than the "principle" of Onsager in restricting admissable constitutive equations because the Onsager relation is of a "more precise nature" and deals with irreversible processes.

This reviewer feels that any new light which is thrown on the constitutive laws will come from a continuation of such work as that of B. D. Coleman and W. Noll (see "The Thermodynamics of Elastic Materials with Heat Conduction and Viscosity," *Arch. Rat. Mech. Anal.* **13**, 167 (1963).

Generalized Functions and Direct Operational Methods. Vol. 1, Non-Analytic Generalized Functions in One Dimension. By T. P. G. Liverman. 338 pp. Prentice-Hall, Englewood Cliffs, N.J., 1964. $14.00.
Reviewed by J. E. Mansfield, Harvard University.

This is a text on differential equations, and specifically on the solution by direct operational methods (as opposed to indirect transform methods) of linear and partial differential equations with constant coefficients, and of certain linear partial differential equations with variable coefficients. In these three problems we have actually three operational calculi. A discussion of such an operational calculus leads to the discussion of functionals on sets of infinitely differentiable functions. These are generalized functions. The class discussed in this book is D', which is shown to be a space of infinitely differentiable generalized functions. This space, nicely, contains the Dirac delta, the theta function, and the delta functions of Feynman.

There is a heuristic introduction to generalized functions and operational solutions of linear differential equations with constant coefficients. The class of generalized functions (g.f.'s) discussed is defined as a space of functional limits of sequences of functionals on piecewise continuous functions—much as Cantor defines the real numbers in terms of sequences of rational numbers. This is a simplified and more readable version of Temple's approach based on Schwartz' classic papers.

The operational calculus so defined is used to prove a fundamental existence and uniqueness theorem for differential equations with constant coefficients. Green's functions for linear boundary value problems are also discussed in this light.

There are a few, more formal, chapters on the fundamental structure theorems for g.f.'s; the proofs are by classical analysis and rather neat. The first volume ends with a discussion of Laplace transforms on g.f.'s of this class, and with a g.f. version of Fourier series—something of a concession to the indirect method of solution.

This interesting work has a companion volume in preparation, to deal with classes of g.f.'s for which simple operational calculi are valid; the sophistication involved can be expected to include some analytic function theory not demanded in the first. The high standards of rigor, maintained in a monograph of good readability, whet the appetite for the second volume.

Introduction to Atomic and Nuclear Physics (2nd ed.) by Rogers D. Rusk. 470 pp. Appleton-Century-Crofts, New York, 1964. $8.75.
Reviewed by Bruce W. Shore, Harvard College Observatory.

The student overwhelmed by the tedium of inclined planes, rotating tops, and vibrating strings of general physics will find this book by Professor Rusk a welcome change. The author's approach is primarily descriptive rather than deductive, and he provides a good survey of the contemporary view of atoms, nuclei, and matter with a minimum of formality and mathematics. Although differential equations such as the Schrödinger equation and the equation of radioactive decay make an appearance, the student needs no more than a mastery of algebra to follow this text. The laws of electricity and magnetism are carefully reviewed as they are introduced, and the author's physical arguments do not rest heavily upon assumed familiarity with classical physics. Mks units are used consistently, with some of the more common atomic constants given in cgs units as well.

This book touches a broad and surprisingly current list of topics, following the general outline so successful with Richtmyer, Kennard, and Lauritsen. Such subjects as the Mössbauer effect, trapped "Van Allen" radiation, and the "strangeness" quantum number are placed into perspective in a general picture of the nature of matter. A lengthy chapter on various types of particle accelerators, a photographic gallery of charged-particle tracks, and a section on the classification of "fundamental particles" should be particular attention getters.

Each chapter concludes with one or two dozen questions for the students, both the "show that . . ." type, as well as numerical computation. Answers for odd-numbered questions appear in the back of the book. A good list of references follows each chapter, ranging from the *Scientific American* to standard graduate reference texts. (The reference to Heitler's *Quantum Theory of Radiation* seems inappropriate in this text, however.)

With the innumerable books on "modern physics" now available as texts, a choice is largely a matter of personal taste. I found this an exceptionally pleasing book, well written, with well-drawn contemporary illustrations. The author mentions the background of important discoveries without belaboring historical wrong turns. Apart from its use as a text, this book can provide a useful supplement to a general chemistry course, and can be read with profit by students of engineering and physical science who are curious about numerous articles on physics in the popular press. I particularly recommend this book for the shelves of college libraries.

Les Liquides simples. Théories et Données expérimentales. By M. Arnold Münster. 77 pp. Gauthier-Villars, Paris, 1964. Paper 16 F.
Reviewed by Stuart A. Rice, University of Chicago.

The theory of liquids has made great strides in the last five years. Indeed, the classical cliché that the gaseous and crystalline states are well understood but the liquid state is not understood at all can no longer be considered accurate.

The book under review is essentially the contents of four lectures by Professor Münster, delivered in 1962.