to be an intelligible introduction to basic methods in modern mathematical analysis as well as to the classic theory of convergence of series.

RALPH P. AGNEW

Miscellaneous physical tables. Planck's radiation functions and electronic functions. New York, Work Projects Administration, 1941. 7+61 pp. $1.50.

In the first part of this volume of the well known W.P.A. series, values are given for the spectral radiancy of a black body, the rate of photon emission, and the indefinite integrals (from 0 to λ in wavelength) of the functions. These are tabulated at constant intervals of $\lambda \cdot T$ (wavelength multiplied by Kelvin temperature), the size of the intervals changing occasionally. Auxiliary tables give values of some of the preceding quantities as tabular functions of wavelength alone at a few definite temperatures.

The second part tabulates relativistically correct values of the following properties of an electron, as functions of its velocity (entered with constant intervals in fractions of c, the velocity of light): the energy, in units of the electron rest energy m_0c^2; the momentum, in units of m_0c; the energy in electron-kilovolts; and the $H \cdot \rho$ values (ρ is the radius of a circle in which the electron would move if projected with the tabulated velocity normal to a magnetic field of H oersteds).

Each part of the volume was inspired by suggestions of well known scientists, as stated in the introductory discussions. The first part has been published previously in the February 1940 number of the Journal of the Optical Society of America. The introduction contains brief descriptions of the functions, examples illustrating use of and interpolation in the tables, a summary of the methods used in assembling or computing the entries, and a bibliography. In the major tables of the first part, first differences and second central differences are given for greater ease and accuracy in interpolation. A complication not met in purely mathematical tables exists here due to the fact that all the functions tabulated depend on measured physical constants: the velocity of light, Planck's constant, and electronic properties. The tables were based on the present best values of these constants, but are carried to extra figures. Directions are given for making corrections in case these are necessitated by newer values of the basic physical constants.

The tables are in the usual format of the W.P.A. series. They 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.