

external form and its genetic basis, sexual dimorphism, pathology, evolution, dietary adaptation, jaw muscles and mastication, occlusion, nomenclature, attrition, and demography. The contributions, with a few exceptions, are well written and well illustrated, and each covers a broad field of current interest.

Among the most interesting are papers by Moss-Salentijn on vestigial teeth in rabbits, rats, and mice, by A. Boyde on the structure of incisor enamel in rodents, and by M. L. Moss on a developmental basis for sexual dimorphism in human canine teeth. J. W. Osborn presents a clear and well-reasoned paper on morphogenetic gradients in the mammalian dentition, interpreting these as developing from self-generating "clones" rather than complex externally controlled "fields." However, his paper ends with a disturbing discussion of tooth homologies that emphasizes developmental simplicity to the exclusion of other adaptive and evolutionary possibilities. In view of the remarkable dental changes that have been documented paleontologically, I suspect that developmental mechanisms may be more complex than Osborn implies, and his suggested revisions of tooth homologies must be tested against the fossil record before they are accepted.

A. W. Crompton and Kielan-Jaworska review molar structure and occlusion in Cretaceous therian mammals, indicating that metatherians may have had an American origin, whereas most or all eutherians entered North America from Asia in the late Cretaceous. R. F. Kay analyzes molar structure and its correlation with diet in cercopithecoid primates. G. H. R. von Koenigswald gives a brief discussion of the palate of "*Pithecantropus* IV," dated at 1.9 million years from the Djetis beds of Java.

The longest paper in the book is a review of mammalian mastication by K. M. Hiiemae summarizing the great advances of the past ten years in understanding how the masticatory system as a whole functions. Much remains to be done in reconciling data from occlusal (wear facet) analysis with jaw movements and electromyographic records of muscle activity, as Hiiemae notes, but her review is a welcome summary of what has been learned to date about mastication. Also of general interest are a chapter by Rensberger documenting a variety of different types of tooth wear correlated with different diets in rodents and a conservative chapter by Butler on tooth nomenclature.

In summary, this book gives a valu-

able overview of current research on the development, adaptations, and evolution of mammalian teeth. In view of the rapidity with which the field is developing, one hopes that this symposium will be followed by more such symposiums.

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