

Colours from coal

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In 1856, an eighteen-year-old chemistry student in London, William Henry Perkin, tried to synthesise quinine, the antimalarial drug, from substances derived from coal tar. He failed to produce quinine. What he obtained instead was a purple substance that dyed silk a brilliant colour, which he called mauveine. Perkin patented his discovery, built a factory and became rich. His mauve set off a fashion craze in Paris and London and started a scientific and industrial revolution: the synthesis of dyes from coal tar.¹

Coal tar was a waste product of the gas works that supplied the cities of Europe with gas for lighting. It contained aromatic compounds, benzene, toluene, naphthalene, anthracene and others, from which chemists learned to produce an ever-growing range of dyes. In 1858 and 1859, the French chemist François-Emmanuel Verguin discovered fuchsine, a brilliant red dye, which was produced in Lyon by the firm Renard frères. The German chemists Carl Graebe and Carl Liebermann synthesised alizarin, the red dye of the madder plant, in 1868. Indigo followed at the end of the century. Within a few decades, synthetic dyes replaced most of the natural dyes that the merchants of Basel had imported from the tropics for centuries.

The dye industry became the first science-based industry. Its products were the result of research in organic chemistry, with success depending on laboratories, trained chemists and a systematic search for new compounds. Its companies thereby became the first industrial enterprises to employ scientists on a large scale. Germany, with its excellent universities and technical schools, took the lead. Companies such as BASF, Hoechst and Bayer, all founded in the 1860s, dominated the world market for dyes by the end of the century. Basel became the second centre of the industry, and the only significant one outside Germany apart from the much smaller British and French producers.

1 Notes

1. On William Henry Perkin's discovery of mauveine in 1856 and the beginnings of the synthetic dye industry, see the standard literature on the history of the chemical industry. To be verified. ↩

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