modern version of August Krogh's 1941 classic of the same title, which the author tried to emulate. The material covered and several of the figures are the same, as is nearly all of one paragraph. Steen's treatment is not always as clear as the older work, nor is he able to cover an area with equal authority, the available information having grown so in the interim. For example, 14 pages of Steen's book are devoted to the alveolar lung, a large representation in a book this small but microscopic in comparison to the available literature on the mammalian lung alone. Consequently, specialists will not find comprehensive reviews of their particular topics; but they should profit from the overview of the field. Students will find in addition insights of an investigator of broad experience into some of the exciting current problems in the field. Finally, the book is commended to general readers, who will find in it an introduction to a fascinating aspect of physiological adaptation.

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## Mutagenic Agents

**Chemical Mutagens.** Principles and Methods for Their Detection. ALEXANDER HOLLAENDER, Ed., with the cooperation of Ernst Freese, Kurt Hirschhorn, and Marvin Legator. Plenum, New York, 1971. Vol. 1, xxviii pp. + pp. 1–310, illus., + index. Vol. 2, xxii pp. + pp. 311–610, illus., + index. $17.50 each.

**Chemical Mutagenesis in Mammals and Man.** F. VOGEL and G. RÖHRBORN, Eds. Springer-Verlag, New York, 1970. xiv, 520 pp., illus. $34.10.

The stated purpose of the two-volume work edited by Hollaender is to encourage the development and application of testing and monitoring procedures to avert significant human exposure to mutagenic agents. Certainly it succeeds brilliantly in providing a single source from which the details of a whole battery of mutational assay systems can be obtained. Despite the large number of contributors (the 23 chapters have 34 authors), it has a continuity seldom exemplified in contributed volumes. It begins with an excellent discussion of the molecular mechanisms of mutation and proceeds with chapters on the relationships between mutagenesis and teratogenesis and between mutagenesis and carcinogenesis. The rest of volume 1 deals with the utilization of simple prokaryotic organisms as mutational test systems. Volume 2 takes up the more complex biological systems. The final chapter, which is exceptionally fine, succinctly elucidates the approaches to and problems of monitoring human populations.

The volume edited by Vogel and Röhrborn contains the papers of the Symposium concerning Mutation Research held at Mainz in 1969 and several supplementary chapters. Three chapters deal with broad aspects of the problem of chemical mutagenesis in relation to man, 14 with research methods, and 10 with findings and applications, the latter including a valuable segment on results obtained to date with a number of characteristic chemical groups such as alkylating agents, antimetabolites, acridines, and caffeine. Special attention should be drawn to the tabular summary, compiled by A. Barthelmess, of mutagenic substances in the human environment, which gives 1017 references. Although valuable in the main, it would have been enhanced by a more specific referencing of the agents responsible for a mutagenic effect per se and by a clearer division of environmental source or use category. The appendix of the book consists of a most useful 40-page treatment of statistical methods in mutagen research. The overall treatment is notably cohesive for a symposium volume, and this work too is a worthwhile contribution to the field of chemical mutagenesis.

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## Embryology

**Lectures on Developmental Physiology.** ALFRED KÜHN. Translated from the second German edition (1965) by Roger Milkman. Springer-Verlag, New York, 1971. xvi, 536 pp., illus. $19.60.

The first edition of *Lectures on Developmental Physiology* appeared in German in 1955. A second, expanded, edition followed in 1965; it is this which is translated into English here, seemingly without change.

Developmental physiology is broadly construed. There are 36 lectures, each of which not only presents facts but also raises problems and discusses concepts. The first five lectures discuss the structure of chromosomes, their distribution in mitosis and meiosis, and cytoplasmic division; examples are chosen from a wide variety of organisms. The next three lectures deal with developmental events in unicellular organisms, acellular organisms (including *Acetabularia*), and in simple multicellular systems (Volvocales, Acrasiales, and so on). Then several general topics are discussed in separate lectures: fertilization, polarity in spores and eggs, cleavage. A number of lectures are then devoted to the development of particular organisms: two to the echinoids, six to the amphibians, one to the ascidians, one to forms with spiral cleavage, four to insects, four to plants. Two lectures follow on regeneration, discussing primarily, but not exclusively, hydroids and planarians. A general discussion follows on spatial patterns in development, and the book then concludes with four lectures on developmental genetics, Kühn's own field. The bibliography includes over 750 items, and there are 620 illustrations, each of which is superb.

The lectures are tersely written, and assume some understanding of technical vocabulary. Kühn was unique by virtue of his breadth of biological knowledge and his depth of understanding of fundamental biological problems. He was intimately acquainted with a great variety of biological forms from the most varied phyla. There is therefore some question as to how deeply Kühn's presentation of a variety of developments can be appreciated by a generation of American students who know little of the adult organisms that are developing. Kühn's lectures were originally addressed to students who had been trained differently. The book will be most useful to advanced students fortunate enough to have professors who can attempt to provide for them some of the background that they lack. It will be indispensable to those who teach developmental biology; it has no counterpart in print in English or any other language. It is a great pity that Kühn died before preparing a new edition of the book for the 1970's; no living teacher or investigator of developmental genetics or developmental biology more generally can begin to equal his standards.

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