

Book Reviews

FOUR BILLION YEARS: AN ESSAY ON THE EVOLUTION OF GENES AND ORGANISMS. By William F. Loomis. Sunderland, MA: Sinauer Associates, Inc. xvi + 286 pp., figures, tables, notes, appendix, index. \$22.95 (paper), \$39.95 (cloth).

Four Billion Years is an extended essay on the origin and history of life. Its scope is consequently so broad that there is probably little here of direct interest for an evolutionary discipline as focused as physical anthropology. Nevertheless, it provides a highly competent reconstruction of the first few thousand million years of human evolution.

The reader is expected to bring a significant bit of chemistry to the work. If I, for example, had not remembered what an "enantiomorph" was from my undergraduate chem classes, I would not have learned it here and would have been lost by page 10. Likewise, one had better know one's kbs from one's kds (kilobases of nucleic acid length and kilodaltons of protein weight).

The nonchemical biology I found disappointing. Though there is some talk of organisms, there is virtually none of populations, the main contribution of the "synthetic the-

ory"; and what talk there is of evolution is overwhelmingly of the molecular sort. Haeckel's biogenetic law is stated on page 197; but the reader has to refer to a footnote to learn not to take it literally. When interesting issues in evolutionary theory would tie in, they are usually absent: Dawkins' "extended phenotype," the controversial origins of sex, mass extinctions, and hierarchy theory, to name a few. A broad and fairly naive pan-selectionism also pervades the work.

Nevertheless, the book is full of illustrative examples, one of its strongest points, the other being a lucid style of writing. On balance, this work will be useful to physical anthropologists who bring to it a knowledge of evolutionary biology and wish to brush up on prebiotic and early biotic developments. I am a little leery, however, of its effect on the molecular biologists and biochemists who hope to learn about current views of evolution.

JON MARKS

*Departments of Anthropology and Biology
Yale University
New Haven, Connecticut*

FAT DISTRIBUTION DURING GROWTH AND LATER HEALTH OUTCOMES. Edited by Claude Bouchard and Francis E. Johnston. New York: Alan R. Liss, Inc. 1988. x + 363 pp., figures, tables, index. \$68.00 (cloth).

When Dr. Albert Behnke began underwater weighing, appropriately enough on U.S. Navy divers, anthropometry—or at least nutritional anthropometry—seemed destined for demise. So did girth measurements, ponderal indices, and circumferential ratios. Why measure spans and girths and the biwristal diameter, why calculate relative weight, when percent fat and percent lean were the ultimate values? However, over the years anthropometry reemerged as radiogrammetry, pinch-caliper measurements, and then again as girths or circumferences. Weight-for-height indices rallied, too, and in Canada the Quetelet index is now part of the national health policy. Bjorntorp, in this

volume, expresses high regard for the waist/hip ratio as the "best" measure of obesity. Other authors in this conference volume are not so sure.

Now underwater (hydrostatic) weighing, described as the "gold standard" by some authors, presumably in reference to Archimedes' regal application, has three limitations as to general use. First, underwater weighing is not feasible for mass-survey, population study or for most patient purposes. Second, there are doubts as to how constant the constants are and as to how valid the equations. Third, there is renewed interest in fat placement or fat patterning as a risk factor in itself, not available from percent fat estimates. Accordingly most of the new research described in the 20 chapters in this volume is based on technically simple, in vivo approaches, though computed tomography (CT) scans are mentioned more or less in passing. There are numerous

attempts to describe patterning by skinfold and circumferential ratios, factor analysis, principal components, and such.

A conference volume like this one is best described by first listing the participants, who include Bray, Bjorntorp, Greenwood, Bouchard, Larsson, Vague, Roche, Malina, and Mueller, to enumerate only half of the total. It can also be described by estimating the amount of new information as against purely historical summarizing reviews. The majority of the papers here included are new, in one sense or another. A volume can also be described by selecting some examples of general interest, including Bjorntorp's valuable attempt to explain why fatter people are at greater risk for hypertension, hyperlipidemias, and such and attempts by Vague and by Kissebaugh and others to explain why some fat distributions or "patterns" may be associated with type I and type II diabetes. Half a dozen of the various first authors otherwise deal with fat patterning or placement, using ratios of various sorts, principal component analysis, and so forth. The question is whether, in the general population, strongly fat-patterned individuals are sufficiently numerous to confirm patterning as a particular risk factor and not just as a manifestation of generalized fatness (factor 1 with high eigenvalues). Since few of the data bases involved are truly large, there is understandably little attempt to ascertain why under-fatness is also a risk factor, but for a different constellation of outcomes. Again, and characteristic of most body composition studies since the beginning, there is little attempt to explore an excess of the lean body mass (LBM) as a separate risk factor or to explore the family-line transmission of differences in the magnitude of the lean component of the two-component model.

It is useful to summarize intervention (Himes), to review data on fatness "tracking" or continuity (Roche), to pay specific attention to fatness and blood pressure (Siervogel and Baumgartner), and to review the evidence for both genetic and nongenetic familial fatness (Bouchard). It is most useful, for anthropologists, to review the data on alleged "ethnic" differences in fat patterning (cf.

Mueller), differences admittedly complicated by the amount of fat. It is useful to see the "gynoid" and "android" fat patterns defined by navel observation (see p. 17), although, with increasing age and increasing fatness, most of us tend to become rather "android" regardless of our chromosomal complement.

Individual papers range in length from a scant 10 pages (Larsson) to 20 or so, according to authors' preferences and writing habits. Still, Bouchard and Johnston appear to have set established working limits, so that there are no near-abstracts paired with miniature monographs. Agreeably, the reference lists are quite complete, thus constituting a useful source of references missed and others not commonly available. The graphs are useful indeed, though some are difficult to fathom, given their short legends and at times their complexity. Being a conference volume, the statistical significance of many such representations is not given so that we must often accept the author's assurance that the trends—so graphed—are actually worth their ink.

This conference volume was published in record time, less than 1 year after the June 1987 Montreal conference itself, and at a reasonable price for such a publication, under 20 cents a printed page, despite the hundreds of text figures. To do this, the publisher worked with camera-ready text supplied by the authors, accepting citation errors to speed the printing. Thus the photographically reproduced text, though readable enough, incorporates a variety of typescript and computer-printed fonts, with differing line spacing and some margin-justified copy and some not. Professional retyping, proofing, and reproduction from high-resolution laser-printed copy could have resulted in a slimmer and more handsome book, but with a time-delay and a higher price. Most of us will accept the compromise, valuing speed of publication for so timely a work and so much information for our perusal.

STANLEY M. GARN
Center for Human Growth and Development
University of Michigan
Ann Arbor, Michigan

NUTRITIONAL ANTHROPOLOGY. Edited by Francis E. Johnston. New York: Alan R. Liss, Inc. 1987. x + 304 pp., figures, tables, index. \$49.50 (cloth).

Nutritional Anthropology is a valuable resource for anthropologists who teach advanced undergraduate- and graduate-level courses that include attention to human