crystallography, in its proper and wider sense, as the science of crystals, was the concern principally of mineralogists. It is true that chemists had a recognized and vital interest in crystallization processes for phase separation and purification, but it is only now that they strive for the large crystal as an end in itself in their search for matter in its most perfect, most characterizable, its most reproduceable form. It is equally true that for a little while physicists have used some optical properties of crystals such as the transparency to radiation of particular wavelengths. The interest in those physical properties that can be exhibited only by crystals, not by polycrystalline, amorphous, or fluid materials, is a more recent development that was stimulated by the spectacularly successful applications of piezoelectrical properties. Even that interest is already overshadowed by the study of relatively few highly specific defects in the otherwise regular atomic arrays of good crystals. Solid-state physics, the subject to which I refer, has opened the door for the semiconductor industry to solid lasers and to other energy-conversion crystal devices that are remolding the whole of our technology.

With all this and even more diverse interest in crystals, we might expect the techniques of growth to be highly developed and the physical mechanisms of crystal growth to be clearly understood. But that is not the case. Despite some notable exceptions, much of crystal-growth practice is haphazard, almost prescientific. To amend this state of affairs is one of the most urgent tasks facing contemporary science.

One immediate requirement is good textbooks, and so far there is certainly no glut of books in this field. It is likely that, for some time, *The Art and Science of Growing Crystals* will remain one of the few in the field. Fortunately it is a good book, and the 30 distinguished contributors and the editor, who have earned a permanent place for their book in the literature of crystal science, deserve our gratitude.

Yet, I feel obliged to warn about a few of this book's shortcomings. It is really a collection of 23 review articles on crystal growth, many of which are quite admirable, up-to-date accounts. Most branches of the subject are covered, often in several chapters without cross references. Polymer crystal growth, a topic that differs from most of the others, has justifiably been omitted; but there are other areas—for example, the production of thin single-crystal films, whisker growth, the use of high-temperature plasmas, and low-temperature solution growth—in which a more detailed and planned coverage might have been helpful to many readers.

The only real guide to any plan for the book must be gleaned from the table of contents. The four major divisions—Vapor Growth, Precipitation from Liquid, Solidification, and Recrystallization—are well chosen, but chapter 21, on alkali halides, has slipped into the wrong division of the text. The subdivision of each major division into "general principles" (one or two chapters) and "specific substances" is doomed to failure because inevitably some chapters are concerned with specific growth methods, not with specific substances.

The index is inadequate. Some important references are not given. For example, not a single paper by Haussuehl is quoted, an omission that will add, in German eyes, a little substance to the unfortunate and largely unjustified belief that Americans do not read papers published in foreign languages.

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Mathematics

Abstract Harmonic Analysis. vol. 1, *Structure of Topological Groups, Integration Theory, and Group Representations.* Edwin Hewitt and Kenneth A. Ross. Springer, Berlin; Academic Press, New York, 1963. viii + 519 pp. Illus. $19.

This book is the first of a projected two-volume treatise on modern harmonic analysis. It assumes on the part of the reader a knowledge of measure theory, point set topology, and algebra at the first-year graduate level. However, a whole chapter is devoted to a detailed development of integration theory on locally compact Hausdorff spaces, and additional background material on groups, topology, topological linear spaces, and normed algebras is available in a short initial chapter and three appendices.

The body of the book lies in four long chapters on locally compact groups. After working through the elementary theory not depending on local compactness, the authors establish the existence and basic properties of the Haar integral, mean values for bounded functions and the convolution algebra $M(G)$, and prove the Gelfand-Raikov theorem which asserts the existence of sufficiently many irreducible unitary representations. Beyond this fundamental material, the principal focus is on the structure theory of locally compact Abelian groups, including, of course, and ultimately depending on, the duality theorem, which is here given the Pontryagin-van Kampen structure-theoretic proof.

This synopis hardly accounts for the 500 densely packed pages that make up this volume. The special flavor of the work lies both in the meticulous, detailed development of its subject matter and in its almost encyclopedic air which results from the inclusion of rather special material not found in other books on the subject and from the discussion of large numbers of concrete examples. The dual aim of these two aspects of the treatment is accessibility to the beginner and usefulness to the expert. My chief regret is that this measured development has resulted in almost all the subject matter of harmonic analysis itself being put off to the second volume, which, in the nature of things, may not be available for some time.

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Note

Soviet Scientists

Soviet Men of Science (Van Nostrand, Princeton, N.J., 1963. 441 pp. $12), edited by John Turkevich, contains a collection of brief biographies of more than 400 academicians and corresponding members of the Academy of Sciences of the U.S.S.R. The material was obtained from sources scattered throughout Soviet literature; individual biographies were sent to the scientists for approval, and "many Soviet scientists have . . . corrected their biographies." The sketches vary in length: approximately six pages, including biographical citations, a bibliography, and his office address, are devoted to Viktor Amazaspovich Ambartsumian but only three lines to Mikhail Vladimirovich Khostenko—"In June 1963, M. V. Khostenko was elected Corresponding Member of the U.S.S.R. Academy of Sciences."