of dictionaries, like the best of other compilations, are those that have been subjected to rigorous criticism, biologists will be performing a service to students and writers by giving Dr. Knight the benefit of their ideas.

Twelve pages of appendices constitute a valuable feature of the book. These include numerous commonly used statistical formulae and tables, among them a table of chi square that is more extensive than similar tables in most text books. There is an unusual table of "Distances Recommended to Avoid Seed Contamination," compiled from the recent literature. The book is attractively made up and is printed on a heavy grade of paper in clear and legible type.

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General cytology. E. D. P. DeRobertis, W. W. Nowinski, and Francisco A. Saez. (Trans. by Warren Andrew.) Philadelphia: W. B. Saunders, 1948. Pp. 345. (Illustrated.) $5.50.

This readable and well-illustrated short text, originally published in Argentina, achieves a remarkably broad survey of modern cytochemistry, cell physiology, and cytogenetics. Its emphasis on cytoplasmic structure and the activities of "resting" cells reflects the profound shift in interest in the 25 years since Wilson's summary of classical cytology, with its concentration on chromosomes in dividing cells. Noteworthy features are accounts, previously reviewed only in symposia and monographs, of recent work on secretion, chromosome structure, "ultrastructure," membane permeability and enzyme systems, and descriptions of many ingenious techniques of physical and chemical cytology (occasionally emphasized at the expense of results or interpretations). In the reviewer's opinion, however, the book's principal contribution is pedagogical: The presentation of cytology as the synthesis of related facts customarily scattered through courses in "cytology," histology, physiology, biochemistry, genetics, and embryology. That the unity actually achieved is far less than ideal is no argument against either the validity of the innovation or the need for such a course at the senior or beginning graduate level. Rather, it is a challenging commentary on our state of knowledge.

The book is reasonably free from the twin curses of cytology: excessive and esoteric terminology, and "explanation" by definition or redescription. Each chapter has an up-to-date though incomplete bibliography. The emphasis is more zoological than botanical. The translation is clear, if not always polished. Occasional prominence given the authors' own work reflects their enthusiasm and directs attention to research in Latin America. Critical readers will note: a fair number of minor errors; omission of some pertinent modern contributions, for example, in the experimental analyses of cell division and of radiation effects; acceptance of some recent work with less reservation than perspective may justify; hypocritical embrace of certain Darlingtonian hypotheses; and inclusion of much primarily genetical material. However, such defects are remediable by a good teacher, and do not obscure the wealth of well-considered and accurate information presented. Few will agree that "Purely morphological cytology . . . has exhausted the study and description of various cellular structures," but also few will deny that here a stimulating step is taken toward the integration of biological, physical, and chemical data which must ultimately give us a unified and meaningful concept of the structure and functioning of the living cell.

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Nucleic acids and nucleoproteins. (Cold Spring Harbor Symposia on Quantitative Biology, Vol. XII.) Cold Spring Harbor, N. Y.: Biological Laboratory, 1947. Pp. xii + 279. (Illustrated.) $7.00.

This volume is the second symposium on nucleic acids to appear in print within a year (cf. *Symposia Soc. exp. Biol.* Vol. 1). This coincidence reflects the current wide interest in nucleic acids as an important cell constituent and a possible key to some of the fundamental problems of cellular biology. Although the contents of the two symposia overlap in part, the wealth of material and the fluid state of research in this field, as well as the absence of definitive conclusions, make duplication a rather desirable feature. The reviewed symposium, organized by M. Demerec, included contributors from Belgium, France, England, Sweden, and the U.S.A.—among them J. M. Gulland. The volume is dedicated to this distinguished biochemist, who lost his life a short time after the meeting.

The 25 separate articles can be grouped into five major sections. The first deals with problems of the chemical and physical constitution of nucleic acids (NA) and nucleoproteins (NP). The structure of NA as a polynucleotide is discussed by Gulland in the light of the results of careful titrations. Taylor, Greenstein, and Hollaender report the effect of X-rays on the state of polymerization of NA, and the effect of ionizing radiations on various preparations of nuclear material is investigated by Errera. Enzymatic degradation as a tool of constitution analysis of NA is described by Greenstein, Carter, and Chalkley; and by Schmidt, Cubiles, and Thannhauser. Michaelis deals with the interaction of NA with basic dyes, correlating the spectral properties of the dyes with their degree of polymerization. For various reasons the chemistry of histological reactions has been notoriously neglected, and it is encouraging to find that the same author who in 1902 wrote a textbook that was probably one of the first introductions to the chemistry of histological staining is returning to this field.

Another group of investigators is concerned with the distribution of NA and NP in cells and tissues. Besides his own findings, Davidson includes data of several other authors on the NA content of mammalian tissues and of tissue cultures. Schneider compares the NA content of liver, regenerating liver, and hepatoma, and extends the determinations to separated cell parts like mitochondria and nuclei. Remarkable progress seems to be taking place in elucidating the composition of the chromosome.