experience, which, though at many points more suggestive than definitive, must be taken into account if the best possible policies and practices are to be adopted in early intervention against atherosclerosis and hypertension.

Much remains to be learned in this important area, and anyone proposing to contribute significantly to further research, at the community level in particular, will profit substantially from study of this book.

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Vertebrate Paleontology

Aspects of Vertebrate History. Essays in Honor of Edwin Colbert. LOUIS L. JACOBS, Ed. Museum of Northern Arizona Press, Flagstaff, 1980. xx, 408 pp., illus. Cloth, $22.50; paper, $9.95.

It is entirely appropriate that this well-written, up-to-date, and diverse collection of essays be presented to E. H. Colbert on the occasion of his 75th birthday. "Ned" Colbert has the distinction of having worked on the paleontology of both mammals and reptiles, and, in addition to over 175 strictly scholarly publications in his field, has written an even greater number of works designed to be accessible to the interested nonprofessional and to students and children. He has had more influence on the public than any other paleontologist of his generation.

This festschrift consists of 22 papers, including Colbert's bibliography. Fifteen are concerned with lower vertebrates and six with mammals. No theme unites them except Colbert's wide-ranging interests, but he has worked on nearly every group or facies mentioned. Five new taxa are described. Two of them are named in Colbert's honor: G. Haas contributes a Cretaceous ophiomorph from Israel with both lizard-like and snake-like features, and A. W. Crompton and K. K. Smith describe a crocodilian braincase from the Kayenta Formation of Arizona. The first known trackway of a prosauropod dinosaur is illustrated and explained by Donald Baird; from A. J. Charig comes the first record of diplodocid sauropod dinosaurs from Europe; and from Heinz Tobien comes a description of a new Miocene mastodont from the island of Chios. Six papers center on faunal correlations and stratigraphy. Four of these concern lower vertebrates of the Upper Triassic and Jurassic, the fifth, by M. C. McKenna, is on an important and still poorly understood Cretaceous-Tertiary contact in northwestern Wyoming, and the sixth, from E. H. Lindsay, N. M. Johnson, and N. D. Opdyke, is a stratigraphic correlation of the famous Siwalik faunas of Pakistan. There are also several varied and perceptive essays on particular aspects of vertebrate paleontology.

The book is heavily weighted toward Mesozoic reptiles, as one might expect. Almost coincidentally, several papers form a reasonable synthesis of our knowledge of vertebrate faunas and biogeography at the time of the rise of the dinosaurs (Late Triassic–Early Jurassic). P. E. Olsen compares the Triassic-Jurassic transition in two basins of the Newark Supergroup of Eastern North America, a region that is now proving to be a much richer piece of the Mesozoic terrestrial puzzle than was suspected earlier, and one that provides an intriguing contrast to the contemporaneous horizons of the Southwest. The latter region is represented by a study of the vertebrates of the Upper Triassic Chinle Formation by L. L. Jacobs and P. A. Murry. Though there is considerable faunal overlap between East and West, many important differences remain to be considered in conjunction with future sedimentologic and paleoecologic studies. The descriptions of these promising horizons are enriched by reviews of Jurassic tetrapod discoveries in South America (from J. F. Bonaparte) and of the fauna of the Lower Jurassic Kota Formation of India (from S. L. Jain). Much of the South American Jurassic is Middle to Upper Jurassic, and most of it is unstudied. The relatively well-known Kota Formation, on the other hand, provides much important biogeographic evidence of Laurasian-Gondwanan relationships in the Late Triassic and Early Jurassic. The next decade should witness a dramatically deeper understanding of this most interesting stage of vertebrate history.

In other papers on lower vertebrates, J. T. Gregory analyzes the taxonomic meaning of the otic notch in metoposaurid labyrinthodonts; E. C. Olson discusses the North American Seymouriidae; E. Kuhn-Schnyder reviews the traditional criterion for the classification of reptiles, the temporal openings of the skull; J. H. Ostrom supplies an inventory of the (sometimes synonymized) theropod dinosaurs *Coelurus* and *Ornitholestes* and shows that they are different; Timothy Rowe redescribes the dicynodont *Geikia*; and D. A. Russell discusses how to approach what dinosaurs were and what they may mean to us. In the single paper on fishes, Bobb Schaeffer and K. S. Thomson consider monophyly in vertebrates, cyclostomes, and gnathostomes and conclude that fossil agnathans do not provide critical information to test hypotheses of agnathan-gnathostome relationships.

The shorter mammalian segment of the book begins with an appreciation by G. G. Simpson of Colbert's contribution to the study of fossil mammals. There follow three papers mentioned earlier and two others. The penultimate, by L. G. Marshall, reviews many past ideas about the geographic origin and spread of marsupials. Though thorough in coverage, it may be unfair to those workers who have modified their views since the advent of vicariance biogeography, and the essay comes to no real conclusion. The final paper, by T. A. Vaughan, describes how woodrats have shaped the vegetative character of the Southwest by selectively pruning junipers—the perspective of neontology in a closing note.

On behalf of all of us who, as children, read Colbert by flashlight under the covers after bedtime and later grew up to use his valuable professional papers, the authors and editor are to be thanked for a fine tribute to a seminal figure in vertebrate paleontology, who mastered and taught the field before it grew too large for one person, however accomplished, to do so. His like, as the Aran poet said, will never be again.

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Cosmology

Ninth Texas Symposium on Relativistic Astrophysics. Munich, Dec. 1978. JÜRGEN EHLERS, JUDITH J. PERRY, and MARTIN WALKER, Eds. New York Academy of Sciences, New York, 1980. xvi, 600 pp., illus. $105. Annals of the New York Academy of Sciences, vol. 336.

The wayfaring Texas Symposium assembled in Munich in 1978 for a six-day review of the state of high-energy astrophysics and relativity theory. Given the diverse group of scientists the symposium attracts, the approach has traditionally been to review the progress of the previous two years and to develop a prospectus for the next five or ten. This

makes the proceedings ideal for the advanced student taking the steps from course work to research, as well as for the nonspecialist looking for access to a difficult and rapidly expanding field.

The first section of the book is devoted to extragalactic sources, which here means quasars, BL Lacterae objects, and Seyfert galaxies. The discussion is almost entirely observational and sadly out-of-date, for it does not take into account the new x-ray results from the orbiting Einstein observatory and the wealth of data in the ultraviolet from the International Ultraviolet Explorer satellite. There is very little theoretical discussion of the engines in these objects. Black holes and beaming jets of plasma are well entrenched in fashion, but certainly some progress has occurred in understanding the physical processes in these glamorous systems.

The symposium is at its best when dealing with the interplay between theory and observation. G. F. R. Ellis's "Limits to verification in cosmology" reviews the assumptions that must be made and the corrections that must be applied to cosmological data to answer the question of just what sort of universe is this one we find ourselves in. His results are skillfully tabulated and displayed in diagrams, thus being made accessible to the large body of astronomers who hope to make cosmologically meaningful observations.

S. Michael Fall and P. J. E. Peebles report on progress relating the statistics of galaxy clustering to the initial power spectrum of fluctuations and the mean mass density of the universe (which determines whether it will continue expanding forever or is destined to decelerate and collapse). The origin of fluctuations receives very little attention. There is a brief description of a paper presented by G. J. Lasher that proposes a quark-nucleon phase transition that can occur in certain models of the very early universe, given a particular model of the strong interactions. This seems to be a fruitful subject for a combined effort by particle physicists and cosmologists, and one hopes it will be included in future symposia.

There is a great deal of discussion of recent observations of the binary pulsar, discovered in 1974 by R. Hulse and J. H. Taylor. The system seems to be a remarkably "clean" arena for extrasolar testing of the post-Newtonian effects of gravitation. The pulsar is a highly accurate, easily read clock of large mass and small size moving at a speed of ~ 0.1 percent of the velocity of light in an eccentric orbit about a similar body, without any perturbing object nearby. The precise measurements by Taylor and P. M. McCulloch of the pulsar's clock yield four distinct tests of general relativity. The most interesting are the advance of the periastron (similar to the excess advance of the perihelion of Mercury's orbit due to general relativistic effects) and the decay of the orbit due to gravitational radiation. The observed change in period has the sense and magnitude predicted by the quadrupole formalism in general relativity. As a bonus, a paper by Clifford M. Will includes a discussion of the magnitude of gravitational radiation in different post-Newtonian theories, and Ehlers reviews the problems inherent in the different approximation schemes for calculating the effect in any isolated system.

One of the most exciting revelations of the conference was B. Margon's report of the peculiar spectrum of SS433, the now legendary "coming and going object" whose finding chart has appeared on the 6 o'clock news. Margon briefly mentions the now accepted kinematical model of two precessing opposed plasma jets flowing outward at nearly a third of the velocity of light, producing the rapidly varying Doppler shifts that are observed.

In a short review, I can barely touch the wealth of information contained in the pages of this proceedings. It is unfortunate that the book is so expensive and has taken so long to produce. Even so, it is a quite worthwhile purchase for any departmental or group library.

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Books Received

Advances in Cancer Research. Vol. 32. George Klein and Sidney Weinhouse, Eds. Academic Press, New York, 1980. x, 362 pp., illus. $36.

Advances in Clinical Child Psychology. Vol. 3. Benjamin B. Lahey and Alan E. Kazdin, Eds. Plenum, New York, 1980. xviii, 476 pp. $29.50.

Advances in Electronics and Electron Physics. Vol. 50. L. Marton and C. Marton, Eds. Academic Press, New York, 1980. xviii, 494 pp., illus $55.

Annual Review of Plant Physiology. Vol. 31. Winslow R. Briggs, Paul B. Green, and Russell L. Jones, Eds. Annual Reviews, Palo Alto, Calif., 1980. x, 724 pp., illus. $17.

Annual Review of Public Health. Vol. 1. Lester Breslow, Jonathan E. Fielding, and Lester B. Lave, Eds. Annual Reviews, Palo Alto, Calif., 1980. xiv. 412 pp. $17.

APL in Practice. What You Need to Know to Install and Use Successful APL Systems and Major Applications. Papers from a conference, Washington, D.C., Apr. 1980. Allen J. Rose and Barbara A. Schick, Eds. Wiley, New York, 1980. x, 376 pp. illus. $25.

Applications of Functional Analysis and Operator Theory. V. Hutson and J. S. Pym. Academic Press, New York, 1980. xii, 390 pp., illus. $39.50 Mathematics in Science and Engineering, vol. 146.

Applied Symbolic Logic. Edward P. Lynch. Wiley-Interscience, New York, 1980. xii, 260 pp., illus. $36.

Biographical Memoirs. Vol. 51. National Academy of Sciences. Washington, D.C., 1980. viii, 418 pp., illus. $10.

The Biosynthesis of Aromatic Compounds. Ulrich Weiss and J. Michael Edwards. Wiley-Interscience, New York, 1980. xvi, 728 pp., illus. $29.50.

Breast Cancer. New Concepts in Etiology and Control. Papers from a meeting, Detroit, 1978. Michael J. Brennan, Charles M. McGrath, and Marvin A. Rich, Eds. Academic Press, New York, 1980. xvi, 406 pp., illus. $31.50.

Breastfeeding Handbook. A Practical Reference for Physicians, Nurses, and Other Health Professionals. Johanna Goldfarb and Edith Tibbetts. Enslow Publishers, Hillside, N.J., 1980. 256 pp., illus. Paper, $14.95.

Cadmium in the Environment. Part 1, Ecological Cycling. Jerome O. Nriagu, Ed. Wiley-Interscience, New York, 1980. xiv, 682 pp., illus. $70.

Calculus and Its Applications. Larry J. Goldstein, David C. Lay, and David I. Schneider. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1980. xx, 558 pp., illus. + appendix. $19.95.

Cell Adhesion and Motility. Papers from a symposium. A. S. G. Curtis and J. D. Pitts, Eds. Cambridge University Press, New York, 1980. x, 500 pp., illus. $95.

Cell Biology. A Comprehensive Treatise. Vol. 3, Gene Expression: The Production of RNA's. Lester Goldstein and David M. Prescott, Eds. Academic Press, New York, 1980. xiv, 684 pp., illus. $65.

Cellular Receptors for Hormones and Neurotransmitters. Dennis Schulster and Alexander Levitzki, Eds. Wiley, New York, 1980. xx, 412 pp., illus. $70.

Central and Peripheral Regulation of Prolactin Function. Papers from a symposium, Taormina, Italy. Robert M. MacLeod and Umberto Scapagnini, Eds. Raven, New York, 1980. xxiv, 394 pp., illus. $36.

Disasters and the Mass Media. Proceedings of a workshop, Washington, D.C., Feb. 1979. National Academy of Sciences, Washington, D.C., 1980. xiv, 302 pp. Paper, $9.75.

Diseases from Space. Fred Hoyle and Chandra Wickramasinghe. Harper and Row, New York, 1980. x, 196 pp., illus. $11.95.

Diseases of Marine Animals. Vol. 1, General Aspects, Protozoa to Gastropoda. Otto Kinne, Ed. Wiley-Interscience, New York, 1980. xvi, 466 pp., illus. $70.

Dragons. An Introduction to the Modern Infestation. Pamela Wharton Blanpied. Warner, New York, 194 pp., illus. $9.95.

Environmental Carcinogens. Selected Methods of Analysis. Vol. 3, Analysis of Polycyclic Aromatic Hydrocarbons in Environmental Samples. H. Egan, Ed. International Agency for Research on Cancer, Lyon, 1979 (U.S. distributor, WHO Publications Centre USA, Albany, N.Y.). x, 240 pp., illus. $30.

Enzyme Engineering. Future Directions. Papers from a conference, Tbilisi, Soviet Union, June 1978. Lemuel B. Wingard, Jr., Ilia V. Berezin, and Anatole A. Klyosov,