Dictyostelium discoideum

Dictyostelium discoideum: a Developmental System. By William F. Loomis. Pp. x+214. (Academic: New York and London, May 1975.) $19.50; £9.35.

Dictyostelium discoideum is undoubtedly one of the most intriguing and fascinating organisms that biologists and biochemists have sought to study. It can be cultured as separate amoebal cells showing no apparent cellular interaction and yet at will it can be induced to mass together and develop into a multicellular body that can move and be responsive to light and heat signals in its environment. It is also very good at taking punishment meted out by the curious investigator. It can be squashed, pricked, stained, drugged, decapitated or thoroughly dissociated to separate cells and still resurrect itself and proceed with its planned development. In this book Dr Loomis records and discusses the descriptive and analytical work of many such investigators.

In the early part of the book, the life cycle and various stages of the development are discussed, together with a review of some of the genetic experiments that have been carried out with the organism. After chapters detailing the analysis of cellular enzymes and macromolecular composition, the author then reviews the research concerned with the effects on development of metabolites and such agents as light, heat, cell density, mechanical barriers, dissociation and mutation. The book ends with a discussion of the ubiquitous biological problem of the control of tissue proportions and the various theories that might account for the surprising constancy of ratio of stalk cells to spores in *Dictyostelium*. Such a division into chapters concerned either with developmental stages or selected topics covering several stages must have caused problems for the author over the subdivision of information without causing undue repetition. Generally this difficulty has been skilfully overcome in this book and except for the topic of cell sorting out which is rather awkwardly divided between pages 69–71 and 169–170, the chapter arrangement is rational and helpful to the reader.

The book is written in a style that is lucidly descriptive and unambiguous. The writing lacks flamboyance or sparkle, but whether this is a point for praise or criticism depends on whether one wishes to be succinctly informed or entertained. The illustrations are plentiful and of good quality and include photomicrographs using Nomarski optics and scanning and transmission electron microscopy; they add a great deal to the interest of the book.

The account of the various experiments described in the text is, inevitably, somewhat subjective, although only occasionally is this tendency obtrusive. If any criticism is due, it is possibly to the occasional failure of the author to make it clear whether a particular statement is a considered review of the consensus of opinion or the author's own particular viewpoint.

The author notes in the preface that he has attempted to put into focus most of the major studies on *D. discoideum* and generally I feel that he has been successful. One area of research that might also have been included as a major study is that of the work on radiation effects by Dr R. A. Deering and his colleagues at Pennsylvania State University using normal and γ-ray-resistant strains of the organism. The bibliography which is fairly comprehensive is also lacking in many of the interesting papers from Dr Deering's laboratory.

In general this is an excellent book and I would recommend it to anyone wishing to acquire an overall impression of the past and current areas of research using *Dictyostelium*. Dr Loomis has carefully trodden the narrow path avoiding both superficiality and academic pendantry, and has succeeded in producing a book that is both readable and thought provoking.

P. C. Newell

Astronomical applications of interferometer

The Intensity Interferometer: Its Application to Astronomy. By R. Hanbury Brown. Pp. xvi+184. (Taylor and Francis: London, November 1974.) £6.

THE original stellar intensity interferometer at Narrabri, New South Wales, finished its program in February 1972, and Professor Harbury Brown has celebrated its achievements and looked forward to the future by writing this account of its construction and use. If only more research programs could be recorded in this way. Reading the book is to acquire twenty years of experience painlessly in a few hours. One can read how physicists proclaimed that the interferometer could not work; that the Australian customs officials were fought for a year and defeated; how the main steel tubes supporting the reflectors sagged; how the reflecting surface was accidentally stripped off; and how parrots pecked through the electric cables. Substitute appropriate personalities and pests and you have a story which could be adapted to describe the progress of many another astronomical project. In many ways the intensity interferometer was vulnerable and exposed to attacks of all sorts, even more so than most telescopes, because of the originality of the design and the rural surroundings. The lessons learned must be appropriate to other ventures.

This is not to say that one is reading a chapter of accidents; far from it, as the difficulties were overcome and most of the book contains a straightforward account of this successful work—for example, one has the full theory of the intensity interferometer and a choice of simpler explanations to suit one's taste. The technical description is given in considerable detail, although without an exact analysis of the system of lenses. The scientific results subsequently described show the power of the new technique. Although the primary program, to determine the angular diameters of stars and their emergent fluxes, was carried out, many other interesting possibilities have arisen from the studies of individual stars and multiple stars. If the reader hasn't already guessed, this leads to a proposal for a new instrument to extend and continue the programs. One is pleased to record that the second interferometer is going ahead and to wish its builders as much success and almost as much excitement.

R. G. Bingham