with such skill and elegance should earn the authors the gratitude of all those who might wish to gain acquaintance with this fascinating field.

The book is divided into two parts. The first part (eight chapters), gives the general theory, while the second (three chapters) is devoted to applications.

The latter includes applications to the theory of analytic functions (chapter 9) (centering mainly around the work of Carathéodory, and others, on analytic functions with positive real parts), to the Kolmogoroff-Wiener prediction theory, and to a class of problems related to random walk.

The general theory, which is attributable largely to the senior author, is presented in a unified and self-contained manner.

The chapters on applications complement the general theory, and the book emerges as a harmonious unit.

References and bibliographical notes are collected at the end, and the reader's attention is not distracted by footnotes.

Of course, this is a technical book on a technical subject. But discounting this, and even my own strong prejudices in favor of the subject, I recommend the book as an outstanding example of the power and beauty of analysis.

MARK KAC
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Morphological Integration. Everett C. Olson and Robert L. Miller. University of Chicago Press, Chicago, 1958. xv + 317 pp. Illus. $10.

Direct observations of organisms are generally confined to single characters, characters often selected on a basis no more significant than that of expediency. Yet always in systematics and evolution, and often in other biological studies, the integrated whole of the organism is the proper object of concern. That difficulty has been widely recognized, and many biologists have coped with it in numerous different ways and with varying success. Olson and Miller have developed, far beyond anyone else, an approach that involves studying not the characters as such but a relationship among them. Specifically, they analyze, compare, and synthesize figures based on the covariance of multiple dimensions — almost exclusively linear measurements of hard parts of animals.

The dimensions (or measures) used are still defined by expediency, but the failings of expediency are largely neutralized by taking as large a number of different dimensions as is at all practicable. Olson and Miller then calculate correlation coefficients for all pairs of dimensions, taken two by two. In suitable instances partial coefficients are also calculated. The dimensions are then grouped by various and highly elaborated techniques into what the authors call ρ and ρF (that is, correlation and correlation-functional) groups. They have also devised an index reflecting the mean level of correlation among all the variants measured. They thus obtain data for studying the distribution of covariance within animals and among related or phylogenetically successive animals. Intensity and distribution of covariance are, by their special definition, the "morphological integration" of their title.

During the years of preparation of this volume, the authors encountered much misunderstanding and considerable criticism from their colleagues. This volume is especially welcome because it should finally clear away all the misunderstanding about just what they are trying to do, and why. They have also successfully countered most, but perhaps not quite all, of the criticisms. Their work depends heavily—indeed, fundamentally—on evaluation of differences between sample values of statistics, but the confidence levels and significances of these differences are established poorly or not at all. That seems to be the principal remaining methodological weakness.

The amount of work involved is downright appalling. In just one of their experiments, not the most elaborate, the study of a few teeth in a small sample ($N = 18$) of a night monkey involved taking 1494 measurements to 0.01 mm and then calculating 3403 separate correlation coefficients, plus an untold number of partial coefficients, and then performing hundreds, or probably thousands, of grouping operations. The reader is certainly grateful for the more than herculean tasks performed by the authors and their assistants. Yet he can hardly avoid asking, "Was it worth it?" If only the concrete results here published are considered, I must, with real regret, answer, "No." The authors have anticipated the possibility of that reaction. They may (how understandably!) somewhat overvalue the specific outcome, but they have a broader and satisfactory answer of their own. They have demonstrated that their methods do produce information not otherwise available and potentially, at least, pertinent to a considerable range of biological problems.

No systematist or evolutionist can safely ignore this difficult, laborious, brilliantly original, and potentially fruitful monograph.

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Nouveau Traité de Chimie Minérale. vol. III (group 1*a*), *Rubidium, Cesium, Francium*; (group 1*b*), *Généralités, Cuivre, Argent, Or*. Paul Pascal, Ed. Masson, Paris, 1957. xii + 838 pp. Illus. Cloth, F. 6900; paper, F. 6000.

A review of the two previously published volumes, I and X, in this 19-volume treatise on inorganic chemistry appeared in *Science* of 1 Mar. 1957 [**125**, 401 (1957)].

Volume III is devoted to the elements rubidium, cesium, francium, copper, silver, and gold. About 100 pages are given over to rubidium and cesium; 10 to francium; 265 to copper; 220 to silver; and 175 to gold. This volume maintains the high standard set for the series. Inorganic chemists will look forward with interest to the appearance of succeeding volumes.

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Soil–Plant Relationships. C. A. Black. Wiley, New York; Chapman & Hall, London, 1957. vii + 332 pp. Illus. $7.

This book covers the subject matter of a course taught by the author at Iowa State College. The continuing process of adjustment and revision of the material for teaching purposes is reflected in the orderly and concise manner in which the subject matter of the book is presented.

To me, the outstanding characteristic of the book is its accuracy and objectivity. These features will come as no surprise to those soil scientists who are familar with publications of the author's research.

A further noteworthy feature of the book is the intensity of the literature search that has obviously preceded preparation of the manuscript. The author has left few stones unturned in his search for appropriate examples bearing upon the various points discussed. Particular attention has been given to older work. The literature coverage alone is enough to justify the book to many research workers in agriculture.

The book contains chapters on soil composition, soil water, soil aeration, exchangeable bases, soil acidity, soil salinity and alkalinity, nitrogen, phosphorus, and potassium. Some readers will criticize this book not for what it is, but for what it is not. The lack of treatment of the trace elements in a book of this title will be disappointing to research workers in this field. Others may wish for a discussion of ion-exchange equations, or for a special treatment of the process of ion accumulation by roots.

I tend, instead, to commend the book for what it is and to emphasize the fact that the scope of a book is the prerogative of the author. To those starting a research career in soil science this book points not only where we are and how we got here but also where we should go in the future. Its value to the established soil scientist will be in helping him to see his part of the field in relation to the other parts, and to identify and evaluate alternative directions for future work.

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Young People's Book of Science. Glenn Blough, Ed. McGraw-Hill, New York, 1958. 446 pp. $4.50.

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Miscellaneous Publications

(Inquiries concerning these publications should be addressed, not to Science, *but to the publisher or agency sponsoring the publication.)*

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