when the Boltzmann equation certainly cannot tell the whole story, and the first part concludes with a heuristic exposition of the "hierarchy theory" as developed by Bogoliubov, Born and Green, Kirkwood and Yvon. The second part of the appendix presents Bogoliubov's ideas about the various stages of the approach to equilibrium with their respective relaxation times. Recent work of Choh, who carried out a number of calculations based on the Bogoliubov theory, is also reported.

The second appendix by Hibbs describes Feynman's path-integral method. This is followed by Appendix 3, by van der Pol, on smoothing and "unsmoothing". The problem concerns the recovery of a function from a moving average and leads through some beautiful work, involving two-sided Laplace transforms and Bernoulli polynomials, to explicit and practical results. The book ends with Appendix 4, also by van der Pol, on the finite difference analogy of the periodic wave equation and the potential equation. Like Appendix 3, it is illuminated by the author's clarity of exposition and zest for mathematics.

The rare combination of beautiful and useful material, lucidity and mathematical originality, which characterizes all the various contributions to this book, makes it a valuable addition to the literature on the subject.

Magnetic Materials: Magnetic and Electrical Properties. Suppl. No. 2 to Syst. No. 59, Iron, Part D of Gmelins Handbuch der anorganischen Chemie (8th Revised Ed.). 580 pp. Verlag Chemie, GmbH, Weinheim, Germany, 1959. Clothbound $78.24; paperbound $77.04. *Reviewed by C. Kittel, University of California at Berkeley.*

MANY solid-state physicists are not aware of the great usefulness of the Gmelins handbooks. The handbooks are monumental organized compilations of physical and chemical references and data on inorganic elements and compounds. Completeness appears to be the main goal; there is little direct attempt to give critical selections or evaluations of the data.

The present volume is concerned with magnetic materials, with particular emphasis on oxides, although only a little information on garnets is included. The presentation and illustration of actual data seem to be fairly random, and do not seem always to be motivated towards bringing out the central or fundamental physical facts about a material.

Atomic Energy in the Communist Bloc. By George A. Modelski. 226 pp. Melbourne U. Press for the Australian Nat'l U. Distributed in US by Cambridge U. Press, New York, 1959. $5.50. *Reviewed by James W. Moyer, General Electric Company.*

FOR those searching for a yardstick to evaluate our atomic energy programs in terms of our major competitor in the scientific Olympics, Mr. Modelski has provided a succinct and pithy review inviting comparisons on every page. Evident fairly exhaustive research of the technical and social literature has brought several aspects into rather sharp focus. The status of the known reactor programs, high-energy nuclear machines, raw materials, scientific manpower, intra-bloc cooperation, diffusion of Soviet policy, and atomic energy administration are topics all dealt with to an extent highly satisfying to the reader.

The book has a few limitations. Very little emphasis is given to the chemical and material technologies which we in the United States are finding to be our pacesetting factors, leading one to surmise that Modelski's chief scientific consultants were physicists. This omission is significant in that the reader is not provided with a feeling as to the communist bloc's capability for processing raw materials (the distribution of which he covers well) or the even more important capability for manufacture of fuel elements. In the latter case, one wonders whether the omission is based on a paucity of resource literature or an actual lack of sophistication in the art.

Realizing the omissions, however, does not blunt the appreciation for the guided tour of Russian policy formulation, with each significant signpost pointed out. Here we find that Russia is cluing her doctrinal expansion to electric power production, and we find the decisions to gain experience quickly from large reactor operation, to power the icebreakers, and to keep the development of industrial atomic energy entirely apart from weapon development. Compare these desiderata with our US policy of testing many types of reactors before settling on the large economy size, and the forbidding encouragement extended to private enterprise to reach this goal quickly, the struggle to apply nuclear propulsion even to the submarine, and the curious mixture of nonweapon and weapon-related research and development which appears in our large national laboratories. This is not to say that the Soviet approach is superior. The implication is clearly demonstrated in many parts of the book, however, that it must be easier for the communist policies to be carried *in their system*, than western policies *in our system!*

Modelski's view is that one basic weakness of the Soviet approach of concentrating resources on a few fields of technical development with high priority is to "undermine the balance of their economic structure because they deprive other vital parts of the economy of necessary resources" (p. 215). We are certainly not guilty of this!

As further comparisons, Modelski cites examples of important developments which parallel almost all of our projects, including their version of Plowshare. (This is almost the only mention of bombs.)

Diffusion of atomic technology outside Russia appears to be principally through technical education programs and limited technical assistance, especially where political ends are in sight. The gathering momentum of Red China's nuclear power is presented and, projecting not