

Then (I) shows that  $\Omega$  is a solution of the partial differential equation

$$X \frac{\partial f}{\partial x} + Y \frac{\partial f}{\partial y} + Z \frac{\partial f}{\partial z} = 0,$$

equivalent to the simultaneous system (1).

Evident misprints occur on p. 145, l. 7, p. 157, p. 182. It adds clearness to use  $y \cot nx$  instead of  $\cot nxy$  used p. 188.

A final remark is that it seems preferable to teach a general *method of procedure* for solving differential equations using freely transformations of the independent and dependent variables, rather than the application of a general formula. For example, the integration of the general linear differential equation of the first order is performed by a simple method, but by a complicated formula.

L. E. DICKSON.

UNIVERSITY OF CALIFORNIA,  
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### TANNERY'S ARITHMETIC.

*Leçons d'Arithmétique théorique et pratique.* By JULES TANNERY. Paris, Colin et Cie, 1894. viii + 509 pp.

THE present volume from the pen of the distinguished director of scientific studies at the École Normale Supérieure in Paris is the first work on arithmetic we have seen which while intended entirely for secondary instruction is written in accordance with the new ideas regarding the number concept and the need of rigor. It is thus a pioneer, perhaps even the inaugurator, of a revolution in secondary instruction in mathematics and as such will receive praise or censure according as the person in question is thoroughly awake to the crying necessity of reform in secondary mathematical instruction, or is not.

For fifty years or more slow changes have been taking place in the mathematical world. Their cumulative effect has completely transformed the aspect of mathematics from its bottommost foundations to the summit. Such mathematicians as Gauss, Cauchy, and Abel found the great structure of mathematics almost without foundation. Here is an extract of a letter of Abel to Hansteen, dated 1826: "Je