monograph containing an account of proximity spaces. The book is definitely not the place in which to learn the basic facts of general topology and hence the title is a misnomer.

After a detailed discussion of the definitional aspects of neighbourhood spaces and topological spaces, the author introduces continuity and the separation axioms and then concludes the first half of the book with a discussion of metric spaces and the metrization theorem of Smirnov-Nagata. The remainder is devoted to proximity spaces, uniform spaces and sets equipped with an abstract distance.

Proximity spaces (due to Efremovich) arose from axiomatization of the relation δ of closeness defined between subsets A and B in a metric space by setting $A \delta B$ if the distance between them is zero. The basic properties of proximity spaces are proved and Smirnov's theorem that a proximity space corresponds to a unique compactification of the underlying topological space is stated. Also stated are Smirnov's and Ramm-Shvarts characterization of those proximity relations that arise from metrics.

Uniform spaces in the sense of Bourbaki are introduced and the standard facts proved. After stating the metrization theorem for uniform spaces, the author gives the Tukey and Shvarts descriptions of uniform spaces and in terms of each of these discusses the connection between uniform spaces and proximity spaces. The reviewer feels that it would have been worthwhile to state the equivalence between uniform spaces and proximity spaces. This would have made it possible to reveal the connection between completion and the Smirnov compactification.

Finally, the author gives an account of the work of Kurepa, Papić, Frechet, Appert, Colmez and himself on the problem of defining a topology on a set by means of an abstract distance. Essentially this requires the replacement of the positive real numbers in the definition of a metric space by some other set equipped with varying types of structure. The details of the results are too technical to be mentioned in a review.

J. Taylor, McGill University

Introduction to functional analysis for scientists and technologists, by B.Z. Vulikh. Addison-Wesley and Pergamon Press (1963), Reading, Mass. $10.00.

This book is a translation of Vvedeniye v funktsional'nyi analiz published in the Soviet Union in 1958. According to one reviewer (S.H. Gould, Math. Reviews 21(1960), 2172), the original Russian

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version "is written in a very lucid style throughout". Since this lucidity appears to have been somewhat marred by translation, it is perhaps fortunate that the translator himself has been allowed to remain anonymous. The title page indicates that the translation was edited by Ian Sneddon, but it is clear that Professor Sneddon is not the translator. Indeed, from the quite substantial errors in translation which have eluded the editor's eye, it appears that the translator is not an English speaker and perhaps not even a mathematician.

Many of these errors render the text (at least locally) incomprehensible to its proposed audience - students of science and engineering who have had at most "a sound course in mathematical analysis". (See dust jacket.)

Particularly severe is the misuse of the articles "the" and "a" in the translation. For example, on p. 165 we find,

"Definition. The complete orthonormal system of elements is said to be the orthonormal basis of the Hilbert space."

Thus the reader is led to believe, among other things, that each Hilbert space has no more than one orthonormal basis! The density of article misuse is especially high in Chapter 6. See also p. 114, where the unwary reader is induced to think that continuous operators on a metric space have at most one fixed point.

In a similar vein, on p. 113 we are asked to consider "an operator U mapping a metric space X or its subspace [reviewer's italics] onto a metric space Y." Further on p. 175, the word "containing" appears in a context where it might not be clear to a beginner that "contained in" is actually meant. Less critical is the use of "belongs to" (p. 59) for the relation of set inclusion.

There are in addition a number of mistranslations or at least awkward translations of mathematical terms. For example, we find on p. 90 "the series of positive integers", on p. 95 the definition of a "dense everywhere set", and on p. 177 "functions of an interval" and "functions of a point", while on p. 122 we are led to consider a number which is "small in absolute quantity".

Finally there are also an appreciable number of mangled sentences. Canonical among these is one appearing on p. 221: "Let X be a normed space, E some its subspace or merely a linear subspace."

In addition to the inadequacies of the translation, the text lacks the motivational material necessary to arouse and sustain the interest of engineering and science students - North American ones at least. In particular, it is written in a cold Definition-Theorem-Proof style

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appropriate for mathematicians but hardly for engineers. Further, there are no examples drawn from science or technology, and no exercises.

Finally, although the author's applications of functional analysis to the solution of infinite dimensional linear equations, Fredholm integral equations and Sturm-Liouville systems of differential equations are quite attractively handled, they could well be lost on engineering and science undergraduates.

However, since some of the lucidity of the original text still shines through the mists of translation, the book, in the reviewer's opinion, is not a total loss. In particular, it could be successfully used as remedial reading for mathematics graduate students whose knowledge of functional analysis is deficient.

The subjects covered are: Finite and infinite dimensional Euclidean spaces, Normed spaces, Hilbert spaces, L^2-spaces (a prior knowledge of the Lebesgue integral is not assumed), Linear operators and functionals, Adjoint and self-adjoint operators, Completely continuous operators, Approximate solutions of functional equations, and Partially ordered normed spaces. There is a short index and a short but well chosen bibliography.

B. Brainerd, University of Toronto

Fundamentals of Banach Algebras, by Kenneth Hoffman. Instituto de Matematica da Universidade do Parana, Curitaba, 1962. 116 pages.

This little volume is developed from the author's lecture notes on the subject.

The fundamental concepts of Banach algebras are developed, with main emphasis on the analytic aspects of the theory. This emphasis is reflected in the fact that the bulk of the work is devoted to commutative Banach algebras and B* Banach algebras since these branches contain most of the important examples arising in analysis.

On the other hand very little attention is given to the algebraic or structural aspects of the theory.

Important ideas are well motivated and illustrated by numerous examples and applications.

The style is clear and lucid and the development concise. There are many allusions to results which are important in the