

Making Paint from Minerals

Paint is a mixture of microscopic grains of pigment that are suspended in a liquid vehicle. A *pigment* is an insoluble colorant, in contrast to a dye in which the colorant is dissolved. The *vehicle* in which the pigment is dispersed for watercolors is a mixture of three materials with specific purposes: 1) *Binder* adheres the pigment to the page. (Gum arabic is a commonly used watercolor binder. It is a natural, water-soluble gum that is produced by acacia trees of the Middle East and northern Africa to seal wounds in the bark. Starches and animal glues also are used); 2) *Plasticizer*, such as glycerin, helps to soften the binder and help it to redissolve; and 3) *Humectant*, such as honey or corn syrup, helps the paint retain moisture.

In this laboratory session you will investigate the properties that determine whether or not a mineral is well suited for use as a pigment in a primitive water-based paint, and then make a palette of paints using minerals as pigments and organic, non-toxic materials as a plasticizer and humectant.

Mineral Properties and Pigments

Examine the five mineral samples provided (albite, kaolinite, calcite 1, calcite 2, and hematite), and document their properties in the table below.

	Albite	Kaolinite	Calcite 1	Calcite 2	Hematite
Color					
Streak					
Luster					
Cleavage					
Hardness					
Solubility					

One mineral at a time, take a few fragments of each mineral and crush them to powder with a mortar and pestle. After crushing each mineral, document how difficult it was to crush (difficult, moderate, easy), and the color of the powder. Discard the crushed mineral.

	Albite	Kaolinite	Calcite 1	Calcite 2	Hematite
Difficulty to Crush					
Color of Powder					

Which mineral property best correlates with the difficulty to crush the mineral?

Which mineral property best correlates color of the mineral powder?

What are the three ideal properties for a pigment for a water-based paint?

Which of the five minerals would make the best white pigment? Explain.

Follow the instructions provided by your instructor to make a palette of mineral-based gouache paints. Take home samples of your paints.

Before next class, research a culture that uses/used a limited color palette such as the one that you created from common minerals (red, black, yellow, green, and white) (e.g., cave paintings, Australian aborigines, native Americans, African tribes). Create a painting in the style of your selected culture on an appropriate piece of earth material (stone, wood, tile, etc).

Write a one-page accompanying description of the artifact that you created. This “curation record” (see attached blank form) will be posted beside your artifact in a gallery-like showing during the next class. This write-up should serve to educate viewers regarding the artwork that you created, just as plaques in authentic museums. (See example plaque of a pair of gold earflares from Peru that are displayed at the Metropolitan Museum of Art.) Your write-up must include the following: Where are the people/culture that you studied located? At approximately what date did they create similar artwork? What is the climate of the region? What is the general physiography (mountainous, volcanic, plains, etc) of the region? Where do the people obtain their pigments? Do the colors/paints have symbolic/spiritual meaning? What use/meaning would your homemade artifact have in this culture? Mark the location of the people/culture that you studied on the blank world map that is attached.

Pair of Earflares

Peru; Moche

3rd–7th century

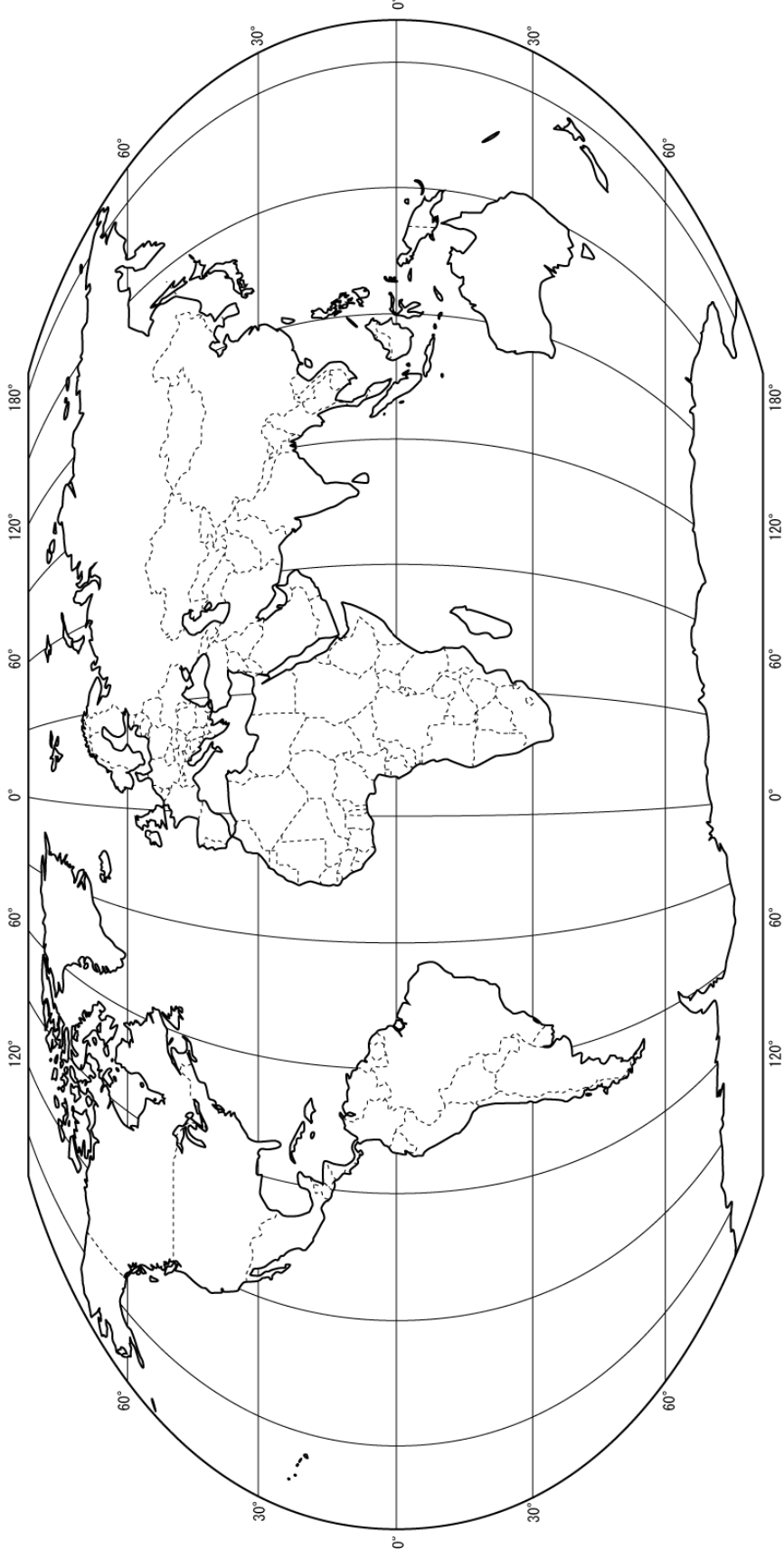
Hammered gold, turquoise,
sodalite, and shell inlay

Gift and Bequest of Alice K. Bache, 1966, 1977
66.196.40, .41

Large circular ear ornaments were popular personal adornments of prominent ancient Peruvian lords and a symbol of their status and wealth. The weight of the frontal was counterbalanced by a long tubular shaft worn in the distended hole in the earlobe. Particularly impressive are those earflares with colorful mosaics. On this pair, bird-headed (or masked) winged runners, worked in turquoise, sodalite, and spondylus shell, hold bags in their outstretched hands. Their eyes and beaks are sheathed in gold. They may be depictions of mythological messengers.

Be prepared to answer questions regarding your artwork, and its origin during a discussion in class.

Location of Artifact



CURATION RECORD

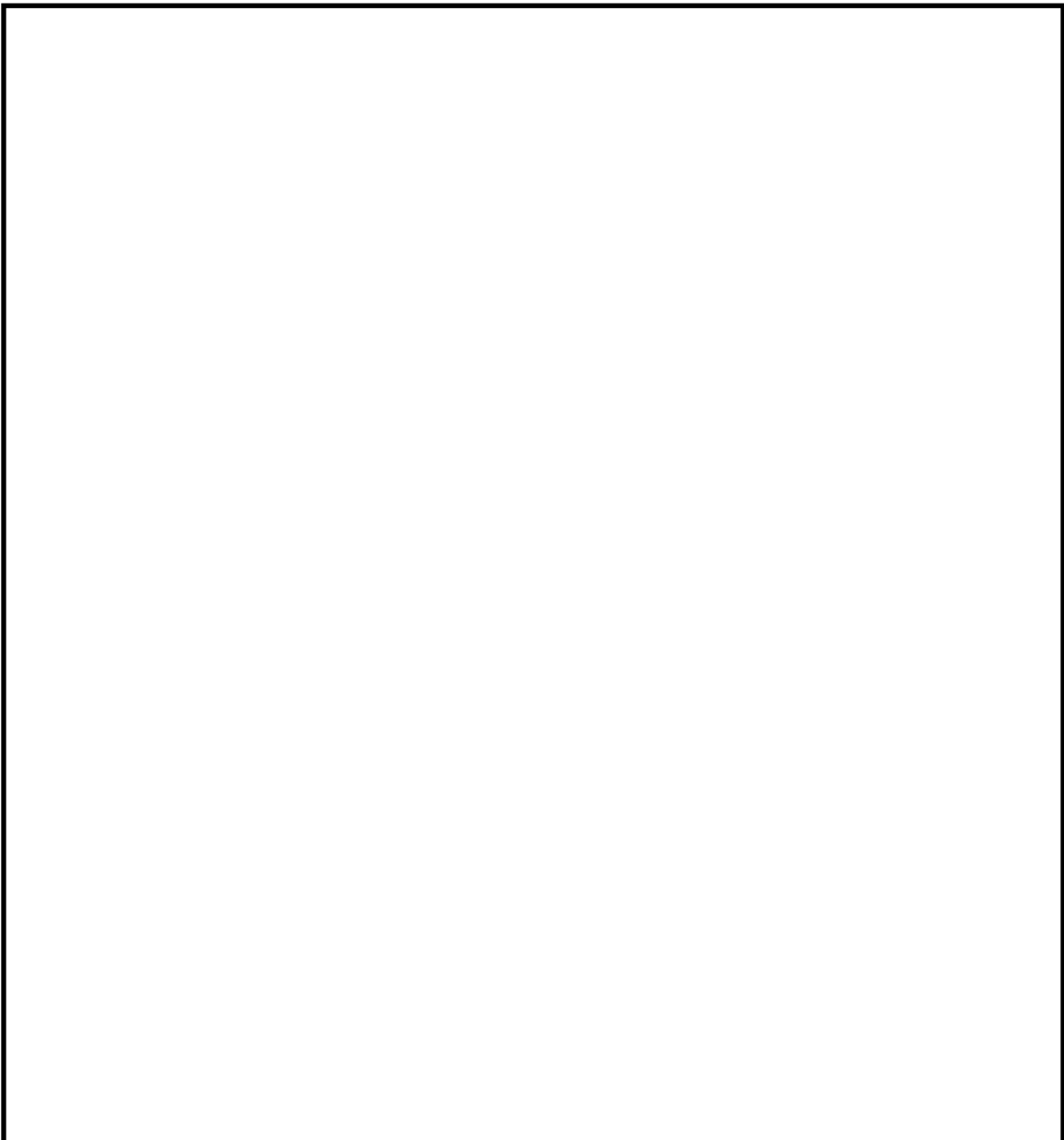
Curated By: _____

Object Name: _____

Region of Origin: _____

Age of Artifact: _____

Pigments Used: _____

A large, empty rectangular box with a black border, occupying the lower half of the page. It is intended for additional notes, observations, or a detailed description of the artifact.