said, he was at times hardly able to master them ; and many of these ideas, especially those concerning elliptic functions, were never incorporated in memoirs.

This diary has now been given to the public by Professor Klein, who has enhanced its value very greatly by attaching to a large number of its entries explanatory notes pointing out their relation to other published or unpublished writings of Gauss. Professor Klein explains, however, that this publication is to be regarded as a preliminary one only, since the diary is to be printed, with a more extended commentary, in Volume X, of Gauss's Collected Works.

A portrait of Gauss at the age of twenty-six, which has never before been published, serves as frontispiece, and one of the pages of the diary is reproduced in facsimile.

MAXIME BÔCHER.

Zur Integration partieller Differentialgleichungen. DR. KARL BOEHM. Leipzig, Teubner, 1900. 8vo. 55 pp. Mk. 1.80.

THE above paper, printed in book form, deals exclusively with the formal solution of partial differential equations, and of systems of such equations, by means of series, the convergence of which is not investigated.

The author starts with a given equation, or set of equations, of any order, forms their successive derived equations, and counts the number of derivatives of highest order compared with the number of equations, at each stage. He then shows, for a single equation, that the given equation can be solved with respect to any exceptional * derivative, and finally that a power series expansion may be obtained for the solution, which will formally satisfy the given equation, when arbitrary constant values have been preassigned for certain suitable derivates ; all this at a point where the equation is not " singular " with the respect to the exceptional derivative chosen. Similar results are obtained for a system of equations, under certain restrictions.

The work doubtless has real merit, but the reviewer does not feel justified in entering further into detail on account of the failure to discuss the convergence of the series in question: an omission which the author acknowledges in several places, and which renders the importance of the paper rather doubt-

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* "Ausgezeichnet ;" the definition is too intricate to repeat here.

ful. For it reduces the work to a questionable revision, not of Weierstrass and Kowalewsky, but of Cauchy, as the author confesses in his preface ; certainly in fact as well as in principle not a modern tendency. In fact the author's only plea for a very complicated piece of reasoning, which might indeed have been put into far simpler form, is that "it gives results even for certain singular points, and fails only for the points which we have called *wholly singular* "— for several reasons a doubtful advantage, especially in view of the unfinished state of the work.

In conclusion, the material of the book would seem to be more fitted for a thesis ; or for publication in a journal (in which case nearly twenty pages of repetition and unnecessary examples might profitably have been omitted); or for preservation unpublished, awaiting some of the proofs of convergence of which the author is happily sanguine. In its present form it may serve, if at all, perhaps to some student who will furnish the major portion of the whole by giving these convergence proofs. It is not in any sense a text-book or a treatise, and it is certainly not a book for general purchase.

<div style="text-align:right">E. R. HEDRICK.</div>

The Measurement of General Exchange Value. BY CORREA MOYLAN WALSH. New York, The Macmillan Company, 1901. 8vo., xiv + 580 pp. $3.00.

THIS is the most exhaustive work ever brought out on the theory of index numbers, embodies a vast deal of labor and acute logic, and will be a mine of information to future investigators. In so well worked ground there is necessarily much that is familiar to students of the subject, though hitherto inaccessible outside the largest libraries. But this editorial portion of the material — the most excellent bibliography, the index, the symbolized summaries of the methods of his predecessors — may prove to be the most valuable part of Mr. Walsh's work.

It is not in place in this BULLETIN to enter on the purely economic aspect of the subject, which is covered by an extended notice by Professor F. Y. Edgeworth in the *British Economic Journal* for September, 1901. But the mathematician and the practical statistician may find themselves puzzled by the confident rejection of the aid of the calculus of probabilities, elsewhere found so helpful both to theory and practice in dealing with complex problems of mensuration. Doubtless—as Professor