and all show his wonderful style which is a pleasure to read. He has the knack of reducing a difficult problem to its essentials by physical insight and then proceeding to a clear and elegant solution. He quite often devises simple experiments or else uses the experiments of others to check his theoretical work. Consequently, each paper usually ends with tables of numerical values and a clear physical interpretation.

The writings of G. I. Taylor place him in the ranks of Britain's great classicists in applied physical science, and any one of the three volumes can serve as an example of significant research and its lucid presentation to students and researchers in all of the physical sciences. The worker in the field of aerodynamics will find this volume of particular value, for it contains almost all of Taylor's aeronautical papers.

Crystallization of Polymers. by Leo Mandelkern. 359 pp. McGraw-Hill, New York, 1964. $13.50.
Reviewed by H. D. Keith, Bell Telephone Laboratories.

Despite its title, this book is concerned more with phase equilibria in crystalline polymers than with questions as to how crystalline phases are formed in these materials. Indeed it deals only peripherally with crystallization as a dynamic process involving molecular mechanisms and depending vitally upon structural considerations. The viewpoint is strictly thermodynamic and is also intensely personal. Material too has been selected in accordance with personal tastes and, all in all, the book qualifies not as a textbook or a review (it would be seriously deficient as either) but as a commentary.

Roughly the first half is devoted either to processes of fusion (in homopolymers, polymer-diluent systems, copolymers, and in cross-linked polymers) or to the evaluation of thermodynamic quantities associated with these transitions. To the author, as he adheres to a rigidly thermodynamic standpoint, these early chapters afford an opportunity to establish the existence of stable crystalline phases in polymers. There can be few instances, however, in which there are greater difficulties to the application of equilibrium thermodynamics than in the crystallization of polymers where kinetic limitations pose almost insuperable barriers to the attainment of true thermodynamic equilibrium. Physicists would probably be quicker to take cognizance of diffraction and other evidence and may tend to lose patience at this point. The author gives an excellent account of what can, nevertheless, be accomplished by his approach, and in doing so he also provides us with a detailed survey of experimental evidence relating to the influence of molecular weight, diluents and copolymerization etc., on transition temperatures. The value of the book lies largely in the skill with which this evidence has been marshalled.

The remaining chapters are variable in quality. The author is on home ground with "Oriented Crystallization and Contractility" and this is perhaps the outstanding chapter of the book. The review of crystallization kinetics and mechanisms is confined to considerations of a general nature, and recent advances are omitted almost entirely in favor of older and less controversial, but at the same time less informative and less specific, material. The last chapter on morphology is a major weakness and only partly because the author disregards much of the extensive literature of the past few years. The importance of molecular chain folding in polymer crystallization and the kinetic theories advanced to account for this phenomenon, are certainly deserving of a fairer and more accurate treatment. Perhaps one should not visit what are probably the sins of the publisher upon the author, but the claim on the jacket that "recent developments and discoveries in the morphology of crystalline polymers are covered and integrated with the other subject matter" is ridiculous; nothing could be further from the truth.

The approach adopted throughout will probably appeal more to the physical chemist than to the physicist. As a commentary for the specialist the book will be found provocative and stimulating, and it will also serve as a mine of information carefully documented and clearly presented. To the nonspecialist, however, and particularly to the student, it can be recommended only with the attendant caution that it does not represent the whole story.

Introductory Topics in Theoretical Physics: Relativity, Thermodynamics, Kinetic Theory, and Statistical Mechanics. By Roald K. Wangsness. 315 pp. Wiley, New York, 1963. $8.50.
Reviewed by Robert L. Weber, The Pennsylvania State University.

Special relativity and thermodynamics are here presented in such a way as to elucidate the basic physical concepts and also to show how these have become broadened in scope to encompass a diversity of phenomena. The level is that of a senior or beginning graduate text for physics majors. The author assumes a background such as might be obtained in his earlier *Introduction to Theoretical Physics: Classical Mechanics and Electrodynamics.*

Relativity is developed from the consideration of electromagnetic phenomena in moving systems. Mechanics and electromagnetic theory are developed in 4-vector tensor form. Thermodynamics is presented as an empirical and macroscopic subject. The laws are presented in a positive form of definite statements about the existence and properties of state functions rather than in a negative form, describing the impossibility of certain mechanisms.

In each of the four major parts, not only are the basic ideas nicely presented, but they are also developed enough to show their utility. For example, statistical mechanics is applied to para- and ferromagnetism, the free-electron theory of metals, and problems of fluctuation and noise. Some 120 exercises, mostly non-numerical, enable the reader to check his understanding by extending the treatment presented in the text. The fact that the book is set without white-space breaks between chapters and with relatively few line drawings gives it a not unpleasant solid appearance in keeping with its terse but clear style. A student of physics should find *Introductory Topics* a valuable reference work.