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tion due to Kantorovich. The chapter on variational methods is followed by a long one on numerical methods for conformal representations. This makes use of such devices as the variational method, orthogonal polynomials, successive approximations, and numerical methods relating to Green's functions. There is much in this chapter that could be explored further, especially in light of the availability of digital computers. The chapter on difference equation approximations to differential equations is thoroughly outmoded by recent developments in the field. In particular there is no mention of stability or convergence questions, which is a serious deficiency in a book of this sort. Finally there is a chapter on series solutions, of which the outstanding feature is a discussion of some little-known work on the solution of infinite systems of linear equations.

In summary, while there is much valuable material in this book, there are serious deficiencies due to its age. Of course, there is no mention of methods which have been developed for digital computers. The work that is still valid, however, is usually well presented and comprehensive.

Russian for the Scientist. By John and Ludmilla B. Turkevich. 255 pp. D. Van Nostrand Co., Inc., Princeton, N. J., 1959. \$5.95. Reviewed by L. Marton, National Bureau of Standards.

MANY scientists in post-Sputnik days came to the conclusion that an elementary knowledge of Russian is a rather useful thing. As a consequence, all of us who came to this conclusion started struggling with grammars, dictionaries, language records, and all other means designed to master a difficult language. I must confess that I tried even kindergarten primers. Few of these are designed to help the practicing scientist and for this reason, even the best textbooks have a limited usefulness. The present short handbook was written by a well-known team of experts of the Russian scientific literature and I for one am convinced that it constitutes a great step forward in helping the average English-speaking scientist who wants to learn Russian.

The most important single feature of *Russian for the Scientist* is to build up a vocabulary based on recognition of scientific cognates. The preface explains: "Our idea is to exploit what the scientist already knows—his English terminology." This book is aided by the use of a limited number of drawings showing common scientific objects and by the skillful selection of scientific reading material. These last cover four selected areas: aeronautics, biology, chemistry, and physics. The reading material in physics is taken from a Russian high-school text, in contrast to the others, which were mostly drawn from the *Great Soviet Encyclopedia*. It may be an indication of the quality of Soviet instruction that the high-school text compares advantageously with the chapters taken from the *Encyclopedia*.

Having reported thus far only the best features of

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the book, I do not want to give the impression that it solves *all* the problems of learning scientific Russian. Russian remains still a difficult language and even the best book will be no substitute for hard work. A few minor remarks may be added, not so much in the nature of criticism, but as hints for possible improvement of future editions. One is that the main goal of the book is to teach its user the reading of scientific Russian. With increasing exchange of scientists, an elementary knowledge of the spoken language is needed and some guide to the pronunciation of, let us say, chemical formulas or of mathematical equations would be useful. A second comment is that all the physics reading material is limited to electricity and magnetism; a spreading to other branches of physics may make the book even more attractive.

One more word about the presentation: the book is printed in large, clear type which is certainly a great help to anybody struggling with an unfamiliar alphabet.

Principles of Modern Physics. By Robert B. Leighton. 795 pp. McGraw-Hill Book Co., Inc., New York, 1959. \$12.50. *Reviewed by M. G. White, Princeton University.*

ONE of the most interesting college courses that can fall to the lot of a professor to teach, is a senior or first-year graduate course in modern physics. In one year the panorama of physics from Newton's era to the contemporary scene passes in review. While the cutting edge of the student's interest is largely concerned with modern discoveries it is necessary to review, as underpinning, practically everything that the student ever studied in physics and mathematics. Probably all who have taught such a course have learned, for the first time, the real meaning of much that they had taken for granted since taking leave of their own graduate days. And probably many who have had this experience have been seized by an almost unquenchable desire to write a book which would, for all time, properly present the principles of modern physics.

No doubt it is a sobering experience actually to put pen to paper and attempt such a Herculean task. There has been no lack of talented authors in this field and several well-known physicists and their textbooks come to mind. None of these books, however, leaves one satisfied that the principles, let alone the basic facts, of modern physics have been adequately laid bare. It is not just that the area to be covered is impossibly immense, but rather that the philosophical basis for an approach to understanding is usually not clearly made evident by the author. Too many books purporting to give an honest, objective account of modern physics fail to emphasize the patched-up nature of our knowledge and leave the unwary student with the impression that our present, seemingly elegant structure rose steadily and solidly in the only possible way. Too much of the underlying foundation