solutions obtained by other programs if suitable caution were adopted in the selection of the time step.

Some of the matters dealt with in this paper may have application to other "user" programs intended for the solution of sets of differential and algebraic equations.

5.0 References

1. *Simulation*, Vol. 3, No. 6, December 1964.
2. Share General Program Library MF DAS (PA) 3093; JOHN HARRIS.
3. "An Introduction to the Laplace Transformation," J. C. JAEGER, Methuen.
4. "Adaptive Control Systems," MISHKIN & BRAUN, McGraw-Hill.
5. "Basic Feedback Control System Design," SAVANT, McGraw-Hill.

Book reviews

Analogue Computing Methods, by D. Welbourne, 1965; 136 pages. (Oxford: *Pergamon Press*, 17s. 6d.)

This interesting little book repeatedly delights and depresses me. The difficulty lies with its twin aims, namely to be welcomed by Technical Colleges giving courses on analogue computing, and to be invaluable to engineers and management wishing to gain an appreciation of the scope of analogue computation.

The preface castigates those books (mostly American) which are so comprehensive that, by their aid "the student could become a professor of computation, mathematics, control theory and electronics all rolled in one," and proposes more modest aims for this book. The author then assumes that his reader has a knowledge of calculus, mathematics and physics such as would be adequate to gain admission to a university, and proceeds to introduce such mathematical techniques as Laplace transforms, transfer functions, frequency response, Bode plots, Kirchoff's laws, vector operators in polar as well as cartesian co-ordinates, Bessel functions, finite differences and Lagrangian interpolation polynomials, determinants, matrices, eigenvalues and vectors, orthogonal functions and Fourier series in some twenty small pages. Admittedly, the purpose of this section is to provide a "phrase book" rather than a "grammar" but it includes "$\frac{d}{dt} = p = jw$" where p has been defined as the Laplace variable. It does not define that frequently used technical phrase "gain for the uninitiated." Worse, it talks of linear differential equations and linear systems without defining them or listing their fundamental properties. It is implied that the response of a linear time varying system to a pure sinusoid is a pure sinusoid and that this frequency response completely specifies the system.

For a young graduate starting a serious study of fundamental analogue computing this book has much to offer. As a text for an elementary course the essential material dealing with the basic computing elements, scaling and problem preparation, is too compressed, although in general, quite sound. Voltage not machine unit scaling is used. Initial conditions are badly treated. Static checks are ignored. The examples are badly ordered and too difficult for the text.

There is a great need for an elementary teaching text on analogue *computing* at about this price but it must not assume that the student is familiar with the jargon and ideas of electronics and control theory; it must proceed at a gentle pace with worked examples through scaling, problem preparation and analytical function generation.

A. H. J. BISHOP

God and Golem Inc., by Norbert Wiener, 1964; 95 pages. (London: *Chapman and Hall Limited*, 18s.)

Norbert Wiener's dominant position as founder of the science of cybernetics is well known. But he was also keenly interested in much wider issues concerning the relations between the theory of Control and the existing human order.

Wiener claims to consider here the implications in religious thinking of the existence of intelligent machines. He describes machines which can learn to play games and reproduce themselves and so have abilities which have up to now been considered among the defining properties of living things. He points out the incongruity of these achievements with a commonly-held three-storey view of existence involving God, man and matter.

Finally we have a consideration of the ways in which man can co-operate with machines, coupled with a warning that this co-operation does not divest man of his responsibility to consider the moral implications of his action.

This book will be of value chiefly to those not aware of the achievements of "intelligent" machines. But to one who is familiar with these ideas and looks for a constructive treatment of religious issues, it may prove rather disappointing.

E. B. JAMES

Sequential Methods in Statistics, by G. Barrie Wetherill, 1966; 218 pages. (London: *Methuen and Co. Ltd.*, 35s.)

The introduction states that this is a survey of sequential methods with emphasis on those of practical importance. Detailed mathematical proofs are not given but the logical basis of the methods is presented. Where possible, reference is made to published applications of the techniques. The reviewer found this claim amply supported by the text. It begins with a discussion of published experimental work followed by chapters on the sequential probability ratio tests, sequential tests between three hypotheses, extensions to the S.P.R.T., and some applications of Cox's Theorem—on the factorization of a joint p.d.f., which appears in a paper together with another theorem on verifying that the sequential tests as constructed terminate with probability one.

These chapters are followed by others on some methods leading to closed boundaries, Bayes Theorem and long chapters on decision theory and sequential estimation. Finally points on regression functions, points on quantal response curves, double sampling and selection procedures are dealt with. Each chapter closes with a number of problems, some intended to lead to further research. The book contains ample references, is a sophisticated text of graduate standard and appears to cover admirably a very wide field in sequential methods.

J. PEDOE