

and local authorities need not be underlined. However much these protest, and despite all the lamentations about cost, the proposals put forward in this most readable work are, in the end, largely bound to prevail. The inadequacies of modern medical services are so glaringly revealed in a book which is logically presented, skilfully written, and supported by periodic summaries to facilitate reading and understanding that it could well become a springboard to national remedial action.

T. H. HAWKINS

CINEMICROGRAPHY IN RESEARCH

Cinemicrography in Cell Biology

Edited by George G. Rose. Pp. 500. (New York and London: Academic Press Inc., Ltd., 1963.) 18.50 dollars; 132s. 6d.

IN the preface to *Cinemicrography in Cell Biology*, Dr. Rose states that, "Although not to be considered a general textbook of Cinemicrography, this volume brings together significant perspectives of an analytical approach. . .". However, while Dr. Rose has done a great service to every biologist who reads the book—for he has assembled a wide range of research papers linked by the common denominator, the use of cinematography in research—a great opportunity to produce a more comprehensive text, dealing fully with techniques, as well as results, has been lost.

The work is divided into three main sections, dealing respectively with 1, instrumentation; 2, tissues; 3, cells. The authors themselves are all respected workers in their own particular fields and their work discusses developments from many countries.

Part 1, read in conjunction with a good text on photomicrography, should enable any research worker to develop a time-lapse film laboratory, while avoiding some of the many pitfalls a beginner inevitably falls into. It is, however, interesting to note the number of times in the following papers that an author acknowledges the assistance of an established research film group which helped him with his instrumentation problems. There is little doubt that for effective use of film as a research tool, a sympathetic collaboration between film technologist and scientist is essential.

It is in parts 2 and 3 that an opportunity has been missed. Cinemicrography, in the biological field, deals essentially with the manipulation and photographic recording of living, growing tissues, observed during long periods of time: on the other hand, the technology of photomicrography deals only with manipulating the size and the optical/recording components of a system examining dead, or shortly to be dead, subjects. There is a wealth of literature on how to manipulate the photomicrographic systems in all their complex forms, but there is a serious dearth of comprehensive literature on the special methods required to maintain the growing cell or tissue, for observation and record, during long periods of time, while using film, and with the minimum of interference to the subject itself. The paper by Clay, Huff and Weathersby underlines this criticism when they say: "Such methods and techniques will be sufficiently discussed in other chapters of this volume, or in books devoted directly to tissue culture and photomicrography, to justify omitting description of them here". Unfortunately this material is not so easy to find—at all events collected between two covers—and a section devoted entirely to the effects of the filming process on various biological materials, on the methods of culture peculiar to the film technique, on the methods of constraint within the microscopic field, and on the methods and problems to be faced in analysing the photographic evidence would all have been most valuable.

However, in spite of possible omissions, *Cinemicrography in Cell Biology* will prove exceedingly valuable

to any research worker; for it indicates the immense potential which film techniques in research can offer. It emphasizes the necessity for using film in parallel with the other methods of looking at any particular problem, and it underlines some of the instrumentation problems likely to be met when developing a cinematic technique. A wealth of references to papers discussing results could have been enhanced by a classified bibliography on methods, and the historical note found in the preface attributing the birth of microcinematography to an American scientific culture should be taken with a grain of salt.

On the cinemicrographic side this book is one of ideas, and further fields to explore, underlining ends rather than means. In fact, *Cinemicrography in Cell Biology* is a reference text which should be available in all research libraries.

E. LUCKY

AN ENCYCLOPAEDIA OF SPORE MORPHOLOGY

Morphologic Encyclopedia of Palynology

An International Collection of Definitions and Illustrations of Spores and Pollen. By G. O. W. Kremp. Pp. xiii+186+38 plates. (Tucson: The University of Arizona Press, 1965.) 15 dollars.

PALYNOLOGY—the science of pollen and spores—has developed, like many other things in the past twenty years, at a rate too great for comfort. A science which even a few years ago was unheard of even by many botanists has now two journals devoted to it, and palynological papers have intruded into more than two hundred journals in the allied fields of botany, geology, palaeontology and palaeobotany. With four to five papers on palynology appearing every week, and new species of fossil spores being discovered at a rate of a thousand a year, palynology is suffering some of the embarrassments of over-production. Many of the 'new' species of fossil spores reported more or less simultaneously from different parts of the world are evidently synonyms of one another. While consistent application of the International Code of Botanical Nomenclature will eventually resolve much of this, unfortunately no such code governs the plethora of terms used to describe the spores.

Morphologic Encyclopedia of Palynology sets out to elucidate the meaning of the 700 words coined expressly to describe the minute structure of spores—and the almost equal number of terms to which special palynological meaning has come to be attached. Prof. Kremp's book is in effect an exhaustive literature survey of this elaborate terminology: 1,280 terms are defined, their definitions quoted from original sources, and more than 800 are illustrated. In one sense, the book is an encyclopaedic dictionary, but no ultimate and definitive meaning of terms is given, nor is one usage advocated as being preferable to another. Prof. Kremp has been at pains not to impose his ideas on the reader: "it is not the object of this encyclopaedia to weed out 'incorrect definitions' and to tell other people what the author thinks 'correct definitions' should be". The "young worker in palynology . . . having before him the similar and related terms and definitions may make his own choices and judgements". A more assertive, Johnsonian interpretation of the prerogatives of a lexicographer might have helped to rid palynology of some of its superfluous terms.

This is the only serious negative criticism of the book; Prof. Kremp has done what he sets out to do with great care and painstaking thoroughness. He has produced an essential reference source for workers not only in palynology but in the neighbouring fields into which this vigorous science is overflowing.

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