Cyanotype Printing

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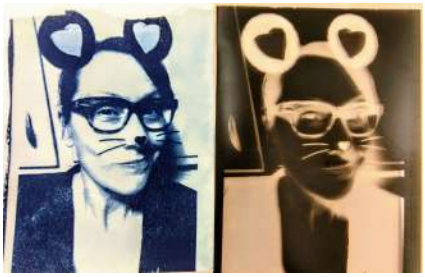

The Cyanotype, or blueprint, was invented by Sir John Herschel in 1842 when he discovered that ferric (iron) salts could be reduced to a ferrous state by light and then combined with other salts to create a blue-and-white image. Not long after, Anna Atkins, one of the few women in photography during that century, published the first book with photographs instead of illustrations, "British Algae: Cyanotype Impressions"

The objective of this project is to introduce students to a process that is as old as photography itself using modern imaging created by smartphones converted to negative images and printed on transparency film. You can also use stencils, drawings on transparency, photocopies of clip art on transparency, found objects, or anything that creates an interesting shadow image.

Cyanotype is a contact print process and you will need a negative the same size as the size of the print you want. A cyanotype with a blue image on a white background is obtained using a negative transparency. In order to obtain a pale white image on a blue background, a positive transparency must be used.

This video produced as part of a series of photography history by the George Eastman Museum gives you an overview of the history and process of Cyanotype. Their entire series on photographic history is excellent and you can find them at their YouTube channel.

Supplies needed (8x10" is the size I use in my advanced photo classes but cyanotype prints can be made to any size)

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- 8x10" supports (cardboard, chipboard, mat board, etc.)
- 8x10" plexiglass (you can use glass if you want to deal with the potential hazards)
- Medium sized binder clips - two for each board/plexi
- Watercolor or printmaking paper - the heavier the better as it has to be soaked/rinsed for 5 minutes in water
- Cyanotype chemicals - you can purchase them pre-mixed or in powder form:
    1. ferric ammonium citrate
    2. potassium ferricyanide
- Plastic graduate with ml or oz measurements
- Plastic spoon or other stirring implement
- Containers for mixed chemicals - i.e. small yogurt cups

- Brushes (sponge work best but any wide soft brush will work)
- Chemical gloves if you have sensitive skin
- Plastic or paper to cover work surfaces
- Drying rack or surface covered with paper to use as a drying area

The cyanotype emulsion is sensitive to ultraviolet light. Therefore either sunlight or another UV light source must be used for exposure. UV lights are more consistent, but sunlight is free and easy to use with a class of 30 students.

Prepare chemicals according to the package instructions. For liquid kits, its a 1:1 mix of ferric ammonium citrate to potassium ferricyanide. Only mix what you need because the liquid once mixed will oxidize within a few hours. Read all instructions that come with your chemicals so you understand the toxicity and risks of using them.

To mix chemicals from powder, use this formula:

For Potassium Ferricyanide solution:
100ml room temperature water
10 grams Potassium Ferricyanide
Mix thoroughly

For Ferric Ammonium Citrate solution:
100ml room temperature water
25 grams Ferric Ammonium Citrate
Mix thoroughly

Mix equal amounts of each to make cyanotype emulsion. Once the emulsion is prepared, use within a few hours.

Preparing paper

Paper should be prepared in low light, preferably a room with no UV light and very dim artificial lighting. Surfaces should be covered in plastic or paper to protect tables and counters.

Using a brush, apply the cyanotype emulsion in even strokes across the paper in both directions. Only one coat is generally needed. You can also prepare a tray of chemicals and soak the paper in the tray. This will use much more of the chemical emulsion but provide a more even coating of the emulsion.

Allow paper to fully dry in low light or darkness. A hair dryer can be used on low/cool setting. Any paper that is not used right away can be stored in a light proof bag or box in a cool, dark place. I've stored paper as long as 9 months with no decrease in the image quality.

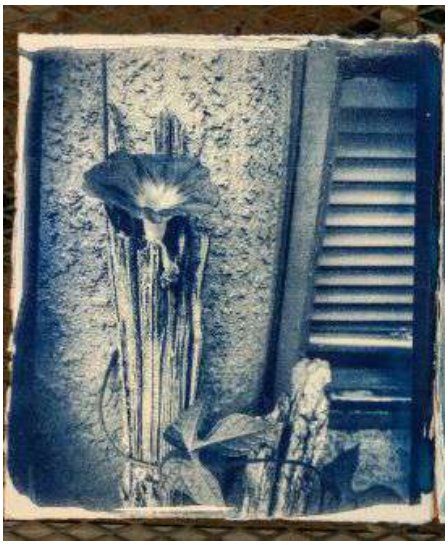
Once paper is dry, place it on a support and then place negative or items on top of the paper. Organize as desired.

Place a piece of plexiglass on top and use binder clips to hold items against the paper. Watch the placement of your binder clips so they do not leave shadow images on your paper.

Creating your exposure

Place under direct sunlight or UV lamp. Exposure times will vary depending on the relative lightness or darkness of the negative and the intensity of light. Test strips can be done for more precise exposure times. In general, most cyanotypes I've made take 5-10 minutes of exposure in direct sunlight (no clouds, mid-day). On cloudy days I have had to leave my paper out for 30-40 minutes. Remove your paper from sunlight as soon as the exposure is done.

This is what your paper will look like after exposure (left) and then after rinsing (right)



Rinsing and Drying

Bring the print indoors to a low light room and remove the negative/contact print objects. Wash your print for five minutes in running water. Be advised that if you have hard water, then a softening filter may be preferable. The iron salts in hard water can alter the appearance of the print. Be sure to wash for the full five minutes or you risk having your print fade.

Other ideas:

- Use objects placed directly on top of the paper to create shadow prints, acetate with drawings created on it with sharpie, a photographic negative on transparency, or a design cut out of paper to create cyanotype images.
- A peroxide bath can be used to deepen the blues of your print
- Different tea baths (black, green, etc.) can alter the blues as well to get more ultramarine or purple hues. Use black or green tea as the tannins in tea alter the colors of your print.
- A great source of info is this article by Freestyle Photographic Supply
- There is also an excellent cyanotype book by Christopher James that you can partially download for free (or purchase the full book).
- View the cyanotype book by Anna Atkins, 1843
- Jacquard cyanotype and Solar Fast products
- Jacquard Negative Generator

Sample images:

Student Work: Sunprints from found objects, Intro to Photo