The authors' most significant achievement is the *systematic* application of ideas of elementary category theory to systems theory; not that this approach to systems study is new. E.g., such ideas are used by Eilenberg (*Automata, languages and machines*, Academic Press, 1975), Arbib and Manes (*Arrows, Structures, and Functors*, Academic Press, 1975), Dididze (Russian), and Bautor (German) for the study of logical systems. The authors of the monograph under review provide elegant, if not tightly reasoned, arguments in this area. On the other hand, there is an undesirable trend in this kind of enterprise. Researchers seem to insist on the development of category-theoretic abstractions of the notion of recursivity rather than developing a "recursive category theory" which begins with a recursively enumerable class of objects together with various recursive functors. Use of recursion-theoretic ideas is not likely to enfeeble the wings of that soaring eagle, category theory. In any case, Von Neumann has warned us all about the adverse things that can happen to the fabric of the mathematical sciences as our theories, governed by aesthetical desiderata alone, recede further and further from contact with physical reality.

In conclusion, this fine work is only a first try at the much desired paradigm for systems theory. Axiomatization is never achieved and much in the overview is left unanswered (e.g., (1) how is the structure of nonlinear systems clarified and extended by the authors' approach, and (2) what *new* systems, if any, are predicted by the present approach). Nevertheless, this carefully written and attractively reproduced treatise passes the BUNTSI test for scientific publishability: much of the material is *B*eautiful, *U*seful, *N*ew, *T*rue, *S*erious, and *I*nteresting.

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An introduction to invariant imbedding, by R. Bellman and G. M. Wing, John Wiley & Sons, New York, 1975, xv+250 pp., $18.95.

This book gives an introduction at an elementary level to a method for solving boundary value problems in one independent variable. The method is called invariant imbedding and sometimes it is also referred to as the method of continuation. The idea is to let the basic interval, over which the solution is defined, vary and replace the boundary value problem by an initial value problem with the width of the interval as independent variable. For analytical, as well as computational reasons, the initial value problem that ensues is more convenient. However, even linear boundary value problems lead to corresponding nonlinear initial value problems which have the form of Riccati equations.

The idea described above frequently has a clear physical interpretation and the quantity that satisfies the initial value problem has physical significance; for example, it may be the reflection coefficient in transport or wave processes. It was first used by Stokes (1862) in a somewhat crude discrete