(Human Biology, *26:* 59–69, February 1954) would appear to offer better information.

Chapter VIII. Sexual maturation. The morphologic and physiologic changes in males and females are reviewed and related to hormone production during adolescence. The usual skeleton indices, epiphyseal closure, and the appearance of certain secondary ossification centers are described.

In general, this volume is a directory for sources of basic data with respect to growth, with brief but succinct commentaries on many phases of the subject. No great innovations are introduced, but sound support is provided for many of the current activities in the field. The volume is a worth while addition to any library, providing a broad perspective not generally found in so relatively few pages.

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THE ANCIENT INHABITANTS OF JEBEL MOYA (SUDAN). By Ramkrishna Mukherjee, C. Radhakrishna Rao and J. C. Trevor, pp.xi + 123. $7.50. With appendices by Frank Addison and the authors. Cambridge University Press. 1955.

This book is number III of the *Occasional Publications of the Cambridge University Museum of Archaeology and Ethnology.* It is a report on the skeletal material, dating from the first millennium B.C., excavated between 1911 and 1914 at Jebel Moya in the Southern Sudan by expeditions supported by Sir Henry S. Wellcome. Although 2903 individuals were recovered, the remains now consist of only 98 crania, 139 mandibles, some long bones (of which the most numerous are 70 right femora), 9 fragmentary pelves, and a few other skeletal parts. Before it was made the subject of laboratory study, a major portion of the material disintegrated beyond recovery while in storage in a succession of warehouses in or near London between 1914 and 1946. The loss was not total because records of field measurements on some 1461 individuals are available. These measurements were made by D. E. Derry (2nd season), M. B. Ray and L. H. Dudley Buxton (3rd season), and R. S. Oldham, W. D. Hambley and L. Hussey (4th season).

The major portion of the text is devoted to a discussion of 4 problems: (1) The reliability of the sex identifications of the skeletons in the field. (2) The comparability of the field measurements and observations with regard to differences between the observers and teams of observers and with regard to the standards now widely used

in Britian. (3) The anthropometric evidence relevant to the suggestion from archeological evidence that a small number of possibly non-Negroid, mostly male immigrants settled at Jebel Moya about 1000 B.C. (4) The biological affinities between the ancient inhabitants of Jebel Moya and 20 other skeletal populations from Egypt, East and West Africa.

The field determinations of sex are shown to be unreliable. The techniques of measurement and observation used in the 3rd and 4th seasons are found to be not strictly comparable either with those of the second season or those employed by the modern British Biometric School. It was necessary, thus, to restrict the statistical analysis of the anthropometric characters to the surviving specimens and the cranial and femoral records available for the missing specimens from the second season's excavations.

The Jebel Moya series is regarded as homogeneous in regard to its internal anthropometric consistency. The skeletal material does not support (nor can it fully deny) the hypothesis that a small number of male non-Negroid immigrants joined the population in the first millennium B.C.

D^2 was used to measure the biological distance between the Jebel Moya and 20 other skeletal series. The comparisons are based on 7 cranial and 10 mandibular characters. The results of the analysis are such that the authors leave open the question of the precise biological affinity of the people of Jebel Moya. They suggest, however, that they are allied to the present-day Negroids of the Sudan.

The appendices attached to the text are as follows: I, The Stratigraphy of Site 100 (by Addison); II, The Mathematical Sexing of the Jebel Moya Series (by Rao, based on a discriminant function using two sets of measurements — 6 on the mandible, and length of femor, tibia, humerus, radius and clavical); III, A Quantitative Analysis of some Cultural Traits of the Jebel Moyans (by Mukherjee); IV, The Concept of "Distance" between Two Groups (by Rao); V, Mean Measurements of the Jebel Moya Series according to Stratum (by Mukherjee); and VI, Final Comments on Problems and Methods (by Trevor).

The authors have accomplished the best possible job of analysis of extremely unsatisfactory material. The available data are not able to provide firm knowledge with regard either to the detailed characteristics of the population during the periods represented by the 4 strata at Jebel Moya, nor with regard to the details of their biological relationships with other populations.

The book is noteworthy as the first large attempt to apply modern methods of multi-variate analysis to problems of the classification

of human populations using skeletal material. In this sense it is a permanent landmark in the development of anthropological methodology. This judgement is not lessened by the fact that, because of limitations of the available data, certain makeshifts used in the statistical analysis are not fully justified. These were necessary if the analysis was to go forward; the authors have used care to label them as makeshift.

The known defects of the Coefficient of Racial Likeness have led some American anthropologists to be suspicious of all statistical approaches to the problem of classification. D^2 is a statistic which overcomes these defects. It is not a probability statement. Rather it is a measure of the amount of divergence between two groups. And it is a measure which corrects for the correlation between anthropometric characters by transforming the observed raw differences in such a way that one character will, in a defined sense, be equivalent in classificatory weight to each of a set of other characters.

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