

# CHAPTER 1

## **GETTING ORGANIZED**

### HOW TO USE THIS BOOK

When I wrote my first aircraft book in 1990 I thought that the scale modeling hobby industry and the cottage industry which began producing resin and photoetch accessories had reached the peak of its golden age. As I started to review the text from my first aircraft book in preparation for this book I realized that aircraft scale modeling had matured so much that complete sections of the original text were no longer applicable. In fact the entire text had to be re-written to incorporate sixteen additional years of scale modeling advances. With new kits sporting higher levels of detail and accuracy and a multitude of parts, with resin detail sets for everything from cockpits to bombs and photoetch detail sets both painted and unpainted, comes new challenges on how to best use, build and incorporate all these wonderful accessories into the scale modeling experience.

As with all my books this one is also organized by topic. That is to say that if you want to learn or read up on painting, decaling or working with seams then you can quickly turn to that chapter of the book and find your specific topic. I recommend that you go through the entire book once to get a feel for all the information and techniques that are presented. I have incorporated lots of pictures for each chapter because a picture is worth a thousand words. While in some cases the pictures associated with some sections of each chapter compliment one another, in other sections I have taken the liberty of incorporating techniques and ideas into the text while covering additional topics in the picture sections. By taking this approach I was able to incorporate a lot more information into the limited number of pages in this book.

There are three key skills for making your scale modeling experience more enjoyable and these have not changed in 50 years. They are assembly, painting and decaling techniques and these three topics form the triangle of success for scale model building in any subject area. Whether you are building out of the box or adding lots of detail to achieve a higher level of accuracy, your finished model should show no seams, have no surface flaws or glue marks. Additionally the model has a good paint job and sports decals that are straight and level which have not silvered and conform to the surface detail.

It takes practice to get good at the basics but that's part of the fun of the hobby. With each kit that you build you should focus on the basics and once you get them down then graduate to adding details with cottage industry products, and start modifying the kits to add additional levels of realism. Scale modeling is a construction hobby with a sprinkling of artistic flair so be patient and don't worry about making mistakes and having modeling disasters. Even those of us who have been building for years and years have disasters now and then. If you get frustrated set the model aside for a few days and then get back to it.

Remember that scale modeling is a hobby. It's supposed to be relaxing and provide the human mind with an escape from reality. Scale modeling is whatever you want it to be for you. Just have fun and enjoy creating a good-looking three-dimensional object from a pile of parts!

#### **REQUIRED TOOLS AND EQUIPMENT**

Listed below are the tools and supplies that you will need in order to build and detail your models. All the items listed are mentioned throughout the book.

The super glues that I use are made by Zap-A-Gap and they are specifically designed for working with plastic. They come in different fluid viscosities from very thin to super thick. For white glue I use Elmers and MicroScale's Kristal Klear. For putty I like to use Testors gray putty and I use their red tube plastic glue for attaching small parts where I need to position the part after gluing it into place. You will also need to purchase a super glue accelerator and I have found that a two-ounce bottle will last a very long time.

For all your cutting needs purchase both large and small handled X-Acto knives and at least one complete set of X-Acto blades. I use number 11 blades more than any other blade shape so I purchase these in packs of 100. X-Acto also makes a stencil knife with a tiny angled blade. Stencil blades come in handy when working with seams in tight locations. I also use lots of single edge razor blades for cutting and shaping photoetch and you can also get them in packs of 100. I also recommend that you purchase a Xuron plastic cutter for removing parts from trees and trimming plastic. Also get a petite sprue cutter called a "despruing tweezer cutter" for removing small

parts from trees or trimming tree stubs from parts.

You will need an X-Acto miter box for cutting thick plastic strip, and various size razor saws. For cutting small plastic strips and making angled cuts I recommend that you purchase a North-West Short Line Chopper. To get straight edges on cut plastic purchase a NorthWest Short Line True Sander.

All of your cutting should be done on a self-healing cutting board, which can be found in any hobby or arts and crafts store.

For all of my sanding needs I use the sandpaper marketed by K & S Engineering Company. The sandpaper comes on a waterproof backing, it can be used wet or dry, and it can be cleaned with soap, water and a toothbrush and used time and again. The grades range from 150 to 600 grit, come in 3 X 4 inch sheets and are color coded for easy identification. Another good source for sandpaper is to visit your local vehicle supply store. In the car body section you will find 9 x 11 sheets of sandpaper designed for body fillers. It is waterproof and comes in rough to super fine grades. Flex-I-Files work great to form and reshape curves and round stock. For sanding sticks, visit the nail care section of a drug store or super market. You can find lots of different grades of sanding sticks in large sizes.

For sanding blocks I use small lengths of Balsa wood of various sizes, plastic stock or even the handles of my files. Balsa wood is especially useful because it conforms to compound areas such as wing and fuselage connection points. I also use strips of balsa wood to attach small parts and sub-assemblies for painting.

Polishing is also necessary for a smooth finish on plastic, as the slightest scratches will show up. To smooth out plastic and remove most scratches I use 0000 steel wool. This grade of steel wool works great for most of your polishing and painting needs. If you plan to have a natural metal finish you will need plastic polish to really get a smooth and flawless surface. Use the 0000 steel wool first and then apply plastic polish with a soft cotton cloth.

For plastic scribing and for cutting out control surfaces I recommend the plastic scribers marketed by the Bare Metal Foil Company. You can also use a sewing needle in a pin vise (called a scribing needle), which works well around sharp corners. Scribing templates for circles and box shapes are also handy to have on hand to restore access panel outlines. These templates are made from thin sheet metal or photoetch metal. Labeling tape, which is used as a guide for plastic scribers when restoring panel lines, can be found in office supply stores. To clean out sanding dust from scribed lines use a toothbrush with soft bristles.

For all your drilling needs have a good supply of various size drill bits on hand. For most of your drilling needs purchase a set of micro drill bits, numbers 61 to 80. For drill bit holders I use both a pin vise for larger sizes and a brass micro twist drill for tiny drill bit sizes. I also have a collection of large size drill bits both in standard and metric sizes for all my drilling needs. You will also need a drill bit gauge and a pair of calipers for checking the diameters of drill bits. For electric drills purchase a variable speed motor tool, a motor tool drill press and a motor tool vise. I also recommend getting a miniature motor tool chuck for your motor tool.

Waldron Products markets a standard size punch set and you will find a thousand and one uses for it. It is a very valuable tool for scratchbuilding and it also simplifies many projects. Punches used for working with leather can also be used to get different size plastic disks.

I have found that scale modelers usually stick with the same type of airbrush once they find one they like. I like the Badger 200 series of airbrushes. They are single action, internal mix, bottom feed airbrushes which is great for scale modelers like myself who's hands are not that steady. I also like the heavy feel of the brass and chrome construction. I keep a good supply of airbrush jars on hand as I usually end up with about a dozen jars of mixed paint by the time I am done with a model. I also keep a small supply of the Teflon bearings and washers as well as a spare head and needle for quick repairs.

For airbrushing you will need a reliable air source and many modelers use a hobby compressor. There are two drawbacks to compressors; noise and water vapor buildup inside the compressor. The water can sometimes find it way onto the surface of your model as you airbrush. I use a compressed air bottle filled with CO2, which is the same type of bottle used at soda fountains. The bottle is slightly smaller than a SCUBA tank. I also have a pressure regulator gauge and a tank pressure gauge so I can regulate the pressure. The air that comes out of the tank is very dry and it will last you up to two years. You can find these bottles and the pressure regulator and gauges at any store that supplies compressed air and air bottles.

For a spray booth you can use a large cardboard moving box with the top and front cut out. Moving boxes are sturdy, come in various sizes, and are readily available at a low price. If you have a vent hood above your stove you can set the box on top of the stove and use the vent to draw away the paint vapors.

For mixing thinner with paint invest in some eyedroppers. They can reduce the mess associated with mixing paint and save you some clean up time.

For all your masking needs I recommend Scotch 3M painters masking tape. This tape is the best product I have found for masking and painting. It has low tack qualities, but it does not allow paint to bleed under it, the tape has sharp clean edges when cut, it has stretch qualities and thin widths can be formed around curved locations. I always keep several rolls of various widths for all my masking needs.

To detect flaws and scratches on plastic surfaces, joints and seam lines use Testors silver paint applied with a soft paintbrush.

To clean plastic prior to applying a primer coat use Polly-S plastic prep. This stuff can also be used between coats of paint to remove dust and skin oils. Polly-S also makes an excellent decal and paint remover called "Easy Lift off".

Warm paint will flow and adhere better than cold paint. I use a coffee cup warmer plugged into a timer so that I will not forget to turn off the warmer.

I recommend that you acquire a good supply of quality flat and round brushes, especially small detail brushes. Natural hairbrushes made from pure red sable are the best quality brushes that you can purchase. Pactra and Floquil brushes are excellent natural hairbrushes, although they are becoming increasingly hard to find. I have purchase IMEX brushes from my local hobby store and found them to be of excellent quality and I like the their large handles.

I prefer using enamel paints as they stick well to plastic surfaces and they do not peel up when they are masked over. Always use the manufacturers recommended thinner and never mix paint with different chemical compositions.

To mix paint I use copper bee bees as agitators in the paint bottle. I usually place 4 to 6 in the bottle to get the thicker paint, which always settles on the bottom of the bottle, mix with the rest of the paint. Using copper bee bees is especially important of you are using water based paints. Steel bee bees can change the paint color when they rust.

For proper decal application you will need to apply a clear gloss finish and I use enamel polyurethane made by Minwax, which can be found in hardware supply stores. To apply a flat finish to protect decals I use Testors Dullcoate, which Testors has relabeled as "clear flat lacquer finish". This stuff can be airbrushed straight from the bottle and if you want to thin it use lacquer thinner. Testors Dullcoate also work great for hiding super glue that has over flowed onto painted surfaces.

For great looking decals you will need a decal setting solution, but be sure that the solution you purchase is compatible with your decals. I use the Microscale two-part system and it has never failed me. The liquid in the blue labeled bottle is called micro set and you apply it to the surface to be decaled just before placing the decal. The liquid in the red labeled bottle is called Micro Sol and it is applied to the decals surface to soften it and to get it to conform to any raised or engraved detail on the model surface.

If you are going to add weathering to your model than I recommend that you purchase paint colors that are specifically designed for weathering. They can be found in enamels and in water base colors, and you can get a wide range of weathering effects by mixing the colors. Another good source for weathering is pastel pencils, which can be found in any arts supply store.

You will need a good selection of drafting templates and at a minimum you should have circles, squares, rectangles and ellipses. These templates can be used to cut out large shapes for masking and painting. A set of small clear drafting triangles is also a must.

For working with photoetch parts I use a Plexiglas plate as a cutting surface and single edge razor blades and number 11 X-Acto blades for cutting the photoetch. The metal dulls the blade tips very quickly so you need a good supply of blades when working with photoetch parts. Stores that specialize in selling stuff to make jewelry are great places to find tools such as flat faced needle nosed pliers which are a must for achieving clean sharp edges when bending photoetch parts.

You should also plan on using several boxes of facial tissue per model for general cleanup and painting needs especially for cleaning paintbrushes. Tissue makes an excellent stuffer in areas that

are deep and need to be masked like cockpits and wheel wells. Q-Tips are also a must when working with white glue and for cleaning your airbrush. You will need various diameters of pipe cleaners for cleaning an airbrush.

A six-inch stainless steel sewing ruler is a great tool to have and they can be found in almost any sewing supply store. The graduations on the ruler are very precise and the ruler's thickness is perfect for use as a straight edge for cutting masking tape.

You will need a good supply of various size tweezers and micro files. Tweezers are a must for working with small plastic and photoetch parts and micro files are a must when opening up plastic or squaring off edges.

Evergreen and Plastruct Scale Model Products produce a wide selection of plastic sheet stock, strips, rod sizes and various shapes. Their plastic is easy to use and it responds well to sanding and shaping. I keep a good supply of various thickness's of sheet stock, strips in widths ranging from .010 to .250 inches thick and rod diameters from .020 inches to .125 inches for all my modeling needs.

I like to apply glue with stiff, small diameter wire. You can find various diameters of stiff steel wire at your local hobby store in the radio control section. I also keep a supply of various diameters of brass beading wire, which can be found in jewelry supply and arts and crafts stores. Small diameter wire also comes in hand for adding plumbing details to the engine area and the cockpit. I also keep spools of clear and black nylon sewing thread for rigging small-scale biplanes and for adding antennas to propeller driven aircraft.

To mark plastic parts and to color clear nylon sewing thread and stiff wire for rigging biplanes and adding antennas purchase Sharpie indelible markers in various colors. The colors I use most are black, brown and silver.

Round toothpicks make good applicators for white glue and for picking up small photoetch parts and for helping to position decals. I also use the tips of round toothpicks to apply tiny quantities of paint.

I like to use plastic sewing and needle craft bin organizers and these can be found in sewing and arts and crafts stores. These organizers are great for storing small plastic and photoetch parts. They can be found in various colors, sizes and shapes.

For adding strength to control surfaces that have been removed and to add weight to parts such as engines you can use two-part resin. The one draw back to using two-part resin is that it is messy and once the bottles are opened they have a short shelf life. To extend the shelf life store the capped bottles in a refrigerator. You will also need lots of mixing cups and small wooden sticks for mixing the resin together.

Good lighting on your workbench and in your paint booth are a must. I have four large adjustable desk lamps on my workbench and several large construction "clip on lights" with large disk reflectors for my paint booth. These large lamps can be found in large hardware stores like Home

Depot. Invest in a dust mask or painters mask and a good pair of safety glasses.

Most of the tools and supplies that you will need can be found in your local hobby store. If they don't have it in stock have them order the items. FineScale Modeler Magazine is also a great source for manufacturers and suppliers for hard to find tools and supplies.

#### **REFERENCE AND RESOURCES FOR SCALE MODELING**

Reference material is a must for scale modeling and there are a great variety of books that have lots of photos of specific aircraft. How the cockpit actually looks, the colors, the arrangement of all the interior hardware and the details inside the wheel wells will help you when you are adding these types of details to your model. What wiring and plumbing is exposed in the engine area, whether the air intakes are open or covered with screening, how the brake lines are set on the landing gear are all important details that reference photos will show you.

The costs of reference material can vary widely and for more expensive books get the ISBN number and have your local library order the book for you. This affords you the opportunity to see if the book is worth the money and that it has what you are looking for.

Reference books should contain lots of original aircraft photos and these are usually black and white unless it's a modern aircraft. All the pictures should be clear and in focus and each photo should have a caption. Some books have walk around photos that were taken of aircraft at museums and these should all be in color. Keep in mind that restored aircraft may vary slightly in colors and the placement of some interior components when you compare them to original aircraft photos. There should also be pictures of the variants of the aircraft and a color section for the different paint schemes that the aircraft may have had.

In the last few years reference CD's have also become available and they can contain hundreds of quality photos of aircraft. There are also many WEB sites that have scale modeler resources and links to other sites. I download the pictures from the WEB sites and save them on CD's for later use. Another great source for reference material is to visit aircraft museums and take lots of pictures. If you are using a digital camera be sure that you have adequate lighting otherwise the pictures taken indoors will be dark. I use a Kodak P-712 digital camera and the one advantage to this camera is that it has a hot shoe for a standard external flash unit.

The WEB is a great place to research what types of detail sets are available for a specific model. Almost all of the cottage industry companies have WEB sites and you can get a first hand look at the actual detail set and all of the parts that are included. There are lots of WEB sites that also have kit and detail set reviews. Sometimes the reviews are just an "in-the-box" review and other times the reviewer actually built the kit or used the detail set.

The one caution here is that sometimes these reviewers get caught up in what I call the accuracy trap. They can find lots of things wrong with a kit or a detail set that most of us would not see or even care about. Some of these people spend so much time consumed by the accuracy trap that they never build anything or finish a model. You can also witness a lot of talk and some very mean spirited keyboard discussions on WEB chat boards about accuracy. Don't get caught up in it. Scale modeling is a hobby not a competitive sport and it is not politics.

In closing out this section save the WEB site addresses so that you can build up a digital library of locations of Manufacturers, cottage industry products and general information WEB sites. I visit many of these WEB sites to see what the latest and greatest is and what new products may be available in the coming months.

#### ORGANIZATION

The key to having a successfully experience in any hobby is to be organized. I use stacked plastic draws with labels on the draw faces to organize and store tools and equipment. I usually keep the most used tools within reach on my workbench and those used less frequently in the plastic draws. I also keep a supply of expendables such as X-Acto blades, sandpaper and glues on hand so that I am not running out to the local hobby store all the time. I keep a small supply of basic paint colors on hand, but I do not let their shelf life extend more than a few months. I stock up on needed colors for each and every modeling project. Lacquer paints have a much longer shelf life than enamels or water base paints so I keep a small supply of Testors metalizer paints on hand.

I use small plastic draw organizers like the ones you find in hardware store for storing nuts and bolts to store and organize unused plastic parts. I use small to medium plastic shoe and shirt boxes to store detail sets, decals, plastic sheet, tubing and wire and sandpaper sheets. I have lots of shelving to store all the stacked draws, and storage boxes and everything is labeled and organized for ease of identification and access. I also keep an ample supply of small and medium zip lock bags on hand to temporarily store things and to seal up items like 0000 steel wool when not in use.

A little bit of planning can go a long way when you are building scale models. This is especially true when you are incorporating detail sets into the kits construction sequences. Study the instructions carefully and become familiar with the part trees and the locations of the parts. Kit manufacturers have gotten very good at keeping sub-assemblies located on the same trees, but this is not always the case. Typically the larger the kit the more parts you will have so having an ample supply of those sewing and needle craft bin organizers is a must have.

When I am working at my hobby bench everything I need to work with is positioned around the self-healing cutting board. I use the kits box top to store large sub-assemblies and my bin boxes for individual parts and small sub-assemblies. I also place a strip of masking tape on the top of each bin box to identify what the parts are. One box will have interior parts and another box will have engines parts. I also strive to keep my workspace clean so after a lot of sanding and scraping take a little time to do some house cleaning before proceeding to the next step.



These are the three types of glues I like to use. I made the glue tube holder for the Testors red tube glue because positioning the tube upright makes the glue last longer.



Miter boxes and razor saws are necessary for cutting plastic stock. The miter boxes are specifically designed for use with the razor saws. The saws also come in various cutting grades.



Here are the basic hand tools for snipping, cutting, trimming and scraping. The long thin black blades are stencil knifes and the stainless steel sniper is called a despruing tweezer cutter.



Testors and K&S Engineering sell color coded waterproof sandpaper. The U shaped tool is a Flex-I-File and the sanding stick are from the nail care section of drug stores. Balsa wood makes great sanding blocks for contoured areas.



Here are the basic tools for restoring panel lines. Bare Metal Foil makes the best plastic scriber. The best templates for scribing are photoetch, which are very flexible. The pounce wheel and needle scriber work great for restoring rivet detail.



I keep a good supply of drill bits and I use a caliper to check diameters. A drill bit gauge is also a handy tool. The Waldron Punch has a thousand and one uses and twist drills make repetitive drilling easier.



A variable speed motor tool, a Dremel drill press stand and a Dremel vise are the perfect combination for precise drilling. To hold plastic parts in the vise, sandwich the part between strips of balsa wood.



These are the essential tools for airbrushing. I like the Badger 200 single action airbrush. Always keep an ample supply of thinner and spare airbrush jars. Copper bee bees are great for mixing paint in its original jar.



The regulator on my air supply tank has two gauges. The one on the right indicates the tanks air supply and the gauge on the left indicates the pressure of the air being supplied to the airbrush which is controlled by the black knob.



The Northwest Shortline chopper and true sander are traditional model railroad scratchbuilding tools and they have a thousand uses in scale modeling. The chopper is especially hand when you need to make multiple parts.



My airbrush source is a CO2 tank with a pressure regulator. The air is always dry and the tank makes no noise! The air supply will last you up to two years and refills are inexpensive. .



A spray booth can be as simple as a large box , placed on top of the kitchen stove. This set up works great if the stove vent discharges the air outside. To protect the vent from paint I tape an air conditioner filter to it.



I have a good supply of quality brushes for detail work. Many of these brushes are over 20 years old. Always clean brushes after every use. This simple organizer stores the brushes and keeps them in easy reach.



I like to keep my airbrushing tools in easy reach. Everything I need for airbrushing is stored in these two organizers.



These are the essential tools for cutting out decals and applying them. Use sharp number 11 X-Acto blades for cutting out decals. Setting solution is also a must if you want your decals to look like they were painted onto the model.



If you are going to do any type of scratchbuilding or just improve kit parts you will need drafting triangles and templates. I made the small white triangles for checking corners on scratchbuilding projects.



For cutting, bending and shaping photoetch you will need dowels, flat faced needle nose pliers and single edge razor blades. I found the red handled pliers in a jewelry supply store and they work great



Evergreen and Plastruct sell plastic sheets and various shapes and sizes of plastic strip and round stock. I keep a supply of plastic sheet and shapes for all my scale modeling needs. This stuff has a thousand uses.



I keep a good supply of various diameters of stiff brass wire. It has lots of uses such as cockpit and landing gear plumbing, engine wiring and landing gear brake lines.



A good size self healing cutting board is a must for scale modeling. I also keep a good supply of tissues and Q-Tips for painting and general cleanup. I use safety glasses whenever I am using my Dremel tool or cutting photoetch.



I have about a dozen of these handy parts bins and use several for each modeling project to store parts, and to separate cleaned up parts and painted parts.



I have various sizes of files with different shapes. Here again these tools have lots of uses in scale modeling. They are great for shaping and cleaning up cut outs such as access panels, hatches and doors and small openings.



Indelible markers are great for coloring antenna wires, control cables and flying wires on Biplanes. Drafting inking pens can be used to detail small parts and pencils are a must for marking plastic during scratchbuilding.



Aircraft reference material helps me detail my models, check for the locations of interior and exterior items and verify colors and markings. I also enjoy reading about the development history of the aircraft that I am building.



The second kind of reference material are the scale modeling books that have been written over the years. I have learned from every one of them and they are great sources for modeling tips and techniques.

