criteria (given in § 498) appears at once from the example $u = (y^2 - 2px)(y^2 - 2qx)$ [Peano]. The origin is a point satisfying the preliminary conditions; taking then for x, y, small quantities h, k, the terms of the second degree are positive for all values except $h = 0$; when $h = 0$, the terms of the third degree vanish, and the terms of the fourth degree are positive; nevertheless the point does not give a minimum, which it should do by the test of § 498. For we can travel away from O in between the two parabolas, so coming to an adjacent point at which u has a small negative value, while for points inside or outside both parabolas the value of u is positive. The truth is, the nature of the value a of the function u at a point (x_0, y_0) at which $\frac{\delta\varphi}{\delta x}$ and $\frac{\delta\varphi}{\delta y}$ vanish, depends on the nature of the singularity of the curve $u = a$ at this point. If this curve has at (x_0, y_0) an isolated point of any degree of multiplicity, we have a true maximum or minimum of u; but if through (x_0, y_0) pass any number of real non-repeated branches of the curve, we have not a maximum or minimum; in Peano's example the branches coincide in the immediate neighbourhood of the origin, but then they separate, and therefore we have not a minimum value for u.

We object, then, to Mr. Edwards' treatise on the Differential Calculus because in it, notwithstanding a specious show of rigour, he repeats old errors and faulty methods of proof, and introduces new errors; and because its tendency is to encourage the practice of cramming "short proofs" and detached propositions for examination purposes.

CHARLOTTE ANGAS SCOTT.

BRYN MAWR, PA., *May* 18, 1892.

NOTE ON RESULTANTS.

BY PROF. M. W. HASKELL.

ON page 151 of Prof. Gordan's lectures on determinants* is to be found the theorem

$$R_{f,\phi} = R_{f+\phi.\psi,\phi}$$

where $R_{f,\phi}$ denotes the resultant of two functions f and ϕ of a single variable x of degree m and n respectively. This

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* *Vorlesungen über Invariantentheorie*, herausgegeben von KERSCHENSTEINER. Erster Band. Leipzig, 1885.