



---

Review

Author(s): H. P. H.

Review by: H. P. H.

Source: *The Mathematical Gazette*, Vol. 6, No. 99 (Jul., 1912), p. 347

Published by: Mathematical Association

Stable URL: <http://www.jstor.org/stable/3605041>

Accessed: 19-11-2015 00:11 UTC

---

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



*Mathematical Association* is collaborating with JSTOR to digitize, preserve and extend access to *The Mathematical Gazette*.

<http://www.jstor.org>

the conditions (i) that  $f'a$  is an integrable function of  $x$ , and (ii) that  $f$  is a continuous function of  $x$  and of  $a$ . "On n'a qu'à former  $\phi(a+h) - \phi(a)$  et à passer à la limite." If he had taken the trouble to do this he would, of course, have found his conditions inadequate. And when he wishes to extend the result to the case of an infinite upper limit, he gives a faulty definition of the uniform convergence of an integral. A little later on he suddenly introduces a new symbol  $\sim$  (without any explanation that I can find), and argues with it in the most casual way. In fact, all this part of the book is inaccurate and ill-digested. And even when it is impossible to say definitely that there is a mistake, the argument is often presented in such a form that the reader's confidence in the author is destroyed.

The best parts of the book seem to me to be the chapter on determinants and linear equations, and some of the sections dealing with integral equations. The parts about double and repeated integrals ought to be good, for the author has had the advantage of seeing the proofs of M. de la Vallée Poussin's new edition of his admirable *Cours*. It is a pity that the account which he gives of M. de la Vallée Poussin's work is not more adequate. G. H. HARDY.

**Elemente der Funktionentheorie.** Von Dr. NIELSEN. Pp. 520. Gr. 8vo. Price 15 marks. Weight 2½ lb. 1911. (Teubner.)

This volume reproduces a set of lectures given at the University of Copenhagen. By keeping strictly to the elements, Professor Nielsen is able to cover a wide field, so that Parts I. and II., on functions of real and complex variables, introduce the reader to a variety of aspects of these subjects. Part III. gives a detailed application to the elementary functions (including the gamma function) of the theory set out in the first two parts. The book is written with very great care. Accuracy is never sacrificed to brevity, and space is devoted to details of argument rather than to general discussion. This results in a certain monotony of style, especially in Part I., where it is not always easy to grasp the special point of each of the innumerable applications of the  $\delta$  and  $\epsilon$  method. A feature which adds greatly to the value of the book is the inclusion in nearly every paragraph of numerous exercises and references. H. P. H.

**Théorie des Fonctions Métasphériques.** By N. NIELSEN. Pp. 208. 4to. 1911. (Gauthier-Villars.)

In Part I. there is collected the elementary theory required later, from the definition of a limit to transformations of gamma functions. Part II. begins with the definition of a general metaspherical function by means of two recurrence formulae, from which is immediately deduced Legendre's differential equation of second order. This function is shewn to include as particular cases all the hypergeometric functions of which use is made in analysis. The remainder of this part gives detailed information about the general function and others connected with it; among the properties discussed are further recurrence formulae, asymptotic expansions, and developments valid in various regions of the plane. Part III. is devoted to infinite series; in particular, any analytic function is expanded in a series of products of metaspherical functions, convergent on and within an ellipse. Part IV. deals with expressions in the form of definite integrals.

Owing to the very general nature of the functions treated, the algebra is heavy, and the masses of formulae are not easy to grasp. There is no discussion of results that would appeal to a general mathematical reader, but these advanced researches will be of great interest to those who have already made themselves familiar with the whole theory of Legendre and allied functions as it existed previously. H. P. H.

**Mémoire sur l'attraction du parallélépipède ellipsoïdal.** By M. DE SALVERT. 7 fr. 1908. (Gauthier-Villars.)

The object of the memoir is to calculate the total attraction of a homogeneous solid bounded by six confocal quadrics which can be arranged in pairs belonging respectively to the three different types. In order to simplify the work, the attraction is calculated at a point on the axis.