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Mordançage

From time to time, texts can be found that refer to a little known photographic process: "mordançage". This term is of French origin. An approaching translation in English would be "pickling" or "etching" which usually refers to a metal surface treatment using various acids for an in-depth cleaning before applying a surface layer. It can also refer to a textile dyeing pre-treatment, for an improved dye fixing.

As for photography, the term appears in a number of old French-language books, such as "La Technique Photographique" from L.P. Clerc (4th edition, 1947 - pages 717 and 739) or "Chimie et Physique Photographique" by Pierre Glafkides (4th edition, 1976 - p. 776). They mention, among other things, the "toning by mordançage".

So what is this all about? Is it an old technique? Yes and no.

An "alternative" technique in any case ..

An old process...

At the end of the 19th century, when photography was only in black and white, toning was almost exclusively used to improve the durability of the prints, the color shift being only a side effect. But with the appearance of the cinematograph, color became an increasing concern.

Research conducted by Paul Liesegang, Arthur Traube, Christensen, Roberto Namias, J.L.Cabtree among others, led to a caustic dyeing technique, allowing the gelatin of an acid "etched" photo to absorb massively certain dyes - but only there, where the acid is present. Excess dye was removed by a wash, to reveal the colored image. This allowed to transform a black and white negative into a color positive by superposing three transparencies, each one being dyed in one of the three primary colors. The principle was simple, but guaranteeing a perfect clarity and constant results was less easy. The technique disappeared with the first real color emulsions in the thirties.

...revisited

It was Jean-Pierre Sudre (1921-1997), who gave a new impulse and the current "mordançage" name to this technique in the 1960s. He was a tirelessly curious photographer, a hard-working experimenter, a technical perfectionist, and his creations exceptional masterpieces. (For the record: he was a lecturer and member of the jury the National College of Architecture and Visual Arts La Cambre in Brussels from 1965 to 1970).

But was it still the same technique? It certainly did not have the same goal. Sudre – who has always fought for the recognition of photography as a means of creative expression – created oniric works, original in both content and form, a combination of art and technology.

His pictures show a certain affinity with the old technique, but the formulas were adapted to make very quirky works of art.

While complete or partial toning is still there, Sudre's "mordançage" worked in different ways: as an effective etching, it caused matte and shiny parts as well as a relief; but on the

other hand, the bleaching-redevelopment caused the black parts of the emulsion to swell, crack and loosen as "veils" over the paper. These veils were replaced, moved, removed, until the desired effect was achieved.

Today

Jean-Pierre Sudre was not only a photographer; he also devoted a large part of his life to training other photographers in his educational career (La Cambre, University of St. Charles, Fine Arts school of Marseille, National Institute for Photography in Arles ..) and especially through the workshops he started to organize in the seventies. Among the photographers who followed his training, two are now recognized as mordantage specialists: [Pierre-Louis Martin](#) (France) and [Elizabeth Opalenik](#) (USA).

A book was dedicated to him: [Jean-Pierre Sudre](#) (collective work) at Actes Sud.

The process

As usual, various formulas can be found on the internet. A detailed description can be found for instance on the website of [Erick Mengual](#).

Below is the summary of the procedure as proposed by [Christina Z. Anderson](#) in her book "The Experimental Photography Workbook" (the full text in English can also be found on the "[Unblinking Eye](#)" website of Ed Buffaloe).

The Formula

Solution A

Water	750ml
Copper chloride (II)	10 - 30gr
Glacial acetic acid	80 - 110 ml
Water, up to:	1000 ml

Solution B

Hydrogen peroxide 10-20 vol

Solution A can be saved indefinitely. Before use, the same amount of solutions A and B are mixed. A 500 ml bath is sufficient for multiple prints. The working solution will slowly break off. It is possible to keep it for a few days, and to regenerate it for a while by adding some concentrated hydrogen peroxide (20-40 vol).

Procedure

Attention: always use gloves!

Place four trays in this order:

- Tray with Mordançage solution (A + B)
- Rinse bath (water)
- Redevelopment bath
- Rinse bath

1- Immerse the print in the mordançage bath and let it work sufficiently (from 30 seconds to 15 minutes, depending on the print, the paper, the concentration of hydrogen peroxide and copper sulphate). The more hydrogen peroxide, the more complete the operation; the more copper sulphate, the faster.

2- Rinse thoroughly, especially in the case of fiberbase paper.

3- Rub the emulsion with fingertips (wear gloves..), with a cotton swab, with a sponge, etc. – do this carefully, otherwise the emulsion could be removed or scratched. You can also choose to not rub at all and to let the veils "float". You can rub in cold or warm water (on a flat bottom), or outside the water ... everything depends on the fragility of the emulsion. It's going to be a rather messy thing: the emulsion will loose fragments floating freely, and sticking everywhere when they dry.

4- Redevelop the print in Dektol (normal dilution or up to 1: 5) and a sepia, thiourea, etc. toning bath. The print can also be re-exposed (about 60 seconds) until the image appears complete, and redevelop in a 1: 4 diluted selenium solution. Keep in mind however that selenium has fixer in it and that it will not redevelop into a more complete image. What wasn't there will not be there.

5- Remove the print from the bath, rinse, and examine. If everything is perfect, continue to rinse for about fifteen minutes. If you want to keep veils, it will not be possible to rinse the print thoroughly. My prints are still fine after a number of years, but be aware that the chemicals used will not improve permanence. When everything is perfectly in place and drained, the print can be placed on newspapers for further drying. The entire bleach-etch bath and redevelopment cycle can also be resumed. Sometimes the gelatin will not swell until it hits the developer for the first or even a second time.

6- Rinse. If you have veils that you want to keep, it will be difficult to wash the print properly. Use a separate tray in which the finished print will soak in plain water, that will be carefully renewed several times within about one hour.

7- Dry. Do not do this on your usual drying racks, to avoid contamination.