cian, very adequately applies these to various practical special cases. The design engineer will find an abundance of useful formulas giving error probabilities or signal-to-noise ratios for many common digital and continuous modulation schemes.

The only major feature of the book this reviewer finds to criticize is its price. The volume contains only 140 pages, photographically reproduced from typewritten copy rather than typeset. Yet the retail price is, surprisingly, $7.50. Perhaps the high price was set in the fear of a small market; we may only hope that it does not guarantee one.

Better late and expensive than never, however. We may welcome to our bookshelves a book which in 1947 would have been almost revolutionary in its impact on our viewpoint, and which even now will serve us as an outstanding and not entirely familiar reference work.

Progress in Dielectrics, Volume 1. Edited by J. B. Birks and J. H. Schulman. 312 pp. John Wiley & Sons, Inc., New York, 1959. $11.00. *Reviewed by Stuart A. Rice, Institute for the Study of Metals, The University of Chicago.*

THIS volume contains an uneasy mixture of basic science and engineering. The review article by Franklin on the ferroelectricity of barium titanate single crystals is an excellent survey of the phenomenological theory and experiments. This reviewer would have appreciated some treatment of the extant molecular theories, but this comment should not be taken to detract from the utility of the review. As an example of the engineering articles, there is a review by Liao and Plump on gaseous dielectrics containing sections dealing with rotating machinery, transformers, etc. In all, seven reviews appear in this volume. Aside from the two articles cited, there are papers dealing with dielectric breakdown in solid insulation (Mason), dielectric breakdown effects in crystals (Davisson), electric strength and high field conductivity of dielectric liquids (Lewis), nonoxide ceramic dielectrics (Popper), and electrophoretic deposition of insulating materials (Birks). Although there is interesting information in several of the papers, I do not believe the volume will find much use by physicists or chemists.

Gmelins Handbuch der anorganischen Chemie (8th Revised Ed.). *Fluorine:* Suppl. to Syst. No. 5; 258 pp.; $36.00. *Silicon,* Part C. Syst. No. 15; 501 pp.; $67.44. Verlag Chemie, GmbH, Weinheim, Germany, 1959 and 1958. *Reviewed by H. A. Liebhafsky, General Electric Research Laboratory.*

PHYSICISTS unacquainted with *Gmelin* can form an impression of this important handbook by scanning the review of the supplementary volume on germanium (*Physics Today,* July 1959, p. 36). As the present volumes show, the virtues of the work continue unabated. The German-English index continues

also, and helpful English translations of the headings and subheadings now appear in the margins.

The supplementary volume on fluorine, which takes us from 1926 through 1949, is three times as large as its precursor, the "main" volume, which contains all the significant knowledge accumulated before 1926. The physicist concerned with fluorine will be interested in the sections on cosmic occurrence, geochemistry, and mineralogy, but the greatest value of the book to him probably resides in the complete and authoritative section (pp. 81–98 inclusive) on physical properties.

The excellent volume on organosilicon compounds is of interest primarily to chemists. It is a complete and faithful record of the early research that made possible the young and growing silicone industry.

Physics of the Atom. By M. Russell Wehr and James A. Richards, Jr. 420 pp. Addison-Wesley Publishing Co., Inc., Reading, Mass., 1960. $8.50. *Reviewed by D. J. Montgomery, Michigan State University.*

LET us admit at the outset that modern-physics texts are fit companions for religion and politics as subjects for unbiased discussion. Now on to our pronouncements. Professors Wehr and Richards, both at the Drexel Institute of Technology, have sought zealously to lead the student to the good life. In the main they have done a good job at the intended level, which may be described as using calculus, here and there. Specific features that match the reviewer's preconceptions and are therefore good are: the organization is highly systematic; examples from everyday life are included with the intention of helping the student over the rough spots; simple and frequently striking experiments are described for performance without elaborate equipment; accessible references, chosen somewhat curiously at times, are listed for each chapter; a good stock of imaginative problems (with answers to the odd-numbered ones) is provided; an adequate but unobtrusive amount of historical and personal material is included. Features that other readers may find attractive are the lacing of the text with extraneous engineering applications; the cavalier treatment of systems of units other than the rationalized mks; the sops to what is conceived to be the humanistic viewpoint; and the preface.

With so much in the book that is good, it is disappointing that one cannot be thoroughly enthusiastic. One source of dissatisfaction is not really serious, being almost a defect of style. In the attempt to make the book appealing to nonprofessional students of physics, a spate of irrelevancies and fatuities appears. Witness the opening sentence of the chapter on nuclear energy: "Although one wink of your eye requires the expenditure of many billions of electronvolts of chemical energy, nuclear processes are potentially far more energetic than chemical processes." The other source of dissatisfaction is more disturbing; it is a pervasive lack of sharpness, precision, address. For definiteness, suppose we take the chapter on atomic models. One