

Poison Pigments

Chrome Yellow

Chrome yellow, also known as lead chromate or PbCrO_4 , was used to create the yellow pigment in books during the Victorian era. It was also used in paintings such as Van Gogh's *The Night Café*.

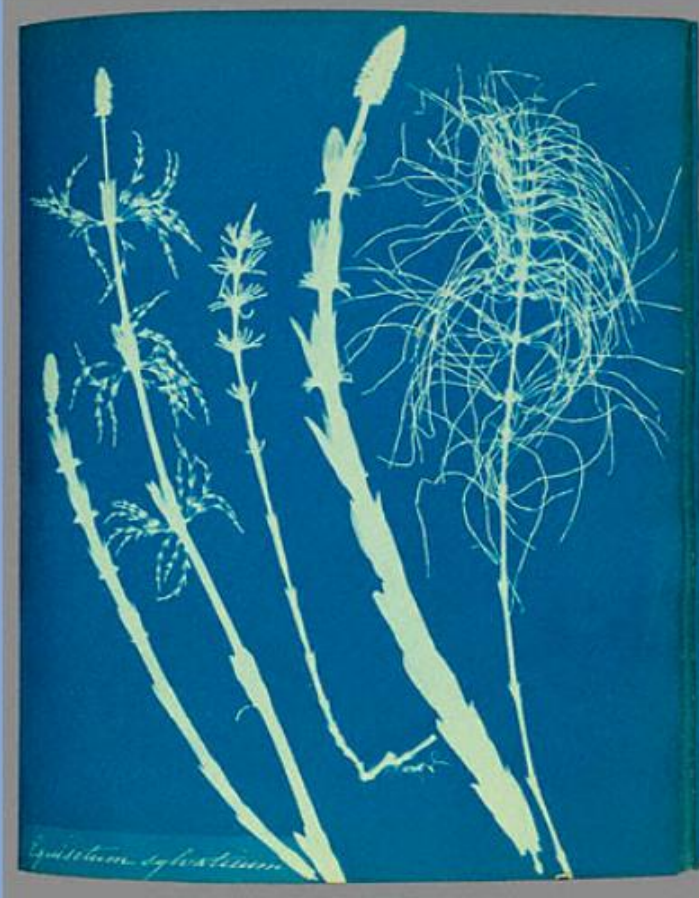
Crocoite, an orange-red mineral discovered in Siberia in 1762 and named after saffron, led to the discovery of the element chromium by chemist Louis Nicolas Vauquelin in 1797.

Vauquelin later determined that lead chromate is synthesized when lead salt reacts with chromate or dichromate, establishing an acid-base equilibrium that influences the pigment's characteristics. Lead chromate is capable of yielding a spectrum of color compositions, ranging from bright "lemon" yellow to orange-red hues. Exposure to acidic conditions results in the formation of the vivid yellow pigment, while alkaline conditions yield orange-red pigments.



Prussian Blue

Prussian blue was first discovered accidentally in the early 1700's by Jacob Diesbach. When trying to make a red cochineal dye, he lacked the potash used to make the dye stick to clothing. He found some potash that had been contaminated with animal blood. Adding this to his ingredients, including cochineal and iron sulfate, the dye came out blue. He later ran experiments and found that the potash had reacted with blood to make potassium ferrocyanide. This chemical, when mixed with iron sulfate became iron ferrocyanide, which became known as Prussian blue. There are two types of Prussian blue, insoluble Prussian blue ($\text{Fe}_4^{\text{III}}\text{Fe}_3^{\text{II}}(\text{CN})_{18}$) and the soluble Prussian blue ($\text{K}[\text{Fe}_4^{\text{III}}\text{Fe}_3^{\text{II}}(\text{CN})_{18}]$).



Brunswick Green
Prussian Blue and Chrome Yellow were mixed to make a green called Brunswick Green.



In 1842, John Herschel invented the blueprint process, also known as the cyanotype. This process was the first used for commercial reprographics, becoming widely used for drawing offices. Anna Atkins was the first to use this process for botanical illustrations.

Scheele's & Emerald Green

Scheele's green (copper arsenite, CuHAsO_3) was invented in 1775 by Carl Wilhelm. Emerald Green (copper (2)-acetoarsenite, $\text{Cu}(\text{CH}_3\text{COO})_2 \cdot 3 \text{Cu}(\text{AsO}_2)_2$) was invented in 1798 by Ignaz von Mitis. In 1814, Emerald green began to be produced commercially by Wilhelm Satler.

Scheele's and Emerald green have been used in artwork, wallpaper decoration, linen, as well as book cloth. It is widely speculated that Napoleon, who died in 1821 on St. Helena Island, could have been killed by the wallpaper in his bedroom.



Joseph Turner was known to use Scheele's Green in his early paintings, such as *Guildford from the Banks of the Way* (1805).



Vermilion

Vermilion or Cinnabar is composed of mercury sulfide (HgS). Cinnabar, which is short for cinnabarite, is a red natural mineral. The term cinnabar is usually used regarding the natural method of production. This method included crushing the mineral into a powder then heating and washing it to remove impurities. The term vermilion is used for the artificial method of synthesis. The "dry process" for synthesis included heating mercury and sulfide together. The "wet process" included mixing mercury and sulfide in an ammonium or potassium sulfide solution to decrease the heating temperature.



Cinnabar is used as a red lacquer coating on pottery, such as this piece from the Metropolitan Museum of Art.



The use of vermilion in paintings can be shown in Jacob Jordaens' well-known painting, *The Holy Family and Saint John the Baptist*, painted around the year 1620.



William Morris was a well-known textile designer. He was skeptical of arsenic poisonings, so he used Scheele's green in his designs until pressure from the public turned him to arsenic free greens. The use of Scheele's green can be seen in this early design for Trellis wallpaper.

A newspaper article warning readers about the dangers of arsenic poisoning from clothes.

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