

with other forms of matter effects important changes. Upon this physical basis, Breislak supposes that, as the heat-particles entered into combination with other particles of matter for which they had affinity, the total amount of free heat diminished, and the temperature of the earth perceptibly cooled. Gaseous material gathered internally and still more at the surface, where it was condensed as a primitive ocean. The internal gases in combination with heat produced elastic vapours. These tried to force their way to the surface, cracking and breaking the solid crust that had begun to form.

Breislak then discusses the origin of the various kinds of crystalline rock found in the crust. He disagrees with Hutton's explanation of gneiss and crystalline schist as altered sedimentary rock, and includes them together with granite, porphyry, and other igneous rocks, as products of the cooling of matter from the primitive molten state. Breislak's ideas about rock-structure soon fell into oblivion, but his able criticism of the Neptunian dogmas was largely instrumental in eradicating them from the teaching of the universities and colleges. There would be little profit in recording further the many contradictory theories of the earth that appeared between the publication of Buffon's *Théorie de la Terre* in 1749 and of Breislak's *Introduzione alla Geologia* in 1811. What seems very remarkable is that in none of these can we trace the influence of the cosmogony and geogeny made known in 1755 by the great philosopher, Immanuel Kant, in his *Naturgeschichte des Himmels*. Neither do geologists seem to have benefited by the kindred work of the French mathematician, Laplace, *Exposition du Système du Monde*, published in 1796.

Kant's little book appeared anonymously, immediately before the outbreak of the Seven Years' War. It received no attention, was forgotten, and ninety years elapsed before Alexander von Humboldt unearthed it from neglect. Kant originated the conception that the ordered cosmical universe might have been produced merely by the agency of mechanical forces acting upon a vaporous chaotic mass. Kant supposed that all the matter composing the spherical bodies of our solar system, the planets and the comets, was in the beginning broken up into its elementary constituents and distributed throughout space. All the particles of matter could attract and repel one