

If such admixture occurred, it could only mean that "neanthropic" man, "Solo" man, and "Neanderthal" man were all members of the same species and therefore of the same line of descent. *Homo erectus* would then be broadly and equally ancestral to all of these. The concept of a species, and the parameters characterizing it, are conspicuous in their absence. The word does not even appear in the index!

Lastly, I cannot in honesty recommend this book to those who are weary of statements such as: "Cro-Magnon man is a modern man in every sense of the word, but where he came from or how he came about we have not the slightest idea (p. 72);" or "It is probable that there had been intermixture between a modern-like form of man and Neanderthal man and that the Mount Carmel population was the product of that intermixture (pp. 70-71)." The conclusion reached after a consideration of the Olduvai Bed II hominids was as follows: "In all physical features these remains closely resemble those of the pre-zinji child found in Bed I (p. 47)."

I believe that physical anthropology has come a long way past the time of Sollas, MacCurdy, Osborn, and Andrews. An introduction to the field as it is in 1969 must differ from these authors by more than the mention of new discoveries. An introductory text which does not consistently apply the evolutionary framework unifying the field and uniting it with other sciences cannot be recommended.

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A RADIOGRAPHIC STANDARD OF REFERENCE FOR THE GROWING KNEE. By S. I. Pyle and N. L. Hoerr. 135 pp. and 31 ill. Charles C Thomas, Springfield, Illinois. 1969. \$6.25.

For many purposes of developmental assessment, the hand is not enough. The knee joint, currently involving a skin dosage of 10-30 mr and a gonadal dosage of 1-3 mr, depending on size and the number of projections, has obvious advantages, particularly when leg growth is the question to be resolved.

The Pyle and Hoerr pictorial and descriptive volume on the knee has been the reference standard since 1955 and now it is available in an expanded form (135 pages instead of 82) with a number of new sections (including one on the newborn), a further explanation of the system of selecting "modal" films, a number of substituted plates, etc. As Andrew K. Poznanski has observed in a separate review (*Radiology*, 92: 1574, 1969), the timing of patella appearance has been newly updated, bringing it in line with other recent studies.

As before, the present volume uses single pictorial standards, with separate age-equivalents for males and females. Careful perusal reveals at first rising, then declining, relative and even absolute sexual dimorphism. Males and females are not pushed further apart during steroidal maturity, rather the reverse. In the knee, as in the foot and in the hand, the relative sex difference is greatest as the school years begin, then it diminishes. Pyle and Hoerr clearly refute Schmid and Moll (who ignore sex entirely) and their North American age-equivalents negate the assumption that the male is simply a retarded female, or vice versa.

Now this atlas of skeletal development of the knee joint illustrates the complexities and the difficulties of radiographic appraisal of skeletal development to perfection. It is meticulous and it is detailed. Nearly every change that can be noted in standard projections is there. It will be used, as an adjunct to the hand, by pediatric radiologists, pediatric endocrinologists and orthopedists, mostly by flipping the pages back and forth, the more "exact" method being restricted to those few workers attempting quarter-year age-assignments.

One problem with the radiographic material incorporated into these standards is that most of the knee radiographs were taken in Cleveland prior to 1942, while the newborn knee plates were completed in Boston in 1949 and 1950. Thus the newest of the non-screen films is now 20-years old, while the average film was apparently taken at least 35 years ago, unless the original pre-1929 Todd films were also employed.

A second problem is that the individual criteria are of varying predictive and diagnostic value, and with different meanings in males and females, because of sequence polymorphisms. The appearance of the patella has high predictive value, that of the tibial tubercle less, and that of the proximal epiphysis of the tibia least of all post-natal ossification centers. The changes that appear in prepubertal time have one set of meanings, and those that follow the steroid-mediated phase of development another set of meanings. A purely descriptive sequence for the knee still leaves much to be answered.

This is not to deny the utility of the knee joint, nor the logic of treating it as a developmental unit, nor the endless hours that the revision alone must have entailed. What is needed next is a selective or weighted modification, based on criteria intercorrelations, and relating the presence/absence of a criterion to other size and developmental manifestations of each age. All with due credit to the accomplishments of the principal author, who has worked with the Brush collection at Western Reserve (now Case-Western) University for more than 27 years.

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EVOLUTIONARY ANTHROPOLOGY. By Hermann K. Bleibtreu. 456 pp. Allyn and Bacon, Inc., Boston. 1969.

Dr. Bleibtreu has not made life easy for a reviewer, who is expected to mingle admiration with admonition, and temper enthusiasm with astringent comment. His new anthology affords little opportunity for such critical exercises. In fact, the book strikes me as unusually praiseworthy, and has already saved me much of the thankless necessity for outside reading assignments in the archives.

While *Evolutionary Anthropology* is hardly appropriate for use by itself as an elementary text (and the Preface informs us that it is not so intended), it is an indispensable source of stimuli for the development of a problem-oriented approach

in students, and an awareness of the status of a number of current controversies.

The editor has selected 28 articles, organized as follows: 1. "The Study of Evolution" (3 articles, by G. G. Simpson, E. Mayr, and Th. Dobzhansky). 2. "Problems in Primate Taxonomy" (3 articles, by J. Buettner-Janusch and R. L. Hill; G. G. Simpson; and S. L. Washburn). 3. "Hominid Paleontology" (6 articles, by E. H. Lonneberg, E. L. Simons, J. Napier, D. Brothwell, and 2 by B. G. Campbell). 4. "Races: Past and Present" (2 articles, by F. E. Johnston and S. M. Garn). 5. "Intrapopulation Variation" (3 articles, by E. Schreider, J. M. Tanner, and J. N. Spuhler). 6. "Genes and Ancestry" (one article by W. C. Boyd). 7. "Selection: Mechanisms and Evidence" (3 articles, by J. F. Crow; F. B. Livingstone and J. N. Spuhler; and A. M. Brues). 8. "Adaptability" (2 articles, by P. T. Baker and H. T. Hammel). 9. "Genetic Drift" (one paper by D. C. Gajdusek). 10. "Culture and Microevolution" (4 articles, by F. B. Livingstone; W. W. Howells; W. S. Laughlin; and W. S. Pollitzer, D. S. Phelps, R. E. Waggoner, and W. C. Leyshon).

Bleibtreu is to be thanked especially for reproducing several valuable pieces not easily available to many of us, e.g., Brues' "Population genetics of the A-B-O groups," Washburn's "An ape's eye-view of human evolution," Lonneberg's "A biological perspective of language," and Gajdusek's "Factors governing the genetics of primitive human populations." We are also grateful for the original bibliographies, which he has retained.

My personal notion of possible improvement would lie only in the inclusion of, say, Hiernaux's "The concept of race and the taxonomy of mankind" so as better to round out Section 4, perhaps using the space allocated to Simon's admirable but often reprinted and easily available "Fallacies in the study of hominid phylogeny." It is probably quibbling to note that I miss a section on "Behavior and Evolution," containing, for instance, Washburn and Shirek's summary paper from the Hirsch collection on *Behavior-Genetic Analysis*, or something from the work of K. R. Hall, along with the Lonneberg article which he has included. Not everyone will agree with his choice of Campbell and Napier as inter-