

INSTRUCTIONS FOR SILVERING GLASS SURFACES.

Reducing Solution.

One good feature of this process is that a good quantity of reducing solution can be made, and is always ready for us, improving with age, and it is always best to prepare it a week at least before using.

1680 grains rock candy or white sugar,
80 grains nitric acid,
6-1/2 ounces alcohol,
Distilled water to make up 50 ounces. This should be kept in a stoppered bottle.

Formula for silvering an 18-inch mirror.

Silvering Solution.

500 grains nitrate silver,
250 grains potassa (pured by alcohol).

Put the silver into a glass vessel, in which about 10 ounces of distilled water has been poured, and the potassa in a separate vessel, with about the same quantity of water. Stir each in with a glass rod, and after the silver is dissolved, pour about one-sixth of this solution into a clean bottle for reserve.

Then add ammonia drop by drop, stirring all the time with the glass rod. The silver solution will soon change to a light brown color, and just as it begins to clear up again stop putting in the ammonia.

Next pour in the potassa solution, and when it will be changing to a muddy brown color again drop in the ammonia, stirring all the time, and watch it carefully, and as soon as it begins to clear

up, stop dropping the ammonia.

Sometimes there are floating particles that refuse to dissolve, but if the liquid is clear, these are of no moment whatever. Now drop in the reserve silver solution, stirring all the time, and just when the solution begins changing color again, add a few more drops, and having stirred it up for two or three minutes, if it does not again clear up, it is ready to filter, but care must be taken not to give an excess of ammonia, and this is best known when the solution has a decided straw color, from the addition of the reserve silver. If there is not enough reserve silver, more must be dissolved in a little water, as it is useless to attempt to silver without having a slight excess of silver in the solution. Now take a little cotton, stuff it in the funnel and filter out the residue, if any, or it can be poured off if left to settle. I always prefer absorbent cotton for filtering. Slow filtering is not necessary. Having filtered the solution into the vessel for final mixing, fill it nearly up with water to the mark, previously made, for the correct amount needed, allowing for the reducing solution to make up the balance. For this amount of silvering solution, a little over 8 ounces of reducing solution will be required, which is poured into a vessel ready for use. Now take the mirror out of the dish, pour out the water and pour a little very clean water over the face of the mirror. Take a clean cloth and wipe off any water that may be on the top or edge, holding the mirror face down while doing so. Next pour the reducing solution into the silvering solution, and stir briskly for

for a moment, pour this into the silvering dish, and having waited until all the bubbles are out of the way, immerse the mirror, one edge lower than the other so as to avoid air bubbles. The solution will soon turn to an inky color, and in a few minutes the silver will begin to deposit. In five or six minutes the solution will change to a light brown color, and when it begins to clear up, which will be in about five to fifteen minutes, the mirror is to be lifted out and washed with some clean water. The residual water can at once be absorbed from the face by a new and clean blotting pad. In this process if properly conducted, the silver is so hard and bright as to need scarcely any polishing. To polish make two or three pads, by stuffing loosely with cotton, pieces of clean soft chamois skin, say, six inches square. One of the pads is first used without any rouge upon it, simply to condense the silver. After going over it in spiral strokes for ten minutes, the rouged pad can be used. Put a piece of rouge as large as a pea on a sheet of clean letter paper, and rub it well into the pad. Go over the mirror with spiral strokes, in the same way with this pad, and it will be finished in a few minutes. This silver stands very hard rubbing, and it may be repolished many times, provided it is never wet or damp, and even if it becomes very damp and is thoroughly dried before polishing, it will come out all right.

It is best to have all the apparatus, chemicals, water, etc., in a room where it can be kept warm, say, 70 degrees Fahrenheit, as the film will likely be thin if it is too cold. All vessels used should be cleaned with nitric acid before using, and thoroughly rinsed with water. Cleanliness is a great element of success in silvering a mirror.

Mirrors may be silvered by wrapping a piece of paraffined drawing paper around the mirror, say, two inches broader than the thickness of the mirror, fastening it tight by tying or a gum band.

The solution can be poured on the face of the mirror and the mirror should be rocked to and fro to prevent the sediment from settling on the face. It should be poured off as soon as it begins to clear up and the mirror washed and dried as in the other method.

TO CLEAN THE MIRRORS BEFORE SILVERING

To clean the mirror, pour on a little nitric acid and rub every part of the surface and edge with a pad of cotton tied to the end of a stick of soft wood. Wash off thoroughly then use a little of the pure potassa water in the same way and wash off again. Then immerse the face in the silvering dish until ready to silver. The glass may be held in any convenient way.

If the mirror is silvered face down it may be suspended about a half inch from the bottom of the vessel.

If the silvering is done with the face of the mirror up, a little distilled water should be kept on the face until ready for silvering.