



## CUPELS, SCORIFIERS AND CRUCIBLES

During the gold and silver rushes of the 19<sup>th</sup> century, many prospectors thought that striking it rich would be easy. They imagined gold nuggets lying on the ground, and dreamt of veins of gold shining in the exposed rock. They discovered instead that mining was hard work. Long hours of digging, blasting and clearing mineshafts or shoveling heavy sand into sluice boxes could result in nothing at all. The 10% of miners who did strike it rich usually had prior mining experience or the geological knowledge to know where to look.

For a prospector, one of the most important things to know is the amount of precious metal in the dirt dug from a mine or in the sand shoveled from an icy stream. The person who determines that is called an “assayer.” He takes a sample of the dirt or sand, crushes it, mixes it with lead, and packs it into a cupel, a cup-sized container. The cupel is then placed into a furnace and subjected to extremely high heat. The lead and dirt is burned away or absorbed into the cupel, leaving a gold “button” as the residue. Weighing the cupel before and after the firing tells the assayer the amount of precious metal in the ore. This entire process is called cupellation.

The most common cupel was made of bone ash. This is a white material produced when bones are subjected to very high temperatures and then crushed into a powder. Bone ash cupels were easy to make, very effective and easily replaced. When larger amounts of ore needed to be tested, a scorifier was used. A scorifier is similar to a cupel, but slightly larger. The “button” remaining after cupellation is more pure because the scorifier absorbs more of the lead.

Today, crucibles, which are normally made of fired clay and glazed with enamel, have replaced cupels and scorifiers. Crucibles vary in size, depending upon the process for which they are used. Generally, any container used in a reduction process (heating to extremely high temperatures) is referred to as a crucible, regardless of its size or the compounds involved.