tries. It shows how well the editorial committee framed the *Guide* and how carefully contributors restricted their descriptive terms to those widely understood.

Careful search revealed almost no typographical errors. The book is a model of concise writing. It gives the latest information about the taxonomy of most European vascular plants. It will be used extensively by botanists, professional and amateur, in many parts of the world. And these botanists look forward with eagerness to the appearance of the ensuing three volumes. Contributors, editors, advisers, consultants, printers, and others who labored on this book deserve praise. Taxonomists extend their thanks and best wishes to the men and women who have produced this outstanding work.

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Applied Statistics

Statistics and Experimental Design in Engineering and the Physical Sciences. vols. 1 and 2. Norman L. Johnson and Fred C. Leone. Wiley, New York, 1964. vol. 1, xvi + 523 pp., $10.95; vol. 2, x + 399 pp., $11.50. Illus.

A good comparison can be drawn between the set of books reviewed here, *Statistics and Experimental Design in Engineering and Physical Sciences*, and the volumes by Kendall and Stuart, *Advanced Theory of Statistics*: both are published in two volumes and written by two authors, both contain a wealth of worked examples and exercises, and both include a comprehensive selection of topics in their respective fields. Kendall and Stuart is frequently cited, but seldom used as a textbook. It is my opinion that Johnson and Leone will also serve as an excellent reference source, for students who have had some formal training in statistics and wish to work as consultants in the field of science and engineering, but that it will not serve as well as a textbook for students in science and engineering. To appreciate the many subtle ideas and useful techniques enthusiastically introduced by the authors (and in some places evidently addressed to professional statisticians), some prior training in statistics is almost surely desirable.

The first five chapters (154 pages) cover the necessary background, including descriptive measures, probability theory, and discrete and continuous distributions. In chapter 6, order statistics are discussed and the distribution of range and tolerance distributions are derived. Chapter 7 covers briefly theories of testing and estimation; chapter 8 gives some standard tests of significance, including a discussion on the use of noncentral distributions; and chapter 9 is on nonparametric tests. In chapter 10 on control charts, cumulative sum charts are treated in detail. Nineteen pages (chapter 11) are allotted to a discussion of prior probabilities and to decision and loss functions. Chapter 12 deals with regression and correlation. It seems to me that the eight pages devoted to the Doolittle and Choleski methods for the solution of normal equations could have been better utilized to provide a more detailed exposition of models of linear relationships. Twenty-six tables complete the first volume.

Three chapters (250 pages) on analysis of variance and the related experimental designs are the highlights of the second volume. The topics are thoroughly treated and illustrated with examples taken from statistical publications. Sequential analysis is introduced in chapter 16 and response surfaces in chapter 17, which is on multivariate observations. Chapter 18, on sampling structures, concludes the main part of the second volume. A selected bibliography of statistical tables and periodicals is given in chapter 19. At the end of each volume solutions are given for about ten exercises per chapter.

These volumes are encyclopedic, and probably cover more topics than any other single treatise on applied statistics—half-normal plot, ratio of standard deviation of trimmed and untrimmed means, Tukey's quick compact two-sample tests, moments of Wilcoxon statistic, and the Zeta distribution are a few examples of the topics included. On the other hand, the law of large numbers and the central limit theorem are not mentioned by name anywhere; apparently this was intentional.

I noted a considerable number of errors and misprints. Most of these are obvious and could have been corrected at the proof stage. For example, the formula for $\alpha_3(x)$ in section 5.6.3, and the equation (12.22) are incorrect; a data point discussed in the text is missing from figure 15.2; and figure 16.3 is missing altogether.

In summary, the authors have successfully presented in these two volumes an up-to-date collection of the many useful statistical techniques developed in recent years; the practicing statisticians in the field of science and engineering should find this publication a helpful and valuable reference.

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Chemistry

The Chemistry of Complex Cyanides. A literature survey. M. H. Ford-Smith. Her Majesty's Stationery Office, London, 1964 (order from British Information Services, New York). vi + 93 pp. Illus. $5.50.

In this useful book, Ford-Smith considers successively, in order of increasing atomic number, the 28 metallic elements that are known to form complex ions containing at least one cyano ligand. Under the heading of each individual element one may find two types of information. First, there is an outline, usually presented in a few sentences, of the methods of preparation and the reactions of the various complex ions, accompanied by the appropriate literature references. Then, for those complexes that contain only cyano ligands, the author presents in tabular form literature references to sources of information about the following topics: reaction kinetics, polarography, redox potentials, anion structures, the infrared spectrum, the visible and ultraviolet spectrum, formation constants, and magnetic moments. At the end of the book, after the coverage of the individual elements, there are six appendices and a four-page section in which Ford-Smith considers the overall state of development of the field and lists some areas in which he feels that future research would be particularly profitable. Each appendix contains the formulas of the known complexes of a given type—for example, Appendix A contains the formulas of carbonyl-cyanide complexes.

Most of the more than 450 references are to the original literature, but per-