As a textbook in human biology, it is as modern and packed with data as one would hope for, as interesting as any available text, and almost indispensable as a reference aid to all elementary biology teachers, because of its extensive and up-to-date coverage. Another feature of special value, in addition to its physicochemical foundations, is the list of pathologies appended to each chapter, whether the chapter deals with muscle, nerve, skin, bone, glands, or digestion. True, heredity, ecology, behavior, and experimental embryology are omitted, but no one would cite this in complaint. However, the issues that this specific approach raises are of another character. One cannot but wonder whether this volume has been pretested to establish whether so much precooked and ready-to-serve material can be consumed and digested by the beginning student. Moreover, should science be taught in this manner, without providing any historical perspective for the questions raised, the theories offered, discarded, accepted, modified, and challenged, or the controversies stirred up between such giants as Pasteur and Liebig, for example, which reveal the very essence and drama of growth and evolution in science as well as the meaning of theory and truth? Should the student memorize these thousands of facts with no motive, no evidence, no challenge, and, above all, with no knowledge of how they came to be established and upon what foundation they rest? Ultimately, each teacher must choose the kind of text that suits his outlook and attitude.

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Russian Genetic Elysium

Problemy Radiacionnoi Genetiki. N. P. Dubinin. Gosatomizdat, Moscow, 1961. 468 pp. Rub. 1.84.

A book on genetics published in the Soviet Union is interesting in two ways. First, and most obvious, one looks for the facts and ideas contained in the book. Second, because for about a quarter of a century the Soviet Union has discriminated against genetics and favored theories that elsewhere have long been considered obsolete, one looks for the denouement of this weird story. In this book Dubinin, who is probably the outstanding living Soviet geneticist, reviews a tremendous amount of information (the bibliography contains 886 entries, 186 of them in Russian and the remainder in other languages, chiefly English), and he casts off Lysenkoist pseudogenetics like a bad dream.

The first chapter (81 pages) is a masterfully condensed exposition of the basic facts and principles of transmission genetics, cytogenetics, and molecular genetics. This is followed by a discussion of the physical nature of radiations (36 pages) and by a long chapter (112 pages) on the genetic effects of ionizing radiations. The remaining chapters are shorter and deal with the genetic effects of ultraviolet and of visible light, the radiation genetics of mammals including man, and the applications of radiation genetics in agriculture, and "Concluding remarks." Population genetics, particularly of *Drosophila*, is scarcely mentioned; this is a conspicuous omission, especially so for an author who has been one of the pioneers in and major contributors to the field. Despite this glaring omission, the book gives the most complete and up-to-date presentation of radiation genetics available, to my knowledge, in any language.

In a book review it is futile to try to summarize the contents of a book that is itself a summary. Suffice it to say that the book is full of interesting facts, interpretations, and ideas; as the author is well aware, some of the ideas will stand the test of time, others probably will not. For example, Dubinin considers human genetic materials to be far more sensitive to radiation damage than those of *Drosophila* or mice. His basis is chiefly his own work and that of his collaborators—M. A. Arsenieva, G. G. Tiniakov, Julius Kerkis, and L. A. Lebedeva—on chromosomal aberrations produced by radiations in the rhesus monkey and in tissue cultures of human cells. From these and other data, he deduces that the doubling dose for genetic changes in man is in the neighborhood of 10 r, a very low value. He then argues that the estimates of the genetic damage in man, based on studies in mice, are unsafe, and he strongly urges the need for "studies on the radiation genetics of monkeys and apes, the animals most closely related to man." At the same time, Dubinin is hopeful of eventually discovering methods of "therapy and prophylaxis of both the physiological and the genetic radiation damage."

The most remarkable and engaging quality of the book is perhaps its consistent and sober optimism. The leitmotiv is this: "Modern experimental genetics has created a new base for the discovery of future powerful methods of directed transformations of the heredity of organisms. . . . Without doubt, when the nature of the chemical coding of genetic properties becomes known, and chemical and physical methods of directed change in the molecules of nucleic acids are worked out, man will have gained an instrument for controlling living nature. By changing the relative positions of the atoms in the molecules of genetic materials, man should be able to create at will the desired new forms of plants, animals, microorganisms, and viruses. This is a way towards radically new solutions of the problems of selection."

Dubinin does not suggest that, in his genetic Elysium, desired new forms of humans may also be obtainable. Possibilities that this may open up surpass the limits of imagination of even the most optimistic geneticists.

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Panoramic Overview

Biennial Review of Anthropology, 1961. Bernard J. Siegel, Ed. Stanford University Press, Stanford, Calif., 1962. 338 pp. $7.50.

This second biennial review of anthropology covers the period from 1957–58 to about mid-1960, though, like its predecessor, it does not deal with all aspects of the discipline.

Two chapters—on peasant life studies by C. Geertz and on the anthropology of development by Vera Rubin—deal with a major current focus: the impact of urban-industrial systems on the world's peasant communities. Although the study of primitive tribal groups has not been abandoned altogether, applied or "action" anthropology is increasingly concerned with cultural change in the far more populous peasant societies. A. F. C. Wallace and R. Fogelson survey the research on culture and personality, now less avant-garde than a generation ago, and also now involved in action programs, from public health to education. These studies overlap into

language and communication theory, which is discussed in the chapter by F. Lounsbury. He reports mainly on recent challenges to the American structural linguistics school, with its perhaps outmoded behavioristic canons. Dissatisfaction has been expressed, not only by Europeans but by Americans engaged in "transformational analysis." Lounsbury also mentions the revived interest in a long-taboo topic—the ultimate origins of language.

A. K. Romney tackles the perennial topic of social organization and kinship, in an unavoidably technical chapter. R. Woodbury ably summarizes New World archeology. In addition to regional roundups, he discusses salvage archeology, archeological finances, training programs, chronology, and some of the new technical aids such as shortwave radio direction finders for field mapping. J. N. Spuhler and E. Heglar review physical anthropology, which is increasingly involved with genetic polymorphisms, abnormal hemoglobins, and more widely ramifying medical research relationships, going beyond earlier osteological and anthropometric interests. Recent fossil finds and primatology are briefly reported.

In his survey of Japanese anthropology, T. Sofue begins with a historical résumé that may surprise those unfamiliar with the speed with which Japan made scientific contact with the West. The Japanese had an anthropological society in 1884, began publishing an anthropological journal in 1886 and were engaged in archeological excavation by 1887. Before World War II, Japanese anthropologists, though active on several fronts, tended to limit themselves to Japan and adjacent parts of Asia and were contributing little to general theory. Postwar Japanese anthropology has expanded greatly, is concerned with major anthropological issues, and has built up several good academic departments. Japanese anthropologists have done fieldwork far beyond Eastern Asia, in India, Nepal, Iran, Iraq, and South America (where they have made notable archeological finds in the Andes). They lead the world in studies of wild primate behavior. Sofue provides a valuable 322-item bibliography of Japanese anthropological publications.

This intelligently selective survey is wholeheartedly recommended.

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New Books

Mathematics, Physical Sciences, and Engineering

Absorption Spectroscopy. Robert P. Bauman. Wiley, New York, 1962. 625 pp. Illus. $12.

Advances in Astronautical Propulsion. Proceedings of the seminar at Milan, Italy, 8–12 September 1960. Corrado Casci, Ed. Pergamon, New York, 1962. 387 pp. Illus. $14.

Analytical Mechanics. Grant R. Fowles. Holt, Rinehart, and Winston, New York, 1962. 288 pp. Illus. $6.

Anorganische Chemie. vol. 2. István Náray-Szabó. Akadémiai Kiadó, Budapest, Hungary, 1962. 815 pp.

Application of Probability Theory and Mathematical Statistics in the Design and Manufacture of Radio-Electronic Equipment. P. P. Mesyatsev. V. I. Siforov, Ed. Translated from the Russian by L. Ebner. Published for the National Science Foundation and the Department of Commerce by the Israel Program for Scientific Translations, Jerusalem, 1961 [order from Office of Technical Services, U.S. Department of Commerce, Washington, D.C. (order number: 60–51086)]. 256 pp. Illus. $2.50.

Asphalts and Allied Substances. vol. 4, *Methods of Testing: Industrialized Raw Bituminous Materials*. Herbert Abraham. Van Nostrand, Princeton, N.J., ed. 6, 1962. 448 pp. Illus. $15.

Atomic-Absorption Spectrophotometry. W. T. Elwell and J. A. F. Gidley. Macmillan, New York, 1962. 109 pp. Illus. $14.

Bibliography of the Ionosphere. An annotated survey through 1960. Laurence A. Manning. Stanford Univ. Press, Stanford, Calif., 1962. 626 pp. $15.

Chemistry, with Selected Principles of Physics. Raymond E. Neal and Rosemary Kennelly. McGraw-Hill, New York, 1962. 381 pp. Illus.

The Collected Papers of Enrico Fermi. vol. 1, *Italy 1921–1938*. Emilio Segrè, Ed. Univ. of Chicago Press, Chicago, 1962. 1105 pp. Illus. Plates. $15.

Combinatorial Chance. F. N. David and D. E. Barton. Hafner, New York, 1962. 365 pp. $10.25.

A Course in the Geometry of n Dimensions. M. G. Kendall (No. 8 of Griffin's Statistical Monographs and Courses). Hafner, New York, 1961. 71 pp. $3.

Differential Equations. H. S. Bear, Jr. Addison-Wesley, Reading, Mass., 1962. 215 pp. Illus. $7.50.

Elementary Introduction to Molecular Spectra. Borge Bak. North-Holland, Amsterdam; Interscience, New York, ed. 2, 1962. 155 pp. Illus. $6.

Formal Methods. An introduction to symbolic logic and to the study of effective operations in arithmetic and logic. Evert W. Beth. Reidel, Dordrecht, Netherlands; Gordon and Breach, New York, 1962. 184 pp. $9.75.

A Guidebook to Mechanisms in Organic Chemistry. Wiley, New York, 1962. 260 pp. Illus. Paper, $3.95.

Heat Transfer and Fluid Mechanics Institute, 1962. *Proceedings*. Held at the University of Washington in June 1962. F. Edward Ehlers *et al.*, Eds. Stanford Univ. Press, Stanford, Calif., 1962. 303 pp. Illus. Paper, $8.50.

Hydrogen Compounds of the Group IV Elements. F. G. A. Stone. Prentice-Hall, Englewood Cliffs, N.J., 1962. 110 pp. $5.25.

Ion Production by Electron Impact. R. I. Reed. Academic Press, New York, 1962. 254 pp. Illus. $7.

Laboratory Experiments for Chemistry, With Selected Principles of Physics. Raymond E. Neal and Rosemary Kennelly. McGraw-Hill, New York, 1962. 109 pp. Paper, $3.

Laboratory Guide for General Chemistry. A research approach. Henry S. Gates. Houghton Mifflin, Boston, Mass., 1962. 107 pp. Illus. Paper, $2.25.

Magnetogasdynamics and Plasma Dynamics. Shih-I Pai. Springer, Vienna; Prentice-Hall, Englewood Cliffs, N.J., 1962. 207 pp. Illus. Trade ed., $14; text ed., $10.

Mathematics Manual. Methods and principles of the various branches of mathematics. For reference, problem solving, and review. Frederick S. Merritt. McGraw-Hill, New York, 1962. 399 pp. Illus. $9.50.

Modern Chemistry. Charles E. Dull, H. Clark Medcalfe, John E. Williams. Holt, Rinehart, and Winston, New York, ed. 2, 1962. 704 pp. Illus. Plates.

Modern Physical Science. William O. Brooks, George R. Tracy, Harry E. Tropp. Holt, Rinehart, and Winston, New York, ed. 3, 1962. 655 pp. Illus. Plates.

Nouveau Traité de Chimie Minérale. vol 5, *Cadmium, Mercure* (1005 pp. 1962. NF. 182); vol. 6, *Bore, Aluminium, Gallium, Indium, Thallium* (1078 pp. 1961. NF. 172). Paul Pascal, Ed. Masson, Paris. Illus.

On the Theory of Radiation in Matrix Form: Theory of Crystal Diode. Nagatoshi Tunazima. Sanshusha Press, Tokyo, Japan, 1962. 92 pp. Paper, $3.

Progress in the Astronautical Sciences. vol. 1. S. F. Singer, Ed. North-Holland, Amsterdam; Interscience, New York, 1962. 427 pp. Illus. $14.50.

Progress in Astronautics and Rocketry. vol. 6, *Detonation and Two-Phase Flow*. S. S. Penner and F. A. Williams, Ed. Academic Press, New York, 1962. 380 pp. Illus. $5.25. Sixteen contributed papers, based mainly on a symposium held by the American Rocket Society in April 1961.

The Sudbury Ores. Their mineralogy and origin. J. E. Hawley. Mineralogical Association of Canada, Ottawa, 1962. 221 pp. Illus.

Thermophysics. Allen L. King. Freeman, San Francisco, Calif., 1962. 386 pp. Illus. $9.50.

USSR Olympiad Problem Book. Selected problems of elementary mathematics. D. O. Shklarsky, N. N. Chentzov, I. M. Yaglom. Translated from the Russian by John Maykovich. Irving Sussman, Translation Editor. Freeman, San Francisco, Calif., 1962. 468 pp. $9.

Uses of Infinity. Leo Zippin. Random House, New York, 1962. 158 pp. Illus. Paper, $1.95.

Vom Denken in Begriffen. Mathematik als Experiment des reinen Denkens. Alexander Israel Wittenberg. Birkhäuser, Basel, Switzerland, 1962. 360 pp.