GUM DICHROMATE
Considerations on the stripping curves related to some variables.

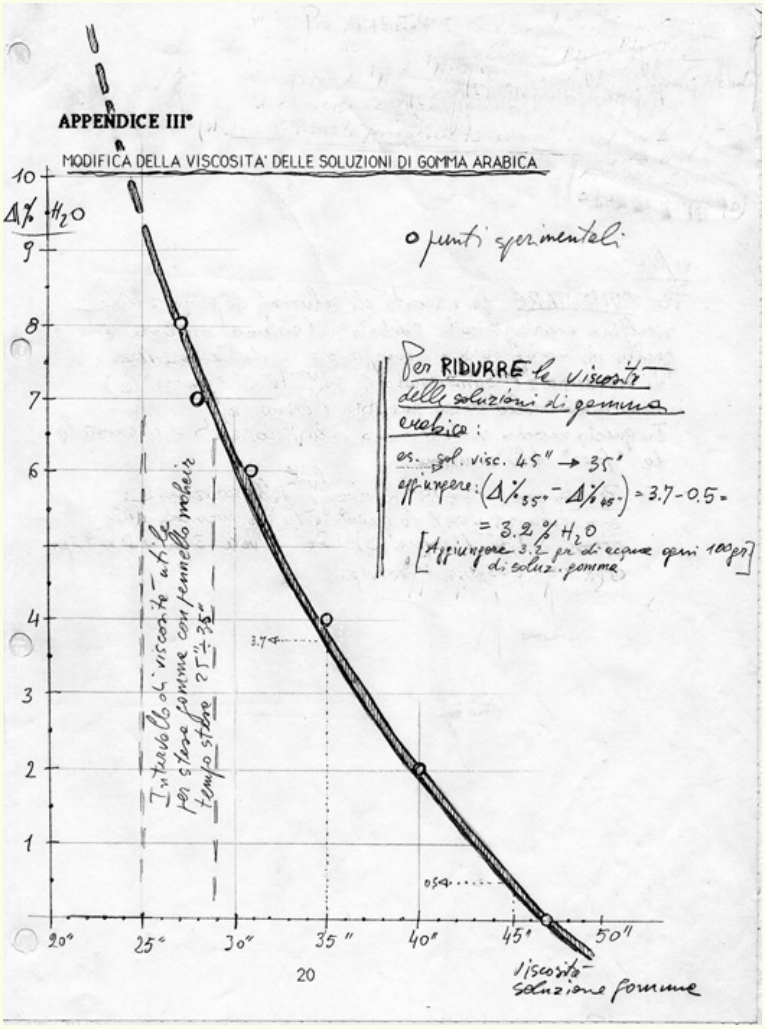
The gum process holds an execution complexity that depends on the quality of the final result that is sought and from the amount of controls the experimenter wants to perform to achieve that result. Just as for silver emulsions, with all the experimentation and literature they produced, starting from the seasoning of the gelatine to the endless research on developing agents.
In *"gum"* case, stages and materials are certainly fewer but they need of the same pernickety examination and test procedures. Therefore, it is advisable to prepare a sheet that follows any stage of the process of the printed copy/ies.
Some of the steps have been dealt with in the previous sheets such as preparation of the 'gum' solution, coating methodology, etc., but as with the study of guitar or chess game, one can know only the "C round chords" or the opening moves, or venture into complex sonatas and plays, practicing a good number of moves and variations.

BICHROMATE CONCENTRATION

The steps that affect the final result of a gum print mainly concern the concentration of the sensitising salt, which as a start generates a different final contrast but only through precise exposure calibration. See in this regard the 'Dichromate Sensitivity' sheet in the 'heliogravure' menu.

SEASONING OF THE GUM SOLUTION

Seasoning of the gum solution is critical to achieve smooth stripping and a smooth final texture of the printed copy – if that is what you are aiming at – rather than picturesque flaky detachments, graininess or quaint absorption of the dye that reduces detail reproduction and colour saturation.

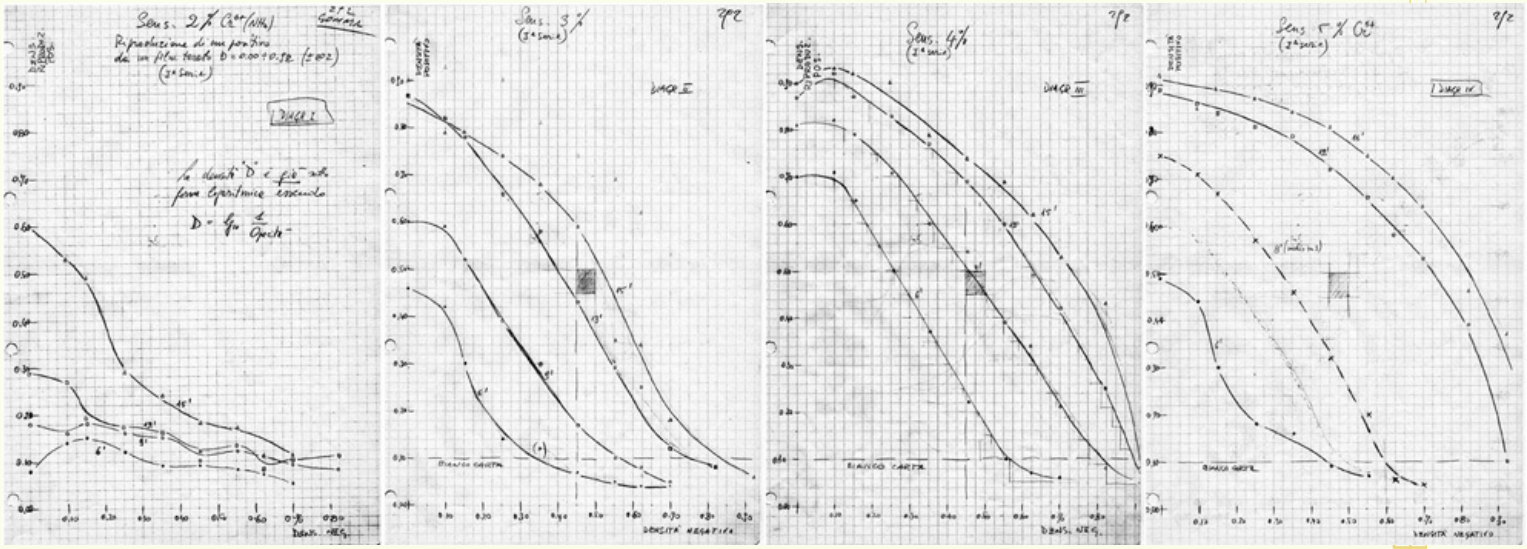


The gum solution seasoning goes hand in hand with the preparation of the paper (as elsewhere stated), which must be as impervious as possible to the dye, but at the same time rough enough to allow a large surface for the sticky gum to cling to.
For changing the viscosity of the 'seasoned' gum, a chart is given that will save the experimenter a good deal of trials and errors, functioning like a clockwork. It is valid between 25 and 50 seconds of emptying time of the viscometre. Below an example of a calculation to lower the viscosity of the solution by 10".

- *To lower the viscosity of gum solutions.*
e.g. viscosity soluz. 45" bring it to 35" :
add $\Delta\%\ 35 - \Delta\%\ 45 =$
$= 3.7 - 0.5 = 3.2\ \%\ H_2O$
[that means adding 3.2 cc or gr. of water for 100 gr. of gum solution]

EXPOSURE

From exposure diagrams at different % sensitisations (2÷5 % Cr^{6+}) and constant stripping times it can be seen how the straight section of the curve (NEGATIVE density / POSITIVE density) is more extended and smooth with correct exposure for each individual % value, and how the curve rapidly tends to 'hump' (1) both as exposure times and % Cr^{6+} increase. Here UV exposure times are 6', 9', 12', 15'.



The best exposure times, should be checked for each coating, according to your own conditions.
Below an example is shown of exposure times between 1st (soft) and 2nd (contrast) coatings versus max negative film density.

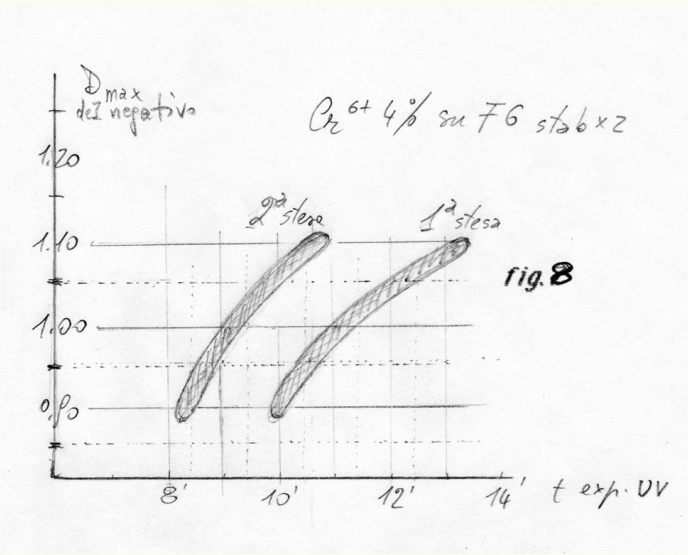
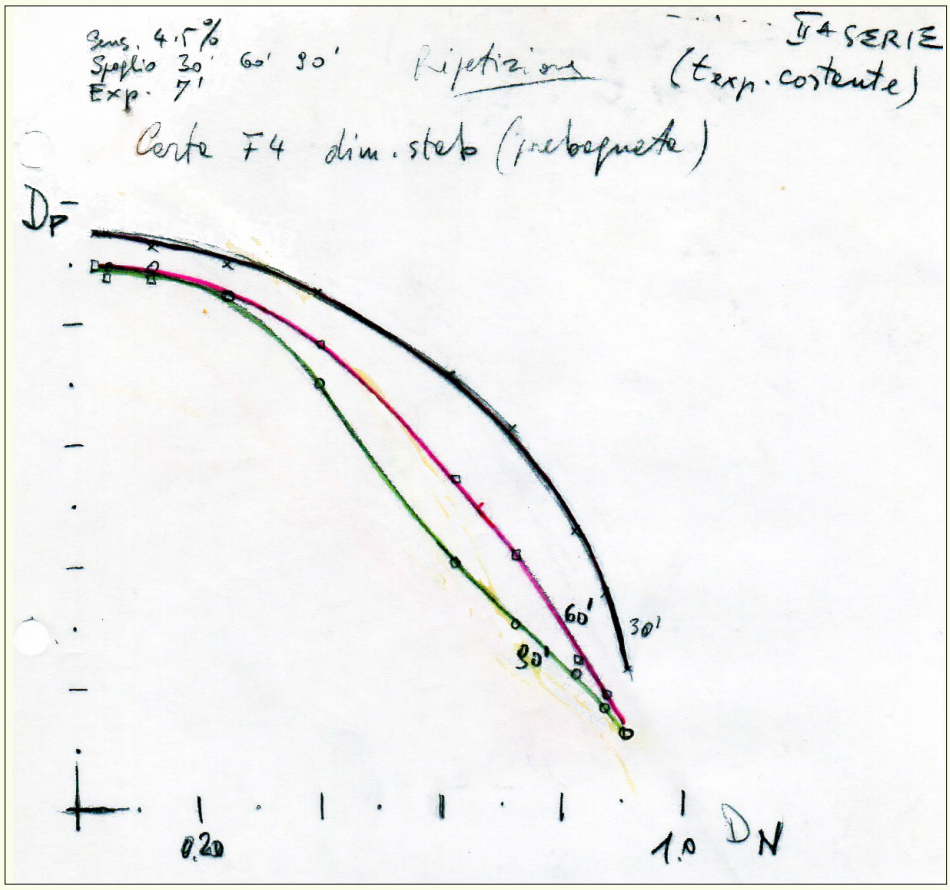


fig. 8

STRIPPING TIMES

In addition to the stripping modes as suggested in the specific sheet, the times themselves also affect the length and linearity of the gray tones range that the image reproduces.
Shown below is a stripping baths test at three different times: 30', 60', 90' of an identical coat (obviously one step-wedge for each time of stripping) at constant exposure.
D_N = density measured on the negative film; D_P = density measured on the obtained positive.



Note how one of the stripping time produces a curve with a more extended straight section. For a reduced time (black), the hunching already noted in the previous paragraph is shown, with similar consequences; for a stripping excessively prolonged (green), the halftones yield first. All this obviously applies for a given % of Cr^{6+} and exposure time.

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(1) Steeper 'hump' section corresponds to increased contrast (burning of highlights); softer section corresponds to reduced contrast (squeezed shadows)