

tions of the magnetic pole through geologic eras, as these changes are indicated by analyses of the magnetic properties of rocks from the several continents. The results indicate that polar positions have wandered widely and that curves through these changing positions, based on evidence in Europe and in North America, are generally parallel but consistently far apart. This suggests that these landmasses were separated fairly late in geologic time.

Paleoclimatic evidence for drift, used effectively by Wegener, is reviewed and brought up-to-date. Climatic conditions are reflected in floras and faunas, and also in certain types of sedimentary deposits such as evaporites, bauxites, glacial materials, and bioherms. Convincing evidence for widespread glaciation late in the Paleozoic Era, at present-day low latitudes in South America, Africa, Australia, and India, continues to be one of the most potent arguments for the concept of continental drift.

Large lateral movement has occurred on the San Andreas, the Alpine, and other active strike-slip faults. Seismologists report that, for a large majority of recorded earthquakes, the first motion has an important lateral component. Recent surveys of magnetic intensity in the northeastern Pacific Ocean reveal evidence of large-scale strike-slip faults in the ocean floor. What mechanism may account for such movements, for the major deformation in mountain belts, and for the shifting of whole continents? Some of the authors favor the concept of gigantic convection cells in the earth's mantle, with movements as slow as a centimeter per year. One author cites the recently reported worldwide rift in the ocean's floor and suggests that slow expansion of the earth may account for separation of the continents. These profound problems invite free speculation.

Authors of the scientific essays are H. Benioff, P. Chadwick, T. Chama-laun, R. S. Dietz, T. F. Gaskell, B. C. Heezen, J. H. Hodgson, F. A. Vening Meinesz, N. D. Opdyke, P. H. Roberts, S. K. Runcorn, and V. Vacquier. In the concluding paper, J. Georgi presents an effective testimonial to the ability and staunch character of Alfred Wegener, once Georgi's teacher and field companion, who was last seen on his 50th birthday when he started by sledge from a station on the Greenland ice cap and was lost in an arctic storm.

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Animal Behavior

Behavioral Aspects of Ecology. Peter H. Klopfer. Prentice-Hall, Englewood Cliffs, N.J., 1962. xv + 173 pp. Illus. Trade ed., \$5.25; text ed., \$3.95.

In this brief account of many segments of animal behavior, Klopfer provides a focus that is rather different from the more common treatments of the subject. His material is organized around five primarily ecological and evolutionary problems: predation, interspecies competition, species diversity and maintenance, and the integration of animal societies. Within this framework, he records a variety of ethological and less readily classified observations and experiments, many of them on birds, in which the author is especially interested, and with which much beautiful work has been done.

Much of the book is openly speculative, and the author warns explicitly against uncritical acceptance of certain lightly supported hypotheses. Armed with such warnings the student is not likely to go too far astray. However, on a number of occasions, ecological assumptions, made rather offhandedly, may cause the psychologist to consider these as proven facts, and one has the impression that Klopfer's grasp of the ecological literature is not quite adequate to the task he has set himself. To the extent that his expressed objective is to stimulate experimental work in behavior, Klopfer's book should be highly successful. Both the approach and his intelligent reasoning are clearly designed for such a purpose.

The rest of Klopfer's intention is to make clear the relevance of behavioral studies to ecological problems. Part of my reaction to this was to rebel. Perhaps this is unreasonable, but one is almost forced to the conclusion that, since at least three of the problems posed by the author exist among plants as well as among animals, behavior may well be primarily an obstacle to their investigation. Moreover, the other two problems—why predators do not overeat their prey, and how communities are organized—quickly assume such a restricted meaning in the context of this book that, were they to be solved, ecologists should still have to ask the same questions in a broader sense. The worthy attempt to promote a closer relationship between ecology and behavior loses some of its force by seeming to be, in part, an attempt at promotion. Where it is successful, as in the chapter

on species diversity, this is the result of evidence of a relationship rather than of hyperbole. The book would have profited from explicit recognition of the role of behavior as one component of the nexus called adaptation.

A number of mistakes, and reference to an "accompanying figure" that is nowhere to be found (p. 54), attest to hasty preparation, perhaps dictated by tight publication schedules. These defects are partly compensated by the bibliography, which is remarkably up-to-date, with a median age of citations of less than five years. The author also notes a number of personal communications from various more or less illustrious friends. After reading one such sequence, I was unable to restrain the thought that, had there been just one more of these, the book might have been truly inspired.

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Africans without Masks

The Human Factor in Changing Africa. Melville J. Herskovits. Knopf, New York, 1962. 569 pp. Illus. \$6.95.

Any reader drawn to this volume by the exotic native masks staring from its jacket is due to see aboriginal Africa fade before his eyes. In its place will arise a land of Africans born to a mixed Afro-European tradition which they take for granted and accept as theirs. As a scholar, Melville Herskovits probes these historic origins with a lifelong conviction that to understand change one must also recognize the continuities of culture.

Some may find it unnecessary to trace these roots into the Paleolithic in order to understand the present, but Herskovits, the teacher, could not resist the opportunity to open with an attack on current notions that aboriginal Africa is without its own history and prehistory. His justification lies in the fact that this book is not for the specialist in African anthropology, despite the footnotes on most of the pages, which declare the pedigree of his statements. It is a work for the intelligent reader, attracted neither by masks nor footnotes but by a desire to interpret the tumult of today's Africa in terms of reasonable human reactions. Despite Herskovits' strong personal feelings about African affairs, he writes with