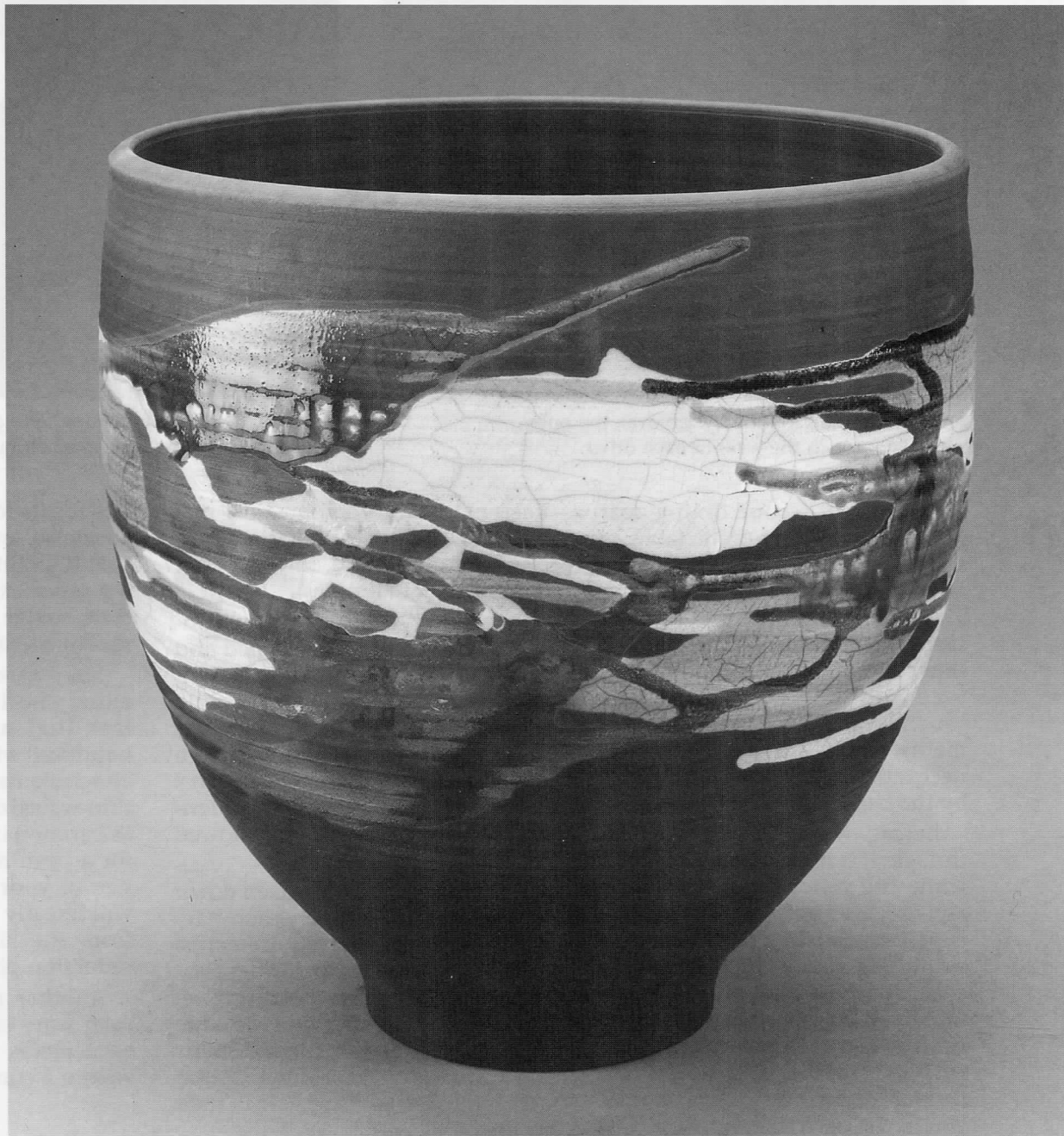


Raku Basics

by Steven Branfman



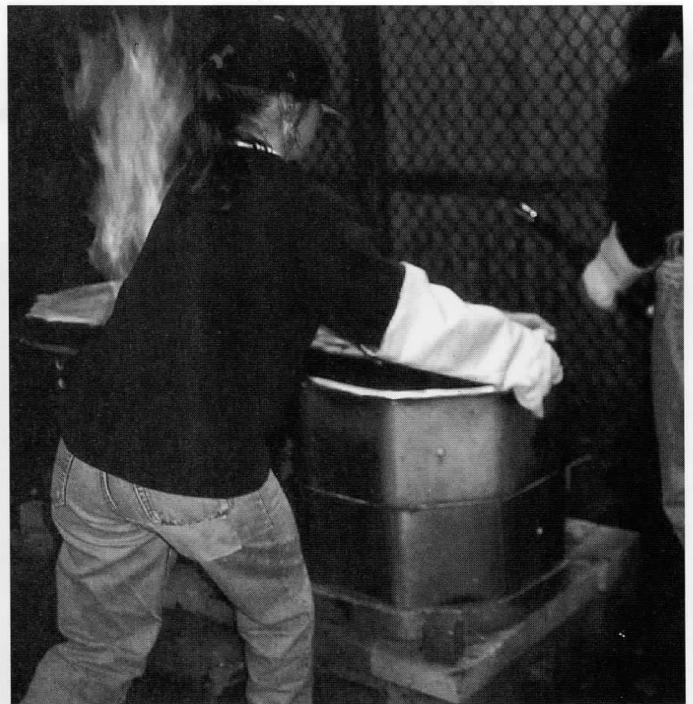
Raku bowl, 13 inches in height, wheel-thrown stoneware, with poured glazes, by Steven Branfman, Needham Heights, Massachusetts.

So you've observed the raku process and it looks intriguing, interesting, exciting. "Yes, it's something I would like to try," you say to yourself. But, "Where do I start? What do I need? What do I do?" Other than a vague idea about what goes on, you don't know squat! Well, I've got news for you. Even though I don't know what kind of experience you have, I know you can do raku. Read on and just try to prove me wrong.

Raku is a technique loaded with process and excitement. For the first-time observer or participant, though, the flurry of activity,



Arranged in the kiln for easy removal, the pots should not touch the walls or each other.



Once the glazes have matured, the gas is turned off, then the kiln lid is placed in a safe, noncombustible area.

apparent split-second timing, roaring flames and unpredictable results combine for an intimidating and often humbling experience. That's certainly the way I felt after seeing a raku firing for the first time. The fact is, though, that raku, even with all its nuances, personal touches and technical requirements, can be stripped to the bare necessities and handled confidently by the beginner.

Before we begin in earnest, though, it is important to note that while the process can be learned and executed by beginners without expert supervision, there is no substitute for hands-on raku experience. It would be best if the first firing you do on your own is supervised by a knowledgeable individual who is capable of guiding you through the process, who can lead you in the right direction and who can be there to answer questions you didn't even know you had.

Raku firing, in fact the use of any type of kiln, is a potentially dangerous activity. When working with fire and heat, common sense must rule. Wear eye protection, long sleeves and long pants. Purchase a pair of Kevlar gloves with at least a 14-inch cuff. Have an adequate source of water ready and waiting.

Keep extraneous combustible materials away from the kiln site. Exercise care and balance, and keep your composure at all times.

In its barest incarnation, contemporary raku (as developed and practiced in the United States) involves the rapid firing and cooling of ware. After the glazed surface has matured, the ware is removed from the kiln with tongs then placed in a container of combustible materials, where it is covered and allowed to smoke for some time.

The process can be broken down into several procedures, each having its own technical requirements: pottery making, bisque firing, glazing, glaze firing and postfiring reduction. Keeping in mind the basic nature of this article, I'll be discussing only those technical aspects that are required for successful raku firing.

Pottery Making/Bisque Firing

Use a clay that can withstand rapid heating and cooling. Most stoneware clay bodies are suitable. Some people prefer to work with heavily grogged bodies, but it is a common misconception that a raku clay has to be loaded with grog to the point of unworkability. If you currently have a clay body that you

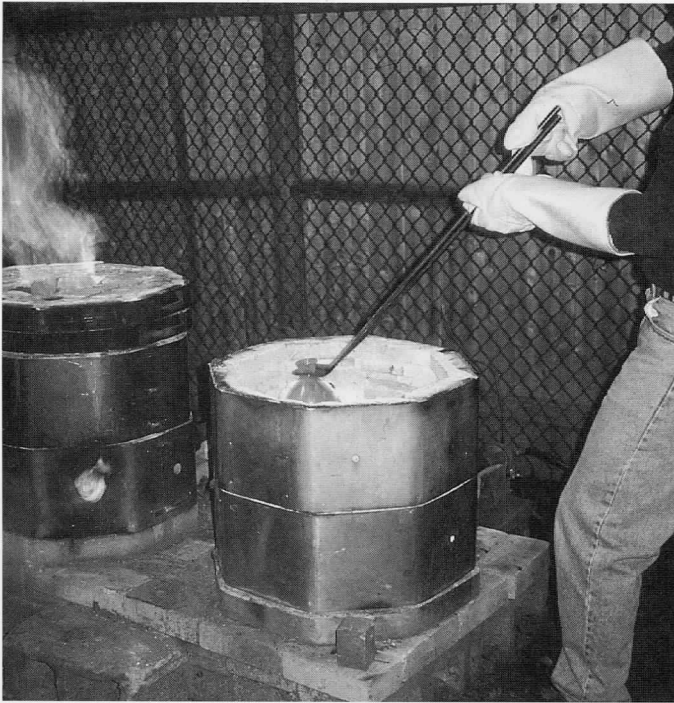
like for its forming characteristics, go ahead and try it. If you think that it might be too dense to allow for rapid expansion and contraction, wedge in about 10% fine to medium grog.

Your ware must be well made—either wheel thrown with walls and feet that are not too thin, or handbuilt with careful attention to attachments. Work that is delicate, thin-walled or has appendages (such as handles) is not a likely candidate for a beginner's success. Keep the size of your ware modest, as this will greatly simplify its removal from the kiln for the postfiring-reduction phase.

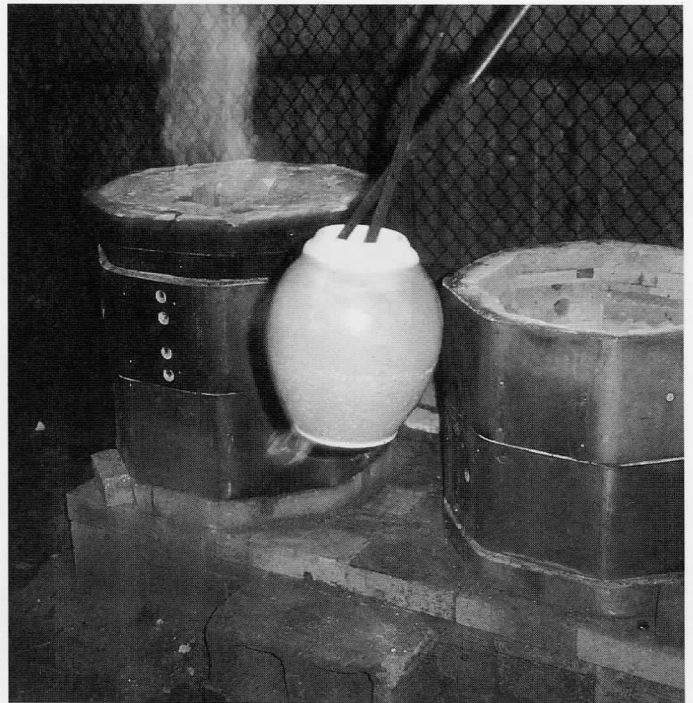
Another misconception is that raku ware is not bisque fired. All raku pieces should be bisqued to within a cone of Cone 08.

Glazing

There are two important items to be aware of when glazing ware for raku firing. First, application (thickness of the glaze, combinations of glaze, etc.) will have a direct bearing on the appearance of the finished piece. There is no right or wrong way, only what you like. Second, while raku is a low-temperature firing technique, there is no one cone that is the universal



Pots of all shapes can be successfully removed from the kiln by lifting carefully with tongs.



A glowing-hot vase is quickly carried (with tongs) to the postfiring reduction container.

magic temperature. Appropriate raku temperatures range from about Cone 020 to Cone 05.

You must make sure, however, that the palette of glazes you select will all mature at the same temperature. If you come across a recipe that is simply labeled raku, you will have to determine whether its maturing temperature is within the range of your selected palette of glazes. If you use glazes that don't

mature at the same temperature, you will have a kiln load of simultaneously underfired, mature and overfired glazes.

Raku glaze recipes are available from a variety of sources: books, magazines and friends. To really simplify things, you can also buy premixed raku glazes from most ceramics suppliers.

If you want to try mixing your own, the following recipes are reli-

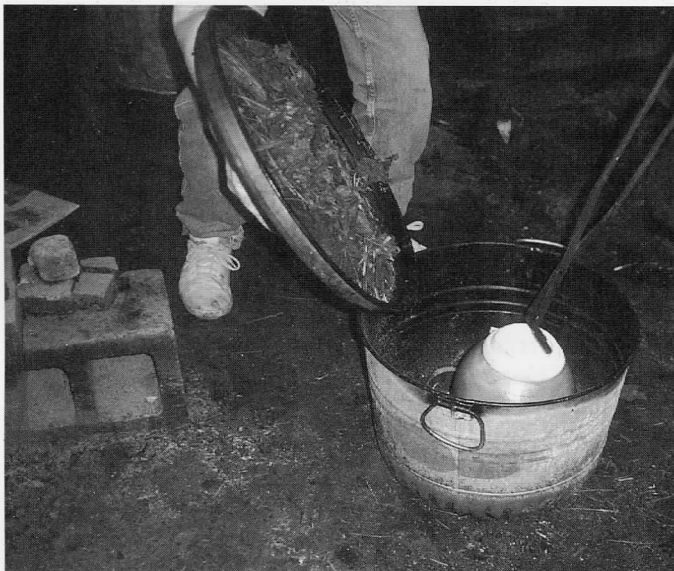
able and offer good bases for experimentation:

**Roger's White Glaze
(Cone 08)**

Gerstley Borate	60 %
Spodumene	35
Tennessee Ball Clay	5
	100 %

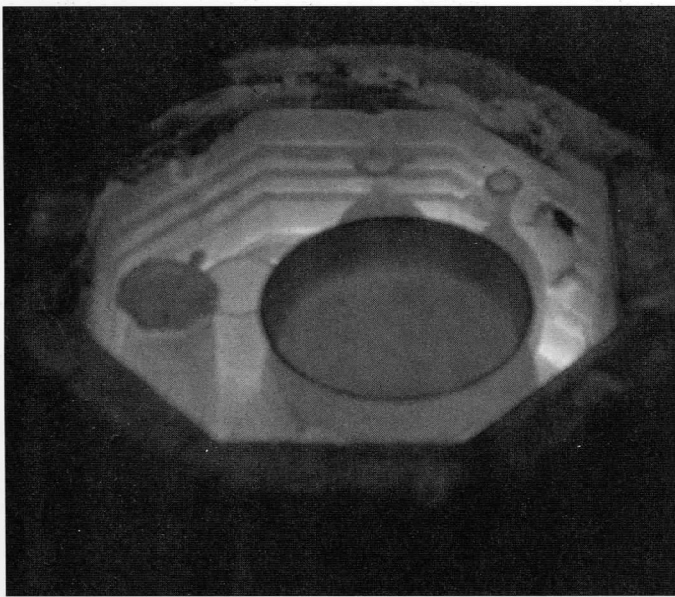
This is actually a clear (not white) base recipe. It can be used as is or you can add colorants on an experimental basis. Add 5% tin oxide for a white glaze.

The pot is nestled in a container partly filled with combustible materials; often, more are thrown in to cover the pot.

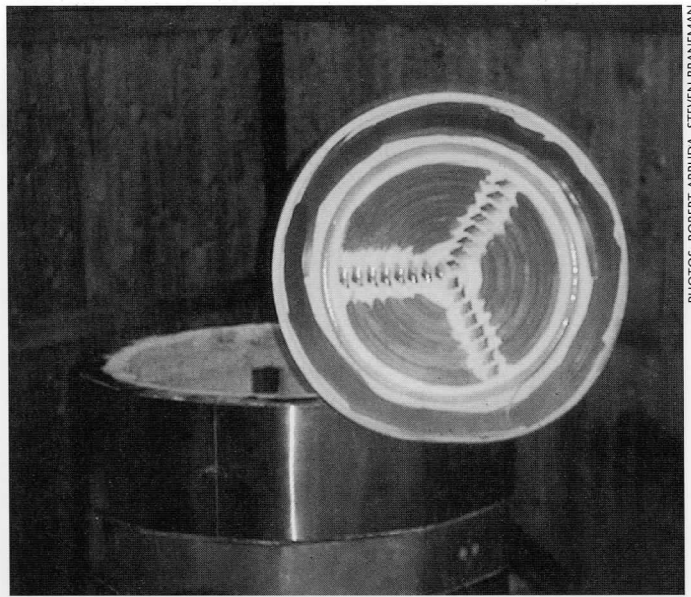


If a suitable reduction container isn't available, use your imagination. Here, a platter was placed on the ground, covered with combustibles, then sealed with a trash-can lid.





The glazes are mature when you see smooth, glasslike, highly reflective surfaces.



This platter is history—as it was lifted from the kiln, it slipped from the tongs and crashed to the ground.

PHOTOS: ROBERT ARRUDA, STEVEN BRANFMAN

Del Favero Luster Glaze (Cone 08)

Gerstley Borate	80 %
Cornwall Stone	20
	100 %
Add: Copper Carbonate	2 %

This is a turquoise glaze that turns a rich copper luster in postfiring reduction. A substitution of 3%–6% vanadium stain for the copper carbonate will result in a yellow crackle.

Firing Technique

At this point, I am assuming that you have some knowledge and experience in stacking and firing kilns. If you have none, then please don't attempt a firing on your own with only this information as your guide.

Before you can begin the raku firing process, you must arrange for the use of a suitable kiln and postfiring-reduction area. Most types of kilns can be used for raku (including electric), with each type presenting its own set of procedures and personality. The two most common types are propane-fired, softbrick, top loaders (the easiest to build) and refractory-fiber-lined, expanded-metal cylinders.

To begin firing, stack your ware in a cold kiln, leaving ample space around each piece to facilitate removal. Light the burner and heat the kiln slowly. It is almost impossible to fire too slowly, while firing too quickly is one of the major reasons for breakage, especially for

beginners. Once you see an orange glow in the chamber, it is safe to turn the burner up full blast. As you fire, the atmosphere in the kiln should be as clear as possible with little to no smoke or flames coming from the flue, peepholes or burner port. When you do see smoke or flames, that indicates a reducing atmosphere. This will slow down the rise in temperature and affect the development of glazes.

It will take some experience to be able to fully and confidently control the atmosphere and temperature rise. Take a conservative approach throughout the learning process. A single firing in a cold kiln of 3 cubic feet should take 1 to 2 hours. As the kiln and the pots heat up, the glazes will go through several stages. Observe them carefully, as there is often a fine line between underfired, mature and overfired ware. When you see a smooth, glasslike, highly reflective surface, the pot is ready to be removed from the kiln.

Postfiring Reduction

Postfiring reduction, or smoking, is what distinguishes raku from other types of firing. Once the glaze reaches maturity, the kiln is turned off, then the ware is removed and placed in a metal container filled with an array of combustible materials (e.g., newspaper, sawdust, leaves). Generally, metal tongs and

Kevlar gloves are used to remove the ware, allowing you to keep a safe distance from the hot pots and the kiln chamber. When reaching into the kiln, try to be as efficient as possible so that it isn't open any longer than necessary. Grab the pot firmly yet gently, then move it as quickly as possible to the reduction chamber. The combustibles will ignite immediately, so be prepared for flames. Cover the container to create a smoke-filled atmosphere around the pot.

During this period of smoking, the glaze and clay react with the carbon in the atmosphere, resulting in the unique qualities associated with raku. Be patient! Give the ware at least 15 minutes to smoke before removing it. The pot will still be hot then, so be careful. Don't set it down near any other combustible material, and don't burn yourself by carelessly touching it barehanded. Many people force-cool their ware in water at this point, but it is not necessary. Let the pot cool slowly, then scrub the surface to clean off any ash and soot residue, exposing the lustrous colors of reduced glaze and somber hues of smoked clay.

Potter/teacher Steven Branfman is the founder of the Potters Shop and School, a workshop and teaching facility in Needham, Massachusetts. He is also the author of *Raku; A Practical Approach*, published by Chilton Books in 1991.