

# Anniversaries

Scipione Breislak died 200 years ago

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## A GEOLOGICAL AND INTELLECTUAL BIOGRAPHY OF THE ITALIAN GEOLOGIST SCIPIONE BREISLAK (1750–1826)

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Scipione Breislak was a leading Roman geologist and a central figure in European earth sciences at the turn of the 19th century. Indeed, his reputation extended far beyond Italy, particularly within France, where his works had been widely translated. In 1810, in recognition of his high scientific standing, Napoleon appointed him an emeritus member of the National Institute (The Royal Institute of Science, Letters and Arts) in Milan. He was also a member of several prestigious scientific academies and institutions throughout Europe, such as the Academies of Sciences in Turin, Geneva, Jena, Berlin, Munich, and the Royal Society of Edinburgh (Gennari and Rigault de la Longrais 1972).

Although primarily renowned as one of the most distinguished Italian Vulcanists—maintaining that magmatism and volcanic activity were fundamental to orogenesis and the formation of the Earth’s crust—the Roman geologist is equally well-known for his adherence to Plutonist theories. The word Plutonism was introduced in the wake of Richard Kirwan’s definition of James Hutton’s theory of the Earth (Kirwan 1810, vol. 1, p. 403), according to which molten incandescent masses in the ‘plutonic’ depths of Earth were responsible for the formation not only of igneous rocks, such as granites and basalts, but also of the Earth’s crust. According to Plutonism, Earth’s internal heat or fire was the primary force in shaping the lithosphere.

Born in Rome in 1750, Breislak was ordained in 1767 as a regular cleric of the Pious Schools at the Collegio Nazareno (Rome). Following his novitiate and with a degree in Theology, in 1773 he began lecturing Philosophy and Moral Theology at the school of the Piarists Order (Order of Poor Clerics Regular of the Mother of God of the Pious Schools) in Albano, just outside Rome. His move to Ragusa (Dalmatia) in 1777 proved to be crucial for his scientific maturity. There, he met the Paduan naturalist Alberto Fortis (1741–1803), famous for his *Viaggio in Dalmazia* (1774) (*Travels into Dalmatia*, 1778), whose theories on the volcanic formation of the Earth’s crust significantly influenced Breislak’s early lithological ideas. Fortis encouraged the young cleric to deepen his studies of the natural sciences (Francani 1970).

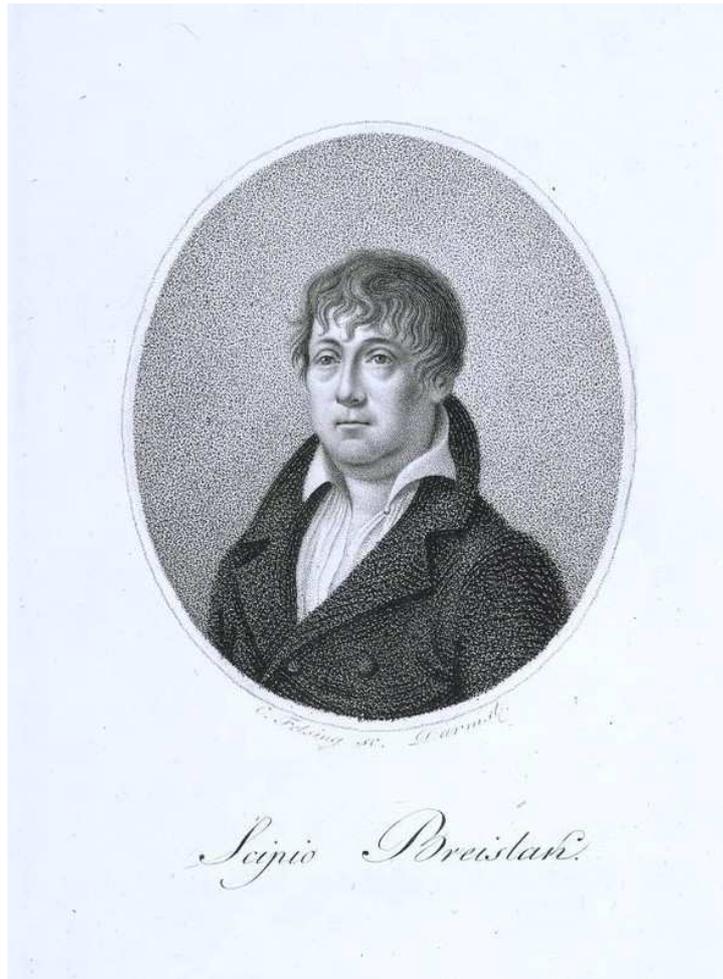


Figure 1: Portrait of Scipione Breislak. Mold manufacturer: Conrad Fesling (Darmstadt, c. 1800) Source: Portrait collection of the Deutsches Museum (Munich).

Breislak later spent some time in the city of Urbino in central-eastern Italy. Upon returning to Rome, he was appointed professor of physics at the Collegio Nazareno, where he played a key role in establishing the mineralogical collection of the institute. In 1787, he moved to the Seminary of Nola near Naples to take up a professorship in philosophy. It was there that he began his productive surveys on the Solfatara of Pozzuoli and volcanic regions of Southern Italy. By the early 1790s, he was serving as professor of physics at the Nunziatella Military School and as director of the alum factory of the Solfatara at Pozzuoli. The years spent in Naples (1787–1798) were indeed decisive; his first-hand experience of the volcanic activity of Vesuvius and the Phlegraean Fields shaped his geological outlook.

At the Nazareno school, Breislak had studied under the Piarist priest Giovanni Vincenzo Petrini (1725–1814), a theologian and polymath profoundly immersed in the German and Swedish chemical-mineralogical traditions. Although initially a proponent of phlogiston theory, Petrini eventually embraced Lavoisier's 'new chemistry'. He also exerted a profound influence over Breislak's scientific formation, likely steering the Roman geologist's early volcanological ideas toward the theories of Swedish chemist and mineralogist Torbern Olof Bergman (1735–1784) (Cipollone 2013). Indeed, Breislak's research on the volcanic district of Campania disclosed how Bergman's theories and Lavoisier's chemistry affected his opinion that volcanic eruptions were triggered by ignition of petroleum deposits (Breislak 1798;

Breislak and Winspeare 1794). However, as the modern chemical system spread from France, Breislak completely abandoned phlogiston theory in the early 1790s. This transition was evident in his *Essais minéralogiques sur la Solfatare de Pouzzole* (*Mineralogical essays on the Solfatara of Pozzuoli*, 1792), composed while he was stationed at the Solfatara of Pozzuoli (Breislak 1792, pp. 12–13). This work marked a significant turning point, as he began to frame volcanic phenomena within the context of Lavoisier’s chemical principles. But, it was in the *Topografia fisica della Campania* (*Physical Topography of Campania*), published in Florence in 1798, that Breislak summarized a decade of observations on Phlegraean and Vesuvian volcanism. In the section on Vesuvius and Monte Somma, and echoing Bergman’s hypotheses, he ascribed the volcanic eruptions of Vesuvius to the subterranean ignition of petroleum deposits.



Figure 2: *Carte physique de la Campanie*: Scipione Breislak, *Voyages physiques et lythologiques dans la Campanie; suivis d'un Mémoire sur la Constitution physique de Rome; avec la Carte générale de la Campanie, d'après Zannoni; celle des Cratères éteints entre Naples et Cumès; celle du Vésuve, du Plan physique de Rome, etc. [...] traduits du manuscrit italien et accompagnés de notes, par le Général Pommereuil*, Dentu, Imprimeur-Libraire, Paris 1801, vol. I, 2 vols. Source: Linda Hall Library (Kansas City, USA), digital exhibition: *Vulcan's Forge and Fingal's Cave. Volcanoes, Basalt, and the Discovery of Geological Time*.

The Roman geologist supposed that bituminous deposits were distilled by the heat generated from the fermentation of pyrite sands. The released petroleum then soaked into phosphatic sands and alkaline solutions, ultimately fuelling the volcano’s ignition. Petroleum was thought to collect in deep underground cavities of Vesuvius: The source of the volcanic lava (Candela, 2024). Within this interpretive framework, Breislak rejected the notion of volcanism as a shallow subsurface phenomenon, instead asserting the hypothesis of deep ignition. Nevertheless, as would become clear in his *Introduzione alla geologia* (*Introduction*

to geology, 1811), he did not fully accept Hutton's thesis that there was a link between volcanic eruptions and the Earth's central heat.

In 1798, Breislak was recalled to Rome by the Republican Government, established that February, to fulfill various administrative assignments. In the capital of the new pro-French Roman Republic, he became an active member of the intellectual circle surrounding the *Monitore di Roma*, a periodical known for its Jacobin and patriotic leanings. Breislak contributed to the journal mainly with a column, entitled: *Abusi di Roma (Rome's Abuses)*. In a series of trenchant articles, he advocated for the revitalization of trade and agriculture as the primary sources of national wealth. His writings from this period reflect a staunchly liberal ideology; he argued that boosting manufacturing required a reduction in public holidays and urged the Roman populace to overcome their indolence. To modernize agriculture, he proposed the adoption of new technologies and a broader distribution of land ownership to reclaim uncultivated territories. Furthermore, he vehemently condemned those who sought to profit through speculation on ecclesiastical properties (Candela 2024).

Due to his political alignment, he was appointed commissioner of the Department of Trasimeno, where his primary responsibility was the recovery of loans. By March 1798, he had risen to the position of Minister of Treasury. However, persistent friction between the Consulate and republican administrative bodies, coupled with rising social and political unrest, led to the collapse of the Roman Republic in 1799. As a result, Breislak chose voluntary exile in France. After traveling to Marseille with the retreating French troops, he proceeded to Paris. His Parisian sojourn proved to be pivotal, allowing him to forge connections with some of France's most distinguished scholars, including Jean-Antoine Chaptal (1756–1832), Georges Cuvier (1769–1832), Antoine François Fourcroy (1755–1809), René-Just Haüy (1743–1822), and Alexandre Brongniart (1770–1847). Immersion within the French scientific milieu profoundly influenced Breislak's geological beliefs.

The time spent in France undoubtedly helped shape that historical perspective which can be noticed in his following works on Earth sciences. He returned to Italy at the turn of the century, settling in Milan, where he was appointed Inspector of Gunpowder in 1802. During the 'Milanese period', Breislak honed his plutonist viewpoint on Earth's history. Serving as an official of the Italian Republic (1802–1805, then Napoleonic Kingdom of Italy), he also focused his research on the geology of Lombardy and the Alps. In 1811, during the administration of the Napoleonic Kingdom of Italy, he published his two-volume *Introduzione alla geologia*, which may be considered the first Italian handbook on the newly institutionalized science of Geology.

In contrast to the Wernerian school of Neptunism, criticized for its dogmatic approach, the *Introduzione alla geologia* drew on both vulcanist and plutonist ideas to depict the entire story of the planet Earth. In this work, the Roman geologist also referred to James Hutton's theories in order to describe the lithostratigraphic features of crystalline rocks. The influence of Huttonian geology is also evident in Breislak's rejection of transition rocks: «nature does not make passages or transitions, and each of its products has a specific and particular way to exist» (Breislak 1811, volume 1, pp. 308–309). The *Introduzione alla geologia* was consistent with the principle of uniformitarianism and, in agreement with Buffon as well as with the Scottish naturalists James Hutton (1726–1797), it adopted the belief that it was not necessary to make use of extraordinary causes to explain geological phenomena. And, although Breislak had some doubts about Hutton's self-renewing Earth machine, he believed in a dynamic Earth, subject to fluctuating and locally active processes of decay, erosion, collapse, and renewal.

This resulted from ordinary physical laws acting over a long timescale, and operating in the past just as they did in the present and would continue to do in the future.

Among Breislak's intellectual activities in his later years was his involvement as editor of the *Biblioteca Italiana*, one of the leading literary periodicals published in Milan during the Habsburg Restoration. It was directed by the renowned Italian intellectual, diplomat and naturalist Giuseppe Acerbi (1773–1846), with whom the geologist unfortunately came into conflict, leading to his decision shortly after to leave the journal. In the final years of his life, Breislak published the *Descrizione geologica della Provincia di Milano* (*Geological Description of the Province of Milan*, 1822) and some geo-mineralogical manuscripts about his travels in Naples and Trentino, while his works on geognosy and the Lepontine Prealps were issued posthumously (Breislak 1838).

Breislak died in Milan on February 15, 1826.

### Further Reading

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