Cyanotype with Fotospeed

Instructions

History of Cyanotype

Cyanotype was the first successful non-silver photographic printing process, and was invented by Sir John Herschel in 1842. It was used for the first photographically illustrated book, and was also employed as a photocopying technique. This use of Cyanotype printing was wiped out with the invention of dry, plain paper photocopying, yet the word *blueprint*, having originated from the cyanotype process, is used with an expanded meaning today. Prussian Blue was first made accidentally in 1710 from ox blood or other animal parts (vegetarian photographers may be reassured that it is no longer made with such substances). Prussian blue is essentially ferric ferrocyanide, while varied chemicals create different shades of blue.

It is interesting to know that, due to its chemical makeup, cyanotype was used in North Wales to overcome a problem of radioactivity resulting from the Chernobyl disaster! It appears that spreading Prussian blue onto the contaminated soil safeguarded the animals that were feeding on the grass.

For the modern photographer, the cyanotype process is an inexpensive, easy introduction to hand-coated alternative printing, and the ability to coat this sensitizer onto surfaces other than paper, such as wood or textiles, gives it added versatility. Used either to create photogram's or prints direct from negatives, cyanotype produces unique and beautiful images.

Cyanotype: *in Brief*

It is important that you **READ ALL ENCLOSED INSTRUCTIONS** carefully during your first few attempts at creating a cyanotype image. However, those who have developed an understanding of the cyanotype process and prefer to refer to a concise, reduced set of instructions, the list below may be helpful:

1. 1. **Coat paper** with sensitizer and allow to dry
2. 2. **Expose**
3. 3. **Wash** for 3mins in running water (check for yellow stains)
4. 4. **Bathe print in Citric Acid Solution**, agitating constantly œ 2min
5. 5. **Wash** for 5min in running water
6. 6. Leave print to **dry**

Additional Items needed:

- *Coating tool*, Used to apply the sensitizer to your paper, your chosen coating tool can be almost anything, yet some practical suggestions are: glass coating rods (included) a paintbrush, a rubber roller, a *clean* jay cloth, or *synthetic* cotton wool (its natural version has a tendency to fall apart).
- *A glass covered printing out frame*, **or** a board plus a *clean* sheet of glass, both of which should be larger than your planned image.
- *An oversized negative* œ the cyanotype process requires negatives of precisely the same size as the intended final image, so before beginning the process it is necessary that a large negative be created. Methods of producing oversized negatives are described below.

Before you begin:

Choosing Your Paper

The paper supplied in this kit is Fabriano 5, however there are many other suitable papers available. When choosing a paper ensure that it is acid free and of sufficient weight to ensure that it will retain its shape during the processing cycle. The cyanotype sensitizer itself is a delicate test of paper quality. If the coated paper is left for some hours in the dark at normal relative humidity, any change of the bright yellow coating towards a green or, worse, blue colour is an indication of impurities or additives in the paper that are hostile to this process. If, during the process, you notice that your paper is becoming discoloured, it is recommended that you use a different type in the future. The fewer the additives and the purer the quality, the more suited your paper is to the cyanotype process.

Choosing your Negative

The negative used should supply a good tonal range with slightly low contrast.
The contrast of the sensitizer can be lessened by adding a small amount of citric acid to it; in doing this cyanotype will also accommodate images of a slightly higher contrast. Conversely, the resulting contrast can be *increased* by adding a little ammonium dichromate solution to the sensitizer.
No problems have been encountered with this sensitizer damaging negatives during contact printing.
Your negative image must be the *full size* of your intended cyanotype print, and oversized negatives are commonly produced in one of two ways:

The Digital Way

i) Scan your chosen negative into a computer using a negative scanner. Enlarge the negative image, then print this at the desired size onto Fotospeed DC Film. If a positive image has been scanned, this must be changed into the negative form prior to printing. This computer aided method is the quickest and simplest way of producing an oversized contact negative.

The Darkroom Way

ii) Using an enlarger, expose your 35mm negative onto **lith film** at the desired size, then develop the film using *normal print developer* for 1 min. Fix and wash in the normal manner. You now have a lith positive

iii) Contact print this lith image onto another sheet of lith film, to produce its *negative form*, and develop this sheet, again using *normal paper developer***.** *You can use a colour slide for the exposure which will give you a negative lith contact sheet thus cutting out the need to make another contact!*

Choosing your coating method

Traditionally, glass rods are used to coat cyanotype solution onto paper. Coating by the rod method will require approximately 1.75cc of sensitizer for an 8x10 image. Use the syringe provided to draw a line of sensitizer along the centre of the paper. Holding the glass rod by each end, spread the solution across the page by gently wiping the long base of the rod across the sheet.
Alternatively, the sensitizer can be brushed onto the paper. This gives an artistic edge to the image but will use a little more sensitizer. A cloth, cotton wool or a rubber roller will also give a different coating surface.

Producing a Cyanotype Print:

Under a red safe-light or tungsten light 60W max:

1) Apply sensitiser to your sheet of paper, using your preferred method. Ensure that the paper is coated evenly, as uneven surface treatment will be apparent in the completed print. We have found that the use of a *clean, new* jay cloth is most effective for coating the paper. Fold the cloth so that it is completely flat, then pour a little sensitiser onto your paper. Using the flattened cloth and pressing very gently with the tips of your fingers, wipe the liquid evenly and smoothly across the page. Immediately after this coating has been completed, hold your page slightly up to the red safe-light to check that an even layer has been applied. Well coated areas will appear shiny and wet whilst uncoated areas will exhibit a dull, dry and unreflective surface texture.
2) Allow sensitizer to completely dry onto the sheet. At this point and if desired, a second coat of sensitizer may be applied to the paper, which must also be completely dry prior to exposure. If using the jay cloth coating method, it is recommended that you *do* apply this second layer of sensitizer. Avoid using too much sensitizer, however, as this y puddle and crystallise. If possible, expose your paper within a few hours of coating.

3) Photogenic drawings or Images from negatives may be produced. *A photogenic drawing does not require the use of a camera or negative. It is the image created by an object placed directly onto photosensitive paper and exposed to a light source. Flowers, for example, may be printed in this way. A photogenic drawing of a flower will capture the delicacy and slight transparency of its petals as well as its thicker, more opaque leaf forms. Cyanotype images produced from negatives require the negative to be the exact size of the intended final image. The transformation of 35mm negatives into this larger format is detailed above.*

a) To create a photogenic drawing of an object such as a leaf or blossom, place the object in contact with the sensitized side of the paper in either a printing frame or beneath a sheet of glass, then expose the paper to the sun or a UV light.

b) To produce an image using an oversized negative, place your paper sensitised-side up, and lay your negative on top of this, emulsion side facing *up*. Lay a sheet of glass on top of the two, and expose.

i) To produce an image using a (large) negative, lie your paper flat sensitized-side up, and place your negative on top of this, emulsion (dull side) up. Lie your sheet of glass on top of the two, and expose as indicated above.

ii) Exposure time varies, but about 8min under normal sunlight conditions is often adequate. When the paper has been sufficiently exposed the highlights should appear green, the mid-tones blue, and the shadow tones will be substantially reversed to a pale grey-blue, giving the image a *solarised* look. At this point, your image may be removed from the light source.

The following three steps are necessary for the processing of the print. It must be noted, however, that prolonging any of these actions will, in effect, begin to "wash out' the image.

4) Place the exposed paper into a running water bath for 3min. This will remove any sensitiser solution that has not hardened during exposure, bringing out the midtones of the image. A blue stain will be seen flowing off the paper during this rinse time.
5) Dissolve 40gm Citric acid crystals into 1ltr of water. Remove your print from the water and soak it in the citric acid solution for 2min, *agitating constantly*. The citric acid bath should be replaced after a few prints have passed through it, as 1ltr of the solution will typically process only eight 8x10"prints.

   You will know when to change this solution as it will become discoloured. Before continuing onto the next step, hold your print up to a bluish light to check that no yellow stain remains in the interior of the paper, and if a stain persists apply a second citric acid bath. 6) Wash the print in running water for 5min.

   The image may appear faint, but this is normal. Shadow areas should darken to a deep blue whilst highlights will lighten to a brighter white during the 24hr drying period.

Optional - The reversed shadow tones usually regain full values quite rapidly during wet processing, but if not they will do so during drying (24hrs). If you are anxious to see the final result immediately, however, then immerse the print in a bath of 0.3% hydrogen peroxide (50cc of the 6% or "20 volume' solution diluted to 1ltr of water) for no more than half a minute. This treatment makes no difference to the final result, yet will allow you to view the final colour cast immediately. 7) Allow the print to dry

You have now produced an authentic cyanotype print!

Problems and Solutions:

Problem	Solution
Print looks uneven or "darkest' shadows are lighter in some areas than in others	Coat your paper methodically and *evenly* with the sensitizer. We have found that the most even coating is achieved by double coating using a flattened out jay cloth covered with the solution, drying the sheet between the two layers.
Yellow stains are evident on final print	After the 5min citric acid bath, hold the print up to a blue light to ensure that no yellow staining remains in the interior of the paper. If so, give the sheet a second citric acid bath. Rinse well afterwards.
Uneven blotches appear on prints or image seems blurred	Your negative is most likely damaged. Make sure that the emulsion side of the film never comes into contact with the sensitizer, as this will permanently damage your negative. The print may not have been rinsed after the citric acid bath, and the blurring will have occurred during the drying period
Image has very high contrast and few midtones	After exposure, *rinse* image in running water before applying the citric acid bath. It is likely that this rinse time needs to be increased for your particular image.
Image is light and washed out looking	Ensure adequate exposure time. Make sure that the coating of cyanotype solution has been applied thickly enough (two coats recommended when using the jay cloth method)
White flecks evident on image	A cloth or cotton wool has likely been used for cyanotype solution application. Although this method of coating is extremely effective, the cloth must be changed regularly to ensure that no dark flecks build up during coating. These, when wiped and dried onto the paper block the light during exposure, creating white flecks.

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