now famous memoirs on the theory of integral equations and by some of his disciples in subsequent contributions. The first of these two chapters is given to the theory of linear substitutions where the number of variables is infinite. The general theory which is developed from this point of view is applied to the derivation of important results concerning a certain type of system of equations with an infinite number of variables. The second of these two chapters is given to the theory of quadratic forms where the number of variables is infinite and to the application of this theory to that of linear equations.

Chapter VI (pages 156–180) is devoted to certain applications of the general theory developed in the preceding part of the book. It falls into three parts dealing with as many distinct topics; namely, linear differential equations in which the coefficients are expansible in Laurent series, integral equations and trigonometric series.

This little book will serve a useful end by affording a ready introduction to one of the most important and most readily accessible phases of the general theory of functions of an infinite number of variables, a field in which at present there lies out before us a vast domain of unexplored territory—a domain in which the present generation will probably make further important explorations.

R. D. CARMICHAEL.

A General Course of Pure Mathematics from Indices to Solid Analytical Geometry. By ARTHUR L. BOWLEY, Sc.D. Oxford, Clarendon Press, 1913. xii + 272 pp.

It would be difficult to give a better brief account of the contents and the purpose of this book than that supplied by the author in the preface. From his remarks, therefore, we shall quote a few sentences, as follows:

"This book is the result of an attempt to bring within two covers a wide region of pure mathematics. Knowledge is assumed of that part of mathematics usually required for matriculation, namely algebra to simultaneous quadratic equations and the substance of the first four books of Euclid, together with a very slight acquaintance with graphic algebra, mensuration, and solid geometry. From this stage the work is carried forward in algebra to the logarithmic series; in coordinate geometry to the nature of the general conicoid; in trigonometry to the use of Euler's expressions for the sine and cosine, with a careful treatment of imaginary quantities; in calculus to definite integration and the maxima of a function of n independent variables; together with the pure geometry which is necessary for the other subjects. It has been the intention to include the bulk of the results obtained in pure mathematics which admit of rigid proof of a fairly easy character, and are needed by those who use pure mathematics as an instrument in mechanics, engineering, physics, chemistry, and economics. For this purpose a very great deal that is ordinarily contained in text-books has been thrown aside, and only those theorems and formulas which are of direct practical application or which are necessary to lead to others of direct practical application are retained.

"It has also been the intention to give exact definitions and strict proofs, of a more careful nature than those found in many of the more diffuse and elementary books; only two difficulties have been intentionally glozed over, viz., the nature of continuity and the nature of irrationals."

The considerable number of topics, the discussion of which is brought together in this one book, are treated in separate sections and probably in a larger degree of isolation from each other than most readers would expect in a single volume in which all of them find a place. The exposition, on the whole, is fairly satisfactory; some of the sections are excellent. The section on limits and series is the least satisfactory of all; some of the statements in it are properly characterized as awkward. For examples of these awkward statements the reader may see pages 101, 102, 105, 115.

The book as a whole is a contribution of some value to the pedagogy of that part of the mathematical curriculum with which it is concerned. Some of the controlling ideas in its preparation might well be adapted to the needs of American institutions; but the book itself is probably not well suited to such purposes. R. D. CARMICHAEL.

Démonstration du Théorème de Fermat. Par E. FABRY. Paris, Hermann et Fils, 1913. 22 pp. 1.50 fr.

Using the theory of Kummer as a basis the author undertakes to prove that the equation

$$x^\lambda + y^\lambda + z^\lambda = 0,$$