

are offered: The first is the sentence quoted above and the second is a metric space with a fixed metric. Since in finite dimensional Euclidean spaces all sets of finite diameter happen to be totally bounded the inexperienced are tempted to see something of importance in sets having finite diameter. On page 22 we find: "A set is called *bounded* if it is contained in some neighborhood." And on page 32: "A set E is *nowhere dense* if its closure contains no neighborhood." (Neighborhoods are introduced on page 22.) These unfortunate aspects are heavily outweighed by the wealth of useful information and in case of a second edition could be easily eliminated.

The book is clearly written by a man who knows mathematics, has something to say and is able to communicate with others. Undergraduates and promising high school students could profit a great deal by reading it.

I. S. GÁL

Commutative algebra, Vol. II. By O. Zariski and P. Samuel. Van Nostrand, New York, 1960. 10+414 pp. \$7.75.

In this, the second volume of their treatise on commutative algebra, the authors have presented the basic facts and concepts of commutative ring theory essential to the practice of algebraic geometry as epitomized by the authors' work in the subject. The main topics covered are valuation theory, ideal theory in polynomial and power series rings, and local algebra. The volume ends with a series of seven appendices, some of which are devoted to generalizations and alternate routes to results given in the book proper and some of which are devoted to the introduction of new concepts. The prime example of the latter is the notion of a complete ideal in a noetherian domain (in the sense of integral closure) and Zariski's impressive theory of such ideals in regular local rings of dimension two.

As far as expository style is concerned, the authors have fortunately seen fit to maintain the same leisurely manner established in their first volume, even though the material presented here is more technical and specialized. Many examples are given and they have not hesitated to give different proofs for the same theorems in those cases where this is appropriate due to the unique features of the various proofs. Also their practice of presenting the same theorems or theories in varying degrees of generality gives a sense of continuity and tentativeness to their development of the material which strongly encourages the reader to try his hand at seeing if he can push things further. It is a pity that there are not more books written by masters of their subject who are as successful as Zariski and Samuel in resist-