

From Laboratory to Fashion – The introduction of Aniline Black into textile dyeing in the 19th Century

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Abstract

In 1834, Friedlieb Ferdinand Runge (1794 – 1867) was the first to observe the formation of a dark green nearly black dye when he allowed hydrochloric acid aniline to act on a substance treated with bichromate. But it was not until 1863 that John Lightfoot (1832 – 1872) in Accrington, UK developed this process into a practical aniline black dyeing method by performing the oxidation in the presence of copper salts directly on the fibre. He later patented this discovery.¹

Defines as a Oxidation Dye Aniline Black is archived directly on the fibre / substrate and therefore was mostly used in textile printing. It was achieved by the oxidation of a soluble aniline salt with an oxidation agent and one or several oxygen carriers. After printing as a thickened paste it was dried and exposed to air or steam.² Its colour, a dark, blueish green black varies due to the level of oxidation and ingredients used. Completely oxidized it shows the highest fastness properties.

Unlikely to many other synthetic or natural dyes there were no “ready to use” dye powder or liquid on the market. Aniline Black must prepared directly by the colourist or dyer in the workshop. Therefore Aniline Black is a great example of how applied chemical knowledge was developed in the field of dyeing and printing at the second half of the 19. Century. The discovery of Aniline Black for the textile production in Lancashire was a consequence of the rise of a new high-technology industry, the production of synthetic dyestuffs and an exchange of knowledge started decades ago.³

How the new dye and its production was adopted and further developed by the dyers in England and Germany will be presented. This talk will focus on how a science based craftsmanship can create new knowledge and influence the chemical field, printing technologies but also the fashion industry -the technical peculiarities in the production of Aniline Black also made new multicoloured patterns possible, which were luckily taken up by the designers.

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¹ Travis, A.: From Manchester to Massachusetts via Mulhouse: The Transatlantic Voyage of Aniline Black. In: *Technology and Culture* 35 (1). 1994. p. 73.

Noelting, E., Lehne, A.: *Anilinschwarz und seine Anwendung in Färberei und Zeugdruck*. 1904.

² Knecht, E. Forthergill, J.B.: *The Principles and Practice of Textile Printing* (4. Ed.). 1952. p. 321 – 339.

³ Homburger, E.: From colour maker to chemist: episodes from the rise of the colourist, 1670 – 1800. In: Fox, R., Nieto-Galan, A.: *Natural Dyestuff and Industrial Culture in Europe, 1750-1880*. p. 219 – 257.