much to argue with in details of data and of interpretation and in some more general matters. Certainly not all of us accept as much population replacement with the advent of each new cultural entity as is implied, and many of us do not accept all of the ethnic identifications which are made. Yet this is a top-notch job by writers thoroughly familiar with the historic and prehistoric material. As such, it may be strongly recommended to the audience for which it was written.

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Soils for the Archaeologist. I. W. Cornwall. Macmillan, New York, 1958. 230 pp. Illus. $7.50.

This book is a pioneer undertaking. It fills a need long felt in archeology. One supposes that the archeologist, whose principal concern is the extraction of information from the soil, would have a thorough grounding in the subject of soils. This is apparently not the case. Many reports refer to soils only in vague terms or omit discussions of soils altogether.

The author of this book, I. W. Cornwall of the department of environmental archaeology, Institute of Archaeology, London University, brings to us the benefit of nearly ten years of field and laboratory experience in "learning how to extract relevant information from soils and archaeological deposits."

The chapters include: (part I) "Archaeological deposits"; (part II) "Weathering and soils"; (part III) "Techniques of soil-investigation"; and (part IV) "Interpretation and examples." There is an appendix.

Two approaches are inherent in soil studies for the archeologist. One is the identification of artificial or man-disturbed soils. The other is the identification and study of ancient natural soils (paleopedology). Of intrinsically greater importance, the latter approach may give clues to the environments of ancient cultures.

The book is intended "to take the 'magic' out of soil investigations." Its purpose is also to show what sedimentary petrology and soil science can do towards explaining the phenomena which many archeologists meet daily in their excavations. Certainly, if archeology is to progress, the material surrounding the artifact and represented by various symbols in profile drawings must be handled as carefully and analyzed as well as the artifacts themselves. It has been customary to call in the soil specialist for an analysis if the means are available. Cornwall describes how one can find the answers to some questions with the aid of rudimentary equipment and basic knowledge. It may be argued that the demands made upon the field archeologist in his study of the cultural remains are quite enough to keep him busy. Still he should have some background information concerning what lies behind soil studies and some knowledge of how such studies may help him in the broader analysis of man's past. Moreover, in this regard, he should at least know how to collect soil samples so that they may be studied. He should be in a position to discuss his problems intelligently with the soil scientist. Cooperation may be of little help unless direction to the problem is given.

Cornwall's earlier book, *Bones for the Archaeologist,* has been mildly criticized for its emphasis upon the Old World and its limited applicability to the problems of the New World. His present work deals with a more universal subject, although it, too, is understandably directed to Old World readers (there is only one reference to the work of an American in soil studies). It may be said that in concerning himself with a shorter time span of prehistory than some of his European colleagues, the American archeologist at home may find some of the soil studies inapplicable. However, as is implied, not all Old World archeologists deal with ancient time periods either.

In all, this is a very stimulating book and deserves to be looked into by the field archeologist, whatever his problem in soils.

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Social Mechanisms. Studies in sociological theory. Georg Karlsson. Free Press, Glencoe, Ill., 1958. 156 pp. $5.

The author is concerned with social mechanisms—models which cover only a part of a total social process. He differs from Herbert Simon, who builds models for either rational or socially influenced behavior, by insisting that the model builder simultaneously provide for both rational and irrational determinants. Under three headings—social diffusion, group choice, and interaction—he presents existent theoretical models and selected empirical findings. His criticism of earlier work is blunt and direct when a better model is known to him (see his comment on Stouffer on migration, page 64). But in the suggestions for the improvement of models given at the end of the three main sections of the book the speculations appear *ad hoc* and disjointed, and one wishes that either greater use of nonquantitative social theory or more explicitly stated mathematical criteria had guided the criticism.

The author's contribution, in addition to his function as a reviewer, is a system of accounting equations (page 134). These equations assume the availability in matrix form of probabilities assigned to matters like the future acts of other individuals. As we have come to know from the analysis of chess moves, the speed of growth of alternative sequences of action is very great. It therefore stretches our optimism to believe that the many-faceted social process will be easily tamed by probabilistic approaches. It would properly be difficult to convince behavioral scientists that Karlsson's approach is the most direct route to deeper understanding of the regularities of social behavior, but whoever among them chooses to teach or write on social applications of mathematical models will wish to study and refer to this handsomely printed volume, both for its pioneering classification of earlier studies and for the reports of recent European work.

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Insect Migration. C. B. Williams. Macmillan, New York, 1958. xiii + 235 pp. Illus. + plates. $6.

This handsomely illustrated volume, the latest of the "New Naturalist" series, deals largely with the migration of butterflies and moths. The migration of locusts, dragonflies, ladybird beetles, hover flies and other insects is discussed in varying detail, but the lifelong interest of the author in the Lepidoptera is reflected through the entire book.

Williams defines migration as "continued movement in a more or less definite direction, in which both movement and direction are under the control of the animal concerned." Some other authors restrict the term *migration* to two-way movements.

The book is divided into four parts: introduction, evidence, problems, and methods. The first section gives a general introduction to insect migration and a brief history of the phenomenon. The second is devoted to anecdotal reporting of migrations. The third section—the largest—discusses the origin of migration, possible mechanisms of migrant orientation, the return flight, the relation of population density to migration, and similar problems.

Although it is not at present possible to offer solutions to most of the mysteries of insect migration, Williams presents much thought-provoking data. However, the discussion of the evolution of the migratory habit is unfortunately brief. For instance, the book contains little mention of the regular daily movements of certain butterflies, which might well illustrate "primitive" migratory behavior.

The final section deals with methods of studying migration. The major emphasis is on observation, and the view of the possible fruits of experimental studies is, perhaps, overly pessimistic.

There are an annoying number of typographical errors, misspelling of generic names, incorrect plate references, and so forth. In some cases the choice of generic names is doubtful, and in several instances a species is placed in two different genera on different pages. An appendix giving "the numbers of individuals of twenty-nine species of immigrant butterflies and moths in Britain each year from 1850 to 1955" might well have been omitted in favor of a more comprehensive bibliography (some works mentioned in the text are not cited in the bibliography) or more discussion of movements of insects other than Lepidoptera (such as mosquitoes).

Because the enthusiasm of the author for his subject is contagious, this interesting and well-written book will doubtless do much to stimulate interest in the phenomenon of insect migration.

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Georgia Birds. Thomas D. Burleigh. University of Oklahoma Press, Norman, Okla., 1958. xxix + 746 pp. Illus. $12.50.

Bird Hybrids. A check-list with bibliography. Technical Communication No. 13, Commonwealth Bureau of Animal Breeding and Genetics, Edinburgh. Annie P. Gray. Commonwealth Agricultural Bureaux, Farnham Royal, Bucks, England, 1958. x + 390 pp. 50s.

Extinct and Vanishing Birds of the World. Special Publication No. 13. James C. Greenway, Jr. American Committee for International Wild Life Protection, New York, 1958. x + 518 pp. Illus.

The three books reviewed here have little in common besides the mere recording and arranging of information about birds with little or no intention of analyzing or explaining the data they present. Within their scope they represent three quite diverse aspects of bird study: a regional or faunal work, a compilation of hybridization in wild and captive birds, and a record of the passing from the scene of those species which have been the casualties of man's advance over the face of the globe.

The first of these, dealing with the bird life of the state of Georgia, presents an up-to-date account of all the kinds of birds authentically recorded in that state. The individual accounts of each species are written to accord with its actual status in the area and, except for brief statements, no attempt is made to discuss its activities or occurrence elsewhere. In this it succeeds very well and gives every indication of taking its place with other well-known state bird books. The geographic location of the area it covers makes it a particularly welcome addition to regional American works. The account of each species gives a statement of its general distribution, its status in Georgia (given in necessary detail), and one or more paragraphs about its habits and recognition marks. The 35 colored plates from paintings by George M. Sutton are well done, but in the review copy they were, in some cases, too pale. This may be the fault of the printing rather than the painting. The book has an adequate index.

The second book is a straightforward check list, with bibliography, of known avian hybrids. While no great critical appraisal has been made of the surprisingly great number of such occurrences, the individual accounts do cite references that substantiate or cast doubt on the record in question. In other words, it is left to the user of the book to accept or reject a given record. It is too bad that no attempt was made to distinguish between hybrids in the wild state and those in captivity. In the latter category we find many instances of crosses between cage mates that in nature do not occur within thousands of miles of each other. The ducks seem to be the most prone to hybridizing—the mallard has no less than 50 crossings with other species listed; the wood duck, 26; the pintail, 27; and so forth. The literature and other sources appear to have been thoroughly covered, and the result is a useful source of information on bird hybrids.

Greenway's record of extinct and vanishing bird species is, even as a bald record, not as good as either of the above books. One of the things the reader wants to look up is where (in what museums) specimens may be seen of each of these departed species, and here the coverage is very incomplete. The author seems to have been aware of this as he dodges the issue by listing only the specimens known to him, without attempting to make his knowledge more complete. In checking this feature of the book against the collections in the U.S. National Museum, I found that specimens —sometimes in considerable numbers— of nearly three-quarters of the species discussed were not mentioned in the book. What is true of the collections in the National Museum is true of those in other museums as well. The historical data on the various species are similarly incomplete or, in some cases, inaccurate. Thus, the story of the demise of the last passenger pigeon in the zoo at Cincinnati is given correctly for that species, but is repeated, incorrectly, for the Carolina parakeet. The book will undoubtedly be consulted as a source reference for years to come, and it is all the more unfortunate that it is not consistently as good throughout as it is in many places.

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New Books

Morphologie structurale. vol. 1, *Structure statique, formes structurales élémentaires.* vol. 2, *Types d'évolution du relief, théories orgéniques.* Pierre Birot. Presses Universitaires de France, Paris, 1958. 464 pp. vol. 1, F. 1000; vol. 2, F. 1800.

Philosophy of Atomic Physics. Joseph Murdy. Philosophical Library, New York, 1958. 136 pp. $3.75.

The Physics of Elementary Particles. J. D. Jackson. Princeton Univ. Press, Princeton, N.J., 1958. 144 pp. $4.50.

Physiology of Fungi. Vincent W. Cochrane. Wiley, New York; Chapman & Hall, London, 1958. 537 pp. $9.75.

The Practice of Sanitation. Edward S. Hopkins and Wilmer H. Schulze. Williams & Wilkins, Baltimore, Md., ed. 3, 1958. 496 pp. $8.

Problems in Wood Chemistry. Weizmann Science Press of Israel, Jerusalem, 1957 (order from Interscience, New York). 136 pp. $6.75. The lectures and discussions which took place during the meeting of the FAO panel of experts on wood chemistry in Israel in April 1956 are published in this volume.

Process Dynamics. Dynamic behavior of the production process. Donald P. Campbell. Wiley, New York; Chapman & Hall, London, 1958. $10.50.

Quantum Electrodynamics, Selected Papers. Julian Schwinger, Ed. Dover, New York, 1958. 441 pp. $2.45.

Readings in Linear Programming. S. Vajda. Wiley, New York, 1958. 106 pp.

Roads. Fon W. Boardman, Jr. Henry Z. Walck, New York, 1958. 143 pp. *Roads* is a juvenile book that tells the story of road building from the days of the Romans to the modern roads of today. Descriptions of the materials used and the modern road-building machinery are included.

Sampled-Data Control Systems. Eliahu I. Jury. Wiley, New York; Chapman & Hall, London, 1958. 468 pp. $16.

Science. A course of selected reading by authorities. International Univ. Soc., London, ed. 2, 1958 (order from Collings, Inc., New York 17). 345 pp. $4.50. The contents are divided as follows: "The origin and meaning of science"; "The universe"; "Matter and energy"; "Science and everyday life." There is an introductory reading guide by E. N. Da. C. Andrade.

Solid State Physics. Advances in research and applications. vol. 7, Frederick Seitz and David Turnbull, Eds. Academic Press, New York, 1958. 539 pp. $12.

Trends in Genetic Analysis. G. Pontecorvo. Columbia Univ. Press, New York, 1958. 145 pp. $4.