

Brian Bracegirdle, *A History of Photography with the Light Microscope*. Quekett Microscopical Club, 2010, viii + 221 pp., ill., ISBN 978-0-9564591-1-4.

This splendidly-produced book is the first full treatment of this topic, and contains over five hundred references to the extensive literature, and three hundred and fifty illustrations of photomicrographic apparatus, equipments, outfits, cameras, photomicroscopes, stands, accessories and plates from the mid nineteenth century to 2010. Many of these items of equipment are examined and discussed individually. Bracegirdle has drawn extensively from his many years of experience as chief curator of the microscopy collections of the Science Museum in London and from his direct practical knowledge of many of the pieces of equipment described. As a figure well known to everyone in the field of microscopy and with wide-ranging experience in the history of science, photography and microscopy, he is uniquely qualified to address the theme.

The book begins with two general chapters: a brief overview of photographic processes, and a survey of illumination sources and illumination techniques. Chapter 3 is devoted to optical components and to advances in microscope optics up to 2000. The journey through the fascinating history of photomicrography from its origins through to the present day touches on ultraviolet microscopy, the influence of fluorescence microscopy on photomicrography, infrared microscopy, interference microscopy, automatic microscopes, confocal microscopes, digital cameras dedicated to microscopy, and image analysis. With the advent of photography, the quality of microscopic imagery “had been dramatically improved, compared with all that had gone before, but means of recording and disseminating the results had changed hardly at all”.

Chapter 4 covers a period spanning forty years (1839-1880) in which initial improvements were made to equipment and techniques and examines the relevant literature, including the contributions of Delves, Shadbolt and Highley, Maddox, Nacet, Gerlach, Möller and Harting. The following chapter, which covers the period up to 1910, focuses on the fundamental contribution to illumination technique made by August Köhler.

A major turning point came in the late nineteenth century. Whereas photography had previously only been an interesting *amusement* in this field, as Spitta noted, “it has now become an absolutely scientific and commercial *necessity*” (*Photo-micrography*, 1899). “Even in England, for so long a bastion of those preferring drawings over photographs in microscopy, the amount of scientific work being undertaken in laboratories by professional scientists positively required the use of photomicrography for publishable results by half-tone” (p. 93). However, a peculiarly English institution, The Photomicrographic Society, was founded in 1911. The whole of chapter 8 is devoted to this Society, which existed between 1911 and 1951, reflecting the importance of an organisation that was probably unique in the history of this field. Bracegirdle focuses in particular on volume 15 of the Society’s *Journal*, which contains a lengthy account of the Symposium of Apparatus held in 1929.

Chapters 6 and 7 deal with developments in photomicrography from 1910 to 1940 and from 1940 to 1980 respectively. They discuss equipment, laboratory catalogues and the most important texts by authors such as Barnard, Kurt Michel and Vickers. The period spanning the late nineteenth and early twentieth centuries saw the emergence of photomicrography with ultra-violet illumination. Cinematography was developing apace by 1911. Colour photography and stereo-photo-micrography date from the early twentieth century. In the meantime, metallography had become a branch of physical chemistry and photomicrography was being applied to the study of metals.

One particularly important event in the early twentieth century was the symposium held in London in January 1920, entitled “A Symposium and General Discussion on the Microscope: its Design, Construction, and Applications”, under the joint auspices of the Faraday Society, the Royal Microscopical Society, the Optical Society, and the Photomicrographic Society (p. 101).

Chapter 9 is entirely devoted to microphotography, a process that was introduced in 1839 by John Benjamin Dancer. It should not be confused with photomicrography: since 1858 the word “microphotography” in English has meant the manufacture of tiny photographs from any size of original. *Photomacrography*, the production and recording of images generated by one lens only, is covered in chapter 10.

Reviewing the third edition (1936) of the book by Barnard & Welch, the *Journal of the Royal Microscopical Society* observed that “today photo-micrography is an implement of scientific and industrial research and a valuable method of manufacturing control in industries so diverse as the manufacture of steel girders, paints, leather, furniture, and photographic film, to mention but a few of its applications” (p. 125). Bracegirdle’s book also looks at the estimation of the exposure (p. 129). The last chapter, 11, explores the developments between 1980 and 2010, the influence of fluorescence microscopy in photomicrography, image analysis, cine – and video-microscopy, and digital recording.

After WW2, writes Bracegirdle, “with the development of the electron microscope some were quite quick to say that the days of the light microscope were numbered. They may have overlooked the vast numbers of these instruments used in manufacturing, and in routine observations requiring only modest magnification, or perhaps they meant only in original research, but left that unsaid. However that may be, it did not come to pass; there has been an amazing renaissance in light microscopy, with the development of completely new ways of generating images of living cells, and requiring relatively very simple specimen preparation into the bargain” (p. 203). This volume will be of great value to anyone wishing to gain a detailed insight into the developments and progress of photomicrography from its origins through to the present day.

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