of her death. His book ends with a description of Beatrice's coming to terms with her approaching death and with two poems, one by Beatrice herself and one by her sister Rowena, which, in their spare and beautiful language, encapsulate the whole book.

The history written by Larson and Stryker, Faber's account (by turns touching and amusing) of what it was like to have Beatrice in the same field, and Hill's description of Beatrice's internal and external struggles to gain expression for her scientific work form a powerful picture of how brightly one so gifted as Beatrice burns—how such a person at once seems so alive and makes life feel more worth living to others. Finally, of course, this is a portrait of a superb scientist at work. Beatrice's intelligence, honesty, enthusiasm, and high standards and the grasp and sweep of her work come across strongly in the several sections of this book, which complement each other beautifully. The book should be read by anyone interested in how science works and how scientists at their best carry out this most human of endeavors.

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Genetic Abnormalities

The Consequences of Chromosome Imbalance. Principles, Mechanisms, and Models. CHARLES J. EPSTEIN. Cambridge University Press, New York, 1986. xxii, 486 pp., illus. $59. Developmental and Cell Biology Series, 18.

This book addresses not the causes of chromosome imbalance but how it leads to an abnormal phenotype and the possible mechanisms involved. Epstein is particularly interested in the human aneuploid states, but he also discusses what is known in other organisms, particularly mammals. Following a brief introduction, he covers "clinical observations" of chromosome imbalances in humans. Part 3 focuses on "the theoretical mechanisms and issues: the primary and secondary effects of aneuploidy" and includes chapters on gene dosage effects, metabolic pathways, transport systems, receptors, regulatory systems, assembly of macromolecules, cellular interactions, pattern formation, type-countertype, and nonspecific effects of aneuploidy. Part 4 covers "experimental systems for the study of mammalian and human aneuploidy," with a particular focus on Epstein's own work in the mouse; these model systems are especially important in the study of early development, which is difficult if not impossible to study directly in humans. Part 5 addresses three major clinical problems of human aneuploidy: trisomy 21 (Down syndrome), monosomy X (Turner syndrome, gonadal dysgenesis), and cancer.

It is evident throughout the discussion that Epstein has, as he indicates in the preface, a bias toward the importance of gene dosage in aneuploidy. This admitted bias notwithstanding, he has provided a fair but critical treatment of the subject. Indeed, one of the strengths of the book is the critiques it provides of work considered. Moreover, it constitutes a comprehensive review of the field (there are almost 88 pages of references) as of 1 September 1984, when Epstein ended his systematic review of the literature.

Epstein has accomplished with distinction his goals of presenting a way of thinking about aneuploidy and of bringing "a sense of coherence to a large mass of clinical and experimental data along with many theoretical considerations." Because of the date for cutoff of references, there are some topics on which the most recent information is not taken into account. For example, I would be interested in knowing Epstein's views on homeoboxes in relation to aneuploidy. And in relation to the acquired chromosome changes, a discussion of the current molecular understanding of chromosome rearrangements in chronic myelogenous leukemia and other related conditions would be of interest.

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Japanese Prehistory

Prehistoric Hunter-Gatherers in Japan. New Research Methods. TAKERU AKAZAWA and C. MELVIN AIKENS, Eds. University of Tokyo Press, Tokyo, 1986 (U.S. distributor, Columbia University Press, New York). xiv, 221 pp., illus., + plates. $62.50. From a symposium, Vancouver, British Columbia, Sept. 1983.

The editors identify three objectives behind the presentation of this collection of essays: "to advance the use of scientific, quantitative methods in the study of prehistoric problems"; to make available (in English) the results of research in one of the most intensively investigated areas in the world; and to help clarify the "origins and affiliations of the Japanese population."

The four chapters in the first section, Archaeology: Jomon Hunter-Gatherer Subsistence and Settlement, taken together successfully attain these goals. The chapters by Koike on hunting pressure and paleobiomass around prehistoric Tokyo Bay and by Suzuki on volumetry and nutritional analysis of a shell midden are numbing in their reconstructive detail, but their value is clearly demonstrated as a background for integrative chapters by Aikens, Ames, and Sanger and by Akazawa.

In their contribution Aikens *et al.* compare preagricultural adaptations in four areas of the world: Japan, the northwest and northeast coasts of America, and the Baltic. These four cultures were characterized by continual underproduction and an economy of use, with any intensification of production deriving from sociopolitical action rather than from technological change directly. The similarities among them can be attributed to their common occurrence in biotically rich north temperate coastal-woodland ecozones and to their long-term, increasingly sedentary, developmental trajectories. The Japanese and European societies attained greater cultural complexity earlier than the North American examples as a result of more intense environmental circumscription and the eventual adoption of agriculture. In general, the relative rates of cultural elaboration are a function of duration and density of settlement.

Akazawa seeks to explain the regional diversity in the adoption of rice cultivation by Jomon populations. There was a high receptivity to agriculture and a subsequent widespread cultural uniformity in the west, whereas in the east cultivation was initially resisted and there was a continuation of more traditional lifeways based on local Jomon adaptations. The eastern populations, relying on sea fauna in the spring and terrestrial plants in the fall, enjoyed a highly productive subsistence regime from March through November. In the west, annual productivity was limited by the terrestrial resources peaking in the fall, and the promise of increased stability and higher yield coupled with subsistence practices already keyed to fall plant collection facilitated the shift to rice crops. The transition in the east involved a more radical alteration of practices, with a conflict between the labor-intensive period of planting in the spring and the fishing schedule, in an already highly productive environment. The slow, clinal adoption of rice cultivation can be explained by socioeconomic processes in differing ecosystems rather than by migration models.

Part 2 of the book, Physical Anthropology: The People of Japan Past and Present, is disappointing by comparison. The content is indicative of much of archeologically applied physical anthropology, and in that sense does not reflect on the individual authors. Until recently, the contributions of

physical anthropologists to archeology have generally been descriptive appendixes to site reports or publications showing little additional anthropological and biological sophistication. Weaknesses here range from the anachronistic presentation of "type" photographs of skulls to the statistical overkill of small samples unrepresentative of actual biological populations. There is a disjuncture between the provocative behavioral frameworks established in the first section of the book and the biodistance comparisons of nonbiological samples separated by thousands of years or thousands of miles or both. One hungers for an examination of the biological correlates of the social and cultural dynamics described *within* Jomon or Yayoi Japan. Therein lies the key to Japanese cultural and biological history.

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