



Documents worth their **weight in gold**

Researchers Ana Maria Alfonso-Goldfarb and Márcia Ferraz, both from the Simão Mathias Center for Studies on the History of Science (Cesima) at the Catholic University of São Paulo (PUC-SP), took the Royal Society's motto, *Nullius in verba* ("Do not believe anybody's word"), literally. This motto conveys the idea that scientific knowledge needs to be experimentally tested rather than assumed to be true. Thanks to their literal interpretation of the Society's motto, the two researchers made an astonishing discovery in 2008. While going through piles of documents in the archives of the British institution, they came across a formula for *alkahest*, the alleged "universal solvent" of alchemists that supposedly dissolves any substance by reducing it to its primary components (see Pesquisa FAPESP issue 154). However, certain questions needed answering before the case could be closed. Specifically, it was necessary to identify the author of the copy of the discovered formula. Alfonso-Goldfarb and Ferraz went back to the archives, solved that mystery, and then came upon an even more enticing one: the discovery of a formula for the notorious philosopher's stone that, according to popular belief, transformed ordinary metals into gold.

Alfonso-Goldfarb explains, "It was an astonishing surprise and, in a way, an uncomfortable one because, as historians of science, it has become increasingly difficult to verify to what extent alchemy was important for the consolidation of the new science in the eighteenth century. It is important to point out that this continuous search for transmutation was viewed within the context of chemistry – especially as an instrument for medical progress – rather than within an esoteric context. This becomes very apparent in the concerns of such men as Boyle or Newton, among other heavyweights, who believed in the existence of the philosopher's stone." She and Ferraz believe that the work on the philosopher's stone was conducted within the scientific context of the eighteenth century, although there are divergent views as well. As the historian Theodore Hoppen, a professor at the University of Hull and author of a paper entitled "The nature of the early Royal Society," points out, "Baconism was introduced into the Royal Society distorted by the views of a group linked to Samuel Hartlib, one of the institution's founders. This group took Bacon's precepts of studying 'that which is new, rare, and strange' in nature to

Brazilian researchers
find philosopher's
stone recipe at the
Royal Society

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Published in April 2011

the limit, mixing it with the persistent interest in discovering ‘useful’ inventions, without disregarding hermetic ideas, and going back to the works of Paracelsus and Helmont. Suffice it to see how Boyle maintained an embarrassing – to say the least – interest in issues related to natural philosophy and was willing to accept any kind of phenomenon, as long as it could be explained along mechanical lines. This included the philosopher’s stone. Newton, in his letter to Henry Oldenburg, the Royal Society secretary, complained that his colleague should ‘keep silent’ and refrain from disclosing ‘the secrets of a true hermetic philosopher.’”

Latin - Oldenburg, that same Royal Society secretary, is in fact at the center of the new mystery uncovered by the Brazilian researchers. After several attempts to identify the handwriting of the *alkahest* formula, they came across a document in Latin with marginal comments in French. “The handwriting looked familiar to us, and we realized that it was Oldenburg’s handwriting; he wrote his personal comments in French. So that mystery was solved: it was he who had transcribed the *alkahest* formula. However, when we read the text in Latin, written in another kind of handwriting, we realized that it was a formula for the philosopher’s stone,” the professors explain. The title of the text, whose date they were able to pinpoint as

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At the Royal Society in the seventeenth century, brilliant men believed in the existence of the philosopher’s stone to ‘unlock gold,’” says Alfonso-Goldfarb

1659, was *Processus de bois*. Right from the start, the two researchers believed that this referred to experiments related to burning wood (*bois* is French for “wood”). However, when they verified the existence of elements in the philosopher’s stone formula, they realized that the same person who had written the *alkahest* formula was involved. They checked in France if someone called Du Bois had anything to do with the famous transmutation; after a detective-like search, they came upon the story of Noel Picard, also known as

Du Bois, who was hanged in the Bastille in 1637 at the order of Cardinal Richelieu. The reason? Picard had tried to fool Louis XIII’s powerful minister by claiming that he was able to produce gold from lead. After an adventurous life of travels and after having converted from a Capuchin priest to a Lutheran one, Du Bois, now back in Paris, was taken under the wing of Father Joseph, Richelieu’s confessor. “The cardinal saw this as a chance to increase France’s wealth and solve the kingdom’s financial problems. So he asked Du Bois to use his ‘projection powder’ to produce gold in the presence of the king, the queen, and other noteworthy guests, including Richelieu,” recounts Ferraz. Carrying a cupel and a crucible, Du Bois went to the Louvre and set to work, asking the guards to bring him some musket gunpowder. He heated the gunpowder, sprinkled a powder on it and then covered it with ash. The enthusiastic king insisted on blowing on the mixture himself to reveal what he hoped would be gold, thereby covering himself, the queen and all the guests in ash. However, the glimpse of gold in the bottom of the pan more than made up for the inconvenience. Louis XIII hugged the ill-fated Du Bois, immediately granting him a noble title and the privilege of hunting on royal lands. Richelieu, who was very pleased, took Father Joseph aside and told him that he would nominate Father Joseph for cardinalship. The court goldsmiths helped sustain the jubilant mood by verifying that the material was indeed 22-karat gold. Du Bois confidently told the goldsmiths that this transmutation was merely a small example of alchemy’s possibilities.

Richelieu told Du Bois that the king needed “only” 800 thousand francs worth of gold every week and granted him 20 days to begin this large-scale production. Richelieu added that this new-found source of gold would allow the king to stop collecting taxes and make him the most powerful ruler in Europe. However, Du Bois spent the 20 days hunting with his friends. The cardinal became suspicious and ordered that Du Bois be watched. Finally, irritated with the delay, Richelieu built a laboratory for the alleged alchemist to execute his “great work,” this time as a prisoner in the castle of Vincennes. Du Bois failed, and the “nobleman” was taken to the Bastille where he was tortured and hanged for

Preparing the philosopher’s stone



ALCHEMIST / ETCHING, 1625 / ALBUM / ANG-IMAGES / LATINSTOCK

failing to provide the formula for the philosopher's stone to his captors. In spite of the alchemist's evasive behavior, Du Bois' executioners believed that he really was capable of producing gold but did not want to disclose the secret. Twenty years later in 1659, Oldenburg was in France and came across Du Bois' formula. He sent it to England, where it seems to have been enthusiastically received. As Alfonso-Goldfarb notes, "In the seventeenth century, at the Royal Society, those brilliant men actually believed that Du Bois had really been able to 'unlock the gold,' in other words, that he had been able to dissolve it in order to prepare other materials, which was the function attributed to the philosopher's stone."

Stones - Alfonso-Goldfarb explains, "The core of the matter was the concern in dealing with health problems, especially the dissolving of stones in the body, one of the leading causes of death at those times. The belief was that the perfect solution was to dissolve them with mineral acids, without killing the patient. It was necessary to find something with the power of acid without the problems. This is where *alkahest* and the philosopher's stone together would be the perfect medication." *Alkahest* would reduce the negative effects of the acid remedies, and the philosopher's stone was its perfect complement. The stone was powerful enough to dissolve a noble and resistant metal such as gold, yet not powerful enough to damage the body. "Of course," Ferraz adds, "this didn't keep people from believing that the Stone was able to produce gold for financial purposes, even though the monetary reasons were neither the only nor the most important ones." Everything was interconnected. If, as alchemists believed, the stone had the power to "perfect" the metals by converting them into gold, then this metal "medicine" could be extended to medicine and similarly "improve" human subjects. This belief in alchemy's purifying power explains why so many people referred to the stone, and its gold-producing power, as a panacea for all illnesses and capable of prolonging life. As gold did not corrode, it came to be viewed as a symbol of immortality. Thus, ancient physicians and Chinese alchemists seeking life-prolonging elixirs came to believe that gold could be used for medical purposes.



Ironic portrait of an attempt at "the great work"

The chemistry historian Paulo Alves Porto, a professor at the Chemistry Institute of the University of São Paulo, expands on the medical implications of alchemy: "The work of Paracelsus and Van Helmont, among others, was developed at a time when Galenic medicine was being questioned. In addition, there were other new diseases that required more effective solutions. The search for such solutions by resorting to such remedies as *alkahest*, for example, reveals this medical concern." In his article "Alchemy and Iatrochemistry," the American historian Allen Debus contends that "the meaning of chemistry, in the sixteenth and seventeenth centuries, must be viewed in the context of its relationship with medicine, even though transmutation remained a constant issue until the Age of the Enlightenment, even when the separation between chemistry and medicine had already begun." According to Debus, the early proponents of the chemistry-medicine divide were rivals of the Galenic camp. They primarily sought to explore chemical explanations for physiological processes, and their advancements formed the basis of the work

of Van Helmont. His work led to a separation between chemistry and medicine in every area except pharmaceuticals. "The work of Lavoisier did not need to resort to chemistry based on medicine because of this long process. The importance of medicine in the rise of modern science was not discussed much," Debus adds. As a result of these shifting conceptions, transmutation lost some of its power in the late seventeenth century. "A movement was started at the Academie Royale de Sciences in Paris to sideline practice in order to domesticate chemistry, turning it into a respectable subject which would be included in academia. It was necessary to break away from the alchemistic past and start everything from scratch to provide chemistry with a new identity and status. Even so, this movement was not entirely successful," notes historian Lawrence Principe from Johns Hopkins University, the author of *Alchemy Tried in the Fire*. Alfonso-Goldfarb believes her discovery will lead to more revelations: "The network of documents and people intimately linked to transmutation, that our research work has exposed, gains more data and ramifications every day. This could be the tip of an enormous documental iceberg." ■

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