appear simple to use, and are of obvious assistance in certain fields of pure and applied science. A single minor criticism may be offered. In the second part, the electron velocity might perhaps have been entered in cgs units as well as in fractions of the velocity of light.

A. O. WILLIAMS, JR.

Galois theory. By Emil Artin. With a chapter on applications by A. N. Milgram. (Notre Dame Mathematical Lectures No. 2.) University of Notre Dame, 1942. 70 pp. $1.25.

This is the first appearance in print of a complete presentation of Artin's brilliant improvement on the classical Galois theory of fields and equations. It provides a fundamentally better development of this most important algebraic theory, and algebraists will be very pleased that it has appeared.

The field theory is presented in the forty-four pages of Chapter II and is preceded by a twelve page first chapter on the linear algebra of systems of linear equations with coefficients in a quasi-field. The fields are then assumed to be commutative. The first five sections present the concepts and elementary properties of extension fields, relative degrees and reducibility of polynomials. They also contain proofs of the existence of simple algebraic extensions and of splitting fields and of the uniqueness of the latter.

The principal non-classical part of the approach occurs in Section F where the concept of fixed field is given and in Section G where the background of the fundamental theorem of the Galois theory is presented and the theorem is proved. It should be noted here that in the fundamental theorem the hypothesis that the irreducible factors of $p(x)$ are separable is required and was probably inadvertently omitted.

There are additional sections on finite fields, roots of unity, Noether equations, Kummer fields, simple extensions, the existence of a normal basis, and the Galois group of the composite of two fields. These results are applied in the final chapter by A. N. Milgram to the proof of the theorem that the general equation of degree $n>4$ is not solvable by radicals. There is also a section in this last chapter on a condition that an equation of prime degree be solvable by radicals, and a final section on ruler and compass construction.

The book as a whole is a model of elegant, compact presentation.

A. A. ALBERT

Received by the Editor of Book Reviews January, 1943; the delay in publication is due to the subsequent loss of the manuscript in the mail.