

MEDICAL ASPECTS OF THE LATE EUROPEAN ALCHEMY

VLADIMIR KARPENKO*

ABSTRACT

Medical trends in European alchemy are discussed. There existed a direction that in curing illnesses made use of various substances known to alchemists. The origin can be traced back to the 14th century and further development of this trend has later led to iatrochemistry. Beside this, there existed all the time the second direction called alchemical medicine. It searched for miraculous universal medicine using for this purpose approaches known from attempts in metal transmutation. Several examples of the confused world of alchemical medicine are brought.

I Introduction

In any discussion of alchemy the very first problem to be solved is that of the definition. What was alchemy, what did she differ from exact sciences? Perhaps the best recent definition was given by the late H.J. Sheppard [1] who tried to include in it the whole broad field covered once by this science. There were two main streams of alchemy: the exoteric one, whose main goal was the transmutation of metals the artificial production of precious metals from nonprecious ones by means of chemical and metallurgical methods. The second stream, esoteric, was focused preferably on human being, on its improvement, on achieving of inner en-

lightenment, and eventually even redemption. Alchemy flourished in several quite different cultural regions where she always more or less reflected ruling philosophy or religion. This reflection was apparent on goals considered most important. It was immortality in the ancient China, while in Europe artificial production of gold prevailed. Further discussion will be focused just on European alchemy, particularly on her last stage. Like her Hellenistic and Islamic predecessor, European alchemy passed through similar stages: the beginning, when new idea reached this part of the world and because of its extraordinary attractiveness became soon widespread. Then, flourish of this science followed, but just during this

* Assoc. Prof. Dept. of Physical and Macromolecular Chemistry, Charles University, Albertov 2030, 128 40 Prague 2, Czech Republic.

stage, when many Masters of the Art were active, negative experience gradually accumulated: it was repeatedly observed that no experiment in production of gold succeeded, or, when it was seemingly a successful one, it was not possible to repeat it. It can be thus called not only the stage of a flourish, but simultaneously the stage of gradual sobering. The final stage was then decline, in Europe followed by the emergence of chemistry. This evolution took approximately six centuries in Europe, from the first alchemical manuscript in the Latin language that appeared in the middle of the 12th century [2], to Lavoisier's works at the end of the 18th century. As the late European alchemy the 17th and 18th century will thus be considered in this paper. Strangely enough, the decline of this science in Europe was not a steady process. Repeated moments of flourish can be observed when new, attractive work appeared that seemingly strengthened the position of believers. It was, for example, the career of Michal Sendivogius (1566-1636), whose *Novum Lumen Chymicum* became best-selling alchemical work in the 17th century [3,4].

The late European alchemy was a world of confusion chemical discove-

ries accumulated, but since there was no sound explanation of them, chemistry did not exist yet, they allowed for various alchemical speculations. In this way they, sometimes unintentionally, nourished belief in the possibility of transmutation. A typical example is the deposition of copper on an iron surface in the cupric sulphate solution. This reaction allowed for both explanations: it was a chemical process of unknown nature to craftspeople, but transmutation of iron into copper to alchemists [5]. As can be observed in many alchemical works it was a time when both exoteric and esoteric directions sometimes fused to a certain extent; the resulting texts were a mixture of laboratory recipes for transmutation of metals mixed with speculations on the nature of man. The questions discussed were the ways to improvement of individual and even of the whole society. It was often a reflection of the state of Europe torn by the Thirty Years War (1618-1648), but other explanations of this attitude can be found as well. There existed, however, a trend aiming at improving of humans that was much older. It was the medical trend in alchemy that was, however, by far not homogeneous; quite contrary, at least two main tenden-

cies can be observed as will be shown later.

II The origin and quest of medical alchemy

The above rough division of alchemy on exoteric and esoteric directions did not respect attempts to improve human health either by curing illnesses, or even by prolonging life. While purely esoteric approach was rather directed toward soul, medical alchemy aimed at the human body, at its existence. Chinese immortals were quite specific case not to be discussed here. In other cultures the approach to achieving immortality by means of alchemical practice was rather careful. What concerns European alchemy, there was a limiting influence by the ruling Christian religion. According to it, human life was fully in hands of the God who decided about the birth, life, illness, and eventually death. Strictly speaking, any attempt to change this state, especially an attempt to prolong human life by elixirs, or even to attain immortality, could be considered an action directed against God's will and intentions. Any ideal like that could be dangerous, because she could bring the author into conflict with religious ins-

titutions. In the time of the inquisition it could be a question of the death at stake. It is necessary to keep in mind this side of the problem, because it explains why alchemical texts dealing with life elixirs were simultaneously often full of assurances that this doing was in accord with God's will.

The second point that should be touched briefly at least is the origin of medical alchemy. It is not quite clear yet and usually two explanations are given. According to one hypothesis [6] it was the observation with metals, particularly with gold, that this metal is incorruptible and thus the perfect one. There were two further aspects of this problem. Alchemical doctrine claimed that any metal can be improved to the same state of perfection, thus, by analogy, even humans could have been transformed to the perfect state, immortality. Or, at least, they could be healed, like common metals are healed and improved to the precious state. The other side of this problem had as a starting point - the incorruptibility of gold. This metal could not be destroyed, what should be understood in ancient terms. In the chemical language it was its dissolution. Indeed, until aqua regia was discov-

ered in the 14th century [7], all attempts to "destroy" gold failed. Gold thus became simultaneously the symbol of immortality. From here, the following speculations led to an idea that gold administered to humans in a proper form could have given immortality to them as well, or, at least, could have prolonged their life. A mysterious "potable gold", aurum potable, became thus one of the goals alchemists tried to reach.

The second explanation is based on the same property of gold, on its seemingly being an "immortal" metal. By this explanation, however, gold was confused with antimony sulphide, a compound that indeed possesses antibacterial properties. When administered in small doses it could cure some illnesses and thus let arise the idea that edible gold is the miraculous elixir of life.

If summarized, gold played obviously the crucial role in these speculations. The problem was to bring it into solution, what was purely a chemical task. With the appearance of aqua regia this reaction became possible, but the experience has shown that the effect of gold preparations was not as good as expected. Although gold solutions were

available, alchemy had to search further for more effective preparations.

It was one side of attempts to include alchemy into medical activities based on knowledge collected by alchemists in treatment of various illnesses. Sometimes it was supported, although often falsely, by observations of the chemical behaviour of gold and other substances. It formed, nevertheless a foundation to further search of more effective drugs on inorganic or organic basis. The first who has chosen this approach was Arnald from Villanova ? (1235-1311/14), who was more a physician than an alchemist [8]. In spite of it he was, nevertheless, claimed by alchemists to be one of the most important Masters. In his works the approach of a physician of his time was apparent, with limitations due to a low level of general knowledge. This direction of the chemico-alchemical trend in medical alchemy peaked in works of Paracelsus (?1493-1541) who became the founder of iatrochemistry.

As mentioned above, there existed all the time the second form of medical alchemy that was based on superstition. This form worked more with supernatural powers and supernatural products.

Strange as it may seem this direction of alchemy continued to live although iatrochemistry gained more ground. The supernatural medical alchemy, that will be discussed below, can be found as late as the second half of the 17th century. The whole problem of this kind of alchemical speculations is rather broad; the present discussion will touch only some typical points. The aim is to illustrate the state of this field of alchemy. It was a state of confusion, the state of a search for miracles that did not happen. In alchemical books of this period often many explanations appeared why experiments failed, but the correct recipe, how to do it properly, was missing. It did not exist. This direction of alchemy has no name and it is difficult to find any, since it was not purely medical alchemy like that introduced by Paracelsus. It made use of the methodical approach of exoteric alchemy, but transformed it from metal transmutation to medical purposes. While exoteric alchemy tried in the first place to improve, to "heal", metals, this direction attempted to do the same with humans. The approach was similar the elixir of life or the universal medicine as a substitute of the philosopher's stone used for metals. Since in this direction supernatural for-

ces were often supposed to be in action, it could be perhaps named alchemical medicine to distinguish it from Paracelsian medical alchemy and iatrochemistry.

III The limits of alchemical medicine

The first question is, what was actually the goal of this activity? Which properties should have possessed a substance that was the ultimate goal of these alchemists? Even this answer was often formulated rather nebulously, like, for example, in a German book by Alexander von Suchten from 1673[9]. An interesting passage appeared here - under the heading: "Colloquium II A discourse about Wood (in German Holz) of Life where it will be given from which elementary bodies such strong medicine is extracted that keeps human life long in fresh health." This discourse was written as a dialogue between demogorgon (demigod) and Raymundus, obviously Raymundus Lullius, one of alleged authorities of European alchemy. Already the first question of demogorgon was about the drug (Arznei) that could have prolonged human life. Does any such preparation exist? As mentioned above, European alchemy was aware to step across certain threshold formed by dogma of Chris-

tian religion. The answer reflected this attitude quite clearly: "Don't you know that God set to everybody certain time and that nobody can go farther across it?" Here, limits were strictly given within which following discussion could go on. The next question of demogorgon on the high age of ancients, it was the allusion on the Old Testament and long lives of Adam, Methuselah, and other person-ages, was answered negatively: according to Lullius in ancient Egypt a year was not as long as it is now. Thus, it is difficult to compare human age given in the old texts with the present state. But, nevertheless, biblical Adam evidently possessed all the knowledge, This introduction of discourse was quite typical for many alchemical books dealing with question of treatment of illness. The limits were strict, the alchemists could not prolong human life, they could only cure the illness, provided it was God's will. This passage shows the difference between European alchemy from alchemical views of ancient China where not sole protraction of life, but the immortality was the ultimate goal.

IV. The nature of the universal medicine

The late stage of European alchemy stood in a sign of a confused search.

Previous experiments failed, but there was seemingly indirect evidence at least that some universal medicine could have existed. This kind of evidence was usually drawn from observation of nature. Second support was the older alchemical literature. In alchemy general belief existed that everything was known to ancients, like Adam mentioned in the previous paragraph.

What concerned the nature of the universal medicine two basic views can be found: according to one it was a preparation of herbal origin, the other claimed it to be a mineral material. In the Colloquium characteristics of the universal medicine were given in rather general terms. It was said to be an extremely stable substance that should be eternal; otherwise, it would introduce additional instability into human body. The role of this substance was allegedly to keep humidity and warmth in a human organism, or, if necessary, to restore these properties. Both terms, humidity and warmth, reflected the Aristotelian view on the composition of matter (10), where four elements, water, fire, earth and air, possessed two properties each. There were thus two basic properties characterizing the universal medicine: it should

be indestructible, or at least long lasting, and should preferably contain warmth and humidity. The first named property obviously preferred goal as the most stable substance. At that time, however, this metal was not as unique as in the more distant past, because its solubility in aqua regia was known.

During discussion between demogorgon and Lullius further details became known. This medicine should be allegedly of green colour, this property led to misunderstanding that it was of herbal origin. It could not be made from moving things. Therefore, plants and animals were excluded. Neither it could be prepared from wine, like recommended by Rupescissa. It should be noted here that one of founders of true medical alchemy and iatrochemistry, Johanus de Rupescissa (active around 1350), used often wine as a solvent for his medicals (11). In the discussed book by von Suchten this approach was denoted as false with the explanation that it was a result of misunderstanding, because the old authors would express their thoughts in a cryptic form. Wine thus denoted somethings else, known only to the original author. The Colloquium, however, is not less cryptic text. It goes on in elimination system so that the

demogorgon proposed as the next plausible source of medicine minerals and salts. Surprisingly, even now the answer was negative with the explanation that these substances are destroyed by fire.

There was seemingly nothing more left as a possible source, but, in the end, the answer appeared it should be the earth. Just the earth, so Alexander von Suchten, is a strong vessel that accumulates the forces from heaven and planets. These forces make it possible to plants and minerals to grow from the earth, and the Earth carries all metals in her wombs. This statement was quite confused in terminology. The earth was understood here as such in the first part of this statement, but, simultaneously, Earth appeared here as a deified symbol. This second meaning was extremely old and brings us back into the first human societies who supposed that the Mother Earth gave birth to everything, animals, plants, and minerals. It is interesting that these thoughts persisted for millennia(12).

Colloquium, nevertheless, does not give clear answer concerning the nature of the universal medicine, but in the von Suchten's book another passage [13] deals with this problem. According to-

the author, humans had two lives the life of the soul, and the life of touchable body. It was this second kind of life that should prevent from illness and decomposition and was called "balsam" by von Suchten. Simultaneously he used the same word "balsam" for the universal medicine. Balsam medicine could have been herbal, but according to von Suchten it was not in the state to clean "ours balsam", it means the genuine human balsam. In other words, the author said that herbal preparation could not cure successfully. It could be done by gold or sulfur of philosophers that, when introduced into body, cleans human balsam.

This statement is another sign of confusion, because sulfur of philosophers usually denoted fictional substance that, with philosophic mercury, formed all metals. It was the basic compound of the sulfur-mercury theory [14]. Here this substance was identified with gold, obviously potable. Anyway, herbal medicines were excluded by this author, but this standpoint was not general.

Similar statements can be found elsewhere. A small anonymous volume [15] dated 1677 distinguished between substances keeping alive the vegetable or the animal world. In the vegetable king-

dom it was "niter" [16], while in the animal world, particularly in human one, it was potable gold. (Trinkable) (or potable) gold is here described as derived from two substances. The first one should be prepared from "corporal gold", a metallic gold that should be "killed" and then returned to life. It was nothing more than the ancient alchemical idea of killing and resurrection of metals, when they appeared in perfect shape [17]. No further instruction how to proceed was given here, but this process was obviously supposed to be quite common one that needed no details. The second origin was yet more nebulous for this purpose the color, here called blood, should be extracted from common gold. Only then, from these two basic ingredients the true miraculous medicine should be made in a way not described.

It is apparent that in both these books no recipes were given. This kind of literature could be denoted as theoretical speculations about universal medicine. It was a search of the very substance of this miracle. Can any summary be given?

All, what appeared in these books, was derived in a corrupted way from basic

alchemical ideas

-Aristotelian elements, and their properties,

-sulfur-mercury theory,

-mythologic idea of Mother-Earth, with ripening of metals,

-alchemical idea of the death and resurrection of matter

These doctrines, originally developed and used for speculations about metal transmutation, were applied to problems of human life, of illness and death. As obvious, this direction of alchemy, although also aimed at medical questions, was a direction different from iatrochemistry that gained more ground by that time. This alchemy was highly speculative and, in opposite to iatrochemistry, searched for substances that did not exist, like "sulfur of philosophers", "balsam", etc. Just these miraculous ingredients led to gradual divergence between iatrochemistry and alchemical medicine.

V The role of fire

In any alchemical tractate the crucial role was ascribed to fire. This agent was the most important for the alchemical work in laboratories and was the most effective one water boils under its influence, it melts metals from their ores. Since the coming of alchemy the idea

originating in myths was accepted that metals "ripened" in the bowels of earth just under the influence of heat. Then, by analogy, the task of alchemist was to accelerate the same process of ripening in his laboratory. What was used for metals, the same could be apparently applied to medical preparations as well. It was supposed that such miraculous substance were formed spontaneously in the nature and thus alchemists had to copy this process.

The role of heat was thus obvious, since under this influence everything ripens. Alchemical ovens became the most important laboratory equipment - and many books were written solely on this topic. On the other hand, the role of heat later served for explanation of failures the attention was turned to the fact that it should be "correct" fire., otherwise no success could be expected. The question remained open what was the "correct" fire like. Von Suchten explained the problem on the example of a pear {18}. When it still hangs in the tree, it ripens under the influence, of natural heat. If, on the other hand, the same unripe pear was put into the oven, in this heat it would not ripe, but would be simply cooked. This was, according to von Suchten, the difference between heat of an oven and

the "natural" heat necessary for performing transmutation of metals or preparation of the universal medicine.

Based on heat the role of mercury in the universal medicine was explained. In any search for a substance that could have influenced human health often not only gold, but also mercury was used. One explanation operated with the view that the lack of "inner" heat in human body led to an illness. Thus, the introduction of additional heat would improve the state of a sick person. Mercury in these speculations was a substance containing very intense "inner" heat, because it does not harden like other metals {19}. This heat was supposed to keep mercury always in the melted state. It was known also that mercury is a poisonous substance, and, as written by von Suchten, this poison cannot be removed by any method (Scheidung). It was again a mercury of metals, a substance derived from sulfur mercury theory, which should

be used. The idea of "mercuries of metals" was very living in the 17th century as apparent from Newton's works.

VI Conclusions

These examples have shown that, from the point of view of medicine, there existed in alchemy the "classical" direction of medical application of alchemy from which gradually iatrochemistry and then medical chemistry and pharmacology developed. Beside this, however, there continued its existence a direction based on the classical ideas of alchemy dealing with the transmutation of metals. This direction, as apparent from the examples given in this paper, was a blind alley. It was not able to prepare any universal medicine; in the late 16th and the beginning of the 17th centuries it was the world of confusion losing ground under its feet. Although the blind alley, this activity of alchemists, nevertheless, belongs to the history of alchemy and medicine.

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सारांश

नवीनतम यूरोपीय रसायन विद्या के चिकित्सा सम्बन्धि पक्ष

— व्लाडिमिर कार्पेन्को

यूरोपीय रसायन विद्या में चिकित्सा संबंधी प्रवृत्तियों के सम्बन्ध में यहां विचार – विमर्श किया गया है। रसायनविदों को ज्ञात विभिन्न पदार्थों को व्याधियों के निवारणार्थ उपयोग में लाने के विषय में निर्देश उपलब्ध था। इसका उद्गम 14 वीं शताब्दी में हुआ तथा इस प्रवृत्ति के विकास ने बाद में चिकित्सा में उपयोगी रसायन विद्या को जन्म दिया। इसके अतिरिक्त हमेशा से रसायन चिकित्सा का दूसका निर्देश भी था। इस उद्देश्य की पूर्ति की दिशा में व्यापक चमत्कारिक चिकित्सा की खोज में धातू रूपान्तर के प्रयास किये गये। किंकर्तव्यविमूढ़ता ग्रस्त रासायनिक चिकित्सा क्षेत्र के अनेक उदाहरण प्रस्तुत किये गये हैं।