
The Problem of Mitosis

Franz Schrader has added another to the list of excellent monographs in the Columbia Biological Series. This volume treats of the problems of mitosis, many of which are as yet quite unexplained. The term mitosis is used in the old inclusive sense of any nuclear division that involves a spindle apparatus and division of chromosomes, and as such includes "meiotic mitosis." The book opens with a careful account of structures involved in the mitotic process, including the spindle apparatus, the kinetochore, the aster and the spindle constituents. Then follows a clear dispassionate account of the various hypotheses of mitosis, including those concerned with pulling, pushing, viscosity and hydration, electrostatics, diffusion, streaming, hydrodynamic forces and tactoids. Related problems of the interphase, the pairing of chromosomes and kinetochores, the nuclear membrane and other subsidiary phenomena make up a challenging chapter. Such conclusions as can be objectively and critically reached are presented in the final chapter. Students of cytology must read this masterful summary before proceeding with further attempts at solving the problems of cell division. A bibliography of nearly 500 titles completes the book. The illustrations are few but very clear, and are used just where they are needed.—*L. H. Snyder.*

Mitosis: The Movements of Chromosomes in Cell Division, by Franz Schrader. 110 pp. New York, Columbia University Press, 1944. \$2.00.

Permeability Up To Date

For nearly twenty years there have been no attempts at a monographic treatment of the topic of permeability. Within the past two years two such books have been published. One of these, written by two well-known American authorities on the subject (Brooks and Brooks, *The Permeability of Living Cells*. Julius Springer, Berlin, 1942), has unfortunately not become available because of transportation restrictions resulting from the war. The other book is "The Permeability of Natural Membranes," by Hugh Davson and J. F. Danielli. This is a volume which will appeal more to specialists than to the general reader, but no one whose work lies within the field of permeability or related phenomena can afford to overlook it. All phases of the topic are discussed and the book should be profitable reading for both plant and animal physiologists. Mathematical formulations of diffusion, rates of penetration, and related phenomena are developed in some detail. There is a graphic chapter on the structure of the plasma membrane. Permeability to various classes of substances such as non-electrolytes, gases, water, proteins, lipoids, ions, weak electrolytes, and dyes are considered as separate topics. One chapter is devoted to the effects of narcotics, another to the effects of temperature on permeability. There are also chapters on such specialized topics as potential measurements and permeability, haemolysis, permeability in relation to secretion and the permeability problems of the kidney. The final chapter is a discussion of the theories of cell permeability. A list of key references is appended to each chapter. There are numerous figures and an index.—*B. S. Meyer.*

The Permeability of Natural Membranes, by Hugh Davson and J. F. Danielli. 361 pp. Cambridge: at the University Press; New York: The Macmillan Co. 1943. \$4.75.