In introducing linear multiple regression (p. 164) it should be pointed out that the form of the equation assumes the relationship between the variables to be additive. The discussion given might lead the reader to believe that the linear equation includes all cases.

Statisticians interested in factor analysis will question the recommendation that not more than ten, usually five, variables be used in a study.

To obtain such quantities as $\sum XY$ and $\sum X^2$ it should be mentioned that the extensions as made in the text are not needed. An explanation of the use of a calculating machine to shorten the work might well be given in the text at an early point.

One rather general criticism of the book should be made. There is throughout the tendency to over-correct calculated constants and to over-refine tests of significance. More care should be taken to explain the fact that experimental data frequently do not justify the use of many of these refinements. To an untrained reader they may imply an accuracy of analysis not actually present. In some cases the significance tests suggested are actually incorrect, as for example the use of the standard error of the coefficient of multiple correlation.

In spite of the above criticisms the reviewer considers this book still to be the best in its field.

E. L. WELKER

Finite dimensional vector spaces. By Paul R. Halmos. (Annals of Mathematics Studies, no. 7.) Princeton University Press, 1942. 5+196 pp.

In this book the author presents the topics covered usually in an introductory course in algebra (matrices, linear equations, linear transformations, and so on) from the point of view of a modern analyst interested in general vector spaces.

The ever-growing interest in Hilbert and more general linear spaces makes the appearance of the book very timely, especially since it furnishes an excellent introduction to the subject certainly within the grasp of a first-year graduate student or even a good senior or junior.

The topics are treated in such a manner as to make future generalizations look both natural and suggestive. This sometimes is done at the expense of the shortness of exposition. Some theorems, as the author himself confesses, could be proved in fewer lines. He prefers, however, longer proofs that admit a generalization to shorter ones that do not.

The reviewer finds himself in complete agreement with this method of presentation, since in the long run it is more economical as far as "economy of thought" is concerned.

Ths book is divided into three chapters: Chapter I, Spaces, Chapter II, Transformations, and Chapter III, Orthogonality. There are also three appendices: on the classical canonical form, on the direct products, and on Hilbert space. This last appendix is just a short preview of what the reader will get into when he takes up further study.

The chapters are divided into sections, and this division was done with great care and didactical skill. The headings of the sections indicate by themselves the impressive variety of topics treated. These range from the relatively familiar ones like linear dependence (§§4, 5), linear manifolds (§9), or proper values of Hermitean and unitary transformations (§62), to those that are of a definitely less familiar and more difficult character like reflexivity of finite dimensional spaces (§15), polar decomposition (§67), or the ergodic theorem for unitary transformations (§76).

However, the reviewer doubts whether this book could be used successfully in a course on matrices and linear equations. The presentation is definitely that of an analyst and the "algebraic" point of view is purposely avoided. The author states in the preface that his purpose is " . . . to emphasize the simple geometric notions common to many parts of mathematics, and to do it in a language which gives away the trade secrets and tells the students what is in the back of the minds of people proving theorems about integral equations and Banach spaces."

The reviewer thinks that the author succeeded admirably in this respect.

MARK KAC

The non-singular cubic surfaces. By B. Segre. Oxford, The Clarendon Press, 1942. 11+180 pp. 63 figures. $4.50.

The extensive literature on the cubic surface would hardly justify further additions unless such additions contributed a novel approach. The novelty of the approach in the case of the volume under review justifies its inclusion.

A non-singular cubic surface F and a triad of planes not belonging to a pencil form a pencil the surfaces of which remain non-singular in all the intermediate positions from F to the triad of planes. Under these circumstances the lines on the surface are always distinct and preserve their incidence relations, thus giving rise to the group.

The book is divided into four chapters devoted to (1) the discussion