several problems included here were solved in the interval between the writing and the publishing of the work.

The problems in this book come from various branches of mathematics—for example, set theory, algebra, topology, analysis, and mathematical physics. The presentation of the problems varies. In some cases there is a rather lengthy discussion of the problem and its motivation, with partial results and implications resulting from its solution. In other cases there is only a dry listing of problems and conjectures. And sometimes no particular problem is discussed; instead an entire area of research is suggested. Thus, the chapter on computing machines as a heuristic aid gives the author's ideas on the subject of man-machine cooperation in solving some outstanding problems in mathematics and mathematical physics.

Although the range of topics is wide, there seem to be several unifying concepts, the principal one being that of transformation. There are also several scattered problems whose formulation is simple. However, the overwhelming majority of the problems are difficult both to formulate and to solve; they should provide Ph.D. advisers with sufficient material to offer to their aspiring young mathematicians.

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Search for the Past. An introduction to paleontology. James R. Beerbower. Prentice-Hall, Englewood Cliffs, N.J., 1960. xiii + 562 pp. Illus. $7.50.

Invertebrate Paleontology. W. H. Easton. Harper, New York, 1960. xii + 701 pp. Illus. $10.

At a time marked by an ever increasing volume of textbooks in geology and related sciences, *Search for the Past* is one of few that is really new both in content and presentation. Unlike the standard paleontology texts, this book does not specially emphasize identification and classification but is, instead, a series of broad discussions dealing with basic zoologic and paleontologic principles. Although intended as an introductory college text, the book has a fresh, readable style that should make it pleasant, informative reading for amateur and professional scientists alike. The text is direct, nondogmatic, and last-minute modern. The chapter and topic headings represent high good humor and add zest to the main theme.

Approximately the first third of the volume is devoted to the direct development of fundamental principles, problems, and methods of modern paleontologic research. Such topics as "The shapes of animals," "The diversity of species," "Patterns of evolution," "Fossils and stratigraphy" are well chosen and carefully developed. Beerbower's chapter, "The species," is notable in that it approaches the subject from the viewpoint of population and covers such subjects as the genetics, morphology, and ecology of populations—subjects not ordinarily found in invertebrate paleontology texts. In keeping with his portrayal of paleontology as a developing science, the author includes examples of statistical and model techniques that are only now receiving widespread application in the profession. Unfortunately, in presenting such statistical methods, Beerbower is not at his best.

The latter two-thirds of the book, chapters 8 through 21, are devoted to the major fossil groups, including vertebrates, with special emphasis on their living relatives. The morphology, adaptation, evolutional history, and paleoecology of each are presented in brief, general discussions. These do not attempt to cover every group in a comprehensive manner but are used to emphasize and illustrate principles of evolution and adaptation. Chapters are interrelated in such a manner that they unfold a story of progressive evolution of the animal groups. A brief glossary of morphologic terms and a simplified classification table are included for each group. Only the most important references are included in the chapter bibliographies, but annotation increases their usefulness.

As an author's first book, *Search for the Past* has relatively few faults. The most critical is lack of adequate illustration. The drawings are not well planned and are of an entirely different order of competence than the text. Many are cluttered and difficult to interpret; few are attractive. The tables and their explanations have not been positioned well by the editors, and some tables do not have adequate explanations. Nevertheless, the book is a lively, readable introduction to basic principles, with emphasis on biology rather than stratigraphy, and well suited to fill the long-standing need for teaching paleontologic principles. The author, a young college teacher, is to be congratulated for recognizing and meeting the challenge. Such an auspicious beginning bodes well for future editions of this well-planned and teachable text.

William Easton's *Invertebrate Paleontology,* like Beerbower's *Search for the Past,* represents an author's first effort in the textbook field. However, unlike Beerbower's text, which is fundamentally a book on principles, *Invertebrate Paleontology* is devoted mainly to morphology and classification. As such, it is intended for use in intermediate college courses where emphasis is on training the student to recognize the principal fossil groups and to collect and prepare specimens intelligently for identification and evaluation by specialists.

Even though these goals are modest, it is disappointing to find a 1960 textbook that devotes only a single chapter to general discussions of such fundamental subjects as classification, nomenclature, methods in paleontology, evolution, correlation, and environment. Some of these deficiencies are compensated for in subsequent chapters by discussions which illustrate topics of special significance, but the very incomplete table of contents precludes the discovery of these topics except by thumbing through the text.

With the exception of the first chapter, the volume is devoted entirely to a systematic series of discussions of animal groups arranged in biological order. Protozoans, sponges, brachiopods, gastropods, and cephalopods are allotted one chapter each. Coelenterates, echinoderms, and arthropods receive two chapters each. The bryozoans and phoronids; worms and conodonts; and chitins, pelecypods, and scaphopods are covered in single chapters. Most of the animal discussions consist of three main parts: (i) consideration of soft- and hard-part morphology, (ii) discussion of classification, and (iii) summary of geologic distribution. The morphology and classification sections for each group are generally comprehensive and well illustrated. Classification, which occupies the major portion of each chapter, contains brief but commonly awkward descriptions of every major taxon. Short tabular keys to the classification of each group are exceedingly useful. The geologic summaries have been reduced to briefest terms, but they are accompanied by effective, simplified range charts.

Throughout the group discussions, several devices are used to make the

text more comprehensible. For example, uniform endings are applied to names of all taxa up through Order; nomenclatural terms such as *Genus, Genera, Families,* and *Subclass* are capitalized to indicate that they are being used in a formal sense; and use of stratigraphic terms is reduced to system names for the Paleozoic and Mesozoic and series names for the Cenozoic. In addition there is a series of study questions for students at the end of each chapter. The bibliographies are comprehensive.

In over-all aspect, Easton's text is authoritative, well organized, and beautifully illustrated. Nevertheless, the volume contains little that is original and much that has been better stated elsewhere. Furthermore, in his effort to reach the intermediate level, Easton has reduced his book to little more than a compendium of morphologic terminology and taxonomic categories. One has the feeling that the book is designed for mediocre students rather than as a challenge to those at the intermediate level.

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Dynamic Programming and Markov Processes. Ronald A. Howard. Technology Press and Wiley, New York, 1960. viii + 136 pp. Illus. $5.75.

Although the material contained in this book is of some interest to operations researchers, it is difficult to see a justification for publishing it as a book rather than as a paper or a series of papers.

The first thing to remark is that, in spite of its title, the book is neither about dynamic programming nor about Markov processes. It is rather a treatment of a single model for decision-making which has the flavor of both topics, but it does not discuss either except as the topic reflects on the author's problem. The problem, briefly stated, is as follows: Suppose one's profits are governed by a finite state, discrete Markov process in which one has some degree of control over the transition probabilities (for example, by research and advertisement). Suppose further that the profit for a transition $i \rightarrow j$ is given by an array r_{ij}, which are known quantities. What is the optimal policy for the manipulation of transition probabilities in order to maximize profit? This same problem is discussed under different circumstances with essentially the same solution given for each case. Many illustrative examples are discussed; none of these are of particular interest since they consist merely of substituting numbers into the established formulas.

It has always seemed to me that writing a book implies an evaluation of the generality and the permanent interest of the material contained in it. On this basis and on the over-all thinness of the subject matter, I would call Howard's book premature and without perspective.

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New Books

Biological and Medical Sciences

Abelson, D., and R. V. Brooks, Ed. *Quantitative Paper Chromatography of Steroids.* Cambridge Univ. Press, New York, 1960. 110 pp. $6. Proceedings of a symposium held in July 1958 to discuss problems in the application of paper chromatography to the quantitative estimation of steroids.

Abramson, Harold A., Ed. *The Use of LSD in Psychotherapy.* Josiah Macy, Jr. Foundation, New York, 1960. 304 pp. $5. Transactions of a conference on D-lysergic acid diethylamide (LSD-25); the conference was held 22–24 April at Princeton, N.J.

Alexander, Frank. *An Introduction to Veterinary Pharmacology.* Livingstone, Edinburgh, Scotland; Williams and Wilkins, Baltimore, Md., 1960. 187 pp. $4.75.

Andrews, R. D., Ed. *Transactions of the Society of Rheology.* vol. 3. Interscience, New York, 1960. 216 pp. $6.75.

Bourne, G. H. *The Structure and Function of Muscle.* vol. 1, *Structure.* Academic Press, New York, 1960. 488 pp. $14.

British National Formulary. Alternative edition, 1960. Based on a pharmacological classification. British Medical Assoc. and Pharmaceutical Soc. of Great Britain, London, 1960. 292 pp. $1.75.

Crampton, E. W., and L. E. Lloyd. *Fundamentals of Nutrition.* Freeman, San Francisco, 1960. 504 pp. $7.50.

Cumings, John N., Ed. *Modern Scientific Aspects of Neurology.* Arnold, London; Williams and Wilkins, Baltimore, Md., 1960. 365 pp. $13.

Dodson, Edward O. *Evolution.* Process and product. Reinhold, New York; Chapman and Hall, London, 1960 (revised text edition of *A Textbook of Evolution*). 368 pp. Text, $5.75; trade, $6.90.

Edsall, John T., Ed. *Amino Acids, Proteins and Cancer Biochemistry.* Academic Press, New York, 1960. 253 pp. $7. Contains the papers presented at the Jesse P. Greenstein Memorial Symposium held by the Division of Biological Chemistry of the American Chemical Society, 16 September 1959. The volume also contains a biographical article and a bibliography of Greenstein's writings.

Etter, Lewis. *Glossary of Words and Phrases Used in Radiology and Nuclear Medicine.* Thomas, Springfield, Ill., 1960. 218 pp. $8.50.

Garland, Joseph E. *An Experiment in Medicine.* The first 20 years of the Pratt Clinic and the New England Center Hospital of Boston. Riverside Press, Cambridge, Mass., 1960. 177 pp.

Glick, David, Ed. *Methods of Biochemical Analysis.* vol. 8. Interscience, New York, 1960. 409 pp. $10.

Harris, E. J. *Transport and Accumulation in Biological Systems.* Academic Press, New York; Butterworths, London, ed. 2, 1960. 290 pp. $9.

Hockenhull, D. J. D., Ed. *Progress in Industrial Microbiology.* vol. 2. Interscience, New York, 1960. 201 pp. $7.50.

Hockensmith, Roy D., Ed. *Water and Agriculture.* AAAS Symposium No. 62. AAAS, Washington, D.C., 1960. 206 pp. $5; prepaid order to members, $4.50. A symposium presented at the AAAS Washington meeting; 16 papers on the following topics: water for the future (covering the resources, legal aspects of water use, significance of small watershed programs, and water management and groundwater supplies in agriculture); water sources (factors that affect the water cycle, effects of weather modification on water supplies, the use of climatic data in guiding water management on the farm, and precipitation measuring and analysis as an aid to agriculture); water planning and use (relations between soil conservation practices and availability of water, increasing water yields by forest management, interdependence of upstream and downstream water management, views of water users on federal reclamation projects); water control (agricultural drainage, control of aquatic and bank vegetation and phreatophytes, suppressing evaporation from water surfaces, energy balance approach to evapo-transpiration from crops).

House, Earl Lawrence, and Ben Pansky. *A Functional Approach to Neuroanatomy.* McGraw-Hill, New York, 1960. 503 pp. $12.50.

Kisch, Bruno. *Electron Microscopy of the Cardiovascular System.* Translated from the original German text by Arnold I. Kisch. Thomas, Springfield, Ill., 1960. 192 pp. $7.50.

Kundu, B. C., K. C. Basak, and P. B. Sarcar. *Jute in India.* Indian Central Jute Committee, Calcutta, 1960. 411 pp. Rs. 30. This monograph deals with the botany, cultivation, diseases, and pests of jute; with its economic and marketing problems; and with the problems of jute manufacture and technology.

Machlis, Leonard, Ed. *Annual Review of Plant Physiology.* vol. 11. Annual Reviews, Palo Alto, Calif., 1960. 475 pp. $8.

Nowinski, Wiktor W., Ed. *Fundamental Aspects of Normal and Malignant Growth.* Elsevier, Amsterdam, Netherlands; Van Nostrand, Princeton, N.J., 1960. 1041 pp.