

Physical Anthropology: A Science of Human Biology

Human Biology. An introduction to human evolution, variation, and growth. G. A. Harrison, J. S. Weiner, J. M. Tanner, and N. A. Barnicot. Oxford University Press, New York, 1964. xvi + 536 pp. Illus. \$8.

This superb book marks a high point in a trend that has been proceeding quietly for some years: the transformation of physical anthropology from a specialized, largely historical discipline, based on and in large part limited by its traditional techniques of osteology and anthropometry, to a central science of human biology. Although a few anthropologists have called attention—largely of one another—to this development, the authors of *Human Biology* make the point in the best possible way: they don't just tell us, they show us.

Written by four distinguished anthropologists, two of them (Weiner and Tanner) physicians as well, the book's purpose, as stated in the preface, is "to synthesize, at an introductory level, present knowledge of the biological organization of past and present human populations." There are five sections. Human evolution (by Harrison and Weiner) deals with evolutionary theory, the history of the primates, the fossil evidence for human evolution, and "anthropogenesis," or the concomitant evolution of human form and behavior. The principles of human genetics are outlined and applied to family and population studies (by Harrison). Biological variation in modern populations (by Barnicot) comprises anthropometry, pigmentation, dermatoglyphics, biochemical and serological traits, and variations in PTC tasting, color blindness, disease frequencies, and mental attributes. Growth and constitution, the latter concerning individual as well as population biology, are treated by Tanner. And finally, under human ecology, Weiner considers the ef-

fects of nutrition, climate, disease, and demographic pressures on human variation.

Organization, content, and style are unified to a degree seldom achieved in books by several authors, with further integration in the form of frequent cross-references from one section to another. Each section moves rapidly from definitions and concepts to applications, findings, and problems requiring further research. Despite the statement in the preface that the level of exposition is introductory, it is far from elementary and presupposes basic knowledge. For example, "polyploidy has been responsible for the abrupt origin of new plant forms because in them the unique genetic constitution can be transmitted . . . by vegetative reproduction" (p. 4). Polyploidy and vegetative reproduction are not defined. Two pages later appears a detailed account of the evolution of the tympanic ring in relation to the tympanic bulla, again without definition of the term tympanum. Both arguments are appropriate in context but will mean little to a neophyte.

In their chief aim, to synthesize knowledge of the biology of human populations, the authors have succeeded admirably. Each section includes enough up-to-date, detailed information and fresh insights to instruct and challenge not only the intermediate and advanced student, but the professional as well. While other attempts at such an ambitious project would doubtless differ in emphasis (does growth, for example, warrant more than three times the space allotted to disease?), the main areas are covered soundly and thoroughly, while the newer fields of epidemiology, demography, and ecology receive the best treatment—and on some topics the only one—given them by any anthropological text to date.

I have some comments. There is too

little discussion of Leakey's exciting finds of early man; *Zinjanthropus* does not appear in the index at all. The statement (p. 164) that "no really systematic studies have been undertaken of human hybridization" seems too harsh a judgment on the anthropometric studies analyzed in Trevor's (1953) monograph, *Race Crossing in Man*, and ignores genetically oriented studies made in Japan and Brazil. In chapter 14, "The size and shape of the body," metrical variation is recognized as an important facet of human biology, a useful antidote to the view of some avant-garde American physical anthropologists to whom anthropometry is old hat. Barnicot also shows how modern analytical methods can breathe new life into the traditional observations of skin and hair color. The section on growth, largely abridged from Tanner's excellent *Growth at Adolescence* (1962), might have included at least a brief account of aging. In a work of this scope, many specific points might be questioned, but this is better done privately. A general criticism is the lack of documentation for many statements which the reader might wish to pursue. The use of numbered references would greatly enhance the value of the book.

In a brief foreword, P. B. Medawar defines human biology as "not so much a discipline as a certain attitude of mind" and regards it as "a very proper study for medical students and those who practice medicine." Many disciplines contribute to human biology, as this text shows, and in my view a human biologist should master at least one, in addition to the attitude Medawar speaks of. Otherwise there is the danger of superficiality, and the relation of human biology, the study of populations, to medicine is circular or spiral rather than one-way. The pre-clinical sciences view man in terms of molecules, cells, tissues, and organ systems; the clinical sciences study individual men; preventive medicine and the public-health sciences complete the circle back to populations.

But human biology is too basic a part of everyone's education to be confined to premedical, medical, or even natural-science curricula. Not the least virtue of this outstanding text is that it can both stimulate and provide a framework for a curriculum built around man's place in nature.

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