few academic scientists appear to be seriously trying to teach their students how to use these methods.

Professor Parratt's book was written, "to introduce the undergraduate student to the unifying concepts of probability and statistics as they apply to science" (pp. vii, viii). He devotes chapter one to a historical survey of ideas about probability and to an explanation of classical (*a priori*) and experimental (*a posteriori*) probability. In the first part of chapter two, he points out the close relationship between scientific reasoning and the correct interpretation of measurements, and gives some basic definitions of errors, significant figures and the rounding of numbers. The rest of the chapter deals with frequency distributions, location indices and precision indices.

The statistics of measurements, in functional relationships, is presented in chapter three. Equations that govern the propagation of errors are given for sums and differences as well as for products and quotients. Use of the t-test and the F-test to examine the consistency of means and standard deviations is explained. The method of least squares for fitting curves to experimental data is developed. The chapter closes with a short discussion of the design of experiments.

In chapter four, the normal probability distribution is derived by way of the binomial distribution; and its mathematical properties are discussed in great detail. The χ^2 for goodness of fit is explained.

The final chapter is devoted to the Poisson probability distribution; and its application to measurements of radioactive decay is explained in detail.

Many problems are given at the end of every chapter and a glossary summarizes the equations developed throughout the entire book.

This book does not appear, to this reviewer, to be worth the price to the chemist, student or professional. Too much time is devoted to mathematical probability and statistics; and too little time is used to explain the logic of experimental design which experimenters learn, with difficulty, by themselves.

The most disturbing thing about the book, to this reviewer, is the way the author has jumbled inadequate traditional machinery with the more useful small-sample methodology. The equation for the normal probability distribution is derived with parameters h and z rather than σ and μ. The mean deviation is defended because it is simple to compute and puts less weight on the larger deviations. Probable errors are used extensively throughout the book and the author justifies this because "most experimenters have a sort of intuitive judgment about the reliability of measurements as a consequence of their laboratory training" and because "the experimenter believes that systematic errors are never quite eliminated, a situation that requires some guessing anyway" (see p. 148).

The most inadequate machinery in the book is Chauvenet's criterion for rejecting "bad data." This procedure, first suggested by an astronomer in 1891, has been cited and recited in books on least squares and the theory of measurements. The rejection of data should not be justified on statistical arguments.

The author sometimes presents misleading, if not erroneous, explanations of statistical methodology. The F-test comparing variances is set up on pp. 124–126 with the larger variance always in the numerator (two-tail test); but the 5% limits of F in Table 3-2 are for a one-tail test and would really be 10% for the situation described.

Again, in section 3-7, the concepts of correlation and regression are badly mixed up and Figures 3-4 shows a scatter diagram of physics and mathematics grades with "probable-error lines parallel to a regression line, rather than the appropriate 50% ellipse about the mean values of the two sets of grades."

The book also fails to present some of the most useful statistical techniques available to the experimenter. No mention is made of control charts anywhere in the book; and the procedure of putting confidence limits about the small-sample estimates of a mean, standard deviation, or regression coefficient, and the interpretation of such confidence intervals is never discussed.

Although the author shows how to use the F-distribution to test for the consistency of variances, he makes no mention of the fact that this distribution is much more powerful when used to make significance tests of results from properly designed factorial experiments.

This reviewer feels that authors of books on probability and statistics for scientists should not devote much time to the mathematical machinery of probability and statistics because there are already many books which do this exceedingly well. What the scientist needs is help in framing his problems and designing his experiments so that the machinery will be able to help him interpret the results.

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Principles and Applications of Paper Electrophoresis. By CH WUNDERLY, Member of Scientific Staff, Medical University Clinic, Zurich (Switzerland). D. Van Nostrand Co., Inc., 120 Alexander Street, Princeton, New Jersey. 1961. xii + 253 pp. 13 × 19 cm. Price, $5.00.

Since the publication on the quantitative analysis of proteins by Consden, Gordon and Martin (*Biochem. J.*, **38**, 224 (1944)), paper chromatography has become a powerful tool for the study of components in biological systems. It is interesting to note, however, that the development and use of paper electrophoresis dates from the isolation of a yellow protein from snake venom by König and Klobusitsky (*Naunyn-Schmiedebergs Arch. exptl. Pathol. Pharmakol.*, **192**, 271 (1939)) which took place five years earlier.

This small book is a lucid and concise review of judiciously selected methods and techniques in paper electrophoresis. As might be expected, the predominant amount of space is devoted to proteins and their derivatives, but an excellent theoretical discussion and description of methods extends its usefulness to a much broader group of investigators. An extensive bibliography completes the necessarily scant details in a volume of this size.

Publications in rapidly developing areas suffer from unavoidable delays between preparation and publication. This book is a completely revised edition in English of a well-received three-year old German text by the same author. Thus, one would have hoped to find in a work of this high quality, a more complete discussion of recently developed low temperature techniques. This limitation aside, the book is a valuable addition to the growing series of Elsevier Monographs.

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Nouveau Traité de Chimie Minérale. Tome XIII. Premier Fascicule. Oxygène, Ozone, Oxydes, Eau oxygénée, La Combustion, Soufre(I). Edited by PAUL PASCAL, Membre de l'Institut, Professeur honoraire à la Sorbonne. Masson et Cie, 120 Boulevard Saint-Germain, Paris 6, France. 1960. xxxix + 1124 pp. 17.5 × 26 cm. Price, broché 310 NF.; cartonné toile, 330 NF (two parts).

This is the first part of Volume XIII which deals with elements of Group VI, namely O, S, Se, Te and Po. As in most of the other volumes of this monumental treatise published so far the introductory chapter (60 pages) is written by the editor himself. It makes for interesting reading from the historical and systematic viewpoints, and the bibliography (some 300 entries) gives an idea of its scope on both counts. Very few misprints and only one or two erroneous statements were found in this chapter. (On p. 5, the explanation for the different valence angles in the series of compounds F_2O, Cl_2O, etc., is not consistent with the accepted views; on p. 53, the configuration of the H_2S_2 molecule is known to be neither *cis* nor *trans*).

The chapter on elementary oxygen by A. Pacault covers the subject adequately in some 180 pages with 300 references. There follows a 70-page chapter on ozone by Josien and Sourisseau, which may have been completed somewhat before the others in this volume since the bibliography ends earlier (1954 instead of 1958–1959). Thus the latest work on the thermal decomposition of gaseous ozone was missed.

At this point a very useful and well organized section of some 150 pages on the crystal structure of oxides and related