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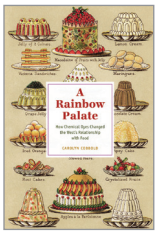

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The synthesis of brilliantly coloured dyes from the wastes of coal-gas distillation in the last half of the nineteenth century is well-known to historians of science and technology. William Perkin's creation and marketing of a deep-purple dye from coal tar initiated, as Anthony Travis has shown, a commercial chemical revolution that created new industries, transformed old ones, and produced new relationships among scientists, businesses, publics, and states. Carolyn Cobbold's book picks up a surprising thread of that history in examining the integration of novel coal-tar dyes into food production, itself undergoing an industrial revolution.

Cobbold has produced a fascinating account and analysis of how these dyes were introduced, contested, and ultimately legitimized in an emerging globalized industrial food system. Cobbold focuses on Germany, Great Britain, France, and the United States—the global centres of the dye industry in the west—and the emergence of analytical and public chemists who strove to detect aniline and azo dyes in foods such as confectionaries, wine, and margarine.

With publics and medical authorities already alert to other forms of food adulteration, the introduction of coal-tar dyes presented new doubts and fears. These concerns and the debates they generated also provided opportunities for analytical and public chemists to bolster their roles, and burnish their expertise, as experts in food safety. But, as Cobbold shows, analytical and public chemists had to confront significant uncertainties. They were, in many cases, unable to positively test for or identify these novel dyes in food; they were also uncertain about their toxic effects on the human body.

These uncertainties undermined their authority. At the same time, analytical chemists were also working for the food industry, establishing careers as engineers of new food ingredients and processes. Caught between these competing interests, chemists vacillated on questions of food safety in the press and in the courts. Were dyes adulterants that compromised food or ingredients that improved it? And were chemists public defenders or industrial scientists? As Cobbold notes, chemists occupied and negotiated these roles simultaneously as they were being generated. Moreover in these multiple roles as creators, mediators, stewards, and guardians, chemists served to legitimize the use of novel dyes as standardized objects of public regulation.

Documenting these linked and parallel processes of professional formation and food-dye legitimization is the core of Cobbold's book. Her argument runs across eight chapters,

the first three dealing with food adulteration, the synthesis of dyes, and transformation of dyes from textile component to food ingredient. The remaining chapters examine the role of analytical and public chemists, comparing and contrasting the different national contexts and regulatory outcomes of their work in Europe and the United States.

In each of the nations under Cobbold's lens, there existed a "restrained negotiation" (155) among companies, consumers, governments, and scientists to establish the boundaries of transparency, regulation, and protection. In Great Britain, where Perkin's dye originated, a laissez-faire, liberal political economy militated against tight regulation of dyes. In the United States, a stricter approach materialized in 1907 with a list that permitted only seven dyes for use in foods. In France and Germany, two dye superpowers, Cobbold notes how variation in regional traditions and preferences for dyed foods influenced approaches to regulation. For Germany, the global nexus of coal-tar production and knowledge, legitimacy was perhaps of even greater economic and political consequence than elsewhere. What was common, however, was the blurring of boundaries between public and private good, an uncertainty that allowed for a novel ingredient to gain acceptance and wide use.

The one thing this compelling book does not deliver on is the promise of its subtitle—how chemical dyes changed the west's relationship with food. Cobbold notes the role of traditional colourants, but does not address how consumers experienced food dyes or how their expectations about food changed with their introduction. But this isn't what the book is about: it is about chemists and their relationship to the food industry refracted through coal-tar dyes. It seems likely that the subtitle was an editorial rather than an authorial decision.

This apparent gap by no means diminishes the book's real contribution. What Cobbold draws our attention to is the inevitable negotiation around expertise and the permitted uses of novel chemical additives. In doing so, she enters a larger discussion about how novel scientific objects and processes evade control once they emerge from the laboratory and enter the world where they are unexpectedly transformed and used. More broadly, this books helps historicize the public construction of trust in science and chemistry. As Cobbold notes, this is not a new feature of our relationship with modern science and remains a critical aspect as we continue to confront the toxic legacies of industrial production.

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