Méthodes et Réactions de L'Analyse Organique. Leon Velluz, Ed. vol. III: *Réactions Colorées et Fluorescences.* Maurice Pesez and Pierre Poirier. Masson, Paris, 1954. 297 pp. Paper, F. 2750.

This is the third, and last, volume of the treatise edited by L. Velluz under the general title *Méthodes et Réactions de L'Analyse Organique.* In essence, this book is a compilation of qualitative tests for various well-known kinds of organic compounds. Both organic and inorganic reagents are used to produce colored or fluorescing products.

Reactions are arranged under nine types, such as oxidation-reduction and diazotization-coupling. Under each of these, consideration is given to the action of various reagents, such as heteropoly compounds and ferric chloride, on different classes of compounds, such as alcohols and phenols.

Under principles of the reactions is a brief explanation of the chemistry involved, with many references. Following brief directions for performing the tests in each section are tables summarizing the reactants covered, the relevant references, and certain other information, such as the color produced.

In summary, this seems to be a useful collection of widely scattered information on the color-forming possibilities of many systems. I have already found valuable suggestions during a brief examination of the book. The wealth of references provides access to any needed details for specific cases.

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Theory of Games and Statistical Decisions. David Blackwell and M. A. Girshick. Wiley, New York; Chapman & Hall, London, 1954. xi + 355 pp. Illus. $7.50.

The mathematical theory of decision making has received increasing attention in recent years. The uses of the art of making optimal judgments according to various criterions occur in many fields of scientific endeavor, including economics, military tactics, business, and engineering, to cite a few examples.

To motivate the subject historically, it began when J. von Neumann and O. Morgenstern in a fundamental book presented an approach to some of the problems of economics based on a new mathematical theory called *The Theory of Games and Economic Behavior,* published in 1945. Later A. Wald, a noted statistician, recognized the relevance of game theory to statistics and exploited some of these concepts. He published a synopsis of his investigation in a book entitled *Decision Theory.* And now this book by D. Blackwell and M. A. Girshick attempts in a thorough manner to develop all the connecting concepts of decision theory and the theory of games.

The mathematical model for decision theory is a special case of that of game theory in which the statistical problem can be viewed as a contest between the statistician and nature. The precise relationship is developed in detail throughout this work. Almost all types of statistical analysis, such as testing hypotheses, estimating unknown parameters, prediction, and discrimination are cast in this framework

The first two chapters are devoted to an exposition of some of the basic elements of game theory to be used in the sequel. In Chapter 3 the statistical game is defined, and many of the motivating ideas are introduced. From here on a careful analysis is presented, for instance, of the situation in which the number of actions available to the statistician or the number of states of nature is finite. All this theory is based on the circumstance of a fixed experiment that is to be performed and the statistician desiring to choose the best course of action. Following this special treatment the authors give a thorough analysis of statistical decision theory involving no predetermined number of observations on the part of the statistician. Allowance is made for the possible performance of an infinite number of experiments with the element of cost of experimentation presenting a deterrent. The last two chapters study various aspects of estimating unknown parameters and the problem of when is one experiment more informative than another.

This book is filled with many exercises and can be used as a textbook on the graduate level. In this attempt to attract the student of statistics, as well as the professional, to this modern viewpoint of statistical theory, nowhere in the work are any of the basic ideas underlying the theory sacrificed. Although this was intended primarily as a textbook in decision theory, it contains many sections of new research and hence it can also serve as a source book for future investigations. This book will certainly occupy a fundamental place in this growing field of mathematics, statistics, and the general theory of strategy and its applications.

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Physical Properties of Solid Materials. C. Zwikker. Interscience, New York; Pergamon, London, 1954. viii + 300 pp. Illus. + plates. $8.75.

This book treats in some form most of the properties of solids. Written on an intermediate level, it is a mixture of textbook and reference book. For the most part it is devoted to presentations of experimental facts and accompanying explanations. Formal development of theory is limited to that essential for these explanations. For its avowed purpose—an inclusive summary—it is satisfactory.

The first thing that strikes the reader is the great breadth of topics considered. Few areas of the field are completely omitted (indeed, in the author's preface there is a refreshing absence of an apology for omitting this or that topic, and, in fact, none is necessary). Clearly, then, in a book of rather average length no given topic may be treated at great length. For example, in few places are alternate interpretations of