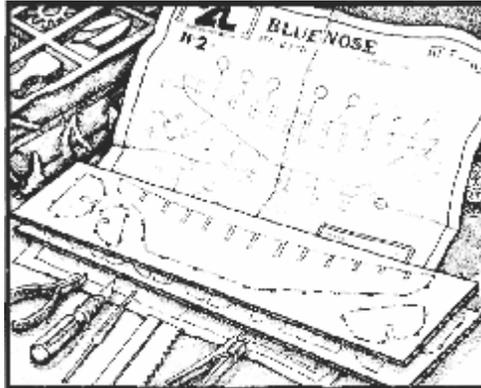


PART I



Setting Up Shop

SELECTING A KIT

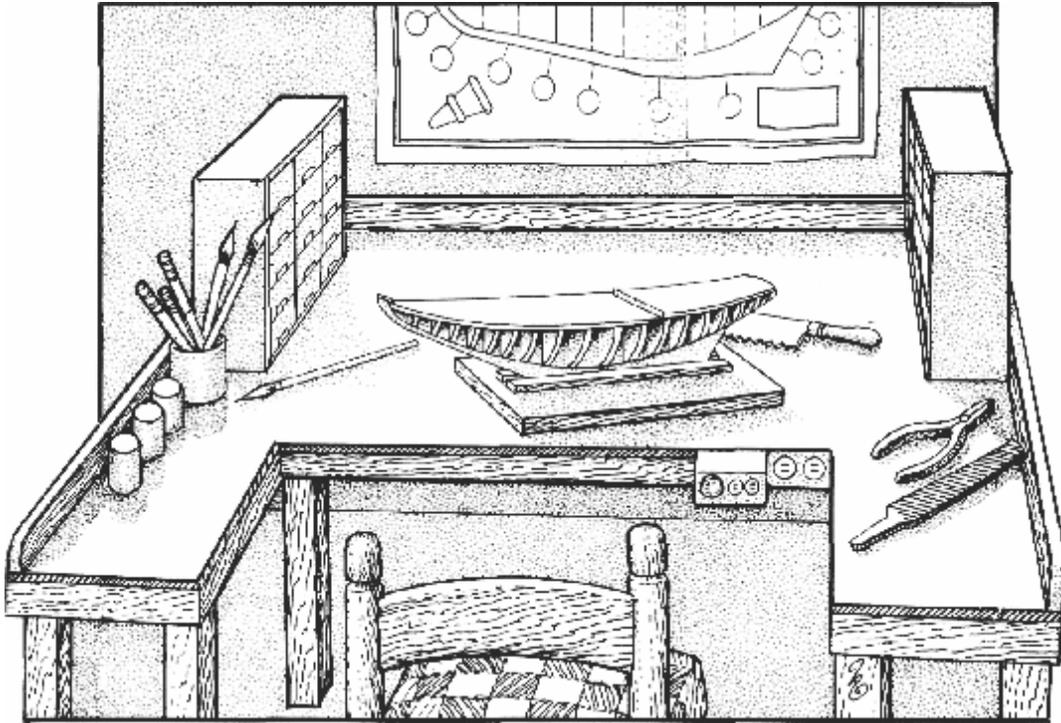
Take a look at the models on display at your local hobby shop. Manufacturers worldwide have produced a huge variety of kits, and that's a good sign. You'll have no shortage of new projects to take on as you gain experience. But where do you start?

An enthusiastic beginner looking for his first model is confronted with a fascinating, but very confusing, array of

choices. Although all kits provide certain basic materials, there are significant differences in type and quality. Here are some things to keep in mind when making a selection.

MAKING YOUR CHOICE

Choose a model that catches your eye, but heed the limits facing a first-timer.



Your decision will have a lot to do with the mood you are in and the pleasure you get from thinking about how the finished model will look. Realistically, though, as when choosing a new car, you should consider several factors before making the final decision. How much money do you want to spend? How much experience do you have? What kind of display space will be available for the finished model? What kind of ship attracts you? Are the kits that interest you

of good quality? How much time can you spend at the workbench?

Sound too involved? Well, it's not if you're sensible. Think "simple" for your first effort. Though you're looking for a challenge, you're not looking for intense frustration.

YOUR ABILITY

I have known many novices to buy kits of the magnitude of the *Sovereign of the*

Seas, San Felipe, or Amerigo Vespucci — ships with multiple decks, intricate ornamentation, and complicated rigging plans. They bought them, but they never finished them. What I saw instead was frustration, failure, and dejection — and, of course, the abandonment of what could have been a happy and successful pastime.

Choose a fairly small, simple, attractive but complete model, one that has a bit of everything found in ships. Look for a model with one deck, one or two masts and simple rigging. A good example would be a Baltimore Clipper from around the time of the War of 1812, or a fishing schooner such as *Bluenose II*. Such a vessel will introduce the first-timer to the art of building the hull (especially the plank-on-bulkhead type). You'll plank decks and build deck fixtures (gratings, pumps, binnacles, fife rails and pin rails, winches, capstans, ladders). If you choose a Baltimore Clipper you'll learn how to cut gunports and how to assemble and rig guns in place. You'll move on to building and rigging simple spars and masts. Such a model, in other words, will be sufficiently complex to teach you many basic skills, but not so much so that you never receive the satisfaction of successfully completing it.

Some good kits that are simple enough for beginners include *Lynx, Gladis, and Dallas* by Pan Art; *Bluenose II, Harvey, and Mare Nostrum* by Artesania Latina; *Flying Fish* by Corel; *America* by Mamoli; and *Dandy II* by Dikar.

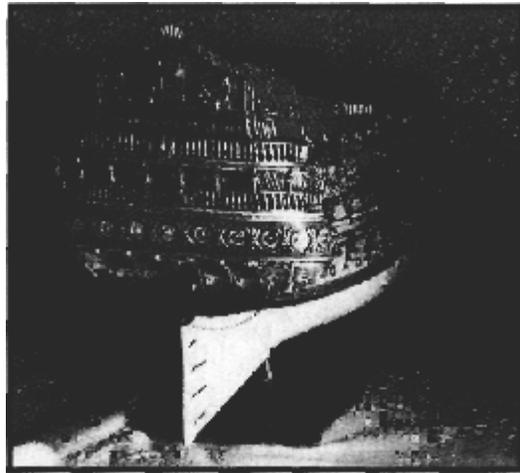


PHOTO 1. *A beginner's nightmare. The stern ornamentation, the sheer of the hull, and the multiple gun decks of the San Felipe spell disaster for a first-time builder.*

THE COST

It's always a good idea to shop around before actually purchasing a kit: There's a wide range of prices out there reflecting quality, size, and production costs. Prices vary from manufacturer to manufacturer for the same ship. For instance, four or five manufacturers offer kits of the *Constitution* at four or five different prices. Throw in the vast differences among hobby retailers and you can see the need for comparison shopping.

My advice for a modeler looking for his first project: Don't spend more than \$150.

When you get to the hobby shop, bring with you all these considerations

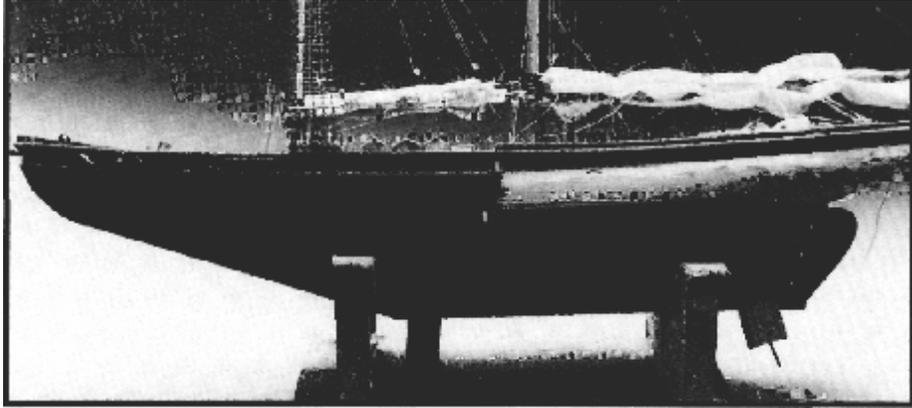


PHOTO 2. *The simple hull line and rigging plan of the schooner Bluenose II allow a beginner to learn and refine basic planking and rigging skills. The exposed section shows the first layer of planking.*

as well as your checkbook or charge card. Leave some of your enthusiasm at home where it will be waiting for you when you arrive with your purchase. A cool, knowledgeable shopper who knows what he wants is the most likely to get it.

SCALE

Kits come in a number of scales — a way of comparing the size of the model with the size of the real ship. Scale will become more important as you refine your modeling skills. For now it's not something to worry a great deal about. Stick

to the types of models I've recommended and go with whatever scale the manufacturer has decided to use.

Still, it's important to understand what scale is. Scale is expressed as a ratio: maybe 1/50 or 1:25 or 1/96. What does that mean?

Say we're talking about a model in which 1/4 inch represents one foot on the full-size ship. The scale might be called a 1/4-inch scale or, more likely, a 1:48 scale (1 foot — that's 12 inches — divided by 1/4 inch equals 48); they're both the same. In 1:48 scale the 143-foot *Bluenose II* would be 35 1/2 inches long.

But there are other scales — and the

matter is complicated further by European kits, which use ratios expressed in metric dimensions. Let's save ourselves some headaches and compare three common scales.

- A 1:96 scale is similar to a 1/8-inch American scale: one foot on the full-size ship is represented by 1/8 inch or about 3 mm. (A three-foot-high bulwark on the full-size ship would be 3/8 inch or 9 mm on your model.)
- A 1:75 metric scale is similar though not equivalent to a 3/16-inch American scale: one foot on the full-size ship is represented by 3/16 inch or 4.5 mm. (A three-foot high bulwark on the full-size ship would be 9/16 inch or 13.5 mm on your model.)
- A 1:48 scale is equivalent to a 1/4-inch American scale: one foot on the full-size ship is represented by 1/4 inch or about 6 mm. (A three-foot-high bulwark on the full-size ship would be 3/4 inch or 18 mm on your model.)

Don't think in abstract terms; apply the scales to real-life situations and your experience will be painless.

METRIC vs. INCHES. This brings up another mildly troublesome problem. When you're working with a European kit do you try to convert everything to inches? If you want to make extra work for yourself go ahead. If you've pur-



PHOTO 3. *Universal ruler. The metric and the inch scales face each other in the center—no calculations necessary.*

you have an American kit, think inches and feet.

Sometimes you *will* need to convert a measurement from inches to metric or vice versa — and that takes time. I have a way around that problem, a little gadget I call my universal ruler. Go to an art supply store and find two rulers, one in inches and the other in metric — preferably one with a righthand scale and one with a lefthand scale.

If you can't find a righthand ruler, cover the numbers on one ruler with masking tape and re-write them from right to left. With the metric and inch scales facing each other, glue the two rulers to a wooden base. Instant conversion.

WHAT TO LOOK FOR IN A MODEL

You don't have to be an expert to choose a good kit. All you have to do is look at

You have a right to do so, and if you can't look inside the box, don't buy the kit.

That, of course, can lead to problems if you're buying from a catalog. The best way to avoid unpleasant surprises is sticking to manufacturers and suppliers whose reputations are solid. Ordering kits from some manufacturers virtually guarantees you'll get what you want. Some mail order suppliers will replace broken or missing parts. Call before ordering and find out what the supplier's policy is. On the other hand, some hobby shops will have nothing to do with you after your purchase. Ask around, and be circumspect.

THE PLANS

The plans include all the drawings you need to assemble the model. The degree of precision and the quality of the drawings generally will spell victory or defeat for a beginner. To take full advantage of any set of plans, however, you should be familiar with overall construction principles, including the anatomy of rigging, or you'll be lost. In fact, I'd strongly suggest reading through this entire book to get an idea of what kinds of things to look for before you commit yourself to a selection.

Generally, you'll find that every manufacturer uses its own system, with different geometrical or three-dimensional drawings. Some include black and

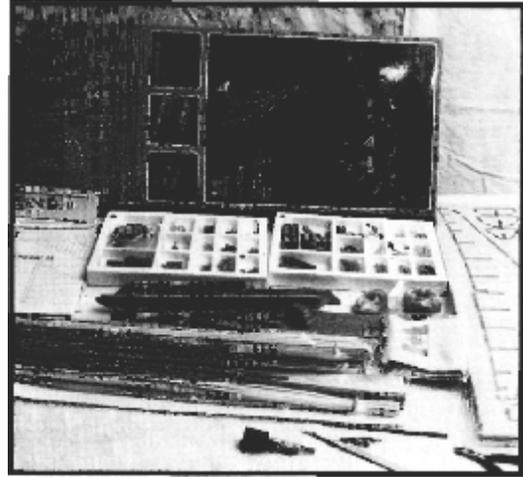


PHOTO 4. *The kit of the Bluenose II by Artesania Latina, a Spanish manufacturer. The number of pieces can be staggering, even for a simple model; check to make sure everything listed is there, and in good condition.*

white pictures of the different parts or stages of construction; some use coded letters with legends to describe parts and rigging lines. The best ones use an exploded view of the model and mark different parts with numbers that guide you to detailed drawings of that particular piece or setting.

INSTRUCTIONS

If the instructions accompanying the plans are not explicit you could be in trouble before you start. Check the instructions to see how clearly they are written. On some kits, the step-by-step methods are actually out of sequence.

Some of the plans carry instructions written in a foreign language (Italian, for the most part), and because the terms are nautical and technical, you can't translate them with a standard dictionary. (You'll find a translation of those terms from Italian to English beginning on page 115.) Some methods lead to confusion because they will contrast unnecessarily with the methods used in other kits.

THE HULL

Disregarding plastic, there are three types of hulls found in model kits: solid hulls; plank-on-frame (or plank-on-bulkhead); or precut plywood on frames. You'll learn the distinction between frames and bulkheads in Part II.

The solid hull can provide an easy step for beginners, because it needs only minor shaping and sanding to finish. Solid hulls are machine shaped, which often creates bulwarks — the parapets around the outside of the deck — that are much too thick. To correct this you must reduce the bulwarks with a chisel, rasp, or sandpaper. This is quite a challenge for beginners because you stand a good chance of splitting the wood and ruining the job. Let me put it this way: If you build a model with a solid hull you miss all the experience and fun of planking. The same thing applies to precut plywood. Plank-on-frame gives the builder a feeling for how a real ship was built. The other two hull types don't.

WOODEN PARTS

Kits are *supposed* to supply all the wooden parts you need to complete your model. In truth, unfortunately, you'll find it hard to finish your model with what you find in the box. Some parts will be badly cut and cannot be used; some are distorted, some are too short. A careful shopper will check this out before he forks over his money. Some stores will let you check, others won't. As with catalogs, find out what a store's policy is on replacing parts. The first thing you should do when you get home is get out the kit's checklist and make sure every strip of wood is there and in good shape.

Here's an example: Most kits supply the dowels needed to build your spars. The problem is figuring out how to cut the correct pieces from a certain dowel length. Most of the time you'll end up with pieces that are too short and can't be used for all the parts needed. But you can always buy extra dowels.

Often, scribed decks are supplied with kits. They may be nice looking but are far from authentic. If measured in scale, some of the planks would be hundreds of feet long. You can always scribe more plank ends, but the best thing to do in this case is to plank the deck yourself, as I'll explain later.

Some precut decks are made of plywood that's much too thin to stand up on its own. When nailed and glued to the frame it sags and buckles atrociously.

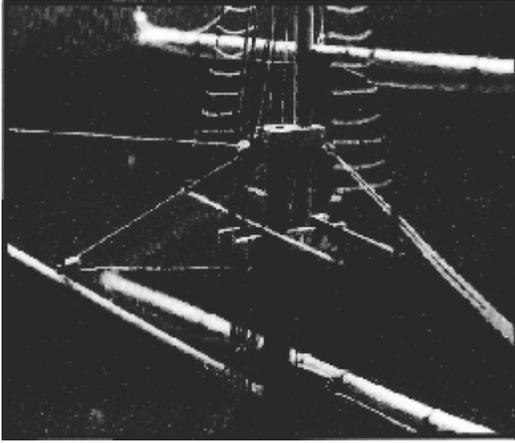


PHOTO 5. *Most kits supply the dowels you'll need to build your masts and yards, but you'll have to cut them to their correct lengths.*

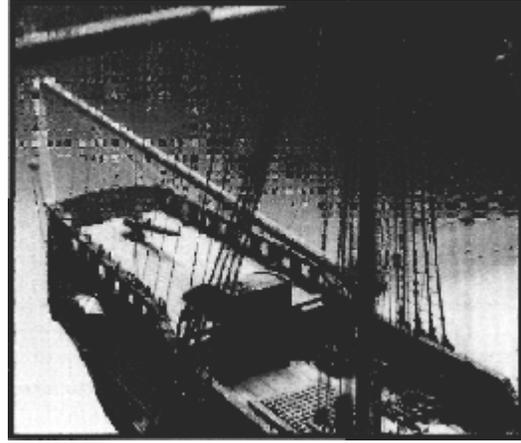


PHOTO 6. *Properly turned out deck fixtures — railing stanchions, cleats, gratings, gun barrels and the like — can add a great deal to your model's appearance.*

I'll show you ways to correct this problem.

Take great care in removing precut parts from their sheets. These parts are precut on one side only; if you attempt to remove them without first cutting through them with a knife, they will break up or tear along their edges.

THE FITTINGS

Fittings — such as blocks, railing stanchions, gun carriages, gun barrels, doors, chains, cleats, pumps, and gratings — are an essential element to the beauty of a model. Some kits have metal fittings, some have plastic, some wood. Look inside the box before you buy, for the

quality of the fittings should help guide your selection and may even decide the issue.

Brass fittings are by far the most attractive and easiest to work with. Fittings made from britannia, a silver-white alloy similar to pewter, can be quite handsome.

Consider also the amount of finish work these fittings will require. Some fittings will have to be cleaned of casting excesses. Some will have to be re-drilled because the holes in them are almost nonexistent. The precut pieces needed to make the gratings are sometimes roughly cut, and can be quite a challenge to clean out. You can check such things without opening the plastic

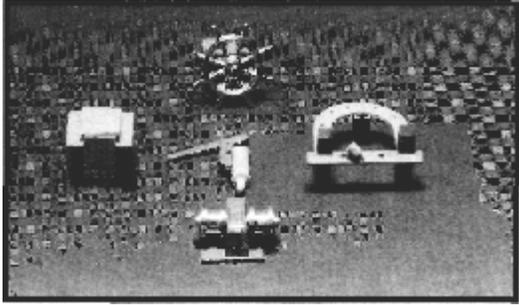


PHOTO 7. Even the simplest kits for the serious beginner provide a wealth of intricate fixtures you can assemble and embellish, such as this schooner's wheel, fife rail, house, pump, and windlass.

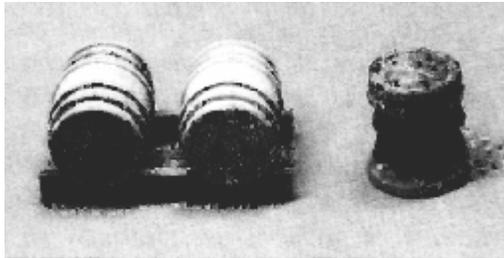


PHOTO 8. Or these lathe-turned barrels and capstan.

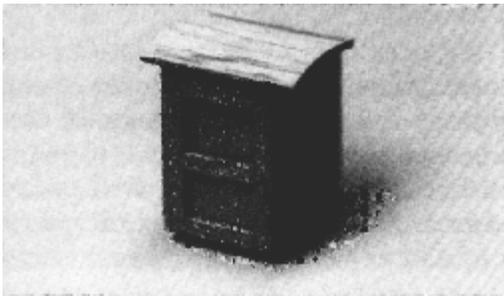


PHOTO 9. . . . Or this aft latrine from the schooner Harvey; note the doorknob.

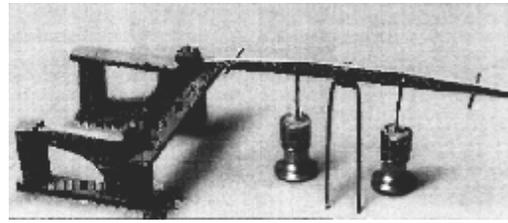


PHOTO 10. This bilge pump and forward rail from the Harvey are part of the kit-, all you need is a steady hand.

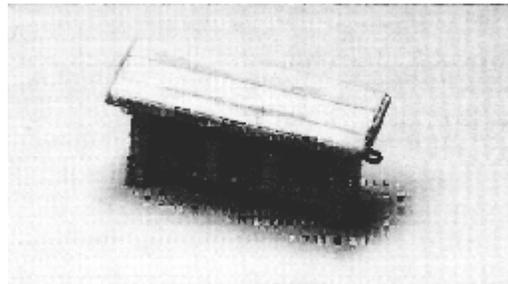


PHOTO 11. Other fixtures you may find in your kit will add flavor, such as this workbench .

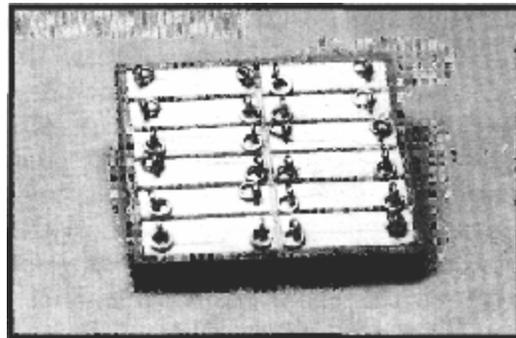


PHOTO 12. Or this main hatch, complete with metal fittings . . .

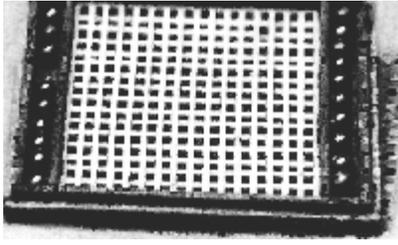


PHOTO 13. . . . Or this grating cover and cannonball rack.

box or bag in which the fittings are stored.

THE BOATS

Lifeboats, whale boats, service boats — most kits include them. They may be metal, plastic, precarved wood, or pre-cut plank on frame. Here again every type has its merits or faults; the important criterion is quality.

The precast boats can be quite authentic-looking and handsome. Although undeniably beautiful, the pre-cut plank-on-frame boats can pose quite a challenge for the builder; they are to me, however, the most authentic and the most satisfying. A built-up whale boat is a pretty thing to see, though it also represents hours of challenging work. It doesn't matter if you fail; you can always try again or buy a precarved one.

If the boats are not supplied with the kit, always make or buy the right ones

for the model you are building. How? Go to a library and check any number of historical references. Try, for example, *The History of American Sailing Ships*, or *The American Fishing Schooners* by Howard I. Chapelle.

Boats should be equipped with oars, harpoons, and other such accessories as appropriate. You can buy oars from hobby shops or catalogs, or you can make them yourself — and that is definitely the most fun. Some kits will show ways of doing it.

RIGGING LINES

It's distressing to have to say that 90 percent of the kits on the market today fall short in supplying acceptable rigging lines and cables. Most include rigging of the wrong size or color.

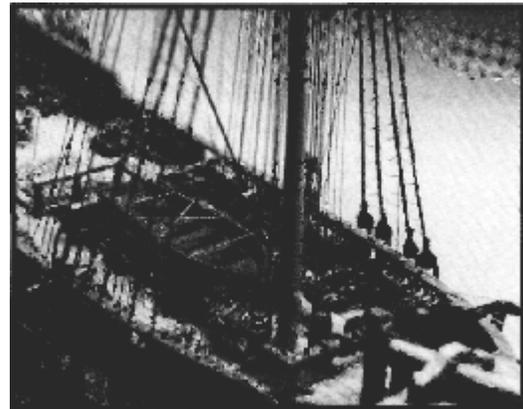


PHOTO 14. A ship's boat lashed to the fore-deck, a touch of authenticity, and a challenge to build.

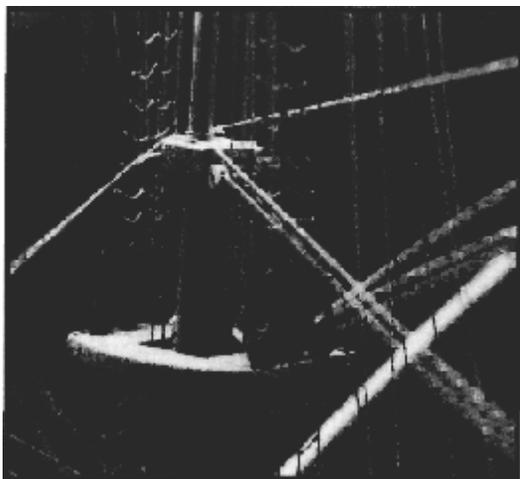


PHOTO 15. *Shrouds, stays, ratlines, and lifts — a cat's cradle of rigging that can quickly get out of control if you don't pay attention to scale.*

Some kits supply white string so thick your finished model will look like a Christmas tree. Only a very few kits provide acceptable rigging line. Check to see what comes with the one you're thinking of buying. The best type is three-strand twisted linen. Black is the most useful color for standing rigging; you'll need other colors — gray, beige (cream), and brown — for other jobs aboard your model. Twisted cotton line is also available. It is practically impossible to find rigging line correct for models of 1/8-inch (1/96) scale or smaller, but with a little persistence you can come pretty close. You can find rigging line as small as 0.10 mm in diameter.

BUILDING A WORKPLACE

TOOLS: VALUABLE ASSETS

Tools are a craftsman's best friend: The quality of your tools will determine the quality of your finished product. Tools improve your ability, save time and effort, and preserve your attitude. There is nothing more frustrating than working with the wrong tools or with tools that are in bad condition.

I've broken down the tools you'll need into three categories: basic, intermediate, and expert. In addition, I've developed some tools and laborsaving arrangements you can make yourself.

BASIC TOOLS. The following hand tools are essential to build any model. Building without them would be like trying to build a house without a saw. A set of the following essential tools will probably run you about \$100. Shop around; the best place to buy this type of equipment is a hobby shop, where you have a chance to see first-hand what you're buying. Here's what you'll need:

- Pliers: Longnose (needlenose), roundtip, sidecutter, and flattip; pliers should be no more than 5 inches long and should have plastic-covered handles for a better grip.
- Hammers: One small carpenter type and one ball peen.

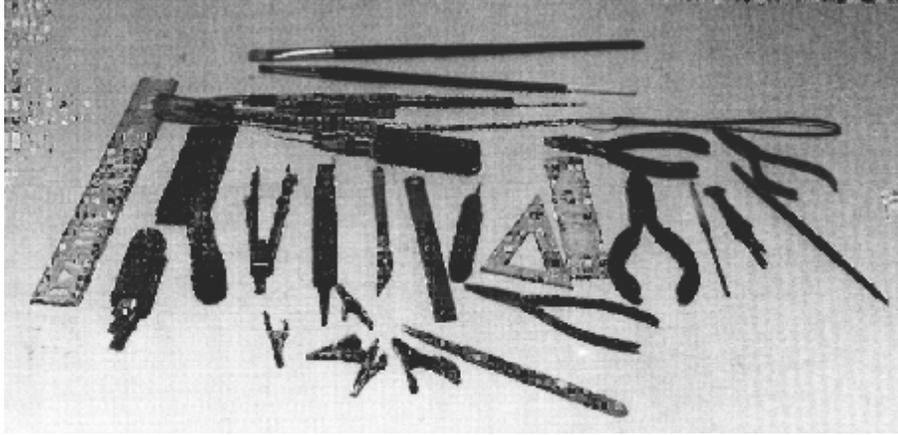


PHOTO 16. *Without these basic tools, it's tough to get going: Pliers, cutting blades, clips, a compass, straightedges, files, and brushes— even a clothespin.*

Saws: A razor-type X-Acto with handle, and miter box (aluminum type, if possible); a good coping saw with a fine-tooth blade; a hole-cutting X-Acto blade with handle. Some stores sell combinations of these tools in sets; the X-Acto saw handles are interchangeable.

Chisels: A small set of carving chisels; X-Acto type chisel blade with handle.

Knives: A set of X-Acto knives; surgeon's scalpel with #11 blade.

Files: A set of small files, including a medium bastard, a fine round, a fine flat, and a fine half-round.

Drills: Pin-vise type hand drill; one set of drill bits from #60 to #80; one set of drill bits from 1/32 inch to 1/4 inch.

Electric plank bender: A must for perfection and ease in plank bending, plank installation, and other uses. (It will cost around \$25; if you don't want to spend the money yet, an electric hair-curling iron will work, but not nearly as well.)

Rasps: One flat and one half-round carpenter's rasp.

Needle threaders: One package.

Tweezers.

Rulers: Yardstick; 12-inch plastic and steel rulers and metric equivalents.

Squares: One small and one large plastic.

Compass: Regular classroom type.

Awl: No thicker than 1/16 inch.

Clamps: One dozen alligator-type clips; one package of clip-type

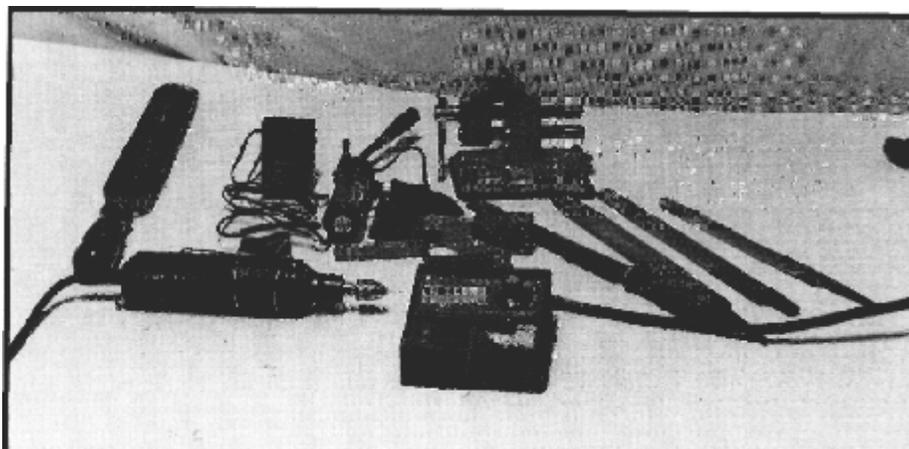


PHOTO 17. An electric drill with a speed reducer, a mini-vise with a "suction-cup" bottom, and a mini-vacuum cleaner can help move things along quickly, and cleanly.

clothespins; a set of three different sizes (one-, two-, and three-inch) of steel clamps. Sanding blocks: A chalkboard eraser; some small wood blocks, triangular and square — with flat and rounded surfaces. Sandpaper: Aluminum oxide is best: rough, medium, and fine (#80, #120, #320). Brushes: One set each of nylon and sable flat brushes, sizes 1 to 4. Plane: A small hobby plane. Scissors: At least one pair of regular dressmaking shears; one pair smaller embroidery/craft scissors. Vise: Vacuum-base type that can be moved easily on the bench. Glue: Carpenter's glue and cyano-

acrylate glue (ACC). I like a brand called Super Jet, but there are a number of others.

- Pins: A number of sizes; a must for planking and for temporary clamping.

INTERMEDIATE TOOLS. You might want to try a few models before investing in these tools, but they will help you do a better job in a shorter time. They also represent a substantial investment. Remember, shop around.

- Drill (motorized tool): Electric, with a complete set of carving and cutting tools; the drill should have a universal chuck, not a collet — a speed-reducing transformer is a must. (Try

- the Maxicraft set with the various attachments.) Around \$110.
- Soldering iron: Pistol-grip type with two heat levels. Around \$25.
 - Miter box: Adjustable to angles from 0 to 90 degrees. Around \$15.
 - Rasps: A set of rasps with offset handles for better handling, including flat, concave, round, and triangular shapes; also get a plane-type rasp with a replaceable blade. Around \$15.
 - Turntable: This homemade base will help in rigging your model; adapt a lazy susan-type base by installing a shelving or plywood board on top of it. By setting your model on this base, you'll be able to turn it around easily when working on the deck or when rigging. Around \$5.
 - Waterline marker: We'll learn how to make one on page 54.
 - Cutting jig for deck planks: See page 41.
 - Mast setting jig: See page 98.
 - Universal vise: This type will permit you to adjust the angle of the jaws in many positions. Around \$25.
 - Magnifying glass: Will help for close-up work. Around \$15.
 - 1/4-inch variable speed electric drill. Around \$35.
 - Electric drill stand. Around \$10.

TOOLS FOR THE EXPERT. Here are some tools to think about when you're sure you've caught the ship modeling bug.

A FEW WORDS OF ADVICE ON TOOLS

- Cheap tools don't last and don't work.
- » Each tool should have its own storage spot. You'll get to it quickly and be able to tell at a glance what's missing.
- Use your tools as they were intended—a screwdriver is not a chisel, a plastic ruler is not a cutting guide.
- Keep your tools clean and sharp. A dull X-Acto doesn't cut, and it could be dangerous.
- Hard surfaces wreak havoc on fine-bladed tools; try to keep them apart.
- Unplug all electrical tools when finished.
- « Store spare saw blades in cardboard covers; you'll protect the blades and your fingers.
- Don't use your electric saw on wood that makes it strain. Sharpen the saw's blades.
- Keep your power table clear of sawdust; fire isn't funny.
- Use protective glasses when working with power tools.
- Clean your paint brushes immediately with thinners and then soap and water; they'll last longer.

They cost a bit and require refined skills, so don't rush out to buy them until you're confident in your growing competence. We won't concern ourselves with prices here; just consider this equipment to dream about.

- 7-1/2-inch electric table saw: This type of saw should be at least 3/4 horsepower. To ensure a true cut, the rip guide should be built so that it can be secured accurately on both ends. The best rip guides are those that slide with a bushing on a solid shaft at both ends. The saw should be adjustable to tilt at various angles.
- 4-inch electric table saw: This saw is used for very close, accurate, and clean work, using a jeweler's blade for a smooth finish. Here again be aware of the construction of the rip guide and the motor's horsepower (at least 3/4 hp). Check the blade slot in the saw table. If it is too wide your fine strips will be drawn under while you're cutting them; a problem you can remedy by using a piece of scrap plywood 3 mm to 5 mm (1/8 to 3/16 inch) thick. Set the piece on the table and cut it about halfway through the blade, then run your strip on top of it while cutting it. The scrapwood base will prevent your strip from being drawn through the table slot.
- Electric scroll saw: A band-type scroll used for making curved cuts; a vibrating scroll saw (buy one with a

clearance of at least 16 inches).

- Bench grinder: A small one will do the job.
- Bench sanders: 1-inch belt sander (good for small parts precision sanding); a 4-inch belt sander (possibly with a disc sanding attachment and a table with an adjustable guide).
- Lathe: Bench type, preferably with speed control. The lathe bed must be at least 18 inches long.
- Mini-vac: This miniature vacuum cleaner will help remove dust and small particles from very hard-to-get-at places.

GETTING SET TO BUILD

WORKBENCH. Depending on the space available, your workbench should be large enough to allow you to work on any size model, plus hold the tools you use constantly. A strong, good-sized bench could be made from a 4- by 6-foot sheet of 3/4-inch plywood. Take a look at Figure 2. Two side extensions approximately 1 foot by 2 feet provide extra accessibility to parts and tools as you work. The bench should be about 32 inches high; place a small cabinet with plastic drawers for spare parts on each end of the bench. You can also store small tools, such as drill bits and knife blades, in those drawers. On the front right side of the bench (left, if you're lefthanded) attach your transformer for your motorized tool (which you may not

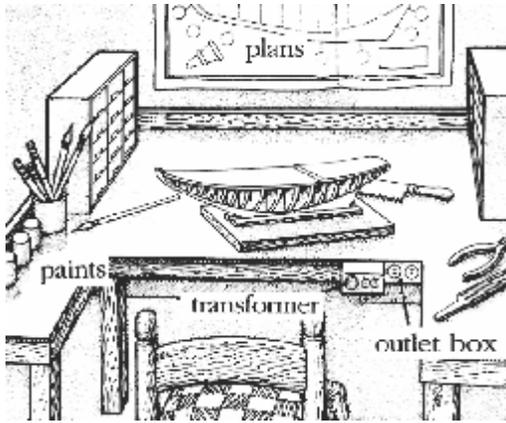


FIGURE 2. *A neat workbench, with everything in reach, can make a modeler's task infinitely easier. Note how the plans are pinned behind the bench to save space and ease reading.*

buy at first, but probably will eventually if you keep at modeling) and some electrical outlets. Don't take up workspace with the plans. Rather, hang them on the wall directly in front of you and all around the bench, so that you can consult them without getting off your chair.

POWER TABLE. Use one table to hold all your power machines. It should be at least 4 by 6 feet, preferably made from 3/4-inch plywood. Arrange your machines as illustrated (Figure 3); believe me, it will cut down on interference and strain. Install a multi-outlet box in the middle of the bench to avoid creating a maze of electrical cords. No wood scraps,

parts, or tools should ever be left on the power table.

THE MASTINI BOOSTER. Working on a delicate rigging problem or cutting a planking section takes the steady hands of a surgeon. The close-range work of ship model building is tough enough without adding to the strain on your arms, lower back, and shoulder and neck muscles because your work chair is too high or too low. And lifting your arms without support makes them unsteady. My solution: the Mastini Booster.

I use an ordinary captain's chair with a padded seat fitted across the arm rests. I sit on the elevated seat with my feet on the original seat. My elbows rest on my knees, supporting my back and steadying my hands. The back and neck pains are gone. This arrangement also allows me to rest a wooden board on my knees for closer work when necessary.

Find a chair that won't be insulted by paint stains and sawdust, push it up to your workbench, then craft a way to allow you to work with your hands at rest on your legs. Rather than straining to reach up to work, your hands are relaxed and free — and at table level. You can work for hours without strain. It's the only way to go. (See Figure 4.)

UTILITY TABLES. These tables will come in handy for your kit box, other parts you want out of the way, measuring tools, and some of the plan sheets,

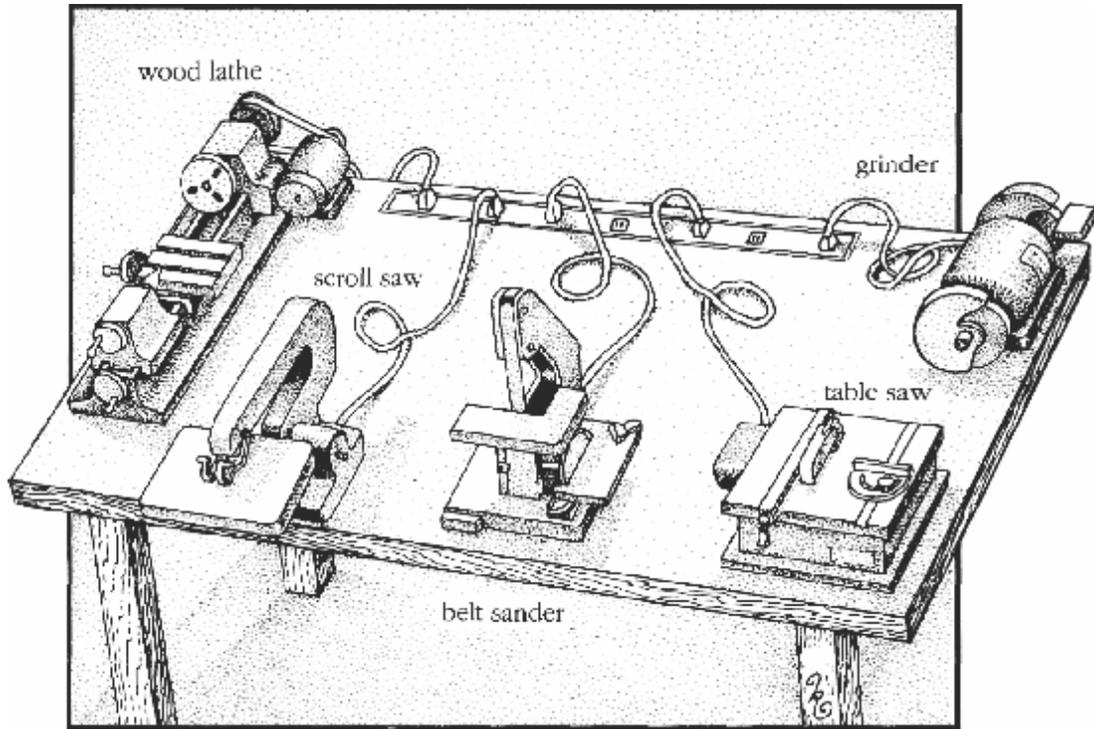


FIGURE 3 *Set up a power table adjacent to your main workbench. Arrange your appliances to prevent crossed wires and awkward reaches. Most beginners won't need this much heavy artillery.*

etc. You may also use them as display platforms for taking photographs.

LIGHTING. Good lighting is extremely important for the quality of your work and, of course, to protect your eyes. Use a two-bulb, 40-watt fluorescent light arrangement above each of your tables and the workbench. In addition, install one bright spotlight on a swivel above your workbench to direct light where it

is needed. Don't use bench-mounted extension lights because they will get in the way of your model. For safety reasons, no extension cords should be hanging over or near your bench.

VENTILATION. Good ventilation is a prime concern when working with fumes from varnishes, paints, glues, and solvents. It will also dissipate excess heat from lights. If your workplace sits apart

FIGURE 4. *The Mastini Booster.*

from any windows, install a small bathroom-type exhaust fan above your bench and connected to a dryer hose vented to the outside.

SLOP SINK. It's also extremely important to have a slop sink nearby. You don't want to walk a mile to wash your brushes, fill your jar, or get a few drops of water to dilute your glue. Unless you live alone — or would like to shortly — avoid using the kitchen sink.

SHELVES. The more shelves you can install on the walls of your work area, the easier your life will be. Unlike boxes, shelves display their contents at a glance, saving time and temper. Masonite perforated board (pegboard) with removable hooks also is a lifesaver.