biochemist/molecular biologist who wishes to employ immunological techniques, the more compact sources such as Harlow and Lane’s *Antibodies: A Laboratory Manual* will provide the basic information (more cheaply) while many specialized techniques will be given in the volumes of *Methods in Enzymology* or *The Practical Approach* series. I feel that *Protocols in Immunol-


Images of living cells working in a nearly natural environment represent the ultimate dream of the biological microscopist. No amount of descriptive text can fully convey the intricate, organised movements of cells and of the organelles within them. The static world of the electron microscope reveals the beauty of the cellular scenery but the actions of the players, unfixed and often unstained, can only be probed by the gentler procedures of light microscopy.

Major developments over the last decade have pushed the resolution of light microscopy to its limits by tackling the fundamental problem of extracting ‘in-focus’ information from the sea of ‘out-of-focus’ data not in the focal plane. On the one hand electronic digitisation, storage and manipulation of images obtained in conventional microscopes permits image enhancement – a data-processing approach typified by video-enhanced contrast microscopy – to the point where tiny objects, below the Rayleigh limit of resolution, can be visualised. Alternatively confocal (scanning optical) microscopy rejects ‘out-of-focus’ data by scanning the focal plane with a narrow aperture through which only ‘in-focus’ photons pass; in this mode successive scans also provide exquisite resolution in the third dimension. Naturally electronic processors are commonly used to store, present and enhance scanned images although direct viewing systems, employing multiple apertures on a ‘Nipkow’ disk, are available.

This delightful book, which is produced to a high standard, explores all the relevant aspects of modern light microscopy mentioned above in a most approachable way. David Shotton has persuaded authoritative experts to share their insights clearly and logically. Both novice and expert will find this book helpful. The basic principles as well as a good variety of interesting applications are covered with remarkably little overlap – perhaps the group of chapters on scanning optical microscopy offended slightly in this regard. The substantial index allows quick access to relevant topics.

Not all the chapters are easy reading! Technical details are not pushed under the carpet; the facts, appropriate for a book on microscopy, are laid bare for all to see and to work through. Occasionally I felt the wealth of technical detail obscured the excitement of visualising cells in action only for the next chapter fully to restore my enthusiasm and sense of wonder.

This is a book that deserves to find its way into the hands of all those contemplating a microscopical approach to their project. The library copies will always be in demand and the price, for once, does not put the book out of reach of the individual researcher. I commend it wholeheartedly.

Lindsay Bashford


This book is based on papers presented at a Symposium of the Society of Experimental Biology held in April 1991, entitled “The Biochemistry and Molecular Biology of Inducible Enzymes and Proteins in Higher Plants”. The book is part of an excellent series published on behalf of the Society of Experimental Biology by Cambridge University Press. Dr. Wray should be congratulated upon persuading such an internationally renowned group of authors to write these important series of articles.

Although the book is not specifically divided into sections, it is possible to make arbitrary decisions based on the subject material. Seven chapters cover the response of plants to environmental signals, these include: heavy metals, phosphate starvation, nitrate addition, pathogens, anaerobiosis, heat shock and cold. A further six chapters cover important areas of metabolism, these include: ammonia assimilation, phenylpropanoid biosynthesis, crassulacean acid metabolism, the response to abscisic acid and gibberellic acid, ripening in tomatoes and the development of the root nodule. The final chapter describes three *Arabidopsis* b-Zip proteins that interact with the light regulated *rbcS-IA* promoter.

Although the title of the book is “inducible Plant Proteins”, the majority of the text describes the molecular cloning of the endocing genes and attempts to understand their regulation. As might be expected, the use of transgenic plants plays an important role in increasing our understanding of the induction process. In particular, the use of antisense RNA to down-regulate the
synthesis of specific target enzymes has been shown to be a valuable technique.

The book is up-to-date and covers the latest advances in the field and is written by researchers in the forefront of the subject. I would recommend it to all post-graduate students, lecturers and research workers with an interest in plant biochemistry.

Peter J. Lea

Secondary Metabolites: Their Function and Evolution (Ciba Foundation Symposium 171); edited by D.J. Chadwick and J. Whelan, John Wiley & Sons; Chichester, 1992; ix + 318 pages. £42.50, $75.00. ISBN 0-471-93447-x.

This publication presents the content of a 1992 Ciba Foundation Symposium whose topic was the brainchild of Professor Julian Davies and Dr. Dudley Williams. The format mirrors that of similar Symposia with individual presentations being followed by detailed coverage of ensuing discussion. The latter, in particular, provides a scientifically stimulating text which is both instructive and, at times, humorous.

The participant list is distinguished and many of the written presentations are excellent. The volume, not surprisingly, features a wide range of topics. Secondary metabolites provide real diversity with respect to their chemistry, their sources and their potential functions, to name but three examples of many. Indeed, this very diversity raises the important question as to why the vast majority of known secondary metabolites are produced at all. Predictably this long standing and controversial aspect is at the centre of much of the reported discussion. Nevertheless, although this particular mystery remains mainly unresolved the current use of certain secondary metabolites in clinical medicine provides in itself a compelling reason for their continued study.

Although considerably more work is required to implicate secondary metabolites as important agents in such areas as evolution, gene regulation or cell development, an increase in their commercial exploitability is perhaps a closer goal. There are huge potential benefits here linked to possible discovery of, for example, new antiviral and antifungal agents. Come what may, however, this Ciba Foundation Symposium was clearly a well-worthwhile scientific enterprise and the publication of the proceedings provides an excellent addition to the scientific literature in this field of study.

Michael Cannon
Principles of Light, Electrons, & Microscopy. In microscopy we take advantage of waveform properties of light. These waves when produced at a particular source vibrate at right angles to the line of propagation. Each wave has a peak and trough. Modern light microscopes use several different modes of operation depending on the needs of the investigator. The most common of these being brightfield microscopy in which direct light passes through the objective aperture and illuminates the background against which the image is seen. Fluorescence microscopy- Samples produce light when excited by short wavelengths of radiation. Field aperture- An adjustable diaphragm placed near the condenser lens to help direct light to the specimen. Configuration of a Video Camera System 234 Types of Video Cameras 236 Electronic Camera Controls 238 Demonstration: Procedure for Adjusting the Light Intensity. Economy and esthetic beauty of optical laws and principles. If carried out, the demonstrations and exercises also offer opportunities to become acquainted with new biological specimens that the reader may not have confronted or seen before by a new mode of light microscopy. Finally, we will practice adjusting the microscope for examining a stained histological specimen, review the procedure for determining magnification, and measure the diameters of cells and nuclei in a tissue sample. Optical components of the light microscope. This indispensable guide to electron microscopy, written by an author with thirty years practical experience, will be invaluable to new and experienced electron microscopists in any area of science and technology. Reviews. "a tremendously readable account of modern electron microscopes and their capabilities, with excellent informative illustrations; its usefulness will not be confined to outsiders and newcomers."