of experimental factors in the system—predictable if we know enough about the system. By designing experiments so as to maximize (under proper control) the appearance of "artifacts," and by carefully distinguishing those due to the intrinsic nature of the migrating species from those due to extrinsic effects (temperature, physical condition of the paper, *p*H, and others), Nakamura has developed methods of great sensitivity and wide applicability in the study of the interactions of proteins with other proteins and with smaller molecules.

The basic idea is very simple: two substances are brought together and caused to interact by appropriate application of electrophoretic migration and endosmotic flow in a paper sheet or gel slab. The crucial interaction may be preceded by a preliminary one- or two-dimensional electrophoretic separation. Interaction is shown by distortions of the pattern compared to patterns in which interaction is absent. Semiquantitative estimates of interaction can be derived. The results are similar in some aspects to those obtained by thin-layer chromatography or gel filtration, but cross electrophoresis affords increased experimental control through the additional variables of electrophoretic mobility and geometrical design.

The Japanese group have applied their procedures to the study of diphtheria toxin, snake venoms, concanavalin A (a protein reacting specifically with a wide variety of other proteins), curare and other drugs, tissue proteins, trypsin inhibitors, enzymes, and substrates. Out of 140 references to this work, 120 are available only in Japanese. (There are also 260 background references.) This book will therefore be almost wholly new material to most of its readers. It will well repay careful study followed by practical application.

SAMUEL RAYMOND
University of Pennsylvania Hospital, Philadelphia

The Cell Cycle

Control of Cellular Growth in Adult Organisms. A Sigrid Jusélius Foundation symposium, Helsinki, Oct. 1965. H. TEIR and T. RYTÖMAA, Eds. Academic Press, New York, 1967. xxiv + 434 pp., illus. $17.50.

Here is a book that is both timely and out of touch with the times. It is timely because, increasingly, critical attention must be paid to the cell cycle and its controls, to mechanisms of cell replication and their role in differentiation, and to the maintenance of balance between cell loss and cell reproduction in the adult—in relation to aging, malignancy, and tissue repair. It is out of touch with the times not just because two years were required for publication but because many of the 30 articles were "old" when they were presented. It is true that the problems themselves are old—and difficult, as difficult as ever before. However, a symposium should provide an occasion for restating the problems in modern terms (which, if it is done well, can be a considerable accomplishment) and for effecting a synthesis of old and new. This book falls short of these objectives. The fault lies principally with the authors, but the editors must be held responsible for including articles that are trivial. At the root of the problem is the insistence of funding agencies, societies, and scientists themselves that the proceedings of symposiums be published in full. Usually the papers of invited speakers are accepted without critical review. Few are ever declined. Should the only "required" publication from a symposium be a brief "meeting report"? If that were the case, then speakers who wished to do so could submit review articles to the regular review journals, where they could compete for space.

The weakness of this volume does not mean that the subject lacks interest or importance. The basic question whether the mechanisms controlling cell replication in the tissues of vertebrates, including kidney and liver, muscle and nerve, conform to a common pattern remains unanswered. Is the genome in adult muscle or nerve completely and irrevocably "closed" or repressed? If not, what DNA-directed functions remain active? Following infection by polyoma and Rous sarcoma viruses, DNA synthesis is initiated in mature muscle, in vitro. But what part of the DNA is synthesized? What is the mechanism of "closure" of the genome? Are there, as is argued by Osgood, Glinos, Iversen, and Bullough and Laurence, among others, tissue-specific "chalones," functioning in tissue autoregulation?

There are a few highlights in the volume. For example, R. J. Goss, whose own book *Adaptive Growth* effectively covers much of the same ground as this volume, has provided an excellent introductory chapter, "The strategy of growth." On the whole, however, the volume falls short. Possibly those already working in the field may find it useful, in a limited way, but it is not sufficiently clear or critical to serve as a source for students of cellular, developmental, and molecular biology who should be entering the field.

JAMES D. EBERT
Department of Embryology, Carnegie Institution of Washington, Baltimore, Maryland

Organic Chemistry

Topics in Stereochemistry. Vols. 1 and 2. NORMAN L. ALLINGER and ERNEST L. ELIEL, Eds. Interscience (Wiley), New York, 1967. Vol. 1, xii + 254 pp., illus., $12.50; vol. 2, xii + 252 pp., illus., $12.50.

One of the major changes in the nature of organic chemical studies in the last decade has been the introduction of mechanistic concepts, which has enabled workers to predict and to rationalize the results of a wide variety of seemingly unrelated chemical reactions. The recognition of the stereochemical consequences of molecular reactions can be likened to a keystone, supporting the structural edifice of physical organic chemistry. During the last five years a number of thought-provoking textbooks on stereochemistry and conformational analysis have been published. It is particularly appropriate at this time that a secondary reference source has become available, not only to deal with "advances" in the field but also to supply greater detail and a critical review of topics that could not be treated at the introductory level. Such is the intended function of *Topics in Stereochemistry*. The series is meant for the teacher, the advanced student, and the researcher and presumes a knowledge of stereochemistry and conformational analysis at the level of *Stereochemistry of Carbon Compounds* (Eliel, McGraw-Hill, 1962) and *Conformational Analysis* (Eliel, Allinger, Angyal, and Morrison, Interscience, 1965). Each of the articles contains a detailed bibliography including references to introductory material that pro-