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The Role of Mineral Exhalations in Paracelsus' Theory of Mineral Generation and Miner's Diseases

A common criticism PARACELSUS' ideas, made by contemporaries and historians, has been the presence of inconsistencies in his conceptions of the processes that occur in nature. Studies of Paracelsus' mineral theory have revealed it to be a relatively early 'aqueous theory,' in which minerals are described as being generated from elemental water and *tria prima* within the earth. Paracelsus also discusses minerals in his treatise on miner's diseases. Recognizing that such illnesses usually enter the body through the pulmonary organs, and certainly having experienced the bad air in mines and the smokes evolved in smelting procedures, Paracelsus attributed most miner's diseases to the inhalation of mineral poisons in the form of impure *tria prima* constituents emanated from compositionally impure ores. This description of the generation of mineral vapors may seem to be inconsistent with his detailed theory of minerals forming in association with water. However, a little-studied aspect of Paracelsus' mineral theory found in his *De rerum naturae* directly addresses the vapors exhaled from mineral deposits during their generative processes. These exhalations were thought to be comprised of impure *tria prima* constituents expelled by the Archeus force that effected compositional separations in Paracelsus' view of nature, and comprised the Sulfur, Salt, and Mercury that were inappropriate toward forming a given deposit of metallic ore. The exhaled *tria prima* went on to form so-called 'semi-minerals' such as pyrites and were also linked to the colors of surface weatherings and the *witterung* vapors supposed to be visible above the deposits from which they were generated. Paraclesus' explanation of miner's diseases is thus related to his theory of mineral generation, for the vapors described as emanating from the natural compositional processing of ore deposits that were initially formed by elemental water were considered to be the same as those that poisoned the subterranean air, and as those released by the smelter of ores acting as an Archeus himself in separating the impurities from the desired metal. These vapors also provided an explanation for the generation of 'semi-minerals' and what are now understood as surface weatherings, and thus stood in agreement with contemporary views as described in the *Pirotechnia* (1542) of VANNOCCIO BIRINGUCCIO (1480 - c. 1539) and in the *Bergbuchlein* (c. 1505).

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