finite numbers, and of the development of geometry, as presented in Chapters 1–3. But I am not at all satisfied with the special approach and the results achieved thereby.

According to the author the principal forces discernible in the development of mathematics are (1) environmental stress (physical and cultural) (2) hereditary stress (3) symbolization (4) diffusion (5) abstraction (6) generalization (7) consolidation (8) diversification (9) cultural lag (10) cultural resistance (11) selection. The effects of these forces are illustrated in the historical Chapters 1–3 (and also in Chapter 5: evolutionary aspects of modern mathematics); they are summarized in Chapter 4 (the processes of evolution) in sentences such as these: "In brief, during the pre-Greek era, *cultural stress* forced the invention of counting processes that, with increasing complexity, necessitated suitable *symbolization*—hence the introduction of numerals. The latter was aided by the fact that the Akkadians took over Sumerian symbols of an ideographic nature, a *diffusion* process, and this in turn led to further abstraction. Demands of engineering, architecture, and the like led to applications of numbers to geometric measurements and to the gradual assimilation by the number scientist of geometric rules, which were later to become theorems. The number scientist was being subjected to greater and greater stress, from *without* (cultural stress) by the demands of his nonmathematical brethren and from *within* (hereditary stress) by the need for systematizing and simplifying the processes by which he obtained his results of a numerical nature". Now I fail to see what kind of new insight into the historical process is gained by the application of this vocabulary, unknown at least to the ears of mathematicians and historians of mathematics.

Maybe, the author's principal intention is only to sharpen the eyes of his readers to recognize that there are other forces at work in the historical development of mathematical thought than those called hereditary stress by him, i.e. internal stresses and trends of mathematics itself. Such other forces as physical and cultural stress, demands made by the society, be they of physical, technical, or other cultural origin. Then, of course, the book will serve its purpose. It is, I believe, even better suited to introduce the student of anthropology and sociology into the formation of mathematical concepts and theories, and to the external influences that play their part in this process.

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Boolean Algebras. BY ROMAN SIKORSKI. Ergebnisse der Math. 25 Springer Verlag, New York, 1969 (third edition). x+237 pp.

FROM THE AUTHORS' PREFACE. The third edition has been reprinted from the second by offset lithography. It is unchanged except for the correction of errors and the removal of misprints. A review of the second edition appears in an earlier issue of the BULLETIN.

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Introduction to Commutative Algebra. BY M. F. ATIYAH and I. G. MACDONALD. Addison-Wesley, Reading, Mass. (1969). xx IX + 128 pp.

An amazing amount of information is included in the 128 pages of this book. A considerable amount of this information is included in the exercises to the eleven tersely yet clearly written chapters. In the body of each chapter the basic ideas and techniques are exposed. The chapters are: (1) Rings and Ideals (2) Modules (3) Rings and Modules of Fractions (4) Primary Decomposition (5) Integral dependance and Valuations (6) Chain Conditions (7) Noetherian Rings (8) Artin Rings (9) Discrete Valuation Rings and Dedekind Domains (10) Completions (11) Dimension Theory.

The authors make no claim to have written a substitute for more voluminous texts on Commutative Algebra such as Zariski-Samuel or Bourbaki, but on the other hand do cover more ground than Northcott's Ideal Theory. The approach emphasises modules and localisation. The role of homological algebra in the subject is acknowledged, but only some of the more elementary methods and theorems are included — some work with exact sequences, diagrams, the serpent lemma, exactness properties of the tensor product.

That the roots of the subject lie in Algebraic Geometry and Algebraic Number Theory is continually emphasized through the examples and the exercises. This book can be recommended to any graduate student wanting to learn Commutative Algebra.

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Introduction to the Theory of Abstract Algebras. BY RICHARD S. PIERCE. Holt, Reinehart & Winston Canada Ltd., Toronto (1968). vii + 148 pp.

This book is a presentation of some basic results of universal algebra. After an introduction on set-theoretical preliminaries there is a chapter presenting in great generality the concepts of concern in universal algebra; most concepts are defined for relational systems and then specialized to partial algebras and (full) algebras.

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