A chapter on topological division rings has also been added. Here the author presents the structure theory of nondiscrete topological division rings. In the original edition the author had devoted a section of the chapter on locally compact abelian groups to the structure of locally compact connected division rings.

Every chapter has been revised and augmented. To the first chapter a section on rings, fields and projective geometry has been added. The chapter on topological spaces has been thoroughly revised and now is a more standard (but still not very elegant) treatment of the subject. In the chapter on compact groups a more detailed discussion of integral equations is given. The author has included a section on analytic and differentiable manifolds and their connection with Lie groups. Topological transformation groups are introduced in the chapter on topological groups, and a section of the chapter on the structure of compact groups has been devoted to the Montgomery - Zippin result that an effective compact transformation group that acts transitively on a locally connected finite dimensional space is a Lie group. The discussion of covering spaces in the chapter on locally isomorphic groups has also been expanded.

There are many additions and changes other than the ones mentioned above. In particular the author has added over thirty examples to the text.

The book is very readable and this reviewer feels that the translator has done a very good job. The translator has added a number of helpful footnotes and made a number of changes in terminology.

There are a number of shortcomings. The complete absence of any reasonable system of references to earlier results via section numbers etc. is a constant frustration to the reader. There are a very large number of misprints, including such unpardonable ones as $\overline{M \cup N} = \overline{M \cup N}$ in the axioms for a topological space. The printing and binding are not of a very high quality. One of the more remarkable accomplishments of the publishers was to make the book 2 1/2 times the width of the earlier Princeton edition and increase the selling price by an even greater factor.

Roger Rigelhof, McGill University

Éléments de mathématique, fascicule 22; Théorie des ensembles, Chapitre 4: Structures, by Nicolas Bourbaki. Hermann, Paris, 1966. Deuxième édition, 108 pages, broché. 36 francs.

This is a new edition of the 1957 original. The main change is the deletion of a 19 page appendix on "criteria of transportability". The booklet now consists of two parts of equal length: the chapter on "structures" and a historical note on the foundations of mathematics. The latter goes not only with chapter 4, but also with the preceding three chapters. It ranges from Greek philosophy to mathematical developments in the 20th century, allowing the author to display his scholarly erudition and wide cultural interests.

In 1959 Bourbaki stated in a private conversation that the chapter on structures really ought to have been a chapter on categories. This is even more true today. The chapter starts with a horrendous definition of certain types that will deter most readers from going further. It concerns a hierarchy of expressions built up from given sets with the help of the cartesian product and the power set operation. The latter is only presented as an object function and its variance is not discussed in general. Many species of structures are dealt with, not only primitive classes of algebras, but also classes of relational systems, the class of all topological spaces, etc. Unfortunately there is no general definition of what constitutes a map in a given species. (These deficiencies can be remedied, as has been shown by Z. Hedrlin, A. Pultr and V. Trnková, see "General topology and its relations to modern analysis and algebra II", Proceedings of the Second Prague Topological Symposium, 1966, pages 176-181). The highpoint of the chapter is the so-called universal mapping problem, which appears to be more general than the problem of finding the adjoint to a functor. It has a solution under certain conditions that resemble Freyd's solution set conditions. There is an interesting collection of important examples from many parts of mathematics. It would seem to be a worthwhile project to rewrite these 50 pages in the language of categories and functors.

J. Lambek, McGill University

Éléments de mathématique, fascicule 17; Théorie des ensembles Chapitres 1 et 2. by Nicolas Bourbaki. Hermann, Paris, 1966. Troisième édition, 137 pages. 36 francs.

This is a revised and corrected edition of Bourbaki's treatment of the foundations of mathematics.

Chapter 1 deals with a description of formal mathematics. The reader learns to his surprise that the usual linear formulas dear to logicians are only abbreviations of certain non-linear assemblies made up from signs, blanks, and links. However, after the first few pages, he is allowed to forget this.

The propositional calculus uses "or" and "not" as fundamental notions. There are four simple axiom schemes, the rule of modus ponens, and two rules of substitution. One of the latter allows passage from one theory to another. One quickly arrives at the natural rules of inference employed in ordinary mathematical discourse: the deduction rule, reductio ad absurdum, argument by cases, the method of the auxiliary constant.