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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**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