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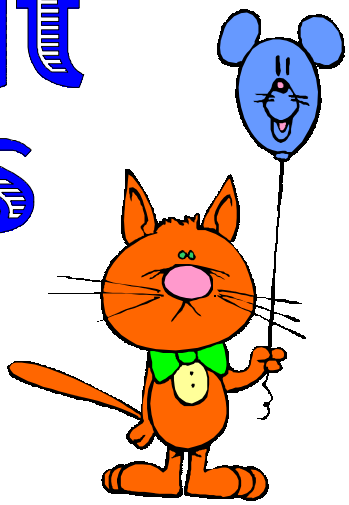
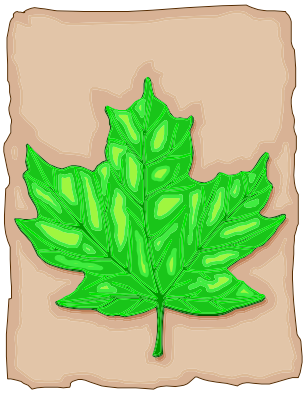
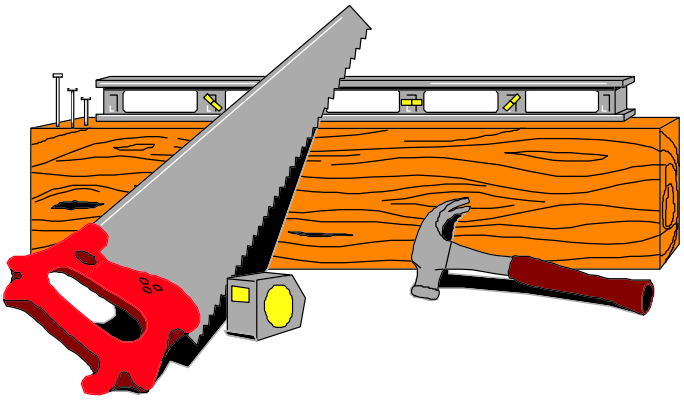
Cub Scout Creations







CREATIVE BALLOONING

BALLOON TWISTING

Supplies needed

- Lots of hot air. (Air pump acceptable.)
- Imagination of a child. (Not available at any store. You must regress in age.)
- Balloons
- Balloon sculpting guide.

The above needed supplies can be purchased at any local balloon, craft and hobby store. They can also be found in the gift and card sections in most major stores.

Balloon Sculpting Skills

The basic skill needed in balloon sculpting is called the " Bubble" or Pinch and Twist. Balloon sculptures are nothing more than bubbles, pinches and twists used in different combinations.

To form a bubble, pinch the balloon and twist the bubble so that it stays pinched. Twist the bubble two or three times to insure that the bubble stays.

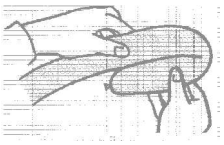
- Lock twist: The twisting of two pinches or bubbles together.
- Fold twist: Fold balloon at desired point and twist.
- S-twist: Fold balloon into a S-shape at desired point and twist all three sections together.

Basic Animal Sculptures

<u>The 3-Twist Dog</u>

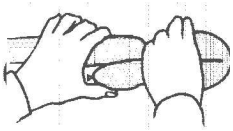
First inflate the balloon leaving 6 inches uninflated

Step #1



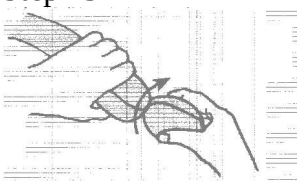
Fold the balloon 5 inches from the knotted end.

Step #2



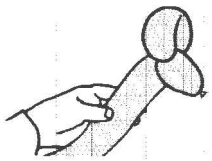
Squeeze the balloon together in the middle of the 5-inch fold.

Step #3



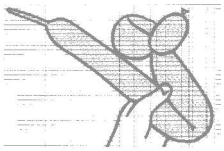
Twist completely around at middle point

Step #4



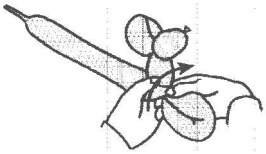
You should have the ears and face of the dog.

Step #5



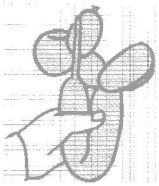
Fold the balloon about 6 inches down from the head

Step #6



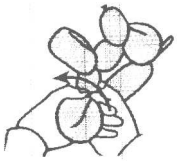
Squeeze and twist, completely around as in Step #3, to form the front legs.

Step #7



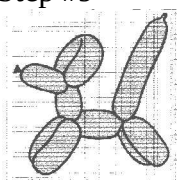
Fold again about 6 inches down to begin forming the body and the back legs

Step #8



Squeeze and twist, completely around as in Step #3, to complete body and back legs.

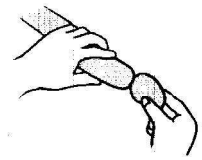
Step #9



The 3-Twist Dog is now complete.

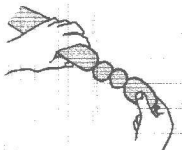
Giraffe: Inflate the balloon, leaving 4 inches uninflated.

Step #1



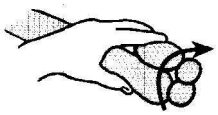
Pinch and twist completely around a 3-inch bubble

Step #2



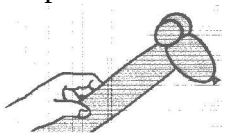
Pinch and twist completely around two 1-inch bubbles.

Step #3



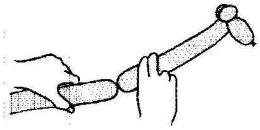
Fold the bubble, placing 1-inch bubbles side by side. Twist completely around to lock and make ears.

Step #4



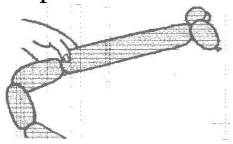
Your giraffe should look like this (head and ears)

Step #5



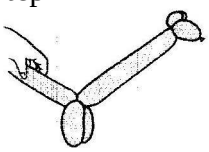
Pinch and twist completely around a 10-inch bubble to make neck

Step #6



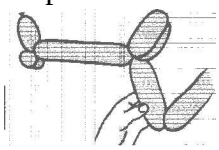
Pinch and twist completely around two 4-inch bubbles to make and lock front legs of giraffe

Step #7



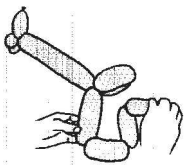
Your giraffe should look like this (head, ears and front legs)

Step #8



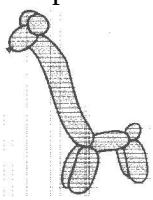
Pinch and twist completely around 5-inch bubble to create body.

Step #9



Pinch and twist two 4-inch bubbles to form rear legs; twist completely to lock.

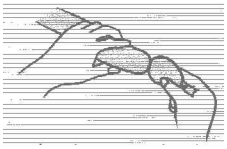
Step #10



Your giraffe should now be complete

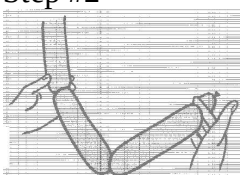
Rabbit Inflate the balloon leaving about 6 inches uninflated

Step #1



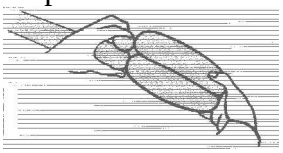
Pinch and twist, completely around, two 5-inch bubbles.

Step #2



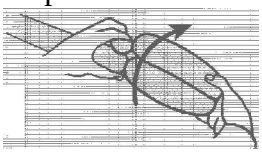
Pinch and twist completely around a 1-inch bubble.

Step #3



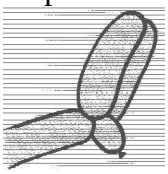
Fold the bubbles side by side.

Step #4



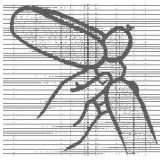
Twist, completely around, and lock the bubbles to make the rabbit head and ears

Step #5



You now have your rabbit head and ears

Step #6

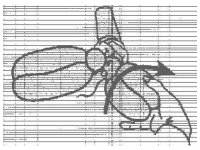


Pinch and twist, completely around, a 1-inch bubble for the neck of the rabbit

Step #7

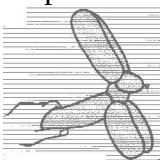
Pinch and twist, completely around, two 4-inch bubbles to begin forming the front legs

Step #8



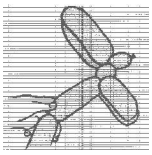
Twist the 4-inch bubble completely around to finish the front legs

Step #9



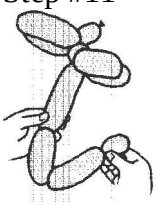
Your rabbit should now have a head, ears and front legs

Step #10



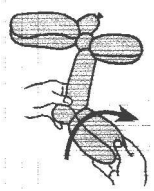
Pinch and twist, completely around, a 5-inch bubble for the rabbit body.

Step #11



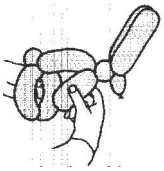
Pinch and twist, completely around, two 5-inch bubbles for the hind legs

Step #12



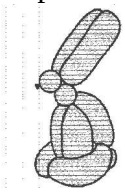
Fold and twist, completely around, to lock together the hind legs together

Step #13



Stretch open the hind legs and slide the front legs through the opening that you have just created.

Step #14



Your rabbit should be complete

Balloons in Cyberspace

The true sculptor must have access to the internet to check out *Balloon Headquarters.* The address is http.www.balloonhq.com. It is a wealth of information on all aspects of ballooning. You can also check out http.www.fooledya.com. At this address you can also join a mailing list

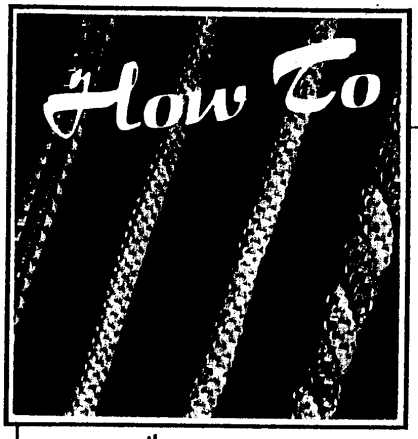
Important Thing to Remember

One important thing to remember is, if you use balloons that have been on a supermarket shelf for six months, they will break as you try to twist them. This can be very frustrating. Qualtex, the most common brand, has a freshness code next to the UPC code. The first two numbers are the year it was made. The next three numbers are the day of the year. For example, 00180 means it was manufactured on June 28, 2000. Never buy balloons that are more than a few months old. Balloons keep longer if they have been stored in a cool dry place.

The most important thing to remember is to have fun!!!!!!!

*No animals were harmed in any way during the making of these Pow Wow pages.**

LEATHERCRAFT

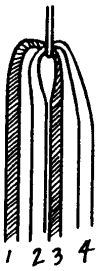


have FUN with Braiding!

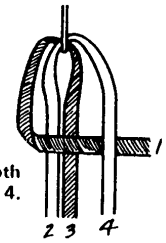
The Cobra Braid

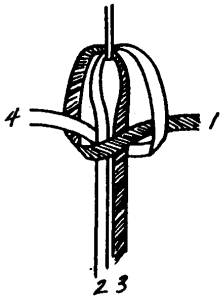
STEP 1. Put 2 laces into hook as shown. Pull outside strands 1 and 4 until they are twice as long as the inside strands 2 and 3.

NOTE: All braiding will be done with the long, outside strands.

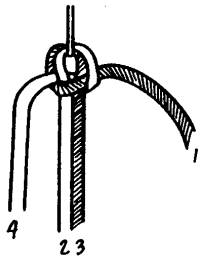


STEP 2. Bring 1 over both 2 and 3, and then under 4.

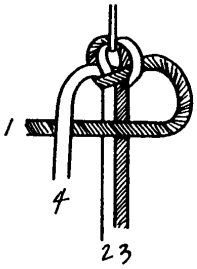




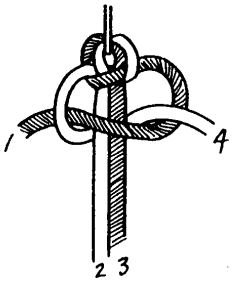
STEP 3. Bring 4 behind both 2 and 3, and then up through the gap between 1 and 2.



STEP 4. Pull both strands 1 and 4 tight.

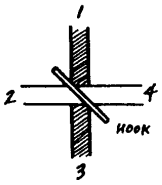


STEP 5. Bring 1 back over both 2 and 3 and then under 4.



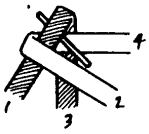
STEP 6. Bring 4 behind both 2 and 3, and then up through the gap between 1 and 3.

The Square Braid

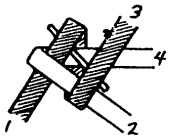


STEP 1. Put both laces halfway through the hook.

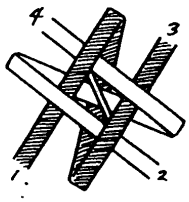
STEP 2. Fold 1 over 2.



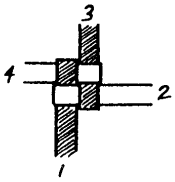
STEP 3. Fold 2 over 1 and 3.



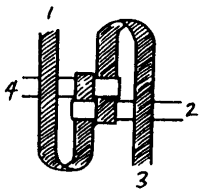
STEP 4. Fold 3 over 2 and 4.



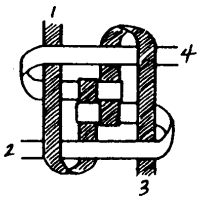
STEP 5. Fold 4 over 3 and under 1.



STEP 6. Pull tight to form the square.



STEP 7. Fold 1 over 4 and fold 3 over 2.



STEP 8. Fold 2 over 3 and under 1. Fold 4 over 1 and under 3. Pull tight to form square.

STEP 9. Repeat steps 7 and 8 to desired length.

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Leathercraft continued)

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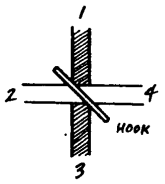
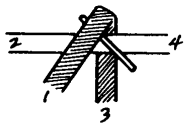
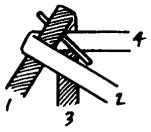
The Round Braid



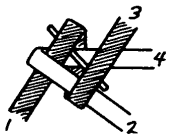
STEP 1. Put both laces halfway through the hook.



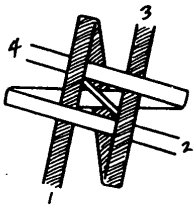
STEP 2. Fold 1 over 2.



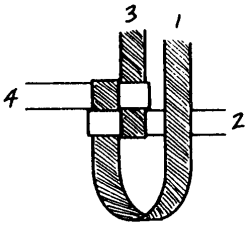
STEP 3. Fold 2 over 1 and 3.



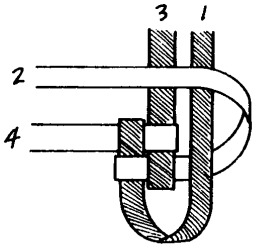
STEP 4. Fold 3 over 2 and 4.



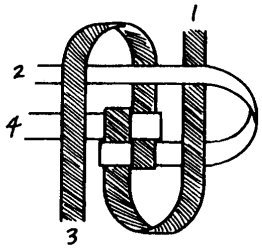
STEP 5. Fold 4 over 3 and under 1.



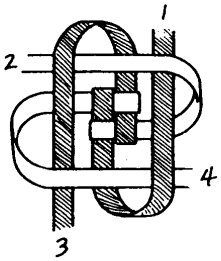
STEP 6. Fold 1 over 2.



STEP 7. Fold 2 over 1 and 3.



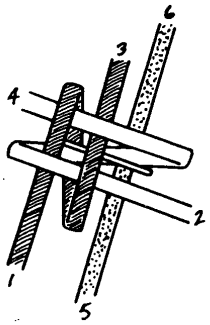
STEP 8. Fold 3 over 2 and 4.



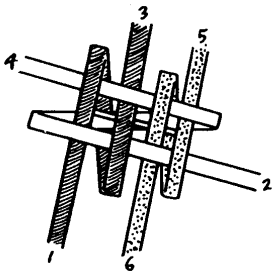
STEP 9. Fold 4 over 3 then push through loop made by 1. Pull all strands tight. Repeat steps 6 through 9 until desired length is reached.

The Spiral Braid

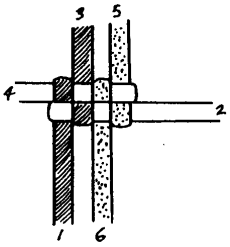
STEP 1. Follow steps 1 thru 5 for The Round Braid or The Square Braid to begin.



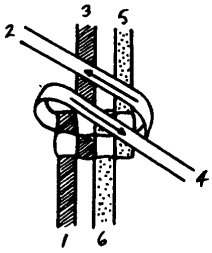
STEP 2. Add another strand, marked 5 and 6, as shown.



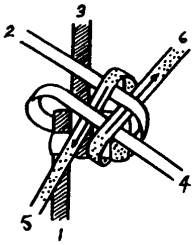
STEP 3. Fold 5 over 2 then push through loop formed by 4. Fold 6 over 4 then under 2.



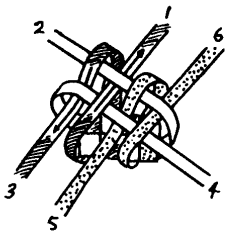
STEP 4. Pull all strands tight.



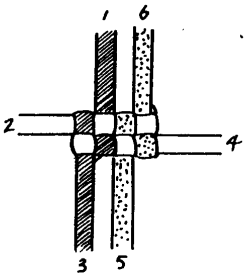
STEP 5. Fold strands 2 and 4 over diagonally forming two new loops, as shown.



STEP 6. Fold 6 over 4 then under 2. Fold 5 over 2 then under 4.



STEP 7. Fold 3 over 2 then under 4. Fold 1 over 4 then under 2.



STEP 8. Pull all strands tight. Repeat steps 5 through 8 until desired length is reached.

(Leathercraft continued)

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HOW TO GET STARTED IS AS EASY AS 1,2,3,4

1- WET THE LEATHER

(CAREFUL NOT TOO MUCH WATER)

-- THIS MAGIC "VEGETABLE TAN" LEATHER MUST BE MOISTENED BY RUBBING A DAMP SPONGE OVER THE ENTIRE SMOOTH OR "GRAIN" SIDE OF THE PROJECT. SOME OF THE PROJECTS HAVE BEEN PRE-DYED A TAN COLOR. WAIT ABOUT 40-60 SECONDS FOR THE WATER TO SINK INTO THE LEATHER SURFACE. WHEN THE LEATHER BEGINS TO RETURN TO ITS NATURAL COLOR, BUT STILL FEELS MOIST, BEGIN STAMPING.

2- STAMP THE DESIGN

(BORDERS LOOK BEST)

- POSITION YOUR TOOL FIRMLY ON THE LEATHER AND HIT IT WITH YOUR WOOD MALLET. EXPERIENCE WILL BE YOUR BEST GUIDE AS TO HOW HARD TO STIKE YOUR TOOLS. YOU HAVE THREE DESIGN TOOLS-STAR,VEINER,CAM-AND A RIVET SETTER THAT WILL STAMP CIRCLES.

A) BORDER--SAME TOOL

B) ALTERNATE TOOLS

C) ACCENT BORDER

PLEASING AND EYE CATCHING DESIGNS CAN BE CREATED BY REPEATING THE SAME TOOL AROUND THE BORDER OF YOUR PROJECT. EXPERIMENT WITH ALTERNATING TWO TOOLS ONE AFTER THE OTHER OR TRY OTHER GEOMETRIC ARRANGMENTS. SAMPLE PATTERNS ARE SHOWN ON THE NEXT PAGE

D) STACKED DESIGN

E) MIRROR IMAGE DESIGN

F) MIRROR IMAGE ACCENT

THE CENTER AREAS MAY BE DESIGNED BY DRAWING LINES WITH A PENCIL ON THE MOIST LEATHER. PRINTING INITIALS. OR STAMPING THEM INTO THE LEATHER. TANDY'S 3-D ANIMALS AND SPECIALTY STAMPS LOOK GREAT FOR CENTERS. YOUR LOCAL STORE WILL STAMP ONE FOR YOU FREE-

G) DRAWN DESIGN LINES

H) ABC #8130 STAMPS

3 - ADD COLOR AND FINISH

-- MARKERS, ACRYLIC PAINTS-COYA DYE, OR DYE MAY BE USED TO ADD COLOR TO YOUR LEATHER DESIGNS. EXPERIMENT BY COLORING JUST THE BORDER AREA OR THE CENTER AREA. WITH EACH PROJECT YOU CREATE, YOUR SKILLS AND STYLE WILL IMPROVE.

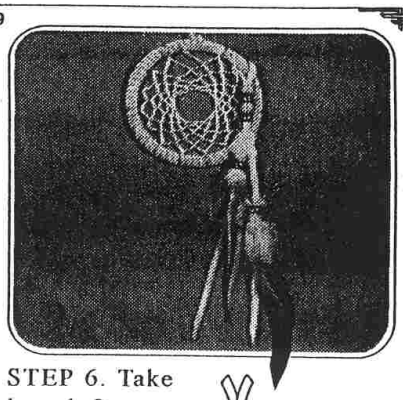
USING A SOFT CLOTH. APPLY A LIGHT COAT OF SUPER SHENE FINISH ON BOTH SIDES OF YOUR LEATHER PROJECT. THIS FINISH WILL PROTECT AND BEAUTIFY YOUR DESIGNS. * ALLOW COLORS AND FINISH TO DRY COMPLETELY BEFORE ASSEMBLING OR USING YOUR PROJECT.

4- ADD MAGNETS, STITCHING, OR KEY CHAINS

(Leathercraft continued)

STOCK No. 3591-99

3" Dream Catcher



YOU WILL NEED:

- **1** #3057 3" Mandella Hoop
- **2 yds.** #5013 3/32" Suede Lace
- **2 yds.** #1208 Artificial Sinew
- **2** Feathers
- **8** #1427 Pony Beads

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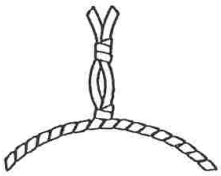
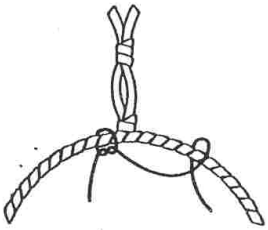
STEP 1. Tie one end of lace to hoop with a string. Leave about 5" of lace to tie off with. Wrap hoop with lace.

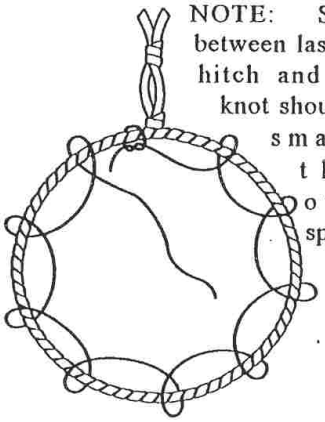


STEP 2. When you reach the beginning, tie the ends together and pull snug against the hoop. Trim ends off even and tie in an overhand knot. Save excess lace as you will need it later.

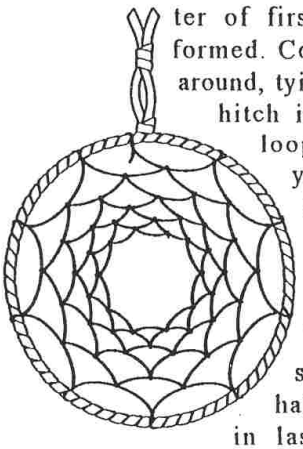


STEP 3. Tie one end of the artificial sinew in place next to knot, move down about 3/4" and tie a half hitch knot.

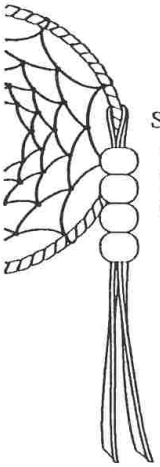
STEP 4. Continue around hoop tying half hitches at evenly spaced intervals. Keep sinew pulled snug. NOTE: Space between last half hitch and first knot should be smaller than other spaces.



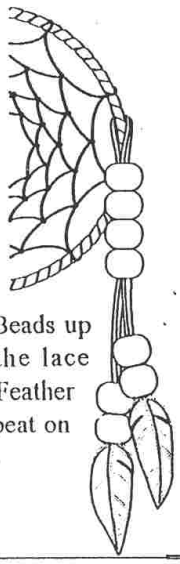
STEP 5. Tie next half hitch in center of first loop formed. Continue around, tying half hitch in each loop until you have about 1" of sinew left. Tie a second half hitch in last loop tied and pull tight. Trim off excess and mash knot down with fingers.



STEP 6. Take lace left over from step 2 and loop it over the hoop and through a loop on the side of the Dream Catcher.



STEP 7. Point the ends of the lace and push both ends through 4 Beads.



STEP 8. Push 2 Beads up on one end of the lace and push end of Feather under Beads. Repeat on other end of lace.

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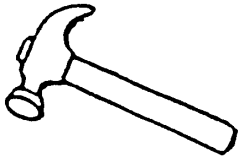
(Leathercraft continued)



CRAFTSMAN

SHOW YOUR CUB POWER!

For this activity the boys will be making a Cub Power band to help remind them that they have the power to say no to drugs.

You will need: 16" piece of suede lace
7 pony beads (1 of each color, red; blue; yellow; green; purple; white; black)

Knot- represents when you are born.

Black- represents the darkness drugs can bring into your life.

Blue- represents truth and honesty.

Yellow- represents happiness and good cheer.

Green- represents wisdom to know right from wrong.

Purple- represents bravery to stand up for your rights.

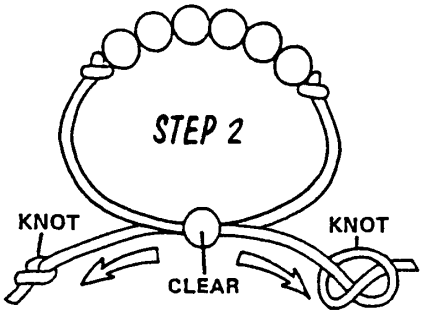
White- represents respect for others.

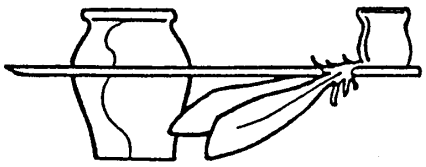
Knot- represents a long and healthy life.

Red- represents commitment to live a drug-free life.

Step 1. Center 6 beads on pieces of lace. Knot lace, as shown, to hold beads in place.

Step 2. Thread one end of lace through remaining bead. Thread other end of lace through same bead from opposite direction. Tie a knot in each end, as shown. Adjust size of power band by pulling on knotted lace ends.





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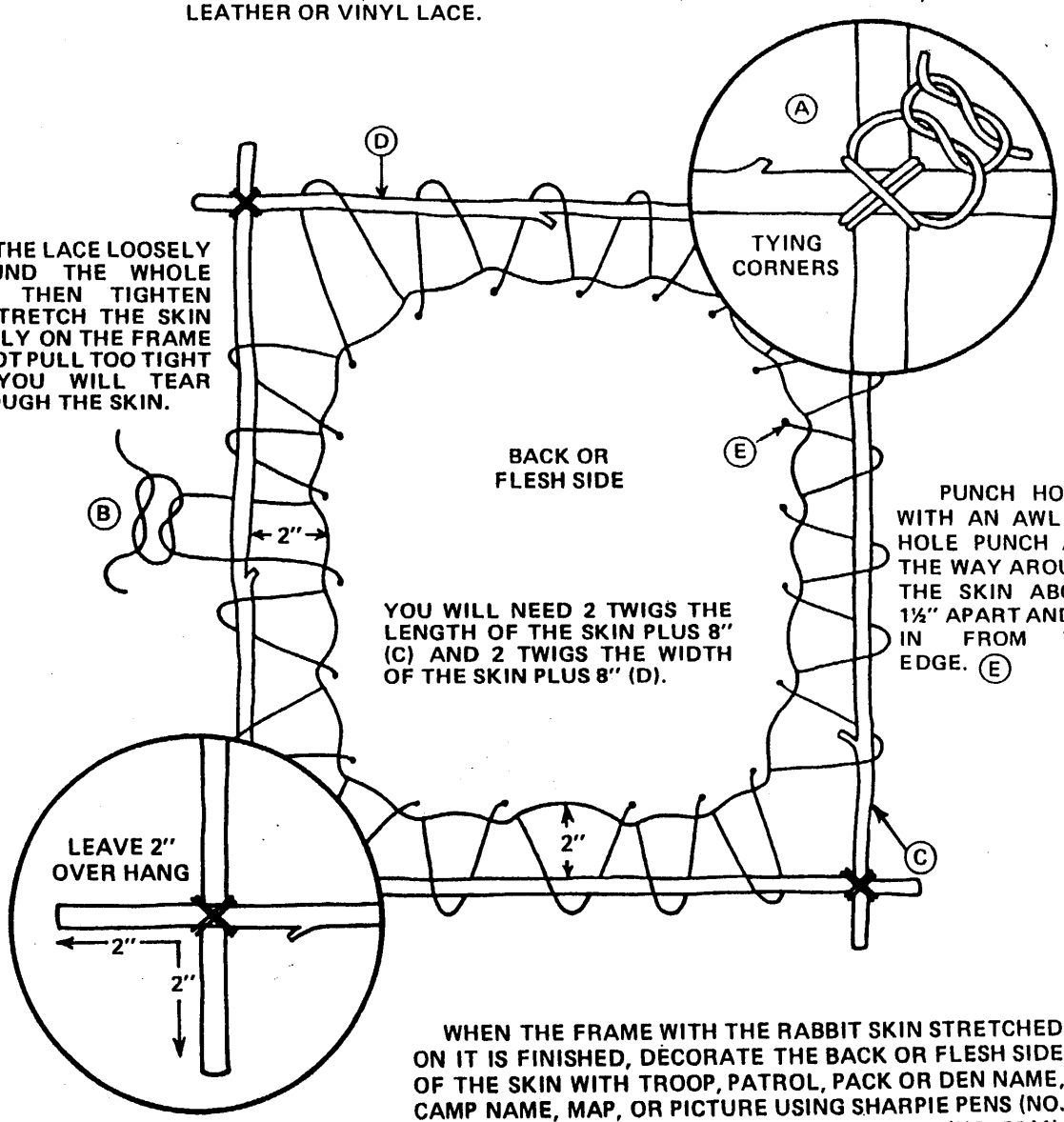
(Leathercraft continued)

RABBIT SKIN STRETCHER FRAME

WOODEN DOWELS ABOUT 3/8" TO 1/2" IN DIAMETER CAN BE USED FOR THE FRAME BUT NATURAL TWIGS LOOK MUCH BETTER. IF YOU USE NATURAL TWIGS, FIRST TRIM OFF ALL LEAVES AND SPRIGS BUT DO NOT SCRAPE OFF BARK. DO ALL CORNER TIES (A) AND LACING (B) WITH WAXED THREAD, ARTIFICIAL SINEW, LEATHER OR VINYL LACE.



WHEN THE FRAME WITH THE RABBIT SKIN STRETCHED ON IT IS FINISHED, DECORATE THE BACK OR FLESH SIDE OF THE SKIN WITH TROOP, PATROL, PACK OR DEN NAME, CAMP NAME, MAP, OR PICTURE USING SHARPIE PENS (NO. 2069), PAINT MARKERS (NO. 2068), COVA DYE (NO. 2041), OR LEATHER BRANDING KIT (NO. 2230) AND HANG ON WALL. STRIPS OF RABBIT FUR, BEADS AND/OR FEATHERS CAN BE HUNG FROM THE CORNERS TO ADD EXTRA DECORATION.

Tandy LEATHER COMPANY

Distributed by Tandy Leather Company
Fort Worth, Texas

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PLASTER CRAFT

Choosing Plaster

There are many different types of plaster on the market today. The easiest one to use for small craft projects is **HYDRACAL**. This is an industrial type, which holds up better and does not break as easily if dropped. This plaster can be found at **Larsen Foundry 860 W. 2600 S. Salt Lake City 84119.**

Mixing of Plaster

Mixing your plaster and determining how much you will need for your project will take practice, but don't let that stop you. Before mixing, fill your project with water. This will give you an idea of how much you will be using; however, mixing a bit extra is a good idea. Just remember the extra plaster ***should not*** be placed down your drains. (The plaster will harden under water and clog your pipes like cement)

Directions:

- Mix 1 part water to 2 parts plaster. (1 Tbsp. water to 2 Tbsp. plaster)
- Put water in disposable container (butter tubs, whip cream, cottage cheese)
- Add the plaster to the water. ***Do not*** stir while adding the plaster to the water.
- Stir gently to mix. ***Do Not*** beat vigorously or over-beat your plaster. This will create air bubbles and cause the plaster to set up too fast.
- Pour or spoon into your molds.
- Tap on table to bring air bubbles to the top.
- Add wire or ring to back.
- As plaster hardens, it warms up. When the plaster cool to the touch, (about 20 to 30 minutes), carefully remove from molds.

Hanger for your project

Choosing the type of hanger for the back depends on your project. If you are making a plaque, a paper clip works well. If you are making a slide, you can use many different things. Wire is the most popular. You can either bend your own (wrap around wood dowels to size), or you can purchase cheap rings from party stores (the ' wedding rings' given out as party favors). You can also use any type of tubing. Let your imagination go

Molds

Making your own molds is only limited by your imagination. You can use candy molds, ice cube trays, candle molds, or soap molds. Use any thing that would hold the plaster while setting up, and that you can remove it from once it has set. You can also make your own molds. To do this, you will need modeling clay, the item to be molded, latex molding compound, inexpensive paint brushes (small to medium), and paints (latex, acrylic, water color paints, poster paints, spray paints). You can either make an impression of the object

(Plaster Craft continued)

in the molding clay, or you can sculpt your own design. If you don' t mind if the object gets dirty, place the latex molding compound right on it. *Note: Latex molding compound contains ammonia, which will affect your work.* For example, the molding compound will turn black and not cure properly if you use a metal object. You' ll need to spray the metal with a coat of Clear coat to prevent this. Also, be sure you are using the latex molding compound in a well-ventilated area

The first layer of compound has to be very thin with no air bubbles. Also, make a ½ inch base around the object. Make sure that each layer of latex is completely dry before adding the next one. Continue to layer the latex until you have a thick-layered mold with sides.

Finishing your project

There are several ways to finish your project depending on the type of look you want to give it; wood finish, painted finish, metallic finish, chalk finish. However, before you can place a finish on your project you need to allow your project to completely air dry. Clean your project using a knife, nail file, popsicle stick, or sandpaper. Seal your project by spraying it with a coat of Acrylic Clear-coat. By doing this, you will not use as much paint. Now you can choose what type of finish to place on your project.

Wood Finish:

1. Cover entire project with liquid shoe dye. (Kiwi shoe dye & Scruff Coat are the best)
2. Before the polish dries, use a dry cloth to rub off part of polish to get the desired effect.
3. Allow the polish to dry.
4. Finish by spraying Clear-coat on your project.

Painted Finish:

1. Any type of paint may be used.
2. Paint the various parts of the project until finished.
3. Let dry, and spray with Clear-coat.

Metallic Finish:

1. Paint project with dark matte paint (Black, dark blue, etc.).
2. Allow to dry completely.
3. Put ***small*** amount of metallic finish and rub on painted project until desired effect is obtained. (Metallic finish under the brand names of Rub-n-Buff and Treasure Gold. All comes in many colors. Available at Zim's, Michael's Craft, and Mac Craft.)
4. Allow to dry and spray with Clear-coat. Use a glossy spray for extra effects.

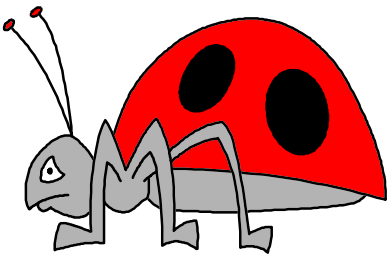
Chalk Finish:

1. Wet paintbrush
2. With wet paintbrush, paint project with paste.
3. Repeat step 2 until project is finished.
4. Spray with Clear-coat. Don't hold too close or use too much, or project will smudge.

Combine any or all of the finishing ideas to create different effects. Before sealing the back of the project, write the initials of who did the project. Seal the back so that the plaster will not leave marks or rub off.

PLASTER CRAFT IDEAS

Bug Slide or Magnet

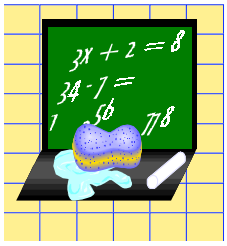


Materials needed:

- Plaster
- Plastic spoons
- Non-stick cooking spray or Vaseline
- Paint

Directions::

Using plastic spoons, spread lightly with Vaseline or cooking spray. Fill the spoon with plaster. Mix, using directions on the previous page. If you desire, you can add legs (pipe cleaners, sticks, toothpicks, etc.). After the plaster starts to set, just push them carefully into the sides of your oval. Use the back of a butter knife to level it off. Set aside until completely dry. Once dry; slide your oval out of the plastic spoon. Using paint, decorate it like your favorite bug! To make it into a slide, stick a ring in before the plaster is completely set. To make a magnet, hot glue the magnet after your paint is dry.



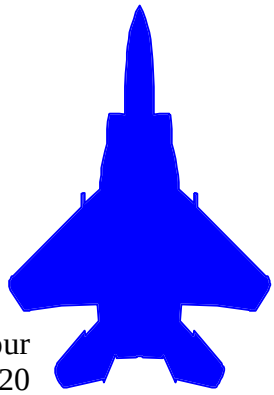
Sidewalk Chalk

Materials needed:

- Plaster
- Tempera paint (liquid or powder)
- Small cups, egg carton, or toilet paper tubes reinforced with duct tape

Directions:

Mix a small amount of plaster in a small bowl. Add a small amount of tempera paint to the plaster. Stir well for a solid color. For a marbled look, stir only slightly. For a more marbled look, add two or more colors of paint to different sides of the container and stir each only slightly. Pour the plaster into the containers. When the plaster hardens (about 20-30 minutes), take the chalk out of the containers. Chalk won' t completely dry for about 24 hours, but you can use the chalk as soon as it comes out.



Neckerchief Slides:

Materials needed:

- Plaster
- Candy, soap, or plaster mold

Directions:

Mix plaster. Pour into any type of mold that you desire. Place your slide into the plaster before it completely hardens. Remove after about 20 minutes. You can match monthly themes, make a wolf, bear, or Webelos symbol, or you can just make a square or round piece and carve your own design.

Hand or Foot Print

Materials needed:

- Plaster
- Aluminum pie plate, plastic lid, or foam plate
- Large paper clip

Directions:

Mix plaster in a plastic bowl. Pour onto the flat container. Have the child make a handprint or footprint in the plaster. Before the plaster completely hardens, push a partially unfolded paper clip into the plaster. (This is how you will hang it on the wall.) It will take 24 hours for the plaster to completely dry, but you can take it out of the container after about 20 minutes. You may paint it if you desire, but don' t forget to write the name of the child on the plaster using a permanent marker.

Leaf Prints

Materials needed:

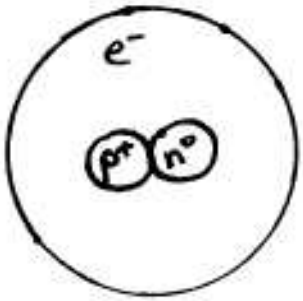
- Plaster
- Foam paper plate or plastic lid
- Leaf
- Vaseline or cooking sprays

Directions:

Mix plaster in plastic bowl. Next, spray or Vaseline the vein side of the leaf and the flat container. Put the leaf vein side up in the bottom of the container. Pour the plaster on gently. Let it set until hard (about 20-30 minutes). Remove the plaster from the container. Carefully remove the leaf. Wash off spray coating, and paint if desired. Let set about 24 hours to dry completely.

SCIENCE & ELECTRICITY SAMPLER

Atomic Structure



	Key
Protons	p^+
Neutrons	n^0
Electrons	e^-

Diagram not to scale.

Atoms are composed of protons, neutrons, and electrons. A proton has a positive electrical charge. Neutrons have no electrical charge or are considered to have a neutral charge. The nucleus of an atom is solid and massive. Particles that compose the nucleus are called nucleons. An electron has a negative electrical charge. They are located in the mostly empty space surrounding the nucleus of the atom. Electrons move in specific regions of space surrounding the nucleus called an orbital. An orbital is not like the movement of a planet about our sun. As electrons are moving in the orbital, they are also spinning like a top. As a result of this spinning electrical negative charge are tiny magnets having a North and South Pole. That's right! Electrons are both electric and magnetic.

Static Electricity

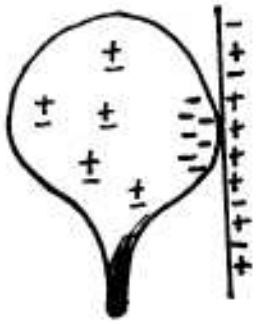
The dramatic effect of static electricity is a result of rubbing two objects together. While the two objects are in contac, electrical, charges are transferred from one object to another. Electrons in the outer orbital of atoms that form hair are loosely held and are pulled from the atoms and attached to the outer surface of an object whose outer electrons are more tightly held. A common example occurs on dry winter days when electrons from outer electron orbitals in atoms that make up the carpet are transferred to the rubber soles of your shoes. The electrons can spread out over your relatively damp skin and, when you touch an electrically conducting metal doorknob, your feel an electrical shock, or transfer of charge.

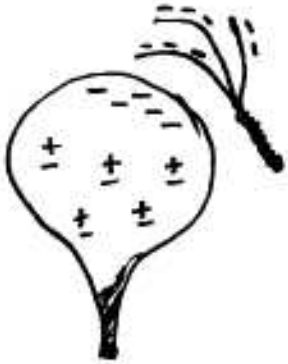
Activities with Static Electricity and Insulators

Electrical insulators are materials like glass and rubber. The outer electrons in atoms that compose these materials are held tightly and can't be moved to another object. Insulators used in this activity include a balloon, braided nylon cord, and one foot length of ½" inch PVC pipe. Two activities are depicted below. One activity uses a balloon and piece of braided nylon cord to explore static electricity. Rub the balloon against your hair, composed of loosely held outer electrons. If you are a careful observer and experimenter, you will find that the electrons transferred from your hair stay on the side of the balloon you rub against your hair and the side of the balloon you didn't rub does not contain excess electrons. Experiment with dif ferent

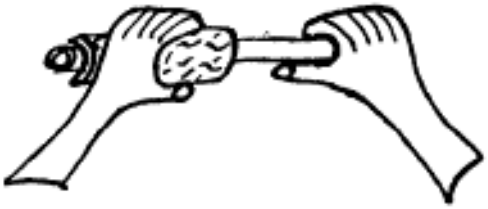
(Science Sampler continued)

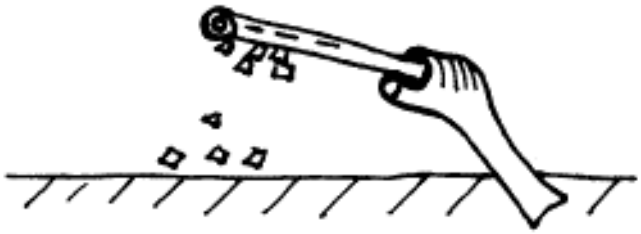
surfaces to see what the balloon will adhere to. Examples include window glass, wallpaper, and painted surfaces. Does your statically charged balloon stick to glass? It will not unless you have not cleaned your windows. The electrically charged area on the balloon will be attracted to the dust that has collected on the surface of the glass. To complete the **first activity,** unbraid the nylon cord at one end and see how this material interacts with the charged surface and uncharged surface of the balloon.





To complete the **second activity** you will need a one foot length of *'A"* PVC pipe and a piece of wool from an old blanket or trousers or rabbit fur. Hold the piece of pipe in one hand and rub the other end with the wool or rabbit fur. Experiment with different materials to see which are attracted to the negatively charged end of the PVC pipe. Try small bits of paper or dried leaves.



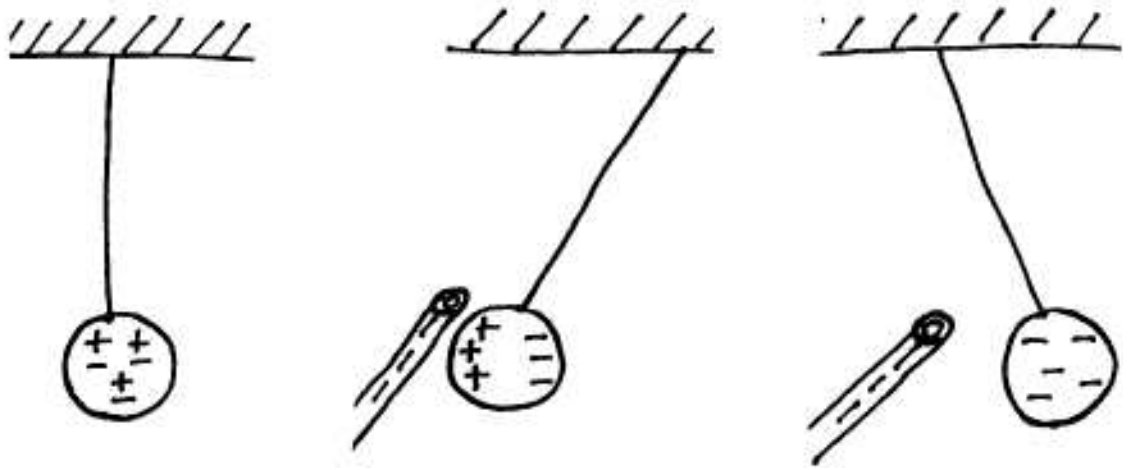


Activity with Static Electricity and Conductors

Metals are good electrical conductors because outer electron(s) move from one atom to another. When electrons are transferred to a conductor the electrons spread out over the entire surface of a conductor. This is unlike electrons transferred to an insulator where they stay in place at the point of contact. During this activity you will need a one foot length of ½" piece of PVC pipe,

(Science Sampler continued)

a piece of wool or rabbit fur, and a ping pong ball painted with metallic paint and threaded through the center using a needle and one foot length of thread. Tie off the thread on the bottom of the Ping-Pong ball and use the other end to tie off on a support. Experiment with the negatively charged PVC pipe (rub pipe with wool or rabbit fur) and ping pong ball. Before you start, touch the ping pong ball with your fingers so that any excess charge is grounded along your relatively damp skin. Now the ping pong ball is neutral or neither positively or negatively charged. How does the negatively charged pipe interact (attract or repel) with the ping pong ball? Next, touch the ping-pong ball with the charged rod. Does the ping pong ball move away (repelled by) or toward (attracted to) the negatively charged pipe? You may need to rub the pipe with the wool or rabbit fur again to obtain the desired results. The diagrams below show the interaction between the pipe and ping-pong ball. Notice that oppositely charged objects attract and like charged objects repel one another.



Circuits

An electrical circuit is an arrangement of electrical devices, such as electric motors or light bulbs, connected by a conducting pathway (such as copper wire) to form a loop. Electrons move along the conducting pathway and through the electrical devices. This flow of electrons is called current (like a current of flowing water). There are two general types of circuits DC (direct current) and AC (Alternating Current) AC current is the type used in electrical outlets in our houses, schools, etc. DC Current is the type used in batteries. For our experiments, we will be working with DC current. In kDC circuits, electrons move from a battery along the wire, through the electrical devices, then back to the battery.

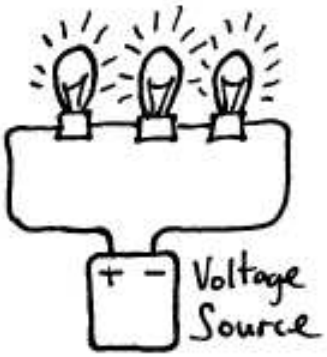
(Science Sampler continued)

DC CURRENT AND RESISTORS--SOME EXPERIMENTS:

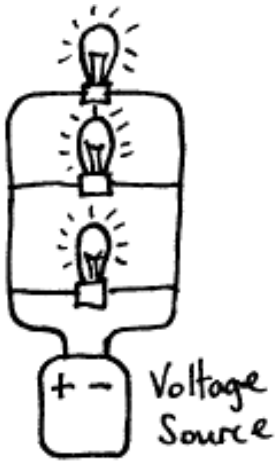
In the following experiments we will compare series and parallel arrangements of resistors. A resistor is anything that resists the flow of electrons, such as a light bulb. A light bulb resists the flow of electrons similar to the way a log across a stream resists the flow of water. Our DC circuit includes a battery as its energy source. The voltage of a battery is like the force. necessary to push electrons through the circuit.***(Science Sampler continued)***

Series Circuit Activity

In a series circuit, electrical devices are arranged in a lineone after the other. During this activity you will need three Christmas tree light bulbs, some six inch pieces of connecting wire. and a 1.5 volt D cell battery. A 6 volt lantern battery will work, but the bulbs will get hot very quickly. Connect the light bulb, as shown below. (Masking or duct tape may be helpful in attaching the wire to the positive and negative terminals of the battery as well as securing the ends of the connecting wires.) Then compare the brightness of the bulbs. RESULTS: You should see that the first bulb is brightest, and each successive bulb is less bright than the ones before it. The reason the light bulbs get dimmer is that the voltage decreases along the circuit as the current passes across each bulb. The resistance in each bulb is nearly the same. The characteristic of a series circuit is that the same current goes through each bulb.



Parallel Circuit Activity



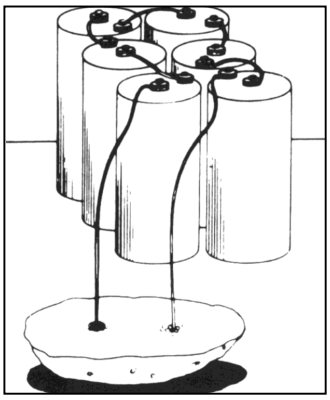
In a parallel circuit, the electrical devices are arranged in circular pathways that look like a ladder. These pathways are called branches (like a stream that splits into many branches, then comes back together again.) The light bulb is on a separate branch of the circuit connected to the positive and negative terminals of the battery. When you set up the circuit *(right)*, you will notice that the light bulbs connected in parallel are of equal brightness. This is a characteristic feature of parallel circuits: the voltage is the same across each device, because each is on its own branch of the current. These types of circuits are found in your home, office, school, and automobile. In your house, each outlet is parallel at the same voltage, 110 volts (AC current.)

(Science Sampler continued)

More Experiments With Electricity

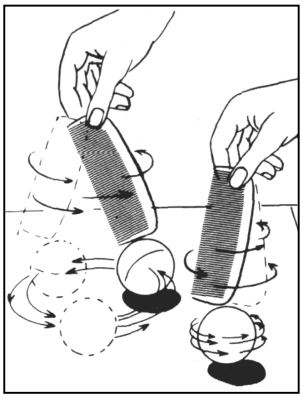
Activity to Determine Positive and Negative Wires

Needed: a battery, a potato, and some wire
Directions: Connect wires to the battery. Cut the potato in half, and stick the ends of the wires into the potato about an inch apart. A green color will appear in the potato around the positive wire, and bubbles will come from the potato where the negative wire is inserted.



Reason: The green color comes from partial ionization of the copper as negative ions from the solution in the potato are neutralized and form copper salt. The bubbles of gas are due to tiny volumes of hydrogen gas at the negative pole. This is the same reaction that causes a cut potato to brown if exposed to air after being cut.
Experiment 2: Put a drop of lemon at the point where the positive wire enters to see if it will prevent formation of color at that point.

Activity: The Goofy Ping-Pong Ball

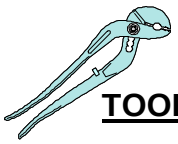


Needed: A table tennis ball and a hard rubber comb
Directions: Rub the comb briskly on a woolen sleeve or cloth, move it around in circles quickly as shown, and the ball will follow it. It is not necessary to touch the ball with the comb.
Reason: Rubbing places a charge of static electricity on the comb. The uncharged ball is attracted by the charge on the comb.

Activity: The Wayward Water

Needed: A hard rubber comb and a thin stream of water from a faucet or poured
Directions: Rub the comb briskly on a woolen cloth or through the hair, then hold it near the stream of water. The water will change its course as the comb attracts it.
Reason: Rubbing the comb puts a charge of static electricity on it. The water is not charged until close proximity of the comb repels electrons to the opposite side of the water column. Then the charge is opposite, and the comb and water are attracted to each other. and some six inch pieces of connecting wire.

TIN AND METAL



TOOLS FOR METAL WORK

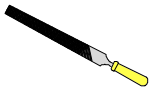
Gloves - Protects the hands from sharp edges.

Vise - Holds metal while working or to aid in bending material.

Pliers - Aids in bending metal or wire.

Needle-nose Pliers - Used in tight spots.

Tin Snips - Used to cut cans and metal sheets and to cut designs or patterns.



Punches or Nails - Used to make holes in metal.

File - Used to remove burns or sharp pieces.

Hammer - Used to pound nails, punches, or chisels.

Can Opener - Used to open ends of cans.

Safety Goggles - Used to protect eyes when working with metal.

Blocks of Wood - Various sizes are used to bend metal or support while punching.

Steel Wool - Used to polish.

Ruler - Provides accurate measurements.

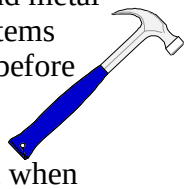
Glue - Use rubber cement, liquid solder, etc.

Felt Tip Pen or Grease Pencil - Used to mark the design to be punched or cut out.

KEEP IT SIMPLE!

SAFETY CONCERNS

Metal is fun and easy to work with using items disposed of everyday. Check the trash for empty cans, juice lids, pie plates, aluminum foil, soda pop cans, and metal odds and ends, etc. Wash these items thoroughly with soap and water before using.



A few precautions must be taken when working with boys. Be sure and have another adult help you. SAFETY FIRST!!! Always use enough adult supervision.

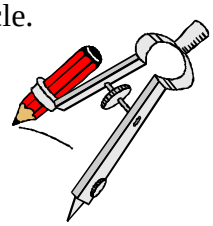
Wear gloves to protect hands when working with metal. Smooth sharp edges with a file and steel wool. Protect hands from steel wool by wearing gloves or holding it in a cloth.

Wear safety goggles when working with metal, especially when striking with a hammer, filing, or cutting.

Keep the project simple! Let the boys do the work, and don' t expect perfection

To bend metal at sharp angles, place metal against a wooden block, and push the metal away from you over the edge of the block. To make cutting angles, use pliers to bend the metal.

To make corners and circles, make straight cuts to remove as much waste as possible. Then round the comer or circle.



MAKE IT FUN!

TIN AND METAL PROJECTS

Tin Can Stove

This is a simple and fun project.

Materials:

No. 10 tin can
Beverage can opener
Tin shears

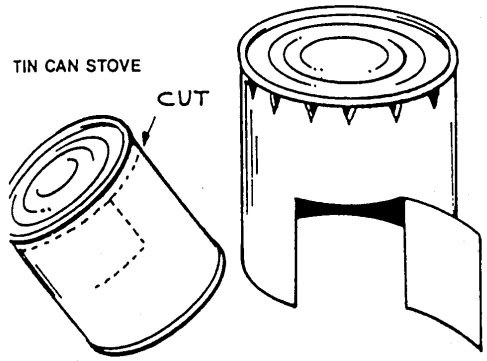
1. Cut one end out of the tin can.

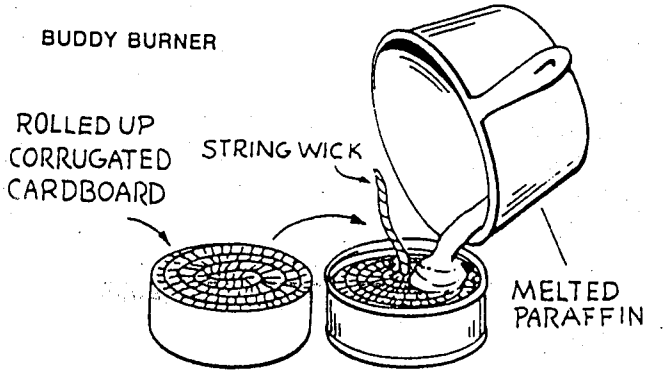
2. Use tin shears to cut a hinged opening at bottom end of can. This door can be folded up or to one side. It allows a place for the buddy burner. Smooth all sharp edges.

3. Use can opener to punch out triangular openings around side of can near closed end.

4. Set tin can stove over buddy burner, light wick, and you' re in business.

Be careful, the tin can stove gets very hot!!





BUDDY BURNER

This fire starter can be used with the Tin Can Stove or can be used as emergency road flares.

Materials:

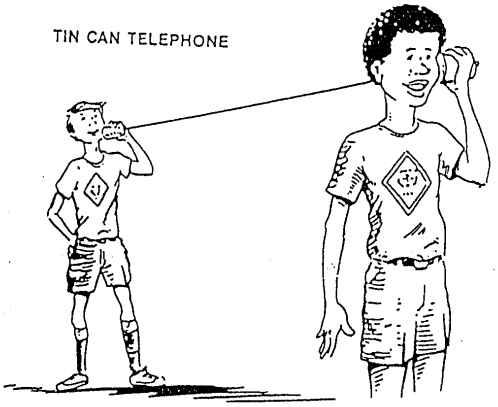
- One 6-ounce tuna or cat food can
- Strip of corrugated cardboard
- Paraffin wax
- String

1. Cut a long strip of corrugated cardboard. The width should be slightly less than the height of the can. Remove the paper from one side. Roll the cardboard in a tight coil and place on edge in tuna can. The tighter the cardboard is rolled, the longer it will burn.

2. Insert a piece of string in the center for the wick.

3. Melt paraffin wax in a clean 1-pound coffee can set in a pan of water. Pour melted paraffin wax over cardboard in can until can is three-quarters full. Let wax harden.

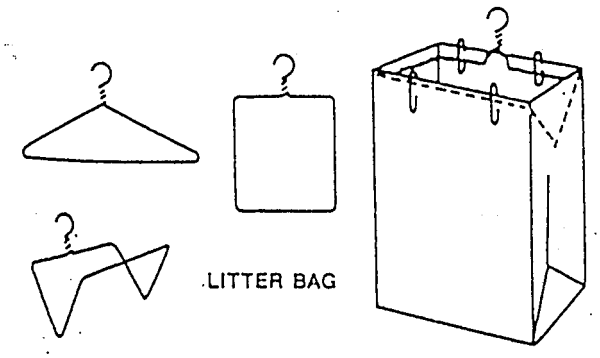
(Tin Projects cont)



LITTER BAG

Materials:
Wire coat hanger
No. 12 size paper bag
Paper clips or masking tape

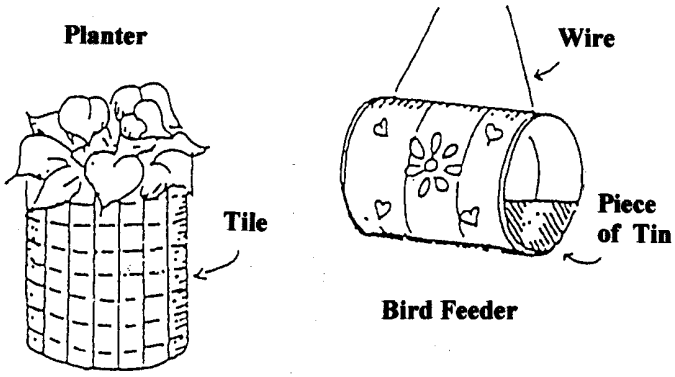
1 Bend coat hanger as shown in illustration.
2 Fold the top of the bag over the holder and fasten with paper clips or masking tape.
3 Hang litter bag in car.
4 Bag may be decorated before assembling, If desired, with crayons or colored markers.



For pipe chimes directions see January Midway page. It is another great tin and metal project.

DECORATING TIN CANS

Cans can be painted with enamel spray paint and decorated with a variety of things. You could use stick-on pressure-sensitive letters or dots; glue on macaroni or seeds; or cover with tiny mosaic tiles or scrap wallpaper or fabric. Cans can also be covered with colored jute twine or yarn. Use your imagination.



TIN CAN WIND CHIMES

Materials:
Lids from various size cans
Spray Paint
Fishing line
Hammer
Sand Paper (very fine)
Gloves

Directions:
1 With a hammer pound the edges of the lids flat. Lightly sand them with a fine sand paper to remove sharp edges.
2 Drill small holes into each lid, then spray paint the lids.
3 Using the largest lid as the base, drill holes around the edges to take care of hanging the other lids. ·
5 Attach the lids to the wind chime using the fishing line. The lines should not be the same length.

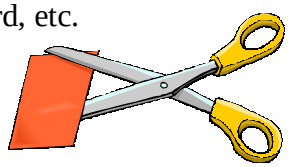
WOODCRAFT I

Hard Materials:

- Craft store pre cut shapes
- Craft (Popsicle) sticks
- Pre-cut custom wood shapes
- "Natural" (sticks, leaves, vines, etc.)
- Balsa wood
- Bass wood
- Dowels
- Scraps from other projects
- Toothpicks
- Other (use your imagination)

Soft Materials:

- Fabric
- Vinyl
- Yarn, thread, cord, etc.
- Feathers
- Leather
- Pipe Cleaners
- Drinking Straws
- Whatever will work



Tools:

- Emery boards (sandpaper)
- Scissors
- Knife (many kinds)
- Hand drill
- Hand saw
- Clamps, clothes pins, etc.
- Tape
- Rubber bands
- Other hand tools

Paints:

- Colored felt tip markers
- Ink pen
- Ball point pen
- Acrylic
- Enamel (spray or brush on)
- Latex

Glue:

Water Based

- Usually Non-toxic
- Usually Non-flammable
- Cleanable with water
- Slower drying time
- May not be water resistant

<u>Examples</u>

- White (Elmer's)
- Yellow (Carpenter's)

Solvent Based

- Faster drying time
- Water resistant
- Bond well to most surfaces
- Can be toxic
- Can be flammable
- May have an odor
- Difficult to clean up spills

<u>Examples</u>

- Super glue
- Silicone
- Model (plastic)
- Contact cement
- Specialty glues

Thermal

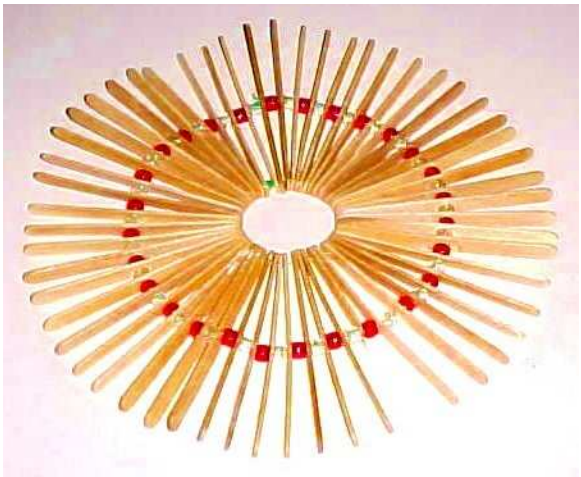
- Fastest set time
- Flexible
- Water resistant
- Non-toxic
- Non-flammable
- Can be cleaned with a knife before setting

<u>Example</u>

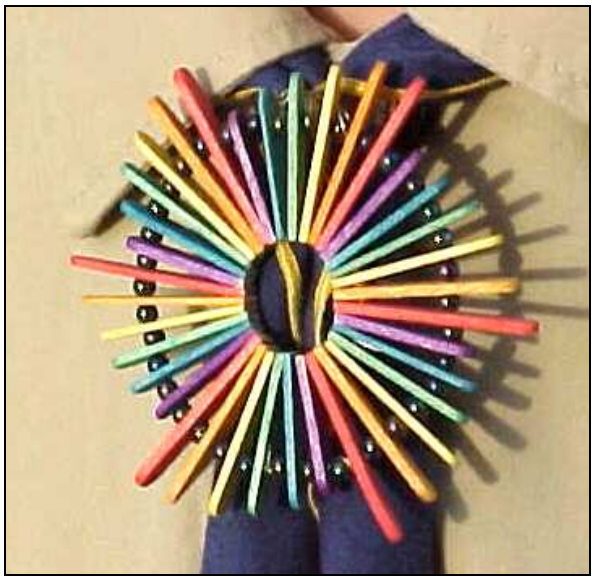
- Hot melt glue

(Woodcraft I continued)

Hot Plate



Materials	Tools
64 Craft sticks	Drill
Thin wire	Pliers
64 beads	



For instructions see:
http://www.e-scoutcraft.com/misc/hot_plate.html
(Used by permission. Thanks to: Vincent Hale [mailto:Hale@e-scoutcraft.com])

Craft Stick Puzzle

1. Put your sticks right next to each other. You can use as many sticks as you want.
2. Tape the sticks together on one side using masking tape.
3. Paint a picture on the front of the sticks. Let the paint dry
4. When the paint is dry, pull the masking tape off, and you have a puzzle
5. Challenge a friend to try to put it together.

Ojo Di Deo (Eye of God)

For instructions see:
http://www.kidsdomain.com/craft/godseye.html

3x5" Recipe Card Holder

For instructions see:
http://www.kidsdomain.com/craft/3x5holder1.html

Cub Scout Place Markers

For instructions see:
http://www.kidsdomain.com/craft/cubmarker1.html

Clothespin Reindeer

For instructions see:
http://www.kidsdomain.com/craft/reindeer.html

Blue and Gold Banquet Pin

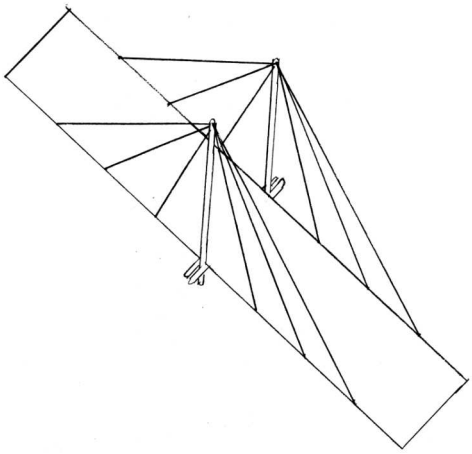
For instructions see:
http://www.kidsdomain.com/craft/blueandgold.html

Crossover Bridge Decorations

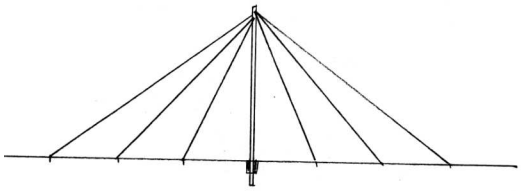
For instructions see:
http://www.kidsdomain.com/craft/bridge1.html

(Woodcraft I continued)

Suspension Bridge



1. Drill a small hole (1/16 inch) at the top of two flat sticks. Mark a line about ½ inch up from the other side.
2. Apply glue to the both ends of two another flat sticks. Line up the ends even with each of the sticks with the line then clamp until dry.
3. Cut a piece of construction paper to the width between the two vertical sticks.
4. From the center of the paper measure evenly (i.e. every inch) and draw a line across the paper. On the same side draw another line in about 1/8 inches lengthwise.
5. Where the two line meet poke a hole with a needle.
6. Apply glue to the two horizontal sticks and the construction paper at the center (put the lined side towards the sticks). Set aside to dry.



7. Thread a needle with thread. Push the needle through the paper at one of the holes from the bottom (knotting the thread will help it stay put). Then push it through the hole in the stick on the same side.
8. Push the needle through the paper. Bring the needle up through another hole and repeat until the entire side is threaded.
9. Repeat for the other side.

Web Site Resources

http://www.kinderplanet.com/poddle.htm

http://www.parents-talk.com

http://family.go.com/crafts/

http://www/e-scoutcraft.com/

http://www.kidsdomain.com/craft/index.html

http://www.daniellesplace.com

http://familycrafts.about.com/

http://www.diamondbrands.com/craft/craft.htm

http://www.kidsdomain.com/kids/links/Crafty_Kids.html

http://www.tiac.net/users/daveread/foo/popstix.htm

http://www.craftworksmag.com/

http://www.enchantedlearning.com/crafts/

http://www.teachyourzoo.com/Crafts.htm

http://www.homeschoolzone.com/pp/popsicle.htm

http://www.funology.com/boredombusters/bb006.cfm

(Woodcraft I continued)

Local Resources

Mac's (4 locations)

2135 S. Orchard Dr.
Bountiful, UT
Ph: **(801) 298-7999**

2334 E. 7000 S.
Salt Lake City, UT
Ph: **(801) 947-0421**

725 E. 10600 S.
Sandy, UT
Ph: **(801) 572-1188**

7046 S. Redwood Rd.
West Jordan, UT
Ph: **(801) 566-9009**

Piece Goods Crafts & Fabrics (3 locations)

673 E. Simpson Ave.
Salt Lake City, UT
Ph: **(801) 485-1224**

3575 S. 1950 W.
West Valley City, UT
Ph: **(801) 972-8907**

4141 W. 5415 S.
Kearns, UT
Ph: **(801) 966-6652**

Roberts's (9 locations)
http://www.robertscrafts.com/

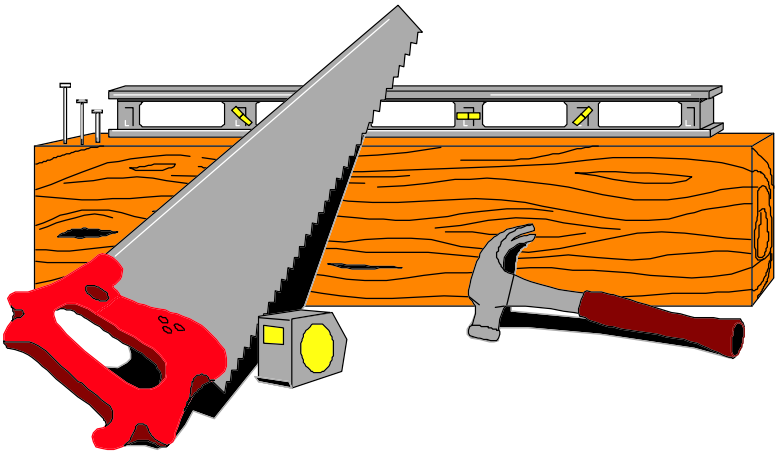
Taylorsville
1797 W. 4700 S.
Taylorsville, UT 84118
Ph: **(801) 967-1229**

Brickyard Plaza
1172 E. Brickyard Road #45
Salt Lake City, UT 84106
(801) 468-1220

Sandy
10301 S. 1300 E.
Sandy, UT 84094
(801) 523-6241

Jordan's Landing
7055 S. Plaza Drive
West Jordan, UT 84084
(801) 282-5575

Zim's Inc.
http://www.zimscrafts.com/
4370 So. 300W.
Salt Lake City, UT
Ph: **(801) 268-2505**
Ph: **(800) 453-6420**
FAX: **(801) 268-9859**

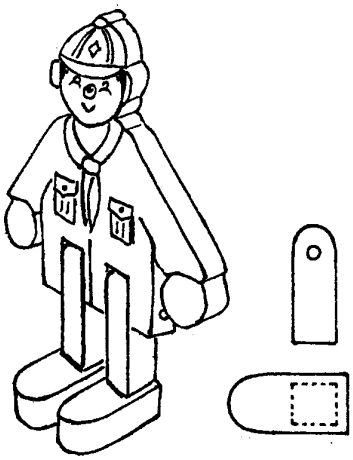


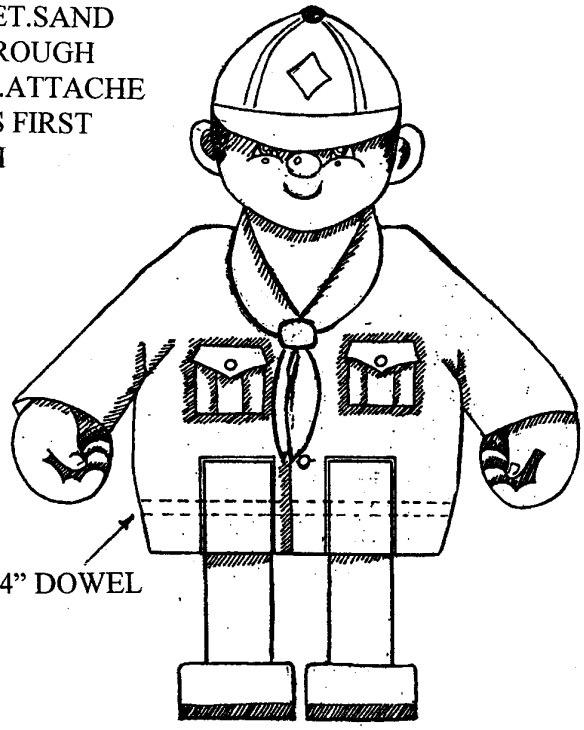
WOODCRAFT II

Woodcraft

Cubby

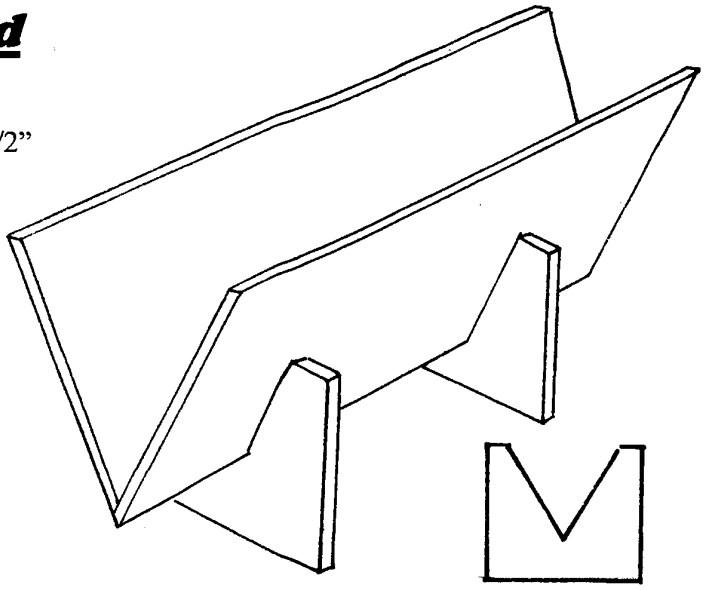
CUT OUT CUBBY (ANY SIZE) FROM 3/4" PINE.CUT OUT 2 LEGS AND 2 FEET.SAND ALL PARTS.DRILL 1/4" HOLE THROUGH LOWER BODY AND UPPER LEGS.ATTACHE FEET TO LEGS.PAINT ALL PARTS FIRST BEFORE ATTACHING LEGS WITH 1/4" DOWEL TO BODY.





Letter stand

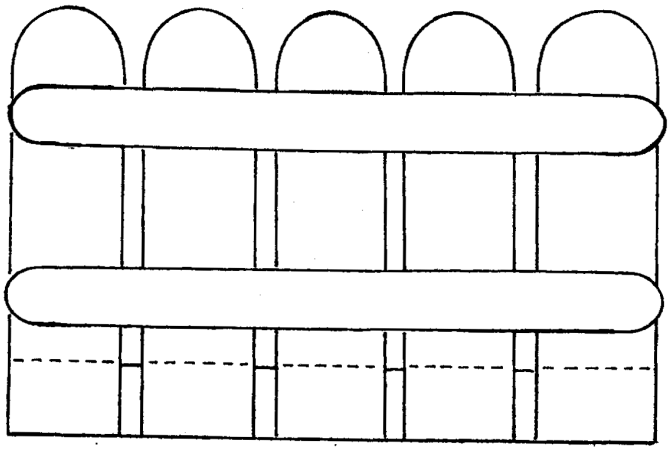
CUT 2 STANDS 4-1/2"X 41/2"
CUT OUT **V** SHAPE
CUT 2 SIDES 5"X 9" AND GLUE IN TO **V** SHAPE
PAINT ON FLOWERS OR GLUE ON PICTURES.

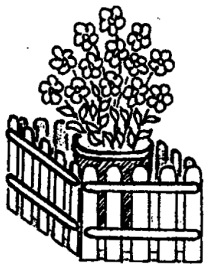


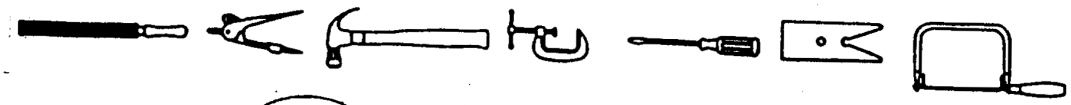
Woodcraft

Flower garden

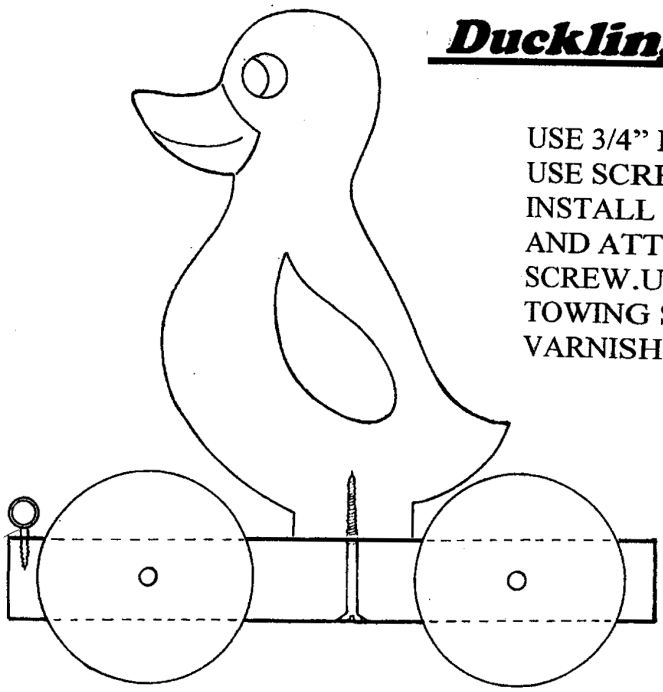
CUT A BOTTOM FROM 1/2" OR 3/4" WOOD 4-1/2"X 4-1/2".
USE CRAFT STICKS FOR FENCE,LENGTH IS DETERMINATE BY THE HEIGHT OF THE FLOWER POT.GLUE 3/8" POPSICLE STICKS HORIZONTAL FOR FENCE RAIL.







Duckling - pull Toy

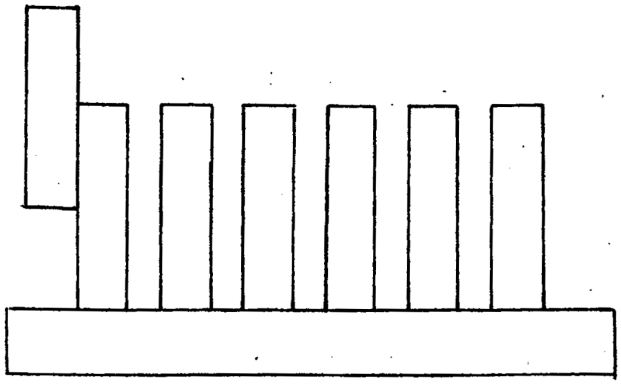


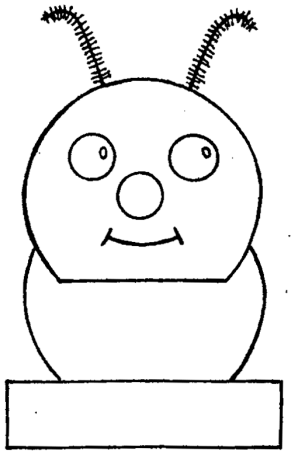
USE 3/4" PINE.CUT BASE 4"X 6".
USE SCREWS OR NAILS TO INSTALL 2" WHEELS.CUT OUT DUCK AND ATTACHE TO BASE WITH SCREW.USE SCREW EYE FOR THE TOWING STRING.
VARNISH OR PAINT.

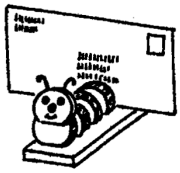
Woodcraft

Caterpillar Letter holder

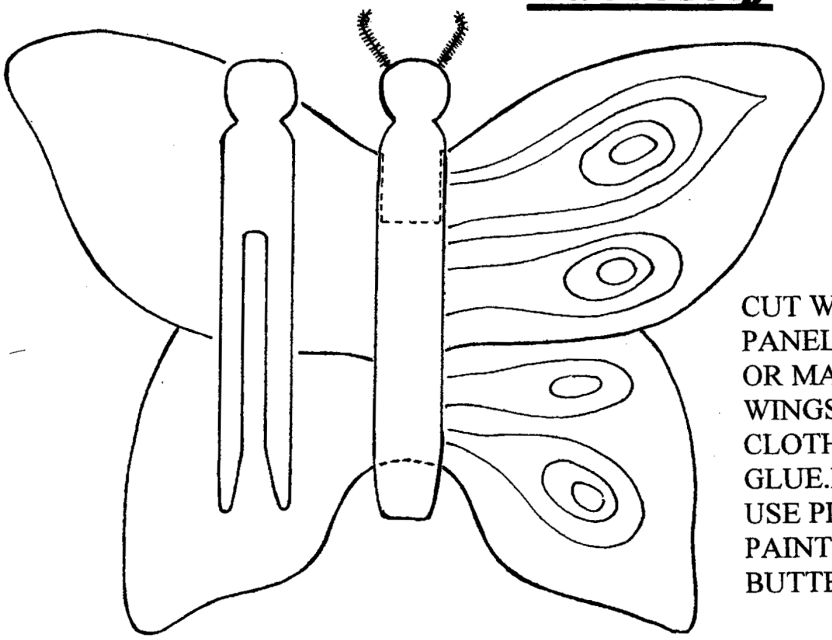
USE A 3/4" PINE, 2"X 4-1/2"FOR THE BASE.CUT SLICES FROM A HANDRAIL FOR BODY AND HEAD AND GLUE TO BASE.DRILL HOLES IN TOP OF HEAD AND GLUE IN PIPE CLEANER FOR ANTENNAS.PAINT LIKE CATERPILLAR.







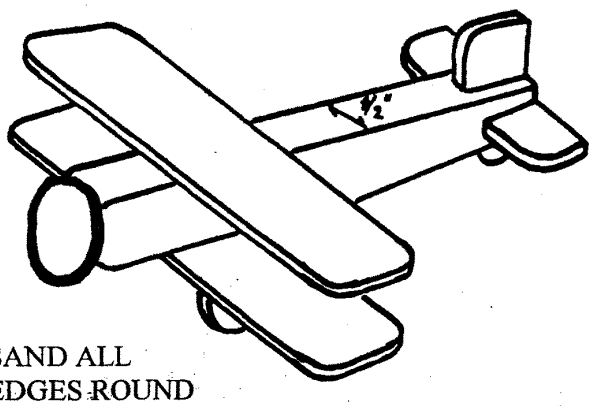
Butterfly



CUT WINGS FROM 1/8" PANELING.PLYWOOD OR MASONITE.SLIDE WINGS IN TO CLOTHES PIN,USE GLUE.FOR ANTENNA USE PIPE CLEANERS. PAINT LIKE BUTTERFLY.

Woodcraft

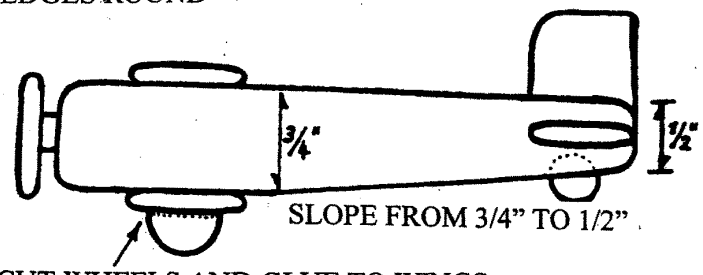
Biplane



SAND ALL
EDGES ROUND

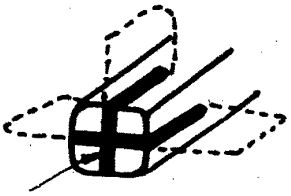
MATERIAL:

1 BODY-1/2"X 3/4"X 4"
2 MAIN WINGS
1/8"X 3/4"X 4"
1 TAIL WING
1/8"X 3/4"X 2"
1 FIN 1/8"X 3/4"X 7/8"
CUT PROPELLER AND
WHEELS FROM
3/4"-1/2"AND 3/8" DOWELS

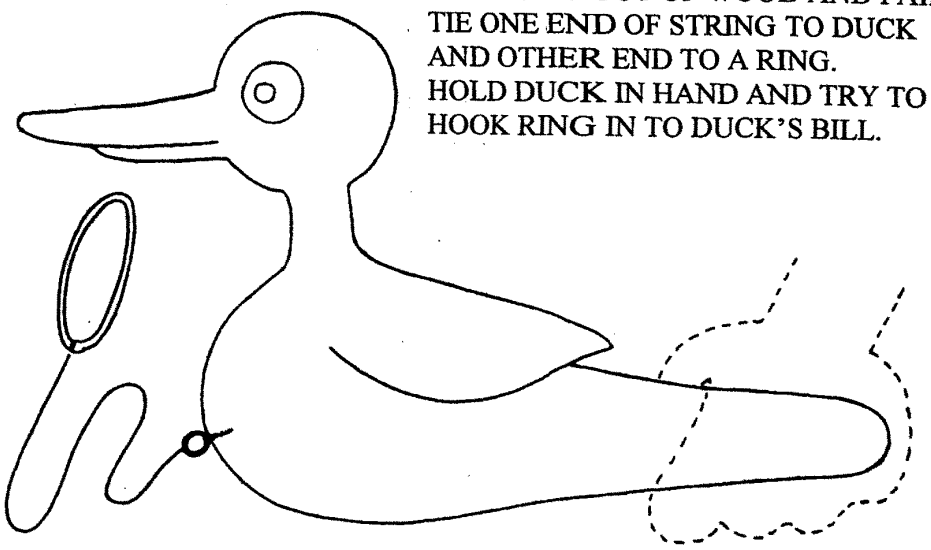


SLOPE FROM 3/4" TO 1/2"

CUT WHEELS AND GLUE TO WINGS



CUT SLOTS FOR
WINGS AND WHEELS

Duck game

CUT DUCK OUT OF WOOD AND PAINT.
TIE ONE END OF STRING TO DUCK
AND OTHER END TO A RING.
HOLD DUCK IN HAND AND TRY TO
HOOK RING IN TO DUCK'S BILL.