Book Reviews

A Prehistoric Route to America

The Bering Land Bridge. Based on a symposium held at the Seventh Congress of the International Association for Quaternary Research, Boulder, Colorado, August–September 1965. DAVID M. HOPKINS, Ed. Stanford University Press, Stanford, Calif., 1967. 511 pp., illus. $18.50.

When submerged the Bering Bridge was the floor of a shallow sea whose currents drew many Mollusca north from the Pacific into the Arcto-Atlantic Ocean. Through most of the Cenozoic the bridge was exposed, and over its low plain broad-leaved deciduous trees, including oak, walnut, beech, and sweet and sour gum, intermingled during the Miocene. With colder times culminating in the evolution of tundra floras and tundra-adapted faunas, the bridge became a one-way street for Eurasian mammals. Between the Hemphillian and the Rancholabrean the percentage of New World mammals moving west dropped from about 33 to zero. The Eurasian immigrants define the last three North American "mammalian ages"—the arrival of deer (cervids) marks the start of the Blancan, the arrival of mammoth the Irvingtonian, and the arrival of bison the Rancholabrean.

A few who seemingly should have come across did not, as the Arctic-adapted woolly rhino. Nor did arrival in unglaciated Alaska guarantee access to the rest of the continent. At times there was still the Cordilleran ice barrier, and some mammals, the yak and saiga, for example, never made it to the Great Plains, where one imagines they might have thrived. Among the last and certainly the most significant of the newcomers was man himself.

Through the instigation of David Hopkins, Beringologists of six countries, including a number from the Soviet Union, gathered to build their own bridge of discourse at the Seventh Congress of the International Quaternary Association, in 1965. The subjects ranged through a variety of pertinent earth science fields on to biogeography and anthropology.

Through preliminary exchange of manuscripts, by incisive footnotes, and in a very perceptive summary, Hopkins sought to overcome the discontinuity to be expected when 27 authors author 23 separate chapters. While the Bering volume is the first of an expected series of post-Congress symposium publications, it is preceded by the encyclopedic 1000-page quarto-size *Quaternary of the United States* (Princeton University Press, 1965), the labor of some 90 authors.

Among the lively issues examined in *The Bering Land Bridge* is the matter of man's crossing. Laughlin reviews the Bering Sea mongoloid cultures whose origins may be traced back by radiocarbon dating about 8000 years and who may have arrived by boat rather than by land. From the archeological record of the last glaciation we know that in Europe ancient man mastered frosty tundra environments much earlier. Furthermore, according to Müller-Beck, the spear-point hunters of America, known to archeologists as Paleo-Indians, are not traceable on typological grounds to the burin-using Aurignacians of 12,000 to 15,000 years ago. Their Eurasian equivalents seem to be the Mousterians, and thus, despite lack of known sites in either Alaska or Siberia, the implication is a New World entry much earlier than the firmly established date of about 12,000 years ago.

Pollen records summarized by Colinvaux show that unglaciated Alaska and the bridge itself were covered by tundra, supporting a variety of large mammals, through the colder parts of the last glaciation. But between roughly 22,000 and 12,000 years ago any further passage east was blocked by the western edge of the Cordilleran ice sheet. Müller-Beck and Hopkins believe that man had arrived in the New World by the earlier date.

Indisputable evidence for man in the New World of this vintage or older has long been recognized as one of the greatest discoveries an American archeologist might hope to make. As a result there is a considerable search under way, and from time to time we hear enthusiastic claims of success. Granting the possibility that some of these may yet prove valid, it nevertheless seems to me that the discovery of early-early Paleo-Indians in the Americas is taking too long. By now their presence should have been firmly established and repeatedly verified.

My objection is simple. Few will dispute that the technology requisite to crossing the tundra of the Bering Bridge could be attained only by an adaptable people quite skillful at Stone Age life and fully capable of exploiting the abundant big game resources to be found in the New World. Could man have entered North America over 22,000 years ago without rapidly becoming an ecological dominant, leaving behind roughly as much imperishable evidence in the New World as archeologists find of this age in the Middle Upper Pleistocene of Europe? Without far more than the tantalizing bits of evidence claimed to date, one may regard the matter of 20,000-year-old man in America with considerable skepticism.

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Properties of Materials

Magnetism in Solids. D. H. MARTIN. M.I.T. Press, Cambridge, Mass., 1967. 462 pp., illus. $19.95.

The study of magnetism has a rather long history, with a number of classics having been written in the past. Martin has added a fine, up-to-date book which attempts to cover both the experimental and theoretical aspects of this very broad field. The writing is at a level suited for introducing graduate students to the subject. Compared with other books that cover the same range at this level, Martin's book is very good. I am especially pleased to find a reasonable emphasis placed on the experimental situation. The emphasis in Martin's theoretical treatment is on systems that can be described as having well-localized magnetic moments. There is no attempt to cover recent progress in the description of itinerant magnetic systems.

The introduction to the subject given in the first chapter underscores the variety of experiments which are part