

# Paracelsus the Innovator: A Challenge to Galenism from On the Miner's Sickness and Other Miners' Diseases

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Phillipus Aurelius Theophrastus Bombastus Von Hohenheim, called Paracelsus, occupies a curious place in the history of medical innovators: on the one hand celebrated for his emphasis on empirical observation, and on the other reviled as a hot-headed and arrogant mystic. His works show great devotion to the Light of Nature, a property of the world which caused it to reveal its God-given healing secrets to the discerning and knowledgeable physician. This emphasis on experience was radical in the days when scholastic study of the works of Hippocrates and Galen was the basis of medical practice. Paracelsus rejected the authority of Galen but lacked the tools of the scientific method to replace Galen's teachings with empirical knowledge. Instead, Paracelsus devised a highly creative and interwoven mystical system of macrocosm and microcosm - God had devised the stars, spirits and the natural world in a pattern which was repeated in man's sidereal, spiritual and physical bodies. The wise physician could study the natural world, waiting to reveal its healing clues. This paper will evaluate Paracelsus the innovator based on one of his most influential and important writings, *Von der Bergsucht und Anderen Bergkrankheiten*, (*On the Miners' Sickness and Other Miners' Diseases*), written in 1534. An in-depth look at Paracelsus' theories of pathogenesis, cure, and prevention of miner's diseases will show that Paracelsus was a positive innovator in the history of medicine in his role as a reformer of medical therapies, as proponent of preventive medicine, and as advocate of learning through experience.

## Introduction

While some are remembered for important contributions to medicine, and others as icons of their time, Paracelsus is most remembered for a lively and infamous temper. Phillipus Aurelius Theophrastus Von Hohenheim, called Paracelsus, was probably not a pleasant man. Paracelsus had a prolific output, and his follower Huser of Basel collected and edited these works (1589-91). Huser had difficulty separating Paracelsus' life and works from colourful legend.<sup>1,2</sup> Paracelsus was deeply concerned with healing the outcast and sick, and with reforming a stagnant and bastardized Galenic medicine, but was grandiose, self-assured, with poor political judgement and a wicked temper.<sup>2,3</sup>

Sixteenth century medicine was the product of medieval scholasticism filtered through Eastern commentators.<sup>2</sup> Galen, interpreted by Avicenna, was the medical authority of the day, while the Church ruled over diseases of supernatural origin.<sup>4</sup> Medical knowledge was complete with Hippocrates and Galen, and although these early physicians had experimented, this was no longer done. Medieval observations were limited to those which reinforced pre-existing theories. Dissections

were rare, crude, and viewed as immoral. Scholastic medical ideas were based on Galen's theory of four humours: phlegm, blood, yellow bile and black bile representing the elemental influences of cold, dryness, warmth and moisture. Disease resulted from an imbalance in these humours, and was treated with a "cure by opposition" approach using complicated concoctions of herbs and unsavoury animal products, or bleeding and purging.<sup>1,2</sup> Insanity was viewed as a supernatural affliction stemming from demonic activity.<sup>4,5</sup> A rebel from the beginning, Paracelsus burst onto the scene with his own elemental system, the idea of like curing like<sup>6,7</sup>, an increased emphasis on simple herb and mineral remedies<sup>6,7</sup>, and natural origins of insanity.<sup>5</sup>

Theophrastus was born in Einsiedeln, Switzerland in 1493. His father, William of Hohenheim, was a local physician, from whom he presumably learned the basics of medicine. His name Paracelsus, a Latin creation perhaps meaning "equal of Celsus," a classical physician, was taken on during his university days.<sup>2</sup> His early education is mysterious: he may have obtained a medical degree at the University of Ferrara. He spent some years practicing in the

Fuggers mines at Huttenberg and Schwaz, possibly penning an early version of *Von der Bergsucht und Anderen Bergkrankheiten*, (*On the Miners' Sickness and Other Miners' Diseases*). He worked as an army surgeon before arriving at Straussburg in 1526. The great turning point in his career came in 1527 when he was appointed as city-physician to Basel. He lectured at the university in vernacular German, an innovative insult to the scholastic sensibilities of the time, and gave lectures criticizing Galenism, demanding reform in medicine. He publicly burned a copy of Avicenna's *Codex* at a student gathering. After two years in Basel, he had so many enemies that he was forced to flee, spending years wandering and studying in various degrees of poverty. He wrote prolifically on syphilis, plague, and surgery, completing his fundamental books, *Paragranium* and *Opus Paramirium*, in 1531. He returned to the mines at Hall and Schwaz in 1532-1533, refining his knowledge of mining and chemistry. He died in relative comfort in Salzburg in 1541.<sup>2,6,7</sup>

Paracelsus took ideas from ancient writers, neo-Platonists and alchemists, synthesizing them to create his own new metaphysics and cosmologies.<sup>1</sup> He believed that when God created the universe's astral, spiritual and physical realms, he echoed the human being's astral, spiritual and physical bodies.<sup>1</sup> Nature was a macrocosm, ordered into different groups and stages of being, reflecting a human's different and ordered components. The components were Paracelsus' new elements: salt, the principle of stability; mercury, the principle of volatility; and sulphur, the principle of combustibility. The stomach was the Archeus, a sort of alchemist that sorted out and arranged the salt, mercury and sulphur in the patient's food and air.<sup>1,6,7</sup>

A physician was gifted by God with the ability to read the Light of Nature<sup>1</sup>, a property which revealed secret patterns of Nature's macrocosm which could be harnessed to heal disease. This is probably Paracelsus' greatest scientific achievement: knowledge is to be sought through the observation of Nature. However, Paracelsus was a medieval man, not an empiricist. Without the tools of hypothesis and

experiment, he was forced to substitute his own metaphysical theories for those that he had rejected. This is evident in his four pillars of the practice of medicine: *Philosophy*, the study of the Light of Nature, *Astronomy*, *Alchemy*, the earliest branch of chemistry, and *Virtue*, theological understanding and right practice.<sup>1</sup>

### **The Von der Bergsucht**

The *Von der Bergsucht und Anderen Bergkrankheiten* may have written as early as 1525<sup>10</sup>, though others favour 1534. It was published posthumously by Samuel Architectus in 1567, and was not widely read until a century later.<sup>10</sup> It is based on years of up-close observation of the workers made by Paracelsus in local mines, who favoured experience over theoretical talk. As Paracelsus puts it:

*It is no longer meet to speak with the learned men and the philosophers, but with experienced men; for it is the manner and the innate custom of any experienced man not to confront another experienced man with talk...Experience is so constituted, that an understanding of its works makes itself known to everyone without much gab.*<sup>11</sup>

The *Von der Bergsucht* is divided into three books, each subdivided into four tractates. The first book deals with diseases of miners, the second with diseases of smelters and metal workers, and the third with disease caused by mercury, which Paracelsus considered unique enough to be treated separately. The four tractates introduce the disease and elements in question, and discuss pathogenesis, signs of the disease, and finally, the disease's cure.

### **The First Book**

Paracelsus, always humble, begins the first book, with an observation that no previous scholar has attempted such a classification.<sup>10</sup> He then explains the basics of how sicknesses of the lungs are generated in the second tractate. Air is the food of the lungs, and is digested there.<sup>10</sup> Air can be polluted through contact with the stars,

whose alchemical furnaces cause air to become separated into its separate elements which are harmful to human health.<sup>10</sup> These elements are mercury, which causes disease by coagulating from smoke, sulphur, which can be roasted by fire onto the lungs, and salt, which precipitates into the lungs. Altogether, these imbalanced elements cannot be properly digested by the lungs and form tartarus<sup>10</sup>, a sort of mucus that induces disease. Paracelsus draws a distinction between the lung diseases that all people suffer, and those unique to miners. Those suffered by above-ground dwellers are caused by the poisoning of surface air by the celestial stars. Those suffered by miners, however, result from the digestion of subterranean air that is poisoned by subterranean stars. By this Paracelsus meant the minerals themselves, forming constellations under the earth in the same manner as proper stars do in the sky.<sup>10</sup> Thus, astronomy, the second pillar of Paracelsus' medicine, informs philosophy, his first pillar of medicine.

The third tractate concerns the recognition of miners' diseases. He stated that physicians are ordained by God to protect men from the dangerous but necessary work of mining.<sup>10</sup> Paracelsus understands himself as a divinely ordained servant. He recognized the importance of shortness of breath due to excessive cold, and acidity and hoarseness due to excessive sulphur.<sup>10</sup> Paracelsus expounds the importance of observing disease to be able to accurately identify these signs.<sup>10</sup> He then poses two ideas of enduring worth to the progress of medicine: a recognition of acute versus chronic forms of poisoning, which he attributes to ingestion of the body instead of the spirit of a mineral. Eating arsenic produces instant death, but a vapour coming off the mineral produces a slower disease with the symptoms similar to pulmonary fibrosis, neoplasia, or emphysema.<sup>10</sup> The other idea is his formulation of what would become known as the homeopathic principle. As Paracelsus puts it:

*Now our physic (cure) is in mercury, sulphur and salt, and our poison is also in these three things, for they both exist together<sup>10</sup>...For instance:*

*whatever causes jaundice, also cures jaundice. It is thus: good and evil are in the same thing, the jaundice arises from the evil, and when the good is separated from the evil, the arcanum (cure) against jaundice is there.<sup>10</sup>*

The final tractate concerns itself with cures for miners' diseases. The first cures are preventative, being recipes for prophylaxis against ore vapours.<sup>10</sup> A diet rich in salt and deficient in spices is prescribed for the same reason.<sup>10</sup> Once the disease has taken hold, Paracelsus divides his cures into natural cures and arcana cures. Natural cures include sweating and the use of cyclamen roots.<sup>10</sup> Arcana cures take advantage of the astrological and elemental correspondences that caused the disease in order to cure the disease. The poisons are divided into arsenic, antimony and alkali sub-types, and each has its own mineral cure designed to produce sweating within the effected organs to wash off the polluting tartarus.<sup>10</sup>

## **Discussion**

In treatment, Paracelsus rejects the Galenic model by rejecting the theory of bodily humours and by rejecting cure by opposition. Paracelsus' pathogenesis are not internal humoral imbalances, but external poisons that have accumulated inside the body. This is much closer to our understanding of the modern pathogen. Of course, Paracelsus is reluctant to leave the older imbalance model behind entirely, as his dissertations imbalances of air, fire, water, and earth indicate. Paracelsus is also the first to suggest that the cause of disease may also be its cure - the homeopathic principle and the idea that one substance may contain both good and evil within it, which has played such an important part in the history of medicine. Paracelsus' pharmacy is also of interest to history. He is an early, if certainly not the first, proponent of a return to simple herbal remedies. More importantly, he is the first to introduce mineral remedies effectively. These would become increasingly popular, entering England's materia medica in the next century.

Paracelsus was also a strong advocate of what we might today call “lifestyle management”. He clearly understood that certain occupations carry their own specific risks, hence an entire book devoted to the diseases of miners and refiners. Of particular interest is his emphasis on the prevention of disease, something whose importance is sometimes forgotten in today’s medicine. Lifestyle control plays some part in this: Paracelsus recommends specific diets and sweatbaths for miners. Paracelsus shows a rudimentary understanding of primary and secondary prevention of disease by discussing those therapies that keep the patient from becoming weak and susceptible to mine vapours in the first place, and those that drive out infections before they take hold.

Finally, there is Paracelsus’ emphasis on experience, and where his sermons reach their most bombastic heights. He was nothing less than fanatically passionate about rejecting book learning and going out to the patients and local healers to understand disease. In the *Von der Bergsucht* he says:

*This experience should defend itself and the results which should move every unbeliever to believe in physic should be examined. For the results are so clear, that they are not in need of any disputation... However, each one should retain his own experience; for who can or wants to fathom the end of medicine?*<sup>10</sup>

Paracelsus anticipates the secular and empirical trends that would soon sweep medicine as the Renaissance took hold. However, he cannot make the leap away from the medieval scholasticism in which he was raised; he does not have any guides or tools with which to do so. He cannot be properly understood as a demystifier of medical knowledge.<sup>11</sup> His own mystical systems are complex and frequently self-incompatible. For all his arrogant confidence in his own mystical ideas however, Paracelsus remained a stubborn proponent of experienced facts, and as the above quotation shows, he

remained open to the idea that his own understanding might someday be surpassed by others’ experiences.

## Conclusion

So was Paracelsus a positive innovator? It depends on the measure. The *Von der Bergsucht* is the first handbook of occupational disease, and one of the first therapeutic texts to endorse a homeopathic ideal. Paracelsus’ descriptions of the physiognomy of mercury poisoning are quite accurate. On a practical level, Paracelsus’ *Von der Bergsucht* is a mixed success. Some of his herbal and mineral cures may have worked, and some undoubtedly did not. His observation that a substance might be helpful or harmful depending on context is a valuable one. However, to focus entirely on the practical therapeutic value of Paracelsus’ cures is to miss out on his greatest contribution to the history of medicine. This is a catalogue of diseases not heretofore recognized by medical authorities- the idea that the ancients might have missed a few things is radical and valuable. Furthermore, Paracelsus’ physiognomic data on the miners’ diseases more than any others (save perhaps his studies on syphilis) were based on real, objective observation. Openness to new ideas and close observation and relationship with the patient, was an ideal of Hippocrates, and is something still highly prized in medicine today. It is also an innovation of which Paracelsus was one of the earliest proponents. For this reason, *Von der Bergsucht und Anderen Bergkrankheiten*, demonstrates the Paracelsus was indeed a positive innovator in the history of medicine.

## References

1. Jay, V. The Legacy of Laënnec. *Arch Pathol Lab Med.* 2000; 124: 1420-1421.
2. Daniel, T. René Théophile Hyacinthe Laënnec and the founding of pulmonary medicine. *Int J Tuberc Lung Dis.* 2004; 8(5): 517–518.
3. Duffin, J. *History of Medicine: A Scandalously short introduction to Medicine.* Toronto: University of Toronto Press, 1999.
4. Lachmund, J. Making sense of sound: Auscultation and lung sound codification of in 19th century French

- and German medicine. *Science, Technology and Human Values*. 1999; 24(4): 419-450.
5. Duffin, J. *To see with a better eye: A life of RTH Laennec*. Princeton NJ: Princeton University Press, 1998.
  6. Images from:  
<http://www.umanitoba.ca/faculties/medicine/units/history/notes/diagnostic/diagnostic5.html>