

even remotely connected with the field of fracture, for it is an authoritative source for background information and for information about current experimental practices and concepts of the phenomenon. It does not pretend to be a complete answer to the technical problem, but it should serve as a useful guide in the further development of the subject.

W. GOLDSMITH

*Department of Mechanical Engineering,  
University of California*

## New World Culture History

**Aboriginal Cultural Development in Latin America: An Interpretative Review.** Betty J. Meggers and Clifford Evans, Eds. Smithsonian Institution, Washington, D.C., 1963. vi + 149 pp. Illus. \$5.

This publication consists of ten papers prepared by specialists on the aboriginal culture history of specific geographical regions of Latin America and presented at a symposium held in Mexico City on 22 August 1962, as a part of the 35th International Congress of Americanists. The 11th paper, by Betty J. Meggers, attempts to synthesize the content of the others into a comprehensive outline of the major factors that underly the rise of civilization in the New World.

As one might expect, the papers vary widely in their adequacy. Limited space precludes a critique of each paper, but I offer the following ranking of the papers in terms of their clarity of organization, accuracy, and overall probability and the degree to which specific problems were pointed up rather than glossed over. From best to worst they run: Coe on southeastern Mesoamerica; Gonzales on northwest Argentina; Estrada and Evans on Ecuador; Di Peso on northern Mexico; Baudéz on lower Central America; Augulo Valdés on Colombia; Kidder, Lumbreras, and Smith on the Central Andes; Piña Chán on central Mesoamerica; Sanoja on Venezuela; Silva and Meggers on Brazil. My extremely negative reaction to the paper on Brazil derives only from the section on the Amazon Basin, evidently by Meggers. The other section, on Central and southern Brazil, seems satisfactory. Something of the scope of my disagreement with Meggers may be expressed by comments on one of her sentences. "The

earliest ceramic complex, represented so far at four sites distributed from eastern Peru to the mouth of the Amazon (Tutishcainyo, Yasuní, Jaurí, Ananatuba), is characterized by broad-line-incision and zoned-hachure decoration, relating it in a generalized way to the late Formative Complexes of Peru and Ecuador." Under no definition of ceramic complex could Early Tutishcainyo and Ananatuba be considered as belonging to the same complex. Aside from the fact that both do show zoned, hatched incision (Early Tutishcainyo almost invariably, Ananatuba very rarely), and the fact that both are made of fired clay, it is extremely difficult to find any points of similarity. Early Tutishcainyo does not show generalized relationships to the Late Formative complexes of Peru. As I pointed out earlier [*American Antiquity* 23, 385 (1958)], Early Tutishcainyo shows a series of specific similarities to some of the ceramic materials from Kotosh, which is located at the eastern edge of the Peruvian Highlands. It is now known that the Kotosh ceramics most like Early Tutishcainyo are the earliest found at that site; they have a carbon-14 date of  $1838 \pm 110$  B.C., which makes them the oldest dated pottery in Peru. It is by no means clear, either to me or to the Japanese archeologists who have worked at Kotosh, that Early Tutishcainyo represents highland influence which dribbled down into the Amazon Basin [Scientific Expedition of the University of Tokyo, *The Japanese Journal of Ethnology* 26, No. 4, 23 (1962)]. There are good reasons to suspect that the cultural movement was in the opposite direction, and, if this is correct, the time depth of Tropical Forest Culture in the Amazon Basin is far greater than 500 B.C., the estimate offered by Meggers.

The summary paper by Meggers tends to rise above the striking and interesting discrepancies in dating and interpretation, which are found among the various papers. As a highly generalized statement of our present knowledge with respect to the prehistory of Latin America, the paper has much to recommend it. Its greatest strength is that it emphasizes the importance of the study of long distance contacts for a full understanding of New World culture history. This is all to the good in the face of a long-standing provincialism on the part of New World archeologists.

Included as a part of Meggers' summary is a table that indicates the first

appearance of a number of culture traits in various parts of Latin America. The data were compiled by the various participants, and the fairly numerous errors (of omission and commission) and the inconsistency can not all be charged to Meggers. The significance of the flow diagrams derived from this table is reduced by these random errors and by a rather consistent overdating on the part of Piña Chán and underdating on the part of Kidder, Lumbreras, and Smith. Figure 19 is particularly suspect because of these factors.

This book is required reading for any serious student of New World culture history. The best papers offer excellent introductions to key problems, and much important new work is summarized. Even the poorer papers are provocative.

DONALD W. LATHRAP

*Department of Anthropology,  
University of Illinois*

## Research Techniques

**Newer Methods of Nutritional Biochemistry.** With applications and interpretations. Anthony A. Albanese, Ed. Academic Press, New York, 1963. xii + 583 pp. Illus. \$18.50.

According to its editor this volume is intended to provide the graduate biochemistry student and the medical scientist with a ready and descriptive résumé of recently developed biochemical procedures that have extensive applications in the currently most active areas of nutrition research. It only partially succeeds in this objective. Not only are many of the most active areas of nutrition research ignored but the varied approach of the many contributors results in a volume that is extremely uneven in both style and content. Thus, in an excellent chapter, almost twice as much space is devoted to vitamin B<sub>12</sub> and intrinsic factor as is given to a chapter in which the discussion covers vitamins B<sub>1</sub>, B<sub>2</sub>, B<sub>6</sub>, niacin, and ascorbic acid; the other vitamins are neglected. A good chapter on fats, fatty acids, and sterols is followed by a poor one on minerals; among the faults noted in this chapter, vitamin D and phytate are omitted from the list of factors that influence calcium absorption and the only mention of selenium is the statement that it has been found in the human body