In the matter of skillful mathematical typography the book leaves more to be desired than is usually the case.

DAVID EUGENE SMITH.

Les Coordonnées intrinsèques, Théorie et Applications. Par L. BRAUDE. (Scientia, série physico-mathématique, no. 34.) Paris, Gauthier-Villars, 1914. 100 pp. Price 2 francs.

IN 1849 and 1850 William Whewell read two memoirs* on the intrinsic equation of a curve and its applications, before the Cambridge Philosophical Society. The opening paragraph of the first memoir is as follows:

"Mathematicians are aware how complex and intractable are generally the expressions for the lengths of curves referred to rectilinear coordinates, and also the determinations of their involutes and evolutes. It appears a natural reflexion to make, that this complexity arises in a considerable degree from the introduction into the investigation of the reference to the rectilinear coordinates (which are *extrinsic* lines); the properties of the curve lines with relation to these straight lines are something entirely extraneous, and additional with respect to the properties of the curves themselves, their involutes and evolutes; and the algebraical representation of the former class of properties may be very intricate and cumbrous, while there may exist some very simple and manageable expression of the properties of the curves when freed from these extraneous appendages. These considerations have led me to consider what would be the result if curves were expressed by means of a relation between two simple and *intrinsic* elements; the length of the curve and the angle through which it bends: and as this mode of expressing a curve much simplifies the solution of several problems, I shall state some of its consequences." He then considers the curve defined by the equation

$$s = f(\varphi), \tag{1}$$

points out that the radius of curvature follows at once from the relation

$$\rho = \frac{ds}{d\varphi} = F(\varphi), \tag{2}$$

* *Transactions of the Cambridge Philosophical Society,* vol. 8, part 5 (1849), pp. 659, 671; vol. 9, part 1 (1850), pp. 150, 156.