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.

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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; Baudez 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, Jauarí, 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 ± 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, Lumbreas, 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.

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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_{12} and intrinsic factor as is given to a chapter in which the discussion covers vitamins B_1, B_2, B_6, 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

and is toxic, and the recommendation that a Beckman DU flame spectrophotometer be used for magnesium determinations.

Some of the subjects are too extensive to be discussed adequately in the space allowed in this volume. This is particularly true of two chapters: "Diets and tissue enzymes" and "Biostatistical methods." A chapter on the rates and the kinetics of enzyme formation and destruction in the living animal consists almost entirely of a review of the authors' own good studies of catalase turnover. Two chapters, "Intestinal absorption" and "Carbohydrates," have considerable merit but are incomplete. There are two good chapters on proteins and amino acids, but it must be pointed out that much of the material covered was included in a volume on protein and amino acid nutrition which was published 4 years ago by the same press and with the same editor.

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Botany

Aquatic Plants of the Pacific Northwest. With vegetative keys. Albert N. Steward, La Rea J. Dennis, and Helen M. Gilkey. Oregon State University Press, Corvallis, ed. 2, 1963. x + 261 pp. Illus. $4.50.

There are so many different kinds of plants, and floral characters are so important in the definition of families, that an attempt to identify a specimen which does not happen to be in flower is apt to be a frustrating and unsatisfactory experience. The number of species of aquatic plants, on the other hand, is much more limited, and in any given region it is possible to learn to recognize most of the aquatics on vegetative characters, and to design keys which will permit other people to identify them. This little book is intended to facilitate identification of aquatic plants, with or without flowers, in Oregon, Washington, British Columbia, and Alaska. Not only flowering plants, but also vascular cryptogams, bryophytes, and the larger algae (such as *Nitella*) are treated. Many of the species, but not all, are illustrated by simple line drawings. In general the authors have accepted contemporary professional opinion, as is proper in such a book, instead of attempting taxonomic revisions.

The first edition, published in 1960, dealt with true aquatics and "also species whose life cycle includes some stage that requires either the saturation of the substrate with water or the presence of an ambient aqueous medium." This required 172 pages. The present edition adds "certain borderline plants which, through their broader powers of adaptability, may be termed facultative aquatics," and it includes a family key based on floral characters as well as a vegetative key.

The addition of some "facultative aquatics" is of course intended to make the book more useful, but this carries its own set of problems. The more species are treated, the more complex and difficult the key must be, and the greater the chance of error. One would not expect to find such familiar terrestrial plants as *Bidens frondosa, Panicum capillare, Plantago major, Populus tremuloides,* and *Solanum dulcamara* in a book on aquatics, but they are there. One might think of many others not included, which have as much claim to being considered aquatic as do these species. Where to draw the line in such matters necessarily involves personal judgment, in which people are bound to differ. I would have preferred a more restricted coverage than the authors have chosen.

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New Books

Biological and Medical Sciences

Bibliotheca Primatologica. fasc. 2, *The Development of the Primitive Streak, Head-Process, and Annular Zone in Tarsius, with Comparative Notes on Loris.* J. P. Hill and J. Florian. Karger, Basel, Switzerland, 1963. 96 pp. Illus. Paper, $9.

Biochemical Findings in the Differential Diagnosis of Internal Diseases. H. U. Anton *et al.* R. Schoen and H. Sudhof, Eds. Translated from the German edition by R. Gaddie and E. Anna Illingworth. Elsevier, New York, 1963. 444 pp. Illus. $20.

Biology Teachers' Handbook. Joseph J. Schwab, Ed. Wiley, New York, 1963. 603 pp. Illus. $7.

Cell Culture, a Postgraduate Course. A course of lectures, symposia, and practical work conducted at the Univ. of Melbourne, February–March 1963. David O. White, Ed. Cell Culture Soc. of Victoria, Melbourne, Australia, 1963 (order from the Univ. of Melbourne, Parkville). 372 pp. Illus. Paper.

Cell Proliferation. A Guinness symposium held at the University of Dublin, Trinity College. L. F. Lamerton and R. J. M. Fry, Eds. Davis, Philadelphia, 1963. 253 pp. Illus. $7.95.

Cell Structure and Function. Ariel G. Loewy and Philip Siekevitz. Holt, Rinehart, and Winston, New York, 1963. 236 pp. Illus. Paper, $2.25.

Cellulose Conference, the Fourth, Proceedings. A symposium (Syracuse, N.Y.), October 1962. R. H. Marchessault, Ed. Interscience (Wiley), New York, 1963. 554 pp. Paper, $22.

Chemical Plant Taxonomy. T. Swain, Ed. Academic Press, New York, 1963. 553 pp. Illus. $16.

The Chemistry and Function of Proteins. Felix Haurowitz. Academic Press, New York, ed. 2, 1963. 570 pp. Illus. $10.

Durchblutungsmessung mit Wärmeleitelementen. In forschung und klinik. K. Golenhofen, H. Hensel, and G. Hildebrandt. Thieme, Stuttgart, Germany, 1963. 131 pp. Illus. DM. 22.50.

Electron-Microscopic Structure of Protozoa. D. R. Pitelka, Pergamon, London; Macmillan, New York, 1963. 279 pp. Illus. $12.50.

Le Emoglobine Umane. Biochimica, genetica, popolazionistica, patologia, e clinica. E. Slivestroni and I. Bianco. Edizioni Dell'istituto "Gregorio Mendel," Rome, 1963. 140 pp. Illus.

Flora of the British Isles. Illustrations. pt. 3, *Boraginaceae-Compositae.* A. R. Clapham, T. G. Tutin, and E. F. Warburg. Cambridge Univ. Press, New York, 1963. 121 pp. Illus. $6.

Handbuch der Experimentellen Pharmakologie. vol. 17, *Ions Alcalino-Terreux.* pt. 1, Systemes Isoles. Zenon-Marcel Bacq, Ed. Springer, Berlin, 1963. 594 pp. Illus. DM. 148.

Immunology for Students of Medicine. J. H. Humphrey and R. G. White. Davis, Philadelphia, 1963. 460 pp. Illus. $8.50.

Informational Macromolecules. A symposium (New Brunswick, N.J.), September 1962. Henry J. Vogel, Vernon Bryson, and J. Oliver Lampen, Eds. Academic Press, New York, 1963. 562 pp. Illus.

Lucrarile Stiintifice. Ale Institutului de Seruri si Vaccinuri Pasteur-Bucuresti, vol. 7. Editura Agro-Silvica, Bucharest, Roumania, 1963. 381 pp. Illus. Paper.

Mechanisms of Immunological Tolerance. Proceedings of a symposium (Liblice, Czechoslovakia), November 1961. M. Hasek, A. Lengerova, and M. Vojtiskova, Eds. Czechoslovak Acad. of Sciences, Prague; Academic Press, New York, 1963. 544 pp. Illus. $18.

Recent Advances in Allergy Research. Transactions of the Collegium Internationale Allergologicum (Freiburg, Germany), October 1962. F. Hahn, P. Kallos, and G. B. West, Eds. Karger, Basel, Switzerland, 1963. 359 pp. Illus. Paper, $14.75.

Recent Progress in Hormone Research. Proceedings of the 1962 Laurentian Hormone Conference. vol. 19. Gregory Pincus, Ed. Academic Press, New York, 1963. 764 pp. Illus. $22.

Recherches Physiologiques sur le Repos Vegetatif de la Vigne (*Vitis Vinifera L.*): La Dormance des Bourgeons et le Mecanisme de sa Disparition. R. Pouget. Institut National de la Recherche Agronomique, Paris, 1963. 255 pp. Illus. Paper, F. 25.