of elementary analysis; and one fundamental technique thereof (epsilonics) is cleverly introduced quite early under the name "error analysis".

Great care is taken to make the book easy to use in practice: it has a careful numbering system, a good index and table of contents, and a detailed "descriptive outline". Another useful practical idea; every exercise whose answer is given in the back of the book is marked, so that any teacher who wants to avoid setting exercises with given answers can do so.

One small blemish occurs in the topic of differential notation. The differential is defined: df is defined, in fact, by the equation $df(x, h) = f'(x) \cdot h$. But then df/dg is given a separate definition, namely $(df/dg)(x) = f'(x)/g'(x)$ provided that f and g are differentiable and $g'(x)$ is never zero. The double definition of df/dg is required, presumably, because the book does not define the quotient u/v of functions u and v unless u and v have the same domain; and df and dg in general do not. This awkwardness is soon overcome. More serious is the over-strong condition "g' never takes the value zero". It means that, for a particle executing simple harmonic motion, dv/ds is undefined (because s', i.e. v, sometimes takes the value zero).

This blemish, and the rather common one of using the notation $\lim_{t \to t_0} f(t) = L$ before proving the uniqueness of the limit (which leaves the thoughtful student to wonder why $\lim_{t\to t_0} f(t) = L_1$ and $\lim_{t \to t_0} f(t) = L_2$ do not imply $L_1 = L_2$ simply by transitivity of equality) are the only ones your reviewer noticed. In general, the clarity and accuracy of this very comprehensive text are outstanding.

Hugh Thurston, University of British Columbia

Topological spaces, by Eduard Cech (revised edition by Z. Frolic and M. Katetov). John Wiley and Sons Interscience publication, 1966, New York. 893 pages. $22.50.

The two editors have translated and rewritten the original book by Cech published in 1959 in Czech. The earlier edition contained two supplements; "Construction of certain important topological spaces" by J. Novak and "Fully normal spaces" bu M. Katetov. The original edition was an outgrowth of a seminar conducted in the late 1930's. The authors have modernised the exposition, re-arranged the contents considerably and enlarged it, placing much emphasis on topics arising from the supplements.

Despite its size, the book is not, and indeed, is not intended to be, a comprehensive account of general topology. It is, rather, a comprehensive account of closure, uniform and proximity spaces, and would be a useful reference work for an analytic topologist. The depth and detail of the work make the book unsuitable, as the authors freely admit, as a text book. The text is self-contained and could be read by a mature graduate student, but not without serious concentration. Much of the value of the book lies in its ability to obtain every result in its most general situation; for instance, although the book is correctly called "Topological spaces", these are regarded throughout as specializations of closure spaces. This generalisation involves abundant use of the prefixes semi-, quasi- and pseudo- and requires of the reader careful study of the notation, which is not quite correct usage and about which the authors are unavoidably pedantic. There is, however, an index of notation.

There are seven chapters and each chapter, section and subsection is prefaced by a summary. The first three chapters, entitled respectively, Classes and relations, Algebraic structures, and Order, Topological spaces, are of an introductory nature. The first contains an axiomatic approach to the theory of classes and sets and basic material on relations and functions. The axiom of choice and countability are also treated. Chapter II includes an excellent treatment of directed sets, ordinals and cardinals, and an introduction to categories. Chapter III is a good general introduction to closure and topological spaces. Nets are freely used in the study of convergence and continuous mappings. Families of projections and injections are emphasized for later use in the generation of spaces and, for the same reason, pseudometrization. The results are applied to topologised algebraic structures. A very clear account of the localisation of topological properties is included. Chapter IV introduces semi-uniform spaces, i.e. uniform spaces without the axiom $V \circ V \subset U$, for V, U belonging to the defining filter on the Cartesian product, which are the most general spaces on which can be defined uniformly continuous mappings. This leads to the important subclass of uniform spaces and to proximity spaces, since these are induced by semi-uniformities. The inter-relations of these spaces and pseudometrizable spaces are studied. The definition of proximal continuity leads to the Stone-Weierstrass Theorem for proximity spaces. Chapter V entitled Separation, is mainly concerned with those separation properties which are related to continuity and limit points. Uniformizable (completely regular) spaces are given considerable emphasis, also regular, normal and paracompact spaces. The last two chapters deal with the generation of the three basic types of spaces. A closure space $< P, u >$ is projectively generated by a family of mappings $\{f_a | f_a : P \to Q_a, Q_a$ closure spaces$\}$ if u is the coarsest closure such that each f_a is continuous. A detailed exposition of this leads, dually, to inductive generation and these same concepts for semi-uniform and proximity spaces. Upper and lower semi-continuity and general convergence of nets in closure spaces are studied and finally, projective (inverse) and inductive (direct) limits of presheaves.

Compactness and completeness, not having been dealt with in the body of the text, are included in an appendix. This is followed by 250 lengthy exercises which, rather regrettably, appear at the end. A very short bibliography concludes this large volume.

Colin Maclachlan, Carleton University

Fourier transforms and the theory of distributions, by J. Arsac. Translated by Allen Nussbaum and Gretchen C. Heim. Prentice-Hall, Inc., Englewood Cliffs, N.J., 1966. xv + 318 pages. $10.00.

This book is a translation of the original French edition (Dunod, Paris, 1961). The author, one of the pioneers in the application of Fourier transforms to radio astronomy, has produced a work which should have considerable appeal to applied mathematicians or mathematically oriented engineers. The book is divided into four parts: the first part (5 chapters) lays the mathematical groundwork of the theory of Fourier transforms and distributions (warning: p. 20, the opening sentence in section 1.14 seems to have a few crucial words missing; p. 32, no restrictions are given on the exponent in Minkowski's inequality; p 71, line 9 from botton, the mystifying word "contained" should be replaced by "continuous"). The second part on applications (3 chapters) covers diffraction, complex impedances and certain partial differential equations. Part 3 on linear filters (3 chapters) contains a fairly detailed presentation on resolving power theory and a too brief discussion of random processes. The final part consists of one chapter on numerical methods.

The detailed exposition of some significant present-day applications should make the book attractive to a wide audience.

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