sumed to be outside its realm. These include motivational issues, resistance to extinction in animals, biologically based motives, personality processes, and such practical concerns as marketing, personnel relations, and politics. However, many of the extensions consist of demonstrations that usual responses are modified and often reversed when dissonance is presumed to be operating. For instance, it has been shown that procedures designed to arouse dissonance can alter a motivational state like hunger or thirst. Thus, dissonance theory often is not shown to be an alternative explanation of commonly observed psychological phenomena; instead, it is shown that dissonance-like processes alter the more usual kinds of behavioral patterns.

Perspectives on Cognitive Dissonance is clearly partisan; the authors quite obviously believe in the validity of the theory of cognitive dissonance. As "true believers," perhaps they can be excused for an overemphasis upon the confirmatory aspects of dissonance research, but the reader should be alert to certain tendencies on their part. First, there is a strong tendency to dismiss disconfirmatory or nonconfirmatory (negative) findings on the grounds that dissonance must have been reduced by some method other than the one examined in the research. Second, the methodologies employed by researchers obtaining negative results are analyzed much more critically than the methodologies that produce confirmatory (positive) results. In fact, the criticisms of "negative" studies are sometimes so devastating that the reader may also find it difficult to accept the results from studies that yield positive results. Finally, competing theories, with the exception of Bem's self-perception theory, are given only cursory treatment. No serious consideration is given to the possibility that dissonance-like effects may be produced by some process other than dissonance.

All in all, however, *Perspectives on Cognitive Dissonance* is a moderately good book. It is comprehensive, clearly written, and relatively free of error. Although the book will undoubtedly be of greatest interest to those who have a strong interest in dissonance theory and research, it can be read with profit by most psychologists and by persons in related disciplines such as sociology, political science, and marketing. It is a major statement concerning the theory of cognitive dissonance that few persons interested in the theory will want to miss.

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Composites

Mammalian Chimaeras. ANNE MCLAREN. Cambridge University Press, New York, 1976. vi, 154 pp., illus. $19.95. Development and Cell Biology Series, 4.

Just 20 years ago I observed that, in the absence of calcium, the blastomeres of mouse embryos failed to compact together in the essential prelude to the formation of a morula and, subsequently, a blastocoel. Compaction promptly followed when calcium ions were added, so I wondered if blastomeres from two mouse zygotes could be combined to form a composite individual. Mangold's experience with newt embryos suggested that monsters would be the likely outcome unless strict spatial relations were maintained, but in 1961 Tarkowski produced several normal, clearly marked chimeras by simply aggregating two whole morulae. This finding was soon confirmed by Mintz, using a simplified technique in which the zona was dissolved with pronase.

These experiments revealed that mammalian embryos were much more malleable than those of lower animals. No doubt this is due to the absence of a burden of yolk, allowing greater mobility, and to the bypassing of the restrictive process of gastrulation by invagination. These experiments also opened a new era of purely mammalian (mouse) embryology in which many of the recently cataloged pigment, protein, and chromosome markers were exploited. Progress in this fascinating and expanding field has been critically and accurately summarized by a major contributor, Anne McLaren.

McLaren introduces chimeras by their mythology and then gives current definitions. The term "allophenic," which was coined by Mintz, is rejected on two counts of priority, Tarkowski's earlier use of "chimera" and Hadorn's use in 1945 of "allophenic" for an entirely different purpose. To this may be added the objection that spontaneous or induced chimeras of the same phenotype should, by the same logic, be called "homophenes." Thus Mintz's wish that the term chimera should rest in peace like its mythological forebear when slain by Bellerophon will probably not come to pass.

The book includes chapters on techniques, early development, sexual development, pigment patterns, other morphological characters, blood and immunology, tumors, chimeras versus mosaics, distribution of cell populations, spontaneous chimeras and, finally, some "perspectives." The presentation is clear, and I frequently read McLaren's account with greater understanding than I had the original papers. The number of personal communications quoted indicates the high regard many workers have for the author, but it does not convey the generous encouragement she has frequently given. The only blemish I found, and in both copies to which I had access, was the omission of the last page of references, which, unfortunately, contained the authors beginning with W.

McLaren puts forward some interesting suggestions for future uses of chimeras, but she did not anticipate the spectacular report, by Mintz and Illmense, of effective colonization of the gonads of a chimera by germ cells derived from Stevens's teratocarcinoma. The way is now open to propagate mammals after DNA modification and cloning (see R. Pollack, *Science* **194**, 1272 [1976]). For those who are interested in this prospect, the book will be an essential guide to the methods and interpretation of research with chimeras. It should also be a handbook for those who wish to use chimeras and other appropriate methods to unravel the fascinating processes of mammalian development.

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Solution Chemistry

The Hydrolysis of Cations. CHARLES F. BAES, JR., and ROBERT E. MESMER. Wiley-Interscience, New York, 1976. xxii, 490 pp., illus. $29.95.

The formulas of and charges on hydrolyzed species affect coagulation, adsorption, solubility, complex formation, and redox potentials. The subject of this book is therefore of interest or potential interest to scientists ranging from physical chemists specializing in ionic solutions to environmental scientists concerned with the chemical fate of metals in natural waters and biologists concerned with the transport of metals in living systems.

The authors' objectives were to assemble data on water-soluble cationic hydroxides and oxides into a convenient form and to "gain some understanding of why metal ions produce such a wide variety of hydrolysis products." The book succeeds in the first objective and takes an important step toward the second. It also provides a review of the methods for obtaining and interpreting data on hydrolysis reactions.

An introductory chapter is followed by two chapters that constitute the methodological review. These chapters deal primarily with potentiometric measurements of pH. Spectroscopy and other less prominent experimental approaches are reviewed adequately but in less detail. On the basis of potentiometric pH determinations and the known total cation content of a solution, the formulas for the various hydrolysis products and their formation equilibrium constants can, in principle, be computed. In practice the computations are not simple, because a variety of species of the general formula $M_x(OH)_y$ need to be considered. Typically x ranges to 3 and y to 5. The chapters outline the degree of accuracy in the data that is required for valid computations and discuss how junction potential, asymmetry, and activity coefficient potentiometric errors are identified, estimated, and minimized.

The interpretation of potentiometric data is a subject on which the perspective of insiders is especially appreciated. Chapter 3 summarizes the graphical and the more recent computer techniques and discusses the degree of confidence that can be placed in the results. The relative merits of inductive and deductive approaches are discussed. An agreement factor involving the difference between observed and calculated ligand number is used, and criteria for data best fit are given. These two chapters provide a sound review that will be useful both for graduate students and for those already active in hydrolysis chemistry.

The largest portion of the book consists of chapters reviewing and summarizing the hydrolysis chemistry of the cations in order of their place in the periodic table. Earlier work is critically reviewed. Best values for the equilibrium constants are proposed, and in many cases graphs presenting hydrolysis species as a function of pH and total cation concentration are included. Some practical aspects of the kinetics of hydrolysis product formation are dealt with.

A chapter aimed at organizing present knowledge of hydrolysis behavior concludes the text. It should prove of great interest to inorganic chemists concerned with complex formation. The authors present some generalizations, based on thermodynamic data, concerning entropy, enthalpy, and structural features of polynuclear species.

The book has several helpful features. It includes a listing of symbols and definitions, a periodic table of the elements that includes references to the chapters in which the various elements are discussed, and a bibliography of over 700 items. At strategic points in the chapters on methodology, preceding material is recapitulated—an evidence of regard for the nonspecialist reader. The appendixes include a computer program for processing data by a general nonlinear least-squares procedure and a subroutine for hydrolysis data that uses the ligand number as the dependent variable. The introductory chapter includes a historical overview showing that a large proportion of the reliable data on the subject have accumulated within the past 20 years. Historical and philosophical perspective is offered at several other points in the text.

The book reads well. Although clear, the style is not pedagogic. At points in chapters 2 and 3 some examples would have helped the nonexpert. Diagrams are used in sufficient number and detail.

In summary, the book provides a succinct, clear account of the hydrolysis reactions of cations.

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