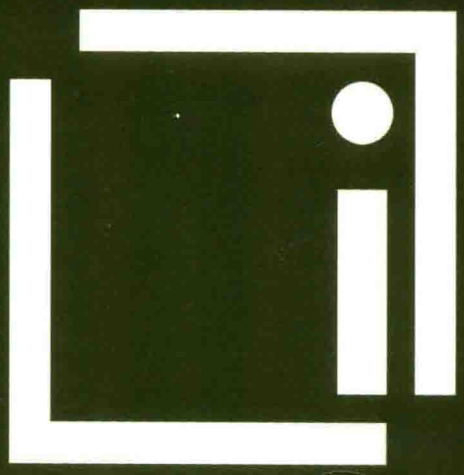
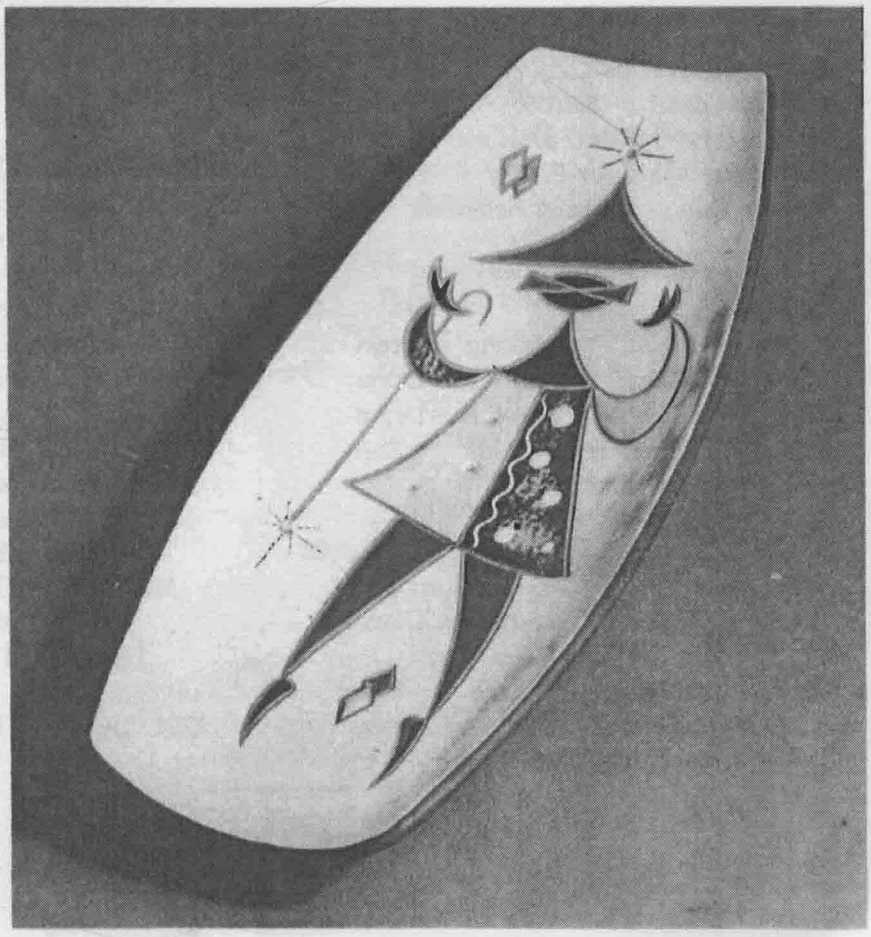
Ceramics And How To Decorate Them



Joan B. Priolo

CERAMICS — and How To DECORATE THEM



by Joan B. Priolo

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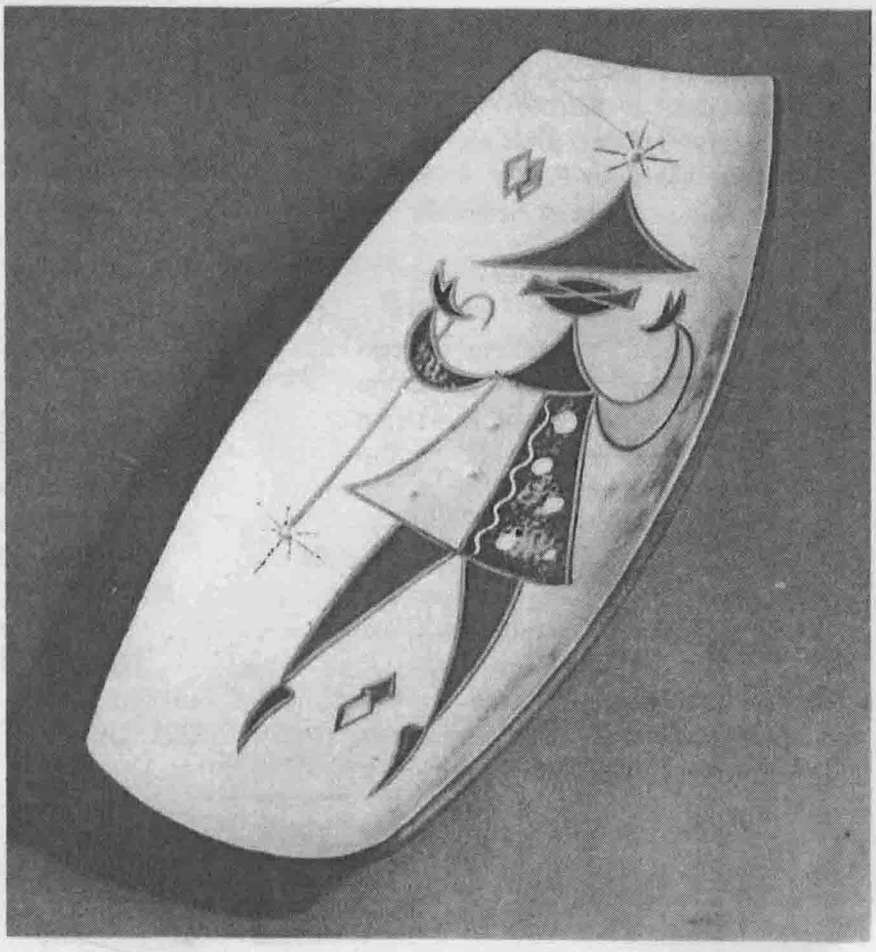

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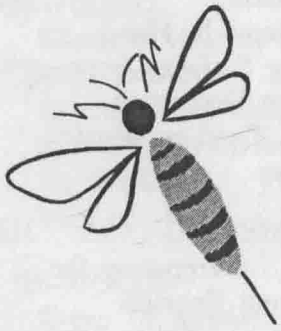
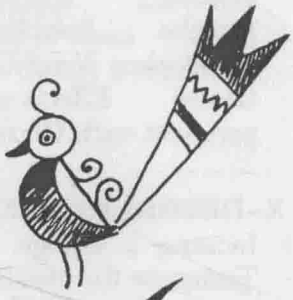
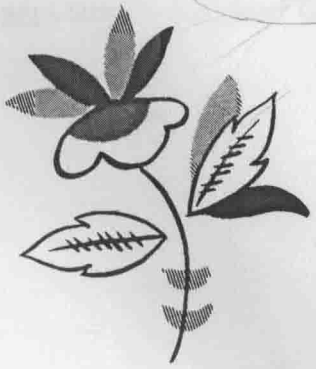
INTRODUCTION







While ceramic art is one of the oldest forms of expression known to man, its magic, mystery and excitement keep ceramics a constantly new and challenging adventure Few other mediums embody so completely the thrill of the unknown that fascinates each student, artist or hobbyist who enters the field of ceramics The magic that lures the ceramist is the timeless magic of earth and fire The mystery that intrigues him is the process by which dull mud can be transformed into a hard, jewel-like object

To discover the secrets of clay, fire, color and glazes, to experiment with them, regulate and control them, to create from his knowledge a thing of utility and beauty—this is the goal of the ceramist The unpredictable factor that is always present in ceramics only stimulates his imagination and adds excitement to an already absorbing medium There are no hard and fast rules Anything goes—if it works!

The clay with which ceramics are fashioned can be modeled, pressed, stamped, rolled or carved It can be thrown on a wheel or made liquid and poured into molds It can be textured, painted with contrasting clay, colored with brilliant glazes, decorated with designs or rubbed with stains Its finished surface can be shiny or dull, rough or smooth, bright in color or subdued It can sparkle with metallic luster or glow with natural earth color The range of creative possibilities is endless, the only limitations being those imposed by the skill and imagination of the ceramist

Ceramics can be an art, a business, a hobby, a therapy, a classroom project or anything one might care to make of it Whatever the individual approach, it is the author's hope that this book may serve as inspiration to all who wish to explore the magic that is ceramics

I—WORKING WITH CLAY

It is not necessary to possess an extensive knowledge of chemistry for ceramic work and this book will provide only such technical information as may be of practical value to the ceramist We are not concerned here with chemical symbols and formulas Our only interest in chemistry is in those areas where it serves as a basis for a better understanding of ceramics For this reason, since anyone working in ceramics will necessarily be working with clay in one form or another, it would be well to learn something of the general composition of clay before attempting to discuss ways and means of making ceramics

COMPOSITION OF CLAY

In brief, clay is a natural product of the earth, formed by the decomposition of rock While the earth's crust contains many chemical elements, only a few are important here The main element is silicon, which makes up more than half of the earth's rocky crust, and the element of next importance is aluminum These elements, when found in combination with oxygen, are called silica and alumina Pure clay is composed of one part *alumina*, two parts *silica* and chemically combined water It is not essential to know these terms but it may prove helpful

There are many kinds of clay In fact, no two clays dug from the earth will be exactly the same However, all clay has two intrinsic properties when moist it is plastic (which means that it can be modeled into shapes without breaking), and when exposed to extreme heat it will become hard, losing this plastic quality forever

KINDS OF CLAY

It is difficult to work with natural clays as they are, but it may be of value to know a little about them if you want to make your own clay bodies While there are hundreds of kinds of natural clay, only the most common types which concern the ceramist are listed here

Kaolin—A white clay with a coarse texture It is difficult to work with and matures (hardens) at very high temperatures

Ball Clay—This clay fires white, has an extremely fine texture and is highly plastic It is used mainly in porcelain and whiteware bodies where workability is needed

Fire Clay—A dark colored, rough textured clay that will stand high temperatures but is not plastic It is usually used in stoneware bodies and for firebrick, furnace linings, etc

Stoneware Clay—A smooth, plastic clay that fires to a light buff color and will stand high temperatures

Slip Clay—A low firing clay used as a glaze on a higher firing clay

DIGGING YOUR OWN CLAY

All the clays mentioned above may be purchased from a ceramic dealer or, if you have a strong arm and a great deal of time on your hands, you may dig them yourself Frankly, digging is not recommended for any but the most enthusiastic ceramist There are so many prepared clays available to the ceramist that digging seems as pointless as advising a modern-day painter to grind his own colors and weave his own canvas An important point to consider, if you are seriously eying the shovel, is that much more is involved than the actual digging Any clay that has been dug from the ground requires cleaning It must first be dried, then pounded and broken up, made into liquid form and screened In addition, natural clay must be tested as to its characteristics Is it plastic? What is its firing range? Is it porous? All these properties must be tested before the clay can be used You must judge

for yourself whether this amount of work is desirable, keeping in mind the fact that prepared clays are not expensive, especially if purchased in powdered form, and that they have been cleaned and properly classified as to their specific characteristics

CLAY BODIES

The distinction between clay and clay bodies is one which seems confusing to newcomers in the ceramic field, but in reality, it is a simple one Clay is that material which comes directly from the ground and, as such, is difficult to work with Some natural clays are not plastic enough to be workable, others are too plastic and do not hold up well in firing, still others will mature at such high temperatures as to be impractical for ceramic use To combat these difficulties and make life a little easier for the ceramist, clay bodies are manufactured

A clay body is simply a blend of various clays, combined with other ingredients where necessary A clay that is too plastic may be added to a non-plastic clay, another clay may be added for its color, grog used for texture, or glass cullet (ground glass) added to provide a lower maturing point In this way a clay body is produced with the particular qualities desired The general types of clay bodies used for ceramic ware are these

Earthenware—A low firing (approximately 1700°-2000°) body that is comparatively soft and porous and will not hold liquid unless glazed Its color is buff, red or white Earthenware is the most widely used of the clay bodies and will probably be used for most of your ceramic ware

Stoneware—A high firing (approximately 2300°-2600°) hard, vitreous body which is able to hold liquid when left unglazed Stoneware bodies usually fire to shades of gray or brown and often contain fire clay or grog which produces a rough texture

Porcelain—A body that requires the highest fire of all ceramic artware (approximately 2300°-2800°) It is a hard, vitreous body that fires to a translucent white

SLIP

Clay in liquid form is called slip It is used for casting in a plaster mold Slip, however, is not merely clay and water When enough water is added to clay to make a slip that will pour easily, too great a shrinkage results in the cast piece The problem is to make a casting slip with less water but with the same fluidity required for pouring To solve this problem an alkaline substance, such as sodium silicate, is added This separates the clay into finer particles that are held in suspension, and a liquid clay is formed without using too much water

This process is called deflocculation While you can make your own casting slip, deflocculation is a tricky business and it is usually much safer to buy the prepared slip Or, better still (and cheaper), purchase the casting body in powdered form and mix it with water The amount of water to be added and the directions for mixing are given by the manufacturer

BUYING CLAY

All the clays and clay bodies mentioned can be purchased from your ceramic dealer in plastic form for modeling, in liquid form for casting or in powdered form to mix for either modeling or casting It is cheaper, although sometimes not as convenient, to buy your clay in powdered form Aside from the fact that it is less expensive, dry clay is easier to store and, too, if you plan to make any clay bodies of your own, you must have the clay in powdered form for weighing with other dry ingredients

When buying your clay be sure to keep in mind the purpose for which it is intended That is, do not buy stoneware or porcelain unless you have access to a kiln that will reach the required high temperature If you intend to model your clay, buy a clay with enough plasticity to render it workable, do not try to harden a casting slip and use it for modeling because slip contains ingredients necessary for casting but not always desirable for modeling Instead, ask your dealer for the same clay in plastic form

STORING CLAY

Any container with a tight-fitting cover can be used for storing moist clay. If you buy your clay in tubs you can keep it moist and plastic by covering it with wet burlap. When working on a clay project over a period of days, remember to cover the piece with damp cloths, rewetting them as necessary. This will help to keep the clay in good working condition until you have finished the project.

Slip is usually stored in a bucket, jar or similar container covered with a lid, but if your slip tends to form a crust on top, cover the top of the container with waxed paper before fixing the lid in place.

WEDGING

All clay, whether purchased ready-mixed or dug directly from the ground, must be wedged before it is used for modeling. Wedging is a process of cutting and slamming the clay to get it into good working condition and to remove air bubbles from it. Air bubbles inside clay would explode during the firing.

A wire fastened to two pieces of wood that serve as handles can be used to cut the clay. Take a ball of clay and cut it cleanly in half with the wire. Throw one half of the cut clay down on a plaster slab or wooden table top, then slam the other half down on top of the first half. This must be done with enough force to wedge the two halves into one. Scoop up the wedged clay and repeat the process until the clay has been cut and wedged together at least twenty times or until the cut edge shows no air bubbles. The clay is ready to use when it is even in texture and free of air pockets or lumps.

If you plan to do much work with clay, it would be advisable to make yourself a wedging board. To do this, find or make a shallow wooden box, fasten an upright post at the back and fill the box to the brim with plaster. This will form your working surface. Stretch a piece of piano wire or any other strong, thin wire from the top of the post down to the front of the box. The wire must be as tight as possible to cut the clay easily and for this purpose you should use a turnbuckle, available at any hardware store.

SLAB BUILDING

Slab building, one of the oldest methods for forming an object from clay, is still widely used. This method is used primarily for rectangular or square pieces, boxes, and so forth, and consists of rolling the clay to a uniform thickness, cutting a pattern from the rolled slab and joining the pieces together in much the same way as a carpenter uses pieces of wood to build a box.

First, take a ball of wedged clay and flatten it into a disk. Then lay two wooden strips of the same thickness (rulers are excellent for this purpose) on either side of the clay. This insures an even thickness to the slab which

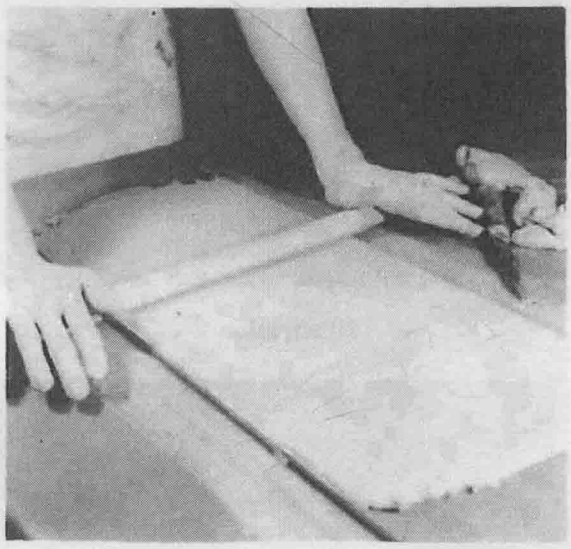


Illustration 1

To begin slab building, roll the clay between two strips of wood.

otherwise might be lower on one end than the other. Rest a rolling pin on the wood strips and roll out the clay. If the clay sticks to the rolling pin, dust a little flint or dry clay on it to help absorb the excess moisture. Keep rolling the clay until the rolling pin rides on the wooden strips; then you will have an even slab of the same thickness as the wooden guides.

Now you must make a cardboard pattern of the bottom and sides of the piece to be built. Cut your pattern slightly larger than the finished size because clay shrinks in the drying and firing and your fired piece will be about one-tenth smaller than the original clay piece. Place the cardboard pieces on the clay and cut around them with a sharp knife. These clay slabs should be allowed to dry slightly before they are handled or they may warp or bend too easily. Stand the side slabs on the bottom piece and join them together, using slip as an adhesive. To strengthen the joints, work thin coils of clay (see Illus. 5) into the inside edges.

You can make the lid very easily by cutting a slab of clay a little larger than the box. For the flange, cut a long strip of clay, shape it to the proper size so that it will fit inside the box, fasten it to the lid and reinforce with thin coils of clay.

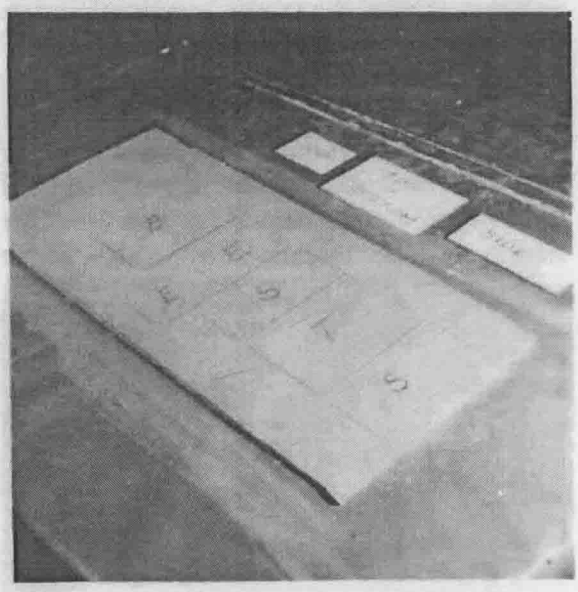


Illustration 2

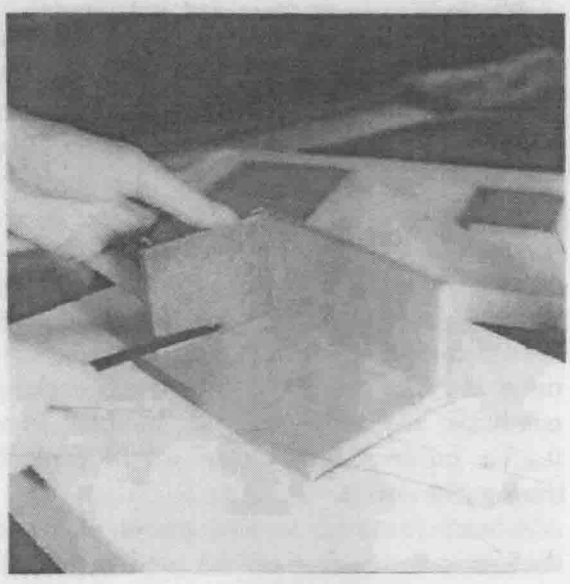


Illustration 4

Illustration 3

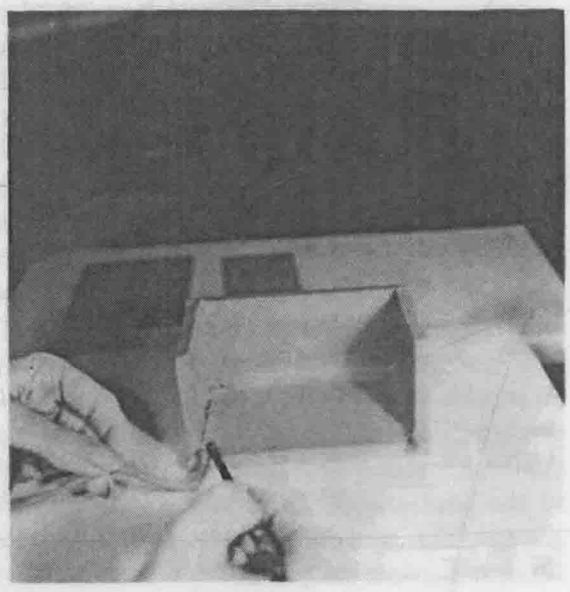


Illustration 5

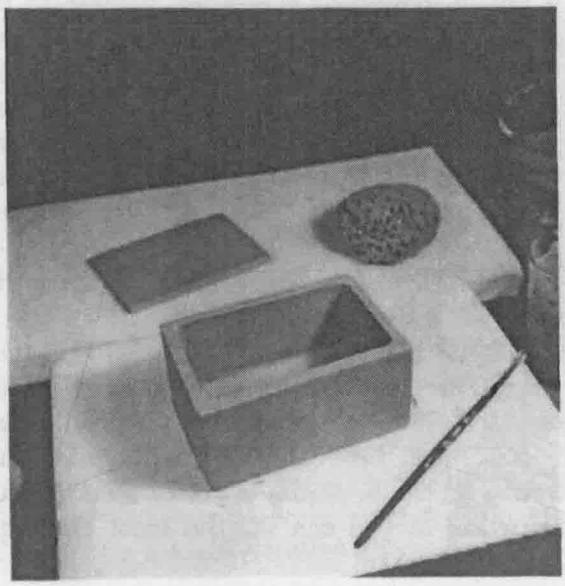


Illustration 6

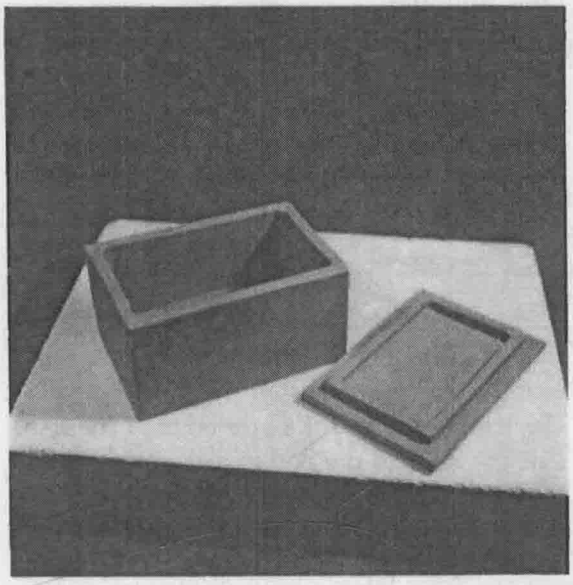


Illustration 8

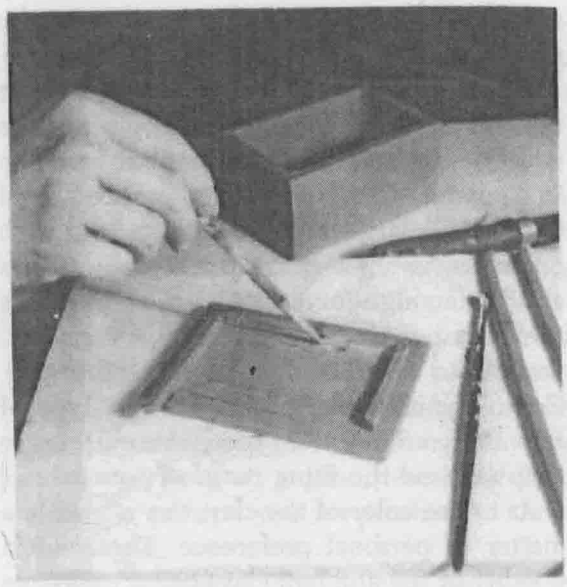


Illustration 7

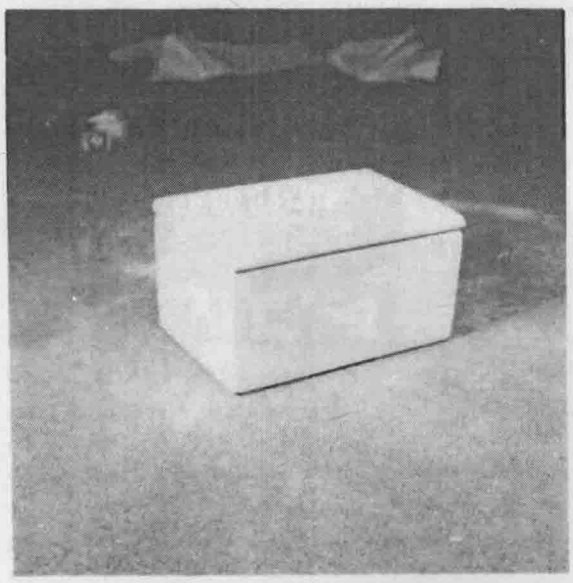


Illustration 9

2. Place a cardboard pattern of the box on the slab and lightly incise the outlines.

3. Cut out the incised pieces with a sharp knife.

4. Join the side slabs to the bottom slab with slip.

5. Strengthen the joints with thin coils of clay.

6. This is the completed box.

7. To make the flange, fasten a long strip of clay to the lid.

8. The box and lid are now completed.

9. After the box and lid dry, smooth and round the edges.

COIL BUILDING

Coil building is an ancient method of forming clay It was used before the invention of the potter's wheel to form cylindrical objects (bowls, vases, etc) by rolling coils of clay and placing them one on top of another in spiral fashion until the bowl or vase was formed

Starting a coil-built project is much like starting with slab building Roll out a small slab of clay in the same manner and cut a round base from the slab Next, roll a coil of clay and lay it on the outer edge of the base Cut the ends of the coil in a diagonal so that they will adhere without making a thick spot in the wall Weld the ends together with slip and weld the coil to the base with slip

Roll out another coil of clay, weld it to the first and continue to build up the wall As with slab building, you can strengthen the joints by pressing a very thin coil of clay in between the coils you are building

In order to control the shape, use a cardboard or tin template (a pattern of one side of the desired shape) to check the symmetry of the piece while it is being built You may find, if you are forming a large piece, that the walls become too weak to hold any more weight In that case, set the piece aside and let it harden awhile before continuing Make certain, when you resume building, to moisten the top coil again before adding another coil, since clay that has dried will not adhere to moist clay A word of caution may be in order here coil building is not as simple as it might appear at first glance The difficulty lies in the attempt to achieve a uniform thickness in all the coils If this is unsuccessful, the finished bowl or vase will be higher on one side than the other It is also difficult, even if a template is used, to control the shape of the piece Therefore, it would be advisable to concentrate on very low objects until you have mastered the technique

POTTER'S WHEEL

A potter's wheel is used to form cylindrical clay objects It consists, basically, of a flat disk, much like a large banding wheel, which is put in motion by the potter himself, or it may be motor driven While the wheel is turning, the potter throws a lump of clay onto the center of the wheel Using both hands to push and pull the clay as it whirls on the wheel, the potter forms his vase or bowl The success of a thrown piece depends on the skill with which the potter is able to coordinate the speed of the wheel with the wall thickness and size of the piece

Throwing on a wheel is a special skill requiring practice and practice and more practice A thorough description of the procedure is impossible here If you are interested in throwing, try to watch a potter working at his wheel so you can see this most exciting and exacting skill

SCULPTURE

The true test of your artistic craftsmanship in the medium of clay will come when you make your first piece of ceramic sculpture The first thing to consider is the most suitable type of clay for modeling the piece It is necessary to have a clay that is plastic enough to be worked with ease, yet, particularly if the piece is large, firm enough not to squash under its own weight. Most modeling clays are firm enough for smallish pieces (6 inches or so) but with larger pieces it is very important to check the firmness of the clay Consult your dealer about the best type of clay for your purpose, remembering also to keep in mind the firing range of your kiln

As to the color of the clay, this is mainly a matter of personal preference There are a number of red and buff clays that are suitable for sculptured pieces or, if you plan to use brilliant colors as a decoration, there are many white clay bodies available that can be fired in almost any kiln

The sculptor's main tools are, of course, his hands, but there are a few tools that are a convenient supplement A wire tool is useful for gouging and a hardwood tool or two can be used for pressing on lumps of clay or smoothing Start with these basic tools and add to the collection gradually as your needs dictate

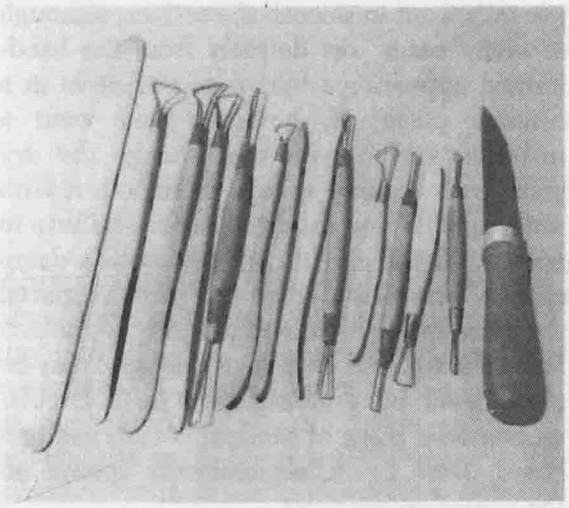


Illustration 10

Sculptor's modeling tools are often helpful.

In constructing a piece of sculpture, concern yourself primarily with the general shape —detail can come later. You should work in much the same manner as a painter who first establishes the broad masses and values before he even thinks of details. Make your general shape larger than the desired finished size to allow for shrinkage and for the carving off that will be done in forming the piece. (Check with your dealer about the amount of shrinkage you can expect in your piece, since clays differ in shrinkage percentages.) As you work, turn the piece around often so that you can view it from all angles. Remember that, unlike the painter, you are working in three dimensions.

When your piece is completed and still in a leather hard (partially dried) stage it must be hollowed out. A solid lump of clay with no openings through which moisture can escape will be certain to break apart when fired. If the piece has a wide enough base, hollow it out from underneath. Otherwise you will have to cut the piece in half and scoop out the inside with a hole extending through the base. Leave a wall about ½ to ¾ of an inch thick, depending upon the size of the piece. A larger piece should have thicker walls than a smaller piece. After the inside has been scooped out, join the halves together again with slip. If you use enough grog (see below) in your clay, it may not be necessary to hollow out the piece.

GROG

To prevent squashing, warping and cracking of a large sculptured piece during firing or drying, you can add grog to the clay before wedging. Grog is simply clay which has already been fired, ground up and screened. When added to the clay it provides openings through which moisture can escape. The grade and quantity of grog used depends upon the size of the piece you plan to construct, since a larger piece requires more and coarser grog than a smaller piece. For most pieces a medium grog (30-60 mesh) is used but for very large pieces a coarser grog (20-40 mesh) should be used.

The best way to add grog to your clay is by embedding it in the clay with a rolling pin. This is done before the clay is wedged.

Illustration 11

This sculptured tobacco jar of red clay would be a handsome object for any pipe smoker's desk. As you form your piece, be sure to turn it often to see all angles.

Divide your mass of clay into sections small enough to be wedged easily and roll out a section to a thickness of about ¼ of an inch Sprinkle grog over the surface and press it into the clay with a rolling pin To make sure that the grog is evenly distributed throughout the clay, fold the piece of clay in half and roll it out again, repeating the process until the grog is completely embedded in the clay Then you are ready to proceed with the wedging

FINISHING

When you have completed your clay piece, whether it is a bowl, box or sculptured figure, you may want to smooth the surface, although in many cases this detracts from the hand-formed appearance that is so attractive in a ceramic piece If, however, you want a smoother surface you may sponge the dry piece with a damp sponge or smooth it with sandpaper If you sand the surface be sure to remove all the excess clay dust with a damp sponge, otherwise, when the piece is glazed the glaze may not adhere properly to the surface The top and bottom of the piece may be made level by grinding them in a circular motion on a piece of sandpaper fastened to a board Here again, remember to sponge off the loose dust particles