

Whewell, in various passages of his 'History' and of his 'Philosophy of the Inductive Sciences,' argues that the explanation of organic forms is to be found in the study of the functions which each organ is destined to perform, and brings morphology back under the guidance of physiology, from which De Candolle and others had only recently liberated it.¹ Alexander Braun, the great German botanist, wrote about the same time: "Although the organism in its growth is subject to physical conditions, the real causes of its morphological and biological speciality lie, nevertheless, not in these conditions: its laws belong to a higher grade of development of reality, to a sphere in which the capacity for spontaneous self-determination becomes evident."² Even Johannes Müller,

mould it in subserviency to the exigencies of the resulting specific form" (p. 172). Huxley attributes these theoretical views of Owen to the influence of Lorenz Oken, the principal scientific representative of the school of the "Naturphilosophie." In this respect Owen left the direction of study initiated and so successfully followed by Cuvier. In fact, though opposed to Darwinism, Owen did not, like Cuvier, believe in special creation, as is clearly shown in a passage frequently quoted, taken from the conclusion to the third volume of Owen's great work 'On the Anatomy of Vertebrates' (1868), p. 807: "So, being unable to accept the volitional hypothesis, or that of impulse from within, or the selective force exerted by outward circumstances, I deem an innate tendency to deviate from parental type, operating through periods of adequate duration, to be the most probable nature, or way of operation, of the secondary law, whereby

species have been derived one from another."

¹ De Candolle is very clear on this point; he says ('Théorie élémentaire,' p. 170): "L'usage des organes est une conséquence de leur structure, et n'en est nullement la cause, comme certains écrivains irréfutés semblent l'indiquer; l'usage, quelque soit son importance dans l'étude physiologique des êtres, n'a donc en lui-même qu'une médiocre importance dans l'anatomie, et ne peut en avoir aucune dans la taxonomie; quelquefois seulement on peut s'en servir comme d'un indice de certaines structures à nous encore inconnues; ainsi lorsque je vois la surface unie d'un pétale suinter une liqueur, j'en conclus que cette partie est glandulaire, et je l'assimile aux nectaires; mais cette assimilation, bien que reconnue par l'identité de l'usage, est réellement établie sur l'identité présumée de la structure."

² Quoted by Sachs ('Gesch. d. Botanik,' p. 188).