France was even more reserved towards this aspect of Lyell's work. The ideas of Cuvier were deeply rooted, and were ably supported by Élie de Beaumont and Alcide d'Orbigny. It was not until after the death of these two gifted scientists that the Uniformitarians could become successful. Many of Lyell's opinions, more especially his theories regarding crystalline schists, were warmly contested, and his explanation of volcanic phenomena and mountain-making was afterwards found insufficient. At the same time, the leading principle of his geological teaching—that the key to the solution of the events of the past is to be found in the study of the natural forces still acting—has remained as the secure basis of all modern geological investigation. The recognition of this grand principle gave a new significance to dynamical geology, and brought it at once into prominence among geologists.

Sir Henry de la Beche wrote in 1835 an excellent introduction to dynamical geology, entitled *How to Observe;* in later editions, the title was changed to *The Geological Observer.* De la Beche followed essentially the same method as Lyell, and his book, which is full of new observations and facts, may almost be regarded as a supplement to Lyell's *Principles.*

A. *Geological Action of the Atmosphere.*—The destructive and constructive activity of the atmosphere plays in general but a small part in the conformation of the earth's surface, and was for a long time neglected by geologists. Chemical effects can only be produced by the atmosphere in its combination with water or living organisms. Mechanical forms of destruction are effected by the atmosphere in all regions subject to marked extremes of seasonal or diurnal temperature, the wasting of the rocks being considerably aided by the strain of alternating expansions and contractions. The geographer Livingstone was the first who observed that in the African deserts sharp fragments sprang away with a ringing tone from the basalt rock whenever a hot day was succeeded by a night with very low temperature. Other travellers have since confirmed this observation, and have ascertained that the so-called "Hammada" region undoubtedly owes its surface-mantle of angular fragments of stone to the destructive effects of rapid variations of temperature.