lished by the National Academy of Sciences, or to other recent committee reports. Now a commercial publisher has produced a broad treatment of the problem. The book is a compendium, edited by an able marine chemist and containing 26 chapters written by some 30 marine specialists. The introduction states, "This book is not intended to be a comprehensive document on the subject of man's effect on the oceans; it is directed, rather, at arousing serious thought on the subject." However, it is difficult to focus the thoughts of such a multitude of authors, and one cannot escape the impression that the publishers saw this substantial and relatively expensive volume more as a technical reference than as an opinion-molding monograph.

The two major sections, on transport processes and reservoirs and on "artifacts" of man, constitute about 60 percent of the book and contain most of the papers of lasting value. The former includes an important and illuminating review of horizontal and vertical mixing processes in the ocean (Okubo) and useful discussions of river inputs (Turekian) and atmospheric transport (Goldberg). The latter section has nine chapters on major classes of pollutants. Particularly noteworthy are those on lead (Patterson), carbon dioxide (Broecker, Li, and Peng), radioactivity (Rice and Wolfe) and heavy metals (Merlini). The paper on chlorinated hydrocarbons is an interesting mix of fact and opinion; a large paper on the petroleum problem makes good reading but is pretty short on solid information; articles on domestic wastes and on the biological effects of petroleum are disappointingly thin.

There are brief sections on chemical and other models and a section on man's alteration of the coastal environment, the only concession to "impingement" other than pollution. The discussions of coastal engineering, living resources, and marine environment are not substantial, and there is no mention of the effects of major engineering projects such as the Aswan Dam or sea-level canals. The final section, on implications of man's activities in ocean resource development, contains papers on regulation of pollution from offshore oil pollution and on public policy on the ocean, both of which seem out of place in a publication of such permanent nature. The final paper, on uses of the oceans (Hood and McRoy), would have made a good introduction to the book.

Better coverage of the subject might have been achieved if topics had been combined into fewer and more systematically integrated chapters. There is much of value in this book, but it is a less effective weapon against misinformation and propaganda than is wanted.

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Differentiation

Developmental Genetics. CLEMENT L. MARKERT and HEINRICH URSPRUNG. Prentice-Hall, Englewood Cliffs, N.J., 1971. x, 215 pp., illus. Cloth, $6.95; paper, $3.50. Foundations of Developmental Biology Series.

It has been clear since the turn of the century that the central paradox of development—the problem of differentiation—was best stated in genetic terms. Now there is a new language, the language of molecular biology, and a vast new array of powerful laboratory tools. Markert and Ursprung set out to present in modern terms what is known about the various means by which differential gene action occurs, and how differential gene expression is translated into the drama of epigenesis. They tackle head on, in clear prose and well-chosen examples, the issue: why and how are different genes expressed in different places at different times? The new molecular vocabulary now available allows them to state questions with precision in terms of the control of transcriptional, translational, and post-translational mechanisms.

Only one chapter and parts of a few others deal extensively with the materials that would have been found in a book on the same topic 15 years ago—pleiotropy, phenocopies, regeneration, lethal mutants, maternal effects, and interspecific hybrids. Most of the book is devoted to such topics as the evidence for differential transcription and its mechanisms, the control of protein synthesis, the stability of proteins and messenger RNA molecules, the assembly of enzyme subunits, and chromosome structure. Many will wish some other examples had been included, or that some included had been enlarged upon. For instance, cyclic AMP is not mentioned in connection with hormone action, nor is the concept of prepattern introduced (although pattern is), nor is the danger of the use and interpretation of experiments employing actinomycin underlined. One inadequacy is the very short and sometimes cryptic figure legends, especially in the early part of the book. There are well selected, but somewhat short, reference lists at the end of each chapter. The book covers wide ground, its omissions are relatively minor, and on the whole the examples and issues are remarkable for their thoughtful choice and presentation.

The book is aimed at "initiated" undergraduates and beginning graduate students. The explanations are so clear I imagine that undergraduates with only a semester or two of introductory biology could understand and profit from it.

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Experimental Gerontology

Principles of Mammalian Aging. ROBERT R. KOHN. Prentice-Hall, Englewood Cliffs, N.J., 1971. xiv, 172 pp., illus. Cloth, $7.95; paper, $4.95. Foundations of Developmental Biology Series.

Two central problems facing experimental gerontologists are the diverse nature of the field and the distinguishing of causes from effects. The first difficulty, as well as the apparent lack of conceptual framework, discourages many capable investigators from selecting this research area at an early stage in their careers. *Principles of Mammalian Aging*, organized primarily for such individuals, outlines ample representative studies on topics ranging from the aging of isolated macromolecules to aging and mortality in the intact organism. Pretense of encyclopedic coverage is avoided and interested readers, acquainted with essentials through this exposure, are referred to reviews and the more detailed works of Comfort and Strehler.

On the more problematical questions concerning proposed mechanisms and distinction between cause and effect relationships the author frequently is at variance with a sizable segment of the scientific community involved in this research area. In essence he argues that there is no substantial evidence to support theories suggesting that intrinsic cellular alterations lead to aging in the whole animal. Instead he believes that cross-linking theories, especially applied to collagen and other extracellular pro-