The difference lies more in the methods, concepts and notations used. There is a great increase in the clarity of presentation; this is attained by use of modern matrix and operator notation, and especially by the systematic use of the idea of "relatively uniform convergence" for functions of L^2.

The tract is chiefly concerned with the linear integral equation of the second kind

$$x(s) = y(s) + \int_a^b K(s,t)x(t)dt, \qquad (a \le s \le b) .$$

After an introductory chapter the existence of resolvent kernels is discussed, the Neumann series for the resolvent kernel is found, and shown to be "relatively uniformly absolutely convergent".

The third chapter makes a start on the Fredholm theory, but the discussion is broken off in the fourth chapter to collect results needed on the L^2 theory of orthogonal systems of functions. The fifth and sixth chapters resume the Fredholm theory, dealing respectively with the classical theory for continuous functions and kernels, and with the L^2 version of the Fredholm theory developed by Smithies himself in 1941. The seventh chapter is on Hermitian kernels, and discusses expansions in terms of characteristic functions. The eighth and final chapter is on singular values and singular functions for the general L^2 kernel.

Altogether the tract is an excellent survey of the present state of the theory of linear integral equations of the first and second kinds. But readers whose interests are in physical applications of integral equations should be warned that the tract does not deal with the practice of finding explicit solutions of specific examples.

A.P. Guinand, University of Alberta

Théorie générale des jeux à n personnes, by C. Berge. Gauthier-Villars, Paris, 1957. 114 pages.

Those interested in the mathematical foundations of the theory of games must sift the economics from the lengthy treatise of von Neumann and Morgenstern, avoid the statistical digressions of Blackwell and Girshick, and skip to the appendix of Luce and Raiffa. In McKinsey one finds an elementary but incomplete mathematical introduction, but the book under review is of a different character. In contrast with Luce and Raiffa, the motivating ideas here are kept to a minimum, the book is addressed to the mathematician and is concerned mostly with n-person games.

The first chapter, after a brief outline of the relevant set theory, begins with a definition of a complete information game, which will be presented here to give an indication of the flavour of the book. It is a set X (positions of play) which is a finite disjoint union of subsets $\{X_i\}_{i \in N}$ (N the set of players) and a function Γ (the rules) such that for each $x \in X$, $\Gamma(x)$ is a subset of X. There are n quasi-orderings $R_1, \ldots, R_n$ on X (R_i is the preference relation for player i, and is often described by means of a real function f_i) and the set N has a partition $N = N^+ \cup N^-$ (the active and passive players). If $x \in X_i$, then player i chooses $y \in \Gamma(x)$.

Without describing the contents in detail, we have, in chapter one, conditions of equilibrium of complete information games. Chapter two introduces topological notions. The third chapter deals with information schemes, combined strategies and behaviour strategies. The fourth gives the fundamental equilibrium conditions for simultaneous games and the fifth discusses coalitions, imputations and the Shapley function.

All this is compressed into 109 pages. In his preface the author states that he writes for those who know no more than the elements of algebra and set theory, and a little topology for chapters two and four. He might have added that mathematical maturity is also required, for this is not a book for the beginner. There are few misprints, but the lemma on page 98 is false as stated. With a multiplicity of new notions, some defined on almost every page and some perhaps not at all, an index of terminology is sorely missed.

J.E.L. Peck, McGill University

The Structure of Arithmetic and Algebra, by May Hickey Maria. John Wiley and Sons, New York 1958. xiv + 294 pages. $5.90.

According to the preface, this book is "an elementary axiomatic development of the real number system. Its aim is to make available to the non-science student and to the teacher of secondary school mathematics the fundamental concepts that underlie the structure of algebra and arithmetic." It seems to have been designed to fill the gap between Landau's Grundlagen der Analysis and the so-called "popular" treatments of the subject.

The book treats the ordinary operations of arithmetic, the order relation, a bit of high school algebra (more or less carefully presented), the positive integers, the continuity property of the real number system, and number notation. The exposition is painstakingly detailed.