by the equation

$$\rho = e^{\int \frac{F_y dx - F_x dy}{1 + F^2}} / \sqrt{1 + F^2},$$

and is determined save as to a multiplicative constant. The group is therefore uniquely determined.

In the second proof it is assumed that the meaning of the condition (2) is known. If, however, the condition (2) had not been derived independently, the two proofs together show that (2) is the necessary and sufficient condition that the integral curves of $y' = F(x, y)$ shall form a system of isothermal curves.

HARVARD UNIVERSITY,
    February, 1905.

ARENDT'S DIRICHLET'S DEFINITE INTEGRALS.

*G. Lejeune Dirichlet's Vorlesungen über die Lehre von den ein-
fachen und mehrfachen bestimmten Integralen.* Herausgege-
ben von G. ARENDT. Braunschweig, Vieweg und Sohn,
1904. xxiii + 478 pp.

This book is almost a literal reproduction of the course on definite integrals which Dirichlet gave at Berlin during the summer of 1854. It is not its aim to give any account of the development of the subject during the last fifty years. The book on definite integrals by Meyer * contains discussions of trigonometric series, potential and other matters, taken partly from other courses of Dirichlet, and partly from his own investigations. Whether the new book encroaches on the older one is not necessary to discuss, for Meyer has long been out of print and it is certainly worth while to have the Dirichlet course accessible, essentially in the form in which it was given. Moreover, apart from the questions of continuity, integrability, length, area, uniform convergence, etc., the great body of subject matter is to-day what it was then.

After defining continuity, an integral is discussed by means of a figure which illustrates the area included between two ordinates, the axis of X and a continuous curve. The same problem is then treated analytically, for an arbitrary division of the in-

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* Vorlesungen über die Theorie der bestimmten Integrale zwischen reellen Grenzen, mit vorzüglicher Berücksichtigung der von P. Gustav Lejeune-Dirichlet im Sommer 1858 gehaltenen Vorträge über bestimmte Integrale. Von Dr. Phil. Gustav Férdinand Meyer. Leipzig, Teubner, 1871.