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Reprinted from AMERICAN ANTHROPOLOGIST, Vol. 70, No. 3
June, 1968

The Biology of Human Adaptability. PAUL T. BAKER and J. S. WEINER, eds. Foreword by Lindor Brown. Oxford: Clarendon Press, 1966. viii, 541 pp., figures, index, chapter references, tables. $19.00, £5.5.0.

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This compendium by 21 authors is a report on a Wenner-Gren symposium held in 1964. It is tightly packed and almost impossible to summarize. Sir Lindor Brown, president of the International Union of Physiological Sciences, wrote the brief foreword. In the first paper J. S. Weiner lists the objectives of IBP (the International Biological Program) under four headings: "Extensive surveys on a world-wide basis," "Intensive multidisciplinary regional studies," "Special investigations in selected populations," and "Medical geographical surveys related to current WHO projects." These are subjects divided into 17 other categories dealing with genetics; heat, cold, and altitude adaptations; nutrition, growth, population dynamics; and disease.

William J. Schull next tells how to design genetic surveys of populations, e.g., the monkey-hunting Birhors of Central India, whom I happen to have visited. He lists a "mandatory" questionnaire that no Birhor could possibly answer, including the causes of death of all dead children, and the individuals exact age at beginning of cohabitation.

J. M. Tanner's paper on growth and physique in different populations is essential for students of growth, just as K. Lange-Andersen's on the work capacity of selected populations reveals another master's touch. The same may be said of Jean Hiernaux's paper on the peoples of East and Central Africa. Hiernaux concludes that African Pygmies represent more than one episode of dwarfing, and cites atmospheric humidity, which Weiner omitted, as an important factor in environmental selection.

Philip V. Tobias's study of the peoples of Africa south of the Sahara gives us 55 pages of tables of genetic traits and challenges the conclusion of blood group specialists that, despite morphological and physiological differences from Negroes, the Bushmen are not a race. C. H. Wyndham finds the Bushmen closer to Europeans than to Bantu in a number of physiological tests.

J. V. Neel and F. M. Salzano survey the genetic peculiarities of American Indians, particularly South American. They accuse some geneticists of using the "typological approach," a pejorative usually flung at morphologists by geneticists, and reject my alleged theory of "man having come into existence at multiple independent foci," which, if they had read my work as carefully as I have theirs, they would know I never proposed. They suggest that a detailed study of the American Indians, who entered the New World some 15,000 years ago, might help elucidate some of the selective forces that, over a vastly longer period, shaped modern man.

In a lucid and detailed article on ecological and physiological adaptations among South American Indians, Paul T. Baker attributes these adaptations to selection for four forms of stress: climate, nutrition, disease, and subsistence activities. He states:

> a *Homo sapiens* form of man entered this continent and . . the cultural and biological methods which man adapted to its environmental diversity were *sapiens* inventions . . Some types of cultural adaptations have been re-invented many times and some forms of genetic adaptation (i.e., body size) have independently occurred.

L. D. Sanghvi discusses inbreeding in India, first explaining that members of castes, e.g., North Indian Brahmins, are not inbred because each caste has exogamous patrilineal sections and marriage is prohibited between persons related through a common male ancestor up to the seventh generation on the father's, and five on the mother's side. In the South these rules are relaxed. There, cross-cousins, parallel-cousins, and uncles and nieces may wed. A first cousin marriage has an inbreeding index of 0.062. In two coastal fishing villages of Andhra Pradesh the index is 0.041 for autosomal and 0.061 for sex-linked genes. Sanghvi cites studies of inbreeding elsewhere, showing that persons born of consanguineous unions carry an average of two to four lethal and two to four detrimental genes, the latter causing malformations and mental defects. M. S. Malhota lists and describes the tribal peoples of India, discusses their diets, and presents a nutritional chart for nontribal Indians.

O. G. Edholm discusses blood groups and disease in Israel, and R. L. Kirk does the same for the native peoples of Australia and New Guinea. Kirk states that these isolated regions may have been settled by more than one wave of immigrants whose descendants became differentiated through the founder principle and selection. In dealing with the same peoples R. K. Macpherson discusses in detail their physiological adaptations, physical fitness, and nutritional problems. The latter vary widely between the game-eating Australian aborigines and the protein-starved, goiterous New Guinea Highlanders. In surveying the effects of climate on white people in these countries he calls melanoma a real danger for fair-skinned persons, says that extremes of temperature affect mostly the sick, very young, and very old, and that

otherwise hazards to life in the tropics are psychological.

William S. Laughlin surveys in detail the genetics, somatic attributes, physiology, cultural adaptations, and archeological-skeletal history of the Aleuts and Eskimo. The former live in a perennially damp, cool climate, while the latter are confronted by severe winter cold stress. The Eskimo live in four temperature ranges, in their heated houses, out-of-doors, in sea water, and in their clothes. Their adaptation depends mostly on physiological fitness, extreme technical competence, and good judgment. Laughlin provocatively states, "There is no better evidence for a causal correlation between physique and temperature than there is between physique and light or between physique and kayaks or sleds," (the kayak people having short and the sled people longer legs). He also cites a correlation between facial widths and the work of the jaws, matched to native vs. European cuisines. J. S. Hildes's paper on the health and physiological adaptations of circumpolar peoples supplements but does not repeat Laughlin's.

J. Ainsworth Harrison says that it is not easy to tell individual adaptation to high altitude from genetic adaptation except through differential fertility. He then outlines a program for studying this subject among Sherpas and North Indian lowlanders. L. G. Pugh continues this theme and scheme, giving the results of previous physiological studies on the Sherpas. There is more, he states, to high altitude adaptation than adaptation to thin air; e.g., to heat and cold stress, physical exertion in moving about on barren regions, and poor nutrition due to trace elements having been leached from the soil. He also outlines a program.

I find the foreword jocular, the first paper a little uneasy, and the others more relaxed, with gold stars from this reviewer pasted on the efforts of Tobias, Baker, Sanghvi, and Laughlin.