secondary schools. The lessons are not intended to be directly available to students but rather to be guides to the teacher, and they are accordingly supplemented by explanatory remarks and notes which serve admirably to motivate the choice of material and to establish the proper mathematical and pedagogical perspective. The authors disclaim any intention to produce a comprehensive syllabus and explicitly warn the reader against supposing that the omission of a topic indicates that they recommend its expulsion from the curriculum. (The point is taken, since there is no treatment in the book of the elementary differential calculus; it is intriguing to wonder why no member of this excellent group felt an irresistible urge to rethink out loud the vexatious problem of how to teach this fundamental topic in mathematics.)

The book consists of an introduction, 11 chapters, and an extensive bibliography. The chapters are "Binary systems"; "Finite arithmetics and groups"; "Numerical methods and flow charts"; "Sets, logic, and Boolean algebra"; "Relations and graphs"; "Linear programming"; "Patterns and connections"; "Convexity"; "Geometry"; "Vectors"; and "Matrices." Throughout the book the authors consistently emphasize both the mathematical content of the ideas being presented and their applicability to situations within the grasp and experience of the student; each of these facets of mathematical instruction enriches the other, and I was delighted to observe this splendid vindication of the viewpoint that mathematics is one and indivisible (contrary to the view that there are many different subjects, called respectively mathematics, mathematics-for-the-layman, mathematics-for-the-engineer, mathematics-for-the-physicist, and so on).

A few comments of a more critical nature should strengthen the effect of my general approval. For example, there seems to be insufficient emphasis on clear-cut definition. It is common ground that some familiarity and appetite must be generated before definitions are given and terminology established; but strict definition is an essential part of the mathematical process, and this is often not supplied (could the reader ever say just what a vector space is?). I am also out of sympathy with the tenor of the authors' remarks on the psychology of teaching. Had they confined themselves to observing that mathematics teaching (indeed, all teaching) must make the subject matter attractive, there could have been no cavil; but it is strongly implied that in planning our curriculum we must take into account the information available to us from modern psychology. I am strongly of the opinion that this information is of an observational and not of a predictive nature; and that it would be folly to halt the exciting experiment in mathematical pedagogy, to which the authors have significantly contributed with this book, on the basis of evidence obtained exclusively from situations in which none of the participants had been exposed to such experiment.

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A Concise Review

An Introduction to Physical Biochemistry. Henry B. Bull. Davis, Philadelphia, 1964. xii + 433 pp. Illus. $8.50.

The intent of the author, a practising physical biochemist, was to show the capabilities of physical chemistry in interpreting phenomena and structures encountered in biochemistry. Avowedly, *An Introduction to Physical Biochemistry* is designed for students in biological sciences, who are not expert in either biochemistry or physical chemistry. On the basis of the material in the book, and particularly on the manner in which the material is presented, the author must have assumed that the prospective students would have mastered at least the fundamentals of mathematics, physics, physical chemistry, and biochemistry. All of these subjects are touched on in the course of the presentation of various topics.

In the first chapter (28 pages), in order to recall what students might have learned about mathematics, the author most briefly runs through numbers and exponents, solution of equations, differential calculus, integration, expansion series, trigonometric functions, probability and error, method of least squares, and dimensional analysis, and even comments on computers.

Equally concise are the chapters "Energetics in biology," "Electrolytes and water," "Oxidation-reduction potentials," "Acids and buffers," "Biopolymers," "Osmotic pressure and related topics," "Solution optics," "Surfaces and interfaces," "Viscosity and the flow of liquids," "Diffusion," "Ion transport," "Electrophoresis and electrokinetic potentials," "Sedimentation," "Kinetics and enzyme activation," and "Elasticity and structure." For the interested student, there are general references at the end of each chapter so that a given subject can be pursued in greater detail. A stimulus to do so would be supplied by an attempt to solve the problems given to test one's understanding of the points touched on in a chapter. The answers to these problems are given. A rather well organized index adds to the usefulness of the book.

The application of the methods of physical chemistry to the problems of biochemistry are frequently indicated by examples taken from the literature. Furthermore, there are comments on the applicability or limitations of the methods thus used.

All in all, this is a refreshingly *concise review* or *outline* of the relationship between physical chemistry and biochemistry. It is *not*, strictly speaking, an *introduction* to physical biochemistry. A beginning student would certainly be frustrated by the dearth of detail on any of the topics covered.

There are many, many typographical errors in this book, and some of them are rather amusing.

Those who want a concise review of some topics in physical biochemistry may find that this book serves them well. It is readable and at times stimulating. But those who desire a detailed presentation should look elsewhere.

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Organic Chemistry

The Systematic Identification of Organic Compounds. A laboratory manual. Ralph L. Shriner, Reynold C. Fuson, and David Y. Curtin. Wiley, New York, ed. 5, 1964. x + 458 pp. Illus. $7.75.

The fifth edition of this well-known text differs from its predecessors in that more space is devoted to instrumental methods of analysis. A section on proton magnetic resonance has been added, and the section on the use of optical methods has been sub-