BOOK REVIEW—BUCHBESPRECHUNG

Pierre Van Rysselberghe: Thermodynamics of irreversible Processes

(Hermann Paris and Blaisdell Publishing Company, New York, Toronto, London, 1963)

The author, who is a prominent member of the Belgian school of thermodynamics established by Th. De Donder, gives in his work divided in 15 chapters, concerned with such a development of irreversible thermodynamics, which corresponds to University Lectures for advanced degree. The aim set by the author is first of all, to present the subject in a concise form to the students who are effectively listening the lectures. This is the reason for, that the book is something like a manuscript. The shortness of verbal explanation is clear and well comprehensible, though not always detailed, enables, however, the continuous understanding. In the first four Chapters the development of fundamental conceptions and basic laws of classical thermodynamics are contained, in such a manner, that the continuity of the transition towards later Chapters is apriori ensured. Particular care is taken by the author in the introducing Chapters to the development of the fundamentals of chemical thermodynamics. Thus for instance in Chapter III the second law of thermodynamics is first of all presented in connection with chemical reactions. In Chapter V the essential of the Onsager theory (linear laws, reciprocal relations etc.) are similarly outlined by the author with respect to chemical reactions approaching equilibrium. It should be mentioned, that the treatment presented here is more concise than the generally usual one, which however, serves to the advantage of the work. Very little care is taken by the author to the formal statistical proof of the Onsager symmetry of coefficients occurring in the linear laws, but rather the approximating character of the theory is emphasized. In present times this is important from the theoretical but also from the partical points of view. Thus right is the author when remembering the non-linear theory suggested by him, though it is discutable, that no other attempts are mentioned by him but only his owns. Chapter VI is concerned with electrochemical problems whereas Chapter VII is dealing with important transport processes taking place between two homogeneous phases. In Chapters VIII—XIV the irreversible thermodynamics of continuous systems is contained. Primarily mass, energy and entropy balances are developed in the usual manner, then applications of fundamental equations are described: isoterm diffusion thermodiffusion, thermoelectricity, viscosity and so on. The subject and way of treatment of the XIII and XV Chapters have to be particularly emphasized. These Chapters are of fundamental importance with the description of processes taking place in continuous systems of the chemical industries, moreover also with the characterization of irreversible processes taking place in biological systems. We suggest the book for all persons who want to become familiar with fundamental conceptions and basic laws of irreversible thermodynamics and with its characteristical computational technics.

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