ultraviolet light as a means of timing the early events in the removal of viral coat protein and the subsequent multiplication of the infectious entity. Shlegel has applied autoradiographic techniques to locate the intracellular site of viral RNA multiplication; Bald has used the phase-contrast microscope to record the changes that take place in living cells following infection; and Hirai has taken epidermal tissue stripped from infected leaves to study the effect of virus infection on the metabolism of those cells which first receive the virus in a leaf.

This book would be a worthwhile addition to the library of specialists in the field. Unfortunately, some of the shorter research papers do not reach the standards of most of the review papers in the volume. The discussions that followed the presentations are not included; these might have helped to clarify some of the research papers where the work is often sketchily described.

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Studies of the Cell Cycle

Cell Synchrony. Studies in Biosynthetic Regulation. IVAN L. CAMERON and GEORGE M. PADILLA, Eds. Academic Press, New York, 1966. 408 pp., illus. $15.

"We hope that the suspicion that cell synchrony was at best an unnatural, artificial, and possibly specious occupation for cell biologists will have been dissipated once and for all." Thus the closing sentence of the preface to this volume crystallizes an attitude which, if not actually prevalent, certainly existed among many biologists. Fortunately, however, this critical attitude also existed among those working with cell synchrony techniques, and they may indeed be held to be their own most severe critics. This volume, as well as a preceding volume, *Synchrony in Cell Division and Growth* [E. Zeuthen, Ed., Wiley (Interscience), 1964], contains ample testimony to the efforts which those engaged in using cell synchrony techniques have made to insure that their populations are ergodic and that the responses observed accurately portray those to be expected in populations in general. The point has, in most cases, been well proven.

The earlier volume was an attempt to cover this new field in a comprehensive way and includes natural synchrony, induced synchrony, and selection of synchronous groups of cells. The book is divided into four sections entitled, respectively, Synchrony of Cellular and Nuclear Division in Tissues, Synchrony of Cell Division in Microorganisms, General Considerations, and Technical Procedures. It describes synchrony in no less than six classes of cells: bacteria, yeast, algae, ciliates, amoebae, and tissue cells.

The newer book developed from a symposium held at Oak Ridge in 1964 [*Science* **147**, 175–77 (1965)] and presents a broad cross section rather than a complete treatment of current work using synchrony techniques. Some of the speakers at the symposium did not contribute to the volume. Among those who did contribute, some expanded their symposium papers to form comprehensive discussions of their subjects; others apparently did not. This results in a lack of uniformity among the presentations, and for this reason alone most readers will not find all the chapters of equal interest or quality.

Nevertheless, there is much here to interest not only those concerned with and utilizing synchrony techniques, but all concerned with cell cycle phenomena. The book emphasizes, rather than methods of synchrony, results obtained with synchronous populations on the changing patterns of macromolecular synthesis during the cell cycle. Interesting data are presented on this matter for a variety of organisms, including *Bacillus subtilis, Escherichia coli,* yeast, a plasmodial myxomycete, *Euglena,* diatoms, *Chlorella,* root meristems, *Astasia longa, Tetrahymena,* and HeLa cells. The chapter on cycle variations in sulfhydryl groups by Dan is of unusual interest. Studies in mammalian cells, inevitably relegated to later chapters in the book, could profit from further expansion.

The subtitle of the book is particularly apt, for the book properly treats synchrony as a means to an end. Synchrony has, however, some features which deserve treatment for their own sake, and some of these (and a summary of methods) have been well outlined in the introductory chapter by James and in a paper on the theory of synchronous cultures by Engelberg and Hirsch. Evidence of the rapidly advancing sophistication of this technique comes from the introspective distinction between "synchronous" and "synchronized" cultures pointed out by James and by Halvorson *et al.* (chapter 6). The two terms, however, are not always used with such discrimination in later chapters of the book.

The book is pleasingly free of errors. One, of perhaps no more than personal moment to the individuals concerned, is the citation on page 354 of two independent members of the clan Sinclair as one and the same.

Molecular biologists and others should be aware of the contents of both this book and the earlier volume by Zeuthen, even though not all chapters will interest them equally. Many will find this volume impressive in the variety of synchrony techniques available and as a cross section of current results on variations in macromolecular synthesis throughout the cell cycle.

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Monograph on Glycoproteins

Glycoproteins. Their Composition, Structure and Function. ALFRED GOTTSCHALK, Ed. Elsevier, New York, 1966. 644 pp., illus. $35.

The field of glycoprotein research has reached the stage where it can stand on its own merits. The progress in the field and the development of appropriate methodology point to the future with confidence, as this volume, one of the first oriented predominantly toward the glycoproteins, demonstrates. The book covers the major phases of investigation on glycoproteins, including their distribution, isolation, physical chemistry, and structural analysis. It is a valuable source book more for the researcher in biochemistry, chemistry, and biophysics, the graduate student, and the teacher than for the clinician or biologist; it points the direction for future emphasis (biosynthesis and isolation of specific tissue glycoproteins), and it describes appropriate analytical techniques.

The introductory chapters deal with general methodology; the later ones treat individual glycoproteins in detail. The book covers a broad spectrum of the relevant literature through 1964 (and early 1965 in the addenda following most chapters). A historical introduction, not often included in such books, provides a valuable perspective.