predate his own study, were not trying to confine these dialects geographically or demean them intellectually. Instead their regional approach led them properly to the two areas, the Caribbean and the Carolina coast, where North American black speech had its most formative development among the most concentrated groups of Afro-Americans at the earliest period in time. Dillard evidences too little awareness of these demographic realities.

If Dillard's book is widely discussed, as it should be, American historians may be prodded to give linguists and others a sharper picture of the distribution and movement of black Americans over time and to demonstrate that the primary sources containing relevant linguistic data have scarcely been scratched. When this is done, unduly hostile schools of language history may become reconciled in their common pursuit of further knowledge. And the phenomenon of black English may become understood before it can be buried. Ya dig?

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Early Mesoamerican Culture

The Aztecs, Maya, and Their Predecessors. Archaeology of Mesoamerica. MURIEL PORTER WEAVER. Seminar, New York, 1972. xvi, 348 pp., illus. $11.95. Studies in Archeology.

Archeologists wishing to recommend a basic introduction to the culture history of ancient Mesoamerica have been required to specify several books, sections of specialists' summaries such as *The Handbook of Middle American Indians*, or portions of monographs devoted to larger geographical areas. With the appearance of *The Aztecs, Maya, and Their Predecessors* the need for a single introductory volume has been more than adequately met. Technically well produced and profusely illustrated, this synthesizing volume traces ". . . a history of culture events in Mesoamerica . . ." (p. 2). Relatively brief chapters are devoted to geography and linguistic relationships, early population movements, and the process of domestication. The major emphasis is on the evolution and historical development of complex societies in both Highland and Lowland zones. Weaver has chosen to use the more traditional divisions of Preclassic, Classic, and Early and Late Postclassic, rather than a sequence of developmental stages, in presenting her data. This would seem to be a wise choice since the older, basically chronological, divisions are more useful in presenting the disparate rates of evolutionary growth in the various subregions of Mesoamerica.

Weaver has attempted to present a unified picture of cultural development in Mesoamerica. How well does she succeed? Looking first at the strengths of the volume (and these are considerable), one is struck by the author's obvious familiarity with the basic resources in both Spanish and English. Current research, including work still in progress, is skillfully worked into the narrative presentation. In theoretical orientation, the book is frankly syncretic. The presentation of data on regional sequences or site development is interlarded with both small- and large-scale explanatory theories and hypotheses. Although an attempt is made to choose one or another of these explanations as more probable, the lack of a single guiding theoretical orientation or explanatory framework is evident. Ecological, materialistic, structural, and "historical" explanations are all invoked at differing times. However, although this theoretical pluralism may be uncomfortable to some researchers, it is in part because of it that the text has a richness of texture and content unmatched in single-framework or explanation-oriented works.

This volume appears at a time when regional syntheses are appearing for many portions of the New World. The increasing quantity and scope of archeological research in the Americas has been one factor involved in a shift in research priorities. In a sense, the publication of these regional syntheses marks the end of a stage of archeological research concerned with the rapid delimitation of regional cultural sequences. Building on these sequences, an increasing number of archeologists are turning to problem-oriented research concerned with reconstructing the internal structure of settlements, regions, and large-scale economic systems. More detailed questions, based on models derived from cultural ecological theory, general systems theory, and a variety of other disciplines, are being posed for testing with archeological data. Weaver is aware of these developments and devotes a whole chapter to the new explanatory frameworks and research orientations. That these approaches are not so fully integrated in her presentation reflects their relatively recent emergence in Mesoamerican archeology.

Weaver's book is an outstanding example of archeological regional integration presented in a narrative fashion. In the preface, she reports the hope expressed by a Mexican colleague that the book will be understandable. For both the nonspecialist and the Mesoamerican archeologist this goal has been admirably achieved.

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Environmental Physiology

The Effects of Pressure on Organisms. A symposium, Bangor, North Wales, Sept. 1971. MICHAEL A. SLEIGH and ALISTER G. MACDONALD, Eds. Published for the Society for Experimental Biology by Academic Press, New York, 1972. xii, 516 pp., illus. $24.50. Symposia of the Society for Experimental Biology, No. 26.

The breadth of interest in the effects of hydrostatic pressure on biological function is admirably represented in this compendium. The efforts of the symposium organizers, the editors, and the contributors have resulted in a book which should be a stimulus to research with high pressures.

The contributors to the first quarter of the book give an overview of the effects of pressure on molecular structure and function. Their chapters are judiciously referenced so that a reader can delve more deeply into the molecular effects of pressure that are discussed. It is possible to find out from these chapters what, for example, pressure does to a solubility, to a *p*H, to a hydrogen bond, or to a hydrophobic bond. A knowledge of the physical and chemical effects of pressure discussed in these chapters is essential for the formulation of hypotheses concerning some of the biological phenomena discussed in subsequent ones.

The remainder of the book deals with manifestations of the actions of high pressures on biological functions ranging from the activity of bacterial and fish enzymes to the behavior of large vertebrates. The motivation for most of these studies is to increase our understanding of the effects of naturally occurring hydrostatic pressures, up to about 1100 atmospheres in the deepest parts of the oceans. The articles in this book clearly indicate that there is

just as much reason for interest in the effects of low pressure as in those of high. For example, there is evidence that locomotor activity in *Carcinus*, an inshore crab, is stimulated by changes as small as 0.1 atmosphere in its ambient pressure. The literature documenting such exquisite sensitivity is well covered, and a chapter is devoted to discussing some of the possible mechanisms for it. There are several chapters on the problems associated with the diving of air-breathing vertebrates. In these chapters one can learn what is known about the respiratory and cardiovascular adaptations required for breath-hold dives to depths with pressures as great as 100 atmospheres. Whereas the gas-condensed-phase interaction creates problems for some animals that want to dive, fish, cephalopods, and even some unicellular organisms have created a gas space in order, apparently, to regulate their buoyancy. Several of the symposium presentations are devoted to the mechanics, energetics, and regulation of buoyancy.

A common obstacle to the study of the effects of high pressure is the difficulty of acquiring and handling the hardware needed to maintain an organism in an environment having a controllable pressure and permitting experimental observation and manipulation. In the case of microorganisms, these problems are not too great. The difficulties become magnified as one undertakes to work with an organism under in situ conditions from the deep parts of the oceans or with a large organism or with gases at high pressures. The text contains many excellent paradigms of technique at high pressures. Particularly exciting is the potential of the apparatus shown in the photograph facing page 233 for the study of organisms retrieved at a high pressure from the deep sea. Hopefully, this apparatus is a harbinger of an increased understanding of life in this extremity of the biosphere.

The volume of activation, $\Delta V^{\ddagger}$, is incorrectly defined as a ratio on the bottom of page 175, but correctly defined as a difference on page 17, equation 20.

In summary, this book will be a valuable source of information and ideas in endeavors to understand the effects of high pressures on biological systems.

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Problems in Immunology

Contemporary Topics in Immunochemistry. Vol. 1. F. P. INMAN, Ed. Plenum, New York, 1972. xii, 186 pp., illus. $14.50.

In the preface to this volume Inman writes, "So much information is available that the immunochemist finds it a struggle just to keep the major problems in his discipline in focus! Most of the articles in this and the forthcoming volumes will not be comprehensive reviews of the subject. It is the editors' intention to publish discussions of rather limited scope in areas of intensive research. The purposes of most articles will be to inform the reader of the present state of comprehension germane to that particular problem area, to describe the current research, and to offer suggestions for future inquiries."

There are 11 articles, and I have chosen three to illustrate the different approaches to the handling of the specialized topics in the burgeoning field of immunochemistry.

Immunologists are prone to speak glibly about the exquisite specificity of immunologic recognition and responsiveness. Much of the incisive work that has provided insight into the operation of immunologic specificity has focused on small haptenic determinants. Proteins have been used in many of these studies merely as carrier molecules for the haptens. The lead-off article, an exposé of the role of protein structure in the operation of antigenic specificity by E. Benjamini, R. J. Scibienski, and K. Thompson, is therefore welcome. Evidence obtained from the work of many authors clearly points to diverse origin of antigenic determinants: Some are a direct expression of the amino acid sequence fixed in the primary structure of the molecule, whereas others are generated by modifications in the molecular conformation or intramolecular rearrangements including interaction of polypeptide chains. The authors draw on a number of proteins of known structure, differing in size and complexity, several with regulatory or metabolic functions of vital significance (ACTH, insulin, angiotensin, cytochrome c, ribonuclease, and immunoglobulin, to mention some). The discourse is kept within the framework of the immunological thinking of the moment with due recognition of the importance of binding sites, T (thymus-derived) cells and B (bone-marrow–derived) cells.

The current interest in histocompatibility antigens transcends the immunologist's concern with their role in homograft rejection. These antigens represent products of genes of complex and polymorphic genetic regions. The complexity of these regions is accentuated by the proximity of genes controlling such important functions as the immune response to antigens and differential susceptibility to infectious agents, including oncogenic viruses. It is therefore not surprising that many laboratories are assiduously attempting to isolate and identify histocompatibility antigens. The article by Ralph A. Reisfeld and Barry D. Kahan takes up the problem of isolation of human histocompatibility antigens. The major portion of the article is devoted to a procedure developed by the authors: extraction by means of high salt, 3*M* KCl. The authors attribute the action to disruption of noncovalent bonds, in contrast with covalent bond cleavage by enzymes, which has been used by others in releasing the cell surface antigens. Without questioning the utility of the high salt method, one can question whether the mechanism of antigen solubilization is entirely one of breaking hydrogen bonds. Information just released from an opposing camp indicates that KCl may be stimulating the release of proteolytic enzymes which perform the actual stripping of histocompatibility antigens.

A good deal of innovative thinking is displayed in the article by Richard A. Lerner, in which he describes "beginning observations on plasma membrane-associated macromolecules which may be involved in the 'linkage' between the surface and gene expression." It is known that lymphocyte membranes contain immunoglobulin molecules (M-Ig) which serve as receptors for the binding of antigen. Antigen triggers a number of events including cellular replication, differentiation, and cytoplasmic immunoglobulin (C-Ig) synthesis. The nature of the trigger mechanism is unknown, as is the nature of the communication between the cell surface and the genetic apparatus. Although some of the data are preliminary, Lerner makes a case for a membrane-localized system associating a unique species of DNA with M-Ig. Different messenger RNA's or different regulatory mechanisms or both are apparently involved in the synthesis of the M-Ig and C-Ig, and the membrane-associated DNA is different from the nuclear and mito-