BULLETIN (New Series) OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 1, Number 1, January 1979

0002-9904/79/0000-0008/$01.50

Introduction to operator theory. I, *Elements of functional analysis*, by Arlen Brown and Carl Pearcy, Springer-Verlag, New York, Heidelberg, Berlin, 1977, xiv + 474 pp., $24.80.

Since this book's title is *Introduction to operator theory*, it could be argued that the text should be discussed solely in relation to a presumed subsequent course in Operator Theory. This is impractical for two reasons: first, the reviewer has no interest in operator theory; and second, the number of people who use any text at this level exclusively as preparation for a subsequent course is surely negligible. Therefore I consider only the book's merits as a text for a standard functional analysis course.

The text comes in two parts: I. *Preliminaries*, and II. *Banach spaces*. The "preliminaries" consist of chapters (actually mini-texts) on set theory, linear algebra, general topology, metric spaces, and complex variables, along with five chapters on measure and integration. The second part consists of most of the standard topics of functional analysis which can be reasonably collected under the rubric "Banach Spaces."

The book contains a wealth of material, much of it in problems with hints and text-like discussion. For a one semester course, one could pick and choose and skip with abandon in Part II, and have plenty of material. No doubt most instructors will want to include some of the material from Part I on measure and integration in topological spaces. With this inclusion there is certainly ample material for a year's course in functional analysis of the normed spaces variety.

It is clear that large amounts of standard material have been eliminated by the restriction to normed spaces and ancillary topics. The reviewer does not feel that this is a valid criticism of the text. Any course in functional analysis leaves out a great deal of important mathematics. Some choice has to be made, and Brown and Pearcy have made one perfectly reasonable one. Anyone who finds too many of his favorite hobby horses missing can pick another text. (But I do wish they had included the Gelfand representation.)

The local organization of the book suggests the work of whimsical committee. There are Propositions, Theorems, Examples, Problems, Lemmas, and Corollaries, all neatly numbered or lettered. For example, Theorem 5.8 (Cauchy Integral Formula in a Disc) is followed by Examples H, I, J, K, L, and M, which is followed by Proposition 5.9 (the Laurent Expansion). Examples J, K, L, and M are: Taylor's Theorem, Liouville's Theorem, Morera's Theorem, and The Maximum Modulus Principle. One possible clue to the labeling code is that proofs given in the problems seem to be more detailed than those for the theorems.

In the sequence of examples mentioned above, Examples H and I consist of a detailed proof that the difference quotient of an analytic function converges uniformly on compact sets. Since this is surely not one of the salient facts of complex analysis, it suggests that somewhere there is going to be a reference to the proof. The reviewer finds that kind of organization unattractive–not to say Teutonic. A lemma at the appropriate place would be more to the point.

It is natural to compare the Brown-Pearcy text with that of Reed and Simon, since both pairs of authors regard functional analysis as a way-station on the road to operator theory. There is, fortunately, little similarity in the approach of the two texts. Reed and Simon treat the subject like an unpleasant chore, and their text is definitely not suitable for a general functional analysis course. One of the really unpleasant features of the Reed-Simon book is that many of the proofs which are not completely straightforward are simply omitted. By contrast, Brown and Pearcy treat both the subject matter and the reader with appropriate respect.

Professors Brown and Pearcy write with a very nice pedagogical style. Without being prolix, they do enough chatting so a student can tell what's going on. They give an idea of how important a result is, for example, and why the other half of an "if and only if" theorem is somewhere else in the book. They do not assume that a student has all possible details at his fingertips (e.g. absolute convergence implies convergence in a Banach space–where this is used a reference is given to the problem where the proof is outlined). The authors talk about the equivalence class versus function dilemma in L_p enough so the student will know that subsequent lack of precision is both deliberate and appropriate.

The reviewer does have some nit-picking complaints. The text has an extensive list of cross references from problem to theorem to example, which is good. However, it badly needs a list of special symbols. The terminology "unital algebra" (that's an algebra with unit) is surely a barbarism of the worst sort. The indexing is quaint. The Springer format is unlovely.

Aside from a few cavils like those above, the reviewer feels that this book is really first rate, and will serve well both as a text for a standard graduate course and as a reference work.

H. S. BEAR

BULLETIN (New Series) OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 1, Number 1, January 1979

0002-9904/79/0000-0022/$01.75

Boolean-valued models and independence proofs in set theory, by J. L. Bell, Clarendon Press, Oxford, 1977, xviii + 124 pp., $14.50.

This lucid and elegant introduction to Boolean-valued models is a book which could have been written ten years ago, and in fact was supposed to have been–by different authors! As Dana Scott says in his introduction to the book, it "essentially supplants" a projected paper by Scott and Robert Solovay which may be one of the most-referenced unwritten papers in recent mathematical history. The contents of that nonexistent paper (and this book) are as familiar to the set theorist today as is sheaf theory to the algebraic geometer, but clear and detailed expositions for the beginner are still relatively scarce, so this book is welcome.

For those not familiar with the recent history of set theory a few words of background may be in order. In the years B.C. (Before Cohen) there were