Quantifiers are defined in terms of Hilbert's ε- symbol, here called "τ". Thus "$\tau_x A(x)$" represents a privileged object b for which A(b), if there are such objects, and "$\exists_x A(x)$" is short for "$A(\tau_x A(x))$". If there is no object b for which A(b), one might be tempted to say that "$\tau_x A(x)$" represents no object; however, in Bourbaki's ontology it represents an object "about which one can say nothing" (see page 16). Unfortunately, having raised this reader's curiosity about this mysterious object, Bourbaki sticks to his guns and says nothing about it. There is one axiom for introducing the existential quantifier.

The theory of equality deals with a symbol " = " and requires two axiom schemes, the usual substitution rule and a rule which says that if $\forall_x(A(x) \Longleftrightarrow B(x))$ then $\tau_x A(x) = \tau_x B(x)$.

Chapter 2 is devoted to the theory of sets, which deals with the symbol "ϵ". The axioms postulate extensionality, the existence of the set x, y, the existence of the set of all subsets of x, and the existence of some infinite set. In addition, there is a curious scheme of "selection and reunion". It asserts that if $\forall_y \exists_w \forall_x (R(x, y) \Rightarrow x \epsilon w)$ then the set $\{x | \exists_y(y \epsilon z \text{ and } R(x, y))\}$ exists for all z. The axiom of choice need not be postulated but can be deduced from properties of the symbol "τ". Pairs, products, relations, functions, etc. are defined in the usual manner.

The book contains many exercises and a foldout displaying the axioms and axiom schemes.

J. Lambek, McGill University

An introduction to the theory of numbers, by Ivan Niven and Herbert S. Zuckerman. John Wiley and Sons, New York, 1966. 2nd edition. 280 pages. $7.95.

After looking at this lucid exposition, I was overcome by a feeling of nostalgia. How much nicer it would be to teach this than the series of unmotivated definitions that goes under the name of algebra!

We have here a leisurely introduction to divisibility and congruences, which any freshman can read, followed already on page 69 by Quadratic Reciprocity. Then there is a chapter on special number theoretic functions which graduate student still knows the Moebius inversion formula?), followed by chapters on Farey fractions, simple continued fractions, $\pi(x)$ (including Bertrand's postulate), algebraic numbers, and the partition function. The last chapter deals with the density of sequences of integers and culminates in the Schnirelmann and and $\alpha\beta$ theorems. There are many carefully arranged exercises and problems.

Some mathematics courses progress on a wide front and advance little. Here we have a narrow but deep intrusion into the unknown territory. I should like to see our undergraduates take this course as early as possible, as it provides much motivation for what is done in other courses now given.

J. Lambek, McGill University

Recursive functions, by Rozsa Peter. Academic Press Inc., New York, 1967. 300 pages. $13.50.

This is a welcome though belated translation of the German original which appeared first in 1951 and slightly revised in 1957. There is a new appendix "On the generalization of the theory of recursive functions for abstract sets of appropriate structure as domains of definition". This text is still a standard work on primitive recursive functions. General recursiveness is treated as a useful generalization, but the author is not convinced that one ought to equate it with calculability. By the way, in spite of the Hungarian custom of placing one's surname first, the author is a woman.

J. Lambek, McGill University

536 Puzzles and curious problems, by Henry E. Dudenay Saunders of Toronto Ltd., 1967. 428 pages. $9.75.

The author, whose name is surely an anglicized form of "Dieudonné", lived from 1857 to 1930. He was a self-taught mathematician and professional puzzlemaker. This delightful collection is a classic, second only to "Mathematical Recreations" by W. W. Rouse Ball, to which however it does not measure up in mathematical sophistication. The problems have been rearranged and reclassified by Martin Gardner, known to readers of the "Scientific American". He claims that he has hardly altered the original text, aside from changing "petrol" and "shilling" to their American equivalents. There are "arithmetical and algebraic problems", including clock and weight puzzles, "geometrical problems", including paper folding puzzles, "combinatorial and topological problems", including magic square and tree planting puzzles, and a few smaller subdivisions. Answers are provided at the end, including the author's solution of the 4 colour problem, with comments by the editor pointing out the fallacy. The text is printed in large type and amply illustrated. It attracted this reviewer's 11 year old son, who informs me that some of the solutions are really quibbles. However, he did appropriate the book.

J. Lambek, McGill University