thetic tissues in light, and the role of various environmental factors on net photosynthesis. Each subject is examined in a scholarly manner, and work published through 1967 is covered.

Physiological and biochemical interpretations of the mechanisms of the processes discussed are avoided. Thus, although Heath is a world leader in research on stomatal movement and CO_2 enters leaves through stomatal pores, he provides no information about how guard cells carry out this essential function.

Both sides of controversial questions are presented fairly. However, portions of the book dealing with photorespiration (the process by which certain species evolve CO_2 in the light) might be misleading to someone encountering this subject for the first time. It is stated (p. 139) that there is relatively little difference in photosynthetic efficiency (CO_2 uptake per unit of leaf area) between herbaceous species, although it is now well established that species may differ in efficiency by at least two- to threefold. Much of these differences can be explained by variation in photorespiration, as evidenced by direct and indirect measurements. Nevertheless, the author believes (p. 173) that it is "problematical" whether photorespiration occurs at high rates in an atmosphere containing 300 parts of CO_2 per million (normal air). Decker, in 1959, had already shown that the post-illumination burst, a measure of photorespiration which like all other methods underestimates it, is the same at the CO_2 compensation point (45 ppm) as at 300 ppm and that photorespiration greatly exceeds dark respiration in many species.

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Plant Science Chronicle

A Short History of Botany in the United States. JOSEPH EWAN, Ed. Hafner, New York, 1969. x, 174 pp. $7.50.

In his preface to this book, the president of the XI International Botanical Congress, K. V. Thimann, makes a significant statement that "there is, of course, no 'American Botany.'" But the occurrence of the congress in Seattle in August 1969 provided an opportunity for a number of American botanists to summarize the events in their respective fields of plant science.

Joseph Ewan, who undertook to edit this work, presents at the beginning a chronology of events pertaining to botany, starting in 300 B.C. He admits that this chronology is subjective, but the summary is so fascinating to read that it is easy to ignore the incompleteness in some areas and the triviality of some of the events listed in others.

In this book the science of botany has been divided into the "traditional" areas. This organization works for the earlier history of the subject, but obviously there are problems as one approaches the present, with considerable interdigitating of fields. For example, "pteridology" cannot be considered completely separate from "plant genetics and cytology," because a great deal of contemporary work on ferns involves the cytological approach. Similarly, experimental plant morphology gets short shrift because it is neither completely physiological nor completely morphological. There had to be some kind of separation of topics, however, and any scheme would have had a certain degree of arbitrariness about it.

Naturally, a book of essays by different authors results in a degree of unevenness. Some essays here, such as the contribution of Sterling Hendricks on "Plant physiology" and that of E. D. Rudolph on "Bryology and lichenology," are well organized and trace the development of their subject by periods. Others (examples are "Morphology and anatomy" by Sherwin Carlquist and "Taxonomy" by Charles Heiser) are more informal and less tightly organized. On the whole, Ewan did an excellent job in making his selections; my principal complaint is that many of the authors are among the giants in their fields and that a collective sense of modesty among them must have been responsible for omission of some of their own important contributions in recent years.

In spite of the announcement (which appears more than once in the book) that there is no such thing as an American Botany, the book tends to be principally a chronicling of events that occurred in this country, and as a result it becomes a little sterile, failing to give a clear picture of the development of the science as a whole. And this development cannot be outlined without reference to the persistent and continuous interaction of botany in the United States with that in other parts of the world. There have been more transfusions since the initial impetus in each of the fields of botany, and the thread in the story of the growth of American Botany is not confined to the northern part of the Western Hemisphere.

Nevertheless, the book serves a useful function in allowing us to step back for a moment, to look at what has been done locally, to determine what trends have developed, and to try to decide where we should go now. We have all profited from the occasion of the XI International Botanical Congress, the enthusiasm and energy of Joseph Ewan, and the thoughtful essays of the authors.

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Phagocytes

The Macrophage. NANCY N. PEARSALL and RUSSELL S. WEISER. Lea and Febiger, Philadelphia, 1970. x, 206 pp. $8.50.

Although mononuclear phagocytes were once considered to act wholly as scavengers, they are now believed by many to be capable of a wide variety of functions, particularly in immune mechanisms. Rightly or wrongly, some role has been ascribed to these cells in virtually every aspect of the immune response. Pearsall and Weiser, who are active contributors to this field, have provided us with a highly readable review of the widely scattered recent literature on this subject and have interjected their own thoughts concerning the significance of some of the data. Their stated object is twofold: to consolidate the information in order to provide a comprehensive characterization of the macrophages for those who are unfamiliar with the field, and to review some of the more recent work concerning these cells for those who are already familiar with it.

The result is a concise but comprehensive account which deals not only with the possible roles of macrophages in the formation of antibody and in cell-mediated immunity but also with the structure, origin, and metabolism of these cells. Current evidence concerning the ontogenetic and functional relationships of macrophages and other cells is also discussed. Such diverse topics as the synthesis of interferon and the inactivation of thromboplastin