ject is quite complete. For example, nearly all of the known elementary methods for obtaining solutions to ordinary differential equations and the classical partial differential equations of engineering and physics are discussed. The treatment of ordinary differential equations begins with the method of Frobenius and a discussion of the roots of the indicial equation. The solutions of Bessel's equation, Legendre's equation, and the hypergeometric equation follow. Exact equations and the solution of nonhomogeneous ordinary differential equations by variation of parameters are also discussed. Linear differential equations with constant coefficients are quite properly treated by use of the Laplace transform. An illustration of the use of perturbation theory to obtain solutions to nonlinear differential equations is also given. Partial differential equations are treated by the method of separation of variables and by transform techniques.

The authors have included several important topics which are too often omitted in elementary books of this type. Among these topics are the numerical integration of hyperbolic partial differential equations by the method of characteristics, the solution of large systems of linear algebraic equations, asymptotic expansions, and the method of steepest descent. On the other hand, several topics which are frequently useful to the modern engineer and physicist have been omitted. For example, no mention is made of the use of Green's functions to obtain solutions to partial differential equations. A further omission occurs in the treatment of numerical methods; the methods discussed are those which would normally be used on a hand computer while no mention is made of numerical methods suitable for large-scale digital computers.

Throughout the book many definitions and developments were omitted, and a number of these are included in the appendix. For example, topics such as partial fractions, limits of sequences, convergence of series, maximum and minimum of functions of two variables, uniform convergence of integrals, and elliptic integrals are discussed in the appendix.

The book is clearly written on an elementary level and should be easily read by a person having a first course in calculus as a background. Because of the wide variety of topics treated and the numerous nontrivial applications from the physical sciences which are discussed, the book should be a very useful addition to the bookshelf of the engineer and physicist.

The International Dictionary of Applied Mathematics. Editor-in-chief W. F. Freiberger. 1173 pp. D. Van Nostrand Co., Inc., Princeton, N. J., 1960. $25.00. *Reviewed by R. E. Street, University of Washington.*

As a dictionary this volume is smaller than (but similar in format to) the well-known *Scientific Encyclopedia* by the same publisher. It is more mathematical and more restrictive in content than the latter, and yet contains many concepts and topics not treated in the earlier volume. A lot of the topics are from the related fields of astronomy, physics, and engineering. Some are simple definitions limited to a few lines, such as the items on boson, Boltzmann factor, Cauchy integral theorem, etc.; other topics, like boundary layer, covariance, driving system, energies of all types, matrix inversion, relativity, thermodynamics, and vectors, for example, run to one or more pages.

The thirty or so editors are well-known authorities in physics, chemistry, and engineering so that there is no doubt of the correctness of the equations, formulae, and statements. Although most physicists and engineers will be conversant with most of the concepts and theorems given, there is the usual shortcoming, as with all dictionaries, that if one looks up an unfamiliar term the brevity of the discussion does not enable the reader to see or understand its significance or usage. For example, this reviewer got very little out of the definition of the Tomonaga-Schwinger equation and he doubts whether the discussion of the shock wave will give a physicist, unfamiliar with modern aerodynamics, too clear a picture of this phenomenon. The book does give all the well-known formulae in standard notation and is therefore useful as a quick reference for needed equations which one must ordinarily search for in textbooks.

One interesting feature is an index which is in four parts, French, German, Spanish, and Russian. Arranged alphabetically with the English meaning following the foreign phrase, it is apparently intended for the student preparing for his foreign language examinations.

Spectra and Analysis. By A. A. Kharkevich. Transl. from Russian. 222 pp. Consultants Bureau Enterprises, Inc., New York, 1960. $8.75. *Reviewed by George Weiss, Institute for Fluid Dynamics and Applied Mathematics, University of Maryland.*

GENERALLY speaking, there are three reasons for translating a book into English. The first is that it is an acknowledged classic in its field, the second is that it presents material otherwise unavailable in English, and the third is that it presents old material with a new slant. Viewed with these criteria in mind, this translation of Kharkevich's book can only be called of marginal value.

At its best, the book is a summary of research in the last decade on the theory and concepts of pulse spectra; at its worst, it is a collection of elementary Fourier transforms. The book is composed of three long chapters, one dealing with the calculation of the Fourier transforms of spectra, the next dealing with theoretical principles underlying measurement of spectra, and the final one dealing with the spectra of random functions.

The first chapter deals with the usual concepts associated with steady-state processes, and also introduces some of the ideas which have recently been used in discussing the spectra of nonsteady-state processes, such as the instantaneous spectrum. The uncertainty principle is discussed for spectra (perversely with no mention of the quantum-mechanical analogue). Kharkevich also derives the Cauchy-Whittaker-Nyquist-Kotelnikov-