got the most thorough up-to-date surveys on epidemiology of lung cancer (Hueper) and of lung cancer in Canada (Phillips). Engelbreth-Holm thoughtfully spoke on classification of tumors, but some of his statements are conflicting with facts—for example, "the presexual years are noteworthy in freedom from tumor development"—and some other statements are questionable—for example, "the differentiation may be changed, but always in the form of a decline." (In man, no age is free of cancer, and early childhood, up to 4 years, has even a higher frequency than later childhood. Differentiation may proceed in some tumors, for instance in sympathoneuroblastoma, up to the point of maturation.)

The most difficult problem—the nature of cancer—was reserved for P. E. Steiner. In his excellently organized paper, he diligently argued point for point against current theories such as embryonal rests, virus, mutation, and chemical theories, suggesting instead *parthenogenesis in somatic cells* as a theory that meets all objections. In my opinion the conference should have been told by Steiner that his theory is a revival of Boveri's 40-year-old concept, experimentally supported by Fr. Levy (see my *Cancer in Man* pp. 496–497).

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New York, N. Y.

Letalfaktoren in ihrer Bedeutung für Erbpathologie und Genphysiologie der Entwicklung. Ernst Hadorn. Georg Thieme, Stuttgart, 1955. 338 pp. Illus. $9.30.

The study of hereditary lethal factors has since long occupied a position of particular significance in genetic investigations. Yet, Ernst Hadorn's book presents for the first time a monographic review and critical evaluation of our knowledge of this many-faceted subject. Following introductory terminological discussions, the early chapters of the book deal with types of evidence for and methods of demonstrating the presence of lethal factors, with ways and means of their maintenance, with their origin by natural or induced mutation, and with the chromosomal morphology of lethal factors. Brief discussions are devoted to dominant lethal factors, polyfactorial lethality, and the role of maternal and extranuclear agencies. More extensive reviews are concerned with penetrance and expressivity, modes of transmission and expression, stage specificity of action, specificity with reference to cell types and organs, pleiotropism, cellular autonomy as studied by transplantation and explanation, the evidence from phenocopy experiments, biochemical traits produced by lethal mutants, and metabolic changes in their presence. The question of economic losses caused by lethal factors is given brief consideration, and there is an interesting concluding discussion of the problem of developmental integration of mutations.

This sketchy enumeration of contents may suffice to indicate the comprehensiveness with which the subject has been treated, but it does not bring out the much greater merits of the book, namely, its exceptional clarity of exposition, its masterly integration of all aspects of lethal mutations, and its skillful disclosure of the most serious gaps in our present knowledge. The illustrations, especially a number of very successful diagrams, deserve particular mention.

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Radiation Biology. vol. II, **Ultraviolet and Related Radiations.** Alexander Hollaender, Ed. McGraw-Hill, New York–London, 1955. x + 593 pp. Illus. $8.

This series of three volumes is a present-day version of *The Biological Effects of Radiation* edited by B. M. Duggan, which was published in 1936. Volume II deals mainly with the effects of ultraviolet radiation, but it also includes some material dealing with ionizing radiation. The first half provides a general background of information on radiation, and the second half covers various biological effects of radiation. Topics not found in the earlier work include radiation of virus, photoreactivation, induction of cancer and sunburn.

The various subjects are covered very completely, for example the chapter on solar radiation includes a brief description of x-ray and radio emission from the sun. Most of the work of the period 1936 to 1951 is critically reviewed, and extensive lists of references are given. Several of the authors have made very skillful use of tables in presenting summaries of related papers. In addition, most of the authors present summaries of the present state of knowledge in their respective fields.

It is unfortunate that the publication of this volume required so much time; most of the articles are dated 1951 or 1952. The value of review articles decreases with a "half-life" of perhaps 7 years, so a 3-year delay causes a serious loss. With the present mass production of scientific literature, however, volumes such as this that summarize a vast quantity of information are indispensable.

Titles of the chapters are as follows: "Photochemistry," Robert Livingston; "Practical applications and sources of ultraviolet energy," L. J. Buttolph; "Sunlight as a source of radiation," J. A. Sanderson and Edward O. Hulburt; "Technique of study of biological effects of ultraviolet radiation," Jesse F. Scott and Robert L. Sinsheimer; "Ultraviolet absorption spectra," Robert L. Sinsheimer; "A critique of cytochemical methods," A. W. Pollister; "The effect of ultraviolet radiation on the genes and chromosomes of higher organisms," C. P. Swanson and L. J. Stadler; "The effects of radiation on protozoa and the eggs of invertebrates other than insects," Richard F. Kimball; "Radiation and viruses," S. E. Luria; "Effects of radiation on bacteria,' M. R. Zelle and Alexander Hollaender; "Radiation studies on fungi," Seymour Pomper and Kimball C. Atwood; "Photoreactivation," Renato Dulbecco; "Sunburn," Harold F. Blum; and "Ultraviolet radiation and cancer," Harold F. Blum.

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Aux Confins de la Vie. Perspectives sur la biologie des virus. P. Morand. Masson, Paris, 1955. 171 pp. F. 850.

This small French book, with the appropriate subtitle "Perspectives on the biology of viruses," appears to have been written for a sophisticated audience of nonspecialists by an exceptionally well-read nonspecialist. Both its merits and defects stem from the fact that its author is not a "practicing virologist." Its merits are unabashed enthusiasm, lack of axes to grind in any specific area of the subject, and willingness to make rapid transitions from the factual to the speculative and on to the philosophic. Its defects are the relative high incidence of minor factual mistakes and, more basic, the lack of informed discrimination among contributions and opinions of varying standing and actuality. Altogether, however, this is high-class, stimulating, semipopular science writing, deriving its appeal from the world of ideas rather than from the realm of practical interests, to which most popular science books seem to cater.

The subject matter is divided into three major sections, dealing with viruses as physical, chemical, and biological entities, respectively. These are preceded and followed by shorter, more speculative chapters. The author succeeds in condensing into these few pages an amazing amount of the information that biologists and biochemists today consider essential to the study of virology as a fundamental science. Much of the condensed material has been predigested somewhat hastily and is more likely to

stimulate the reader to further study than to provide him with adequate knowledge. This makes it regrettable that despite the numerous quotations and mentions of original contributions the book does not provide a list of references. A short list of suggested books preceding the text may serve as a lead to bibliography.

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Books Reviewed in The Scientific Monthly

October

Cultural Anthropology, Melville J. Herskovits (Knopf). Reviewed by M. H. Fried.

The Evolution of an Insect Society, Derek Wragge Morley (Scribner). Reviewed by Reginald D. Manwell.

Readings in Anthropology, E. Adamson Hoebel, Jesse D. Jennings, Elmer R. Smith, Eds. (McGraw-Hill). Reviewed by Alfred G. Smith.

Animal Life in Deserts, P. A. Buxton (St. Martin). Reviewed by Paul B. Sears.

Evolution of the Vertebrates, Edwin H. Colbert (Wiley; Chapman & Hall). Reviewed by Albert E. Wood.

Grundriss der Allgemeinen Zoologie, Alfred Kuhn (Thieme). Reviewed by Ernst Caspari.

Introduction to Physical Geology. Chester R. Longwell and Richard Foster Flint (Wiley; Chapman & Hall). Reviewed by Jacob Freedman.

Two Years in the Antarctic, E. W. Kevin Walton (Philosophical Library). Reviewed by V. E. Fuchs.

Science Reasoning and Understanding, Intercollege Committee on the Evaluation of Science Objectives of the Cooperative Study of Evaluation in General Education (Brown). Reviewed by I. Bernard Cohen.

The Chemistry of Living Cells, Helen R. Downes (Harper). Reviewed by L. J. Mullins.

Botany Principles and Problems, Edmund W. Sinnott and Katherine S. Wilson (McGraw-Hill). Reviewed by Robert F. Smart.

The Elements of Chromatography, Trevor Illtyd Williams (Philosophical Library; Blackie). Reviewed by James D. O'Rourke.

Soil Fertility, C. E. Millar (Wiley; Chapman & Hall). Reviewed by Roy D. Hockensmith.

Minerals in World Industry. Walter H. Voskuil (McGraw-Hill). Reviewed by William A. Hance.

Experiments in Organic Chemistry, Louis F. Fieser (Heath). Reviewed by Roy G. Bossert.

The New Warfare, O. N. Barclay (Philosophical Library). Reviewed by Ralph Braibanti.

Applied Entomology, H. T. Fernald and Harold H. Shepard (McGraw-Hill). Reviewed by J. S. Wade.

Physics: a Descriptive Interpretation, C. H. Bachman (Wiley; Chapman & Hall). Reviewed by R. F. Paton.

New Books

Chemotherapy of Malaria. Gordon Covell, G. Robert Coatney, John W. Field, Jaswant Singh. WHO Monogr. Ser. No. 27. World Health Organization, Geneva, 1955. 123 pp. $3.25.

The Hormones. Physiology, chemistry and applications. vol. III. Gregory Pincus and Kenneth V. Thimann, Eds. Academic Press, New York, 1955. 1012 pp. $22.

Laboratory Outlines and Notebook of Organic Chemistry. Cecil E. Boord, Wallace R. Brode, Roy G. Bossert. Wiley, New York and Chapman & Hall, London, ed. 3, 1955. 314 pp. $3.90.

Boundary Layer Theory. Hermann Schlichting. Trans. by J. Kestin. McGraw-Hill, New York; Pergamon, London; Braun, Karlsruhe, Germany, 1955. 535 pp. $15.

The Miracle of Light and Power. How electricity, gas and steam are produced for home and industry. Burr W. Leyson. Dutton, New York, 1955. 186 pp. $3.50.

Qualitative Organic Analysis and Scientific Method. A. McGookin. Chapman & Hall, London; Reinhold, New York, 1955. 155 pp. $4.50.

Stuttering in Children and Adults. Thirty years of research at the University of Iowa. Wendell Johnson, Ed. Univ. of Minnesota Press, Minneapolis, 1955. 472 pp. $5.

Principles of Meteorological Analysis. Walter J. Saucier. Univ. of Chicago Press, Chicago, 1955. 438 pp. $10.

Recent Progress in Hormone Research. vol. XI. Proceedings of the 1954 Laurentian Hormone Conference. Gregory Pincus, Ed. Academic Press, New York, 1955. 518 pp. $10.

Fifth Symposium (International) on Combustion. Combustion in engines and combustion kinetics. Standing Committee on Combustion Symposia of the Combustion Institute. Reinhold, New York; Chapman & Hall, London, 1955. 802 pp. $15.

The Convolution Transform. I. I. Hirschman and D. V. Widder. Princeton Univ. Press, Princeton, N.J., 1955. 268 pp. $5.50.

Textbook of Anatomy and Physiology. Diana Clifford Kimber and Carolyn E. Gray. Rev. by Caroline E. Stackpole and Lutie C. Leavell. Macmillan, New York, ed. 13, 1955. 850 pp. $5.

'Sound Barrier.' The story of high-speed flight. Neville Duke and Edward Lanchbery. Philosophical Library, New York, rev. ed., 1955. 129 pp. $4.75.

Advances in Internal Medicine. vol. VII. William Dock and I. Snapper. Year Book, Chicago, Ill., 1955. 311 pp. $8.50.

Culture and Experience. A. Irving Hallowell. Univ. of Pennsylvania Press, Philadelphia, 1955. 434 pp. $7.

Discovering Buried Worlds. André Parrot. Trans. by Edwin Hudson. Philosophical Library, New York, 1955. 127 pp. $3.75.

The Principles of Electromagnetism. E. B. Moullin. Oxford Univ. Press, Oxford, ed. 3, 1955. 438 pp. $8.

The Case History of Sigmund Freud. A psychobiography. Maurice Natenberg. Regent House, Chicago, 1955. 245 pp. $3.95.

Miscellaneous Publications

(Inquiry concerning these publications should be addressed, not to Science, *but to the publisher or agency sponsoring the publication.)*

Eighth Annual Report. Pacific Science Board, 1954. Natl. Acad. of Sciences–Natl. Research Council, Washington, 1955. 61 pp.

INSDOC Report 1954–55 (Indian Natl. Scientific Documentation Centre). Natl. Physical Lab. of India, New Delhi, 1955. 18 pp.

In Time of Trouble. Office of Public Reports. 38 pp. *Technical Cooperation in Education.* 18 pp. International Cooperation Administration, Washington 25, 1955.

The Research Report of the Land Locomotion Research Laboratory. vol. 1, No. 2. The Laboratory, Detroit Arsenal, Center Line, Mich., 1955. 33 pp.

The 14-Week Exploratory Study of Marginal-Airman Basic Training: Comparison of Proficiency of 8-Week and 14-Week Training Groups. Research Rpt. AFPTRC-TN-55-10. Donald B. Gragg *et al.* 27 pp. *The Behavior of Individuals and Personnel Systems in the Surveillance Functions of an Air Defense Direction Center.* pt. III, *Distribution of Responses with Respect to Job Functions.* Research Rpt. AFPTRC-TN-55-11. Jay D. Cohen and Robert K. McKelvey. 15 pp. *Student Achievement as a Measure of Instructor Effectiveness.* Research Rpt. AFPTRC-TN-55-12. Joseph E. Morsh, George G. Burgess, Paul N. Smith. 20 pp. *Implications of Regional Differences in Aptitude for Personnel Classification.* Research Rpt. AFPTRC-TN-55-13. Mary Agnes Gordon. 13 pp. *Evaluation of a Selection Composite for Screening Applicants for USAF Officer Candidate School.* Research Rpt. AFPTRC-TN-55-15. Ernest C. Tupes and Walter R. Borg. 13 pp. *Predicting Motivation for Flying Training among Senior AFROTC Cadets.* Research Rpt. AFPTRC-TN-55-18. Ernest C. Tupes, J. W. Bowles, Donald V. Torr. 8 pp. Air Force Personnel & Training Research Center, Lackland Air Force Base, San Antonio, Tex., 1955 (Order from: Office of Technical Service, U.S. Dept. of Commerce, Washington, D.C.)

Air-Borne. Cornell Rural School Leaflet, vol. 49, No. 2. Verne N. Rockcastle. Cornell Univ., Ithaca, N.Y., 1955. 32 pp.

The Zoonoses in Their Relation to Rural Health. Karl F. Meyer. Univ. of California Press, Berkeley and Los Angeles, 1955. 49 pp. $1.

A New Species of Sternotherus with a Discussion of the Sternotherus Carinatus Complex (Chelonia, Kinosternidae). Tulane Studies in Zoology, vol. 3, No. 3. Donald W. Tinkle and Robert G. Webb. Tulane Univ., New Orleans, 1955. $0.50.

First Annual Report and Statement of Accounts for the Period Ending 31 March 1955. National Research Development Corp. of India, New Delhi, 1955. 17 pp.

Bioestadistica. Serie Científica 2. Alfonso Dominguez Toledano. 1953. 181 pp.; *Papeles de la Chinantla.* pt. I, *Mayultianguis y Tlacoatzintepec.* Serie Científica 3. Roberto J. Weitlaner and Carlo Antonio Castro G. 1954. 269 pp. Museo Nacional Antropología, Mexico.