



B L O O M S B U R Y

The Dangers of Dress Past and Present
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Fashion Victims

Mauve Measles

"One of the first symptoms by which the malady declares itself consists in the eruption of a measly rash of ribbons, about the head and neck of the person who has caught it. The eruption, which is of a mauve colour, soon spreads, until in some cases the sufferer becomes completely covered with it."

"The Mauve Measles," *Punch*, Saturday, August 20, 1859, p. 81

Like white arsenic derived from large-scale mining and smelting operations that were a product of the Industrial Revolution, the toxic chemical benzene, used to produce aniline dyes, came from coal mining and its by-products. Developments like gas lighting and heating, derived from coal, were spurred by shortages in natural lighting resources like whale oil and candle tallow in the first decades of the 19th century.¹² Use of coal gas left large amounts of coal tar residue, a viscous black sludge. Chemists looked for other applications for this plentiful sludge, both medical and commercial, and while trying to synthesize quinine to cure malaria, the 18-year-old William Henry Perkin discovered that the black coal-tar solution he was using dyed cloth purple (Fig. 5). The hue, according to *All the Year Round*, a popular magazine edited by none other than Charles Dickens, was "rich and pure, and fit for anything; be it fan, slipper, gown, ribbon, handkerchief, tie, or glove. It will lend lustre to the soft changeless twilight of ladies' eyes—it will take any shape to find an excuse to flutter round her cheek—to cling . . . up to her lips—to kiss her foot—to whisper at her ear. O Perkin's purple, thou art a lucky and a favoured colour."¹³ The erotically alluring mauve was born, and the chemist became a wealthy man. Purple was a popular colour throughout the 19th century and frequently "kissed" women's feet, as these shoes from the Bata Shoe Museum attest (Fig. 6). The "flashy" silk satin aniline mauve boots

from the 1860s at the back, which have faded considerably, were purchased by a British woman in France.

Not all publications, however, received mauve with the same warm welcome. *Punch* magazine humorously compared the rapid adoption of aniline mauve by every fashionable man, woman, and child in England in 1859 to a virulent outbreak of measles, a disease that

- ▼ 5. Dress dyed with Perkin's mauve, 1862–1863. SCM—Industrial Chemistry, Science Museum, London.





▼ 6. Nineteenth-century purple-dyed shoes. From top to bottom, English, ca. 1860s; Turkish-made, ca. 1855-70; French, ca. 1830s. Copyright © 2015 Bata Shoe Museum, Toronto (Photo: Ron Wood).

causes bright purplish-red splotches on the skin (Fig. 7). As mentioned in the earlier case study, fashion writers adopted the medical language of contagion to describe mauve's rapid spread through the population, describing it as "very catching." It suggested that milliners' and bonnet shops were infected places that "should just now be marked as 'Dangerous.'" While its "ravages are principally among the weaker sex," some men might have a milder form of the disease, but "in general one good dose of ridicule will cure it."¹⁴ Another journalist gave a less dire prognosis, calling it a "mild fever" and a "gentle, fashionable insanity for Perkin's purple." As he looked out his window, he described how he saw the colour everywhere, "the apotheosis of Perkin's purple seems at hand—purple hands shake each other at street doors—purple hands wave from open carriages—purple hands threaten each other from opposite sides of the street; purple gowns cram barouches, jam up cabs, throng steamers, fill railway stations: all flying countryward, like so many purple birds of migrating Paradise."¹⁵ This way of describing the rapid, and sometimes illogical, spread of a fashion trend is still with us when we say that a certain image, video, or event has "gone viral." Even though 19th-century commentators observed how new dyes spread from one woman to another or migrated from

the city to the countryside, this phenomenon is global, as are the chemical dyestuffs that still colour our clothing.

The development of aniline dyes affected all of society and led to many further scientific, medical, and commercial applications. These included the advent of immunology and chemotherapy, allowing researchers to stain and identify the tuberculosis and cholera bacilli, and led to synthetic perfumes and food colourings.¹⁶ On the flip side, many of its derivatives were toxic, and aniline-based compounds became the raw materials for deadly explosives. Yet despite these dangers, the story of Perkin's invention is retold in many celebratory texts and images. Whereas arsenic could create convincing green leaves, colours like mauve and fuchsine, named after flowers, could recreate and seemingly improve upon the shades of nature. As *All the Year Round* put it, the "dull brown purple" of the mallow flower was "utterly unlike the delicious Violet of Perkin."¹⁷ Fuchsine, discovered by the Frenchman Emmanuel Verguin in 1859, was a "rich crimson red" used in large quantities for military uniforms. By the end of the year, it was all the rage as a fashion colour.¹⁸ In England, it was triumphantly named after victorious battles, first Solferino, then Magenta, after the French-Austrian encounter in 1859. As a brilliant magenta



◀ 7. Back of a female showing a case of measles. From Ricketts, *The Diagnosis of Smallpox* (London: T.F. Casell and Company, 1908), Plate XCIII. Wellcome Library, London.



▲ 8. Madame Vignon, magenta dress, ca.1869–1870, Paris. © Victoria and Albert Museum, London.

gown from about 1869 by the elite Parisian dressmaker Madame Vignon attests, the electric purplish-pink colour remained fashionable for a decade (Fig. 8). Mauve was soon joined by an entire spectrum of colours, some of which are visible on this shade card from Friedrich Bayer & Co. after the dye industry was monopolized by the Germans (Fig. 9).

During the 1860s and 1870s, the quest to understand aniline was so complex and intriguing that it was even worthy of the attention of detective Sherlock Holmes. When in France hiding from the evil Professor Moriarty, he “spent some months in a research into the coal tar derivatives.”¹⁹ The money to be made from inventing and patenting new shades for the textile industry made the situation even more complex. Early aniline colours were made more vibrant by using an arsenious acid dyeing process. The toxin was not always washed out in the final product and could be absorbed through the skin. The arsenic also leached into

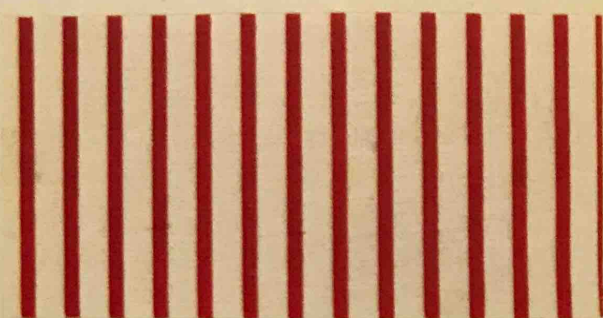
the water and soil near dye factories, killing a woman near a French factory making fuchsine (magenta). An autopsy revealed arsenic in her organs, which had poisoned the well she drew her water from.²⁰ In order to make the same magenta, which was the height of fashion in 1860, Perkin’s own factory used mercuric nitrate, the same solution that carotated fur felt hats. He had to discontinue its use: like hatters, his own workers were being poisoned by the solution.²¹ The pace of innovation increased during the second half of the 19th century, and chemists played with formulations and chemical families to achieve a particular shade of blue or scarlet that was in style. The speed of change left civilian and military doctors, toxicologists, and even veterinarians scrabbling to understand the chemical compositions of particular shades that were causing health problems. In the case of a reddish orange dye called coralline, the eminent toxicologists Ambroise Tardieu and his assistant Roussin conducted horrific but seemingly

- ▼ 9. Shawl dyed with Perkin’s mauve (1856) and Aniline Dye Shade Card, ca.1910, Bayer & Co. SCM—Industrial Chemistry, Science Museum, London.





CORALLIN ON WOOL.



YELLOW CORALLIN ON CALICO.

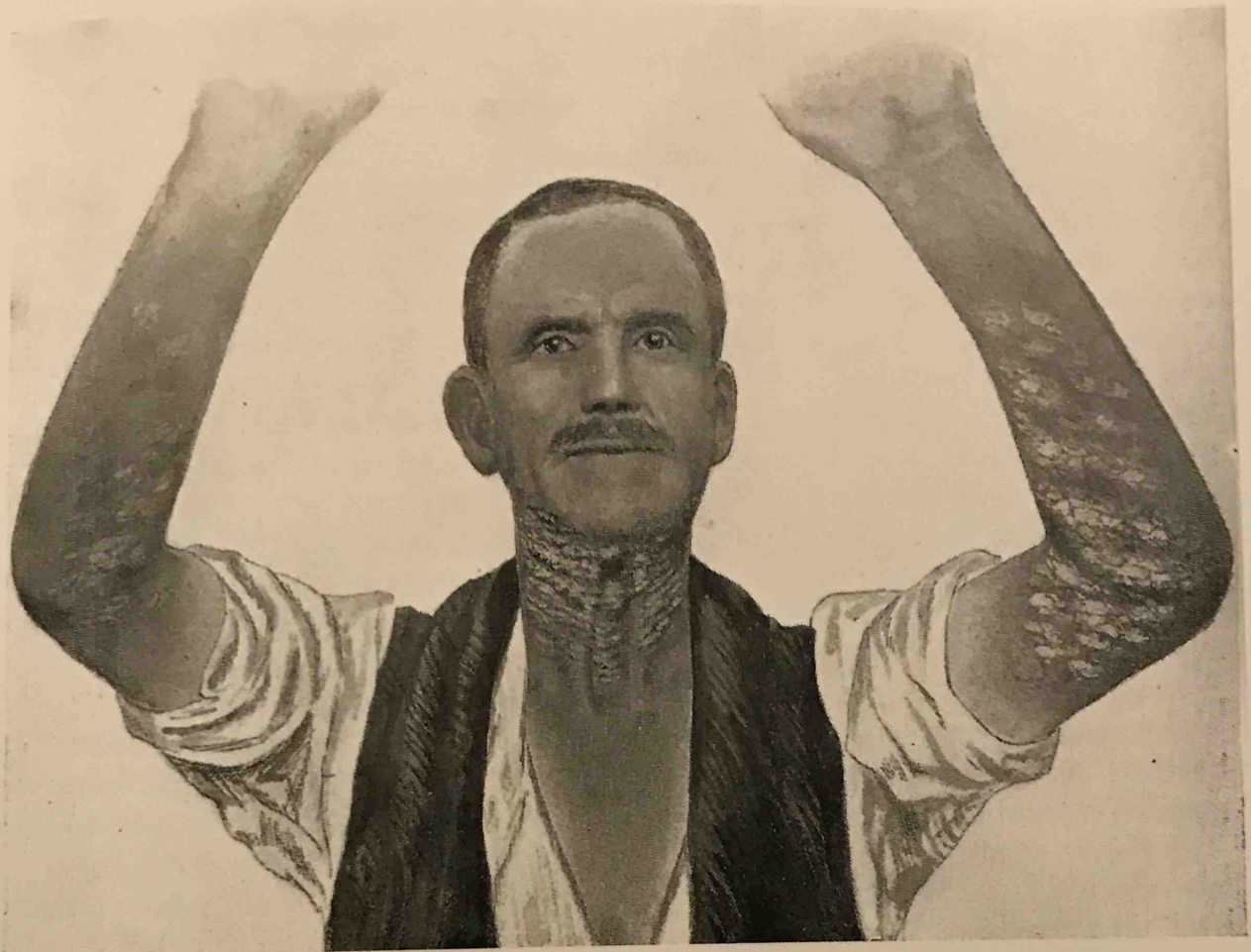
▲ 10. Red corallin dye on wool and yellow corallin on cotton, fabric swatches. From Dr. F. Crace-Calvert, *Dyeing and Calico Printing* (Manchester: Palmer & Howe, 1876). ©Victoria and Albert Museum, London.

conclusive experiments.²² In order to prove that coralline was poisonous, they distilled red from an incriminated pair of socks with boiling alcohol, and injected it into a dog, a rabbit, and a frog, eventually killing all three. On noticing that the red had stained the rabbit's lungs a 'very beautiful nuance of scarlet,' they extracted the dye and proved that it could still tint a skein of silk a "characteristic" shade of coralline (Fig. 10). In an echo of the experiment designed to prove that the dye, made by large firms in Lyon, France, was harmless, the Landrin brothers, a young vet and a doctor, along with two workers at the famous Parisian Gobelins tapestry works, pulled a stunt. They too distilled socks in alcohol and dyed their own hands and feet many

times over several days to prove that Tardieu and Roussin were wrong and that commercial coralline was "completely innocuous."²³

Time would challenge their conclusions, as observations over years and decades showed that men in the dyeworks became ill with acute and chronic aniline poisoning, or "Anilinism." Although it had always been a hazardous occupation, by the dawn of World War I, the precise dangers of the job were well known. Dyeing used "a great variety of toxic substances as coloring, bleaching, and fixing agents or mordants."²⁴ Chromium, or chrome as it was called at the time, was extensively employed in leather tanning and dyeing in the early 20th century. It bored deep "chrome holes" in workers' hands, nicknamed *rossignols* or *nightingales* because they were so painful they made those affected sing out like birds at night. An image from a treatise on occupational skin diseases graphically demonstrates the painful rash chrome vapour produced on the arms and neck of a man who dyed stockings (Fig. 11). Another treatise on occupational diseases shows workers "Squeezing Dye from Yarn by Hand" with no protective gloves and calls dyeing dirty work "at best."²⁵ The author noted that workers in this industry suffered from respiratory illnesses like bronchitis, skin irritations (like eczema), anemia, and cyanosis, known as "the blues" by workers in the trade, which was a sign of oxygen deprivation and turned lips and extremities blue. Aniline also caused a high number of bladder and testicular cancers.²⁶

One would expect women, who became the chromatic peacocks of the 19th century, to suffer from a disproportionate number of aniline poisonings, yet some of the worst cases of dye intoxication were of children and full-grown men. Middle- and upper-class Victorian women were expected to be sedate, graceful, and sedentary compared to their more active



▲ 11. Chrome dermatitis from dyeing stockings, ca. 1910. Prosser White, *The Dermatergoses or Occupational Affections of the Skin* (London: H.K. Lewis, 1934). Courtesy Gerstein Science Information Centre, University of Toronto.

masculine and juvenile counterparts. Men and children, who worked, walked, or ran even during hot weather perspired, sometimes profusely, into their shirts, socks, shoes, and even hatbands. Recent academic studies done with the Adidas Innovation Team have proven that men sweat most on the lower back and forehead, and that they sweat almost twice as much as women during exercise.²⁷ Emerald green and the new rainbow of aniline dyes had rarely been worn next to the skin; however, red had long been a popular colour for men's and children's socks, women's stockings, flannel undergarments, petticoats, and the shirts worn by working-class

men. Traditional red dyes, made from plants like madder root and insects like cochineal beetles, may have deterred pests like moths from eating red wool, but they were colourfast and safe for skin. Red "was frequently worn next to the skin by preference" and marketed as "anti-rheumatic" or recommended by doctors.²⁸ Popular belief even held that red flannel had special hygienic properties.²⁹

Poison Socks

When aniline dyes began to be used for a wide range of garments in direct contact with the skin, however, some wearers suffered severe and painful reactions. Sweat modified the colours, which gradually stained the skin, giving glove wearers stained "dyer's hands." But the greatest vitriol and perplexity was reserved for the humble knit garments on men's and women's feet. In the 1860s, fashions in men's socks and women's stockings replaced traditional dyes with brilliant synthetic fuchsine and coralline-striped creations like these four rare surviving pairs of men's socks in the collection of the Museum of Costume in Manchester (Figs. 3 & 4). Two of these socks have 1862 woven into the band at the top, and a detail shows how bright the colours were, alternating black with almost fluorescent orange and magenta. In 1861, the *Lady's Newspaper* remarked "the sudden apparition of particoloured and diversified stockings, the tints of which were so bright and glaringly contrasted, that at first sight one supposed that the wearers must be going to take part in some fancy ball . . . Red and black, red and white, mauve and grey, dance before one's astonished eyes in all the shop windows," drawing the viewer's attention to the "rainbow-spanned ancles" peeping out from under the flounced skirts.³⁰

In England, these "brilliant" and "gorgeous" new styles of striped and plaid socks and stockings were very popular with the public, and 250,000 pairs in cotton and 125,000 in woolen worsted were exported every year.³¹ Although these colours "were calculated to attract the eye"³² in shop windows, many of their colours were only for personal enjoyment or subtle display. A bourgeois man's bright socks would only have been glimpsed as a flash of colour between his shoes and black trousers, or were otherwise hidden beneath his ankle boots. Regardless of

their actual visibility, they soon became part of a highly public media and medical debate. Famously, a British Member of Parliament was confined to his house and laid up on his couch for months because of a painful eruption of the feet.³³ A Frenchman in Le Havre, wearing imported purple and red striped socks he had purchased in London and worn "for 12 days," suffered from pustulent, inflamed feet and ankles with acute and painful eczema in "red transverse stripes."³⁴ The doctor traced the problem to the socks, which he had chemically analyzed. He found that the red was fuchsine, which had not been used before for items "coming into direct contact with the skin." Interestingly, the British medical journal *The Lancet* had refused to publish the French doctor's report on this imported poison, perhaps out of a displaced sense of nationalism. After these incidents, one "highly-respectable city firm" stopped an order of over 6,000 pairs of tainted socks "at great pecuniary sacrifice" and returned to traditional dyestuffs, losing 1000 pounds of profit in the process.³⁵ Not all manufacturers were as scrupulous, however, and many more cases emerged, including an incident in 1871 where a gentleman's pair of purple and yellow socks caused his feet to become "inflamed in stripes presenting an appearance described as that 'of an inflammatory tiger.'"³⁶ Despite these problems, one doctor sarcastically observed "but what does it matter? They flatter the eye and last long enough for the fabrics we manufacture nowadays!"³⁷ Skin burns and panic ensued in France and England. One potentially tongue-in-cheek correspondent to the *Times* who dubbed him- or herself "Barefoot in Taunton" suggested that the obvious cure was to follow his or her example and abandon wearing socks and stockings altogether.³⁸

Doctors puzzled over why only a small proportion of wearers suffered chemical burns whereas others seemed fine, including the judge in a poisonous socks case who "was in the habit

of wearing coloured socks" himself "without evil consequences."³⁹ Even though some men had unwisely worn toxic socks without washing them beforehand, certain dyes seemed to leach from cotton, silk, and wool only when heated to high temperatures in summer by tight shoes pressing into the skin, or when reacting to the individual sweat chemistry of their wearers.⁴⁰ In 1868, chemist William Crookes tried and failed to identify the exact chemical composition of the agent in the "several hundred dozen pairs of chromatic torpedoes already let loose upon society."⁴¹ He identified it as a new orange dye that had been introduced only 18 months earlier. When mixed with magenta it could also produce a brilliant scarlet. Workers using this corrosive dye were forced to "retire" after six months, their arms covered with sores.⁴² Another problem occurred when the dye came into contact with the sweat of a small number of wearers. Most human sweat has a slightly acidic pH balance, but this particular new orange dye seemed to be soluble in rarer alkaline or basic sweat, thus poisoning a small but alarmed percentage of sock-wearers.⁴³ Crookes suggested that instead of throwing the incriminated socks away, that washing them with soap and soda would make them "lose their stimulating action, both on the feet and the optic nerve."⁴⁴

The problem of English red, orange, and violet dyes also affected working-class men, soldiers, and even children, who wore colour more openly than their stockinged bourgeois counterparts. In December 1868, a sea captain in the French navy, identified as Capitaine B., docked in Yarmouth in England with no clean clothes after months at sea. He bought a beautiful amaranth-red- or carmine-coloured shirt striped with dark violet at a slop-shop for ten shillings and put it on for five days without washing it beforehand.⁴⁵ He took it off before sailing for France because it was staining his skin, hair, and

the inside of his mouth an indelible red that could not be removed with boiling soapy water or alcohol. However, after contracting pneumonia, he put it back on, when the abundant, feverish sweating of the deathly ill captain provoked another skin reaction and almost killed a "man in the force of age with an excellent constitution."⁴⁶ Although the doctor hoped that sailors would not be tempted by gaudy red English cloth, an article four years later describes further cases, including a Zouave soldier who refused to give up his red shirt because he could not believe that such a beautiful thing was the cause of his illness.⁴⁷ All of these cases prove that widespread consumer desire for bright colours, the constant chemical engineering and marketing of new tints, and increasing medical knowledge of their potential dangers competed for public attention throughout the second half of the 19th century.

Organizations at the 1884 International Health Exhibition capitalized on consumer fears by marketing items like "famous" hand-spun, hand-woven Irish Galway flannels tinted with vegetable dyes like madder red and indigo.⁴⁸ By the end of the nineteenth century, chromophobia was popular knowledge. In 1892, Ada Ballin, an expert on women's and children's health, unequivocally declared, "No dyed garment should ever be allowed to come into contact with the skin."⁴⁹ All colours, not just green, purple, and red, were considered potentially dangerous. Even though colour did not disappear from fashion, the Edwardian vogue for white cotton dresses and the modernist "pure" white-painted walls may have been a product of medical knowledge and several decades of campaigning and public exhibitions by "Sanitarians" and Dress Reformers.⁵⁰ New understandings of germ theory and toxicology also contributed to a desire for white, undyed fabrics that could be washed and bleached of infectious agents. The dangers posed by green and magenta were reduced by the 1890s; nevertheless,

new dye technologies flooded the market with other cheap but highly toxic by-products from aniline production like nitrobenzene, including shoe polish, dyed furs, and cosmetics.

The Black Death

"We are all dressed in black like so many people in mourning."

Honoré de Balzac, cited in John Harvey, *Men in Black*, p. 26

While stylish 19th-century women were shimmering emerald gems or colourful "birds of purple paradise" in mauve gowns, in the machine age civilian men favoured sober, respectable black. Almost as hard to maintain as a pure, spotless white, a true, rich black was the prerogative of the wealthy. In suits, cheap black dyes quickly faded to a dirty dark green or yellow, and unpolished boots or shoes would have been matte and mud-spattered. White was desirable for Caucasian women, who wore gloves, carried parasols, and applied lead-based "Liquid Pearl" fluid to their faces to achieve a soft, genteel white glow.⁵¹ Velvety black was equally desirable for their male counterparts, and men were conscious of how literally polished they were, investing a great deal of time and energy into keeping up appearances by whatever means they could. Gleaming with the burnished sheen of steel, men's accessories adopted an aesthetic that could be called the "industrial sublime:" black shoes in shiny patent leather matched a glossy "gossamer" silk top hat. A whole "blacking" industry endeavoured to give men's footwear the required black veneer. An entire population of impoverished, often homeless shoeshine boys and bootblacks constantly worked the city streets, charging a pittance for their services, whereas the well-to-do had house servants to tend to their footwear. The text of a photograph of an "Independent

Shoe-Black," taken by John Thomson in 1877 for his *Street Life in London*, describes how the police persecuted boys who could not afford to pay for a five-shilling license, sometimes kicking their boot boxes into the streets, breaking them and spilling their blacking. No young or able-bodied men were allowed to ply the trade. The image depicts a man in a recognizable one-legged stance, having his heeled boot brushed carefully by a young boy of 8 or 9 who, "whenever he had a few moments to spare, he might run out and hope to gain some pence" to help his mother who looked after their invalid father, "by cleaning gentlemen's boots."⁵²

As the expression to be "well-heeled" suggests, the design, maintenance, and condition of a man's footwear was a strong indication of where he stood on the social ladder. In our age of cheap, disposable, and even washable shoes and clean concrete sidewalks, we forget that shoes were a major expense for the poor, and that even for the wealthy, 19th-century pedestrianism could be fraught with perils. Dirty, muddy, and often unpaved walkways were heaped with horse excrement and other refuse, and few men could keep their shoes burnished to perfection without help (or a carriage). In addition to shoeshine boys and newly available umbrellas, several helpful technologies and architectural spaces were available to the resourceful bourgeois pedestrian in quest of clean footwear in Paris. Japanned, lacquered, and patent finishes for leather, called *cuir verni*, had a protective function—several coats of varnish made footwear more waterproof and it became easier to remove mud splatters from boots. Yet varnishing leather in the early 19th century involved the use of lead ceruse and toxic, flammable solvents that emitted a horrid stench.⁵³ New spaces arose to cater to shoppers who wished to avoid traffic and inclement weather. In the glamorous new covered arcades or *passages* of postrevolutionary Paris, which were tiled and lit by gas lamps for strollers, a *décrotteur* or "mud-



▲ 12. Louis-Léopold Boilly, *The Downpour or Passez payez*, 1803. Musée du Louvre, Paris, France
(Photo: Erich Lessing / Art Resource, New York).

remover” was stationed at either end of the arcade to clean the footwear of those coming in.⁵⁴ Yet when it rained in Paris, streets became almost unnavigable. Clever entrepreneurs provided a solution. They wheeled out planks of wood and charged a toll for their use, allowing wealthy families like the one depicted in Boilly’s painting to cross the streets unsoiled on these impromptu bridges (Fig. 12).

Despite these aids, shoes had to be regularly maintained, and techniques to prolong the life of shoes and boots included resoling, brushing,

and painting or buffing leather. Dark footwear was frequently “blackened” or *ciré* (waxed) with liquid or paste preparations. A print observes these trades on the banks of the Seine in Paris, showing entrepreneurs performing small but important grooming services for animals and people such as clipping dogs’ coats and giving black shoes a touch-up of “French” or “English” polish (Fig. 13). In this case, a working-class woman is having the polish painted on her shoes, which was typical for women’s more delicate footwear. Many different varieties of blacking were marketed and sold, and



▲ 13. Street vendors on the Seine in Paris: A pet groomer, a shoe shiner, and a bookstall, early 19th century. Wellcome Library, London.

London was the key manufacturer and exporter of these solutions. To give an example of how important it was to have “spit and polished” footwear and how lucrative this industry was, Charles Day, proprietor of the blacking firm Day & Martin, which employed Charles Dickens when he was a teenager, was worth the then-mind-boggling sum of £350,000 on his death in 1836.⁵⁵

Whereas early blacking formulations contained unsavoury ingredients like wax, tallow or animal grease, and lampblack, a coal-based residue, 19th-century chemical innovation introduced far more toxic substances. Around the time of blacking magnate Charles Day’s death, Eilhard Mitscherlich, a German chemist, first isolated a yellowish liquid called nitrobenzene or nitrobenzol. British chemist Charles Mansfield patented and commercially produced it for perfumery in England in 1847 under the name of Oil of Mirbane or Myrbane.⁵⁶ Because of its aromatic properties—it smelled like bitter almond essence—it was used as a cheap scent in beauty items like hair and face creams and soaps and even in candies, marzipans, and liqueurs.⁵⁷ When aniline dyes were at their peak in the mid-19th century, all the available benzene was required to manufacture dyes, but as new dye technologies emerged, nitrobenzene or benzene treated with “fuming” nitric acid, became widely available as a “cheap industrial and commercial solvent” also used extensively in dry cleaning.⁵⁸

Nitrobenzene is a highly toxic chemical that oxidizes iron in the blood and turns the body a steel- or ash-grey colour, whereas the lips turn a distinctive, dark blackberry violet shade.⁵⁹ Despite modern medical intervention, in 2012 in Lucknow, India, a 17-year-old girl who drank an unknown quantity of the liquid to commit suicide died four days later of a condition now known as methaemoglobinemia.⁶⁰ Doctors began to record serial nitrobenzene poisonings in the dyestuffs industry in the late 19th century. As

one doctor speculated in 1899, “the oxygen-carrying power of the hemoglobin . . . seems to be lost,” and concluded that “when the stage of coma is reached there is but little chance of preventing a fatal termination.”⁶¹ Lethal accidents occurred when the liquid spilled on clothing. One man used it to remove a paraffin stain on his garments, and another whose clothes were splashed with it left them on for four hours: both died.⁶² The health effects were most severe for the workers synthesizing the chemical. An 1892 technical treatise on the use of “aromatic” dye chemistry recorded that nitrobenzene manufacture was “formerly the source of many accidents and dangerous explosions” and noted that sick workers complained of “burning irritation in the mouth, tingling tongues, nausea, vertigo, symptoms of depression, coma, sleepiness, anxiety,” as well as ringing ears, violent headaches, cramps, convulsions, and livid skin, and “the air they exhaled smelled of bitter almonds. Fourteen out of forty-four cases of industrial poisoning resulted in death.”⁶³

Thrift, an otherwise worthy motive, caused the most serious serial nitrobenzene poisonings of the first three decades of the 20th century. When light tan or yellow shoes became too soiled to wear, they could be redyed black or brown by brushing them with a liquid blacking solution, often called “French Dressing” in the United States (Fig. 14). The solvent used to suspend the black dye in these solutions was often toxic liquid aniline or worse, one of the even cheaper and more plentiful chemicals used to synthesize it, nitrobenzene or nitrobenzol. When it was applied wet, it evaporated, producing potentially deadly fumes. In liquid form, it also soaked through cloth uppers or leather and was absorbed into the skin of sweaty feet or ankles. The tragedy is that poisonings often occurred on “ceremonial” occasions when propriety was important and shoes were polished to look their best. Shoes



▲ 14. Trade card for Bixby's Royal Polish for ladies' shoes and satchels and Bixby's Best Blacking for Gents' boots, ca.1880, chromolithograph. Author's collection.

were blackened at a shoe repair shop or at home before a social occasion, a weekly ritual "child-and-nanny Sunday walk,"⁶⁴ or simply to dress appropriately for a standard office job. One French case ironically consisted of a "healthy man who went to a funeral in yellow shoes which had been blackened . . . was seized with vertigo and passed into a state of cyanosis."⁶⁵ Cyanosis, or lack of oxygen in the blood, which caused extremities and lips to turn blue or black, was one of the most distinctive visual symptoms. Two French

doctors, Landouzy and Brouardel, had written up a case in 1900 where six of seven children from the same family were poisoned by recently dyed shoes. At the beach, the 3-year-old's lips turned blue and she toppled over, and her 4-year-old sister followed a few instants later, exclaiming, "Mummy, everything is spinning!" Half an hour later, their 5-year-old brother exhibited the same symptoms. The elder children, who were 9, 13, and 14, were affected less severely but still had blue lips and hands.⁶⁶ This case caught the public



and medical imagination, and many similar incidents were reported in the press.⁶⁷

The court proceedings of a French case against the manufacturer of a toxic shoe dye give a gripping and "expressive" firsthand record of what it was like to be poisoned by one's own boots.⁶⁸ A young man, identified simply as *Sieur W.*, woke up for work and put on yellow button boots he had recently had dyed black. He walked a total of 3 kilometres to work in central Paris, which no doubt caused his feet to sweat. Looking out the window at work, he spotted a woman wearing new yellow boots pass by. He said, "How funny, I just blackened mine." His friend remarked that a child had recently died from wearing blackened shoes, an observation which later helped him figure out what was happening to him. By mid-morning, his face and lips had turned "violet," and he felt dizzy and stunned. He details how every single person he encountered saw him and exclaimed: "What is the matter? You are all black" or "Oh! how strange, he has black lips and ears: it looks as if his face is decomposed."⁶⁹ He saw a pharmacist, who told him to see a doctor, then chanced upon a police inspector, who helped the by-then very ill man to a doctor, who diagnosed cyanosis and heart problems. After fresh air and taking off what he called his "maudites" or "accursed" dyed boots, his health was much improved. A judge seized a bottle of the dye and had it chemically analysed. It tested positive for aniline. Landouzy and Brouardel conducted animal experiments to prove how dangerous this substance was in a court of law. They applied a scrap of leather dyed with the incriminated polish onto a rabbit with a patch of its skin shaved. The outside surface of the leather was brushed with one coat of the dye and a band of cotton batting wet with hot water was applied over it. The rabbit became cyanotic within one hour and died within two.⁷⁰ As a result of these experiments, the court condemned the

manufacturer and fined him a paltry 50 francs for endangering the health of the public.⁷¹ In 1901, Julien Tribet, a medical student from the dye-manufacturing city of Lyon, stated in his thesis that "It is essential to warn the public that aniline dyes and shoe polish are dangerous products"; he then called for them to be carefully labeled and their sale regulated by the French state.⁷²

Though I have found no medical records, these dyes must have affected the health of less regulated workers doing the dirty job of cleaning the shoes and boots of others, including employees in shoe repair shops, bootblacks, and retail workers. In the 1902 court case, the police were told by the shoe salesman who helped *Sieur W.* buy a new pair of shoes that when he uncorked a bottle of the toxic varnish he was "absolutely suffocated by the odour." Protective legislation was slow to come. In March 1927, the Department of Health in Chicago banned all leather dyes containing toxic solvents. They demanded a warning label on products stating that all shoes that have been dyed "should stand in the open for not less than 72 hours after drying before being worn . . . and also that such dyes must not be used on canvas, satin, or other shoes manufactured from fabrics." They printed placards with this warning for every shoe store, shoe repair shop, and shoe-shine parlour.⁷³ Yet these warnings might not have been helpful for illiterate or immigrant boot blacks, many of whom as one doctor noted, "have little knowledge of English."⁷⁴

In the 1920s and 1930s, hair presented new problems. Men and women had long tinted their hair to achieve more fashionable shades or cover grey, but new chemicals used in hair dyes were leaving a trail of "horrific" accidents. At the same time, cheap rabbit coats and trims dyed to resemble more expensive furs were causing painful cases of "fur dermatitis."⁷⁵ Some of the effects of dangerous but still legal products were graphically illustrated in the *American Chamber of Horrors*, an exhibit

organized by the U.S. Department of Agriculture and displayed at the Chicago World's Fair of 1933, and then in Washington, D.C. (Fig. 15). One of the products denounced was Lash-Lure, a brand of eyelash and eyebrow dye.⁷⁶ Mascara, a cosmetic that was virtually unknown in the 19th century, had become increasingly popular with middle-class women in the early 20th century. In 1933, a Mrs. Hazel Fay Brown, who was being honoured with a banquet by her local Parent-Teacher Association, had her picture taken for the state PTA magazine. An hour later she went to a beauty parlour to have

her hair styled and was "persuaded" to have her brows and lashes dyed. Her eyes started to hurt almost immediately, and by the next morning she was unable to open them. She suffered for months in hospital, where ulcerations resulted in the sloughing off of her corneae, and her "laughing blue eyes" were "blinded forever."⁷⁷ She had a severe allergic reaction to an aniline dye from the paraphenylene-diamene family in Lash-Lure brand mascara.

The Chamber of Horrors exhibit included this disturbing before and after portrait of Mrs. Brown

15. Before and after photographs of Mrs. Brown, who was blinded by the aniline dye in her eyelash and eyebrow dye, 1933. Courtesy Food and Drug Administration Archives.

One of several cosmetics that are not harmless.

The manufacturer's version of what this eyelash dye will do.



It blinded this woman.





to emphasize the danger of the product. *Time Magazine* reported that when Eleanor Roosevelt, First Lady of the United States, discovered the photographs of Mrs. Brown, she “pressed them to her breast crying ‘I cannot bear to look at them.’”⁷⁸ Another 52-year-old woman died eight days after her beauty-parlour operator daughter applied Lash-Lure and the *Journal of the American Medical Association* had reported at least 17 similar cases. The “Criminal Ingredient” was also used to dye fur and felt in the United States, where it was marketed under the trade name Ursol.⁷⁹ Although it poisoned one out of every 120 people who used it and is now known to be a powerful contact allergen, American laws passed in 1906 before the widespread use of cosmetics could not forbid its use in hair and eyelash preparations because the manufacturer did not falsely claim that it cured a disease. Because of this lack of legislation, Lash-Lure, a “caustic ‘beautifier’ capable of burning the very eyeballs out of your head” was still carried in stores nationwide in 1936.⁸⁰ In 2011, Sali Hughes, a beauty columnist for the U.K. newspaper *The Guardian*, wrote an article entitled “Could Your Hair Dye Kill You?”⁸¹ She penned it a month after Tabatha McCourt, a 17-year-old Scottish teenager, died of a severe reaction to p-phenylenediamine, or PPD, in a hair dye.⁸² Hughes herself has a glossy head of black hair but was hospitalized after having a similar allergic reaction when her hair was tinted in her usual salon. Although it is banned in makeup, PPD is still used in 99 percent of hair dyes today, including those manufactured by L’Oreal, Clairol, and Avon, because it covers grey hair so effectively. As with so many other toxins in beauty products and clothing, from lead in lipstick to PPD in hair dye, contaminants that should have been consigned to history are still very much present in our lives and on our bodies. The economic imperatives of manufacturers and the social imperatives of propriety and beauty are still with

us: just as men flocked to blacken their boots with dyes and polishes in the Victorian era, most women feel pressure to dye their grey hair in more socially acceptable if not more beautiful shades.