and in the reviewer's opinion, proper perspective. There are numerous simple examples and counter examples which neatly point up the text.

One obtains the impression on reading the book that the creation and execution of the subject is almost exclusively Russian with an occasional interloper here and there. There are only one or two major results which are unequivocally attributed to outsiders. And while it is perhaps pointless here to press these matters it seems equally profitless for everyone concerned to obtain the authors' view that Schwartz' inequality, Hermite polynomials, etc. ought to bear Russian names.

Though there is a slight nonuniformity in the printing, due to the photo reproduction of the displayed formulas, the main effect is quite pleasing. There are surprisingly few misprints and only a very few rough spots in the analysis, in the latter sections. (The definition of the symbol $A\backslash B$ in the footnote on page 16 should read "the set of points in A, but not in B.")

In closing a word of commendation on the translation. This is much more than a pedestrian transliteration of the Russian text, and the translator has really made a critical analysis, correcting errors, emending the text in numerous places, bridging lacunae, etc. In appendix II he has disproved and analyzed an erroneous theorem of the original. In addition he seems to have caught the flavor of the authors' trenchant style, and the book is pleasant to skim through for a surface taste of the topics. It is, in short, eminently readable.

It seems clear that this book will serve as an authoritative model of clarity, simplicity and definitiveness for some time to come.

DONALD A. DARLING

Methods of theoretical physics. By P. M. Morse and H. Feshbach. New York, McGraw-Hill, 1953. Part I, 22+998+40 pp.; Part II, 18+979 pp. $30.00 a set.

The present two-volume book is a gigantic compendium of methods of mathematical physics. It is truly staggering in scope and one cannot but admire the authors for accomplishing a task of this magnitude. The two most notable features are: 1. an excellent account of the Wiener-Hopf technique with many important applications; 2. a systematic use of the Green's function technique in dealing with differential equations of physics.

The arrangement of material follows a "handbook" pattern, i.e. the methods and techniques are not necessarily arranged according to logical interconnections but rather according to their specific use in physical theories. Thus mathematics is strongly subordinated to physical application and, because of this, methods tend to appear as "tricks" and the book as a collection of the latter rather than the former. This subordination, which was doubtless intentional, tends to emphasize the "handbook" character of the work and makes it less effective as a textbook. It also makes the book much more useful than inspiring. But if usefulness was the purpose of the authors they have achieved it to such a degree that the book will, for many years to come, be an indispensable addition to the bookshelf of everyone who might be even mildly concerned with mathematical physics.

A specific topical review of a book of nearly 2000 pages is clearly impossible. Even the table of contents is too lengthy for reproduction. Suffice it to say that all standard tools of both classical and modern physics, with the exception of group theory and probability theory, are at least touched upon. (Theory of matrices is apparently presupposed because there is no systematic presentation, but matrices are used throughout the book.) The principal emphasis is on differential equations. In some cases the authors have striven to completeness beyond and above the call of duty, such as the coverage of both the tensor and dyadic notations or the scrupulously detailed discussion of separation of variables in less common coordinate systems. The style is lucid and the level of mathematical rigour quite adequate for a work of this kind.

Each chapter ends with a list of extremely well selected problems and an excellent bibliography. Many chapters have been appended by summarizing tables and lists. For instance, Chapter II ends with a list of standard forms of some of the partial differential equations of theoretical physics, Chapter III with a tabulation of variational methods and Chapter XI with a short table of Laplace transforms.

There are curious omissions and inadequacies. For instance, the Huyghens principle is discussed briefly (one page!) in the chapter on Green's functions but never mentioned in an exhaustive (250 pages!) chapter on the wave equation. Nowhere is there even a hint that the principle is wrong in even-dimensional spaces. The method of steepest descent, so important in statistical physics, is treated briefly in the chapter on complex variables with a relatively simple example. It is then applied twice or three times in even simpler situations. Neither the example nor the applications contain a warning as to how mathematically delicate the method becomes as soon as one leaves the elementary realm. The whole question of continuous spectra is dealt with in a most cursory manner and in general one feels that the authors have tried to stay away from situations where conceptual difficulties exceeded the purely technical ones.

Since the book is destined to play an important part in the mathematical education of future physicists it is perhaps not inappropriate to take issue with the authors on the "philosophy" underlying their approach. Throughout history mathematics has served physics in dual capacity: (a) as a tool for obtaining numerical answers, (b) as an aid to deeper understanding and logical evaluation of the generalizations and abstractions one tends to draw from experiment and experience. Although no sharp line can be drawn between (a) and (b) the two aspects are clearly distinguishable especially if pushed to extremes. The authors have concentrated on (a) to such an extent that (b) is all but absent or lost. Thus in spite of the richness of material and the meticulous care taken in its presentation the reviewer feels that the work is inadequate as a treatise or even a textbook on mathematical methods of physics. It is a "super handbook" and an invaluable reference source, but with all its excellent features it somehow lacks cohesiveness and structure. If this book should become the "Riemann-Weber" of the twentieth century the reviewer will regretfully and nostalgically look back to the nineteenth.

MARK KAC

Primzahlen. By E. Trost. Basel, Birkhäuser, 1953. 95 pp. Paperbound, 13.50 Swiss Fr.

This little book is devoted to the elementary or nonanalytic theory of primes. Within this scope, the author has managed to cover many topics in an interesting way. There are no problems.

Among the things which are also found in almost any elementary book on the theory of numbers are the unique factorization theorem, the Fermat-Euler theorem, primitive roots, the Legendre symbol and its reciprocity law, the Möbius inversion formula, residue characters and Wilson's theorem. Also treated in some detail are the partial converse of Fermat's theorem, the representation of prime numbers by certain special forms of the kind x^2+dy^2, the Mersenne and Fermat numbers, prime representing functions and the calculation of $\pi(x)$ by Meissel's method.

Estimates for $\sum_{p\leqq x} 1/p$ and the Tchebychef inequalities

$$0 < C_1 < \pi(x) \div (x/\log x) < C_2$$

are given as well as the corresponding inequalities for the functions $\vartheta(x)$ and $\psi(x)$. Also proved is Bertrand's "postulate" that there is a prime between n and $2n$; the following stronger result is also proved:

$$0 < C_3 < \{\pi(2n) - \pi(n)\} \div \{n/\log n\} < C_4.$$