

Dye History from 2600 BC to the 20th Century

by Susan C. Druding

Originally written for a Seminar presented in Seattle, Washington at Convergence 1982, a bi-annual gathering of weavers, dyers and spinners

2600 BC Earliest written record of the use of dyestuffs in China

715 BC Wool dyeing established as craft in Rome

331 BC Alexander finds 190 year old purple robes when he conquers Susa, the Persian capital. They were in the royal treasury and said to be worth \$6 million (equivalent)

327 BC Alexander the Great mentions "beautiful printed cottons" in India

236 BC An Egyptian papyrus mentions dyers as "stinking of fish, with tired eyes and hands working unceasingly"

55 BC Romans found painted people "picti" in Gaul dyeing themselves with Woad (same chemical content of color as indigo)

2ND and 3RD Centuries AD Roman graves found with madder and indigo dyed textiles, replacing the old Imperial Purple (purpura)

3rd Century papyrus found in a grave contains the oldest dye recipe known, for imitation purple - called *Stockholm Papyrus*. It is a Greek work.

273 AD Emperor Aurelian refused to let his wife buy a purpura-dyed silk garment. It cost its weight in gold.

Late 4TH Century Emperor Theodosius of Byzantium issued a decree forbidding the use of certain shades of purple except by the Imperial family on pain of death

400 AD *Murex* (the mollusk from which purpura comes) becoming scarce due to huge demand and over harvesting for Romans. One pound of cloth dyed with Murex worth \$20,000 in terms of our money today (Emperor Augustus source)

700's a Chinese manuscript mentions dyeing with wax resist technique (batik)

925 the Wool Dyers' Guilds first initiated in Germany

1188 the first mention of Guilds for Dyers in London

1197 King John (of Magna Carta fame) persuaded Parliament to regulate dyeing of wools to protect the public from poor quality goods

1200's Rucellia, of Florence, rediscovered the ancient art of making purple dye from lichens sent from Asia Minor (similar to Orchils?)

1212 the city of Florence had over 200 dyers, fullers and tailors. A directory of weavers and spinners was published as well.

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1290 the only blue dye of the period, Woad, began to be raised extensively in Germany. The 3 major dyes were now: woad, madder and weld.

1321 Brazilwood was first mentioned as a dye, source from East Indies and India. (the country of Brazil was named for the wood found there, not vice versa)

1327-1377 Edward III, "Royal Wool Merchant" offered protection to all foreigners living in England and to all who wanted to come to help improve the textile industry.

Early 15th Century Cennino Cennini of Padua, Italy described the printing of cloth (block printing) in his treatise called *Method of Painting Cloths by Means of Moulds*.

15th Century Aztecs under Montezuma conquered the Mayans. 11 Mayan cities paid a yearly tribute of 2000 decorated cotton blankets and 40 bags of Cochineal (insect dye) each.

1429 the 1st European book on dyeing *Mariegola Dell'Arte de Tentori* was published in Italy

1464 Pope Paul II introduced the so-called "Cardinals' Purple" which was really scarlet from the Kermes insect. This became the first luxury dye of the Middle Ages just as Imperial Purple (Murex) had been for the ancient world.

1472 Edward IV incorporated the Dyers' Company of London

1507 France, Holland and Germany begin the cultivation of dye plants as an industry

1519 Pizarro and Cortez find that there is cotton in Central and South America. They send back brightly printed fabrics showing that the Indians knew about block printing prior to the Conquest. Cochineal from Mexico and Peru now being shipped back to Spain.

1614 dyeing cloth "in the wood" was introduced in England: logwood, fustic, etc.

1630 Drebbel, a Dutch chemist, produced a new brilliant red dye from cochineal and tin. It was used at Goblein (Paris) and the Bow Dyeworks (England)

1631-33 The East India Co. began importation of calico from Calicut, India to England. At first they thought the fabric was linen, not cotton.

Mid-1600's English Logwood cutters in Honduras lead a dangerous life (danger from Spaniards, hurricanes, swamps, disease) in the Bay of Campeachy, but could get very rich

1688 James II, of England, prohibited exportation of un-dyed cloth from England to help bolster the home industry for English dyers over that of the Scottish dyers.

1689 the first calico printworks was begun in Germany at Augsburg and was later to grow into a large industry

18th Century - English dyehouse gets contract to dye the Buckingham Palace Guards coats with cochineal. This contract continued into the 20th Century still using cochineal.

1708 William III signed a law prohibiting the importation of printed silks, this only made calicos and silks more popular

1716 There were now more than 30 laws in England prohibiting the importation of calico and cotton; prints became more popular than ever. **1727** A method of bleaching linen with kelp (seaweed) was introduced in Scotland

1733 Fly shuttle invented by John Kay, England

1745 Indigo begins to be grown in England, after the Revolution when it became cheaper to import from the East Indies

1766 Dr. Cuthbert Gordon patents *Cudbear* (derived from his mother's name) Cuthbert was prepared from a variety of lichens. Only one of 2 natural dyes ever credited to an individual (other is *quercitron* to Bancroft)

1769 Arkwright's spinning frame in England (aka the *Spinning Jenny*)

1774 Swedish chemist, Scheele, discovered chlorine destroyed vegetable colors by observing a cork in a bottle of hydrochloric acid

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1774 Prussian Blue and Sulphuric acid available commercially. Prussian blue formed from prussite of potash and iron salt (copperas). Actually one of the early chemical dyes.

1775 Bancroft introduced the use of quercitron bark as a natural dye. One of only 2 natural dyes whose discoverer is known, it yields a yellow, brighter than fustic, and is from the inner bark of No. American oak.

1786 Bertholet, France, recommended chlorine water for commercial bleaching. Other oxidizing agents began to be used, too: hydrogen peroxide, sodium peroxide and sodium perborate.

1785 Bell, England, who had invented printing from plates, developed roller printing

1788 Picric acid available (yellow dye and disinfectant) could be dyed from acid dyebath on wool

1790 Acid discharge of mordant printing developed

1794 Three Frenchmen set up first calico printing

1796 Tennant developed bleaching process

1797 Bancroft develops a process for steam fixation of prints

1798 Oberkampf (in Jouy, France) pleased Napoleon by showing him a roller printer made from a cannon Napoleon had seized from the Pope. This began the famous *Toiles de Jouy* production.

1802 Sir Robert Peel brought out a resist method, he had purchased the idea for from a commercial traveller for equivalent of \$25. It consisted of a wax or other resist on the background, actually a batik technique done on large scale.

1823 Mercer discovered chromate discharge of indigo

1825 Mathias Baldwin (later of locomotive fame) began the first American production of engraved metal rollers for calico printing which were used in the Philadelphia area and could produce 300 yds of fabric per day.

1834 Runge, a German chemist, noticed that upon distilling coal tar, aniline would give a bright blue color if treated with bleaching powder. This helped to pave the way to the development of aniline (basic) dyes 22 years later.

1844 John Mercer discovered that treating cotton with caustic soda (lye) while under tension improved its strength, luster, dyeability, absorbency. The process was called "mercerization".

1856 William Henry Perkin discovered the first synthetic dye stuff "Mauve" (aniline, a basic dye) while searching for a cure for malaria and a new industry was begun. It was a brilliant fuchsia type color, but faded easily so our idea of the color mauve is not what the appearance of the original color was.

1858 Griess discovered diazotisation and coupling on/in the fiber

1858-59 Magenta (fuchsin) discovered by Verguin the 2nd basic dye and more widely used than Mauve

1861 Methyl violet, basic dye, by Lauth

1862 Hofmann's Violet, Hofmann was one of the great dye chemists of all time

1862 Bismarck Brown developed by Martius and Lightfoot, first soluble azo dye

1863 Aniline Black, developed by Lightfoot, a black produced by oxidation of aniline on the cotton fiber.

1866 Methyl Violet, basic dye

1868 Graebe and Liebermann, German chemists, produced alizarin (synthetic madder). this was the first time a synthetic substitute for a vegetable dye had been manufactured. W.H.Perkin also synthesized it about the same time, but independently.

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1872 Methyl Green by Lauth and Baubigny, still in use, basic dye

1873 Cachou de Laval, 1st sulphur dye, a brown, by Groissant and Bretonniere, France

1875-76 Caro and Witt prepared Chrysoidine, 1st important member of azo class of dye

1876 Caro, an important dye chemist, discovered Methyl Blue, an important

1877 Malachite Green, basic dye by Dobner and Fisher

1878 Biebrich Scarlet invented, a very pure red acid dye, rivalling cochineal in brightness

1878 von Baeyer synthesized synthetic indigo. It was not marketed until 1897

1880 Thomas and Holliday, England, synthesized the first azo dye formed on the fabric by coupling. Vacanceine red formed by treating fabric with naphthol and then dipping in a diazotized amine, a very fast category of dyes.

1884 Congo Red by Bottiger, first of the direct cotton dyes

1885 Benzopurpurine, early direct dye by Duisberg, bright and highly substantive

1885 Para Red dye brought out by von Gallois and Ullrich. (B naphthol and nitraniline)

1885-89 Chardonnet, France, made the first successful rayon and showed it at the Paris Exposition of 1889.

1887 First azo mordant dye, Alizarin Yellow GG

1887 Rhodamine B (brilliant red-violet) basic dye

1890 Direct Black BH, first direct black

1891 Diamine Green B, first green azo dye

1891 Chardonnet built his first commercial plant at Besancon for manufacturing rayon, by the Chardonnet process.

1891 Direct dye-Sky Blue FF, important blue for many years, good light fastness

1893 2nd Sulphur dye, Vidal Black

1895 Viscose method of making rayon invented by Cross and Bevan, England was begun. This is now the most common process for manufacture of rayon.

1898 Direct Black E, a black dye of major importance

1900 When Mozaffer ed Din became Shah of Persia one of his first edicts was to prohibit the use of analine dyes for rugs. All analine dyes were seized and publicly burned. Penalties included jail and fines equal to double the value of the merchandise.

1901 Rene Bohn patented his invention of Indanthrene Blue RS, the first anthraquinone vat dye, a category of dyes with extremely good fastness to light and washing

1901 Bohn developed 2nd vat dye, Flanthrene a yellow

1902 Thesmar, Baumann, Descamps, and Frossard brought out hydrosulfite and sulfoxylateformaldehyde.

1905 Thio-indigo Red, by Freidlander, 1st indigoid dye

1908 Hydron Blue, a rival to indigo, developed by Cassella

1914 USA importing 90% of its dye stuffs, a problem during WWI, as many came from Germany.

1915 Neolan dye, 1st metallized chrome dye, dyed from strong acid bath

1921 Bader developed soluble vat colors, the Indigosols.

1922 the AATCC (American Assoc. of Textile Chemists and Colorists) formed its first subcommittee to study washfastness of printed and dyed cottons, formulate testing procedures, standards of fastness.

1924 Indigosol O, by Baeyer and Sunder, 1st commercial indigosol dye

1928 Dupont began the fundamental research that would lead to discovery of nylon

1936 First pair of stockings knit with a new synthetic fiber from DuPont called "nylon" for which Carothers received the patent.

1938 Nylon formally introduced to the public

1948 Textiles became second largest industry in USA. The average consumer consumption per

capita of fibers: 27 lbs cotton, 6.3 lbs rayon, 4.9 lbs wool.

1951 Irgalan dyes introduced by Geigy, 1st neutral pre-metallized dyes (did not require a lot of acid as Neolans did) Cibalans are the same type.

1950 Dupont introduced first commercial availability of Orlon, a new acrylic "wool substitute"

1951 DuPont announced that a plant in N.Carolina would begin to manufacture Dacron polyester.

1951 A new acrylic, Acrilan. was introduced by Chemstrand Corp.

1953 Cibalan Brilliant Yellow 3GL, a dye which lead the way to discovery of the fiber reactive dyes was introduced

1954 Celanese Corp announced first commercial production of an American triacetate, Arnel.

1956 ICI in England introduced Procion, first range of fiber reactive dye - this dye was to have a major impact on industry as well as textile artists around the world ([more here](#))

1956 Eastman Kodak introduced Verel, a modified acrylic

1956 American Cyanamid introduced a new acrylic, Creslan

1956 One person working out of every 7 in the USA received his income from work performed in textile or apparel industries!

1957 CIBA introduces Cibacrons, a new range of reactive dyes and the first to compete with ICI's Procion series

1958 Eastman Kodak introduced Kodel polyester.

1964 First permanent press finishes used

1968 DuPont introduces Qiana, a fancy nylon with "silk" feel and drape

1968 For the first time manmade fibers topped natural fibers for US consumption. 5 billion pounds vs 4.6 billion pounds, the use of polyester was growing the most quickly.

1970s Late in the 70s, CIBA-Geigy introduced Cibacron F series ([history here](#))

These pages were especially prepared by

Susan C. Druding for her dye seminar at Convergence '82.

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Note from Susan:

Normally, I would have a bibliography or list of references attached to this sort of historical listing, but since I wrote this for a lecture given more than 14 years ago I was lucky to have even found the copy of the list, much less my sources.

I would be pleased to hear from anyone with corrections, additions or suggestions for updating this list, but I am unable to supply any additional information specifically for this list.

For some bibliography on dye chemistry and history see the [special TAN reprint on fiber reactive dyes here.](#)

Susan

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