History of staining

By G. CLARK and R. H. KASTEN. 1983. 3rd ed. Williams & Wilkins, USA. Pp x and 304. £22.25.

Few sciences continued to operate with much the same intellectual capital in the 1950s as was available at their inception two centuries earlier. Biological staining was one of the select few. The hardware had improved, the microscopes and microtomes were vastly superior, and most of the stains were synthetic rather than natural products, but the software had not advanced beyond the largely empirical stage. In the main, the text books were cook-books, at best incorporating personal recipes and the fruits of experience, at worst secondhand and pseudo-scientific. Even in the 1970s, it was possible to write with little or no background in physical or organic chemistry and as if molecular biology (of which biological staining is a subsection) did not exist. This book honours the exceptional individuals in this field.

At the turn of the century, Gustav Mann was astonishingly modern in spirit, setting out goals and asking questions that remain topical, and Paul Ehrlich's contributions still have enormous practical relevance. They mastered the physics and chemistry that were important in their work, assimilating the most recent advances. This disciplined approach never found general favour. It was easier to produce pretty coloured pictures by using reagents of unknown purity and structure, applying them to substrates of unimaginable complexity. Although knowledge of the substrates, as biopolymers, did not begin to become available until later, in the 1930s, a few workers felt that something could be done about the stains. The Biological Stains Commission in the USA grew out of this concern. In 1925, it published a book of "standards", which included a short chapter on the "History of staining". H.J. Conn and other members of the Commission expanded this chapter into the first (1933) and second (1948) editions of the present book, consisting of brief (2-3 pages) biographies and pictures of outstanding practitioners in the field, plus a few, short review chapters, such as "Aniline dyes in histochemistry". The scale was modest. The new edition, also written by members of the Biological Stains Commission, is rather more ambitious. There are five new chapters, three of them very short, and two, "Fluorescence microscopy" and "Protein and nucleic acid histochemistry", much longer. The early editions of the book are now very difficult to locate, and the new edition is, therefore, welcome, with significant reservations, in filling an important gap in the literature of scientific history.

The most serious reservation concerns the lack of balance. The authors have added a few paragraphs on recent work to some of the original chapters, but they do not sit comfortably in the old contexts. They are insufficiently informative and compare poorly with the new chapters, which, on the whole, are acceptable. It would have been better not to tamper with the older chapters, and to incorporate the more recent data in new review chapters. The one new biography, that of Rolph Lillie, with its complete bibliography, occupies about ten times the space given to, e.g., Paul Ehrlich. In fact, this book also serves as a posthumous tribute, from his colleagues in the Biological Stains Commission, to Lillie, who had intended to write the 3rd edition himself. (One wonders whether there was really only one person from the period 1947-1981 who deserves to appear in this Pantheon.) Many other topics get short shrift, e.g., electron histochemical stains and enzyme histology.

There are frequent signs of haste in proof reading and checking. One of the authors (FHK) twice thanks his "XYL" for support during the writing. Alcian blue and Astra blue are *not* identical, (p. 85), and quinolinic blue does not "... bear an O-N (*sic*) methyl pyridinium ring" nor does it "... H-bond to nucleotides" (p. 85). Sanger's reagent (2,4DNFB) does not *cleave* NH₂ groups (p. 198). There is also some tendency for repetition, e.g., a famous paragraph by Mann is quoted twice, on pp. 186 and 199—perhaps too much of a good thing.

The Index is useful, and the production of the book is good but future editions will benefit from restructuring and polishing.

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