

11. Kinetics of Mechanical Relaxation Processes in Inorganic Glasses, P. L. Kirby
12. Non-Newtonian Relaxation in Amorphous Solids, Sang Joon Hahn, Taikyue Ree, and Henry Eyring
13. Amorphous Sulfur and Selenium, J. A. Prins
14. Kinetics of Ion Motion in Anodic Oxide Films, D. A. Vermilyea
15. Amorphous Layers and Their Physical Properties, R. Hilsch
16. The Chemical Approach to Problems of the Glassy State, R. W. Douglas
17. Network Defects in Non-crystalline Solids, J. M. Stevels
18. The Anomalous Properties of Vitreous Silica, O. L. Anderson and G. J. Dienes
19. Strength of Amorphous Solids, R. J. Charles and J. C. Fisher
20. The Thermal Conductivity of Glass, P. G. Klemens

The discussions following each chapter are a very important aspect of the book. Here, additional results and interpretations are given often in a thought-provocative manner, highlighting the many questions that still remain. In at least one instance, the discussions brought out an important omission in the main presentations by pointing out the application of nuclear electric quadrupole resonance spectroscopy to the non-crystalline state, a technique which has promising potentiality in this research area.

At the end of each chapter the pertinent references are included, supplying the specialist with references from other fields which may ordinarily escape him.

Some of the chapters treat the experimental and theoretical aspects of certain techniques and then follow with applications to the non-crystalline state. Some of these methods have been discussed in a number of recent books and consequently represent a repetition of material that is covered as well or better in other easily available sources. A reader who is familiar with such coverage may feel a pertinent reference would eliminate the necessity of duplication and then the writer could devote the corresponding space to a crucial discussion of more of the applications to the problem of interest, *i.e.*, non-crystalline solids. However, it is a convenience to the reader to have the technique summarized between the covers of one book and it undoubtedly contributes to the smoothness of the presentation.

The book is well edited and the articles are written in a clear and readable fashion. The book will be a useful addition to the libraries of individuals interested in non-crystalline solids and it will encourage research workers to apply techniques from fields of science other than their own to this important research area.

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Proceedings of the Symposium on the Mechanism of Heterogeneous Catalysis. 12-13 November, 1959, Amsterdam, The Netherlands. Edited by J. H. DE BOER. D. Van Nostrand Company, Inc., 120 Alexander Street, Princeton, New Jersey, 1960. ix + 180 pp. 13 × 19 cm. Price, \$3.00.

This symposium volume stands out as exceptional in the morass of symposia which are being announced in the lists of technical publishers with increasing frequency. With the shortening of transportation time between the various scientific centers of the world, symposia, with hundreds of participants from many lands, each bringing digests of earlier publications, are proliferating in abundance. Participants concede, when the proceedings are concluded, that the antechambers of the symposium were more fruitful in scientific exchange than the lecture halls. But that condition does not help the purchaser of the subsequent volume.

This monograph on heterogeneous catalysis is distinguished by the fact that there are nine contributions in 177 pages and one of these only two pages long, in summary, because the material had already been published elsewhere. There were 27 participants in the discussions and their very significant participation is recorded in the total number of pages already mentioned. All the authors and participants lived in Holland so transportation expenses were minimal. The end-product abundantly justifies the

hope expressed by the Chairman, Professor Dr. J. H. de Boer, that it will be "well received not only in the Netherlands, but in other countries as well." Authors' and discussants' views have therefore been given in English, although the symposium language was Dutch.

Anyone who wishes to learn the main features, as of November, 1959, of current aspects of heterogeneous catalysis, as to general theory of mechanism, electronic and chemical factors in heterogeneous catalytic change in gas phase or solutions, with decomposition of formic acid or the synthesis of ammonia as typically standard examples, of Ziegler catalysts, selective hydrogenation, and, finally, bifunctional catalysis, cannot do better than purchase this volume. In two sessions of evening reading he can, thanks to our Dutch brethren, be brought abreast of current thought in catalysis, probably more effectively than by prolonged reading of volumes five-fold in size that are appearing at frequent intervals. The book is as excellent and pleasurable as a well-engineered small car.

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Archives de l'Institut International des Sciences Théoriques. Fascicule 10. Théorie Fondamentale du Système Périodique des Éléments. By S. DOCKX, O. P., Directeur de l'Institut. Office International de Librairie, 30 Avenue Marnix, Bruxelles 5, Belgium. 1959. 183 pp. 16.5 × 24.5 cm. Price, BF 300,—.

Chemical similarities and the masses of the atoms formed the back-ground for the early representation of the periodic system of the elements. Much later it became possible to explain the periodicity, in terms of electronic configurations, arrived at by extrapolating the properties of the hydrogen atom to the other atoms and combining this with the Pauli principle. In quite a few cases, however,—transition elements, rare earths and actinides—the assignment of a certain electronic configuration to a certain atom has not been unambiguous.

In this book an attempt is made to get rid of these ambiguities. The author sets up a series of theorems (which are actually postulates), concerning the filling of the sub-shells. By means of these postulates he is able to construct a periodic system in which the rare earths and the actinides are included in a "natural" way instead of being placed in separate "boxes" below the main table. In the cases where his electronic configurations differ from the ordinarily accepted ones, the author supports his results with recent experimental evidence. The periodic system presented in this way is certainly esthetically more appealing than the ordinary one. Which one is the more "correct," is, however, very difficult to say. The whole question is tied up with the problem as to whether it is meaningful at all to use the shell-approximation for large atoms.

The second part of the book is unfortunately invalidated by conclusions, which are contradictory to the basic theory of angular momenta for atoms. The author seems to be unaware of the fact that the quantum numbers  $J$ ,  $L$ ,  $S$  (or rather  $J(J+1)$ ,  $L(L+1)$ ,  $S(S+1)$ ), are the eigenvalues of the operators  $J^2$ ,  $L^2$ ,  $S^2$ , and as such never negative. From the author's notation one gets the impression that he has mixed up the two types of quantum numbers  $J$ ,  $L$ ,  $S$  and  $M_J$ ,  $M_S$ .

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3<sup>e</sup> Colloque de Métallurgie sur la Corrosion (Sèche et Aqueuse). Organisé à Saclay les 29-30 juin et 1<sup>er</sup> juillet, 1959. Organized by M. SALESSE, Chef du Département de Métallurgie. North-Holland Publishing Company, P. O. Box 103, Amsterdam, Holland. 1960. 241 pp. 21 × 28 cm. Price, \$10.00.

This is yet another of the many "books" based on collecting papers given at a meeting, symposium or conference. There is some discussion to act as cementing material, but by and large this volume, like others similar to it, does not deserve review as a book. To do so would be much the same