

Incredible Stackables:

Ornamental Scroll Saw Projects



Frank Pozsgai

A Schiffer Craft Book

About the Author

Born in Budapest, Hungary, scroll saw guru Frank Pozsgai attributes his love for wood cutting to his early days in concentration and "displaced persons" camps in Germany. Awaiting liberation, he found solace and amusement in creating some artistic or usable object out of wood whenever he could find a scrap.

Later on, while attending college in Los Angeles, Frank excelled in art, especially drawing and painting. While he went on to pursue a career in industrial engineering and facilities engineering management, he never lost his love for wood and art.

Finally, in 1989, Frank found himself laid up with back problems. As part of his "Boredom Therapy" he purchased an inexpensive 15" scroll saw. Suddenly, his artistic talents and industrial engineering background started paying dividends! Frank set to work, retrofitting the machine with numerous custom-designed accessories to make it more user friendly. He also began creating three-dimensional patterns, and finally, he added the idea of carving his 3-D figures to give them greater realism and personality. Soon he was being urged by other saw users to go into mass-production of his accessories and designs.

Because of his success, Frank has been featured in *Woodworker's Business News*, and presently teaches weekly classes and workshops in the Portland, Oregon area. He continues to work with users, manufacturers and retail stores. Frank's "how-to" videos have enjoyed great success. His company, Pozsgai's Designs, is dedicated to "Removing Obstacles to Success," and he works hard to develop unique state-of-the-art products and strong technical support for customers.

Frank's previous four books, *The Scroll Saw Book*, *Scroll Saw Pictures*, *A Scroll Saw Christmas*, and *54 3-D Scroll Saw Patterns*, have received critical acclaim. These two new books should please those who wish to share in his arts & crafts talent.

Frank Pozsgai lives in Aloha, Oregon, where he runs his workshop & business. He can be contacted at: 19390 S.W. Murphy, Aloha, OR 97007-4428 or calling @ 1-800-872-2803.

Dedication

In loving memory of my father-in-law, Paul L. Currin, nicknamed "Beno," for his continuous support of my family.



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My thanks goes out to all these fine companies and their helpful people.

Introduction

Incredible Stackables was designed for both the beginning and the advanced sawyer. The ornamental patterns are at the same time simple enough for everyone and filled with enough potential to challenge the most skilled scroll sawyer. All the patterns are original size and are drawn in outline. However your craft is only limited by your imagination—in how you choose to display them. One can see the numerous ways items can be given used creatively by turning to the Gallery section in this book. Even more, the patterns can also be used to create puzzles for the kids or grandkids...a great learning tool about various animals.

For the sake of all sawyer's we will be adding to any of our future books a complete scroll saw blades selection chart, as well as a general (SPM) blade guide. This information will be very beneficial in improving your knowledge with respect to proper blade selection.

Once again I would appreciate hearing from you about your success with these projects. And please send me any suggestions or requests for future pattern designs. "Happy cuttin' to ya!"

Instructions & Tips

Special Blade and Cutting Hints

- The blade you use should have a minimum of three teeth per material thickness.
- Cutting speeds may be increased using blades with larger teeth, but this will result in a finished edge that will be rougher.
- Finer (smoother) cuts may be achieved with blades with more teeth per inch and slower cutting speeds.
- When cutting soft materials, use a blade with large teeth. Hard materials are cut best with a blade with fine teeth.
- If saw burns or melts material when cutting, either slow the cutting speed or increase the blade size (blades with more teeth).
- One additional tip to reduce or eliminate burning. Using 2" clear 3M packing tape I envelope the wood or simply place the tape over or under the pattern I'm about to cut. The tape lubricates the blade preventing burning. You won't believe your eyes at the results! Use this method with all hard & exotic woods.



You can see the result of two cuts with the same blade and speed in this piece of purple heart wood. The top one was done without the tape and shows much burning. The bottom one was done with the tape in place.



This purple heart wood burns very easily, particularly with the tight scroll work you see on this piece. By apply clear packing tape before cutting, it is possible to reduce or eliminate the burning.

The Right Blade For The Right Job

Contrary to numerous opinions, just like mine, it's the end result of what one achieves with the scroll saw that counts. I am repeatedly asked "what blade should I use?" There are too many variables to consider to give a pat answer to that question! The saw itself whether it's an Excalibur, a Hegner, Delta, RBI Hawk, or an import, is not the most important factor. Most saws can be made to do a good job. More important factors are the blade tension, the feed rate, your sensitivity, the speed (SPM), and the type of material you are cutting.

That being said, the blade is the single most important component of a scroll saw! If the right blade is not used for the job, the results won't be worth anything. And there are so many variables that you need to have a variety of blades available for your saw. Remember that one or two common blades will not be enough for a novice, much less the accomplished scroller.

Choosing the correct blade size and tooth style for the material to be cut is the key factor for accurate and smooth scroll sawing. If it is done right, one can eliminate or reduce the constant problem of sanding!

Sizing, Copying, & Transferring the Pattern

• **Sizing & Copying the Pattern:** Use a photocopier to make several copies of the particular pattern you wish to cut out. Modify them to your satisfaction, by either enlarging them or reducing them to suit your needs.



The photocopied pattern.



Cut the pattern straight along the base. This is important for proper alignment with the wood. If the bottom of the pattern is straight, it can be laid against the straight edge of the wood to give you a clean line for joining later.

Cut roughly around the rest of the pattern.



• **Transferring the Pattern to the Work Piece.** There are several products on the market one can choose to adhere the pattern to the work piece. They include: Glue Stic™ by Avery, 3M's Scotchbrand™ spray adhesive, rubber cement, etc. Make sure they are the repositionable or temporary bond items.



Two of the adhesives you may use for the piece.



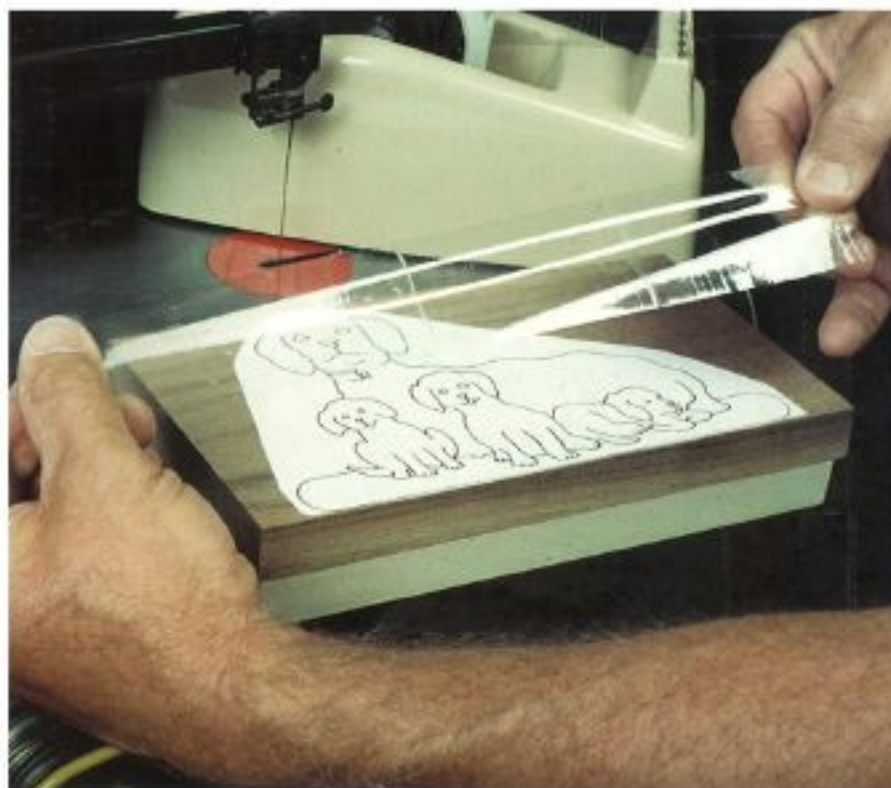
Glue the pattern to the wood.

Selection of Materials

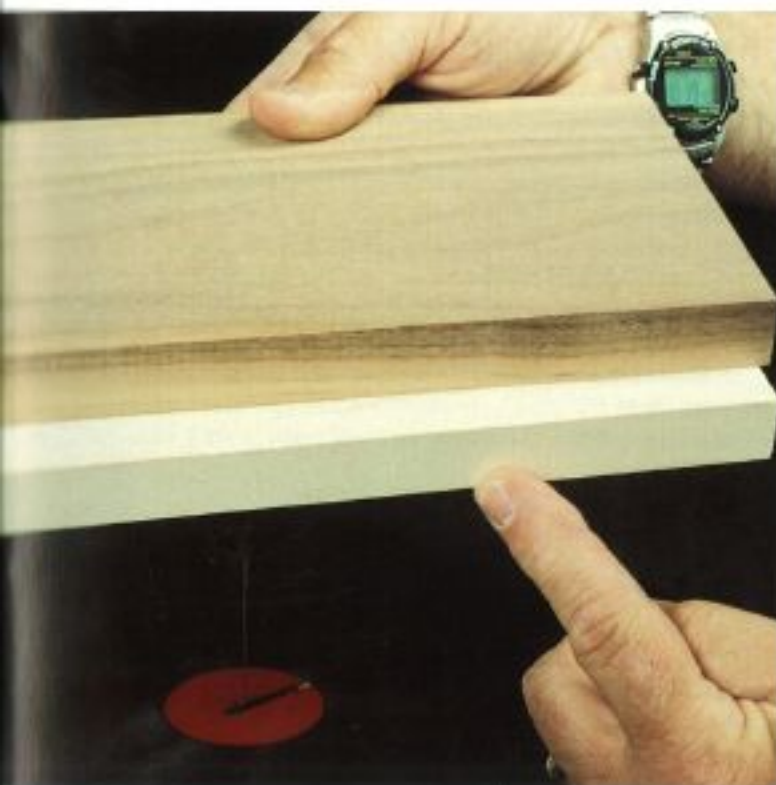
The provided patterns may be sawed from a wide variety of different materials & different thickness—the choices are entirely yours. The range can include wood products, plastic, or even metals.



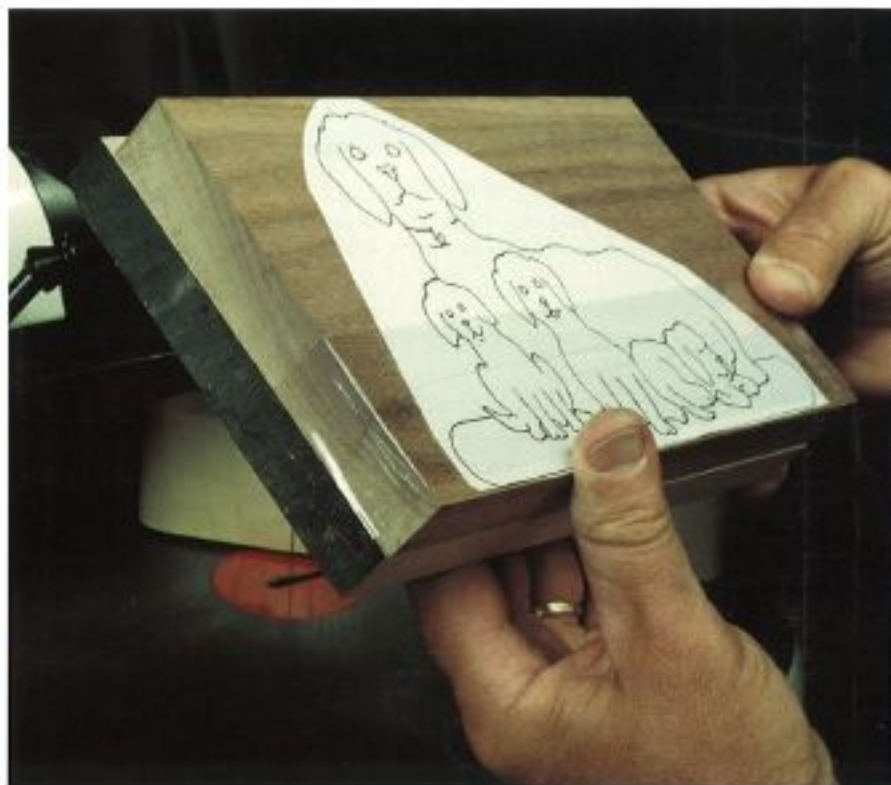
I am using two hard woods, maple and walnut, for their contrasting colors.



To hold the two pieces of wood together I use clear packing tape. As mentioned earlier, this has the added benefit of lubricating the blade as it cuts, keeping it from burning the wood.



They are the roughly the same dimensions, with identical thicknesses. These are 3/4" thick.



I run the tape around all sides of the wood...



Until the piece is encased in tape.

Scroll Saw Cutting Preparation

- **Wax the work table** periodically. This will help the stock slide easily over the work table for better control.



For this project I am using a Delta P-20 Scroll Saw. It was the newest available and is the most user-friendly scroll saw on the market. It has numerous features, including a belt drive, that make almost vibration free.



Periodically I wax the table surface using a spray wax.

- **Level the table**, and, using a square, check to see if the blade is at an angle of 90 degrees or perpendicular to the saw table.



Tables can be readily adjusted to establish level.

- **Select the blade.** Remember, use the right blade for the right material. For guidance, check out the blade use Guideline Chart in this book.



The blade for this hardwood project is the Olson PGT double reverse tooth. It clears chips easily and runs cooler.

- **Check blade tension.** The Rule of Thumb: When you push the blade front to back with your thumb, you should get a 1/8" deflection. Remember periodically blade tension adjustment is a must.

- **Decide on a cutting speed.** Establish the proper "SPM," Strokes Per Minute, for the project. Check out the General Guide to Cutting Speed for the materials you have selected. Remember to read the section pertaining to special blade and cutting hints; as well as the right blade for the right job. To some sawyers this will truly be helpful.

- **Don't be afraid.** Learn not to be afraid of the scroll saw blade and work from 1/2" to 1" around the scroll saw blade while you are cutting. This is most important, and will make a BIG difference on your finish product.

Maintenance & Upkeep of your Scroll Saw

All scroll saws require periodic maintenance. This includes:

- Greasing (not oiling) of pivot bolts every 50-75 hours of running time. Note: On the new delta P-20 you have no choice but to oil.
- Checking your motor brushes periodically and replacing them as needed.
- Visually checking belts and or other wearing parts.
- Waxing the work table frequently.
- Cleaning the scroll saw periodically, especially around the motor & electronic controls. Compressed air works well for this task.

Safety Procedures

Read your owners operating manual is essential for all sawyers. Once again take care and truly enjoy your scroll saw.

General Characteristic & Manufacturing Processes of Scroll Saw Blades

- Material: Carbon: .070%-.079% Silicone: 0.10%-.030%
Manganese: 0.30%-0.70% Chromium: 0.10%
- Hardness: RC 53-55
- Style
(skip tooth): 15.0 TPI
- Dimension
(tooth cut): .001"/.008"
- Bend Test: The Reverse Tooth Fret saw blade must be able to revolve around a 360° pin without fracturing. Then the blade must return to its relaxed state and remain bent.

All the carbon steel wire product produced in the U.S. today either comes from an open hearth or electric furnaces. The typical USA Acid Bessemer Process is what produces the superior quality grades of steel. Virtually all scroll saw and similar blades are manufactured from a non-resulphurized high carbon steel.

- Scroll Blades Regular Style Teeth (5" or 6"): Blades are notched & set.
- Skip Tooth Fret, Saw Blades (5"): Blades are milled with no set.
- Reverse Skip Tooth Saw Blades (5"): Blades are milled with no set.
- Double Tooth Fret Saw Blades (5")—Blades are milled with no set.
- Metal Cutting Saw Blades (5"): Blades are milled with no set.
- Spiral Saw Blades (5"): Blades are milled with no set.
- PGT Saw Blades (5"): Blades are precision ground with no set.
- Double Tooth PGT Saw Blades (5"): Blades are precision ground with no set.
- Thick wood Saw Blades (5"): Blades are notched and set.

Note: for the experts out there NOTCHED BLADES are extremely sharp and can be equal to a milled or precision ground tooth blade.

Pozsgai's Designs' General Guide to Cutting Speed (SPM)

	APPLICATION	SPEED (SPM)
SOFT WOODS	High speed quickly & easily cuts pines, balsa wood, bass wood, plywood, cedar, fir and others	1600-2000
HARDWOODS	For making intricate cuts on cherry, walnut, oak, teak, ash, maple, purple heart, rosewood and others without burning wood. With stock that is 3/4" & above use the 3M tape trick.	1400-2000
METALS	Slow speed keeps blades cool to minimize breakage. Can cut brass, copper, aluminum, soft 16 to 20 gauge low carbide steel sheet stock and others.	400-700
PLASTICS	Slow speed helps to prevent melting of some cast acrylic, ASB, lexan & Plexiglas. Note: An extruded acrylic can be cut easily at 1500-1700 SPM	300-1000

The Project

Sawing Out the Pattern



I generally begin by drilling out the eyes, nose, and other areas that can be best formed with a drill press.



If properly aligned, the base should not need to be cut. Start at a corner of pattern and cut the outline. Then go back and cut the detail lines within the pattern.



The result should be two identical figures, one in maple and one in walnut.



Each segment of the pattern should be independent. In this case the pillow, pups and mother are all completely cut out.

When the pattern is completely cut, remove the tape and the pattern.



The base is 3/4" to 1" stock. Since I have produced two patterns, I also will need two bases, one in maple and one in walnut.



Glue in place.



For the edge I am using an ogee fillet bit with two flutes and a bearing guide. I have decided to make these into pen holders, and have created a trough for the pen using a 1/2" box core bit.



For sanding I use a 220 grit adhesive pad. I remove the back and fold the pad in half. Between finish coats I use a 320 grit pad.



Mix and arrange the pieces in an appealing way.

Finishing the Cutouts

There are numerous ways to finish your project depending on the pattern you choose, the type of material you'll use, and including what style you want to present it. They include natural finishes, stains, paints, and lacquers. The choice is strictly a matter of personal preference.



In the front you can see a finished piece. I use felt pads on the bottom to complete the piece.

Ways to Utilize Patterns

With the variety of positions, woods, and setting, one can be very creative in utilizing these patterns. A few ideas include:

- **Pictures.** This is done by simply adding a backing & frame.
- **Pen & Pencil Sets.** As we did here, all you need is an attractive base.

- **Refrigerator Magnets.** Place a magnet on the back and you have something beautiful to hold all those important messages and memories.

- **Clock Sets.** Quartz movements are readily available and easy to use.

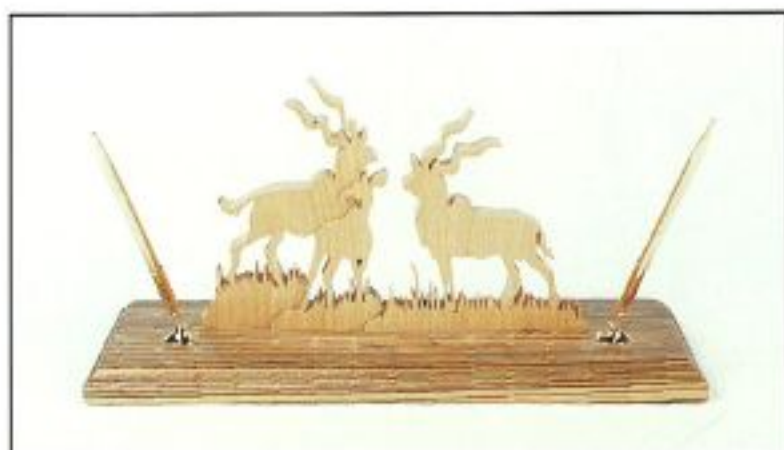
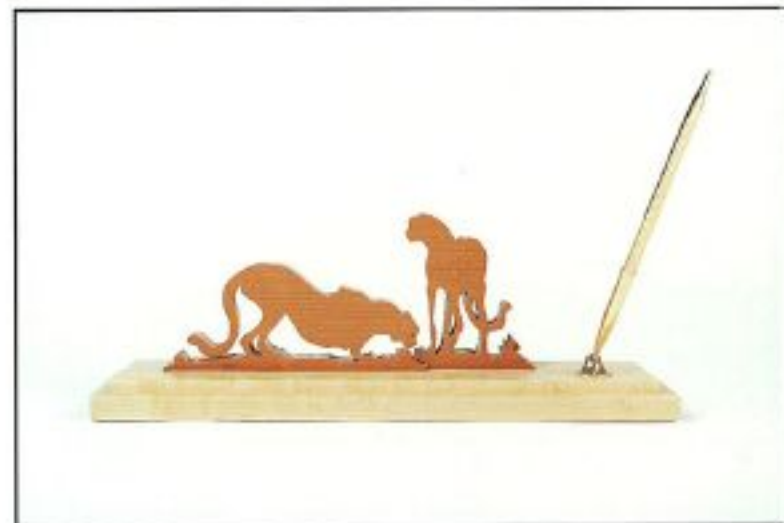
For these possibilities and more, see the gallery that follows.

This pen holder would make a wonderful fixture in the office or the perfect gift.



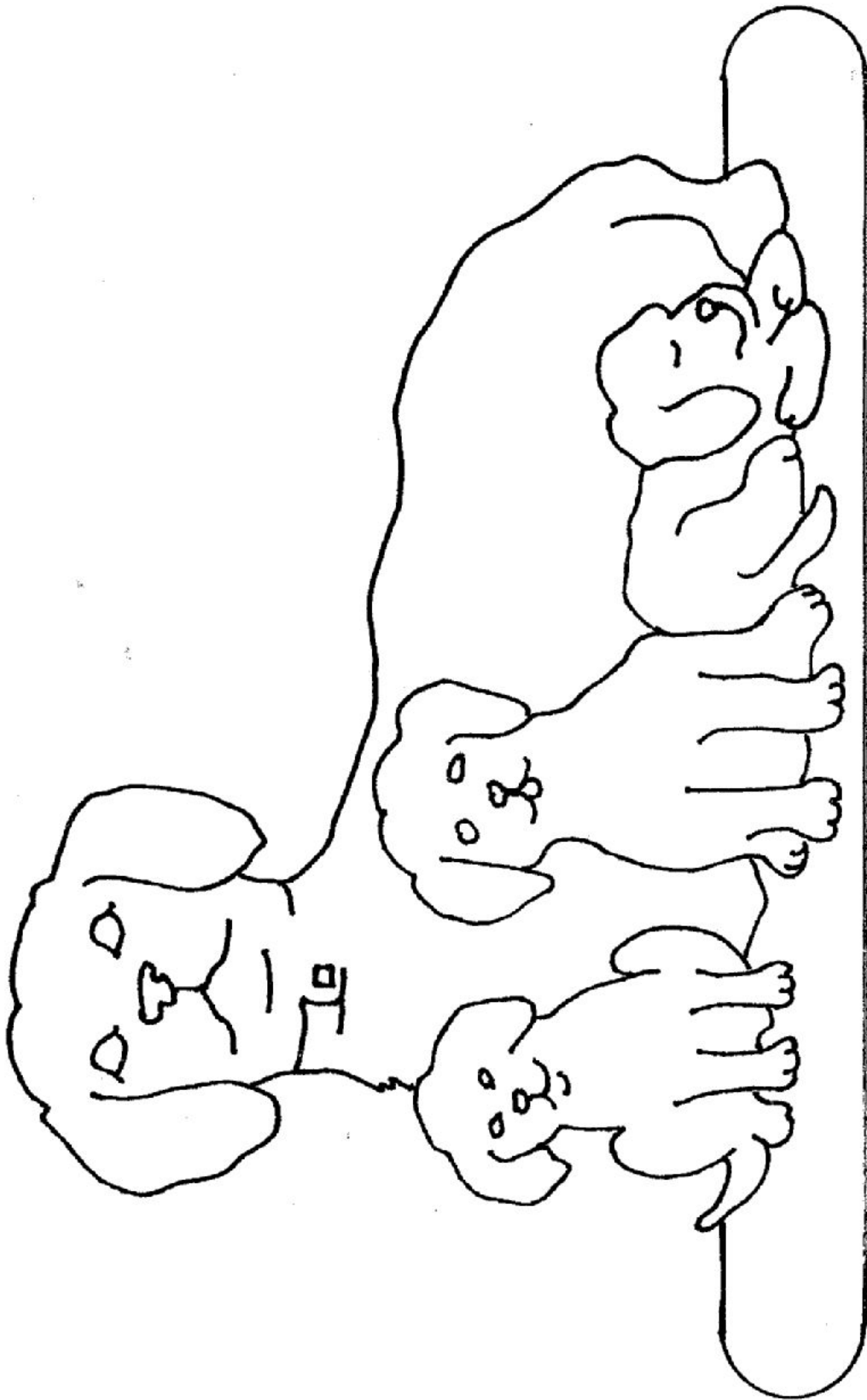
The Gallery

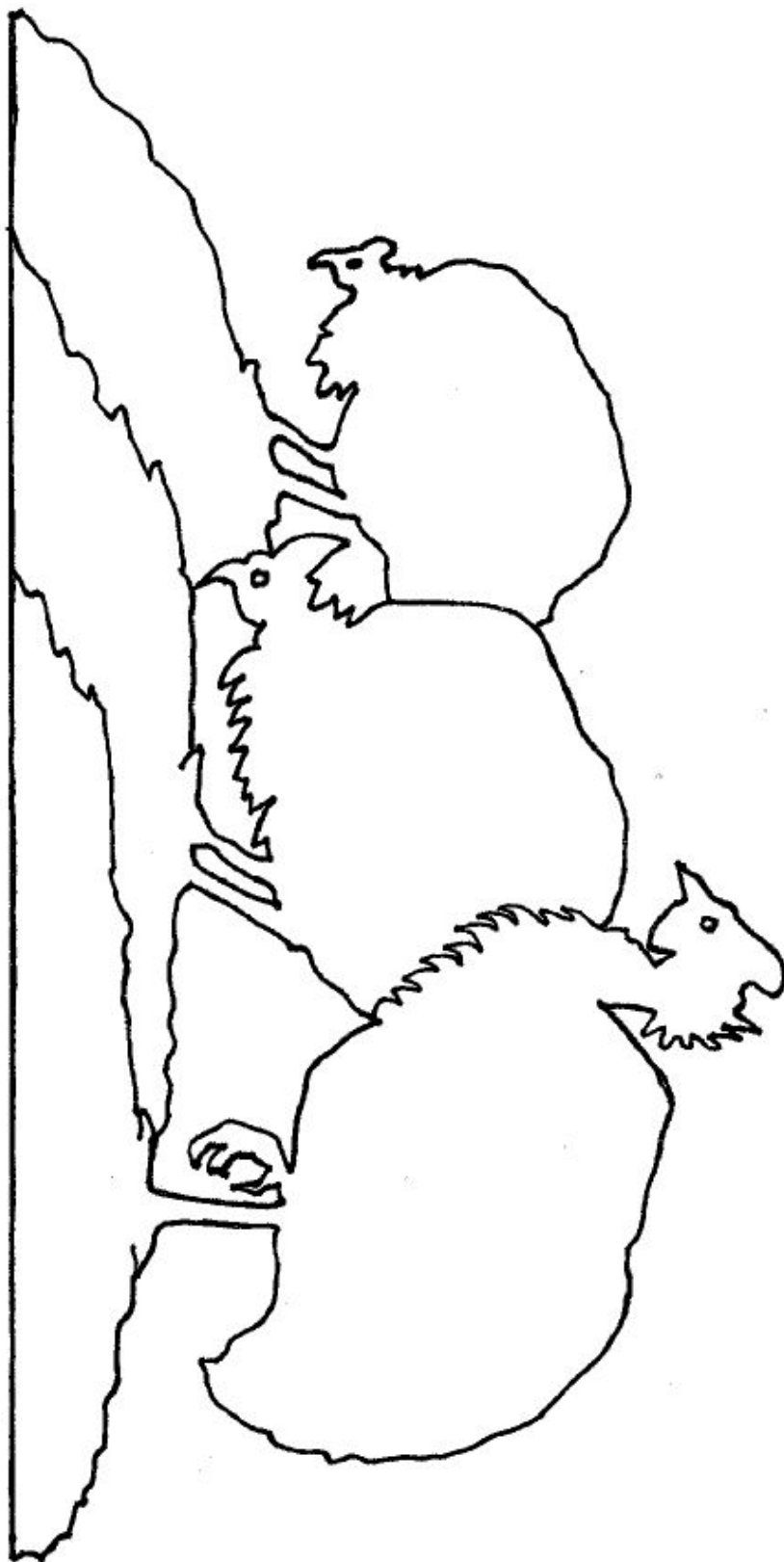


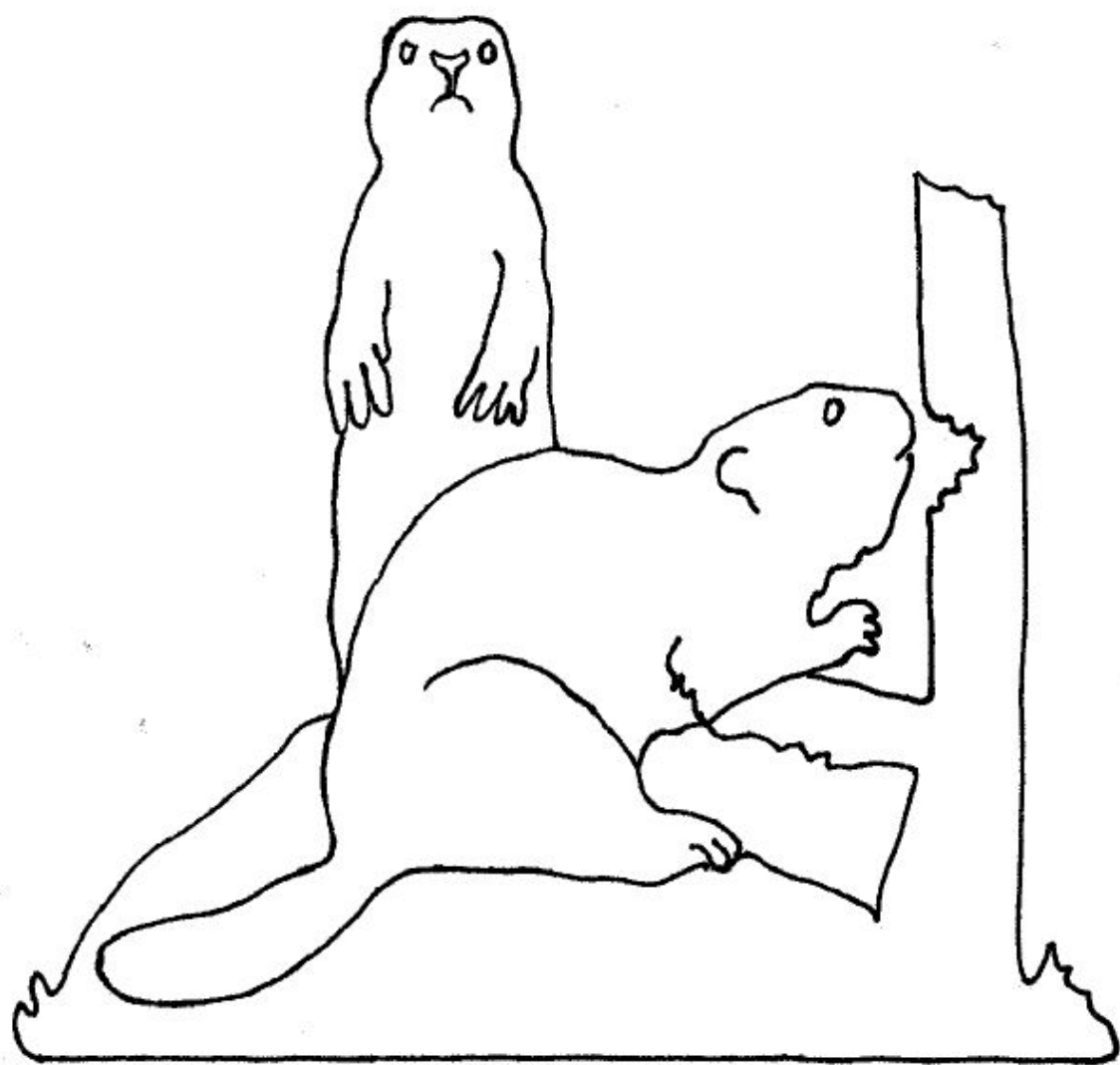


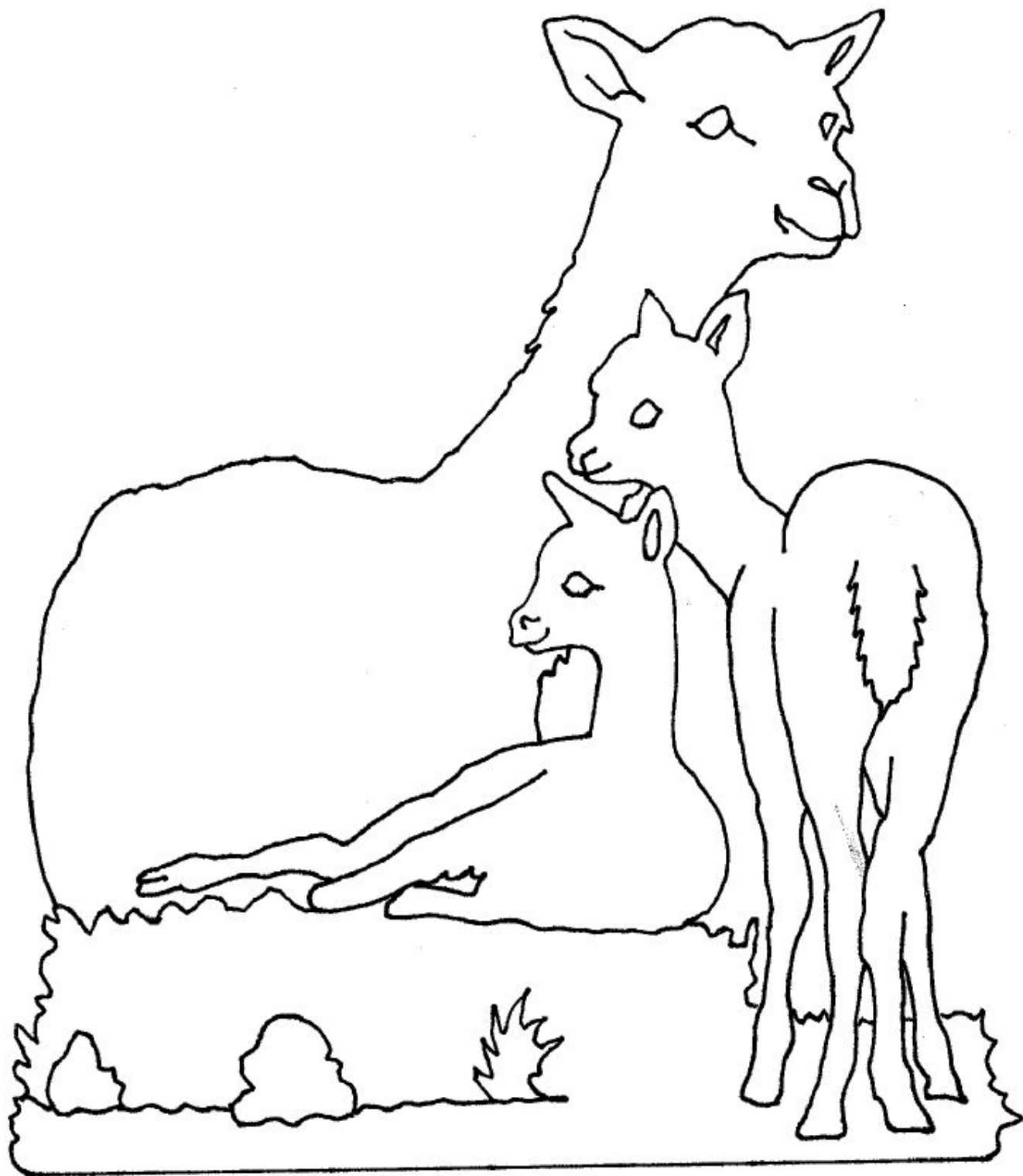
Ornamental Patterns

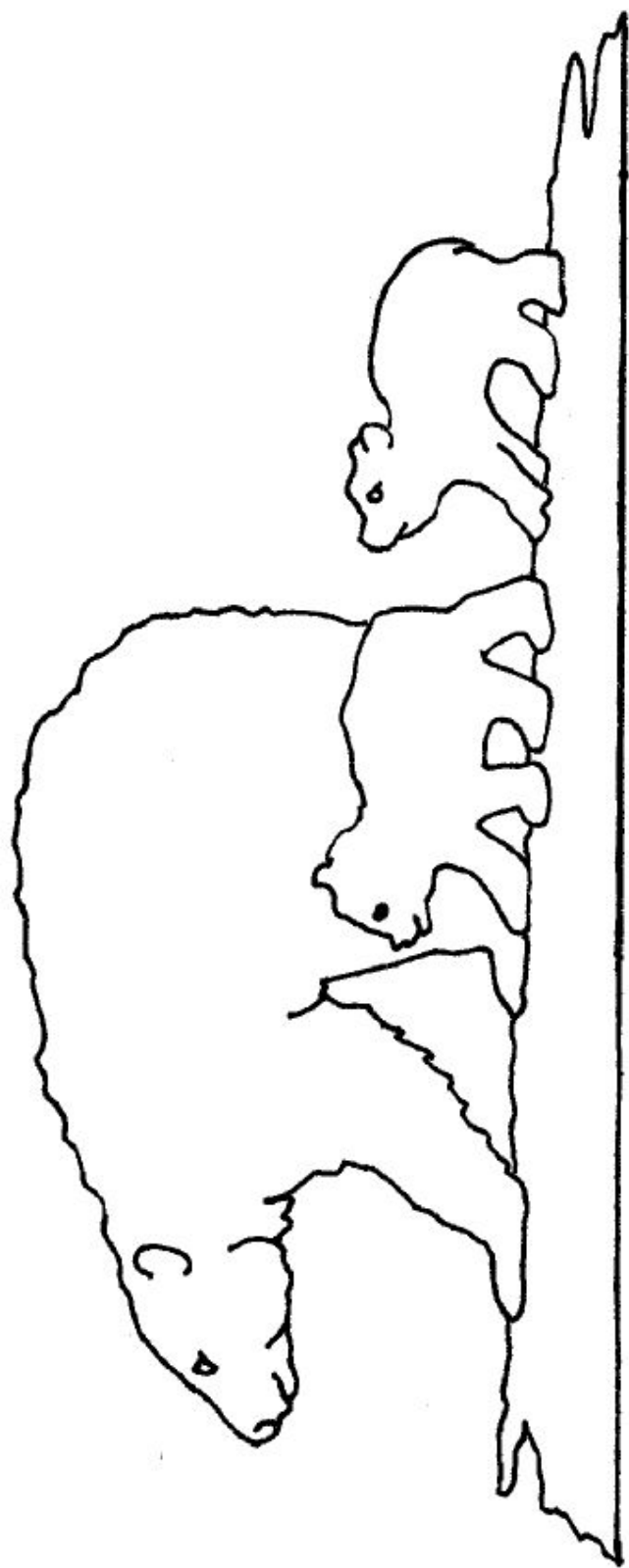
Hound Dogs

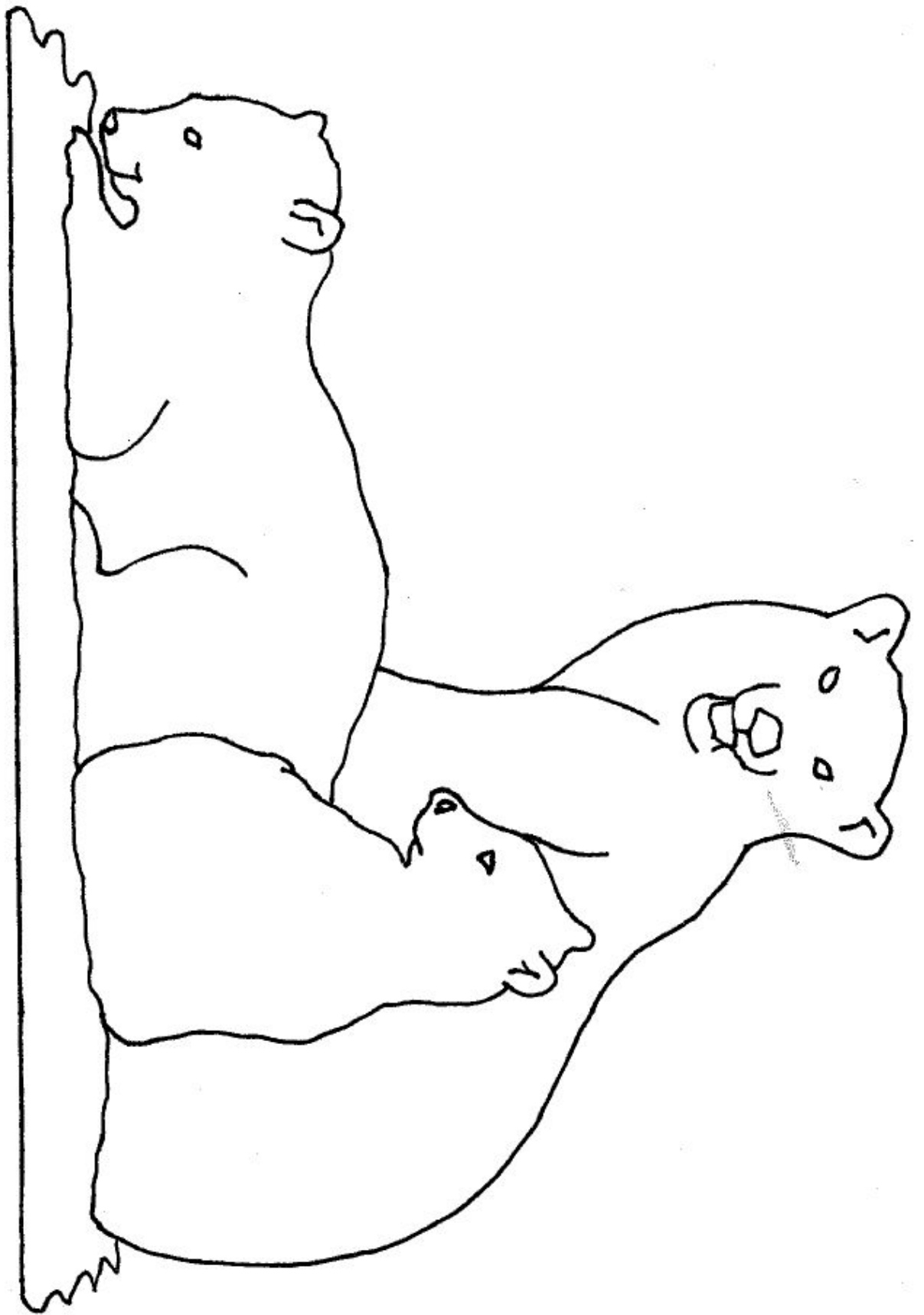






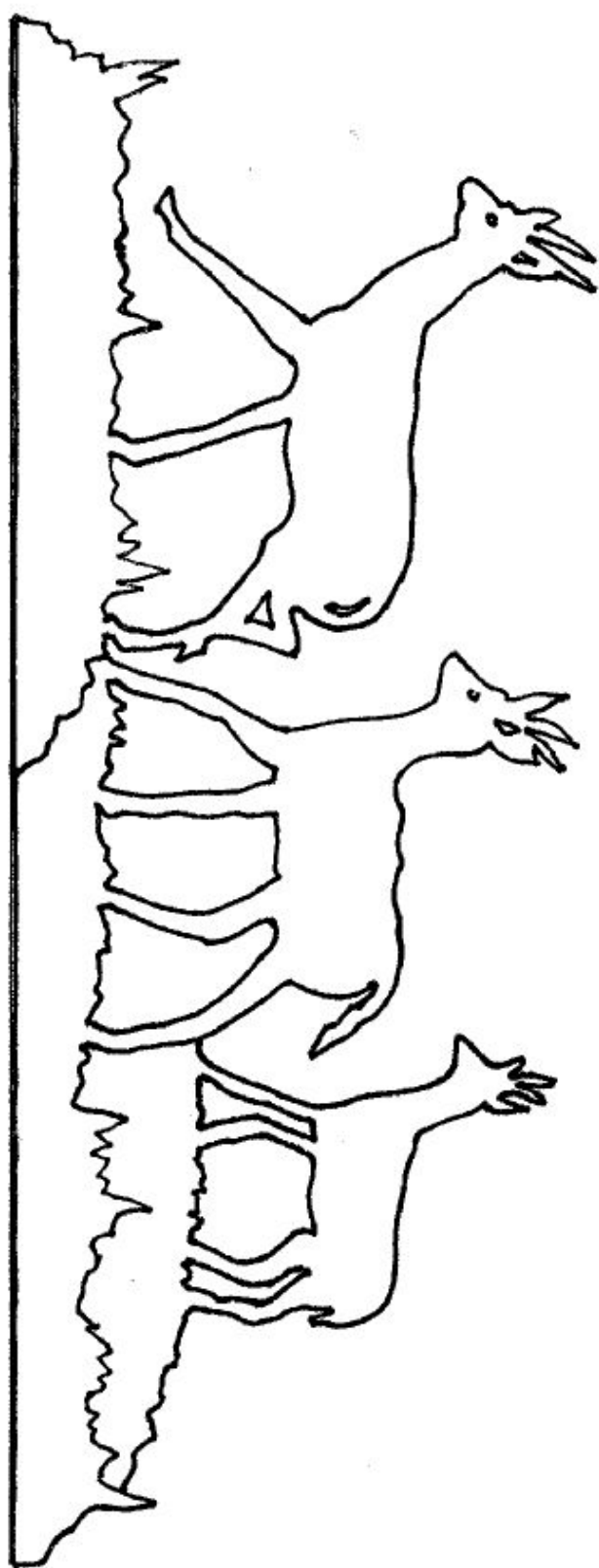
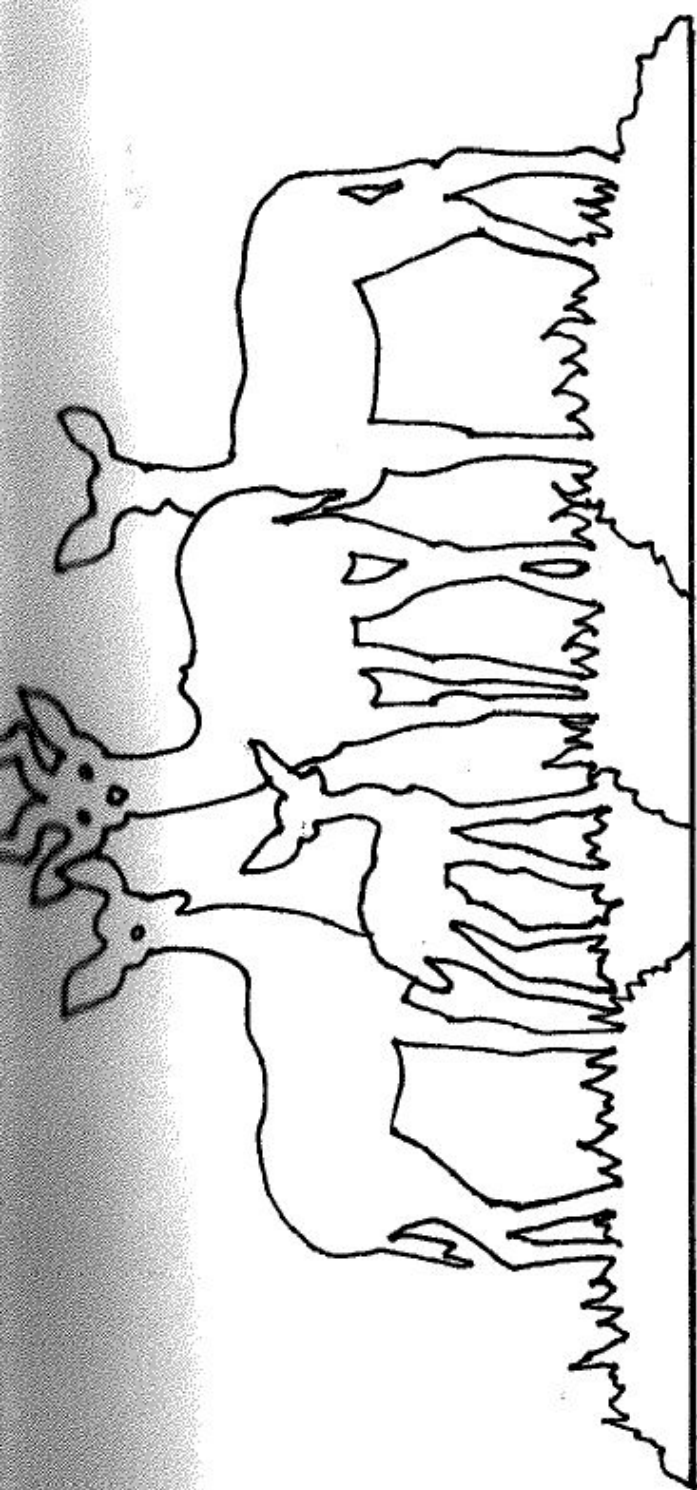


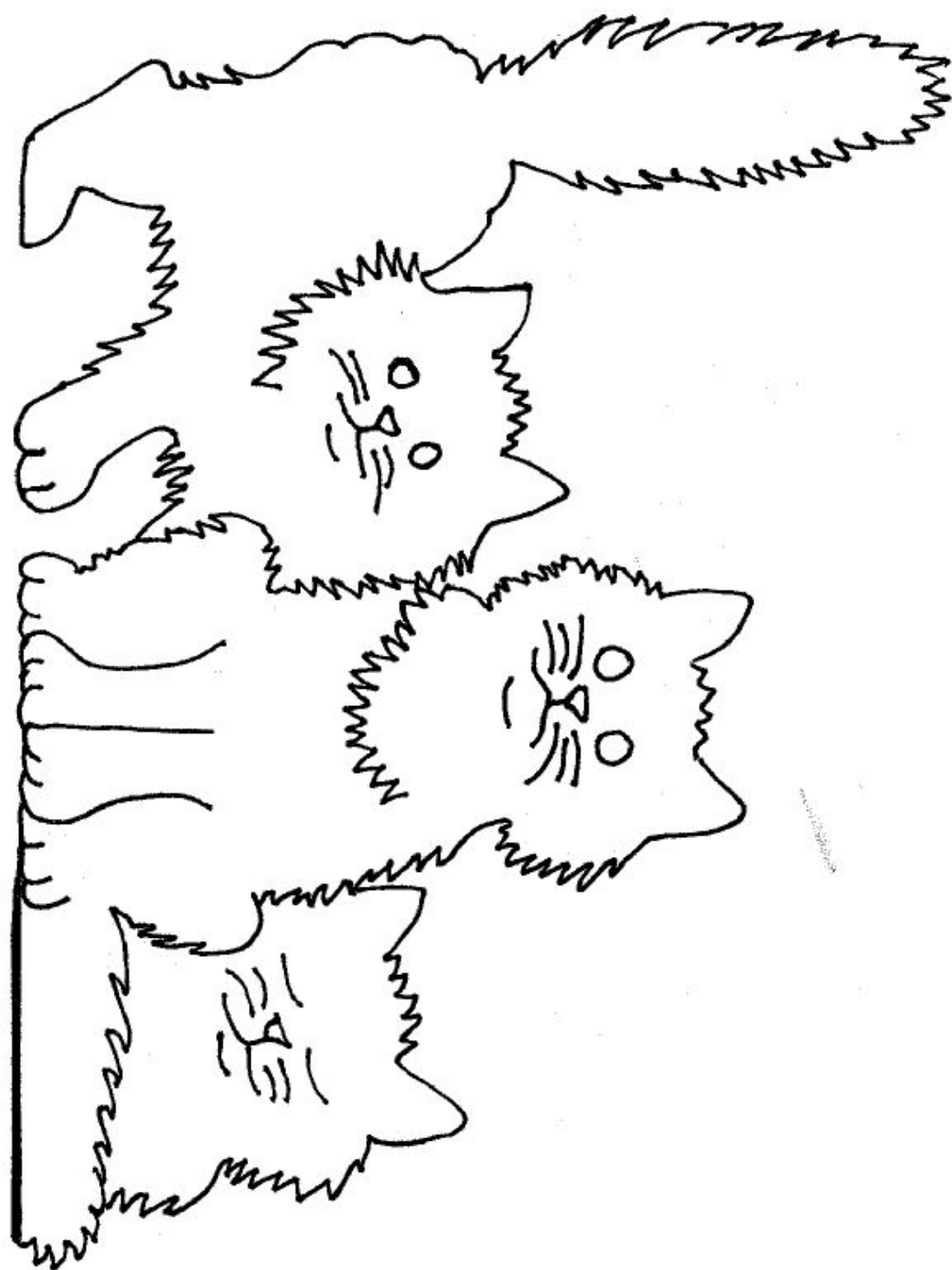


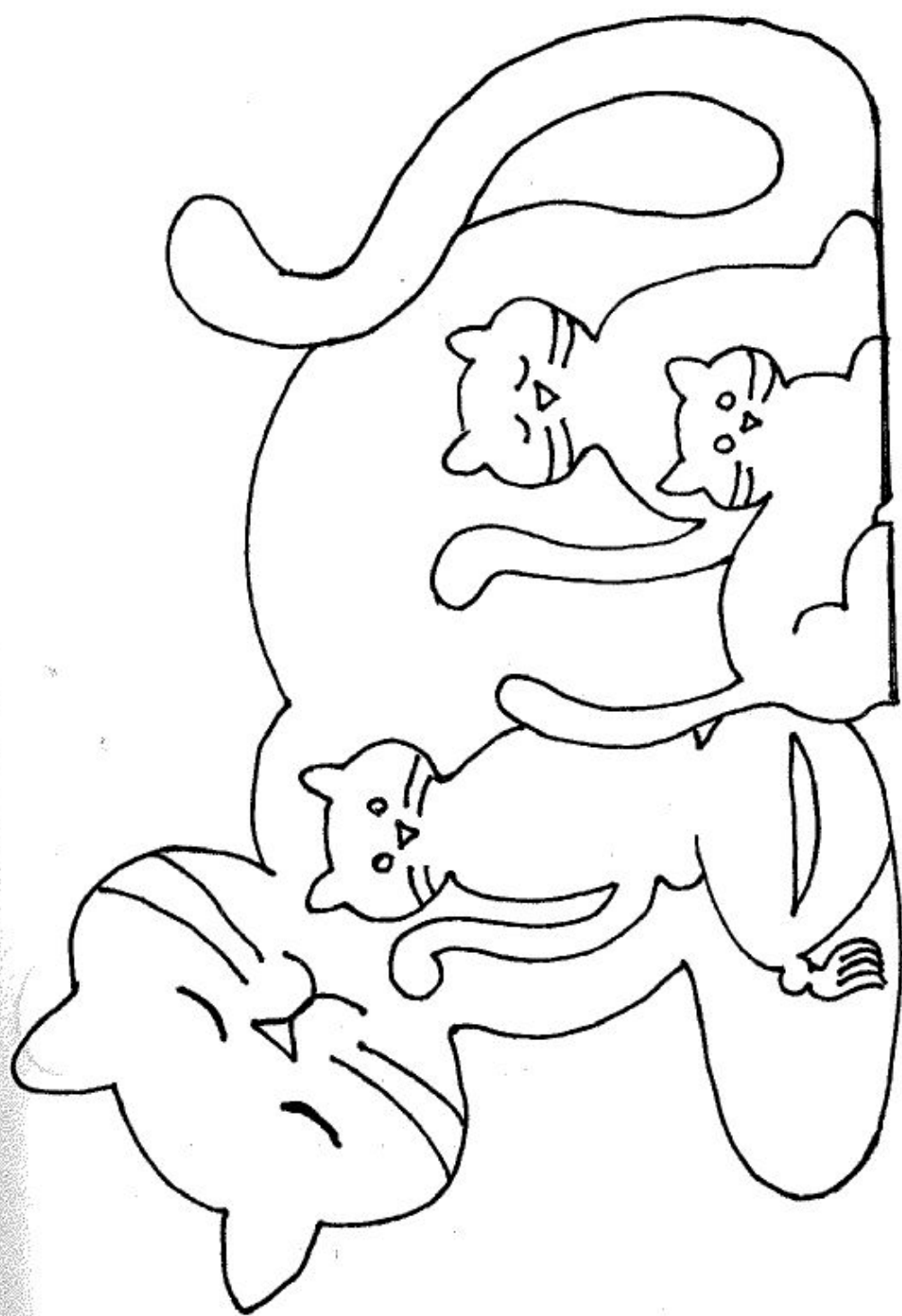


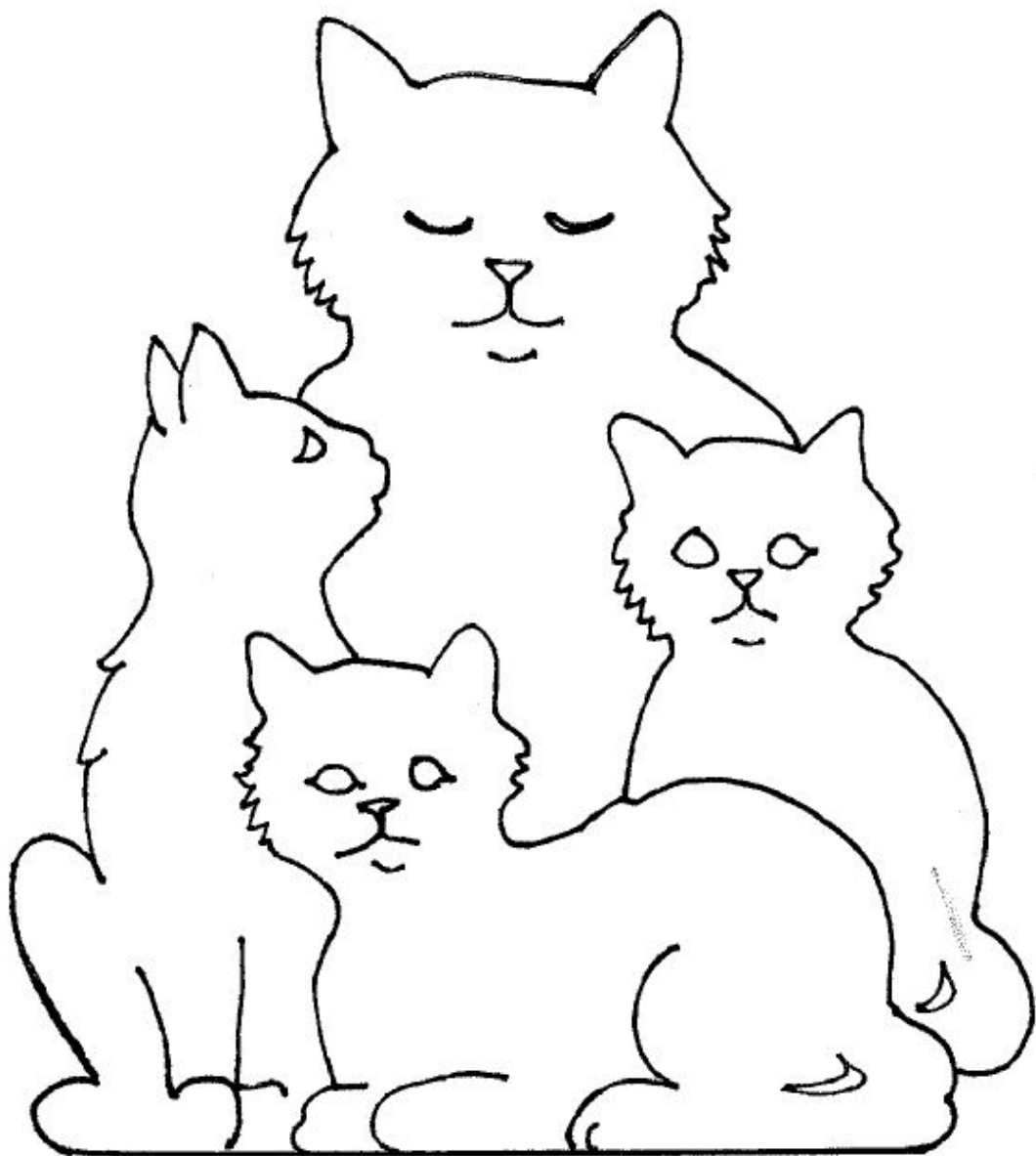


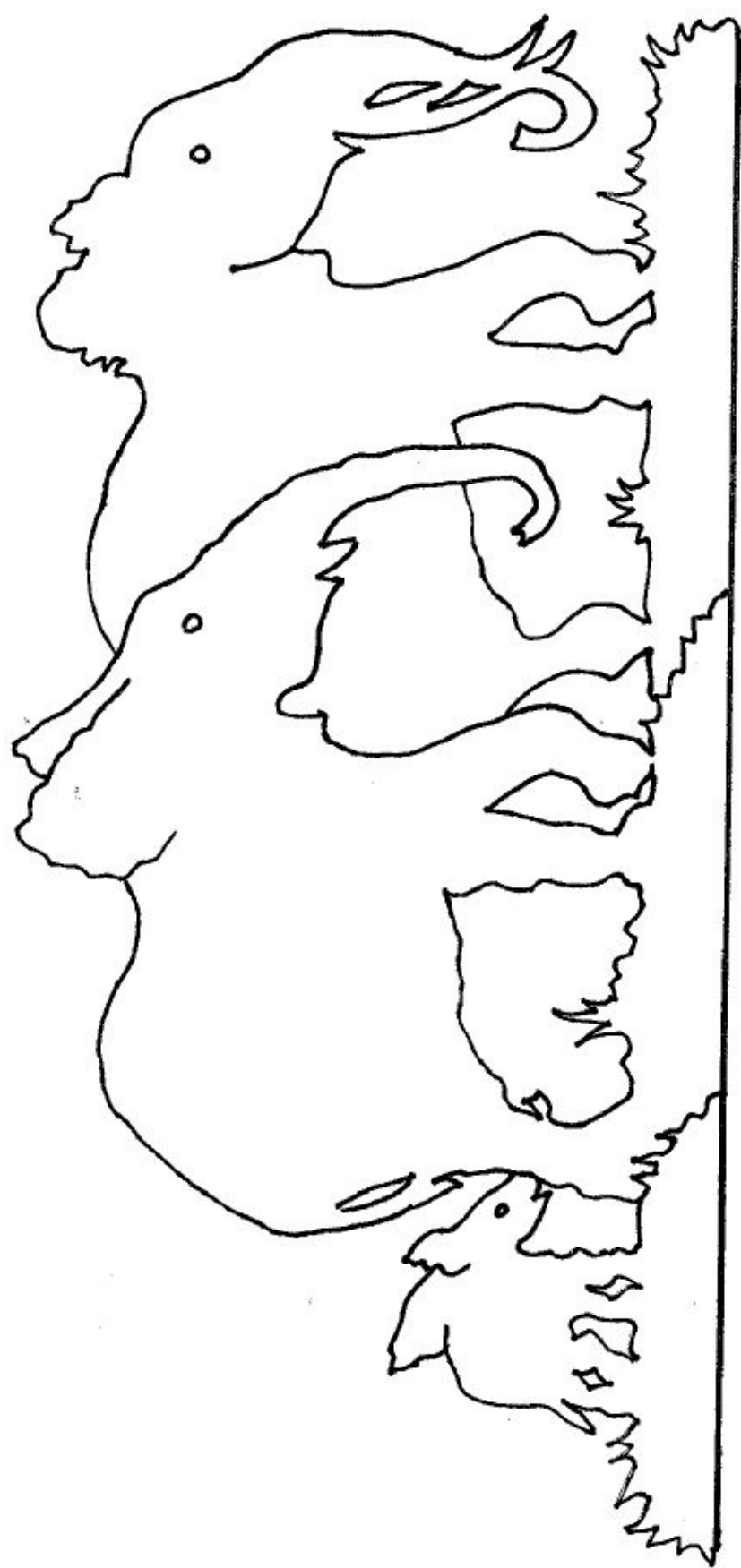


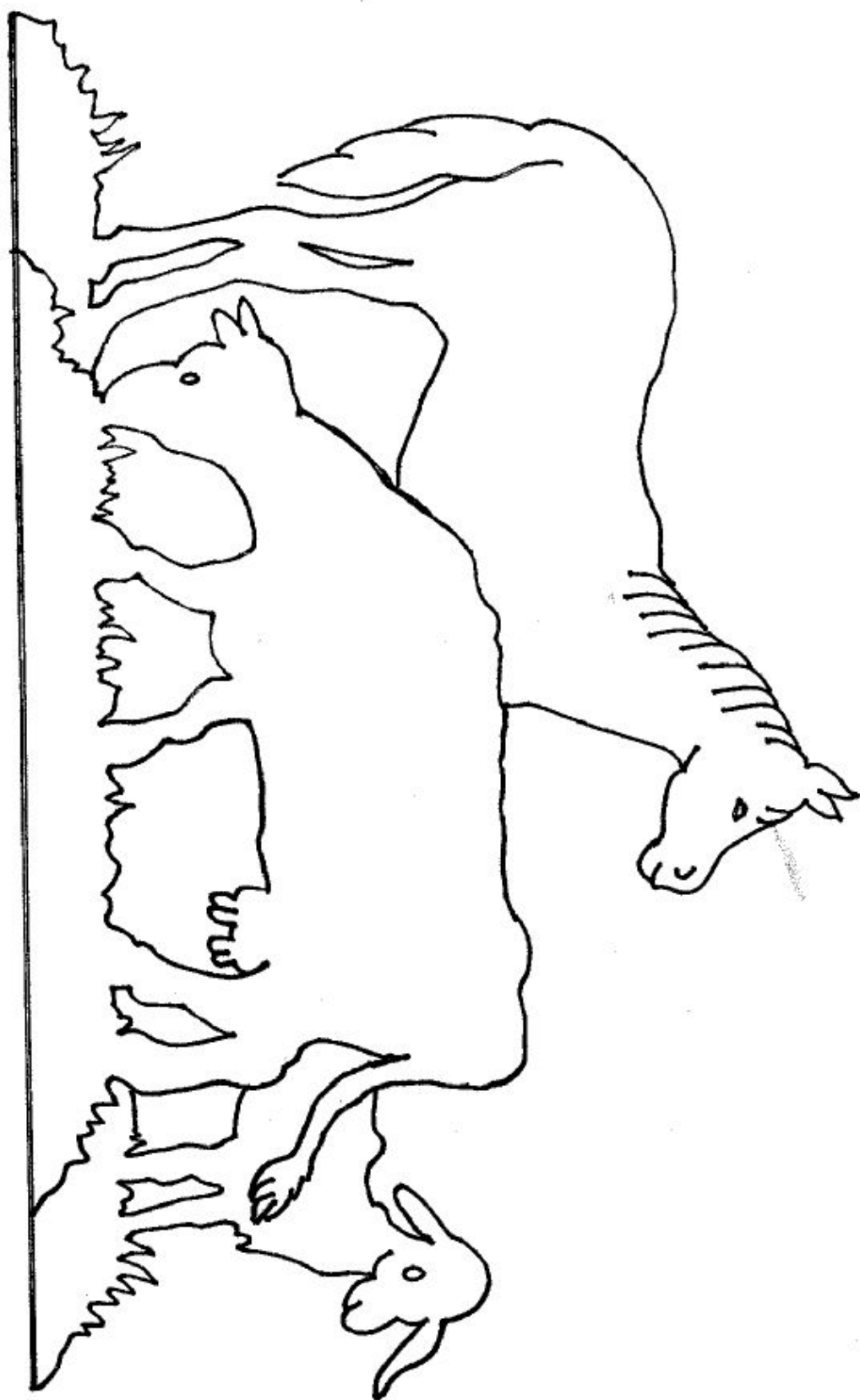


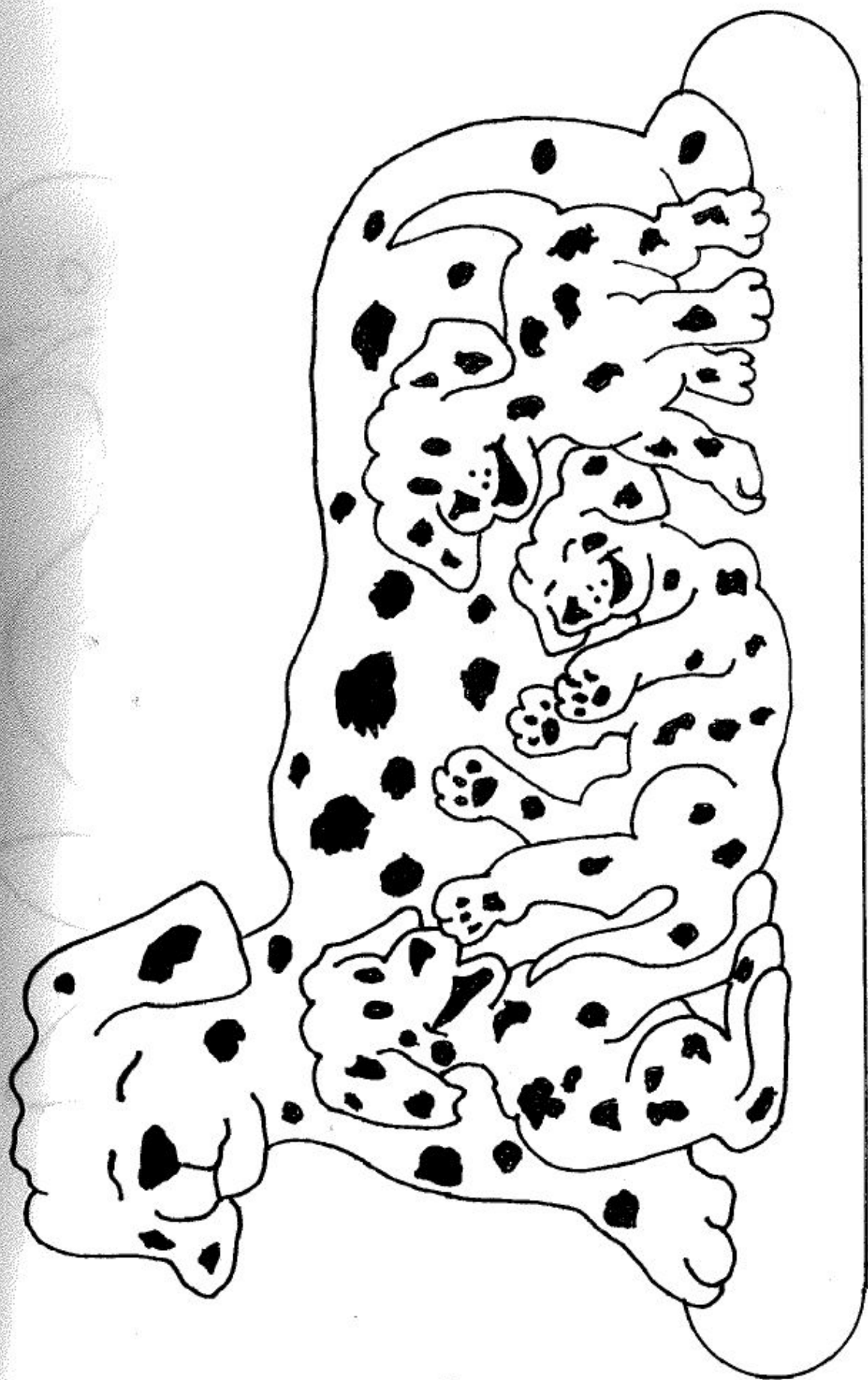


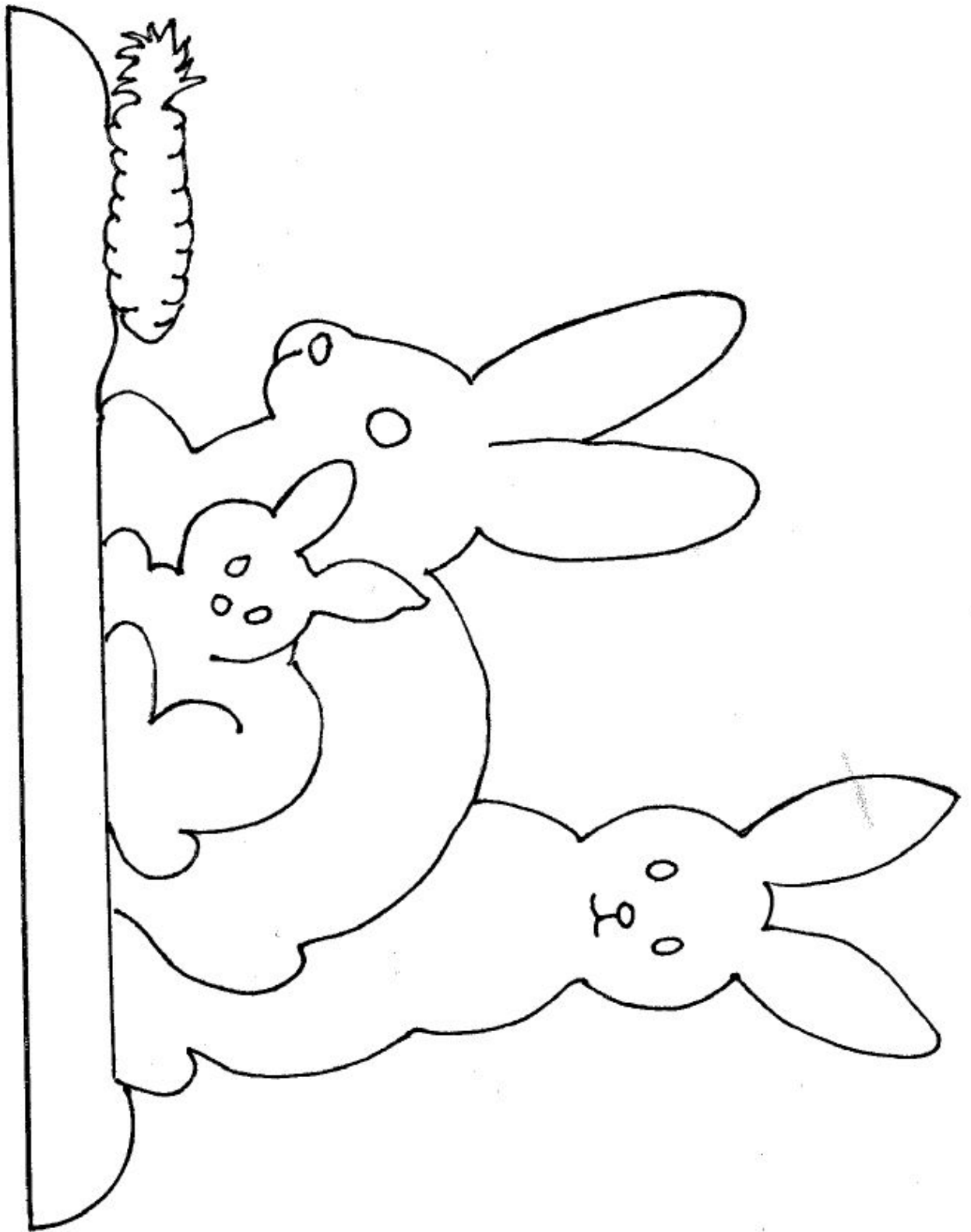


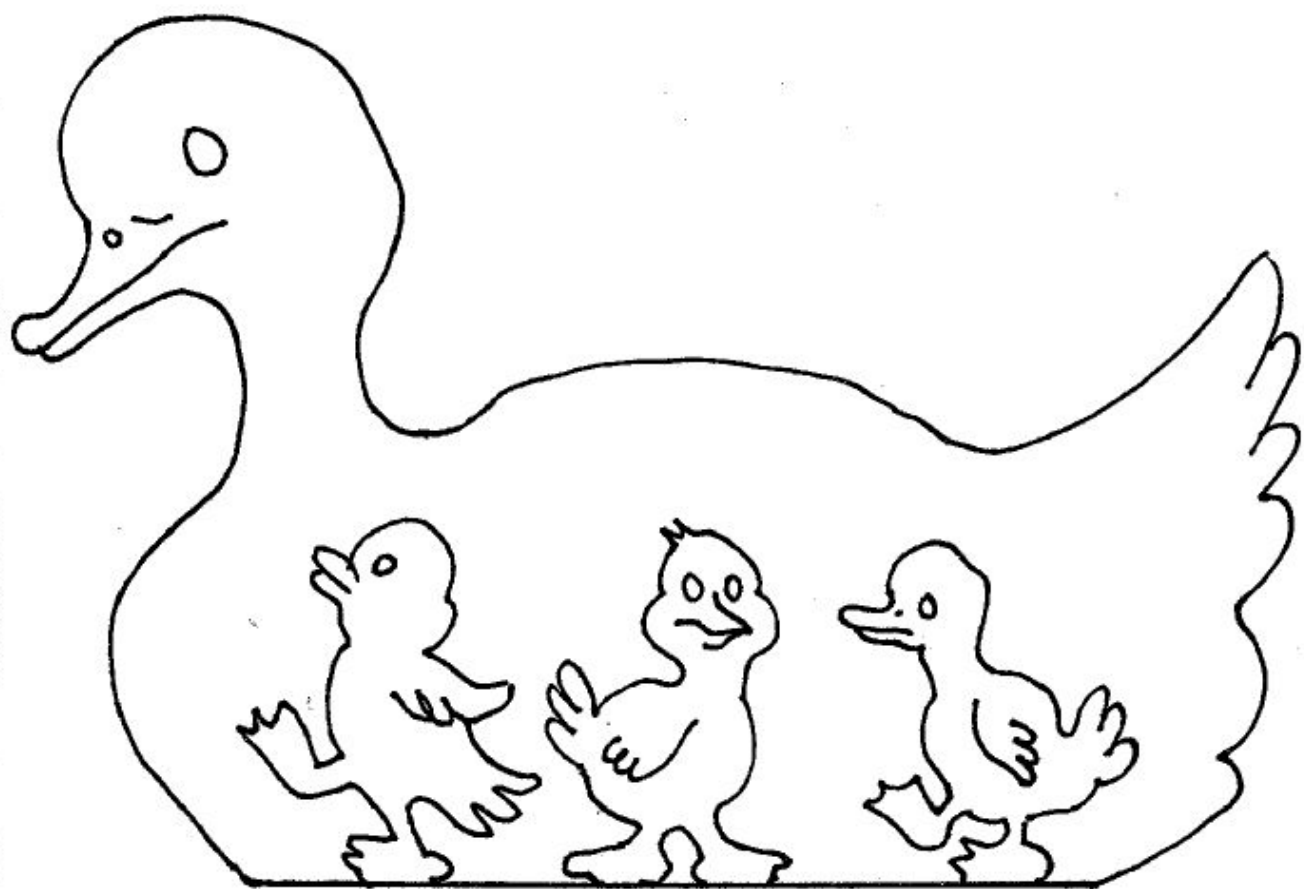




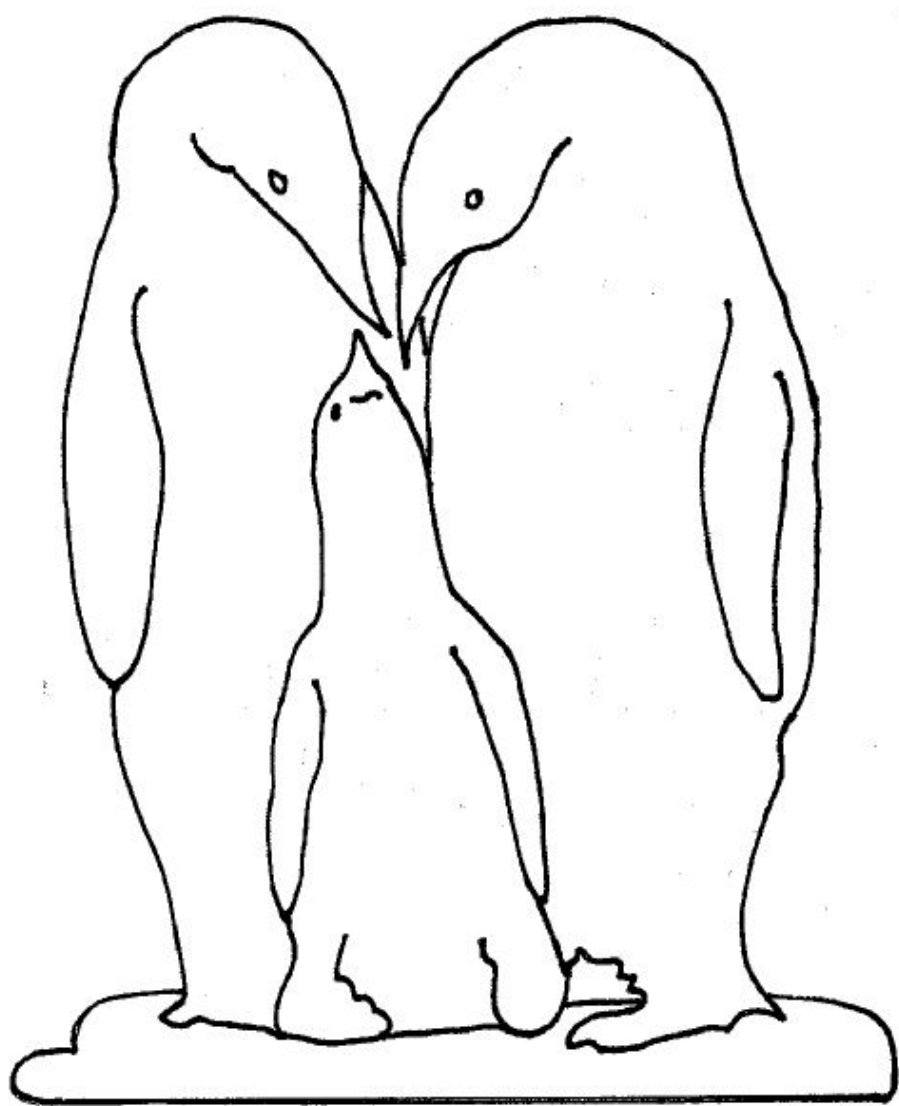


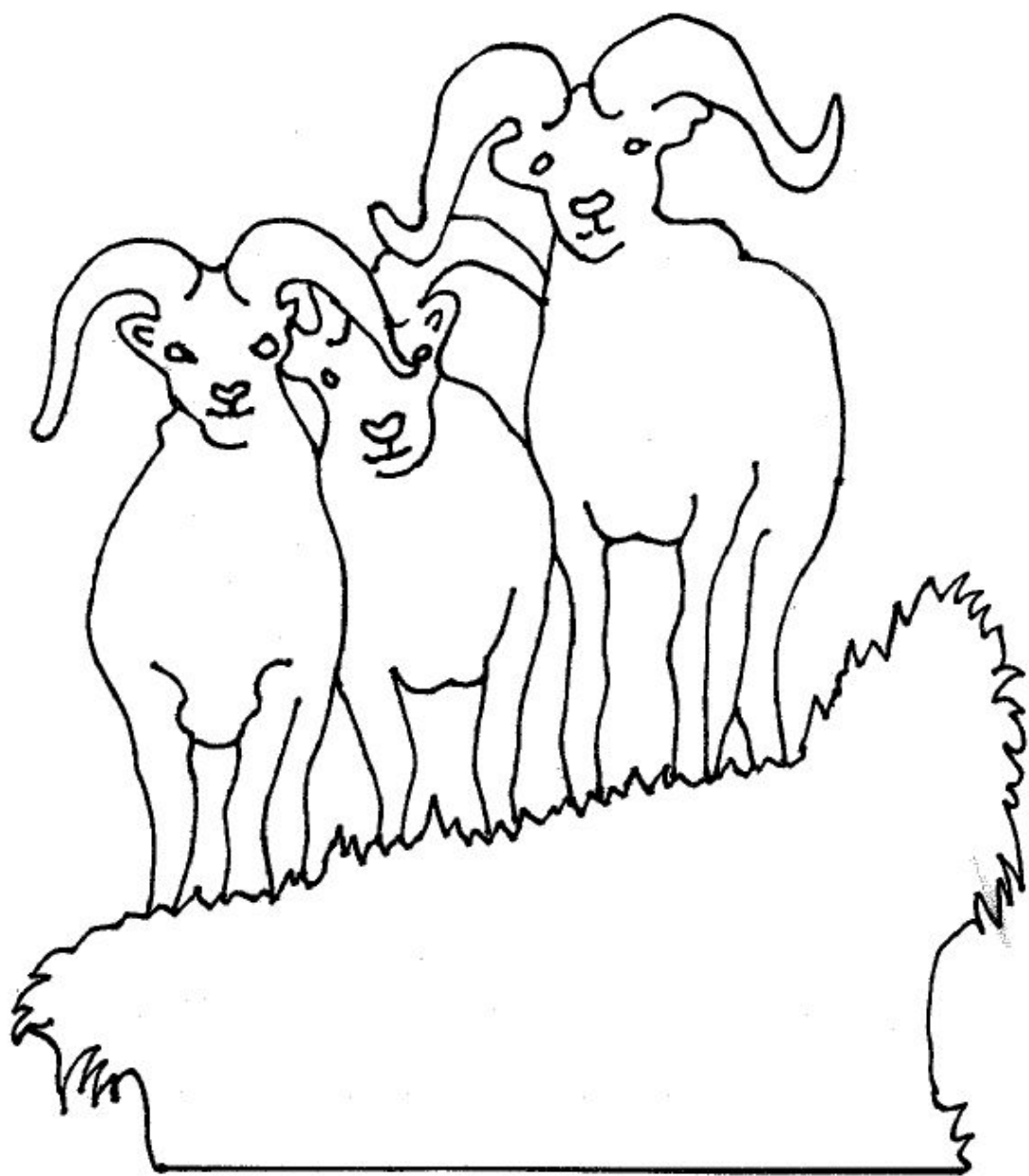


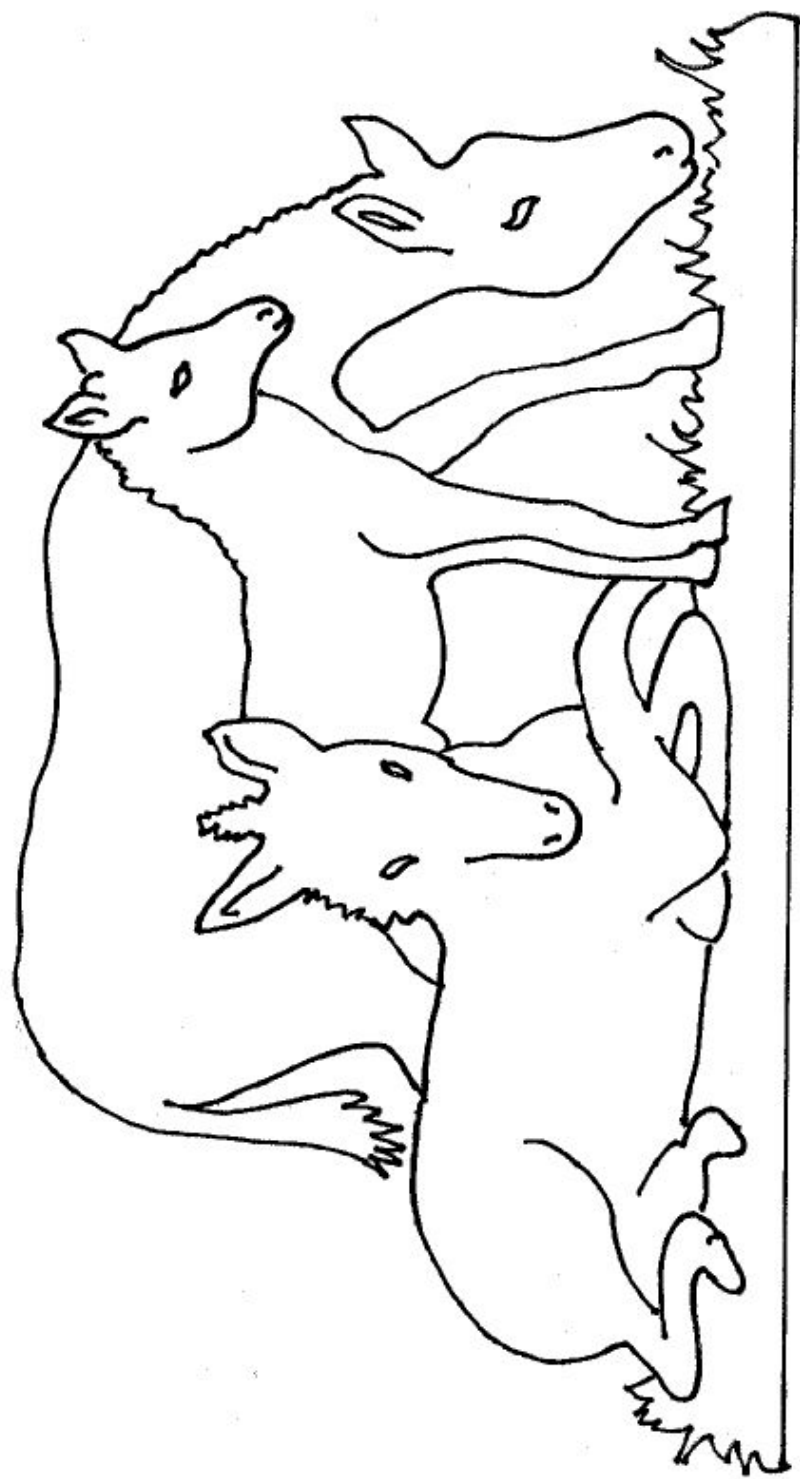




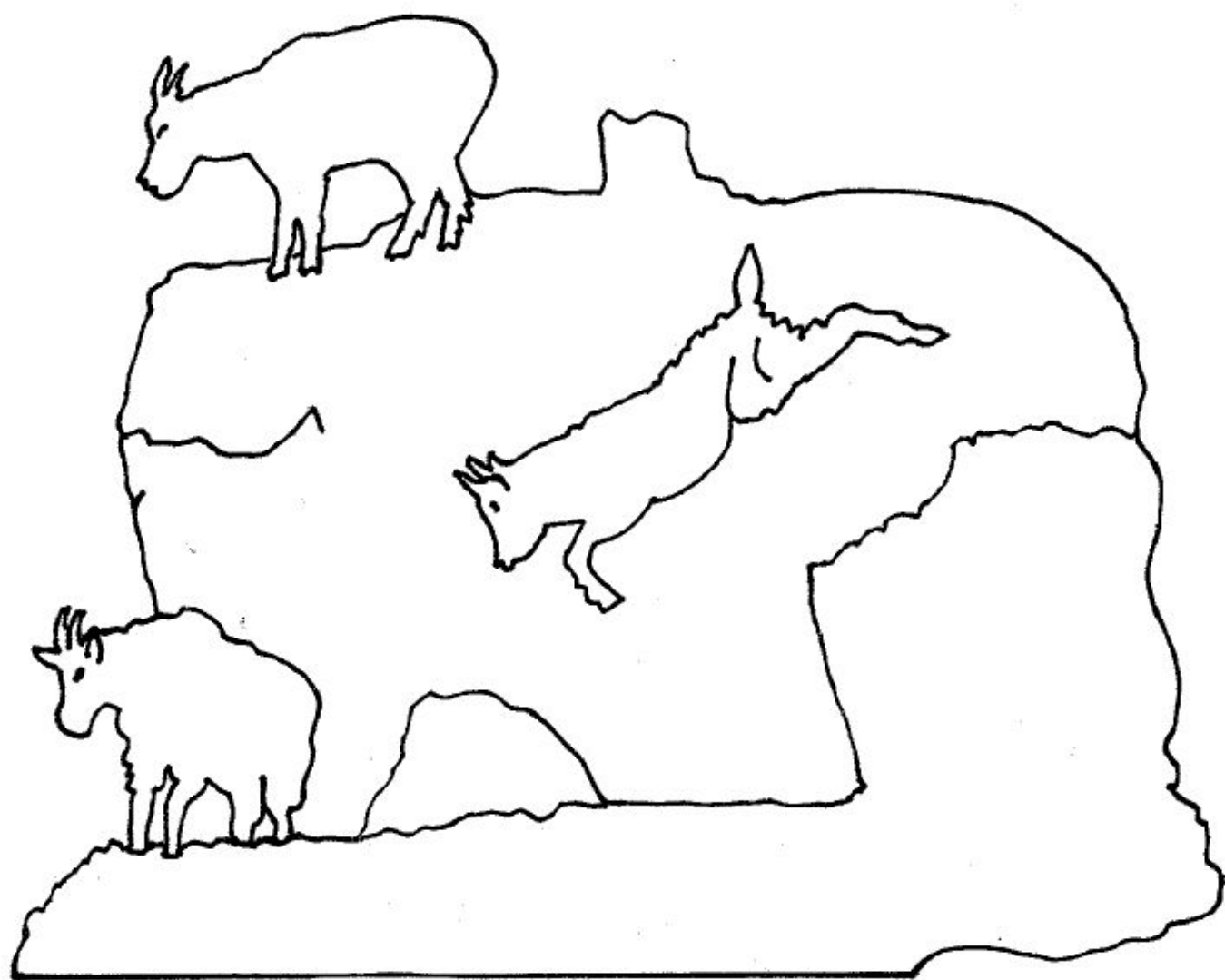


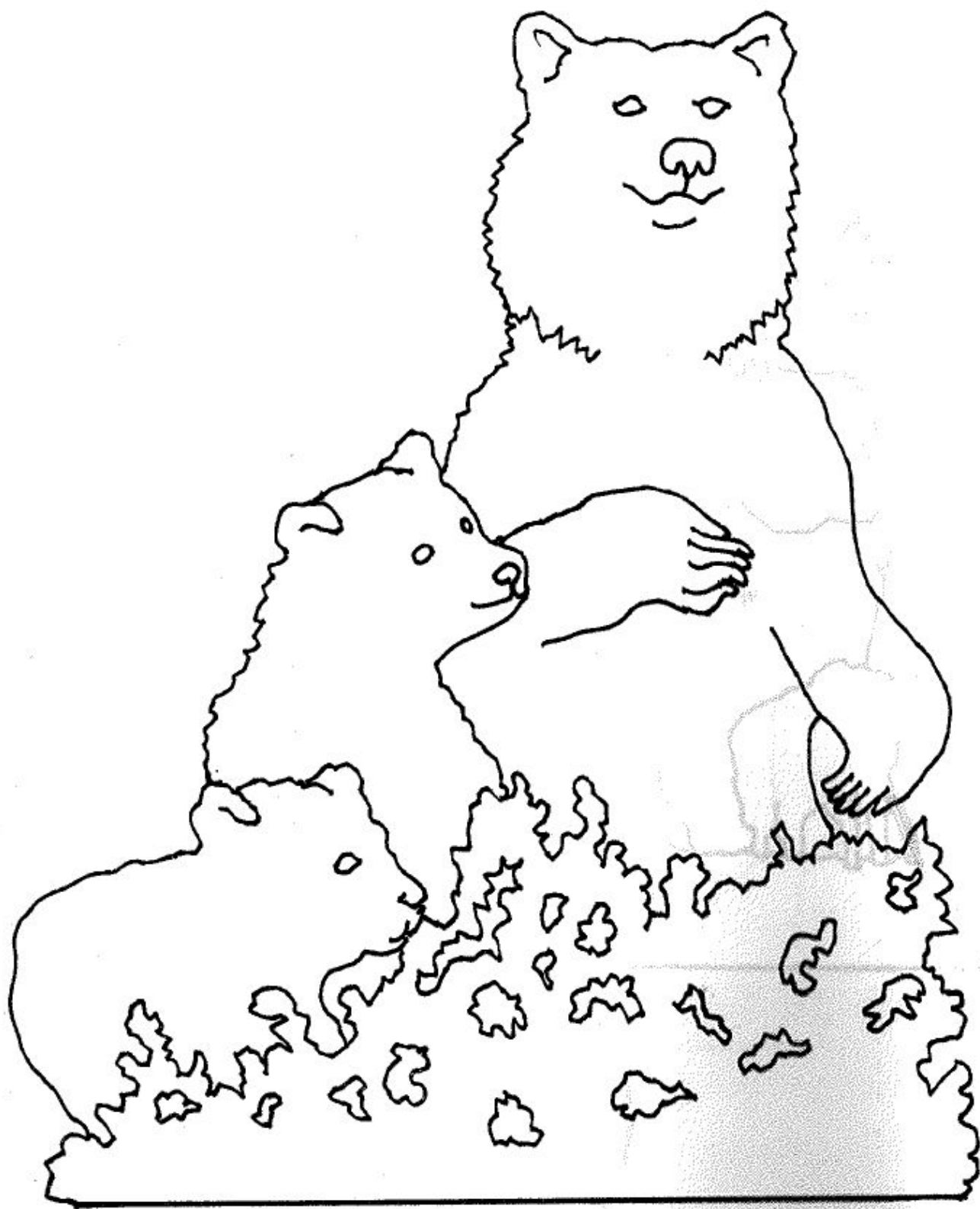


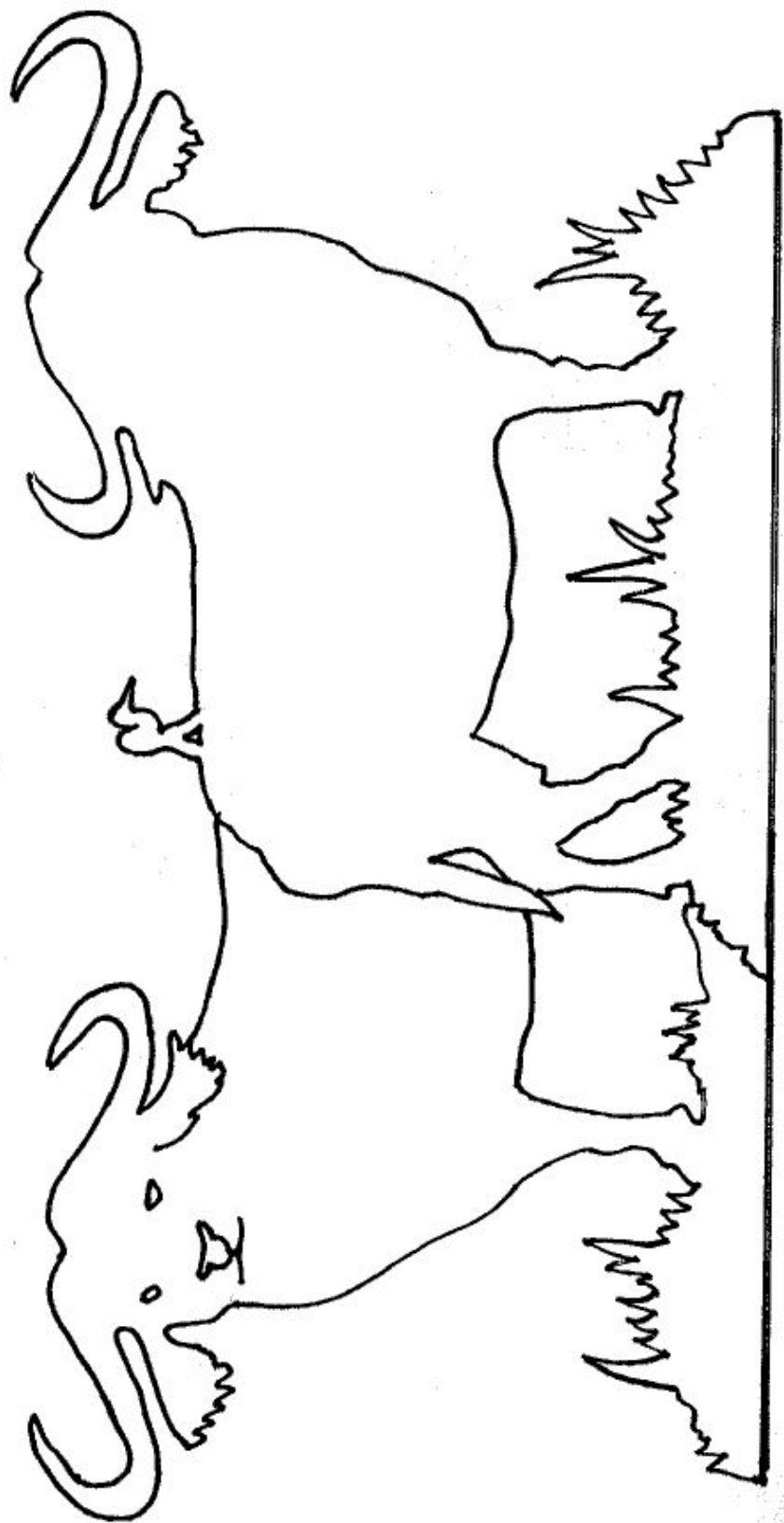


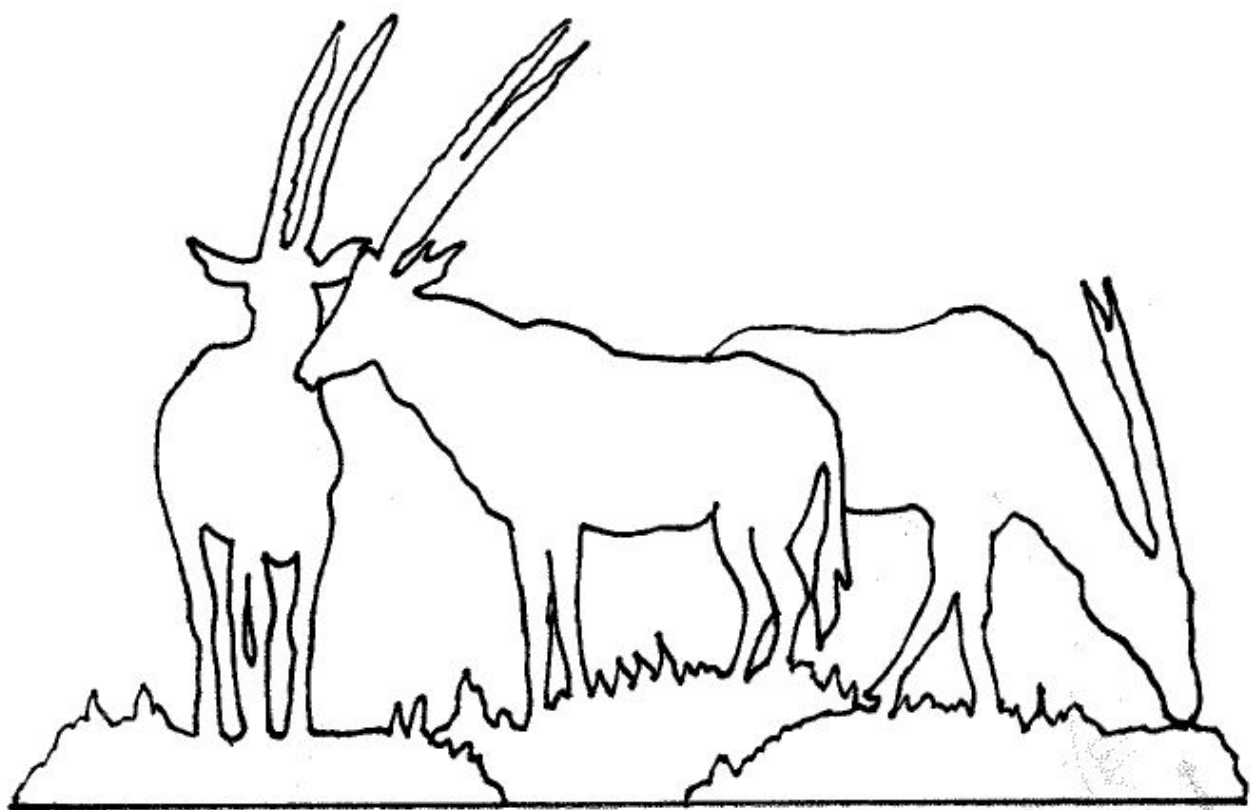


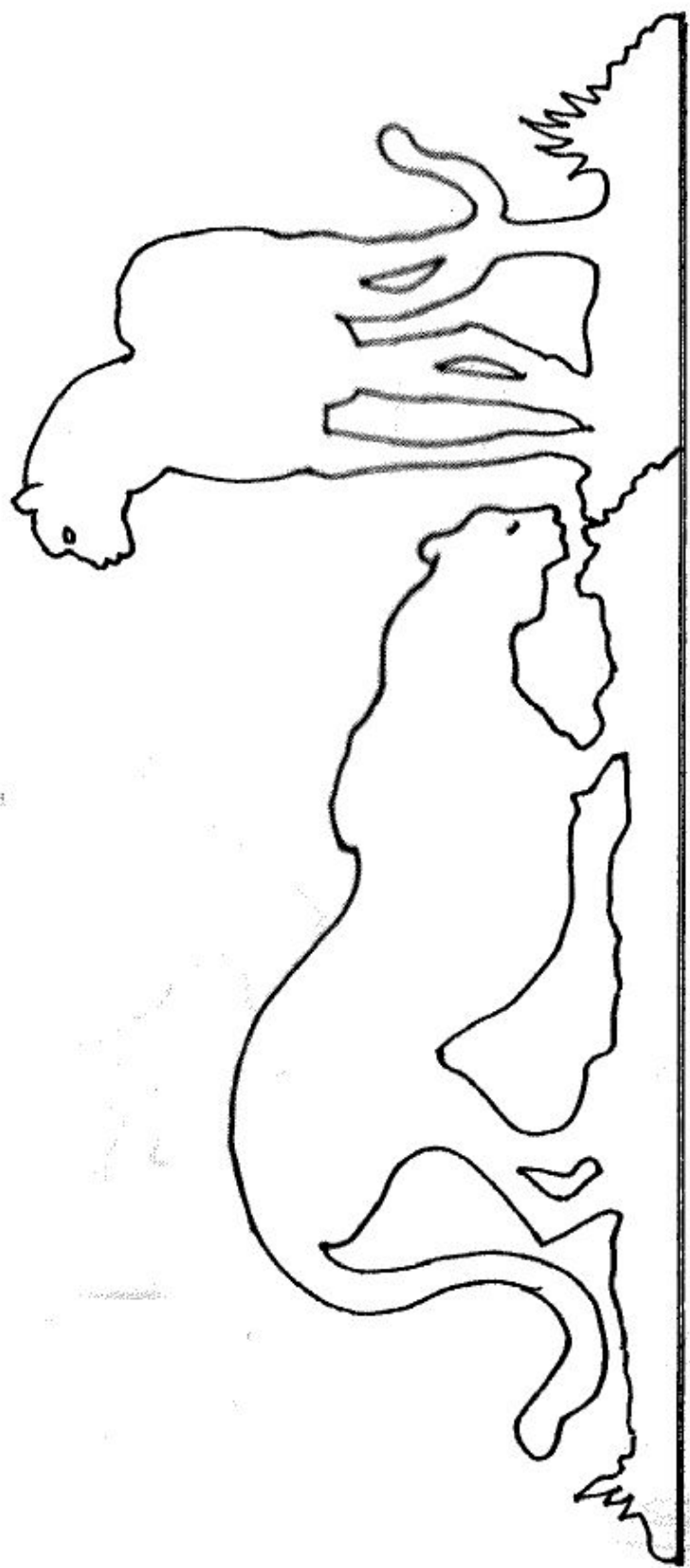




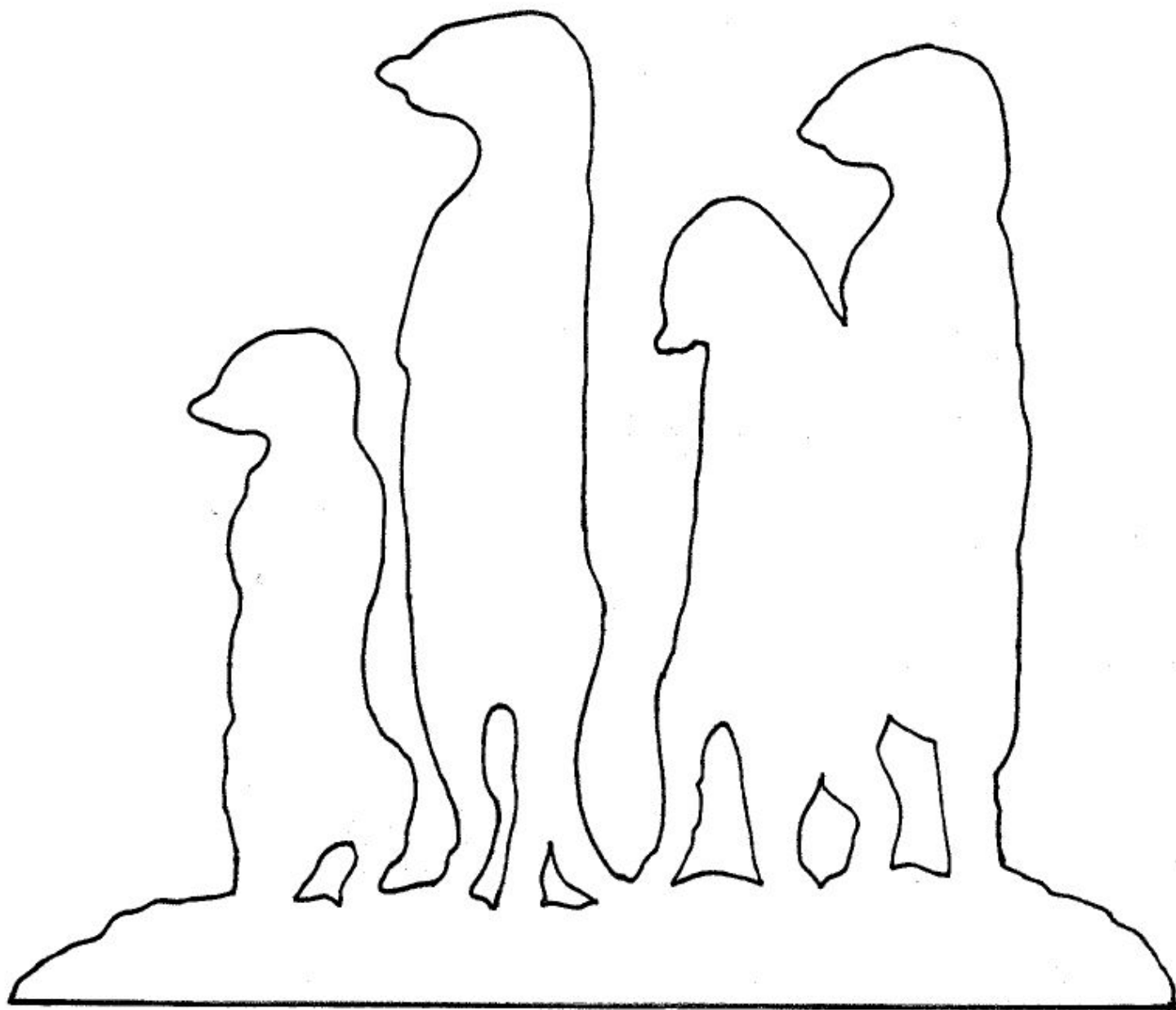






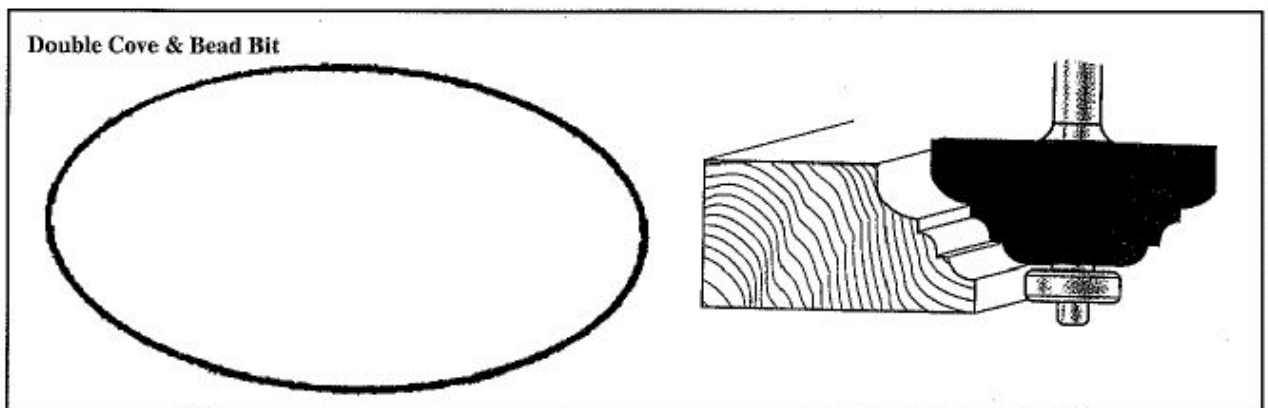
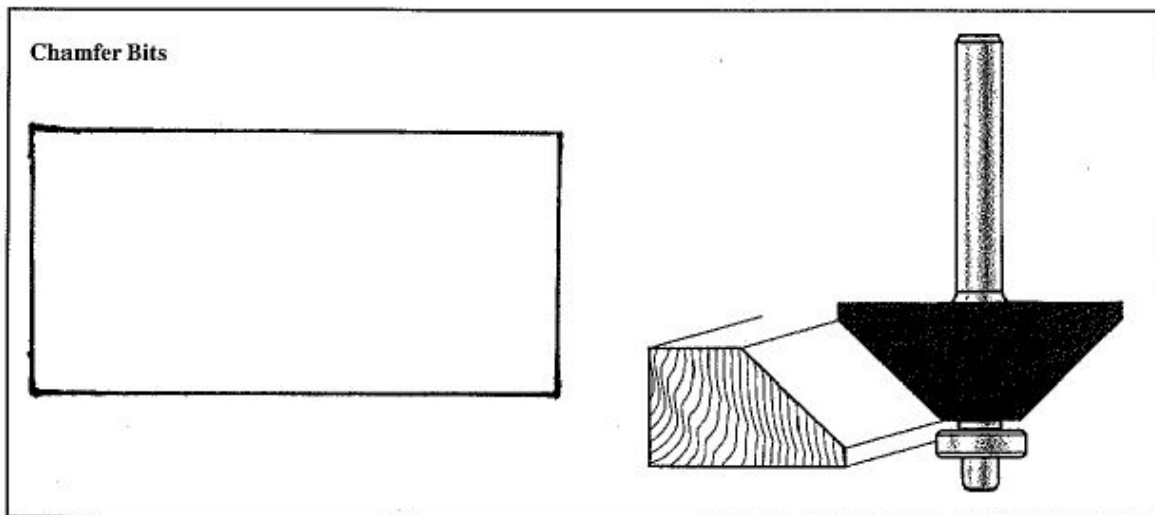
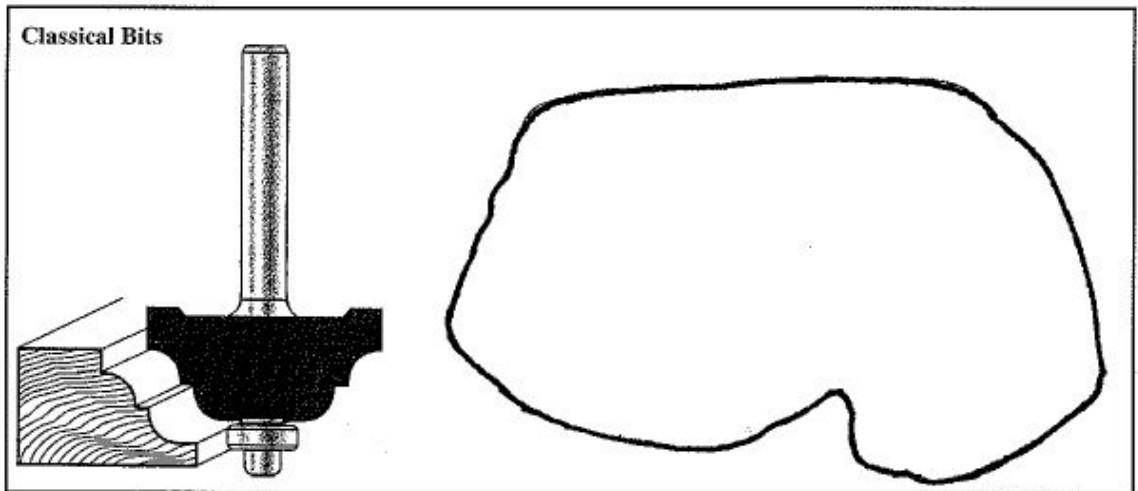




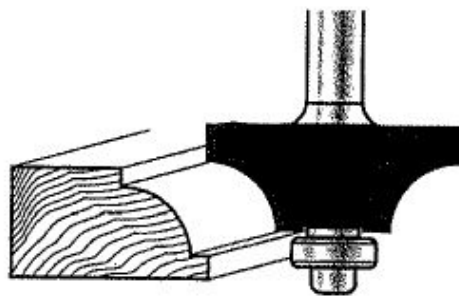
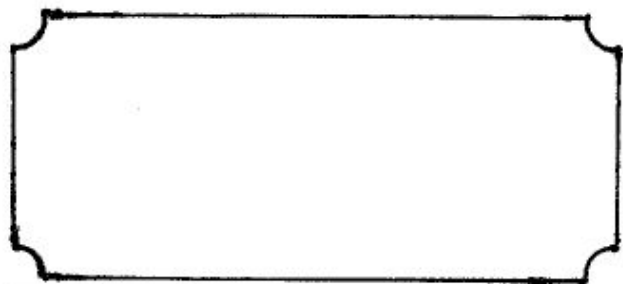


Sample Base Mounting Patterns

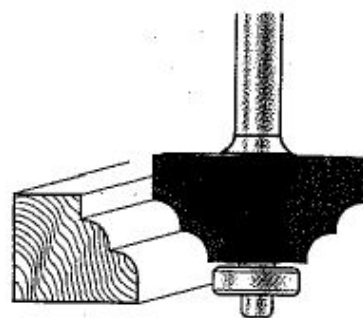
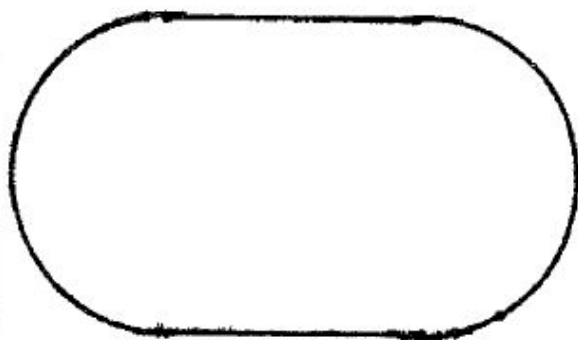
The various mounting bases are designed to give you an option and style to choose from for your project. Merely enlarge them to your desired needs. Remember to mix the various patterns with different woods to complement your art when using a base to mount on.



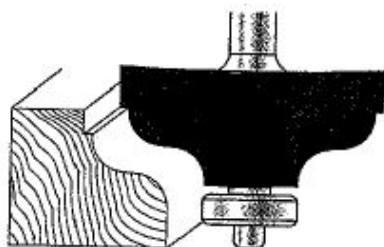
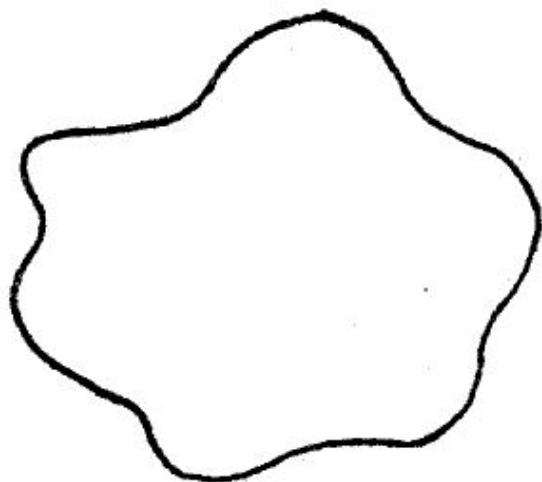
Beading Bits



Double Round Over Bits

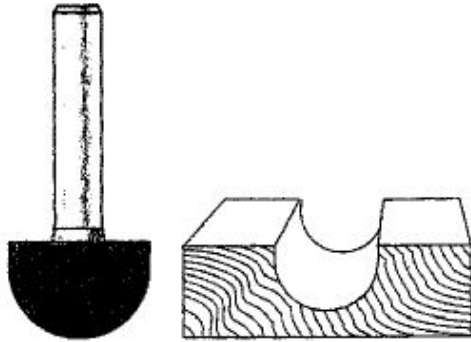


Ogee Fillet Bits

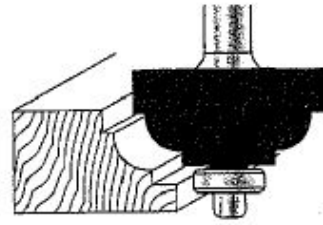


Alternative Router Bits and Profiles

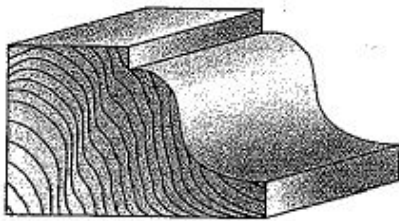
Core Box Bits



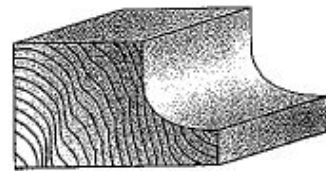
Cove & Bead Bits



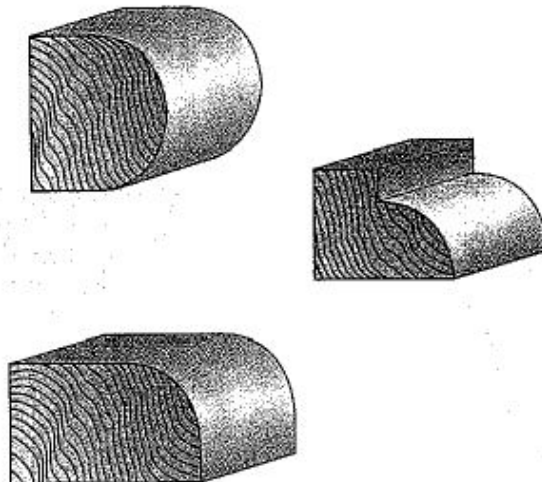
Roman Ogee Bits



Cove Bits



Round Over Bits



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The Scroll Saw Book

Frank Pozsgai

Text written with and photography by Douglas Congdon-Martin

Every scroll saw user will benefit from this book. Beginning with the mechanics of the scroll saw itself, and continuing with the basic skills every scroll saw user needs for a fun and successful hobby, Frank shares secrets for maximizing the capabilities and efficiency of the saw. The selection of wood, the creation of patterns, and the basic techniques of scroll saw use are also covered.

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Frank Pozsgai

Text written with and photography by Douglas Congdon-Martin

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The Incredible Stackables offers the scroll saw artist some innovative and beautiful ways to use the tool to make ornamental, three dimensional designs. After cutting, the pieces come apart so that they can be set to in various creative arrangements. Each pattern has several uses, from decorating a pen holder to simple puzzles for children. By using different color woods the possibilities become limitless. The book has easy-to-follow directions for one of the patterns, with each step illustrated with a full color photograph. Patterns for 30 additional projects are included. A gallery explores the many possibilities for using these creations. Finally, there is useful information on scroll saw techniques and equipment. This is a wonderful book for the newcomer and the old pro alike.



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