

# PLATINUM PRINTING

## INTRODUCTION

After learning about platinum printing, I decided it would be interesting to try this method. I took my first workshop in platinum printing through Taos Institute of Arts in June/July 1999 with Chuck Henningsen at his home in Taos, NM. This workshop used old school methods of enlarging negatives and the equipment in use there was well out of my financial reach, so I shelved the idea. In October 2011 I took platinum printing workshop from Kerik Kouklis at his home in Placerville, CA. This workshop used a computer, scanner and printer to create enlarged negatives. The use of digital negatives was a game changer for me. I began purchasing or building the equipment necessary to do platinum printing. There were several events in my life that delayed this goal, but I am now ready to proceed. This last Christmas, my wife, Jill, gave me a platinum printing kit from Bostick & Sullivan which included a set of DVDs by Patrick Alt. This past November, I got a refresher in platinum printing along with learning to use Gum printing to add color to the platinum print.

## HISTORY

In the early years of photography, many people were look at a variety of chemicals that were sensitive to light. In 1830, Ferdinand Gehlen of Germany recorded his observations of the effected of light on platinum, but the action seemed quite weak. The following year Johann Doberiner of Germany found that ferric oxalate enhanced platinum's reaction to light. Sir John Herschel and Robert Hunt of England continued to experiment with platinum and other combinations of chemistry with some success, but the images tended to fade within several months. The 1850's brought several other processes, such as albumen printing, into common use.

In 1873, William Willis patented his platinotype process in England. He started the Platinotype Company to manufacture platinum paper for professional and amateur use. Other company, including Kodak also introduced platinum papers. Initially, platinum was fairly inexpensive, but by 1907 the price raised to 52 times the cost of silver. By 1916, Kodak and most manufactures of platinum paper ceased production. By World War I, Russia controlled 90% of the world's platinum supply.

Since other paper, including Silver papers were still available, platinum printing was abandoned. In the 1970's, Irving Penn and George Tice began experimenting with the platinum process. Today, there are a number of photographers using variations of the process for fine art photography. Bostick and Sullivan has been providing supplies for platinum and other alternative process since 1980, the platinum printing process remains a very hand-crafted and often tedious process. The rewards, however, include a larger tonal range than silver and if properly made, platinum prints are estimated to have a life of more than a thousand years.

## PAPER

Since today there is no commercially available pre-coated paper for platinum printing, the photographer must sensitize their own paper. There are a variety of papers on the market suitable for platinum printing, most being of 100% cotton rag. Arches Platine was developed specifically for the platinum process.

When I began my experiments, I had two papers, Arches Stonehenge NFA and Strathmore Bristol Vellum 2 Ply. After 2 days of trying to determine proper exposure time to produce maximum black for my process, I became very frustrated with the inconsistent results. As I contemplated the problems I was seeing and continued to read about papers, I realized that the problems could be coming from a variety of variables. However, the item that seemed most likely was that most papers today are manufactured to be acid free, therefore they contain buffering agents. The platinum process is inherently acidic in nature and this can cause problems with smooth coating and strange processing.

At this point, I ordered Arches Platine and additional chemistry from Bostick and Sullivan. One of the chemicals I ordered was Oxalic Acid. I mixed a 2% solution and treated the 2 papers that had given me problems. I resumed testing, now with 3 papers. I began getting much better results with all three papers, however, the Strathmore paper, if left in the wash too long, tended to delaminate and I found the tones to be not very smooth. So, I abandoned it from further testing. About that time, I discovered that several years ago, I had forgotten I had purchased a package of Bergger COT 320. This paper was



manufacture by Arches, based upon their Platine paper and it has a much smoother side than Platine. So I began testing this paper as well.

As I began running low on the Bergger COT 320 and the supplier was out of stock, so I opted to try Hahnemuhle Platinum Rag and Legion's Revere Platinum. These new paper were created for platinum printing. It has been less than satisfactory so far, but I understand using Tween20 in the sensitizing mix will increase saturation into this paper.

Since I found the Arches Stonehenge surface to be very similar to the Platine and was still experiencing issues with coating this paper, I eventually abandoned it as well.

A final note about paper: Making paper the proper size for printing 8X10, requires the paper to be torn, not cut. Any metal to metal shearing device will contaminate the paper with metal particles that will yield black spots on the image. Thus the proper way to tare paper is from the back using a straight edged ruler. Also, my 8X10 contact frame will take paper up to 9 ½" by 11 ½". So that is my target size, allowing extra room for coating the paper.

## COATING

The platinum sensitizing solutions I use (and there are other combinations) for 8X10 papers are as follows:

20 drops	Ferric Oxalate
20 drops	Sodium Palladium Standard
0-2 drops	Sodium Chloroplatinate (quantity affects contrast)
2 drops	Everclear 151 Proof Alcohol (optional for smoother coating of the paper)

The sensitizing solution is only sensitive to UV light, so the lighting in the darkroom and in my case, the hobby room where I coat the paper is critical. I blacked out the window in the hobby room with cardboard and changed the lighting to LEDs. After researching LEDs online, I found that some



LEDs do give off UV light to some extent. So I added Bug Lights (yellow coated) as that is what many platinum printers use.



Coating paper with the platinum/palladium solutions is done with a brush or glass rod on a flat surface. The brush I began with in my first work shop was a cheap foam rubber sponge brush. In the Kouklis workshop, he touted

the Richeson Series 9010 Water Color Brush (2"), often called "The Magic Brush". Patrick Alt demonstrated the use of brushes and the glass coating rod in his video. After having early issues with the process, I purchased a couple of coating rods from Bostick & Sullivan. The glass rod is also known as a "puddle pusher". I found that I really like this method of coating paper as it seems to spread the solution more evenly than the brushing method. After coating the paper, it is placed in the paper dryer to be dried to bone dry.



## CONTACT PRINTING

A contact print frame in its simplest form is a piece of glass laid on top of the negative as it sits on the paper while it is exposed to UV light. I purchased fancy oak contact printing frames. The contact print



frame used in my first workshop was sealed and a vacuum pulled to assure everything was flat and tight. This still seems to me to be a bit overkill.

As for the light source, initially, the contact frame was simply put out in the sunshine for a period of time. Sunshine, however, is not consistent. The sun moves and is often not at the same angle to the frame. Clouds and/or haze reduce or block the light. In my first workshop, the darkroom had an overhead UV light controlled by an

intensity sensor built into the contact frame. Again, this seemed a bit more complicated than it needed to be, while throwing UV light all over the darkroom. Everyone had to wear UV blocking glasses when exposures were made. In the second workshop, Kerik Kouklis had a homemade UV light box with a curtain over the door and used some number of 4' fluorescent UV bulbs. I also built my own UV source similar to Kerik's, but mine uses 24" bulbs. It is intended to handle up to 16X20 prints in the future. However, when exposing 16X20, I found the UV tubes have a significant light fall off near the ends of the bulbs. I was able to modify the UV source by raising it 4 inches to resolve the issue.

The results of my exposure testing showed that both Arches Platine and Begger COT 320 attain maximum black with 9 minutes of exposure.

## DIGITAL NEGATIVE

With a contact printing method, the final print is the same size as the negative. That is one reason that many early photographers used 8x10 and larger cameras. I shoot a 4X5 field camera and feel that that is really too small for display on a wall. And while 8x10 is OK, it is entirely too common. Therefore I would prefer 11X14 and 16X20 for wall display.

In my first workshop, the 4x5 negative was printed on to an 8x10 positive film and that in turn was printed using a huge 8x10 enlarger to print a the 11x14 negative. Using two enlargers in the process provides two opportunities to get the original negative to go out of focus. In addition, an 8x10 enlarger is not only rare and expensive; they take up a lot of room.

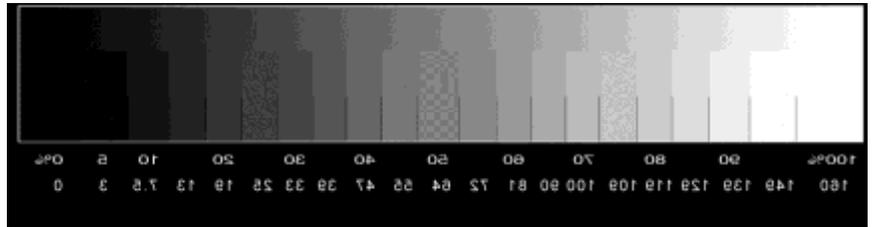
In my second workshop, the 4x5 negative was scanned into a computer and then the enlargement was printed on an Epson printer. This method eliminates the chance for causing focusing issues. An added benefit is the opportunity to clean up the scanned negative from dust and pin holes, common on 4x5 negatives. This is the method I now employ at home.

While negatives can be printed from Photoshop, the workshop introduced QuadTone RIP software. The combination of Photoshop and QuadTone RIP, was used to create custom profile. The custom profile is

then used by Quadtone RIP to control which inks and how much to print a negative that will properly block UV light. For Platinum printing, the inks used are Black, Light Black, Light Light Black and Yellow. In the Window environment, Quadtone RIP is stand-alone software, while in the Mac environment, Quadtone RIP becomes a part of Photoshop.

The process of developing the custom profile can be quite tedious and I still do not fully understand it. The process uses a 21 step wedge from transparent to completely opaque in 5% steps. The wedge is printed from Quadtone RIP and then used as a negative to be printed on platinum paper. Once it is

processed and dried, it is scanned and evaluated in Photoshop. Adjustments are made to the profile and the wedge is printed again using the new profile. This process is done several times, trying to get



Negative of 21 step wedge

as close as possible to the target for each step. I was able to get pretty close on most of the steps, but I still need to improve the highlight and shadow ends of the wedge.

## DEVELOPMENT PROCESS

Before exposing the paper, it is humidified in a cabinet. Then the contact frame is loaded with the paper and the negative and placed into the UV exposure unit. After the allotted time, the paper is removed from the contact frame and placed into an empty tray.

There are two primary developers in use for platinum printing. Ammonium Citrate is relatively non-toxic and produces cool images. Potassium Oxalate is more toxic, but produced warmer images. Either developer is normally heated to 100-130 degrees and poured on the paper in the tray and agitated for two minutes.

When the paper is placed in the empty tray, there is an image beginning to form. Once the developer is poured onto it, the image comes up immediately. After the two minutes of



agitation, the paper is rinsed off with water and then placed into the first clearing agent for 5 minutes. Agitation



is done only for the first minute in this bath. The paper is moved to the second clearing agent for another 5 minutes. Various chemicals may be used in these first two trays.

Patrick Alt used Muriatic Acid (pool acid), certainly easy to get locally. My kit from Bostick & Sullivan came with EDTA and Sodium Bisulfite. After the second

clearing agent the paper is again rinsed off and placed into the third tray containing Kodak Hypo Clearing Agent for 5 minutes. After the three clearing baths, the paper is washed in running water for 30 minutes.

All chemistry that I mix from powder is mixed using distilled water. A few years ago we found that our well water has a very high concentration of dissolved iron and this would be very bad in the platinum process except for the washing.

## REFERENCES

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