

55. HYDROFLUORIC ACID IN BEADWORK RESTORATION: A DEFINITE NO-NO, by Judith A. Logan and Tom Stone (1994, 24:10-12)

In her article "Restoring a Nineteenth-Century Yoruba Headdress: The Case of the Missing Trade Beads" which appeared in the January/February 1994 issue of *Piecework* magazine (pp. 75-77), Mary Jo Meade describes and advocates the use of hydrofluoric acid to alter the color and size of small glass beads for use in restoring ethnographic beadwork. This is a process that may be hazardous to both the user and the object being restored.

Although the article does warn the reader to not try and duplicate the process at home, it cannot be overstated that hydrofluoric acid is extremely dangerous. It must be used in a fumehood, in a laboratory that is fully equipped with showers, the proper acid spill kits, and emergency burn treatment kits. The vapors will penetrate skin and dissolve bone; this can be fatal, or at least lead to a very painful treatment that may involve amputation. Brief exposures to high levels of vapors may cause severe respiratory damage and contact with the eyes may cause blindness. Burns from contact with the vapors may not be felt immediately, and vapors can be absorbed by clothing and held against the skin for several hours before any burns are noticed. Leather that has absorbed the vapors cannot be decontaminated and must be destroyed. Readers should refer to the CRC Press *Handbook of Laboratory Safety*, 3rd edition, A. Keith Furr, editor, 1989, pp. 295-299, for a description of the effect of hydrofluoric acid on human tissue, handling precautions, and treatment of exposure to the acid.

The author does not describe the type of washing neutralization that was used to stop the action of the acid on the beads. Since the beads were subsequently coated with a "commercial glass paint," it is possible that residues of the acid have been sealed in under the paint. What will be the long-term effect on the beads treated this way, and is it possible that they could affect the rest of the headdress, or people who subsequently handle it? I am thinking of the huge surface area that had to be thoroughly cleaned of acid, including the increase in area due to etching of the glass and the difficulty of washing acid residues from the bead perforations.

The use of hydrofluoric acid and the potential long-term residual effect it may have on the beads is one problem. Another is the ethical approach in the manner of the replacement of the beads. There is no evidence of any attempt to differentiate the areas of replacement from the original material. The author states that the work on the headdress was a "restoration" and chose to match the beads as closely as possible with the original and, from an

aesthetic point of view, this is understandable. However, it would have been relatively easy to use a very different material to restring the beads so as to provide some sort of evidence that a large part of the headdress had been rebuilt. On the contrary, the author went to the trouble and expense of having "30,000 yards of the thread on which the beads were restrung... custom-milled in North Carolina to match a fragment of the original." Even in the case of a "restoration" there is no need for this sort of exact replication of material which has the potential to mislead anyone studying the headdress in future.

56. THE DETERIORATION OF GLASS BEADS ON ETHNOGRAPHIC OBJECTS, by Sandra Loughheed and Jane Shaw (1985, 7:10-12)

Introduction

Conservators and scientists at the Canadian Conservation Institute, Ottawa, Ontario, have been investigating the deterioration of glass trade beads on Canadian ethnographic objects. These beads are on non-archaeological objects which have been stored in museums for varying amounts of time. Most of the beads examined are suffering from some form of glass disease.

Symptoms of Glass Disease

"Glass disease," a term loosely used to describe deteriorating glass, has a variety of causes and many different symptoms. Often when examining an object only one of the many colors of beads on it will be deteriorating while others remain unaffected. This phenomenon has been observed on a variety of objects and with many different colors of beads. To date, no chemical correlation has been observed between a specific color of glass and its stability. The deterioration relates to the poor quality of a particular batch of glass, not the colorant.

The most obvious symptoms of glass deterioration are cracked and broken beads. The more subtle symptoms include:

- 1) A crusty deposit on the glass bead or threading material (usually an alkaline carbonate).
- 2) A fine network of cracks, known as "crizzling," over the entire surface of the bead and only detected under a microscope. (Cracking of this sort occurs on the surface of the glass due to a structurally weak alkali-leached layer.)