tween an older metallurgist (that is, before quantum theory) and a young scientist. In general such a treatment would be difficult to sustain for more than, say, 50 pages, but the author has done a wonderful job, giving the older metallurgist just the right amount of curiosity and intelligence.

The book is well organized and starts by examining the physical principles upon which quantum mechanics is based; quantum theory is then described, and the periodic table is examined. The behavior of electrons in a solid is then considered, with free electrons, Brillouin zones, and electron density versus energy curves being examined. Various types of cohesion are then considered: molecular crystals, valence crystals, and metals. Next the electronic differences among metals, insulators, and semiconductors are described. Atomic and ionic radii are then discussed. Then a thorough study of the cohesion of univalent and, finally, of the transition metals is given. In the case of the transition metals the treatment includes an accurate and up-to-date discussion of ferromagnetism. The last major section of the book deals with alloys. Since this is a field in which the author has made notable contributions, one hopes for something rather special. The expectations are fully realized, for all of the various results produced by electron to atom ratio, size, and the electrochemical factor are described with illustrations.

It can be seen that the book covers a tremendous amount of material, but the writing is skillful and careful so that the net result is to instruct rather than to confuse. A very useful feature of the book is a good set of references for further reading.

J. S. KOEHLER
Department of Physics,
University of Illinois

Political Systems of Highland Burma. A study of Kachin social structure. E. R. Leach. Harvard Univ. Press, Cambridge, Mass., 1954. xii + 324 pp. $7.

A brief review can hardly do justice to a major contribution to theory in any field. The judgment "major contribution" should not be lightly bestowed, and certainly in the case of *Political Systems of Highland Burma* many anthropologists would dissent. I shall therefore restrict my comments to assertions of the book's importance—criticisms, of which I have many, will be reluctantly foregone.

Several of the most crucial aspects of anthropological theory are treated and skillfully interrelated by Leach. His work is not an ethnography but a remarkably keen analysis of varieties of social structure in the still remote mountainous reaches of northeastern Burma. But social structure for Leach is not a topic exclusively devoted to kinship or political algebra. Starting firmly with the contrasting ecological bases of three subregions within the general area, he seeks to isolate and construct conceptual models of the political organization of the "simple" Kachin and the "sophisticated" Shan. This in itself would represent a contribution only in the degree of its elaboration of detail, for the gross dichotomy involving the generally lowland dwelling, irrigated rice cultivating, territorially organized Shan (T'ai) and the generally highland dwelling, shifting cultivators with kinship-oriented societies, in Leach's case the Kachin, has long been utilized either implicitly or explicitly by Chinese and British rulers and many of the literate travelers who left commentaries on the area of which this present volume treats a small part.

But the genuine contribution of Leach is twofold: he has constructed his models with unusual vigor, and he has substituted a trichotomy for the earlier dual categorization. He still retains Shan with no apparent amendment of his predecessors' work and he similarly utilizes the concept of the simple political organization, although he describes it in terms of a model of *gumlao,* the idealized Kachin structure based on egalitarian kinship. The innovation is the insertion of a transitional sociopolitical type, *gumsa.* This, stripped to essence, I would call "stratified kin society," although Leach does not use this terminology.

While Leach, trained in British social anthropology, nowhere explicitly commits himself to a general evolutionary view of culture (he would say "society") and although he explicitly seeks the dynamic of change outside the system with which he is concerned (p. 212), other anthropologists may wish he had gone much farther with the implications of his work. Briefly, this would have meant adding to the *general* theory of the evolution of class-stratified society and the state.

Here, then, is the locus of my enthusiasm. As Leach himself points out, none of the great 19th-century evolutionists in social science, Morgan, Engels, Spencer, and so forth, "discussed in detail—still less observed—what happened when a society in Stage A changed into a society at Stage B; it was merely argued that all Stage B societies must somehow have evolved out of Stage B societies" (p. 283). The work that might fill this lacuna is still quite scanty, but I find it incredible that, although Leach cites the pioneer work of Fortes and Evans-Pritchard, *African Political Systems* (1940), he makes no conspicuous use of his own excellent report on various peoples of Sarawak, *Social Science Research in Sarawak* (1950).

Leach, himself, ends on an equivocal note. He finds the transitions from kin to stratified kin to state organization a difficult one and wonders in print how other peoples have dealt with similar situations. I apparently am more confident of the richness of comparative data presently in hand. But, regardless of the ultimate determination of the issue, it must be admitted that a scientific approach to basic questions of the evolution of social classes and state organization is an exciting reality demonstrated by this book.

MORTON H. FRIED
Department of Anthropology,
Columbia University

An Introduction to Stochastic Processes with Special Reference to Methods and Applications. M. S. Bartlett. Cambridge University Press, New York, 1955. xiv + 312 pp. Illus. $6.50.

This book, based on the author's lecture notes at the University of North Carolina, is the first of a proposed three-volume work on the theory and application of stochastic processes. It is an introductory work addressed to the applied mathematician and statistician and presents the elementary methods and statistical techniques involved in stochastic processes. A detailed treatment of the basic mathematical theory and applications in physics are the topics for the forthcoming two volumes, both by J. E. Moyal.

A stochastic process, aside from its precise mathematical formulation, is initially defined by Bartlett as some possible actual process in the real world that has a random or stochastic element in its structure. After a brief introduction into some of the basic concepts of statistics and probability, the author introduces discrete and continuous Markov processes. He then deals with the random walk, the theory of queues, the application of stochastic processes to population growth and epidemic models. Two chapters are devoted to limiting stochastic operations and stationary processes. Prediction, communication theory, and the statistical analysis of stochastic processes make up the latter portion.

Although Bartlett does not always conform to the commonly accepted notation of the theory, his volume is a model of clarity and organization. On the whole this book is to be highly recommended for the applied mathematician and statistician who like a sound but not too abstract treatment of the theory of stochastic processes. For research workers in the natural, physical, and social sciences, who