

sea withdrew into these crust-cavities, and at the same time the areas of denser precipitation became land. Volcanic eruptions invariably originated in these primitive air and vapour chambers in the earth's crust, which were moreover frequently connected with one another by crust-fissures.

It is unnecessary to enter into the further details of De la Métherie's *Theory*. Two years after its publication, Bertrand, another French geologist, wrote *New Principles of Geology*, a work contesting De la Métherie's conceptions, but not in itself contributing any new facts of value to science. Ballenstedt, a German pastor, was the author of a book entitled *Die Urwelt* (or the *Primeval World*), which was widely read in scientific and literary circles. It endeavoured to "expound the Biblical stories in a sensible way," and went so far as to affirm that all human races had not descended from the one pair in Paradise, but that there had been originally several well-defined human species.

Scipio Breislak (1748-1826), an Italian, deserves to be remembered for his determined opposition to the Neptunian doctrines. In his *Text-book of Geology* he tries to demonstrate that the earth was originally in a fluid state, but that the volume of water now present on the globe would be absolutely insufficient to dissolve the solid material of the crust.

Further, the presence in earlier epochs of a much greater volume of water was a mere hypothesis, so also was the conception of internal crust-cavities into which large quantities of water might have withdrawn after the separation of the rock-precipitates. Again, there was no positive evidence that the surface of the ocean had sunk. The cases of apparent retreat of the sea from the coasts of Scandinavia, or in the Gulf of Naples, might be just as well explained by oscillatory movements of the earth's crust as by the supposed general lowering of the sea-level. After Breislak had demonstrated the impossibility of a fluid state of the earth with water as the solvent, he tried to prove that the primitive fluidity of earth substances had been due to their intimate admixture and combination with heat-particles. Breislak imagines the earth in its first periods of formation as a confused cosmic mass soaked in heated matter, and therefore more or less molten. Two modes of heat are distinguished by Breislak, *free* heat, which calls forth the sensation of heat, and *combined* heat, which is not perceptible to the senses, but whose combination