A. I. Propoi

(Elements of the Theory of Optimal Discrete Processes)

Nauka, Moscow 1973 240 pp.

The work synthetizes the results obtained so far in the theory of discrete systems of optimum management. The author himself is one of the founders of this theory. As is known, a whole number of planning, prognoisis and other problems lead to management systems with discrete variables. The knowing of qualitative properties of these systems and of the effective way of solving them represents an obvious necessity.

The first chapter reviews some of the problems leading to dynamic systems with discrete variables: the problem of long-term planning, the best allocation of resources, transport problems, etc.It also formulates the general problem of optimal control with discrete variables. Furtherl the optimum conditions of mathematical programming, several soving methods and the necessary optimum conditions for discrete systems are presented in brief. The theory of duality for discrete dynamic systems on the basis of which the conditions of "dual optimality are formulated, is also examined. In the final part of the work, the author presents the main algoritms for solving these problems.

As can be seen from this brief presentation, the content of the book is extremely comprehensive. The author's special merit consists in the fact that he succeeded in approaching this vast theme in a relatvely reduced volume, without affecting the scientific level. The reader thus has the excellent possibibility of becoming conversant with this field. From the point of view of the economist or engineer, the absence if felt of examples solved to the end. This was not the objective pursued by the author, the book being conceived as an introduction to the theory of optimal discrete processes. We recommend it to all those wishing to be initiated in this theory.

St. Cruceanu