

## **Introduction**

Coins and medals are popular items to collect. Often there are family histories and anecdotes connected to these objects. Because of their small size, coins and medals are easy to store without requiring too much space.

Traditionally, coins have been made from three metals and their alloys: gold, silver and copper. The alloys vary: silver or copper in gold coins; copper in silver ones; and tin or zinc in copper coins. This last group is often referred to as "bronzes." In recent years, additional metals — iron, aluminum and copper-nickel alloys — have been used in coin production.

## **Causes of Damage**

All coins and medals (except relatively pure gold) are likely to show some deterioration over time, especially if stored in damp or polluted conditions. Dampness is especially damaging for iron and for coins that have been buried because it encourages corrosion. Sometimes, the corrosion products on the metal surface will contain salts absorbed from the soil that allow corrosion of any remaining metal to continue if moisture is present.

The accumulation of chloride ions on archaeological coins made of copper or its alloys can result in a condition called "bronze disease." Bright powdery green spots appear on the surface. If this corrosion process is not corrected, it can destroy the coin. Such corrosion problems should be treated by a conservator.

Pollution also damages coins and medals. Many materials used in manufacturing everyday objects, including furniture, emit organic acids into the air. These organic acids cause zinc and lead to corrode, resulting in a covering of white crystals. This corrosion is difficult to stop unless the source of the organic acids is removed.

Copper and silver will tarnish in reaction with hydrogen sulphide, a pollutant given off by decaying animal matter (which is naturally present in the atmosphere). However, some paints, textiles and other household materials also emit some sulphur-containing organic compounds and these also cause copper and silver to tarnish.

Light can damage the ribbons that are attached to medals. Silk is especially prone to fading.

## **Handling and Storage**

It is best to handle coins and medals by their edges and, if possible, to wear cotton or polyethylene gloves (not latex). Gloves protect the metal from the corrosive oils and acids found on our hands. This is particularly important with proof coins, which have a mirror-like surface, because any mark on them can disfigure the coin and lessen its value.

Coins are best stored individually in coin holders called "flips" made of Mylar, a stable plastic. These holders have two pockets: one for the coin and one that can hold a piece of paper where you can write information about the coin. They come in a variety of sizes.

Somewhat more commonly available are cardboard holders lined with Mylar. These have a circle cut out in the middle that is covered with Mylar. The coin is placed on the Mylar "window" and the other half of the cardboard holder is folded over and stapled on three sides. Both sides of the coin are then visible through the Mylar. Be careful to flatten the staples against the card so that they do not scratch other coins they might come into contact with. Although the cardboard is not acid-free, it does not come into contact with the coin's surface. For the majority of coins, this kind of holder is fine.

Avoid flips and other kinds of holders made of polyvinyl chloride (PVC) because they can lead to corrosion of coins over the long term. Coin albums are not recommended because it can be awkward to remove coins from the pockets (they are usually open at the top, increasing the likelihood of coins slipping out when the album is open).

Believe it or not, one of the easiest ways to store coins or medals is in individual polyethylene zip-lock bags. These are inexpensive and available at your grocery store. They protect coins or medals from scratches and from sulphur-containing compounds in the air that can cause tarnish. Many medals come with their own presentation cases. These are an important part of the object's history and value and, although the medal should not be stored in the presentation box, they should be kept together. Medals can also be stored in Mylar flips or holders.

Wooden coin cabinets (especially oak) are not recommended for storing either coins or medals. They can emit acidic vapours that will cause corrosion. Instead, use metal storage cabinets (preferably with a powder coating) or containers made of either polyethylene or polystyrene.

### **Cleaning and Repair**

Most numismatists advise against cleaning coins. They often have patinas, toning and tarnish that can develop on the surface of a coin over time. Certain kinds of light tarnishing, called toning, are considered part of a coin's value. In the case of proof coins, it is very difficult to do anything that will not hurt the coin.

Removing surface dirt from a coin is about the only cleaning that should be done. When handling or cleaning coins, you should wear cotton or polyethylene gloves (not latex). To remove surface dirt, wash the coin in lukewarm distilled water with a mild liquid soap. Do not scrub the surface. To rinse, use a cotton swab dipped in distilled water. Regular tap water contains chlorine, which can leave chloride on the surface of the coin that eventually leads to corrosion. After cleaning, use another cotton swab and acetone to remove any grease (this is called degreasing) that may remain on the surface. Because of its toxicity, acetone should only be used in a well-ventilated area. Allow coins to air dry on a paper towel.

Coin dips or metal cleaners (cloths, liquids or pastes) are not recommended. The dips contain acids that can cause corrosion if any remains on the surface. Most metal cleaners contain abrasives that can scratch the coin.

The approach to medals is slightly different. It is desirable to maintain the bright surfaces of silver medals, but care needs to be taken with the ribbons that are attached to them. It is advisable to wear cotton or polyethylene gloves (not latex) when handling medals. For surface dirt, use a cotton swab to apply a mild liquid soap to the surface. Rub gently to remove dirt and rinse well in distilled water. Let the medal air dry on a paper towel. Silver medals with light tarnish and bronze medals can be cleaned by rubbing a piece of soft cloth gently and evenly over the surface. After cleaning, degrease the surface of the medal using a cotton swab and acetone. Let the medal air dry on a paper towel.

Lightly tarnished silver medals can also be cleaned with a dip cleaner. First remove the ribbon from the medal and then apply the dip solution to the surface of the medal with a cotton swab (do not immerse the medal in the dip). Rinse — first in running tap water and then in distilled water. Degrease the surface using another cotton swab and acetone. Allow the medal to air dry on a paper towel.