

then proceeded to work out their own distinctive forms.

Thor Heyerdahl's "Navel of the world: The red-topped giants of lonely Easter Island" (pp. 323 to 344) is the last essay. It is fitting that the volume ends with Polynesia, because it was the last major part of the world settled by man, but a more balanced presentation of this event would have been preferable. Heyerdahl is the only contributor who limited himself to one of two opposing and controversial interpretations and who presented only the facts that favor his interpretation. The reader should bear in mind that migration from Peru, which Heyerdahl presents with such conviction, is not the only side to the story of the Easter Island statues. If the reader is interested in the alternate view, he may obtain it from the following publication, which is not included in the otherwise comprehensive bibliographies at the end of the volume: *The Island Civilizations of Polynesia* by Robert C. Suggs.

One theme ties the articles together: they all deal with peoples who were marginal to the centers of civilization in their times. The volume could have been given more unity by emphasizing this theme. It would have been interesting, for example, to inquire into the nature of the blend between local traits and influences from the centers, which is shown by all the civilizations discussed. One wonders about the effect of trade with the centers (see, for example, the plaque illustrated in the figure). Why did many of these peripheral civilizations preserve earlier customs and styles of art, which had gone out of fashion in the centers? Why did they have little or no writing? And what, in general, was the result of being in a peripheral position?

A more balanced coverage of the marginal peoples and civilizations would also have been desirable. For example, the Norse, the Pueblo Indians, and the mound builders of the eastern United States might well have been substituted for the Maya, the Sarmatians, and the megalith builders of western Europe, all of whom had been treated in the first volume, though in less detail. Nevertheless, the editor is to be commended for bringing us an authoritative view of some lesser-known civilizations, which are usually not included in compendia of this kind.

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Number Theory

Elementary Theory of Numbers. W. J. LeVeque. Addison-Wesley, Reading, Mass., 1962. viii + 132 pp. \$5.

A Second Course in Number Theory. Harvey Cohn. Wiley, New York, 1962. xiii + 276 pp. Illus. \$8.

LeVeque's *Elementary Theory of Numbers* is written in somewhat more leisurely fashion than a number of beginning textbooks on the subject, including the first volume of his own two-volume work. It is intended for use by teachers, and the author hopes that it will enrich high school courses and serve as an introduction for college students. LeVeque begins with a discussion of number theory and of some of its methods and solved and unsolved problems; he gives some attention to proofs by induction and indirect proofs, since in this subject such proofs are frequently used.

The volume is concerned with the Euclid algorithm and its consequences, linear and polynomial congruences, primitive roots of a prime modulus, continued fractions, and the Pell equation. The quadratic reciprocity law is not dealt with. There are many historical references, and the author frequently sketches the idea of a long proof before embarking on its formal development. Many examples are worked out, and exercises of varying degrees of difficulty are given. The book is most suitable for use as a textbook.

A Second Course in Number Theory presupposes knowledge of the usual beginning course in number theory through the quadratic reciprocity law. The approach is developmental in that Cohn continually points to what is ahead and shows what is needed for the proofs that are later developed. The content is strongly algebraic, with special emphasis on quadratic fields.

The first two chapters provide a preview of some of the paths that are followed (for example, composition of binary forms and primes in an arithmetic progression), a review of basic concepts, and preliminary discussion of abelian groups. The third chapter deals with characters and culminates in Dirichlet's lemma that any real character modulo m can be expressed in terms of Kronecker's symbol. The fourth and fifth chapters consider integral domains and lattices, leading to a proof of Kronecker's theorem on

abelian groups, and some results on minima of quadratic forms.

Part two is concerned with ideals and ideal classes and their connections with the geometry of numbers.

In the final part, previous results are applied to establish a relationship between Dirichlet L-series and the binary class number to prove Dirichlet's theorem on primes in an arithmetic progression and Weber's allied result that every ideal class of a quadratic field contains an infinite number of primes. The author closes with an ideal-theoretic proof of the quadratic reciprocity law, the composition of forms, equivalence classes, class numbers of orders of binary forms, and Hilbert's symbol. Possible further extensions are described.

The exercises are an important part of the development of this clearly written book. The choice of topics is unusual, and an amazing amount of ground is covered. By working through the volume, the careful and studious reader should acquire much of the flavor of modern developments in number theory.

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Ecology

Animal Ecology. Aims and methods.

A. MacFayden. Pitman, New York, ed. 2, 1963. xxiv + 344 pp. Illus. \$10.

This second edition of a book originally published in 1957 reflects both the large accrual of information and the changes in perspective that have characterized ecology in the last few years. Much of the book is new. Of its three major divisions, which deal respectively with the ecology of individuals, populations, and communities, the last contains the largest additions. MacFayden expresses the sanguine point of view that fragmentation within ecology is decreasing, and he justifies that viewpoint with a relatively successful attempt to bridge the gaps between the study of populations and ecosystems by means of a metabolic approach. Although his interest in soil invertebrates is very much in evidence, he presents major ideas in a well-balanced manner. Documentation is extensive; it is particularly pleasing to find evaluations of