magnetic phenomena novel conceptions, the value of which other fifty years have hardly sufficed to realise —is, indeed, an extraordinary fact well worthy of careful examination. Certainly the language in which Cuvier with truth congratulates the French nation on the pre-eminence which it has attained in all branches of science contrasts strangely with the repeated attacks made in periodical literature, and in special pamphlets, on the state of science in England. And these not by persons ignorant of the great names and signal achievements just mentioned, but by men of note, occupying all but the very first places among the scientific men of this country.

It will suffice to give only two out of many examples of this criticism.

5. Criticisms of Playfair.

One of the earliest complaints regarding the culture of higher mathematics in this country will be found in an

at Nottingham by private subscription in 1828. The term "potential function," to denote the sum (V) obtained by adding together the masses of all the particles of a system, each divided by its distance from a given point, or in mathematical language $V=\int\frac{dm}{r}$, occurs there for the first time. See Green's mathematical papers, ed. Ferrers, 1871, p. 22. The function had before that time been used by Legendre and Laplace, but Green was the first to give a general mathematical theory of it. His essay remained unknown to the mathematical world, and the principal theorems were independently published by Gauss in his celebrated essay 'Allgemeine Lehrsätze über die im verkehrten Verhältnisse des Quadrats der Entfernung wirkenden Anziehungs- und Abstossungs-Kräfte,' 1839.

2. W. Rowan Hamilton's memoirs in the 'Philosophical Transactions' of 1834 and 1835, preceded by his theory of systems of rays in the 'Transactions of the Royal Irish Academy,' 1828. In these papers is contained his celebrated principle of varying action, which is a development of Maupertuis's principle of least—or stationary—action. A great deal has been written on this principle, which is now considered to be the most general principle of dynamics, as well for its mathematical usefulness in calculations (see Kirchhoff, 'Vorlesungen über mathematische Physik,' vol. i. pp. 28, 29), as from a physical point of view (Helmholtz, in 'Journal für Mathematik,' vol. 100). It has gained this importance since the conception of energy, or power to do work, has been placed at the base of the theory of all physical processes.