book must stand on its own merit, it is quite obscure and open to major criticisms. If it is to be considered as Sassouni conceived it, "directed to the student in maxillo-facial orthopedia," and as source material for further clinical research, it no doubt is much more adequate. This, however, I am not competent to judge.

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RADIATION, GENES, AND MAN. By Bruce Wallace and Th. Dobzhansky. xii + 205 pp. $3.50. Henry Holt and Company, New York, 1959.

This is the best general book now available to the non-specialist in radiation genetics on the hereditary effects of increased exposure to ionizing radiation in human populations.

The opening 5 chapters give background information on genes and chromosomes, the regularities of reproduction and transmission of the genetic material, the nature of ionizing radiation, and the mutagenic effects of such radiation. Chapters 6 and 7 deal with the genetic structure of breeding populations and the distribution of mutant genes in such Mendelian populations. Mutational damage is measured in terms of Mullerian "genetic deaths"— a measure first proposed, as Muller has been careful to acknowledge, by the anatomist-anthropologist C. H. Danforth in 1921.

Chapter 8 is the core of the book and gives the message which moved the authors to write it. All radiation geneticists agree mutation rates go up with increased exposure to ionizing radiation. Wallace and Dobzhansky hold we do not know how to estimate the overall biological damage in terms of "genetic deaths" because we do not know how to give good values to the required selection coefficients. Under the *classical hypothesis* on the genetic structure of populations (given a constant environment) most mutant genes are considered deleterious in homozygotes and either neutral or somewhat deleterious in heterozygotes. Under the *balanced hypothesis,* which Wallace and Dobzhansky support, many or most mutant genes are considered both potentially heterotic (advantageous) when in heterozygotes and potentially deleterious when in homozygotes. The balance hypothesis holds mutation is ". . . not only the price for evolutionary plasticity; it is also the tax levied in order to preserve the status quo (p. 165)."

Everyone agrees that some loci in human populations consist of several mutually heterotic alleles, e.g., the hemoglobin S locus, and probably several loci for the antigens on red blood cells. Everyone agrees that genes at some loci identified by mutants with major effects seem to lack heterotic effects, e.g., hemophilia and galactosemia. Everyone would agree with Wallace and Dobzhansky that one difficulty in forecasting the risk to man from increased radiation is the uncertainty as to the proportion of loci that are "classical" and that are "heterotic." Everyone would agree this is not the only major problem.

The issue as to whether the "classical" or the "heterotic" hypotheses is more correct for human populations cannot be solved conclusively with the data now available. As Wallace and Dobzhansky say: "Probably the most important fact concerning the issue is that the data, evidence, and information on which, and only on which, conclusions should rest are as yet wholly inadequate (p. viii)."

Perhaps the chief quarrel geneticists who specialize on man would have with the book is that it omits too much of what is now known about radiation genetics in human populations. Studies of inbred human populations provide direct estimates of the mutational load in man. These studies give information superior to indirect results obtained from *Drosophila* investigations (see p. 118). Large-scale studies now in progress (based on the populations of Hiroshima, Nagasaki, and Shizuoka) should provide reliable information which will permit making better estimates of the genetic hazards of the atomic age. The final chapter, 9, is an argument in support of getting the type

of knowledge we need to assay the combined effects of radiation, genes, and man.

Physical anthropologists who wish to understand the technical problems in contemporary attempts to comprehend the radiation genetics of human populations will find this book an excellent introduction.

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AN ODONTOMETRICAL STUDY ON THE NORWEGIAN LAPPS. By Reider Selmer-Olsen. 171 pp, 35 figures, 47 tables and 2 plates. Skrifter Utgitt Av Det Norske Videnskaps-Akademi 1 Oslo. 1 Mat.-Naturv. Klasse 1949. No. 3.

Selmer-Olsen has presented a most comprehensive odontometrical study which not only includes materials on the Norwegian Lapps but also by the inclusion of comparative materials has presented an excellent source book for statistical data on a good many other populations.

The author is quick to point out that the size of teeth alone has a limited value as a racial characteristic because of the high variability within the different collections. For this reason in his summation he states that large series are therefore required in such studies and determinations.

One of the most important contributions in this publication is the review of the literature on odontometry and the discussion and definition of nomenclature and measuring techniques. There is only one disturbing point and that is Selmer-Olsen's decision to follow Martin's lead in using the term "crown breadth" for the mesiodistal dimension and "crown thickness" for the labiolingual. However, in the tables themselves and in the text he avoids complications by designating the diameters as mesiodistal or labiolingual as the case might be.

The investigation and study covers the roots as well as the crowns. The author states though, that owing to the large variation in the roots they are of less significance than crowns in racial comparisons.

The Lapp dentition is characterized by Selmer-Olsen as having small tooth crowns, rather large and long roots with pointed apices, crown size decreasing greatly from the first to third molar, and a relatively thicker character to the teeth generally. Only the Bushman and Hungarian dentitions show as small averages in crown size as do the Lapps.

Various indices of tooth measurements are compared in the study between racial and local groups. The variation coefficients of most of the measurements ranged in the vicinity of 8.0, with the female showing a slightly larger figure. From the tables it is seen that some of the lowest values for the individual coefficients, both in the male and female all lie either in or above the group considered moderately high variation and none in the moderate low category, that is, below 4.5.

This work is certainly one of the most thorough-going analyses of odontometry and should be consulted in any problem of this type. It would be of great value to have a thorough-going morphological study of this population to parallel the fine work done in the metrical areas.

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THE ANTECEDENTS OF MAN. By W. E. Le Gros Clark. 374 pp. $6.00. Quadrangle Books, Chicago, 1960.

This is a fascinating book which deals with the evolution of man's close relatives, the non-human Primates. Le Gros Clark, one of the world's authorities on Primate evolution, presents this difficult subject in a straight forward manner intelligible to both the interested layman and the serious student. This introductory book presents not only the author's latest thinking, but also the basic principles which he has used in arriving at his conclusions. Although it treats the same subject matter as his earlier book, The Early Forerunners of Man, this is not just a second edition.

The book's 374 pages, including index, are divided into 10 chapters. The first two serve as an introduction by reviewing certain principles which must be observed