

Step 1 Graining. The printer receives thin smooth sheets of zinc. In order to hold the water on the nonimage area, the plate had to be grained. This consisted of putting the plate in a box and rocking marbles and abrasive grit over the plates until tiny scratches covered the surfaces. Inspection and brushing followed to remove remaining grit.

Step 2 Counter Etching. This step cleaned the grained plate to make it receptive to the image coating. The counter etch consisted of a weak solution of hydrochloric, acetic, and nitric acids.

Step 3 Pre Cronak Treatment. The bare metal was now subject to rapid oxidation and had to be quickly treated with an ammonium bichromate and sulfuric acid bath.

Step 4 Pre Etching. A thin film of gum Arabic was then applied to the plate surface. The gum used was a common food additive used in drinks and candies. It was the same gum Arabic used by Senefelder in the first plates. Gum Arabic comes from the sap of a North African tree. Farmers cut the bark and the sap leaks out. To harvest the gum Arabic, the desert-dried sap is simply broken off. Printers had to hydrate the dried gum in water before use. This also involved a Baumé measurement of the solution for strength.

Step 5 Coating. Now comes the application of the egg white solution. In some shops a person was designated to actually separate the yolks from the whites. Many shops bought dried egg whites or egg flake. In order to make a coating, the egg powder was wrapped in a cloth and soaked in ammonia water over night. The liquid was filtered to remove bubbles and applied to the plate in a whirler. The plate was attached inside of the whirler to an enclosed table that, by rapidly spinning, used centrifugal force to spread the coating on the plate.

Step 6 Exposure. With the coating completely dried, the plate could be exposed with ultraviolet light produced by carbon arc lights. The carbon arc exposure unit look similar to some of today's plate exposure units, except the UV bulbs were replaced with two carbon rods, similar to welder's rods. When placed in the unit, the points of the rods almost touched and an electrical spark was forced to jump the gap creating the light. The rods would bum down rapidly and have to be replaced, sometimes in the middle of an exposure. There was also a lot of dirt and smoke from the unit that had to be exhausted.

Step 7 Lacquer Application. The plate was next brought-up by rubbing a lacquer to bond to the image area. The purpose was to create a harder image than the egg white.

Step 8 Developing Ink. A greasy ink receptive and water repellent coating was applied. It was called developing ink.

Step 9 Development. The unexposed area now had to be removed or "developed." Washing the nonimage areas with a weakened gum solution did this.