of an ideal in a number field K as the set of all integral multiples in K of some algebraic integer which does not necessarily lie in K. In Chapter 10 it is demonstrated that every ideal can in fact be so described, the proof depending on the finiteness of the class number of a field. The application of algebraic number theory to the Fermat conjecture ($x^p+y^p=z^p$) is then discussed, on the basis of previous illustrative analysis of the cyclotomic field generated by the pth roots of unity. The last chapter presents the Minkowski proof of the Dirichlet theorem on the units of a number field. The material is well arranged, with frequent appropriate examples, and is self-contained except for the fundamental theorem of algebra, the theorem on symmetric functions, and the basic facts about simultaneous homogeneous linear equations.

The reviewer regrets that the author did not take a little additional space to point out the fascinating relations between the specific concepts arising in algebraic number theory and the more general concepts of algebra. Thus, the fact that an ideal is precisely the kernel of a homomorphism is not mentioned. A field means exclusively a field of numbers; hence the revealing circumstance that the congruence classes of integers modulo a prime ideal constitute a finite field cannot be brought out. In keeping with an ancient tradition in number theory, the word "group" is never mentioned, in the midst of numerous arguments of a group-theoretic character. The fact that the ideal classes form a group is thus not clearly stated, and the familiar argument that a subgroup of a free abelian group is free appears in disguise at least twice (for units, and for bases of an ideal).

This book provides a clear and elementary introduction to its subject, in keeping with the purpose of the Carus Monographs. If supplemented as indicated, it would be of use in elementary graduate courses.

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BRIEF MENTION

Collected mathematical papers. By G. D. Birkhoff. Vol. 1, 43+754 pp.; vol. 2, 8+983 pp.; vol. 3, 8+897 pp. New York, American Mathematical Society, 1950. $18.00.

In addition to the collected papers, volume 1 contains obituaries by R. E. Langer, O. Veblen, and M. Morse, and volume 3 contains a list of Birkhoff's publications. The obituary by Morse, reproduced from Bull. Amer. Math. Soc. vol. 52 (1946) pp. 357–391, contains a detailed review of Birkhoff's work.

Contributions to Fourier analysis. By A. Zygmund, W. Transue, M.