ship.

**11** Campbell Scale Models chain, found in model railroad stores, is perfect for 1/350 scale models.

12 These basswood strips were stained and cut to length using the outline of the bottom of the hull as a guide. The ends of the timbers will be stained as well.

**13** This "drydock" style base adds a lot to the appearance of the USS *Salem* model.

water, "drydock," and brass pedestals. The *Indianapolis* was mounted to the mahogany base via drydock style – not really an accurate drydock, but close enough to show off the full-hulled model right down to the props.

Once the hull was painted, I sat it on a piece of paper and sketched around the hull, **12**. This will act as a guide when placing the basswood stock. I obtained some square basswood from my local hobby shop to make the drydock timbers. The timbers are out of scale for this model but it's best to keep it simple – if the base gets too elaborate, it takes away from the look of the model. Basswood stock is available in many sizes, so the scale is up to you.

I stained the basswood mahogany and cut it into strips that conformed to the hull's shape. Once all the strips were properly spaced, it was then just a matter of gluing them on the base with fiveminute epoxy. After about 30 minutes or so, I glued the completed hull assembly to the strips, **13**. Now the model can be handled by the base, which will protect







the delicate photoetched and resin parts during the final phases of construction.

It's not any harder to work with resin kits – just different. I guarantee that once you dive into the resin pool, it will be very difficult to go back to plastic only. Many subjects you find in resin kits will appear nowhere else. Multimedia kits may be the answer to filling the holes in your collection without scratchbuilding. **FSM** 

#### SOURCES

#### **Models and bases**

Classic Warships, P.O. Box 57591, Tucson, AZ 85732 ©520-748-2992 www.classicwarships. simplenet.com

Flagship Models, 2204 Summer Way Lane, Edmond, OK 73013 ©405-330-6525 warship.simplenet.com/ Flagship.htm

#### Paints

Model Master and Polly Scale, The Testor Corp., 620 Buckbee St., Rockford, IL 61104 ©815-962-6654 www.testors.com

#### **Resin and RTV**

Ace Resin, 7481 E. 30th St., Tucson, AZ 85710 ©520-886-8051

#### **Paint chips**

Snyder and Short Enterprises, 9175 Kiefer Blvd. #224, Sacramento, CA 95826-5105 ©916-736-1918 www.shipcamouflage.com/

#### **Anchor chain**

Campbell Scale Models, PO Box 5307, Durango, CO 81301 ©970-385-7729

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Warship Pictorial #1: USS Indianapolis, Classic Warships Publishing, Tucson, AZ 1996

Ships How-To



## Now your ship won't slip

Build a secure modeling platform for small-scale ships

By Christopher Crofoot Photos by the author

Building 1/700 scale warships has become a delicate business since the advent of etched-brass detail – even the slightest handling can damage these tiny parts once they are attached to your ship model. And since building such small objects almost always requires that you handle them, I needed to find a way to stabilize my ships without jeopardizing the delicate photoetched parts.

My solution was to make a couple of building slips or platforms. Once your hull is assembled on one of these slips you don't have to worry about a lightweight ship getting knocked over. It also helps keep the hull from warping and keeps your Chris built his modeling slips for use with 1/700 scale ships, but the basic plan can be easily adapted for ships of all sizes and scales.

assembly straight and true. When you're finished with a model, just move it to a permanent base.

#### 1/700 Scale



The holes in the ship bottom must be aligned with the machine screws. Make sure the throat openings are on the same side of the holes.



The ship is securely attached to the base – the screw head is held in the throat, and the wing nut has been tightened.



After converting this full-hull 1/600 Airfix HMS *Warspite* into a waterline model, Chris fitted it with styrene bulkheads so he could secure the ship to the slip.

Materials. Building a slip requires three separate components: the slip itself, the attachment hardware, and the modifications to your model in order to mount it. The slip is simple to make and can be adjusted to suit the size of ships that you build. You can use unfinished wood for the slip, but an old Formica-coated countertop is ideal because it will help prevent the board from warping over time. (I used an industrial grade plastic called UHMW [ultra high molecular weight polyethylene]). Whatever you use, make sure that it is at least 3" longer and 2" wider than the size of the vessels you build. Thickness is dependent on your modeling scale  $-\frac{1}{2}$ " is the minimum thickness for 1/700 scale.

Building the slip. Make a pencil line down the center of your board, then mark off 1/2" increments down its length. Using a drill press with a 1/4" bit, drill a hole at each hash mark on the penciled center line. At each end attach "legs" that are the same width as your slip top. The legs I built are about 5/8" thick to allow enough clearance for the wing nuts, but this measurement can vary. If your slip is made of unfinished wood, seal it with a coat of varnish and set it aside to dry. There's no need to be fancy and sand it – it will get glue and paint spatters on it soon enough!

**Tool time.** Next, you'll need attachment hardware. Keep in mind the thickness of your slip top and use appropriate length round-head machine screws (for a 1"-thick top, 1'/4" to 1'/2" screws are great). Also, get some wing nuts that fit the machine screws. If on some smaller ships, such as destroyers, there isn't enough clearance between the deck and the bottom plate to allow the machine-screw head to fit, just grind the screw heads down with a motor tool.

Attach the ship. The final step to using your builder's slip is to drill the base of your ship to accept the machine screw heads. I used a motor tool for this. Be careful that your throat notches are both facing the same direction and that your holes line up with the drill holes in the top of your slip, 1. After you've drilled the holes and throats, just slip the screw heads through the holes and slip them up into the throats at the same time, 2. Tighten the wing nuts underneath and your ship won't be going anywhere!

**Other uses.** It is also possible to use this slip with full-hull models that you've turned into waterlines. Just cement two horizontal bulkheads under your ship after you've cut it at the waterline, then drill the holes as you would for a regular waterline kit, **3**. You can also use this slip with fullhull kits by epoxying nuts inside the hull of the ship and using threaded rod to set the hull off from the base. The nuts secure the top and the wing nuts go under the slip.

This little tool has helped me build better ships, and saved me from the frustration of damaging delicate parts – I hope it will do the same for you. **FSM** 



# Building and detailing a WWI battleship

#### ICM's new König kit and reliable techniques make a fantastic model!

By Mike Ashey Photos by the author Completed model photos by Glenn Johnson

The German battleship König was one of four World War I dreadnoughts built for the German Navy. The König was laid down in March of 1911 and commissioned in September 1914. König was 175.7 meters long and had a beam of 29.5 meters. The ship's fierce 305 mm main guns were housed in five double barrel turrets, and helped fight in many of the major sea battles against the British Navy. König survived the war, but was scuttled by her crew on June 21, 1919 along with her sister ships at Scapa Flow Harbor.

ICM's model of the *König* is the first large-scale injectionmolded battleship release in 1/350 scale since Tamiya introduced their 1/350 scale battleships more than a decade ago. The model has a one-piece hull, just like the Tamiya kits, and its level of detail and parts fit is just as good. The wood deck scribing is excellent, and the superstructure detailing is also above average.

**Details, details.** When I start any model project, I always spend some time examining all the parts and the assembly sequences. I also make a list of what changes I want to make,

details I will add, and any obvious problems that I can identify. The ICM kit is pretty good right out of the box, but there are always some things you can do to improve any kit's appearance. These improvements include scraping off the deck chains and adding real ones, drilling out all the portholes and main guns, adding rigging, and last (but not least) adding photoetched railings and hatches.

I acquired the Gold Medal Models photoetched detail set designed specifically for ICM's *König*-class of battleships. The photoetched fret is packed with superb details, all of which are well engineered and easy to assemble. The thickness of the brass is just right. The railings are very fine, but the brass is strong and easy to handle. The brass bends and curves easily and maintains its shape very well. With the modifications that I wanted to make, the superb photoetched detail set, and some good masking and painting, I knew that I would have an outstanding display model.

Setting sail. As I planned my efforts and studied the assembly instructions, I identified what assemblies needed to be done

out of sequence with the instructions. When shipbuilding, I generally work on the hull and main decks first, then work on the superstructure assemblies and decide which ones can be attached to the main deck before final painting. I check and re-check assemblies to be sure that they all fit together, and I identify any fit problems to determine how to fix them. I also decide what photoetched details I will be adding, cutting and measuring railings as I move along the assembly process.

This time, I decided to try out a new technique for painting a natural wood deck. Though it did not lessen the amount of masking required, the end result is very crisp demarcation lines between the wood deck and any steel components. This technique also allowed me to airbrush every step of the way.

**Problem solving.** While the kit has some minor fit problems which are easy to fix, you'll need styrene strip and sheet stock to fix some other problems. The rear superstructure assembly has two voids, one on the rear area deck and one on the face of the assembly. Both are easy to fix with strip stock and super glue so long as you keep the strips level with the deck and superstructure surfaces. The superstructure assemblies consist of sides, backs, fronts, and tops. While large superstructure parts designed to be assembled in this manner are usually not a problem, small superstructure parts that consist of four sides and a top can make assembly somewhat tedious. Most of the *König* superstructure assemblies needed some tweaking, super glue filling, and careful scraping and sanding. One small assembly needed a replacement roof, as the kit part just would not fit.

The upper and lower main decks are somewhat thin, so to prevent them from flexing I laminated styrene sheet to the undersides of the decks. On the upper deck I had to be careful that the lamination didn't interfere with the casemate guns (on the lower superstructure). Although the instructions tell you to insert these guns into the superstructure sides during assembly, they'll snap into place from the outside after the assemblies are completed. This saves a lot of time in masking and, most importantly, you don't have to worry about breaking the barrels off when you're working with the deck seams.

The lower main deck fit very snugly into the hull and the seam line was easily filled with super glue then scraped and sanded smooth. I was careful when attaching the superstructure sides that are sandwiched between the upper and lower main decks. It's best to form fit them into place to fix the slight misalignments and then position them with thin strips of making tape. Next, I positioned the upper main deck with masking tape and made whatever adjustments were necessary to get the superstructure sides positioned correctly. Then I ran a bead of super glue along the base of the superstructure sides to attach the parts, and I removed the deck and finished gluing from the inside. I then repositioned the upper deck with new strips of masking tape and ran another bead of super glue around the perimeter of the deck.

Like most WWI battleships, the superstructures on the *König* were not very big and the most distinct parts are the smokestacks and masts. The kit-supplied upper masts and yardarms, boat davits, search light platform bracing, and flagstaffs were too thin, so I replaced them with various diameters of stiff brass rod. You can get a really strong bond using super glue when attaching brass to brass (or brass to plastic) if you clean the rod with 600-grit sandpaper.

I used Model Master enamel paints throughout the project, mixing flat black and flat red to give me colors more appropriate for the *König's* anti-fouling red lower hull. For rigging I used clear



I removed the mold line that ran down the centerline of the hull with a No. 11 hobby blade, then sanded the remaining plastic smooth. I then drilled out the hull portholes using a .038" drill bit in a pin vise. The raised rings of the portholes provide a guide for the tip of the drill bit. You will also need to remove excess plastic from the backside of the porthole using the tip of the hobby blade.



To prevent the decks from flexing I laminated .030" styrene sheet onto the undersides. I first traced the outlines of the deck perimeter right onto the styrene sheet, then I moved the deck about ½" offset to the original trace line and retraced it so that the resulting lamination would be smaller than the deck. I also added styrene strips so the deck wouldn't flex when I installed the superstructure.



The Gold Medal Models photoetched detail set has torpedo tube doors for the forward and aft sides of the hull and the bow. To ensure that the locations of the doors are the same on both sides of the hull, use a length of masking tape with the distance marked on it. This small length of labeling tape was used as a guide for gluing the tube door into place.

nylon sewing thread, which I painted flat gray using a small brush after they were glued in place with super glue.

ICM is certainly making the effort to establish itself as a styrene ship model maker, and I'm more than happy to indulge in the purchase and building of their product. While the bulk of my ship collection in 1/350 scale comes from World War II, I guess it's time to start collecting those earlier era dreadnoughts. **FSM** 



In order to replace the molded-on anchor chains with real chain I scraped them off with a sharp hobby stencil knife. I also drilled holes where the chain emerges from the deck with a .038" drill bit. This is easier to do before the deck is installed. I then secured the deck with strips of masking tape and ran a bead of super glue along the seam line between the deck and the hull. There were no voids to fill, so I needed only to scrape the super glue flat and then wet-sand the plastic until smooth.



Use a toothpick with a flat end that has a small strip of masking tape folded over onto itself so that you can pick up the photoetched hatches. Apply some super glue, and position the hatch in place. To ensure that super glue will adhere to the brass, run the photoetched part across a stationary piece of 400-grit sandpaper to remove any residues. Set hatches onto the superstructure sides using a piece of .030" strip glued to a long handle to set vertical lines at the hatch locations.



The photoetched screen vent for the back side of the rear superstructure replaces a kit part. Although the instructions advise cutting out the plastic where the screen goes on the back of the stack, gluing the screen directly to the plastic looks just as good. The vent louver covers for the sides of the forward and aft superstructures that come with the kit do not fit very well so I replaced them with .015" x .060" strip cut to length with a NorthWest Short Line Chopper.



To install the upper main deck and the superstructure sides, first test-fit them in place. The contact point between the forward sides of the superstructure parts and the hull will need to be reshaped once they are glued, so don't concern yourself with the fit at this point. Concentrate on making sure that the superstructure sides are flush with the lower main deck and that the upper main deck fits snugly into place. The bow area of the upper deck needs to have some plastic shaved off to get the deck to fit correctly. Hold everything in place with strips of masking tape before gluing.



There are two voids on the rear superstructure that need to be filled, and the best way to do it is with styrene strips – this method is much quicker and easier than messy putties. For the deck void use a  $.030" \times .060"$  strip and for the superstructure face use a  $.020" \times .040"$  inch strip. Be sure that the strips are flush with the deck and the superstructure face so that all you need to do is give them a light sanding to remove any excess super glue.



Here the vent louvers have been installed. They look much better than the kit-supplied parts. Setting the locations for the louvers was easy because each part had specific location grooves molded into the sides of the superstructure. Note that the searchlight platform bracings are brass rod replacements.



The upper masts and yardarms that come with the kit are too thin to hold rigging so I replaced them with stiff brass rod. The masts were replaced with .022" rod and the yardarms were replaced with .019" rod. Super glue holds the assemblies together nicely, but they're still very delicate so handle them carefully.



The voids along the lengths of the struts were filled with white glue and contoured with the tip of a damp cotton swab. I also had to drill holes for the rudders as none were molded into the hull. I cleaned the plastic with Polly S Plastic Prep and then primed the entire assembly with Testor primer. I ran masking tape along the raised line of the hull and painted the lower hull flat red mixed with some flat black so that the resulting color was blood red. I applied white glue in small sections at a time to any voids and used a cotton swab to shape the glue. Then I sprayed the upper area and deck fittings with Flat Dark Gull Gray.



The molding on the main guns was slightly offset, making the ends somewhat oblong. To fix this problem I wrapped the end of each barrel with 400- to 600-grit sandpaper and rotated the barrel to round off the tip. I then scraped off the mold lines and bored out the ends with a .028" drill bit.



I masked off the hull and the vertical surfaces of the superstructure, leaving any square or rectangular shapes unmasked. I also used thin strips of masking tape to set the demarcation lines between the wood deck and the hull. It's easier to set the line from the deck first as this allows you to judge the distance between the edge of the wood and the hull. I then ran another length of masking tape along the outer edge of the first length of masking tape, making sure that the edges butted up against one another and then removed this first length. This technique gives you a perfect demarcation line with equal distance between the deck and the hull.



Here you can see almost the full amount of masking tape required for ship modeling. I saved some masking time by not applying any to the upper superstructure decks. I was very careful when apply-

ing the Model Master Wood paint, and I applied several light coats with an airbrush over a two-day period.



I removed the tape from the lower superstructure sides and the hull, though I left the masking tape on the upper-superstructure area as the upper decks still need to be painted medium gray. I used flat black mixed with flat white for the boot stripe so that the resulting color was a dark charcoal. Next I masked off around the base perimeters of square and rectangular shapes on the main decks using small strips of masking tape. I then covered the remaining areas of the decks with larger strips and painted.



The vertical struts between the platforms on the rear stack were replaced with .019" brass rod to make the assembly stronger. The next step was to cut and shape the lengths of photoetched metal railings.



The best way to paint all the small photoetched metal parts is to attach them to lengths of masking tape – the paint coverage will be even, and you're a lot less likely to lose a piece to the carpet this way.



I painted the small round coal scuttle ring details using a small detail brush. I simply applied a drop to each ring – the paint spread around the entire ring, but was contained by the lip. The upper main decks have been painted Model Master Medium Gray. All the remaining masking tape has been removed and the model is now ready for final assembly. The boat cradle tracks were accented by carefully and lightly scraping off the surface wood colored paint using a flat-edged knife, exposing the gray color undercoating.



To achieve sharp bends I placed the railings in flat-nosed pliers and bent them into shape around a single-edge razor blade. Curves in photoetched railings were achieved using a wood dowel of a slightly smaller diameter than needed.



The masts needed some tweaking to get them to fit correctly, and the searchlight platforms on the aft smokestack also required some minor adjustments. Most of the superstructure guns snapped into place. I used clear nylon sewing thread for all my rigging and I attached the rigging with super glue. After the rigging was completed, I carefully gave the lines a thin coat of dark paint.



The small boats needed some work to get rid of the seams, but the photoetched metal details really enhance their appearance. ICM seemed to anticipate the addition of photoetched propellers, as they fit perfectly onto the boats without any modifications. The boat davits that were supplied with the kit were too thin to use so I made new ones using .019" brass rod. I also used .019" brass rod for the bow and stern flagpole bracing. The photoetched gangways were the last items to be installed. Since the main guns were positioned in their firing positions, the gangways had to be in their stowed positions.

#### SOURCES

**Photoetched details** 

Gold Medal Models, Inc., 1412 Fisherman Bay Rd. Lopez, WA 98261, 360-468-2171

#### The Chopper

NorthWest Short Line, P.O. Box 423, Seattle, WA 98111-0423, 206-932-1087 www.nwsl.com



# **RIGGING WITH**

#### Adding wire antennas and lines to ship models

By Patrick Roach

hen I was young and innocent, I built ship models for play, never really caring about paint, realism – and what's "rigging" anyway?

Of course, all that's changed now. I'm older and less innocent, and there are resin and photoetched metal parts sets for nearly every ship detail. But rigging (rope lines and wire antennas) is still one area where you're on your own. Few kits come with rigging material, and not many have rigging diagrams, so good references are a must.

Choosing rigging material is another hurdle. You could use fly-fishing line, Lycra thread, stretched sprue, sewing thread (don't do it!), and surgical silk, but I prefer small-gauge wire.

**Getting wired.** For long, straight runs, I prefer stainless steel guitar string; the high E string is available in gauges down to .007" and a single string will usually provide enough material to rig one ship model, **1**. The string is coiled into a paper envelope, and this induces a subtle bend in the wire, ideal for

mimicking the natural sag of a long wire antenna, **2**. This sag is difficult to replicate with other materials.

For shorter runs and for wires that need to be shaped, I like to use soft tungsten wire or "dental" wire, available in 30" and 60" lengths in gauges down to .005". Small Parts Inc. (www.smallparts.com) has an extensive catalogue of wire and other useful items for small-scale modeling.

**Tooling around.** A good wire cutter is important, especially when cutting strong guitar strings. I rely on my old trusty Stanley (No. 84-131), **3**. I've had it for years and it's always held its edge. Xuron side cutters and parts cutters also work well.

I use an artist's compass to make initial measurements of the lengths of wire needed on the model, **4**. This tool has two arms with pointers at each end (pencil leads) and a thumb screw in the middle to adjust the span of the arms.

Tweezers are good for holding the wires while you install them on the model, **5**. There are several types available, some

#### 1/350 Scale



Patrick used fine steel and tungsten wire to rig this 1/350 scale Armada Warships' resin kit of HMS *Vendetta*. John Riley photo

with fine points, some with curved points, some with grip locks, so find the one that you're comfortable using.

**Special shapes.** The softer dental wire or tungsten wire can be formed to the desired shape. On this model, I needed a curved line from the main aerial to the forward superstructure. I cut a length of tungsten wire and wrapped it around a pen to get a uniform curl, **6**. When released, the wire relaxes a bit, so the radius you get is larger than the form you wrap the wire around.

**Before the mast.** Fortification of the plastic kit masts isn't required for wire rigging; such fortification is sometimes needed for monofilament or stretched sprue lines that are tightened with heat. In those cases, the tightening may pull and bend the soft plastic masts and yardarms. Wire rigging is cut to length and doesn't require such tightening.

I'll sometimes use brass wire to build or add to a mast to make it more accurate, but usually I stick with the plastic kit masts.

**Start in the middle.** It's best to do the rigging after the ship is complete. Once the ship is rigged it becomes more difficult to handle.

It is important to start rigging in the middle of the ship and work your way outwards. You'll avoid snagging fragile lines



For long, straight runs, Patrick uses fine guitar strings. For lines that require shaping, he uses soft tungsten wire (in tube). Construction photos by Patrick Roach



The induced bend in the guitar string can simulate the natural sag of a long antenna wire.



Hardware-brand wire cutters are ideal for cutting the strong guitar strings.



An adjustable artist's compass is a handy tool for measuring lengths of rigging on a nearly finished model.



Soft tungsten wire can be shaped easily. This piece was wrapped around a pen to form a curve.

Fine-point tweezers are Patrick's favorite installation tool.



A small plastic cap makes a handy dispenser for a few drops of white glue (such as Elmer's Glue-All). Patrick dips the ends of the wire in the glue. White glue dries clear.

that are already installed. Sometimes I photograph a model, then draw on the print to help me plan where the lines go and where to start.

I mark the measured span on paper, lay the wire on the paper, mark it, and cut it a little longer than the measurement. Why? A length of wire cut too short is wasted; one cut too long can be shortened in tiny increments. Repeated dry-fitting of the wire to the model ensures the right length.

Ideally, there will be little stress on the wires on a ship model, so I just attach them with tiny drops of white glue (or sometimes super glue). I like to put a few drops of glue into a plastic cap, then dip the ends of the wire into the glue, 7.

Elmer's glue goes on white but dries clear. If you're not satisfied with a piece of rigging, a little water will loosen the white-glued joint, and you can remove the wire.

Rigging with wire can be done efficiently and quickly – it's my favorite modeling task! Like anything else, the more you do it, the better you get at it. **FSM** 

#### **Meet Patrick Roach**

Patrick is an avid history buff and enjoys modeling from that perspective. He is a senior design engineer and was diagnosed with young-onset Parkinson's disease while in his late 30s. Although this has certainly affected the speed at which he builds, it has given him a thoughtful perspective and patience with his work.



Patrick is the husband of Sally and father of Jackson, Olivia, and Schaefer. They live in Groveland, Ill.



he sleek *Charles F. Adams*-class guided-missile destroyers had always been my choice for "most beautiful ship" in the U.S. Navy, and the USS *Semmes* (DDG-18) was very familiar to me. I had recently completed my military service as a medical officer on the Destroyer Squadron Six staff and still had pleasant memories of sea cruises and liberty calls, many of them aboard this ship. This was going to be a special project.

I was holding a newly carved wooden hull in my hands, turning it this direction and that, trying to visualize the finished model. The problem was that I saw two models rather than one.

The vision of the graceful hull with the sonar dome and bilge keels, **1**, as well as the screws and rudders, **2**, drew me toward the idea of a solid-hull ship model mounted on a varnished base in the classic tradition. But, I also saw an equally appealing image: a waterline diorama with the ship in its natural element and the crew going about its duties on deck.

I fancied the *Semmes* at anchor in a tropical lagoon with boat booms swung out and accommodation ladders extended, **3**. I could just imagine the liberty boats plying from ship to shore like water beetles and a small sailing craft pitching and bobbing alongside the ship with locals selling trinkets to the crew, **4**. All of the figures would be placed so that they would not be visible from the "solid-hull" side.

#### Into the water

Both visions drew me equally, so I decided they must be combined. I started with some scrap cardboard and through trial and error, cut a shape that would represent the water's surface for a diorama story. I fashioned it so that when I slipped it around the hull from below, it fit snugly at the waterline, surrounding the ship at the bow and stern. This shape also allowed for an open side, from which the ship's underwater details could be seen. I set the cardboard pattern onto a piece of  $\frac{3}{16}$ " acrylic sheet, cut it to shape, and set it aside while I built the model.

#### **Back aboard**

My destroyer evolved from an old Ship Model Shop custom wood-ship kit. It contained the basic hull and superstructure shapes along with cast-metal fittings for the gun mounts, rocket launchers, gun director, and other small details.

I added a considerable amount of scratchbuilt detail to the wood shapes. The bridge was fabricated with a complete interior from styrene sheet. I vacuum-formed the stack caps and hollowed out the stacks. The most difficult part of the model was scratchbuilding the SPS-40 and SPS-52 radars, but I particularly enjoyed making the crew figures from copper-wire armatures filled out with putty.

When my destroyer was painted and complete, except for the masts and rigging, I mounted it on a stained and varnished decoupage plaque. Brass finials found at a lighting-fixture store made up the pedestals. Then I went back to the water.

#### Another dip

The acrylic "water" was temporarily placed at the model's waterline, and four points were marked with a pencil, one at the bow and stern on each side. Then holes were drilled into the hull at

#### 1/250 Scale | Ship | How-to

You can have your full-hull ship and your waterline diorama in one model By John T. Leyland

The port side of John Leyland's USS *Semmes* (DDG-18) portrays the ship at rest in a tropical lagoon.

these points to receive small wire nails that support the acrylic sheet. I test-fitted the sheet, removed the pins, and slipped it off for painting.

The upper surface of the acrylic sheet was airbrushed with two shades of blue-green in a random "splotch" pattern. When completely dry, the acrylic sheet supported by the pins was reinstalled on the model. I've used acrylic gel medium for water on several other diorama projects and have been pleased with the results, so I used it on this project as well. Acrylic gel medium comes out of the jar with the appearance and consistency of mayonnaise, but dries completely clear, giving a translucent appearance for the color beneath it.

I placed masking tape around the joint from below the ship's waterline so that no gel would run through the gap between the acrylic sheet and the hull. A layer of gel medium was spread over the "water" surface with an old kitchen knife. I was extremely careful not to stir any bubbles into the gel, because they would be visible later.

When I applied gel medium to the surface, it resembled a frosted cake with swirls and peaks. Starting at one end, I dipped an inexpensive 1" paint brush in water, and while it was dripping wet, I dabbed it on the gel to create realistic waves. The brush picked up "peaks" after two or three dabs in the gel, so I rinsed it regularly in water and kept dabbing. When the whole surface was finished, it had puddles of standing water all over it. After several days, when the gel was firmly set yet not completely dry, I removed the masking tape.

Next, I set the ship's boat and the outrigger canoe in place





The *Semmes* displayed as a graceful solid-hull model reveals its sub-surface details including the sonar dome, bilge keels, and . . .



... screws and rudders.



The ship lies quietly at anchor with a local catamaran pitching and bobbing alongside and . . .



... boat booms swung out and accommodation ladders extended for liberty boats plying to and from shore.



and gently pushed them into the "water." After the surface was completely dry (at least a week), I dabbed on small drops of gel to shape the motorboat wake and the rippling of water against the ship's hull. I rippled the water just slightly because the ship is at anchor. When this dried, I painted ripples around the anchor chain and the hull with titanium-white acrylic paint.

#### My visions realized

The completed model is much more interesting than either of my two original ideas. Now when I admire it, I find myself turning the ship around to enjoy the other model for a while.  $\ensuremath{\textbf{FSM}}$ 

Dr. John T. Leyland is an anesthesiologist. Away from his workbench, John enjoys sailing, hiking, and reading. He and his wife Marilyn live in Peoria, Ill.





# Launch your first By Chris Appoldt **Tesin ship model**

Chris Appoldt made the leap from aircraft to his first resin ship model with this Yankee Modelworks 1/350 scale Perryclass frigate, the USS McInerney (FFG-8). nspired by an admiration of naval forces and by a co-worker who had served aboard the USS *McInerney* (FFG-8), I planned my first-ever attempt at ship modeling, intending to present the finished model to him as a gift.

But first I had to get over my fear of resin ships. All that resin, all those railings, all that measuring - give me an airplane kit any day!

I decided Yankee Modelworks' (www.yankeemodelworks.com) 1/350 scale *Oliver Hazard Perry*class frigate kit (No. 35004) was a logical place for me to begin this adventure. Its cast-resin hull eliminated some of the potentially tough construction sequences offered by styrene kits. The *Perry*-class ship's superstructure isn't too complex even though a considerable number of photoetched parts must be bent and assembled. I was confident a new photoetched-metal-bending tool on my workbench could simplify this process.

Build and detail a 1/350 scale Perry-class missile frigate

#### 1/350 Scale | Ship | How-to

#### Hull assembly and prep



Ship kits offer the modeler an option of building a full-hull or waterline model. Waterline projects require only the upper hull half, but you'll also have to model the water as well. I decided to build a full-hull model.



To prep the hull halves for mating, I removed most of the flash with a worn pair of clippers and cleaned the parts with water and wet-or-dry sandpaper. I taped the sandpaper to a tabletop to provide a sturdy, flat surface for sanding these parts. It's important to keep the hull halves as close to level as possible when sanding to make sure the halves match perfectly.

#### REFERENCES

Basics of Ship Modeling: The Illustrated Guide Mike Ashey, Kalmbach Publishing Co., Waukesha, Wis., 2000 Building and Detailing Scale Model Ships Mike Ashey, Kalmbach Publishing Co., Waukesha, Wis., 1996

#### SOURCES

Hold 'n' Fold photoetch bending tool and dowels The Small Shop, 360-673-1255 ext.11, www.thesmallshop.com Etch Mate photoetch bending tool Mission Models, 323-666-4228, www.missionmodels.com Decals, anchor chain, and paint TotalNavy.com, 516-569-7115, www.totalnavy.com



Separately cast hull halves are sometimes distorted. The thin bottom half may be warped or bent to one side. It's easily fixed, though. I used a razor saw to cut straight through the lower hull half where it bowed the most, leaving it in two pieces. Then, I wet-sanded the parts, aligning them at the bow and stern. The remaining gap was filled with putty.



I attached the upper and lower halves with 5-minute epoxy. This gave me time to slide the pieces around to get the best possible alignment. Then, gap-filling super glue sealed and secured the hull seams. Don't go overboard though! Super glue should be sanded within an hour of application or it will cure harder than the resin making it difficult to sand.



Putty works best to fill the hull seams. I used Tamiya's putty, though automotive filler works well too and shrinks little when it cures. Keep it neat to avoid over-sanding. Run strips of masking tape along the seam edges to prevent excess putty from getting onto the hull.



I carefully pulled the tape back from the wet putty line so the tape didn't "glue" itself to the hull. Next, I wet-sanded the putty flush to the hull with successively finer grades of sandpaper. Then, I marked off the hull's mounting holes and test fitted the assembly to its base.

#### Photoetched assemblies and white-metal parts



I identified the photoetched-metal assemblies by the color they'd be painted. I pushed a sharp razor blade straight down to remove pieces from the fret. Be careful with that last connecting arm by securing the part with a finger or pencil eraser to guard against launching it into the air.



My new tool is a small vise-like folding jig designed to bend and shape photoetched parts. Its many arms offer a variety of sizes to clamp down a part while you work it to its final shape with a razor blade. If you don't have a photoetch tool, you can use a second razor blade to secure the part while bending it. Go slowly to keep the bend straight.



To bend more complicated pieces like this bridge ladder, remove the part from the vise's grip, reposition and clamp it along the next bend line, then bend it. It's important to plan multiple-bending steps in the most logical order as rebending parts weakens the folds.



With the ladder's rails in position, I folded its steps with a utility blade. Also shown is one of the lattice supports that was eventually placed on the model's upper superstructure. When all of its bends were complete, I bonded the part with a thin line of super glue.



You'll need to roll parts like railings and this radar array over a curved surface to contour them. I used a set of dowels from The Small Shop, but any dowel, pencil, or perfectly round object will do. The inner, smaller radar screen also needed the same bend to fit into the assembly.



This kit contains a large number of white-metal castings that are easy to work with, but are softer than the resin. Be careful when you remove flash and seam lines. I hit the local beauty-supply store for sanding sticks. Again, I used successively finer grades until the whitemetal parts were smooth.



The photoetched railings can be attached to the white-metal parts with super glue. Before painting them, etch cast-metal and photoetched parts in a vinegar bath to give them some "tooth."

#### Paint shop



Now, ready to airbrush, I painted the lower hull anticorrosion dark red. I also replaced the kit-supplied (bent) white-metal propeller shaft with a length of brass rod cut with a motor tool. This rod can also replace deformed or incompletely cast flagstaffs, tower supports, and other items.



A tip from Mike Ashey's *Basics of Ship Modeling: The Illustrated Guide* made easy work of painting the boot stripe. I cut a piece of masking tape the exact width of the stripe and located it on the hull. I then applied masking strips on either side of that piece and removed the center strip. Finally, I painted the exposed waterline with Testor Model Master enamel.



The upper hull and superstructure were airbrushed haze gray. I added a few drops of black to the mix and sprayed into recesses for more visual depth. The decks are a darker gray and require masking the superstructure sides with small cuts of tape that are easily applied to such contours and details.



After the paint had cured for 24 hours, I applied four coats of Future floor polish to the model. It provided a smooth finish for decals. Also, when I painted details with enamels, the acrylic barrier allowed me to erase any mistakes with a thinner-dampened paintbrush. Using Future also allowed me to attach detail parts to a clear-acrylic finish rather than to enamel paint, which might pull up. The decals set easily into recesses with decal solvent.

#### Railings and final details



I painted the railings and measured with a divider on the superstructure each length that required bends. These figures were transferred to the railings and marked with a pencil (I'd touch them up later). The railings were bent carefully with needle-nose pliers.



With a section of railing bent in the appropriate places, I positioned it on the model and superglued along its bottom rail, working down its length a little at a time. This takes a delicate touch, so go slowly. I bonded each rail to the gloss acrylic overcoat. I was lucky and no paint pulled up where I touched up minor blemishes with a fine-tipped brush.



If you think a 1/350 scale missile frigate is small, you should see the helicopter that sits on its flight deck. It's too small to detail with a brush, so the helo's windows and rotor-blade stripes were added with decals from my spares box. I cut them to fit using a No. 11 blade and small scissors. A finetipped marker let me add the black-colored details.





Next, I detailed the life preservers. They were left on the fret to ease handling while I dipped the tip of a mechanical pencil into white acrylic paint and carefully drew on the details.



Placing the photoetched parts and small resin or white-metal details takes a steady hand. Tweezers usually work fine, but be careful when you're pulling away after setting the piece in place — you don't want to pop off a length of railing or a detail you've already set. One neat method is to ball a small piece of masking tape on the end of a paintbrush, stick the part to it, apply a drop of glue to the mating surface, and touch the part against it.



#### Six tips for better resin models

• Resin kits can be brilliantly detailed, but their instructions may not be. Read them over well before beginning your project. Familiarize yourself with the parts involved in each step of the assembly sequence.

• Stay organized – I used inexpensive fishing-tackle box trays to store photoetched assemblies with small paper chits labeled with their part numbers.

- Danger hazardous work zone! Keep your protective eye wear and a dust mask handy, as cutting photoetched parts and sanding resin is hazardous to your eyes and lungs.
- Work in an area with plenty of light so small whitemetal and photoetched parts can be easily found.
- Mix enough paint for touch-ups and resprays.

• Finally, be sure your workbench has plenty of available space. You'll be mounting your model to its display base early in the project, so every square inch will count. - Chris Appoldt

Chris, whose modeling skills were honed while he was on the staff of FineScale Modeler from 1999-2001, enjoys military modeling. He is the supervising editor for corporate communications at a civilian and defense contractor. Away from his workbench, Chris enjoys photography, saltwater fishing, and Manhattan's



museums and restaurants. Chris lives on Long Island's north shore. FSM.



# Give me Liberty or...

#### Painting a two-tone naval scheme on Trumpeter's Liberty ship By Jeff Herne

rumpeter's 1/350 scale kit of the Jeremiab O'Brien fills a huge void in the 1/350 scale ship model world. The arrival of this merchant ship kit provided a welcomed break from the destroyers, cruisers, and carriers I'd been working on over the last few years.

During World War II, most Liberty ships wore an overall gray paint scheme, so I wanted to model something that would be different from the rest. I settled on the Navy vessel USS *Sculptor*, AK 103, named after a constellation in the Southern Hemisphere. Liberty Ships were classified by the Navy as the *Crater* class, and all of the ships were named for celestial objects.

The *Sculptor* was one of the few vessels in her class to carry the Navy's Measure 22 camouflage scheme in late 1943 and early 1944. Measure 22 consists of a twotone scheme of navy blue on the hull, parallel to the waterline, and haze gray upperworks. Although it's more complex than overall gray, it's a simple scheme to apply and provides some additional color and contrast to the model.

I chose Polly Scale acrylic paints for the finish and used 5-N navy blue, 5-H haze gray, 20-B deck blue for the upper hull and superstructure, oxide red for the lower hull, and flat black. I use a 2:1 ratio of Tamiya thinner to paint when spraying. I try to construct a ship model to allow me to paint specific parts of the model before final assembly. This reduces the amount



Jeff assembled the bare hull and filled the deck seams before painting.



The hull is masked, the colors are selected ...



Spraying the parts on the trees prevents excess paint in the airbrush from going to waste.



Using a pair of calipers keeps the demarcation lines parallel, even over compound-curve surfaces.



... and the first layer of color is sprayed.



Jeff painted the deck surfaces with 20-B deck blue prior to assembly.

of time required to mask the ship and also minimizes brush painting. I usually don't follow the assembly instructions since most manufacturers' instructions want you to build first and paint later. I chose the Tom's Modelworks photoetched set (No. 3546), since it offers many details the kit lacks.

#### **Basic construction and painting**

I made the decision to build my ship fullhull before I started assembly, so I assembled the hull halves and filled the seam between the upper and lower hull. Getting the hull halves together proved troublesome; I had to align and glue one side of the hull, allow it to dry, then work the opposite side of the hull to achieve the proper fit.

With the hull assembled, I attached the forward- and after-deck sections and filled and sanded the resulting seams with Tamiya putty, **1**. Using the seam as my reference, I established the color demarcation line on the upper hull with a pair of dividers to insure my mask was parallel to the waterline along the entire length of the hull, **2**, **3**. I sprayed the lower portion of the hull 5-N navy blue, **4**. When the paint was dry, I removed the mask and allowed it to harden for 48 hours. During this time, I focused on construction of the bridge and superstructure. I built each in levels and sprayed them before assembly using 20-B deck blue on the decks and horizontal surfaces, and 5-H haze gray on the vertical surfaces, **5**, **6**. I freehand sprayed the main deck and brush-painted the interior of the bulwarks. It is much



Spraying large, flat surfaces such as decks usually won't require the use of a mask. Deck fittings can be touched up with a brush later on.



By tilting the model at an angle to the spray, you can eliminate overspray if you're careful.



Jeff painted the upper hull, deck, and fittings and allowed the paint to cure for 48 hours.



The lower hull was painted oxide red and allowed to set for 24 hours.



The superstructure was built in layers and attached to the hull.

Since most of the photoetched parts are 5-H haze gray, Jeff sprayed the entire fret of parts before using them.

easier to complete fine painting with an uncluttered, empty deck, **7**.

With the superstructure done and the paint hardened, I masked the lower portion of the hull and sprayed it 5-H haze gray from the top of the navy blue stripe upwards. By holding the model at an angle to mask the deck from direct spray, I was able to eliminate the need to mask the upper deck, **8**.

#### **Detail work**

After allowing the painted model to dry for another 48 hours, **9**, I applied the mask to the painted portions of the hull and sprayed the oxide red below the waterline, **10**. While this was drying, I assembled and painted the small parts and Tom's Modelworks photoetched detail parts on the superstructure, **11**. Since ships' colors are often monotone in nature, I usually spray the entire photoetched fret before I add the parts to the model, **12**. With all the painting done, I sprayed the model with Future floor polish.

I added the derrick boom towers and other deck details, **13**, **14**, and attached the model to the base. The model was attached to a replacement cabinet-drawer face I found at my local home-improvement center. I used brass lamp columns as finials, **15**.

#### Over the top

With the model secured to the base, I applied the boot topping, the black stripe along the waterline. Since the draft of cargo vessels varies depending on the amount or type of cargo they carry, the boot topping is considerably wider than that of a warship. I chose black decal stripes from my local model-railroad shop. They settled nicely over the hull but required several cuts around the stern because of the compound curves. The boot



The major deck assemblies are added to the hull and detailed.



With the major assemblies complete, Jeff started rigging the support cables for the towers. Doing this later in the construction could prove troublesome.



Jeff attached the model to a base to continue the detail work and prevent damaging the paint from over-handling.

topping on my model splits the demarcation line between the oxide red and navy blue. Some Liberty ships wore an additional thin white stripe at the bottom of the boot topping stripe, but I was unable to confirm that my particular ship had this stripe. I decided to leave the stripe off.

I added the small parts, antiaircraft guns, and deck fittings, then finished rigging the booms with monofilament and Lycra thread, **16**. The rigging on a Liberty ship is a complex array of cables and pulleys, so in the interests of time, I decided to include just enough rigging to make it look cluttered. Liberty ship experts will probably notice a few omissions, so I'll probably go back and add more rigging in the future.

I added hull numbers and Plimsoll marks from a Gold Medal Models naval sheet. Plimsoll marks are applied to merchant ships to indicate the maximum draft allowable by law in various waters.

I weathered the model using a thinned wash of acrylic inks made popular by wargamers. After the wash dried, I drybrushed the base color, lightened with white, over the machinery and fittings. As



The rigging was added using a combination of Lycra thread and monofilament.

a final touch, I weathered the anchor and added some rust stains to the hull using MMP weathering powders. Once I was satisfied with the finish, I sprayed the model with a mixture of Future floor polish and Tamiya flat base (X-21), giving it a dead flat finish.

The entire model took about 40 hours to build, not including drying time. It's an uncommon scheme for a well-known ship, and the results are gratifying. For my next Liberty ship project, I think I'll try a Measure 32 disruptive pattern! **FSM** 

#### The Liberty Ship

In the annals of wartime mass production, the Jeep, Sherman tank, and the M1 Garand rifle immediately come to mind as the great successes of the U.S. war effort in World War II. An often overlooked tool of war is the EC2 Emergency Cargo ship, better known as the Liberty Ship. Between Sept. 27, 1941, and Sept. 2, 1945, 2,710 Liberty ships were built at 18 yards around the United States. They served in all theaters of the war, and 196 were sunk. The vast majority fell under the control of the United States Maritime Commission, a few by the U.S. Army Transportation Service, the War Shipping Administration Transport, and the United States Navy. Several vessels were renamed and loaned to Great Britain,



The USS Sculptor wearing Measure 22 camouflage, December, 1944.

Russia, Belgium, and China. Today, only two Liberty ships remain, the S.S. *Jeremiah O'Brien* in San Francisco, Calif., and the S.S. *John W. Brown* in Baltimore, Md.

#### **RESIN MODELING SPECIAL SECTION**



## **IMPROVING THE UZUSHIO**

#### A stubborn resin kit worthy of proud display

Story and photos by Ken Hart

1/200 scale kit of the Uzushio, Japan's first modern submarine, was available a few years ago from a Japanese manufacturer called "Raccoon." Never heard of 'em? Me either, but a few of these rare kits found their way to the United States, and I grabbed one.

There wasn't much to it; just two solid resin hull halves that were cast as fore and aft, rather than the usual upper and lower; ten resin parts; and five white-metal masts, **1**.

The castings were plagued with pocks, gaps, pinholes, and flash. The few scribed details were faint. The metal masts were just short of useless. Regardless, I could see that it had potential to be a decent model.

As always, research came first. A couple of Maru photo books from Japan provided useful views of this submarine. I cross-referenced a *Jane's Defense Annual* and some other naval books. I prepared a list of details I would need to work on, and Ken Hart took a simple, spartan 1/200 scale Raccoon kit of Japan's first modern submarine and made it a showpiece.

crossed them out as work on the model progressed.

**Hull preparation.** The hull halves and resin parts were trimmed, sanded, and cleaned, and I filled in the pocks, gaps, and pinholes. Super glue and baking soda is my favorite combination for this task, **2**. Noxious fumes can result when baking soda reacts with super glue, so be sure that your workspace is adequately ventilated.

Super glue sprinkled with baking soda cures almost immediately, but deep pocks and gaps need to be filled one drop at a time; otherwise, only the surface will cure, leaving a bubble of liquid glue underneath. Those trapped active resins will eventually find their way out as an oily residue, and will ruin the finished paint job.

#### 1/200 Scale

#### Project at a glance

The model is from the JMSDF Uzushio (SS 566) kit by Raccoon in 1/200 scale. The author added acidetched brass handwheels from a model railroad aftermarket set; masts made from plastic stock; and a number of small parts (hand railings, grabhandle rungs, jackstaffs, and antennas) made from brass wire. The finished model is mounted on a walnut-stained wood base with a Plexiglas dust cover.

The filled surfaces are harder than the surrounding resin, which will tend to be sanded away faster and easier than the filled-in spots; check frequently to avoid uneven areas. I joined the hull halves with super glue, and applied the same curing and sanding steps to the joint seam and the other resin parts.

**Surface detail scribing.** Armed with drawings, photos, and my list, it was time to scribe all necessary details onto the hull and sail to make the model an accurate replica.

I used a variety of generic and homemade templates to measure and locate each detail on the hull. The templates were taped firmly in place, and the appropriate shapes were scribed onto the resin surface. I used a scribing tool, a compass point, needles, the sharp tip of a No. 11 knife blade, and assorted sanding tools to achieve uniform lines.

Of particular importance were the long, irregular slits along each side of the hull, up near the deck; they allow air to escape *Uzushio* as the ballast tanks flood. They required more than just simple scribed lines, because these slits vary in depth, width, and angle as they span the length of the hull.

Using the tip of a No. 11 blade held at an angle, I carefully scraped along sideways, gradually gouging out the resin until the slits became deep enough and wide enough. Final shaping and smoothing was accomplished with micro files and sanding tools.

The bridge cockpit and mast wells were drilled out, then opened to their proper shapes. I drilled openings for exhaust ports and other hull penetrations, and pilot holes for the planes, rudders, hatch wheels, and pad eyes. The sail was laid out, marked, and drilled to accept wire grabhandle rungs, hand rails, and various antennas.

**Hull final prep.** With the scribing done, I readdressed the filled pocks and gaps. Even after sanding, uneven spots could be found, so I applied 3M Acryl-Blue automotive putty to feather them over and ensure a smooth surface, **3**. I carefully wet-sanded the hull with 400-grit sandpaper, then wiped it clean and examined it. I applied putty where needed to feather in any remaining flaws and repeated the wet-sanding process using 600-grit paper and a gentler, slower touch. After an overall light wet-sanding with 1200 grit, the hull was washed, wiped clean, and dried.

The sail, rudders, and stern planes were attached with super glue. After the glue dried, I filled, cured, and sanded the sail joint seam smooth.

**Priming.** A light coat of flat gray sandable primer revealed any remaining flaws and filled minute pinholes. A few problem areas did show; they were sanded bare, more putty was applied where needed, and left to dry, **4**. I repeated the wet-sanding steps until the desired finish was finally achieved, then applied



The rare Raccoon Uzushio kit had only a few resin and metal parts, and no decals. Note the unusual vertical hull split.



Ken filled pocks and pinholes in the hull with baking soda and super glue. To avoid trapping glue beneath the surface, the deeper gaps were filled in several thin layers.



Remaining hull flaws received an application of 3M Acryl-Blue automotive putty, followed by wet-sanding with 400-grit paper.



After the first coat of gray primer, Ken sanded problem areas bare, and more putty was applied and wet-sanded.



Red-oxide primer sprayed past the hull midaxis simulates antifouling coating.



Ken masked the lower hull and sprayed a coat of dark gray almost up to the deck, where detail lines have been scribed, and bridge and mast wells cut open.



The deck and sail are flat black above the waterline. The underside of the bow dome has a deeper shade of red-oxide, achieved by adding brown paint to the original mix.



A number of parts, including hand railings and antennas on the sail, are made from brass wire in various sizes.

another light, even coat of gray primer to the hull.

**Paint.** The mast wells, bridge cockpit, hull vent slits, and deep hull penetrations were brush-coated flat black to ensure a thorough coating all the way down where the final sprayed-on paint might not reach.

I used a flat red-oxide primer to represent the underside antifouling coating. An initial coat was sprayed up past the midaxis of the hull, **5**. I then masked the underside of the bow dome and applied another mixture of flat red-oxide, this time with some brown mixed in.

After the sub dried for a day or two, I masked the midaxis line from beneath and applied a coat of dark gray almost up to the deck, **6**.

Photoetched brass brake wheels from a model railroad aftermarket set made perfect hatch hand wheels; they were glued atop each hatch fore and aft. After I attached the fairwater planes to the sides of the sail, the model was ready for the third and final color painting.

After masking the normal trim buoyancy line (waterline) along the hull, I applied the final coat of flat black to the deck and sail, **7**. I removed the masking and left the model to dry in a dust-free place for two days.

**Decals.** Since the Raccoon kit did not provide decals, I had to check aftermarket sources. This model needed not only the proper style and size of hull numbers, but also the many distinct draft markings located in four places on the sub, as well as the ship's name in Japanese lettering.

I found a couple of decal sheets that would work (from Skywave Models, www.trenes.com/skywave), but I still had to do a lot of cutting and pasting in an almost surgical effort to provide the decals necessary for an accurate model.

I finally had the decals the model needed, but they were water-soluble. Wet-transfer decals cannot be applied to a flat paint finish as dry-transfer decals can; they require a smooth, glossy finish to lay down and adhere properly.

**Clear coats.** Several light, even coats of clear gloss gave the model a smooth, even, glossy overall look. It took a few days for the clear coat to dry thoroughly.

Each decal was presoaked and softened, its location on the hull was wetted with setting solution, and placed into position. When all of the decals were down flat, they were allowed to dry before any residual adhesive was gently wiped off the model.

Another light, even coat of clear gloss over the entire model helped to feather the decal film smoothly in with the finish. I gave the model another few days to dry completely in preparation for the final finish coats.

The *Uzushio* now had a super-smooth, super-glossy finish that was simply unacceptable, so I sprayed several thin, even coats of clear flat acrylic until a flat finish was achieved over the entire model.

**Details.** To make this model an accurate scale replica, certain details found on the real ship could not be left out. A modern submarine without safety hand railings and grabhandle rungs would be incomplete, much as a car model without a radio antenna or windshield wiper blades appears to be lacking something. These details, made from various gauges of brass wire, had to be added after the painting and clear coats, to prevent buildup on them. Brushed-on acrylic flat paint was applied after they were installed.

Eight tiny preformed U-shaped pad eyes (tiedown loops at four points around the escape hatch mating ring surface) made from .080" brass wire were test fitted to their predrilled pilot holes around the fore and aft escape hatches.

The coats of gloss and flat finish clogged the predrilled pilot holes, so they had to be bored out again, and the small wire pad eyes were super-glued and carefully inserted to their proper height around the hatches.

Lengths of hand railings, made from .010" wire, were test fitted and super-glued into their pilot holes in the sides of the sail. The .080" wire grabhandles, from the sailplanes down to the deck, were glued to the starboard side of the sail, **8**. I did not glue the .010" wire bow and stern jackstaffs, but simply inserted them snugly into place.

After I cleaned up and corrected the kit's cast white-metal masts, I made a few additional masts from plastic stock, painted them red, and super-glued them into place. A few small aerials atop the sail were made from brass wire, as was a sheathed whip antenna. The kit's five-bladed propeller was cleaned up, sanded, and painted glossy bronze, then installed.

The side navigation lights, located over the hand rail toward the front of the sail, are easily simulated by applying dabs of paint, then brushing a rectangle of clear gloss over them. The deadlights (windows) at the upper front face of the sail are similarly fashioned by filling in the scribed rectangles with brush-on clear gloss.

**Display.** At the start of the project, I made a dust cover from <sup>1</sup>/<sub>8</sub>" Plexiglas, cut a wood base to fit, and drilled and countersunk holes for the mounting screws. I attached wood keel blocks and gave the base a coat of walnut stain, **9**.

Finally I could place the completed model on its stand and contemplate that from a simple, spartan, poorly-cast kit, a scale model replica of the JMSDF *Uzushio* SS 566 was rendered worthy of proud display. **rsm** 

#### Uzushio-class submarines

The seven *Uzushio*-class submarines were the first teardrop-hull submarines produced by Japan. These boats had double hulls and bow sonar arrays. NS-63 high-tensile steel was used in the hull shell to permit greater diving depth (200 meters) than previous submarines.

The class was equipped with a separate emergency blowing system that enabled the submarine to surface rapidly. The three-dimensional automatic steering system combined automatic depth maintenance with automatic direction maintenance.

SS 566 was launched in 1970 and was completed in January 1971. Crew complement was 80, including 10 officers. The sub was powered by twin Kawasaki V8V24/30ATL diesels and two Fuji 7,200 hp DC electric motors. Top speed was 12 knots surfaced, 20 knots submerged. The 71.1-meter-long *Uzushio* displaced 1,850 tons surfaced. Armament comprised six 533mm torpedo tubes amidships, with Type 89 active/passing homing torpedoes.

SS 566 remained in service until March 1987. The later *Yushio*-class submarines, built during the 1980s, superseded the *Uzushio* class, offering deeper diving capability and improved electronics.

For the sake of comparison, the last diesel-electric subs built by the United States were the late-1950s *Barbel* class, which had a crew complement of 77, were 66.7 meters long, and displaced 2,146 tons surfaced. —Jim Haught



The completed Uzushio was mounted on a walnut-stained wood base with keel blocks. A Plexiglas dust cover completes the display.

# USS Gaio

Ken Hart detailed, upgraded, and back-dated Revell's 1/178 scale USS *Lionfish* kit to model the USS *Gato* as it slid off the builder's ways in 1941.

#### Modeling Revell's 1/178 scale fleet submarine.

#### By Ken Hart

212

was commissioned some time ago to build a diorama depicting three U.S. fleet submarines tied to a pier, so I included one boat configured as an early *Gato* design. This design was the first of a submarine class developed during World War II.

Researching the early *Gato*-class design for the pierside diorama inspired me to build the namesake of the class, USS *Gato* (SS-212), in her original configuration. ( Ken's sub diorama appeared in FSM's *Modeling the Second World War*, pp. 46-52 (1995). Photocopies are available through Kalmbach's customer service department, 800-533-6644.)

#### The model

I started with that good old 1/178 scale Revell USS *Lionfish* (SS-298) (kit No. 5228), issued previously as the *Flasher* (SS-249) and the *Growler* (SS-215). This offering has held up over time as a good foundation for conversion projects. I've built plenty of them over the years, both as stand-alone models and in dioramas. The hull halves are the most accurate and usable parts in the box. The fairwater (the structure sitting on the boat's main deck, often called the conning tower) is way off the mark, so for any conversion, a replacement should be scratchbuilt. I discarded the guns and masts, deciding to fabricate replacement parts and new details as needed. After all, that's half the fun of model building.

#### The fairwater

First, I drew a paper template for the base of the fairwater and made corrections by test-fitting it to the deck. Then, I employed

#### 1/178 Scale |Ship | How-to



#### Fleet submarines in service

The *Gato* class, packed with cutting-edge technologies of its day, went into production on a major scale after Pearl Harbor.

The keel for USS *Gato* (SS-212) was laid down at the Electric Boat shipyard in Groton, Conn. It was launched on Aug. 21, 1941, and commissioned on Dec. 31. Most of the U.S. fleet submarines that gained fame during WWII were *Gato*-class boats. Many of them were upgraded and served well into the Cold War years.

Although the boats of a given class may have begun their careers as identical mates, by the war's end no two boats looked alike. Shipyard overhaul improvements and field modifications made each unique. by Ken Hart



Ken laid out a paper pattern for the fairwater on .030" styrene sheet. The bridge and gun decks were made the same way.



The completed fairwater's frame construction is ready to receive the gun deck, bridge deck, and overheads.



Ken split a length of plastic tubing to fabricate the bridge coaming and installed it between the front overhead and the bridge framing.



This is the outer skin pattern laid out and transfered to .010" styrene sheet.



The finished fairwater shows the stiffeners against the inboard surface of the skin.



The parts for the periscope masts and the skin that will surround them are finished.



The periscope-shears framing and mast wells are ready to recieve their outer skins.



Ken wrapped the .010" outer skin around the scope-shears assembly and adjusted it to fit.



Many of Ken's fabricated details including the range light, ship's horns, the port grab rail were installed on the fairwater.

The fairwater also received port and starboard blinker lights, navigation lights, and side vents, along with a search light and a loop antenna.



the ol' "looks about right" method rather than complicating the process with mathematical tolerances. The corrected paper template was transferred to .030" styrene sheet, and the fairwater's base was cut out, trimmed, and sanded, **1**. The gun deck, bridge deck, and overheads were fabricated the same way.

I used a lot of I-beam stock and C-channel stock in various sizes from <sup>1</sup>/<sub>16</sub>" and larger to fabricate the fairwater's skeleton.

I calculated the fairwater's height and cut strips of  $\frac{1}{6}$ " I-beam stock to build the framework. These frames were arranged around the styrene-sheet base according to a shipyard drawing that I had seen.

I cut pieces of .030" styrene sheet for the bridge deck and gun deck, then cut notches into the decks to accommodate the taller frames and fixed them atop the short support frames. The taller frames were installed, and the secondary internal framework of .020" x .020" square strips was cut to length and added to support the structure's outer skin, 2.

Then, I built the slightly raised, contoured bridge coaming located above the front of the fairwater. A length of  $\frac{3}{6}$ " plastic tube stock was split in half and trimmed to fit between the .030" front overhead piece and the bridge coaming front frame, **3**.

Next, I calculated the fairwater's skin area, drew it on paper, cut out the pattern, and wrapped it around the framework. It was test-fitted until it looked about right. Once I was satisfied, the paper template was transferred to a sheet of .010" styrene sheet and cut out, **4**. The forward view ports and the side doors were also located, marked, and cut out.

I used a blow dryer to heat the skin and soften it up before gluing it to the framework. A drop or two of super glue applied to the frames located at the forward end of the part held the carefully aligned plastic skin firm. When I was sure it fit, I applied super glue to all the frames, wrapped the outer skin around them, clamped it, and then ran a bead of the adhesive to fill the seam along the structure's trailing edge.

Old photos show that inside the open gun deck (also called the cigarette deck), upright stiffening frames were placed along the skin. I fashioned these frames out of  $.020" \times .020"$  square stock and installed them at deck level, **5**.

#### Periscope support shear

I scratchbuilt the streamlined support-shear housing for the periscopes using the same methods described in the fairwater's construction. The mast-well sleeves were made from <sup>1</sup>/<sub>8</sub>" plastic tube stock, and I used <sup>1</sup>/<sub>16</sub>" solid rod stock for the attack periscope, search periscope, and radio antenna mast. I was able to secure the rod stock in my motor tool, and use it as a lathe to turn the stock as I tapered these parts with sanding sticks and jeweler's files, **6**. The scope-shear framework and mast-well sleeves were attached to the base, **7**. Then I laid out the skin around the support-shear framework, glued it up, and sanded the trailing edge flush, **8**.

#### Down to the detailing

All of the details needed to complete the fairwater structure, including the .50-caliber water-cooled machine gun and its raised platform, the ship's bell, horns, braces, and lights, were fashioned from styrene tube, sheet, rod, and strip, **9**, **10**, **11**. I used .010" brass wire to form the railings. They were assembled with super glue then inserted into pre-drilled pilot holes on each side of the fairwater. The loop antenna and its supports, and the side-antenna-rigging support braces were fabricated and installed the same way.

#### The hull

I assembled the hull halves with a generous coat of Testor plastic cement and sanded the seam smooth. Then I applied 3M Acryl Blue auto-body putty to the remaining gaps and wet-sanded them until they disappeared. Once the hull was dry, I improved some of its details and corrected some shortcomings.

One of this kit's obvious flaws is the incorrect shape of the torpedo-tube outer shutters. On the actual ships, these shutters were flush-fit to streamline the hull. I scribed guide lines using a template and cut out rectangles for each shutter on both sides of the hull. Strips of  $.020" \times .020"$  square stock braces were inserted into the opened rectangles, and strips of .010" styrene sheet were fitted tight and flush against the hull.

Next, I used a No.74 twist drill to make pilot holes for each of the many upside down D-shaped limber holes along each side of the hull. With a sharp No. 11 blade, I cut out the holes and shaped them with jeweler's files, a monotonous task, but not difficult. The flood ports, exhaust ports, free-flood holes, and foot holds were done the same way, **12**.

#### **Topside detailing**

I cut off the hull's molded cleats, drilled pilot holes, and installed 1/192 scale H-R Products (www.hrprod.com) cast white-metal submarine cleats. The kit-supplied anchor was replaced with an H-R Products destroyer anchor that fit very nicely into the anchor well. These two additions alone greatly enhanced the model's appearance.

On deck, I opened the escape hatches and companionway (a rectangular access through the deck). Hatch tunnels, braces, and anything normally visible through these openings were installed on the underside of each deck half before it was glued to the hull.

I measured, marked out, and drilled pilot holes with a No. 76 twist drill for the deck-railing stanchions. These parts were cut from .010" steel piano wire, and attached with super glue. Then I used a No. 60 bit to drill into the forward deck to locate the antenna support post. Heavy brass wire served as the vertical mast, with a length of .010" steel wire super glued horizontally across the top to represent the separating arms, **13**. Next, I moved aft to rework some of the stern details.

The propeller guards were way too thick, so I cut off the lower braces and thinned the guards down to a satisfactory dimension with 400-grit sandpaper. New braces were cut from styrene strip, attached to the guards, and mounted to the hull. Once installed, I used thin beads of white glue to form fillets around the joints where the guards meet the hull.

The kit propellers are not even close to correct, so I used my motor tool to recontour the blades. Both kit propellers were identical, but on a full-size boat they turn in opposite directions, so I repositioned the blades on one propeller hub in the correct pitch configuration, **14**.

#### Main armament

Early *Gato*-class boats were equipped with a 3"/.50-caliber deck guns, and the kit-supplied part is the wrong gun for this conversion. So, I scratchbuilt a new deck gun using everything from styrene sheet and rod, thin brass wire, and numerous odds and ends from my spare-parts box, **15**. I fabricated more than 50 parts for this gem, which measures less than 1" long. The gun mount and barrel, seats and supports, foot pads and hand-crank wheels, and sighting tubes, – they're all there, **16**.

#### **Big and black**

First, I attached the forward dive planes, stern planes, rudder, propeller shafts, and their supports to the hull. Then I carefully



Ken added new lookout-platform rails and a scratchbuilt .50-cal. machine gun. The port and starboard antenna-rigging-support braces, and the ship's bell are also in place.



The new torpedo-tube shutters made from styrene sheet are supported by .020" square frames. The free-flood holes above the top tube have been drilled out.



The cast-metal anchor is in its well, the escape hatch and companionway are open, and the piano wire stanchions are installed.



Ken corrected the counter-rotating propellers and their guards, then mounted them to the hull.





The 3"/.50 caliber deck gun under construction. More than 50 parts make up the assembly.

Seats, foot pedals, sights, frame, and other details were fabricated for the gun, which is less than an inch long.



Ken painted the fairwater and mounted it to the hull. The navigation and running lights were hand painted.



The brass forward antenna support post and its stretchedsprue tension cables.

brush painted acrylic flat black into recesses that an airbrush might not reach. Next, I stuffed dampened tissue paper into open hatchways and in the companionway to prevent overspray.

The fairwater assembly was spray painted black. When it was dry, I sprayed a couple of thin coats of clear gloss onto it to prepare the surface for water-soluble decals. Once the decals were applied and dry, another coat of clear gloss helped blend the decal film to the finish. Later the entire assembly received a few coats of clear flat to balance out the finish.

I painted the inside of the searchlight silver and applied Micro Krystal Klear to simulate the lens. This material also filled in the forward view ports, each periscope lens, and each of the running lights and navigation lights. The periscopes, radio-antenna mast, running lights, and ship's bell were brushed painted, and a 1/700 scale American flag was attached to the jackstaff, **17**.

I painted the hull using the same steps that were used on the fairwater. Afterward, some clear flat coats evened out the finish. I removed the tissue paper from the openings and attached the pre-painted hatch assemblies.

I painted the deck gun and propellers, then attached them along with the fairwater assembly to the hull. An hour or two spent stretching sprue yielded plenty of long, hair-thin "wires" for the antenna rigging and deck railings. These were all easily attached with super glue, **18**. My fleet boat was ready for one final operation.

#### Display

I secured the completed model to a wood base with ½" dowels epoxied into two holes previously drilled into the keel. These dowels allow the model to sit upright on evenly spaced ½" x ½" x 2" balsa keel blocks. A Plexiglas dust cover protects the display.

My USS *Gato* brings out the best in Revell's classic kit and reveals the graceful lines of American early-war submarines. It's a tribute to steel boats and the iron men who served them. **FSM** 

Ken, 48, is a journeyman electrician in Syracuse, N.Y. When he's not wrangling wire, he's outdoors with an antique Winchester rifle from his collection, drumming to "beatnik jazz," or modeling a submarine. His interest in subs began in 1966 with a visit to the New London Naval Submarine Base in Connecticut.

212



"I was fascinated with submarines from then on," he says. Ken is a long-standing member of The SubCommittee, an organization made up of submarine modelers, historians, and enthusiasts ( www. SubCommittee.com).

Ken's finished USS *Gato* rests atop keel blocks on a finished wood base.

# Doin' the wave

Make a splash with this easy, inexpensive watermaking technique

By Patrick Roach

our latest sea-faring creation is finished, and even though it's a beaut, something seems to be missing – but what? Wait a minute ... There's no water! A ship model out of water just doesn't look right. Modelers employ many methods to simulate water, but my favorite uses readily available materials such as aluminum foil. The foil lets you create a convincingly random texture, and the process is remarkably easy.

Like many modeling techniques, the

ed, more you do it, the better you will get at it. This process is also forgiving about mistakes: If something doesn't come out right, just remove it and try again. The supplies are inexpensive and will last for many projects, bringing the average cost per project down to just pennies. I'll demonstrate the process by creating a base for a model of the World War II Royal Navy destroyer HMS Vendetta built from a 1/350 scale Armada Models resin kit. Now, let's make some waves. **FSM** 

Patrick used his foil-based water-making technique to surround his 1/350 scale Armada Warships HMS Vendetta with a realistic, rippling sea.

#### **Base matters**



Raid the kitchen for aluminum foil and get a flat paint brush. For this project, I also used an inexpensive multi-purpose product called Mod Podge Gloss Lustre (www.plaidonline.com, 800-842-4197), commonly used in découpage. It's a water-based sealer, glue, and finisher – just the ticket for several aspects of foil wave-making.



You'll need to mount your foil water to a plastic or wood base. I prefer wood because it's easy to shape and resize. Pre-made wood bases can be found any craft store; they're a great alternative if you don't have access to wood-working equipment. Apply stain (if desired), then a clear topcoat to seal the wood before attaching the foil. I sealed this base with Mod Podge.

#### The perfect foil





Cut a piece of foil to fit your base. The foil can cover the entire surface, or you can cut it to a "water-spot" shape, as I did here. Gently ruffle the foil to simulate waves and swells. Don't crumple it too much: Less is definitely better in this case.

Set the foil on the base and position the model on the foil. After some test positioning, wave adjusting, and spot re-ruffling, trim the foil where necessary. Flatten out the edges before you trim to get a clean cut.



Tack the foil to a piece of scrap cardboard with bits of masking tape. Any paint that will adhere to the foil will work for the basecoat. Here I used ordinary spray-can paint from the hardware store. To vary the color and add depth, apply three complementary colors – for example, dark blue, grayish blue, and aquamarine. Spray the colors from different angles to highlight the wave tops and create a shadow effect. Add light topcoats to blend these features.



Gently remove the painted foil from the cardboard and apply Mod Podge to the unpainted side (white glue will also work) to attach the foil to the base. Use a lot of the glue and push the outer edges flat against the base.



You may have some high spots (swells) in the middle that do not touch the base. That's OK, as long as enough of the foil contacts the base to anchor it firmly. Wipe up excess glue that oozes from the edges with a damp cloth and let dry.

#### Anchor the ship



Use a large, soft brush to apply a heavy coat of Mod Podge to the area on the foil where the model will go and position your subject in the glue.



If the model doesn't sit exactly flat, carefully fill the voids with Mod Podge and let dry. It'll take two to four hours for Mod Podge to set up. Drying times vary depending on application thickness and humidity.

#### Waking time



Unless you want to depict a ship at rest in a calm sea, you'll need to create a wake to convey a sense of motion. I do this with heavy clear acrylic gel medium and acrylic paint, both of which can be purchased inexpensively at art supply stores.



To add some color to the gel, mix it with a teaspoon of white acrylic paint. Pure white water looks artificial, so tone it down with a bit of gray paint to compensate for scale.

The type and speed of a vessel determines the size and shape of its wake. Study reference photographs to find the correct wake pattern, and refer to them frequently while you work. A build-up of gel angled away from the bow will suffice for a "slow mover." On a fast mover like my destroyer, you'll need a cascading bow wake. You can simply apply many layers of gel, but that's time-consuming and the results are often less than convincing. There's an easier way!



After these have set up, start applying your gel-medium mixture over the paper form, making sure you completely cover it. Blend the trailing portion of the swell behind the form. Check your references often to make sure you're shaping the wake realistically.



Apply a heavy coat of Mod Podge over the rest of the foil to soften the waves and add depth. Don't worry! Mod Podge goes on white, but dries clear and shiny.



The trick is to apply the gel over a form made from heavy paper or light card stock such as a business card. Sketch the profile of the swell on one side of the card, playing with the sketch until you have the exact profile you want the wake to have.

Fold the card in half, so you can cut both sides at once and have identical shapes. Soak the cut-out form in water, and while it's wet, curl it around a paint brush handle, pencil, or dowel to achieve a smooth, uniform curve. Bend the halves in opposite directions to make mirror images, and let the form dry.



Once dry, the form will hold its shape while you apply your gel. Attach the halves to each side of the bow with white glue or Mod Podge.



Scoop up a brush full of the mixture and apply it at the stern in a churning pattern. Build up the height with additional applications.



Do the same for waves along the side of the ship, angling them properly for the speed you want to portray (keep checking those references). Once the wakes are dry, apply another coat of Mod Podge to seal them.

#### Sea foam scene



To simulate foam, make a translucent mixture of approximately 80 percent distilled water and 20 percent white acrylic paint. White toothpaste also works well. Distilled water is better than tap water because it won't leave water spots when it dries. Apply this mixture around the ship's wake and...



...to the tops of the taller waves. When you have the foam looking the way you want it, let it dry thoroughly.



To seal the foam and blend the surface of the water, apply a heavy final coat of Mod Podge. Glob it on and push it around with a big, damp brush, being careful not to work it around too much. Keep some distilled water and cotton swabs close by. If some Mod Podge gets in a spot where you don't want it, just wipe it off before it dries with a swab dipped in the water. When this topcoat dries, you're done.

Patrick Roach is a senior design engineer by profession and an avid history buff and modeler.

He lives in Groveland, Ill., with his wife Sally and children Jackson, Olivia, and Schaefer.



Plowing through the waves with a spectacular wake fanning out behind it, Patrick's *Vendetta* is in its natural element – like a fish in water.



## Building a RESIN SUB CHASER

#### Enter the world of resin kits on a plastic kit budget! By Phil Kirchmeier

igh prices and the need for expertlevel skills have kept you from building a resin ship model, eh? Fear not! Try an "entry-level" resin ship like Iron Shipwright's 1/350 scale PC-461-class patrol craft (also known as a "sub chaser"). It takes about the same skills, tools, and knowledge as a plastic ship model.

**Chasing subs with resin.** Iron Shipwright's PC-461 is a highly detailed kit with a one-piece resin hull. Many of the small details are resin, too, but items such as railings, ladders, and 20mm gun shields are provided in photoetched brass, **1**. The instructions give a brief history, specs, and basic assembly instructions. If you study the parts and the drawings, you can figure it out. Overall, the kit is simple without being boring – a great starter kit.

It's a good idea to wash resin parts before assembly. Mold-release agents and sometimes oils from the resin coat the surface of the parts and make it difficult for glues and paints to adhere. I washed all the parts with soap and water and allowed them to air-dry. All the assemblies were accomplished with super glue.

**Tiny bubbles.** The casting process can trap air bubbles in the resin, so I examined the parts carefully and found a few. I filled them first with "micro balloons" – fine, sand-like plastic spheres – then coated over them with thin super glue. This worked as quickly as super glue alone, but produced a softer filler that was easier to sand.

My kit had bubbles in some of the superstructure detail. Rather than try to fill and fix the detail, I carved away the affected items and replaced them with parts from Gold Medal Models' photoetched doors and hatches set, **2**.

The hull casting was missing the prominent anchor hawespipes on the bow. I fashioned them from .030" styrene rod, **3**. The heat from my fingers softened the plastic enough so that I could bend it around a toothpick to create the teardrop

#### 1/350 Scale

shape. I closed the loop with super glue. With sandpaper on a flat surface, I sanded one side of each hawespipe so it would lay flat against the hull.

Several photos of sub chasers show an armored belt along the length of the hull. The kit didn't have it, but it was easy to add. I made it from .005" sheet styrene cut into strips  $\frac{5}{32}$ " wide and  $\frac{51}{2}$ " long. I cut notches in each strip to go around the hawespipe. I applied super glue around the edges of each strip with a piece of wire, adding a rough, "welded" appearance to the seams.

I used .008" brass rod for the propeller shafts. I had to drill out the shaft struts so the rods could be inserted. Drilling resin has to be done slowly and with even pressure to avoid shattering the brittle material. The prop shafts and struts were super glued to the hull for a strong assembly, **4**. I cleaned off a lot of molding flash from the screws (propellers), and then squared the rudders to match the drawings.

**Superstructure.** I like to use a "Hold and Fold" tool when working with photoetched parts. It's a clamping device that grips part of a piece while you bend the rest of it to shape. You could also use two single-edge razor blades, with one holding the part down while the other serves as an adjustable wedge for folding.

I added the photoetched steps leading from the main deck up to the bridge wing. The resin 20mm deck platforms that came with the kit were too heavy, so I made new ones from .010" sheet styrene with .010" x .020" strip stock for the deck beams, **5**. The photoetched supports for the platforms looked too flat, so I replaced them with .015" styrene rod. I also added a support under the forward edge of the bridge wing as seen in references, **6**.

Photos and the kit drawings show a visor over the bridge portholes, but there's no part for it. I decided I could make one. Referring to photos, I first drew a  $^{13}/_{22}$ " circle using an artist's circle template, then intersected it with a 55-degree ellipse using another template, **7**. When finished with my paper visor, I traced its shape onto .005" sheet styrene and cut out the final visor with a knife. The resulting shape fit perfectly on the kit, **8**.

Another item missing from the kit was the canvas windbreak around the life rail on the "flying bridge" (the open-air deck above the bridge). I added this using gold Bare-Metal Foil, **9**.



Here's the Iron Shipwright sub chaser kit (originally an Accurate Image Models kit) spread out and ready to build. Many of the resin details are on "pour stubs" that must be removed. Construction photos by Phil Kirchmeier



Phil replaced some of the superstructure detail with photoetched brass parts and styrene rod stock.



The hawespipes around the anchors were fashioned from styrene rod, and the armored belts were made from styrene strips.



Phil cut brass rod for the propeller shafts.



The kit's bridge-wing platforms (right) were too thick, so Phil replaced them with new ones made from sheet styrene.



The supports for the bridge wings were made from styrene rod.



Here's a template for the bridge visor.



Phil made the prominent bridge visor from thin sheet styrene.



Self-adhesive foil is just right for simulating the windbreak for the flying deck.

**Guns.** The kit's 20mm guns were crude, so I replaced them with L'Arsenal's resin and photoetched guns. I left off the delicate photoetched gun barrels and shields until after painting.

The kit's other guns, an open 3" turret forward and a single-barrel 40mm gun aft, were well-cast, but needed cleanup. I figured the barrels wouldn't survive cleanup, so I removed them and replaced them with .020" styrene rods, **10**.

**A new mast.** So far, we've cleaned up parts and replaced some details. Let's roll up our sleeves and do a bit of scratchbuilding for the ship's mast.

I started with a 2"-long piece of .060" brass rod. The finished size will be  $1^{3}/_{16}$ " –

the extra length is needed so that the rod can be chucked in a motor tool. The tool was used as a lathe; I spun the rod at moderate rpms and tapered it with files and sandpaper, holding the free end against a block of wood to keep it steady. I trimmed it to length, leaving a little extra for mounting in the model.

I made the yardarm from  $\frac{1}{32}$ " square brass rod cut to  $\frac{11}{16}$ ". I tapered each side of the yard, then soldered the yard to the mast. It was positioned perpendicular  $\frac{1}{16}$ " from the top of the mast. This produced a strong mast that wouldn't distort when I added rigging, **11**.

The jack staff was made from .030" brass rod,  $\frac{5}{16}$ " long. Since it would not be



The gun barrels were replaced with thin styrene rod.

put under stress, I attached it with super glue. I added the kit's resin "crow's nest" (lookout tub), and below it, three spacer blocks to hold the photoetched ladder realistically away from the mast.

Next were two small platforms on the yardarm, used by crewmembers when working aloft. I cut two  $\frac{1}{16}$  squares from .005" sheet styrene. I rounded  $\frac{1}{8}$ "-long bits of .030" styrene rod for the small lights on the mast.

**Painting.** After all the major subassemblies were complete, it was time to paint. I swabbed everything with Polly Scale's Plastic Prep to remove dust and fingerprints and reduce static electricity, then let the model air-dry. A light wipe



Phil made a new mast from brass stock tapered in a motor-tool lathe. He used the kit's resin "crow's nest" and added more brass and plastic details.

with a painter's tack cloth removed remaining dust.

It's a good idea to prime models made of different materials to provide uniform painting results. Primer will help you spot surface imperfections, too. I used Floquil's figure primer (spray can); it dries quickly and settles into a smooth matte finish.

I painted my sub chaser in the Measure 22 graded system. The regulation for it reads: "All vertical surfaces from the waterline to the lowest point on the main deck painted 5-N Navy Blue, all other vertical surfaces painted 5-H Haze Gray. Decks painted 20-B Deck Blue." With the hull's red-and-black boot topping, this would make a fairly colorful display.

I used Polly Scale's U.S. Navy colors straight from the bottle. They're close to the color chips in Snyder & Short's U.S. Navy World War II Ship Colors. I used lowtack transparent magic tape for masking the color demarcation line.

No decals are included, but Blue Water Navy makes a 1/350 scale decal sheet with the correct-style Navy numbers, flags, and aircraft roundels.

I didn't model a specific ship, but all of this class wore a hull number, either as the number only or prefixed with "PC." I based my number choice on one of the ships in my reference photos.

The last details. With painting and decaling completed, all that was left was to add the small details. I worked from the smallest to the biggest and from the center of the ship outward. The antenna



Thin-gauge brass wire is ideal for the 40mm gun deflector. The depth-charge racks are photoetched pieces from the kit.

trunk, located behind the mast, was made from .060" styrene rod cut to  ${}^{3}/{}_{16}$ ". I used fine brass wire for the gun deflector for the 40mm, **12**. The kit's photoetched depth-charge racks were attached and charges added from .060" styrene rod.

Fine model-railroad chain was used for the anchor chains and brass wire for the small jack staffs fore and aft. The flags were fashioned from foil for more realistic "furling."

The mast was installed with a rake of 92 degrees, which I aligned using an adjustable protractor. I used various gauges of monofilament fishing line for the rigging.

The last items were the railings around the main deck. After pre-painting and cutting them to size, I attached each railing with a tiny spot of super glue at one end. Then, using a piece of wire for an applicator, I ran a continuous bead of super glue between the railing and deck as I moved around the edges of the model. I weathered with a coat of Polly Scale clear flat and pastel chalk dust applied wet and dry.

I display the model in a pre-built plastic "model car" case, but I added <sup>3</sup>/16" square basswood strips to simulate a drydock pose.

So, resin ships aren't as difficult as you thought, right? The little ones like this pose about the same amount of work as a plastic kit, and you'll develop modeling "smarts" to use on bigger kits when they come your way. **FSM**  Phil Kirchmeier is an artist and web designer/developer who lives in Milwaukee, Wis. He has written several articles for FSM and once served as designer and illustrator for Kalmbach Publishing. He likes to model ships and armor, but has been known to build an aircraft or two.

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Sheet, strip, and rod plastic Evergreen Scale Models, 877-376-9099 Brass rod stock K&S Engineering, 773-

586-8503, www.ksmetals.com Hold and Fold tool The Small Shop, fax:

360-673-1255, www.thesmallshop.com **Gold foil** Bare-Metal Foil Co. 248-477-0813, www.bare-metal.com

**Decals** Blue Water Navy, available from Yankee Modelworks, 508-996-1760, www.yankeemodelworks.com

# Sailing the American Dream

By Phillip Gore

Brighten your model collection with a colorful ketch

Phillip's 1/36 scale Otaki American Dream awaits the next port call.

y model collection was missing something, it needed some pizzazz. I was looking beyond the drab military schemes that surrounded me. But I discovered Otaki's 1/36 scale yacht *Long Beach*, and I could see an elegant, colorful yacht sitting on my shelf. *Long Beach* is an ocean-going sailing ketch with an auxiliary diesel engine. I decided to recommission it *American Dream* and dress it in a bold patriotic scheme that would splash some color into my collection.

#### **Parts prep**

This kit showed its age through the quality of its moldings. All of the parts were plagued with injection-mold lines. I scraped the extra plastic from them with a No. 11 blade and followed up with successively finer grades of sandpaper to even out their surfaces.

Many of the affected parts were finished in vacuum-metallized chrome, giving the model a toylike appearance. I removed the chrome finish by spraying the parts with oven cleaner. The sprues soaked in the bubbly solution for a few seconds, and with my hands and eyes protected from the caustic material, I rinsed the parts in warm tap water while scrubbing away the residue with a toothbrush.

#### Hull and deck

The kit instructions were written in Japanese, so I picked up the latest issue of *Cruising World* magazine for some idea of how these boats looked. My color scheme was decided, so I needed only general examples of these kinds of boats to help me finish the project.

First I painted the hull. I sprayed the lower hull with Testor flat sea blue (No. 1172). Next I masked from waterline to keel and airbrushed the upper hull (freeboard) with Testor Model Master flat white (No. 2142), **1**. By carefully applying the tape, burnishing it to prevent any lift, and pointing my airbrush away from the tape, I produced a sharp demarcation line between the two colors, **2**.

The four-piece stand became the boat's cradle. To add support, I bonded it to a stained-wood plaque. Small strips of masking tape on the chocks (contact points where the hull rests on the stand) protected the model's finish during assembly. Now my ketch rested on a sturdy cradle during its construction.

All of the clear cabin lights (windows) were too thick. To improve its look, I



Masking tape protects the lower hull from overspray.



The details were painted before the deck was sprayed.



Styrene strips hide gaps between the hull and deck.

tinted the back of each light by airbrushing it with Future floor polish mixed with blue paint. I installed the cabin lights located inside the hull before attaching the deck.

Many of the details were molded into the deck, so I painted it in several steps, **3**. The details were painted white, masked, and the surrounding deck surface was painted Humbrol tan (No. 63). I drybrushed the deck fittings to bring out their surface details with an initial pass of



Careful masking and painting produced a sharp color demarcation at the hull's waterline.



Phillip toned down the weathered effects on deck with a cotton swab.



The red pedestal focuses the viewer's eye toward the compass and wheel.

Model Master dark ghost gray followed by an application of Model Master light ghost gray.

Then I spread some pastel dust onto the deck fittings to further enhance their appearance, **4**. I ground up some medium-gray pastel chalk on a piece of sandpaper and applied the dust around the deck details with a paintbrush. A dry cotton swab spread out the dust to soften its effect. I applied the dust a little at a time, checking each application so as to not



The alignment of the masts and booms looks good.



2

This sail awaits its stars, ...





The insignia's edges were trimmed closely to blend with the sail's blue field.

overdo the process. It's easier to add more chalk than to take away too much.

The fit between the hull and deck was less than ideal, so I camouflaged this flaw by placing .010" thick styrene strips over the hull/deck joint. The strips were thin enough to be tacked down along the curve of the deck, giving it a finished look, **5**.

I painted the cabin white and added the remaining cabin lights to its interior. Tinting these cabin lights helped hide the lack of detail inside the cabin. I bonded the cabin to the deck and painted some of the cockpit details and the dodger with Testor flat red (No. 1150), then added them to the model, **6**. The cleats, railings, grab rails, winches, stanchions, and vents added to the cabin top and deck looked great in their new aluminum-painted finish.

#### Stepping the masts

The mainmast is the taller of two masts

on a boat and the mizzen mast is the small aft mast on a ketch or yawl. *American Dream*'s mainmast comprised four pieces that, when assembled, measured 23 ¼" overall. I inserted a ½" diameter brass tube inside the assembly to stiffen it against distortion. The mast could be twisted by too much line tension from rigging the model or attaching (bending on) its sails.

I mixed some five-minute epoxy to secure the main and mizzen masts into their steps in the cabin top. This allowed me to adjust their alignment before the glue hardened, **7**.

A boom is the spar to which the sail's bottom edge is attached. I secured the main and mizzen booms to their masts along with the fragile mast spreaders (support beams extending out from the masts) and the radar pod.

#### **Patriotic sails**

I prepared the kit-supplied vacuumformed sails by trimming off their excess material and drilling out their rigging holes. To pattern them after an American flag, I sprayed the sails with the same colors that I used on the hull. After I painted each sail white, its lower section was masked, and I sprayed its top part blue. Then I added the red stripes, **8**, **9**.

The stars from U.S. Air Force insignias were taken from my spare-decal box and applied to the sails to complete the scheme. I trimmed most of the blue field around each marking so it wouldn't contrast with the blue paint, **10**.

The headstay is a line of standing rigging running from the bow to the mast. I rigged the headstay from the mainmast to the foredeck so I could attach the jib (foresail) to it. The main and mizzen sails were bent on to their masts and booms before I rigged the rest of the lines.

#### Rigging

Sailing craft have running rigging and standing rigging. The running rigging is made up of halyards that raise and lower the sails, sheet lines (called sheets) to control the sails, and other lines to adjust them. Some standing rigging runs foreand-aft to support the masts. These lines are called stays. Other standing rigging lines called shrouds, support the masts from either side of the deck.

Rigging thread should be coated with a wax-based product to defuzz it and protect it from moisture, which over time will cause the thread to sag. I rubbed lip balm over the thread and wiped the excess away with a paper towel.

I rigged American Dream from the

center line out to the lifelines to keep my hands away from as much of the rigging as possible. Once the sails were attached to the masts and booms, I led halyards from the heads of the sails, up through fittings at their mastheads, and secured them to points at deck level. Next, the jib, main, and mizzen sheets were installed and tied off. For a nautical effect, I coiled the loose ends of several lines into mats and glued them to the deck, **11**.

On each side of the boat, I attached one end of a turnbuckle to a chainplate along the length of the toe rail. Next, I ran a shroud from each turnbuckle's free end and tied it off to a point on either mast. Some shrouds were run through spreaders and secured at the mastheads, **12**.

#### **Final Details**

I added the aluminum-painted bow pulpit and stern rail, followed by the stanchions along the toe rail. I used large-diameter line for the lifelines, **13**. Finally, I painted the dinghy (rowboat) in its own patriotic livery, finished it with an American flag decal, and hung it from davits off the transom, **14**.

The finished model, at an overall length of 22" and height of 30 ½", really brightens up the room as the new centerpiece of my collection. **FSM** 

Phillip, 41, is a process-equipment cost estimator. He and his wife Diane have two children, 12-year-old James and 8-year-old Rachel. Away from his workbench,



Phillip enjoys involvement in church activities and playing the guitar. The Gores live in Trussville, Ala.

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Phillip coiled some lines on deck before most of the rigging was installed.



On deck, the port lifelines were threaded through their stanchions.



The spreaders guide shrouds to the masthead. The radar pod is in place on the mizzen mast.



The dinghy is decked out with the Stars and Stripes.



American Dream's uncluttered foredeck looks ship-shape.

#### The landlubber's guide to nautical terms

**bow pulpit** – the guardrail at the bow of some boats

**chainplates** – metal plates that connect standing rigging to the boat **cockpit** – the area where the steering and sail controls are located **davit** – a crane that projects over a boat's stern to hoist the dinghy **dodger** – a protective structure in front of the cockpit **grab rails** – rails located on the cabin

top and dodger for the crew to steady themselves **head** – top corner of a sail

**ketch** – a two-masted boat with the mizzen (after) mast located forward of

the rudder post **masthead** – top of a mast **stern rail** – elevated guard rail mounted at the stern of a boat **toe rail** – the short rail around the outer edges of the deck **transom** – the vertical surface of the stern