coefficients are integral. This may be of limited practical usefulness but a link with the author's previous work on polynomial matrices is academically very nteresting.

Four excellent appendices on algebra, controllability, optimal control and stability as well as an extensive bibliography up to 1970 round off the book.

W. D. RAY

**Generalized Inverse of Matrices and its Applications.**

C. R. RAO and S. K. MITRA.

*Wiley, London*, 1971. xv+240 *pp.* £6·55.

This book provides a very comprehensive treatment of the various generalizations of matrix inverse that have been proposed. It also discusses fairly extensively their applications to statistical estimation and includes a short final chapter on computational methods. There is a bibliography of over 300 books and papers on generalized matrices and their applications and related mathematical topics.

It is intended mainly for the mathematician and mathematical statistician, and it is thus likely to interest only a minority of operational researchers. Those parts of it that are most relevant to operational research are Chapter 7, on the estimation of parameters in linear models, and Section 10.2, on applications to a rather special form of mathematical programming problem.

As is usual for publications in the Wiley Series in Probability and Mathematical Statistics, it is well arranged and clearly presented.

ALAN J. MAYNE

**Urban Traffic Simulation.**

U. LARSSON and R. LUNDIN (with one chapter by A. LINDSTROM).

*BAS, Göteborg, Sweden*, 1971. v+127 *pp.* No price indicated.

This book aims to present a generalized traffic simulation model that has been formulated to investigate the effects of various traffic control systems on the operation of street intersections controlled by traffic signals.

It starts by outlining a systems approach to urban traffic planning and control, and by discussing goals and sub-goals and performance criteria. Then it surveys, briefly but fairly comprehensively, work on road traffic simulation up to the year 1970.

Its main results are given in its Chapter 4, which presents in detail a simulation model of a network of intersections, each controlled by traffic signals with a pre-assigned sequence of red and green periods. The model is formulated in a modular way, which allows it to be adapted easily to a variety of network configurations. It tracks the motions of individual vehicles, though it does not distinguish between different types of vehicle and uses rather restricted assumptions about the intervals between successive vehicles. Several limitations