

mathematical arguments which seem to negate the requirement of large numbers for a proper application of the Hardy-Weinberg equation.

Eigen and Winkler have devised a hypercycle game with the A,U,G,C components of DNA to illustrate the helping hand given to chance in making the leap to life from the chaos of the primordial soup. Some very nicely rendered electron micrographs illustrate the theory of primitive microbe conglomeration to form more modern cells. The Britten-Davidson theory of gene regulation is reviewed to show the probable relationships between master gene, control genes, and producer genes.

Next appear illustrations that well depict the domination of Pangaea by the dinosaurs. The record of life would seem to indicate that continental coalescence had led to radical change in life forms, whereas continental break-ups have been accompanied by greater diversity in life. This would support Adriaan Kortlandt's explanation of the appearance of early man in East Africa as due to isolation caused by the Western Rift Valley. The variance in wind-up and delivery of an object thrown by a chimpanzee is related to his habitat. Special attention is then given to man's great superiority in the throwing action as though "taking his canines in his hands." Richard Leakey is inferred to use skull number 1470 from Lake Rudolf, to cast doubt on the very idea of trying to formulate any clear-cut theories of human evolution. Bjorn Kurten presents a table of mammalian half-life to illustrate the rapid evolution of the primates. John Napier is quoted as saying "Were it not for the coming of man, macaques and baboons might well have been the dominant form of animal life in all the temperate regions of the Old World."

Surely all of the "radical possibilities for self-directed human evolution" are reviewed in the closing pages. An adequate index and an intriguing dust cover finally make a volume that more people than just biologists will enjoy

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General Biology

LIFE ON THE PLANET EARTH, by Harold J. Morowitz and Lucille S. Morowitz. 1974. W. W. Norton & Co., New York. 394 p. \$8.95.

According to the "Note to the Instructor," the book is planned for a one-term course in biology for nonspecialists. The authors have succeeded in reducing terminology to a minimum. The narrative style is excellent and the book is very readable.

However, it is marred with errors. Ostrich eggs are not really one-celled; bird

eggs have had some cell divisions before the eggs are laid. Most specialists will look at their own areas for accuracy, and botanists, especially plant morphologists, will be disappointed. There are international codes of nomenclature in botany and microbiology as well as geology. Meiosis does not result in gametes in plants. Pollen is not sperm. Fig. 11-5 is a diagram of a root cross section, not of a stem. Maple syrup is obtained from sap rising in xylem in the spring, not from phloem. And there are many more.

It is unfortunate that so many errors occurred. Sharply reducing vocabulary in biology courses for nonprofessionals would help biology become as central to human consciousness as the environmental, nutritional, and population challenges demand. The vocabulary in this textbook is reduced to the extent that a glossary of 235 words is sufficient, and this is a substantial advantage. Perhaps in a subsequent edition, the authors will improve this textbook's potential by eliminating a substantial number of the misstatements.

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Genetics

A PROGRAMMED APPROACH TO HUMAN GENETICS, by Allen Vegtosky and Cynthia A. White. 1974. John Wiley & Sons, Inc., New York. 163 p. \$3.95 softback.

Designed to be used as a supplementary text in undergraduate general genetics courses, this textbook covers classical, or Mendelian, genetics and makes no effort to supplement material in the molecular or cellular aspects of genetics. It limits the problems and examples to the field of human genetics, a field most interesting to beginners in genetics and one for which it is most difficult to find simplified material.

The text takes the student, step by step, from the physical bases of heredity (that is, chromosomes, mitosis, meiosis, and basic terminology) through the more complex problems such as those dealing with linkage, chromosome mapping, and multiple allelism. More emphasis is placed on making, reading, and interpreting human pedigree charts than is usually found in genetics textbooks. Each chapter concludes with a review problem or two and well-explained expected answers; a final examination with answers at the end of the book allows the student to check his own understanding of the material.

The student with a good background in genetics may find the programmed approach annoyingly simple, but for the general student it should help clear up common difficulties such as those with the rationale and mechanics of de-

termining various genetic ratios. An index to the material in the text would be helpful, but the authors do include a good literature list of both general and human genetics titles.

The programmed approach and stress on the genetics of man, using the Mendelian principles, should make this book very useful as a supplementary textbook for undergraduate college students. It could also be used on the upper secondary school level.

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Microbiology

FUNDAMENTALS OF MICROBIOLOGY, by Martin Frobisher, Ronald D. Hinsdill, Koby T. Crabtree, and Clyde Goodheart. 9th ed., 1974. W. B. Saunders, Co., Philadelphia. 867 p. \$16.50.

The authors have produced a remarkable book which deals in a masterly manner with the multifaceted topics of microbiology. Subject matter is treated so proficiently that the neophyte and professional find the book inspirational as well as informational. Following each chapter is a list of supplementary readings. A glossary is included.

The origin and development of microbiology as an offshoot of biology is dis-

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cussed historically with due elaboration of the major contributions of outstanding scientists. The material is well organized and generously illustrated. Not only do the authors offer a discursive presentation of the subject matter generally treated in a microbiology text, they include chapters which elucidate the biochemistry and bioenergetics of the macromolecules of the major groups of prokaryotes—eucaryotic, procaryotic, and viruses. The latter are given specific attention, with discussions of modern research on intracellular and genetic phenomena, lysogeny, transduction, colicins, prophages, and factors in the production of a viral neoplasm and in mutation.

Currently pertinent sections of the book are the treatment of microorganisms in their native environments; requirements of mesophiles, psychophiles, and thermophiles, the biochemistry of antibiotics; vectors as disseminators of infectious diseases; immune mechanism; industrial utilization of microorganisms; and the microbiology of ecological systems.

So important are microorganisms in our cosmos that the authors state emphatically (p. 651): "The cycles of nutrient elements within the biosphere involve myriads of microorganisms, and their activities (decomposition and transformation of compounds) are essential for the continuance of life itself."

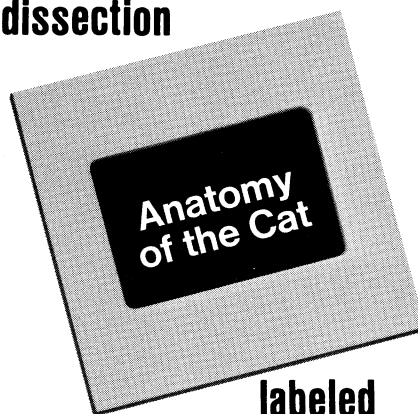
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FUNDAMENTALS OF MEDICAL BACTERIOLOGY AND MYCOLOGY, by Quentin N. Myrvik, Nancy N. Pearsall, and Russell S. Weiser. 1974. Lea & Febiger, Philadelphia. 520 p. \$14.50.

This is one of a series of three textbooks designed to cover the field of medical microbiology. The other two volumes are concerned with immunology and medical virology. This is not a reference work, nor is it designed for the student of microbiology as such; rather, it is directed toward the medical student and attempts to provide him with the essentials of what he needs to know about microbiology in order to practice medicine successfully. It does not contain any discussion of intermediary metabolism and points out that today this information is obtained primarily from courses in biochemistry.

Now, for what the book does contain: First, there are 114 pages of the basics of microbiology—nature of bacteria, phage, genetics, sterilization and disinfection, chemotherapy, host-parasite interaction, pathogenic mechanisms, mode of transmission, and normal flora. Next are 256 pages on pathogenic

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bacteria arranged in the conventional pattern, *Diplococcus*, *Streptococcus*, and so on. Each group of organisms is treated according to the following outline: medical perspectives; physical and chemical agents; experimental models; infections in man; mechanisms of pathogenicity; mechanisms of immunity; laboratory diagnosis; therapy; reservoirs of infection; and control of disease transmission. The treatment of subject is not, of course, necessarily of the same length, but it appears to be adequate and brief and indeed suitable for the medical student. A similar pattern is followed for the pathogens related to bacteria. 17 pages are devoted to mycotic infections. On the whole, this is a brief no-nonsense summary of probably the minimum that a medical student ought to know about pathogenic microbiology.

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Physiology

THE HUMAN ORGANISM, by Russell M. Decoursey. 4th ed., 1974. McGraw-Hill Publishing Company, New York. 655 p. Price not given.

Written for basic undergraduate courses in human morphology and physiology, this textbook follows the typical format of presenting the functional systems, nutrition, and human development. It includes enough details about both structure and function to make it rewarding for the student to read without being overburdening for a one-term course.

This updated edition includes a brief description of prostaglandins, the role of cyclic nucleotides as intracellular messengers, venereal disease, female oral contraception, male sterilization, and orgasm in both sexes. Intermediary metabolism is treated succinctly in the introductory chapters and more fully in the chapter on respiration. Students will probably not really grasp the important aspects of this subject without supplementary material from the teacher. The genetics of blood-type inheritance and of developmental deficiencies are included with circulation and human development.

The author introduces the muscular system from the molecular level, which is too abstract for most students. However, the teacher may avoid this by assigning the later chapter on skeletal muscles first.

I find the book beautifully written. It is a pleasure to read. At the end of each chapter is a list of papers for further reading, and the book concludes with a set of book references relating to each chapter and an extensive glossary. The index is comprehensive.