Hence $\mathfrak{G}$ can be thought of as imbedded isomorphically in its associated algebraic group $M(\mathfrak{G})$. The representations of $\mathfrak{R}$ to which these special ω's correspond are precisely those which preserve the passage to conjugate imaginaries (that is $\zeta(\bar{P}) = \overline{\zeta(P)}$). This subgroup of the representations of $\mathfrak{R}$ is therefore in one-one correspondence with $\mathfrak{G}$. This is the duality theorem of Tannaka by which we regain $\mathfrak{G}$ from $\mathfrak{R}$. The usual theorems about reducibility, orthogonality and the approximation of continuous functions on $\mathfrak{G}$ are needed in the foregoing development; they are established with characteristic efficiency.

The book is dedicated, appropriately, to Elie Cartan and Hermann Weyl.

P. A. SMITH

Lectures on differential equations. By Solomon Lefschetz. (Annals of Mathematics Studies, no. 14.) Princeton University Press; London, Humphrey Milford, Oxford University Press, 1946. 8+210 pp. $3.00.

This book is a welcome addition to the literature of differential equations in the real domain, for in it one finds certain basic parts of the theory treated in a refreshingly modern manner. The principal topics considered include the fundamental existence and continuity theorems, critical points, periodic solutions, and the stability of solutions. Poincaré's geometrical theory of the qualitative properties of the general solution of an equation of the first order is developed at considerable length. One chapter is devoted particularly to systems of linear differential equations. It is the author's intention to furnish the necessary background for the modern work on the theory of nonlinear dynamical systems, and I believe that the judicious selection of the material, together with the thoroughness of the treatment, will cause the book to serve this purpose admirably. Some of the simpler physical applications are discussed briefly in the final chapter.

The consistent use of the terminology and properties of vector spaces, matrices, and matrix differential equations enables the author to handle quite general situations without any unduly complicated symbolism. The relevant parts of matrix theory are carefully explained in the first chapter; and the subsequent use of these notions results, for the most part, in a very perspicuous treatment of the subject matter. In a few places, mostly in the fourth and fifth chapters, the highly condensed notation, combined perhaps with some typographical errors, makes for rather difficult reading. (The book is lithoprinted from a typewritten manuscript and, as is usual in such cases, there are a goodly number of typographical errors. Most of these, however, are quite trivial, and will cause no difficulty.)