The volume concludes with a valuable historical essay, whose fluent prose affords a welcome contrast to the austere mathematical style of the main part of the book.

W. LEDERMANN

SALZER, H. E., RICHARDS, C. H. AND ARSHAM, I., *Table for the solution of Cubic Equations* (McGraw-Hill Book Company, New York, 1958), 161 pp., 50s.

The three roots of the cubic equation

$$ax^3+bx+c = 0$$

can be written in the form

$$-(c/b)f_1(\theta), \quad -(c/b)f_2(\theta), \quad -(c/b)f_3(\theta),$$

where $f_1(\theta)$, $f_2(\theta)$, $f_3(\theta)$ are simple functions of $\theta = ac^2/b^3$. The present table gives $f_1(\theta), f_2(\theta), f_3(\theta)$ for $1/\theta = -0{\cdot}001\,(-0{\cdot}001)-1$, for $\theta = -1(0{\cdot}001)1$; $1/\theta = 1(-0{\cdot}001)\,{\cdot}001$ to seven decimals. Each of the three tabulated functions is provided with a table of first and second differences.

The tables should be particularly useful to the occasional computer having only a desk-calculator at his disposal.

I. N. SNEDDON

HILTON, P. J. AND WYLIE, S., *Homology Theory, an introduction to Algebraic Topology* (Cambridge University Press, 1960), 484 pp., 75s.

Only a slight familiarity with analytic topology and group theory is assumed in this book; the prerequisites are summarised at the beginning. As well as giving (i) the basic properties of the simplicial and singular homology groups and cohomology rings, the book introduces (ii) the fundamental group, (iii) covering spaces, (iv) obstruction theory, (v) homological algebra, (vi) spectral sequences. (The elementary properties of homotopy groups, used in (iv) and elsewhere, are summarised.) The exposition is leisurely and is enriched by many discussions of related topics; and there are many exercises, some easy, some not. We mention a few of the related topics to which the main theories are applied: lens spaces are classified by homotopy type as well as by topological type; the cap product is introduced and its connection with intersections indicated; the Hopf invariant is discussed by means of the cohomology ring; spectral homology sequences are applied to homological algebra and to homotopy theory.

The book is intended for the beginner as well as the more advanced student, so I am sure it is right to put simplicial homology theory before any other sort of homology theory. However in other respects the arrangement of the contents seems unnecessarily difficult for the beginner and I suggest a rearrangement leading more easily to the heart of the subject. Although the book aims to " be modern ", 1.2-1.5 and 1.7-1.9 seem so old fashioned that I advocate reading pp. 56-65 of [14] (see bibliography) instead; let the beginner have as neat a presentation of simplicial complexes and maps as possible. (Incidentally, simplicial approximation is more perspicuous when the *V*s of p. 337, or better of [12] 1948-9, are used.) Now liberalise the definition of pseudo-simplicial complex in 1.11 by allowing identification of closed simplexes under linear homeomorphism; a pseudo-dissection of a torus is then possible using only two triangles. (A pseudo-simplex may have some of its proper faces identified. Two barycentric subdivisions may be needed to obtain a simplicial from a pseudo-simplicial complex. A pseudo-simplicial complex is best defined as a

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