Book Reviews

Essays on Extinction

Wildlife in Danger. JAMES FISHER, NOEL SIMON, JACK VINCENT, and members and correspondents of the Survival Service Commission of the International Union for Conservation of Nature and Natural Resources. Viking, New York, 1969. 368 pp., illus. $12.95. A Studio Book.

The smaller the remnant population of some organism, the more difficult it is to study. Still, bit by bit, over the past several decades, the biological evidence on dwindling species has been brought together in the files of the Survival Service Commission of the International Union for the Conservation of Nature and Natural Resources. A few years ago the information on birds and mammals threatened with extinction was published in two Red Data Books. For each such animal there is a page of condensed information on biology and status. As new information comes in a new page is printed to replace the old.

The organization of the Red Data Books is taxonomic, so that it is a simple matter, for example, to scan the parrots for threatened forms.

The present volume, too, is based on the files of the Survival Service Commission. Its authors include those of the Red Data Books, and like those books it consists of accounts of threatened organisms taxonomically arranged. These accounts, however, are really individual essays. Each stands alone, yet the threat of extinction constitutes a theme which links them all together. Each is clearly written, logically organized, and packed with interesting information. Abundant, well-executed illustrations enliven the text. To the large sections on mammals and birds are added shorter ones on the much less intensively studied reptiles, amphibians, fishes, and plants. The book is introduced with a preface, a foreword, and an introduction. The last (by Fisher) does that rare thing among introductions—it really introduces the subject of the volume, which is the natural history of biotic extinction.

Biotic extinction is, of course, nothing new. Fisher, from the fossil record, places the mean life of a bird species at about two million years, and of a mammal at not much over 600,000. After that a species evolves into other species or becomes extinct. The pace of evolution—and of extinction—is much more rapid for island populations. Island forms, therefore, are prominent among species both extinct and threatened with extinction. In the West Indies the life of a bird species before colonization by man was only 180,000 years. But—and here is Fisher's main point—this figure dropped to 30,000 with colonization by aboriginal man, and to 12,000 with colonization from Europe.

The various major causes of biotic extinction can be grouped into natural causes (that is, changing through adaptation or being unable to adapt or compete) and effects of man, including hunting, introduced predators, introduced competitors, introduced diseases, and habitat alteration. Focusing on the period since 1600, which marked the beginning both of a rather definite knowledge of bird and mammal species and of the age of colonization, Fisher estimates that about 70 to 80 percent of both extinctions and serious population declines can be attributed to man's activities.

However, the living forms, not the extinct ones, are the topic of this book.

The first account, devoted to the thylacine, or Tasmanian "wolf," includes information on the fossil record, recent and present distribution, appearance and biology, and probable causes of decline. These include competition from the dingo on the Australian mainland, resulting in extinction, and relentless control efforts by man in Tasmania. However, the small remnant there has for some time been rigidly protected, and in 1966 a reserve covering much of the thylacine habitat was established. If there is to be reproduction, it will be here, since, although often captured, this species has never bred in confinement.

In contrast is the story of the indris, the largest of the lemurs so characteristic of Madagascar. Its forest habitat has been divided and diminished by clearing and burning until only small tracts remain. The fate of these is in the hands of the new nation of Malagasy, where good land is scarce and the colonial practice of locking it up for the sake of a few animals is perhaps "no longer in tune with proper development of the country."

There is nothing static in these accounts. None of them has, as yet, an end. And it is to keeping them endless—to keep each man-species relationship stretching on in perpetuity—that these authors and their organization are devoted.

Proceeds from the sale of this book will be applied to the further work of IUCN, to gather, digest, and promulgate more information, to enlist the support of an ever wider public, and to carry the efforts toward species preservation into the halls of power where man makes, for man, the decisions of such enduring biotic effect.

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The History of a Civilization

The Olmec World. IGNACIO BERNAL. Translated from the Spanish edition (Mexico City, 1968) by Doris Heyden and Fernando Horcasitas. University of California Press, Berkeley, 1969. xviii + 274 pp., illus. $12.50.

Ignacio Bernal, director of Mexico's venerable National Institute of Anthropology and History, attempts to "transform archeology into history." In doing so he continues what has long been a fundamental task of Mexican archeology: the reconstruction of social history from the sherds, stelae, and structures of the pre-Columbian past. Just as anthropology and history are joined in the name of the National Institute, so they are linked in actual practice by Mexican archeologists. The most recent result of this approach is that we have had open up before our eyes a whole new world: the Olmec world. Thirty years ago, no one would have dreamed that it existed.

Although Bernal's "fundamental interest lies in the history of a civilization, not in its archeology," he expertly covers Olmec architecture, sculpture, and ceramics. Description is augmented by 40 drawings and over 100 photographs. The archeological data serve as a factual basis upon which to make inferences about the nature and history of Olmec society. The formulation is the most ambitious attempt yet to bring alive the Olmec civilization.

The innovative Olmec produced one of the great early art styles in all human history. It is likely that they developed a writing system, positional numbers, and a calendar, and forged an empire as well.

The strength of Bernal's work lies in the plausibility of his deductions from the archeological record. No Phoenician galley, Egyptian dhow, Polynesian raft, or Chinese junk is conjured up as a model for the Olmec ship of state. The explanation for the rise of the first New World civilization is at once more simple and more reasoned than transoceanic origin: it is the genius of the Olmec confronted with a challenging environment. But which environment? That is the question. Was it the Mexican plateau or the jungle lowland?

About a millennium before Christ—Bernal says 1200 B.C.—there appeared along the Gulf Coast of southern Veracruz and northern Tabasco ceremonial centers with truncated pyramids, spacious courtyards, jade-rich tombs, and a sophisticated sculptural style. Aside from technical proficiency and esthetic impact, the content of Olmec art attests to a profound religiosity embodied in the jaguar cult. Through trade, proselytism, conquest, or combinations of these, the cult of the jaguar and its connected art style spread throughout the culture area of Mesoamerica, covering central and southern Mexico and northern Central America. Bernal's tripartite division of the Olmec into Metropolitan, Colonial, and Olmecoid is an attempt to create meaningful units for analyzing this diffusion.

As Bernal notes in passing (p. 107), my views as to the origin of Olmec style differ from his. Bernal accepts "the hypothesis of the birth of civilization on the tropical coast," ruling out the possibility of highland origins because "there are no antecedents there." I do not see that Bernal has made a case for antecedents on the coast. For me his Olmec I period has nothing Olmec about it and the Olmec arrive on the coast fully formed in Olmec II. (The latter I would have start at 1000 rather than 1200 B.C., thus following Heizer's radiocarbon dates for La Venta, which seem to offer a better fit within the overall Mesoamerican sequence than do Coe's for San Lorenzo.) This would mean that the original challenge to Olmec genius was not the tropical forest, as Bernal holds, but rather the semiarid highlands where plant domestication occurred and where irrigation works constituted an appropriate response. Furthermore, as I see it the evolution of the Olmec style shows the earlier works of art as coming from the highlands.

Because of this position I cannot accept the division of Metropolitan, Colonial, and Olmecoid. There are no metropolises in Olmec times anywhere in the New World. The word "colonial" pertains to colonies under the control of a parent country, but where is the parent country: on the coast or in the highlands? Tlapacoya in the Valley of Mexico looks much more Olmec to me than it does to Bernal; it also appears closer to being a metropolis with a large resident population than does the coastal ceremonial center of La Venta.

Like Bernal and me, all Mesoamericanists of necessity are divided into "highlanders" and "lowlanders" when the origin of civilization is debated. This makes for one of the most fascinating controversies in New World archeology. Its existence adds to the appeal of Bernal's book, for the reader can form his own opinion. At the same time, all will agree on the greatness of the Olmec accomplishment. The Durants' *The Story of Civilization* and Toynbee's *A Study of History* obviously have not told the whole story. Bernal's lucid synthesis of the evidence for the most ancient of American civilizations serves to fill the gap.

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Petroleum Geochemistry: A Russian View

Transformation of Petroleum in Nature. P. F. ANDREEV, A. I. BOGOMOLOV, A. F. DOBRYANSKII, and A. A. KARTSEV. Translated from the Russian edition by Robert B. Gaul and Bruno C. Metzner. E. Barghoorn and S. Silverman, Transl. Eds. Pergamon, New York, 1968. xvi + 468 pp., illus. $18. International Series of Monographs in Earth Sciences, vol. 29.

Soviet research on the geochemistry of petroleum has probably been more extensive than that of any other country except the United States, where, unfortunately, many of the data that have been obtained are buried in oil company files. Consequently, the translation of this monograph, which was carried out with National Science Foundation support, makes a valuable contribution to the Western literature. The authors are four of the leading petroleum geochemists of the U.S.S.R., and their book has long been recognized within their country as the leading treatise on this subject.

The real strength of the book lies in the wealth of data it presents, from both laboratory experiments and studies on numerous Soviet oil fields. About one-fourth of the data are new, the rest having been previously available to geochemists with the facility and fortitude to read Russian journals. The reader also receives a clear picture of how these data led the authors to their present ideas about the origin and alteration of petroleum.

The objective of the book is to throw light on questions connected with the transformation of petroleum, and it does this in a logical manner, starting with a summary of existing geological information on the habitat of petroleum and proceeding to a discussion of the thermodynamic transformation of petroleum constituents, including thermocatalytic reactions. The basic concepts of the authors are in agreement with those of most Western geochemists who have worked along similar lines.

For example, Dobryanskii prefaces the text with the statement, "Although there can be no question about the organic origin of the source material of petroleum, the chemists have not yet established the mechanism of the transformation of this material into hydrocarbon mixtures. However, there is no question about the general thermodynamic direction of the process." In the opening chapters Kartsev devotes a few pages to discounting hypotheses postulating an inorganic origin