are important in the atmosphere over the ocean and may oppose or enhance the effects of temperature. Also, because temperature differences are much smaller over the ocean, it frequently becomes necessary to distinguish between actual and potential temperatures and densities in the stability analysis—a point touched on very lightly in this treatment.

Finally, the equations of turbulence and particle dispersion in a Lagrangian frame of reference are developed. The Lagrangian treatment will no doubt be receiving increased attention as problems of atmospheric and water pollution are faced.

To summarize, this book along with the forthcoming second volume will fill a long-standing need for a comprehensive book on turbulent flow. The two volumes have become the standard reference on the subject in the Soviet Union. It seems likely that the translation will assume this role in English-speaking countries as well.

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Microorganisms

The Biology of Mycoplasmas. PAUL F. SMITH. Academic Press, New York, 1971. xii, 258 pp., illus. $14.50. Cell Biology.

The mycoplasmas (originally called pleuropneumonia-like organisms or PPLO) have been studied both by people who want to grow them for study because of their pathogenicity and small size and by people who want to get rid of them because they are common tissue culture contaminants. The small size and fastidiousness of these organisms made it difficult to grow cultures, quantitate cell viability, and examine viable cells by light microscopy. Because of these technical problems, many early (that is, before the mid-1960's) workers in the field neglected some basic controls in their studies. Cells for biochemical and microscopic analyses were rarely assayed for viability, so we do not know whether many of the data in the literature were collected from living cells or dead ones. The microscopists, at least, should have been aware of the problem, since the vesicles shown in most published electron micrographs (and called cells) obviously show little or no cytological preservation. As might be expected, a cell biology based on studies of cell debris tends to be full of bizarre forms. This explains the exotic biology ascribed to the mycoplasmas in much of the literature.

Paul Smith's book was written to serve as a general introduction to the mycoplasmas. The text is divided into six sections: on the origin of mycoplasmas, the structure of the mycoplasmal cell, the dynamics of reproduction and growth, the relationship of structure and function, the interaction of mycoplasmas with their environment, and the significance of mycoplasmas as cells. Half of sections 2 to 4, which cover the cells' biochemistry and structure, is concerned only with lipids and membranes, the other half covering all of carbohydrate, nucleic acid, and protein biochemistry and structure. This imbalance reflects both the historical development of mycoplasma studies and the author's field of interest.

Though the book is an adequate review of the field, certain reservations must be expressed. The conflicting points of view and diversity of data in this field are dispassionately presented, with little attempt to interpret or explain the inconsistencies to the general reader. This may serve to make the data seem even more confusing than they are. A number of errors and generalizations also confuse the discussion; for example, the mycoplasma membrane is up to 40 percent of the cell's dry weight, not 60 to 70 percent as stated (p. 224); multi-hit and multi-target kinetics are not mentioned, while clumping is used to explain nonexponential radiation inactivation of the cells (p. 188); and the Donetta cell chromosome is 350 μm long, not 350 nm as stated (p. 55).

Smith mentions, but does not use, the most recent taxonomic nomenclature, which tends immediately to date the book. More important, the controversy he discusses on the size of the minimal cell and the mode of mycoplasma replication has recently been resolved (Ciba Symposium on Pathogenic Mycoplasmas, in press). In fact, since we now know that the mycoplasmas are larger than was originally believed and that the small forms seen earlier were cell debris, the biology of the mycoplasmas seems much less complicated.

Smith's book is recommended as a comprehensive introduction to the mycoplasmas. It will probably serve as a bench mark, documenting the development of our knowledge of these cells and leading up to the recent expansion of this field into new areas of cellular and molecular biology, such as the identification of plant mycoplasmas and mycoplasma viruses.

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Biological Psychiatry

The Biochemistry of Functional and Experimental Psychoses. HANS WEIL-MALHERBE and STEPHEN I. SZARA. Thomas, Springfield, Ill., 1971. xviii, 406 pp., illus. $18.50. American Lectures in Living Chemistry.

Freudian thought has dominated most psychiatric research in this century, the behavioral sciences having reigned supreme. Yet the only major psychiatric disorder to be eliminated during the same period, general paresis due to syphilis, yielded to techniques of the biological sciences. During the past two decades interest has shifted back to biological psychiatry. Its practitioners include physiologists, pharmacologists, experimental psychologists, biochemists, and clinicians. Of these, biochemists have had the greatest impact on our new thinking about "functional" psychiatric disorders. Two factors provided the impetus to this rebirth of biological psychiatry. First was the introduction of effective chemicals for the treatment of psychiatric disorders, especially the antischizophrenic drugs, exemplified by reserpine and chlorpromazine. Second was the discovery of the remarkable potency of lysergic acid diethylamide (LSD-25) in altering the functions of the mind. The antipsychotic drugs have not cured schizophrenia, nor has the model psychosis from LSD-25 unraveled its biochemical basis. Still, we think much more of genes and amines in seeking to explain schizophrenia than we do of dreams and schemes of the unconscious. The impertinent question "Is Freud dead?" no longer seems so.

The explosive increase in scientific literature concerned with the biochemical approach to mental illness has become exceedingly difficult to follow. Varying levels of sophistication are represented, and rapid advances in chemical techniques often make yesterday's new discovery obsolete tomorrow. Frequently the literature is contradictory