al region. Labby postulates, following Jacques Barrau, that as the population increased there was a shift from extensive, slash-and-burn agriculture to a more intensive, permanent agriculture emphasizing swamp taro (*Colocasia* and *Cyrtosperma*). Swamp taro cultivation can be carried on efficiently by conjugal family households and is more likely to be carried on by men than by women, according to a comparative study of food crops in the Caroline Islands which Labby cites. This shift in cultivation, he suggests, led to an increasing tendency for the men of the matrilineal clans (i) to reside on and work their own clan property instead of moving to their wives' lands on marriage and working those, and (ii) to pass on some—in later periods all—of their share of their own matrilineal clan lands to their wives and thence to their sons. Since there is in other matrilineal societies in Micronesia an occasional transfer of land from men to women at marriage and a more widespread tendency for men to try to give a little land to their sons, this hypothesis is plausible. Labby postulates that these changes in inheritance of land occurred in a densely populated society, which fostered intense competition for land and the growth of a view that the recipients of land (the wives and their sons) are indebted to the givers (the men) and are inferior to them, even polluting and dirty, and therefore should not eat food from the same garden or food cooked on the same fire. Again, this is logically consistent, although an extreme development.

As for the dialectic of Marxism, Labby mentions repeatedly a "dialectic between clan and land," by which he seems to mean concretely a kind of exchange between a land-owning man and his wife in which the man progressively transfers rights to pieces of his estate to his wife and their sons—who are necessarily members of their mother's matrilineage and thereby share her property rights. This transfer is phrased as a payment to the wife and her clan for her labor in the land, her care for her husband, her bearing his children, and so on. This exchange of land for wifely service strikes me as rather different from standard Marxist dialectic, but Labby argues that this husband-wife relationship, which is also in a sense a relationship between their two clans, serves as a prototype for relationships between social classes and political entities such as villages and districts.

Labby's book is short. In a longer work I would hope he would consider other possible approaches in some detail, if only to dismiss them authoritatively. For instance, he mentions that some Yapese clans attribute their origin to "people of Malaya," an area that was historically strongly subject to influence from India. The division of Yapese society into endogamous classes separated by food-sharing taboos has suggested to others the caste system of India. Could this complex social system have originated not in a gradual local development but in a wholesale introduction of the Indian caste system by migrants or castaways from one of the Hinduized states of Southeast Asia? Are there apparent Hindu influences in other aspects of the culture of Yap?

To deal with this and other questions much more evidence than Labby presents is needed. Some of it is available in scattered writings of earlier authors. Some of the evidence may—though the people of Yap have a reputation for cultural conservatism—be irretrievably lost owing to recent acculturation. In part Labby's work is salvage ethnography—an effort to dredge from the memories of old people the way the society worked a century ago when Western influence was still minimal. Labby appears to have an impressive grasp of the language and current culture of Yap. I hope he will prepare a lengthier description of it in the future to provide a more solid test of the value of his innovative approach.

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Psychological Theory

Perspectives on Cognitive Dissonance. ROBERT A. WICKLUND and JACK W. BREHM. Erlbaum, Hillsdale, N.J., 1976 (distributor, Halsted [Wiley], New York). xvi, 350 pp. $16.50. Complex Human Behavior.

Cognitive dissonance theory was first formulated by Leon Festinger in 1957. According to this theory, whenever a person has two or more cognitions that are inconsistent with one another the person experiences a motivational state that is referred to as cognitive dissonance. A person experiencing cognitive dissonance feels pressure to reduce the dissonance and to avoid increases in it. The consequences of the pressure include changes in cognitions, changes in behavior, and selectiveness in taking notice of new information and opinions.

In *Perspectives on Cognitive Dissonance*, Wicklund and Brehm attempt to evaluate the current status of cognitive dissonance theory in the light of the considerable amount of research the theory has generated. To accomplish their purpose, the authors have attempted to assess the extent to which the basic propositions of the theory have been supported by research and the extent to which dissonance phenomena can be interpreted in terms of alternative theories. After giving an outline of dissonance theory, the book summarizes an amazing array of research on various processes relevant to the arousal and reduction of dissonance, and discusses applications, variations of dissonance theory, alternatives to dissonance theory, and basic issues that remain to be resolved. The material is well organized, except that chapter 5 (which presents evidence for basic propositions) would more appropriately follow chapter 1 (which presents the basic theory).

Perhaps the most important contribution made by the book is the explicit statement of the conditions that are necessary for the occurrence (or at least the demonstration) of dissonance-like effects. Wicklund and Brehm's review of relevant research makes it clear that when two or more cognitions are in a dissonant relationship the predicted effects do not necessarily occur. Their modified version of dissonance theory holds that cognitive dissonance is aroused only if the person feels responsible for the cognitive inconsistencies. In view of the importance they attach to personal responsibility, it is surprising that Wicklund and Brehm ignore the research that has been done on the attribution and perception of responsibility. There is a notable correspondence between the conditions that are presumed to be necessary to create feelings of personal responsibility and the variables that have been shown to determine the attribution of responsibility. For example, in a typical dissonance experiment the subject is induced to perform some act (commission) that has foreseeable consequences under conditions of choice (intentionality). Furthermore, it is usually argued that dissonance can be reduced by justification of the action. A considerable body of research based on attribution theory shows that attribution of responsibility is influenced by the same variables—commission, foreseeability, intentionality, and justification. The theoretical framework of dissonance theory could be strengthened by integration with attribution theory.

A particularly praiseworthy aspect to Wicklund and Brehm's presentation is the extension of dissonance theory to phenomena that previously were pre-

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.