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Make a Rainbow

Support material 2

The History of the Textile Dyeing Industry

Making natural dyes is one of our oldest human activities. Ancient fabrics dyed with plant material have been unearthed at many archeological sites and are referenced in historical texts as old as the Bible. Up until only two centuries ago, the materials and methods of textile dyeing had hardly changed since ancient times. But with the advent of the industrial revolution, chemistry began to play a more important role in the textile industry. This led to improvements in existing dyes, though unfortunately also causing accelerated rates of pollution and the increased exploitation of natural resources.

The early history of modern dyes

Until the 13th century European countries used the same dyes, such as woad, madder and indigo, that had been in use since ancient times. Blue was obtained from indigo, either from woad or the indigo plant and reds were available from the kermes insect, the root of the madder plant, and the so-called “brazilwood” imported from the Far East. Yellows were extracted from weld, Persian berries, saffron, and dyer's broom and these colours were also combined to give greens, browns, violets, and other compound shades.

In 1548, the first edition of the earliest book devoted to professional dyeing was published in Venice. The colonisation of the Americas had led to an enriched European dyers palette, bringing to Europe the South American dyewoods.

An explosion of colour

In 1856, at the age of 18, the British chemist William Perkin made a great, yet accidental, discovery. He produced a substance with an intense purple colour and named it mauveine. The colour purple, which had been a mark of aristocracy and prestige since ancient times, was especially expensive and difficult to produce as the dye, known as Tyrian purple, was made from a particular mollusc. After the discovery of mauveine, many new synthetic aniline dyes were discovered and a significant number of dye production factories cropped up across Europe.

The development of this colonial natural dye industry in North America coincided with a transatlantic revolution in manufacturing methods, especially in textiles. The ensuing rapid growth of the textile industry from the end of the eighteenth century onwards came about through the introduction of mechanised processes, the use of chlorine for bleaching, and by the mid-nineteenth century, multi-colour roller printing. These new processes, along with the introduction of steam power, enabled rapid, large-scale production, and were met by an unprecedented demand for dyes. This encouraged scientific studies, especially in researching new methods for applying dyes in printing and improved extraction processes.

Competition rose among chemistry companies in Great Britain, Germany, France and Switzerland, and new types of chemical dyes—known as azo dyes—were developed as a result. In the twentieth century, textile corporations moved to countries with cheaper labour, such as China, Bangladesh, India and the Philippines. Many former farmers were forced to work in textile factories to help meet the increasing demand from developed countries—changing their lives dramatically.

Hope for the 21st century

Today there are new pigments being derived using natural processes, and it is possible to dye fabrics using about 500 times less water than with traditional methods, and with far fewer harmful synthetic chemicals. However, this area of innovation is still in a development phase and has not yet been industrialised.

Who makes your clothes?

Mainstream growth economics are based on ever-increasing production, consumption, inequality and pollution. In many countries like Bangladesh, wastewater from the fashion industry processes is commonly dumped directly into natural rivers and streams. The fashion industry is responsible for up to one fifth of industrial water pollution and uses approximately 93 billion cubic metres of water annually—enough to fill 37 million Olympic swimming pools! Cotton is the second most damaging agricultural crop in the world, accounting for 25 percent of all pesticide use globally. According to the United Nations, producing a single pair of jeans consumes around 7500 litres of water from growing the cotton to finalising the finished product.

More than 3600 individual textile dyes are currently being manufactured by the fashion industry, using more than 8000 chemicals in various textile manufacturing processes. Many of these chemicals are poisonous and harmful to humans and non-humans alike.

The consumption of fashion products is set to rise by 63 percent to 102 million tons per year in 2030, according to the 2017 Pulse of the Fashion report. With these kinds of numbers, even if everyone dressed in organic cotton and natural dyes, the effect would still be devastating.

Unfair pay and unsafe working conditions are all too common for millions of garment industry workers who are most often women and sometimes even children. On top of this, a staggering 20 percent of all clothing items produced each year are not even sold, and are instead often buried, shredded or burned. It doesn't seem right that some of the world's most vulnerable people are paying the ultimate price for fashion.

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