of such quantities as middle ear cavity volume, tympanic ring area, and body size in living and fossil prosimians.) The last character Cartmill examines, exposure of the ethmoid in the medial orbital wall of cheirogaleids and lorisiforms but not lemuriforms, is also shown to be at least in part conditioned by allometry (as well as orbital approximation).

Cartmill concludes that the available evidence suggests that lorisiforms are more closely related to cheirogaleids than to the other Malagasy lemurs, but declines to modify the existing classification. He argues, "Since the lorisiform configuration of the bulla and carotids represents modified and functionally significant retention of fetal lemuriform morphology, and since the orbital exposure of the ethmoid is largely conditioned by factors of allometry and orbital orientation, most of the traits shared by lorisiforms and cheirogaleids might easily have been acquired independently" (p. 350). And further, "The time is not ripe for attempts to make our classificatory units mirror our ideas about phylogeny. If we wish to go on communicating intelligibly with each other, with our students, and with future generations of primatologists, the best course of action is to continue using paraphyletic (or 'wastebasket') taxa where phylogeny is acknowledged to be uncertain. Because we lack early Tertiary fossil strepsirhines in Madagascar and Africa, the taxon Lemuriformes is one of the most useful wastebaskets we have to work with" (pp. 349–350).

I have elaborated on Cartmill's paper because to me it is something all too rare, a well-done analysis of the implications of morphological differences for phylogenetic interpretations. Particularly in view of the current enthusiasm for cladistics (seen in several of the other papers in the book), I find Cartmill's functional perspectives and taxonomic restraint refreshing.

Two papers by Szalay, an examination of basicranial evidence for phylogeny of primate higher taxa and a review of fossil tarsiiforms, provide a wealth of information on the morphology of fossil prosimians. The figures of the ear region of the ancient tarsiiforms *Rooneyia* and *Necrolemur* are superb, and the illustrations of dentitions of such early prosimians as *Tetonius*, *Teilhardina*, *Omomys*, and *Chumashius* are the best yet published. For the nonpaleontologist particularly, these papers will be excellent sources of information on morphology of fossil prosimians and serve as good entrees to the literature. I find the value of these papers diminished by a lack of adequate justification for some of the important arguments and conclusions, however. For example, Szalay should have spelled out the evidence for the reconstructions of ancestral eutherian and ancestral primate ear regions. (Such evidence is important for justifying the exclusion of microsyopids from Primates.) Szalay follows most previous workers in arguing that a promontory branch of the internal carotid artery that is larger relative to the stapedial branch distinguishes Eocene tarsiiforms from lemuriforms, but does not deal with Gingerich's contradictory findings, though he cites them. What is needed in this case is data on variation in relative sizes of those vessels in living and fossil prosimians plus, for arguments on functional significance, data on allometry of blood vessel diameter and brain, eyeball, and body size.

McKenna presents a provocative reassessment of the relationships of the orders of mammals, based in part on the hypothesis that primitive eutherians had five premolar loci and three molars. Macroscelidids (elephant shrews), lagomorphs (rabbits), and some fossil groups are united by their retention of the primitive three molars and loss of P3 and other premolars. Several other orders are considered to have lost M3 but retained DP5 in adults to produce what we usually call M1. A variety of morphological data are cited to support the suggestion that the edentates (sloths, armadillos, and anteaters) diverged early from other placentals. McKenna presents a new classification of the orders of mammals, based on strict cladistic rules, and introduces 20 new terms for taxa above the ordinal level and several new taxonomic ranks, among them legions, magnorders, and mirorders. I found the new ideas on phylogenetic relationships fascinating and thought-provoking but the new taxonomic names and terminology more a hindrance than a help. I wish McKenna had expressed his ideas on phylogeny with diagrams alone and hope that the unfamiliarity of his formal taxonomy will not discourage readers from studying the paper. McKenna is one of the foremost students of mammalian evolution, and his hypotheses deserve serious consideration.

Other articles that struck me as particularly useful in providing evidence on primate phylogeny are on placental and fetal membranes (W. P. Luckett), molecular data (M. Goodman), and recent and fossil catarrhines (E. Delson and P. Andrews). I found the articles on behavior and neuroanatomy less helpful in providing evidence on primate phylogeny, although interesting in other respects. I recommend G. G. Simpson's brief but comprehensive review of contemporary approaches for inferring phylogeny for a lucid introduction to the subject.

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## Books Received

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*(Continued on page 1151)*

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*(Continued from page 1122)*

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**New Theoretical Aspects**. Springer-Verlag, New York, 1975. iv, 188 pp., illus. $23.80. Topics in Current Chemistry, 58.

**Noise Reduction Techniques in Electronic Systems**. Henry W. Ott. Wiley-Interscience, New York, 1976. xx, 294 pp., illus. $19.95.

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