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The photographs that follow were not previously included

ELECTROLYTIC CLEANING OF PEWTER

INTRODUCTION

Dr. Ron Homer's article inspired me to try electrolytic cleaning [1]. I thought it might interest others to learn what happened to me by sharing my views and experience of the results so far. Naturally, I do not encourage people to try this and can accept no responsibility for what happens to them. This article simply recounts my experiences.

THE EQUIPMENT

12-volt caravan or emergency lighting battery, which can be recharged more often and better than a car battery*. Crocodile clips, 27amp wire and battery connections. Welded stainless steel container. Rubber mat for the pewter to stand on. Electrolyte: a tablespoon of ordinary washing soda to each pint of water.

* I know some people use battery chargers plugged in to the mains on low ampage. As I have burnt out two, I am reluctant to do so again. My first container was a welded steel bucket but sometimes our local supermarket sells off kitchenware,

1. Framework made from a fine woven stainless steel mesh to follow the contours of a bowl I was cleaning.

but sometimes our local supermarket sells off kitchenware, and has very inexpensive steel containers. Finding the size you need may prove difficult, as they need to be large enough to hold the pewter and negative clip without them letting them touch the sides.

THE PROCESS

Put the pewter in the container on the mat ensuring it does not touch the sides. Cover with electrolyte solution to at least 1" above the pewter. Attach the negative clip to the pewter, and the positive to the container side. Electrolysis begins almost instantly, first the surface bubbles at the negative terminal side, and then the liquid swirls around the sides of the container (dirtily) as it removes the oxide, and may froth up by half an inch or so. Usually, it removes most oxide in an hour or so. Disconnect the terminals, put the pewter in a bowl of water and rub the oxide off with a kitchen sponge. The piece usually needs more polishing to remove any fine scratches from the sponge and to achieve a finish that one likes. Typically, it takes about 2½ hours for a quart mug…from dirty to clean!

I use plastic garden trugs, and dustbin lids to clean plates and larger sadware. Wooden supports keep a sheet of steel mesh about 1" above the plate. Put them around the outer edge of the plate so the steel mesh does not touch the plate. Steel sieve suppliers to the food processing trades are a good source of mesh, and an kind one will cut a square to the size you need. I use an angle grinder to cut it to the shape and size wanted. Steel mesh suspended in a mug or measure like a rolled tube will clean the interior.

- Battery chargers if used by me in place of a battery are easily destroyed, containers if steel should be welded not soldered - or will fall apart.
- The battery discharges quickly and needs regular recharging. To avoid the battery running too low to recharge it at all, I have started to recharge it after cleaning two items.
- This process requires good equipment, which can be expensive. For example, dustbin lids and trugs only go up to about 18" diameter, which limits the largest charger that can be cleaned to about 16½". Larger sizes of plastic lid type containers are difficult and often costly to find (think small ponds.) A steel perforated disc to use above such an item can be costly. If a battery is used, it needs to be a safety light or caravan battery as car batteries do not take to constant recharging and hence is a more expensive battery. The positive crocodile clip corrodes quickly and the wire to it has on occasion burnt out. Taller

THE ADVANTAGES

- Cleans within one or two hours what would take many times longer to do by hand.
- Cleans without the deeper scratching that often comes from using wire wool, abrasive papers etc.
- Cleans the oxide out of many marks without any damage and often makes them clearer.

CONSIDERATIONS

- Risk of Explosion – electrolysis liberates hydrogen; the invisible gas hovers above the work area unless cleared away and ignites easily. For example, a spark sufficient to cause ignition can come from removing the positive electrode at the end of the process. The amount of gas dictates the effect of the explosion. I have had three explosions, one amusing, two impressive and worrying, but fortunately no serious damage other than ringing ears for 48 hours, and have moved the process outside. However, outside on a still day the hydrogen still needs dispersing – a leaf blower does this for me in a few seconds. (My third and most impressive explosion was outside.)
- The process can take up a larger area of workspace than most other methods.
- The electrolyte solution can become very hot when using a fully charged battery for the first time.
- Clean flagons with lids by inverting the piece so the lid goes into a glass jar filled with electrolyte. Be aware that a piece can clean differently and show different colour/patina on the two body halves, which final polishing can almost eliminate.
- While this produces clean pewter, to many it is more in the American taste, and you have to ask yourself how clean do you like your pewter?

Sadly, I recently lost the touchmark in the centre of the base of a 9" bowl with a heavily oxidised interior. Before cleaning it stood out really well as a sailing ship over London and *ARCH** to the left vertical. After removing the oxide, I cleaned it well, and the ship merged with the background! Even using stove black did not bring it back clearly. One correspondent recommended a permanent marker, taking off the surplus with a little white spirit on a

and the wire to it has on occasion burnt out. Taller steel containers can be expensive and flagons may still be too tall for them.

- This process may not remove all oxide - given three attempts some areas simply defeat it. I have found pewter made by *James Yates* exceptionally awkward and reluctant to be cleaned, as are heavily oxidised early John Whitaker Yorkshire plates.
- Oxide removal can reveal previously unknown repairs, cracks and other damage. Recently, an early Henry Joseph bowl that looked simply well-oxided had a crack in the rim. A Galbraith pint handle that was a little bumpy looked far worse when cleaned. A Chamberlain flagon revealed much pitting like acne. Scratches hidden under oxide on large areas of an early London quart suddenly revealed how a former owner gave up after hours of using wet and dry. How I wished he had used 2000 wet and dry paper not 300!
- The process is reversible. I have swapped terminals around and the result for me was a fine all over even coating of darker pewter patina, although some of it did polish off later.

fine brush. Figure 1 shows the framework I made with a fine woven stainless steel mesh to follow the contours of that bowl, and which I stood 1" away from the bowl in a plastic trug. Then I followed the same method as I set out for cleaning plates.

I fully appreciate that other members will have done this for a long time, and they will understand it far better than I do and may have words of advice to offer. I welcome all such comment to my email address, which is: johnstephenbank@btinternet.com

REFERENCE

1. RF Homer 'Electrolytic cleaning of Pewter' *JPS*, Spring 1993.

- The battery drains quickly and needs regular recharging. I have started to recharge after cleaning two items. The risk is that the battery runs too low to recharge at all.

Extra info ***– the battery used thus can on occasion appear to stop working altogether. The manager of the car parts salesroom I bought it from (and took it back to) explained it to me thus –***
There is floating surplus energy within the battery that needs bleeding off as it is preventing the battery functioning. You should use a small bulb hold it between finger and thumb and taking a metal rule, or similar, place the rule on the battery positive and the bulb on the negative and then bring the rule to the bronzed area of the bulb above your thumb – the battery lights up after about 30 seconds the surplus energy has been burnt off and the battery will work –
Oh yes… …until I tried it in desperation and found it works –
Tried the theory out on 2 electricians, engineers ,a Cambridge University electronics graduate and …all look incredulous…never heard of it (that's polite!)….
It works for me. (and - no - your thumb does not get a burn…)

Comment after Publication –

Editorial Note: John is using a very strong solution of washing soda as his electrolyte. Problems with burnt-out battery chargers and wires, over-heating electrolyte and hydrogen explosions are unlikely to occur with a much weaker electrolyte, and the oxide-removal process will not be significantly slower. In Ron Homer's original article, he recommended starting with plain water and adding a small quantity of concentrated soda solution until a current of 2-3 amps is flowing, and this is good advice.

A stainless steel big (kitchen soup?) pan showing a piece of rubber car mat placed in the bottom.

Showing the positive terminal clip attached to the pan handle and the negative clip to the piece to be cleaned with the measure stood on the rubber mat before the addition of the water or electrolyte solution (water they say will do it alone without washing soda).

Cleaning underway (almost – just the leads to be connected to the battery). The battery is put into a plastic carrying box as battery acid splashes about. yes it might destroy the container but it saves your clothes!

You can see the process progressing in the bubbling in the bucket. The grid across the top is shown below with an attachment to go down into the measure to be cleaned. This 'probe' must not touch the base of the measure or the sides – some use say a stainless steel fork. hung there.

This shows the probe made out of rolled stainless wire mesh.

As you can see the 'froth' on the top – I used perhaps too much washing soda which releases hydrogen which hovers over the top of the bucket.

To clear the hydrogen I used a leaf blower – carefully.

This shows a similar set up for cleaning plates. The negative is attached to the plate and the positive to a stainless mesh disc placed free of the plate and above it in the water. This trying to clean a 20" plate. The black tub is a man made garden pool liner.

After the cleaning there can be a lot of oxide remaining in the container. If this is dried and ground down in a mortar it can be made use of in other repairs as it is simply pewter (or pewter oxide) dust.

The purpose of this photo is to show some of the commonly found kit that can be used. A flat garden or plasterers trug (yellow) can clean plates up to 16" in the largest size I found. Rubber gloves – well electricity and some heat! Stainless steel bucket, plastic water jug, kitchen pad (keep it softer rather than hard)

Three discs for cleaning different sizes of plates. 2 pieces of mesh shaped to clean the inside of bowls. I stainless steel grill or oven pan with rubber mat piece in bottom as a container to clean smaller plates

A home made wire mesh framework to stand in the bowl and over it whilst not touching it I attached the positive to the tail and the negative to the bowl.

<u>Two photos above and one to the left show the effect on cleaning a half gallon bulbous measure.</u>The photo immediately above shows how it looks as it emerges after the cleaning process. Wiping that and sometimes using a little very fine (000) steel wire wool or paper will polish it up to the picture to the left next to this copy. A cleaner item but the oxide that was removed from the lower casting line level with the ball handle terminal revealed small pin holes which were unknown about before.

<u>Below are two photos of a later Joseph Morgan Victorian</u> lidded trophy. Hours and hours of wet and dry work had partly cleaned the engraving to the front. About 1 ½ hours took the piece from the condition at left to the condition at right below.
Really though it needs thinking about as many might prefer their pewter left as it was.