Book Reviews

C. V. HOWARD AND M. G. REED - *Unbiassed Stereology*. Oxford: Bios Scientific Publishers, 1998 (RMS Handbook 41). ISBN 1-85996-071-5. Paperback, pp. x+246, illustrated. Price £18.45.

This book is clearly written, and is surely required reading for all working on the internal microscopical structure of anything, although it does require a definite scientific background to appreciate its contents. The text provides an excellent introduction to quantitative microscopy, as opposed to the qualitative microscopy wherein a number of sections are described and interpreted, and spoken of as being typical of the whole.

It is necessary first to decide if the specimen is representative of the whole, then if the sub-sample chosen is representative of the whole specimen, and then if measurements being made on the sub-sample are sensible with respect to the scientific question being investigated. The book is devoted to clarifying approaches to these questions, the tool for the purpose being stereology.

A feature of the approach adopted is the inclusion of exercises of various kinds; it is most rewarding to take the trouble to try a number of these, as they are certainly thought-provoking. The first chapter ("Concepts") is most valuable to those new to the discipline, and would repay attention by most experimental biologists. Chapter two ("Random sampling and random geometry") is treated in a non-mathematical way and clearly shows why particular methods are later advocated. Later chapters consider estimation of reference volume, of component volume, and number estimation. I found this last chapter particularly helpful and stimulating. Surface area estimation (surely useful to all users of the microscope), analysis of layered structures, particular sizing, are all dealt with thoroughly, and a chapter on statistics for stereologists is revealing without being forbidding. A final consideration of a few other aspects includes a paragraph on the recent history of stereology.

A number of appendices deal with gadgets for stereology, provide a set of really helpful grids, and give worked answers to the exercises (and much relief to those trying them out). This is an admirable addition to the RMS series, and is thoroughly recommended.

Brian Bracegirdle

BRIAN BRACEGIRDLE - *Microscopical Mounts and Mounters*. London: Quekett Microscopical Club, 1998. pp. vi +225, including 60 full-page colour plates. ISBN 0-9514441-3-1. Hardback, price £21.00.

All microscopists inevitably collect permanent mounts of interesting objects for study with their instruments. Some make their own slides but most rely on mounts purchased from dealers or other enthusiasts. If properly prepared, such slides may last for well over a century, and often during this time their origin and sometimes even their subject is forgotten. Fortunately, however, many of the older slide preparers not only took immense care with the actual mount itself, but also in the presentation of the finished slide. This often took the form of using coloured cements and varnishes round the coverslip, or elaborate printed paper covers or labels. These may contain all the information a collector needs, but often this is not the case.

It is in this latter situation that the present book by the foremost authority on slides and their makers serves its purpose. Dr. Bracegirdle has set out a vast amount of collated information on the identity and dates of slide makers. In the course of his research he has studied literally thousands of preparations from his own and other collections. The body of the book consists of alphabetical entries listing makers (even though some are known only as initials), and the subjects they mounted. A quick check suggests that more than 700 entries are included, ranging from one line (eg, A.S. - initials on a number of mounts of uncertain date), to entries of five pages or more (as in the case of C Baker). Perhaps the most valuable and innovative feature of the book is the inclusion of 60 full-page colour plates; 54 of these show actual slides (usually of 15 or more to a page), while the remainder are photomicrographs (four to a page), to illustrate the special features of some of the specimens themselves. There are plates of different types of illumination, type plates, exhibition mounts, and mounts intended specifically for study with polarized light. Also featured separately are injected specimens and insect mounts. All of the illustrations are fully captioned, with the legends on the facing page, thus making them very easy to use. Where there is a photograph of a slide by a mounter mentioned in the text, this is keyed into the textual entry. Also in the text are references to original publications where these are relevant to the topic.

This book is clearly a tremendous labour of love. Many of the names included are very familiar indeed; Enock, Dancer, Möller, Norman, and Wheeler are typical examples. Others are not so (to this reviewer at least!), and I have learnt a great deal from dipping into the book at random. Major firms such as Baker, Flatters & Garnett, N.B.S., and Zeiss are, of course, included, but so are very many others indeed. I particularly welcomed the fact that the author includes not only the usual 3 x 1" slides, but also mentions and figures early ivory sliders, graticules, test rulings, and non-standard mounts.

Beautifully researched and produced, the book forms a fitting companion to *Notes on Modern Microscope Manufacturers*, published by the Club in 1996, and by the same author. The book is a landmark in the study of the history of microscopy, and in my opinion no serious microscopist can afford to be without it.

Note: Sales of the book in pounds sterling are by Savona Books, 9 Wilton Road, Hornsea, E Yorks HU18 1QU, England.

Sales in US dollars are by The Gemmary, PO Box 2560, Fallrbook CA 92088, USA.

Buy now, while stocks last!

Savile Bradbury

S. BRADBURY AND B. BRACEGIRDLE - *Introduction to Light Microscopy*. Bios Scientific Publishers Ltd. 1998. ISBN 1-85996-121-5, pp 123, Price £16.45.

This is a recent addition to the series of Microscopy Handbooks published by BIOS Scientific Publishers in association with the Royal Microscopical Society. It is the basic work on the light microscope in this series, and is the totally rewritten successor to Savile Bradbury's original No. 1 Handbook. The fact that the original work had been reprinted several times, and the reviewer's recent experience of microscopes in some teaching laboratories, confirm the reviewer's opinion that there is an ongoing need for this publication.

The authors make the point that it is almost too easy to get some sort of image with any sort of microscope. However it only requires a little more understanding to get the best possible image from an instrument, which is both visually satisfying and less liable to misinterpretation.

An introductory chapter starts with the important questions "Why use a microscope" and "What is a microscope", encouraging the user to think about the purpose of the observations being made. The chapter follows through with succinct but readable sections on the interactions of light with matter, the behaviour of lenses, the effects of magnification and the important distinction of resolution.

The introduction is followed by short descriptive but thorough chapters on the useful but often overlooked "Hands Lens", the invaluable, in many fields of work, "Low-power Stereomicroscope", and the "Compound Microscope" capable of carrying observation to the limits of visual light examination.

The authors then return in more detail to the basic concepts of image formation by the optical components of the microscope and the importance of diffraction as a limiting factor in the resolution of fine detail. The functions and types of Objectives, Eyepieces, Light Sources and Condensers are considered before passing on to the final chapter "Practical use of the microscope".

In this last chapter the authors' accumulated experiences have been put together as sound advice which microscopists at all levels of ability can read with benefit.

Inevitably in a book of modest size and price many aspects have to be given only a basic treatment. The authors however give ample guidance for these to be followed up through end of chapter references and an accumulated "Bibliography" at the end of the book.

This book is excellent value for money. it is clearly written and well illustrated both with line diagrams together with photographs of a range of microscopes that may be found in day-to-day regular applications and teaching situations. The book can be read with benefit by all serious microscopists. It should not be "on the shelf" but in the hands of all those who guide students in the wide range of studies that make use of the optical microscope as a tool of investigation.

Bryan E. Tabor