Lectures on real and complex vector spaces, by F.S. Cater. McAinsh, Ltd. Toronto, 1966. x + 167 pages. $5.40.

Bien que l'ouvrage soit conçu dans un but didactique, le principal souci de l'auteur semble avoir été de faire oeuvre originale et, de son propre aveu, son effort a tendu à mettre dans le texte plus de matières non-triviales qu'il n'est habituel d'en trouver dans des publications de ce genre. Il espère qu'une bonne partie du livre pourra être lue sans ennui par les spécialistes.

Les chapitres I-III sont consacrés au bagage indispensable pour la compréhension des suivants: Nombres réels (on postule N^+ et on définit les ensembles finis comme isomorphes à $1, 2, \ldots, n$), complexes, polynômes, espaces vectoriels, matrices, opérateurs. IV et V traitent des espaces vectoriels de dimension infinie, puis finie. Bien que le champ des scalaires soit limité aux corps des réels et des complexes, beaucoup de démonstrations subsistent sur des corps plus généraux. Chaque leçon est suivie de problêmes dont quelques-uns inédits; le texte est ainsi soulagé de propositions mineures dont l'examen est laissé à l'utilisateur du cours. Dans le même esprit, le style se fait d'une concision de plus en plus sévère à mesure que l'on progresse dans l'exposé. Les sources ne sont pas données et la bibliographie se réduit à 12 titres. L'index fournit plus de 200 vocables, avec renvoi aux pages. On appréciera cette marque de respect à l'égard du lecteur, si cavalièrement oubliée par certains auteurs fantaisistes, qui renvoient à un numérotage incommode de sous-paragraphes.

Un ouvrage jeune, attrayant, clair, bien imprimé et "self-contained".

A. Sade, Pertuis, France

Matrix Algebra for the Biological Sciences. (Including Applications in Statistics.) John Wiley and Sons, Inc., New York, London, Sydney, 1966. 296 pages. $9.95.

This book certainly fulfils the promises made by its publishers on the dust-cover: it makes it easy and pleasant, for any quantitative-minded, but mathematically unsophisticated biologist to acquire some familiarity with a branch of mathematics, the usefulness of which in biological research can hardly be overstated. This praiseworthy achievement is attained without sacrifice of rigour, merely by sacrificing elegance. This reviewer has certainly no objection to the more operational philosophy, manifested in so many modern mathematical texts: "a concept is, what it does"; nonetheless, for an unsophisticated reader it is a relief to read the naive elementary presentation of the "matrix" as a two-way-array of entries, before 'linear operators', 'transformations of spaces' are discussed. Very properly, this preliminary definition is

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illustrated by the passive presentation of (experimental and observational) data in two-way-tables. Analogously, more advanced sections on how to use matrices (and operations defined by them) are illustrated by recommendations on the (active) interpretation of data.

It may be ungracious to criticise an author for failing to achieve what he did not attempt, nor claim to do; this book is emphatically not a textbook in algebra: the proofs of important theories - although correct - could well be improved. Nor is it a textbook in statistics. However, this reviewer hopes that it shall be read as widely as it deserves: it shall then help many biologists to complete the simplest analyses of their data, and encourage them to collaborate with mathematical statisticians, for the more refined interpretations.

One may, moreover, hope that it will also encourage attempts to understand more advanced books on linear algebra, as well as introductions to modern statistics.

As a final remark (possibly conditioned by the reviewer's personal interests and taste) one could desire more examples, showing the efficiency of matrix-techniques, dealing with discrete varieties as it is often required in genetics (cf. Corsten L.C., Biometrics, 13, 451 +).

The emphasis on the importance of "generalised inverses", (1951) an exceedingly valuable device, is most welcome.

F.E. Binet, C.S.I.R.O., Sydney, Australia

Algèbres Non Associatives et Algèbres Génétiques, by Mme. Monique Bertrand. Gauthier-Villars, Paris, 1966. 103 pages. F.20.-

A non-associative algebra A of order n over a field F is baric if there is a homomorphism w of A into F such that $w(x_o) \neq 0$ for some $x_o \in A$. A commutative baric algebra is a genetic algebra if the characteristic function of each element $T = \alpha I + f(Rx_1, \ldots)$ of the enveloping algebra depends on the $w(x_i)$ rather than on the x_i. Genetic algebras were introduced by R.D. Schafer in 1949 in the American Journal of Mathematics.

The book is divided into three parts. Part I is an elementary exposition of some basic results and techniques in the theory of non-associative algebras. Some of these are early results of A.A. Albert and I.M.H. Etherington which are necessary for an understanding of part III. Part II (seven pages) introduces the basic ideas of genetics which lead to the study of train and genetic algebras. The third part is essentially a translation of papers of Schafer, Etherington and H. Gonshor on train algebras, special train algebras and genetic algebras.

There are some minor errors and misprints.

Nora Losey, University of Manitoba