wishes, however, that there were more on this important subject.

Perhaps the most striking testimony to progress with respect to basic eukaryotic cellular functions is the demonstration by Carbon and Clarke that centromeres can be isolated as physical entities encoded in DNA and that small plasmids containing such centromeric sequences are then endowed with most of the biological properties of legitimate chromosomes.

The principal shortcoming of the book is one that is unavoidable: rapid progress renders much of what is said already significantly out of date. This volume is clearly not a source for the most recent developments. Yet it contains a balanced collection of, in most cases, well-written papers that bear witness to a minor revolution brought about by the convergence of genetic and biochemical methods in the study of this simple eukaryotic organism. The excitement of the time is captured. It is perhaps fitting that the majority of these papers have been dedicated to Herschel Roman, one of the pioneers and sustaining forces of yeast genetics, on his 65th birthday. Roman is largely responsible, through his own efforts as well as through his encouragement of others, for the preeminence of *Saccharomyces* in the genetic analysis of cellular processes in eukaryotes. This volume is an appropriate tribute.

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Virus-Receptor Interactions

Virus Receptors. In two volumes. Part 1, Bacterial Viruses. L. L. RANDALL and L. PHILIPSON, Eds. xii, 148 pp., illus. $39.50. Part 2, Animal Viruses. K. LONBERG-HOLM and L. PHILIPSON, Eds. xii, 218 pp., illus. $39.50. Chapman and Hall, London, 1980–1981 (U.S. distributor, Methuen, New York). Receptors and Recognition, Series B, vols. 7 and 8.

These two slim volumes attempt to bring together the available knowledge concerning the structure and function of receptors for both bacterial and animal viruses.

The first volume contains five chapters, one dealing with the receptors of Gram-positive bacteria and the remaining four surveying various aspects of bacteriophage receptor biology in Gram-negative bacteria. Rather than provide an exhaustive (and exhausting) catalog of known phages and their receptors, the authors have attempted to emphasize general principles and to offer interesting speculations about receptor function. For example, Maxime Schwartz, writing about the interaction of phages with receptor proteins, proposes that phages bind irreversibly only if the host cell membrane is in an energized state, thus providing a mechanism whereby phages can recognize a "healthy" cell. A. R. Archibald reviews the receptors of Gram-positive bacteria, Andrew Wright and colleagues discuss the role of the lipopolysaccharide of Gram-negative bacteria as a phage receptor, and T. Palva and D. Bamford review the lipid-containing bacteriophages. Although functional analogies between receptors for phages and viruses infecting eukaryotic cells are mentioned by Palva and Bamford, this issue does not receive the full attention it deserves. Consequently, the two volumes remain separate and will probably be purchased separately by bacteriologists and animal virologists.

The subject of animal virus receptors, reviewed in the 11 chapters of part 2, embraces a much greater variety of experimental systems. There is also considerable variation in the amount of detailed knowledge about the receptors for the major taxonomic groups of viruses. Some aspects of the subject are dealt with rather summarily, and there is some redundancy in chapters on related topics. For example, there is considerable overlap in the chapters that review receptors for picornaviruses (R. L. Crowell *et al.*) and the myxo- and paramyxoviruses (A. S. Scheid) and those devoted to the role of glycophorin as a virus receptor (A. T. H. Burness), methods for receptor isolation and characterization (K. V. Holmes), and the role of lipids in virus-cell interactions (J. Bramhall and B. Wisnieski). One also experiences a feeling of déjà vu on reading certain chapters. For example, the chapter by Scheid, on the properties of envelope glycoproteins isolated from myxo- and paramyxoviruses, though well written, is a virtual copy of his many other reviews of the last few years. On a more positive note, Burness presents some new ideas about the possible role of sialic acid as a virus receptor and the lucid chapter by Crowell and co-authors makes a useful effort to relate virus receptor function and cellular properties to the pathogenesis of disease.

Because of the diversity of the topics covered in the volume on animal viruses an introductory chapter would have been helpful. The final chapter, "Evaluation and conclusions" (L. Philipson), attempts to develop a unified view of virus receptors in prokaryotic and eukaryotic cells and to define certain avenues for future research, but it is far too brief to be of any real value.

The papers in these volumes contain few literature references later than 1979, and virtually no mention is made of how advances in recombinant DNA technology and new methods for the production of monoclonal antibodies will be exploited in the study of virus-receptor interactions. The editors can be criticized for not making a greater effort to integrate information derived from studies of prokaryotes and eukaryotes. Despite these criticisms, the volumes provide the best survey of this important topic to be published to date.

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(Continued on page 1312)