



Mauve: a color that changed chemistry, medicine and history

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Malaria is one of the oldest recorded human diseases and still kills more than a million people a year today. From the 1600s until the 1820s a crude extract of the bark of the cinchona tree from South America was used to treat the "fevers". In that year Pelletier and Caventou, French pharmacists, isolated the active principle of the bark effective in the treatment of malaria, and named it "quinine". The difficulties and expense involved in obtaining quinine from cinchona in the middle of the 19th century prompted many chemists to consider synthetic methods for the production of the drug, even though practically nothing was known at the time about organic chemical structure and atomic bonding. In 1856 William Perkin, an 18-year-old chemistry student in London, attempted a chemical synthesis of quinine by oxidizing N-allyl-p-toluidine, a substance obtained from coal tar. Predictably, the reaction gave no quinine but led Perkin to the invention of mauve, a synthetic, "aniline" or "coal tar", dye. This invention revolutionized chemistry, pharmacology, diagnostic medicine, etc., and literally changed history. For example, it marked the beginning of the synthetic dye industry, which in turn led to the start of the modern chemical and pharmaceutical industries. These developments were based on the impetus the invention gave to chemical research. Quinine is a complex molecule with challenging stereochemistry, and its stereoselective synthesis was not accomplished until 2001, despite extensive earlier efforts.

In this presentation the details of the above story will be discussed.

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