

NEW BOOKS

Annual Review of Biochemistry, Volume 23

Edited by J. M. LUCK, 18 + 636 pages. Annual Reviews Inc. Stanford, Cal. 1954. \$7.00. Reviewed by BARNETT SURE, University of Arkansas, Fayetteville, Ark.

These annual monographs represent the best source of summarized information in the field of biochemistry and are indispensable for experimental and clinical investigators. This volume contains 19 chapters with over 4,000 references, dealing with such a variety of topics as Chemistry of the Proteins, Peptides, and Amino Acids; Nucleic Acids; Chemistry of the Carbohydrates; Carbohydrate Metabolism; Biochemistry of Muscle; Biochemistry of Cancer; Biochemistry of Hormones; Mineral Metabolism; Proteolytic and Nonoxidative and Nonproteolytic Enzymes; Biological Oxidation; Thyroid Hormones and Iodine Metabolism; Fat-soluble and Water-soluble Vitamins, and Clinical Applications of Biochemistry.

The section of Water-soluble Vitamins has been expanded by division into two parts and will be further extended in 1955 to three parts. The section on vitamin B₁₂ dealing with the intrinsic factor has been described in great detail and has applications in the treatment of pernicious anemia. The chapter on Biochemistry of Cancer introduces further evidence that dietary factors are involved in malignancy induction, as for instance the demonstration that prolonged iodine deficiency results in thyroid neoplasms. Tumor tissues are deficient in certain enzymes. The significance of these deficiencies, however, in tumor metabolism must still be ascertained. A noted contribution in the chapter on hormones is the amino acid composition of corticotropin. An unfortunate omission in the chapter on Metabolite Antagonists is failure to treat the recent literature on folic acid antagonists in various forms of leukemias. In the chapter dealing with Biochemistry and Physiology of Muscle, information has become available which may prove to have clinical applications in cardiac diseases. The chapter on Clinical Applications of Biochemistry is the fourth of this type which appeared since 1936. The present review deals with recent work on the precision of analytical procedures in the chemical laboratory, Sodium and potassium, isotopic iodine in the investigations of the thyroid, and amino acids in the urine.

A novel and extremely interesting

feature of the 1954 Review is a prefatory chapter by Dr. Karl Thomas on Fifty Years of Biochemistry in Germany. Dr. Thomas is known chiefly for his famous experimental method to determine the biological value of proteins by his nitrogen retention procedure in which he used himself as the first human experimental subject. Dr. Thomas describes in detail his various phases of nutritional biochemical studies and those of his associates covering a period of almost five decades. One of his noted students was the late Dr. Rudolf Schönheimer whose chemical experiments in this country with tracer elements in laboratory animals laid the foundation for the modern isotope technique in biochemical studies. Among other problems investigated by Dr. Thomas and his coworkers was the determination of free terminal groups of protein, creatine metabolism, and fat metabolism. With the aid of a grant from the Rockefeller Foundation he organized a two-year training course for medical doctors in his laboratory at Leipzig. The rest of the chapter is devoted to a résumé of progress in biochemistry made in Germany during the last 50 years.

Statistical Analysis in Chemistry And the Chemical Industry

CARL A. BENNETT AND NORMAN L. FRANKLIN, XVI + 724 pages. John Wiley & Sons, Inc., New York, 1954. \$8.00. Reviewed by ERWIN L. LECLERG, Agricultural Research Service, U. S. Department of Agriculture, Beltsville, Maryland.

This book is a monumental work and the range of subjects treated is generally remarkably complete. An amazingly large number of topics in statistical theory and methodology are treated with careful attention to the assumptions and mathematics upon which they are based. One is impressed at the enormous effort involved in collecting, organizing, systematizing and presenting such a mass of material. Study of the book evokes a steadily growing admiration and gratitude that an amazing amount of useful material has been made available to the chemist and industrial engineer. The book is the outgrowth of a discussion at a meeting of the Committee on Applied Mathematical Statistics of the National Research Council in 1949. The Committee, in consultation with members of the mathematics branch of the Office of Naval Research, decided that such a book should be written jointly by a mathematical statis-

tician with some knowledge of chemistry and a chemist with some knowledge of mathematical statistics.

The basic principles of statistical inference are developed in a logical sequence in the first five chapters. Chapter 6 deals with some of the problems arising where two (or more) variables are involved. The analysis of variance is, quite rightly in such a book, dealt with at considerable length in Chapter 7 before a discussion of the design of experiments. Over 100 pages, comprising Chapter 8 are given to the design of experiments; Chapter 9 discusses the statistical analysis of discrete data, including transformations, inferences, and the use of Chi-square tests. The general principles of the use of quality control and some methods of obtaining control limits are briefly covered in Chapter 10. Quality control, of course, comprises an extensive field of the application of statistical methods in industrial work and, as pointed out by the authors, is not extensively considered in this chapter. The book concludes with a discussion of the concept of randomness in experimental work and some tests for randomness as criteria to detect the presence or absence of statistical control. In the opinion of the reviewer, the book is an excellent source of information on statistical methods as applied to chemistry.

The authors are to be congratulated upon the excellent presentation of the theory and the use of modern statistical methods in such form as to give a better understanding of the subject to the chemist and chemical engineer. They have not only accomplished this, but, in addition, have provided the statistician with a ready reference book containing an abundance of examples drawn from the field of industrial chemistry. For the applied researcher, the outstanding achievement of the book is the complete treatment of the various methods used in the chemical industry, and the degree of correspondence between the practical situations from which data are obtained and the mathematical models on which inferences from these data must be based.

This book should be well received by research workers in chemistry, who have sufficient mathematical background, as it will serve to explain the theory and application of the various statistical techniques with which they have become acquainted through their experimental work. This is the most comprehensive book which so far has appeared on statistical methods relating to chemistry and chemical engineering.