is made of Lappo-Danilewski's work which is based on a definition of analytic functions of several matrices. The last chapter (pp. 172-250) deals with the problem of Routh and Hurwitz and related questions. It is absolutely comprehensive and original. It begins with a historical sketch. The subsequent exposition explains with most welcome attention to detail the criteria of Lyapounov, Routh, Hurwitz, Orlando, Liénard and Chipart, the method of quadratic forms of Hermite, making use of Frobenius' results on Hankel forms (cf. Chapter X); a digression on infinite Hankel matrices of finite rank; a proof of Routh-Hurwitz' theorem by means of the Cauchy indices of a rational function; Stieltjes' representation of Hurwitz polynomials by continued fractions and the connection with the moment problem. Finally we have a survey of several other topics connected with the main problem and its generalizations that have been dealt with mainly in the Russian literature (Chebyshev, Markov, Krein and Naimark, Chebotarëv and Meiman).

The system of notations used in this translation of Gantmacher's book is one rather generally accepted. There is, however, a slight inconsistency: whereas elsewhere in the book the transpose of a matrix is indicated by superscript T, we find that in vol. II, pp. 189-190 the (maybe more Continental) notation A' is used without previous warning.

At the end of each of the two volumes we find the same extensive (but by no means complete) bibliography, listing 67 books (18 in Russian) and 296 papers (116 in Russian), all, with only a few exceptions, published during the last 20 years; some are not referred to in the text, but are in more or less evident relations to one section or another. There is also an alphabetic index.

From this survey it may be seen that the book before us is an important work whose appearance in English will be welcomed by many mathematicians, pure and applied, in and outside the circle of those actually interested in the theory of matrices.

H. Schwerdtfeger, McGill University

Information Theory and Statistics, by Solomon Kullback. Wiley, New York, 1959. xvii + 395 pages. $ 12.50.

This is a book for statisticians. It discusses tests of statistical hypothesis from the point of view of information theory. The first 100 pages deal with the basic properties of information measures and their relevance to statistical inference; the remaining 250 pages are devoted to applying these concepts and analysing samples for hypothesis testing. The result is a unified and novel presentation of statistical procedures in hypothesis testing.

Summary of Contents: Chapter 1, Introduction and definition of information; Chapter 2, Properties of information measures and their relationship with Fisher's information and sufficiency; Chapter 3, Some fundamental inequalities of information theory. Their relation to the "Cramér-Rao inequality"; Chapter 4, Limiting properties of information; Chapter 5, Asymptotic distribution theory of estimates of the information measures; Chapters 6-13, Applications to analysis of samples from Multinomial, Poisson and multivariate Normal populations and to the analysis of contingency tables.

A pleasant feature of the book is the consistent use of properties of information to derive well-known and new results in hypothesis testing. Many worked-out examples, including some numerical ones illustrate the ideas. There is a plentiful supply of problems at the end of each chapter. The references accompanying theory and problems should prove very useful to the student.

The book is suitable for first year graduate students in statistics with some familiarity with measure theory and mathematical statistics. The author is to be congratulated for "a presentation avoiding special approaches for problems that are essentially related".

T. V. Narayana, University of Alberta

The Special Theory of Relativity, by J. Aharoni. Oxford University Press, 1959. 285 pages. $ 7.20.

This book could be read by a first-year graduate student. The author states in his preface that he has written with the physics student uppermost in mind, but that the book may be of interest to a student of mathematics as well. It should be added that it appears to be intended particularly for those seeking preparation for modern quantum field theory.

Five chapters are devoted to standard topics of special relativity: inertial systems, tensors, Maxwell's equations in vacuo, dynamics of a charged particle, and a fluid under normal pressure. Maxwell's equations in charged matter are not solved, although the author refers to the Liénard-Wiechert potentials later. Radiative self-force and the non-electromagnetic mass of the electron are discussed, but superficially. However, a section on the Weyssenhoff equations of a spinning particle is a worthwhile inclusion. The first chapters are carefully written, although they do not set this book above other good works on relativity theory.

As already stated, the purpose of the book is rather special, and many topics are omitted which do not conduce to an understanding of