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“Anniversaries”: Alexander von Humboldt (1769-1859) “forever”. “Unkelstein” in the River Rhine, Basalt and the Pyramids – A Strange Connection 250 Years Ago

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Without a doubt Humboldt was, and still is, one of the most famous naturalists. His global activities, his expeditions to America (1799-1804) and Asia (1829), and his holistic view of nature are all deserving of recognition.

In 2019, historians of science are celebrating Humboldt’s 250th birthday and the 160th anniversary of his death. In the light of numerous publications on this occasion that are already available we may repeat the phrase “Humboldt forever” (“Humboldt und kein Ende”) to paraphrase the address by the famous German physiologist Emil Heinrich Du Bois-Reymond “Goethe forever” (1882), which in turn was a take-off on Goethe’s own “Shakespeare forever” (1813-1816).

There is much to say about Humboldt’s life and his contributions to science. Let us consider his first work dedicated to geology. After his time as a student at the Universities of Frankfurt/Oder and Göttingen, the young twenty-year-old nobleman turned his back on his books and undertook an excursion lasting several weeks to the river Rhine. His observation of basalts between Andernach and Bonn resulted in a short book with the title *Mineralogische Beobachtungen über einige Basalte am Rhein* (1790). Hidden behind this plain title was a bold line of argument that propelled a controversy about geology, the still young academic discipline. Both the neptunistic and vulcanic theories failed to categorise basalt and explain its origin. It was Goethe who uttered a hollow groan regarding this unsolved problem: “the North Americans are lucky not to have any basalt formations. No ancestors and no classical soil.” (Weimarer Ausgabe II,13, 314.) Humboldt could not solve the problem either. However, it was fascinating that he, based on his observations, discussed the external appearance of the basalt formations in direct connection to the two above-mentioned theories. The Unkel basalt was already well known among natural philosophers as it outcrops in the Rhine River, where it was an obstacle to shipping. Humboldt in observing the well-formed pillars of basalt was surprised that there were cavities inside. He read that they were filled with water but as he himself could not observe the water directly, he asked the stoneworkers about their experiences. From today’s perspective, this method of including statements of practical workers was much more

innovative than Humboldt's cautious interpretations that tended nevertheless to privilege neptunistic theoretical explanation as far it was dominant in that time.

Humboldt included both philological and cultural research in his book about basalt, for instance stating that the humanist and mining expert Georg Agricola had coined the term "basalt" in connection with his study of Pliny's *Naturalis historia* (book 36, § 58). Humboldt had justifiable doubts that basalt was used as construction material in ancient Egypt, as many scholars maintained. His book was also an answer to the so-called "pyramid debate", triggered by the 18th century German academic Samuel Simon Wittes. Wittes' theory that the pyramids in Egypt were not human made and were instead the result of volcanic eruptions divided the "republic of scholars". Some of them saw Wittes' theory as criticism on travel literature, others as irony about the exaggerated interest in volcanological phenomena. Humboldt's contribution to this debate was his philological analysis of ancient texts, beginning with Pliny. He came to the conclusion that Pliny's "basalts" were not identical with what was classified as basalt in Humboldt's time. What Strabo considered basalt, Humboldt identified as granite.

Back to the roots and to the primary sources - this is the message that historians today may share with Humboldt's assertion in his first monograph.

For more information:

Alexander von Humboldt (1790). *Mineralogische Beobachtungen über einige Basalte am Rhein*. Braunschweig, Schulbuchhandlungsdruckerei Kircher, 126 p.

Fritz Krafft (1994). Alexander von Humboldts mineralogische Beobachtungen über einige Basalte am Rhein und die Neptunismus-Vulkanismus-Kontroverse um die Basalt-Genese, in: Leitner Ulrike and Mikosch Regine (eds.), *Studia Fribergensia*. Alexander von Humboldt Kolloquium, Berlin, Akademie Verlag, p. 117-150.

Marita Hübner (2014). Samuel Simon Witte, Reiseberichte und Wissenschaft. Erklärungen von Persepolis und den Pyramiden um 1800, in Mulsow Martin and Rexroth Frank (eds.), *Was als wissenschaftlich gelten darf*. Frankfurt/New York, p. 439-460.



Fig. 1: Frans Hogenberg, the attack on Unkel (Neuwied), Germany, c. 1583. Wikisource. The “Unkelstein“ was identified as basalt; the basalt rocks that were seen in the Rhine (on the right bank of the river) were considered dangerous for shipping.