a specific topic is provided by the next chapter, by June East, on "Immunopathology and neoplasms in New Zealand black (NZB) and SJL/J mice." However, just as Schlesinger's chapter is mostly devoted to antigens other than those associated with neoplasia, so much of East's paper is necessarily devoted to a general description of the immunopathology of the NZB mice, because relatively little is known about nonreticular tumors in these animals. The chapter gives enough of a general discussion of the immunological distortion in these animals to show how the different aberrations can be distinguished by comparisons between NZB and SJL strains, and presents some interesting data on the appearance of malignant reticulum cells, not known to be plasma cell precursors, in a lymphoproliferative spleen. Parts of this article are quite detailed, but as a whole it gives insights into differences in the immunopathology of spleen, lymph node, and thymus.

"Lymphocyte proliferation and lymphoproliferative disorders," by H. Rubin, L. I. Johnson, and S. M. Brown, is in part a general survey of these disorders but deals in considerable detail with ribosomal and RNA changes in lymphoid malignancies. There are several disturbing errors, for example the statement that "in the presence of PHA 60 to 80 percent of normal blood lymphocytes transform into DNA synthesizing blast cells in 2 to 3 days," the 60 to 80 percent having been shown by several excellent kinetic studies to be the result of clonal proliferation of a responding population. Such inexactitudes detract from the value that can be placed upon this otherwise most interesting paper, which does, as the editor claims, give the beginning of an understanding of the molecular biology of the phenomena.

As a whole the book does not give an adequate representation of the emphases and developments in tumor immunity. Perhaps it was felt that such topics as the carcinoembryonic antigen, the development of information about the cytotoxic effects of lymphocytes from cancerous subjects, and the blocking of these effects by serum have been adequately covered in other sources. In all, a very readable book, misleading in part, but also instructive and innovative.

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Metabolism of Plant Organs

The Biochemistry of Fruits and Their Products. Vol. 1. A. C. HULME, Ed. Academic Press, New York, 1970. xxii, 620 pp., illus. $30. Food Science and Technology.

About 50 years ago physiologists investigating the process of fruit ripening for the first time considered it a special aging phenomenon. They used the word "climacteric," with the meaning of "change in life," to designate biochemical changes taking place during ripening. With our increasing insight into particular aspects of the aging of plant organs, we now realize that fruit ripening is not distinctly different from other aging processes. The biochemical pathways, the induction of hydrolytic enzymes, and the changes in the respiratory patterns are very similar to those in other senescing organs. This has made the writing of this book difficult, but the result is very valuable. The authors, with the skillful guidance of the editor, have produced more than merely another plant biochemistry book. This is to say that the editor has carefully selected the topics, and the contributing authors have been so adept that the reader finishes the book with the feeling that he has read a book about fruits and not about general pathways common to many plant organs. At the same time, those who are interested in the pathways themselves will get detailed information.

Any book written by a group of authors will contain variations in its treatment of the subject. The chapters that are selected as best will depend on the reader. One certainly should mention the chapter on lipids by P. Mazliak and the chapter on physiology and nutrition of developing fruits by E. G. Bollard as clearly outstanding.

The book, of course, has shortcomings. I, for one, would like to see an anatomical discussion of the substructure of fruit cells. Most readers probably would not know that most of the mature fruit cells are filled with a single vacuole, nor would they know the biochemical consequences of this. Other shortcomings of the book are the chapters on physiological disorders of fruit after harvesting and on apple scald. Although much is known about the biochemical aberrations leading to physiological disorders, these chapters do not discuss them in depth. The authors consider only the inducing factors and never mention that the fruit can be protected if certain pathways are operational and that some of these pathways can be induced.

In the chapter on hormonal factors in growth and development, only the most general physiology, rather than fruit physiology, is discussed. Although the information presented is interesting, the authors include results obtained with corn kernels, bean seeds, pharbitis seeds, lupin seeds, and bean endocarp, which only loosely can be classified as fruits.

Other chapters deal mainly with the chemistry of the groups of compounds found in fruits, with special reference to their specific roles in the fruit metabolism. The reader will find a wealth of information in the book about sugars, amino acids, proteins, phenolic compounds, pectins, aroma components, carotenoids, and vitamins in addition to enzymatic and hormonal changes occurring during critical stages of maturation and senescence.

The present work and probably its companion volume to come will be among the most effective and widely used books on this subject. This volume stands by itself, however, and can be highly recommended to all plant physiologists and biochemists, student and professional alike, who have an interest in the physiology or biochemistry of fruits.

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A 1969 Flare

Intercorrelated Satellite Observations Related to Solar Events. Proceedings of a symposium, Noordwijk, the Netherlands, Sept. 1969. V. MANNO and D. E. PAGE, Eds. Springer-Verlag, New York, and Reidel, Dordrecht, 1970. xvi, 632 pp., illus. $38.20. Astrophysics and Space Science Library.

A solar flare is the most cataclysmic event that occurs in our solar system. Typically an energy equivalent to 10 billion 1-megaton hydrogen bombs is released in less than 15 minutes. Despite the enormous quantity of data already collected, the basic physics involved in the flare process is still the subject of much acrimonious debate.

The problem lies with the fragmentary nature of the observations. Different observers look at different