héliogravures
sensibilisatrice

HELIOGRAVURE – The resist

In our specific 'photomechanical' process, we move a bit from the world of 'photo-' to that of the '-mechanical', i.e., something that concerns mostly the chalcographic part, of which a certain knowledge is assumed here, in terminology and instruments.

Resist in graphic jargon is the stuff covering a part of the metal to be engraved so that it is not bitten by the acid, or at least only for the time necessary to get a requested depth. There are various techniques for doing this, using either resins and pigments, or paints, waxes and plastic materials, ... There are also many ways to cover the metal.
One of these resins is bitumen (of fossil origin) and its vegetable sister colophony (*rosin*, or Greek pitch) which can be dissolved in a solvent and then painted on the metal, or reduced to a very fine powder distributed 'snow-like' on the plate itself. To settled on the surface on which it is spread, the solvent is left to evaporate in one case, or the deposited powder is heated to melting point as in the *aquatint* technique. Heliogravure is in effect an "aquatint" and therefore the resin deposition process and subsequent operations, follow the same path.

The copper plate to be engraved is covered with this completely impalpable powder inside an *aquatint dust-box*, so the plate itself is heated until the resin particles are melted.
This granular cross-linking will constitute the 'resist'.

In our case - in addition to this graining - we will have to consider having a film of gelatine pasted on the plate. If the exposed C.T. layer is stuck to the copper plate *after* the dusting / heating deal, the fusion can be carried out quite brutally even waving a flame under the slab. If the gelatine is transferred and stripped on the plate *before* the graining, the temperature rise for melting the resin must be very gradual, making sure that the couple *gel-plate* is perfectly dried by a feeble preheating, to allow the gelatine itself to release residual moisture and then comply with the thermal variations of the metal size. For this an electric oven is indispensable (1).

In the first case (the *after*) it will be more delicate to transfer the gelatine onto the already grained slab, as the bitumen tends to leave a certain greasiness on the metal bare parts, in the second (the *before*) the gelatine cling will be more guaranteed on the metal, but is more delicate the melting process.

In one case it will be better, after graining, to pickle the metal with a light HCl bath, then carefully wash and dry, before proceeding with the C.T. transfer. In the second, in addition to a stepwise increase in temperature, it is also necessary to take care of slow cooling down, for the risk the gelatine layer (at this point cooked) crumble like a cracker.

A third modern chance is to use an electronically-dotted screen as in photopolymer engraving (a so-called stochastic screen) to be superimposed onto the sensitized and exposed gelatine, performing a second exposure. This will deeply harden the gelatine layer up to the ground paper, in the transparent gaps among dots. These insolubilized gelatine microdots will constitute the '*resist*' for the acid during etching.
Although both are absolutely invisible to the eye in the print, the latter way provides a 'sharper' image of the resist dot, since it consists essentially of pixels and their clusters and is 'focused' in contact with the gelatine. The bitumen dots provide more rounded and slightly shaded islands on the edges due to the melting deal, producing - let us say - a sort of '*shore*' for the acid, instead of a '*cliff*' !.

(1) It can be self-made using a coil resistance and its potentiometer as heat source, for example those of kitchen-ovens; internal stuff such as aluminum or copper for a good heat dispersion and glass wool and tiles as refractory outside shell, for insulation.