BOOK REVIEWS

Electromagnetic theory. (Proceedings of Symposia In Applied Mathematics, vol. 2.) New York, American Mathematical Society, 1950. 2+91 pp. $3.00.

The present book gives an account of the Second Symposium in Applied Mathematics of the American Mathematical Society, held at the Massachusetts Institute of Technology, July 24–31, 1948. It covers all fields of modern development in the electromagnetic theory, ranging from quantum electrodynamics to practical applications of the electromagnetic theory in communication engineering.

H. Feshbach presents in the first paper an excellent and very clear summary of the problems of quantum electromagnetic theory. He explains the advances made in recent years, especially the work of Schwinger on the elimination of infinite terms and the correct discussion of the Lamb-Rutherford correction.

J. L. Synge discusses a problem of importance for general relativity, and investigates how far it may be possible to dissociate electromagnetism from metric definitions. This is a central problem in relativity theory, and it had retained the attention of the late P. Langevin in many of his (unpublished!) lectures at the College de France. Synge's paper goes back to the fundamental definitions and represents a very important contribution to the problem.

W. H. Watson investigates the possibility of introducing discontinuities in the classical electromagnetic theory, and especially a sort of discontinuous motion. The idea is to obtain a translation of Maxwell's theory that could be more easily connected with the quantum statistical methods. This interesting paper shows how such an adaptation of the classical theory can be logically attempted and practically performed.

L. Infeld discusses the factorization method and its application to differential equations in theoretical physics, a very interesting problem on account of the power of the method for practical resolution of problems.

R. J. Duffin treats of nonlinear networks and indicates the method that can be used for such problems.

C. L. Pekeris compares the ray theory to the normal mode method, and shows that they are related by a Poisson transform.

A. E. Heins discusses systems of Wiener-Hopf integral equations and their applications to some boundary value problems in electromagnetic theory.