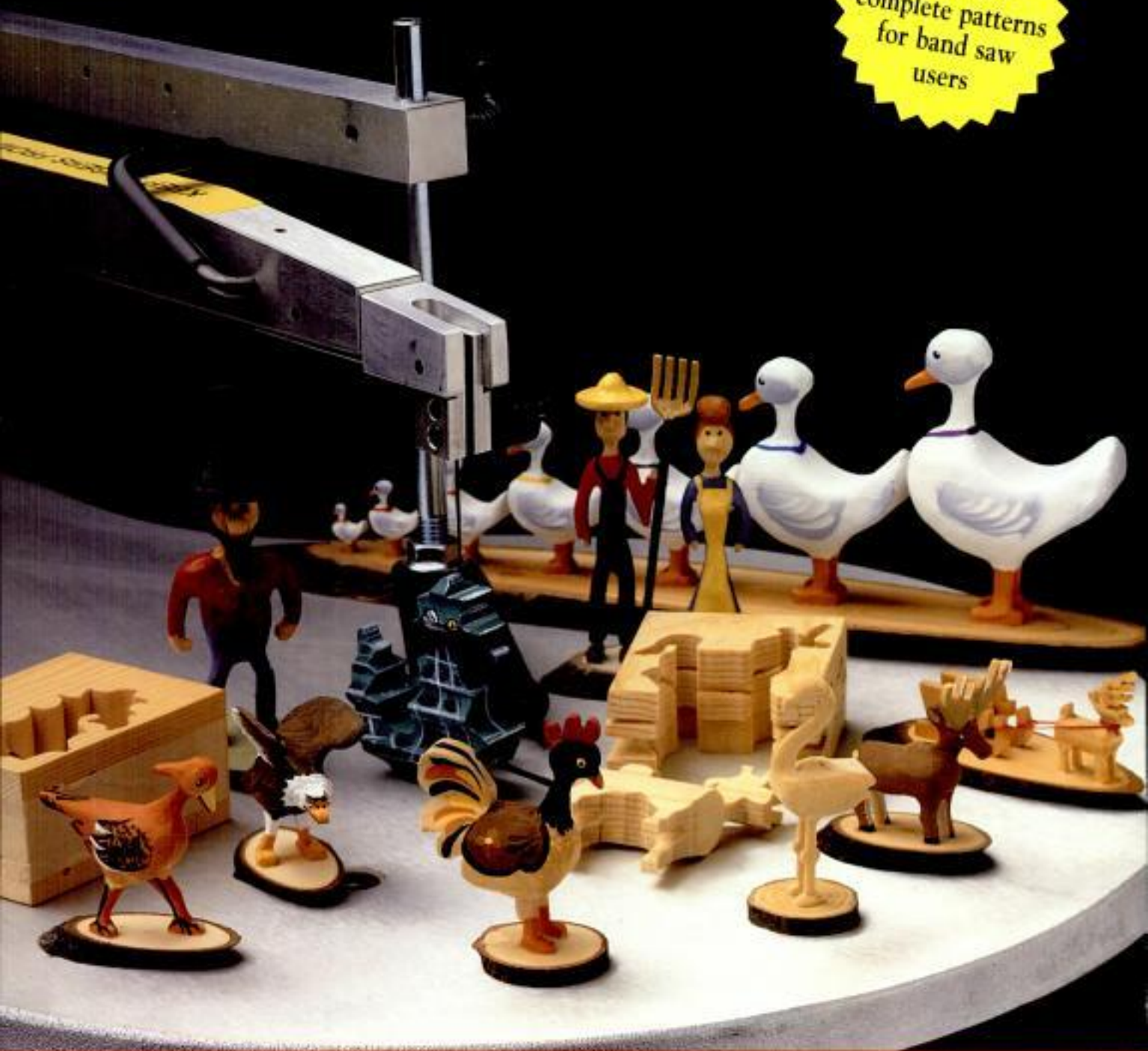


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Three-Dimensional Scroll Saw Patterns and Techniques

by Henry Donald Berns



Fox Chapel Publishing Co., Inc.
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Introduction

The historical use of scroll saws has been to create thin two dimensional craft projects. Wall plaques, silhouettes, and puzzles are typical examples. The creation of miniature craft items has recently become a very popular hobby activity. This has remained, however, mostly a two dimensional activity. Some of the small items have been sawed from thicker stock and painted to look three dimensional.

This book gives hobbyists that enjoy making miniatures, a whole new dimension to their work. Almost all of the pattern books that are currently available are for two dimensional flat patterns. Silhouette wall plaques and puzzles are good examples of these 2-D projects. This book adds the third dimension to the art of creating miniature craft items. They are truly three dimensional and are detailed miniatures as well. There are a variety of different birds, animals and people type craft items that can be made in different sizes. They can be displayed as individual curio items or combined in group projects such as a Nativity scene, Noah's Ark, or a Barn scene.

Patterns are included for both small and large size versions of the craft items. The patterns can also be photocopied to other sizes to make very small, intermediate or even larger items. The small size patterns are best to begin with. Both sizes of the patterns can be used with the better quality scroll saws that can handle material that is two inches thick. The large size patterns can also be used with band saws that have the new one sixteen inch wide blades. The larger size items are an excellent first step for learning how to do miniature hand carved items. Small powered rotary sanding tools or hand carving can be used to finish many details. No additional finishing or only rounding of some of the square corners is all that is needed to finish many of the 3-D items.

The chapters are organized by their level of detail and required skill. The first set of simple animal patterns can be made with a minimum of skill after becoming familiar with the operation of a scroll saw. The second set of detailed animal patterns are easy to do after practicing with the simple items. The third set of patterns are for "people type" figures (this includes animals standing up on their back legs) and are more challenging. They require some special finishing techniques for the "arms" or front legs. The fourth set of patterns also require some special finishing techniques but produce additional detail to the finished craft items. These special projects will be very rewarding after the hobbyist has become familiar with the special sawing and finishing techniques.

The last Chapter has suggestions of how the craft items can be used to make grouped projects. Some are quite easy to do as they are simply arrangements of the craft items. Other special projects may require the construction of other craft items such as a Noah's ark shelf, a barn for a farm scene, or a stable for a Nativity scene, etc. The addition of wire hooks and earring wires allows the craft items to be used as dangle-type earrings or Christmas tree decorations. The craft items can be brightly painted or left as carvings with wood grain detail showing. They can be displayed individually or as caricature groups.

Chapter One

Power Tool Operation

The projects in this book assume that the reader is already familiar with the safe operation of a scroll saw and a band saw and does not need a long discussion of the use of these tools. Basic information about these tools can be found in their operation manuals and in the books listed in Appendix A. Always read and follow the instructions in the operator's manual for any power tools you may use to insure that you are using them in a safe manner. This chapter will discuss the basic sawing techniques and how they relate to the making of three-dimensional craft items.

SCROLL SAW OPERATION

There are two basic types of scroll saws available to the hobbyist: the C-Frame and the Parallel Arm. The C-Frame type of saw has the two ends of the blade tensioned between the two ends of a deep "C-shaped" open frame. With this type of machine, the stroke of the saw is produced by pivoting the complete frame at a point below the table and near the back of the frame. A disadvantage of this type of saw is that the blade does not remain vertical. It tips back at the top end on the up stroke and to the front on the down stroke. This action may produce a faster more aggressive cutting motion because the blade moves into the stock on the down stroke. While this may be useful for thin stock on two-dimensional projects, it could be a problem on thicker three-dimensional projects where very sharp turns are made. With sharp turns in thick stock it is best if the blade remains vertical during the whole cutting stroke to produce the best results.

3-D Scroll Saw Patterns and Techniques

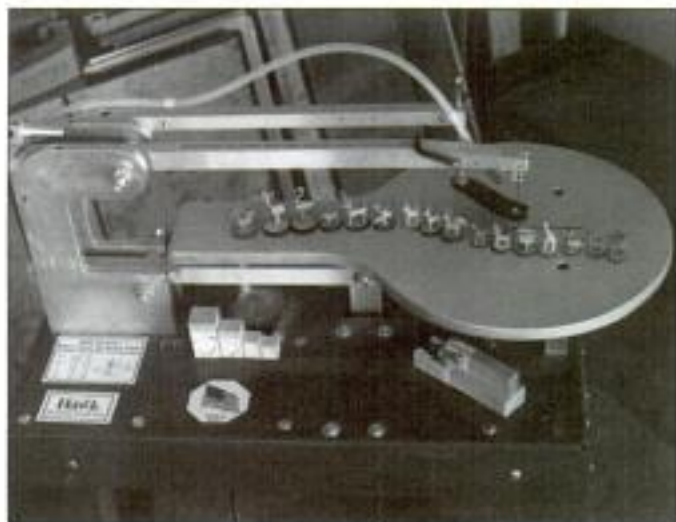


Figure 1.1

This well-built quality parallel arm scroll saw was used for both sizes of craft items in this book. A smaller or less capable scroll saw may be limited to the smaller sized patterns.

A typical Parallel Arm machine is shown in **Figure 1.1**. The parallel upper and lower arms hold the blade at their front ends. Both arms have a pivot point about two-thirds of the way to the back. The upper arm pivot is directly above the lower arm pivot. The blade tension is held by a rod that is tightened between the two arms at their back end. The stroke of the saw is produced by moving the lower arm up and down at a point near the front. The arms, blade and tension rod form a parallelogram that always keeps the blade vertical. This can be an advantage for cutting thick material when very small turns are made. It does require some type of pivoting blade holder for both ends of the blade where they join the upper and lower

arms.

With the very small blades used in the three-dimensional miniatures, it is important to allow the blade holders to pivot so the blade ends are not bent as the parallelogram is flexed during the cutting action. Adequate tension in the blade will then keep it from bending and will avoid a fatigue failure after a minimum of use. Proper use of a saw will require blade changing after the blade becomes dull from an extended cutting time rather than breakage.

You should study your scroll saw, and be sure it is safe for making thicker cuts with very small turns. There are many different brands of saws that have large variations in price. They may have a number of features that would be helpful, such as variable speed, counterbalanced drive, quick blade change, dust blowers and support legs. The most important features are, however, the ability to cut accurately in thicker stock and the ability to be able to make very small turns. This will require the use of thin, narrow blades. A universal No. 2 or smaller scroll saw blade can be used for the small patterns. Most of the small pattern projects in this book were done with a blade that was 0.015 inch thick by 0.037 inch wide with 14 teeth per inch. The large patterns will need at least a No. 7 blade to accomplish the thicker cuts that are needed.

If the blade is too small for the thickness being cut, it will bow back with the cutting force. This becomes a significant problem when trying to make a sharp turn! As the turn is made, the cutting is no longer vertical. If the center piece being sawed loose from the rest of the block will not slide out of the main block after a cut has been done, the blade is too small, dull or it may be under-tensioned. Tension in the blade must be in accordance with the manufacturers recommendation in order for the blade to operate properly.

BAND SAW OPERATION

The size of the band saw blade is the key to this procedure for making miniatures. New narrow $\frac{1}{16}$ -inch blades can be purchased from various tool sources in custom lengths to match existing band saws. A very helpful accessory to go with the narrow blade is a special set of composite material guide blocks as shown in **Figure 1.2**. (Note the blade guard has been temporarily removed to show the guide blocks and the blade support bearing; always operate your power tool with all the safety features in place.)

These blocks are made from a type of composite material that is self-lubricating. They replace the usual metal blocks that had to be positioned so the teeth on the blade were in front of the slot between the blocks. With the new narrow blades, there would be very little blade material behind the teeth to slide between the guide blocks. As a result, a very small forward movement of the blade would leave it with no side to side stability. The blade support bearing behind the back of the blade should be adjusted to keep the blade in the middle of the composite guide blocks as shown in Figure 1.2. This bearing will react to the cutting force during operation as it does with ordinary blades.

Blade movement may happen if you need to move backward in the saw kerf and inadvertently pull the blade forward out of the guide blocks. Sometimes it is necessary to move backward in the saw kerf if you are making a very sharp turn, and you want to widen the saw kerf to assist with the turn. The composite guide blocks can be set so the blade is completely between them as shown in Figure 1.2. Since the blocks are a soft material they will not harm the saw blade teeth or the set in the teeth as would happen with metal blocks. As a result, the blade will still be guided if it is subjected to a small forward movement. The end of the guide blocks will wear with time from the set in the blade teeth, but can easily be replaced or the ends resurfaced to again give maximum blade stability.

It will be helpful if the saw table insert around the blade has a small opening to give maximum support to the material being cut. It may be necessary to obtain or make a special insert that has a reduced opening around the blade, as shown in Figure 1.2. Another way to minimize the saw table opening is to use a saw table cover made from a hard pressed-board material or thin, smooth plywood. Make a saw cut from the back

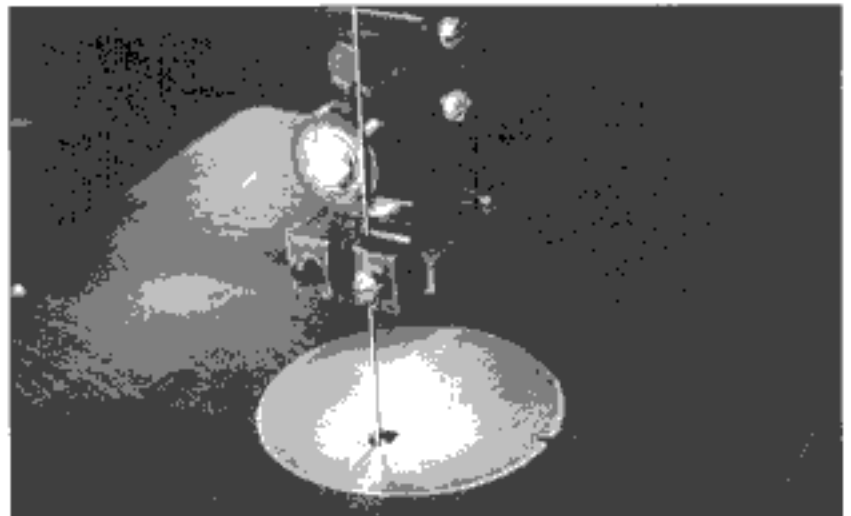


Figure 1.2

"Composite" guide blocks in position with a $\frac{1}{16}$ inch blade on a band saw. The blade is set in the middle of the guide block ends so a small forward movement of the blade will not pull it free of the blocks. Note the saw blade guard has been temporarily removed to take the picture.

3-D Scroll Saw Patterns and Techniques

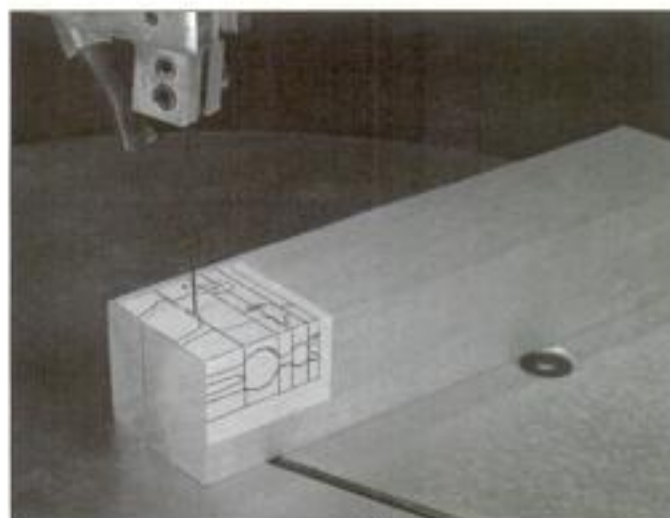


Figure 1.3

Typical scroll saw cutting of the smaller pattern for the Horse. Note that the wood block is much longer than the patterns to assist in directing the cutting and holding the block down on the saw table.

edge of the table cover, forward to the blade position to allow it to be put in place after the blade is installed in the band saw. You can glue small strips on the bottom edges to make lips that fit over the edges of the table. The cover could also be held in place with double-sided tape, clamps and stove bolts.

It is also very important to have the band saw blade and the saw table adjusted so the blade is perpendicular to the table. Improper adjustment will result in irregular width and thickness of the small parts on the craft items, such as legs, arms and antlers. Small details, such as an antler, require a turn at the end of the item. The second part of the cutting will be done in the opposite direction but parallel to the first part of the cut. If the blade is not perpendicular to the table, the small detail will not be of uniform thickness.

PREPARATION OF WOOD BLOCKS

Creation of the rectangular blocks used for the projects will also

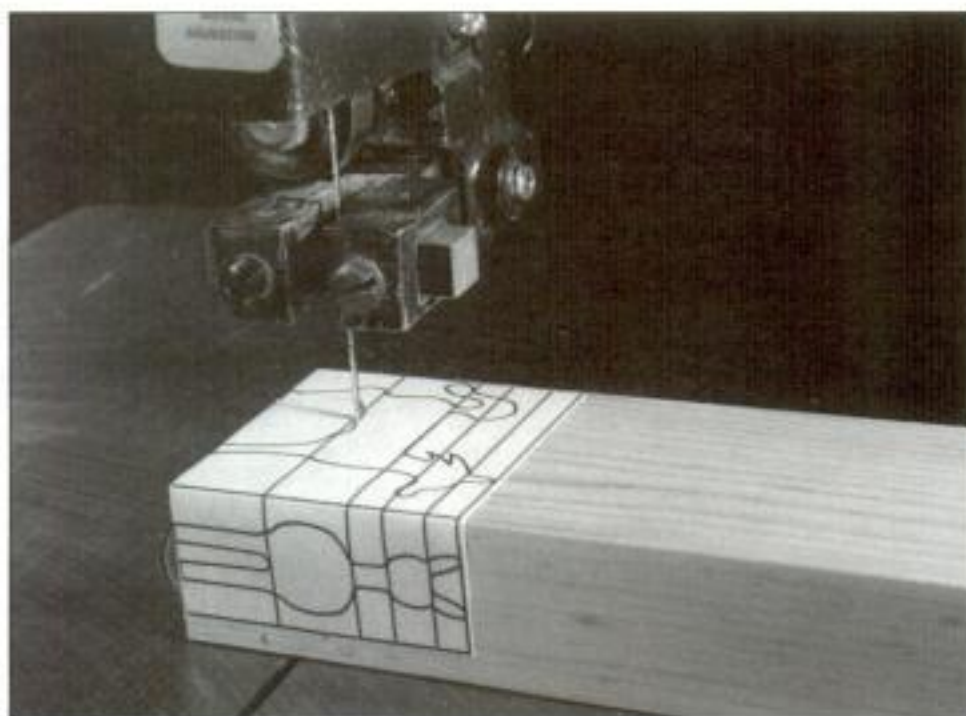


Figure 1.4

Cutting the side view pattern for the large Horse. The wood block is much longer than the patterns to assist in holding the block and directing the saw cuts without having the blade near your fingers.

require ordinary sawing and sanding of larger wood stock to the proper rectangular sizes. Basswood may be the easiest to work with, but soft pine, various fir-type woods or other soft plain-grain woods will work well for the three-dimensional craft items. You may need to try samples of other types of soft plain-grained wood to determine how well they work with your saw. Try to avoid wood that has a lot of pitch or oil. If the saw blade becomes gummy, sawdust will stick on the blade and fill the space between the teeth. When a blade gets filled this way, it cannot carry the sawdust out of the saw kerf. Some of the projects require thick stock and it is very important to let the sawdust move out of the saw kerf. When the thickness of the cut is greater than the stroke of the scroll saw it is much more difficult for the sawdust to be carried out of the saw kerf. If this does not happen, then more pressure is required to force the cutting and can cause a fatigue failure of the blade.

Most of the items shown were made from basswood or soft fir or pine. Generally the wood grain needs to be perpendicular to the base of the item and as a result it will be parallel to the length of the rectangular stock being used as shown in **Figure 1.3** for a scroll saw project and **Figure 1.4** for a band saw project. The blocks will need to be of different cross section sizes to match the project being made as discussed later.

OPERATION OF OTHER POWER TOOLS

Other equipment, such as a table saw, belt or disk sanders, will be used in making the wood blocks. These items should also be used in a safe manner in accordance with the operator's manual. It is assumed the reader is familiar with their operation and will not need detailed instruction on how to produce the rectangular blocks of wood needed for the craft items.



Figure 1.5

A hand-held rotary sanding tool is used to remove the square corners on a Wise Man. The long small-diameter carbide cutter works best for removing square corners of craft items.



Figure 1.6

Sometimes material must be removed from between arms or legs as shown with this large pattern Mary. A wheel-shaped carbide cutter is useful for this type of operation.

3-D Scroll Saw Patterns and Techniques



Figure 1.7

This figure shows a variety of carbide cutters, steel burr cutters, sanding drums and grinding stones. All of these cutters will work with the different types of hand-held rotary sanders.

ROTARY SANDING TOOLS

The craft items will require some sanding or special finishing after they have been cut out. For some of the small patterns most of this can be done with hand sanding or small metal files as discussed in Chapter 3. A few patterns, such as the Sea Horse, only require defuzzing the edge of the cuts for both sizes of the patterns. For the more detailed items, however, some of the features need to be altered after the sawing is completed. In some cases it will be useful

to use a power rotary sanding tool. If you have a small hand-held rotary sanding or grinding tool, you can use it to remove larger amounts of wood as shown in **Figure 1.5**. The rotary sanding tool should also be operated in a safe manner according to the operator's manual.

These tools are available in both cord and cordless models. Their use on the more detailed projects makes them very handy. **Figure 1.5** shows the first step in rounding the corners of the body of a small pattern Wise Man from Chapter 6.

Figure 1.6 shows the extra material being removed from between the arms of a large pattern Mary. The hand-held rotary sanding tool can be used with a variety of different cutting tools, such as those shown in **Figure 1.7**. The carbide cutters, which are upper left in **Figure 1.7**, are the ones being used in **Figures 1.5** and **1.6**. They are best for quickly removing large amounts of wood from body corners or where tails and arms need to be thinned.

The small diameter steel burr cutters are useful for removing material in hard-to-reach spots, for example, between legs or wings. This tool is less aggressive and not as apt to catch or grab as the carbide cutters can. **Figure 1.8** shows a small-diameter steel burr being used to remove the extra material between the legs of a Feeding Flamingo as discussed further in Chapter 7 for some of the more creative patterns.

Medium to course grit grinding stones will also remove wood sim-

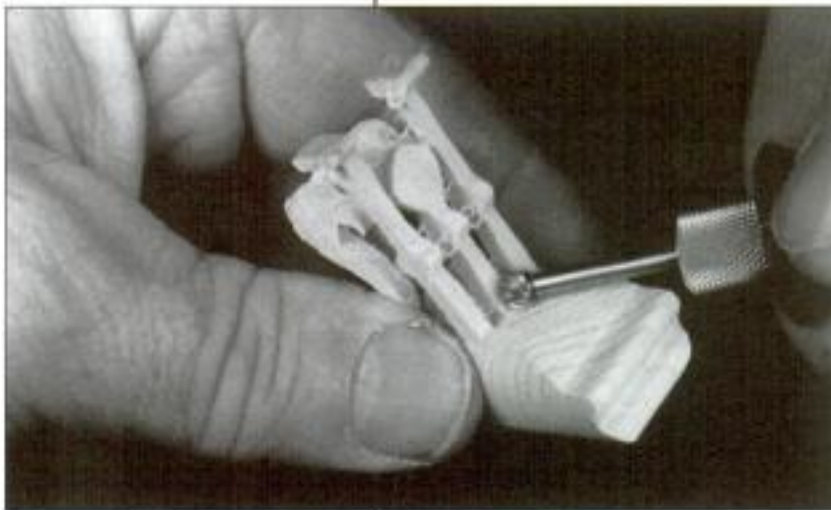


Figure 1.8

A small diameter steel burr cutter is being used to cut off the extra appendage between the legs of the Feeding Flamingo.

Power Tool Operation

ilar to a sandpaper drum; they are also shown in Figure 1.7. **Figure 1.9** shows a medium grit stone being used to smooth the body of a large Horse. Stones of this type can have the advantage of rounded corners or edges that will sometimes match the surface contour of the item being smoothed. **Figure 1.10** shows a disk with a rounded edge being used to smooth the neck of a small Wise Man. **Figure 1.11** shows a small-diameter stone being used to do a "cheek cut" on the small Skunk/Squirrel. For many of the small patterns this "cheek cut" can be done with a small file as discussed in Chapter 3. **Figure 1.12** shows the same stone from Figure 1.11 being used to shape the edge of the nose on the large Hillbilly. It is best to use a very light touch with these tools. If you push too hard, the surface will load up with wood and will start to burn rather than cut. The application of these types of operations will be discussed in more detail in Chapter 3.

The coarsely burred carbide cutters are best for quickly rounding the square corners of the larger craft items or for removing extra mate-



Figure 1.9

A medium grit grinding stone is very useful in smoothing the surface of craft items that have had the corners rounded with a more aggressive cutting action like that shown in Figures 1.5 and 1.6.

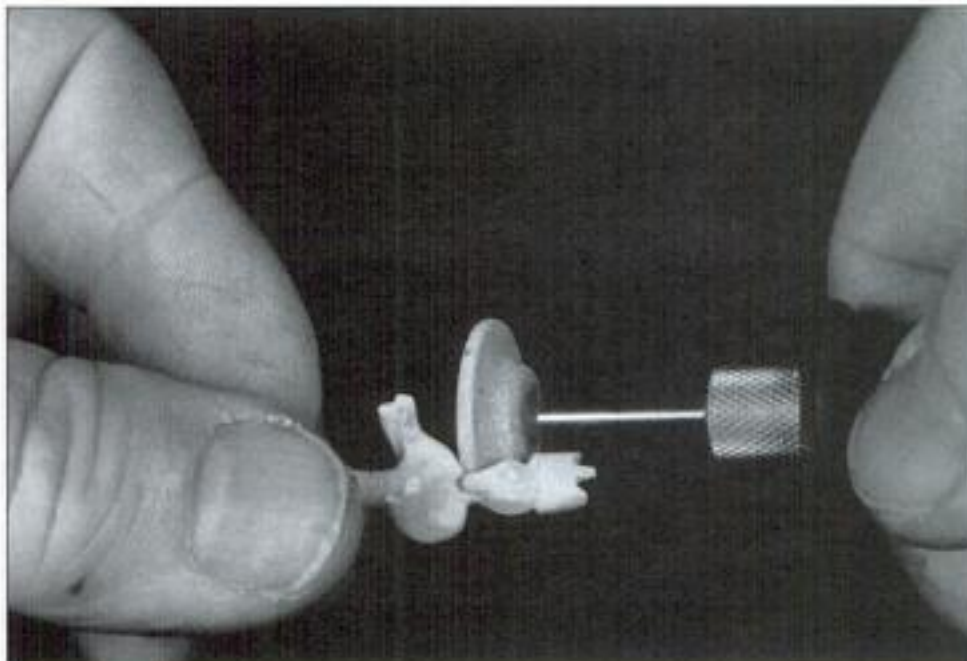


Figure 1.10

A larger diameter disk type grinding stone is being used to smooth the corners of the neck of a small Wise Man.

3-D Scroll Saw Patterns and Techniques

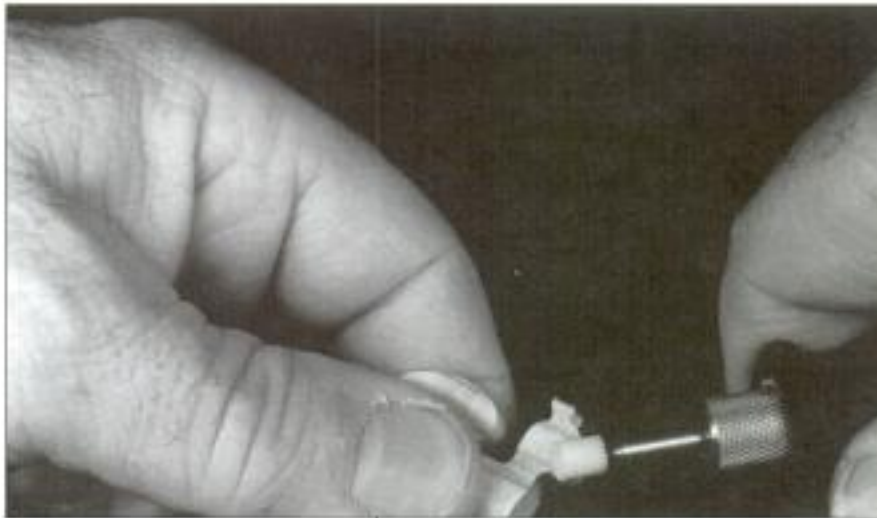


Figure 1.11

The "face" for many of the animals needs a "cheek cut" to blend the nose into the larger part of the head. A small-diameter cylindrical stone can be used to do this as shown for the small Skunk/Squirrel.

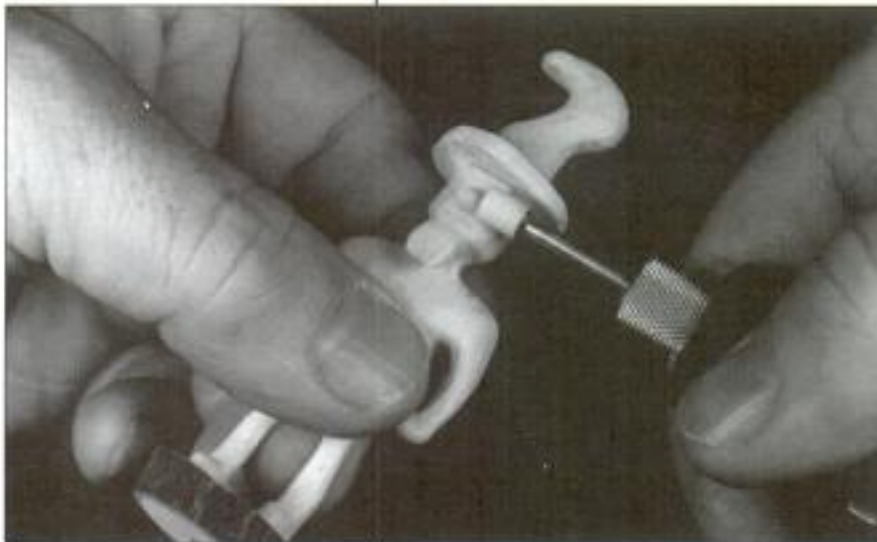


Figure 1.12

The end of a small-diameter cylindrical stone is used to set-in the nose on people-type craft items.

rial as shown in Figures 1.5 and 1.6. Final smoothing, however, still needs to be done with a less aggressive process. Sanding drums and medium grit stones are a good second step after using a carbide burr. Medium or fine grit stones and/or fine sandpaper are best for the final smoothing of delicate details as shown in Chapter 3.

Figure 1.13 shows a small-diameter pointed fine grit stone being used to smooth the inside corners of the arms of a small Wise Man. The small diameter and less aggressive stone keeps this tool from "catching" on the wood. As a result, they can be used to "gently rub" the surface and do the final smoothing of legs and body corners. Larger diameter fine stones work well as a final step on many larger surfaces. Be careful in using any of the power sanding tools where the tool is between two parts of the craft item. When sanding between two legs, for example, the tool may catch both legs at the same time and cause breakage.

Special care must be used in working on the smaller parts, especially if the wood is somewhat cross-grained. Extra care needs to be used with the power sanding as it is easy to remove material too fast or to let the tool grab and break a small tail, ear or antler. If this happens, it is generally possible to glue the broken piece back in place. After the glue dries, use extra care to finish the sanding operation and smooth up the glue joint if necessary. Some details are best done by hand with sand paper or files as discussed later in Chapter 3.

Power sanding is most helpful for band saw items and large scroll saw items. It is also needed for the more creative patterns in Chapter 6 and 7 where major alterations are needed. Many of these projects have the "people profile" which will be discussed in detail in Chapter 2 and again in Chapter 6 for the individual craft items. These items have "arms" on either side of the body, and

it is necessary to reduce the front-to-back dimension so they have the proper proportions. This is where a power sanding tool can be quite helpful. By using a sequence of aggressive to finer grit tools a craft item can be quickly finished. With a little practice, detail finishing will go quickly and the craft items will look as if they have been hand-carved.

ERRORS DUE TO IMPROPER SET UP

The blocks must be carefully made so they have square corners and parallel edges. If the patterns are transferred to a poorly prepared block, there may be distortions in the craft item due to the non-parallel edges and surfaces of the block. This error is similar to what can happen if the saw blade is not perpendicular to the saw table. This is most important for the animals with four legs or where the wood block has a large front-to-back dimension.

When the side view pattern is being sawed, cutting around the front leg will produce both front legs and cutting around the back leg will produce both back legs. In a similar manner, for the front view sawing, cutting around a leg on the pattern is really producing both a front leg and a back leg at the same time. The saw blade may be carefully guided around the pattern drawn on the upper surface of the block, however, what happens in the block near the saw table can be quite different.

Remember, a non-perpendicular saw blade and saw table are routinely used to cut a tapered item. As you cut around a leg in the front view, the width of the leg near the saw table can be either too wide or too narrow if the saw is not set up properly. Since this cutting operation produces both a front leg and a back leg at the same time, the leg near the saw table may be thicker, or worse, it will be too thin and subject to breakage. If there are errors in the saw set up or in the preparation of the blocks, this is one of the problems that could happen. Other features of the craft item could also be distorted and difficult to finish.

While it is very important to carefully prepare the rectangular blocks with square corners and parallel sides, it is also very important to avoid a wood block that has any other irregularities. A large piece of wood may have small cracks in the end grain that formed when the wood was drying. It may also have small knots or pores in the grain pattern. When you prepare the saw blanks, avoid any defect in the wood

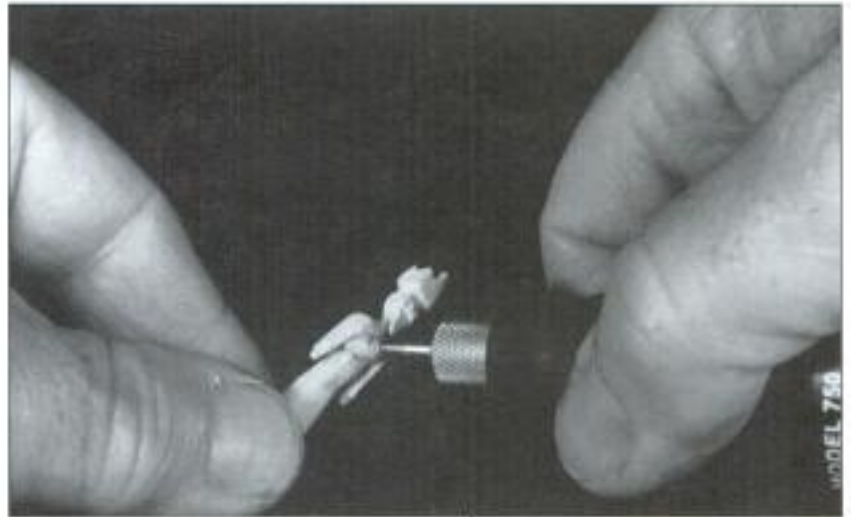


Figure 1.13

This small Wise Man has a narrow space between the arms and body. The corners are being rounded and smoothed with a small-diameter pointed grinding stone. A fine grit stone is best for this operation to avoid catching of the stone in the narrow space.

3-D Scroll Saw Patterns and Techniques

block that might be in a critical location on a craft item that would allow it to break easily or be a distraction in the finished craft item.

SAWING TECHNIQUES

Some of the patterns require square corners or a sharp point on the end of an ear, horn or antler. This tight turning with the saw can be done easier if you widen the saw kerf where the turn is to be made. Stop sawing where you need to turn and move the block backward a small distance. You can now move forward again and widen the saw kerf on the waste side of the material in the wood block. The blade can now be turned in the kerf and form the square corner or the point of ears, horns and antlers.

Chapter Two

3-D Pattern Techniques

There are many books with two-dimensional patterns for flat stock that only require one pattern for a craft item. The three-dimensional items in this book will require two patterns for the creation of a craft item. The use of three-dimensional patterns is similar to a blueprint or an engineering drawing of a building where there is a front view and a side view of the structure. Another good way to visualize this procedure is to look at your shadow on a wall when you have a single light source across the room from you. If you stand facing the wall, the outline of your shadow will be a front profile pattern for your body; if you turn sideways to the light, the outline of your shadow will then be a side profile pattern for your body.

FRONT AND SIDE VIEW PATTERNS

As noted before, the three-dimensional craft items require a rectangular block of wood instead of thin flat stock. The two patterns are traced, glued or fastened with double-sided tape on the front and one side of the block. The stock needs to be somewhat longer than the height of the craft item being made so you can hold on to the wood. Grip the stock back away from the area that is being cut and guide the saw cut around the pattern on the wood, as shown in Figures 1.3 or 1.4. After an item has been completely sawed, the rectangular stock can be cut off square just above where the patterns were drawn. The end can be sanded smooth and the block is again ready for another item. Several projects can be made from one piece of stock before it gets too short to hold and control the sawing operations.

The procedure photos in Chapters 4-7 show typical blocks with pat-

3-D Scroll Saw Patterns and Techniques

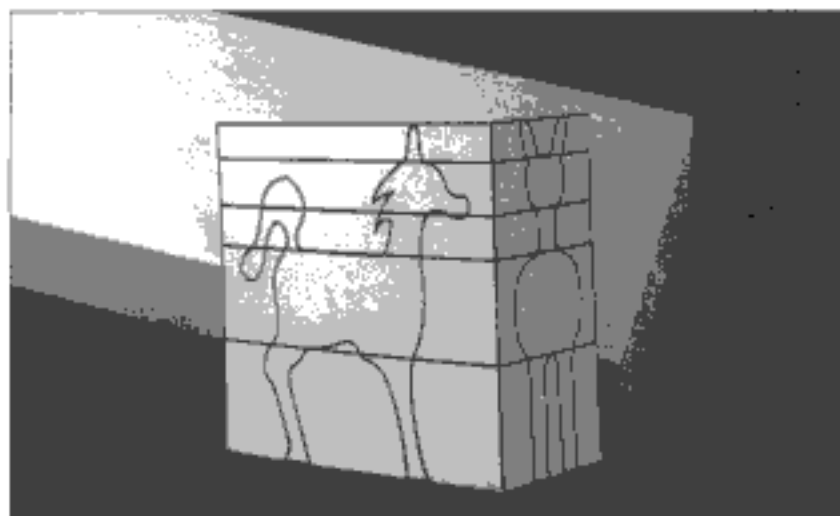


Figure 2.1

A photocopy of the front and side view Horse patterns is being prepared to position on a wood block. Note the 90-degree fold in the paper where it will fit over the corner of the wood block.

terns drawn or taped on them. Both the thickness and width of the block need to be at least $\frac{1}{8}$ inch greater than the maximum distance across each of the two corresponding profile patterns mentioned above. This extra material is needed to keep the block intact while the cutting is being done for both the front view and side view. When the patterns have been transferred to the wood block, they need to be a minimum of $\frac{1}{16}$ inch from either edge of the block face for the small patterns (larger for the big patterns).

This can be seen in Figures 1.3 and 1.4 and in the procedure photos for Chapters 4-7. This edge space has been included in the pattern drawings with the guide line grids as discussed later.

In an engineering drawing of a building, any given point or detail will be the same distance from the bottom of the drawing in both views. Using the example of the shadows, the top of your shoulder is the same distance above the floor when you look at your shadow on the wall for either the front profile or side profile. In a similar manner, the two patterns on the wood block must be properly located from the end of the block. This end of the block will be the bottom of the craft item being produced, as shown in Figures 1.3 and 1.4.

HORIZONTAL PATTERN GUIDE LINES

The patterns for all the items in Chapters 4-7 are shown at the end of each chapter. The small size patterns are only for use with a scroll saw with small blades. The larger patterns can be used with deep cutting scroll saws with bigger blades or with a narrow blade band saw. The patterns include horizontal guidelines between the two views to insure the proper orientation of details in the side and front views. All the pattern drawings (both sizes) are together at the end of chapters 4-7. These pages can be photocopied true size and used for a craft item the first time it is made.

The patterns can also be made smaller or larger when you are comfortable with this type of sawing technique. Figure 8.7 shows a special project with the Duck pattern. There are seven Ducks starting with the smallest that is only one-half-inch high and ending with the largest that is three inches high. The largest Duck is six times the height of the smallest! The third and fifth items in the series are the "normal" small and large patterns. The smallest Ducks were done with a No. 2/0 scroll saw blade. The largest items were done with the $\frac{1}{16}$ inch blade in the band saw.

The photocopies can be glued or taped directly onto the wood

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blocks. Spray adhesive or tape that has adhesive on both sides can be obtained from an office supply store. Be sure the bottom of the pattern drawing is even with the bottom of the wood block. This will require careful cutting out of the pattern drawing with the rectangular grid. Carefully fold and crease the photocopy on the vertical grid line between the two views so the two parts of the paper strip can be positioned with a 90-degree bend in the paper as shown in **Figure 2.1**. Then flatten the paper strip again and place it face down on a flat surface. Use spray adhesive or pieces of two-sided tape on the back of the paper strip. Then carefully refold the strip at the crease to the 90-degree bent position again. Place it so the fold is at the corner of the block as shown in **Figure 2.2**. It is very important to keep the horizontal guide lines perpendicular to the corner of the block. This should be easy if the bottom of the paper photocopy strip is kept even with the bottom of the wood block.

MAKING PERMANENT PATTERNS

The first time a craft item is done, the patterns with the grid must be taped or glued onto the wood block as discussed above. Once a craft item has been produced, it is easy to have permanent templates for doing the same craft item again. This is done by carefully cutting and/or sanding both the front view and the side view waste pieces into a thin "wafer" or "template." Smooth the edges of the templates if the saw cut you made was irregular. You can tape both of the waste pieces, which had the front and side view patterns, into the saw block and simply cut parallel to the edge of the block to make a thin slice. You may want to sand these slices thinner so it will be easy to use a sharp pencil point to trace around them as shown in **Figure 2.3**. These templates are also shown in several of the procedure photos in Chapters 4-7.

Use the front view template first and trace the front view pattern on the front of the block. The next step is to add guidelines similar to those

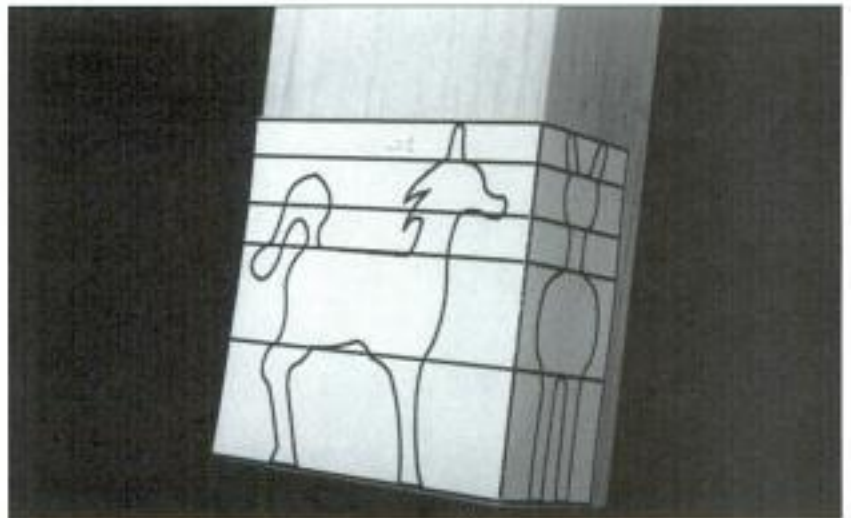


Figure 2.1

This photo shows a properly positioned photocopy in place on a wood block. Note how the bottom of the patterns match the bottom end of the wood block.

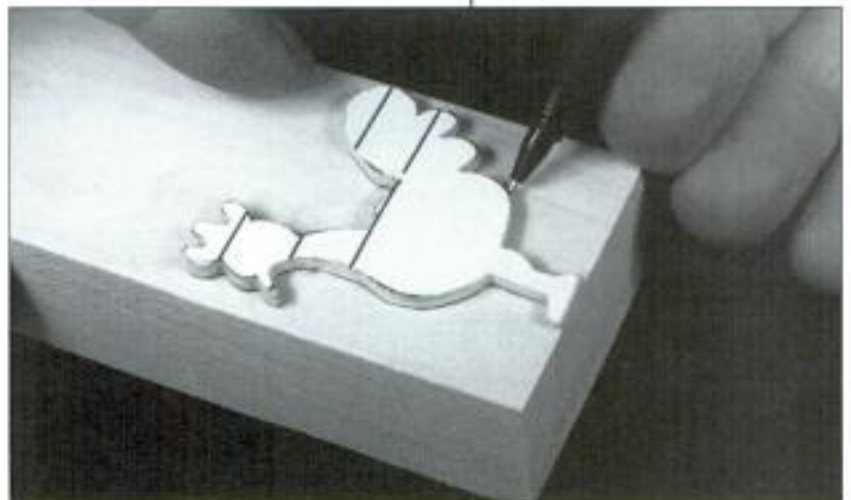


Figure 2.3

Permanent templates can be made from waste pieces. Horizontal guidelines assure proper positioning.

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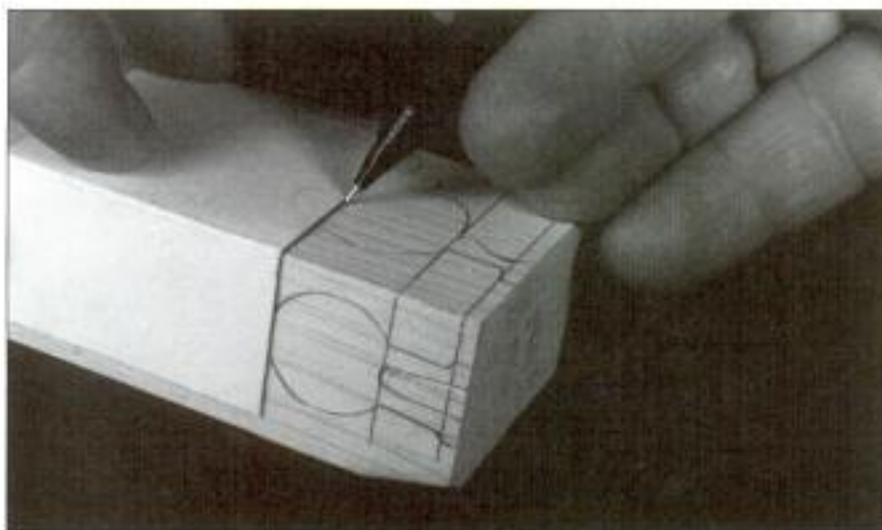


Figure 2.4

A cardboard square is being used to draw the horizontal guide lines between the front and side views. This helps in proper positioning of the templates when they are used.

line is truly perpendicular to the edge used to draw the guidelines.

Drawing of guidelines is illustrated in **Figure 2.4** and again in the procedure photos in Chapter 4. The guidelines will provide valuable assistance in locating features in both views. They will clearly establish the body part spaces as noted in the next section. They are also very important when the craft item has a hat. This will be discussed further in Chapter 6.

The last step is to trace the side view pattern on the side of the block with the other template making sure it lines up properly with the guide

lines. This procedure will assist with proper orientation of the body, head and ears in both views. Note that it is very important for the fold line of the cardboard square to be properly fit over the corner of the block to draw the guidelines between the two views. The guidelines are extra helpful for band saw items where there is a larger saw kerf, as noted later in the section on typical sawing procedures.

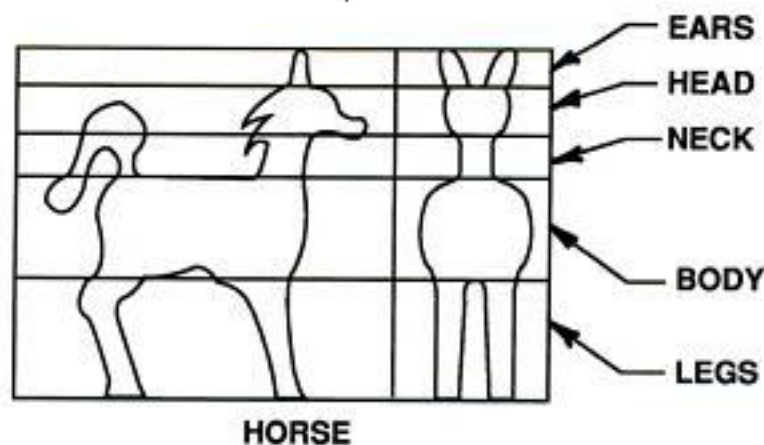


Figure 2.5

The "body part" stack of "spaces" for the Horse patterns. Note each body part space is distinct.

BODY PART SPACES
The guidelines referred to above are used to locate the top of feet, bottom of the body, top of the body, bottom of the head, top of the head, and the top of ears or horns above the head. The simple patterns in Chapter 4 generally have clearly defined feet, legs, body, neck, head, and ears or horns. Also these body parts do not overlap in moving from the bottom to the top of the craft item. There is a distinct "space" for each part and they are "stacked" on top of each other like a

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stack of books. **Figure 2.5** shows the stack of spaces for the Horse that is shown in Figure 2.1. The space for each body part is controlled by its vertical distance in the front view.

The patterns in Chapter 5 are more detailed because some of the body parts are the same distance above the base. As a result, the space for each item is no longer distinct as shown for the Horse in Figure 2.5.

Figure 2.6 shows the body part spaces for the Eagle. Note that the head and the body are in the same space. When the cutting is complete, the head will have the same width as the body and will require some extra sanding and finishing of the craft item as explained later in Chapter 3 and in Chapter 5 for the detailed instruction for the Eagle.

The more creative patterns in Chapters 6 and 7 have greater detail in the overlapped parts or appendages that are in the same space. Some of this greater detail can be visualized with the "shadow on the wall" example. When you look at your side silhouette shadow, your arms are not clearly visible if they are along side your body. When the cutting is completed on a "people-type" craft item, the arms will have the same front-to-back dimension as the body and will need alteration. This is illustrated in **Figure 2.7** for the Mermaid. The arms are shown as a dashed line in the side view since they will not be the proper width when the cutting is done. This is discussed in general at the beginning of Chapter 6 and for each of the craft items as needed.

SPECIAL ALTERATIONS

A different alteration of parts is necessary when several parts are located in the same space above the base. For example, in Chapter 7, the legs and the neck/head of the Feeding Flamingo are in the same space just above the feet and below the body. A similar situation occurs for Pegasus, the Unicorn, the Turkey and the Angel. The result is that when the two profile cuts are completed there are "appendages" wherever the two patterns intersect, as shown in Figures 7.1 to 7.5. The "extra" appendages for the

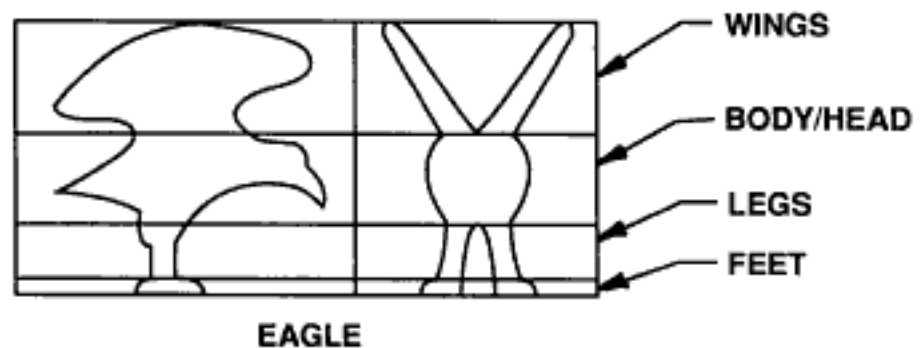


Figure 2.6

The "body part" stack of "spaces" for the Eagle patterns. Note the body and head share the same space.

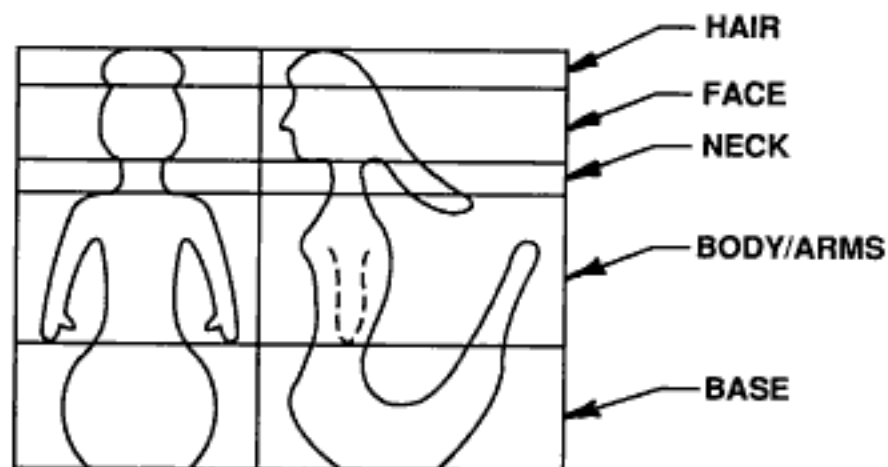


Figure 2.7

The "body part" stack of "spaces" for the Mermaid patterns. Note the body and arms share the same space. The arms are shown with a dashed line in the side view.

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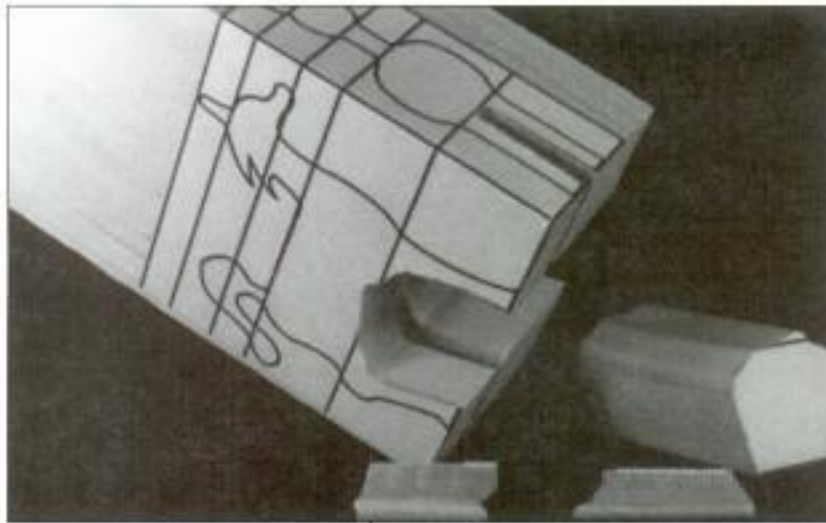


Figure 2.8
Initial sawing steps for four-legged animals. Note the first cut was done on the side view.

material from between the front and back legs in the side view, as shown in **Figure 2.8** for the Horse. This is discussed in greater detail at the beginning of Chapter 4. Craft items with only two legs don't need this first step. Next remove the material from between the left and right legs in the front view, also seen in Figure 2.8. By cutting out the material between the legs first, the rigidity of the block is still intact.

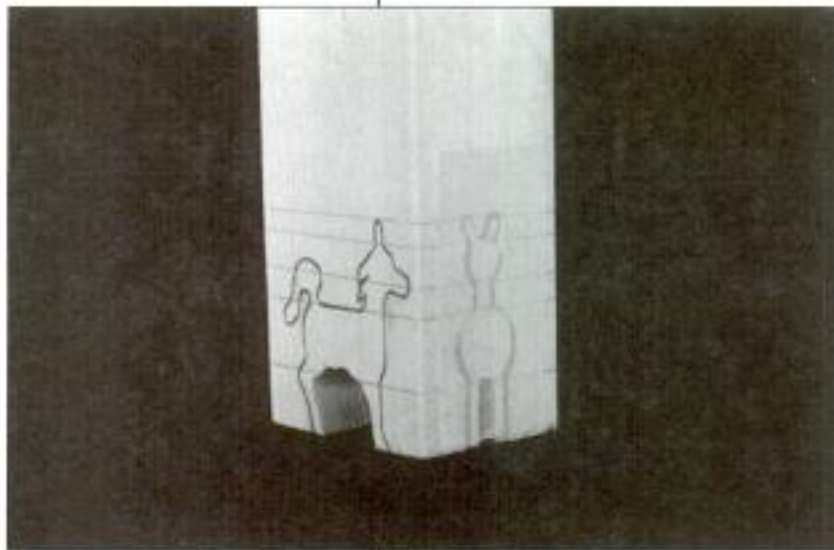


Figure 2.9
Masking tape has been put over the saw cuts on the front and back surfaces. Note the center piece has also been carefully positioned so the guidelines line up with their remaining portions on the block.

block up off the table. The greatest tendency for this to happen will be when a tight turn is being made. An advantage of using the band saw for a craft item is the continuous down motion of the blade does not cause the "lift" problem noted for the scroll saw. The band saw, however, may require more care in order to make tight turns. The larger patterns help but the blade size is still relatively larger than for the scroll saw. A review

Feeding Flamingo will be attached to the body on either side of the neck/head and between the legs, as seen in Figures 1.8 and 7.1. These extra appendages, on these special craft items, need to be trimmed away to complete the items as shown in Figures 7.1 to 7.5. These alterations are discussed further for each craft item as needed in Chapter 7.

TYPICAL SAWING PROCEDURE FOR ANIMALS

A typical sawing procedure for animals with four legs is to first cut out the material from between the front and back legs in the side view, as shown in **Figure 2.8** for the Horse. This is discussed in greater detail at the beginning of Chapter 4. Craft items with only two legs don't need this first step. Next remove the material from between the left and right legs in the front view, also seen in Figure 2.8. By cutting out the material between the legs first, the rigidity of the block is still intact.

The rest of the front view sawing is done next, as this is generally the larger dimension of the block that requires the maximum depth of cut. It is better to do the most difficult cuts first while there is greater rigidity in the block, and it is easy to hold. As noted before, the block should be several inches longer than the height of the craft item being produced to assist with holding the block down on the saw table and turning it as needed to follow the pattern lines as shown in Figures 1.3 and 1.4.

Holding the block securely down on the saw table is very important with a scroll saw. The up and down action of the scroll saw blade will tend to lift the

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of the sawing techniques discussed at the end of Chapter 1 will help.

After the front view cutting is done, masking tape needs to be put over the saw cut on both the front and the back of the block as shown in **Figure 2.9** for the small scroll saw horse. Clean the saw dust from the surfaces where the tape goes so it will stick properly. This keeps the small piece in the center of the block (that has just been cut free) from sliding in the front to back direction while the side view cut is being made. The large pattern projects are made from a much larger piece of wood stock and are more rigid. As a result the center piece may seem "loose in its slot." Before taping the large patterns, it will be necessary to properly position the center piece in place.

This positioning is done by cutting "shims" from a heavy paper, such as a manila file folder, and placing one or two shims on each side of the center piece. **Figure 2.10** shows these shims being pushed into place. They must be pushed in so they do not interfere with the tape when it is put in place. This is not needed for the small scroll saw operation with the much smaller pieces of wood stock. The end of the block can just be "pinched together" to firmly position the center piece as the masking tape is put in place. Since the large scroll saw patterns use a larger blade, shims are generally needed. It is always a good step to gently "pinch" all sizes of items as the tape is being put in place. The shims are a very necessary step for the band saw cut items since the saw kerf is much wider with the band saw blades.

Figure 2.11 shows the center piece taped in place for the large pattern Horse. Note the guide lines are still visible through the masking tape in **Figure 2.11**. It is important to check the portion of the guide lines on the "free" center piece of wood that has been taped in place to ensure they still line up with the other part of the guidelines on the remainder of the saw block. Because of the wide saw kerf, the center piece can shift up

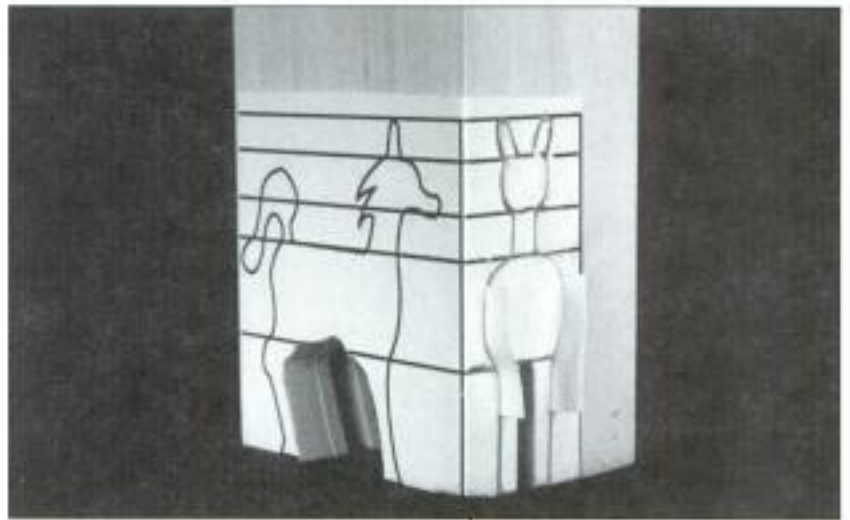


Figure 2.10

Cardboard shims have been placed in the band saw kerf to keep the "loose" center piece in place. Keep the "cut" guidelines in position when taping.

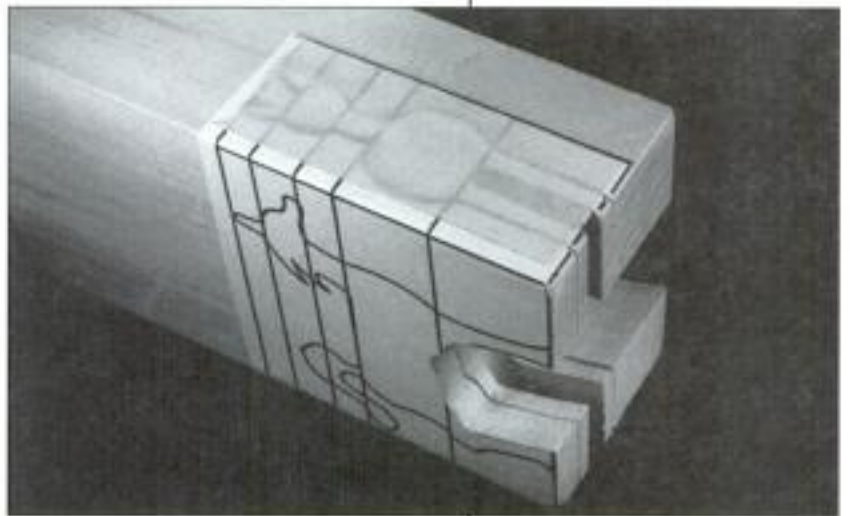


Figure 2.11

Masking tape has been put over the band saw cuts after the shims have been properly positioned. Note how the cut guide lines in the front view can be seen through the tape and are still in proper position.

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or down before the tape is put on. If there is any mismatch, reposition the "free" center piece and add shims to properly position the material before the tape is in place. This is a very important step to do before the side view cutting can be done.

SIDE VIEW CUTTING

The next step is to finish the side view cutting. Use extra care because the block will not be as rigid, even with the tape used to keep it together. Sometimes there is a "best way" to continue with the side view cutting. Consider an animal that has small details on the head, ears, antlers or horns, for example. It is best to start the cut with the front leg so all the head details are done as soon as possible. This will keep the block more rigid while the more difficult cutting is done. The cutting can end with the back leg where there is less detail when the block has become less rigid. Suggestions are given for some of the patterns on which way to saw.

TYPICAL SAWING PROCEDURE FOR PEOPLE PROFILE

The "People Profile" craft items include vertical standing animals, such as the coyote and the penguin, where the front legs or wings are in the same space as another body part. As discussed earlier in Chapter 2, the arms, front legs or wings will have the same front-to-back dimension as the body when the sawing is done. The first step in sawing for the "People Profile" is to remove the material from between the legs in the front view. (The Nativity Scene people have floor level robes and don't show their legs.) The rest of the front view sawing is done next as with the regular animals since this is generally the larger dimension of the wood stock. Side view cutting of "People Profiles" follows a similar procedure, as noted above for the regular animals. Be sure to carefully follow the pattern details for the arms when they extend out in front of the body. These items will require special finishing as discussed for the individual items in Chapter 6.

Chapter Three

Finishing Operations

Because the craft item being produced is the result of two cutting operations that are perpendicular to each other, there will be some details of the craft item that have square corners and appear "blocky" in nature. And because the craft items made with the small pattern drawings are somewhat smaller than the similar large pattern items, a lack of detail for legs, ears, horns, and tails, for example, may not be unpleasant to the viewer. When the large patterns are used for a craft item, the lack of detail and square corners become more apparent to the eye. As a result, additional rounding of the body corners can be done as shown in **Figure 3.1** for the large Penguin, Duck, Ostrich and Rooster.

This is also clearly seen in Figure 8.7 and on the book cover for the series of different size Ducks. The smallest Ducks have almost no rounding, as the size increases, it is apparent that the rounded corners improve the appearance of the craft items. Most of the special finishing operations are noted in the detailed plans for each craft item in Chapters 4-7, but will be discussed here in a general way to give insight for a typical project.



Figure 3.1

The large pattern items generally will require more rounding of the corners than for the small pattern items.

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Figure 3.2

Typical craft items where the face, head or body corners will need to be rounded, for both scroll saw and band saw items, include Mary, the Farmer and the Coyote.

DETAIL ALTERATIONS

For both small and large patterns, the face of the "people-type" craft items should be slightly rounded to improve their appearance as shown in **Figure 3.2** for both sizes of Mary, the large Farmer and the small Coyote. The heads of birds, like the Cardinal and the Road Runner, can be rounded for both small and large patterns, as seen in **Figure 3.3**. A gentle sanding is needed to round the sharp square corners. These sanding techniques were discussed in Chapter 1 in the section on using a rotary sander.

Many of the items have a nose as part of the head. If the nose is mostly below the head, as seen in **Figure 3.4** for the Goat, Horse and Moose, only a gentle rounding of the edges is needed to improve their appearance. Many of the animals, such as the Dogs, Cats, Polar Bears and Camels, have both a tapered and a rounded nose as part of the facial features. Sometimes the nose is directly in front of the basic head structure, as seen for the Skunk/Squirrel, Do, and Cat in **Figure 3.5**. **Figure 1.11** shows how a small-diameter stone can be used to do a "cheek cut" for this needed alteration. This reduces the width of the nose where it is directly in front of the head.

This sanding operation has been done on the items in **Figure 3.5**. Note the alteration from unfinished to finished noses. This **Figure** also shows how the ears on the Dog will need to be trimmed at the front.



Figure 3.3

The heads of birds generally need to be rounded for both sizes of patterns.



Figure 3.4

The nose of several items, such as the Goat, the Horse and the Moose, will only need a small amount of rounding to improve their appearance.

Finishing Operations

The ears will have to be trimmed before the work can be done on the nose. Both sizes of craft items will need this attention. **Figure 3.6** shows that on several of the birds, such as the Ostrich, Rooster and Stork, the beak will need very little attention since it is below the head in the neck space. Note the unfinished items in this Figure and how the beak will need very little finishing.

The Eagle, however, is an example where a significant amount of attention is needed since both the beak and head are directly in front of the basic body structure. An operation similar to the "cheek cut," shown in Figure 1.11, needs to be done to reduce the Eagle head from the width of the body. A second similar operation is then done to reduce the beak from the width of the head. This is discussed later in the detailed instructions for the Eagle and is shown in Figure 5.5. The Sea Gull will be similar to the Eagle. The Polar Bear will also require a similar alteration since part of the head and the nose are in front of the basic body structure.

Whenever there is an overlap of body part spaces, power sanding will speed the alteration. **Figure 3.7** shows typical tails in the body space after sawing and how they need to be altered. Note the unfinished Elephant, Camel and Polar Bear tails that need to be reduced in width.



Figure 3.5

When a craft item has the nose in front of the head, a more significant alteration is needed, as shown for the Squirrel, Dog and Cat. Note the alterations from unfinished to finished noses. This Figure also shows how the ears on the Dog will need to be narrowed. Both scroll saw and band saw items need this attention.

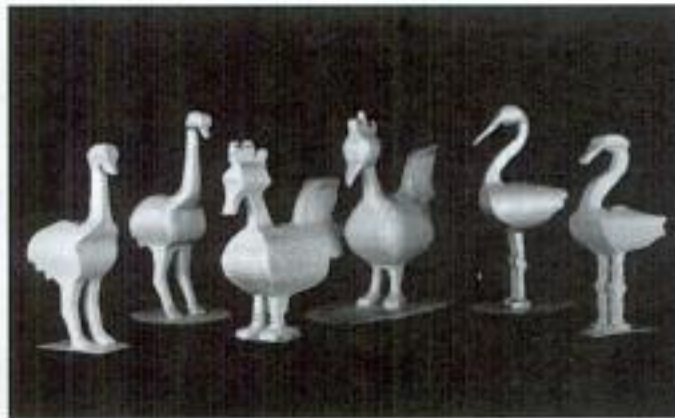


Figure 3.6

For several of the birds such as the Ostrich, Rooster and Stork, the beak is in the neck space. A gentle rounding of the edges and a slight taper to a point is all that is needed.

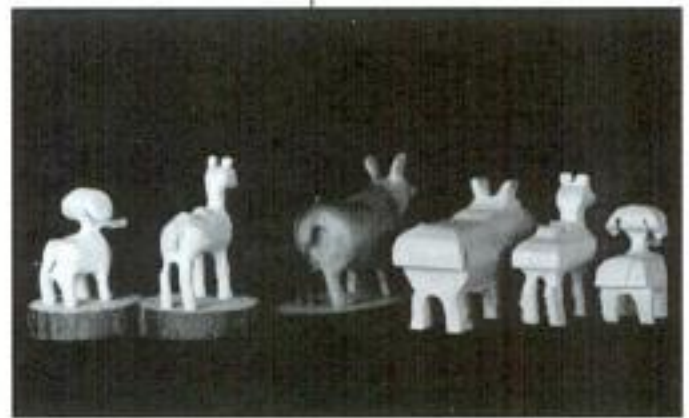


Figure 3.7

The Elephant, Camel and Polar Bear tail alterations are typical of animals that have the tail in the body space. After sawing, the tail is the same width as the body.

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Figure 3.8

The Rooster feet need to be sanded to a triangular shape for both sizes of patterns. This is a typical sanding operation for many of the bird craft items.

FOOT ALTERATION DETAILS

Generally the birds should have flat triangular-shaped feet. However, the feet will be rectangular in shape when the sawing is done. They can easily be sanded to a typical triangular shape, wide in front and narrow at the back. **Figures 3.8 and 3.9** show this sanding operation for the Rooster feet. In a similar manner, sanding of the feet of the people type craft items in Chapter 6 can be done to round the corners and improve their appearance. Many sanding alterations can generally be done for the small pattern items with a

fingernail file emery board or a small piece of fine grit sandpaper as shown in **Figures 3.9-3.11**. Since the big pattern items are somewhat larger, they may require more sanding as shown in Figure 3.1. This is discussed in the section on Rotary Sanding Tools in Chapter 1.

CORNER AND EDGE SANDING

Depending on how sharp your saw blade is and the texture of the wood, there may be some "fuzz" at the bottom edge of the saw cut where the saw teeth exit the wood on the down stroke of the sawing operation. Excessive fuzz is an indication that the saw blade is dull and should be changed. Sometimes it works well to fold a narrow strip of sandpaper lengthwise so it is more rigid and has grit on both sides but can still be formed in a curve. This is helpful for defuzzing edges between legs, as shown in Figure 3.11. Emery boards, normally used for

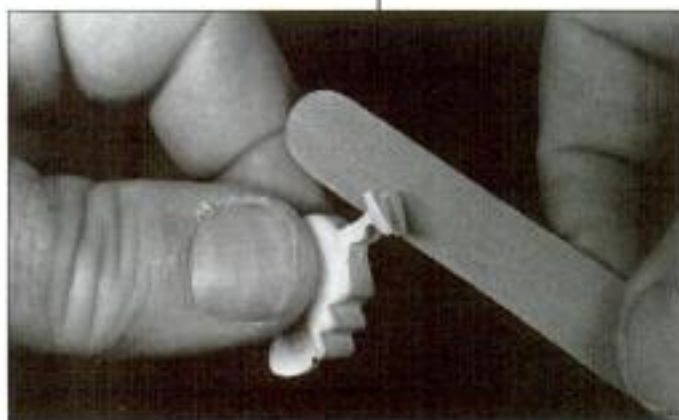


Figure 3.9

An emery board can easily be used to form the triangular shape of the bird's feet as shown for this small Rooster.

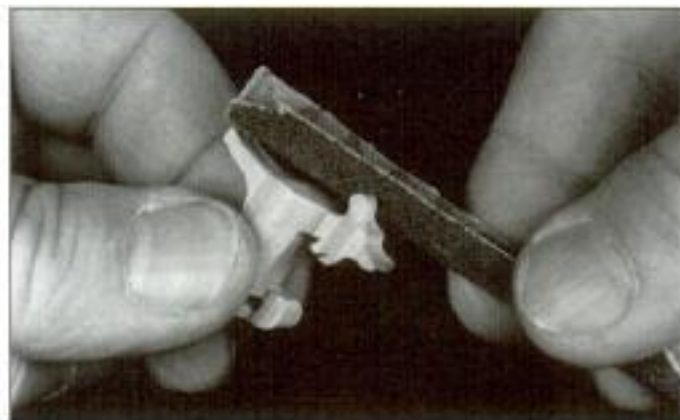


Figure 3.10

A small piece of fine grit sandpaper can be used for many of the sanding operations as shown for the nose of the Horse.

Finishing Operations

fingernails, or a small set of metal files of different shapes can also be useful for the different finish sanding efforts. Figures 3.9 to 3.13 show an assortment of sanding tools and how they can be used. **Figure 3.12** shows a metal file being used on the head and beak of the Eagle. A group of metal files, emery boards and folded sandpaper is shown in **Figure 3.13**. The metal files are a good hand operation for the small patterns when alterations such as the "cheek cut" are needed.

It is recommended that the first projects you do are some of the simple patterns in Chapter 4 with the small size patterns. Several of these do not require any sanding except to perhaps defuzz the edges at the bottom of the saw cuts. As you get a feel for sawing and sanding, you can move on to the detailed patterns in Chapter 5 that require more detailed alterations to complete the craft item. The more creative patterns in Chapters 6 and 7 will be easier to do after you have developed your skill by doing the items in Chapters 4 and 5. The bigger pat-



Figure 3.11

A narrow piece of fine grit sandpaper has been folded in half lengthwise to assist in defuzzing the saw cut edges between the legs of the Horse.

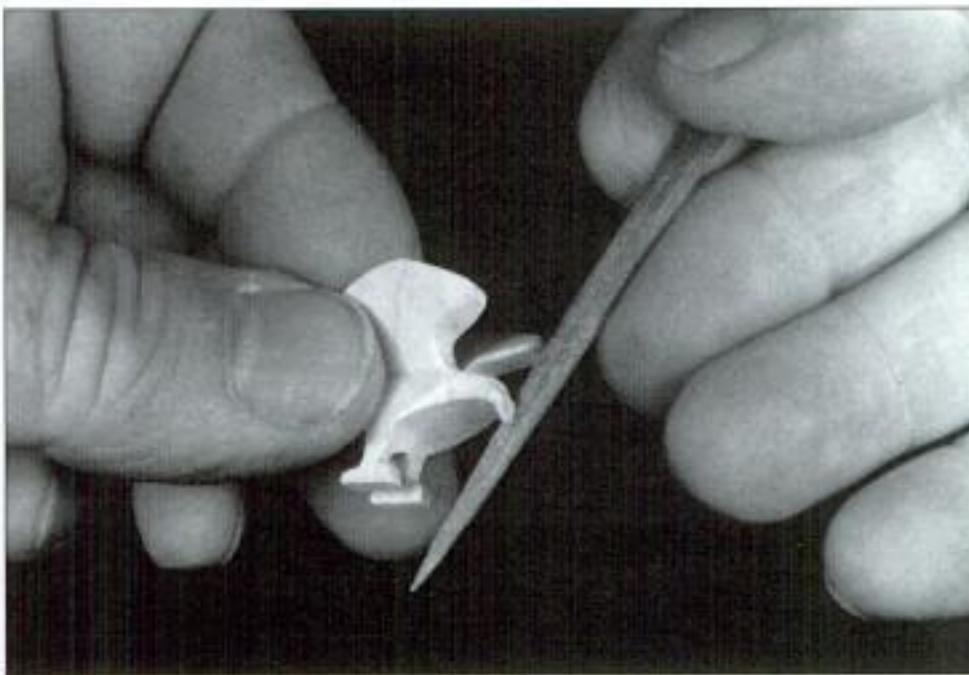


Figure 3.12

The Eagle beak is being carefully finished with a small metal file.

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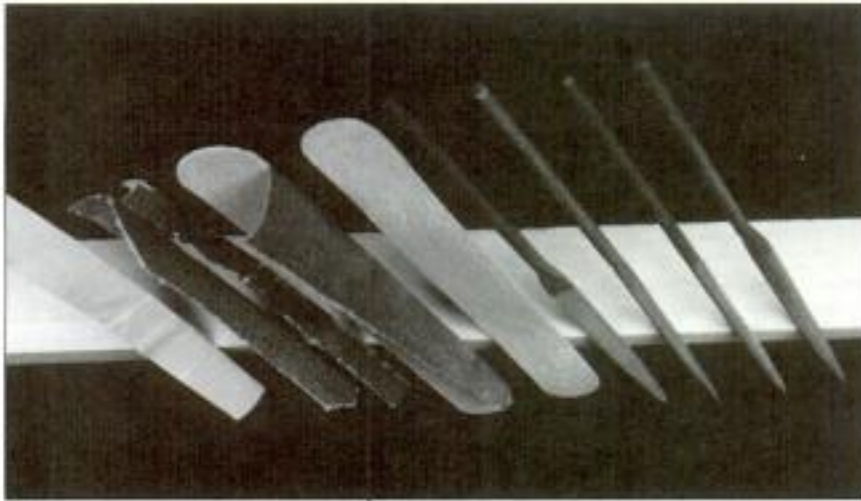


Figure 3.13

Here are several types of medium and fine grit sandpaper that have been folded in half, an emery board and metal files.

terns for scroll sawing or band sawing will be easier to do after you are practiced on doing the small patterns.

FINISHING AND DISPLAY OF CRAFT ITEMS

Most of the craft items can be displayed better if they are fixed to a base as seen in most of the individual photos for each of the projects. Put a small amount of glue on a scrap of paper. Then use a toothpick to transfer a tiny amount of the

glue to the bottom of each leg or base of the item. Too much glue will leave an overflow or squeeze out around the bottom of a leg when it is placed on the base and will distract from the appearance of the finished project. A small wooden base of the type shown can be made from thin wooden stock. It could be any shape: round, square, oval.

The bases shown in the finished project photos for various craft items were made by cutting different sizes of small basswood or maple tree branches into thin slices and sanding the cut surfaces smooth.



Figure 3.14

The Rooster and the various "waste pieces" from the scroll saw cutting operation are displayed on a small wooden base.

Finishing Operations

Oval-shaped bases can be made by cutting the branch at an angle. It may be helpful to sand only the legs of some of the smallest animals, such as the Deer, Moose and Rabbit, before gluing them on a base. The rest of the sanding can be done after the legs are firmly attached to a base. This makes the item easier to hold and there is less chance of breaking off a small leg. A coat of wood sealer or polyurethane should be applied to the finished craft item. The craft items can also be painted with bright colors to accent the features of the item as seen in many of the figures and on the book covers.

If you want to illustrate the details of how the miniatures have been created, you may want to mount the finished craft item and the various "waste" pieces on a larger base. The main block can be cut off short after the front and side view patterns have been cut because you no longer need the extra length to control the blank while cutting around the patterns. **Figure 3.14** is for a small pattern Rooster. **Figure 3.15** is for a large pattern Eagle. These Figures show how to mount the craft item and the waste pieces for display. Depending on how the waste pieces are shaped, it may be necessary to support them part way back into the space in the main block.

DOUBLE CUTTING OPERATIONS

Several of the craft items are not very wide in the front view. If a thicker block of wood is used for the project, it is possible to trace two front views on the front side of the block. There needs to be a space between them, as well as the usual space on either side as explained in the basic techniques in Chapter 2. The usual side view pattern is then traced on the side of the block. Follow the usual cutting procedures, except cut around both of the front view patterns before finishing the side view cutting. The front view cutting will produce two pieces of wood that will then need to be taped in place. The side view cutting then produces two items. It is very important to have square blocks and perpendicular saw set ups

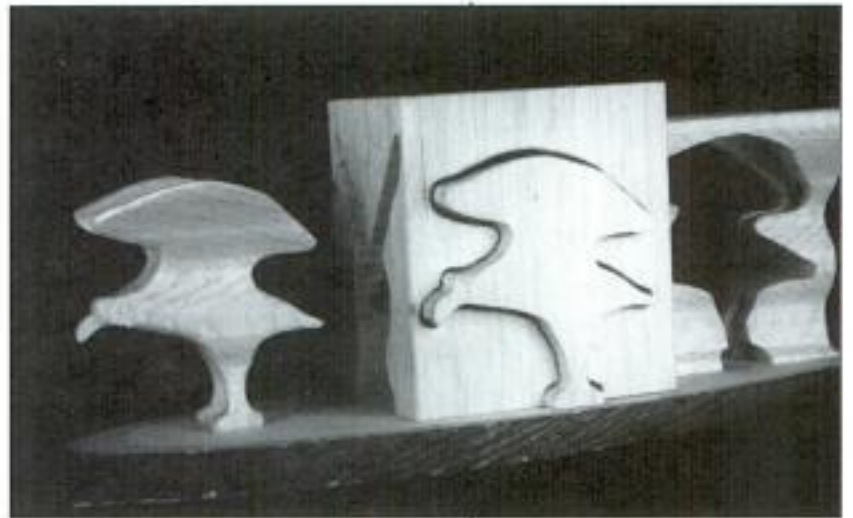


Figure 3.15

The Eagle and the various "waste pieces" from the band saw cutting operation are displayed on a wooden base.



Figure 3.16

Example of double scroll saw cutting for two Horses with all the waste parts mounted on a wood base.

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with this procedure. **Figure 3.16** shows just the waste pieces mounted on a base after a pair of Horses have been sawed from the block. You should keep the "double thickness" less than the width of the side view so the sawing operation does not become too difficult. This works best for the pieces where the narrow front view pattern that is less than one half the width of the side view pattern, as in the Horse, Deer and Camel.

Chapter Four

Simple Animal Patterns

This chapter has fourteen easy craft items that are recommended for initial projects. The large and small pattern drawings for each project and a photo of a finished item are at the end of the chapter. The detailed discussion for each craft item also includes a photograph for both sizes after final finishing has been done. As noted in Chapter 3, more finishing is generally done on the large size projects. The Rooster and the Horse are suggested as typical beginning craft items to learn the various steps in the sawing and finishing procedure. They are shown with a series of detailed photos on how to do all the various steps for a project. Similar steps will be needed to do the other craft items in this Chapter.

The patterns will need to be transferred onto wood blocks of an appropriate size, as discussed in Chapter 2. It is important to use the horizontal guidelines to ensure the top and the bottom of a given detail are at the proper height above the base in both the front and side views. If this is not done carefully or if you stray away from the pattern lines in sawing, certain features of the craft item can be quite irregular. For example, on many of the animals, a ridge along the top of the body between the neck and tail can occur if the top of the body in the side view is cut above the top of the body in the front view.

THE ROOSTER

Figures 4.1-4.8 illustrate the sequence of steps needed to complete the Rooster project for either the scroll saw or band saw. Scroll saw procedures are shown with both the small and large patterns. The band saw procedure is only for the large pattern and except for the wider saw kerf is done very

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similar to the large pattern with the scroll saw.

Figure 4.1 shows how both front and side view patterns have been transferred onto a small block for the scroll saw and onto a large block for either the scroll saw or the band saw. Figure 4.1 shows how a photocopy of the small patterns with the guide lines has been taped to a small block. The patterns on the large block have been done with "templates" as noted in Chapter 2. **Figure 4.2** shows how the horizontal guidelines were added

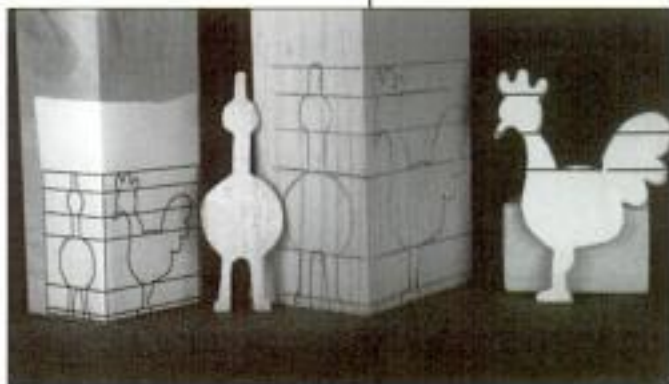


Figure 4.1

This photo shows both the large and small patterns on wood blocks for the Rooster. A photocopied pattern set is being used for the smaller scroll saw block. The larger scroll saw or band saw block has the patterns drawn with the use of the permanent templates shown in the photograph. Note that the horizontal guidelines have been added between the front and side views.

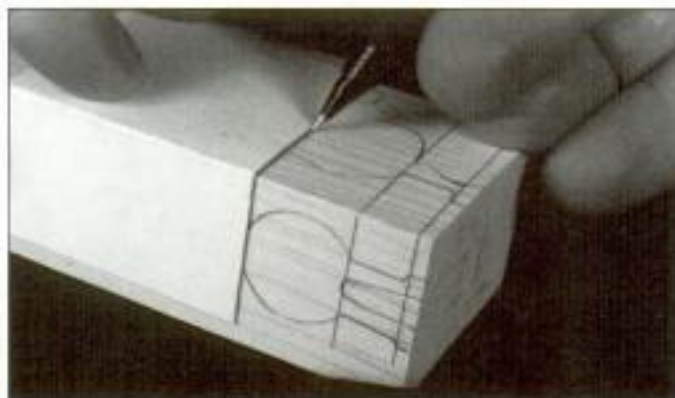


Figure 4.2

The horizontal guidelines for this band saw Rooster have been drawn between the two views with a cardboard square. Draw the front view first, then the guide lines and then the side view.

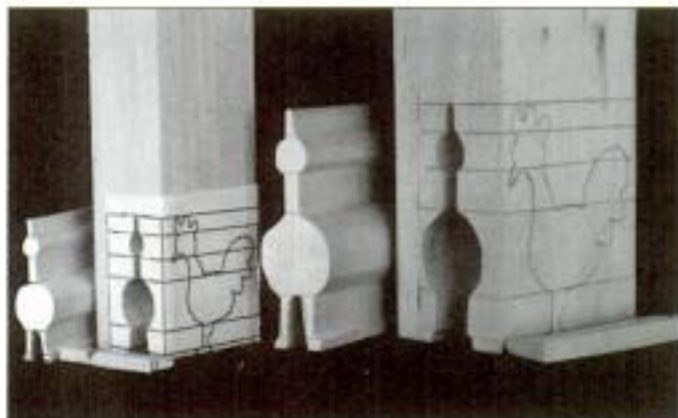


Figure 4.3

Completion of the front view scroll saw and band saw cutting. Note the material between the legs was cut out first.

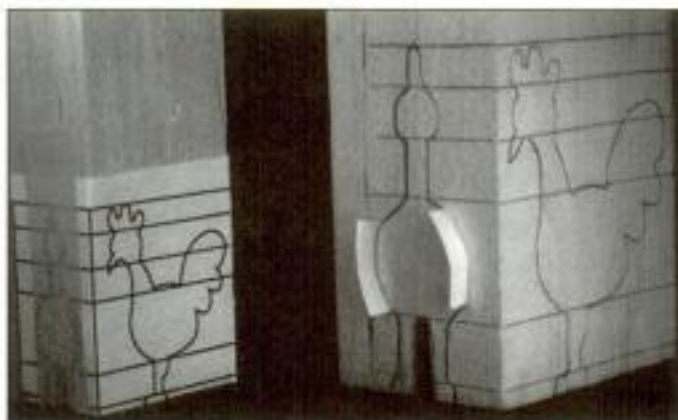


Figure 4.4

Masking tape is used to hold the center piece of wood in its original location in this scroll saw block. The side view cut can then be done without the piece moving out of place. Cardboard shims have been placed in the wider band saw kerf to keep the "loose" center piece in place. This step is not needed for the scroll saw procedure because the saw kerf is very narrow.

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with a "cardboard square," made by folding a stiff piece of cardboard on a line drawn perpendicular to one edge. **Figure 4.3** shows the first cut (between the legs) and the second cut around the pattern outline to complete the front view for both sizes of patterns. **Figure 4.4** shows how the center piece of wood for the small craft item has been put back in place and held with masking tape.

Figure 4.4 also shows for the large patterns, how the paper shims, discussed in Chapter 2, are being pushed into the saw kerf to keep the center piece from shifting. For the small size scroll saw patterns, the shims are not needed since the scroll saw kerf is very thin and the block can be gently "pinched" together to close the narrow saw kerf in the small blocks. For the large size scroll saw projects, it is better to put in shims than to try to "pinch"

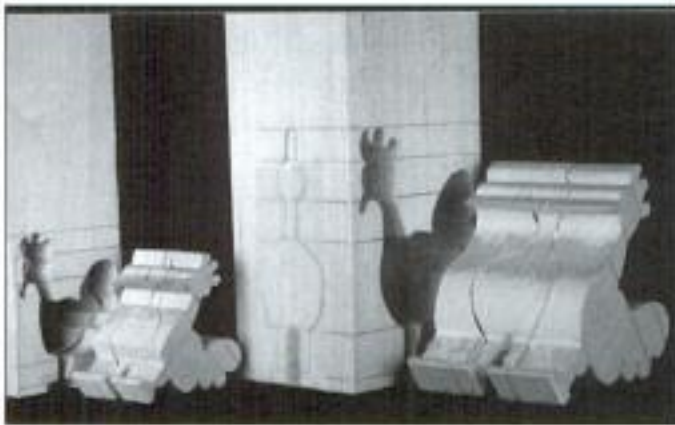


Figure 4.5

Completion of the side view cutting for the band saw and scroll saw items.



Figure 4.6

This figure shows all the waste pieces and the Rooster for the larger pattern.



Figure 4.7

Finished and unfinished small scroll saw items. Note the triangular shaped feet and the pointed beak in the finished craft item mounted on a small base.



Figure 4.8

Finished and unfinished Roosters made with the band saw (right) and with the scroll saw (left). Note the additional rounding of the body and neck for the large size craft items.

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the saw kerf closed. It is essential to use the shims with the band saw cut projects since the saw kerf is so much wider. After the shims are in place, it is still necessary to gently "pinch" the sides of the block together to force the shims in place as the masking tape is put on to keep this center piece from moving while the side view cutting is done.

It is best to start the side view cutting around the head and finish around the tail, since the tail is easier to do. As noted in Chapter 2, it is better to do the more difficult cuts when there is more rigidity in the block. **Figure 4.5** shows the completion of the side view cutting for both sizes. **Figure 4.6** shows all the waste pieces and the rooster that are produced with the large pattern. Except for the size, similar pieces are produced with both types or sizes of saw operation.

Figure 4.7 shows finished and unfinished items for the small size scroll saw pattern. **Figure 4.8** shows finished and unfinished items for the large pattern with the scroll saw and the band saw. As noted earlier, the large size Rooster will look more pleasing if the corners of the body and head are slightly rounded. The band saw cut roosters are to the right of the large scroll saw cut roosters in **Figure 4.8**. Note some of the "tight turn" locations show a larger saw kerf for the band saw. Generally it is hard to see significant differences in the two sawing methods for the large patterns. The feet of the Rooster for all three versions can be sanded to a triangular shape as discussed in Chapter 3 and shown in **Figure 3.8**. Edges of any other features should be "defuzzed" if needed.

THE HORSE

Figure 4.9 shows the small patterns for the scroll saw drawn with templates on a block with the horizontal guidelines added as noted above. A large photocopy of the patterns with the guide lines has been taped in place on a block for cutting with the band saw or scroll saw. Identical cutting procedures will be needed for both sizes and types of procedures with the additional step of paper shims in the saw kerf as noted before. The cutting sequence for this four-legged animal will differ slightly from that used for the two-legged Rooster. As noted in Chapter 2, it is best to start with the side view and cut the material from between the front and back legs first. Then go to the front view and remove the material between the left and right legs. You can then cut around the rest of the front view. The result is shown in **Figure 4.10**, note the three small pieces of material that came from between the legs.

Figure 4.11 shows the center piece taped back into position in the blocks. Note shims were put in place before taping for the large pattern as discussed above for the Rooster. The rest of the side view can now be done. If you start with the back leg, it will be easier to cut the notches for the mane. It is necessary to cut into the notch in the mane and then back the saw blade out and go on to the next notch. **Figure 4.12** shows the various pieces for

Simple Animal Patterns



Figure 4.9

Wood blocks for both sizes of the Horse. The small scroll saw block has the patterns drawn in place. A photocopy of the front and side views has been taped in place on the large saw block.

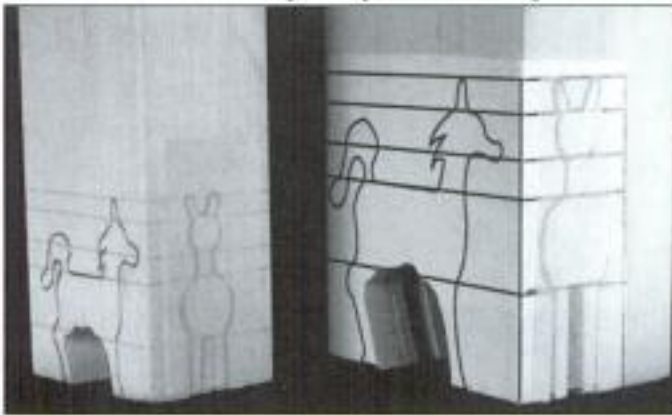


Figure 4.11

The center wood piece has been taped back in place on the blocks and they are ready for the final cutting of the side view. Note that shims were added before taping the large block.



Figure 4.13

Finished and unfinished small scroll saw Horses. The nose, tail and mane are the most important finishing operations.



Figure 4.10

Scroll saw and band saw cutting operations for the Horse after the front view cutting is completed. Note the first cut was from between the legs in the side view.



Figure 4.12

Completion of the large pattern scroll saw cutting for the Horse. This result is very similar to band saw operation.



Figure 4.14

Both finished and unfinished scroll saw and band saw Horses for the larger sized patterns. Note additional rounding of corners has been done for these large-sized craft items.

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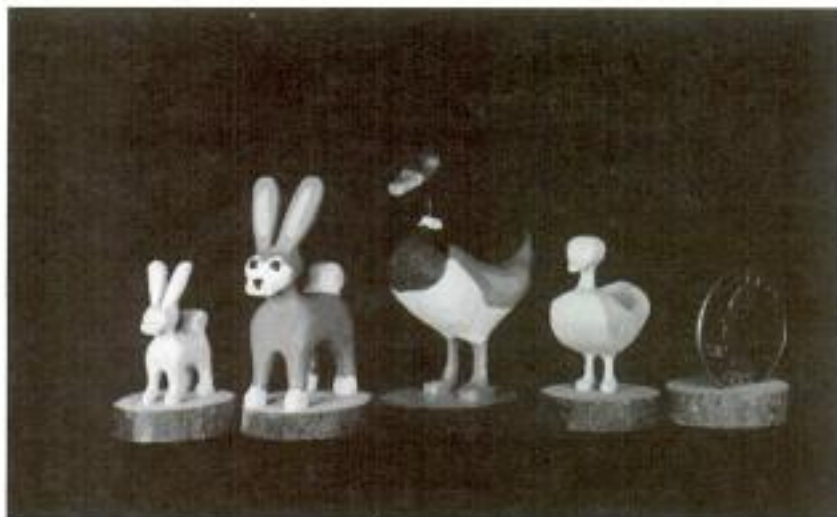


Figure 4.15
Examples of both sizes of finished Rabbits and Ducks. Note the larger items have been painted.

THE RABBIT

Both sizes of finished rabbits are shown in **Figure 4.15**. The Rabbit may be an easier project than the Horse or Rooster since it does not have as much detail. There are not as many small tight turns to make with the saw. The nose will need a "cheek cut" as discussed in Chapters 1 and 3. The tail of the Rabbit will need to be rounded to improve the final appearance. The top of the tail is partly in the same space as the head. As a result, it will be thicker but can be rounded and will look like the big fluffy tail expected for a Rabbit. The large size versions of the Rabbit will look better if the corners of the body are rounded.



Figure 4.16
Examples of both sizes of finished cats and Puffins. Note the body rounding for both sizes.

THE PUFFIN

The Puffin is a craft item that is best painted to show off its natural color scheme as seen in some of the figures. The upper and lower parts of the beak

a large scroll saw cut horse. **Figures 4.13 and 4.14** show both sizes and types of finished Horses as well as unfinished Horses. The band saw cut horses are on the right. It is easy to see that the tail, mane, and nose have been altered for final finishing for both sizes of the craft items. As noted before, the large size items in **Figure 4.14** have been given additional rounding of the body corners to complete them when compared to the small scroll saw items in **Figure 4.13**.

THE DUCK

The Duck is also an easy beginning project and is shown with the Rabbits in **Figure 4.15**. It will look better if the square corners of the head are rounded for both the scroll saw and band saw items. Since the beak is mostly in the same space as the neck and below the head, it will not need much attention. The feet will need to be sanded into a triangular shape as noted in Chapter 3 and shown in **Figures 3.8 and 3.9**. A series of seven different sizes of Ducks is shown on the book cover and in **Figure 8.7** in the special projects section.

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will need to be shaped to a point. This will be easier if a "cheek cut" as explained in Chapter 3 is done. It will also help if both sizes have the tail tapered some and the body corners rounded. The feet need the usual triangular shape discussed in Chapter 3.

THE CAT

The large and small Cats shown in Figure 4.16 are easy projects to cut because the patterns don't have many tight turns for the saw. It will, however, require special care in sawing and sanding the tail. In the side view cut, start at the front leg. This will minimize the stress on the tail while cutting. The tail is above the body in such a way that it is cross-grained in the wood and very easy to break. Both sizes of the items will need some sanding to make them look more round. The corners of the head should also be rounded, the nose should have a "cheek cut" and be pointed as discussed in Chapter 3.

THE SKUNK/SQUIRREL

The Skunk can also be a Squirrel, as shown in Figure 4.17. This is an easy project to saw. Do a "cheek cut" and round the nose and narrow the tail to a blunt point. The large items will look best if the body corners are rounded.

THE CAMEL

The Camels are shown in both sizes in Figure 4.17. This is an easy beginning project. The major alteration is narrowing the tail to a uniform thin width as discussed in Chapter 3 and shown in Figure 3.7. Smoothly blending the front of the body and neck will improve the appearance. The nose will need to be slightly rounded.

THE GOAT

The Goats are shown in Figure 4.18. This is also a good beginning pro-



Figure 4.17
Examples of both sizes of finished Skunks (Squirrels) and Camels.

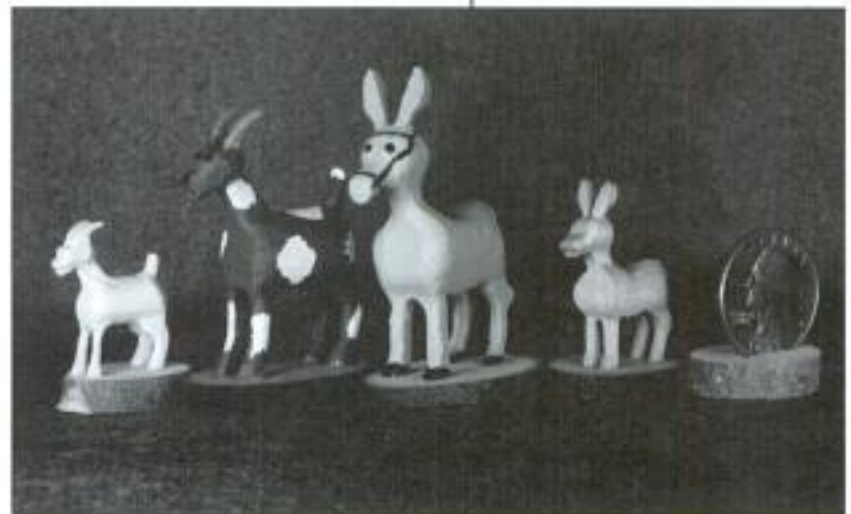


Figure 4.18
Examples of both sizes of finished Goats and Donkeys. Note the extra body rounding for the large sizes.

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Figure 4.19

Examples of both sizes of finished Cardinals and Sheep. Note the body rounding for both sizes.

ject. The nose will need to be sanded slightly. Because the tail is in the same space as the neck, it will not need much attention.

THE DONKEY

The Donkeys are also shown in Figure 4.18 and share many of the same body features with the Goat. The ears and tail are really all that is different. The tail will need to be altered since it is in the body space rather than in the neck space as with the Goat.

THE SHEEP

The Sheep are shown in Figure 4.19. They will need sanding of the tail and the nose as noted in Chapter 3. Because the Sheep should look woolly, it will also help to round the neck and body.

THE CARDINAL

The Cardinals are shown in Figure 4.19. They are an easy project except for the feathers on top of the head. These feathers will be easy to break.



Figure 4.20

Examples of both sizes of finished Sea Horses and Giraffes. Note the Sea Horse only needs "defuzzing" after cutting.

Round the corners of the head and the body to make it look better. The width of the tail feathers can be narrowed if desired. The feet need the typical bird treatment.

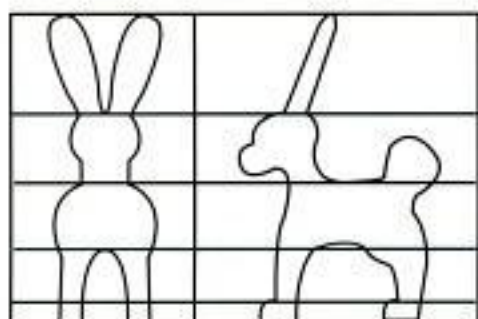
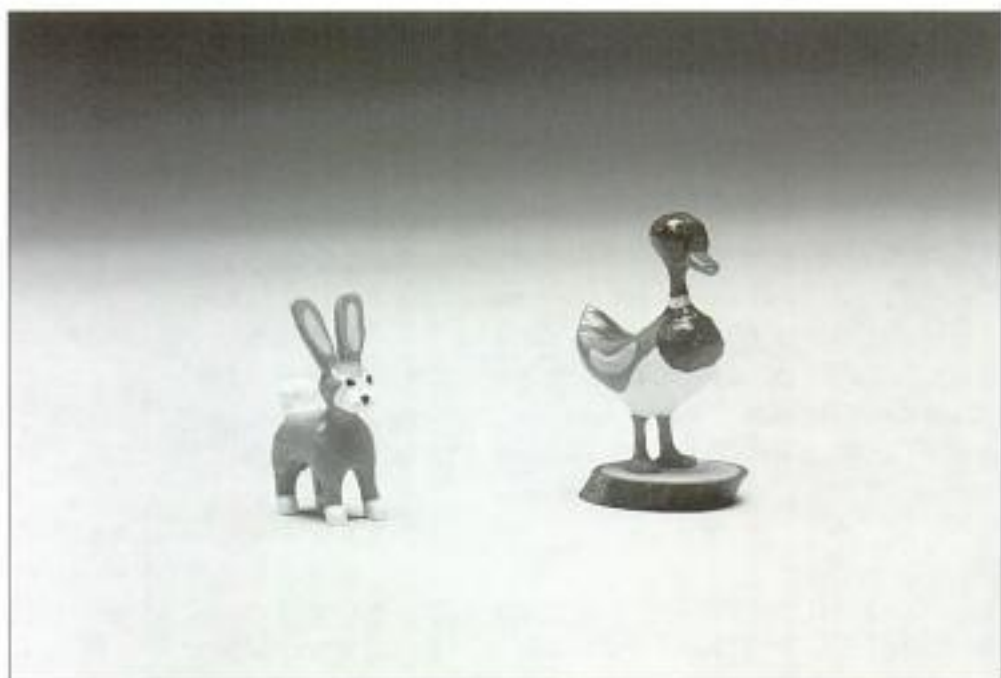
THE GIRAFFE

The Giraffe is an easy project. Both sizes are shown in **Figure 4.20**. They will need work on the tail and the nose. Because the front legs are longer than the back legs, you may want to remove more material from between the front legs after the cutting is completed. The separation between the front legs will stop at the same height as the back legs. The dotted line in the pattern side view shows how the finishing operation can make this higher. The thin web between the front legs next to the body needs to be removed.

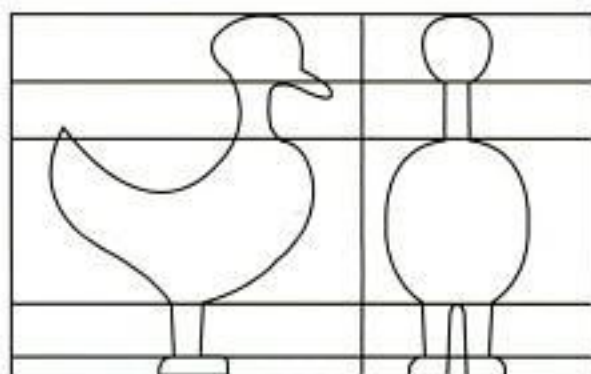
THE SEA HORSE

Both sizes of the Sea Horse are shown in **Figure 4.20**. The Sea Horse is an easy project except for one cutting technique. It requires a very sharp turn at each of the ridges on the surface of the body. This is easier to do with the small scroll saw blades. When the cutting is done, there are no major alterations needed. Defuzzing of the edges will complete the project for both sizes of items.

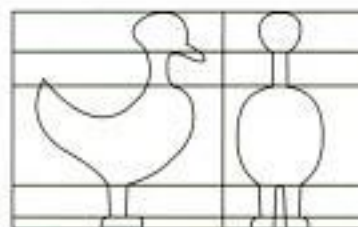
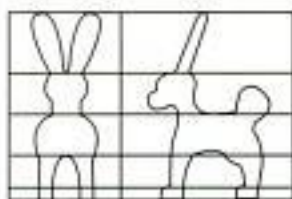
Rabbit and Duck



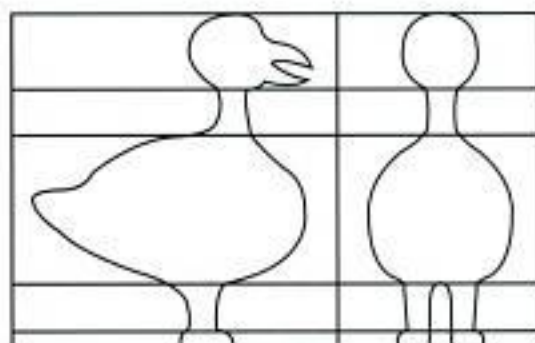
RABBIT



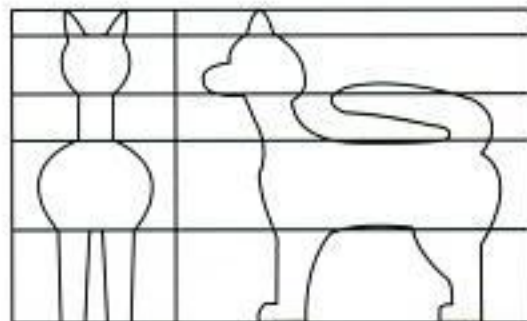
DUCK



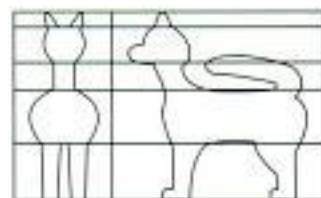
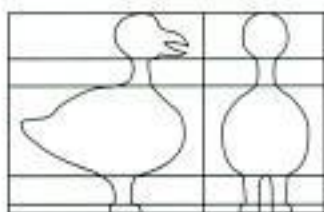
Puffin and Cat



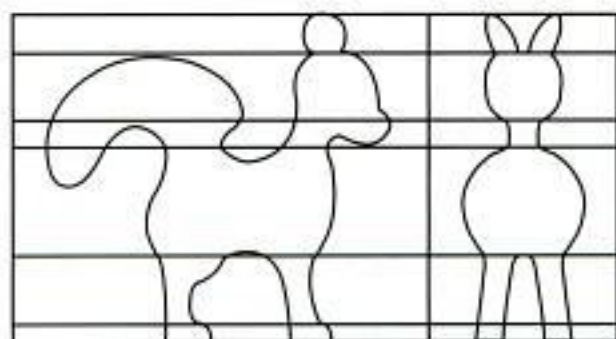
PUFFIN



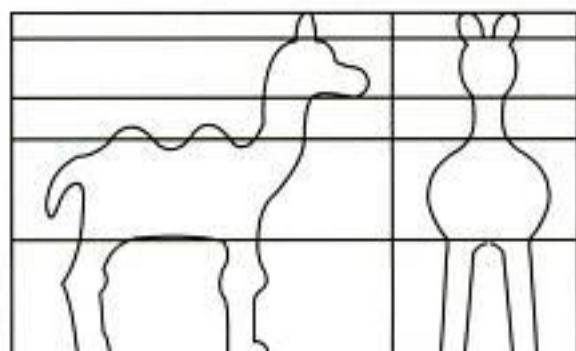
CAT



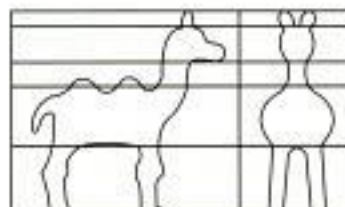
Squirrel/Skunk and Camel



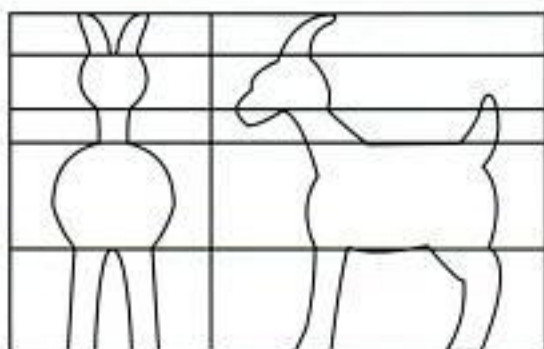
SKUNK/SQUIRREL



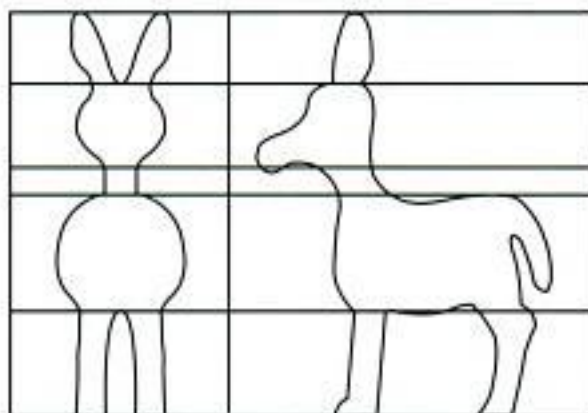
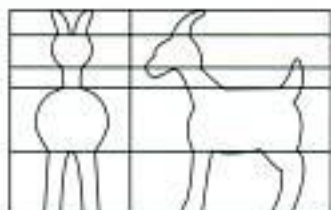
CAMEL



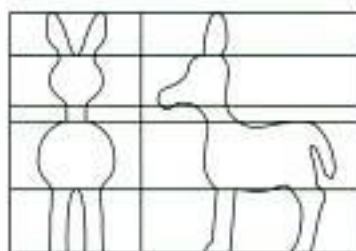
Goat and Donkey



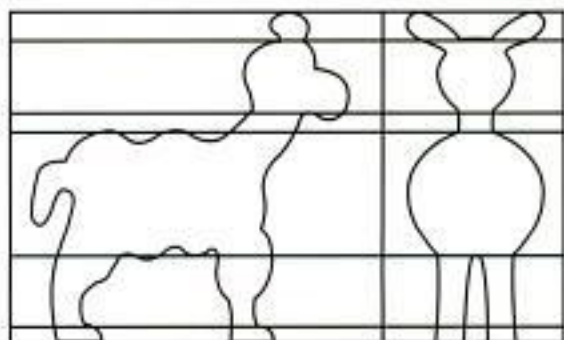
GOAT



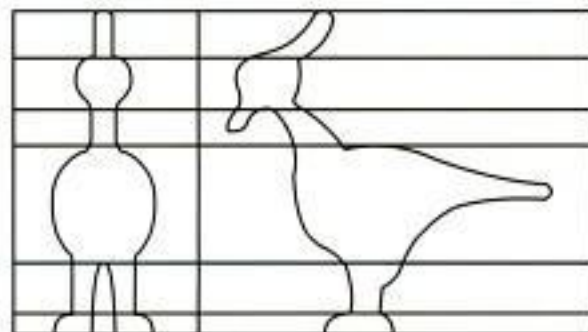
DONKEY



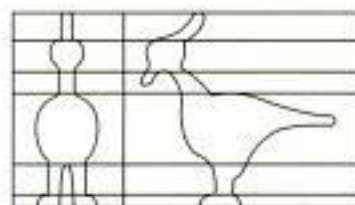
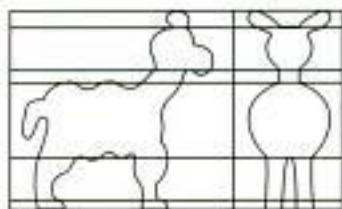
Sheep and Cardinal



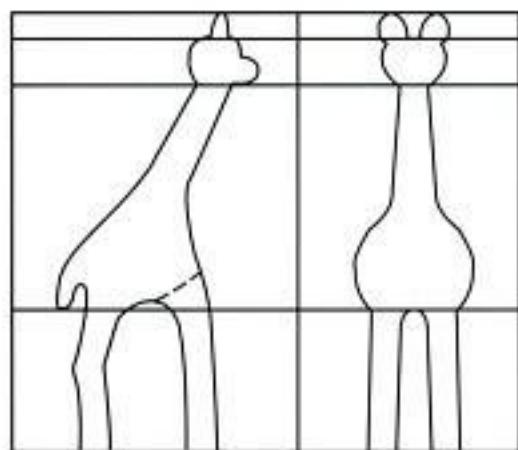
SHEEP



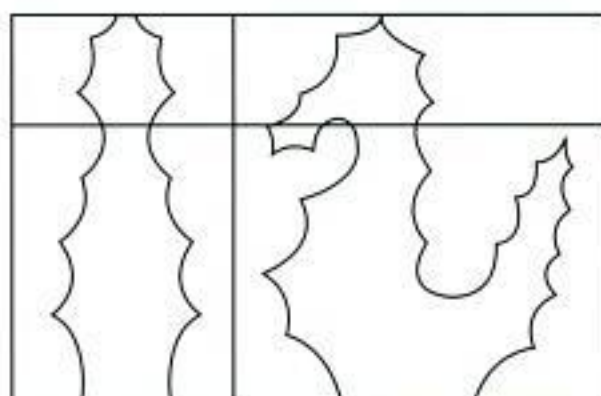
CARDINAL



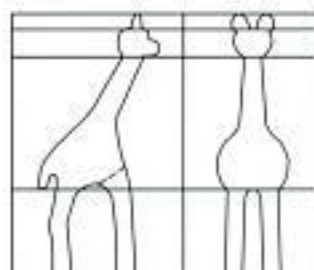
Giraffe and Sea Horse



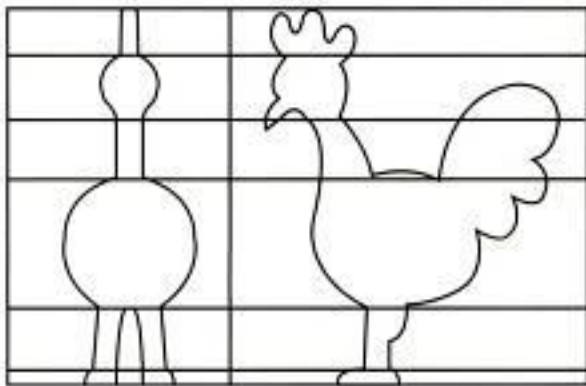
GIRAFFE



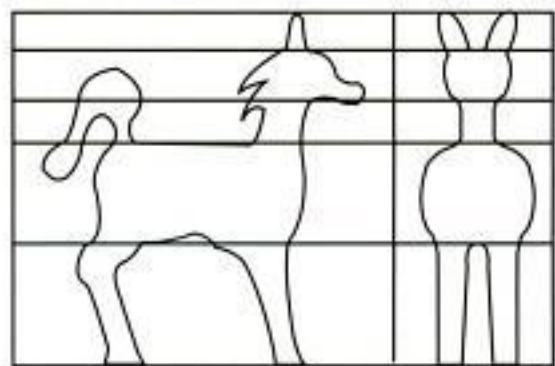
SEA HORSE



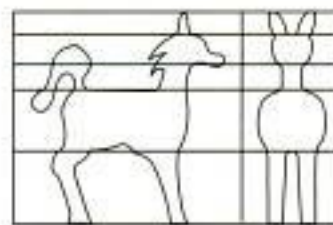
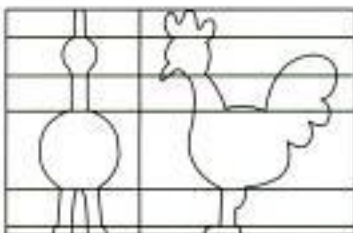
Rooster and Horse



ROOSTER



HORSE



Chapter Five

Detailed Animal Patterns

This chapter has twelve craft items with more detail and will require some special finishing operations as noted in Chapter 3. The large and small pattern drawings for each project and a photo of a finished item are at the end of the chapter. The detailed discussion for each craft item also includes a photograph for both sizes after final finishing has been done. The typical steps that were discussed in earlier Chapters, such as cutting between the legs first, are to be followed. Some of the craft items in this Chapter will require a little more skill and dexterity in cutting around the detailed antlers and long thin legs. Figures 5.1-5.5 are a series of procedure photos that will assist with the Eagle as a suggested first project for this chapter.

THE EAGLE

Figure 5.1 shows both large and small blocks ready for cutting out the Eagle. The permanent templates shown were used to copy the patterns onto the small scroll saw block. The large block has a photocopy of the patterns taped in place and is ready to be cut with either the scroll saw or band saw. Note the horizontal guidelines have been drawn on the small pattern block, as discussed in Chapter 2. It is important that the wings come together just at the top of the body in the front view. Also be sure the back edges of the wings in the side view are not below the top of the

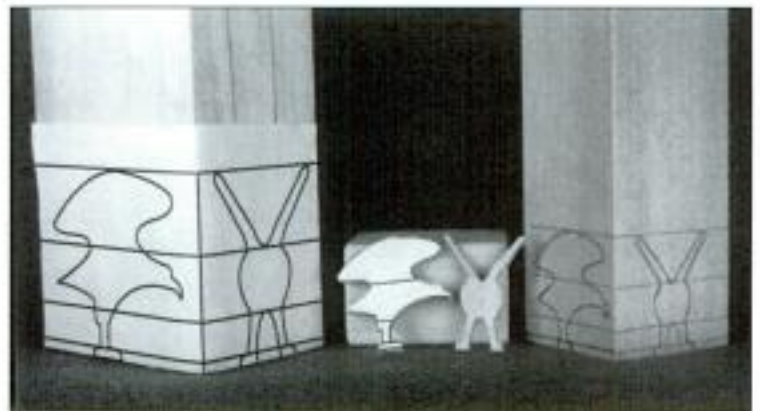


Figure 5.1

Both large and small blocks ready to be sawed for the Eagle. Permanent wood templates were used to draw the patterns for the small saw block. Guidelines between the two views have been added with a cardboard square. The large saw block has a photocopy of the patterns taped in place.

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body guideline; if they are, they will be joined at their bottom edge when the cutting is done. Note that the head of the Eagle is in the same space as the body. If part of it were above the body in the side view, then there would be a notch in it where the V-cut between the wings joins the body in the front view.

The guidelines will help ensure that these details are properly located when the patterns have been traced from templates onto the two faces of the block. **Figure 5.2** shows the front view cutting complete for both sizes. **Figure 5.3** shows the center piece of wood taped back in place and ready for the side view cutting. The large size item has had shims put in the saw kerf to keep proper alignment before the masking tape was applied. Extra care needs to be used in cutting around the end of the beak to make it sharply pointed. (See the discussion in the section on Sawing Techniques in Chapter 1.) It is best to start the side view cut around the

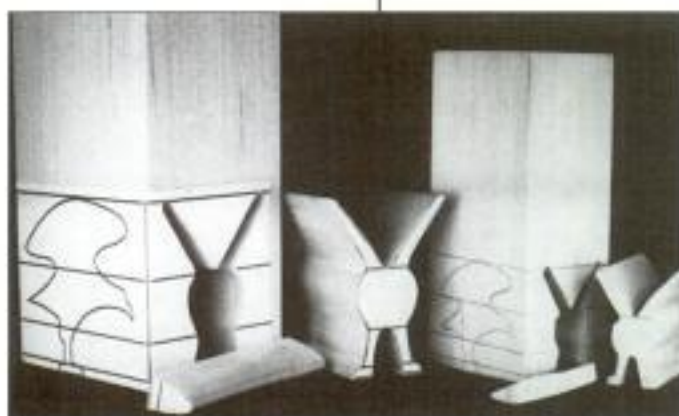


Figure 5.2

The front view cuttings for both sizes of the Eagle have been completed.

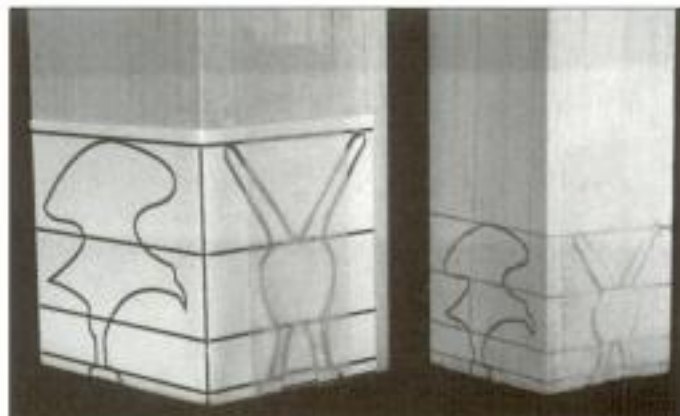


Figure 5.3

The center piece of wood has been taped back in place in the blocks and they are ready for the side view cutting.



Figure 5.4

Cutting has been completed for the large scroll saw Eagle. Note the V-shaped waste piece that comes from between the wings.



Figure 5.5

Unfinished and finished Eagles in both sizes. Pencil lines shows how the head and beak need to be finished.

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head first and end around the tail and the back of the legs.

Figure 5.4 shows the cutting complete with all the pieces for the large scroll saw procedure. Note the V-shaped waste piece that comes from between the wings. **Figure 5.5** shows the "before" and "after" views for the final finishing operations. A black line has been drawn on the cut eagles to show material that needs to be removed from the head and beak. Because both the head and beak are in the "body space," they are the same width as the body and must be narrowed down, as discussed in Chapter 3. A "cheek cut," as discussed in Chapters 1 and 3 will assist in this significant alteration. The head should be slightly rounded for both sizes of items. Special care must be used to avoid breaking off the beak during the alterations. The feet also need the typical alterations as noted in Chapter 3. Rounding of the legs for the large size Eagle may make them look better.

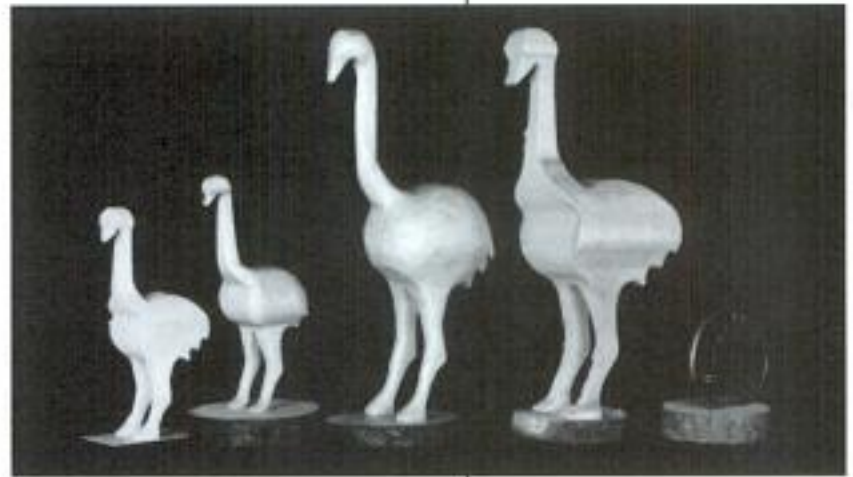


Figure 5.6
Examples of both sizes of finished and unfinished Ostriches. Note the body rounding for both sizes.

THE OSTRICH

Both sizes of the Ostrich are shown finished and unfinished in **Figure 5.6**. Round off the square corners on the head and where the neck joins the body as shown in Figure 5.6. More rounding of the tail has been done for the large pattern, as can be seen in comparing the unfinished and finished items. Because this is such a tall figure, it is a good example of where large size patterns look better if they have more finishing.

THE FLAMINGO

The Flamingos are shown in **Figure 5.7**. They are a tall project like the Ostrich and the large pattern items will look better if they have more finishing. The Flamingo will require care in cutting long thin legs with bumpy knee joints. A small amount of finishing can be done at the base of the beak where it joins the head. The head should be rounded for both sizes of items to remove the square cor-



Figure 5.7
Examples of both sizes of finished Storks and Flamingos. Note only the beak is different for these birds.

3-D Scroll Saw Patterns and Techniques



Figure 5.8

Examples of both sizes of finished Elephants and Dogs. Note the ears for both of these animals need special finishing.

THE DOG

Both sizes of finished Dogs are shown in **Figure 5.8**. The Dog pattern is easy to cut but requires special finishing on the big floppy ears. They are not above the head as many of the animals are, but in the same space as the head as can be seen in Figure 3.5. As a result the ears have a side profile like the head and nose and will require considerable trimming

to have the proper shape, shown in Figure 5.8. This is an example of where a power sander saves much time for both sizes of items. The nose will need a "check cut" to be tapered and rounded to improve the head details. General rounding of body corners will also improve the appearance of the finished project for both sizes of items.

THE ELEPHANT

Both sizes of the Elephant are also shown in Figure 5.8. The Elephant ears follow the same details used for the

Dog. The use of a power sander for both sizes of items will speed the finishing work. The ears will need careful trimming, as discussed above for the Dog. Extra care is needed in rounding and tapering the trunk because it is cross-grained in the wood. The tail will need to be sanded to a narrow uniform width, as discussed in Chapter 3 and illustrated in Figure 3.7.

THE DEER

The Deer are shown in **Figure 5.9** and will require several tight turns



Figure 5.9

Examples of both sizes of finished Deer and Moose. Take special care in cutting around the antlers.

Detailed Animal Patterns

as well as parallel cuts on the antler parts. The guidelines are important in keeping the ears and antlers above the head space so they are completely separated when the cutting is done. If the cut between the antlers in the front view stops above the head, the ears will appear joined where they attach to the head. They can be sanded apart with a piece of sanding paper that has been folded over. Use the folded edge as a "saw" to cut between the ears if needed. The nose should be tapered and rounded. General rounding of the body is needed on the large pattern items to finish the project.

THE MOOSE

The Moose is also shown in Figure 5.9 and is a lot like the Deer. The major difference is the antlers are side-to-side rather than front to back. Because the ears are behind the bottom part of the antlers, they will need to be sanded to a uniform thickness. The nose and tail will need the usual finishing operations as well as rounding of corners for the large pattern items.

THE HONEY BEE

Both sizes of finished Honey Bees are shown in **Figure 5.10**. Many of the details of the Honey Bee are similar to the Eagle. Both have their head and neck in the same body space. They both have wings above the body. Most of the alterations are best done to both sizes of Honey Bee. The head needs to be rounded, and the neck narrowed and rounded next to the body. The "stinger" end of the body needs to be tapered to a point. The wings can be sanded to a sharp edge to make them look much thinner.

THE SEA GULL

The Sea Gulls are shown in Figure 5.10. Their head and beak will need finishing like the Eagle. Be very careful with the wings because they are thin and cross-grained in the wood. The ends of the wings need to be altered to a point as shown by the dashed line in the pattern drawings. The wings can be sanded to a sharper edge as discussed above for the Honey Bee. The feet need the usual finishing.

THE POLAR BEAR

The Polar Bears are shown in **Figure 5.11**. Alterations need to be



Figure 5.10
Examples of both sizes of finished Sea Gulls and Honey Bees. Take special care in cutting and finishing the Sea Gull wings.

3-D Scroll Saw Patterns and Techniques

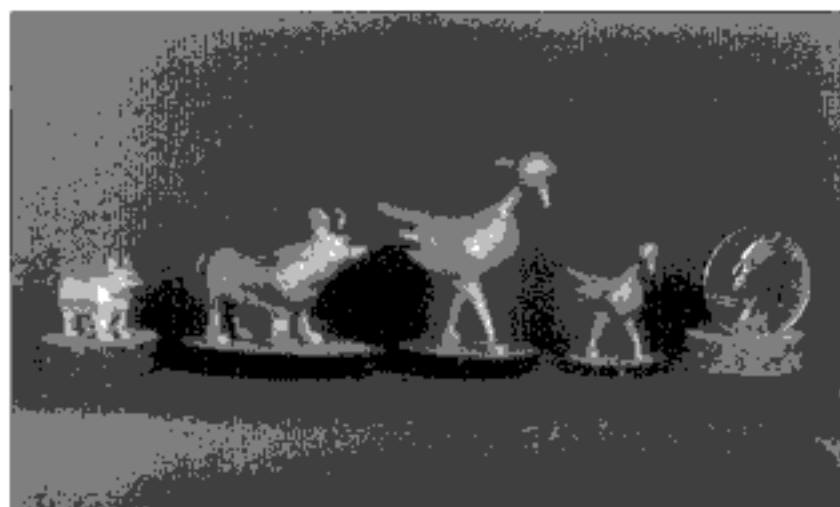


Figure 5.11

Examples of both sizes of finished Polar Bears and Road Runners. Note the special body rounding for both craft items. Special cutting is done to have the Road Runner legs to the front and back.

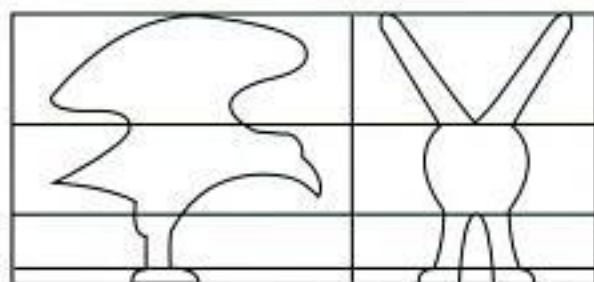
done for both sizes of items. The head and neck will need to be rounded slightly to improve their appearance. The nose needs a "cheek cut" to be tapered and then rounded slightly. The tail will need to be sanded to a narrow uniform width as discussed in Chapter 3 and illustrated in Figure 3.7.

THE ROAD RUNNER

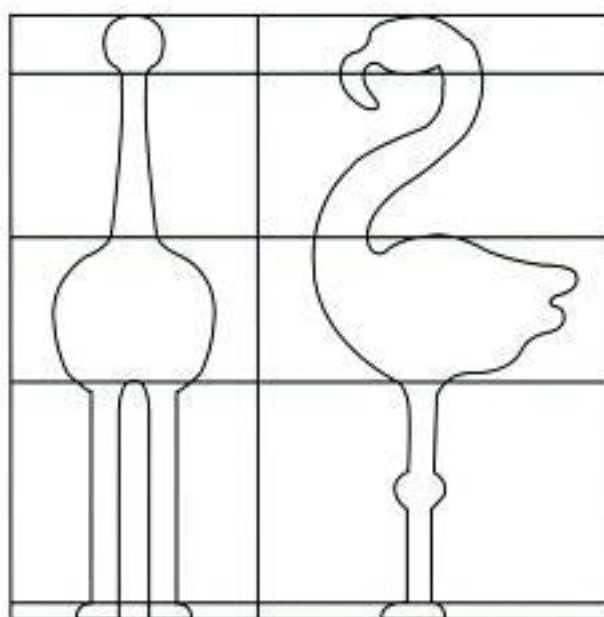
The Road Runners are shown in Figure 5.11. This craft item is similar to the cardinal in Chapter 4 except it will have four legs rather than two when the sawing is complete. Start the side view cut-

ting behind the back leg. Be careful not to cut too high between the legs in the side view. One front and one back leg, on opposite sides, will need to be removed after the sawing is done. Smooth the remaining wood where the legs were cut off to blend the legs you keep into the body. This will give the Road Runner the appearance of running with one leg ahead of the other. Sand the width of the feathers on the back of the head to a point. Be careful with both the head and tail feathers as they are a cross grain area that could break easily. The feet will need the usual finishing, as noted in Chapter 3.

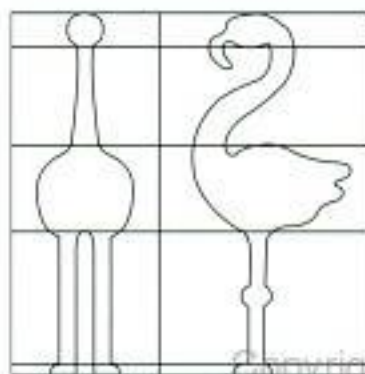
Eagle and Flamingo



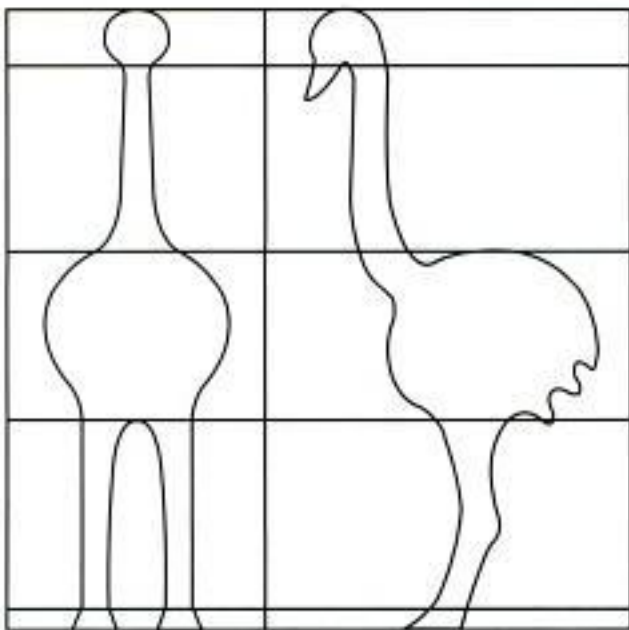
EAGLE



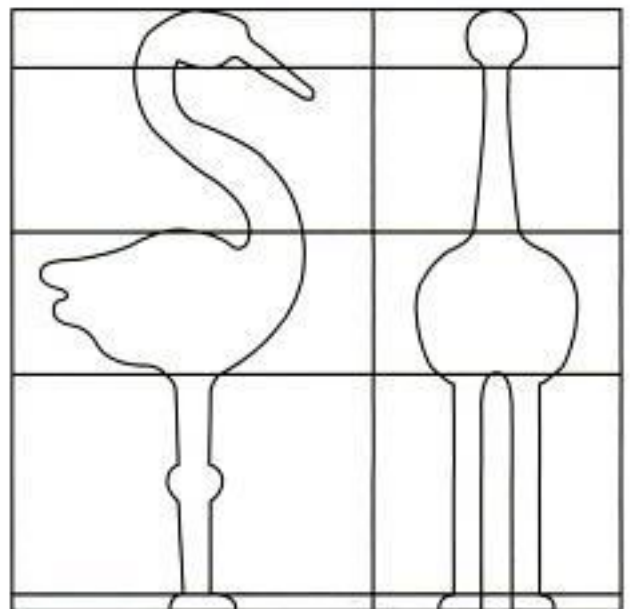
FLAMINGO



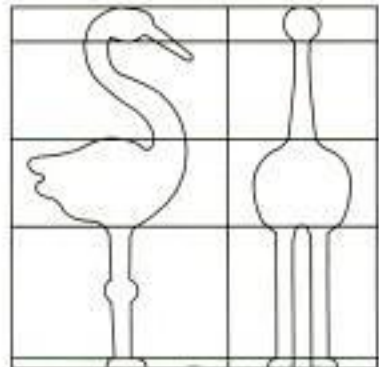
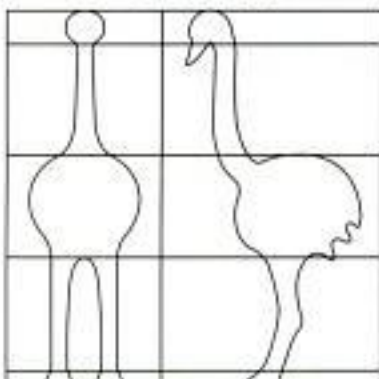
Ostrich and Stork



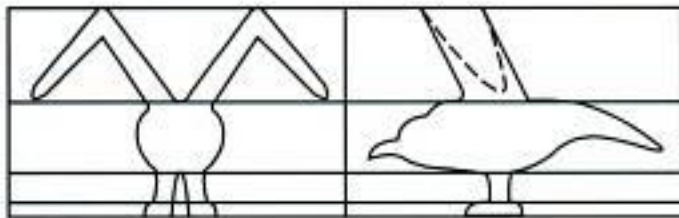
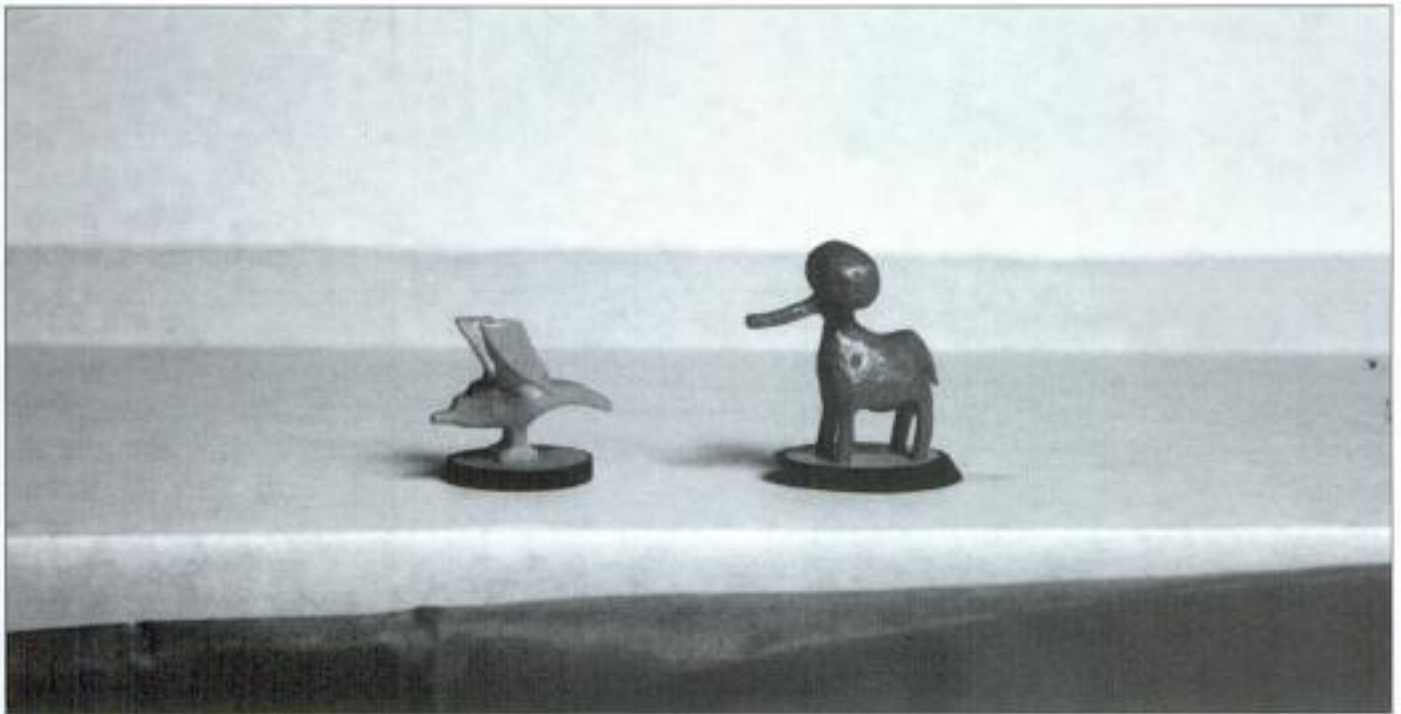
OSTRICH



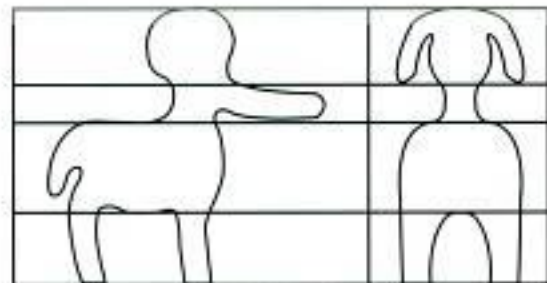
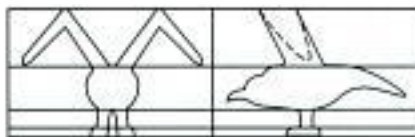
STORK



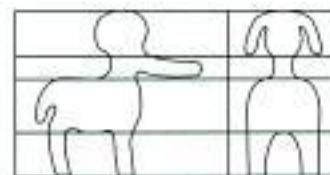
Sea Gull and Elephant



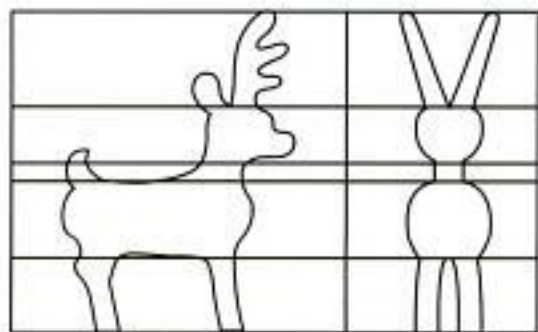
SEA GULL



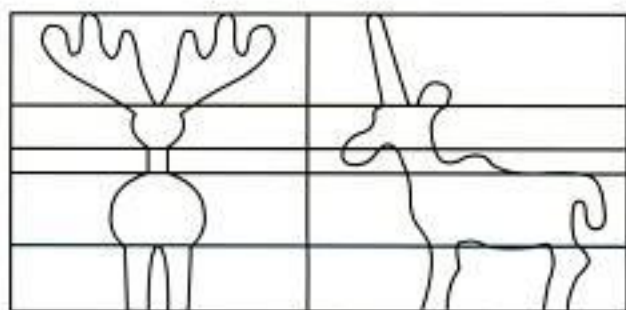
ELEPHANT



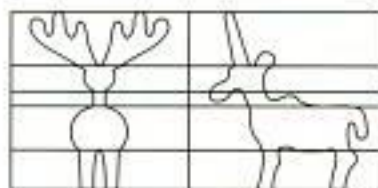
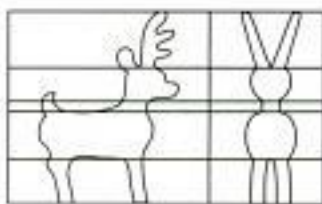
Deer and Moose



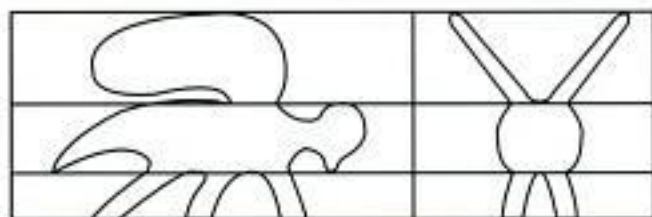
DEER



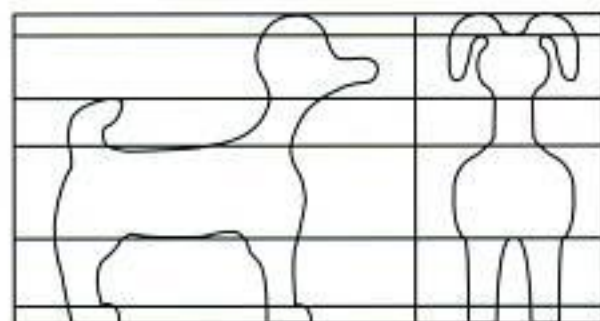
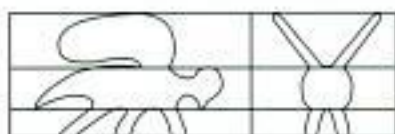
MOOSE



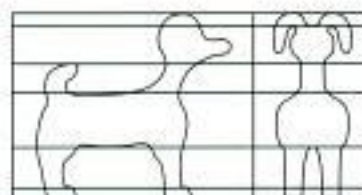
Honey Bee and Dog



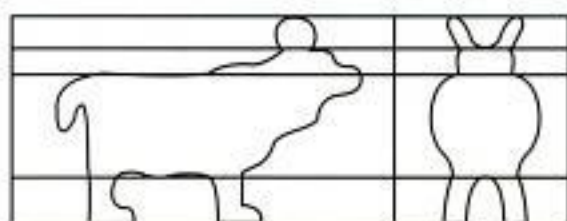
HONEY BEE



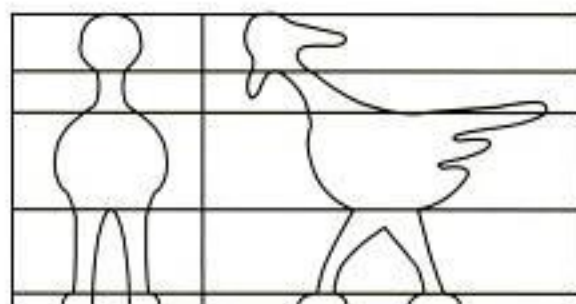
DOG



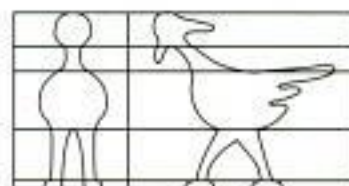
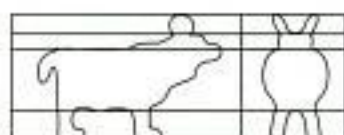
Polar Bear and Road Runner



BEAR



ROAD RUNNER



Chapter Six

People Type Projects

This Chapter has sixteen "People-Type" craft items and will require special finishing operations for the "arms" (front legs or wings for animals). The large and small pattern drawings for each project and a photo of a finished item are at the end of the chapter. The detailed discussion for each craft item also includes a photograph for both sizes after final finishing has been done. The projects in Chapter 6 will be easier to do after several beginning and detailed projects have been completed from Chapters 4 and 5. Extra care in sawing and sanding of complex details will be needed to finish the items. The rotary sanding tool is essential in the alterations that are needed.

The basic steps discussed in Chapter 3 will need to be followed during the sawing. Several of these projects will require careful coordination of saw cuts in the two views. For example, the hat brims will be irregular if the bottom edge (or top edge) is cut at a different height in the two views. If the horizontal cuts are carefully made, then the bottom and top surface of a hat brim will be continuous all the way around the hat. Some small variation can be cleaned up with careful sanding; it is best to be very careful and keep the cuts coordinated.

This chapter includes some craft items that are more challenging but are worth the extra effort. Significant alterations are needed after the sawing is complete, as a result, the comments on alterations generally apply to both sizes of items. The first step of alteration for the "people-type" craft items is for the arms, wings or front legs that are in the same space as the body. As noted in Chapter 2, with the example of shadows on the wall, the arms have the same front-to-back shape as the body when the sawing is

3-D Scroll Saw Patterns and Techniques

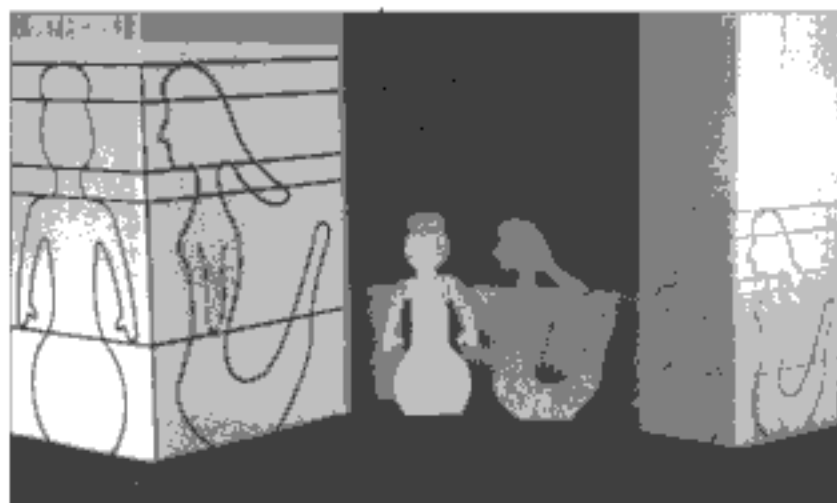


Figure 6.1

Wood stock for both band saw and scroll saw Mermaids. The patterns for the scroll saw Mermaid have been drawn with the permanent templates. The guidelines have also been drawn. The band saw block has the photocopy taped in place.

done. They will need to be narrowed as shown in the sequence photographs for the Mermaid, see Figures 6.1- 6.5.

The pattern drawings show dashed lines for the arms. After sawing is complete, the arm profile, shown by these dashed lines, has to be drawn on the arms as shown in Figures 6.4 and 6.5 for the Mermaid. These Figures also show how the nose needs to be narrowed, refer to Figure 1.12 for using a small diameter rotary stone to do this. For these "people type" craft items, an artistic eye for facial features, arms, hands, etc., will be helpful in the finishing

operations. These special operations are illustrated with the series of procedure photographs for the Mermaid and other photographs showing finished craft items in this Chapter.

THE MERMAID

Figure 6.1 shows both sizes of blocks ready for cutting out the Mermaid. Permanent templates were used to draw the patterns on the small block. Note the guidelines have also been added to reference details between the two views. The large pattern block has a photocopy taped in place. **Figure 6.2** shows the front view cutting complete for both sizes.

HAND DETAILS

The Mermaid patterns have a "thumb" on each hand as seen in Figures 6.1-6.5. This detail can easily be omitted with just a rounded end on each arm. You may want to start this way and add the thumb detail after you have more practice. It is much easier to do with the big scroll saw patterns. Hand details on many of the "people-type" craft items can be added or omitted, depending on the skill and practice level you have. Several of the pattern drawings show hands or thumbs; they are optional. If you are going to do hand details, practice on the larger patterns first.

Figure 6.3 shows the tape in place on the small pattern block and the shims being pushed into place for the large pattern block. Note how the guide lines for the neck space in the center piece need to be pushed up slightly to line up with the guide lines in the rest of the block. Always check this alignment before the tape is put in place. **Figure 6.4** shows the side view cutting completed for the large pattern. This Figure shows all the pieces that result when the "parts" are removed from the block. Note the "extra" loose pair of arms that fall out of the block when the cutting is done. These "extra arms" are created because the tail in the side view and

People Type Projects

the arms in the front view are both in the body space. It is not unusual to have "strange" little pieces when the cutting is complete for pattern drawings that have considerable detail.

The Mermaid is far from being finished at this point. The arms are the same width as the body; also the nose and bust profiles extend completely across the front of the head and body. The arms need to be narrowed as originally indicated by the dashed line in the pattern drawings. Material that needs to be removed has been darkened in **Figure 6.4**. **Figure 6.5** shows both sizes of the unfinished and finished Mermaids. **Figure 6.5** also shows the unfinished items with darkened areas where the significant alterations need to be done. The finished items in **Figure 6.5** show completion of these details as well as some gentle rounding of the facial features, hair and bust profile. Many of the "people-type" craft items will require similar attention for arms (front legs or wings) and facial detail.

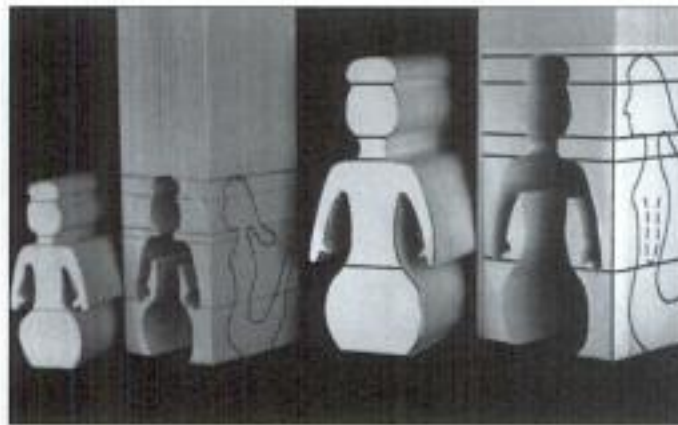


Figure 6.2
Completion of the front view cutting for both sizes of the Mermaid.

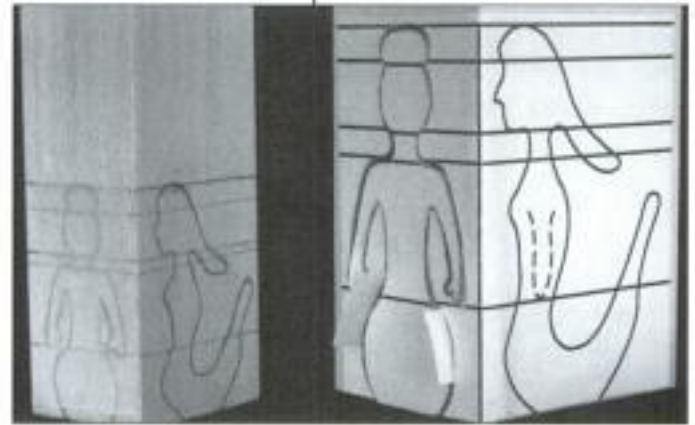


Figure 6.3
The small Mermaid block is taped and ready for side view cutting. The large Mermaid block shows the shims being put in place before taping.

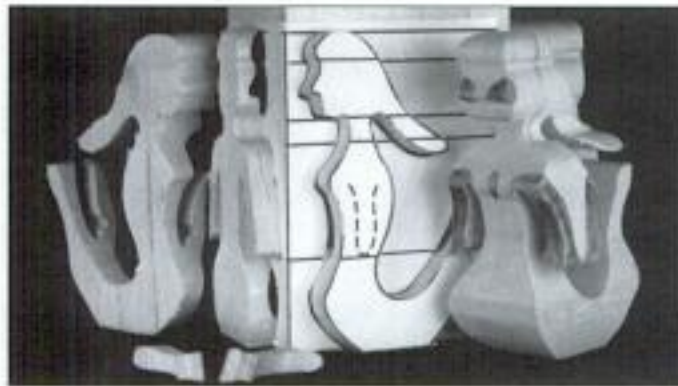


Figure 6.4
Side view cutting completed for the large scroll saw Mermaid. Note the extra loose pair of arms that fall out of the block when the cutting is completed.



Figure 6.5
Unfinished and finished mermaids. Note the darkened areas on the face, bust and arms that must be removed in the finishing operations. Many areas need gentle rounding of details.

3-D Scroll Saw Patterns and Techniques

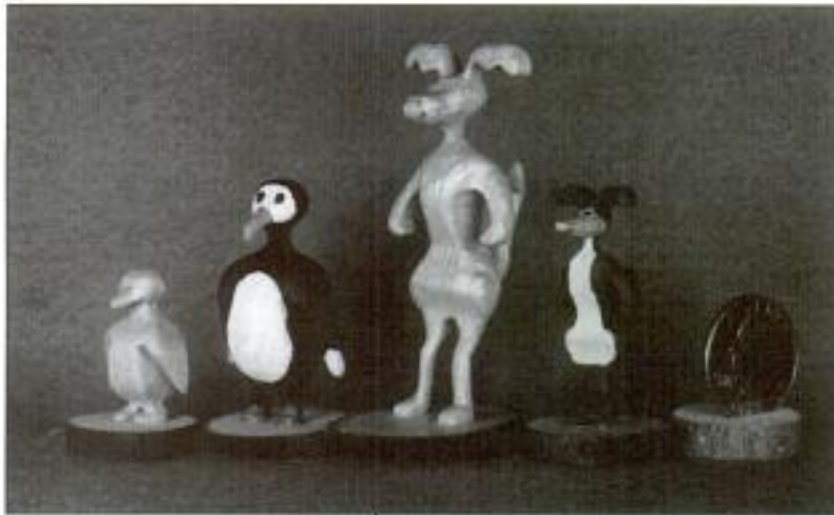


Figure 6.6
Examples of both sizes of finished Penguins and Coyotes. Note the special alteration of wings and front legs for both craft items in both sizes.

black and white color pattern of the Penguin makes it a good item for painting, as seen in Figure 6.6.

THE COYOTE

Both sizes of the Coyote are shown in Figure 6.6. The Coyote is another of the "people-type" craft items that will require work on the front legs (arms) to reduce their thickness, as shown by the dashed line in the side view pattern drawing. The usual rounding of facial features, (do a "cheek cut") the feet and edges of the body should be done. Be very careful and sand the end of the nose to the "ball" shape seen in Figure 6.6.

The width of the legs is another option for many of the craft items. The classical caricature of the Coyote is to have scrawny legs. Note the very thin legs for the finished scroll saw cut Coyote. This requires very careful sawing and sanding to avoid breakage. The pattern drawings generally have much thicker legs; this craft item illustrates how the patterns can be varied some to make special details. After your skill has developed, thinner legs, arms, etc.,

can be done to enhance the appearance of the craft items.

SIESTA SAM

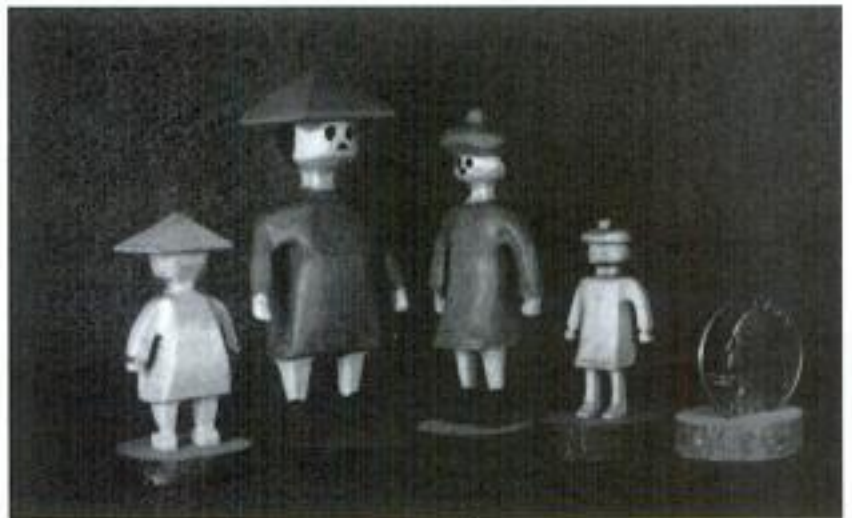
Both sizes of Siesta Sam are shown in Figure 6.7. This project will require separation of the legs in front of the body as part of the finishing operation. See the dotted line in the pattern drawings and the finished



Figure 6.7
Examples of both sizes of finished Siesta Sam and Hillbilly. Special finishing is needed in rounding the hat brims for both sizes.

People Type Projects

items in Figure 6.7. For the large pattern this can be easily done with the type of rough carbide cutter that is shown in Figure 1.6. The small size item will require a smaller notch and may be done with the edge of a metal file or the thin cutting disk seen in Figure 1.7. The square corners on the face should be sanded to round them slightly. The hat should be rounded for both sizes of items as shown in Figure 6.7. The folded arms need only be slightly rounded at the elbows.



THE HILLBILLY

Either size of the Hillbilly, as seen in Figure 6.7, is a good item for painting. The arms need thinning, as shown in the pattern drawings. The hat will be square after cutting is complete. Both the brim and the top parts of the hat should be rounded to improve their appearance. The beard will also need to be trimmed to a point at the bottom. Work the nose to a round shape. Round the edges of the body, arms and legs.

THE MANDARIN MAN

The Mandarin Man is one example where the square features of the hat can be left as seen in Figure 6.8. The face, arms and body will need typical alterations as noted above. This is a good item for painting as seen in Figure 6.8.

THE BISHOP

Both sizes of the Bishop are also shown in Figure 6.8. This figure is somewhat similar to the Mandarin Man, but will need to have the hat rounded to look proper. Finish other face and arm details as noted above. This is also a good item for painting as seen in Figure 6.8.

THE FARMER

Both sizes of the Farmer are shown in Figure 6.9. This "tall and skinny" craft item is easy to cut in either size because it does not need a big cross section block. The arms will need the typical treatment discussed in the beginning of this Chapter; note the upraised arm is to hold the Pitch



Figure 6.8

Examples of both sizes of finished Mandarin Man and the Bishop. These items show the details much better if they are painted.

Figure 6.9

Examples for both sizes of the finished Farmer and his Wife. Note the pitch fork was added to the Farmers hand as a separate item.

3-D Scroll Saw Patterns and Techniques



Figure 6.10

Special finishing is needed in rounding the corners of the Teddy Bear. Note the Shepherd and the other Nativity scene items do not have a separate base.

Fork. Details for the hat are similar to Siesta Sam or the Hillbilly. Be careful when cutting the shoes, ankle and pant leg area. You can cut past the ankle between the shoe top and the bottom of the pant leg first. Then go back and widen the saw kerf so you can turn and carefully cut in perpendicular to the ankle to reduce its size. If this is a problem leave the pant leg longer as if it covered the shoe top and the ankle.

The Farmer (with his pitch fork) and the Farmer's Wife are shown in Figure 8.3 in the Farm Scene. See details in Chapter 7 for making the Pitch Fork.

Use a round file and file a round groove in the upraised hand that holds the round handle of the pitch fork. The Pitch Fork needs to be glued to both the hand and next to the Farmer's shoe as seen in Figure 6.9.

THE FARMER'S WIFE

Both sizes of this craft item are also shown in Figure 6.9. The Farmer's



Figure 6.11

Examples of both sizes of finished Mary and Joseph. Special finishing is needed for the arms of the Nativity scene craft people.

Wife is similar to the Farmer in that she is a tall skinny person and will not require a large cross section wood block. Refer to the Mermaid for details on the hair and bust profile. Other details are similar to the Farmer.

THE TEDDY BEAR

Both sizes of the Teddy Bear are shown in **Figure 6.10**. Because a Teddy Bear is generally considered a "stuffed animal," it should be rounded on almost all the corners. The first step, however is alteration of the arms and nose. The arms will need typical alterations as shown in the pattern drawings. The nose profile is the same width as the face and will require a "cheek cut." The juncture of the ears with the head will also need some attention. Round the body corners on both sizes of the Teddy Bear until it has the usual "stuffed look."

THE SHEPHERD

Both sizes of the Shepherd are shown in **Figure 6.10**. This is one of the items for the Nativity scene illustrated in Chapter 8 and shown in **Figures 8.1** and **8.2**. This "tall and skinny" craft item is a lot like the Farmer. The Shepherd is holding his Shepherd's Staff in the upraised hand similar to the Farmer's Pitch Fork. See Chapter 7 for making the Shepherd's Staff and the section on the Farmer for details. The arms will need the typical treatment discussed in the beginning of this Chapter. A major difference in all the Nativity scene craft items is the floor length robes, and as a result, there are no feet to finish. The advantage of floor length robes for the Nativity scene craft items is that they do not need a special base, as discussed in Chapter 3. This makes the Nativity scene easy to set up and rearrange.

JOSEPH AND MARY

Both sizes of Joseph and Mary are shown in **Figure 6.11**. They have a new detail for the arms since one or both are extended in front of the



Figure 6.12

Examples of both sizes of the finished Wise Men. Special finishing is needed in rounding the outside corners of the crowns.

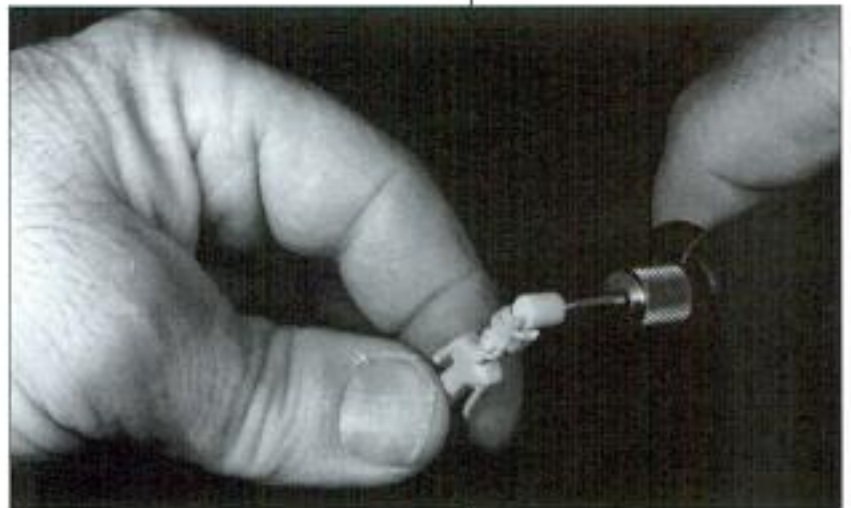


Figure 6.13

This Figure shows how a small diameter grinding stone is used to remove the extra material from the interior of the crowns of the Wise Men.

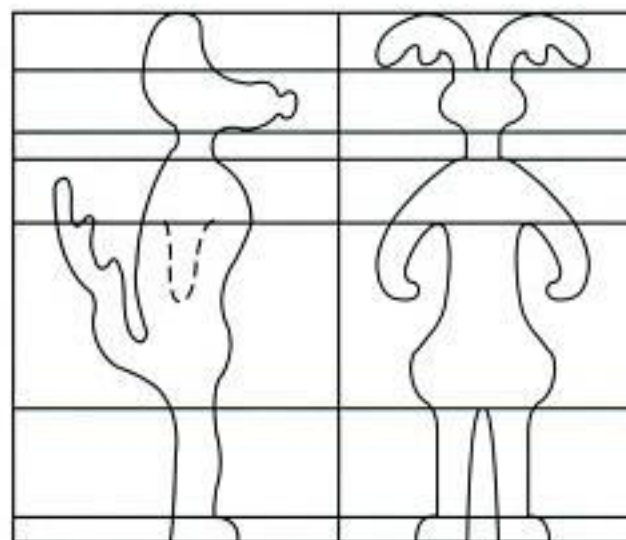
3-D Scroll Saw Patterns and Techniques

body. The final shape of the arms is noted with dashed lines in the pattern drawings. Cutting between the arms is similar to cutting between the legs for Siesta Sam (review those cutting instructions). All other details are similar to previous discussions for arms, faces and noses. Mary's hair is similar to the Mermaid. Joseph's hat is similar to the base of the Hillbilly's hat.

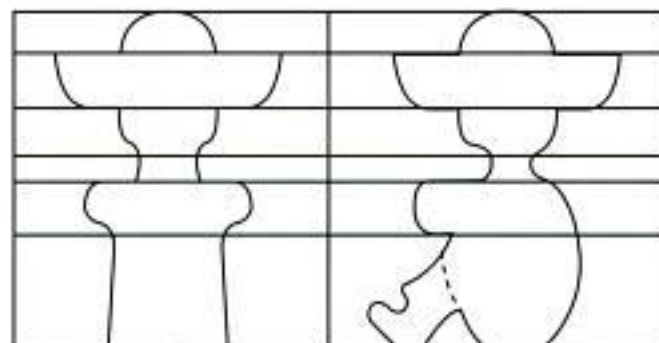
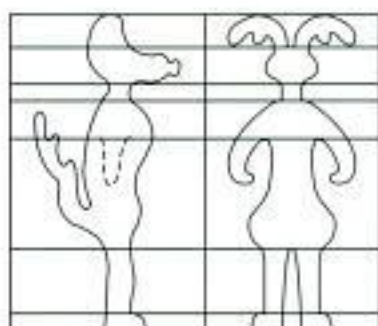
THE THREE WISE MEN

Both sizes of the Three Wise Men are shown in **Figure 6.12**. They have a new detail with the crown. The square corners of the crown need to be rounded on the outside. **Figure 6.13** then shows how a small diameter stone with a square end is used to remove the unwanted material in the center of the crown. Other details are similar to previous items.

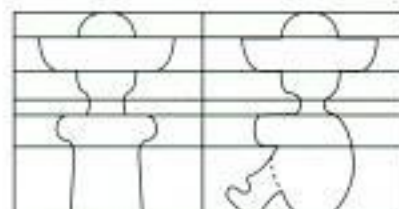
Coyote and Siesta Sam



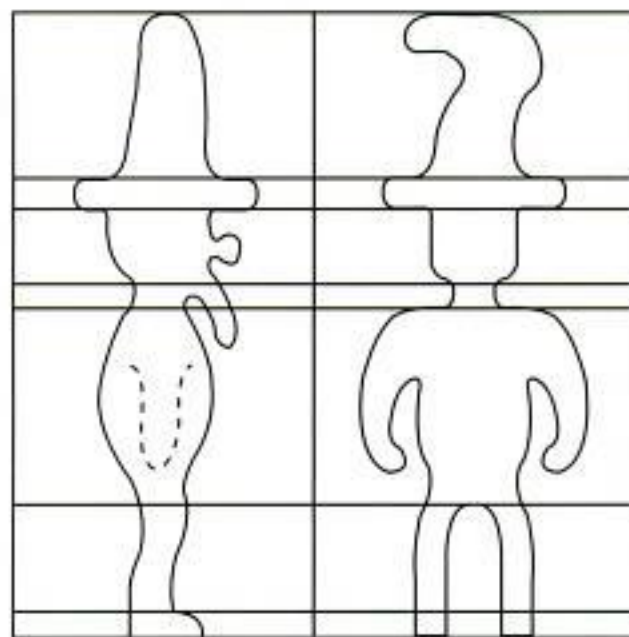
COYOTE



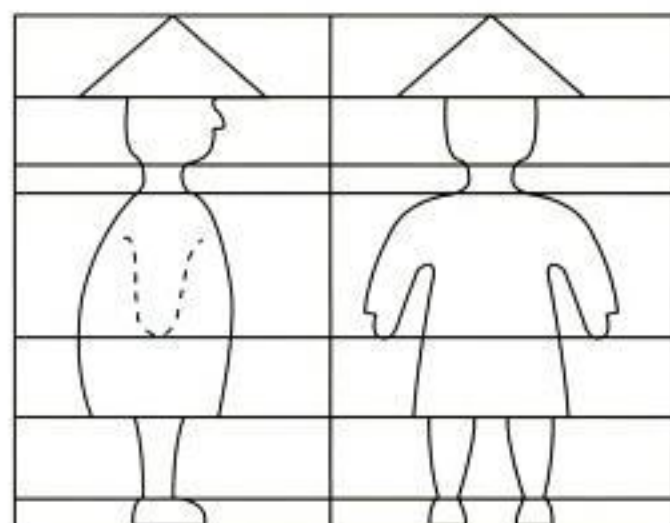
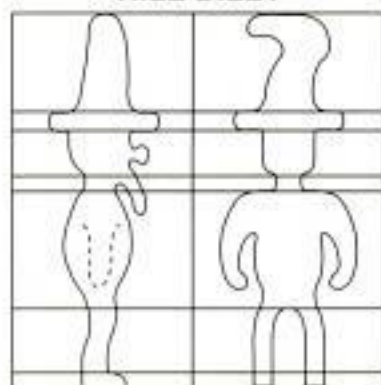
SIESTA SAM



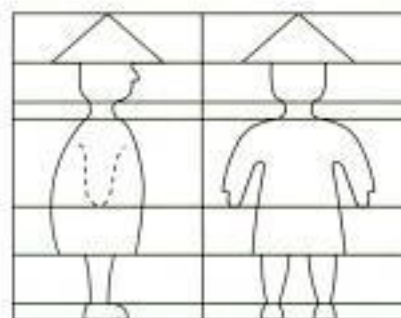
Hillbilly and Mandarin Man



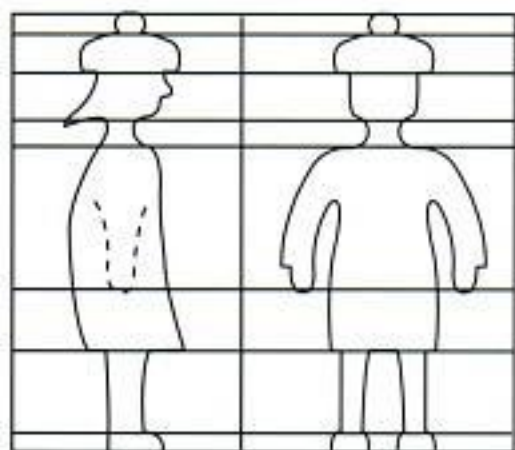
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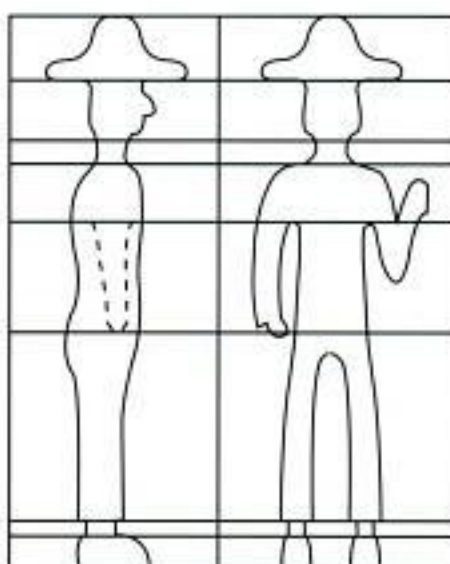
MANDARIN MAN



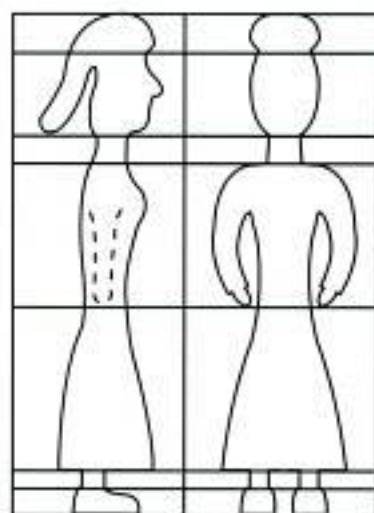
Bishop and The Farmer and His Wife



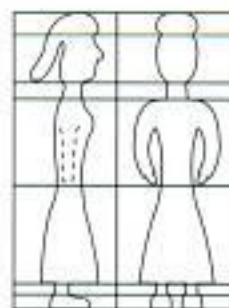
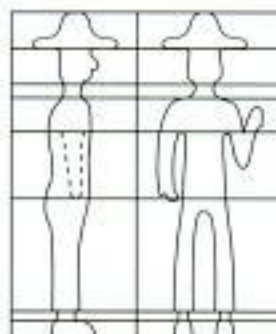
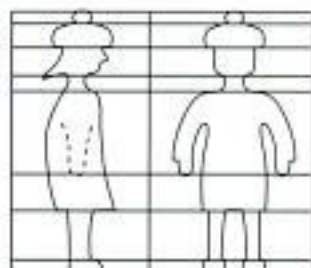
BISHOP



FARMER

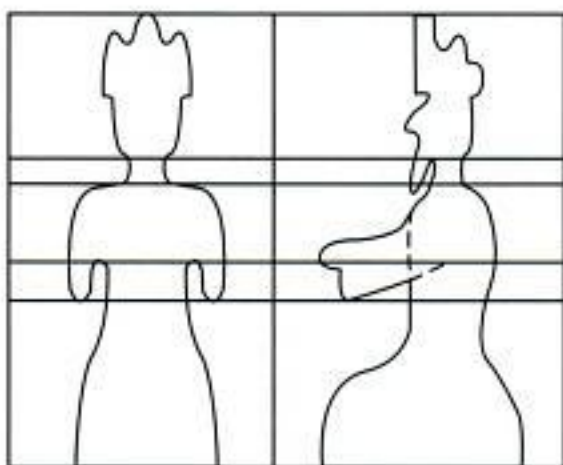


FARMER'S WIFE

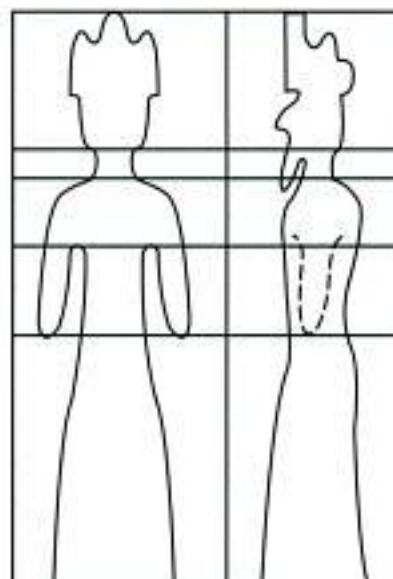
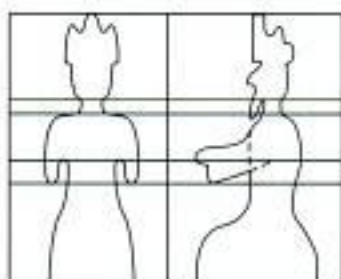


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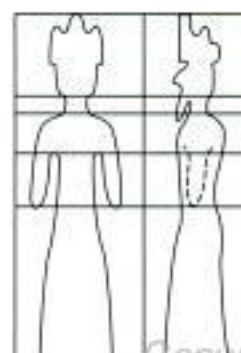
Wise Man 2 and Wise Man 3



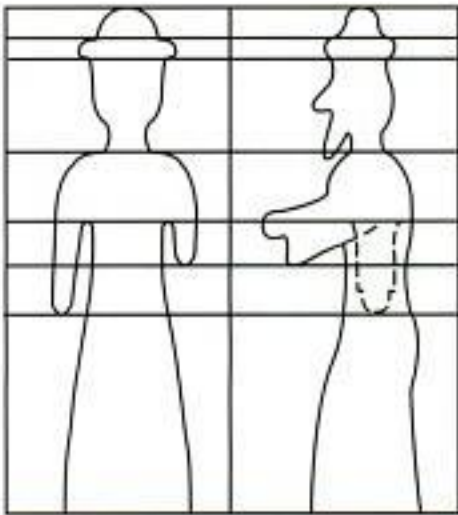
WISE MAN II



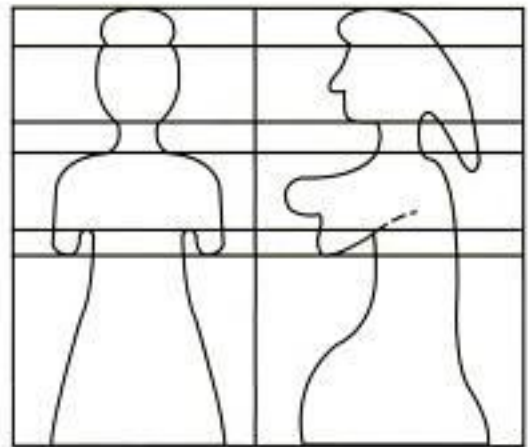
WISE MAN III



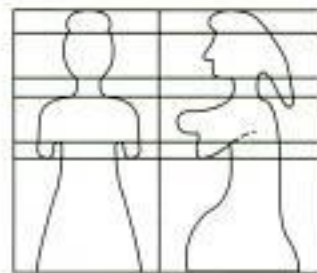
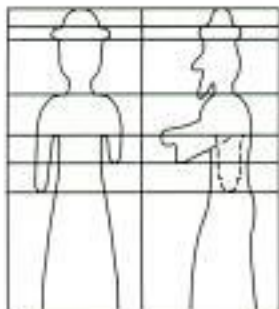
Joseph and Mary



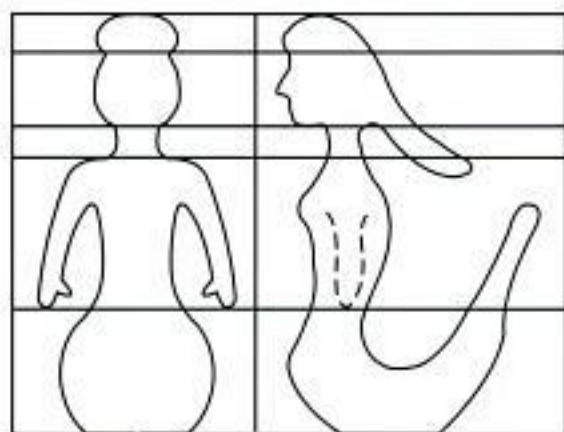
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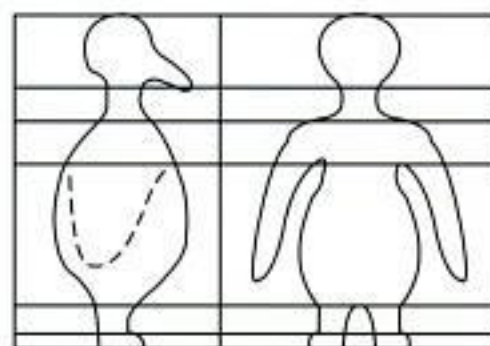
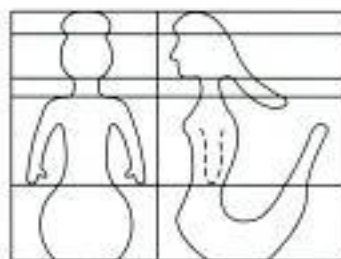
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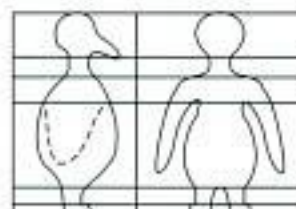
Mermaid and Penguin



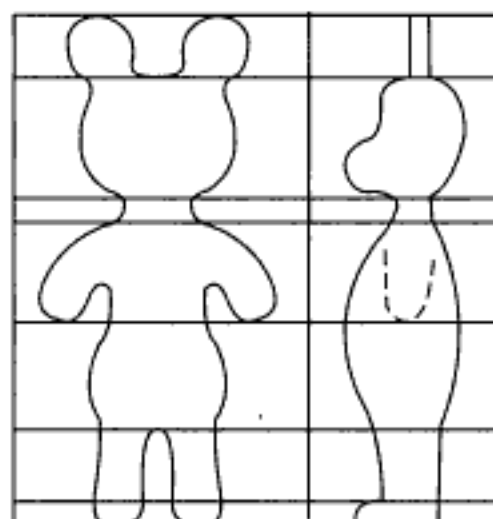
MERMAID



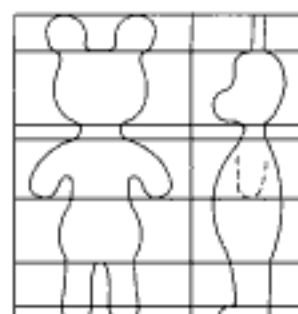
PENGUIN



Teddy Bear



TEDDY BEAR



Chapter Seven

Patterns Using Special Techniques

This chapter has four special animal craft items and several other special items needed for the various grouped scenes discussed in Chapter 8. The large and small pattern drawings for each project and a photo of a finished item are at the end of the chapter. The detailed discussion for each craft item also includes a photograph for both sizes after final finishing has been done. The special animal craft items have a new type of alteration, as mentioned in Chapter 2. This is the "extra appendages" that result when there are different body appendages in the same space in both the front and side views. The complex nature of these patterns produces these extra "appendages" when the sawing is completed. They must be carefully trimmed away as noted in the individual discussions and shown in Figures 7.1-7.5.

THE FEEDING FLAMINGO

Both sizes of finished and unfinished items are shown in **Figure 7.1**. The Feeding Flamingo is the same basic design as the Flamingo in Chapter 5 except it has its head down in front of its legs. Saw the front view first between the legs and head. This may require backing the saw blade in the



Figure 7.1

Note the extra appendages that have to be removed from both sides of the head and from between the legs. Smooth the corners of the body, neck and legs, as seen in the finished items.

3-D Scroll Saw Patterns and Techniques



Figure 7.2

Note the extra appendages on each side of the horn that are easy to remove. The appendage between the ears is best removed with one of the small steel burrs shown in Figure 1.7.

The unfinished items in Figure 7.1 show how the craft item looks when sawing is completed. There is an appendage on either side of the head and neck directly in front of the legs. These can be quickly removed with the carbide type cutter shown in Figure 1.6 as the first step of the finishing operation. The edge of the body can be smoothed where the extra appendages were removed to blend in with the neck.

There is also an appendage between the legs and directly behind the head and neck. This must be carefully cut away and the bottom of the body smoothed with one of the small steel burr cutters as shown in Figure 1.8. This is more difficult because it is between the legs and behind the neck. Care must be taken to avoid breaking one of the thin legs on either side of this unwanted appendage while it is being removed. The other finishing details, such as the feet, are typical to complete this challenging craft item.



Figure 7.3

The appendages on both sides of the head are easy to remove. The big appendage between the wings is best removed with one of the small steel burr cutters shown in Figure 1.7.

The unfinished items in Figure 7.1 show how the craft item looks when sawing is completed. There is an appendage on either side of the head and neck directly in front of the legs. These can be quickly removed with the carbide type cutter shown in Figure 1.6 as the first step of the finishing operation. The edge of the body can be smoothed where the extra appendages were removed to blend in with the neck.

THE UNICORN

Both sizes of finished and unfinished Unicorns are shown in Figure 7.2. This

Patterns with Special Techniques

with a very small diameter cutter can be quite useful for this operation.

THE PEGASUS

Both sizes of finished and unfinished Pegasus are shown in **Figure 7.3**. The Pegasus can also be compared to the basic Horse. The unfinished items in the Figure show the extra appendages on either side of the head and neck that are easy to remove. The body and neck area can be smoothed to the normal shape. The more difficult appendage is again between the wings with a cross grain cut required similar to the Feeding Flamingo. In general follow the same procedure discussed for the Feeding Flamingo.

THE TURKEY

Both sizes of finished and unfinished Turkeys are shown in **Figure 7.4**. The Turkey will also have extra appendages as seen in the photograph for the unfinished items. The head is in front of the middle of the five feathers. When the sawing is done, the Turkey will have two extra appendages on either side of the head and a ridge on each side of the body in front of the outside feathers. They can be easily removed because they are not between other details as noted above for the Pegasus. After they are removed, the corners of the body need to be smoothed. The neck should be narrowed just below the head so it is a uniform width along the length rather than the tapered shape of the center feather that is behind it. The feet need the usual shaping done for birds.

THE ANGEL

Both sizes of the Angel are shown in **Figure 7.5** in the unfinished and finished form. The Angel is a special project in that there is a pair of large wings on the back of the arms. If this project is made with a normal rectangular wood block, a very large volume of wood is left between the wings when the sawing is completed. Special preparation of the wood block as shown in the pattern drawing will eliminate most of this excess wood between the wings. The final finishing will then be much easier. A dado cut along the length of



Figure 7.4

Note the sawing procedure produces a head in front of each feather! The extra heads and the ridge on both sides of the body have to be removed to complete the project as shown.

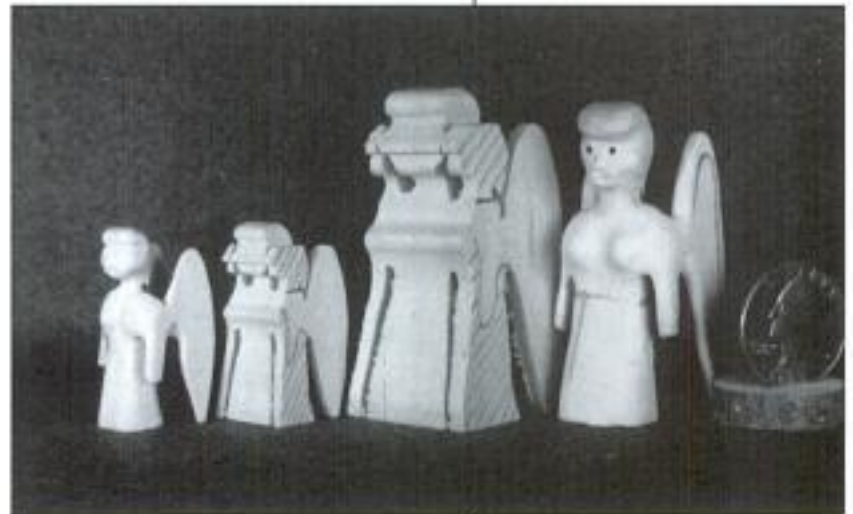


Figure 7.5

Examples of both sizes of finished Angels. A special wood block with a dado cut in the back makes finishing of the wings much easier. Finishing of the hair, face, bust and arms is similar to the Mermaid.

3-D Scroll Saw Patterns and Techniques



Figure 7.6

Examples of both sizes of the finished Baby Jesus in the crib. Finishing requires some gentle rounding of the face, body and toe area of the Baby.

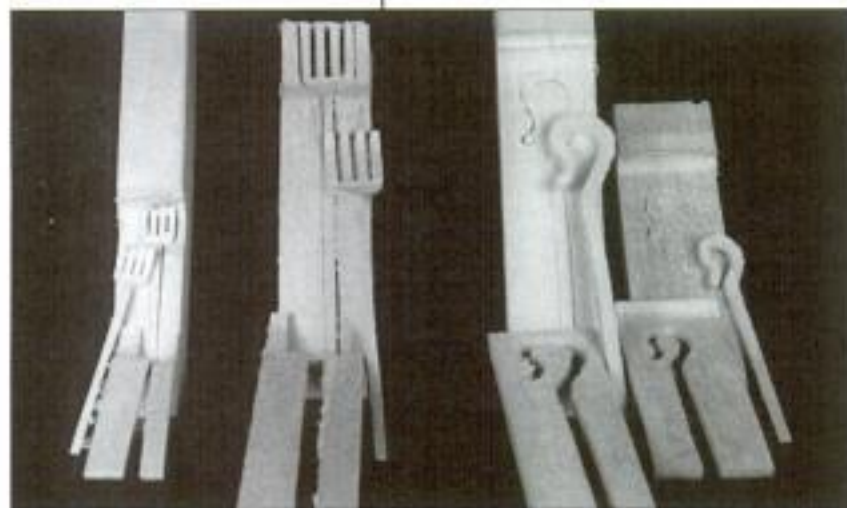


Figure 7.7

Examples for the finished Pitch Fork and Shepherd's Staff. Special finishing is needed in rounding the shaft portions. Note how several duplicate items can be made by cutting from one edge of the wood block.

the block is needed as shown in the bottom view of the pattern drawings. This is simply the cross section of the long wood block to which the front and side view patterns need to be attached.

Saw the front view first. Cut between the lower body and wings. Begin these cuts next to the body so you finish at the inside surface of the wing. Finish the front view cutting before doing the side view. Start the side view sawing near the lower edge of the wing between the wing and the body. Next start at the lower edge of the wing again

and go around the rest of the side view. It is important to do the start and stops in all these cuts as noted so the cutting ends in the full part of the block and not in the dado cut. This will keep the stresses in the block at a minimum during the sawing.

The arms blend into the wings as shown by the dashed lines in the pattern drawings. The shape of the dashed lines has been redrawn on the arm/wing material on the unfinished craft items in Figure 7.5. The cross-hatched material above the shoulder needs to be cut away first. Round the shoulder down into the top of the arm. Then the arm can be shaped as shown by the original dashed line by removing the cross hatched material in front, behind and below the arm. Make a smooth transition from the back of the arms into the wings. The hair, face and bust profile need to be altered similar to the Mermaid. As noted in Chapter 6, for the other Nativity scene items, there is no need for a special base for the Angel. Be careful, however, not to cut away any of the material at the bottom tip of the wings. These tips of the wings keep the

Angel standing upright!

THE BABY JESUS AND CRIB

Both sizes of the Crib with Baby Jesus are shown in **Figure 7.6**. Special care is needed in sawing out the Crib legs to keep them straight and smooth. Do the end view cutting first and then the side view. The only finishing needed is to gently round the face, body and toe area of the Baby so it looks as if

Patterns with Special Techniques

it has been carefully wrapped in a blanket. This is illustrated in comparing the large unfinished and finished items in Figure 7.6.

THE FARMER'S PITCH FORK AND SHEPHERD'S STAFF

Both sizes of the Fork can be seen in Figure 6.9 with the Farmer and his Wife. Both sizes of the Staff can be seen in Figure 6.10 with the Shepherd. These long and thin craft items are made in a similar way. The saw blocks for making these items are shown in Figure 7.7. The pattern drawings indicate how the front view is first cut in the block and the tape put on in the usual manner.

It is best to leave the top of the Staff away from the end of the block for strength purposes. It is, however, more convenient to have the tines of the fork at the end of the block to make it easier to saw between the tines. These items could be made either way if sawing is done carefully and the block is gently "pinched" together as the tape is put in place.

What is different in the sawing is that the items are then cut from one edge of the block. An initial short curved cut is made for the Fork to obtain the proper curved shape for the tines. After this initial cut, several items can be made from the same block before it gets too narrow to saw conveniently. After sawing, carefully sand the staff and the fork handle round. As noted for the Farmer and the Shepherd, the Fork or Staff is glued to the upraised hand and next to the shoe or bottom of the robe to hold it in place.

THE CACTUS

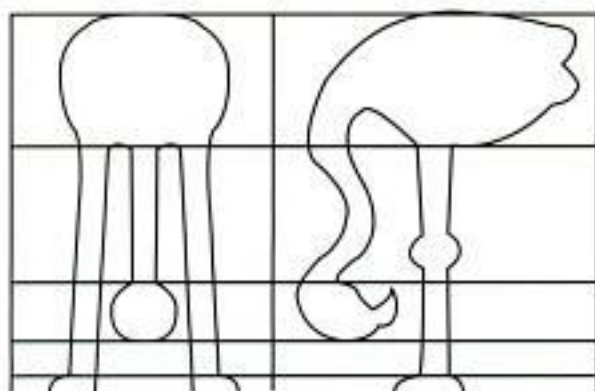
Both sizes of the Cactus are shown in Figure 7.8. This tall and fuzzy"craft item is part of the Southwest Scene in Figure 8.4. The large unfinished Cactus shows how it looks before working on the "arms." All the arms need to be made thinner than the main body of the cactus as shown by the lines drawn on two of the lower arms. A thin cutting disk as shown in Figure 1.7 will quickly cut the extra material from the arms. Two of the upper arms have been trimmed with the cutting disk. Considerable rounding of the main body and the arms then needs to be done. Because the Cactus needs to have a "fuzzy" texture, the rounding can be done with carbide cutters like those shown in Figures 1.5 and 1.6. These cutters leave a "fuzzy" texture and no other finishing is needed.



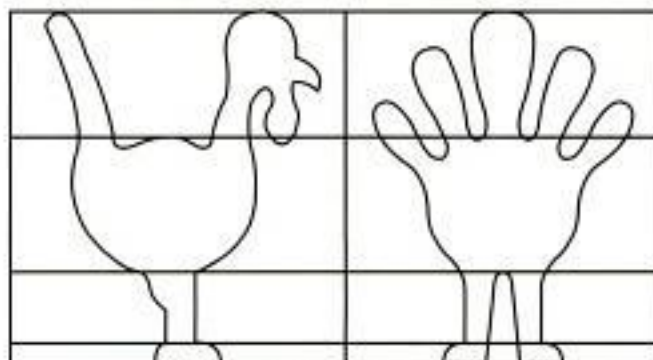
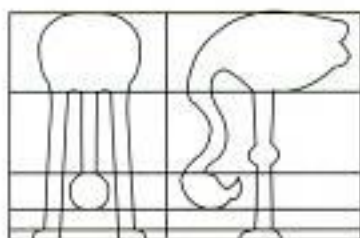
Figure 7.8

Examples for both sizes of unfinished and finished Cactus. Special finishing is needed in trimming extra material from the arms. The arms and the body of the cactus then need to be rounded.

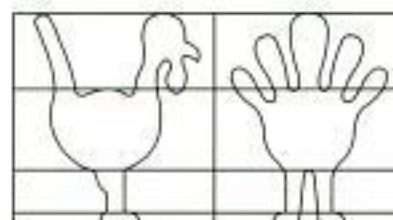
Flamingo and Turkey



FEEDING FLAMINGO



TURKEY

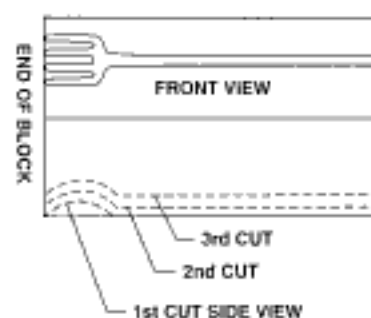
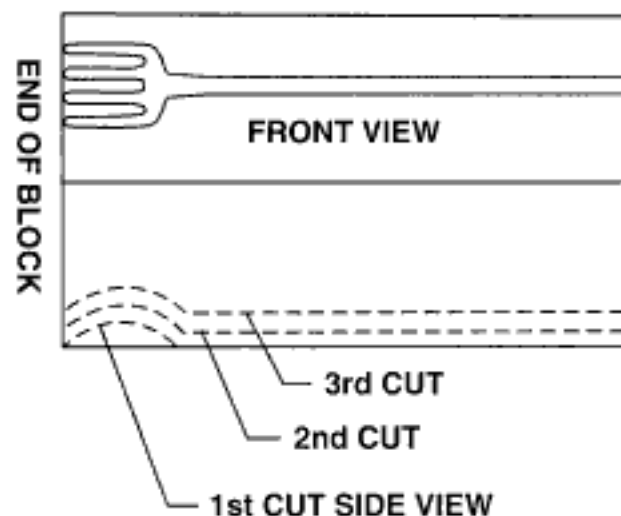


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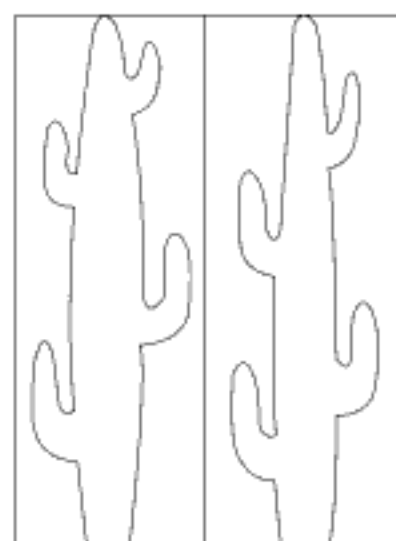
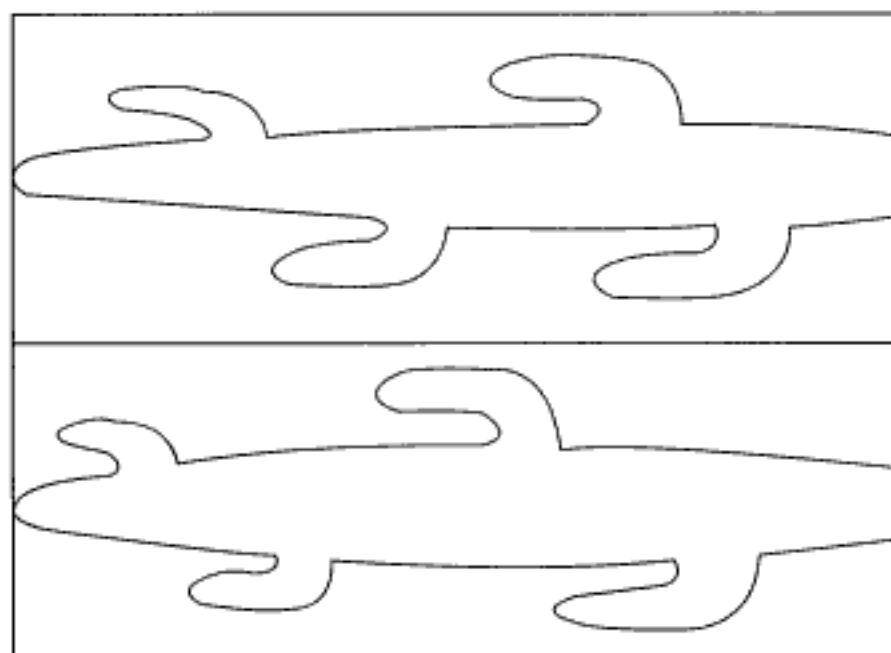
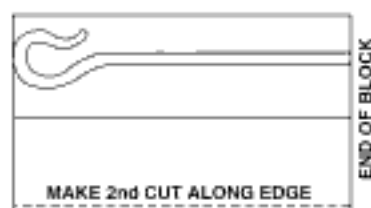
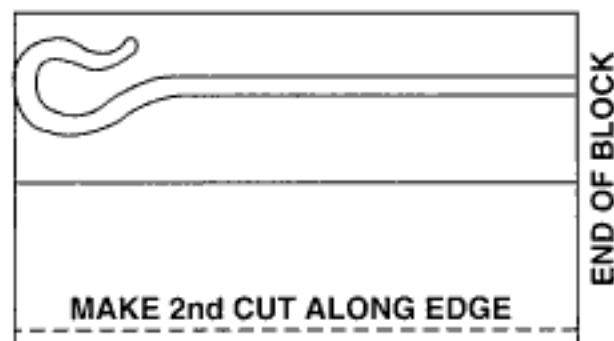
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Pitch Fork, Staff and Cactus

FARMER'S FORK



SHEPARD'S STAFF



CACTUS

Chapter Eight

Gift Ideas and Grouped Item Projects



Figure 8.1

The small Nativity scene. Note these craft items are not glued to a base. This allows them to be easily arranged.

This Chapter has a number of suggested ideas for using the individual craft items for special projects that would make nice gifts. Included at the end of the chapter are suggested patterns for shadow boxes to complement some of the grouped items. Some of the materials needed to do these projects can be purchased at craft or hobby stores as noted in the detailed discussions for the various projects.

THE NATIVITY SCENE

Figures 8.1 and 8.2 show the small and large pattern craft items in Nativity scenes. You can also make a simple stable to set up with the scene or just arrange it as you like on a mantel or table. A suggested pattern for the stable is at the end of the chapter.

THE FARM SCENE

This type of farm scene, shown in **Figure 8.3**, uses the often seen Farmer couple with a pitch fork and various farm animals in front of a barn type shadow box. A suggested pattern is at the end of this chapter. Many other arrangements could be made with these basic farm items, such as a table center piece.

THE SOUTHWEST SCENE

Figure 8.4 shows a typical southwest scene. By using different sizes of the cactus, animals and people, this scene could also have many variations.

NOAH'S ARK

Figure 8.5 shows a type of Noah's ark shadow box that can be done with the various craft items. There are many types of ark design that could be used. A suggested pattern is included at the end of this chapter. You could use the Shepherd and the Farmer's wife as Noah and his wife. This could also be a table center piece as well as other types of arrangements.

OTHER COMBINATION ITEMS

Figure 8.6 shows a chess set that has used different craft items for the chess set pieces. Basswood and wild cherry woods were used to give light and dark colors. This chess set has many possible variations depending on the type of animals or people chess pieces you might want.

Figure 8.7 shows a series of Ducks that were discussed in Chapter 2 when the various sizes of patterns were explained. This type of craft item could be done with many of the animals.

OTHER INDIVIDUAL ITEMS

Figures 8.8–8.10 show how the small horses and roosters have been used for dangle-type earrings. The smaller craft items could also be glued to earring posts for that style of earrings. The upper left side of Figure 8.11 shows how the "wires" for the dangle type earrings have been made.

Figure 8.11 shows a small gold plated fishhook in its original shape and after it has been straightened with a pair of needlenose pliers. A wire type earring hook has been joined to the fishhook eye. This upper portion of the earring wire can be purchased in craft stores. The straightened hook can then be pushed into the wood to support the craft items. The length of the hook should be such that the "eye" of the hook is above the top of the item so it will hang straight and not tip over.



Figure 8.2
The large Nativity scene. This set has been painted.

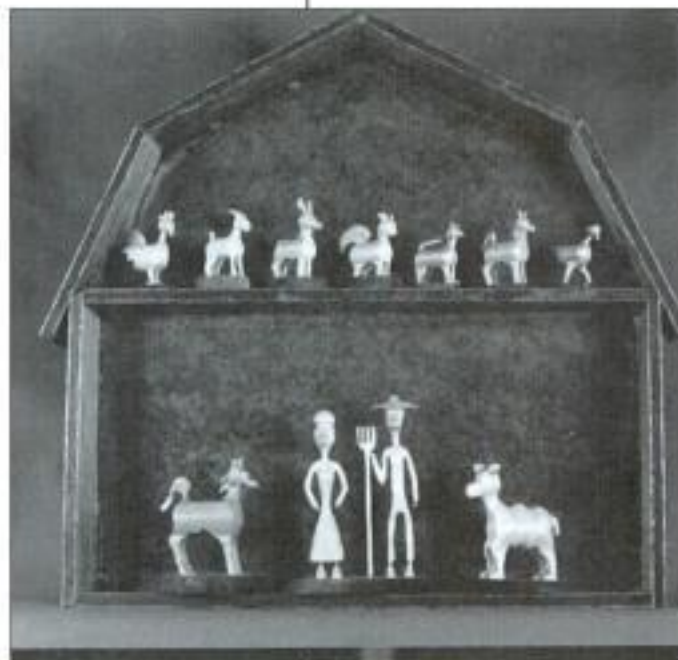


Figure 8.3
This farm scene includes the very familiar farmer and his wife posed in front of a barn.

3-D Scroll Saw Patterns and Techniques



Figure 8.4
One of many possible arrangements for a "Southwest" scene.



Figure 8.7
This series of seven ducks vary from one half inch to three inches tall. The largest items were cut with the band saw, the smallest items were cut with a 2/0 scroll saw blade.



Figure 8.5
Noah's ark is always a popular craft arrangement. Many different types of arks could be used for this scene.



Figure 8.6
Many different unique chess sets can be made by different choices for the pieces and/or selections of woods.



Figure 8.8
Small pattern horse and rooster dangle type earrings. Note the craft items are mounted for left and right ear positions.



Figure 8.9

Right side rooster earring. Note the fishhook eye is above the rooster head to assure proper balance of the craft item when it is hanging.

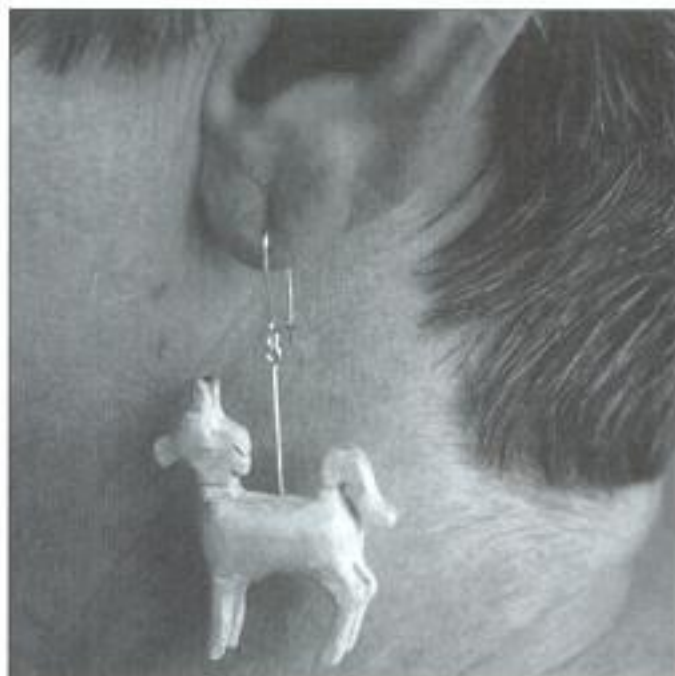


Figure 8.10

Left side "horse" earring. The use of gold fishhooks and gold earring wires adds to the fine appearance of the earrings.

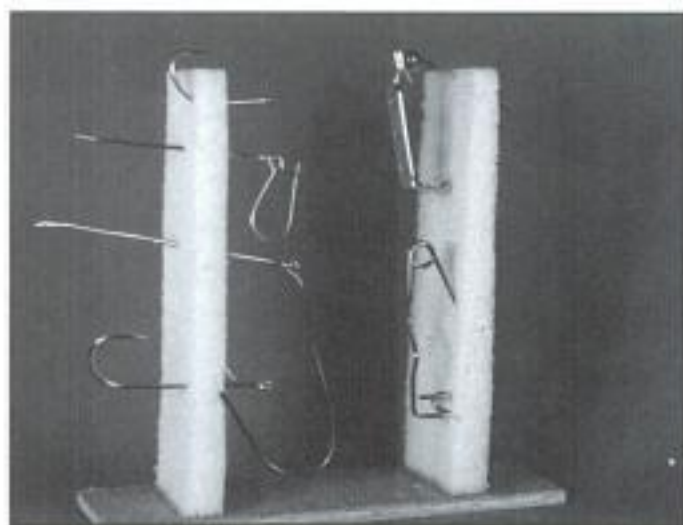


Figure 8.11

Upper left: Short gold fishhook in original curved shape and after straightening and attaching the gold earring wire. Lower left: longer gold fishhook in original curved shape and after straightening and attaching a soft piece of wire to the hook eye. The soft wire allows easy bending to hang on a tree. Right side: two types of name tag pins that can be hot melt glued to the back of craft items for lapel pins.



Figure 8.12

Christmas tree decorations made from large craft items. Note the soft wire added to the fishhook eye can be easily bent to hook on different types of trees.

3-D Scroll Saw Patterns and Techniques

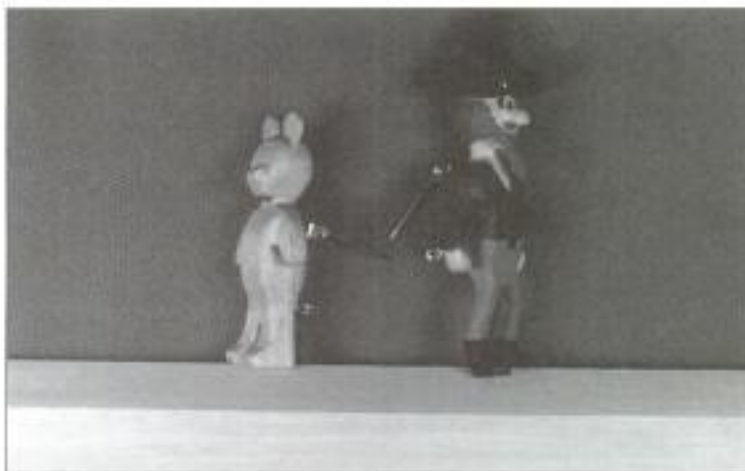


Figure 8.13

Lapel pins made from large craft items. Note the name tag pins have been hot melt glued to the back of the craft items with the pin point directed downward.

Figure 8.12 shows Christmas tree items that have been made similar to the earrings. They have a short length of soft wire added to the hook eye so they can be hung on a tree. The lower left side of Figure 8.11 shows a larger gold fishhook before straightening. It also shows the short length of wire attached to the hook eye to form a tree hook as needed for the type of tree on which it will be hung. The larger size craft items may work best for Christmas tree decorations.

When making these items, the "barbed" end of the hook must be carefully pushed into the wood with a pair of needlenose pliers while gripping the hook wire next to the barbed end. Be sure to do the pushing, in several short strokes, by always gripping the hook wire very close to the wood body of the craft item. The barb on the hook helps keep the wire from pulling out easily. Don't push the hook clear through the wood body, but far enough to have a firm grip in the wood.

Figure 8.13 shows lapel pins that have been made with craft items. It is best to use items which don't have any easy to break parts like the deer antlers. The right side of Figure 8.11 shows two different styles of "tag pins" which can be hot melt glued to the back of craft items to make the lapel pins.

OTHER CRAFT ITEMS

The "waste pieces" from various craft items can be sanded down to thin wafers as discussed in Chapter 2 for permanent patterns. They can then be used to decorate boxes, pictures and other items. Twelve different animals have been used for the numbers on the wood kitchen clock

shown in Figure 8.14. The center of the clock has a raised profile of "Noah's Ark" to go with the various animals. Clock kits with battery powered motors and hands can be purchased at craft stores.

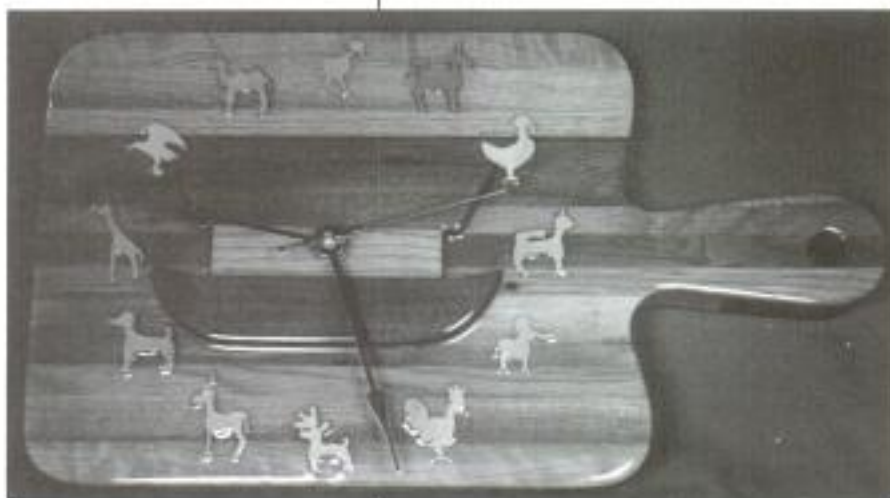
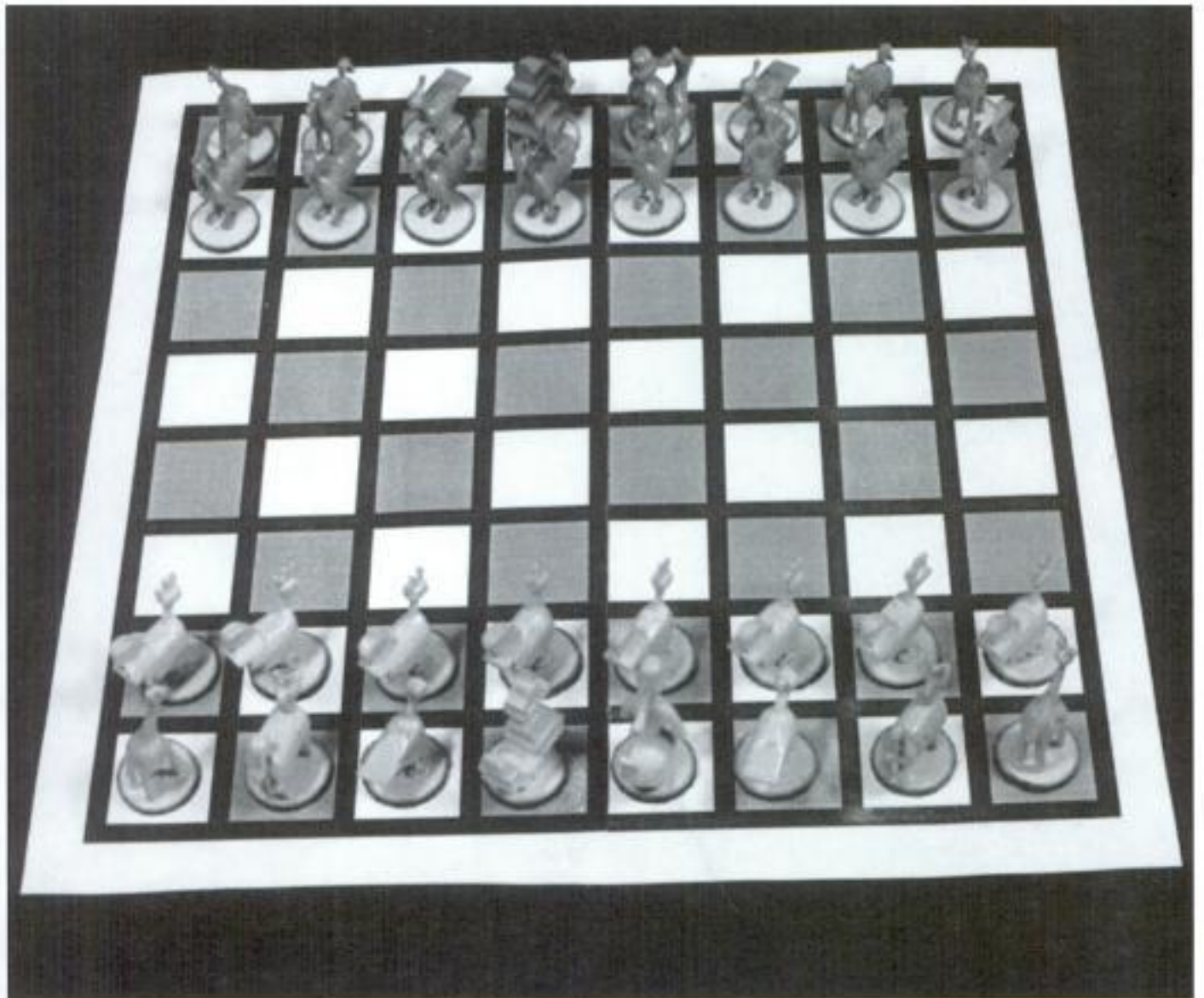


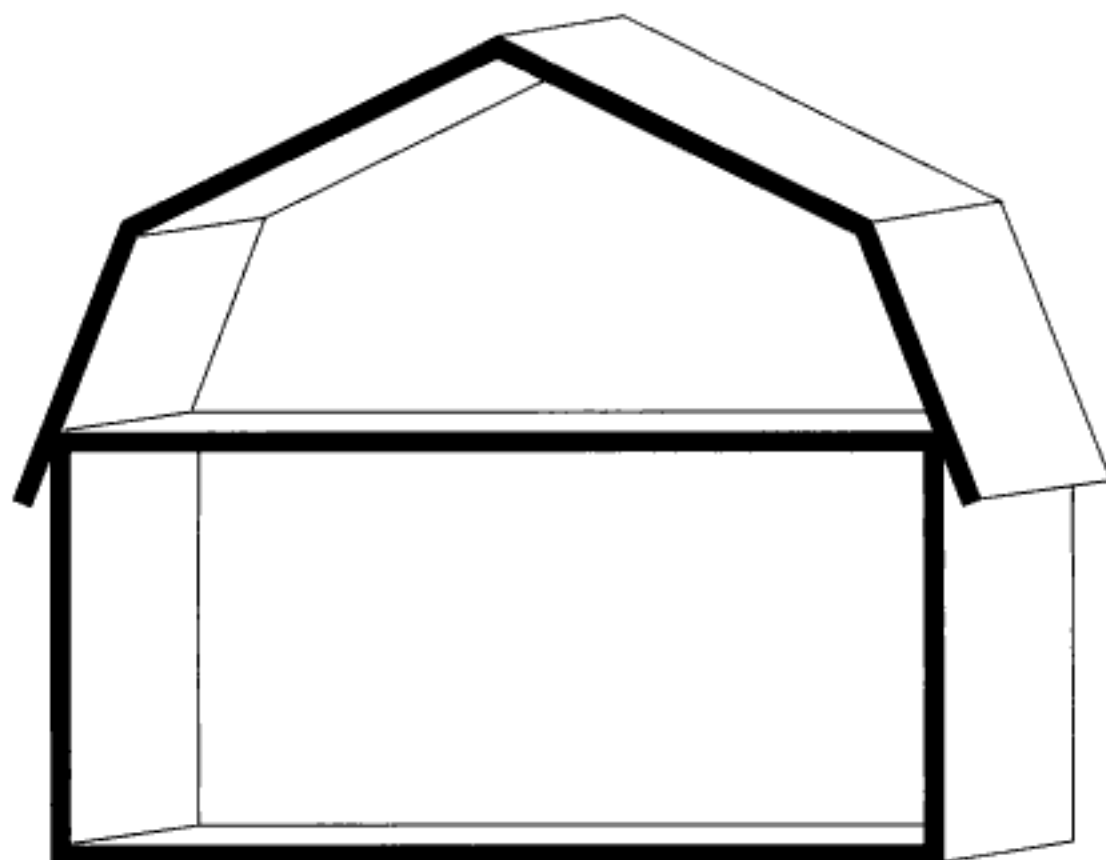
Figure 8.14

This breadboard type kitchen clock has twelve different thin saw waste pieces for the numbers. The center of the clock has a raised Noah's ark to go with the different animals.

Chess Set



Barn



BARN SHADOW BOX

Make the barn eight to ten inches wide and high.

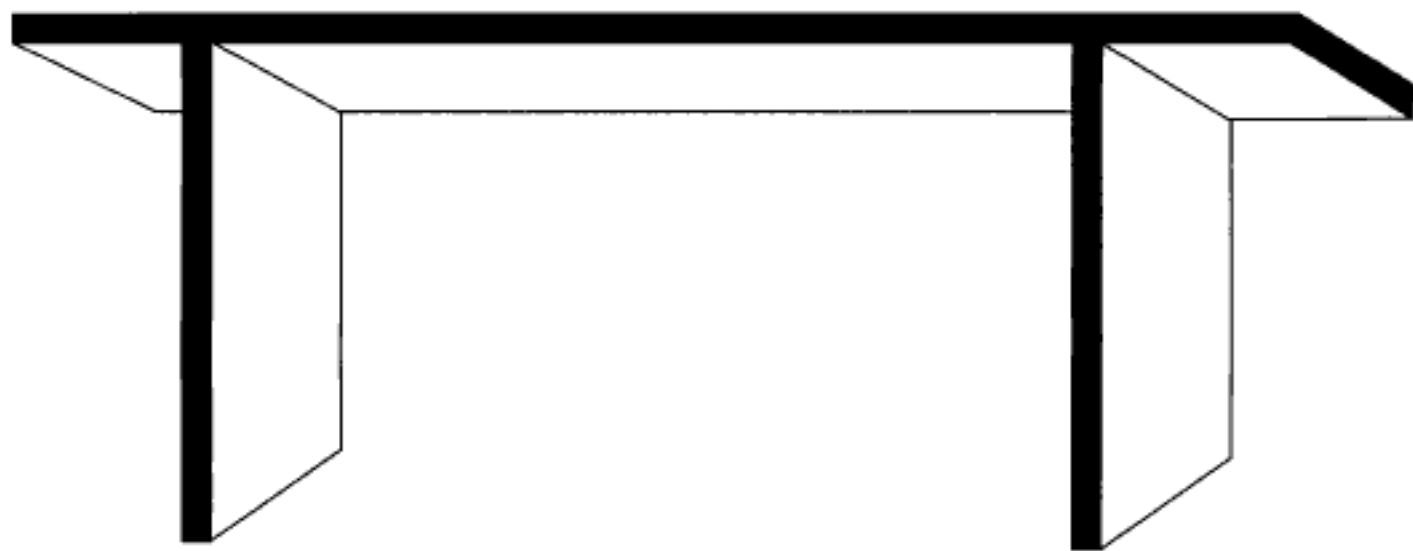
Make the depth about one and a half inches.

Use 1/8 to 1/4 inch thick wood stock.

The back of the box can be a heavy paper or light weight cardboard. Glue the wood barn frame to the backing material and trim around the outside.

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Stable



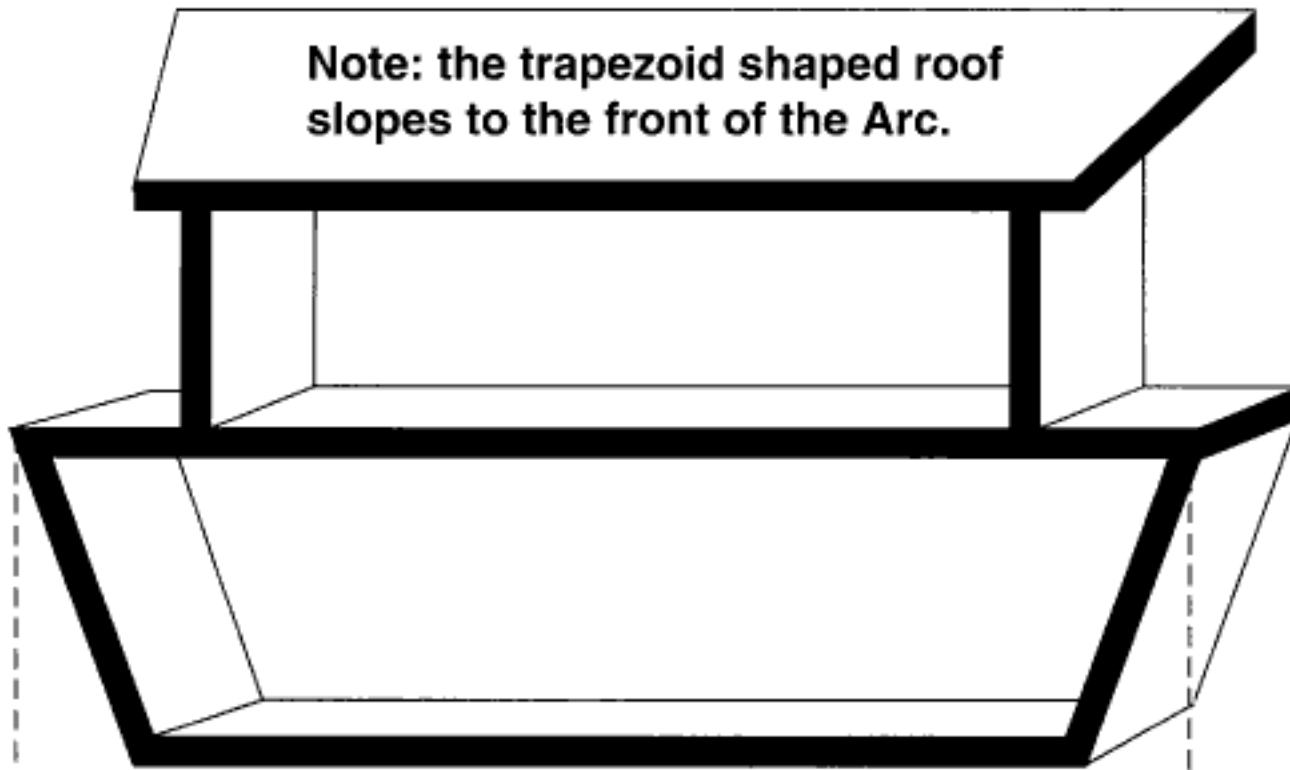
NATIVITY SCENE STABLE

Make the stable a little taller than the Wise Men and about two-and-one-half times as long. Make from wood strips about three inches wide and 1/8 to 1/4 inch thick. Note the roof slopes to the back.

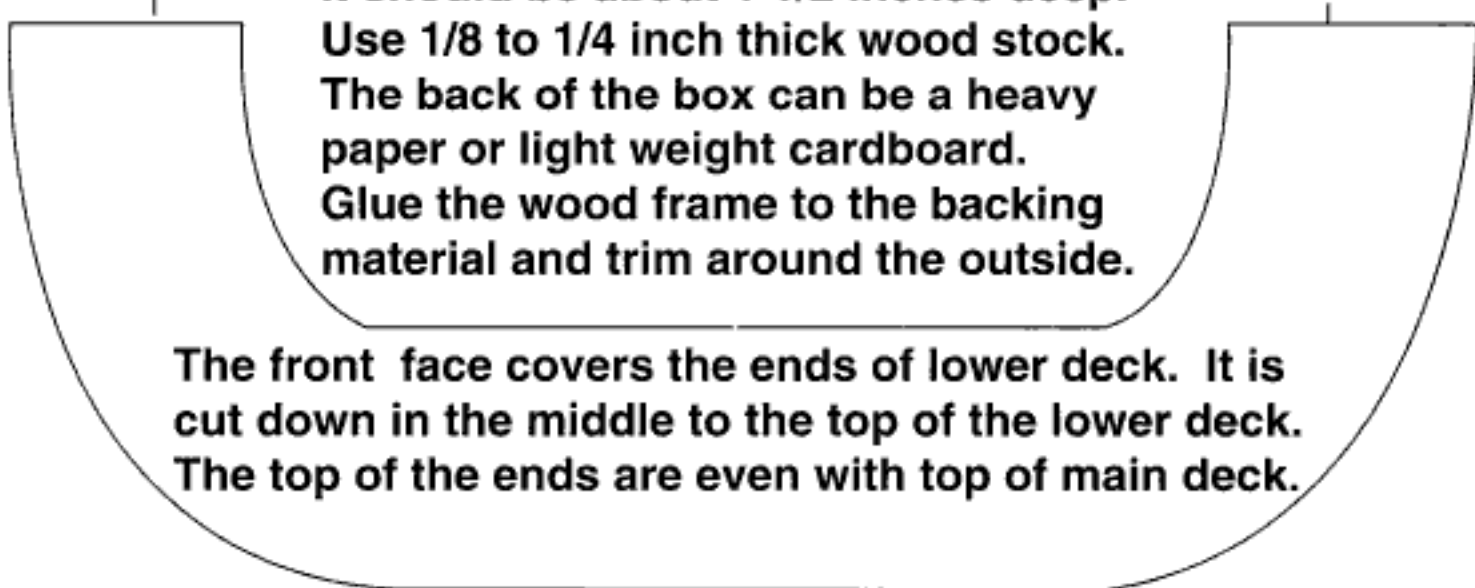
The barn pattern from the previous page can also be used as a backdrop for the nativity scene, as shown in the photograph on the opposite page.



Ark

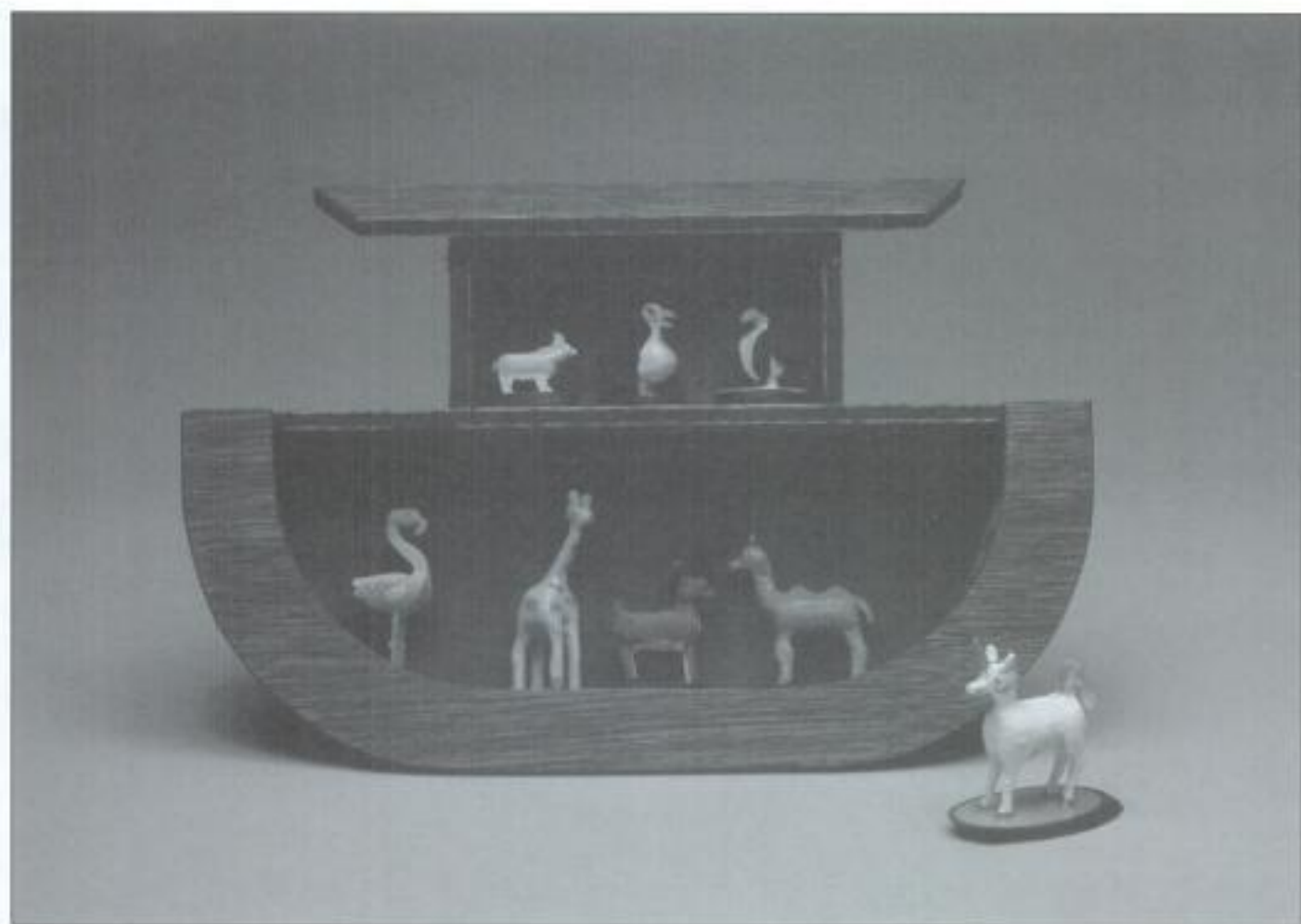


Note: the trapezoid shaped roof slopes to the front of the Ark.



Make the Arc about nine to ten inches long and about six inches high. It should be about 1 1/2 inches deep. Use 1/8 to 1/4 inch thick wood stock. The back of the box can be a heavy paper or light weight cardboard. Glue the wood frame to the backing material and trim around the outside.

The front face covers the ends of lower deck. It is cut down in the middle to the top of the lower deck. The top of the ends are even with top of main deck.



Appendix A

Nelson, Joyce C. and John A. *Patterns and Projects for the Scroll Saw*. Harrisburg, PA: Stackpole Books, 1991.

Spielman, Patrick. *Scroll Saw Handbook*. Sterling Publishing Company, Inc., 1986.

Spielman, Patrick and Patricia. *Scroll Saw Pattern Book*. Sterling Publishing Company, Inc., 1986.

Spielman, Patrick and Patricia. *Spielman's Original Scroll Saw Patterns*. New York, NY: Sterling Publishing Company, Inc., 1990.

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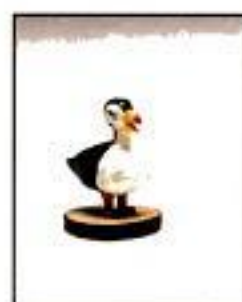


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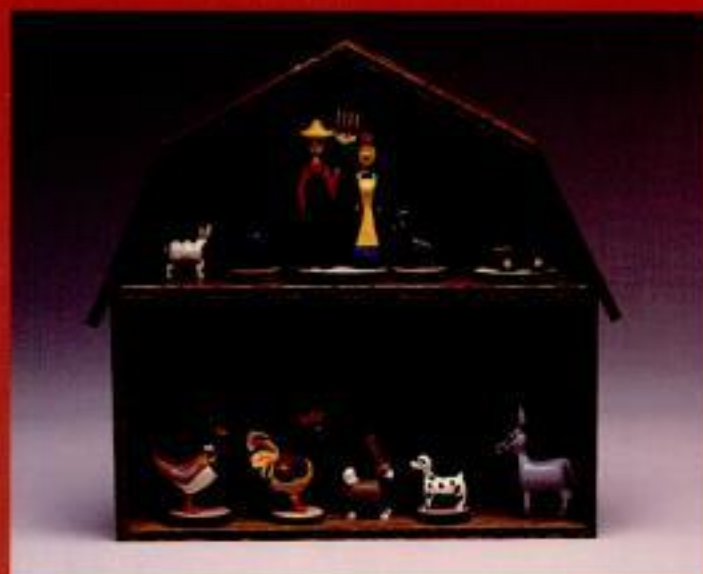
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Join Henry Berns as he uses a scroll saw or band saw to create an ark-full of miniature three-dimensional animals and a stable-full of miniature three-dimensional people to watch over them. Henry covers three-dimensional pattern use, basic power tool operating instructions and finishing technique, then moves on to include specific instructions and patterns for almost 50 three-dimensional animal and people projects. Also included are gift ideas and presentation ideas, including a barn, a stable and an ark in which to display the finished pieces.

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