

water shells, and remains of terrestrial mammals. But to Desmarest they were proofs of the former presence of the sea over the heart of France. He inferred that the pebbles of various lavas which he found among these strata denoted former volcanic eruptions, before the accumulation of the marine deposits. But he noticed also indications of the discharge of lava during the sojourn of the sea over this region. He believed that his third epoch must have lasted some considerable time, so as to permit the deposition of 600 or 900 feet of horizontal sediments above the lowest lavas.<sup>1</sup>

He remarks that from ignorance of this method of following the sequence of eruptions and the effects of continuous waste, naturalists had failed to detect the existence of lavas of the second and third epochs in districts where eruptions of the first epoch were no longer to be recognized. These observers, he contended, had misread the evidence of nature, referring what were undoubtedly volcanic rocks to deposition from water, to schists, and to *Pierre de corne*, and on the other hand mistaking for volcanic craters what were only hollows dug out by running water in the lavas of the second, or even of the first epoch.

<sup>1</sup>In the article "Auvergne" in his *Géographie Physique*, p. 882 (published in 1803), he briefly summarises his three epochs thus—"I have distinguished three kinds of volcanoes in Auvergne, first, ancient volcanoes; second, modern volcanoes; and third, submarine volcanoes." Probably most of the lavas of his third epoch are rather of the nature of intrusive sills. The subject of ancient volcanic rocks interstratified among sedimentary deposits is discussed in chapter viii.