

Adept Alchemy

by

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Acknowledgements: Hal Robins ~ William van Doren ~ Hans Nintzl ~ Manly P. Hall ~ Adam McLean

Frontispiece: "Alchemia" (Harry S. Robins, 1994) ~ The Great Work begins with the Revelation of the Lost Word (John 1:1), and is consummated by the dedicated Hermetic Artist, who accomplishes a synthesis of the Philosophers' Stone by the Grace of God and masterful manipulation of Arsenic, &c.



Table of Contents

Part I Ars Magna

Chapter 1 The Philosophers' Stone

Anonymous ~ *The Secret Fire of the Philosophers*
Anon. ~ *Light Out of Chaos*
Anon. ~ *Tractatus de Lapide*
Anon./K. Bohemia ~ *Arcana Divina*
P. Bonus ~ *The New Pearl of Great Price*
Cyliani ~ *Hermes Unveiled*
Fulcanelli ~ *The Dwellings of the Philosophers*
Geber ~ *The Sum of Perfection*
J. Grashof ~ *The Greater & Lesser Edifyer*
R. Ingalese ~ *They Made the Philosophers' Stone*
J. Juran ~ *Hyle & Coahyl*
H. Lintaut ~ *Friend of the Dawn*
T. Paracelsus ~ *The Tincture of the Philosophers*
T. Paracelsus ~ *Concerning the Spirits of the Planets*
T. Paracelsus ~ *The Fifth Book of Archidoxies*
E. Philalethes ~ *An Open Entrance to the Closed Palace of the King*
E. Philalethes ~ *Ripley Revived*
M. Sendivogius ~ *Epistles to the Rosicrucian Society*
I. Hollandus ~ *Opuscula Alchymica*

Chapter 2 The Short Dry Path

P. Allen ~ *A Christian Rosenkreutz Anthology*
Anonymous ~ *The Allegory of Merlin*
Anon. ~ *On the Philosophers' Stone*
Anon. ~ *Rosarium Philosophorum*
Anon. ~ *Untitled*
S. Bacstrom ~ *The Work of Pontanus, According to Mr. F.*
D. Beuther ~ *The Transmutation of Base Metals...*
P. Bonus ~ *The New Pearl of Great Price*
Cyliani ~ *Hermes Unveiled*
A. Eleazar ~ *The Book of Abraham the Jew*
B. Figulus ~ *A Golden and Blessed Casket of Nature's Marvels*
Fulcanelli ~ *La Mystere Des Cathedrales*
Fulcanelli ~ *The Dwelling of the Philosophers*
J. Grashof ~ *The Greater & Lesser Edifyer*
C. Grummet ~ *Sanguis Naturae*
J. Helvetius ~ *The Golden Calf*
J. I. Hollandus ~ *De Lapide Philosophorum*
J. I. Hollandus ~ *Vegetable Work*
K. Jnana ~ *Dictionary of Hermetic Philosophy*
N. LeFebre ~ *Secret of Secrets*
R. Lully ~ *Letter or Epitome to King Rupert*
J. Muller ~ *Hyle and Coahyl*
Myriam Prophetessa ~ *Her Conversation with Aros, King of Egypt*
Paracelsus ~ *The Philosophical Canons*
Eir. Philalethes ~ *Ripley Revived*
Eir. Philalethes ~ *An Open Entrance to the Closed Palace of the King*
Eugenius Philalethes ~ *A Short Enquiry Concerning the Hermetic Art*
G. Ripley ~ *Medulla Alchemiae*
M. Rulandus ~ *A Lexicon of Alchemy*
S. Salztal ~ *Fountain of Philosophical Salts*

Chapter 3 Arsenic

- Anon. ~ *Hydropyrographum Hermeticum*
Anon. ~ *A Magnificent & Select Tract on Philosophical Water*
Anon. ~ *The Book of the Science of Bkrtnth*
Anon. ~ *An Anonymous Treatise on the Philosophers' Stone*
Anon. ~ *The Crowning of Nature*
Anon. ~ *Rosarium Philosophorum*
Aristeus ~ *Turba Philosophorum*
R. Bacon ~ *The Mirror of Alchemy*
R. Bacon ~ *The Root of the World*
S. Bacstrom ~ *Lapis de Tribus*
M. Berthelot ~ *Collection des Anciens Alchimistes Grecs*
A. Besant & C. Leadbeater ~ *Occult Chemistry*
D. Beuther ~ *Universal & Detailed Account*
W. Bloomfield ~ *Bloomfield's Blossoms*
P. Bonus ~ *The New Pearl of Great Price*
A. Coudert: *Alchemy ~ The Philosophers' Stone*
R. Councell ~ *Apologia Alchymiae*
J. Cremer ~ *The Testament of Cremer*
M. Crosland ~ *Historical Studies in the Language of Chemistry*
Cyliani ~ *Hermes Unveiled*
J. Dee ~ *Rosicrucian Secrets*
G. Della Porta ~ *Hermetic Treatise*
J. Duchesnes ~ *Treatise on Metallic Medicine*
A. Eleazar ~ *Aesch Mezareph*
J. Espagnet ~ *Arcanum, or the Grand Secret of Hermetics*
H. Fictuld ~ *Aureum Vellus*
B. Figulus ~ *A Golden & Blessed Casket of Nature's Marvels*
Fulcanelli ~ *The Mystery of the Cathedrals*
Fulcanelli ~ *The Dwellings of the Philosophers*
Geber ~ *Of the Sum of Perfection*
Geber ~ *Of the Invention of Verity, or Perfection*
J. Grashof ~ *The Greater & Lesser Edifyer*
C. Grummet ~ *Sanguis Naturae*
J. van Helmont ~ *Arca Arcani Artificiosissimi Apertae*
Hermes ~ *Tractatus Aureus de Lapidus Physici Secreto*
E. Hitchcock ~ *Alchemy & the Alchemists*
J. Hollandus ~ *A Work of Saturn*
J. Hollandus ~ *Opuscula Alchymica*
J. Hollandus ~ *The Cabala*
J. Hollandus ~ *De Lapide Philosophorum*
R. Ingalese ~ *They Made the Philosophers Stone*
F. Jollivet-Castelot ~ *The Chemical Manufacture of Gold*
C. Jung ~ *Mysterium Coniunctionis*
J. Juran ~ *Hyle and Coahyl*
A. Kirchweger ~ *The Golden Chain of Homer*
G. Lacinius ~ *The New Pearl of Great Price*
F. Libavius ~ *Commentariosum Alchemiaem*
R. Lully ~ *Apertorium*
R. Lully ~ *Testament*
A. Magnus ~ *Compound of Compounds*
A. Magnus ~ *Libellus de Alchemia*
P. de Mirandola ~ *On Gold*
B. Mookerjee ~ *Rasa-Jala-Nidhi*
Morienus ~ *A Testament of Alchemy*
J. Needham ~ *The Theoretical Background of Elixir Alchemy*
R. Nelson ~ *Arsenic Pentoxide from Orpiment*
I. Newton ~ *Verses at the end of B. Valentine's Mystery of the Microcosm*

H. Nollius ~ *The Chemist's Key*
E. Nowell ~ *Certain Chemical Works with True Practice*
Olympiodorus of Alexandria
Ostanes ~ *The Book of Ostanes*
T. Paracelsus ~ *Aurora of the Philosophers*
T. Paracelsus ~ *The Revelation of Hermes*
T. Paracelsus ~ *The Economy of Minerals*
R. Patai ~ *The Jewish Alchemists*
Pearce the Black Monk ~ *Upon the Elixir*
A.-J. Pernety ~ *Treatise on the Great Art*
A.-J. Pernety ~ *Dictionaire Mytho-Hermetique*
E. Philalethes ~ *Preparation of the Sophic Mercury*
E. Philalethes ~ *Ripley Revived*
E. Philalethes ~ *An Open Entrance to the Closed Palace of the King*
E. Philalethes ~ *A Short Manuduction to the Celestial Ruby*
P. Ray ~ *History of Chemistry in Ancient & Medieval India*
Rhasis ~ *The Light of Lights*
G. Ripley ~ *The Epistle unto Edward IV*
G. Ripley ~ *Medulla Alchimae*
C. v. Rosenroth ~ *Kabala Denudata*
M. Rulandus ~ *A Lexicon of Alchemy*
S. Saltzal ~ *Fountain of Philosophical Salts*
W. v. Schroeder ~ *Instructions Regarding the Art of Transmutation*
L. de St-Didier (A. Toussaint) ~ *Hermetic Triumph*
B. Trevisan ~ *Verbum Dismissum*
Urbigeris ~ *Aphorisma Urbigeris*
B. Valentine ~ *Triumphal Chariot of Antimony*
T. Vaughan ~ *Aqua Vitae: Non Vitis*
A. de Villa Nova ~ *Lucidary*
A. de Villa Nova ~ *Rosarius*
A. Waite ~ *Paracelsian Lexicon*
J. Webster ~ *Metallographia: Or, An History of Metals*
Zosimos ~ *On the Evaporation of the Divine Water*

Part II Modern Transmutations

Chapter 1 Transmutation of Silver

T. Tiffereau
R. Hunter
A. Waite
Fulcanelli
M. Rulandus
F. Jollivet-Castelot
S. Emmens
C. Lea
J. Champion
References

Chapter 2 Transmutation of Ores

T. Moray
Dunikovski
A. Klobasa
D. Hudson
J. Champion
References

Chapter 3

Transmutation of Carbon

G. Ohsawa & M. Kushi
M. Jovitschitsch
M. De Boismenu
J. Hannay
S. Brown
References

Chapter 4 **Decomposition of Tungsten**

G. Wendt & C. Irion
References

Chapter 5 **Transmutation of Lead**

A. Smits & A. Karssen
References

Chapter 6 **Transmutation of Hydrogen**

W. Ramsay , *et al.*
References

Chapter 7 **Transmutation of Mercury**

H. Nagaoka, *et al.*
F. Tausend
R. Caro & Kamala-Jnana
References

Chapter 8 **Biological Transmutation**

Early Experimenters
L. Kervran, *et al.*
Other Modern Researchers
References

Chapter 9 **Cold Fusion**

Cold Fusion Transmutations
Nuclear Waste Remediation
References

Chapter 10 **Esoterica**

Quabbalah & Magic
Astrochemistry
Prophecy
References

Index

Figures:

- I. 3. 1 ~ Arsenic according to Besant/Leadbeater
- II. 3. 1-3 ~ Ohsawa & Kushi's Experiments
- II. 4. 1-2 ~ Wendt & Irion's Experiment
- II. 5. 1 ~ Smits & Karsen's Experiment
- II. 7. 1 ~ German Patent #234,670
- II. 8. 1-3 ~ Atoms according to Kervran

AeTZI ~ The "Lost Word" (John 1:1, &c.), the "Secret Name of GOD" :

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Z
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Part I

Ars Magna

Chapter 1

Lapis Philosophorum

Anonymous ~ The Secret Fire of the Philosophers

Anon. ~ Tractatus de Lapide

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Geber ~ The Sum of Perfection

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H. Lintaut ~ Friend of the Dawn

T. Paracelsus ~ The Tincture of the Philosophers

T. Paracelsus ~ Concerning the Spirits of the Planets

T. Paracelsus ~ The Fifth Book of Archidoxies

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E. Philalethes ~ Ripley Revived

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J. I. Hollandus ~ Opuscula Alchymica

This anthology of excerpts from the literature of Alchemy intends to illustrate certain aspects of the Great Work: the correct use of the Philosophers' Stone, the Short or Dry Path, and the Prima Materia. This book will guide you directly to the gate of the Philosophers' Garden and provide you with its key and password. Pray God to allow you entry, grace your labor, and forgive us our trespasses.

Do not imagine, however, that you can complete the Great Work with the information in this book, which purports to reveal only the first step of the reaction pathway. Such an ignorant presumption could easily result in your premature death, rather than enhanced health, longevity, and wealth. Read every alchemical text you can find, and learn inorganic chemistry at least. If you are chosen to achieve this Magistry, it will be revealed to you in due time, and not one second earlier. Nor will you complete the work any sooner than God allows you, even if you practice the Ars Brevis. *Festina lente*. Indeed, it really should not matter to you whether or not the Philosophers Stone is a physical

possibility, or that you attain it; "The true Philosophers' Stone is to have means and waste not". It is also simply the Lost Word, **AeTZI**.

Alchemy is not to confused with chemistry, archemy, or spagyry. Adeptus Fulcanelli makes the distinctions clear in *The Dwellings of the Philosophers*:

"Let us clearly state, since so many educated and sincere people seem unaware of the fact, that the real ancestor of our modern chemistry is ancient spagyrics and not the hermetic science itself. There is indeed a profound abyss between spagyrics and alchemy...Hermetic writings alone, misunderstood by profane investigators, were the indirect cause of discoveries which the authors had never anticipated...With their confused texts, sprinkled with cabalistic expressions, the books remain the efficient and genuine cause of the gross mistake that we indicate. For, in spite of the warnings, the objurations of their authors, students persisted in reading them according to the meaning that they hold in ordinary language. They do not know that these texts are reserved for initiates, and that is essential, in order to understand them, to be in possession of their secret key...It is essential first to understand what the Ancients meant by the generic and rather vague term of spirits...For the alchemists, the spirits are real influences, although they are physically almost immaterial or imponderable. They act in a mysterious, inexplicable, unknowable but efficacious manner on substances submitted to their action and prepared to receive them. Lunar radiation is one of these hermetic spirits. As for archemists, their conception proves to be of a more concrete and substantial nature. Our old chemists embraced all bodies under the same heading, simple or complex, solid or liquid, having a volatile quality liable to make them entirely sublimable. Metals, metalloids, salts, hydrogen carbides, etc., bring to archemists their contingency of spirits: mercury, arsenic, antimony and some of their compounds: sulphur, sal ammoniac, alcohol, ether, vegetable essences, etc."

As concerns "Lunar radiation", it may be noteworthy that 17% of moonlight is stimulated emission. Magnetism and intent also are effective upon chemical reactions. The effect of intent is seen in the Hado Effect, discovered by Dr. Masaru Emoto, whereby the geometry of frozen water is modified by thoughts. The work of Charles Littlefield also demonstrates this effect. Other useful energetic effects can be achieved with a Spectral Catalyst (US Patent # 6,033,531) which "duplicates the electromagnetic energy spectral pattern of a physical catalyst and when applied to a reaction system transfers a quanta of energy in the form of electromagnetic energy to control and/or promote the reaction system."

Several credible historical accounts describe phenomenal healings, rejuvenations, and longevity attributed to the Elixir of the Sages. As the following adepts attest, the blessed Stone has many wonderful powers:

Anonymous ~ *The Secret Fire of the Philosophers*

Yet my dear friend, the things which I have said, do greatly conduce to your desired end, for whosoever is well furnished in other things, and hitherto instructed, is well adapted for the finding out of this secret fire, which he will probably obtain, if only he continues his inquisition, and God Vouchsafe to bless him...

It is worthy to be noted that sentence of a Chief Father of the Church: God, in Mercy, denies many things which he grants in his Anger; for very many gifts of God, are made rather punishments than benefits...

Anonymous ~ *Tractatus de Lapide*

In the use of this Medicine, many great Philosophers themselves, after they obtained this wonderful blessing, desiring to have perfect Health, have been so bold as to take a certain quantity of it, some no more than a quarter of a grain, some less, some more, but all that did so with it, instead of Health, took Death itself; for there is no small skill to it for Medicine, though every fool think if he had it, he could cure all diseases, and himself too, and set the Elements at unity, which few men have known, neither is there but one way to it with safety; if this be not known, more hurt than good may be received by it. For the method of Health, it is thus: Take the quantity of four grains, I do not mean the grains of Wheat, or Barley grains or corns, but four grains of Gold weight, and dissolve them in a pint of white or Rhenish wine, but in no hot wine, as Sack, &c. put it into a great clean Glass, and instantly it will colour all the Wine almost as red as it self was, which is the highest red in the World: let it stand so, close covered from dust, four days, for in respect it is an Oylie substance, it will not presently dissolve in Wine; then add to this pint more by degrees, until it be not so red, stirring it with a clean stick of wood, not of metal, nor Glass, and so continue the pouring on of fresh Wine, until it be just of the colour of gold, which is a shining yellow. Beware that there be no redness in it; for so long as there is any redness in it, it is not sufficiently dilated, but will fire the Body, and exhaust the Spirits: neither is it sufficiently brought to yellow, until the Wine have round about the sides a ring like Hair, of a whitish film, which will shew itself plain when it is well dissolved, if it stand but four hours quiet. As soon as you see this whitish film, then let it run through a clean linen Cloth, or Paper, so the white film will stay behind and look like a pearl on the paper: and all the rest will be yellow like Gold. This is the token of truth, that you cannot wrong yourself by this Liquor; and without this token, it will be either too weak, or so strong that it will fire the Body. Know this to be a rare Secret. Of this Golden Water, let the party (of what disease soever he be sick of) take each morning a good large spoonful, and it shall expel the disease whatsoever it be, by a gentle sweat; for it purgeth not, nor vomiteth, nor sweateth so much as to make faint, but to corroborate: I say, it strengthens the party; and if the disease be of many years continuance, or a Chronical disease, it will then be perhaps twelve days, otherwise but twenty four hours, or two or three days at most. Thus it must be used for all diseases internal: But for all external diseases, as Ulcers, Scabs, Botches, Scores, Fistulas, *Noli me tangere's*, &c, the place must be anointed with the Oyl of the Stone it self, not dilated in wine; and after this manner it must be done nine or ten days, and be it whatsoever it will, it will cure all outward and inward diseases. And more than this, whosoever carries this Stone about him, no evil Spirit can or will stay in the place; nay bringing or giving it to a party possessed, it drives away and expels the evil Spirits: for it is a Quintessence, and there is no corruptible thing in it; and where the Elements are not corrupt, no Devil can stay or abide, for he is the corruption of the Elements. This Medicine taken nine days as aforesaid, and the Temples of the Head anointed with the Oyl of the Stone each day in the Morning, it will make a man as light as if he could fly, and his Body so aerial it is not to be credited, but by him who hath experienced it. These most admirable qualities it hath, perfect health it giveth, till God calls for the Soul; and perfect knowledge it giveth (if the truth be known:) but even this part hath been known but to a few that have made it, for it is a Divine, and as it were an Angelical Medicine. The white is not to be used for any disease but Madness, in the same proportion, and way or preparation that the red Stone was...

Anonymous ~ *Arcana Divina*

For this reason we report to you and tell you that it should be understood from the beginning, under circumstances where you will be considered an expert in this matter, that even a learned philosopher or practitioner on the subject of fire, will find that working with a combustible material is quite dangerous and, even more, during the preparation of such materials in the natural course of events of things, the danger is added to and even compounded. It could be demonstrated to you just where we might want to discontinue such precautions in an effort to save time; such error will now be pointed out to you as inadvisable.

Petrus Bonus ~ *The New Pearl of Great Price*

Concerning the Ferment --- But how are we to understand Plato's remark that he who has once performed this work need not repeat it, as his fortune is made forever? The words do not mean that he who has once prepared the Tincture can multiply its quantity indefinitely, just as he who has once struck a fire out of a stone can always keep himself provided with fire simply by adding fuel to it. The authority of Plato is supported by that of Rhasis, who speaks in a similar fashion. They should be interpreted, however, not according to the letter, but according to the spirit. He who has once succeeded in preparing this Medicine need not any more go through the experience of his failures and mistakes: he now knows how to perform all the processes of our Magistry properly, and, therefore, if ever he should need a fresh supply of the Medicine, he will be able to provide himself with it without much trouble.

Cyliani ~ *Hermes Unveiled*

Heaven having granted me success in making the Philosophers' Stone, after having spent 37 years seeking it, stayed awake at least fifteen hundred nights without sleep, suffering innumerable miseries and irreparable losses. I have decided to offer to youth, the hope of the future, the heart-rending picture of my life. This may serve both as a lesson and at the same time help the young turn away from an art that at first sight may offer the most delightful white and red roses that, however, are surrounded by thorns and of which the path that leads to the place where one can pick them is full of pitfalls.

The universal medicine being a far greater blessing than the gift of riches, to know it naturally attracts studious men who believe themselves to be happier than the multitudes. This reason has influenced me to transmit to posterity the processes to be undergone in the greatest details, without leaving out anything at all, in order to let it be known and to prevent the ruin of honest people and to render a service to suffering humanity...

Be very careful that it does not happen to you, as it did to me, to be wounded. As a result of these varied labors I find myself with the most essential organ of life affected, by which means that I shall be denied, considering the seriousness of the illness, enjoying a long life, the virtue of the medicine not being surgical, but only medicinal.

Fulcanelli ~ *The Dwellings of the Philosophers*

The Salamander of Lisieux (III) --- First, let us say that, according to the sacred language, the term philosopher's stone, means the stone which bears the sign of the sun. The solar sign is characterized by its red coloration, which can vary in intensity, as Basil Valentine says, "Its color ranges from rosy red to crimson red, or from ruby to pomegranate red; as for its weight, it weighs much more than it has quantity". So much for color and density. The Cosmopolite, whom Louis Figuier believes to be the alchemist known under the name of Seton, and others under the name of Michael Sendivogius, describes in this passage its translucent appearance, its crystalline form, and its fusibility: "If one were to find", he said, "our subject in its last state of perfection, made and composed by nature; if it were fusible, like wax or butter, and its redness, its diaphanous nature or clarity appeared on the outside; it would be in truth our blessed stone" Its fusibility is such, indeed, that all authors have compared it to that of wax (64 C); it melts in the flame of a candle", they repeat; some, for this reason, have even given it in the name of great red wax. With these physical characteristics the stone combines some powerful chemical properties --- the power of penetration or ingress, absolute fixity, inability to be oxidized, which makes it incalcinable, and extreme resistance to fire; finally, is irreducibility and its perfect indifference to chemical reagents. We hear the same from Heinrich Khunrath when he writes in his *Ampitheatrum Sapientiae Aeternae*, "At last, when the Work will have passed from ashy color to pure white, then to yellow, you will see the philosophers stone, our King raised above the dominators, come out of his glassy sepulcher, arise from his bed and come onto our worldly scene in its glorified body, that is to say, regenerated and more than perfect; in other words, the brilliant carbuncle of a greatly shining splendor, whose parts, very subtle and very purified by the peaceful and harmonious union of the blend are inseparably bound and assembled into one; constant and diaphanous as crystal, compact and ponderous, easily fusible in fire like resin, flowing as wax, and more flowing than quicksilver yet without fumes; piercing and penetrating solid and compact bodies, as oil penetrates paper; soluble and dilatible in any liquid capable of softening it; brittle as glass; taking on a saffron color when it is reduced to powder, yet red as ruby when it remains in one unadulterated mass (this color is the signature of perfect fixation and of fixed perfection); coloring and dyeing constantly; fixed in the tribulations of all experiences, even when tried by devouring sulphur and fiery waters and by the very strong persecution of fire; always durable, incalcinable, and like the Salamander, permanent and justly judging all things (because it is in its own way all in everything), and proclaiming: 'Behold, I shall renew all things'".

Around 1585, the English, the English adventurer Edward Kelley, surnamed Talbot, had acquired, from an innkeeper, the philosophers' stone found in the tomb of a bishop who was said to have been very rich; it was red and very heavy, but without any odor. Meanwhile, Berigard of Pisa says that a skillful man gave him a gros (3.82 grams) of a powder whose color was similar to that of the red poppy and which had the odor of calcined sea salt (4).

Helvetius (Jean-Frederic Schweitzer) saw the stone, shown to him by a foreigner, an Adept, on December 27, 1666, in the form of a metal powder the color of sulphur. This powdered product came, says Khunrath, from a red mass. In a transmutation performed by Seton in July 1602, in front of Dr Jacob Zwinger, the powder used was, according to Dienheim, "rather heavy, and of a color appearing lemon yellow". A year later, during a second projection at the house of a goldsmith, Hans de Kempen in Cologne, August 11, 1603, the same artist used a red stone.

According to several trustworthy witnesses, this stone, directly obtained in powder form, could take on a color as bright as that of a stone formed in a compact mass. This instance is rather rare, but it can happen and is worth mentioning. In this way, an Italian Adept, who, in 1658, realized the transmutation in front of the Protestant minister, Gros, at the house of a goldsmith (named Bureau) from Geneva, used, according to those who were in attendance, a red powder. Schmeider described the stone that Boetticher obtained from Lascaris as a substance having the appearance of a fire-red colored glass. Yet, Lascaris had given Dominico Manuel (Gaetano) a powder similar to vermilion, the color of cinnabar. That of Gustenhover was also very red. As for the sample given by Lascaris to Dierback, it was examined under Counselor Dippel's microscope and appeared composed of a multitude of small grains or crystals which were red or orange; this stone had a power equal to about 600 times the unit.

Jean-Baptiste Helmont, relating his experience in 1618 in his laboratory at Vilvorde near Brussels, writes, "I have seen and touched the philosophers' stone more than once; its color is like powdered saffron, but heavy and shining like pulverized glass". This product, of which one fourth of a grain (13.25 milligrams) furnished eight ounces of gold (244.72 grams), showed a considerable energy: approximately 18,470 times the unit...

In the category of tinctures, i.e., liquids obtained by solutions oily metallic extracts, we have the account of Godwin Herman Braun from Osnabrueck who achieved the transmutation in 1701, using a tincture having the appearance of an oil, "rather fluid and of a brown color". The famous chemist Henckel (5), according to Valentini, reports the following anecdote: "One day a stranger, who had a brown tincture with a smell close to hartshorn oil, came to a famous apothecary of Frankfort-on-Main, named Salwedel; with our drops of this tincture he changed a gros of lead into 7-1/2 grains of gold of 23 carats. This same man gave a few drops of this tincture to the apothecary who lodged him and who then produced identical gold which he saved in memory of that man, with the small bottle in which it was contained and where the marks of the tincture can still be seen. I had this bottle in my hands, and I can testify about it to the world".

Without disputing the truth of the last two statements, we nevertheless refuse to categorize these as transmutations brought about by the philosophers' stone in its special state of powder of projection. All the tinctures meet this criterion. Their subjection to a particular metal, their limited potency, the specific characteristics they exhibit, lead us to regard them as simple metallic products, extracted from common metals by certain procedures called little particulars, which pertain to spagyry rather than to alchemy. Furthermore, these tinctures, being metallic, have no other action but to penetrate the metals which have been used as a basis for their penetration.

Let us leave aside these processes and tinctures. Above all, it is important to remember that the philosopher's stone appears in the shape of a crystalline, diaphanous body, red in mass, yellow after pulverization, dense and very fusible, although fixed at any temperature, and which its inner qualities render incisive, fiery, penetrating, irreducible and incalcinable. In addition, it is soluble in molten glass, but instantaneously volatilizes when it is projected onto molten metal. Here, in one single object, are gathered physiochemical properties which singularly separates it from a possible metallic nature and render its origin rather nebulous. A little reflection will get us out of our difficulty. The masters of the art teach us that the goal of their labors is triple. What they seek to realize first is the universal Medicine or the actual philosopher's stone. Obtained in a saline form, whether multiplied or not, it can only be used for the healing of human illnesses, preservation of health, and growth of plants. Soluble in any alcoholic liquid, its solution takes the name of Aurum Potabile (potable gold, although it does not contain the least atom of gold) because it assumes a magnificent yellow color. Its healing value and the diversity of its use in therapeutics makes it a precious auxiliary in the treatment of grave and incurable ailments. It has no action on metals, except on gold and silver, on which it fixes itself and to which it bestows its own properties, which, consequently, becomes of no use for transmutation. However, if the maximum number of its multiplication is exceeded, it changes form and instead of resuming its solid crystalline state when cooling down, it remains fluid like quicksilver and definitely not coagulable. It then shines in the darkness, with a soft, red, phosphorescent light, of a weaker brightness than that of a common night light. The universal Medicine has become the inextinguishable Light; the light giving product of those perpetual lamps, which certain authors have mentioned as having been found in some ancient sepulchers. Thus radiant and liquid, the philosopher's stone is not likely, in our opinion, to be pushed farther; desiring to amplify its igneous nature would seem dangerous to us; the least that could be feared would be to volatilize it and to lose the benefit of a considerable labor. Finally, if we ferment the solid, universal Medicine with very pure gold or silver, through direct fusion, we obtain the Powder of Projection, the third form of the stone. It is a translucent mass, red or white according to the chosen metal, pulverizable, and appropriate only to metallic transmutation. Oriented, determined, and specific to the mineral kingdom, it is useless and without action in the two other kingdoms.

It becomes clearly evident from the preceding considerations, that the philosopher's stone or universal Medicine, in spite of its undeniable metallic origin, is not uniquely made from metallic matter. If it were otherwise, and if one had to compose it only with metals, it would remain subjected to the conditions ruling mineral nature and it would have no need to be fermented to operate transmutation. Furthermore, the fundamental axiom which teaches that bodies have no action on bodies would be false and paradoxical. Take the time and the trouble to experiment, and you will recognize that metals have no action on other metals. Be they brought to the state of salts or ashes, glasses or colloids, they will always retain their nature throughout trials and, in the process of reduction, they will separate without losing their specific qualities.

Only the metallic spirits possess the privilege to alter, modify and denature metallic bodies. They are the true instigators of all the physical metamorphoses that can be observed here. But since these tenuous, extremely subtle and volatile spirits need a vehicle, an envelope capable of holding them back; since this matter must be very pure --- to allow the spirit to remain there --- and very fixed so as to prevent its volatilization; since it must remain fusible in order to promote ingress; since it is essential that it be absolutely resistant to reducing agents, we may easily understand that this matter cannot be searched for in the sole category of metals. That is why Basil Valentine recommends that we take the spirit out of the metallic root and Bernard of Trevisan forbids the use of metals, minerals and their salts in the construction of the body. The reason for it is simple and self-explanatory. If the stone were made up of a metallic body and a spirit fixed in this body, the latter acting on the former as if it were of the same species, the whole would take the characteristics form of metal. We could, in this case, obtain gold or silver or even an unknown metal but nothing more. This is what alchemists have always done, because they did not know the universality and the nature of the agent which they were looking for. But what we ask for, along with all the philosophers, is not the union of a metallic body with a metallic spirit, but rather the condensation, the agglomeration of this spirit into a coherent, tenacious and refractory envelope, capable of coating it, impregnating all its parts and quaranteeing it an efficacious protection. This soul, spirit, or fire assembled, concentrated and coagulated in the purest, the most resistant and the most perfect of earthly matters, we call it our stone. And we can certify that any undertaking which does not have this spirit for guide and this matter for basis will never lead to the proposed objective.

The Castle of Dampierre (V) --- It is a double fruit for it is picked from the Tree of Life when specially reserved for therapeutic uses, and from the Tree of Knowledge if the preferred use is metallic transmutation. These two properties correspond to two states of the same product, the first characterizing the red stone, translucent and diaphanous, destined for medicine as potable gold, and the second, the yellow stone, whose metallic orientation and fermentation by means of natural gold have rendered it opaque....

According to the artisan's skill, care, and prudence, the philosophical fruit of the tree of knowledge shows a more or less important virtue. For it is undeniable that the philosopher's stone used for the transmutation of metals is never endowed with the same power. Historical projections provide us with certain evidence of it. In the operation performed by J. B. van Helmont in his laboratory at Vilvorde near Brussels in 1618, the stone transformed into gold 18,740 times its weight in flowing mercury. Richtausen, with the help of a product given by Labujardiere, obtained a result equivalent to 22,334 times per unit. The projection achieved by Seton in 1603 at the house of the merchant Coch of Frankfurt-am-Main was acted on a proportion equal to 1,155 times. In Dippel's report, the powder Lascaris gave to Dierbach transmuted approximately 600 times its weight of quicksilver. However, another piece given by Lascaris displayed more efficiency; in the operation performed at Vienna in 1716 in the presence of Counselor Pantzer von Hesse, Count Charles-Ernest von Rappach, Count Joseph von Wurben and Freudenthal, the brothers Count and Baron von Metternich, the ratio reached a power in the vicinity of ten thousand. Furthermore, it is not useless to know that the maximum production is achieved by the use of mercury, and that the same quality of stone gives variable results depending upon the nature of the metals used as the basis for the projection. The author of *Letters of the Cosmopolite* affirms that if one part of Elixir converts into perfect gold a thousand parts of common mercury, it will only transform twenty parts of lead, thirty of tin, fifty of copper and one hundred of silver. As for the white stone, it will, in the same degree of manipulation, only act on approximately half of these quantities.

But while the philosophers spoke little of the variable yield of the chrysopeus, on the other hand they displayed more prolixity toward the medicinal properties of the Elixir, as well as on the surprising effects that it enables one to obtain in the plant kingdom.

"The white Elixir," says Batsdorff, "performs marvels on illnesses of all animals and especially on those women suffer from... for it is the true potable moon of the Ancients". The anonymous author of *The Key to the Great Work*, mentioning Batsdorff's text once more, asserts that "this medicine possesses other even more incredible virtues. When it is at the white stage of the Elixir, it has so much sympathy with women that it can renew their bodies and render them as robust and vigorous as they were in their youth... For this effect, a bath is first prepared with several fragrant herbs with which they should scrub themselves clean; then they go into a second bath without herbs, but in which 3 grains of the white elixir were dissolved in a pint of wine spirit and then poured into the water. They remain in this bath for a quarter of an hour; after which, without drying themselves, a great fire is to be prepared to dry this precious liquor. The ladies then feel so strong within themselves, and their body is rendered so white that they could not imagine it without having experienced it. Our good father Hermes agrees with this operation, but, besides these baths, desires that, at the same time and for seven consecutive days, this Elixir be taken internally; and he adds, if a lady does the same thing every year, she will live exempt from all diseases to which other ladies are subject without experiencing any discomfort."

Huginus Barma certifies that "the stone fermented with gold can be used in medicine in this manner: one scruple or twenty-four grains are to be taken, dissolved according to the art in two ounces of spirit of wine, and two to three and up to four drops will be prescribed depending on the illness' requirements, in a little wine or in some other suitable vehicle". According to the ancient authors, all ailments are radically healed on one day that lasted for a month; in twelve days if they are a year old; in a month if they appeared more than a year ago.

But for this, as for many other things, we must know how to guard ourselves against excess imagination; the too enthusiastic author of *The Key to the Great Work* sees marvels even in the spirituous dissolution of the stone: "Burning golden sparks," claims the writer, "must come out of it and an infinity of colors must appear in the vase". It is going a little too far in the description of phenomena which no philosopher points out. Furthermore, he does not acknowledge any limits to the virtues of the Elixir: "Leprosy, gout, paralysis, kidney stone, epilepsy, dropsy... could not resist the virtue of this medicine." And as the healing of these reputedly incurable diseases doesn't seem sufficient to him, he eagerly adds to the list even more admirable properties. "This medicine causes the deaf to hear, the blind to see, the mute to speak, the lame to walk; it can totally renew a man by causing his skin to change, his teeth, fingernails and white hair to fall out, in stead of which new ones will grow, in the color desired". We are now drifting into humor and buffoonery.

Going by what the majority of sages say, the stone can give excellent results in the plant kingdom, particularly in what concerns fruit trees. In the spring, if we pour a solution of the Elixir highly diluted with rain water on the soil close to their roots, they can be made resistant to all causes of decay and barrenness. They produce even more and bear healthy and delicious fruits. Batsdorff goes so far as to say that it could be possible, using this process, to cultivate exotic vegetables in our latitude. "Delicate plants," he writes, "which have difficulty growing in climates of an opposite temperament to that which is natural to them, by being watered with it, becomes as vigorous as if they were in their native soil proper and set by nature."

When taking exaggeration and legendary additions into account, it remains true nevertheless that the hermetic fruit carries in itself the highest gift which God, through nature, can give to men of good will on earth...

The Castle of Dampierre (IX) --- Unlimited for the speculative philosophers, the multiplication however is limited for practical considerations. The more the stone progresses the more penetrating it becomes and the quicker its elaboration; at each stage of augmentation, it only requires the eighth of the time required for the preceding operation. Generally --- and we are speaking here about the long way --- the fourth reiteration requires seldom more than two hours; the fifth thus takes a minute and a half, while twelve seconds would suffice to achieve the sixth; the instantaneousness of such an operation would make it unpractical. On the other hand, the intervention of the continuously increasing weight and volume would force us to keep aside a great part of the resulting product, for want of the required corresponding ratio of mercury, the preparation of which is time-consuming and fastidious. Finally, the stone multiplied to the fifth and sixth degrees would demand, given its igneous power, an important mass of pure gold to orient it toward the metallic --- otherwise we would be liable to lose the whole thing. From any standpoint, it is preferable to not push the subtlety too far of an agent already gifted with such a considerable energy, unless, leaving aside the scope of metallic and medical possibilities, you want to possess this Universal Mercury, shiny and luminous in darkness, in order to make a perpetual lamp. But the passing from the solid to the liquid state which must be accomplished here, as it is eminently dangerous, can only be attempted by a very learned and most skillful master...

Like those of Dampierre, the panel with the three trees sculpted in the palace at Bourges bears a motto. On the border of the frame decorated with flower-bearing branches, the attentive observer indeed discovers isolated letters, very cleverly concealed. Their connection composes one of the favorite maxims of the great artist that Jacques Couer was: .DE.MA.JOIE.DIRE.FAIRE.TAIRE. (About my joy, say it, do it, be silent). Now the Adept's joy resides in his occupation. The work which renders this marvel of nature more tangible and more familiar to him --- which so many ignorant people call chimera --- constitute his best distraction and its most noble experiment. In Greek the word chara, joy, derived from chairo, to rejoice, to delight in, to enjoy, also means to love. The famous philosopher, than clearly alludes to the labor of the Work, his dearest task, of which moreover so many symbols have come to enhance the glamour of his sumptuous house. But what to say, what to admit of this unique joy, of this pure and complete satisfaction, the intimate cheerfulness of success? The least possible, if we do not want to break the oath, to attract envy from some, greed from the others, jealousy from all, and risk becoming the prey of the powerful. What to do then with the result about which the artist, according to the rules of our discipline, promises to use in a modest fashion? To always use it for the good, to consecrate its fruit to the exercise of charity, in conformity to the precepts of philosophy and to Christian ethics. Finally what should we keep silent about? Absolutely everything which concerns the alchemical secret and privilege, the disclosure of its process remains forbidden, non-communicable in clear language, only permitted when veiled by parables, allegories, images, or metaphors.

Jacques Couer's motto, in spite of its conciseness and implications, turns out to be in perfect accord with the traditional teachings of the eternal wisdom. No philosopher, truly worthy of the name, would refuse to subscribe to the rules of conduct which it expresses and which can be translated in this way:

About the Great Work, say little, do much, and always be silent.

The alchemical science is not taught; everyone must learn it by himself, not in a speculative way, but indeed with the help of a persevering work, by multiplying trials and errors, so as to always submit the products of thinking to the control of experience. Whoever fears this manual labor, the heat of the furnaces, the dust of coal, the danger of unknown reactions, and the wakefulness of long vigils, will never know anything...

Geber ~ *Sum of Perfection*

For the Lord might feel inclined to withhold this Art in punishment of your sophistic work and throw you into a devious error, and from error into lucklessness and everlasting misery. For he is very miserable and luckless whom God does not show the truth after the completion of his work and labor, and he must end his life in sadness.

Johan Grashof ~ *The Greater and Lesser Edifyer*

Our Art and Science is so divine and supernatural (understand, after the Composition) that it has never been possible to understand through which means it could or might be able to exist, even by those who have been or still are the wisest of the wise, unless they have been previously enlightened by God. For in this point all of our sense and natural reason shatters. However, in order that you may be further introduced to and instructed in this, as I have promised, I will teach you thoroughly and inform you as much as is granted and permitted me now to disclose and reveal. You may then appeal further in accord with my guidance, most diligently to the Almighty and Most High with fervent prayer, for from him come all treasures of wisdom. At that time, without doubt, you will be enlightened... However, such an exalted gift is not given to everyone, and accordingly each man must make his own reckoning and test himself well, before injury overtakes him and harms him: let him heed who can...

Behold, with this you may cure all vegetables, make all unfruitful trees fruitful, and turn winter to summer and summer to winter. That is, in winter you can have all the plants which are otherwise only provided by summer. Indeed, you can make a tree bear five or six times in a year; you can make a good plant from a bad one, a young fresh tree from an old rotten one, a bitter apple sweet, turn pears to cherries, and cherries again to pears, and thus transform all plants and trees into one another.

In the second place, you can turn all imperfect metals into good ones, that is, into gold and silver, and indeed, into so much that you are not able to express the amount. For one part will tincture not merely ten thousand parts, but rather several hundred thousand parts, and this by means of multiplication.

In the third place, you can liberate men from all diseases, turn an old man into a young one, and make a healthy man from a sick one. You can transform the mind and thoughts of men, and make the most pious man from the wickedest knave.

And whatever you might think of all of this, it is not great but rather insignificant in comparison with what follows, for the words of Hermes have not yet been sufficiently explicated.

Listen, for now we will advance to the supernatural. This is the key to open heaven and earth, that you may enter into the highest firmament of heaven, into the center of the earth, and into the depths of the ocean. You can see through every mountain, valley, leaf, grass, animal, man, etc, and in short through everything, as though you were looking through a piece of glass. You can learn the characteristics of everything, you will master heaven and earth, all spirits will be obedient to you, they will have to serve you and do your will. You can also come to know everything, both present and future (as much as God permits), which means that you can create the world and receive the power of the same. However this may seem, it is knowable, for it is magic and supernatural. As I have already said, when you are granted the success of attaining the completion of the natural, then you may go on to experience the supernatural. Thus you now possess what I have taught you, and, considering how poorly you have dealt with it before, guard yourself against this, and be warned.

Louis Grassot ~ *The Light Out of Chaos*

A Vindication of the Great Work --- The Grand Work of the Sages holds the first rank amongst beautiful things; Nature, without the help of art, is unable to perform it, and art without nature cannot venture to undertake it; it is a masterpiece which borders on the powers of the god;

its effects are so miraculous, that the health which it gives and preserves to the people, the perfection which it gives to all things in Nature, and the great wealth it produces in a manner wholly divine, are not to be reckoned to be its highest marvels.

If the great Architect of the Universe has made it the most perfect agent in all nature one may say without fear that it has received the same power from Heaven in regard to mortality; if it purifies the body, it clarifies the spirit; if it develops compound substances to the highest point of perfection, it can elevate our intelligence up to the highest knowledge; it is the Savior of the great world, because it purges all things from their original stains and by its virtue repairs the disorder of their temperament. It subsists in a perfect ternary of three perfect principles, truly distinct, but which together make one and the same nature. It is normally the universal spirit of the world corporified in a virgin earth... One may justly say that it produces marvels in nature introducing into bodies a very great purity and it also does miraculous things in morality, illuminating our spirits with the most powerful lights.

I leave the readers the liberty to supplement these results in any manner they may judge fit and convenient.

The Virtues of the Philosophical Elixir --- It is, according to the sayings of all the philosophers, the source of riches and of good health, because with it one can make gold and silver in abundance and effect a cure not only for all those maladies which are curable but also, by its moderate use they can be prevented. One single grain of this medicine or red elixir, will cure paralysis, dropsy, gout and leprosy, if taken daily during some few days.

Epilepsy, colic, rheumatism, inflammation, frenzy, and all other internal complaints cannot resist this life principle. It is an assured remedy for all affections of the eyes. All aposthumes, ulcers, wounds, cancer, fistulas, noli-me-tangeres, and all diseases of the skin will be cured by dissolving one grain in a glass of wine or water, and bathing the affected part; it will dissolve, little by little, stone in the bladder; is an antidote for all poisons by drinking it as above advised.

Raymond Lully assures us that it is, in general, a sovereign remedy for all the ills which afflict humanity from the feet to the head; if the illness has lasted one month it will cure it in one day; if it has lasted a year, it will cure it in twelve days while in month it will eliminate any disease whatsoever.

Arnold de Villa Nova says that its efficacy is infinitely superior to any and every remedy of Hippocrates, of Galen, of Alexander, of Avicenna and of all ordinary medicine; that it rejoices the heart, gives strength and energy, conserves youth and makes old people young again; in general, that it cures all diseases whether hot or cold or humid or dry.

Geber, without making an enumeration of the maladies which it will cure, contents himself by saying that it will overcome all those diseases which are regarded as incurable by the medical faculty; that it rejuvenates the old and preserves health during many years beyond the normal span, simply by taking a piece the size of a mustard seed two or three times a week, fasting.

Philalethes adds to this, that it clears the skin of all blemishes and wrinkles, etc. that it will help a woman in labour, the child being dead, simply by holding the powder to the mother's nose, and quotes Hermes as his authority; he asserts that he himself has snatched many from the arms of death who had been given up by their doctors, You will find prescriptions for its application in all diseases by consulting the works of Raymond Lully and Arnold de Villa Nova.

Richard Ingalese ~ *They Made the Philosophers' Stone*

In 1917 we succeeded in making the White Stone of the Philosophers. It looked like soft, white marble, and its effect upon the body was startling. We dared not try it on ourselves at first, but there was a third member of our family, a beautiful Angora cat of which we were very fond... It survived the first dose, and we repeated it on the two following days, with the cat becoming more frisky than usual. After that we tried it ourselves, each taking a dose at the same moment so we would exanimate together if it should prove fatal. But it proved beneficial and energized our bodies.

Shortly after that event, the wife of a prominent local physician died; and the doctor, knowing of our experiments and that the books claimed that such a stone, if used within a reasonable time, would raise the dead, asked us to experiment on the body of his wife. Half an hour had elapsed since her death and her body was growing cold. A dose of the dissolved White Stone was put into the mouth of the corpse without perceptible result. Fifteen minutes afterward a second dose was administered and the heart commenced to pulsate weakly. Fifteen minutes later a third dose was given and soon the woman opened her eyes. In the course of a few weeks, the patient became convalescent, after which she lived seven years.

Jacob Juran ~ *Hyle and Coahyl*

Take common rainwater, a good amount, at least ten quarts, keep it well sealed in glasses for at least ten days, and it will deposit matter and feces at the bottom. Pour off the clear liquid and put it in a wooden vessel that is made round like a ball, cut it off in the middle and fill the vessel a third full, and set it in the sun at noon in a secret and secluded spot.

When that is done, take a drop of the consecrated red wine [containing the Stone in solution] and let it fall into the water, and you will immediately see a fog and thick darkness on top of the water, such as had also been at the first Creation.

Now pour in two drops and you will see the light coming forth from the darkness. Thereupon, pour in every half of each hour first three, then four, then five, then six drops, and then no more, and you will see with your own eyes one thing after another on top of the water, how God created all things in six days, and how that came to pass, and such secrets as are not to be revealed and which I also do not have the power to reveal. Let your eyes be the judge; for thus the world was created...

By this you will see the secrets of God, which now are hidden from you as from a child. You will understand what Moses wrote about Creation. You will see what kind of body Adam and Eve had before and after the Fall, what the snake was, what the tree, and what kind of fruits they ate, where and what Paradise is, and in what bodies the just will resurrect --- not in this one that we have received from Adam but in

that which we receive through the Holy Ghost, namely, such a one as our Savior brought from Heaven...

Still more than that: If you take your Stone at every full moon, when it is above the horizon where you are, and step aside in a garden, and you take a little pure rainwater, as you did in the first operation, and you drop some of the white wine in it, just as you did with the red --- immediately a vapor will rise in a peculiar way toward the circle of the moon. If you do this at every moon in due course, there is no philosopher in the horizon where you are living and who has knowledge of the Stone as well as its use, who does not also go out at the same time, seeking in the East and West, the North and South. When he finds such an appearance (as he will soon see), he will now that this is done by an artist, or someone else, who would like to get acquainted with those who know just this art, and he will answer you in the same manner as you have done. In this way you will recognize those who know the use of the Stone.

To meet your philosophical society, do as follows: Rub your temple with the White Stone at night, and pray earnestly to recognize who he is. Put three freshly picked laurel leaves under your head, and set your imagination on him who you desire to recognize, and go to sleep in this way. When you awaken, you will immediately remember the face of the person, his name and the place where he stays. If you do not wish to go to him, he will come to you; for he will perhaps think that you do not know this secret. The cause of this happening is this: the universal spirit of the Air, which is locked in the Stone, causes it.

In this way, you can get to know all scholars in the world, who will seem to you more like beggars than wise people, and who will perhaps teach you more than I am able to or have done here, for, truly, all things that are natural can thereby be brought about, such things as can hardly be described in a big book.

Henri Lintaut ~ *Friend of the Dawn*

No one can bring this work to fruition, or harvest who is not established in proper mental and psychic balance within, which is required in order for the astral and mental Guardians of this Great Secret to allow one to proceed with this Great Work. This statement is given only as a warning. One may try, but never succeed, without the proper authorization by Divine sources of inner and outer guidance given to the alchemist. Hundreds of obstacles must be conquered. And one who conquers all of the obstacles of the "Way of the Crucible" is one who has been chosen and approved, for various Divine and karmic reasons, to so achieve. Each one knows only in his inner heart if he or she has been given permission to achieve this Great Work for the benefit of mankind.

Theophrastus Paracelsus ~ *The Tincture of the Philosophers*

Chapter VI. Concerning the Transmutation of Metals by the Perfection of Medicine --- If the Tincture of the Philosophers is to be used for transmutation, a pound of it must be projected on a thousand pounds of melted Sol. Then, at length, will a Medicine have been prepared for transmuting the leprous moisture of the metals. This work is a wonderful one in the light of Nature, namely, that by the magistry, or the operation of the Spagyrist, a metal, which formerly existed, should perish, and another be produced. This fact has rendered the same Aristotle, with his ill-founded philosophy, fatuous... These things, and more like them, are known to simple men rather than to sophists, namely, those which turn one appearance of a metal into another. And these things, moreover, through the remarkable contempt of the ignorant, and partly, too, on account of the just envy of the artificers, remain almost hidden...

But though the old artists were very desirous of this arcanum, and sought it with the greatest diligence, nevertheless, very few could bring it by means of a perfect preparation to its end. For the transmutation of an inferior metal into a superior one brings with it many difficulties and obstacles, as the change of Jove into Luna, or Venus into Sol. Perhaps on account of their sins God willed that the Magnalia of Nature should be hidden from many men. For sometimes, when this Tincture has been prepared by artists, and they were not able to reduce their projections to work its effects, it happened that, by their carelessness and bad guardianship, this was eaten up by fowls, whose feathers thereupon fell off, and, as I myself have seen, grew again. In this way transmutation, through its abuse from the carelessness of the artists, came into Medicine and Alchemy. For when they were unable to use the Tincture according to their desire, they converted the same to the renovation of men...

Chapter VII. Concerning the Renovation of Men --- Some of the first and primitive philosophers of Egypt have lived by means of this Tincture for a hundred and fifty years. The life of many, too, has been extended and prolonged to several centuries, as is most clearly shown in different histories, though it scarcely seems credible to any one. For its power is so remarkable that it extends the life of the body beyond what is possible to its congenital nature, and keeps it so firmly in that condition that it lives on in safety from all infirmities. And although, indeed, the body at length comes to old age, nevertheless, it still appears as though it were established in its primal youth.

So, then, the Tincture of the Philosophers is a Universal Medicine, and consumes all diseases, by whatsoever name they are called, just like an invisible fire. The dose is very small, but its effect is most powerful. By means thereof, I have cured the leprosy, venereal disease, dropsy, the falling sickness, colic, scab, and similar afflictions; also lupus, cancer, noli me tangere, fistulas, and the whole race of internal diseases, more surely than one could believe...

Now, Sophist, look at Theophrastus Paracelsus. How can your Apollo, Machaon, and Hippocrates stand against me? This is the Catholicon of the Philosophers, by which all these philosophers have attained long life for resisting diseases, and they have attained this end entirely and most effectually, and so, according to their judgment, they named it the Tincture of the Philosophers. For what can there be in the whole range of medicine greater than such purgation of the body, by means whereof all superfluity is radically removed from it and transmuted? For when seed is once made sound all else is perfected. What avails the ill-founded purgation of the sophists since it removes nothing as it ought? This, therefore, is the most excellent foundation of a true physician, the regeneration of the nature, and the restoration of youth. After this, the new essence itself drives out all that is opposed to it. To effect this regeneration, the powers and virtues of the Tincture of the Philosophers were miraculously discovered, and up to this time have been used in secret and kept concealed by true Spagyrist.

Theo. Paracelsus ~ *Concerning the Spirits of the Planets*

Chapter VIII. Conclusion --- This secret was accounted by the old Fathers who possessed it as among the most occult, lest it should get

into the hands of wicked men, who by its aid would be more abundantly able to fulfill their own wickedness and crimes. We, therefore, ask you, whoever have obtained this gift of God, that, imitating these Fathers, you will treat and preserve this divine mystery in the most serious manner possible, for if you tread it underfoot, or scatter your pearls before swine, be sure that you will hear pronounced against you the severe sentence of God, the supreme avenger.

But to those who, by the special grace of God, abstain from all vices, this Art will be more constantly and more fully revealed than to any others. For with a man of this kind more wisdom is found than with a thousand sons of the world, by whom this Art is in no way discovered.

Whosoever shall have found this secret and gift of God, let him praise the most high God, the Father and Son, with the Holy Spirit. And from this God also let him implore grace, by which he may be able to use that gift to God's glory and to the good of his fellow-man. The merciful God grant that this may be so for the sake of Jesus Christ His Son, and our Saviour!

Theo. Paracelsus ~ *The Fifth Book of Archidoxies*

Concerning Arcana --- ...So, then, the Prima Materia is the first Arcanum; the second is the Philosophers' Stone, the third is the Mercurius Vitae, and the fourth is the Tincture...

Concerning the Arcanum of the Philosophers' Stone --- In like manner, this Philosophers' Stone purifies the heart and all the principal members, as well as the intestines, the marrow, and whatever else is contained in the body. It does not allow any disease to germinate in the body, but the gout, the dropsy, the jaundice, the colic, fly from it, and it expels all the illnesses which proceed from the four humours; at the same time, it purges bodies and renders them just as though they were newly born. It banishes everything that has a tendency to destroy nature, none otherwise than as fire does with worms. Even so, all weaknesses fly before this renovation...

The power and potency of the Philosophic Stone is exalted to so wonderful an extent that it is impossible to trace how it can be naturally brought about; and unless the most evident signs lay open to our eyes, it would be incredible that men could perfect and accomplish such wonderful things; since the virtue of that operation passes from generation to generation without any break. On the other hand, by the mercy of God, it exists in one body, and at length, according to their deserts, it is denied to others or conceded as a special act of grace...

Eirenaeus Philalethes ~ *An Open Entrance to the Closed Palace of the King*

So long as the secret is possessed by a comparatively small number of philosophers, their lot is anything but a bright and happy one; surrounded as we are on every side by the cruel greed and the prying suspicion of the multitude, we are doomed, like Cain, to wander over the earth homeless and friendless. Not for us are the soothing influences of domestic happiness; not for us the delightful confidences of friendship. Men who covet our golden secret pursue us from place to place, and fear closes our lips, when love tempts us at times to open ourselves freely to a brother. Thus we feel prompted at times to burst forth into the desolate exclamation of Cain: "Whoever finds me will slay me." Yet we are not the murderers of our brethren; we are anxious only to do good to our fellow men. But even our kindness and charitable compassion are rewarded with black ingratitude --- ingratitude that cries to heaven for vengeance. It was only a short time ago that, after visiting the plague-stricken haunts of a certain city, and restoring the sick to perfect health by means of my miraculous medicine, I found myself surrounded by a yelling mob, who demanded that I should give to them my Elixir of the Sages; and it was only by changing my dress and my name, by shaving off my beard and putting on a wig, that I was enabled to save my life, and escape from the hands of those wicked men. And even when our lives are not threatened, it is not pleasant to find ourselves, wherever we go, the central object of human greed... I know of several persons who were strangled in their beds, simply because they were suspected of possessing this secret, though, in reality, they knew no more about it than their murderers; it was enough for some desperate ruffians, that a mere whisper of suspicion had been breathed against their victims. Men are so eager to have this Medicine that your very caution will arouse their suspicions, and endanger your safety. Again, if you desire to sell any large quantity of your gold and silver, you will be unable to do so without imminent risk of discovery. The very fact that someone has a great mass of bullion for sale would in most places excite suspicion. This feeling will be strengthened when people test the quality of our gold; for it is much finer and purer than any of the gold which is brought from Barbary, or from the Guinea Coast; and our silver is better even than that which is conveyed home by the Spanish silver fleet... I remember once going, in the disguise of a foreign merchant, to a goldsmith's shop, and offering him 600 pounds worth of our pure silver for sale. He subjected it to the usual tests, and then said: "This silver is artificially prepared." When I asked why he thought so, his answer was: "I am not a novice in my profession, and know very well the exact quality of the silver which is brought from the different mines." When I heard these words I took myself away with great secrecy and dispatch, leaving the silver in the hands of the goldsmith. On this account, and by reason of the many and great difficulties which beset us, the possessors of this Stone, on every side, we do elect to remain hidden, and will communicate the Art to those who are worthily covetous of our secrets, and then mark what public good will befall...

I possess wealth sufficient to buy the whole world --- but as yet I may not use it on account of the craft and cruelty of wicked men. It is not from jealousy that I conceal as much as I do: God knows I am weary of this lonely, wandering life, shut out from the bonds of friendship, and almost from the face of God. I do not worship the golden calf, before which our Israelites bow low to the ground; let it be ground into powder like the brazen serpent. I hope that in a few years gold (not as given by God, but as abused by man) will be so common that those who are now so mad after it, shall contemptuously spurn aside this bulwark of the Antichrist. Then will the day of our deliverance be at hand when the streets of the new Jerusalem are paved with gold, and its gates are made of great diamonds. The day is at hand when, by means of this my book, gold will have become as common as dirt; when we Sages shall find rest for the soles of our feet, and render fervent thanks to God. My heart conceives unspeakable things, and is enlarged for the good of the Israel of God. These words I utter forth with a herald's clarion tones. My book is the precursor of Elias, designed to prepare the Royal way of the master; and would to God that by its means all men might become adepts in our Art --- for then gold, the great idol of mankind, would lose its value, and we would prize it only for its scientific teaching. Virtue would be loved for its own sake. I am familiar with many possessors of this Art who regard silence as the great point of honor. But I have been enabled by God to take a different view of the matter; and I firmly believe that I can best serve the Israel of God, and put my talent out at usury, by making this secret knowledge the common property of the whole world. Hence I have not conferred with flesh and blood, nor attempted to obtain the consent of my brother Sages. If the matter succeeds according to my desire and prayer, they will all rejoice that I have published this book.

Eir. Philalethes ~ Ripley Revived

An Exposition upon the Preface of Sir George Ripley --- This Mercury thus renovate or new born, may by the Philosopher be diversly handled; for he may take his work from the Fire, and circulate and cohobate this Mercury by a peculiar operation, which partly Mechanical, till he have a most admirable pure subtile Spirit, in which he may dissolve Pearls and all Gems, and multiply them or his Red Stone, before it be united with a metal in projection for the making of Aurum Potabile. And in this Mercury thus circulated, is doubtless the Mystery of the never-fading Light, which I have actually seen, but yet not practically made. In a word, every one who hath this exuberate Mercury, hath indeed at command the subject of wonders, which he may employ himself many ways in both admirably and pleasantly. And certainly he that hath this, needs no information from another; himself now standing in the Centre, he may easily view the Circumference, and then operation will be, next to the Spirit of God, his best Guide. Know then, that if thou be a Son of Art, when thou art once arrived hither, thou are so far from being at the end of thy search, (unless thou make Gold to be thy final object, and so thou shalt never come hither) that thou art but now come into the Mystical School of the hidden wonders of God, in which thou mayst every day see new Miracles, if thou be studious and desirous of knowledge, which all Adepti are; they prize skill before any earthly thing, and therefore refuse Honour and Pomp, and retire only to the beholding of God and his Works, in this admirable Looking-glass of the most hidden Mysteries of Nature.

Michael Sendivogius ~ Epistles to the Rosicrucian Society

XXXVII --- The Use of the Practice is this. First, as to a medicine for animals, dissolve one grain of the simple Stone in 100 grains of that mercury wherewith the Stone is made, or in any other liquor or convenient vehicle according to the present condition of the disease, and the temperament of the patient, giving a due potion of such liquors with one grain of dissolved Stone. But if the stone has been once multiplied, then one grain of it must be dissolved in a thousand grains of such a convenient liquor; if twice multiplied, in ten thousand grains of liquor, and so on.

Second, as to the transmutation of metals, take one part of the simple Stone and ten parts of the said Mercury, not of the vulgar; or of the once multiplied Stone one part, and one hundred parts of the same Mercury, or lastly one part of twice multiplied Stone and a thousand part of the said Mercury. Set them to dry, first in a gentle fire, then stronger and stronger till it acquires the consistency of stone. And such imbibitions and dessications repeat until one part of the Stone converts ten parts of common mercury, twenty of lead, thirty of tin, fifty of copper, and lastly one hundred of silver, into perfect gold if the Stone be for gold. But half of the part, or thereabouts, of the said proportions of those metals, if the Stone be for silver.

But if you should want a sufficient quantity of the aforesaid Mercury, then you can degrade the Stone with common Mercury in the following manner. Project one part of this simple or multiplied Stone upon ten parts of heated common mercury, and you shall have a powder of the same nature as the Stone, but of a lesser virtue and efficacy. All of this powder project again upon one hundred parts of the same common mercury, and again project this powder upon one thousand part of the same common mercury. And if then the powder grows moist, dry it with fire, and it will remain a powder, which lastly you can project upon the aforesaid metals, keeping the same proportion.

This is now the universal and most exact Theory and Practice of the Stone...

Johann Isaac Hollandus ~ Opuscula Alchymica

I am telling you enough, if you will only understand; and if you do not understand, God Almighty will not grant it to you, and even if you do not find it, it is nevertheless found.

Part I

Ars Magna

Chapter 2

The Short Dry Path

P. Allen ~ A Christian Rosenkreutz Anthology

Anonymous ~ The Allegory of Merlin

Anon. ~ On the Philosophers' Stone

Anon. ~ Rosarium Philosophorum

Anon. ~ Untitled

S. Bacstrom ~ The Work of Pontanus, According to Mr. F.

D. Beuther ~ The Transmutation of Base Metals...

P. Bonus ~ The New Pearl of Great Price

Cyliani ~ Hermes Unveiled

A. Eleazar ~ The Book of Abraham the Jew

B. Figulus ~ A Golden and Blessed Casket of Nature's Marvels

Fulcanelli ~ *The Mystery of the Cathedrals*
Fulcanelli ~ *The Dwelling of the Philosophers*
J. Grashof ~ *The Greater & Lesser Edifyer*
C. Grummet ~ *Sanguis Naturae*
J. Helvetius ~ *The Golden Calf*
J. I. Hollandus ~ *De Lapide Philosophorum*
J. I. Hollandus ~ *Vegetable Work*
K. Jnana ~ *Dictionary of Alchemical Philosophy*
N. LeFebre ~ *Secret of Secrets*
R. Lully ~ *Letter or Epitome to King Rupert*
J. Muller ~ *Hyle and Coahyl*
Myriam ~ *Her Conversation with Aros, King of Egypt*
Paracelsus ~ *The Philosophical Canons*
Eir. Philalethes ~ *An Open Entrance to the Closed Palace of the King*
Eir. Philalethes ~ *Ripley Revived*
Eug. Philalethes ~ *A Short Enquiry Concerning the Hermetic Art*
G. Ripley ~ *Medulla Alchemiae*
M. Rulandus ~ *A Lexicon of Alchemy*
S. Salztal ~ *Fountain of Philosophical Salts*
Theophrastus ~ *The Sacred Art*
Arnold de Villanova ~ *Rosarium Philosophorum*

The Philosophers' Stone can be prepared in two general ways: "wet" (solutions) and "dry" (fusions). Much has been written about the wet way; it is long, dangerous, tedious and expensive. The Short, Dry, or Royal Path, the *Ars Brevis*, is little known, having been mentioned only a few times in the literature of Alchemy. It can be quick, simple and easy, but it is also very dangerous and difficult to control. Here are most of the explicit references to the subject:

Paul M. Allen ~ *A Christian Rosenkreutz Anthology*

And thereupon followeth the mixture, observe!
And so it cometh to a wondrous strength,
The finished figures with the unfinished.
And if the fire be likewise rightly controlled,
It will be entirely perfect
In much less time than a year.
Now thou hast the entire way in its length
On which there are not more than two paths.
From these one soon wandereth and goest astray,
Else it all standeth clear and plain.
The one is the water of the Wise Men,
Which is the Mercurius alone.
The other is called a vinegar,
And it is known only to a very few.
And this vinegar doth circle
Away from the philosophical lion.
It is Lord Aes whom it makes glad.
Therefore they have combined to so closely
Many hundred forms and names are given
After each has chosen it.
One way springeth from a true source,
A few have worked on it for a whole year
But many through their art and craft
Have shortened so long a space of time.
And quickly is the preparation set free
As Alchemy doth point out.

Anonymous ~ *The Allegory of Merlin*

Brother, keep secret this treatise for it is of an importance amongst the fools, and no importance amongst wise men, and this is the Royal way of three days, for they will have but little labour and great lucre.

Anon. ~ *On the Philosophers' Stone*

But some, who were adepts in the art, have by painful processes taken gold for their male, and the mercury, which they knew how to extract from the less compacted metals, for a female: not as an easier process, but to find out the possibility of making the stone this way; and have succeeded, giving this method more openly to conceal the true confection, which is most easy and simple.

Anon. ~ *Rosarium Philosophorum*

Aristotle in the Second Book of his *Politics* --- There is a double way in this art according to the Philosophers, that is --- universal and particular. The universal way is easy and rare, and it is that which is brought forth from true and natural beginnings, by which a speedy and reformative virtue doth presently and in a moment hardens Mercury, and it tinctureth any metal that is duly prepared, into true Gold or Silver.

But the second way is called particular and it is hard and laboursome. Note this, although Alchemy in the universal way be partly natural and partly artificial, yet it is more natural than otherwise, because by nature no strange or foreign thing is brought in the way of true Alchemy, for nature hath whereon to work because actives are joined to passives by a competent union and application, but the rest nature worketh by herself.

Out of the *Lucidary of Arnoldus* --- I demand in what time this blessed Stone may be made, to which it is answered as a certain author Lelius the Philosopher witnesses, that his magistry was finished in eight days, and that another did it in seven days, and another in three months, and some in four months, and some in half a year, and some in the space of a whole year, and Maria says she did it in three days. To this I say that the cause of diversity, that is of shortness and length of time, might be defect in the virtue of the water of Mercury or because it worketh of Sol and Luna. And some of the Philosophers added more and some less. But Sol is fixed and not flying, and with that only did they work.

Raymund Lully in his *Epistle to Rupert, King of France* --- Wherefore I speak things which are miraculous, which seemed to be incredible to all the ancient Philosophers, that is, that thou shalt know well to separate this oil from the wateriness and thou shalt labour in the manner of the mixtion of them, and thou shalt be able to make the Stone in 30 days, but this is not necessary by itself because the solutions and coagulations of it (as hath been said) are quickly made and done.

Anon. ~ *Untitled Ms*

Accordingly there is now, besides the work of three years, a work of three months, three weeks, three days, and, surpassing all of these, three hours. Mary the Prophetess was trained in this last work; a philosopher of keen intellect, or a well-trained artisan, will be able to investigate what she has learned from her discussions with the Philosopher Aros. In addition, there are other works, called the work of one natural day, one month, one year, and nine months. Anyone who does not know the distinctions among these and other such things lays claim to this saying: "He should take his hand off the reins." And though all these aforesaid works are to be understood only by the time of operation from first to last, nevertheless it can happen that other works are mixed in with them, and then both operations, antecedent and consequent, are included in the timespan listed above. But since the purpose here has been merely to give you a casual warning about these matters, there is no need to dwell on them further...

What follows is how the Philosophers multiplied their work in the moist path, and perhaps also by the same token in the dry path. Multiplication takes place in quantity as well as in quality, always with ten parts of its water or of philosophical mercury duplex and so on to infinity. The first time it does not tinct, but if it is put in fire the second time it is perfected in two months time, and one part tincts only ten parts. If you put it in fire a third time, it is finished in three weeks and one part tincts a hundred parts. If you put it in fire a fourth time, it is perfected in three days, and one part tincts a thousand parts. After that a work of multiplication is completed in three days at a time, and this is the work of three days.

Sigismund Bacstrom ~ *The Work of Pontanus According to Mr. F.*

Pontanus had his knowledge from Artephius, therefore followed him, having read and understood him, except that Artephius worked by the long humid way, but Pontanus by the dry short way, and Mr. F. believes that it can be done in a very Short Time, probably sooner than we are aware of.

David Beuther ~ *The Transmutation of Base Metals into Silver and Gold*

If we now wish to proceed further, we must now go on to Paracelsus' School of Work and to the brief passages which follow, as are readily to be noted and learned from his *Scriptis*. Then we desired to learn from the *Subjectum Materiae vel Tincturae*, which is reported clearly enough and shown with the fingers, so he also set up thereby the welcome preparations and said that from one (of the materials noted) two would result, namely, sulfur and mercury, since one of them (mercury) gives the body, on earth, wherein we plant the seeds, *i.e.*, the Sulfur of the Sun, which sulfur is called the Blood of the Red Lion, while the mercury is called the Gluten of the White Eagle. He further stated that when the two coagulated together, then the tincture thus prepared was ready to be used. This is, indeed, a shorter way of preparation, though it gives poorer and inferior results...

One also sees how the work is brought to completion from a material in an oven, glass container, or other type of receptacle, in one experiment after another, by using increased amounts to heat. And, even though the work and the art by you yourself is completely inferior in quality, the philosophers have also pointed out that, "It is wife's work and children's play". Even so, it still requires a well-qualified artisan to be the fire-master. Moreover, the work may be completed easily enough without danger in 16 weeks...

Petrus Bonus ~ *The New Pearl of Great Price*

This Art is noble, brief, and easy. It requires one thing, which everybody knows. It is in many things, yet it is one thing. It is found everywhere, yet it is most precious. You must fix it and tame it in the fire; you must make it rise, and again descend. When conjunction has taken place, straightway it is fixed. Then it gives riches to the poor and rest to the weary. The operation is good, if it become first dry and then liquid, and what Rebis (Twothing) is, you will find in the practical part of this work.

Cyliani ~ *Hermes Unveiled*

At this point, I must warn you that only two matters of the same origin are needed: One volatile, the other fixed. That there are two ways, the dry and the humid. I personally follow the latter by preference and by duty, though the former is known to me. It is done with only one matter.

The azoth unites easily with sulfur, fire with fire, and the double mercury or rebis in powder or oil forms the true potable gold or the Universal medicine in white or red. Finally the seed of gold lies within the gold itself.

Few combustibles are necessary; even less receptacles. The work costs very little to undertake and can be performed in any place, but it is convenient to begin it with that of nature in order to finish it well...

Rabbi Abraham Eleazar ~ *The Book of Abraham the Jew*

That however you know and become acquainted with the Materiam; so is such our old Albaon Abacschozdii, is a Minera, so there in the mountains is found, and such is of three different sorts... The third is grey and white and a very poisonous kind, a right Saturn, which has the power, with its poisonous breath to kill. Therefore one must be very careful when working with this, when in a dry form, to get it sweat... and also such a materia is found in the pits, because they often throw such away, because it gives from itself a strong smell, and also often kills the men...

Formerly I have pointed out and shown to you the wet way, and how you can find and prepare in such a way the Mysterium, and such a way is without danger.

This dry way, that I will describe to you and teach you, is somewhat dangerous, yet if you follow my teaching, then it will not fall heavy on you, for as I have described to you in all my Figures throughout, two ways, so to the intelligent it is not difficult to understand, and have also wished to show that in this Figure [3]; for here you see flowing from a desert a white Lunar Water, which is the old progenitor of all things, prepared in two ways:

Firstly however, you must understand, what of the two ways is taken; namely the first proceeds from the Fatness of the Earth, out of the Primordial Chaos. The other from our black heavy lump; that however the serpents crawl in the grass, and is of divers colors, the Phyton in the dry way, for this promptus is very poisonous, yet some times it ascends in the hills, and so becomes a flower, nearly medicinal, whilst then it is not so poisonous...

...This is that, which the Ancients said, how they finished their stone in four hours. They have taken of such one part and added to four parts of Ophiris Sol in flux, so it will become pure tincture; of which they have incorporated half of this with one part of Columba Dianae, as has been taught till the seventh time, and in such a manner increased their work in infinitum, whereby they supported themselves in their need and came to the help of their poor imprisoned brethren...

...But there is prepared from the green Lion a crawling Dragon, and you have it before your eyes, and can compare with the Old one the wet way, and the Dragons the dry way. In the preparatory work you go on, in the Dry way, there is another Modus than in the Wet...

Benedictus Figulus ~ *A Golden and Blessed Casket of Nature's Marvels*

The Natural Philosopher's Tincture --- Theophrastus also means that, when you have obtained the two things by the short method, viz., the rosy blood and the Eagle's white gluten, you shall thereto add nothing foreign...

The Natural Philosopher's Tincture [Alexander von Suchten] --- This is the first process of our Philosophical Birth, the Returning into the Mother's Womb, whereby the Rule of God is followed, and the first precepts of chemists are fulfilled, viz., the Reduction into Primary Matter, into the Three Natural Principles, i.e., Animated Spirit, Mercury, and Sulphureous Vapour of Earth... which is nothing less than... The Process with Double Smoke of Paracelsus. But the above method entailed heavy expenses and much time and labour, all of which the Ancient Sages could have avoided, and obtained the Lion's treasure by a shorter cut, had they enquired into the matter as diligently as Theophrastus.

Now, I wot there is no one who would not wish to know this shorter method; and that you may not have to complain of Theophrastus, he shews you another short way, admonishing you also to let the above tedious process be, and to take from the Lion nought but his rosy blood, and from the Eagle the white gluten. These two bodies you must coagulate together and bring into one body, as it were male and female seed.

Now, someone might object thus. Dear Theophrastus, that is the old story which I have heard long ago. The Ancients took nothing more than the Lion's blood and water, and coagulated them. Yet you tell me the same is a brief way to obtain the aforesaid two Mercurial Substances, with little labour and in a short time.

Well, that is true so far. Theophrastus is not so clear here as he might be. But you may easily imagine what the mode of preparation must be if you have diligently studied Theophrastus's other books and preparations, and are otherwise experienced in Chemical labours. You will then find that Chemistry, in the preparation of all arcana (secrets), has two methods, viz., Distillation and Extraction. Whatsoever is to be prepared by Chemistry and brought into its Arcanum, its Tincture, or Quintessence (in which is the power and virtue of all creatures), or is to be cleansed from impeding impurities, that must be done by Distillation or Extraction (which is the same as Solution). There is no other means. As Bernhardus says: "The King never goes forth except the Fountain attract him".

Now, having already heard that he rejects the tedious process of much distillation and purification by reason of its expense, etc., you perceive that he must have used the only other means, viz., Extraction by Solution.

According to Calid, son of Jazichus: "Solution is the Extraction of the Interior of Things to their Superficies, so that the hidden become

manifest". Hence his (Theo.'s) meaning is this: When you of one thing have made two --- or have taken two things differently constituted by Nature --- let the old process alone; take from the Lion his blood only --- i.e., cut out his heart with his own sharp spear --- or as Bernhardus says: "Slay the King with his own sharp, poisonous Mercurial Water". In plain words: Extract but from the earth its Tincture or Arcanum, and the blood, the sunshine, the dry spirit immediately all distills over. By such extraction or solution more will be done in a few hours than the Ancient Sages could effect in six months. By the above process the whole work may be completed in ten or twelve months, in which time the Ancients could barely achieve the first step --- i.e., Reduction into Primary Matter --- as all those know whom God has enlightened, and thought worthy you know this Solution and Extraction.

But misunderstand me not! I speak here, not of the second solution of the earth, but of the first solution of the crude body...

This is also the aforesaid short process of Paracelsus, whereby you, in a short time, and with little trouble and expense, may find the two said things (of which one is the Father, or Sun, or Red Water, and the other the Mother, or Moon, or White Water) which are necessary for the perpetration of the miracle of the One Thing, and for which good counsel you owe Theophrastus many thanks...

Fulcanelli ~ *La Mystere Des Cathedrales*

Let us retrace our steps and pause at the south portal, still called the Porch of St. Anne. It offers us only a single motif, but the interest of this is considerable, because it describes the shortest practice of our Science and among lessons in stone it therefore deserves pride of place.

"See," says Grillot de Givry, "sculptured on the right portal of Notre Dame of Paris, the bishop perched above an athanor, where the philosophical mercury, chained in limbo, is being sublimated. It teaches the origin of the sacred fire; and the Chapter of the cathedral, by leaving this door closed all the year in accordance with a secular tradition, shows that this is not the vulgar way, but one unknown to the crowd and reserved for the small number of the elite of wisdom."

Few alchemists will admit the possibility of two ways, one short and easy, called the dry way, the other longer and less rewarding, called the moist way. This may be due to the fact that many authors deal exclusively with the longer process, either because they do not know of the other, or because they prefer to remain silent about it, rather than to teach its principles. Pernety refuses to believe in those alternative methods, while Huginus a Barma, on the contrary, asserts that the ancient masters, such as Geber, Lully and Paracelsus, each had his own particular process.

Chemically speaking, there is no objection to a method, employing the moist way, being replaced by another, which makes use of dry reactions, in order to arrive at the same result. Hermetically the emblem we are studying is a proof of this. We shall find a second one in the 18th century Encyclopedia, where the assurance is given that the Great Work may be accomplished in two ways; one, called the moist way, being longer but held more in honour and the other, or dry way, being much less esteemed. In the latter "the celestial Salt, which is the Philosophers' mercury, must be boiled for four days in a crucible over a naked fire, together with a terrestrial metallic body."

In the second part of the work, attributed to Basil Valentine, but which seems rather to be by Senior Zadith, the author appears to have the dry way in mind when he writes that "in order to arrive at this art, neither great labor nor trouble is required and the expenses are small, the instruments of little worth. For this Art may be learnt in less than 12 hours and brought to perfection within the space of 8 days, if it has its own principle within itself."

Philalethes, in Chapter XIX of the *Introitus*, after having spoken of the long way, which he describes as tiresome and good only for rich people, says: "But by our way no more than a week is necessary; God has reserved this rare and easy way for the despised poor and for abject saints."

Furthermore, Langlet-Dufresnoy, in his *Remarques* on this chapter, thinks that "this way is achieved by the double philosophical mercury" and adds: "The work is thereby accomplished in 8 days, instead of taking nearly 18 months by the first way."

This shortened way, which is, however, covered by a thick veil, has been called by the Wise the Regime of Saturn. The boiling of the Work, instead of necessitating the use of a glass vase, requires only the help of a simple crucible. "I will stir up your body in an earthenware vase, in which I will inter it", writes a famous author, who says again further on: "Make a fire in your glass, that is to say in the earth which holds it enclosed. This seems to me to be the shorter way and the true philosophical sublimation, in order to arrive at the perfection of this difficult task." This could be the explanation of the basic maxim of our Science: "One single vessel, one single matter, one single furnace."

In the preface to his book, Cyliani refers to the two process in these terms: "I would like to warn you here never to forget that only two matters of the same origin are needed, the one volatile, the other fixed; that there are two ways, the dry way and the moist way. I follow the latter for preference as my duty although the former is very familiar to me; it is done with a single matter."

Henri de Lintaut also gives a favorable testimonial to the dry way when he writes: "This secret surpasses all the secrets in the world, for by it you can in a short time, without great trouble or labour, arrive at the great transmutation. For information about this, see Isaac Hollandois, who speaks of it more fully." Unfortunately our author is no more forthcoming than his colleagues. "When I consider," writes Henckel, "that the artist Elias, quoted by Helvetius, claims that the preparation of the Philosophic stone is begun and finished in the space of four days, and that he has actually shown this stone, still adhering to the fragments of the crucible, it seems to me that it would not be so absurd to ask whether what the alchemists call great months may not be as many days, which would mean a very limited space of time. And to ask further whether there may not be a method, which consists only in keeping the matters in the greatest degree of fluidity for a long time, which could be achieved by a violent fire, maintained by the action of the bellows. However, this method cannot be carried out in all laboratories and perhaps not everyone would find it practicable."

Fulcanelli ~ *The Dwellings of the Philosophers*

The Man of the Woods --- Our mercury, we believe it has been mentioned, is this pilgrim, this voyager to whom Michael Maier has consecrated one of his best treatises! [*Viatorium: Hoc est de Montibus Planetarium septem seu metallorum*. Rouen, Jean Berthelin, 1651]. By

using the dry path, represented by the earthly road followed at first by our traveler, one can successfully but progressively exalt the diffuse and latent virtue, transforming into activity that which was only potential. The operation is completed when, on the surface, appears a shining star, formed of rays emanating from a single center, prototype of the great roses of our gothic cathedrals. A sure sign that the pilgrim has successfully reached the end of his first trip. He has received the mystical blessing of St James, confirmed by the luminous imprint which radiated, it is said, above the tomb of the apostle. The humble and common shell which he bore on his hat turned into a shining star, a halo of light. Pure matter whose hermetic star consecrates the perfection: it is now our compost, the holy water of Compostella (Latin *compos*, who has received, possesses --- and *stella*, star) and the alabaster of the sages (*albastrum* contraction of *alabastrum*, white star). It is also the vase of perfumes, the vase of alabaster (Greek *alabastron*, Latin *alabastrus*) and the newly blooming bud of the flower of wisdom, *rosa hermetica*, the hermetic rose.

From Compostella the return can be made either by the same path, following a different itinerary or by the wet or maritime path, the only way the authors indicate in their writings...

The Castle of Dampierre V (Panel 1) --- The two paths of the Work require two different manners of undertaking the animation of the initial mercury. The first belongs to the brief way and requires only one technique by which the fixed is gradually dampened --- because any dry matter avidly drinks its own humidity --- until the repeated affusion of the volatile on the body causes the compound to swell and turn into a pasty or syrupy mass, as the case may be. The second method consists in digesting the totality of the sulphur in three or four times its weight in water, decanting the resulting solution, then drying up the residue and reiterating the operation with a proportional quantity of fresh mercury. When the dissolution is complete, the faeces, if any, are separated and the collected liquors are subjected to a slow distillation in a bath. Thus the superfluous humidity is released, leaving the mercury at the required consistency without any loss of its qualities, and ready to undergo hermetic coction.

The Castle of Dampierre V (Panel 8) --- Two vases, one in the form of an embossed and engraved flagon, the other a common earthen pot, are represented in the same frame occupied by this saying of Saint Paul: ALIVD VAS IN HONOREM ALIVD IN CONTUMELIAM. One vessel for honorable uses, another for base uses. But in a great house", says the Apostle [II Timothy 2: 20], "There are not only vessels of gold and silver, but also of wood and of earth; and some to honour, and some to dishonour."

Our two vases appear well defined, clearly marked and in absolute agreement with the precepts of hermetic theory. One is the vase of nature made with the same red clay God used to form the body of Adam with. The other is the vase of the art, whose entire material is composed of pure, red, incombustible, fixed, and diaphanous gold, of an incomparable brightness. And these are our two vessels which truly represent only two distinct bodies containing the metallic spirits, the only agents we need.

If the reader is acquainted with the traditional manner of writing of the philosophers --- which manner we try to imitate correctly so that the Ancients can be explained through us and so we can be controlled by them, it will be easier for him to understand what the hermeticists meant by vessels. For these vessels represent not only two matters, or rather one matter in two states of evolution, but they also symbolize our two ways based on the use of these different bodies.

The first of these ways which uses the vase of the art is time-consuming, painstaking, thankless, accessible to wealthy people, but it is in a place of great honor in spite of the expenditures it entails, because it is the one which authors preferably describe. It is used as a support for their reasoning as well as for the theoretical development of the Work, requires an uninterrupted labor of twelve to eighteen months, and starts with natural gold prepared and dissolved in the philosophical mercury which is then cooked in a glass matrass. This is the honorable vase reserved for noble use of these precious metals which are the exalted gold and mercury of the sages.

The second way demands, from beginning to end, only the help of a coarse clay abundantly available, of such a low cost that in our time ten francs are sufficient to acquire a quantity more than enough for our needs. It is the clay and the way of the poor, of the simple and the modest, of those whom nature fills with wonder even by her most humble manifestations. Extremely easy, it only requires the presence of the artist, for the mysterious labor perfects itself by itself and is achieved in seven to nine days at the most. This way, unknown to the majority of practicing alchemists, is elaborated from start to finish in one crucible made of fireproof clay. It is the way that the great masters called woman's work and child's play; it is to it that they apply the old hermetic axiom: una re, una via, una dispositione. A single matter, a single vessel, a single furnace. Such is our earthen vase, a despised, plain vase of common use, which everyone has before his eyes, which costs nothing, which can be found at everyone's house, yet which no one can recognize without a revelation.

The Castle of Dampierre VI (Panel 3) --- Lying on the altar of sacrifice, a forearm is consumed by fire. The sign of this fiery emblem holds in two words: .FELIX.INFORTUNIUM. Happy unhappiness! Although the topic seems a priori quite obscure and without equivalent in the hermetic literature and iconography, yet it yields to analysis and perfectly agrees with the Great Work's technique.

The human forearm, which the Greeks simply called the arm (*brachion*), is the hieroglyph for the short, abridged way (*ars brevis*). As a matter of fact, our Adept, toying with words as the learned cabalist he is, hides under the substantive *brachion*, arm, a comparative of *brachus*, written in the same fashion. The latter means short, brief, of short duration, and forms several compounds, including *brachutes*, brevity. Thus the comparative *brachion*, meaning brief, the homonym of *brachion*, arm, takes on the specific meaning of brief technique, *ars brevis*.

But the Greeks used yet another expression to qualify the arm. When they evoked the hand (*cheir*), they applied by extension the idea to the entire upper limb and gave it the figurative value of a skilled artistic production of a special process, of a personal style of work, in short, of a tour de main, a flick of the wrist, whether acquired or revealed. All these acceptations of the word exactly characterize the fine points of the Great Work in its swift, simple and direct realization, for it requires the application of a very energetic fire to which the flick of the wrist boils down [pouring a crucible properly]. Now this fire on our bas-relief is represented not only by the flames, it is also represented by the limb itself which the hand indicates as being the right arm; and it is well known from the proverbial expression that "to be the right arm" always applies to the agent responsible for the executing of the will of a superior -- the fire in the present case.

Apart from these reasons --- which are necessarily abstract because they are veiled in the form of a stone with a concise image --- there is another one, practical, which comes to uphold and confirm in the practical domain the esoteric affiliation of the first ones. We shall state it by saying that whosoever being ignorant of the flick of the wrist of the operation yet takes the risk to undertake it, must fear everything from the fire; that person is in real danger and can hardly escape the consequences of a thoughtless and reckless action. Why then, one could say to us,

not to provide this means? We will answer this by saying that to reveal an experiment of this sort would be to give the secret of the short way and that we have not received from God nor from our brothers the authorization to uncover such a mystery. It is already much that, prompted by our solicitude and charity, we warned the beginner whose lucky star leads to the threshold of the cave, that he should be on his guard and redouble his prudence. A similar warning is rarely encountered in the books, and quite succinct as to what concerns the *Ars brevis*, but which the Adept of Dampierre knew as perfectly as Ripley, Basil Valentine, Philalethes, Albertus Magnus, Huginus a Barma, Cyliani or Naxagoras.

Nevertheless, and because we deem it useful to warn the neophyte, it would be wrong to conclude that we are trying to dishearten him. If he wants to risk the adventure, let it be for him the trial by fire to which the future initiates of Thebes and Hermopolis had to be put through before receiving the sublime teachings. Isn't the inflamed arm on the altar the expressive symbol of the sacrifice, of the renunciation the science demands? Everything is paid for down here, not with gold, but with work, with suffering, often by leaving a part of oneself; and one could not pay too much for the possession of the least secret, of the tiniest truth. Therefore should the candidate feel endowed with faith and armed with the necessary courage, we fraternally wish him to come forth safe and sound from this difficult experience, which most often ends with the explosion of the crucible and the projection of the furnace. And then he could cry out, like our philosopher: Happy unhappiness! For the accident, forcing him to ponder the mistake he has committed, will undoubtedly lead him to discover the means to avoid it and the flick of the wrist for the proper operation.

The Castle of Dampierre VI (Panel 7) --- The geometric figure which we encounter here frequently ornamented the frontispieces of medieval alchemical manuscripts. It was commonly called Solomon's Labyrinth, and we mentioned elsewhere that it was reproduced on the stone floors of our great gothic cathedrals. This figure bears as a motto: .FATA.VIAM.INVENIENT. The fates will well find their way. Our bas-relief, specifically characterizing the long way, reveals the formal intention, expressed by the plurality of Dampierre's motifs to primarily teach the Work of the rich. For this labyrinth offers only one entrance, while other drawings of the same subject usually show three, which entrances, by the way, correspond to the three porches of the gothic cathedrals placed under the invocation of the Virgin mother. One entrance, absolutely straight, leads directly to the median chamber --- where Theseus slayed the Minotaur --- without encountering the least obstacle; it conveys the short, simple, easy way of the Work of the poor. The second, which likewise leads to the center, only opens onto it after a series of detours, twists and turns, and convolutions; it is the hieroglyph for the long way and we have said that it refers to the preferred esotericism of our Adept. Finally, a third gallery of which the opening is parallel to that of the preceding ones, ends abruptly as a dead end a short distance from the threshold, and leads nowhere. It cause the despair and ruin of those who have gone astray, of the presumptuous ones, and of those who, without serious study and solid principles, nevertheless set out on the way and chanced the adventure.

The Castle of Dampierre IX (Panel 4) --- Closed by its narrow lid, with a fat albeit split belly, a common clay pot fills with its plebeian and cracked majesty the surface of this panel. Its inscription states that the vase of which we see the image, must open by itself and manifest by its destruction the completion of that which it holds: INTVS.SOLA.FIENT.MANIFESTA. RUINA. (Only the inside makes the ruin manifest).

Among so many diverse figures, so many emblems with which it fraternizes, our subject seems to be all the more original because its symbolism relates to the dry path, also called the Work of Saturn, as rarely translated into iconography as it is described in texts. Based on the use of solid and crystallized materials, the brief way (*ars brevis*) only requires the help of a crucible and the application of high temperatures. This truth, Henckel had glimpsed, when he remarks that the "artist Elias, quoted by Helvetius, claims that the preparation of the philosopher's stone is accomplished, from start to finish, in four days time; and that he has indeed shown the shown still adhering to the sides of the crucible; it seems to me, the author continues, that it would not be so absurd to question whether that which the alchemists called long months, would not really only be days --- that is to say a very short period of time --- and whether there did not exist a method whereby the entire operation would consist in holding, for a very long time, the matters in a great degree of fluidity which could be obtained by a violent fire maintained by the action of bellows; but this method cannot be undertaken in all laboratories and perhaps not everyone would find it practical." [J.F. Henckel, *Traite de l'Appropriation (Treatise on Appropriation)* in *Pyritologie ou Histoire naturelle de la pyrite (Pyritology or Natural History of Pyrites)*. Paris, J-T. Herissant, 1760, p. 370, para. 416.]

Nevertheless, contrary to the humid way, whose glass utensils allow for easy control and accurate observation, the dry way cannot enlighten the operator at any time in the process of the Work. So, although the time factor reduced to a minimum constitutes a serious advantage in the practice of the *ars brevis*, the necessity of high temperatures, on the other hand, presents the serious inconvenience of an absolute uncertainty as to the progress of the operation. Everything happens in the deepest mystery inside the crucible which is carefully sealed, buried at the core of the incandescent coals. It is therefore important to be very experienced and to know the fire's behavior and power well as one could not find in it, from the beginning to the end the least of indications. All the characteristic reactions of the humid way having been indicated among the classical authors, it is possible for the studious artist to acquire indications precise enough to allow him to undertake his long and difficult work. Here, on the contrary, it is without any guide that the traveler, brave to the point of rashness, enters this arid and burnt desert. No road laid out, no clue, no landmark; nothing save the apparent inertia of the earth, of the rock, of the sand. The shiny kaleidoscope of the colored stages does not brighten up his uncertain walk; it is as a blind man that he continues his path, without any other certainty save that of his faith, without any other hope but his confidence in divine mercy...

Yet at the end of his path, the investigator will notice a sign, the only one whose appearance indicates success and confirms the perfection of the sulphur by the total fixation of mercury; this sign consists in the spontaneous bursting of the vessel. Once the time has elapsed, by laterally uncovering a part of its side, we notice, when the experiment has succeeded, one or more lines of dazzling clarity, clearly visible on the less brilliant background of the envelope. These are the cracks revealing the happy birth of the young king. Just like at the end of incubation the hen's egg breaks under the effort of the chick, similarly the shell of our egg breaks as soon as the sulphur is produced. There is, among these results, an evident analogy in spite of the different causes, for in the mineral Work, the breaking of the crucible can logically be attributed to a chemical action, unfortunately impossible to conceive or to explain. Let us note however that the rather well known fact often occurs under the influence of certain combinations of lesser interest. Thus, for example, while leaving aside, after having cleansed them well, new crucibles which have only been used once, for the fusion of metallic glass, the production of hepar sulphuris, or diaphoretic antimony, they are found cracked after a few days without one being able to explain the obscure reason of this late phenomenon. The considerable spacing of their bulges shows that the fracture seems to occur by the push of an expansive force acting from the center towards the periphery at room temperature and long after the use of these vessels.

Finally, let us point out the remarkable match which exists between the motif of Dampierre and that of Bourges (Hotel Lallemand, in the ceiling of the chapel). Among the hermetic panels of the latter, one can also see an earthen pot tilted, whose opening, bell-mouthed and rather

wide, is enclosed with a parchment's membrane tied on the edges. Its belly with holes in it lets beautiful macles of different sizes escape from it. The indication of the crystalline form of the sulphur obtained by the dry way is thus very clear and confirms by its added details, the esoteric quality of our bas-relief.

The Castle of Dampierre (XII) --- But before we leave this masterful ensemble, we will allow ourselves to connect its teachings to that of a curious stone picture that can be seen in Jacques Couer's palace in Bourges and which apparently can serve as a conclusion to, and summary of, our collection. This sculpted panel forms the tympanum of a door opening on the main courtyard, and represents three exotic trees --- a palm tree, a fig tree, and a date tree --- growing in the midst of herbaceous plants; a frame of flowers, leaves, and twigs surround the bas-relief (Plate XXXIII).

The palm and date trees, of the same family, were known to the Greeks under the name of phoenix, and Phoenix in Latin, which is our hermetic phoenix; they represent the two Magisteries and their results, the two white and red stones, which partake of one and the same nature included in the cabalistic denomination of Phoenix. As for the fig tree occupying the center of the composition, it indicates the mineral substance out of which the philosophers draw the elements of the miraculous rebirth of the Phoenix, and it is this work of rebirth as a whole which constitutes what is commonly referred to as the Great Work.

According to the apocryphal Gospels it was a fig or sycamore fig tree (a.k.a. the fig tree of the Pharoah) which had the honor of sheltering the Holy Family during their flight to Egypt of nourishing them with its fruit and of quenching their thirst, thanks to the clear and fresh water that the child Jesus had drawn out from between its roots. Fig tree in Greek is *suke*, from *sukon*, fig, a word frequently used for *kusthos*, with the root *kuo*, to carry in the womb, to contain; it is the Virgin Mother who bears the child, and the alchemical emblem of the passive, chaotic, and cold substance, the matrix and vehicle of the spirit incarnate. Sozomene, a 4th century author, asserts that the tree of Hermopolis which bowed before the infant Jesus was called Persea (*Hist. Eccl.*, Lib. V, ch. 21). It is the name of the *balanus* (*Balanites Aegyptica*), a shrub from Egypt and Arabia, a kind of oak, called by the Greeks *balanis*, acorn, a word by which they also called the myrobalan, fruit of the myrobalan tree. These diverse elements are perfectly related to the subject of the sages and the technique of the *ars brevis* that Jacques Couer seems to have practiced.

Christopher Grummet ~ *Sanguis Naturae*

This is a Short and Secret way which few also have known. The other way is longer...

This way is long, and lasteth almost two years, and is very tedious, which also the Ancient Philosophers taught...

Johan Grashof ~ *The Greater and Lesser Edifyer*

Lastly, I will also gladly perform certain processes which comprehend the true foundation, so that you may see that if you had understood the philosophy properly at first, then you could have attained the end in a much more rapid time. Such a failure with the Materia comes especially through misunderstanding of the first Resolution or dissolving and also of the correct composition, as you shall hear. For several philosophers have finished the Work and brought it to a happy conclusion in 378 days and others in 30 days.

Johan F. Helvetius ~ *The Golden Calf*

He would not tell me anything about the cost and the time; "As to its substance," he continued, "it is prepared from two metals or minerals; the minerals are better because they contain a larger quantity of mature Sulfur. The solvent is a certain celestial salt, by means of which the Sages dissolve the earthy metallic body, and this process elicits the precious Elixir of the Sages. The work is performed from beginning to end in a crucible over an open fire; it is consummated in four days, and its cost is only about three florins. Neither the Mineral from the Egg nor the Solvent Salt are very expensive." I replied that his statement was contradicted by the saying of the Sages, who assign seven or nine months as the duration of the Work. His only answer was that the sayings of the Sages were to be understood in a philosophical sense and no ignorant person could apprehend their true meaning.

J. Isaac Hollandus ~ *De Lapide Philosophorum*

You must know that the old alchemists made the Stone in many different ways, and at the end it was always good. Know that the old masters worked as I have told you. But their descendants discovered many other forms of the works by which they could shorten the Art, such as using aquafort... They also sought to shorten the time and to try doing it according to Nature. The work involves great worry, much labor and much expense and uncertainty...

J. I. Hollandus ~ *Vegetable Work*

Know, my son, that the stone of the philosophers must be made by means of Saturn, and that once it is obtained in its perfect state, it performs the projection both in the human body, internally as well as externally, and in the metals. Know also that in all vegetable works, there is no greater secret than in Saturn, for we find the putrefaction of gold only in Saturn where it is hidden. Saturn contains within it the honest gold, on which all philosophers agree, provided all its superfluities, i.e., its faeces are removed from it, only then has it been purged. The outer is brought inside; the inner manifests outer, and that is its redness and then that is the honest Gold.

Besides, Saturn easily enters into solution and coagulates similarly. It lends itself readily to the extraction of its Mercury. It can be easily sublimated, to such an extent that it becomes the mercury of the sun. For Saturn contains within itself the gold which the Mercury needs, and its mercury is as pure as that of gold. For these reasons, I say that Saturn is, for our Work, by far preferable to gold; for if you want to extract mercury from gold, you will need more than a year to extract this body out of the sun, while you can extract mercury from Saturn in 27 days.

Both metals are good, but you can assert with more certainty yet, that Saturn is the stone that the philosophers do not want to name and whose name until today has been hidden. For were its name known, many would have found it, who are eagerly looking for it, and this art would have become common and vulgar. This work would then become brief and without much expense. Thus to avoid these drawbacks, the philosophers have hidden its name with great care. Some have enveloped it in marvelous parables, saying that Saturn is the vase to which nothing foreign must be added, except that which comes from it; in such a way that there is no man, however poor, who cannot be occupied with this Work, since it does not require great expense and since little work and few days are needed to obtain the Moon from it, and a little bit later the Sun. We therefore find in Saturn everything necessary for the Work. In it is the perfect mercury, in it are all the colors of the world which can be manifested, in it is the true blackness, the whiteness, the redness and in it also is the weight.

I therefore confide in you that it is easy after that to understand that Saturn is our philosophical stone, and that Bronze from which mercury and our stone can be extracted, in little time and without a lot of disbursements, using our brief art. And the stone we obtain from it is our Bronze, and the acute water, which is within it, is our stone. Here are the Stone and the Water about which the philosophers have written mountains of books.

Kamala Jnana ~ *Dictionary of Alchemical Philosophy*

Wet Way: This is the most commonly followed path. It is also far more described than others are. It lasts for 28 philosophical months. This dictionary will be mostly about this way. It is relatively easier, because comments on it can be easily found. It is also the less toxic and less dangerous.

Dry Way: This is a less known path, although quicker, lasting four philosophical months. The main difference resides on the first Solve operations. The wise men then use their Agent in the form of earth. This remaining unaltered by humidity in the air is more active and cooks the matter more strongly. It is nevertheless very harmful if breathed and given the heat required it may easily happen that the vessel explodes.

Nicolas LeFevre ~ *Secret of Secrets*

Table VII: The Time~ By the long first humid but finally dry way, seven months are sufficient for the Artist, but for the quick dry way, five hours are enough.

The humid and dry way is but One Way, which by diligence or negligence of the operator, may be abbreviated or prolonged.

Raymond Lully ~ *Letter or Epitome to King Rupert*

You ask which of the three Stones is more useful, readily obtained, and efficacious: Well, the mineral method is long and full of risks. It consists in two waters, one of which makes the Stone volatile without labour or danger; the other fixes it, and is fixed with it, and this operation is attended with risk. This latter water is extracted from a certain fetid menstruum; it is stronger than any other water, and the danger consists in the ease with which, in ablution, its spirit may escape.

The Animal Stone is far more difficult of composition, so that far greater knowledge is required for it; yet it enables you not only to transmute metals into gold, but to change anything into any other thing, whence the potency of this Stone is infinite. The Vegetable Stone takes still longer to prepare, and has still more wonderful virtues than the Animal Stone. It should follow the Animal Stone as far as the rectification of elements, and, if thus prepared, its effect passes into the animal. Everything transmuted by means of the Vegetable Stone, far transcends Nature in excellence and size, because it is impregnated with the quintessence which performs so many wonderful things in the world. All alchemical gold is composed from corrosives, and from the incorruptible quintessence which is fixed with the ferment by the skill of the artist. Such quintessence is a certain mortified and empoisoned spirit in the Mineral Stone. The Animal Stone may be the most miraculous medicine for the human body, just as if it were an extract of human blood. The quintessence which is in the Vegetable Stone restores youth, and preserves the human body from all accidental corruption. The spirit of the quintessence, as you know, is that which tinges and transmutes, if it be mixed with its proper ferment. The Vegetable Stone is more noble, and useful, and efficacious, than all the rest.

You ask me whether the work can be shortened; I tell you that all abbreviation diminishes perfection, so that the medicine which is composed by accurtation has less transmutatory power. There is, however, a multiplex accurtation of the Mineral Stone. In order to curtail its effect as little as possible, you should after the first calcination and putrefaction, which is performed with the most limpid and clear first water during a space of 20 days, and not less, separate from the substance a red powder, and distill it with the second water so as to prevent the escape of the spirit. Take only the last part of this water, after rubefaction in the alembic. Dissolve therein the powders, by placing both in hot water in a sealed vessel; then set over it an alembic, and distill as much as will ascend. This water pour away; that which remains with the body coagulate in a well-closed vessel among hot ashes; make other water and pour over it, then distill and coagulate ten times. Thus the Stone will be made perfect. If you wish to increase its efficiency, you may go on distilling and coagulating it as often as you like, or until it is impossible to congeal the body further. This Medicine will change metals into gold, and may be completed in 80 days at the most.

In the case of the Animal Stone, there is no possibility of abridgment, except, indeed, that the earth may be ruled with fire, and the water with air, when its efficacy will be the same; this is called the accurtation of middle time. As to the Vegetable Stone, the same may be said. The following directions will be found useful in the preparation of this Stone...

Wherefore I speak things which are miraculous, which seemed to be incredible to all the ancient Philosophers, that is, that thou shalt know well to separate this oil from the wateriness and thou shalt labour in the manner of the mixtion of them, and thou shalt be able to make the Stone in 30 days, but this is not necessary by itself because the solutions and coagulations of it (as hath been said) are quickly made and done...

I demand in what time this blessed Stone may be made, to which it is answered as a certain author Lelius the Philosopher witnesses, that his magistry was finished in eight days, and that another did it in seven days, and another in three months, and some in four months, and some in

half a year, and some in the space of a whole year, and Maria says she did it in three days. To this I say that the cause of diversity, that is of shortness and length of time, might be defect in the virtue of the water of Mercury or because it worketh of Sol and Luna. And some of the Philosophers added more and some less. But Sol is fixed and not flying, and with that only did they work.

Dr. Johan Muller ~ *Hyle and Coahyl*

You see, I have taught you the complete work from its beginning to the end, but many don't like this way because of the long time that it takes; but the other way, the second way, I will teach you herewith, and in not too long a time you will attain to the secret of the Work Adamists.

Myriam Prophetessa ~ *Her Conversation with Aros, King of Egypt*

Myriam: My dear Aros! I can accomplish the work of our Stone not only in one day, but even in part of a day.

Doest thee not know, Aros! That there is a Water or a Thing, which Whiteneth hendrages?

Hermes has mentioned that the philosophers are accustomed to whiten the stone in one hour.

If I did not find a steady mind in thee, O Aros! I would say no more!

Take Alum from Spain, the White Gum, and the Red Gum, the Kibru of the Philosophers, their Gold, and the Great Tincture.

Make a marriage of the Gum with the Gum, by a true union;

Proceed therewith, that they may flow like water; this well prepared water Thou must vitrify, that is, thou must make a glass thereof.

This glass is composed of Two Subjects and a fixed body. Render this matter fusible by the secret operation of nature in the Philosophical Vessel.

Take care of the Fume, and beware, that nothing of the fume may escape! Attend the work, with a gentle fire, such as the Sun gives in July.

Be not absent from the Vessel, that thou mayst observe, how the matter becomes Black, White and Red, in less than 3 hours of a day, and the fume will penetrate the body, the Spirits will keep together and will become like Milk, which softens, and renders fusible and penetrating.

And this is the Secret, O Aros!

My dear Aros! I could tell Thee another Secret, which the Philosophers before me, did not know or make use of! And that was not anything Medicinal. It is this: Take that White, Clear and much-honoured herb, which is found in the low Hills, pound it fresh and sift the powder very finely.

This is the true fixt body, which does not flee from the fire, but rather melts into glass.

Aros: Is this the truth?

Myriam: Yes, truly. But very few know this regimen and the quickness in the fire.

Vitrify or make a glass over the matter; over the Kibrick and Zubreck, over the two Fumes which contain two Lights, and when it is perfect, throw or project therein the fulfilling or ferment of the Tincture and of the Spirits, according to the true Weight.

Then pulverize it, it is very brittle, and make use of it in a strong fire, and thou wilt see strange things performed thereby.

The whole Regimen depends on the moderation of the Fire. It will pass from one Colour to another, in one hour's time, before it becomes White and Red. When thou hast obtained perfect Redness, let the fire go out and let the matter grow cold, open the Vessel.

And thou wilt find the body appears now like a fine pearl, with a tint of the wild Poppy intermixed with white, and this is the substance, which inceriates, giveth ingress, mollifies and penetrates.

And this Stone can be projected on 1200 parts of Lead or Tin.

Myriam said further to King Aros: I will teach thee, how to proceed by the shortest way: with the Clear Fixt Body, found on small hills: this body cannot be conquered by putrefaction. Take that body finely powdered and sifted; rub it up gently with Gum Elsaron, rub it very finely and unite the two powders.

If you project this or unite this with her spouse, it will flow like water, and when it cools, it will be coagulated and They will become one Body; project some part of this body, and thou will see wonderful things.

The before mentioned Two Fumes are the White Kibrick: but the fixt body is from the heart of Saturn, which preserves the Tincture.

The Philosophers have given various names to this fixt body, which is taken from small hills, and it is a Clear White Body.

These are the principles of this art, which can partly be bought, partly it is found on small hills.

In our work enter Four Stones, and the Regimen is as I have said; the first are: Seoyare, Ade and Zilket.

The Philosophers have always indicated a long Regimen, and have concealed the Work, that no man should easily undertake it, and they

pretend to be a whole year in doing the magistry; But all this is done with no other view, than to hide the work from the ignorant, until they can comprehend it, because it is only accomplished with fine Gold, which is a great and Divine Secret.

Myriam said further to King Aros: The Vessel of Hermes does consist in the Degree of the Fire. The Root of our Art is a Brittle Leprous Body and venomous matter which destroys all mineral and metallic bodies and reduces them into a powder. It coagulates Mercury by its fumes.

Myriam added, by saying: I swear unto thee by the living God, that if the before-mentioned venomous matter be dissolved and opened, it coagulates Mercury into Luna, by its strength, and tinges Jupiter into Luna and the Art is in all the Metals, but especially in the Fixt metals, wherein lie the Tingeing Elements.

Paracelsus ~ *The Philosophical Canons*

[44] The Philosophers' work can be carried on without much labour or expense at all times, in every place, and by all, if only the true and sufficient matter be forthcoming.

[87] The long method is the open secret of philosophy, but it is a veil and an evasion.

[88] There is a certain short method by which the Sulfur is removed from gold and silver, whereby every Mercury is permanently changed into gold or silver.

[119] The Wise reduce years to months, months to weeks, weeks to days

Eirenaeus Philalethes ~ *Ripley Revived*

An Exposition Upon Sir G. Ripley's Epistle --- I know many pitiful Sophisters do dote on many Stones, Vegetable, Animal, and Mineral; and some to those add the fiery Angelical, Paradaical Stone, which they call a Wonder-working Essence; and because the mark they aim at is so great, the ways also by which they would attain their scope, they make also agreeable, that is a double way; One way they call *Via Humida*, the other they call *Via Sicca*, (to use their languages:) the latter way is the Labyrinthian path, which is fit only for the great ones of the earth to tread in; the other the Daedalean Path, an easie way of small cost for the poor of the world to enterprise.

But this I know, and can testifie, that there is but one way, and but only one Regimen, no more colours than ours; and what we say or write otherwise, is but to deceive the unwary: For if every thing in the world ought to have its proper causes, there cannot be any one end which is produced from two wayes of working on distinct Principles.

Therefore we protest, and must again admonish the Reader, that in our former writings) we have concealed much, by reason of the two ways we have insinuated, which we will briefly touch; There is one Work of ours, which is the *Play of Children*, and the *Work of Women*, and that is Decoction by the Fire; and we protest that the lowest degree of this our work, is, that the matter be stirred up, and may hourly circulate without fear of breaking the Vessel, which for this reason ought to be very strong; but our lineal Decoction is an Internal Work, which advances every day and hour, and is distinct from that of outward heat, and therefore is both invisible and insensible...

But trust me this is not for a Tyro, nor for every one of us, unless he have the Secret from his own Studies, and not by Tradition from a Master or Guide. Know then that this fore-recited way is true, but involved with a thousand broileries.

But our way which is an easie way, and in which no man may erre, our broad way, our Linear way, we have vowed never to reveal it but in Metaphors; I being moved with pity, will hint it to you. Take that which is not yet perfect, nor yet wholly imperfect, but in a way to perfection and out of it make what is most noble and most perfect: This you may conceive to be an easier Receipt, then to take that which is already perfect, and extract out of it what is imperfect, and then make it perfect, and after out of that perfection to draw a plusquam perfection: and yet this is true, and we have wrought it, And because it is an immense Labour for any to undertake, we describe that way; but this last discovery which I hinted in few words, is it which no man ever did so plainly lay open, nor may any man make it more plain, upon pain of an Anathema...

Pray then to God, that he would be propitious unto your studies and labours, in giving thee the true knowledge of this secret Mystery; it is the gift of God, I have holpen thee what I can, but venture not to practice barely upon my words, for know that what I have only hinted, is far more then what I have discovered; and what I have declared to thy first apprehension most openly, hath yet its lurking Serpent under the green Grass, I mean some hidden thing which thou oughtest to understand, which thou being Cock-sure at first blush wilt neglect; but yet it will bite thee by the heel when thou approachest to practice, and make thee begin again, and it may be at last throw away all as a man desperate: for know that this is an Art very Cabalistical, and we do study expression such as we know will suit almost with any mans fancy, in one place or other; but be sure to take this Maxim from one who knows best the sence of what he hath written: Where we speak most plainly, there be most circumspect, for we do not go about to betray the Secrets of Nature; especially then in those places which seem to give Receipts so plain as you would desire, suspect either a Metaphor, or else be sure that something or other is suppress, which thou wilt hardly without Inspiration ever find of thy self, which in tryal will make all thy confident knowledge vanish; yet to a Son of Art, we have written that which never heretofore was by any revealed...

For 'tis a Labour hardly to be borne,
So many tricks and turnings in it be,
And he that tryeth it is surely forlorne,
Unless a crafty Master, credit me;
For I have tried both, yet could not see
How any in this way can be secure:
I therefore who have vowed secrecy

Have writ this way, which we can scarce endure
For knowledge-sake to try, its ease will none allure.

Our Kingly road I also hinted have,
Our way in which a Fool can hardly erre,
Our secret way, which much mad toyl will save,
Which is so easie, that I may aver,
If thou shouldst see it, thou wouldst it prefer
To any earthly pleasure; yet beware
That you mistake not, for I do aver,
A mingled Doctrine these lines do declare,
I or both ways in this Book of mine do claim a share.

Learn to distinguish every sentence well,
And know to what Work it doth appertain;
This is great skill, which few as I can tell
By all their reading yet could ere attain,
And yet of Theory this is the main:
Also to know accordingly to give
Due heat, which in one way thou must be fain
T' increase ten-fold, thou mayst me well believe,
For what we decoct, t'other away will drive.

Also their Operations different
Appear, the one thou must sublime and boyl,
O tedious way! In which much time is spent,
And many errours, which the Work will spoyle:
The other silently doth make no toyl,
Like the still voice which to Eliah came,
About which Work thou needest not to broyl,
Nor wantst thou fiery Vulcan's parching flame,
A far more gentle heat begins and ends this Game.

But if thou canst each Work perform apart,
And knowst them afterward to reconcile,
Then art thou Master of a Princely Art,
The very success will thy hopes beguile;
Thou hast all Natures Works ranks in a File,
And all her Treasures at command dost keep,
On thee the Fate shall never dare but smile,
No Mystery is now for thee too deep,
Th' art Natures Darling, whether thou dost wake or sleep.

Pardon my plainness, if the Art thou knowst,
'Twas the fruit of my untamed desire
To profit many; and without a boast,
No man above my Candour shall aspire:
My zeal was kindled with Minerva's Fire,
And thou who to this Art wilt now apply,
My Book in Natures way shall lead thee higher,
Then ever thou alone mayst hope to fly,
If only thou shalt favour'd be by Destiny.

Peruse these lines, and being read, review
And read again, and on them meditate,
Each reading shall fresh Mysteries and new
Discover, which are scatter'd in each Gate;
For they so linked are, that all relate
To each, and we our words have woven so,
That thou mayst soon erre by misleading Fate,
Unless for to distinguish thou do know;
Remember that 'mongst Briars thick, sweet Roses grow.

Eir. Philalethes ~ *An Open Entrance to the Closed Palace of the King*

Chapter XIX --- This method has been followed by many Sages, but it is exceedingly slow and tedious, and is only for the rich of the earth. Moreover, when you have got this Sulfur do not think that you possess the Stone, but only its true matter, which you may seek in an imperfect thing, and find it within a week, by our easy yet rare way, reserved of God for his poor, contemned, and abject saints...

This is the Great Labyrinth in which most beginners go astray, because the Sages in writing of these ways as two ways, purposely obscure the fact that they are only one way (though of course the one is more direct than the other)... I know both ways, and prefer the shorter one; but I have described the longer one as well in order that I may not draw down upon myself the wrath of the "Sages". The great difficulty which

discourages all beginners is not of nature's making: the Sages have created it by speaking of the longer operation when they mean the shorter one, and vice versa.

Eugenius Philalethes ~ *A Short Enquiry Concerning the Hermetic Art*

"There is a pure Matter" (saith another) "which is the Matter of Gold, containing in itself the heat that giveth increase" (Fire of Generation). This is locked under thick Folds in common Gold; nor is it to be extracted, but by a strong and tedious Decoction, which is a Work liable to many Errors, and hath always occasioned those that wrought in it to complain of the length and trouble of it. But in the other Work, the Body is soon dissolved, by a sweet and kindly bath, or moist Fire.

As the former path requires much Pain and Patience to effect the Work, so this requires great Skill and Application to find it out, being deeply concealed. The Masters of these Secrets do also affirm, that these Works (which are all one in the Beginning) may be conjoined, and made their Grand Medicine. And I have been informed, that the way of making them one is but slenderly hid...

And that he will find himself in the High Road of Nature which is that Secret Way of the Philosophers, viz., most easie, delightful and speedy; in which are no Storms, no Heterogeneities, nor any Fire, but the gentle one of Generation.

Norton asserts, That there are but few clerks that comprehend this Work, it being truly Philosophical. And he saith, That in this Work you must not begin with Quicksilver and Metals, as if in another Work you might; which other Work, he adds, if it be done in three years, would be a blessed Chance, and which belongs to great Men; advising poor Men not to meddle with it, for that Errors in it may be committed above a hundred ways; that it is a work of Pain and labour, as well as full of Perils.

George Ripley ~ *Medulla Alchymiae*

The first Matter of this unclean Alchymical Body is a Viscous Water, which is thickened in the Bowels of the Earth. And therefore of this Impure Body (as Vincent saith) is made the great Elixir of the Red and White, whose name is Adrop, or Adrup, viz., the Philosophers' lead. From the which Raymundus commands an Oyl to be drawn: from the Lead of the Philosophers (saith he) let there be an Oyl drawn of a Golden Colour; if you can separate this Oyl (wherein is Our second Tincture and Fire of nature) from its Phlegm, which is its waterishness, and wisely search out the Secret thereof, you may in the space of 30 days perform the Work of the Philosophers' Stone.

Martin Rulandus ~ *A Lexicon of Alchemy*

Water --- Dry Water which does not wet the hands. It must be remembered in this connection that those Adepts who give this name to their Mercury are followers of the Dry Way in the operation of the Magisterium; those who, like Paracelsus, Basil Valentin, etc., are operators of the Humid Way, apply to the same substance the appellation of Virgin's Milk, because it is a white liquor which does wet the hands, while the other is a fluid Mercury of the nature of Vulgar Quicksilver.

Gold: Its Artificial Production --- ...This chemical secret is contained in the *Hermetic Cabinet*, and the facility with which the experiment can be performed has led many persons to undertake it. The authority cited in support of it is no less than that of the most learned Basil Valentine, who also affirms that the operation of the Grand Work of the Philosophers can be performed in less than three or four days, that the cost should not exceed three or four florins, and a few earthen vessels are sufficient for the whole experiment.

Solinus Salztal ~ *Fountain of Philosophic Salts*

At this point the old man said: "Behold, now I have doubled mercury in my possession. Now I own it --- white lily, powder of adamantine, chief central poison of the dragon, spirit of arsenic, green lion, incombustible spirit of the moon, life and death of all metals, moist radical, universal dissolving nutriment, true menstruum of the philosophers, which without doing any damage or harm reduces metal to first matter. This is the true water for sprinkling, in which the living seeds of metals inhere, and from which other metals can be produced. Through this water their potency remains in solution in this water. In all kinds of aqua fortis and other such unknown philosophic waters, they lose and relinquish this potency. In this exalted water is the true vitriol of the wise, of which Rupicessa said: "Vitriol or salt is the proper seed to generate all metals, including both the remote and the proximate seed." I will show you its power as clearly as in a mirror: for this water from the fountain radically, silently, and wondrously dissolves all metals, white and black, by its own innate power and magnetic force. In an instant it liquifies metals by its own internal fire. It opens their pores and enters them like feminine seed, attracting the soul of the metal. It leaves the lifeless body behind like refuse that cannot endure the fire. Certainly it is a very marvelous thing that this water strips metals of their dignity. It is the dry path of the philosophers, by which metals are reduced to their first matter. It is considered very swift, but compendious. Since we want to proceed on the humid path, in which common water is added to this water to make it liquid, we must first make the metals very bright. This operation takes a great deal of time and effort, but it is beautiful to look at...

Theophrastus ~ *The Sacred Art*

The white augmented thrice within a fire
In three days time is altogether changed
To lasting yellow and this yellow then
Will give its hue to every whitened form.
This power to tinge and shape produces gold
And thus a wondrous marvel is revealed.

Arnold de Villanova ~ *Rosarium Philosophorum*

Aristotle in the Second Book of his Politics --- There is a double way in this art according to the Philosophers, that is --- universal and particular. The universal way is easy and rare, and it is that which is brought forth from true and natural beginnings, by which a speedy and reformative virtue doth presently and in a moment hardens Mercury, and it tinctureth any metal that is duly prepared, into true Gold or Silver.

But the second way is called particular and it is hard and laboursome. Note this, although Alchemy in the universal way be partly natural and partly artificial, yet it is more natural than otherwise, because by nature no strange or foreign thing is brought in the way of true Alchemy, for nature hath whereon to work because actives are joined to passives by a competent union and application, but the rest nature worketh by herself.

Part I

Ars Magna

Chapter 3

Arsenic & Gur

Anonymous ~ *Turba Philosophorum*

Anon. ~ *Hydropyrographum Hermeticum*

Anon. ~ *A Magnificent & Select Tract on Philosophical Water*

Anon. ~ *The Book of the Science of Bkrtnth*

Anon. ~ *An Anonymous Treatise on the Philosophers' Stone*

Anon. ~ *The Crowning of Nature*

Anon. ~ *Rosarium Philosophorum*

R. Bacon ~ *The Mirror of Alchemy*

R. Bacon ~ *The Root of the World*

S. Bacstrom ~ *Lapis de Tribus*

A. Besant & C. Leadbeater ~ *Occult Chemistry*

D. Beuther ~ *The Transmutation of Base Metals into Gold and Silver*

W. Bloomfield ~ *Bloomfield's Blossoms*

P. Bonus ~ *The New Pearl of Great Price*

A. Coudert ~ *Alchemy ~ The Philosophers' Stone*

R. W. Councill ~ *Apologia Alchemiae*

J. Cremer ~ *The Testament of Cremer*

M. Crosland ~ *Historical Studies in the Language of Chemistry*

Cyliani ~ *Hermes Unveiled*

J. Dee ~ *Rosicrucian Secrets*

G. Della Porta ~ *Hermetic Treatise*

J. Duchesnes ~ *Treatise on Metallic Medicine*

A. Eleazar ~ *Aesch Mezareph*

J. Espagnet ~ *Arcanum, or the Grand Secret of Hermetics*

H. Fictuld ~ *Aureum Vellus*

B. Figulus ~ *A Golden & Blessed Casket of Nature's Marvels*

Fulcanelli ~ *The Mystery of the Cathedrals*

Fulcanelli ~ *The Dwellings of the Philosophers*

Geber ~ *The Sum of Perfection*

Geber ~ *The Invention of Verity, or Perfection*

J. Grashof ~ *The Greater & Lesser Edifyer*

C. Grummet ~ *Sanguis Naturae*

J. van Helmont ~ *Arca Arcani Artificiosissimi Apertae*

Hermes ~ *Tractatus Aureus de Lapidus Physici Secreto*

E. Hitchcock ~ *Alchemy & the Alchemists*

J. Hollandus ~ *A Work of Saturn*

J. Hollandus ~ *Opuscula Alchymica*

J. Hollandus ~ *The Cabala*

J. Hollandus ~ *De Lapide Philosophorum*

R. Ingalese ~ *They Made the Philosophers Stone*

F. Jollivet-Castelot ~ *The Chemical Manufacture of Gold*

C. Jung ~ *Mysterium Coniunctionis*

J. Juran ~ *Hyle and Coahyl*
A. Kirchweger ~ *The Golden Chain of Homer*
F. Libavius ~ *Commentariosum Alchemiaem*
R. Lully ~ *Apertorium*
R. Lully ~ *Testament*
A. Magnus ~ *Compound of Compounds*
A. Magnus ~ *Libellus de Alchemia*
P. de Mirandola ~ *On Gold*
B. Mookerjee ~ *Rasa-Jala-Nidhi*
Morienus ~ *A Testament of Alchemy*
J. Needham ~ *The Theoretical Background of Elixir Alchemy*
R. Nelson ~ *Preparation of Fixed Arsenic Pentoxide from Orpiment / Realgur*
I. Newton ~ *Verses at the end of B. Valentine's Mystery of the Microcosm*
H. Nollius ~ *The Chemist's Key*
E. Nowell ~ *Certain Chemical Works with True Practice*
Olympiodorus of Alexandria
Ostanes ~ *The Book of Ostanes*
T. Paracelsus ~ *Aurora of the Philosophers*
T. Paracelsus ~ *The Revelation of Hermes*
T. Paracelsus ~ *The Economy of Minerals*
R. Patai ~ *The Jewish Alchemists*
Pearce the Black Monk ~ *Upon the Elixir*
A.-J. Pernety ~ *Treatise on the Great Art*
A.-J. Pernety ~ *Dictionnaire Mytho-Hermetique*
E. Philalethes ~ *Preparation of the Sophic Mercury*
E. Philalethes ~ *Ripley Revived*
E. Philalethes ~ *An Open Entrance to the Closed Palace of the King*
E. Philalethes ~ *A Short Manuduction to the Celestial Ruby*
P. Ray ~ *History of Chemistry in Ancient & Medieval India*
Rhasis ~ *The Light of Lights*
G. Ripley ~ *The Epistle unto Edward IV*
G. Ripley ~ *Medulla Alchimae*
C. v. Rosenroth ~ *Kabala Denudata*
M. Rulandus ~ *A Lexicon of Alchemy*
S. Saltzal ~ *Fountain of Philosophical Salts*
W. v. Schroeder ~ *Instructions Regarding the Art of Transmutation*
L. de St-Didier (A. Toussaint) ~ *Hermetic Triumph*
B. Trevisan ~ *Verbum Dismissum*
Urbigeris ~ *Aphorisma Urbigeris*
B. Valentine ~ *Triumphal Chariot of Antimony*
T. Vaughan ~ *Aqua Vitae: Non Vitis*
A. de Villa Nova ~ *Lucidary*
A. de Villa Nova ~ *Rosarius*
A. Waite ~ *Paracelsian Lexicon*
J. Webster ~ *Metallographia: Or, An History of Metals*
Zosimos ~ *On the Evaporation of the Divine Water*

The *Ars Brevis* revealed by Myriam and other alchemists is most intriguing and appealing. Yet, many aspiring alchemists have died in vain due to their carelessness, ignorance, and haste in this operation, which apparently involves *Arsenic*. There is no margin for error: arsenic is very toxic. A single bubble of arsine (the hydride gas) can be fatal. It behooves you to be familiar with inorganic chemistry and literature such as J.W. Mellor's *Comprehensive Treatise on Inorganic & Theoretical Chemistry* (IX), *Chemical Abstracts*, *Merck Index*, etc., particularly as concerns arsenic trioxide, arsenious acid hemihydrate and the trichloride.

Arsenic is the alchemical child of Gur, a mysterious terrestrial gel that is extremely rare today, insofar as very few people are aware of its existence; fewer still search for it, and find it. In ancient times, Gur often was found in mines (especially in lead mines), but the modern practice of explosive blasting prevents its manifestation. It has been called Gur only in a few books. Nature can and will make a gift of Gur to her Lovers, but you must be prepared to collect and seal it in a clean glass vessel, and use it immediately (add gold and heat). Sendivogius (or, Seton, if you prefer), states in *The New Chemical Light*: "In the winter this unctuous vapor is congealed by the frost". This is true, as I have found it thus (presented to me by the Earth). Otherwise, Gur also fits the description given by Dioscorides for "*chalcanthon*", and by Pliny for "*atramentum sutorium*" (vitriol, ferrous sulfate), from which Sulfur Trioxide (the Philosophical Mercury of Albertus Magnus) can be prepared by dry distillation, if you choose to explore in that direction.

Anonymous ~ *Turba Philosophorum*

16th Dictum --- Know, also, that the arcanum of the work of gold proceeds out of the male and female, but I have shown you the male in

lead, while in like manner, I have discovered for you the female in *orpiment*... Now, therefore, I have notified to you the power of *orpiment*, which is a woman by whom is accomplished the most great arcanum...

50th Dictum --- Pandolphus: The philosophers have ordered that quicksilver should be taken out of cambar, and albeit they have spoken truly, yet in these words there is a little ambiguity, the obscurity of which I will remove. See then that the quicksilver is sublimed in tabernacles, and extract the same from Cambar, but there is another Cambar in sulphur which Belus hath demonstrated to you, for out of sulphur mixed with sulphur, many works proceed. When the same has been sublimed, there proceeds from the Cambar that quicksilver which is called Ethelia, *Orpiment*, Zendrio, or Sanderich, Ebsemich, Magnesia, Kuhul or Chuhul, and many other names...

52nd Dictum --- This is the quicksilver which is indeed extracted from all things, out of which all things are produced, which also is pure water that destroys the shade of copper. And know ye that this quicksilver, when it is whitened, becomes a sulphur which contains sulphur, and is a venom that has a brilliance like marble; this the envious call Ethelia, *Orpiment* and sandarac, out of which a tincture and a pure spirit ascends with a mild fire, and the whole flower is sublimated, which flower becomes wholly quicksilver...

The Book of El-Habib says that the virtue of eternal water is that of a spiritual blood. It is identified with aeriform water, azure water, and water of sulphur. It is also primal sulphur. When boiled, it transforms the male (*arsenic*) into silver, and afterwards into gold. It is also said that copper is water of silver, which, after preparation, becomes eternal water... [10th Dictum, footnote by Arthur E. Waite]

Moses: The quicksilver out of cinnabar (*argentum vivum cambar*)... is the Magnesia, while the quicksilver of the *auripigmentum* or *orpiment*... is the Sulphur which ascends from this mixed compound material. You must, therefore mix that thick thing with the Fiery Venom, and let it putrefy, and diligently pound it until a spirit is produced which is hidden in that other spirit; then it will become a tincture for everything that you wish. [Julian Ruska: *Turba Phil.* (Berlin 1931)]

Anon. ~ *Hydropyrographum Hermeticum*

This Virgin and blessed Water the Philosophers named in their Books with many thousand names; they call it Heaven, Celestial Water, Celestial Rain, the dew of Heaven, May-dew, Water of Paradise, parting Water, Aqua Regis, a corrosive Aquafort, sharp Vinegar, Brandy, Quintessence of Wine, growthful green juice, a growing Mercury, a viridescent Water, and Leo Viridis, Quick Silver, Menstruum, Blood, Urine, Horse-piss, Milk, and Virgins Milk, white *Arsenick*, Silver, Lune, and juice of Lune... [&c.]

Anon. ~ *A Magnificent & Select Tract on Philosophical Water*

...The philosophers have called this maid (Beja) and blessed water by many thousands of different names in their books. They call it heaven, a heavenly water, a heavenly rain... milk and virgin's milk, water of *arsenic*, silver, Luna water, woman, a female seed, a sulphuric steam and smoke, a fiery, burning spirit, a deathly all-penetrating poison, a Basilicum, which kills all things, a poisonous snake, a poisoned worm, a dragon...

Anon. ~ *The Book of the Science of Bkrtntb*

Appendix (Vocabulary) ---

'alam ~ *zarnikh* [A. *arsenic*]...

alumin ~ [I. *alumina*, *alumina*] ~ *zarnikh*; *orpimento*...

lutemetalium, limasinas, *orpimento* ~ *zarnikh*...

qatami'a ~ *tusi'ah* [I., *tutty*, white *arsenic*]...

sadaraqah [I., *sandaracca*, *realgar*] ~ *sandarus* [A. *sandarac*, red *arsenic*]...

sandariai ~ burnt *orpiment* or burnt *arsenic*...

isawres ~ *arseniqo saruf* [I., *arsenico*, H. *saruf*, burnt]...

itutiyah [A.] ~ *tutty*, white *arsenic*...

zarnikh [A., *arsenic*]...

Anon. ~ *An Anonymous Treatise on the Philosophers' Stone*

Now the aforesaid Subjectum is of such a nature that it, our Magnesia, doth not only contain a small proportioned quantity of the universal Spiritus Vitalis in itself, but also hath some of the heavenly power condensed and compressed within it. Many who found it were so intoxicated by its fumes that they remained in their place and could no longer raise themselves.

Anon. ~ *The Crowning of Nature*

Impregnation --- We must know that when the Earth is a little made white, there it is termed Pregnation, because then the Earth is Impregnated. For when the Earth is joined with an imperfect body, it is called Our Earth, because the Earth is the Mother of all the elements,

and this is that which they term [unidentified alchemical symbol], when the Earth begins to retain with it somewhat of *Arsenic*, or Our Salt, or Argent vive, for then it is called a Conception, because the male acts towards the female, because the Mystery of the Philosophers is nothing else but the male and female and their conjunction.

Water coming to them, that is *Arsenic* or Our Salt, which increases much in the Earth and is augmented and comes out when the Earth is dealbated, then it is called a Pregnation, because the Earth having conceived goes away pregnant.

Anon. ~ *Rosarium Philosophorum*

Out of the Lucidary of Arnoldus --- ...But the powder ascending upwards from the faeces is ashes extracted from ashes, and earth sublimed and honoured, but that which remains beneath is ashes of ashes, and the lower ashes is to be condemned and disposed as faeces and dross. Make, therefore, a difference between the clear and bright thereof, because when it is most white and ascends like snow then it will be accomplished. Gather it, therefore, warily that it fly not away in fume, because it is a good thing to be sought for, a white foliated earth, congealing that which is to be congealed and cleansing that which is to be cleansed, and purifying *Arsenic* and white Sulphur, of which Aristotle says that it is the best thing the Alchemists can take, that of it they may make Silver...

Senior --- Sulfur and *Arsenic* are not the true medicine of this magistry, because they neither accomplish nor effect fully, as hath been sufficiently known of all the lesser minerals...

Of the Salt of the Philosophers --- And when it was white they called it *Arsenic*, and by the name of every white thing, and also Virgin's Milk, and when it was red they called it Sulfur, and Jacinth, and by the name of every red thing...

Of the Double Difference of Minerals --- But mineral bodies are specially distinguished into two parts. That is to say, into a metallic part and a mineral part. Into a metallic part, that is, into metals which draw their original from Mercury, and into a mineral part which does not come from Mercury. An example from metals - Sol, Luna, Jupiter, and Mars has its mixture of gold and silver. An example from minerals --- Salts, Inks, Alums, *Arsenic*, *Auripigment*. All metals are ductile and liquefiable which draw their original from Mercury, because the matter of them, out of a watery substance mixed with an earthy substance, by a strong commixtion that the one cannot be separated from the other, wherefore that watery substance is congealed with cold more after the action of heat and therefore they will be more fabrile or ductile, and the water only is not congealed but only with the earthly dryness which alters the wateryness, when as there is no unctuous moisture in them, because the congealing of them is of earthly dryness. Therefore they are not easily dissolved unless by the vehement action of the heat in them, according to which they are most easily commixt. But there are lesser and middle minerals which take not their original from Mercury, and of these are Salts which easily melt in moisture, as Alum, simple Salt, Salt Armonick, stony Salt and all kinds of salts. And surely they have virtue in them. Neither do they easily melt with moisture only, as *Auripigmentum*, *Arsenic* and Sulphur, when as the wateryness of sulphurous bodies is mixed with slimy earth, by strong commixtion, with the fervency of heat, until they be made virtuous and then they are coagulated of cold.

That it is Impossible for the Lesser Metals to be made Artificially ---...For many of the ignorant sort have laboured and do yet labour in these vegetable and sensible things, where they have found out no truth, but certain humilities which we will declare to the ignorant that they may avoid the deceits. For they have extracted a long time out of these things, afterwards to be spoken of, which they call artificial Argent vive and oils and waters, which they named the four elements, namely water, earth, air, and fire, and Salt Armonick, *Arsenic*, Sulphur and *Auripigmentum*, which they could have bought cheaper in the market and had sooner brought it to pass... And there are other Alchemists labouring in lesser minerals, that is to say in four Spirits as in common Sulphur, *Arsenic*, *Auripigmentum*, and Salt Ammoniac being desirous to make a tincture but this they cannot do as is manifest by the definition of the tincture...

Of the Rejoicing or Springing or Sublimation of the Soul --- The second sublimation is extraction, because it is in it, of the nature of the fifth essence separated from the elemental faeces. But I call the fifth essence a tincting spirit wherein washing is necessary, that the unctuousness of *Arsenic*, or the oily nature of the purest unctuousness, which bound by his faeces, may be extracted by it, which faeces suffer it not to be sublimed.

Roger Bacon ~ *The Mirror of Alchemy*

Chapter III. Out of What Things The Matter of Elixir Must Be More Nearly Extracted --- And if we should take one of the seven spirits by itself, as Argent-vive, or Sulphur alone, or Argent-vive and one of the two Sulphurs, or Sulphur-vive, or *Auripigment*, or Citrine *Arsenicum*, or red alone, or the like: we should never effect it, because since nature does never perfect anything without equal commixtion of both, neither can we: from these therefore, as from the foresaid Argent-vive and Sulphur in their nature we are excused. Finally, if we should choose them, we should mix everything as it is, according to a due proportion, which no man knows, and afterward decoct it to coagulation, into a solid lump: and therefore we are excused from receiving both of them in their proper nature: to wit, Argent-vive and Sulphur, seeing we know not their proportion, and that we may meet with bodies, wherein we shall find the said things proportioned, coagulated and gathered together, after a due manner. Keep this secret more secretly...

Our quicksilver is the clearest water, and our *arsenic* is pure silver, and our sulphur is pure gold; and in these three things is constituted total perfection.

R. Bacon ~ *The Root of the World*

30. Now let us return to the black matter in its vessel, continually closed. Let this vessel, I say, stand continually in the moist fire, till such time as the white colour appears, like to a white moist salt. The colour is called by the philosophers *arsenic*, and sal armoniac; and some others call it, the thing without which no profit is to be had in the work...

Sigismund Bacstrom ~ *Lapis de Tribus*

Take good crude antimony and native *orpiment* 1/4 lb or as much as you like. Powder each finely by itself, and mix the powders. Beware of the dust.

Put the mixture in a globe glass with a long neck. Place your glass deeply buried in the sand, so that the best part of the globe is under the sand, but the whole neck remains free. Your furnace must stand under a chimney. Then light your fire which increase gradually. After the humidity has evaporated, put a bit of soft clay upon the opening of the neck of the glass and press it in gently.

Increase your fire, until the sand and glass grow so intensely hot, that the powders melt together in the globe.

When you see this let the substance continue melting until the whole has become of a fine deep red fluid massa. At the later end of the operation, the iron sand pot must become red hot in the bottom.

When you have obtained the red fluid mass in fusion, take the fire out immediately, that the glass may cool gradually.

The next day, break the glass and you will find a fine red transparent ruby glass, called *Lapis de Tribus* because it consists of antimony, *arsenic*, and sulphur.

Note -- Of you admit the air into the neck of the glass, the mixture takes fire, and you run great risk of your life; therefore be careful. It is done in 4 hours time. This glass is very volatile.

(I have given you some of it in a red powder, which, if you melt, it becomes a red glass again.)

One W. Cornelius de Winter from Amsterdam who was in London about the year 1775 comunicated this and what to do with it to W. Lantz.

Cornelius de Winter working the process of Myriam prophetissa, not as she told her process to Aros, King of Egypt, but in the following manner, had attained a tinging powder upon silver, as he told W. Lentz, and recommended this to him, until he should fid something of greater consequence, and W. Lentz gave it to me. I have never tried it.

The Process of Cornelius de Winter with te foregoing Lapis de Tribus for the Short Way.

Take 3iv of *Lapis de Tribus* in powder and 3J of fine gold in leaves. Mix these in a mortar by rubbing. Let it melt together in a covered crucible and suffer no coals to drop in. When the crucible begins to grow red hot, the mixture melts and at last inflamed, and the *Lapis de Tribus* fumes away and evaporates. When you find the *Lapis* evaporated, take the crucible out and let it cool, but do not breathe the poisonous fumes.

Take the gold calx out. Weigh it and mix it anew with 4 parts of fresh powdered *Lapid de Tribus*, by rubbing it in a glass. Put the mixture into a new crucible. Melt again and keep it in the fire, until the *Lapis de Tribus* is again evaporated. Repeat the same operation, with 4 parts of fresh *Lapis* and your gold calx is well opened for a further operation.

Cornelius de Winter said to W. Lentz, "You may proceed in this manner with silver, copper, or iron, and open and volatilize them by means o the *Lapis de Tribus*, sooner than the gold, and not that one single melting of four parts of the lapis to open part of fine silver in leaves, or of a *Crocus Martis*, or *Veneris*, opens and greatly volatilizes silver, iron or copper in one single operation. You are also to note that you fire must not be excited by the blast. It must not be a melting, but only a calcining fire. Otherwise your volatilized metals fly out of the crucible, and you keep the empty nest".

The *Lapis de Tribus* has a power to volatilize all metals, gold and silver not excepted, either by the first, second or third operation, according to their natural volatility or fixity, and highly subtilizes them and reduces them into a mercurial principle, which mercurialized metals can be employed in labors of great consequence, as experience will teach you. I tell you the truth, but beware of the mercurial fumes.

"I have made a Tincture in *Via Sicca* from this foundation, more than once at Amsterdam, and although it acts only on a few parts of silver, yet it is very profitable, as it can be accomplished very well in 3 or 4 days' time, but this is not the brass founder's work, by any means", said de Winter.

Take of the whitest and clearest river pebbles you can get, a pound or more, and powder them finely in a clean iron mortar, and sift your powder perfectly fine.

Of this fine pebble powder, take 3/4 lb, and good yellow litharge powdered and sifted, one lb. Mix the two powders. Put them into a new crucible covered, and melt the mixture to a glass in the wind furnace. When done take the crucible out and let it cool. When cold, break the crucible and powder your glass and sift it.

Now take one part of *Lapis de Tribus* in powder and mix it with 4 parts of the pebble glass by rubbing them well together in a glass mortar. Melt these substances in a new crucible for 5 or 6 hours, so as to keep the matter in constant fusion. Then take the crucible out, break it, and when cold, powder it, and your glass will look tinged with yellow or orange. Weigh it, and mix it again, 4 parts of this tinged glass with one part of fresh de *Tribus*. Melt again, in a new crucible constantly covered, for 5 or 6 hours. You can very well accomplish 2 meltings in a day. Repeat this a third time, and your obtained glass ought to be of a fine orange colour. This is already a kind of Tincture, which if you melt it with silver, it enriches the silver with atoms of fine gold, and if you separates such silver with *aqua fortis*, the black calx, which falls, when washed, dried, and melted with borax, proves to be fine gold of 24 carats, but this is not all.

Take your orange coloured opaque glass, weigh it, and powder and sift it. Take of this 4 parts, say drachms, in proportion, as you have opened gold, which you have prepared at first, one part or drachm of fresh *Lapis de Tribus*, and one 3 of your opened mercurialized gold, and mix the whole diligently in a porphyry or glass mortar. You must rub full 2 hours, and do not breathe the dust. Melt this composition in a new covered crucible during 6 hours continual fusion, yet without any blast or violence, as fusion is enough.

When the time is past, take out the pot and let it cool. Break the crucible and separate the glass, which does now look of a deeper red, like a new brick.

Powder and weigh this glass. Take thereof 4 parts, and add one part of fresh lapis de Tribus in powder. Mix the two powders diligently and melt them again in a new covered crucible for 6 hours time, keeping the matter in constant fusion. When cold, you will find your glass deeper in colour than before.

Repeat this fusion a third time (which from the beginning, is now the sixth melting, adding to 4 parts of this red glass, one part of fresh Lapis de Tribus and proceed carefully, as you did before, but Note: ---

1. If any coals fall into the pot, the operation is spoiled, which has happened to me in the beginning:

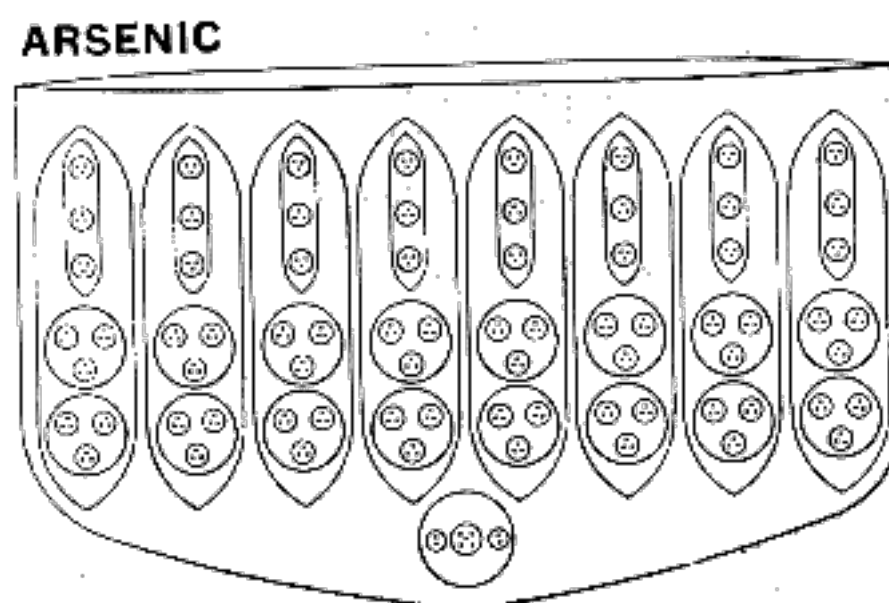
2. By the repeated fusions and fixations by the violent way, adding each time a 1/5 part of fresh Lapis de Tribus, i.e., one part of the lapis to 4 parts of the fixed glass, your tinged glass becomes more and more penetrating, more fusible and more fixed. I durst not go beyond 6 or 7 fusions, as the glass does at last run through the pores of the red hot crucible. In this manner I once lost all my treasure. 6 or 7 fusions may be safely done.

This red glass is a genuine Tincture upon fine silver. After 6 fusions, it tinges sometimes 10, sometimes 12, sometimes 20 parts of silver in fusion into fine gold of 24 carats. I could never make it twice alike, the reason of which I cannot penetrate. It is profitable enough, but no so profitable, as Myriam said to King Aros. At least I could never find it so.

Annie Besant & Charles Leadbeater ~ *Occult Chemistry*

Arsenic --- Atomic No. 33. Once more there is no central globe. Funnels: All six funnels are alike, and there are not two separate segments. *Arsenic* resembles Aluminium in having eight internal sub-divisions in the funnels, and the ovoids which form the top ring are identical with those in Aluminium save for the minute differences that in Aluminium the ovoids stand the reverse way from those in *Arsenic*. In *Arsenic* the top and bottom triplets in the top ovoids point downwards and the middle one upwards, in Aluminium the opposite is true. The total in one *Arsenic* funnel is 225 Anu.

Arsenic = 6 [Al.9' + 8 (2N9 + Al.9)] ~ 6 funnels of 225 Anu = 1350 Anu ~ Number weight 1350, 18 = 75



David Beuther ~ *The Transmutation of Base Metals into Gold and Silver*

In what follows in this report, as indeed in all reports on natural philosophy, it is the lack of knowledge about this process, which in fact does not pertain to a universal idea, but in particular might find a major use in the knowledge of the universal nature of this material, despite some abuse and misleading statements. When, however, attention is paid only where the philosopher's gold. The philosopher's mercury, mercuric ores, the electro-minerals of Paracelsus, red cinnabar ore and white *arsenic* (which of all of them alone, only the true material, and sulfur and mercury is that material, is separable in a salt) are concerned, it is implied from what was said that he indicated what he ascribed to the Art and to method of operation and how he showed the preparation and testing of the same, so that he would be able, when finally chosen for that purpose by God, to know immediately the proper and most practical method to use and to readily show that all of his processes were different, even though quite similar to one another...

Moreover, the principle preparation of one or another of the ingredients from the universal material had already been carried out, as had become clearly evident from the above-mentioned work of Kunkel, page 580, which reads, "The white arsenic powder is no longer prepared for the Elector of Saxony and unfortunately, the whole Art rests upon it..

This white *arsenic* powder, black sulfur, and other material which all refer to the prime universal material mentioned now and then in his process. He who knows how to make this same white material can make his process successful, while others cannot.

While it must be a general rule in this work, as stated by Arnold de Villa, and again on page 66, that only a few minerals, along with white *arsenic* and burning sulphur, which were to be made at the same time, are needed, as Geber had said: "There is only one mineral, one medicine, one digestion; and in this our entire work consists, to which we add nothing unfamiliar, or take anything away, without removing excess impurities therefrom in the process".

William Bloomfield ~ *Bloomfield's Blossoms*

Then father Tyme & I by favour of these men,
Such sightes to see, passed foorth toward the campe

Where wee met Disguised philosophers ten,
With porfiries & morters, ready to grind & stamp;
Their heades shakeing, their hands full of the cramp;
Some lame spasums, some febull, wann, & blind,
With *arsneck* & sulphur, to this art most unkind.

Petrus Bonus ~ *The New Pearl of Great Price*

Nuncupatory Discourse --- *Lacinius* : But is this knowledge not also sought by learned men, nobles, princes, and even by kings?

Bonus: Yes, but the motive which prompts them all is an illiberal love of gold. Their hearts are as hard as the flints which they wish to change into the precious metals, and they are as ignorant withal of the elementary facts of nature as the poorest laborer. The consequence is that they fall an easy prey to impostors and itinerant charlatans, and spend their lives in foolishly experimenting with *arsenic*, sulphur, and all manner of solvents. Thus, instead of learning to prepare the Stone, they dissipate their money, and have empty pockets for their pains.

Reasons Apparently Militating Against the Reality of Our Art: Reason Fifteenth --- If gold and silver could be evolved out of any metallic substance, they could be prepared most easily out of that which is most akin to them; but as it is impossible to prepare them out of their first principles, viz., quicksilver and sulphur, they cannot be evolved out of metals specifically different from them. For it is clear that out of these two matters all metals are derived and generated; *orpiment*, sal armoniac, and secondary spirits like marcasite, magnesia, and tutia, being all reducible to these two primary forms. There are seven spirits in Alchemy, the four principal ones, quicksilver, sulphur, *orpiment*, and sal armoniac, and the three secondary and composite spirits, marcasite, magnesia and tutia; but sulphur and quicksilver include them all. The Stone would have to be obtained either from the metals or from these spirits.

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Chief Difficulties of Alchemy: Tenth Cause of Difficulty --- The Sages appear to vary quite as much in their descriptions of the substance from which this Stone is elaborated. In order to mislead the ignorant and the foolish, some name *arsenic*, some sulphur, some quicksilver, some blood, some eggs, some hair, some dung, etc., etc. In reality, there is only one substance of our Stone; nothing else upon earth contains it; it is that which is most like gold, and from which gold itself is generated, viz., pure quicksilver, that is, not mixed with anything else, as we shall shew further on. The substance of Alchemy --- though called by a perplexing variety of names --- is the substance of Nature, and the first substance of metals, from which Nature herself evolves them. Were it otherwise, it would be impossible for Art to imitate Nature.

An Excellent Introduction to the Art of Alchemy: Chapter I. The Matter of the Philosopher's Stone --- Note: Hence, fixed sulphur retards fusion and liquefaction in metals, and entirely prevents it where its quantity exceeds that of the quicksilver. The latter is the case in iron, and the said metal is, therefore, not fusible. The fact we are taught by experience, for when we desire to make fixed sulphur, we must calcine it, and that which is calcined is not susceptible of fusion. But sulphur which is not fixed accelerates fusion, as we see in the case of *arsenic*, which is of the nature of sulphur, and brings about the fusion of red-hot iron. That it is the sulphur which prevents fusion, we see from the fact that when miners smelt ore, there ascends a sulphureous vapour before fusion takes place, and if we collect this substance in a vessel, it is found to resemble *orpiment*. But both its smell and its properties shew that it consists largely of sulphur...

Though in his book on *The Coagulation of Mercury by Precipitation* he [Geber] says that this medicine is elicited from metallic bodies with their sulphur and *arsenic*, he really means the same thing, but he expresses himself somewhat obscurely...

Concerning the Ferment --- If the Mercury were coagulated by some foreign (non-metallic) substance, it would not be of the slightest use, since in Nature only homogeneous things will combine. The coagulation by means of *arsenic* and common sulphur, though they are mineral substances, tends only to corruption.

The Epistle of Bonus of Ferrara --- Know, then, that our *arsenic* or *auripigment* is composed by Nature of sulphur and quicksilver, as it is found in its original natural state. When *arsenic* is sublimed, it often happens that there comes out of it quicksilver in small globules like grains of millet, as every experimental chemist will tell you. This quicksilver is identical with ordinary quicksilver, which may be seen from the fact that it alone of all metallic substances will mingle with quicksilver, while the quicksilver retains all its own peculiar properties and qualities. Hence we conclude that in the composition of *arsenic* there is quicksilver. In the same way, we call sulphur the tincture of redness properly and by virtue of its own nature; quicksilver is the white tincture, as all Sages tell us. But if we project *arsenic* or *realgar* upon liquid copper, it will tinge that metal with a white colour like the whiteness of the Moon; this colour shews the presence of quicksilver. In all properly purified metals we find the nature of quicksilver rather than of sulphur; for sulphur exists in quicksilver in an occult manner.

Common sulphur is specifically different from *arsenic*, but belongs to the same genus. Similarly, all sulphur, and everything that belongs to the same species with sulphur, has the property of coagulating quicksilver; and sometimes succeeds in imparting to it a red colour, and sometimes fails to do so.

We said above that when *arsenic* is sublimed it gives out globules of quicksilver like grains of millet, which is identical with ordinary quicksilver. For this reason the Sages have endeavored, by a congruous digestion, to coagulate the same quicksilver with itself, even as gold is coagulated by its intrinsic power. *Arsenic*, says Geber, has the two metallic first principles, sulphur and quicksilver, combined, and by their means may itself be designated as the first principle of Nature, in virtue of their properties and qualities. In the same book he says that the fetid spirit and living water, which is also called dry water, are the first principles of Nature. There can be no transition from the softness of quicksilver to the hardness of metals, except in some intermediate substance. Hence neither quicksilver by itself, nor sulphur by itself, is the first principle of Nature, but some intermediate matter which contains both. The quicksilver extracted from sulphur and *arsenic* is, however,

more proximately the substance of our Medicine than the same sulphur and *arsenic* when they remain as they are.

The *arsenic* to which Geber refers as the third principle of Nature in the generation of metals is a compound of quicksilver and sulphur, and possesses the virtue and power of both. It cannot be properly called sulphur, nor yet quicksilver, and thus it is true that there are only two principles of Nature. Nor is this *arsenic*, which has quicksilver for its matter and sulphur for its active potency, in any sense a thing superfluous, but is a sufficing principle of nature in the generation of metals. Hence the quicksilver of which we speak is not common quicksilver, nor is our sulphur common sulphur; but there is in our quicksilver an occult homogeneous sulphur, and it is by means of this inward sulphur that all our changes are accomplished.

Therefore, do not suppose that any compound but the one I have mentioned is the right substance of our Art, and forbear to spend your labour in vain upon magnesia, marchasite, tutia, antimony, or any other heterogeneous material. Our sulphur is the vital agent which digests and perfects our quicksilver; but the sulphur of marchasite, for instance (as Geber tells us), is only degrading and combustive; in the separation thereof the quicksilver of marchasite is left dead at the bottom of the vessel, and must afterwards be sublimed by fire. Again, we do not find in the composition of gold, or of any other metals, anything that suggests or resembles marchasite. Though *arsenic* and marchasite are generated from nearly the same elements, their diversity of form has combined and developed those elements in a widely different manner, since the same substance, if differently digested, receives a different form. This is sufficiently patent from the fact that different limbs are generated from the same substance. As with marchasite, so it is with tutia, magnesia, and all other like substances. Thus, through many mistakes, and by a process of elimination, we at length, through the grace of God, arrive at the substance which we firmly believe to be the right one. This short exposition must suffice for the present.

Of The Spirits --- There are three mineral spirits: quicksilver, sulphur and *arsenic*. *Arsenic* is hot and dry, of great virtue and potency, yet lightly esteemed. It burns up all other bodies. There are two kinds of *arsenic*, one is of a pale white, the other red. The red is combustive, the white is solvent, and useful for the Tincture; with quicksilver it makes silver. It has a fiery nature, and sublimes quickly. This spirit we strive to render corporeal and fixed, in order that it may permanently colour our substance. It has great affinity for vinegar...

A. Coudert ~ *Alchemy: The Philosophers Stone*

It is also an unfortunate fact that in the initial stages certain poisons do produce beneficial effects. *Arsenic*, for example, improves the appetite, increases growth and stimulates the production of bone marrow. Up to the very end the victim of *arsenic* poisoning consumes his food with a fair appetite. Because arsenic produces a mild dilation of the blood vessels, it was prescribed as an aphrodisiac regularly in India and Europe well into the 19th century and even appeared in an aphrodisiac preparation listed in the 1957 edition of the *British Encyclopedia of Medical Practice*....

In some cases, errors in translation or copying led to dangerous results. The Byzantine Greek Nicolaus Myrepsus compiled a book of remedies, using Arabic sources. He mistranslated the Arabic "darsini" (cinnamon) for *arsenic*. The mistaken belief that large doses of arsenic had beneficial medicinal properties threatened alchemists and their patients until the 17th century...

Most of the negative evidence was accumulated by alchemists who continued to believe in the possibility of transmutation. One convinced adept, for example, left an anonymous record of 104 alchemical recipes he had methodically tested... In the midst of all these failures he does record one success: a silver recipe using *arsenic*. Somehow this worked, for beside it the adept wrote, "gewinnt man vil silber darpei."

R.W. Councill ~ *Apollogia Alchymiae*

Section II. Modern Criticism --- In order that the statements of modern critics may be assessed at their proper value, a list is here given of things which Ripley, endorsed by Eirenaeus, says are useless, and even injurious in the work. Other eminent alchemists, in their candid moments, warn students against using these and many other ingredients: Antimony (not worth a mite), amalgams, acids, ardent and corrosive waters, *arsenic*, *orpiment*...

Section III: The Speech of the Philosophers --- In his *Short Way and Repetition*, Basil Valentine gives the following seriatim illustration of the work, viz.: a crowned lion, a crowned eagle, a crowned serpent without wings, an uncrowned flying dragon, a crow or raven, a peacock, a swan, a pelican, feeding its brood with its own blood. The crowned lion, eagle and serpent are transmuted; they are of the process. Basil Valentine described his process, as if done out of ordinary gold; but this metal he did not use as his base; for, as he says, it would require about ten pounds weight of the vitriol of gold to do so. But as gold is the ultimate product or offspring, therefore, it is permissible to call the parent, or sire, gold also. This substance the philosophers called immature or unripe gold, or the "Green" Lion. In the second stage of the work --- the analysis of the green lion --- a white salt ascends, like snow, and adheres to the sides of the vessel, "much like sublimate," as Ripley says. This is their Eagle, Sublimate, *Arsenic*, Sal Alembroth, Sal Ammoniac, Nitre, Sea salt, ergo Aphrodite or Venus, Sulphur of Nature, Icarus, etc. Its importance cannot be exaggerated.

John Cremer ~ *The Testament of Cremer*

Chapter I. How to Prepare the Living Water which Constitutes the Life of Our Art --- Take three oz. of tartar of good claret, strong and pure. Add to it five oz. of Petroleum, two oz. of living sulphur, two oz. of orange coloured Arsenic, three oz. of Rabusenum, two oz. of willow charcoal. Mix and distil all these ingredients in the "bath of Neptune," in a well-stoppered glass jar. Let this jar be about one cubit high, and carefully closed to prevent any of the spirits or smoke from evaporating. When you see it turn of a pale colour, take it out of the furnace, and let it cool. You ought to be able to prepare it in about four days. Be careful not to inhale its smell, for it is deadly poison. This water should be kept in a stout well-stoppered glass jar, and used according to the directions given in the following chapters. The other water should be twice distilled out of the urine of an unpolluted youth of eighteen; if he be polluted, the water will have no vitality. [Rabusenum is a certain red substance and earth coming forth with water, which flows out of minerals, and is brought to perfection in the month of July in a glass jar exposed to the heat of the sun for 26 days. --- (N.B.: Vitriol)]

Maurice P. Crosland ~ *Historical Studies in the Language of Chemistry*

Allegory and Analogy --- ...It is rather disconcerting, for example, to encounter a 'green lion' which is explained as referring to orpiment. [Allegoriae Sapientium, Distinction 20; *Theatrum Chem.*, V]

Secret Names --- Two historians of alchemy, Ruska and Wiedemann have compiled a list of the secret names given by Arabic alchemists to common chemical substances... Realgar and orpiment were mentioned variously as 'the two brothers', 'the two kings', or the 'two friends'.

Colour as a Basis for Chemical Names --- ...Metal sulphides too were sometimes referred to in a similar way, and we read in the alchemical lexicons that 'red sulphur' is arsenic (sulphide) and 'black sulphur' is antimony (sulphide)...

Cyliani ~ *Hermes Unveiled*

At this point the old man said: "Behold, now I have doubled mercury in my possession. Now I own it --- white lily, powder of adamantine, chief central poison of the dragon, spirit of *arsenic*, green lion, incombustible spirit of the moon, life and death of all metals, moist radical, universal dissolving nutriment, true menstruum of the philosophers, which without doing any damage or harm reduces metal to first matter."

John Dee ~ *Rosicrucian Secrets*

Of Arsenick --- *Arsenick* is in the kindred of Mercury and Antimony as a bastard in a family may be. Its whole substance is poisonous and volatile, even as the former two; in its external colour to the eye it is white, yellow and red, but inwardly it is adorned with all manner of colours, like to its metals, which it was fain to forsake, being forced thereunto by fire. It is sublimed per se without additions and also in its subliming there are added several other matters as occasion requireth. If it be sublimed with Salt and Mars, then it looks like a transparent crystal, but its poison stayeth still with it, unfit to be joined or added to metals and it hath very little efficacy to transmute any metals.

The subterranean Serpent bindeth it in the union of fire, but cannot quite force it that it might serve for a Medicine for man and beast. If it be further mixed with the Salt of a Vegetable Stone, which is with Tartar, and is made like unto an oil, it is of great efficacy in wounds which are of an hard healing. It can make a coat for deceitful Venus, to trim her handsomely, that the inconsistency of her false heart may be disclosed by her wavering servants, without gain, with her prejudice and damage. When Antimony and Mars are made my companions, saith *Arsenick*, and I am exalted by them to the top of Olympus, then I afford a Ruby in transparence and colour like unto that which cometh from the Orient and I am not to be esteemed less than it. If I am proved by affliction, then I fall off like a flower which is cut off and withers, therefore nothing can be made of me to fix any metal or tinge it to any profit.

Gambiasta Della Porta ~ *Hermetic Treatise*

We can also extract Gold out of Silver, and not so little but it will pay your cost, and afford you much gain. The way is this: Put the fine filings of Iron into a Crucible that will endure fire, let it glow red hot, and melt: then take artificial Chrysocolle, such as Goldsmiths use to solder with, and red *Arsenick*, and by degrees strew them in: when you have done this, cast in an equal part of Silver, and let it be exquisitely purged by a strong vessel made of Ashes: all the dregs of the Gold being now removed, cast it into water of separation, and the Gold will fall to the bottom of the vessel, take it: there is nothing of many things that I have found more true, more gainful or, more hard: spare no labour, and do it as you should, lest you lose your labour...

Joseph Duchesnes (Quercetanus) ~ *Treatise on Metallic Medicine*

Chapter XII: Preparation of the Arsenic --- *Arsenic* is equal to Mercury, both in its property of whitening and in the occult virtues of its nature, that is why Paracelsus reiterates in his *Librum de l'Aurore* about Mercury and all its preparations, and takes in its place *arsenic* well prepared and well purified of all its impurities. For the purification and preparation in the manner of the Philosophers, take equal parts of crystalline *arsenic* and of good vulgar sandarac, powder them and put them in a retort with a quantity of common water, and give the fire of distillation till the water has just gone over and taken with it all the blackness and impurities of the *arsenic*, and everything that can sublimate has issued, then, when you open your retort, you will find that all the sublimate to be false white flour, which is all the impurity of the arsenic, and at the bottom you will find all the good substance in the form of a beautiful crystalline regulus. After it is prepared in this way, it can sublimate with antimony and vitriol instead of sublimated Mercury, and thus make the Triad of Paracelsus.

To prepare the *arsenic* again with greater strength, separate the powdery substance from the ore by sublimation with Mars...

Sublimation of Arsenic --- Take good strong *arsenic* and fix it by calcination with saltpeter according to the art. Take of this calcined *arsenic* 6 ounces with as much good sublimate, and 4 oz of common salt, prepared or decrepitated, put everything in a sublimation furnace or in a proper flask in an ash-fire, and when the moisture has completely vanished, plug it with cotton, continuing and augmenting the fire of sublimation by degrees till the sublimate has completely risen into the neck of the vessel, it will happen in 12 hours if you manage the fire correctly. Finally, expose the phial or the flask to the air, so that it breaks of its own and you can separate your materia all the better. Take this sublimate and resublimite it another 3 or 4 times with fresh materia. This is to give it a coagulative impression and the white tincture of *arsenic*, which is a great secret. When this sublimate has been prepared in this way, mix it with half the powdered tartar, adding some vinegar and always proceeding as is done in the reunification of cinnabar. Thus you will prepare a Mercury with this sublimate which, when clean and purified, is preferable to the vulgar in all kinds of chemical operations.

Rabbi Abraham Eleazar ~ *Aesch Mezareph*

By the Fornicators are understood the (Masculine) *Arsenical* Sulphur, and the (feminine) dry water unduly mixed, together in the Mineral.

By the Spear of Phineas is meant the Force of iron acting upon the matter to cleanse it of Dross: By which Iron, not only is the *Arsenical* Sulphur killed, but also the Woman herself is at length mortified; so that the Miracle of Phineas may be fitly applied here...

...Then on top of the Glass, thou shalt have a White Matter, which is the Prima Materia or tingeing *Arsenic*, being the living Water of metals, which all Philosophers call Dry Water, or their Vinegar. Let it be purified thus: Take of the Crystalline Matter sublimed; Let it be ground upon a marble, with an equal part of Calx of Luna, and let it be put into a Vial sealed, and set in a Sand bath again, the first two hours with a gentle Fire, the second with a stronger, and the third with one yet more violent, and increased till the Sand will hiss, and our *Arsenic* will be sublimed again, the starry Beams being sent forth...

Jean Espagnet ~ *Arcanum, or The Grand Secret of Hermetic*

Perfect Metals contain in them two things, which they are able to communicate to the imperfect, Tincture and Fixation (for those, because they are dyed and fixed with pure Sulphur, to wit, both white and red, they do therefore perfectly tinct and fix) if they be fitly prepared with their proper Sulphur and *Arsenick*, otherwise they have not strength of multiplying their tincture.

Hermann Fictuld ~ *Aureum Vellus*

In the same way, Athamas and Nephele, through their nuptial and royal bond, begot two royal children, Phryxos and Helle, that is, a solar sulphur and a royal mercury. They were born in the kingdom of Thebes, that is, the higher elements. Some other planets, for their part, and especially Jupiter, had sent a contrary current, that of their feelings and emotions, which were like those of cruel stepmothers and of the mob of priests; under the action of this current of arsenical mercury and sulphur, the children left their dwelling in the higher regions. As if bathed in a shower of holy gold, they had to come down with the Golden Fleece, the great golden Ram, through the air region, down to the etheric earthly cold, upon the earth, and they enjoyed a wonderful welcome in the latter's three principles and elements, that is, in the kingdom of Colchis. Here, misfortune has doubly struck Phryxos and Helle; it fell upon a vast area in such a way that, through a divine curse, that most noble mass (that was the universe) was changed into a despicable wilderness, the faces of the earth, under the influence of these sulphuric and *arsenical* spirits.

Benedictus Figulus ~ *A Golden & Blessed Casket of Nature's Marvels*

Concerning the Philosopher's Stone --- This Virgin and Blessed Water have philosophers in their books called by a thousand names, as a Heaven, Celestial Water, Heavenly Rain, Heavenly or May Dew, Water of Paradise, Aqua Regia... White *Arsenic*, Silver... [&c.]

Fulcanelli ~ *The Mystery of the Cathedrals*

Paris (1) --- The first magnetic agent which is used to prepare the solvent --- designated, by some, Alkahest --- is called the green Lion, not so much because it is green in colour as because it had not yet acquired those mineral characteristics, which in chemistry distinguish the adult state from the nascent one. It is a green and sour fruit, compared with the red, ripe fruit. It is metallic youth on which Evolution has not yet worked, but which contains the latent germ of real energy, which will be called upon to develop later. It is *arsenic* and lead in respect to silver and gold...

Bourges (2) --- The enigma itself consists in two inscriptions: RERE, RER, which do not seem to have any meaning. Each of them is repeated three times on the concave back of the niche...

What, then, is this RER? --- We have seen that RE means a thing, a matter; R, which is half RE, will mean a half thing or a half matter. RER, then, is the equivalent of a matter increased by half of another or of itself. Note that it is not here a question of proportion, but of a chemical combination independent of relative quantities. In order to make myself better understood, let me give an example. Let us suppose that the matter represented by RE is *realgar*, or natural sulphur of *arsenic*. R, half RE, could then be the sulphur of the *realgar* or its *arsenic*, which are similar or different according to whether you consider the sulphur and the *arsenic* separately or combined in the *realgar*. In this way the RER will be obtained by augmenting the *realgar* with sulphur, which is considered as forming half the *realgar*, or with *arsenic*, which is seen as the other half in the same red sulphide.

Fulcanelli ~ *The Dwellings of the Philosophers*

The Salamander of Lisieux (II) --- This substance, at once positive and negative, passive containing its own active agent, is the basis, the foundation of the Great Work. Of these two natures, taken separately, the one which plays the role of the feminine matter is the only one indicated and alchemically named on the corbel bearing the overhang of a second-story beam [at the Manor of Lisieux]. The figure of a winged dragon can be seen, its tail curled into a ringlet. The dragon is an image and symbol of the primitive and volatile body, true and unique subject upon which one must first work. The philosophers have given it a multitude of diverse names besides the one under which it is commonly known. This has caused and still causes so much difficulty, so much confusion, to beginners, and especially to those who are little concerned with principles and do not know how far the possibility of nature can be expanded. In spite of the general opinion averring that our subject had never been named, we assert on the contrary that many books name it and that all describe it. However, while it is mentioned by the good authors, it cannot be said that it is underlined or expressly shown; it is often encountered classified among the bodies that have been rejected as improper or alien to the work. This is a traditional technique used by Adepts to divert the lay people and to hide from them the secret entrance to their garden.

Its traditional name, the stone of the philosophers, is descriptive enough of the body to serve as a useful basis for its identification. It is, indeed, genuinely a stone, for, out of the mine, it shows the external characteristics common to all ores. It is the chaos of the sages, in which the four elements are contained, but in a confused, disorganized manner. It is our old man and the father of metals which owe their origin to it,

as it represents the first earthly metallic manifestation. It is our *arsenic*, cadmia, antimony, blende, galena, cinnabar, colcothar, aurichalcum, *realgar*, *orpiment*, calamine, tutia, tartar, etc. All ores, through the hermetic voice, rendered homage to it with their name. It is still called black dragon covered with scales, venomous serpent, daughter of Saturn, and "the most beloved of its children". This primal substance has seen its evolution interrupted by the interposition and penetration of a filthy combustible sulphur, which coats its pure mercury, holds it back, and coagulates it. And, though it is entirely volatile, this primitive mercury, materialized by the drying action of the arsenical sulphur, takes the shape of a solid, black, dense, fibrous, brittle, crushable mass rendered, by its lack of utility, vile, abject, and despicable in the eyes of man. Yet, in this subject -- poor relative of the metal family --- the enlightened artist finds everything that he needs to begin and perfect his Great Work, since it is present, say the authors, at the beginning, the middle, and the end of the Work...

The Salamander of Lisieux (V) --- From the combat that the knight, or secret sulfur, engages with the *arsenical* sulfur of the old dragon, is born the astral stone, white, heavy, shining as pure silver, and which appears to be signed, bearing the imprint of its nobility, its stamp esoterically translated as the griffin, a sure indication of the union and peace between fire and water, between earth and air. However, we should not hope to attain this dignity from the first conjunction. For our black stone, covered with rags, is soiled by so many impurities that completely freeing it from them is extremely difficult. For this reason it is important to submit it to several levigations (which are Nicolas Flamel's lavueres or fire purifications), so as to progressively cleanse it from impurities and from heterogeneous and tenacious stains which encumber it, and to see it take on, with each one of these fire purifications, more splendor, more polish, and more brilliance...

If you want to possess the griffin --- which is our astral stone --- by tearing it from its *arsenical* ganque, take two parts of virgin earth, our scaly dragon, and one part of the igneous agent, which is that valiant knight armed with the lance and the shield. Ares, more vigorous than Aries, must be in a lesser quantity. Pulverize and add the fifteenth part of this pure, white, admirable salt, washed and crystallized several times, which you must necessarily know. Intimately mix it; and then, following the example of the painful Passion of Our Lord, crucify it with three iron nails, so that the body dies and can then be resurrected. This done, drive away the coarsest sediments from the corpse; crush and triturate the bones; mix the whole thing on a slow heat with a steel rod. Then throw this mixture half of this second salt, extracted from the dew that fertilizes the earth in the month of May, and you will obtain a body clearer than the preceding one. Repeat the same technique three times; you will reach the matrix of our mercury, and you will have climbed the first rung of the ladder of the sages. When Jesus resurrected the third day after his death, a luminous angel clothed in white alone occupied the empty sepulchre...

Louis d'Estissac (III) --- As for the second body --- passive and feminine --- Louis d'Estissac had it represented under the shape of a hare-lipped gnome, equipped with breasts, head covered with a scaly helmet. We already knew from the descriptions left by classical authors that this mineral substance as it is extracted from its mine is scaly, black, hard, and dry. Some have called it leprous. The Greek *lepis*, *lepidos* (scale), has among its derivative the Greek *lepra* (leprosy), because this frightful infection covers the epiderm with pustules and scales. And so it is essential to drive away the coarse and superficial impurity from the body by removing its scaly envelope (*lepizo*), an operation which we easily realize with the aid of the active principle, the agent with the grooved helmet. Taking as an example Moses' gesture it will suffice to sharply strike this rock (*lepas*) of arid and dry appearance three times in order to see the mysterious water that it contains, spring forth. It is the first solvent, common mercury of the sages, faithful servant of the artist, the only thing he needs and that nothing can replace according to the testimony of Geber and of the most ancient Adepts. Its volatile quality which allowed philosophers to assimilate this mercury to the common hydrargyrum, is moreover emphasized on our bas-relief by the tiny lepidoptera wings (Greek *lepidos-pteron*) affixed to the shoulders of the symbolic monster. However, in our opinion, the best name that authors have given to their mercury seems to be Spirit of Magnesia. For they call magnesia (Greek *magnes*, magnet) the coarse feminine matter which attracts by an occult virtue the spirit enclosed beneath the hard shell of the steel of the sages. The latter, penetrating like a burning flame into the body of the passive nature, burns, consumes its heterogeneous parts, drives away the *arsenical* (or leprous) sulfur, and animates the pure mercury it contains and which appears in the conventional form of a liquor both humid and igneous --- the fire water of the ancients --- which we call Spirit of Magnesia and universal solvent.

The Castle of Dampierre IX (Panel 6) --- An ivy plant is represented coiled around the trunk of a dead tree whose branches have all been cut by human hands. The inscription which completes this bas-relief bears the words: .INIMICA.AMICITIA. (The Enemy Friendship).

The anonymous author of the *Ancienne Guerre des Chevaliers (Ancient War of the Knights)* in a dialogue between the stone, the gold and the mercury has gold say that the stone is a worm filled with venom and accuses it of being the enemy of man and metals. Nothing is more true; so much so that others reproach our subject to contain a frightful poison whose very odor, they insist, would suffice to cause death. Yet it is from this toxic mineral that the universal medicine is made, which no human illness can resist, no matter how incurable it is thought to be. But that which gives it all its value and makes it infinitely precious in the eyes of the sage is the admirable virtue it possesses, of revivifying metals that have been reduced and molten and of losing its poisonous properties by granting them its own activity. And so it does appear to be the instrument of resurrection, and of redemption of the metallic bodies, dead by violence of a reducing fire, the reason for which it bears in its coat of arms, the sign of the Redeemer, the cross.

Preface to the 2nd Edition (Eugene Canseliet) --- Let us say it straightforwardly: The matter of the alchemical work offers itself, even imposes itself, with so much evidence that there is no author, be he the most sincere, who has not become "envious", who has not silenced, veiled or falsified the choice, going as far as writing the common name of this truly predestined subject and finally declaring that it is not.

Geber ~ Of the Sum of Perfection

Part II --- Chapter VI (Of the Reasons of Men denying the Art supposed in Arsnick, and their Refutation) --- But others judging this Stone must necessarily be found in the same [Sulphur], and its Compeer, *Arsnick*, and more profoundly intent on the Consumation of the Work, do not only by a Sublimation cleanse the burning Sulphureity, but also endeavor to remove the Terrestricity, leaving the Flight (or Volatility) in it. These in like manner, coming to Projection, find a Delusion in it; because their Medicine adheres not stably in those very Bodies, but successively, and by little and little vanisheth, leaving such a Body in its former Condition. Hence these also, condemning Art, argue like the former; and to them We answer, as We did to the First, affirming the Art, and that We know it to be, because We have seen and touched the Verity thereof.

Part III --- Chapter III (The Division of what are to be spoken, touching the Three Principles, viz. Sulphur, Arsenick, and Argentive) --- Now, having finished our Universal Discourse of the Natural Principles of Metals; it remains, that we here give a peculiar Chapter to each

one of the Principles. Therefore, seeing they are Three, viz. Sulphur, *Arsenick*, and Argentive; the first shall be of Sulphur, the second of *Arsenick*, and the third of Argentive...

Part III --- Chapter V (Of Arsenick)--- It now remains that we at present speak of *Arsenick*. We say it is of a subtle Matter, and like to Sulphur; therefore it needs not be otherwise defined than Sulphur. But it is diversified from Sulphur in this, viz. because it is easily a Tincture of Whiteness, but of Redness most difficultly: and Sulphur, of Whiteness most difficultly: but of Redness easily. Of Sulphur and *Arsenick* there is a twofold Kind, viz. Citrine and Red, which are profitable to this Art; but the many other kinds not so. *Arsenick* is fixed as Sulphur; but the Sublimation of either is best from the Calx of Metals. Yet Sulphur and *Arsenick* are not the perfective Matter of this Work: for they are not compleat to Perfection; yet they may be an help to Perfection in the Case. But the Lucid and Scaly, and Scissile must be taken.

Geber ~ Of the Invention of Verity, or Perfection

Chapter VII (Of the Preparation of Arsenick) --- After its Compeer *Arsnick* is beaten to Powder, it must be boyled in Vinegar, and all its combustible fatness extracted, and then it is dried. Then R. of Copper, lib. 1, of Allom calcined 1/2 a pound, and of Common Salt prepared as much as of the Allom. Mix these with your *Arsnick* prepared, and having ground all well together, moisten the Mixture with distilled Vinegar (that it may be liquid) and boyl the same, as you did in Sulphur; and then sublime it in an Aludel (without an Alembeck) of the height of one Foot. Gather what ascends white, dense, clear, and lucid, and keep it, because it is sufficiently prepared for the Work.

J. Grashof ~ The Greater & Lesser Edifyer

Magister Degenhardus, Lullius and Matthesius, in his *Serpa Concione* 3, write that the material of the metals should be like buttermilk before it hardens into a metallic form, and that it can be spread like butter. They call it *GUR*, and I have found it myself in mines where Nature has made lead. And if one is also able to make such a material here above the earth, then that should be a sure sign not only that one has the right Materia, but also that one is undoubtedly on the right path. This I can make, praise be to God, with my own hands. When left in warmth an hour it goes into a state of putrefaction, so that it turns black, then reddish, and finally red-brown. The philosophers call it Lac Virginis, the Milk of the Virgin. Thus, if one puts a little Salis Metallici in our water, it becomes like a white milk, and if one puts a lot therein, then it turns thick like butter and can be spread like fat or a similar substance. I have thought it well to mention this, in order that you may harbor no doubts concerning the Materia, and this will be proven to you with the help of the only Creator.

De Generatione Mineralium et Vegetabilium --- If one takes the ore and digests and matures it with hot, corporeal fixed species that are engendered from the conjunctions of the sun, such as antimony, vitriol, *arsenic*, etc., then one obtains a correct and powerful shower of blood. Since this not only matures the immature gold, but also transmutes the other immature metals, such as lead, tin, copper and iron, and turns them into gold or silver while they are still in blossom, and thus easily affected, they should be placed in an oven that is proper for them. There the flower will be matured and made enduring in a short time, although Nature would have taken a long time on them, due to her weak digestion. Thus such ores can very often now give forth their spiritual, immature gold as mature, corporeal and fixed, as I have said, and, indeed, much more of it than Nature could have perfected... One must be careful to digest these properly and preserve a tempered heat, which is not destructive, but rather natural and fostering of perfection; for, truly, if one wants to perfect the ore in great amounts, this requires a special diligence and understanding...

Christopher Grummet ~ Sanguis Naturae

Chapter IV --- But the Artist, who endeavors to set upon this work, must know that every Body is dissolved by a sharp Spirit, and made volatile with a Spirit; and if the Spirit be so prepared by the help of the Body, our Mercury is prepared, which purifies, washes, and fixes and incerates itself, till at last it attains to the highest Subtlety and purity, and sublimates itself from the bottom of the Vessel into white Stone. This must be separated from its Feces, by sublimation and reduction; and then will be prepared the Foliated Earth more white than Snow, which after its due Decoction, coagulates and fixes vulgar Mercury, and transmutes every imperfect Body into true Luna. This most precious Whiteness is our *Arsenic*, an incomparable Treasure, which above all other things the Philosopher needs. This Sulphur must be calcined, till it be converted into a dry and very subtle powder; which Powder must be imbibed with the white Oil of the Philosophers divers times, till at length it flows like wax and then there will be prepared the White Stone, whereof one part Tinges a Thousand parts of any Metal, into true Silver.

Johann Baptista van Helmont ~ Arca Arcani Artificiosissimi Apertae

Therefore it is to be known, that Nature hath her passages and veins in the Earth, which doth distill Waters, salt, clear and turbulent. For it always observed by sight, that in the Pits, or Groves of Metals, sharp and salt Waters do distil down. While therefore those water do fall downwards, (for all heavy things are carried downwards) there are sulphureous vapours ascending from the center of the Earth, that do meet them. Therefore if the waters be saltish, pure and clear, and the sulphureous vapours pure also; and that they embrace one another in their meeting, then a pure Metal is generated; but in defect of purity, an impure Metal: in elaborating of which, Nature spreadeth near, or about a thousand years, before that she can bring it to perfection; which cometh to pass either by reason of the impurity of the salt Mercurial waters, or of the impure sulphureous vapors, When these two do embrace each other, shut up close in the rocky places; then of them a moist, thick, fat vapour doth arise by the operation of natural heat, which taketh its seat where the air cannot come (for else it would fly away) of which vapour then a mucilaginous and unctuous matter is made, which is white like Butter; which Mathesius doth call *Gur*, which may be clam'd like Butter; which I also shew in my hand, above the Earth, and forth of the Earth. The Labourers in the Groves do often find this matter which is called *Gur*; but of it nothing can be prepared, because it is not know what was the intention of Nature in that place; for a Marchasite, as well as a Metal, might equally have been made of it.

Hermes ~ Tractatus Aureus de Lapidus Physici Secreto

Chapter 1, Section 5 --- Take of the humidity, or moisture, an ounce and a half, and of the Southern Redness, which is the soul of gold, a fourth part, that is to say, half an ounce, of the citrine Seyre, in like manner, half an ounce; of the *Auripigment*, half an ounce, which are eight; that is three ounces. And know ye that the vine of the wise is drawn forth in three, but the wine thereof is not perfected, until at length thirty be accomplished...

Chapter 2, Section 5 --- Return then, O my Son, the coal being extinct in life, upon the water for thirty days, as I shall note to thee, and henceforth thou art a crowned king, resting over the fountain, and drawing from thence *Auripigmentum* dry without moisture. And now I have made the heart of the hearers, hoping in thee, to rejoice, even in their eyes, beholding thee in anticipation of that which thou possesseth...

Commentary (Barrett) --- Hermes signifies the first manifested resplendence of the vital tincture; the well is, as the catholic spirit of life, inexhaustible; at the bottom, or center rather, of which subsists the occult Causality of all; even from this, the true efficient wheel, is drawn, according to tradition, that *auripigment* of philosophers which is the multiplicative virtue of their stone.

Chapter 2, Section 7 --- Know thou, my son, that the fat of our earth is sulphur; that sulphur is auripigment, sirez, or colcothar; of which auripigment, sulphurs, and such like, some are more vile or mean than others, in which there is a difference or diversity. Of this kind also is the fat of glewy substances; to wit, of hair, nails, hoofs, and sulphur itself, oil of Peter, and the brain or marrow, which is *auripigment*...

Commentary (Barrett) --- Hermes alludes to her in part to the various manifestations of the spirit in this natural life, and the vegetable growth of it in animal bodies. The occult luminous principle of life, and the vegetable growth of it in animal bodies. The occult luminous principle of vitalization he calls sulphur, *auripigment*, &c, hiding it also under a variety of other covertures.

Section III --- O permanent watery Form, creatrix of the royal elements! who, having with thy brethren and a just government obtained the tincture, finds rest. Our precious stone is cast forth upon the dung-hill, and that which is most worthy is made vilest of the vile. Therefore, it behooves us to mortify two Argent vives together, both to venerate and be venerated, viz., the Argent vive of *Auripigment*, and the oriental argent vive of magnesia...

In this way our prepared material is also called male and female, active and passive. So Zimon says, in *The Crowd*: "Know that the secret of the work consists in male and female, i.e., an active and a passive principle. In lead is found the male, in *orpiment* the female..."

Ethan Allen Hitchcock ~ *Alchemy & the Alchemists*

"The work," says one, "while yet crude, is called our water permanent, our lead, our Saturn, our Jupiter; when better decocted, then it is argent, then Magnesia, and white sulphur; when it is red, it is called *auripigment*, coral, gold, ferment, or stone, a lucid water of celestial color."

I am not defending this mode of writing, but I affirm that the whole subject of Alchemy is man. But each writer, for the most part, designates him by a word of his own choosing; hence one writes of Antimony, another of Lead, another of Zinc, another of *Arsenic*...

Johannes Isaac Hollandus ~ *A Work of Saturnia*

Now, my Child, why is Saturn as fluxible as Wax? By reason of its' abounding Sulphur, which is therein; for I find no fluxibleness or fusibleness in anything saving in Sulphur, Mercury and *Arsenick*, and all these three are in Saturn; so that Saturn is quickly fluxible, but all these three are cleansed with it from their uncleanness.

And do you not know, that the Philosophers call their Stone *Arsenick*, and a white thing; and they say their Sulphur is incombustible; they call it likewise a red thing, all this is Saturn, in it is *Arsenick*; for Luna is principally generated of a white Sulphur, as is plainly taught in the Book of Sulphur, and all *Arsenick* is internally red as Blood, if its' inward part be brought outwards, as is demonstrated in the *Book of Colours*. Saturn stands almost in the degree of fixed Luna. So that in it there is a red Sulphur, as you see, when its internal is placed outwards, it will be red as Ruby; there are no Colours but in the Spirits, so that there is in it a red and a yellow Sulphur. In it is Mercury, as may be seen, for Mercury is extracted out of Saturn in a short time, and with it little labour.

So that all three are in Saturn, but they are not fixed therein, but they are clean, pure, incombustible, fluxible as Wax; in it are all things which the Philosophers have mentioned. They say, our Stone is made of a stinking menstruous thing: What think you, is not Saturn digged out of a stinking Earth? For divers are killed with the ill Scents and Vapours where Saturn is digged.

J. I. Hollandus ~ *Opuscula Alchymicaia*

Chapter 86: The Twenty-Fourth Work of Arsenic --- Now I will teach my child how to make the white Stone from *arsenic*. Take *arsenic*, 4 or 5 lbs; powder it finely; then take alum, egg chalk, calamine and common salt, all dried at a gentle fire, that is, 2 parts of common salt to 1 part of each of the others. Pound them well together, and for every 4 lbs of *arsenic*, take 8 lbs of the other matters. Mix them together and put them into a sublimation vessel; sublimate the *arsenic*. Pound what has been sublimated among its faeces, and sublimate it again. Repeat it once more. Now mix the *arsenicum* sublimatum with as much fresh matter as your *arsenicum* weighs; sublimate it and repeat 3 times. After this, sublimate again 3 times with as much fresh matter. Then your *arsenic* will become clear, white and transparent like crystal. Dissolve that in aqua fort, made of alum, egg chalk, calamine and saltpeter, as much as all the others weigh together. Dry them to the point of dusting, put them into a distillation pot and distill as one normally makes aqua fort. Put the caput mortuum, powdered, back into the pot, pour your aqua fort again on it, distill for 36 hours till nothing drips any longer. After this, keep it glowing for another 36 hours; repeat that again, rectifying it with its caput mortuum. It is achieved with the third distillation. With this dissolve your sublimated *arsenic*, draw the water off, and sublimate the *arsenic* again; and again dissolve it in the said water. Do this 3 times, each time dissolving in fresh water.

Chapter 87 --- Now take as much silver as the weight of the *arsenic*, dissolve it in common aqua fort, and beat it down. Wash this chalk

with common water of its saltiness, and dry it on a moderate fire. Take this calx Lunae and the prepared *arsenic*, pound them together on a stone, put them into our sublimatorium, and sublimate them of the chalk, at first heating fairly strongly, so that the distillation pot stands there in a soft glow, for 2 hours. Then let it cool down, and remove the sublimate; again pound it with its fecibus, and set it again to sublimate as before. Do this 4 times, and you have sublimated all the spirit or quintessence of the silver with the *arsenic*. Then put the faeces of the silver to reverberate or calcinate in the sublimation furnace, for 4 days and nights, in a soft glow not too hot or it would melt and spoil everything.

Then take it out, put it into your stone jar, pour distilled wine vinegar on it, set it in the balneum for 4 days and nights, and proceed in every way as I have taught above in the work of antimonium, when I instructed you how to prepare the salt, earth, or corpus. Subsequently, pound it together intangibly on a stone, and for that take twice as heavy of our burning blessed water to the White. Put everything together into a fixing glass, seal it hermetically, put it on a furnace in a dish with ashes, and again give moderate fire, and everything will dissolve into pure water, also rise and fall, until it stays fixed as a crystalline, clear oil, which is a perfect Elixir. It translates mercury and tin into true silver. Put this into a glass ampule or egg, seal it, set it for 40 days and nights in a tripod, and it will coagulate into the Philosophers' Stone, whose projection is very great. The very same work which you have done with silver you can also do with tin, and the projection will be equally high. Thank God and be charitable to the poor.

J. I. Hollandus ~ *The Cabala*

Chapter II --- My child should know, as has been said before, that the Salts are of many different kinds, namely of Saturn, Jupiter, Mars, Sol, Venus, Mercury, and Luna, and that each of them can become a salt...

From this note that Jupiter would well be fixed and stable of it had all 3 Principles without any lack thereof. But let that be as it may, it is nevertheless not due to this cause alone, as Jupiter still has these other two deficiencies which cause it to be unstable in the fire. Of these the first and greatest deficiency is that, although it contains Salt and Sulphur, it lacks the Salt of Sulphur, which is called Philosophical *Realgar* by its proper name. And although the common man calls it only *Arsenicum*, be it yellow, white, or red, it is nevertheless nothing but the spirit of the Sulphur of Jupiter, although it is a fixed or stable *Realgar* or *arsenic*. The white *Realgar* comes from Venus and Jupiter, the red *Realgar* from mercury.

J. I. Hollandus ~ *De Lapide Philosophorum*

You should also know that the oil of all things in the world separates from its earth in the fire, except that of minerals and metals, because their oil stays with the earth in the fire and does not separate from it. If it does separate, the earth rises together with it, as their oils cannot be separated from the earth, which can be done with other things. They knew well that if they wish to follow Nature, they needed such oils to increate and make their spirit and dry earth liquid. They found them in sulphur and *auripigment*, but ten times more in mercury. In this way the art of ceration was invented...

Luna has two sicknesses, like other imperfect metals, but its two sicknesses do not go to the inmost root as do those of the other imperfect metals. One sickness is the combustibile sulphur, the other is cold and humidity. The first sickness is eliminated with *arsenic* and washing. Know that the substance of *arsenic* is so strong that it burns and destroys all bodies. The same is done by *auripigment* and sulphur; these three are of one nature.

When *arsenic* and *auripigment* are disembodied and cleansed of their impurity, density, and wild unfixed spirits, and you take the idle spirit, then with this spirit you will drive away the combustibility of the sulphur of metals by calcining, washing, purging, reiterating. Consequently, *arsenic* and *auripigment* are comparable to theriac. For if the poison in the theriac is not prepared, it will kill man; but when it is prepared, it drives the poison out. Likewise *arsenic* and *auripigment*.

Richard Ingalese ~ *They Made the Philosophers' Stone*

This element is not called mercury always. It had different names in different languages. In the time of the Arabians it was frequently called *arsenic*, which is not the arsenic of medicine, but another name applied to mercury.

Francois Jollivet-Castelot ~ *The Chemical Manufacture of Gold*

By means of catalytic action I have succeeded in manufacturing gold chemically by acting on silver with *arsenic* and antimony sulfides, tellurium, and tin. The process gives a very high yield which has already been confirmed by several chemists...

I made a mixture composed of chemically pure silver and 1 gram of chemically pure *orpiment* and placed it in 36° nitric acid for several months cold and then brought it to ebullition. The liquid was kept at the boiling point for several days. A small quantity of the material became detached at this point and formed a pulvurent black deposit. When no further action took place, I decanted off the solution and collected the insoluble residue. This residue was attacked by aqua regia at the boiling point until it was almost completely dissolved; the liquor when decanted and filtered was analyzed and gave all the characteristic reactions for gold. (December 1925)

I acted on 22 grams of pure silver... and on 3.5 grams of pure *orpiment*... The mixture was heated to about 1600° C. In a metal smelting furnace for about three quarters of an hour. The residue obtained was again melted with the addition of *orpiment*. After having hammered for half an hour and remelted with the addition of small quantities of *orpiment* every ten minutes, it was withdrawn.

After cooling and the addition of chemically pure antimony sulfide, it was again put back into the furnace, small quantities of *orpiment* being thrown in every five minutes. The residue obtained had a dark metallic tint. After hammering it became slightly golden.

The residue dissolved in pure 36° nitric acid first cold and then hot, gave an abundant pulvurent deposit. This deposit after being washed

and treated with ammonia to dissolve the arsenic and antimony salts was completely dissolved in aqua regia. The liquor then being chlorinated and filtered was subjected to the usual reagents of platinum and gold...

I submit the hypothesis that the *arsenic* acts as a catalyst and the sulfur as a ferment in this transmutation...

Carl Jung ~ *Mysterium Coniunctionis*

...In the face of huge numbers every thought of individuality pales, for statistics obliterate everything unique. Contemplating such overwhelming might and misery the individual is embarrassed to exist at all. Yet the real carrier of life is the individual. He alone feels happiness, he alone has virtue and responsibility and any ethics whatever. The masses and the state have nothing of the kind. Only man as an individual being lives; the state is just a system, a mere machine for sorting and tabulating the masses. Anyone, therefore, who thinks in terms of men minus the individual, in huge numbers, atomizes himself and becomes a thief and a robber to himself. He is infected with the leprosy of collective thinking and has become an inmate of that insalubrious stud-farm called the totalitarian State. Our time contains and produces more than enough of that 'crude sulfur' which with '*arsenical* malignity' prevents man from discovering his true self.

I was tempted to translate *arsenicalis* as 'poisonous'. But this translation would be too modern. Not everything that the alchemists called '*arsenic*' was really the chemical element As. '*Arsenic*' originally meant masculine, manly, strong, and was essentially an Arcanum, as Ruland's *Lexicon* shows. There *arsenic* is defined as an 'hermaphrodite', the means whereby Sulphur and Mercury are united. It has communion with both natures and is therefore called Sun and Moon. Or *arsenic* is 'Luna, our Venus, Sulphur's companion' and the 'soul'. Here *arsenic* is no longer the masculine aspect of the arcane substance but is hermaphroditic and even feminine. This brings it dangerously close to the moon and the crude Sulphur, so that *arsenic* loses its solar affinity. As 'Sulphur's companion' it is poisonous and corrosive. Because the arcane substance always points to the principal unconscious content, its peculiar nature shows in what relation that content stands to consciousness. If the conscious mind has accepted it, it has a positive form, if not, a negative one. If on the other hand the arcane substance is split into two figures, this means that the content has been partly accepted and partly rejected; it is seen under two different, incompatible aspects and is therefore taken to be two different things...

Jacob Juran ~ *Hyle & Coahyl*

Gur --- Its sign, however, is this: in the caves of the mountains where the workers labor and dig our gold or silver, a white oil drips out and when it has disappeared in the ground in which there is this Cohyle or the seed and the beginning of the gold, there will be something glowing from the earth like a tear or like a white blood, and like a tear of a plant or a grapevine when they are cut, and it is similar to drops of light water in its seeping out, and after a day or night it will coagulate and be similar to the saliva of the mouth or the milk or water foam. And after a certain time when you see it, you will find it slightly reddish and this redness will increase every day, and when it is redder than coagulated blood, but not yet hard as stone, but soft and like a salve and cream, then the gold in it is completed, but not yet stable in the heat of the fire, and it will not be stable until it coagulates and becomes similar to a hard rock, and this is the word of King Saba, which he talks about in his book *Kaba Thabiban*, the oil, the butter of the wise. It is a bird in the world and it is white like snow, and it is the bird of all birds since it doesn't fly underneath the sky and above the earth like other birds, but it comes down from the height of the sky into the deepest abysses in the interior of the earth, and its flight goes through stone and ground, through rock and the abysses of the sea; this bird in reality is the Phoenix of the Wise and alchemists, and if it doesn't join with the mother of the gold in the earth and this become white and slightly stable, then the alchemists will not be able to complete it in a long time except if it comes down every day and flies into the interior of the earth and hides and unites with the mother of the gold, and when you first see it you will compare it with the seed of men, and its face, if white, will turn red after some time, and it will be soft as butter or a salve; but when its softness changes the gold is born and stable in fire. This Cohyle has no name, just like the Cohyle of the first way has none. But the experienced of those working inside the mountains when they find this Cohyle, they answer and say we have preceded the birth of the son and the completion of the gold because, see, the son is received, and due to our hurry we have found no gold... my son, choose this Cohyle, the butter of the wise men; you can find when it is red like blood, choose it, because with it you will hurry to its end, and if it is white like saliva of the mouth, choose it because with it you will understand even more; therefore when possible choose the red one and the white one, but choose it soft like a fatty substance...

In our opinion, the word *GUR* is not a German but a Hebrew word... Our matter, then, so writes the author of this process, is one single thing, but of two substances, subject to Saturn, and surrounded by his circle, wherein is found the Humidum Radicale, and a fixed grain of gold, still unhurt, quite alive, with soul and spirit, and it is a congealed vapor and a white coagulated juice, which nature itself has given up, or sublimated, in the Mineris Sol & Luna, heavy by weight, of a metallic kind and quality, and yet not a metal in itself. It can be spread like lard, or a very subtle amalgam, it attaches itself everywhere to the walls, like fat, quite glistening. In every viscous sulphur, or water, there lies hidden in its center a Centrum Concentratum, meaning: The salt of Nature, which is the light of the world, and the true Materia Prima gold.

As proof, take as much of this subject as you like, pour upon it twice distilled dew water, the first time as is, the next time through a dozen double-fine blotting papers, as is correctly taught and shown in the *Fama Hermetica mense Februario*. Once distilled, let it stand for a few days in digestion, stirring it somewhat every day. Then, out of this subject will extract itself the hidden Centrum concentratum, or Sal Naturae: When this extract has cooled down, filter it, and when the moisture has evaporated from it through a dozen double-fine blotting papers, one will see this Sal Naturae and Lumen Mundi so beautiful, splendid and glistening as the stars at the firmament are always glittering and glistening. But if it is further treated philosophically, it can even be turned into a brightly shining oil.

Often one breaks and finds also cobalt, which contains little or almost no metal. But by digging further in the pits, one will find the same white coagulated metallic juice. It is formed plentifully in nearly all mines, especially where there is gold and silver, but that which is mined in Hungary is to be preferred to all others. Our earth is gold and silver, but not the natural and common. It is of one thing and root. *Astrum gerit masculinum et femininum genus tamen exinde persublimationem Archael fit crystallus, qui habit naturam aquae, cum quaignis et Sulphur redigenda sunt in gratiam*. Miners do not heed it, nor is it of use to them in their work. It is generally called by them: *aurum immaturatum, seu astrum Solis, semen Solis*, metal seed, also sometimes Arabian gold. When they find such matter, they say, we have come too early or too late, *dicitur etiam*. Before it congeals into a metallic form, it is like butter and can be spread like butter. The first matter of metals is not Mercurius vivus, but a sticky, sulphurous vapor, and a viscous water, in which viscous water the three Principia: Sal comm., Sulphur and Mercury are

gathered. This matter is known to all true philosophers, and it is the true Agens and Patiens.

Anton Kirchweger ~ *The Golden Chain of Homer*

Note here that *Arsenic* is a subtil dry mercury for the formation of the red metals chiefly. Modestin Fachs and Tugel believe *Arsenic* to be unripe Luna, and Luna to be fixed *Arsenic*. Tugel confirms it by experiment: Lead from Mercury, Tin from *Arsenic*, Silver from *Arsenic*, Iron from Mercury, Copper from Mercury, and Mercury from *Arsenic*...

My teachings will repel many and they will be astonished when they learn that I prepare the gold with *arsenic*...

Sulphur removes all the poison from *arsenic* and antimony. If a man were to reflect on the true prime origins of gold and other metals, or if he were to take the Mineram Solis, which is one with the other metals, he could immediately change it back into its prime matter. From this the reader learns of the properties of *arsenic*, how quickly its poison can be removed and thus it is transformed into a better substance.

The first constituent of all marcasites and metals is *arsenic*. In what mineral or metal can we find common quicksilver except very rarely and accidentally? Instead, you will find *Arsenicum* and sulphur in each of the aforementioned, be it little or much, but usually in quantity.

See Jo. Agricola in *Popp. Nuremburg* 1681, 4, P. II, *Tr. de Arsenico*, P. 997, where it is written: "Without a reason, one should not be surprised that this mineral is so closely related to Sulphur, that they are almost sprung from one spring, but in their effects they are almost opposites... It is a King of Medicine when it is corrected, one grain or less of it has the most salutary effect in countless diseases. It is penetrating and tinges the blood and vital spirit so intensely that it becomes capable of dispersing even the most pernicious enemy from the body; which other medicines, lacking this power, can never accomplish. Therefore, you must search in every way to find out how its poisonous nature can be allayed..."

Isn't it by experience that we know that gold and silver buried under the earth are aroused when the salty moisture of the earth awakens the sour spirits of gold and silver into action; that is why one has found only their electra or even only some dust instead of gold and silver. When therefore gold and silver have been put in places where many *arsenical* or marcasitical vapors evaporate, they are sooner destroyed by Nature. We can see this in the Art, which must necessarily follow Nature in just these steps, when we melt sulphur, *arsenic* and marcasite together and let them flow, then put glowing gold into it, so that the gold turns into all powder which is then immediately dissolved by the salts or salty vapors or spirits and reduced to its first nature.

Likewise with metals or minerals: the medicine or tincture does not intend to heal the sulphur, *arsenic* or marcasite, but the metals, and even if it were thrown upon sulphur, *arsenic* or marcasite, it would not turn them into pure gold and silver, but into a pure solar or lunar nature. Therefore, such a solarized sulphur, *arsenic* or marcasite can also be made into gold or silver by digestion and maturation, but not into pure gold and silver as metals are transmuted by casting and melting, etc.

Gur --- The portion of the earth which the corrosive [vapor] has been unable to dissolve completely, is made subtle, dirty, and greasy in part. Alchemists call it a metallic gur, or the first matter of metals, but wrongly so, because it is the first and nearest matter to sulphur and *arsenic*. When *arsenic* becomes marcasite, that then is the very nearest matter to metals, because metals spring directly from marcasite and not from this gur which is only the distant matter of metals. This gur or dirty substance is made ever finer by the rising corrosive vapors and is more and more dissolved. And the more it becomes subtle, the more it congeals the corrosive within itself, and that makes it sulphurous and *arsenical*. This *arsenic* is increasingly ripened into marcasite, and the marcasite in turn into metal. Such is the progress of metals, which we intend to show ever more clearly.

When the vapors rise into the cracks and crevices of the rocks, they turn into water because of their condensation (while more and more rise unceasingly). This water contains the intermingled spirit of salt and saltpeter, which spirit is known by all alchemists to be corrosive. Here, however, in the center, it is surrounded and diluted by much Phlegma and water. Such spirits adhere to rocks and earth by their sharpness, corrode and dissolve them, make them subtle, swollen, sticky, greasy and dirty, and turn them into a moist *gur* which lies between the rocks and the earth like meat interlarded with bacon. But often it penetrates outside due to the swelling and adheres to the walls, as may be seen in old galleries and mines. The more dissolved and refined such dissolved earth becomes through vapors and salty spirits, the more it swells, pressing and driving out the remaining moisture by this swelling. In turn, this moisture runs back to the center or elsewhere into other corners and holes of the earth. This swollen earth or *gur* now has no peace, because the continually rising and subsequent vapors are attacking it ever more, adhere to it, congeal and coagulate with the earth; and the more such corrosive vapors follow, the more fiery, sulphurous the earth becomes. The more sulphurous it becomes, the higher it swells, and more moisture it drives off, and becomes the drier the longer it lasts. The drier it becomes, however, the more the sulphurous component part loses its combustibility and thereby acquires the name of mercury, or rightly, *arsenic*, which has originated in the sulphurous acidity. It no longer burns, but is still volatile. This volatility, however, is gradually more bound by the central heat between the stones, and thereby congealed and coagulated, so that it is transformed into a marcasite. If the digestion or earthy central heat is strong, the marcasite is congealed into a metal; but if it is weak, it remains what it is or becomes a marcasite or *arsenic* choke-damp, or pyrite.

Now one must know that when nature has got so far that she had made sulphur or *arsenic*, she has already filled the crevices and chasms and dissolved and caused so much earth to swell that the crevices are full to the brim. Then the earth does not admit any more vapors or moisture, and is no longer in dissolution. Now begins the dessication, fixation and coagulation, and passes from there to a metallic nature or fixity.

Just as the earth and rock are the mother and foundation, or the vessel, of minerals in which fossil ore bodies are made, so the vapor is their food. Vitriol or vitriolic *gur* is the root, sulphur and *arsenic* the stem, marcasite the flower or blossom, metals, the seed, the completed birth and offspring.

That vitriol is first born of sulphur and *arsenic* can be proven by *gur*, if it is lixiviated, filtered and coagulated. Then one finds a vitriolic salt after the kind of earth that has been dissolved. That sulphur or *arsenic* originate in this way, can be seen during dismemberment. When the Acidum or the sour vapor is driven by fire, it distills first. It is followed by the flowers of sulphur, then the *arsenic*, then the volatile marcasite.

The fixed marcasite flows into a regulus and slag. That marcasite is made from *arsenic*, can again be seen in dismemberment, because bismuth and antimony driven into flowers are quite *arsenical* and volatile, and also have the total nature and quality of *arsenic*.

Libavius ~ *Commentariosum Alchymiaem*

(T) Here paint a swan swimming on the sea and spewing out of its mouth a white fluid. This swan is the white elixir, the white chalk, the *arsenic* of the philosophers, common to both ferments...

Raymond Lully ~ *Apertorium*

Two are more pure than the rest, namely gold and silver, without which the work cannot be begun or finished; because in them is the purest substance of sulphur, perfectly purified by the ingenuity of Nature. Out of these two bodies, prepared with sulphur and *arsenic*, our medicine may be extracted.

Raymond Lully ~ *Testament*

But our Secret Philosophical Water is compounded of three Natures, and it is like to a Mineral Water, in which our Stone is dissolved, and therein it is terminated, Whitened and rubified. For it is not joined to the work, unless essentially moistening the parts of the dissolved Stone, whose Phlegm preserves the whole Work from combustion, by means of the Artist's Industry.

But know that all its substance, that is the phlegmatical, is by decoction separated from the whole Compound, but our Phlegm is the middle substance, and the first Water of Mercury, in which the beginning of the Stone is, that is, its dissolution, neither does it enter with it, although they embrace one another with the Bond of Nature, unless as a Phlegm moistening the parts of the things, and note generating or augmenting; Whence the radical moistures are the essential parts of the Stone imbibed in the things themselves, of which alone the parts of the thing consist, therefore by it, it is augmented and nourished. But it is the truly germinating Nature, which the more it is decocted by the Phlegm, in its Vessel, by a Fire forcing is the more ingrafted into all and every one of the Parts, it is adorned, and so made fitter that manifold Fruits may be generated out of it: For this is called the middle nature, and the Stone, Mercury, *Arsenick*, and the noble spirit partaking of both extremes, the White Sulphur and the Red, binding up Mercury and converting it into better Silver than that of the Mine...

Albertus Magnus ~ *Compound of Compounds*

The *Arsenick* is of the same nature as the Sulphur; both tint to red and to white. But there is more humidity in the *Arsenick*, and it sublimes less rapidly over the fire than the Sulphur.

One knows how well Sulphur sublimes quickly and how it consumes all the bodies, except God. The *Arsenick* can unite its dry principle with that of the Sulphur, they temper each other, and once united, one separates them only with difficulty, their tincture is toned down by this union.

"The *Arsenick*", says Geber, "contains much of the Mercury; it can also be prepared like it". Know that the Spirit hidden in the Sulphur, the *Arsenick* and the animal oil, is named by the philosophers The White Elixir. It is unique, miscible with the volatile substance, from this one we extract the red Elixir; it unites with the melted metals, thus as we have experimented with it, it purifies them. Not only because of the aforementioned properties, but also because there is one common proportion between its elements...

According to philosophy, the Elixir also is called Medicine, because one assimilates the body of metals in the body of animals. Also we say that there is a hidden Spirit in the Sulphur, the *Arsenick* and the oil extract of the animal substances. It is that spirit for which we search, with whose aid we will tint all the imperfect bodies to perfection. This Spirit is called Water and mercury by the Philosophers. "The mercury", says Geber, "is a medicine composed of the dry and the humid, the humid and the dry". You understand the succession of operations: extract the earth from the fire, the air from the earth, the water from the air, since the water can resist the fire. It is necessary to mark well these teachings, they are Universal Secrets.

None of the principles which enter into the Work have strength by themselves; for they are linked in the metals, they cannot be perfected, they are not very fixed. Each lacks two substances, one miscible with the metals in fusion, the other fixed which enables it to coagulate and fix. Also Rhases said: "There are four substances which change in season: each one of these is composed of the four elements and takes the name of the dominant element. Their marvelous essence was fixed in one body, and, with this last, one can nourish the other bodies. This essence is composed of water and of air, combined in such a way that the heat liquefies them. Here it is: a marvelous secret. The minerals employed in Alchemy must, in order to serve us, have an action upon the melted bodies. The stones we use are four in number, two tint to white, the two others to red. Also: the white, the red, the Sulphur, the *Arsenick* and Saturn have only that one same body! But in this single body, what obscurities! And at first it is without action upon the perfect metals"...

I will add that from the four imperfect bodies, one can extract all. As for the manner of preparing the Sulphur, the *Arsenick*, and the Mercury most highly acclaimed, one can bring it forth here.

Indeed, when in this preparation we heat the spirit of the Sulphur and of the *Arsenick*, with the acid waters or the oil, for in extracting this volatile essence, the oil or unctuousity, we raise them above that which is superfluous to them; it leaves the volatile force and the oil, these things alone are those which are useful to us; but they are mixed in the acid water which served us in purifying, there is no means of separating these, but at least we are rid of the useless. It is necessary therefore, to find another means to extract from these bodies in order to obtain the water, the oil, and the very subtle spirit of the Sulphur which is the true very active Tincture for which we search...

Of the Purification of the Spirits --- The purification of spirits consists in the removal of all superfluities, but without the corruption of essentials. There are three kinds of spirits, mineral, vegetable, and animal. The mineral spirits, again, are properly three: sulphur, quicksilver, and *arsenic*, which operate naturally in metals, and to which metals, prepared by Art, are naturally joined. Of these, sulphur is the great active,

quicksilver the great passive principle, while *arsenic* represents the secondary operations of quicksilver; but all three unite in the composition of the Elixir...

Of Arsenic --- *Arsenic* is a mineral body composed of earth and water; it is oleaginous, like sulphur, but having more earth than oil, and containing a more gross and earthy sulphur. Its purgation for the first sublimation is by means of substances which dry up and consume its oleaginous superfluity, which is the first humidity. The aqueous superfluity, which is the second humidity, must be evaporated.

In God's name, take ponderous, lucid, red or yellow *arsenic*, pound small with an equal weight and a half of iron or copper filings; sprinkle with vinegar, dry, place between layers of its sediment over a fire, till there be no more steam, close up vessel, increase fire more and more till all is sublimed; cool, collect what appears outside the sediment, place between new layers, in each case about the thickness of one inch; sublime as before, till it is white, pure, crystalline, and free from all humidity and superfluity. This may be done by means of five or six sublimations; dissolve, and then coagulate, as in the case of sulphur, whether for the white or red. *Arsenic* is of less potency in the coagulation of Mercury than sulphur, but it is possible to extract from it an igneous virtue.

Albertus Magnus ~ *Libellus de Alchimia*

10. The Four Spirits of Metals Which Color --- Note that the four spirits of metals are mercury, sulphur, *auripigmentum* or *arsenicum*, and sal ammoniac. These four spirits color metals white and red, that is, in Gold and Silver: yet not of themselves, unless they are first prepared by different medicines for this, and are not volatile, and when placed in the fire burn brilliantly...

15. What is Auripigmentum and What is its Origin? --- *Auripigmentum* is a mineral stone and is made thus. Earthen dung pits in the bowels of the earth through long processes of decoction transform it into the substance of *auripigmentum*. Its viscosity is twofold: one is fine and the other coarse: one is freed through washing and decoction in urine; another through sublimation, as stated below.

Addition. *Auripigmentum* is active and burning, unless whitened. After sublimation it may whiten copper into a species of silver: this is done by adding two parts of sal ammoniac to four of rock salt, placing the latter on top of the former, and repeating the process three times until you are satisfied.

16. What is Arsenicum? --- *Arsenicum* is a subtle substance of a sulphurous color and occurs as a red stone [Realgar]. By nature it is like *auripigmentum*: the flowers are white and red. It is easily sublimed and is whitened in two ways: through decoction and sublimation.

33. What is Fixation and in How Many Ways are Bodies Fixed? --- Fixation is the appropriate tempering of a volatile substance in fire. It was devised so that every coloring, and every alteration is perpetuated in another and is not changed: for bodies, whose perfection has been diminished through calcinations, are fixed when they are freed from corrupting and volatile sulphureity. Sulphur and *arsenicum* are fixed in two ways: one method is the repetition of their sublimation from one state to another, or until they achieve stability. Spirits are also fixed in another way, either with the solutions of metals or with oil of tartar, as I shall say below.

Addition. Take sublimed mercury, an equal amount of sal ammoniac, and sublime seven times, or until melted, let the stone remain at the bottom; crush it and expose to damp air so it will become a liquid. Soak metallic *arsenicum* in this water, dissolve in distilled vinegar, and distill seven times, or congeal, and dissolve, and a stone will result.

Metallic *arsenicum* is made by melting one part of arsenicum with two parts of white soap. Another procedure is given in Geber's *Liber Fornacum*: where you may read it if you wish. Either sublime mercury, or sulphur, or prepared *arsenicum*, or several of these, at the same time, along with sal tartarum or saltpeter, or sal ammoniac. Do this many times until they remain fixed, then extract with warm water.

39. How is Auripigmentum Whitened? --- You should grind *auripigmentum* and boil it one day in vinegar, and another in urine. Then add to it a like amount of black iron powder, mix well, then sublime, doing everything as I taught concerning sulphur, and it will become white.

Addition. *Auripigmentum* is called yellow *arsenicum*. *Auripigmentum* is prepared from vinegar and salt until it rises clear; there is no better way of purifying it. Rhases says the same elsewhere: salt is the best of all for this preparation.

40. How is Arsenicum Whitened? --- *Arsenicum* is of the same nature as *auripigmentum*, but it is not necessary to boil it. Therefore, grind well and imbibe with strong vinegar (Roger says with distilled vinegar, as you will see, when he speaks of the calcinations of bodies) two or three times, or four, and dry as many times. Then it can be reserved as a powder which will be suitable for calcining bodies. But if you wish to sublimate, grind well by itself and add to it the same amount of black iron powder. Sublimate seven times or more, following all I have taught concerning mercury, and it will be whiter than snow.

Fr. Pico Della Mirandola ~ *Upon Gold*

I have experienced the truth of this matter often in various ways...

Nor shall I omit to mention what a certain poor man told me occurred to him during sleep, which he soon proved by experiment. When he was anxious and did not know where to turn to bear his hunger, for he was oppressed by very high taxes, by a foreign treasury and by a large number of children, he went to sleep and saw a certain heavenly being whose name is in the catalogue of the saints, who taught him the art of making gold in riddles and then hinted at the water he should use for making gold; he used it, at first by himself, to make gold, not a great weight, however, but enough to feed his family, and he also made gold twice from iron, from *orpiment* three or four times, and by experiment he therefore proved to me that the art of making gold is not an empty one, but truthful...

Bhudeb Mookerjee ~ *Rasa-Jala-Nidhi*

Haritalam (Orpiment) --- Haritalam, properly purified, cures phlegm, vataraktam, poison, excess of air, and fear from ghosts. It stops menstrual discharge, is soothing, pungent, and produces a warm effect on the system. It increases the appetite and cures leprosy...

Evils of Using Haritalam, not properly purified --- Haritalam, not properly purified, shortens life and gives rise to an abnormal excess of phlegm, air, spermatorrhea, gonorrhoea, inflammation, boils, and contraction of the limbs. It should therefore be purified very carefully...

Test of Incinerated Haritalam --- Haritalam is considered to be properly incinerated, if it does not emit any smoke when put upon the fire; otherwise it is to be considered un-incinerated.

Merits of incinerated haritalam: (1) Incinerated *haritalam* cures 80 different kinds of disease due to an abnormal excess of *vayu* (viz., paralysis, etc.)...

(2) *Haritalam* may be used in asthma, bronchitis, leprosy, ringworm, itches, carbuncle, and diseases due to an excess of *vayu*.

Transformation of base metals into gold by Haritalam --- Haritalam is to be rubbed with the juice of *rudanti*. Copper leaf, smeared with this *haritalam*, turns into fine gold. The leaf of a metal consisting of 16 parts of silver and 12 parts of copper is to be smeared with an amalgam made of haritalam, mashikam, hingula, manas-shila, and mercury, all rubbed together for three days with the juice of *kakamachi*, the weight of these metals being 3/2 part of the leaf, which is to be heated after it is so smeared. The product is gold...

Morienus ~ A Testament of Alchemy

Now consider what an authority said, that this magistry is customarily accomplished with a single matter. Attend well to this and apply yourself to it, and you will find no contradictions among the natures which you will perceive. Know that sulfur and *orpiment* burn, but do not long withstand combustion. Quicksilver always long withstands combustion, while all substances which approximate the nature of fire burn quickly. Thus you may expect best results from something which burns quickly in the fire and is reduced to coals...

But that which prepares this body is blood, or virgin's milk, for it unites and joins all the various substances and properties into one body, it being only necessary to apply to them a gentle heat that long continues at the same degree, neither increasing nor decreasing... Now the foul earth readily receives the white sparks and prevents destruction of the blood, or air, or virgin's milk, during decoction. But such is the blood's strength that it must be broken in order to promote rather than impede, and this is done after whatever still dark of the confused minerals has been whitened, thus accomplishing the full fruit of this magistry, the truth of which you may well not at first have seen. That is in sum the secret of your operation, as I have condensed it and set it forth for you...

The philosophers referred to the impure body as lead. The purified body is tin. The green lion is glass and almagra is latten, although it may have been called red earth earlier. And blood is *orpiment*, and foul earth is foul sulfur. Eudica is apart from all these and is called glaze, or the dregs or impurity of glass. The red vapor is red *orpiment*, the white vapor quicksilver and the yellow vapor yellow sulfur.

Joseph Needham ~ The Theoretical Background of Elixir Alchemy

(iii) **Time as the Essential Parameter of Mineral Growth ---** The protean metalline metamorphoses of the *Huai Nan Tzu* book were avoided by later alchemists, who accepted much more straightforwardly the archaic idea of the gradual perfection of minerals within the terrestrial matrix. Here the idea is expressed with pristine simplicity in one of the most influential of all alchemical writings, the supplementary instructions (*chueh*), probably of the early Sung, which now accompany the Han Yellow Emperor's *Canon of the Nine-Vessel Spiritual Elixir*:

Realgar occurs in the same mountains as *orpiment*, and is formed by the transformation of *orpiment*. (This latter) great medicine of heaven and earth (i.e., of the natural order) is called 'doe yellow' (*tzhu huang*). When eight thousand years have passed, it transforms into *realgar*, the variant name of which is 'imperial male seminal essence' (*ti nan ching*). After another thousand years have passed it transforms into yellow gold, with the variant name 'Victuals of the Perfected (or Realized) Immortals' (*chen jen fan*)...

Among the scriptures taken down by Yang Hsi, Thao had also found actual instructions for alchemical preparations. Two of these formulae still exist in their entirety. One, called *Thai-Shang Pa-Ching Ssu-Jui Tzu-Chiang (Wu-Chu) Chiang Shêng Shen Tan Shang Ching (Exalted Manual of the Eight-Radiances Four-Stamens Purple-Fluid Crimson Incarnation Numinous Elixir*, a Thai-Shang Scripture), is preserved in the *Shang-Chhing Thai-Shang Ti Chiün Chiu Chen Chung Ching (Ninefold Realised Median Canon of the Imperial Lord*, a Shang-Chhing Thai-Shang Scripture); a work otherwise devoted to techniques for encountering various deities in meditation --- making them appear from within one's body, from the sun and moon, and from inside unusually coloured clouds that conceal the immortals as they travel through the sky. The elixir recipe itself, for all its twenty-four ingredients and 104 days of heating, is clearly phrased in the language of the laboratory, and could be carried out in one today. The ingredients are given elaborate cover-names, but all are defined in notes recording oral instructions (*khou chüeh*) ascribed to the first Patriarch of Taoism, Chang Tao-Ling (+2nd century): e.g. Crimson Tumulus Vermilion Boy (*chiang ling chu erh* = cinnabar, HgS), Elixir Mountain Solar Animus (*tan shan jih hun* = *realgar*, As₂S₂), Arcane Belvedere Lunar Radiance (*hsüan thai yüeh hua* = *orpiment*, As₂S₃). The formula is not dissimilar on the whole to later alchemical recipes in terminology and technique...

Examples of spatial orientation have already appeared in several of the documents above. Alchemical specifications of location were so tied conceptually to temporal correspondences that they are practically never found in isolation. One of the very few exceptions is particularly interesting because it is early, its context is medical, and it is concerned implicitly but unmistakably with emplacing the reactants within the reaction-vessel in such a way as to create a microcosmic configuration. This is not an alchemical elixir but a 'Panaceal Sublimed Yellow Powder' (*kuang chi fei huang san*), prescribed for sores and ulcerations in one of the great medieval compendia of medical prescriptions, Wang Thao's *Wai Thai Pi Yao (Important Medical Formulae and Prescriptions* revealed by a provincial governor) of +752. That its ultimate source was alchemical is more than likely. Yoshida Mitsukuni has pointed out, similarities to a recipe in the *Thai-Chhing Shih Pi Chi (Records of the Rock Chamber*; a Thai-Chhing Scripture --- before +806), a practical collection of alchemical and iatrochemical formulae with Mao Shan associations. What Wang Thao says is as follows:

Take: Laminar malachite (*tshêng chhing*) Magnetite (*tzhu shih*), Orpiment (*tzhu huang*) Realgar (*hsiung huang*), Fibrous arsenolite (*pai yü shih*) Cinnabar (tan sha), one ounce of each. Grind the above six ingredients to fine powders, and emplace them according to the colour correspondences of the directions: laminar malachite to the east, cinnabar to the south, white arsenolite to the west, magnetite to the north, and realgar in the central position. Two earthenware urns (*wa wêng*) are coated inside with yellow clay two or three times in order to make (a lining) five- or six-tenths of an inch thick. Then place powdered orpiment in the bottom. Combine and sieve the other ingredients and put them on top, afterwards laying (the other) half of the orpiment on top as a cover. Spread clay closely on the joint (between the two vessels, the mouths of which are now joined); and do not allow any of the *chhi* to leak out...

Not long after Wu Wu's time someone who was trying to reason out the best possible way of making a container represent an egg hit upon the unsurpassable solution: he used a hen's egg itself. This may have come earlier, as early as the +9th century, but more probably it was a little later, in the Southern Sung. The '*Complete Compendium on the Lead-Mercury Perfected Treasure*' (*Chhien Hung Chia King Chih Pao Chi Chhing*) by Chao Nai-An, cites '*Secret Directions for the Yellow Sprouts Great Elixir*' (*Huang Ya Ta Tan Pi Chih*). One stage of the preparation goes as follows:

Orpiment, 1/2 ounce, Sal ammoniac, and White arsenic, 1/4 ounce each. First grind the orpiment; then grind the arsenic and sal ammoniac separately, fine as flour. Take an egg and make a hole in it. Get rid of the yolk but keep the white. Spread half the arsenic and sal ammoniac on the bottom inside the egg; put the orpiment in the middle, and half the arsenic and sal ammoniac to cover it. Take somewhat less than half an egg-shell to cover the hole, and seal it on with iron oxide solution (*chiang fan shui*) which has been mixed (with the egg-white?). Then take a pound of minium (*huang tan*) and an iron reaction-vessel (*ting*). Put half the minium into the vessel and place in its centre the medicines in the egg. Then cover them with the rest of the minium, applying a little pressure. Fill the vessel with lime (*shih hui*, evidently raw) and lute it tightly. Using half a pound of charcoal, heat it gently in an ash bath. When it is taken out it will be finished. For each ounce of *pai hsi* (zinc or tin) use a piece the size of a red mung bean (*hsiao tou*). First melt the metal, and when it is liquid project the medicine upon it. Pour it out and wait for it to cool. It will then be the colour of gold.

Exactly what form of aurification was taking place here is not immediately obvious. The reagents heated together were arsenic trisulphide, ammonium chloride (or carbonate), arsenic trioxide, ferric oxide, lead tetroxide and calcium oxide, with or without, as the case may be, a protein as source of carbon, nitrogen and hydrogen. Whether or not the tin or zinc was tinged golden only superficially is not clear from the description: if so, arsenical and other sulphides might have done just as well by themselves (cf. pt. 2, p. 252 above). If, on the other hand, copper was meant though tin or zinc actually stated, then a uniform-substrate golden alloy of arsenical copper could easily have been produced by projection as described (cf. pt. 2, p. 223 above).

Robert Nelson ~ A Novel Preparation of Arsenic Oxides from Orpiment / Realgar

Since the beginning of metallurgy, arsenic trioxide has been prepared by oxidation of ores and collected from the chimneys of furnaces. Arsenic pentoxide has been prepared by reduction of the trioxide by nitric acid.

Here is a new method for preparation of arsenic oxides from orpiment or realgar, that is simple, safe, fast, easy, efficient, and requires only one vessel. The yield is quantitative.

Orpiment / realgar is pulverized and boiled with ammonia water to liberate the arsenic sulfides from ganque. After decanting from the residue, nitric acid is added until the solution is clear of visible ammonium nitrate.

The mixture is heated for a few hours until it forms a white precipitate. Decant, filter, wash, and dry to yield arsenic pentoxide, and a small amount of trioxide depending on reaction conditions.

Isaac Newton ~ Verses at the end of B. Valentine's Mystery of the Microcosm

Arsenicum

The soot of melting houses is my name
Being a noysome fierce & poys'nous steam
I can pretend unto no further might
Since I my body have forsaken quite
Therefore no man as once twas heretofore.
Can now attain my body to restore
But whensoere with dextrous art & skill.
My noysom venom you shall tame & kill
Then man & Beast may both be cur'd by me
And oft from dangerous sicknesses set free.
Els I am poyson still & so remain
Putting rash heads & hearts to deadly pain.
Yet take good heed you rightly me prepare
To watch & ward me having a due care.

Henry Nollius ~ The Chemist's Key

He that knows not how to fix Arsenic, to take away the corrosive nature of sublimate, to coagulate sulphureous spirits, and by a convenient specifical Medicine to break and analyze stones in the greater world, will never in the body of Man allay and tame the Arsenical spirits of the

Microcosmic Salt, nor quite take away the venomous indisposition of the Sulphur, nor dissolve the Stone in the bladder, and drive it out being dissolved. It is a noble, safe and pious course we examine and try the force and virtues of Medicines upon Microcosmical substances, before we apply them to our fellow creatures, and the rare fabric of Man.

Edward Nowell ~ *Certain Chemical Works With True Practice*

Preface.

...Likewise do learn our mineral spirits three
From whence they rise, *Arsenick* of which being one,
The other Sulphur, ye last Mercury.
The Fuming Spirits chiefest of our Stone
One of those poisonous with his piercing breath
Congeals Quicksilver to a solid Earth...

Of True Principles.

11. Our *Arsenick* doth of these participate
Wherefore Hermaphrodite we do it call
But of itself no Metal may beget
Our Tin and Lead are Salts ethereal
Mars and Venus two fumes from Sulphur rise
The which from Vitriol dissolved comes...

The True Work.

...This Lead dissolve like butter somewhat soft,
Dissolve in Balneo what will thence arise.
When fire of Sand will rise two fumes aloft
A White, and Red, called *Arsenick* of the Wise.
The Faeces black, calcine in fire you may
Till they be White or else look somewhat Grey...

...This White leaved Earth, divide it into two
And in one part the Soul again must grow
This Soul is *Arsenic* which likewise divide
From greatest part sever, the white from Red
Into fixed Oils with fire let them be fried
Which are the Lights, true Leavens for our Bread...

Microcosmus.

...Our Stone being raw we water call wherein contained is
Saturn, Jupiter, and Venus our filth of Silver cleaned
Which being in Quicksilver, Magnesia I do mean
White Sulphur we do call it but being boiled red
Is Gold, Coral, and *Orpiment* and Leaven for our bread...

To The Deriders of Alchemy.

...Not common brimstone or Quicksilver crude
But foliate Earth and *Arsenick* to conclude,
Of which by long concoction we do frame
A Powder Red which Elixir name...

Olympiodorus of Alexandria ~

First Tincture, Coloring Copper White by Means of *Arsenic*, as follows:

Arsenic is a kind of sulphur which volatilizes quickly; that is to say, volatilizes over the fire. All substances similar to *arsenic* are also called sulphurs and volatile bodies. Now the preparation is made thus: taking 14 ounces of lamellar *arsenic* the color of gold, cut it into pieces, grind it so as to reduce it to particles as fine as down; then soak it in vinegar for 2 or 3 days and as many nights, the material being closed up in a glass vessel with a narrow neck, carefully luted at the top at the top so that it shall not be dissipated. Shaking once or twice a day, do this for several days; then, emptying the vessel, wash with pure water, only just until the odor of vinegar has disappeared. Guard the most subtle part of the substance; and do not let it be thrown out with the water. After allowing the mass to dry and contract in the air, mix and pulverize it with five ounces of salt of Capaddocia [common salt].

Now the use of the salt was devised by the ancients to avoid the *arsenic* sticking to the glass vessel. This glass vessel is called asymptoton by Africanus. It is luted with clay; a glass cover in the shape of a cup is placed above. At the upper part, another cover envelopes the whole; it is fastened tightly on all sides, so that the distilled *arsenic* may not be dissipated.

Then distill it repeatedly and pulverize it, until it became white; thus we obtain a white and compact alum. Then melt the copper with some

hard Nicean copper; then take some of the flower of soda and throw it into the bottom of the crucible 2 or 3 parts to flux it. Next add the dry powder (sublimed *arsenic*), with an iron ladle; put in the amount of one ounce to 2 pounds of copper. After that, put into the crucible for each ounce of copper a little silver, with a view to making the color uniform. Then throw into the crucible again a small amount of salt, Thus you will have a very fine alloy. [M. Berthelot ~ *Collection des Anciens Alchimistes Grecs*]

Ostanes ~ *The Book of Ostanes*

And others have said that *arsenic* itself is the stone of the nations, of little worth, and rejected and cast out of doors and into the dunghills and sewers... [Berthelot ~ *Moyen Age III*]

Theophrastus Paracelsus ~ *The Aurora of the Philosophers*

Being therefore moved with compassion towards the well-meaning operators of this art, I have determined to lay open the whole foundation of philosophy in three separate arcana, namely, in one explained by *arsenic*, in a second by vitriol, and in a third by antimony; by means of which I will teach the true projection upon Mercury and upon imperfect metals.

Chapter IX. Concerning Those Who Have Sought The Stone In Minerals --- Now, here note that Nature has distributed its mineral sperm into various kinds, as, for instance, into sulphurs, salts, boraxes, nitres, ammoniacs, alums, *arsenics*, atraments, vitriols, tutias, haematites, orpiments, *realgars*, magnesias, cinnabar, antimony, talc, cachymia, marcasites, etc. In all these Nature has not yet attained to our matter; although in some of the species named it displays itself in a wonderful aspect for the transmutation of imperfect metals that are to be brought to perfection.

Chapter X. Concerning Those Who Have Sought The Stone And Also Particulars In Minerals --- Some have taken *arsenic* several times sublimated, and frequently dissolved with oil of tartar and coagulated. This they have pretended to fix, and by it to turn copper into silver. This, however, is merely a sophistical whitening, for *arsenic* cannot be fixed unless the operator be an Artist, and knows well its tingeing spirit. Truly in this respect all the philosophers have slept, vainly attempting to accomplish anything thereby. Whoever, therefore, is ignorant as to this spirit, cannot have any hopes of fixing it, or of giving it that power which would make it capable of the virtue of transmutation. So, then, I give notice to all that the whitening of which I have just now spoken is grounded on a false basis, and that by it the copper is deceitfully whitened, but not changed.

Now the sophists have mixed this counterfeit Venus with twice its weight of Luna, and sold it to the goldsmiths and mint-masters, until at last they have transmuted themselves into false coiners --- not only those who sold, but those who bought it. Some sophists instead of white *arsenic* take red, and this has turned out false art; because, however it is prepared, it proves to be nothing but whiteness.

Chapter XI: Concerning the True & Perfect Special Arcanum of Arsenic for the White Tincture --- Some persons have written that *arsenic* is compounded of mercury and Sulphur, others of earth and water; but most writers say it is of the nature of Sulphur. But, however that may be, its nature is such that it transmutes red copper into white. It may also be brought to such a degree of perfection as to be able to tinge. But this is not the way pointed out by such evil sophists as Geber in *The Sum of Perfection*, Albertus Magnus, Rhasis and Polydorus; for these writers, however many they be, are either themselves in error, or else they write falsely out of sheer envy, and put forth receipts whilst not ignorant of the truth. *Arsenic* contains within itself three natural spirits. The first is volatile, combustible, corrosive, and penetrating all metals. This spirit is crystalline and sweet. The third is a tingeing spirit separated from the others before mentioned. True philosophers seek for these three natural properties in arsenic with a view to the perfect projection of the wise men. But those barbers who practice surgery seek after that use in the cure of wounds, buboes, carbuncles, anthrax, and other similar ulcers, which are not curable save by gentle means. As for that tingeing spirit, however, unless the pure be separated from the impure in it, the fixed from the volatile, and the secret tincture from the combustible, it will not in any way succeed according to your wish for projection on Mercury, Venus, or any other imperfect metal. All philosophers have hidden this arcanum as a most excellent mystery. This tingeing spirit, separated from the other two as above, you must join to the spirit of Luna, and digest them together for the space of thirty-two days, or until they have assumed a new body. After it has, on the fortieth natural day, been kindled into flame by the heat of the sun, the spirit appears in a white brightness, and is endowed with a perfect tingeing arcanum. Then it is at length fit for projection, namely, one part of it upon sixteen parts of an imperfect body, according to the sharpness of the preparation. From thence appears shining and most excellent Luna, as though it had been dug from the bowels of the earth.

Theo. Paracelsus ~ *The Revelation of Hermes*

This spirit in its fiery form is called a *Sandaraca*, in the aerial a *Kybrick*, in the watery an Azoth, in the earthly Alcohoph and Aliocosoph. Hence they are deceived by these names who, seeking without instruction, think to find this Spirit of Life in things foreign to our Art. For although this spirit which we seek, on account of its qualities, is called by these names, yet the same is not in these bodies and cannot be in them. For a refined spirit cannot appear except in a body suitable to its nature. And, by however many names it be called, let no one imagine different spirits, for, say what one will, there is but one spirit working everywhere and in all things

Theo. Paracelsus ~ *The Economy of Minerals*

Chapter XVIII. Concerning Arsenic used for Alchemy --- It seems right to connect *Arsenic* generically with Sulphurs rather than with Mercuries, and to treat it immediately after Sulphurs. Some old chemists, or rather sophists, labouring at chemistry, swelling with jaundice, that is, with desire for gold, a sort of yellow dropsy, when they saw in *Arsenic* the white Tincture of Venus, and the red tincture in the calamine stone, believing, too, that the true arcanum of the stone was contained in these, thought the white and red electrum were silver and gold until they found out the contrary by tests, and learnt that they had been engaged in a vain work. And not content with that they went on perversely in order to arrive at a fixation, and persevered until they had neither house nor possession left. They had wrought a transmutation in themselves rather than in the metal! And what wonder? They approached this work without judgment, and possessing no knowledge of minerals and

metals, as so many of those who embark in the Art at the present day do. Since the time when the name of electrum given by the ancients passed into oblivion, there has forthwith followed the ruin of those who changed that name into fictitious gold and silver. That has been the destruction of modern chemists. To define Electrum: it is a metal made from some other by Art, and no longer resembling that Form from which it was made. For example: *arsenical* metal, prepared according to the form of metallic preparation, cemented with Venus in the accustomed manner, converts the whole copper into white electrum more worthless than its own copper. What need is there to deprave metals at great expense? Would it not be better to leave the copper in its own natural essence, to keep one's money, and devote time and labor to a more useful work? The ancients called Electrum by its proper name, the moderns falsely call it silver. The ancients were not losers, because they knew the Electrum itself; the moderns, because they have no knowledge of Electrum, throw away their faculties, labour, and time. Now, since in Alchemy all mistakes are constantly propped up with some new hope, it was tried to fix *Arsenic* by means of reverberations for some weeks, and by other devices. Thence it ensued that the *Arsenic* became red and brittle like coral, but of no use in Alchemy except for Electrum, as was just now said. Then by descent and precipitation they effected nothing more than by their calcinations. Thus it happens in Alchemy obdurate men are deceived because they do not learn thoroughly from the foundation all the terms of the Art. It is true that *Arsenic* does, in its own natural condition, contain gold, and that this gold, by the industry of the artist, can sometimes be separated in a cement, or a projection, or otherwise, into silver, copper or lead by attraction, but it does not therefore follow that this is produced by his operations and his tinctures. It means only that the gold which was there before has been derived by a process of separation, as it generally is, from its ore. It is nearly always found golden, and very seldom lacks gold, as is the case with many other substances. So far, then, have I given concerning *Arsenic* what I know, or what it is advisable to write. Let everybody first of all diligently examine its name, so that he may understand. Otherwise error is apt to arise easily in both faculties, which is only at length discovered by the result.

Raphael Patai ~ *The Jewish Alchemists*

The green *suspita* mentioned in connection with gold had given rise to various interpretations. The *Zohar* commentary *Nosose Orot* explains: "It is called in Arabic *zarnikh [arsenic]*, and in La'az *orpimento*, and it causes men's hair to fall out." Later commentators explained it as "green copper which is called allatun". Robert Eisler, in a 1925 article on the terminology of Jewish alchemy, emended the reading of the word to *susepta*, and suggested that it stood for the Greek *susseptē*, meaning decayed or putrefied gold...

Pearce the Black Monk ~ *Upon the Elixir*

In *Arsenick* sublimed there is a way straight...
Realgar and *Arsenick* I defende...

Dom Antoine-Joseph Pernety ~ *Treatise on the Great Art*

When the Mercury of the Sages is mixed with silver and gold, it is called the Electra of the Philosophers, their brass, their latten, their copper, their steel: and in operations, their venom, their *arsenic*, their *orpiment*, their lead, their latten which it is necessary to whiten: Saturn, Jupiter, Mars, Venus, the Moon and the Sun...

Alphidius teaches us that this matter, or this White Smoke, is the root of the Art, and the Quicksilver of the Sages... The Philosophers have given it, among other names, those which follow: White Copper, Lamb, Spotless Lamb, Albathest, Whiteness, Alborach, Holy Water, Heavy Water, Talc, Argent-Vive, Coagulated Mercury, Purified mercury, Silver, Zoticon, *Arsenic*, *Orpiment*, Gold, White Gold, Azoch...

Dom Antoine-Joseph Pernety ~ *Dictionnaire Mytho-Hermetique*

Arsaq --- *Arsenic*.

Arsaneck --- Sublimated *arsenic*. Also called Arcanec, & Artanech (Johnson).

Arsenic --- in terms of Hermetic Chymistry, is taken to be now the mercury of the Wise, now the materia wherefrom it be drawn, & again for the materia in putrefaction. Certain having discovered in the verses of one of the Sybils, that the name of the materia from whence is taken the philosophic mercury, was composed of nine letters, whereof are four vowels, the rest consonants, whereof is one syllable composed of three letters, and the rest of two, believed they had discovered that materia in the name *Arsenicum*, the more so in that the Philosophers hold their materia to be a poison of the most dangerous nature; but the materia of the stone is the very same as that whence are formed *arsenic* & the others compounds, & the mercury of the wise is not drawn from *arsenic*; for *arsenic* is sold by Apothecaries and Druggists, and the ore of mercury is everywhere to be found, in the woods, in the mountains, in valleys, in water, on earth, & in all lands. Philalethes & various other Philosophers gave also the name *arsenic* to their materia in putrefaction, for it is then a poison most subtle & of the greatest violence. At times also by *arsenic* they understand their volatile principle, the which does office as the female. It is their Mercury, their Luna, their Venus, their vegetable Saturne, their Green Lion, &c. This name, *arsenic*, comes of the fact that it blanches their gold, as does vulgar arsenic blanch copper.

Arsenic of the Wise --- It is the Mercury of the Wise; again, the material from whence is drawn the Philosophic Mercury; again, the materia of the Hermetics when that it has come to the black; again, the sulphur or male seed & agent. Certain do by this name intend the salt that is link betwixt Sulphur & Mercury, and which, all three, are the principles of nature & of all compounds.

Incombustible Arsenic of the Wise --- The Stone of the Hermetics perfected unto the white.

Eirenaeus Philalethes ~ *Experiments for the Preparation of the Sophic Mercury*

(1) *The Secret of the Philosophick Arsnick* --- I took one part of the Fiery Dragon, and of the Magnetical Body two parts; I prepared them

together by a strong Fire, and in the first fusion there was made about eight ounces of the true *Arsnick*.

(2) *The Secret of Preparing the Mercury with His Arsenick, for the Separating its Faeces* --- I did take one part of the best *Arsnick*, and I made a marriage with two parts of the Virgin Diana into one Body; I ground it very fine, and with this I have prepared my mercury, working them all together in heat, until that they were most exquisitely incorporated: then I purged it with the Salt of Urine, that the Faeces did separate, which I put away.

(5) *The Secret of the just Preparation of the Sophic Mercury* --- Every single preparation of the Mercury with its *Arsnick* is one Eagle, the Feathers of the Eagle being purged from their Crow-like blackness, make it to fly the seventh flight, and it is prepared even until the tenth flight.

(6) *The Secret of the Sophic Mercury* --- I have taken the proper quantity of the Mercury, and I mixed it with its true *Arsnick*, to wit, about four ounces of Mercury, and I made a thin commixed consistence; I purged it after a due manner, and I distilled it, and I had a pure Body of Lune, whence I knew that I had rightly prepared it: afterwards I added to its weight of *Arsnick*, and I increased its former weight of Mercury, in so much that the mercury might prevail to a thin flux, and so I purged it, to the wasting of the blackness almost to a Lunary whiteness: then I took half an ounce of the *Arsnick* of which I made a due Marriage, and there was made a temperature like Potters Loam, but a little thinner; I purged it again, after a due manner, the Purgation was laborious: I made it with the Salt of Urine, which I have found to be the best in this Work.

(9) *A Threefold Tryal of the Goodness of the Prepared Mercury* --- Take thy Mercury prepared with its *Arsnick* of seven, eight, nine or ten eagles, put it into a Phial, and thou shalt lute it with the Lutum Sapientiae: place it in a Furnace of Sand, and let it stand in an heat of Sublimation, so that it may ascend and descend in the Glass, until it be coagulated a little thicker than Butter: continue it unto a perfect Coagulation, until it be as white as Silver.

Eir. Philalethes ~ Ripley Revived

An Exposition upon Sir George Ripley's Third Gate --- Note then that Sublimation, which otherwise is called Separation, Division, Ascension and Descension, is the Key of the Work; it is placed for the third Gate, and yet it is the last and the first; the last it is called by Ripley, and I to Echo his Voice assure thee it is the first and last.

And as the Key of all our Operations is Separation, so the Key to it is our true Mercury, truly prepared and proportioned as it ought to be. Now the proportion of thy Water, is in reference to its internal additional Sulphur, which is added by the Philosopher; which is done by successive Eagles, which are made by our Philosophical *Arsnick*, the number of which ought to be seven. The darkness vanishing, and the light appearing, after many showers, before the flight of each Eagle, our Water being thus actuated, is by Acuation purged, and then it becomes powerful in dissolving the Body, which will be done with a fewer number of eagles, or a greater, but with 7 or 9 most desiredly.

This actuated Water is also the Instrument which doth move the gold to putrefie, which no other Agent in the World can do; for by this the Body is ground, softened and mollified, the pores of it are softened, and the Sulphur invisible is set at liberty, which causeth the Body to rot, change colours, and at length become black like unto melted Pitch.

But if thou omit any of the number of eagles, or fail in the goodness of thy *Arsnick*, or err in the preparation of the Water with thy *Arsnick*, either in Conjunction, or Purification, or Digestion, or any other error, of which experience will warn thee, do not then expect that the most exact Regimen of heat of thy external Furnace will do the Work.

An Exposition upon Sir George Ripley's Preface --- And now indeed if any be ignorant, let him be ignorant; I know not what more to say, and not transgress the silence of Pythagoras. I have told you that our matter is two-fold, crude and fixed; the fixed is by Nature perfected to our hands, and we need only to have it made more then most perfect, which Nature alone could never perform; nor is there any thing that can thus exalt Tinctures, but our dissolving Water, which I told you floweth from three Springs; the one is a common Well at which all draw, and of which Water many use; this Well hath in it a Saturnine drossiness, which make to Waters unuseful; these frigid superfluities are purged by two other Springs, through which the Water of this Well is artificially caused to run: these Springs make but one Well, whose Waters appear dry, the humidity being sealed; the Well it self is surrounded by an *Arsenical* Wall, the slimy bottom abounds with the First Ens of Mineral Salt and Sulphur, which acuate the Water of the first Well, whose primary quality is Coldness; being thus actuated, it becomes so powerful a Menstruum, and so pleasant to the Metals, that for its peculiar Vertue it is chosen for to be the Bath of the Sun and Moon.

An Exposition upon Sir George Ripley's Fifth Gate --- If then thou accend this heat so much as that it predominate, it will not then dissolve the Bodies, as thou expectest, but contrariwise burn the Flowers before they are extractd from the depths of their marrow: this thou mayst easily do, either if thy *Arsnick* be not made as it ought, or else the number of Eagles exceeded, or the proportion of thy Water to thy Body not agreeing to the number of Eagles, or thy Glass not well proportioned to thy Matter; it will easily burn, if thy Glass be too big, for so the moisture will so much be dispersed about the Concave, that it will not return before the earth below be left too dry. I have given Rules easily to avoid all these inconveniences.

And on the other hand, be sure that thou do not erre in too little heat; let thy Water have Fire enough within it, to make a true division and corruption, which if either thy *Arsnick* have sufficient Fiery virtue, or if the union of this and thy Water be not well attended, but slightly performed, or the Purgation of thy water be not thoroughly made each eagle, for so two or three eagles may not add the virtue of one, or if thy number of eagles be not just, or thy proportion of quantity be not duly observed...

Pray then to God, that he would be propitious unto your studies and labours, in giving thee the true knowledge of this secret Mystery; it is the gift of God, I have holpen thee what I can, but venture not to practice barely upon my words, for know that what I have only hinted, is far more then what I have discovered; and what I have declared to thy first apprehension most openly, hath yet its lurking Serpent under the green Grass, I mean some hidden thing which thou oughtest to understand, which thou being Cock-sure at first blush wilt neglect; but yet it will bite thee by the heel when thou approachest to practice, and make thee begin again, and it may be at last throw away all as a man desperate: for know that this is an Art very Cabalistical, and we do study expression such as we know will suit almost with any mans fancy, in one place or

other; but be sure to take this Maxim from one who knows best the sence of what he hath written: Where we speak most plainly, there be most circumspect, for we do not go about to betray the Secrets of Nature; especially then in those places which seem to give Receipts so plain as you would desire, suspect either a Metaphor, or else be sure that something or other is supprest, which thou wilt hardly without Inspiration ever find of thy self, which in tryal will make all thy confident knowledge vanish; yet to a Son of Art, we have written that which never heretofore was by any revealed.

Eir. Philalethes ~ An Open Entrance to the Closed Palace of the King

Chapter II. Of the Component Principles of the Mercury of the Sages --- It is called our *Arsenic*, our Air, our Moon, our Magnet, and our Chalybs: these names representing the different stages of its development, even unto the manifestation of the kingly diadem, which is cast out of the diadem of our harlot. Learn, then, who are the friends of Cadmus; who is the serpent that devoured them; what the hollow oak to which Cadmus spitted the serpent. Learn who are the doves of Diana, that overcome the green lion by gentleness: even the Babylonian dragon, which kills everything with its venom. Learn, also what are the winged shoes of Mercury, and who are those nymphs whom he charms by means of his incantations.

Eir. Philalethes ~ A Short Manuduction to the Celestial Ruby

Therefore you must take Care that you don't Err in this first Entrance, for the Work is spoiled unless you be wary here. The common Errors on this Operation are many and various; Firstly, of them who know not what is to be Calcined, but seek the Principle of Gold-making in Extraneous things. Some bring in for their Material Principle, those things which are not of the same Imposition with Metals, such are Borax, Alloms, Attrement, Vitriol, *Arsnick*, Seeds of Plants, Wine, Vinegar, Urine, Hair, Blood, Gums, and the Rosins of the Earth; some do endeavor (such is their Blockishness) to Generate Salts of every kind, out of the flame, I pass by these understanding nothing at all in this Art...

P. Ray ~ History of Chemistry in Ancient & Medieval India

Chapter II. Chemistry in Rasaratnasamuchchaya --- *Talaka* (*orpiment*) is of two kinds: the one is of a leady structure, the other is found in balls or cakes and is of golden color... and bright. It is purified by being digested in the juice of cucumber and the alkaline water of the ashes of sesamum, or in lime water.

Talaka is to be rubbed with buffalo's urine and thrice macerated in the decoction of *Butea monosperma* of the consistency of honey, and then to be roasted in a covered crucible and powdered. This operation is to be repeated twelve times. Then it is fit to be used in medicines. [Most likely a sulpharsenite of potash is formed in the process]

Manassila (*realgar*) is mixed with one-eighth part of its weight of iron-rust, molasses, bdellium and clarified butter, and then enclosed in the *koshthi* apparatus and strongly heated, when it yields its essence...

All the gems with the exception of diamond are killed when roasted eight times with a mixture of *realgar*, sulphur and *orpiment*, rubbed in the juice of *Artocarpus lakoocha*.

Dhatuvada --- In the Himalaya, there is a very good and well-known plant called *kustha* (*Costus speciosa*), from the leaf of which drops towards the earth a fluid having a colour like bright gold... Pure *orpiment* is to be rubbed with this oil for 20 days. The former is killed thereby and loses its volatility. The eight metals in the molten state being treated with this *orpiment*, acquire the power of transmutation...

Rhasis ~ The Light of Lights

Of the Spirits --- There are three mineral spirits: quicksilver, sulphur, and arsenic. *Arsenic* is hot and dry, of great virtue and potency, yet lightly esteemed. It burns up all other bodies. There are two kinds of *arsenic*, one is of a pale white, the other red. The red is combustive, the white is solvent, and useful for the Tincture; with quicksilver it makes silver. It has a fiery nature, and sublimes quickly. This spirit we strive to render corporeal and fixed, in order that it may permanently colour our substance. It has great affinity for vinegar.

This spirit must be cleansed, sublimed, and exalted; then it will do what no man would think possible. Take pallid *arsenic*, pound well into powder, place in a glazed pot, pour over it four times as much clear strong vinegar. When most of the *arsenic* is dissolved, after three days, place over a gentle fire, steam off the liquid, take it out, place in a dish, wash well of all saltness with pure water, and dry in the sun. Place again in a glazed pot, pour over it four times its quantity of water of alum, and let it evaporate over the fire. Put in an aludel, add twice its quantity of common purified salt, close the vessel, and seal it up carefully. Sublime cover fire from morning till noon. Cool, open the vessel, and you will find in it a brilliant substance. Place it in a glass vessel, pour over it its own quantity of water of alum, and leave for eight days. Take up what floats on the surface, put it in a small narrow-necked bottle, coagulate, and you will find a crystalline stone; keep until necessary to use, and see that it is free from dust. If you digest this arsenic with milk or oil of bitter almonds, and afterwards with water of alum, it will be very brilliant and beautiful in the sublimation; and then it dissolves very easily. If *arsenic* be cooked with olive oil, and then with water of atrament, it will be found in the sublimate brilliantly red and easily soluble. Red *arsenic*, when its ferment is added, makes glad the heart of the Alchemist; but it is not so easily dissolved as white flaky *arsenic*. Hence you should use the later for dissolving and sublimation. To sublime with quicksilver, cook in the manner described one pound of *arsenic* with one ounce of quicksilver.

Of Sulphur --- The decoction of sulphur is the same as that of *arsenic*. But as sulphur has much air, as well as much hotness and dryness, it is not easily sublimed. To effect this purpose, cook it well, and dissolve it; you will then be on the road to perfection. Without the three substances which I have mentioned, there can be no silver or gold, *arsenic* being best for silver, and sulphur for gold. Some say that if sulphur be mixed with living calx, it can be easily sublimed; but I do not wish you to waste your labour. Know, however, that arsenic is more valuable in the Lunar, and sulphur in the Solar work. Sulphur is partly white without, and partly red within. Of *arsenic* the opposite holds good...

Of Gold --- The Sages call gold the product of the sun. When it is perfect, the fire cannot hurt it, but rather intensifies its colour. If you wish to make gold, you must ferment it, or all your labour will be in vain. Moreover, the ferment must be pure. Nevertheless, it does not require much purification, since it is in itself sufficiently pure, but it must be prepared so that it may be easily incorporated and fermented, and for this purpose it must be calcined as we will shew further on.

Beat pure gold into thin leaves; then take red *arsenic*, pound, add a third part of common salt (i.e., one-third part of the *arsenic*), take seven ounces of steel filings, pound the three together; take a small, new, glazed pot, put a little of this powder at the bottom of the pot; over it place a plate of gold, cover the plate with more powder, and so fill up with alternate layers. Take another glazed pot, put in one pound olive oil, boil over a gentle fire, add four ounces of clear yellow sulphur; remove at once from the fire, stir with an iron rod till the sulphur is melted, and allow to cool. Add some of this oil to the contents of the other pot; simmer over gentle fire, till absorbed; add more, place again on the fire, and so on, little by little, till all the oil has been absorbed. Then leave it on the fire till quite dry. All this can be done in 24 hours. Stop up the pot with the clay of Sages; next morning, place the pot among the coals of a gentle fire, so that it is entirely covered, from 6 to 9 a.m.. Take pot, cool, break it, pound its contents; afterwards pound the gold, place the whole in dish, add sweet and clear water, and stir it. When the powder has settled at the bottom, remove the water (for it is salt); add more water, till the powder has quite lost its saltiness. Dry it in the sun, or by a fire, place in a small pot, stop up with clay, place in furnace for the space required for baking bread. Then rejoice, for you have pulverized and fermented gold...

Of Silver --- Silver, though composed in the same way, is not quite so pure or well digested as gold, and suffers from two kinds of humidity, sulphureous and phlegmatic, or evaporant. Yet silver may be properly purified by fire; but if being cooked with common sal and *orpiment*, it grows black, while there is no blackness in the salt or the *orpiment*, this is a sign that it is suffering from the first humidity. The sign of the second humidity is diminishment in the fire. By purification and digestion it can be transmuted into gold, for its infirmity is of a negative kind.

The following is the best way of changing silver into gold... Take thin plates of [pure] silver, five pounds of *arsenic*, and one ounce of steel filings; pound them well together. Take some of this powder, cover with it the bottom of a pot, put over that place a silver plate, over that some more of the powder, and so fill the pot with alternate layers of plates and powder. Let there be powder over the top of all. Place on a slow fire, over the coals, pour over it strong vinegar, and leave it from 6 to 9 a.m.. Let the moisture evaporate, stop up with clay of Sages, and plunge pot among red-hot coals; keep up a powerful fire or 12 hours. Then open the pot (after cooling), separate the silver from the powder, pound in mortar, wash with clean water in a dish. Dry in the sun. Add to the powdered silver equal quantities of sal armoniac, of sublimed coagulated quicksilver, and of white sublimed *arsenic*; pound, put in a bottle, pour over it four times as much water of alum, and leave for two days. Plunge bottle up to neck, which should be narrow, in a pot full of ashes; the bole should be unstopped till its contents are coagulated. Then stop it up, and place over fire for 24 hours. Let it cool, and then break bottle; if anything be sublimed up to the neck, combine all together; pound its contents, place in glass vessel, pour over it twice as much water of alum, and leave for 8 days, shaking it twice or thrice every day. Skim off what floats on the surface into a small narrow necked bottle; evaporate the liquid from the remaining faeces, add one-half ounce of it to 20 ounces of copper, and it will become the purest silver. Coagulate the contents of the bottle in a pot full of ashes, then add one-half ounce of it to 250 ounces of copper, 150 ounces of tin, or 50 ounces of lead, and you will witness a wonderful transformation. There is another way of carrying out this operation, but here is the most efficacious, and however the coagulated substance the preparation of which I have described may be obtained, it has the property of transmuting larger or smaller quantities of copper, tin or lead into the most irreproachable silver.

Of Arsenic --- *Arsenic* is a mineral body composed of earth and water; it is oleaginous, like sulphur, but having more earth than oil, and containing a more gross and earthy sulphur. Its purgation for the first sublimation is by means of substances which dry up and consume its oleaginous superfluity, which is the first humidity. The aqueous superfluity, which is the second humidity, must be evaporated.

In God's name, take ponderous, lucid, red or yellow *arsenic*, pound small with an equal weight and a half of iron or copper filings; sprinkle with vinegar, dry, place between layers of its sediment over a fire, till there is no more steam, close up the vessel, increase the fire more and more till all is sublimed; cool, collect what appears outside the sediment, place between new layers, in each case about the thickness of one inch; sublime as before, till it is white, pure, crystalline, and free from all humidity and superfluity. This may be done by means of five or six sublimations; dissolve, and then coagulate, as in the case of sulphur, whether for the white or red. *Arsenic* is of less potency in the coagulation of Mercury than sulphur, but it is possible to extract from it an igneous virtue.

George Ripley ~ *The Epistle unto King Edward IV*

For then both Body and Spirit also both Oil and Water,
Soul and Tincture one thing both White and Red,
After Colours variable it containeth what so men clatter;
Which also is called when he hath once been Dead:
And is revived our Marcasite, our Magnet, and our Lead,
Our Sulphur, our *Arsenick*, and our true Calx vive...

G. Ripley ~ *Medulla Alchimia*

Another way, by which the Body of gold is Elixirated by the power of the Fire against Nature, which is thus. Dissolve the Body of pure Gold in the Fire against Nature, the same fire being well rectified *Arsenick* as the manner is; from which Gold being dissolved into a Citrine, clear and shining Water, without any Heterogeneity or Sand remaining, let the water be abstracted, till the Body does remain in the bottom of the Glass, like a fixt Oyl...

Christian Knorr von Rosenroth ~ *Kabala Denudata*

Chapter 3 --- About metallic things R. Mordecai wrote: Let the red mineral of silver be taken, let it be ground most finely, then add to six ounces of it an ounce and a half of the calx of Luna. Let it be placed on a sand bath in a sealed vial. Let it be given weak fire for the first eight

days lest its radical humidity be burnt up. In the second week, one degree stronger, and in the third, yet stronger; and in the fourth so that the sand should not be red hot, but that when water is dripped upon it, it should hiss. Then on top of the glass, you will have a white matter, which is the *materia prima*, the dyeing *arsenic*, the living water of the metals, which all philosophers call dry water, and its vinegar. This is how it is purified: Take some of this sublimated crystalline pure matter. Let it be ground on marble with calx of Luna in equal parts. Let it be put in a sealed vial, again in sand, in the first two hours with gentle fire, in the second with stronger, in the third yet more violent, and increased until the sand will hiss: and our *arsenic* will again be sublimated, with starry rays being sent forth. And since a large quantity is required of this, augment it thus: Take some of this six ounces, and of the purest filings of Luna one ounce and a half, and let it be an amalgam, and let it be digested in a sealed vial in hot ashes, until all the Luna is dissolved, and converted into *arsenical* water. Take of this prepared spirit one ounce and a half, put it in a closed vial of hot ashes, and it will ascend and descend; which heat should be continued until it no longer sweats, but lies at the bottom, having the color of ashes. Thus the matter is dissolved and putrefied. Take of this ashy matter one part, and of the aforementioned water half a part, mix them and let them sweat in a glass as before, which will happen in about eight days. When, thereafter, the ashy earth begins to whiten, take it out, and let it be imbibed with five washings of its lunar water, and be digested as before. Let it be imbibed the third time with five ounces of the same water, and coagulated as before, for eight days. The fourth imbibition requires seven ounces of the lunar water, and once the sweating is ended this preparation is finished.

Now for the white work. Take of this white earth twenty-one drachmas. Of lunar water, fourteen drachmas. Of the calx of purest Luna, ten drachmas. Let them be mixed on marble, and committed to coagulation until they harden. Imbibe it with three parts of its own water, until it had drunk up this potion, and repeat this until it flows without smoke on a glowing copper plate. Then you will have a tincture for the white, which you can increase in the aforementioned manner. For the red, calx of sol, a stronger fire must be applied. And this is a work of more or less four months. Thus says he. This should be compared with the writings of the Arab philosopher, in which he describes the *arsenical* material in more detail...

By the Spear of Phineas is meant the Force of Iron acting upon the Matter to cleanse it of Dross: By which Iron, not only is the *Arsenical* Sulphur killed, but also the Woman herself is at length mortified; so that the Miracle of Phineas may be fitly applied here...

Martinus Rulandus ~ A *Lexicon of Alchemy*

Aes Hermetis --- is the same as Mercury. It is also Solar Dust, the Head of the Raven, our copper, citrine earth, the thing containing and the thing contained, our lead. Mirerius calls it Gold extracted out of Metals; it is also termed Venus; Vitriol; *Orpiment*; *Arsenic*; Money; the Soul; the Green Lion; Green Water, because it germinates; Permanent Water; Wine; Blood. But it is truly and properly an imperfect body, not yet prepared, and in its original state.

Alernet --- *Orpiment*.

Aquala --- Philosophical *Arsenic*.

Arsag --- *Arsenic*.

Arsaveile --- Sublimed *Arsenic*. Called also Arcanec and Artanec.

Arsenic --- Incombustible *Arsenic* of the Philosophers --- the Hermetic Stone perfected to the white degree.

Arsenic of the Philosophers --- The Mercury of the Wise --- otherwise, the matter from which this Mercury is extracted. It is also the Hermetic Matter when it has reached the black stage, and the Sulphur or active and masculine seed. Some also understand by this term that Salt, which is the bond between Sulphur and Mercury, and is one of the three principles of Nature, and of all composites.

Arsenicum is the Greek Nitre, Effulgence of Metals; Salt of Metals, and of Saturn. Called also Artanek, or Artanech... It is also Luna, and our Venus. According to Geber, it is Sulphur's companion. It is the soul, the hermaphrodite, the means whereby Sulphur and Mercury are united. It has community with both natures, and is, therefore, called Sun and Moon.

Artaveck, *Artaneck* --- *Arsenic*, of which there are three species: White, Yellow, and Citrine. Yellow *orpiment*, golden dye; crystalline *arsenic*. Item: Red Greek Sandaraca which is of two kinds, rough and manufactured; the former was a red *arsenic* mixed with brimstone, the latter a kind of vermilion.

Auripigmentum is *Orpiment*, *Arsenical* Earth... It is a native metallic substance, and is found in combination with Sandarac [yellow *Orpiment*]. It is covered with a crust, and glitters with a gold colour. In its fundamental nature it is a certain kind of sulphur, and is, so to speak, a terrestrial excrement in the caverns of the earth, which in the long process of time is turned into *Orpiment*... The Arabs, however, confound Sandarac with *Arsenic*, and, in fact, give the name of *Arsenic* indiscriminately both to Sandarac and *Orpiment*, and, distinguishing only their variety according to colour... *Orpiment* is also the Blood of the Stone. The *Turba* calls it the female which we use to color the Sun and to cook with Mercury. It is, however, genuine Sulphur. Quicksilver *Orpiment* is Sulphur which rises from the composition...

Cal --- Philosophical *Arsenic*, or the Matter of the Chemists, not only during the period of its dissolution, when it is a virulent poison, but also when it has arrived at the white state.

Cerusa --- i.e., Rust of Lead, White Lead, the Psimytm, Psimytmion, or Aphidegi, of the Greeks, a Poisonous Body, according to Dioscorides and Nicander, which is cold and dry in the second degree... It should be noted that there is some confusion both of names and ideas in regard to this substance. Sandaracs, or Sandaracha, is a kind of red colour; there are two species, rough and manufactured; the former was a red *arsenic* mixed with brimstone, otherwise red *orpiment*; the second was a kind of vermilion...

Chambar --- Poison, the fruit of Poison, or Magnesia. The *Turba* says: It is the White Stone, and calls it *Orpiment*, *Zendrio*, *Abaemech*, *Chalul*. But when it has become white and innocuous, then it is called Lead, *Exobmich*, *Magnesia*, *Martech*, *White Copper*.

Disposition --- A Philosophical Confection so-called by Maria, but Trevisan terms it Weight or Proportion, and others name it Composition. It is a synthesis of the three principles philosophically combined. In his *Vade Mecum*, Philalethes says that we must take one part of the red or the white body, which answer to the male, two or three parts of *arsenic*, which fulfils the office of the female; and four parts or more, up to twelve, of the sea-water of the Sages; the whole, being well mixed, must be placed in the vase, which must be well sealed, and the vase placed in the athanor, where it must be subjected to the required regimen.

Eloanx --- is *Orpiment*.

Elome --- is *Orpiment*.

Falcanos --- Otherwise *Arsenic*; vulgarly *Orpiment*.

Filum Arsenicale --- i.e., Sublimed *Arsenic*.

Fuligo Metallorum --- Properly *Arsenic*, but it often signifies Mercury.

Fumus Rubeus --- is *Orpiment*. It is also called Gold because it is bright.

Gaza Fumi --- i.e., Crystalline *Arsenic*.

Gold: Its Artificial Production --- It is not only by the common operations of mining and digging in the profundities of the earth that it is possible to obtain Gold. It is quite within the powers of Art to imitate Nature in this matter, for Art perfects Nature in this as in many other things. We propose to provide in this place an account of a formal experiment, the worth of which has been tested over and over again, and has in fact become little less than familiar among operators in the pursuit of the Grand Work. In order to perform it a large crucible must be provided, and it must be of such a quality as will be able to resist the action of intense heat. This crucible must be set over a burning furnace, and at the bottom of the vessel there must be strewn Powder of Colophony (a kind of resin) to about the thickness of the little finger. Above this undermost layer there must be another layer of Fine Powder of Iron --- that is, the Finest Iron Filings --- which shall be of the same thickness. Subsequently, the filings must be covered with a little Red Sulphur. Then the fire in the furnace must be increased till the iron filings have passed into a liquid condition. The next operation is to throw in Borax --- that kind which is made use of by goldsmiths for melting gold. To this must be added a like quantity of Red *Arsenic*, and as much Pure Silver as will be equivalent to the weight of the Iron Filings. Let the entire composition undergo coction by driving the furnace, taking care at the same time not to inhale the steam, on account of the *arsenic* in the vessel. Take then another crucible into which, by inclining the first vessel, you must pour the cocted matter, having previously stirred it effectually with an iron spatula. Proceed in such a manner that the composition will flow into the second crucible in a purified state, and devoid of recremental matter. By means of the Water of Separation, the Gold will be precipitated to the bottom. When it has been collected, let it be melted in a crucible, and the result will be good Gold, which will repay all pains and expense which have been devoted to its production. This chemical secret is contained in the '*Hermetic Cabinet*', and the facility with which the experiment can be performed has led many persons to undertake it. The authority cited in support of it is no less than that of the most learned Basil Valentine, who also affirms that the operation of the Grand Work of the Philosophers can be performed in less than three or four days, that the cost should not exceed three or four florins, and a few earthen vessels are sufficient for the whole experiment.

Guma Paradisi --- *Orpiment*.

Hernec --- The *Orpiment* of the Philosophers.

Kibrius or *Kebrick* --- is *Arsenic*.

Lapis Philosophicus --- Sublimation of the Stone:...*Turba* says: Sublimate Chambar of Mercury; thus Sulphur becomes mixed with Sulphur, and is called Ethelia, *Orpiment*, *Zendrio*, *Chulul*, *Magnesium*, and under many other names is his white nature set forth... The Redness of the Stone:... When it is red, it is called Heaven, Gold, Red Sulphur, Carbuncle, and has the names of everything that is red and costly between heaven and earth, such as... Red *Orpiment* of the Philosophers... The Whiteness of the Stone:... It is also called... by the names of all things that are white --- Salt, Alum and Marble, Crystal, Ethelia, Alba, white Silver Litharge, *Arsenic*, Nitre... The Digestion of the Stone:... When the mixture is completed, it is called... *Orpiment*...

Lempnias --- Some call this *Orpiment*, but wrongly, for it is a Red Sigillated Earth.

Lempnias Lempnia --- i.e., *Orpiment*.

Leo Citrinus Foliatius --- *Orpiment*.

Marcasita Alba --- White Marcasite, i.e., White *Arsenical* Pyrites.

Mercury --- is mentioned everywhere, in every alchemical work, and is supposed to perform everything. Everybody wastes his brain and his money in endeavoring to produce a quantity of it... it is also called... *Orpiment* [etc.]...

Ozo --- i.e., *Arsenic*.

Pompholix --- Concerning this substance and the varieties of the same, see Dioscorides, who seems to confound Pompholix, Spodon, and Antispodon. In the first place, Pompholix is the same as that which is called white nothing or nil by vendors of medicines. Hence the proverb that nothing is good for the eyes They also call it White Pompholigum, which is coarser. On the other hand. Spodium is what the chemists call Black Pompholix... Pompholix is a Metallic Ash, which produced upon the tops or walls of furnaces, or of huts where there are extinguished furnaces. This Ash varies with the metals and the place of production. Grey Pompholix is obtained from Pyrites rather than from Stone... That which adheres to the tops and walls of furnaces Spodium. On the other hand, that which hangs from the top is Pompholix differing from the first in whiteness and polish. Dioscorides states that difference is specific, not generic. Spodon is: (1) Black, (2) Heavy, (3) Full of Straws, (4)

Swept from the floors of Laboratories.

Pompholix is White like a Bubble, or like that Greek vessel of globular shape from which it obtains its name. It is fat, light, and pure, and is produced on the top of furnaces. There are, however, properly speaking, two kinds of Pompholix:

1. Somewhat thick, and of a copperish hue. Its proper name is grey nothing.

2. Exceeding white, of the highest polish. Produced either in perfecting Copper, when the Cadmia purposely strewn upon the surface is rubbed off; or from Cadmia melted by means of bellows. Dioscorides gives a lengthy description of the method. The thin and very light matter which finds its way to the top of the furnace and adheres to the walls and roof is Pompholix, but the heavier substance which betakes itself to the lower parts is Spodion.

Dioscorides gives us further information as to genuine and adulterated Pompholix, the method of washing it, its virtues as an astringent, cooling, purifying, obstructing, and drying agent. He describes its torrefaction or roasting, and tells us from what substances it is preferably obtained --- namely, Gold, Silver, Lead, and Brass. Next to Pompholix from Cyprian Ore comes Pompholix from Lead. Pliny endorses these statements. Galen ascribes more powerful virtues to Pompholix than to Spodion.

Indeed, Pompholix has a combination of virtues. Under Cadmia we have mentioned that Cadmia Botryitis, or Grape-shaped Cadmia, is called Arabian Tutty. Accordingly, that of Alexandria is called Dry or Solid. But Botryitis Cadmia is not the same substance as Cadmia, to which the Arabs and Serapion testify. For the Spodion here treated of is Tutty and a matter of importance. Botryitis is not Tutty. Dioscorides mentions Spodion and not Tutty. What is called Tutty by the Arabs and Pompholix by the Greeks is by us termed Spodion. Avicenna testifies to this fact. We can use Botryitis Cadmia instead of Tutty, that is, of Spodion, if it has been prepared. The difference between Botryitis and Capnitis Cadmia, and between Pompholix and Spodion, which are all made of the same material, depends upon the places where they are made. Cadmia Botryitis is made or deposited on the walls or the highest roofs of the furnaces. On the other hand, Capnitis is, properly speaking, obtained from the edges of the furnaces. Genuine Pompholix, or White Nothing, an exceedingly light Metallic Ash, is produced on the tops of furnaces, or even on the tops of the huts in which the furnaces are situated. If obtained from the mouth of the furnace, it is Cadmic Capnitis; if from the sides and roofs, it is Pompholix; that which adheres to the walls is Spodion. Young students should diligently observe these points. The Arabs distinguish two varieties of Tutty: Native Tutty --- White, Green, or Citrine --- found among minerals on the shores of the Indian Ocean; also Manufactured, of which we treat here. Observe also that besides the Sooty Spodion of Serapion, Dioscorides, Pliny, and Galen, who says: I have never used Spodion, because I have always found Pompholix in abundance...

Pompholix --- (1) The Soot which is collected in Compartments of Furnace; (2) Pompholix from Silver; (3) Slimy, sticking to the walls where Silver is separated from bead. Yellow, Poisonous, Crystalline *Arsenic*; (4) From Mansfeld Copper; (5) That which is collected where Silver is separated from Copper; (6) Obtained from Furnaces where White Lead is smelted; (7) Purest White. Best Crystalline *Arsenic*; (8) That which is Solidified from Pieces of Stone roasted when Copper is cooked; (9) White Pompholix, termed by the Metallurgists White Nothing.

Pompolix, Tutty, and Spodius --- are one and the same.

Pompholix Lursa --- Crystalline *Arsenic*.

Quebricum --- is, according to some, *Arsenic*, but, according to Stephanus, it is Sulphur.

Realgar --- Red *Orpiment*. *Realgar* is properly a Mineral Smoke, which has something of the nature of *Orpiment*, or *Arsenic*. Metaphorically, it is that poison of the body which generally is the cause of Ulcers. It is of four kinds, corresponding to the four elements, so there is the *Realgar* on the Surface of Water, the *Arsenical Realgar* of the Earth, the Terebinthine *Realgar* of Air, and that Saturnine Conjunction which is the *Realgar* of Fire.

Sal Factitium --- There is Tragesium Salt, *Arsenical* Salt, or Sublimated *Arsenic*...

Sandaraca, otherwise Erythace --- A Food for Bees. As to its production, see Pliny (1. 11, c. 7). But in this place we are dealing with a native metallic substance, which the Germans call *Orpiment, Realgar, Arsenical Orpiment, Red Sulphur, Fire Sulphur, Red Orpiment*. It is hot and dry in the second grade.

Sandarac is a Metal and a Purple Earth. It is found in the same metals as Native *Orpiment*, of which there is a species resembling this in smell, substance, and properties, though it differs in colour, corresponding therein to Cinnabar, which is red. Hence Pliny says that *Arsenic* is a compound of the same matter as Sandarach, meaning *Orpiment* by *Arsenic*...

Sandaracha --- *Orpiment, Crystalline Arsenic, Yellow Orpiment*. There are four species: (1) native Sandarach, Yellow *Orpiment*; (2) The artificial named Vitruvius, the Sandix of the Greeks, Minium, Red Lead.

Sanderich --- Lunar Spittle, White Ore, White Magnet which attracts iron, Yellow *Orpiment* --- the thing we seek --- *Realgar, Minium, Spirit* which makes Red, also a White Sandarach.

Sandix --- A Wild Herb, Red Earth, Philosophical Paul, Red *Orpiment*.

Sanguis --- Blood is *Orpiment*, that is, the Stone which is not yet perfect, the Philosophical Water which gives life and unites, according to Morien...

Sira --- *Orpiment*.

Soot of Metals --- *Arsenic*.

Speculum Album --- Precipitated *Arsenic*.

Speculum Citrinum --- Citrine Arsenic.

Spiritus Chymicae --- The Spirits of Chemistry are seven in number: (1) Black Quicksilver; (2) Red Sulphur; (3) Yellow *Orpiment*; (4) Green Sal Ammoniac. These four are living as they come from the ore, or dead when they are melted. Marcasite, Bismuth, and Tutty (out of Venus and Mercury) complete the list, and are called spirits, because they admit of elevation, and because they escape fire.

Spodos --- (1) Ash-coloured Soot, heavier than Pompholix. A grayish-black, Crystalline Arsenic; (2) Yellow Crystalline Arsenic, from the refining furnaces of metals...

Sulphur --- Sulphur is the seed of the stone, and is of two kinds --- an external, whereby the internal is born in Mercury, which, being earthy, combustible, useless, is removed as menstrual water from a child. The internal Sulphur is the power which makes and prepares the body and cannot be separated from it, because it is inherent, congenital in its very heart and substance. It is originally white, becomes red by means of heat, just as food in the belly by means of the liver, and is the form of the matter, the soul and ferment of the stone, the husband, the king, and bridegroom --- Red *Arsenic*, Burnt Ashes, our Gold [etc.]...

Sulphur Rubeum --- *Arsenic*.

Terra Rubea --- *i.e.*, *Orpiment*.

Thaphneus --- A Cleansed and Purged Medicine, a Preparation of *Arsenic* (?).

Ventus Rubeus --- Red *Orpiment*.

Virgin --- The Moon or Mercurial Water of the Sages, after it has been purified from the unclean and *Arsenical* Sulphurs with which it has been combined in the mines...

Water --- *Arsenical* Water. The Green Lion of the Philosophers. [N.B.: --- *Orpiment* in ammonia water].

Yridis, or *Yride* --- That is, *Orpiment*.

Zanere --- *Orpiment*.

Zarnich --- That is, *Orpiment*, called also *Zarnec*, *Zarneck*, and *Zarne*.

Zericum --- That is, a kind of *Arsenic*.

Zernic --- The *Orpiment* of the Philosophers.

Solinus Saltzal ~ Fountain of Philosophical Salts

Behold, now I have doubled mercury in my possession: Now I own it --- white lily, powder of adamantine, chief central poison of the dragon, spirit of *arsenic*, green lion, incombustible spirit of the moon, life and death of all metals, moist radical, universal dissolving nutriment, true menstruum of the philosophers, which without doing any harm reduces metal to first matter. This is the true water for sprinkling, in which the living seeds of metal inhere, and from which other metals can be produced...

William von Schroeder ~ Instructions Respecting the Art of Transmutation

Plinius in his 33 Book of *Natural History*, says: that there exists a process whereby Gold is made by means of *orpiment*, a process which invited the Emperor Caligula, a prince very covetous of Riches, to cause some men to work a great quantity of *orpiment*; by which operation perfect Gold was procured, but so small a quantity that the Emperor had reason to repent of his avarice...

It is yet fresh in memory, that not long ago a Hollander, a goldsmith, of the name of Sommer resided in Vienna, who fixed out of a Tincture of mercury into pure Silver.

I have made the Experiment with my own hands; I have seen his Medicine under two forms... I have once seen the operation of preparing the Medicine, which was performed in 16 hours, in a strong fire, in the open air, on account of the poisonous fumes.

The Basis of the Medicine was a fixed *Arsenic*, which fixation, I found, had been made with Borax in a crucible...

In regard to the Most Universal Subject out of which Raymundus Lully, Bernhardus Trevisanus and Basilius Valentinus have made the most Universal Tincture, it is called Electrum Immaturatum...

Note further that Sulphur and Mercury or Sulphur and *Arsenic* are the first seminal principles of all the metals. These two principles are certainly the most heterogeneous and most natural Keys to dissolve the metals radically, in order that death and Regeneration may follow.

When such a Regulus is melted, it imbibes all the Metals, which you put into it, and those metals, when afterwards treated and distilled... form a metallic oil in the same manner as if you had used Regulus Antimony-Mars. The Regulus of *Realgar* or *Orpiment* absorbs metals quicker than the Regulus of Antimony, and renders the metals more volatile...

[*Sigismund Bacstrom's Notes (1797)*] --- Baron Schroeder called his subject an unripe Electrum, so does Paracelsus who names it Electrum Minerale Immaturatum. *Auripigmentum* as well as Cinnabar and Antimony is an Immature Electrum, where the first metallic principles are found.

Limojon de St. Didier (A. Toussaint) ~ *Hermetic Triumph*

Eudoxus --- These expressions should not seem strange to you, the Philosophers themselves call their Stone dragon, and serpent, which infects all things with its venom. Its substance in effect, and its vapour, are a poison, which the Philosopher knows how to change into an Theriac by the preparation, and by coction. The stone also is the Enemy of Metals, since it destroys them, and devours them. The Cosmopolite says that there is a metal, and a steel, which is as the water of metals, which has the power to consume the metals, that nothing but the radical moisture of the sun and of the moon can resist it. Take care however, not to confound here the Stone of the Philosophers, with the Philosophical Stone; because if the first like a veritable dragon, destroys, and devours the imperfect metals; the second as a sovereign medicine, transmutes them into perfect metals, and renders the perfect more than perfect, and fit to perfect the imperfect.

Bernhard de Trevisan ~ *Verbum Dismissum*

All this business then is nothing else but to create Sulphur of Nature and reduce the composition to its First Matter of the Metallick kind, for as Albertus saith in his *Book of Minerals*; "We must not so much alter or distance our Stone from the nature of Metals". Know then that this Compound is the substance out of which ought to be drawn the Sulphur of nature by comforting it, and nourishing it in joining to this substance the Mineral Virtue, to the end it may be made a new Nature stript from all its Sulphureous terrestrity and corruption and all phlegmatic humidity, hindering digestion. It is further to be observed that according to the divers alterations or change of the one and the same Matter in digestion, divers names are imposed on it by the Philosophers according to its divers complexions, some have called it a coagulating pressure, some Azoc, *Arsenic*, others Album and tincture illuminating all bodies, some have called it, Philosophical Egg, for a Egg is composed of three parts, viz., Shell, White, and the Yolk, so is compounded out Philosophical Egg, or Body, Soul and Spirit. Although in truth our Stone is but one thing according to Body, Spirit and Soul, but according to the divers reason and intentions of Philosophy, is now called one Thing, and then another, which Plato meant when he said, "The Matter flows infinitely or always, if the Form stay not its flux", so is it Trinity in Unity, and Unity in Trinity, for there is Body, Soul and Spirit. There is also Sulphur, Mercury and *Arsenic*, for the Soul breathing, that is casting out its Vapours by *Arsenic* Works in conjoining Mercury of which philosophers say that the property of *Arsenic* is to breathe, or respire, the property of Sulphur is to coagulate or congeal Mercury, nevertheless this Sulphur, this *Arsenic* and this Mercury are not those the vulgar think of which are not those venomous Spirits the Apothecaries sell, but the Spirits of the Apothecaries are those vulgar Spirits, theirs are more of imperfection and corruption, to prejudice rather than repair imperfect Metals. Wherefore it cannot give perfection and incorruption to them, which perfection ought to be given by our Medium, Vainly therefore do those Sophisters work, who endeavor to make the Elixir, from such venomous Spirits full of corruption. For certainly, in no other thing is lodged the Truth of the Sovereign subtilty of Nature, but in the three matters above said, to wit, Sulphur, *Arsenic* and Mercury Philosophical wherein the reparation and total perfection of Bodies that are to be purged, lodges, only all the Philosophers have imposed divers names on our Stone...

This Sulphur so sublimed, no whiteness in the world exceeds it, for it is divested of all corruptible things, and is a new nature, a Quintessence arising from the pure parts of the four Elements. T'is the Sulphur of Nature, *Arsenic*, not burning, the incomparable treasure, the Joy of Philosophers, and the Delight so much desired by them, the White, Clear and Foliate earth, the Bird of Hermes, the Daughter of the Great Secret, and the new White Black Bird whose Feathers exceed Crystalline Brightness, White as Snow, of clean subtilty and agility...

Another translation (by Patrick Smith) --- Know therefore that this Compote is that Substance from which the Sulphur of Nature must be withdrawn by comforting and nourishing, by putting the mineral Virtue into this Substance, so that finally a new Nature is made, stript of all superfluous and corrupting terrestrities, and of all phlegmatic humidities, which hinder the Digestion. At which point it is to be observed that, according to the diverse alterations or mutations of one same Matter in its Digestion, diverse names are imposed on it by the Philosophers; and according to different tempers, some have called this Compote coagulating or thickening Rennet, while others have names it Sulphur, *Arsenic*, Azote, Alum, Tincture illuminating all Bodies, and the Egg of the Philosophers: For as an Egg is composed of three things, namely, of the shell, the white and the yellow; likewise our physic is composed of Body, Soul, and Spirit, although our Stone is indeed one same thing, according to the Body, the Soul, and the Spirit; but according to diverse reasons and intentions of the Philosophers, it is presently called one thing, and anon another; which Plato has us to understand when he said that the Matter flows endlessly, that is to say, always, if the form does not arrest its flux.

Thus it is a Trinity in Unity, and a Unity in Trinity; because there are Body, Soul and Spirit; there are also Sulphur, Mercury and *Arsenic*: for the Sulphur, breathing, that is to say, casting out its vapor into *Arsenic*, operates by coupling the Mercury; and the Philosophers say that the property of *Arsenic* is to breath, and that the property of Sulphur is to coagulate, to congeal and to arrest the Mercury. Yet this Sulphur, *Arsenic* and mercury are not those venomous Spirits which the Apothecaries sell; but they are the Spirits of the Philosophers which should give our Medicine; whereas the other Spirits can give nothing for the perfection of Metals.

It is therefore in vain that labor those Sophists who make their Elixir from such venomous Spirits filled with corruption. For certainly the truth of the sovereign subtlety of Nature is in no other thing, than in these three Things --- viz., Sulphur, *Arsenic*, and Philosophic Mercury --- in which alone is the reparation and complete perfection of the Bodies, which must be purged and purified.

Urbigeris ~ *Aphorisma Urbigeris*

The imperfect metals contain two factors which they can impart to the imperfect: tincture or fixation. For some, because they are tinged with a pure Sulphur, that is, with a white and red one, and are fixed, can therefore also tinge perfectly if they are prepared with their own Sulphur and *Arsenic*. Otherwise, they do not have the power to augment their tincture.

Basil Valentine ~ *Triumphal Chariot of Antimony*

Against these I do in a special manner exclaim and protest, against these, I say, who (ignorant of Preparation) exhibit Poison to Men: for Mercury, *Auripigment*, Antimony, and such like, are venoms in their Substance, and unless rightly prepared remain Venoms. Yet after a

Legitimate Preparation all their Venenosity is broke, extinguished and expelled, so that no part of them remains, but what is Medicine, which resists all internal Venoms, although most deeply rooted, and radically destroys the same. For Venom, being in such a manner prepared, as it can no longer hurt, resists all Poison, which is not as yet prepared, and so very well prepares and subjugates it, as it is compelled with the same to put off its own venomous Nature.

Thomas & Rebecca Vaughan ~ *Aqua Vitae: Non Vitis*

The Whole Art --- There is one universal way, that is all, and it is made as follows, nor by any other way. Take water from the bath and congeal it with its prepared sulphur, proper and briny. Sublime the congealed air, after the fluid has been first cast off, and you will have sal ammoniac of the philosophers.

Now: Take our *arsenic*; let it flow through resin, and be rarified in its chambers with moderate fire. Grind what has been rarified with caustic magnesia, and concoct it into cinnabar.

Of this Cinnabar, Join one part with a half part of our sal ammoniac; and let the mixture be thickened with proper phlegm, and distilled with a bare flame, and it will be made. This is sophic mercury, and the universal menstruum, and first philosophical water, without which nothing is made...

Arnold's Stone from the Juice of Three Herbs --- Take sublimated *arsenic*, or its spittle. Grind it with calcinated magnesia, dissolved, dried, and extracted, as you know. Add congealed mercury, as follows.

Dissolve mercury in aqua fortis and draw out; decoct it in cold distilled water, and then draw out, and sublime. Because it will settle, dissolve in distilled vinegar, draw out, and dry. Then join with sulphur and *arsenic*, and it will be made...

Various and True Ways to the First Metallic Water --- The accustomed method is, That calcinated juice be ground with sublimated *arsenic* or with white precipitated powder...

Our Mineral Tartar Fixes all sublimated spirits and makes wonderful things with ammonia, mercury and *arsenic*...

Arnold de Villa Nova ~ *Lucidary*

...But the powder ascending upwards from the faeces is ashes extracted from ashes, and earth sublimed and honoured, but that which remains beneath is ashes of ashes, and the lower ashes is to be condemned and disposed as faeces and dross. Make, therefore, a difference between the clear and bright thereof, because when it is most white and ascends like snow then it will be accomplished. Gather it, therefore, warily that it fly not away in fume, because it is a good thing to be sought for, a white foliated earth, congealing that which is to be congealed and cleansing that which is to be cleansed, and purifying *Arsenic* and white Sulphur, of which Aristotle says that it is the best thing the Alchemists can take, that of it they may make Silver...

An example from minerals: Salts, Inks, Alums, Arsenic, Auripigment --- All metals are ductile and liquefiable which draw their original from Mercury, because the matter of them, out of a watery substance mixed with an earthy substance, by a strong commixtion that the one cannot be separated from the other, wherefore that watery substance is congealed with cold more after the action of heat and therefore they will be more fabrile or ductile, and the water only is not congealed but only with the earthly dryness which alters the wateryness, when as there is no unctuous moisture in them, because the congealing of them is of earthly dryness. Therefore they are not easily dissolved unless by the vehement action of the heat in them, according to which they are most easily commixt. But there are lesser and middle minerals which take not their original from Mercury, and of these are Salts which easily melt in moisture, as Alum, simple Salt, Salt Armonick, stony Salt and all kinds of salts. And surely they have virtue in them. Neither do they easily melt with moisture only, as *Auripigmentum*, *Arsenic* and Sulphur, when as the wateryness of sulphurous bodies is mixed with slimy earth, by strong commixtion, with the fervency of heat, until they be made virtuous and then they are coagulated of cold...

For many of the ignorant sort have laboured and do yet labour in these vegetable and sensible things, where they have found out no truth, but certain humilities which we will declare to the ignorant that they may avoid the deceits. For they have extracted a long time out of these things, afterwards to be spoken of, which they call artificial Argent vive and oils and waters, which they named the four elements, namely water, earth, air, and fire, and Salt Armonick, *Arsenic*, Sulphur and *Auripigmentum*, which they could have bought cheaper in the market and had sooner brought it to pass...

And there are other Alchemists labouring in lesser minerals, that is to say in four Spirits as in common Sulphur, *Arsenic*, *Auripigmentum*, and Salt Ammoniac being desirous to make a tincture but this they cannot do as is manifest by the definition of the tincture...

Arnold de Villa Nova ~ *Rosarius*

Chapter II. Whence the Physical Stone is Extracted --- Our physical Stone, or Medicine, may be obtained from all metals; but it is found in the highest perfection in gold and silver. Without the Sun and its shadow, the Moon, we can have no tingeing quicksilver, and he is foolish who attempts to accomplish our Magistry in their absence. On the other hand he who knows how to tinge quicksilver with the Sun and Moon is in possession of our arcanum which may become red sulphur, but at first is called white sulphur. Gold is the father, and silver the mother of the proximate substance of our Stone, for out of these bodies, prepared with their sulphur or *arsenic*, is our medicine elicited. It may, indeed, be possible to derive it from other bodies, but it is found nearer to the hand, and more easily, in quicksilver, which is the father of those lights and the root of all metals. Of this were they all made, and into the same all of them return. That which is now our Stone is not quicksilver, but once formed part of it, and it is this which imparts to it its brightness, preserves it from combustion, and is the cause of its perfection. Do not work with anything except Mercury and the Sun for the Sun, and Mercury and the Moon for the Moon.

Arthur E. Waite ~ *Paracelsian Lexicon*

Arsenic --- The arcane sense of the term refers it to the Mercury of the Philosophers, and at times to the matter of the philosophers when in the stage of putrefaction. It is stated, or supposed to be stated, in one of the Sibylline verses, that the name of the matter whence philosophical Mercury is extracted consists of nine letters. Of these, four are vowels and the rest consonants. One of the syllables is composed of three letters, the rest are of two. Hence it was concluded that *Arsenicum* was the name in question, more especially as the philosophers affirm that their matter is a deadly poison. However, the matter of the stone, according to other authorities, is not *arsenic*, though it is the matter of which *arsenic* and all mixed bodies are formed. Nor can the Mercury of the Sages be extracted from *arsenic*, for *arsenic* is sold by apothecaries and the mineral of Mercury is found everywhere. The name has been given by some other writers to the matter in putrefaction, because then it is a most subtle and violent poison. Sometimes it refers to the volatile principle of the sages, which performs the office of female. It is their Mercury, their Moon, their Venus, their vegetable Saturn, their green Lion, etc. The *arsenic* of the philosophers whitens gold, even as the common *arsenic* whitens copper.

Fuligo Mercurii --- The fuligo Metallorum is properly *arsenic* in alchemical symbolism, but it often stands for Mercury.

Ogertum or Ogertinum---i.e., *Orpiment*.

Yliadum, Yliadus Yleidus, etc. --- The interior spirit which informs the members of every body. Outwardly it generates health, but inwardly disease in humanity. It also leads on to the crisis in diseases. Disease is the resolution of Yliadus. The reason of this seems to be that the interior spirit contains many species of salts. The resolution of *arsenic* in the body causes plague; the resolution of ogertinum, or *orpiment*, causes pleurisy...

John Webster ~ *Metallographia: Or, An History of Metals*

III. Of the Generation of Metals, and whether they Grow, and have Vegetability --- The author of *Arcae Arca*. [*Theatr. Chym.*] from Lully and Mathesius tells us this... 'That the matter (viz. of Metals) before it be coagulated into a metallick form, is like unto Butter made of the Cream of milk, which may be clamed or spread as Butter, which he (he meaneth Mathesius) calleth *Gur*, which I also (saith the Author quoted) have found in the Mines, where Nature hath produced Lead'. To ratifie this, and to put it forth of doubt, I shall relate what I my self have found, and how have some pounds of it by me. Inquiring after this *Gur* of all persons that I could hear of that wrought in Mines, there could some of them tell me, that often in the sudden breaking of some Stone, there would be a liquor spurt forth bright and shining, which they regarded not, because they knew no use nor benefit to be made of it, nor knew how to save or keep it. At last, meeting with an ingenious young man, whose Father had all his days been experienced in working in the Mines of Lead in Darbyshire, and he therein also had been trained up from his young years: one whom I had formerly much employed in seeking and procuring for me, several sorts of Oars, Minerals, Stones and Earths, wherein I had found him very faithful and diligent; and discoursing with him about what liquid juices or waters he had ever observed in digging in the Mines, and instructing him in all that I understood of such things, according as I had read in Paracelsus, Helmont, or other writers, he thought the thing might be feasible. So according to my directions, providing himself with some wooden dishes to take with him, it was not very long ere he brought me a large quantity, found in a trench; where he got good store of Lead Ore, such as the Miners account the best for their purpose; that is, such as will most easily run, or melt, and yield the most Lead: the description of which I shall here give as fully as I am able. It was (as he most faithfully affirmed) when he first broke the hard stone in which it was enclosed, some of it especially very thin and liquid, so as he could hardly preserve it; and the other as soft as Butter, and the inmost part of that he brought was as soft as Butter, to my touch and feeling, and the outside more hard; for the longer it lay to the air, the harder it grew. It was of a grayish or whitish colour, and would spread with ones finger upon a table, or smooth piece of wood, as like Butter as could be, but not so fatty, or greasie: and as Helmons saith, was like unto soft soap, but most of it something harder, for he had brought it near two miles to me, and though he had made haste, yet it had hardened by the air in the way. He also brought divers pieces of the hard grey stone, in whose holes and cavities it lay, and some of it in the midst, little pieces of lead, bright and pure Ore. So that if a man may give any reasonable conjecture, one would verily imagine that the piece of Lead inclosed in this soft matter, did in continuance of time, change, or ripen it into its own Nature; which I will not positively affirm, but commend it to further trial and inquiry, for there had need be any careful experiments, before an Opinion be raised from the. But I remember that the Colliers and those that seek for Coal-mines, find in their boring or other working, such matter as they call Crow-stone, Coal-stone, and Soap-stone; the last of which is a black substance like fat Clay, and which (as the *Gur*) spread like Butter, but will soon harden in the air, into an hard matter that will hardly be cut with a knife, and somewhat harder then the other by: which both make me more and more admire the skill and knowledge of Paracelsus and Helmont, and to wonder at our ignorance in these things.

An observation agreeable to this (as I conceive) that I have related of mine own experience, is that of Helmont, which he gives us thus... 'For it often happeneth that a Mine-man in the Pits breaking stones, the wall is opened and shews a chink from whence a water hath flowed of a somewhat whitish greenness: which by and by hath thickened, like soft Soap (I call it *Bur*) and forthwith the somewhat greenish paleness being changed, it groweth yellowish, or whitish, or more fully greenish. This I would have the Reader to consider seriously of, in comparing it with the former relation; and to note, that whereas he calls it *Bur*, I suspect the Print is false, and that it ought to read *Gur*...

Zosimos ~ *On the Evaporation of the Divine Water*

Taking the *orpiment*, whiten it in the following manner. Make a fatty paste, of the size of a small very thin mirror, pierce it with small holes, in the manner of a sieve, and place above it a small receptacle, well adjusted, containing some sulphur. Put into the sieve some *arsenic*, as much as you wish. After having covered it with another receptacle, and having sealed the points of junction, after two days and two nights you will find ceruse [usually white lead; here, *arsenic trioxide*]... This is the construction of the apparatus...

Modern Transmutations

Chapter 1

Transmutations of Silver

- (1) **M. Rulandus**
 - (2) **T. Tiffereau**
 - (3) **R. Hunter**
 - (4) **A. Waite**
 - (5) **Fulcanelli**
 - (6) **F. Jollivet-Castelot**
 - (7) **S. Emmens**
 - (8) **C. Lea**
 - (9) **J. Champion**
 - (10) **References**
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Gold can be manufactured from other elements by several methods. The transmutation of silver to gold is the least difficult to accomplish. The methods developed by Francois Jollivet-Castelot offer a good chance of success, albeit with great danger due to the use of arsenic. The penultimate means of transmutation is the Philosophers' Stone of any degree, but that is another matter altogether.

Fulcanelli and others Adepts, however, affirm that experiments such as these are not Alchemy, but rather "hyper-chemistry" or "archymy". The following procedures are included in this collection in order to afford a wider perspective to all inquirers, and to console those who fail to complete the Ars Magna.

Most of the 19th and 20th century experimenters in this genre used a variety of "wet" techniques (refluxing with nitric acid, etc.), or "dry" transmutations with alloys in the furnace. Dr. Stephen Emmens used high-pressure hammering (500 tons/sq. in.) of silver at low temperature, followed by fluxing, granulation, more hammering, treatment with "modified nitric acid", and refining.

(1) **Martin Rulandus ~ A Lexicon of Alchemy**

Gold --- Its Artificial Production ~ It is not only by the common operations of mining and digging in the profundities of the earth that it is possible to obtain Gold. It is quite within the powers of Art to imitate Nature in this matter, for Art perfects Nature in this as in many other things. We propose to provide in this place an account of a formal experiment, the worth of which has been tested over and over again, and has in fact become little less than familiar among operators in the pursuit of the Grand Work. In order to perform it a large crucible must be provided, and it must be of such a quality as will be able to resist the action of intense heat. This crucible must be set over a burning furnace, and at the bottom of the vessel there must be strewn Powder of Colophony (a kind of resin) to about the thickness of the little finger. Above this undermost layer there must be another layer of Fine Powder of Iron --- that is, the Finest Iron Filings --- which shall be of the same thickness. Subsequently, the filings must be covered with a little Red Sulphur. Then the fire in the furnace must be increased till the iron filings have passed into a liquid condition. The next operation is to throw in Borax --- that kind which is made use of by goldsmiths for melting gold. To this must be added a like quantity of Red Arsenic, and as much Pure Silver as will be equivalent to the weight of the Iron Filings. Let the entire composition undergo coction by driving the furnace, taking care at the same time not to inhale the steam, on account of the arsenic in the vessel. Take then another crucible into which, by inclining the first vessel, you must pour the cocted matter, having previously stirred it effectually with an iron spatula. Proceed in such a manner that the composition will flow into the second crucible in a purified state, and devoid of recremental matter. By means of the Water of Separation, the Gold will be precipitated to the bottom. When it has been collected, let it be melted in a crucible, and the result will be good Gold, which will repay all pains and expense which have been devoted to its production. This chemical secret is contained in the 'Hermetic Cabinet', and the facility with which the experiment can be performed has led many persons to undertake it. The authority cited in support of it is no less than that of the most learned Basil Valentine, who also affirms that the operation of the Grand Work of the Philosophers can be performed in less than three or four days, that the cost should not exceed three or four florins, and a few earthen vessels are sufficient for the whole experiment.

(2) **Theodore Tiffereau**

Between 1854-55, Theodore Tiffereau submitted six memoirs to the French Academie des Sciences concerning transmutations of silver to gold. He published a compilation of the papers (*Les Metaux sont des Corps Composes*) in 1855.(25-27)

Tiffereau conducted his experiments at considerable expense while supporting himself making daguerotypes in Mexico. Tiffereau claimed that Mexican silver possesses peculiar qualities that lend to its augmentation as gold (Dr. Emmens also used Mexican silver in his work). While he claimed success in principle, he made no capital gains. Tiffereau demonstrated his process at the French Mint in Paris before the assayer M. Levol, but the results were unsatisfactory.

Tiffereau attempted many modifications of his techniques, and claimed that certain experimental conditions influence the transmutation of silver to gold:

- 1) Pure silver filings were used, sometimes mixed with pure copper filings (Ag 9:1 Cu) and traces of zinc, iron, alumina and silica;
- 2) Trace amounts of gold catalyze the reaction;
- 3) The silver was refluxed with concentrated nitric acid, hyponitrous acid, and nitrogen protozide or deuterioxide;
- 4) Concentrated sulfuric acid was used at times;
- 5) The acids were exposed to sunlight to "solarize" them. Tiffereau complained that the French sun was not so effective as the Mexican;
- 6) Halides and sulfur in the presence of oxides of nitrogen improved the reaction, and so did ozone;
- 7) Prolonged reaction time increased yields.

Tiffereau attributed the production of gold in the earth to the action of the "microbe of gold". This was confirmed in the 1980s by the discovery that placer gold nuggets form around a nucleus of *bacillus cereus*.

The following experiment is typical of Tiffereau's general methods:

"After having exposed, over two days, pure nitric acid to the action of solar rays, I added pure silver filings with pure copper filings in the proportions of the alloy of money (9:1). A lively reaction manifested, accompanied with a very abundant deposit of intact filings agglomerated in a mass.

"The disengagement of nitrous gas continued without interruption, and I left the liquid as is over twelve days. I noted that the aggregate deposit was augmented sensibly in volume. I then added a little water to the dissolution in which the product had precipitated, and again abandoned the liquid to rest five days. During this time, new vapors unceasingly disengaged.

"The five days having passed, I raised the liquid just to ebullition, which I maintained until the nitrous vapors ceased disengagement, after which I evaporated it to dryness.

"The matter obtained from the dessication is dry, dull, blackish-green; it did not offer an appearance of crystallization...

"Placing the matter again in pure nitric acid and boiling six hours, I saw the matter become clear green without ceasing to aggregate in small masses. I added a new quantity of pure concentrated nitric acid and boiled it anew; it is then that I finally saw the disaggregated matter take the brilliance of natural gold...

[The third test in this series] "presented an extraordinary phenomenon to be noted: the quantity of the alloy that I used experienced a transformation entirely to pure gold."

Carey Lea suggested that Tiffereau and other experimenters had merely prepared a gold-colored form of allotropic silver.

(3) R. M. Hunter

In 1908, Sir Henry Baskerville made mention of a contemporary claim to the production of artificial gold:

"Among the many communications reaching the writer, one is of more than passing interest. Mr. R.M. Hunter, of Philadelphia, has written concerning 'synthetic gold' as follows:

"I have so perfected the process that in my judgment, based on my actual experience, gold may be manufactured at enormous profit, and to this end I have designed a plant to be erected in Philadelphia and am at this moment negotiating for \$500,000 capital for its erection. I realize that the public and most scientific men are adverse to the belief in the possibility of such an enterprise, but I know what I am doing and can afford to allow public sentiment to follow its own course.

"Enclosed with the letter was an affirmative affidavit. On request, Mr. Hunter promptly forwarded me samples of silver in which the gold is 'growing' and some 'grown-up' gold, said to have been produced by his secret process. I have not made analyses of the samples." (5)

(4) Arthur E. Waite

The eminent occultist Arthur E. Waite wrote *A Collection of Alchemical Processes* which includes a segment entitled "Silver Transmuted Into Gold By The Action Of Light":

"In the focus of a Burning-Glass, 12 inches in diameter, place a glass Flask, 2 inches in diameter, containing Nitric Acid, diluted with its own volume of water:

"Pour into the Nitric Acid, alternately, small quantities of a Solution of Nitrate of Silver and of Muriatic acid, the object being to cause the Chloride of Silver to form a minutely divided state, so as to produce a milky fluid, into the interior of which the brilliant convergent cone may pass, and the currents generated in the Flask by the Heat may so drift all the Chloride through the Light.

"The Chloride, if otherwise exposed to the Sun, merely blackens on the surface, the interior parts undergoing no change: This difficulty, therefore, has to be avoided. The Burning-Glass promptly brings on a decomposition of the salt, evolving, on the one hand, Chlorine, and disengaging a metal on the other. Supposing the experiment to last two or three entire hours, the effect will then be equal to a continuous midday sun of some 72 hours. The Metal becomes disengaged very well. But what is it? It cannot be silver, since Nitric acid has no action on it. It burnishes in an Agate Mortar, but its reflection is not like that of silver, for it is yellowish, like that of Gold.

"The Light must therefore have so transmuted the original silver as to enable it to exist in the presence of Nitric Acid." (28)

(5) Fulcanelli

The renowned master Fulcanelli published this transmutation of silver in *Les Demeures Philosophales*:

"The simplest alchemic procedure consists in utilizing the effect of violent reactions --- those of acids on the bases --- to provoke in the midst of the effervescence the reunion of pure parts, their new arrangement being irreducible. In this manner, starting from a metal close to gold --- preferably silver --- it is possible to produce a small quantity of the precious metal. Here is, in this order of research, an elementary operation whose success we guarantee, providing the instructions are carefully followed.

"Empty into a glass retort, tall and tubular, one-third of its capacity in pure nitric acid. Adapt to the receiver an escape tube and arrange the apparatus in a sand bath.

"Gently heat the apparatus short of reaching the boiling point for the acid (83° C). Turn off the fire, open the tube, and introduce a small portion of virgin silver, or of cupel, free from gold traces. When the emission of peroxide of azote has stopped and when the effervescence has quieted, let drop into the liquor a second portion of pure silver. Repeat introducing metal, with no hurry, until the boiling and issuing of red vapors manifest little energy, which is indicative of the property of saturation. Add nothing more. Let it rest for half an hour, then cautiously decant your clear solution into a beaker while it is still warm. You will find a thin deposit in the form of black sand. Wash this with lukewarm water, and let it fall into a small porcelain capsule. You will recognize by making the assays that the precipitate is insoluble in hydrochloric acid, just as it also is in nitric acid. Aqua regia will dissolve it and yields a magnificent yellow solution, exactly like gold trichloride. Use distilled water to dilute this liquor; precipitate from a zinc blade. An amorphous powder will be obtained, very fine, matte, of reddish brown coloration, identical to that given by natural gold reduced in the same manner. Wash well and dessicate this pulvurent precipitate. By compression on a sheet of glass or marble, it will give you a brilliant, coherent lamina with a beautiful yellow sheen by reflection, green by transparence, having the look and superficial characteristics of the purest gold.

"To increase with a new quantity this miniscule deposit, you may repeat the operation as many times as you please. In this case, take up again the clear solution of silver nitrate diluted from the first washing water; reduce the metal with zinc or copper. Decant this silver into a powder and use it for your second dissolution." (14)

(6) Francois Jollivet-Castelot

Francois Jollivet-Castelot was the Secretary General (and later President) of the Alchemical Society of France (founded in 1896). He also edited the Society's journal *L'Hyperchemie*, and served as a special delegate of the Supreme Council of Martinists. He authored several books and articles on alchemy and "hyperchemistry", a system of non-occult chemical methods of transmutation. (17-20)

Jollivet-Castelot began experimenting with transmutations of silver in 1908. In 1920, he published *La Fabrication Chimique de L'Or* to report his successes using both "wet" and "dry" methods of transmutation:

"By means of catalytic action I have succeeded in manufacturing gold chemically by acting on silver with arsenic and antimony sulfides, tellurium, and tin.

"This process gives a very high yield which has already been confirmed by several chemists, in particular by Mr. Ballandras, Chemical Engineer of Lyons, and Mr. Outon, Chemical Engineer of Buenos Aires...

"The object of the present leaflet is to enable chemists to repeat and check my experiments in their turn...

"I made a mixture composed of 3 gr of chemically pure silver and 1 gr of chemically pure orpiment and placed it in 36° nitric acid for several months cold and then brought it to ebullition. The liquid was kept at the boiling point for several days. A small quantity of the material became detached at this moment and formed a pulvurent black deposit. When no further action took place, I decanted off the solution and collected the insoluble residue. This residue was attacked by aqua regia at the boiling point until it was almost completely dissolved; the liquor when decanted and filtered was analyzed and gave all the characteristic reactions for gold.... [December 1925]

"I acted on 22 gr of chemically pure silver ... and on 3.5 gr of chemically pure orpiment... The mixture was heated to about 1600° C In a metal smelting furnace for about three quarters of an hour. The residue obtained was again melted with the addition of orpiment. After having hammered for half an hour and remelted with the addition of small quantities of orpiment every ten minutes, it was withdrawn.

"After cooling and the addition of chemically pure antimony sulfide, it was again put back into the furnace, small quantities of orpiment being thrown in every five minutes. The residue obtained had a dark metallic tint. After hammering it became slightly golden.

"The residue dissolved in chemically pure 36° nitric acid first cold and then hot, gave an abundant pulvurent deposit. This deposit after being washed and treated with ammonia to dissolve the arsenic and antimony salts was completely dissolved in aqua regia. The liquor then being chlorinated and filtered was subjected to the reagents of platinum and gold. Mr. Andre Vandenberghe who was acting as preparator for this experiment, had thought that in accordance with the law of the evolution of matter, the transmutation of bodies into gold should be preceded or accompanied by their transmutation into platinum...

"The reactions of gold were quite characteristic; the reactions of platinum also seemed to reveal its presence.

"The quantity of gold obtained in this experiment was about one gramme.

"I submit the hypothesis that the arsenic acts as a catalyst and the sulfur as a ferment in this transmutation." (December 1925; Douai, France)...

"As a sequel to my previous work on the artificial synthesis of gold, I have introduced tin into these new tests as it is also often associated with gold in Nature. The following is a description of this new process, thanks to which the percentage of gold obtained destroys all the objections that are raised with regard to impurities.

"I made an intimate mixture of 6 gr of chemically pure silver... 2 gr of antimony sulfide, 1 gr of orpiment, and one gr of tin... I then added the usual fluxes and then heated the whole in a crucible in the furnace to about 1100° C for about one hour, twice adding a small quantity of SbS.

"The residue obtained was treated for a long time in 36° nitric acid, first cold and then at the boiling point; the insoluble residue was next washed with distilled water, treated with ammonia, washed again and finally treated for a long time with boiling aqua regia.

"The liquor when filtered and subjected to the reagents of gold showed the presence of this metal in the form of abundant deposits which may be estimated at 0.05 gr in all, which is very high considering the 6 gr of silver employed. The deposits when collected and dried had a yellow green metallic color and possessed all the characteristics of gold...

"The addition of tin to the other bodies has certainly facilitated the reactions of the gold and increased the yield of this metal which can be manufactured artificially by my process, i.e., by synthesis and in measurable quantities.

"It would be very easy to show that, given the respective prices of gold and of the other substances that are used in my process to produce it, a profit could be obtained if the process were worked industrially, all the more so as the greater part of the silver employed can be recovered at each test..

"I believe I now hold the key to the regular and even industrial manufacture of gold.

"But the industrial question is voluntarily put aside from my thoughts, for my only object is the search for pure scientific truth."

In a correspondence to Jollivet-Castelot, Mr. Ballandras reported on "How I Succeeded In Making Gold According To The Process of Mr. Jollivet-Castelot: Dosage of gold obtained by the second method":

"From a mixture of 10 gr silver, 3 gr of tin, 3 gr of arsenic sulfide, and 3 gr of antimony sulfide, the residue which had been obtained was crushed as much as possible and subjected to a treatment of pure chloric acid like in the first method. However, in order to completely eliminate the silver and the tin employed, I scrupled to begin again the indicated treatments, that is as much to say that the powder which was obtained having been subdued first to the action of azotic acid, then washed with distilled water, then subdued to the action of chloric acid, then washed with distilled water, then once more washed with distilled water, and these different operations were begun once again with another portion of pure chloric acid... The insoluble residue was subdued to the prolonged action of aqua regia...

"It must be noted that this thing happened during the ebullition. The washed residue contained the slighter part of gold; this thing would be found dissolved in the last liquor which I obtained.

"After 18 hours of digestion at about 25°, I subdued the mixture to ebullition during 3 hours. After refrigeration, I filtered on glass wool and I looked if parts were not drawn along in suspense. I found nothing. Then, I decided to proceed to a circumstantial analysis of the liquor which I obtained...

"The quantity of gold which was obtained was 0.476 gr for 10 gr of silver employed, or 0.0476 gr of gold per gram of silver."

Jollivet-Castelot read this memorandum to the Academie Royal des Sciences (Belgium) on June 6, 1926:

"*A Recent Experiment In Transmutation* --- All my research work on transmutation since 1908 has started from the fact that gold is found in nature associated with antimony and arsenic sulfides as well as with tellurium, which is considered as a mineralizer of gold. I therefore considered that it was logical to introduce tellurium into the artificial combination of silver and arsenic and antimony sulfides that I make...

"I prepared a mixture composed of 6 gr of silver, 1 gr of native orpiment free of gold, 1 gr of antimony sulfide and 2 gr of tellurium... I added pure silica to the usual fluxes. This mixture was heated in the furnace in the usual way for one hour at about 1100° C. The residue obtained was of a blackish-grey color with violet reflections. It weighed 6.42 grams.

"When subjected to the action of nitric acid, the residue was attacked with difficulty and greenish metallic particles become detached. The solution was then decanted and a greenish-yellow residue remained which was kept at the boiling point of nitric acid for several hours. After decanting off the liquor once again, the residue, which had not changed, was washed, treated with

ammonia and then subjected to the action of boiling aqua regia in which it was entirely dissolved after boiling for several hours.

"[The solution was chlorinated and subjected to the reagents of gold with positive results, although] a certain amount of gold was certainly lost in this test just as in all my previous tests, for it is known that arsenic, antimony, and tellurium entrain gold in their fusion and their volatilization.

"In order to obviate this disadvantage, I had thought of making the vapors of arsenic acid and antimony sulfides and of tellurium act on the silver in fusion in a closed vessel by means of a special device...

"I consider it certain that if the vapors were allowed to bubble through the melted silver, a much higher yield of gold would be obtained than that I have obtained hitherto by an imperfect and too rapid contact of the bodies in presence, while it is undoubtedly necessary to make them react on one another in the vapor state in a closed vessel."

Mr. Louis Outon, a pharmaceutical chemist in Buenos Aires, reported to Jollivet-Castelot in a letter (July 26, 1927):

"Dear Sir... I have repeated the experiments... in my laboratory and am amazed at the results. For the moment, it is only the scientific side which interests me, since the cost of the gold obtained is often greater than the value of the metal..."

Mr. A. Ballandras also replicated the experiments and reported the results:

"I will not conceal the fact that I have often heard ironical remarks about processes by which he succeeded in manufacturing gold. I determined to check his tests with the greatest possible accuracy..."

"In a new quartz crucible, I placed 15 gr silver, 6 gr arsenic sulfide, 6 gr antimony sulfide. The crucible was heated at a temperature of 500° C and then for one hour and a half at 1100° C. At this moment the mass was fairly liquid... The crucible was then allowed to cool down. The reddish-brown residue obtained weighed exactly 23.742 gr, or a loss of 3.258 grams.

"I allowed this residue to cool in pure nitric acid in which the greater part was dissolved fairly easily. After prolonged boiling the liquor was filtered on a new glass wool. The resultant liquor was very clear and absolutely free of any particles.

"The glass wool was then macerated in aqua regia rich in hydrochloric; after 18 hours maceration, the whole was boiled for 3 hours. I again filtered on glass wool in order to separate any traces of the filter from the liquor... Any gold that might have been obtained would necessarily be found in the last liquor... It was of importance to prove its existence qualitatively at least.

"For this purpose, I tried the various standard reagents, the results being the following: 1) Oxalic acid: flakey precipitate; 2) Iron sulfate: glossy metallic black; 3) Tin chloride: peach pink precipitate; 4) Formol: rather light bluish coloration; 5) Sodium carbonate, potassium carbonate: light coloration after boiling; 6) Sodium hydroxide, potassium hydroxide: yellowish coloration, cloudy.

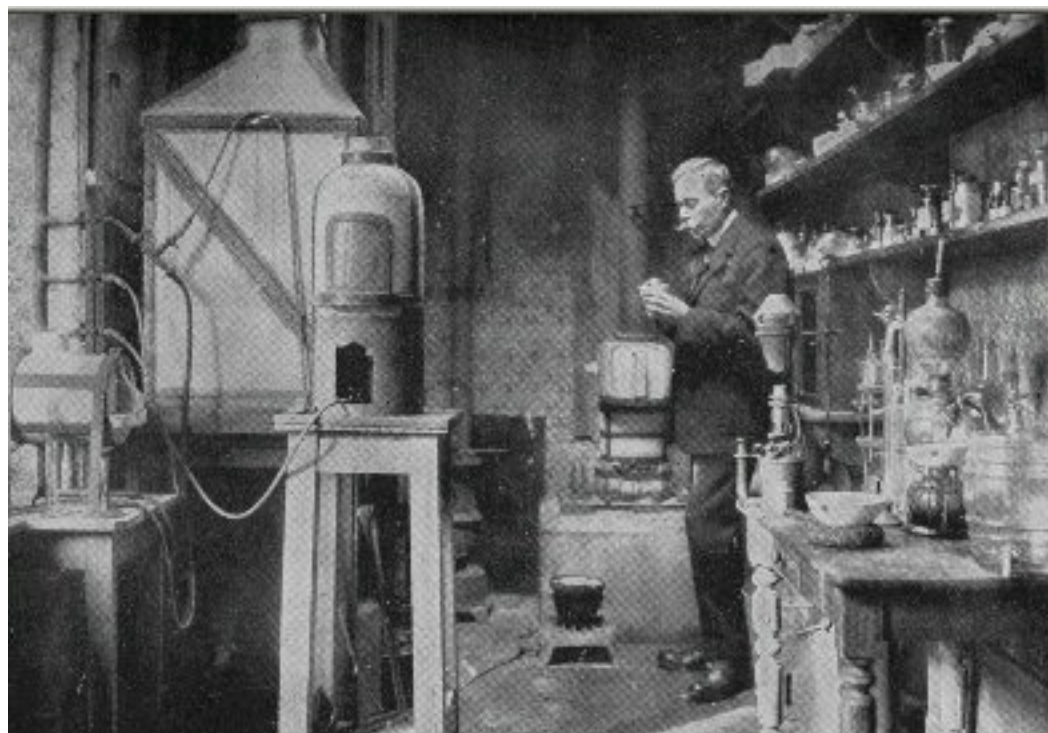
"These reactions are sufficiently characteristic and clearly prove the existence in the last liquor of a metal which, even if it is not gold, must nevertheless be placed very close to the latter... the metal obtained and gold must be perfectly isotopic.

"I have repeated this test several times and I have observed: 1) That the production of gold is a function of the rapidity with which the necessary heat is obtained; 2) That it is also a function of the degree of tightness of the crucible. A crucible that is closed as tightly as possible gives better results; 3) That the amount of gold obtained was not always uniform; some of the tests were absolutely sterile and I inferred that this was due to some defect in the mounting.

"I think there must be a certain temperature that should not be exceeded and that the external conditions of pressure and electricity must be of considerable importance."

In another experiment, Ballandras used silver (10 gr), tin (3 gr), orpiment (3 gr), and antimony sulfide (3 gr):

"After having operated as previously, I obtained a quantity of gold corresponding to 0.05 gr per gram of silver employed... This I consider to be a highly interesting result."



Francois Jollivet-Castelot

Early in 1897, the British chemist Stephen H. Emmens, then residing in New York, announced the discovery of a new element which fills the "vacant space existing in the sub-group of Group I", and which he thought to be the intermediate matter from which silver and gold are formed. Dr. Emmens said:

"Our claim is that the element in question is therefore neither silver nor gold, but which may, by our new physical methods, be converted into gold." (14)

In 1897, Dr. Emmens' Argentaurem Laboratory on Staten Island produced over 660 ounces of gold from silver and sold it to the U.S. Assay Office. He revealed a few historical and technical details of his transmutation process in his book, *Argentaurem Papers #1: Some Remarks Concerning Gravitation*:

"Our work, which converts silver into gold, had its origin in the course of certain investigations which I undertook for the purpose of preparing chemically pure nickel... in 1892. In attempting to prepare these pure metals [nickel and iron], a certain product was obtained which seemed to differ from anything recorded in the textbooks. The same product was subsequently found when the investigation was extended to the case of metallic cobalt... The phenomena observed afforded indications of the existence of some substance common to the whole of the elements in what is known as Series 4 of Group 8 of the classification of Chemical Elements... It appeared to us almost self-evident that if we were right in supposing a common substance to be present in any single series of elements, the same would hold good for each group.

"And as Group I of the classification contains the precious metals --- gold and silver ~ it was obvious that our time and attention should be directed to these metals rather than to any other...

"Our starting point, so far as silver and gold were concerned, was afforded by the remarkable discoveries of Mr. Carey Lea with regard to [colloidal silver]... It was found that... this subdivision of metallic silver was attended by very considerable changes in the physical properties of the substance... By certain physical methods and by the aid of a certain apparatus, we succeeded in bringing about a further subdivision of the silver. We were not surprised to find that the substance obtained differed so far from ordinary silver that it could no longer be regarded as the same elementary substance. It seemed to require a new name and a new chemical symbol. Inasmuch, therefore, as our theory was that this substance was common to both gold and silver, and in reality was the raw material out of which both gold and silver were constructed by the hand of nature, we named the substance Argentaurem...

"The next step was to ascertain whether this substance could be so treated as to be grouped into molecules of greater density than those of silver... We found that... Argentaurem can be aggregated into molecules having a density considerably superior to that of ordinary gold molecules. Whether we are right as to this or not, the condensed Argentaurem presents the appearance and is endowed with the properties of ordinary metallic gold...

"We do not consume any chemicals and other costly materials in our process; what we use is mainly energy in some of its various forms, such as heat, electricity, magnetism, gravity, cohesion, chemical affinity, x-rays and the like... Our chief source of expense is the time required for bringing about the desired molecular changes... One ounce of silver will produce three-quarters of an ounce of gold..." (6)

Herbert Fyfe reported that Dr. Emmens' process comprised five stages: 1) mechanical treatment; 2) fluxing and granulation; 3) mechanical treatment; 4) treatment with a "modified nitric acid", and 5) refining. Dr. Emmens said:

"I regard the mechanical treatment as the *causa causans*. The fluxing and granulation serve, I think, merely to render the molecular aggregate susceptible of displacement and rearrangement." (15)

The mechanical treatment was accomplished by means of Dr. Emmens' "Force Engine", which exerted pressures in excess of 500 tons/in² at very low temperatures. Step 4, using "modified nitric acid", contradicts the statement made elsewhere, that "we do not consume any chemicals... in our process." (4, 7-12, 15, 16, 23)

Dr. Emmens included a sample of Argentaurem and these instructions in a letter (21 May 1897) to Sir William Crookes:

"Take a Mexican dollar and dispose it in an apparatus which will prevent expansion or flow. Then subject it to heavy, rapid, and continuous beating under conditions of cold such as to prevent even a temporary rise of temperature when the blows are struck. Test the material from hour to hour, and at length you will find more than the trace (less than one part in 10,000) of gold which the dollar originally contained."

Sir Crookes was unable to replicate the experiment to his satisfaction. He reported:

"A specimen of Argentaurem sent me by Dr. Emmens has been examined with the spectrograph. It consists of gold with a fair proportion of silver and a little copper. No lines belonging to any other known elements, and no unknown lines, were detected."

This analysis resembles that of ordinary bullion gold, which contains silver and copper to make it harder and more fusible than pure gold.

In a rejoinder, Dr. Emmens noted:

"I have received a letter from a very eminent Fellow of the Royal Society informing me that he has performed the crucial experiment suggested in my letter of May 21, 1897, to Sir William Crookes. The gold contained in the Mexican dollar after 40 hours of intense cold and continuous hammering was found to be 20.9% more than the quantity of gold contained in the same dollar before the test."

In 1898, Emmens floated the Argentaurem Company, a syndicate which promised that for one ounce of silver (then worth

about 50 cents) entrusted with payment of \$4.50 per ounce for conversion costs, the investor would be repaid with 3/5 ounce of gold (then worth about \$11). Dr. Emmens' application for a patent on his process was refused, however, so production never began, since he would not have been able to protect his methods from unscrupulous competitors. (24, 29, 30)

Dr. Emmens was issued several U.S. Patents for inventions; at least two of them may be related to his process: #501,996 (25 July 1893), Electrolytic bath; and #501,997 (25 July 1893), Apparatus for Electrolytic Extraction of Metals. Dr. Emmens' Force Engine produced hammering pressures in excess of 500 tons/in² at very low temperatures. These effects can be achieved by a variety of modern methods.

Semantic ambiguities in Dr. Emmens' writings confuse the understanding of the process. At times, Argentaurum refers to a new element, or to the gold produced from it, or to Lea's intermediate allotropic silver.

(8) Carey Lea

Carey Lea discovered the preparation of so-called "allotropic" and "intermediate" silver in 1889 while he was studying reductions of silver nitrate. "Allotropic" is a misnomer, however. In 1925, Dr. Richard Zsigmondy, Professor of Chemistry at the University of Goettingen, received the Nobel Prize in Chemistry for his study of Lea's "allotropic" silver under the ultramicroscope. Dr. Zsigmondy found that such silver actually was a monoatomic colloid of ordinary silver, not another isotope.

Lea determined that silver occurs in "allotropic", "intermediate", and ordinary forms. Ordinary silver is protean in nature. The aqueous solutions are colloidal monoatoms, and give perfectly clear solutions. The several forms of "allotropic" silver (a-Ag) dry with their particles in optical contact with each other, thus forming continuous films that are beautifully colored, perfect mirrors. Strong acids and pressure will convert a-Ag to the normal form. There are three forms of a-Ag, and all are unstable. (21, 22)

There is also a very stable "intermediate form" of silver (i-Ag) which is easy to prepare. It occurs as bright gold-yellow or green crystals with a metallic luster. Treatment with a very dilute solution of ferric chloride will enhance the appearance of its foliar structure, interpenetrating with plant-like ramifications, or fine acicular crystals up to 1 inch long.

Intermediate silver is hard, tough, and unaffected by pressure. It is nearly as indifferent to oxidizing and chlorizing agents as is normal silver. Intermediate silver can be formed from the allotropic varieties by light, heat, or chemical action. The simplest preparation is as follows:

"It has long been known that golden-yellow specks would occasionally show themselves in silver solutions, but could not be obtained at will and the quantity thus appearing was infinitesimal. Probably this phenomenon has often led to a supposition that silver might be transmuted into gold. This yellow product, however, is only an allotropic form of silver, but it has all the color and brilliancy of gold, a fact which was apparent even in the minute specks hitherto obtained...

"It is a little curious that its permanency seems to depend entirely on details in the mode of preparation. I have found many ways of obtaining it, but in a few months the specimens preserved changed spontaneously, to normal silver... The normal silver produced in this way is exquisitely beautiful. It has a pure and perfect white color like the finest frosted jewelers' silver, almost in fact exceeding the jeweler's best products. I found, however, one process by which a quite permanent result could be obtained... the following proportions give good results:

"Two mixtures are required: No. 1 containing 200 cc of a 10% solution of silver nitrate, 200 cc of 20% solution of Rochelle Salt [Sodium potassium tartrate] and 800 cc of distilled water. No. 2, containing 107 cc of a 30% solution of ferrous sulfate, 200 cc of a 20% solution of Rochelle salt and 800 cc of distilled water. The second solution (which must be mixed immediately before using only) is poured into the first with constant stirring. A powder, at first glittering red, then changing back to black, falls, which on the filter has a beautiful bronze appearance. After washing it should be removed whilst in a pasty condition and spread over watch glasses or flat basins and allowed to dry spontaneously. It will be seen that this is a reduction of silver nitrate by ferrous sulfate...

"Although the gold-colored silver (into which the nitrate used is wholly converted) is very permanent when dry, it is less so when wet. In washing, the filter must be kept always full of water; this is essential. It dries into lumps exactly resembling highly polished gold...

"If we coat a chemically clean glass plate with a film of gold-colored allotropic silver, let it dry, first in the air, then for an hour or two in a stove at 100° C, and then heat the middle of the plate carefully over a spirit lamp, we shall obtain with sufficient heat a circle of whitish gray with a bright, lustrous golden ring round it, somewhat lighter and brighter than the portion of the plate that has not been changed by heat. This ring consists of what I propose to call the "intermediate form"...

"With sulfuric acid diluted with four times its bulk of water and allowed to cool, an immersion of one or two seconds converts a film on glass or on pure paper wholly to the intermediate form...

"Its properties are better seen by using a film formed on pure paper, one end of which is heated over a spirit lamp to a temperature just below that at which paper scorches. The change is sudden and passes over the heated portion of the surface like a flash. Examining the changed part, we find:

- 1st. That it has changed from a deep gold to a bright yellow gold color.
- 2nd. When subjected to a shearing stress *it does not whiten or change color in the slightest degree.*
- 3rd. It is much harder, as is readily perceived in burnishing it.

4th. It no longer shows the color reaction with potassium ferricyanide and ferric chloride, changing only by a slight deepening of color.

"Of these characteristic changes the second is the most remarkable. The gold-colored silver in its original condition changes with singular facility to white silver; almost any touch, any friction, effects the conversion...

The intermediate form is distinguished from normal silver almost solely by its bright yellow color and its higher luster."

(9) Joe Champion

In 2004, Joe Champion presented a non-toxic method to convert microscopic amounts of silver to gold by the action of phonons:

"In the formation of Ag (or other elements) from a dimensional reaction, the conversion will occur without excess energies or nuclear signatures. By heating Ag to a temperature of 43.2° C. The principle is straightforward and simple without toxicity, by utilizing a heat source that is stable and capable of heating in the range of 100-120° C. Allow the temperature of the silver to stabilize at 43.2° C. It is important that you measure the temperature of the silver and not that of the sand. The function of the sand is to provide an even influx of temperature to the entire area of the silver and it provides an excellent insulator.

"The temperature of 43.2° C is optimum under ideal conditions. It is, however, possible that the temperature may vary within the statistical limits shown in Table 1. When the temperature is exact for the reaction the silver will become endothermic. This means that the temperature will be slightly greater than that of the surrounding sand. A point of interest - this reaction is the same as observed in the working Cold Fusion cells of the past. The scientists were not observing a low energy nuclear event; rather, they were observing an inter-dimensional phenomenon.

°C	°F	
53.42	128.15	High
46.19	115.14	++
43.92	111.05	+
43.16	109.68	Std
42.40	108.32	-
40.12	104.22	--
32.89	91.21	Low

"Achievement of the maximum conversion of Ag to Au will depend on the dwell time at resonance temperature. Conversion of Ag to Au can occur in as little as six hours; 2% conversion takes up to 24 hours.

Theory ~ "The conversion of one element (specifically one isotope) to another through a dimensional reaction occurs under select conditions of phonon resonance. Dimensional phonon resonance occurs when the space occupied by one isotope is exactly the same as that of another isotope in its rest state. This event only occurs under the following two conditions: (1) the expansion of an isotope by heating; or, (2) the contraction of an isotope by cooling.

"Due to the natural characteristics of elemental properties, this event is extremely rare and one can only force the event under select conditions. To determine the phonon resonance of an isotope, it is necessary to apply the following formula:

$$\text{Phonon Resonance (Hz / Cm)} = \sqrt[3]{\frac{d \times Na}{m}}$$

where d is Density in gm/cm^3 ,
 Na is Avogadro's Constant, and
 m is mass.

"By determining the inverse, one will observe the linear atomic spacing.

$$\text{Linear Atomic Spacing (cm)} = \frac{1}{\sqrt[3]{\frac{d \times Na}{m}}}$$

"Since the resonance frequency and spacing is required for all isotopes, the calculations for most isotopes may be determined:

Z	47	79	47	13	30	42	75
a	Ag ¹⁰⁹	Au ¹⁹⁷	Ag ¹⁰⁷	Al ²⁷	Zn ⁷⁰	Mo ¹⁰⁰	W ¹⁸⁶
D gm/cm ³	10.5	19.32	10.5	2.6989	7.133	10.22	19.3
ref	20°C	20°C	20°C	20°C	20°C	20°C	20°C
M	108.904757	196.966543	106.905092	26.981	69.929	99.907	185.954
% abund.	48.16%	100.00%	51.84%	100.00%	0.60%	9.63%	28.60%
f	38,722,586	38,845,303	38,962,532	39,200,637	39,456,798	39,494,370	39,685,708
phonon spacing/cm ³	2.58247E-08	2.58770E-08	2.58857E-08	2.55098E-08	2.53442E-08	2.53201E-08	2.51980E-08
exp. coef	1.962E-05	1.40E-05	1.91E-05	2.5E-05	3.98E-05	1E-05	4.50E-06

"When an element is heated or cooled, the atomic spacing will change proportionally to the cube of the product of the temperature (increase/decrease) and the expansion coefficient. To understand, following is the mathematical model for determining the linear spacing in reference to temperature:

$$\text{Phonon Resonance} = \left(\frac{1}{\sqrt[3]{\frac{d \times Na}{m}}} \right) e^{((t-S)Ec)}$$

where t is the temperature increase,
 St is the standardized temperature, and
 Ec is the expansion coefficient

"To place this in perspective, to determine the exacting temperature for a dimensional phonon reaction to occur, requires knowing the starting element (specifically the isotope of the starting element if more than one) and the element to be produced. Once this is known, you can apply the following formula:

$$\text{Resonant Temp } ^\circ C = \frac{\text{Ln} \left(\frac{f(\text{starting})}{f(\text{target})} \right)}{Ec} + St$$

"This will provide the temperature required within statistical probabilities. A statistical probability deals with the least significant digit (LSD) of each variable. In the case of phonon resonance, this is limited to the density. For example, the density of Ag is 10.50 gm/cm³. Taking that the accuracy is ± 1 LSD, we can establish a variable range by applying the following:

$$\frac{1}{1050}$$

Or, ± 0.0009524

"To place the mathematics in perspective, following is the calculations for the conversion of Ag¹⁰⁷ to Au:

$$\begin{aligned} \text{Ag107 Phonon Resonance (Hz / Cm)} &= \sqrt[3]{\frac{10.50 \times (6.0221 \times 10^{23})}{106.905092}} \\ &= 38,962,532 \end{aligned}$$

$$\begin{aligned} \text{Au197 Phonon Resonance (Hz / Cm)} &= \sqrt[3]{\frac{19.32 \times (6.0221 \times 10^{23})}{196.966543}} \\ &= 38,945,303 \end{aligned}$$

$$\text{Resonant Temp } ^\circ C = \frac{\text{Ln} \left(\frac{f(38,962,532)}{f(38,945,303)} \right)}{1.91 \times 10^{-5}} + 20$$

$$\text{Resonant Temp } ^\circ C = 43.16$$

$$\text{Resonant Temp } ^\circ F = 109.688$$

"To find the most logical profile requires determining the basic phonon frequencies of all of the stable isotopes.

Conversion of Al to Au ~ "The conversion of Al to Au is an absolute application of dimensional science. In this reaction, gold is produced in its ultra-pure state on a continuous basis. This procedure may be utilized for most elements. The basis of this dimensional occurs in the collection of atomic size particles that form near the resonant metal (in this case aluminum). Due to the size of the particles they appear in what normal chemistry would consider a gas phase. The targeted element (isotope) forms in its singular state and due to the lack of energies present. There are insufficient energies to bind the atoms into a colloidal state.

"In the production of gold from aluminum, the ideal temperature is 302.9° C. These temperatures are optimum for the Al (the Al must be allowed to come into equilibrium with the furnace). Once resonance is established, production is continuous. The Au is captured in water as it is removed from a negative pressure applied to the furnace established by the vacuum pump. However, please be aware that Al will also convert to Ag¹⁰⁷ at a temperature of 283.7° C. To understand this, the following chart is supplied:

"The aluminum reaches the phonon resonance of Au it passes through the resonance of Ag. Due to the atomic spacing, Al will not form any other element near this temperature range.

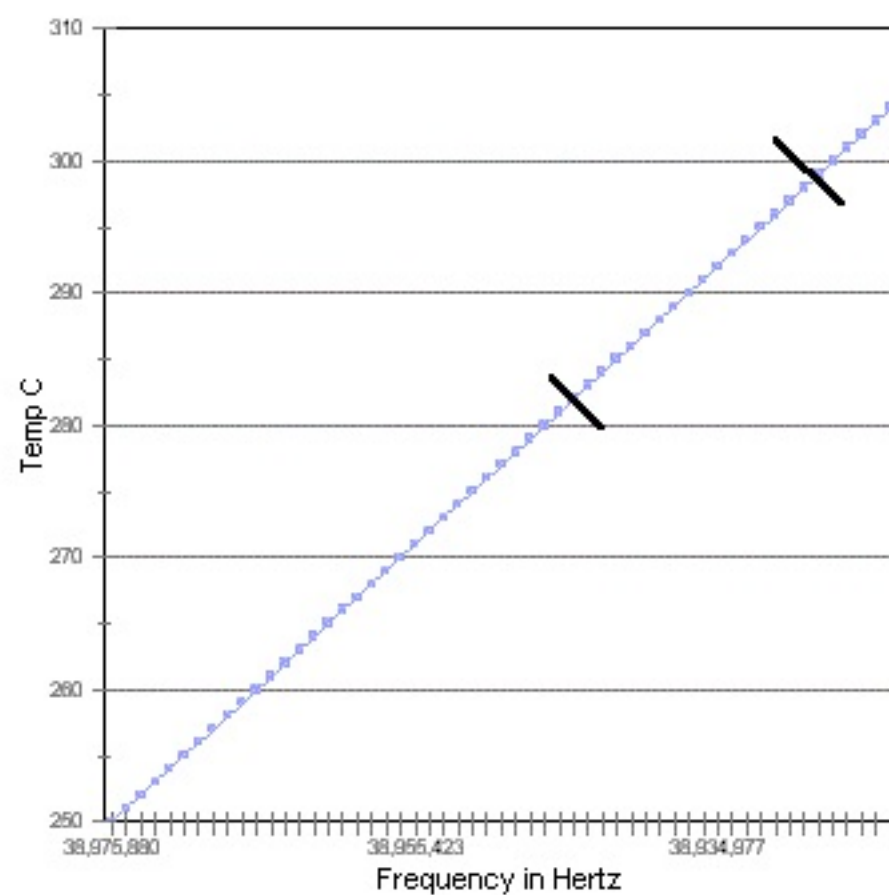
"All of the procedures listed were confirmed by independent laboratory testing..

"At the time of printing the Phonon Conversion of Ag to Au, the genesis mapping of elements was not complete. Based on the above, the following allows the other potential formation patterns for Ag and Au:

$z \sim e \sim D \text{ gm/cm}^3 \sim M \sim \% \text{ abundance} \sim \text{Hz} \sim \text{phonon spacing/cm}^3$
 $13 \sim \text{Al}27 \sim 2.6989 \sim 26.981 \sim 100.00\% \sim 39,200,637 \sim 2.55098\text{E-}08$

47 ~ Ag109 ~ 10.5 ~ 108.904 ~ 48.16% ~ 38,722,676 ~ 2.58247E-08
 47 ~ Ag107 ~ 10.49 ~ 106.905 ~ 51.84% ~ 38,950,170 ~ 2.56738E-08
 79 ~ Au197 ~ 19.3 ~ 196.967 ~ 100.00% ~ 38,931,830 ~ 2.56859E-08

"This procedure is nondescript. As easily as zinc, aluminum, titanium or silver converts into gold, so does gold convert into titanium and silver."



In 1997, Champion reported the replication of one of his transmutation experiments by a 16-year old high school student for a science fair project. The original experiment was performed by Dr Bockris at Texas A.M. University (www.transmutation.com/tamu.htm). The ingredients of the experimental formula were:

300 gr Carbon; 900 gr Potassium Nitrate; 80 gr Sulfur; 100 gr Iron Sulphate; 30 gr Cadmium; 100 gr Mercury Chloride; 50 gr Litharge (PbO); 5 gr Silver (Ag); 30 gr Calcium Oxide. The ingredients were mixed, placed in a coffee can, and ignited with a torch. The silver increased from 5 to 8.7 grams, and a small amount of gold also was produced. X-ray fluorescence and mass spectrometry examinations were made of the materials before and after the ignition.



Joe Champion

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Part II

Modern Arcana

Chapter 2

Transmutation of Ores

- (1) T. Moray
 - (2) Dunikovski
 - (3) A. Klobasa
 - (4) D. Hudson
 - (5) J. Champion
 - (6) References
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The synthesis of elements by high-energy bombardment of other elements is common knowledge and practice among nuclear physicists. In their fashion, modern physicists also have accomplished one of the goals of alchemy: the production of artificial gold. The yields are low, however, and the product is unstable and very expensive. Such nuclides find only limited use in medicine and chemistry.

For example, R. Sherr, et al., reported the "Transmutation of Mercury by Fast Neutrons" of lithium and deuterium. These formed three radioactive isotopes of gold by the n-p reaction, and three isotopes of platinum. (11)

In 1980, a group of researchers at Lawrence Berkeley Laboratory (Glen T. Seaborg, et al.) reported the production of a few billion atoms of gold as the "trivial result" of an experiment with a Bevalac accelerator. A bismuth target was bombarded with a "relativistic projectile" that chipped some protons from the Bi nuclei, forming gold. The experiment produced less than one-billionth of a cent worth of gold. (1, 6, 12)

Andrew Melchanov published this notice in 1980, but nothing has been reported about it since then: "Soviet physicists at a nuclear research

facility near Lake Baikal in Siberia accidentally discovered a fusion reaction for turning lead into gold [in 1972] when they found the lead shielding of one of their experimental reactors had changed to gold." (8)

Several researchers in the 20th century have reported their methods of producing profitable amounts of values from base metals and low-grade ores without the use of nuclear reactors. Some of the methods are genuine low-energy alchemical transmutations.

(1) Thomas H. Moray

The Moray process is a prime example of what is possible. In 1950, Thomas H. Moray was approached with a request to investigate the possibility of improving the extraction of uranium ores. As a matter of course, the Moray Research Institute (MRI) proceeded by bombarding the ore in an "environment" with x-rays as high as 24 MeV before attempting to extract the values. The average ore contained 0.23% uranium oxide. After irradiation, the ore yielded from 7-75% uranium oxide!

In 1953 the MRI proposed that the Atomic Energy Commission (AEC) investigate such a project for the "aging" of atomic ores by a "breeding type reaction with high-energy particles or x-rays in the presence of a proper environment." The AEC declined to grant a contract. (7, 9, 10)

In 1958, the MRI adapted its process to the augmentation of precious metal ores. the Moray process uses three main categories of ores, containing traces to a few hundredth of an ounce of gold and silver per ton: 1) low-grade unprocessed gold ore; 2) mill tailings --- especially advantageous; this material costs very little, is ground already, and yields excellent results. High grade ores seem to be less adaptable to this process; they yield much less of an increase in values than do low grade ores:

"Early tests gave yields of 50-100 oz. gold/ton ore. While virtually no gold or silver values can be determined in the raw ore, after irradiation and drying the gold and silver can be identified by standard fire assay or any other normal determination methods...

"Metals not otherwise detected are freed for a separation by normal separating processes. This process does not purport to be a separation process in any way in that upon completion of irradiation the samples will have to be disposed of expediently." (9)

The Moray process utilizes an "environmental solution", developed in 1949. Aging became a problem as chemical reactions continued to take place due to hydration and temperature changes. By 1961, the MRI had refined several formulas of solutions, one or more of which work well with most ore types and do not require any aging. They can be used immediately after mixing and can be stored without adverse effects. Their cost is approximately \$50/100 gallons (the volume of solution required to process one ton of ore). The solution is heated to an unspecified "elevated temperature" during irradiation.

In a telephone interview with Ken Jones (September 1981), John Moray said:

"The environmental material consists of a combination of chemicals whose atomic numbers add up to the atomic number of silver or gold and yield silver and gold upon irradiation [The formulas include arseno- and iron-pyrites in alkaline solution]. Antimony has peculiar properties -- it has floating electrons which come in very handy. It is believed that this environment furnishes particles similar to the cosmic ray reaction on the atmosphere. Research work indicates that the radiation must be composed of both high-speed electrons and x-rays. Consistent results under controlled methods were obtained with the addition of a catalyst (a flux or reduction agent, an environment) combined with bombardment of the material ... by an energy bombardment tube developed for the Research Institute."

The "bombardment tube" may be a preferred embodiment of Dr. T.H. Moray's "Electro-Therapeutic Apparatus" (US Patent #2,460,707) The invention is described as follows in the patent abstract:

"An apparatus for applying radiant energy therapeutically, comprising means for producing high potential, high frequency electricity; a high capacity sparking condenser; and a treatment electrode connected in circuit with the foregoing...

"The invention has been described in the foregoing with sole reference to its use for therapeutic purposes. It should be noted, however, that inorganic matter may also be treated to advantage pursuant to the methods and with the apparatus... It has been found that metals, for example, lead, have changed physical properties after treatment in accordance with the above..."

T.R. Dolph published an article about the Moray process (Fate, February 1976), in which he stated:

"Dr. Moray engaged my father-in-law, attorney Victor G. Sagers, Midvale, Utah, to represent him in offering the device to the US Government... Transmutation of metals (yes, turning lead into gold) was demonstrated several times; the government supplied the lead and kept the gold."(5)

John Moray commented on this in a letter to Ken Jones (18 January 1982):

"The article by T.R. Dolph, Garland, TX, is one of those articles written by a crackpot that has in fact mixed together a number of unrelated facts. There is no such device as described in Fate magazine... The bombardment tube does exist. However, this has nothing to do with the recovery of minerals from low grade ore. The bombardment tube is a part of the therapy device.

"The story of gold and lead supplied by the US Government is a complete fabrication. My father and I always detested liars, and this man Dolph is a compulsive liar. His father-in-law, Vick Sagers, would never have said anything similar to what this man has said."

John Moray added this note in a later letter to Ken Jones (11 February 1982):

"The bombardment tube is electrotherapy and does not apply to the mining or mineral recovery process, regardless of how you interpret the patent.

"The patent application is speaking of a "method" and has to do with an individual trained in the art of that "method" which is all the law requires, and therefore, changing the physical properties of lead, i.e., making it possible to be alloyed with copper or developing a lead semi-

conductor has nothing to do with the mineral process again."

The services of the eminent physicist W.J. Hooper (Prof. EmEritus, Principia College) and other scientists were solicited in an effort to discover what was producing such results. It appeared to be caused by "a rapid buildup of atoms of relatively low atomic weights to those of much higher atomic weights" such as silver, gold, and platinum.

In a progress report at the 68th National Western Mining Conference (Denver, CO; Feb. 4, 1965), Dr. Hooper announced:

"First of all, I will cite one of several tests carried out in an effort to ascertain whether the modus operandi was actually one of transmutation from elements of low atomic weights to those of the noble metals. A solution was prepared --- made up of Baker's reagent quality chemicals of the highest purity and water, distilled by boiling. These bottled chemicals list the trace materials which might be existent in them. Gold did not appear on any of these lists even in trace amounts. No atoms of higher atomic number than 19 (K) were present in quantity in this solution. Silver has the atomic number of 47, and gold 79. This prepared solution of pure chemicals in glass containers is irradiated by high energy photons for about one minute and then by evaporation the residue was dried and sent to an independent assayer for analysis... It reads 939.76 oz gold/ton and 113.04 oz silver per ton...

"A point of great interest in the experimental test I have described is that the specks of gold found in the residue of the solutions reveal a marked crystal structure under microscopic examination. It is a coincidence that Miethe, back around 1925, found his formation of gold to be in small crystals also... The process we have described is in reality a crystal growing bath activated by irradiation. As the gold atoms come into being by transmutation, they become gregarious, which results in the crystal formation.

"From this observation there is every reason to suspect that low grade ores and mining tailings provide, not only the seed for crystal growth, but also a nuclei environment which is well advanced or uniquely favorable, for the formation of the precious metals by transmutation."

Dr. Hooper contended that the process is one of nuclear reaction. Dr. Hans Frauenfelde (Univ. Illinois) opined that the energy levels were too much of a departure from the accepted standards to verify this point. Another theory proposes that colloidal gold, lost in the dilution of ore in the environmental solution, is concentrated by the bombardment. The MRI insists that is not the case.

In 1963, MRI conducted experiments with a linear accelerator at the Electronized Chemicals Corporation (Rockford, IL) at energy levels of 11.4-20 meV with doses of 1 megarad. The average yields were 8-9% gold! It was estimated that a production rate of 5 tons of ore per day was possible with the available equipment. Computerized risk analysis indicated that yields over 11.5 oz Au/ton ore could be expected with 99.5% certainty. A higher average (15 oz Au/ton) could be expected in mass production under optimum conditions. Other experiments showed even more promise, yielding 100-200 oz Au/ton (128 oz Au/ton average):

"The standard deviation of yields was rather high due to the constant modification of experimental conditions."

MRI rented time on the Varian Associates' 8 MeV LINAC in order to test parameters such as dose, dose rate, slurry depth, shield material, electron volt setting, shield height, and the distance of the target from the irradiation source. The shield was a thin sheet of unspecified material placed over the sample while irradiating it:

"In main effects, only electron-voltage setting showed up as significant, with high-voltage setting being better than the low. In addition, several interactions between variables showed up as being significant. An interaction between two variables means that when either variable is changed singly, a significant difference results. Some interactions between three variables, or perhaps even more may be present. The following interactions seemed to be significant ones and seem to indicate that a higher voltage would give much better results: 1) Shield height/Voltage; 2) Dose rate/Voltage; 3) Dose/Voltage; 4) Distance of sample from radiation source/Shield height; 5) Solution depth/Shield material; 6) Slurry depth/Voltage.

"X-rays perform photo-disintegration, and the electrons furnish the energy and amperage to the reaction. It is suspected that because the escaping electrons have a certain amount of energy, a certain amount of x-rays will be produced in the material by the electrons' reactions (Compton Effect). The ideal reaction, it is indicated, is for the x-ray to be produced at a target located somewhere outside the accelerator tube where losses of energy would be minimal. This reaction is dependent on the following factors:

"1) The isomers of the isotopes reacted upon must be present in the ore before the ore will react to the reaction; 2) These reactions are dependent upon the type target in order to control the frequency of the quantum energy level; 3) High-energy electrons must be present in the ore as well as x-rays; 4) The composition of the environmental solution furnishes other particles that are freed by the action of the resonant frequency of the x-rays and the electrons produced by the particle accelerator; 5) The reaction is a dose-rate reaction and not dependent upon velocity. The velocity of the original particles will determine the depth and time of the reaction only. Over-radiation gives a deterioration rate and loss of values reported...

"As the size of the sample varies, the reaction varies on an inverse lineal level wherein doubling the size of the sample would cut the total reaction in half."

Radiation dosages of 0.16, 0.5, and 2.0 Megarads/minute gave peaks on the dosage curve. Four Megarads/minute gives the highest yield. Irradiation lasted one minute. The reaction also is wattage-dependent. The minimum wattage required is 200 watt-seconds per gram of ore:

"The process has to be adjusted to the characteristics of different ores. The chemical formulas and the resonant energy levels must be established for each ore."

Consistency was achieved in 1970 by adding to the process a control resonant chamber (Magnetic Undulator) which acts to bring all variables into phase, or into a resonant relationship, with the radiation source, to a point where a consistency was obtained higher than any obtained prior to that time. There are definite peaks at which each ore that is of value with this process, releases the metals found within it. There are peaks for each metal ion within the ore.

The Magnetic Undulator establishes non-propagating, resonant standing waves with the x-ray diffraction wavelength of gold (2.042

Angstroms) in the environmental solution. The chemicals (in copper pans) were bombarded from above. Each bombardment increased the amount of gold 9-fold, but the yield later diminished to only three times the original amount. Consistently high, stable yields were obtained by first irradiating the trays from below and then applying x-rays from overhead. The yields increased 9-fold and remained at that level without deteriorating. The process as developed produces little increase in platinum values, probably due to: a) the energy level of the irradiation source; b) the chemical composition of the environmental solution; c) target type. The silver produced in this process assayed as high as 426 oz/ton. According to the report, the following conditions also apply:

"The reaction is sensitive to interference from nearly every material other than glass or porcelain. Plastics cannot be used, nor stainless steel, and most varieties of rubber or brass. Copper can be used if it is in one continuous piece. Indications are that interference is due to electrostatic charge or particle position in the solution."

Better results also would be obtained with suction pumping of the slurry in an all-glass system, rather than the makeshift conveyer belt/copper pan system used by MRI.

(2) Dunikovski

In 1931, a Polish engineer named Dunikovski announced that he could produce artificial gold by the action of "Z-rays" on a mixture of silica and feldspar melted in bronze crucibles under the influence of 110 kilovolts. Dunikovski claimed to have perfected a process he inherited from his father and grandfather who had developed it. Dunikovski theorized that all minerals contain "embryonal atoms" or "mineralites" that can be artificially matured in minutes.

Several French investors syndicated and subscribed 2,000,000 francs which Dunikovski used to build a laboratory in Paris. But no gold was produced, and he was charged with fraud. He demonstrated his process to the court, but the results were ambiguous and insufficient to prove his innocence. Dunikovski was sentenced to four years imprisonment, but his attorney secured his release after two years. Dunikovski relocated to San Remo and renewed his experiments. He improved the process, gaining significant increases in yields.

His attorney (Jean Legrand) visited Dunikovski with the eminent chemist Albert Bonn to investigate the new situation. M. Bonn witnessed and replicated the process. One type of sand, which contained 11 grams Au/ton before treatment, assayed 859 grams/ton after treatment with the improved apparatus.

Dunikovski later established "Metallex, Societe Anonyme" with Belgian stockholders and established a factory on Lake Neuchatel. Nothing more is known about the affair because all subsequent proceeding were kept secret. (4)

(3) Adalbert Klobasa

About 1937, an Austrian chemist named Adalbert Klobasa claimed to have produced gold using an electromagnet and induction coil with which he treated a mixture of titanium-potassium-oxalate (36 gr), ferrous sulfate (84 gr), copper sulfate (50 gr), sodium sulfide (50 gr), ammonium chloride (100 gr), ammonia (250 ml), sodium silicate (20 cc) and silica (440 gr). The reaction was catalyzed with 100 mg of silver. Two hours of treatment afforded a 1% yield of gold which appeared as brown-red scales. Klobasa claimed that gold is built up from iron, titanium, and sodium. He declined to enter into business with his synthesis:

" I am too old, and not fit enough to worry myself chasing around after capitalists."(4)

(4) David Hudson

In the 1980s, David R. Hudson discovered the existence of ORMEs (Orbitally Rearranged Monoatomic Elements), which are virtually undetectable by conventional means (except for a distinguishing IR doublet located between about 1400 and 1600 cm⁻¹) because they lack a d-orbital electron. Hudson and associates developed a method to recover ORMEs and convert them into their metallic forms. While it is not a transmutation of one element into another (but rather, the conversion of an allotrope into the common visible form of the elements), the extraction and conversion of ORMEs to metal may explain the claims of some other experimenters. Certain ores, particularly sodic and calcidic plagioclase, contain large amounts of ORMEs which can be extracted by Hudson's process, as described in his British Patent # 2,219,995 for "Non-Metallic, Monoatomic Forms of Transitional Elements" (Dec. 28, 1989):

"300 gr of dried material assayed by conventional techniques to show no gold present, ground to less than 200 mesh, is placed in a 1-gallon vessel, fitted with electrodes, with 120 gr NaCl, 10 gr KBr, and 2 liters of tap water.

"The anode consists of a pair of 3/8" x 12" carbon welding rods wrapped together with No.10 copper wire. The cathode consists of 1-5/8" ID x 14" glass tube with a medium porosity glass frit with a 1" x 14" x 1/16" stainless steel strip inside in a solution of 36 gr/liter NaCl (approx. 500 ml). Both electrodes are placed into the sample vessel and supported by clamps extending about 5" into the sample solution.

"The sample is placed on a roller table at approx. 10 rpm. The electrodes are connected to a (120 V) power supply in conjunction with a 2-3 amp 400-600 PIV rectifier. A 100 W light bulb and the electrodes are hooked in series. The rectifier load is connected to the anode since the rectifier filters out all negative voltage and only passes positive voltage.

"The sample is kept under load for a period of 6-1/2 hours. The final pH is in the range of 3-6.5. The voltage across the electrode is 5 volts. After disconnecting the load, the sample was allowed to settle and the solution over the settled out material was removed by decantation...

"800 ml of the sample was placed in a 1000 ml beaker and 20 ml concentrated sulfuric acid was added to the solution. With stirring, the solution was boiled down slowly on a hotplate until the solution was just dry (not baked). The just dry salt contains sodium gold chloride. The just dry salt was taken up in 400 ml deionized water and again boiled down to the just dry condition. There should be no discoloration at this point, i.e., a clear solution is formed.

"The just dry salt was then taken up in 400 ml 6M HCl, and thereafter boiled down to the just dry condition. The dilution and boiling down step was repeated four times, alternating with deionized water and a 6M HCl wash, with the sequence controlled to that the last washing was

with 6M HCl. The purpose is to remove all traces of hypochlorite oxidant.

"The just dry salts are taken up in 400 ml anhydrous ethanol and stirred for approximately 10 minutes. This step is to dissolve the gold chloride salt, to remove the sodium chloride. After stirring, the slurry was filtered through #42 paper on a Buchner funnel.

"5 ml of concentrated sulfuric acid was slowly added to the filtrate, mixed, and the filtrate was then allowed to sit for approximately 1 hour. The filtrate was filtered through #42 paper on a Buchner funnel, and then passed through a filter of 0.5 micron Teflon. The sulfuric acid precipitates out any calcium. Filtration removes the precipitant and a light yellow filtrate is recovered, with all traces of calcium sulfate removed.

"The light yellow solution was again boiled down to just dry, taking care to avoid any charring. At this point there should be no further evaporation of ethanol and the just dry residue should be free of color. The residue should have a sweet smell similar to burnt sugar. The occurrence of the sweet smell indicates the end point of the boil-down.

"The just dry residue is taken up in 600 ml deionized water to provide a water-soluble gold form which is the gold auride. If desired, the G-ORME can be recovered at this stage or converted into metallic gold. For gold recovery, the solution is put into a 1000 ml beaker and an electrolysis unit was set up... The anode is a gold electrode, 2 cm² in size, upon which gold solution will plate out. The cathode comprises a 6.8 cm² platinum electrode contained in a Nafion 117 chamber... Inside the Nafion chamber is 200 ml of electrolyte solution containing 5 ml sulfuric acid per 600 ml of electrolyte solution. It is important to keep the Nafion chamber wet at all times. The potential was measured across the electrodes and then an additional -2.2 volts potential was applied and maintained for a period of 2 hours.

"After the two hours, the potential was raised to 3.0 volts and maintained for approximately 18 hours. Bubbles formed on both the gold and platinum electrodes. A black material formed on the gold electrode after 3-4 hours. The gold electrode was removed from solution while voltage was still being applied. The electrode was dried in a vacuum oven overnight at 115°C. The electrode was weighed before and after the plating to determine the amount of gold collected.

"The metallic gold is, therefore, produced from a naturally occurring ore which, when subjected to conventional assaying, does not test positive for gold."

The ORMEs are produced from sodium gold chloride, which is reduced to sodium auride:

"Continued aquation results in dissociation of the gold atom from the sodium and the eventual formation of a protonated auride of gold as a grey precipitate. Subsequent annealing produces the Gold-ORME. The G-ORME has an electron arrangement whereby it acquires d-orbital hole or holes which share energy with an electron or electrons. This pairing occurs under the influence of a magnetic field external to the field of the electron.

"G-ORMEs are stable [as] demonstrated by unique thermal and chemical properties. The white salt-like material that is formed when G-ORMEs are treated with fuming HClO₄ or fuming H₂SO₄ are dissimilar from the transition (T) metal or its salts. The G-ORME will not react with cyanide, will not be dissolved by aqua regia, and will not wet or amalgamate with mercury... The G-ORMEs remain as a powder at 1200°C...

"G-ORMEs can be reconverted to metallic gold from which they were formed. This reversion is accomplished by an oxidative rearrangement which removes all paired valence electrons together with their vacancy pair electrons, with a subsequent refilling of the d and s orbitals with unpaired electrons until the proper configuration is reached for the T-metal.

"This oxidative rearrangement is effected by subjecting the G-ORME to a large negative potential in the presence of an electron-donating element, such as carbon, thus forming a metallic element-carbon chemical bond. For that metal-carbon bond to occur the carbon must provide for the horizontal removal of the d orbital vacancy of the ORME. The carbon acts as a chemical fulcrum. When the element-carbon bond is reduced by way of further decreasing the potential, the carbon receives a reducing electron and subsequently vertically inserts that reducing electron below the s orbitals of the element, thus forming metallic gold.

"The above description for the preparation of G-ORME from commercially available metallic gold is applicable equally for the preparation of the remaining ORMEs, except for the specific potential energy required and the use of nascent nitrogen rather than carbon to convert the other ORMEs to their constituent metallic forms. The specific energies range between -1.8 V and -2.5 V depending on the particular element. Alternatively this arrangement can be achieved chemically by reacting NO gas with the T-metal ORMEs other than gold. Nitric oxide is unique in that it possesses the necessary chemical potential as well as the single unpaired electron."

(5) Joe Champion

In the 1990s, Joe Champion announced a variety of methods of transmutations of black sands by thermal burns, melts and kinetic methods. He was convicted of fraud in Arizona after being accused by an irate investor who failed to achieve satisfactory results. Other researchers (including the physicists Bockris and Sundaresan, 1994) validated his processes, however, so the question remains open for experiment.

The process was developed from a method of "growing gold" in an electrolytic cell that was originally developed by Dr. Walter Lussage, a Czechoslovakian geologist (d. 1977). Dr. Lussage revealed his process to Mr. Jack Keller, who taught it to Joe Champion in 1989. Champion subsequently developed the method further.

The original formula is quite simple: black sand (90 gr), charcoal (90 gr), and sodium nitrate (270 gr), pulverized to 200 mesh and mixed thoroughly. The reagents must be pulverized separately to avoid ignition. The mixture is ignited with a torch; it burns about 90 seconds, reaching a temperature of about 700°C. In one assay, the mixture contained 0.18 mg Au and 1.35 mg Ag before ignition; after ignition it contained 212.7 mg Au and 856.8 mg Ag.

Black sand typically is composed of 40% magnetite (Fe₃O₄), hematite (Fe₂O₃), or chalcopyrite (CuFeS₂). The necessary parental isotopes (cobalt, iron, manganese, nickel, and calcium) must be present, according to the formula:

Co59 + Ca40-44 = Ag99-103
Ni60-64 + Ca44 = Cd104-108

The addition of a molar proportion of lead enabled the atoms of gold to be collected as they formed, and served as an absorptive shield for radioactivity released in the reaction.

Another formula for the thermal burn process was carbon (300 gr), potassium nitrate (900 gr), sulfur (80 gr), silica (120 gr), ferrous sulfate (100 gr), cadmium (30 gr), mercury chloride (100 gr), lead oxide (50 gr), silver (5 gr), and calcium oxide (30 gr).

In one test that Champion described, the thermal melt process was accomplished in a gas-fired or inductively heated furnace, vented to release gases liberated in the process. A mixture of black sands (1 kg), mineral coal (1 kg), sodium nitrate (3 kg), lead (300 gr), silver (200 gr), and mercury chloride (HgCl₂, 1 kg) in a graphite crucible yielded 44 gr gold, 6 gr platinum, and 35 gr rhodium.

Another gas-fired mixture tested by Champion was composed of black sands (100 gr), charcoal (300 gr), sodium nitrate (900 gr) and powdered silver (500 gr). When an inductive furnace was employed, the formula needed to be modified: black sands (100 gr), charcoal (350 gr), sodium nitrate (150 gr), silver (50 gr), and copper powder (50 gr).

The gas or electricity was reduced during the ignition period. After the ignition was completed, the temperature was raised to 2000o C for 90 minutes. If necessary, borax or potassium nitrate was added to maintain fluidity of the mixture. When there was no more apparent reaction, the mixture was poured into a mold to cool, and the slag removed. Both the reaction mixture and the slag should be assayed.

Another method was discovered in 1993, utilizing the kinetic energy of a ball mill with 40 kg of carbon steel balls. The liner must be made of iron-coated steel and the reagents must be thoroughly dry for this method to work properly. The ball mill also must have an airtight seal. 24% of the mineral weight should be ferric oxygen, which is required for the kinetic excitation transmutation to occur.

One of Champion's research associates, Greg Iseman (Mesa AZ), used a microwave digestion process to perform analyses of the formula; this method also produced transmutations.

"If the reaction mixture exceeds 15 kg, the yield is reduced because the transmutation cycle is too long and begins to produce base elements instead of precious metals. It was found necessary to add traces of the target elements to the starting mixture in order for the resonance of those elements (i.e., Au) to act as a "stopping agent".

Champion also noted:

"The following reagents were required to produce synthetic precious metals by this process: silica, ferrous sulfate, lead oxide, calcium oxide, mercury sulfide, and cadmium. The mixture was combined with carbon, sodium or potassium nitrate, sulfur, mercury chloride, and silver. The formula produced synthetic gold, iridium, platinum, palladium, and rhodium...

"When the chemical mixture is properly prepared, it has a reproductive factor of over 60%. This was later increased to 90-plus percent when an error was determined in the crystalline structure of the ferrous sulfate. The differences dealt with a magnetic susceptibility at high temperature, i.e., greater than 750o C...

"The coincidence factor is extremely important in determining the effectiveness of any nuclear occurrence... The following parameters must be weighed:

1. Natural occurrence (%) of parental isotopes; 2. Percent relationship of parental isotopes to total mass; 3. Composition of total mass; 4. Thermal nuclear cross section of parental isotopes; 5. Magnetic susceptibility of nuclear moment; 6. Type and length of energy excitation; 7. Parental isotopes' complacency with additives...

"The coincidence factor is also related to the "treeing effect": it is a nuclear reaction, such as caused by low energy transmutation situations, where a parental element has multiple isotopes, but when combined with 10 a and (10 a + a o), produce more daughter isotopes than parents. If charted, this would resemble limbs on a tree... "

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Part II

Modern Arcana

Chapter 3

Transmutation of Carbon

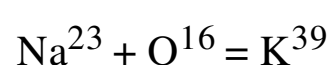
- (1) G. Ohsawa & M. Kushi
 - (2) M. Jovitschitsch
 - (4) J. B. Hannay
 - (5) S. Brown
 - (6) References
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Nuclear physicists bombard targets with high-energy particles in order (or chaos) to prove the schematic of their mindset with appropriate experimental results. In recent years, however, the discovery of cold fusion has quite upset the world view of conventional physicists, who generally deny the possibility that Nature allows for other means of transmutation. Yet, there is considerable historical evidence that many types of transmutations have been accomplished without particle accelerators, long before Pons and Fleischman announced their discovery of cold fusion. There is so much credible documentation of low-energy transmutation that, in the words of Rupert Gould, "did it relate to any more probable event, we should be compelled either to accept it or cease putting any faith in recorded testimony."

Among the many examples that can be cited, "biological transmutation" is the best developed and well known. About forty years ago, Dr. Louis Kervran presented the idea that sodium, potassium, and dozens of other elements change into each other under certain natural conditions in the mineral, vegetable, and animal kingdoms. Biological transmutations have been demonstrated, crucial experiments replicated, and the theoretical principles verified by many scientists who are finding new industrial, medical and agricultural applications of the discoveries.

(1) George Ohsawa & Michio Kushi

Inspired by the pioneering work of Dr. Kervran, Dr. George Ohsawa sought to transmute sodium into potassium *in vitro*. The method revealed itself to him in a symbolic dream. Thus inspired, Dr. Ohsawa and Michio Kushi, *et al.*, constructed an experimental electric discharge tube with copper (Yin) and iron (Yang) electrodes and a valve through which to draw a vacuum or admit oxygen (Fig. 3.1). The first transmutation with this equipment was achieved on June 21, 1964. After applying 60 watts of electricity for 30 minutes to heat sodium to a plasma, a molar equivalent of oxygen was introduced. Viewed with a spectroscope, the orange band of sodium gave way to the blue of potassium, according to the formula:



Analysis of the reaction product confirmed the result and revealed an unexpected extra: a trace of gold was produced by the combination of Na, O, and K with the Cu and Fe electrodes. Several different metals were tested as electrode materials. Neon and argon atmospheres were found to enhance the yield of potassium and other elements. External heating of the reaction tube also served to ionize the sodium.

Dr. Louis Kervran noted these experiments in his book *Transmutations A Faible Energie*:

"Professor [Masashiro] Torii, on a circuit designed by Prof. Sakurazawa, and under the control of Prof. Odagiri, observed in the spectroscope the passage of sodium to potassium upon the adjunction of a small quantity of oxygen to sodium vapor...

"Prof. Torii [of Musashino Institute of Technology, Tokyo] has informed me of having observed on 21 June 1963, in the spectroscope, the passage of sodium to potassium, the disappearance of the yellow line of sodium being replaced by the red-violet ray of 7699 Å⁰ potassium; the experiment was repeated June 22 before five scientists...

"In the production of steel in electric furnaces, the incomprehensible appearance of boron [has been observed]. We see now that we cannot exclude, under the effect of a powerful electric field and of the high temperature of these furnaces, the 'reduction' of carbon from the loss of hydrogen and in keeping with: C - H = B...

"The experience is simple to realize, as it suffices to take a plate of steel --- or of iron -- an anode of magnesium, place them in a jar containing distilled water rendered conductive by a salt of magnesium --- in order not to introduce any metallic ion other than magnesium, and these two electrodes are reunited by a metal wire, to the exterior of the jar; thus they realize (in part) a battery with magnesium at the negative, iron as positive; through the production of hydrogen at the electrode, magnesium is at a potential of 1.9 volts more negative than iron. Leave it

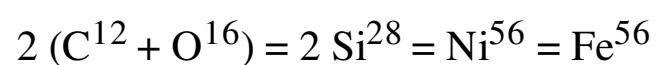
for two or three months; from time to time add a little distilled water in order to compensate for evaporation. On analysis, calcium is obtained... in an operation in which calcium was not introduced!"

The calcium (as oxide) accumulates in scales on the cathode.

Kushi and Ohsawa, *et al.*, proceeded to develop their process for industrial-scale production. They estimated that potassium could be manufactured for 1% of the current price. In a correspondence to Ken Jones (12 October 1980), Michio Kushi stated:

"After George Ohsawa and myself succeeded in producing K out of Na and O... we presented the experiment to several chemical corporations. At that time, Pfizer International became most actively interested. We had conferences on several occasions; however, soon after we decided not to become involved with these corporations, as a result of the considerations of the vast effects this would have on the industry."

The researchers also had no patent with which to protect their interests. Ohsawa and Kushi then turned their attention to the manufacture of steel by transmutation of carbon and oxygen according to the formula:



The experimental arrangements worked as predicted, and produced several other elements from combinations of C and O with atmospheric nitrogen, etc:

"The Fe produced by this transmutation is stainless; it does not rust easily. Also it reacts much less to heat than does ordinary Fe... All results of the transmutation for Fe have been carefully examined and analyzed by several methods, as: (1) magnetic inspection, (2) spectroscopic analysis, (3) chemical analysis, (4) examination by reagents, etc, and confirmed by authoritative testing agencies.

"The new form of iron was called GOS (George Ohsawa Steel). The experimental method is as follows:

"Method 1: Transmutation in Air [Fig. 3.2] --- Two graphite crucibles (approx 2.5" x 5") cover each other top and bottom. The upper crucible has a 10 mm Hole, surrounded by a ceramic ring, which acts as an insulator. Into this hole a carbon rod (0.25" diam) is inserted until it reaches the 2 or 3 grams of carbon powder placed at the bottom of the lower crucible, which has one or two small holes at the lower part of its side wall for circulation of air. An iron base placed under the lower crucible acts as another electric pole. As the carbon rod approaches the powder, the electric arc arises. Continuing the operation for 20 to 30 minutes, the carbon powder changes to iron. In this experiment, the applied electricity is about 35 to 50 volts/8 to 18 amps, either AC or DC.

"Method 2: Transmutation in Water --- Using two carbon rods (0.25" diam.), create an electric arc between them, striking them on one another in water. This operation is performed for 1 to 5 seconds. Then, brown-black metallic powder (which contains iron) falls down to the bottom of the water.

"Method 3: Transmutation in Air --- Carbon powder is placed on a copper plate, approximately 12" long, 6" wide, and 0.5" thick. This plate works as an electrical ground. A carbon rod (0.25" diam.) used as the other electrical pole, is struck repeatedly to the carbon powder on the plate, producing an electric arc. The carbon powder changes into iron.

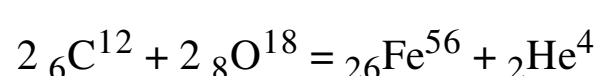
"During the process of this transmutation, nickel is temporarily produced as a short-lived radioactive isotope. The degree of transmutation from C and O is approximately 5% to 20% immediately, with a larger percent of transmutation occurring gradually in the air, which has the effect of cooling the metallic powder to below room temperature."

In another experimental configuration (Fig. 3.3), the reaction was cooled by dry ice. When sparked with carbon rods, the CO₂ vapors also yielded iron, etc.

In 1994, R. Sundaresan and J. Bockris (Texas A&M) reported that they had observed "Anomalous Reactions During Arcing Between Carbon Rods In Water:

"Spectroscopically pure carbon rods were subjected to a carbon arc in highly purified water. The arc current varied from 20 to 25 A and was passed intermittently for several hours. The original carbon contained ~ 2 ppm Fe. The C rods remained cool to the touch at >2 cm from their tips. Adsorption of iron from water or the surrounding atmosphere was established as not being the cause of the increase of iron. There is a weak correlation between the iron formed and the time of passage of current.

"When dissolved O₂ was replaced by N₂ in the solution, no iron was formed. Hence, the mechanism



was suggested as the origin of the iron. The increase in temperature of the solution was consistent with expectation based on this reaction."

Also in 1994, another group of researchers (M. Singh, *et al.*) at the Bhabha Atomic Research Centre (Bombay) reported their "Verification of the G. Ohsawa Experiment for Anomalous Production of Iron from Carbon Arc in Water:

"A direct current arc was run between ultrapure graphite electrodes dipped in ultrapure water for 1-20 hours. The graphite residue collected at the bottom of the water trough was analyzed for Fe content by a conventional spectrographic method... The Fe content was fairly high, depending on the duration of the arcing... The results showed large variations in Fe content (50 to 2000 ppm) in the C residue. In the second series of experiments... with the water trough fully covered, the amount of Fe in the carbon residue decreased significantly (20-100 ppm). Here also there were large variations in the iron concentration in the residue, although the experiments were performed under identical conditions. Whether Fe is really being synthesized through transmutation from C and O as suggested by George Ohsawa or is getting concentrated to different degrees through some other phenomenon is not currently clear. The Fe in the C residue was also analyzed by mass spectroscopy for the abundance of various isotopes... Besides Fe, the presence of other elements like Si, Ni, Al, and Cr was also determined in the C residue,

and it was found that the variation of their concentrations followed the same pattern as that of Fe."

In 1996, Kenjin Sasaki reported his successful experimental replication of the carbon arc production of iron. He used a 99.9999% pure graphite crucible and rod with a 100V/10A electric welder. The crucible was cooled. The arc (8-10A) struck high-purity carbon powder 4 times for 1 minute each time. The yield of iron was recovered with a magnet. Further experiments conducted by C. Akbar (Kushi Research Institute) "indicate that voltage potential and current density are important in the formation of iron in chemically pure carbon."

Toby Grotz also conducted this experiment and reported the results in detail in 1996. He tested activated charcoal, activated carbon, and coal. No iron was produced from charcoal, but activated carbon did yield magnetic material. Tests were performed with copper and aluminum plates and rods to eliminate the possibility that the carbon rod and copper plate might be releasing iron:

"This amount [0.22 gr] of iron is an order of magnitude less than that which occurs naturally in the sample... The excess weight appears to be due to magnetic material that is part of or encased in particles of carbon... There is a point at which no more magnetic material may be removed from the sample using the arc discharge process. It is proposed here that the high current density of the arc discharge magnetizes magnetic material that exists within the particles of the activated carbon. This then allows separation of the magnetic material from the sample using a magnet..."

J. Bockris and associates replicated the experiment using the underwater arcing method, and found only microgram amounts of iron after 24 hours. When the experiment was repeated with the reaction vessel covered to exclude air, no iron was found.

Those results suggest that at least some of the reported yields of iron might be due to the arc coagulating ORMES (Orbitally Rearranged Monoatomic Elements) existing in the Earth's atmosphere. ORMES are virtually undetectable by all conventional methods except infrared analysis, which can distinguish a certain characteristic doublet. As David Hudson discovered in the 1980s, ORMES can be converted to metallic form by certain processes involving carbon or nitrogen, which are used to insert an electron in the *d* orbital shell of the atoms. The complete process is described in his Australian patent.

Dr. Joseph McKibben has published his suggestion that the transmutative production of iron from carbon may be due to what he calls a subquark particle, which has a mass of about 1.15 nucleons:

"The subquark, when attached the ⁴He seemed to me to be an ideal candidate for an ideal catalytic agent."

In the 1980s, Michio Kushi resumed his experiments with the "aim of finding methods of mass production":

"At that time I shall be able to consider how to present to the world the transmutation of the atom using the principles of Yin and Yang for the future world industry.

"The transmutation of the atom can be achieved if elements are changed into the state of plasma, and if these elements are well understood in their antagonistic and complementary relations to other elements, according to the principles of Yin and Yang.

"The atomic number, mass, density, and gravity, physical reaction to temperature such as melting and boiling points, chemical reactions to other elements, reactions to specific environmental factors, such as ultraviolet and infrared wavelengths applied to the elements, as well as spectroscopic color analysis --- all of these characteristics of the atom can contribute to classify the atom into the Yin group or Yang group..."

"Nothing is solely Yin or Yang: everything involves polarity. There is nothing neuter. Either Yin or Yang is in excess in every occurrence. Large Yin attracts small Yin; larger Yang attracts small Yang. At extremes, Yin produces Yang, and Yang produces Yin. All physical forms and objects are Yang at the center and Yin at the surface."

"Hydrogen, the center of the atomic spiral, is Yang. It gathers particles to itself, forming the first octave of creation. The conditions become apparent upon studying the melting and boiling points of the first eight elements.

"Within the first octave, the greatest attraction is between carbon and oxygen, which represent Yin and Yang respectively. It is the fugate interaction of these two that form the other elements. Carbon is often replaced by boron. In terms of Yin and Yang, these are like brothers in that they react in similar ways in forming new elements."

Since George Ohsawa and Michio Kushi conducted their initial experiments in the 1970s, several other researchers have reported the same results and more, thanks to modern analytical equipment, computers, and communication. The worlds of low-energy transmutations have become much more accessible to us. New discoveries are being reported at an increasing rate in the scientific literature, particularly cold fusion and biological transmutations. Perhaps within a few decades we shall see the mass production of elements on demand. **(1, 7, 10-18, 22, 23)**

The Fugate of Carbon

- 1 (C + O) = Si
 - 2 (C + O) = Fe
 - 3 (C + O) = Kr
 - 4 (C + O) = Cd
 - 5 (C + O) = Ce
 - 6 (C + O) = Er
 - 7 (C + O) = Pt
- After Pt the elements become increasingly Yin

Classification	Yin	Yang
Tendency	Expansion	Contraction
Position	Outward	Inward
Structure	Space	Time
Color	Purple	Red
Temperature	Cold	Hot

Weight	Light	Heavy
Catalyst	Water	Fire
Atomic	Electron	Proton
Elements	K, O, P, Ca, N	H, As, Cl, Na, C

(2) Milorad Jovitschitsch

In 1908, Milorad Z. Jovivitsch (Bergau-Akademie in Belgrad) published two unique articles in the journal *Monatschrift für Chemie*, describing "The Mysterious Deficiency of Carbon in the Condensation Products from Ethylene and Acetylene."

Jovivitsch had been experimenting with electrical discharges in these gases, following the methods used by Berthelot. The latter had shown that the action of a silent electric discharge upon saturated or unsaturated hydrocarbons will split off hydrogen and produce condensation products. (4, 6, 12)

Jovivitsch introduced pure dry ethylene or acetylene and oxygen into an ozonizer containing copper oxide, and electrified the mixture with 100 volts/3 amps for 3 days and 2 nights. His analysis of the resulting compounds showed a deficiency in the theoretical amount of carbon and hydrogen, and an excess of oxygen. Several determinations of the carbon and hydrogen taken together indicated a 7% deficiency in the ethylene reaction product, and a 22% deficiency in the case of acetylene.

Berthelot had accounted for these losses by attributing them to oxygen absorption from the atmosphere. Jovivitsch excluded that possibility by employing pure gases, and he immediately preserved the products in hermetically sealed tubes. There was practically no possibility of absorbing any significant amount of atmospheric oxygen. He also determined that the condensed ethylene loses no carbon on exposure to air, and that the condensed acetylene remains unchanged after many weeks. Comparative analysis of the reaction products preserved in tubes and those exposed to air showed them to be in close agreement.

Jovivitsch attempted to explain the scientific riddle of this chemical anomaly by attributing it either to experimental error or the transformation of elements. Because he took great care and made very precise analyses, Jovivitsch was convinced that a transmutation had occurred. His opinion was reinforced by the fact that the condensation products were radioactive.

(3) M. E. De Boismenu

In 1913, the French engineer M.E. De Boismenu, the director of an electric carbide furnace plant in Paris, announced the issuance of his patent for a very easy new method to produce artificial diamonds in an electric furnace. The largest specimens produced at that time was 2-1/2 millimeters in diameter; it was "cut with 32 facets with remarkable dexterity."

The furnace was built of refractory brick and had two carbon electrodes (6-1/2" diam.), one of which could be adjusted manually. The bed was packed with a mixture of powdered lime and carbon; this was found to be the best way to support a trough, made of fused calcium carbide (CaC), in which the carbon electrodes operated. The trough was filled with 8 lb of CaC fragments and melted (34 V / 800 A / 6 hr). More CaC was piled on the trough, and the whole was covered with more of the lime-carbon mixture, and finally with refractory bricks. The furnace was run for another 12 hours. The negative pole became covered with a black carbonaceous deposit weighing about 700 gr. The mass was soaked in water and the diamonds were picked out; their size varied from 1/2 to 2-1/2 mm diameter. The last reported run of the furnace (12 hr / 700-800 A / 24-25 V) produced over a dozen diamonds, some as large as 1/10 inch diameter. They were indistinguishable from natural diamonds. (21)

A similar method was developed by Felix Sebba, a chemical engineer at the Virginia Polytechnic Institute & State University (Blacksburg, VA). He improved on the technique developed by Charles V. Burton in 1905 (C dissolved in molten Pb-Ca, then cooled). Sebba dissolved calcium carbide in molten lead. Steam at 550° C was passed over the melt and reacted with the Ca (but not the Pb), forming calcium hydroxide which forms a slag on the surface. Some of the carbon crystallizes as diamonds. Although these methods are not transmutations, they certainly are most interesting allotropisms. (5, 19)

Lea Potts was featured in *Life* magazine (March 1993) for his production of diamonds with a blowtorch.

(4) J. B. Hannay

In 1880, J.B. Hannay of Glasgow made diamonds from Dippel's Oil, catalyzed by lithium metal in thick iron tubes at red heat. The minute yield (14 mg) of Type B blue diamonds exhibited all the characteristics and properties of natural diamonds. Hannay was attempting to produce nascent carbon. He found that when carbon is liberated from a nitrogenous hydrocarbon in the presence of Li, Na, Mg or K at red heat and high pressure, the metal hydride is formed, and the carbon reacts with (or is stabilized by) the nitrogen and assumes diamond form. No diamonds were found in experiments without N. (8, 9)

Dippel's Oil is a nitrogenous by-product of the dry distillation manufacture of bone char. The principal N-ingredient is pyridine. The iron tubes were 20" x 4" o.d. x 1/2" i.d.. Most of them ruptured during the experiments.

The largest yield was obtained from a mixture of "paraffin spirit boiling at 75° [a mixture of light paraffins], 90%, together with 10% of carefully rectified bone-oil [Dippel's Oil, bp 115-150°]; these were placed with metallic Li (4 gr) in an iron tube" (20" x 4" o.d. x 1/2" i.d.) which was heated to redness for 14 hours. The tubes usually exploded, or the vapors escaped through the porous iron, or combined with it. Only 4 experiments (out of 34) were successful.

In his Bakerian Lecture for 1918, Sir Charles Parsons reported that he had repeated Hannay's experiments without success. He doubted that Hannay had made genuine diamonds. Bannister and Lonsdale, however, obtained samples of Hannay's diamonds from the British Museum;

X-ray analysis showed they are genuine. (2, 3, 20)

Hannay's approach to diamonds is interesting, but it is not feasible for industrial application. Several other methods of manufacturing diamonds have been developed since then, but none are so simple as the technique developed by De Boismenu.

(5) Dr. Samuel Brown

Dr. Samuel Brown presented a report to the Royal Society of Edinburgh in May 1841 concerning his "Experimental Researches on the Production of Silicon from Paracyanogen":

"I venture to announce, as the result of my inquiries, that carbon and silicon are isomeric bodies, and that the former element may be converted into a substance presenting all the properties of the latter."

Dr. Brown prepared paracyanogen and reacted it in various ways to yield residues of silica. The experiments were replicated by Dr George Wilson and John C. Brown in August 1843. Although they obtained residues of silica in several runs (8.4 gr in one test), it was probably a contaminant in the potassium ferrocyanide. They stated:

"We tried the greater number of Dr Brown's processes, and rejected them one after another, without pursuing their investigation farther, on finding they would not yield quantitative proofs of the conversion of carbon into silicon... In conclusion we need scarcely say, that we have been unable to supply any proof of the transmutability of carbon into silicon."

Prof Liebig also reported negative results:

"We have repeated all the experiments of Dr Brown on the production of silicon from paracyanogen, but we have not been able to confirm one of his results. What our experiments prove is, that paracyanogen is decomposed by a strong heat into nitrogen gas, and a residue of charcoal, which is exceedingly difficult of combustion." (24)

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Figure II.3.1

The Ohsawa-Kushi Transmutation of Carbon

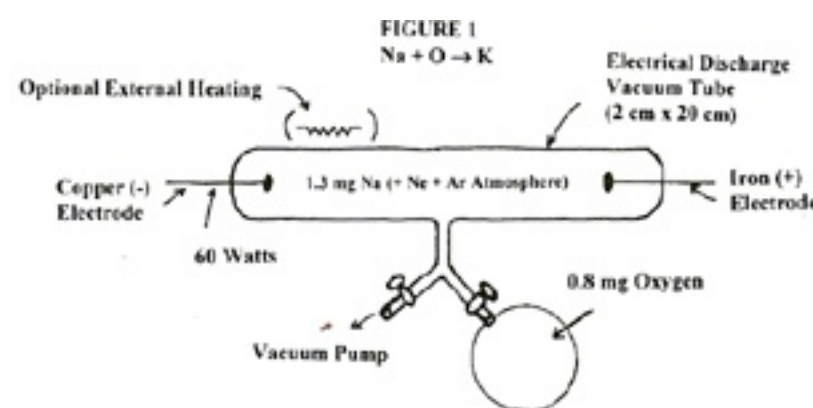


Figure 3.2
 $2(\text{C} + \text{O}) \Rightarrow \text{Fe}$

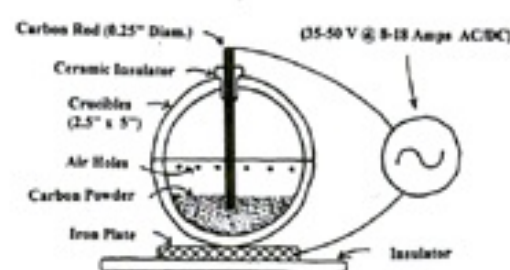
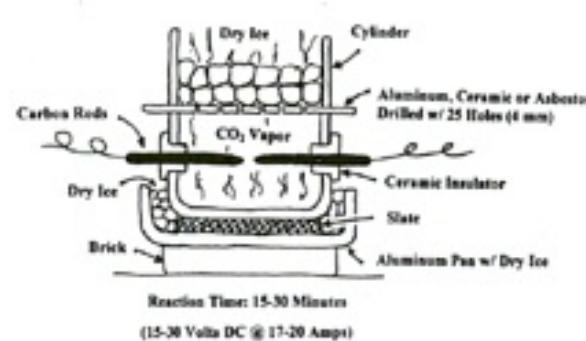


Figure 3.3
 $2(\text{C} + \text{O}) \Rightarrow \text{Fe}$



Part II

Modern Arcana

Chapter 4

Decomposition of Tungsten to Helium

- (1) G. Wendt & C. Irion
- (2) References

(1) Gerald Wendt & Clarence Irion

Gerald L. Wendt and Clarence E. Irion (University of Chicago) reported their "Experimental Attempts to Decompose Tungsten at High Temperatures" to a meeting of the American Chemical Society in Illinois in April 1922. (4, 5)

Wendt and Irion claimed to have completely disintegrated tungsten wire into helium by means of a high-voltage discharge in glass bulbs. In the mean of 21 experiments, 1.01 cc of helium was obtained from a wire length of 39.62 mm with a weight of 0.713 mg, exploded with 29.6 kilovolts. The procedure consisted of charging a condenser to 100 Kv and discharging it at high speed through an extremely fine wire. The resulting explosion generated a pressure of about 1,000 lb/in² and a temperature over 50,000° F. The method introduced as much as a coulomb of electricity into the tungsten wire within 1/300,000th of a second. The accompanying flash of light was about 200 times as bright as sunlight, and lasted less than 1/100,000 of a second. No smoke or other residue was ever found after the explosions.

Wendt and Irion described the electrical circuit and bulb (Fig. 4.1, 4.2) as follows:

"The primary circuit of the transformer, T, operates on a 220-volt alternating current power line through an inductive resistance, E. In order to prevent a destructive back-pulse into the power line should the charged condenser accidentally be discharged through the secondary circuit

of the transformer, 2 condensers of 1 microfarad capacity each are bridged across the primary circuit with a ground connection, as shown at A. The primary circuit was heavy enough to carry 40 amperes during the brief period necessary to charge the large condenser; the secondary circuit furnished 100,000 volts though ordinarily only some 30,000 were used. The secondary circuit was connected to the two sides of the large condenser, C, one side leading through the hot cathode 'kenotron' rectifier, R, which was especially designed for heavy service and a large factor of safety. Its cathode filament was heated by the battery of dry cells, B. The discharge circuit led from the two sides of the condenser and contained only the spark gap, S, and the wire to be exploded, H. This discharge circuit was made as short and compact as possible, of heavy copper strip, in order to reduce resistance and inductance to a minimum and thus allow a rapid and non-oscillating discharge through the wire in the minimum time, thus concentrating the energy input and giving the maximum temperature in the material to the wire. To give maximum capacity and hold maximum voltage the condenser was built of 100 glass plates 60 by 75 cm covered with heavy tin foil and cast into solid paraffin with a gap of 5 mm between plates. The condenser showed brushing at the edges of the plates at 30,000 volts but held 45,000 volts without puncturing. The capacity was about 0.1 microfarad. The spark gap consisted of two 2 cm brass spheres, their separation adjustable to the maximum voltage of the condenser. Its use is important since it is the only means for protecting the condenser from excessive charge by the transformer, and for insuring a complete and sharp discharge at the proper moment.

"Tungsten was chosen for the material of the wire to be exploded chiefly because its high atomic weight made its decomposition probable on the hypothesis adopted, and also because it is hard enough to allow convenient manipulation and support even in excessively thin wires. The wires were 0.035 mm in diameter, about 4 cm long and weighed 0.5 to 0.7 mg. They had sufficient strength to be sprung into place between the larger electrodes shown in Fig. [4.2] without welding or clamping.

"The construction of the explosion bulb is shown in Fig. [4.2]. It has a volume of about 300 cc, and was constructed of heavy Pyrex glass without strain and in good spherical form, for it was required to withstand momentarily a tremendous outward pressure. Thick bulbs invariably broke during the explosion because of insufficient elasticity. Thin bulbs may be used if the bulb is immersed in a vessel of water, which gives sufficient support together with elasticity. The large side-tube is the neck at which the bulb was sealed from the pump system after evacuation, and through which the wire was sprung into place between the electrodes by means of pincers. The smaller side tube contained a third sealed-in electrode, and served for the spectroscopic examination of the gas within, one of the electrodes being used for the other terminal of the exciting induction coil.

"The three electrodes were constructed as is shown in detail in Fig. [4.2]. B was the electrode itself, made of... # 20 tungsten wire. This was firmly sealed directly through the Pyrex walls in the manner shown, for mechanical strength. The entire surface of the electrodes was first covered with a thick layer of Pyrex glass, A. The tip was then carefully ground off until the tungsten was exposed. Then a hole, C, was drilled in the end with a # 80 drill, 0.343 mm in diameter, the hole being less than 0.76 mm deep, to receive the fine wire for explosion. The electrodes were then sealed into the bulb. This method of sealing in the electrodes had the two purposes of excluding the chance of leakage of air inward through the seal after evacuation and of preventing the liberation of gas from these electrodes by the heating effect of the explosion itself. With such electrodes only the surfaces of the three small holes were exposed to the effects of the explosions, and one of these, in the spectroscopic capillary, was far removed from the scene of the explosion. In some of the early explosions brass electrodes were used welded to a tungsten wire sealed through the glass.

"The bulb was vacuum-evacuated for 15 hours by a mechanical pump and two mercury-vapor diffusion pumps in series with a liquid-air trap to capture any mercury vapor. The bulb was supported in a furnace and heated to above 350° C to drive off any gases contained in the glass, and out-gassed coconut charcoal (immersed in liquid air) was employed inline to absorb gases just prior to sealing the bulb. In addition, about 0.2 amperes from a battery was passed through the electrodes and the filament to heat them above 2000° C for 15 hours to drive off any other absorbed gases. Bulbs prepared in this manner showed no spectrum, fluorescence, or conductance."

After the wire was exploded, spectroscopic analysis of the gas revealed the strong yellow line of helium, and the faint green line of mercury. Other faint lines were detected but not identified: two red, one bright blue, and one pale violet. On some occasions, two unidentified faint yellow lines and a second violet line were detected. Hydrogen and neon were absent. Wendt and Irion commented:

"The appearance of helium and the absence of hydrogen is interesting for two reasons. In the first place, it seems to dispose of the objection that the helium arose from gas remaining in the wire, for in that case hydrogen should also have been visible, for it was probably originally present in the wire in much larger quantity than was helium. In the second place, if the helium does arise from a decomposition of the tungsten atoms, the absence of hydrogen is also interesting because the atomic weight of tungsten is exactly 46 times the atomic weight of helium, and Rutherford was also unable to detect hydrogen from the bombardment with α -rays of carbon, oxygen, magnesium, silicon, and sulfur, whose weights are multiples of 4, though he did detect it with boron, nitrogen, fluorine, sodium, phosphorus and aluminum, whose weights are not such multiples." (2, 3)

The possibility that helium could have been present in the tungsten could have been excluded by exploding the wire using a greater inductance to obtain a slower explosion at a lower temperature, giving complete vaporization without decomposition. However, there was not enough time available to conduct such tests. The vacuum method of preparing the tubes rigorously excluded contamination, but did not allow the collection, measurement and analysis of the gas produced. Therefore, Wendt and Irion also conducted explosions in carbon dioxide at atmospheric pressure in slightly modified bulbs; this enabled them to study the helium they produced. The carbon dioxide was carefully purified and blank-tested. This method also excluded the possibility of contamination from leakage of air into the bulbs, or by the release of gas from the glass bulb or the electrodes, because the explosion was too rapid to liberate any helium from those sources by heat from the tungsten vapor. The brief duration of the high temperature could not cause the carbon dioxide to decompose into carbon monoxide and oxygen, and the scientists performed pertinent tests to prove the point.

Unfortunately, the Associated Press widely published an exaggerated account of the "transmutation" experiment, based on the oral presentation which Wendt and Irion had made to the American Chemical Society in April, 1922. In a footnote to their article published in the *Journal of the ACS* (September 1922), they emphasized that, "this report is preliminary, and that nothing is proved beyond the importance of the problem and the promise of this method... For the sake of clarity it is suggested that the term *disintegration* be reserved for the spontaneous processes of radio-activity, that *decomposition* be applied to the splitting of complex atoms into simpler parts, and that *transmutation* be understood to imply some degree of synthesis of atomic nuclei."

Wendt and Irion planned a complete analysis of the gas they collected, but the sample was lost in an accident. "Then the work was stopped by the failure of health of the senior author..." Two years later, S.K. Allison and William Harkins reported inconclusive negative results from their version of the experiment. *Scientific American* magazine, however, sponsored a test of the experiment and published the successful results! The issue remains unresolved to this day. (1)

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-

Figure II. 4. 1
Electrical Circuit

C = Condenser - S = Spark Gap - W = Wire - B = Battery - R = Rectifier - T = Transformer
A = Small Condensers - G = Ground - E = Resistance

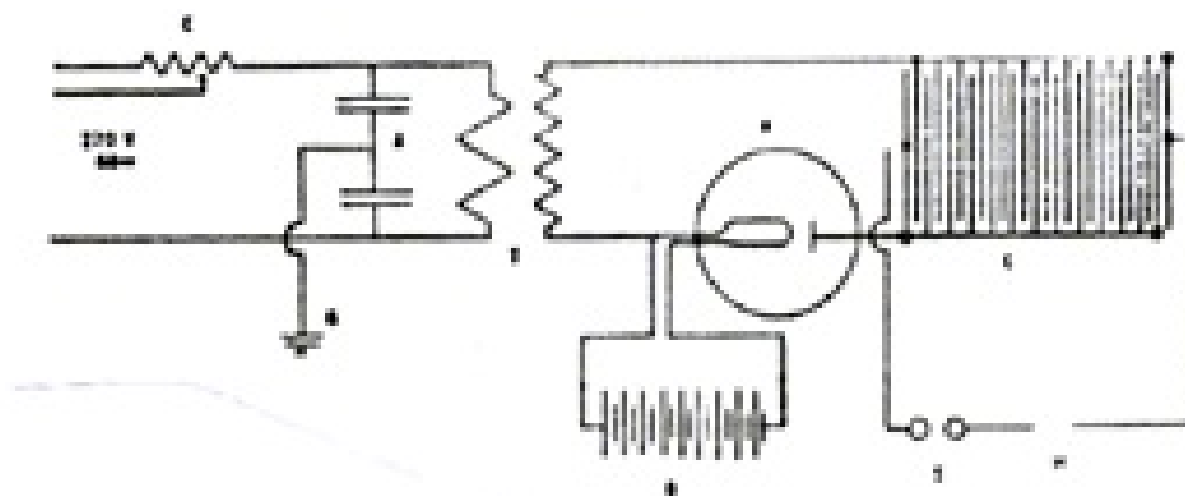
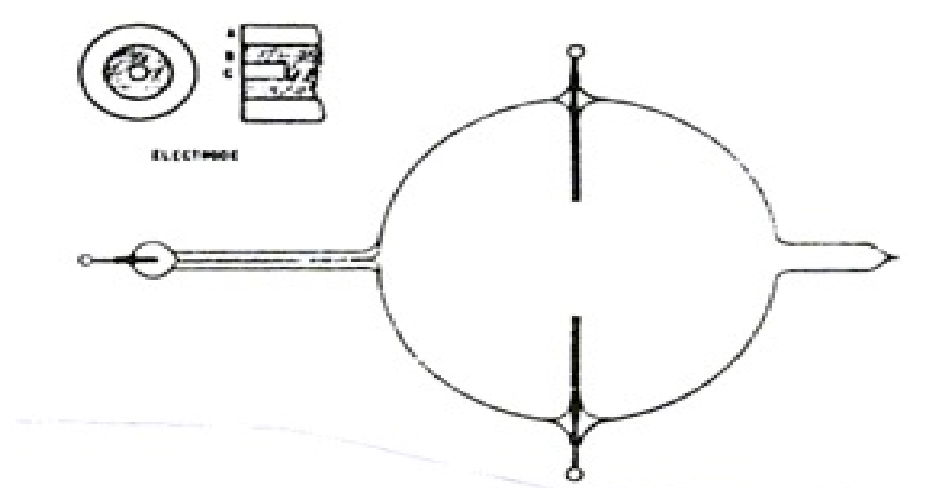


Figure II. 4. 2

Figure 4.2
Explosion Chamber



Part II

Modern Arcana

Chapter 5

Transmutation of Lead

- (1) A. Smits & A. Karssen
 - (2) References
-

(1) Arthur Smits & A. Karssen

Prof. Arthur Smits and Dr. A. Karssen (Univ. of Amsterdam) published reports of their alleged transmutation of lead into mercury and thallium in 1924. Their work was inspired by that of Prof. Miethe, who claimed to have transformed mercury into gold in a modified Jaenicke mercury ultraviolet lamp. (4, 5)

The lamp was constructed of lead quartz. Two legs (A, B), ending in narrow tubes, contain two steel electrodes cemented with sealing wax. The electrodes were inserted in two small removable copper water coolers (G, H). Pure liquid lead was poured into storage vessel C, after which the open end was sealed off. The lead was kept liquid at 350° C by an electric furnace around C. Tube D contained capillary F and terminated in stopcock K, which was connected to a mercury diffusion pump (Fig. 5.1).

When a high vacuum was attained, vessel C was further heated with a Bunsen burner to dissociate all the oxide and gases. Stopcock K was then closed and disconnected from the pump. The apparatus was tilted so the liquid lead ran into the two legs (A, B) of the lamp. The legs of the lamp were heated to redness to drive off the gases from the electrodes, and the lamp was evacuated again. Then copper water coolers were placed around the legs, and the lamp was ready to use. At the end of the experiment, the liquid lead was returned to vessel C, which was continuously heated. The lead was specially prepared and purified by the firm of Kahlbaum of Berlin to prevent every contamination, especially mercury.

The experiment was monitored with a quartz spectroscopy. After a current of 30-35 amperes/8 volts was passed through the system for 6 hours, a few mercury lines began to appear in the spectrum. After 10 hours, the entire series of lines of mercury, plus those of thallium, were apparent in the visible and ultraviolet spectrum.

In 1926, Smits and Karssen reported further developments of their experimental protocol. The lamp was redesigned, and the mercury diffusion pump was replaced by a mechanical pump to eliminate the possibility of contamination from that source. The use of a mercury manometer was avoided by employing a glass spring manometer. All the equipment was examined with a spectroscopy to make certain it was free from mercury and thallium. They described their method as follows:

"After filling the storage vessel, the lamp and the lead were heated in high vacuum to redness. The lead oxide being dissociated, the liquid lead was as brilliant as mercury. Then the lead was brought into the lamp, and after ignition the spectrum was observed at 25 V/36 A, by a Hilger quartz-spectrograph. Further, the spectrum of a quartz mercury lamp was observed, and also the scale in such a way that, to facilitate comparison, the different spectra were adjacent. Thus we obtained the spectrum of the lead in its initial state. After that we burned the lamp at 40 A/80 V for 10 hours. After having done this the lead was poured into the storage vessel to obtain thorough mixing; the lead was then brought into the lamp again, and after ignition the spectrum was observed at 25 V/36 A. The result was that, whilst initially the lead spectrum showed only very weakly the mercury line 2536 in the ultra-violet, after 10 hours' burning the strongest mercury lines had appeared in the visible as well as in the ultra-violet part of the spectrum, and also the most characteristic thallium line, indicating a transmutation of lead into mercury and thallium.

"Since our experiments showed that a high current density is very favourable to this transformation, we used currents up to 60 A, but that seemed to be dangerous, because only by intensive air cooling could melting of the quartz-lamp be prevented.

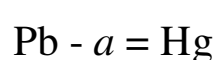
"We thought it better, therefore, to change our method a little, by applying not a continuous electrical current but sparks of high current densities... While the lamp was kept oscillating by a mechanical arrangement... a current of high-density [60-100 A] was breaking and making... This method was very successful... After 9-1/4 hours' sparking all mercury lines, even the very weak ones, were present...

"This, however, does not yet prove the transmutation to be strong, as it is known that a relatively strong quantity of mercury can cause the spectrum of another element to disappear. But at all events our spectra show in a very convincing way the transmutation of lead into mercury..."

The researchers also conducted experiments with a nitrogen atmosphere at various pressures and a liquid dielectric (carbon disulfide) with 100kv/2 milliamperes for 12 hours. The mercury was chemically detected as the iodide. Similar results were obtained with 160 kv/10-20 milliamps. In six such experiments, 0.1-0.2 mg of mercury was recovered. The researchers suspected that the CS₂ had contained a trace of some organic mercury compound. Positive results were still obtained, however, even after it had been thoroughly purified.

Smits offered this explanation for the transmutations:

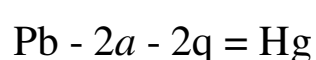
"In the case of the transmutation of lead into mercury, the inactive isotopes having the atomic weights 206, 208 and 210, we may assume, for example, that the isotope 206 suffers a transmutation giving an isotope of mercury:



$$201 - 4 = 202$$

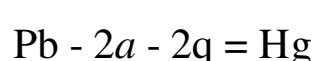
$$82 - 2 = 80$$

"But we may also assume that the other isotopes 208 and 210 undergo a transmutation. In that case we obtain:



$$208 - 4 = 202$$

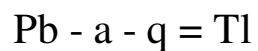
$$82 - 2 = 80, \text{ and:}$$



$$208 - 8 = 200$$

$$82 - 4 + 2 = 80$$

"In the case of the transmutation of lead into thallium we can assume, for example, the following process:



$$208 - 4 = 204$$

$$82 - 2 + 1 = 81$$

"We see that of the different transmutation possibilities, [the first] is most simple. Moreover, I suspected this process could be expected first, as lead is the end-product of the spontaneous radioactive transformations... The best method of learning the nature of the transmutation is to examine spectroscopically whether the process is accompanied by the formation of helium or hydrogen, and to determine the atomic weights of the heavier products...

"While using the old quartz-lead lamp, negative results were obtained only if the current strength was lower than 15 amperes, but now, with our new lamps... spectroscopically negative results were found even using 60 amperes. The lamp showed distinctly different properties in burning and sparking. This proves that the phenomena taking place in the quartz-lead lamp depend on influences unknown until now, so that transmutation in the quartz-lead lamp is not so easy to reproduce as we expected." (2)

In 1926, A.C. Davies and Frank Horton reported that they had been unsuccessful in their attempts to replicate the Smits-Karssen experiments. They offered these speculations:

"In the case of the transmutation of lead (82) into mercury (80), the change may occur either by the intermediate production of thallium by one of the processes already suggested [viz, "the entry of an electron into, or by the removal of a proton from, the nucleus of the mercury atom."], and the subsequent conversion of the thallium into mercury by a second similar process, or it can occur as a one-stage change by the ejection from the lead nucleus of either one doubly charged positive particle (presumably an α -particle) or two singly charged positive particles (presumably protons) simultaneously. If the process occurs by the intermediate production of thallium, one would expect to find evidence of a relatively large amount of thallium compared with the amount of mercury produced. Prof. Smits does not seem to have found such an effect, for he records stronger evidence of the production of mercury than of the production of thallium...

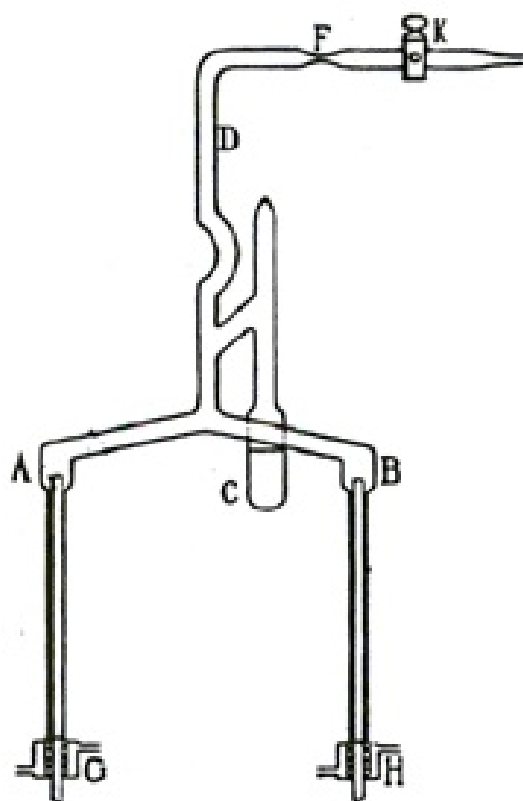
"When atoms are bombarded by electrons, it is possible that in a few instances an electron penetrates within the *K* shell of extra-nuclear electrons, though it is certainly surprising that this is possible in the circumstances of these experiments. When such a penetration does occur, the electron will be attracted towards the nucleus and may possibly be absorbed by it. Even so, in some cases the absorption of an electron by the nucleus may render the latter unstable and disruption may occur with the ejection of a proton and an electron, either separately or together, in which case the final chemical state of the disturbed atom will be the same as if the electron had been absorbed by the nucleus and a stable condition attained."

For some unknown reason, these explorations were not continued, and the issue disappeared from the scientific literature after 1928. This line of research remains open to exploration, since the questions it raised remain unanswered to this day.

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Figure 5.1
Smits' & Karssen's Jaenicke Lamp



Part II

Modern Arcana

Chapter 6

Transmutation of Hydrogen

- (1) W. Ramsay, *et al.*
 - (2) References
-

(1) William Ramsay, *et al.*

Dozens of scientific papers were published between 1905 and 1927 concerning the mysterious appearance of hydrogen, helium and neon in vacuum tubes. The matter has not been resolved.

The first such report, written by Clarence Skinner, was published in *The Physical Review* in July 1905:

"While making an experimental study of the cathode fall of various metals in helium it was observed that no matter how carefully the gas was purified the hydrogen radiation, tested spectroscopically, persistently appeared in the cathode glow..."

Skinner eventually located its source in the cathode. (26)

In 1912, Sir William Ramsay reported "The Presence of Helium in the Gas from the Interior of an X-Ray Tube", and J.J. Thomson published an article "On the Appearance of Helium and Neon in Vacuum Tubes" in 1913. Thomson was investigating a new gas called X_3 (atomic weight 3: tritium), a polymerized form of hydrogen. He used the positive ray method to detect the helium and neon because it is more sensitive than spectral analysis and provides much more definite data. There was no apparent connection between the type of gas used to fill the tubes and the appearance of the new gases (X_3 line 3 in H, N, He, O, and air; Ne line 20 in H, N, O, HCl, and air). Another line often appeared corresponding to atomic weight 10; it is probably due to neon with two charges of electricity, but brighter than expected. (22, 23, 29, 30)

The experimental apparatus was a large glass bulb fitted with aluminum electrodes; the discharge was produced by an induction coil. Thomson described it as follows:

"The positive rays for the analysis of the gases were produced in a vessel containing gases at a low pressure. I shall call this the testing vessel; the vessel in which the various processes for generating X_3 , were tried (the experimenting chamber) was sealed on to the testing vessel, but separated from it by a tap. Thus the pressure in the experimenting chamber was not restricted to being the same as that in the testing vessel, but might have the value which seemed most appropriate for any particular type of experiment. After these experiments were over, the tap was turned and some of the gas from the experimenting chamber let into the testing vessel; a photograph was then taken, and by comparing it with one taken before turning on the tap the new gases present in the experiment chamber could be detected."

Thomson finally determined that the gases were being occluded by the electrodes. He concluded:

"These gases are present in the metal independently of the bombardment, and are liberated by the action of the cathode rays."

"I would also like to direct attention to the analogy between the effects just described and an everyday experience with discharge tubes --- I mean the difficulty of getting these tubes free from hydrogen when the test is made by a sensitive method like that of the positive rays. Though you may heat the glass of the tube to melting point, may dry the gases by liquid air or cooled charcoal, and free the gases you let into the tube as carefully as you will from hydrogen, you will still get the hydrogen lines by the positive ray method, even when the bulb has been running several hours a day for nearly a year. The only exception is when oxygen is kept continuously running through the tube, and this, I think, is due, not to lack of liberation of hydrogen, but to the oxygen combining with the small quantity of hydrogen liberated, just as it combines with the mercury vapor and causes the disappearance of the mercury lines. I think this production of hydrogen in the tube is quite analogous to the production of X₃, of helium, and of neon." (31)

Prof. N.J. Collie and H. Patterson conducted the early stages of their work independently and from different points of view. They began collaborating when they learned they were getting the same results. Patterson was interested in the pure physics of the electron, and had developed a hypothesis that "by doubling the electrical charge on hydrogen atoms, it might be possible to convert this into an a particle, and so into helium." He got neon instead. The experimenters took all due precautions against error, yet they repeatedly obtained traces of helium and neon. The tubes were surrounded by an exterior vessel which was evacuated, or contained neon or helium; the same results were obtained. In one such experiment, Prof. Collie tested the vacuum-evacuated exterior vessel and found helium with neon. Patterson replicated the experiment, and then repeated it with an oxygen atmosphere in the exterior tube. Neon was found therein. It appeared that neon was formed by a union of helium and oxygen. They also performed numerous blank experiments to exclude the possibility of contamination from various sources. (4, 9, 21)

R.J. Strutt and other workers found no helium in their experiments. (11, 15, 27)

In 1914, Collie reported his "Attempts to Produce the Rare Gases by Electric Discharge." Finely powdered, heated uranium was placed in a cathode discharge bombardment tube; the equipment was carefully purged in several ways. 1-2 hours of electrical treatment yielded traces of helium and neon in 11 experiments. Collie concluded:

"If the neon and helium found were due to an air leak, it is difficult to account for the disappearance of the argon, which should have been present to the extent of one thousand times as much as the neon and helium found. The amount of argon present, however, was too little to be measured, as it made no difference in the volume of neon and helium... The presence of the nitrogen is probably due to a nitride of uranium... That comparatively large amounts of neon and helium should come off from uranium by bombardment with the cathode rays, and not by heating, is a matter of interest; also that in one experiment a change of coil should affect the result is an observation that must if possible be repeated...

"That the presence of neon and helium in vacuum tubes, after the electric discharge has been passed, is due to an air leak seems most improbable. Where the gases come from has yet to be proved. They have been found by Sir J.J. Thomson, by Sir William Ramsay, by Mr. G. Winchester, and by the author [J. N. Collie], Mr. Hubert S. Patterson, and Mr. Irvine Masson... Whatever the source may be, it is only by further experiments that the question will be resolved..."

Collie, Patterson, and Masson described the electrical circuit, discharge tubes and testing apparatus, precautions and controls, bombardment experiments, results, and possible sources of the gases in the *Proceedings of the Royal Society of London* (1914).

"The coils gave 12-inch sparks with either a mercury or a hammer interrupter. The nature of the break has some influence on the result of the experiment; in the case of a mercury break, better results were obtained with a rectifier. The current in the secondary circuit averaged a few millamperes. The form of the discharge tubes varied from simple spectrum bulbs with disc electrodes to elaborate jacketed designs. The gases employed were generated by chemical and electrical methods and were tested for purity." (7)

The testing apparatus was either directly connected to the discharge tube, or the gases were transferred by means of an inverted siphon over mercury after being pumped from the reaction vessel. Hydrogen was removed by exploding it with oxygen in a burette or in the collection tube, which had platinum wires sealed in it. In some designs, the hydrogen was removed by copper oxide and phosphorus pentoxide. Oxygen and moisture were removed by cooled charcoal, liquid air, and Na-K alloy. The He and Ne were collected in a fine capillary tube with a fine platinum wire sealed through the top:

"It is found that the minimum quantity of neon detectable probably equals that contained in a few cubic millimeters of atmospheric air. If, owing to defective working, the neon actually was atmospheric, the accompanying argon would be very easily seen (as the ratio Ar:Ne in air is about 700:1) when the particular method used was such as might have eliminated nitrogen beforehand; in the apparatus depicted, nitrogen naturally made its presence at once evident if a very small part of a cubic millimeter of air was present... In many of the experiments, the total volume of gas used was so small that even if it had been all atmospheric air, it could not have accounted for the quantities of the neon, and still less for those of the helium, which were obtained... We wish to point out that a great many of our experiments have yielded negative results, for as yet unexplained reasons."

The electrodes were made of Pd, Cu, Pb, Tl, Li, Na, K, Al, and Mg. Some bombardment experiments were conducted with anti-cathodes of Pt, Tl, U, KF, KCl, KI, RbCl, Cs₂CO₃, CaO, and BeO. (14)

Besides the several precautions against air-leaks, Collie, *et al.*, tested for nitrogen; The ratio of N₂:Ne in air is about 80,000:1; therefore:

"If the Ne detected in an experiment came from air, the nitrogen accompanying it would be found in relatively overwhelming quantity..."

"If atmospheric contamination occurs at any point after the run, nitrogen must infallibly be detected during the examination. If any contamination occurs before the run, it would likewise instantly be made manifest on the first passage of the discharge through the experimental tube. It is only when an infinitesimally slow leak goes on during the run that it is possible that no nitrogen could be seen at any time; and to provide against this contingency an additional control is necessary, namely the absence of argon from the gas... The argon test is in reality superfluously delicate as a control; nevertheless it was used.

"In all experiments where helium was the chief product, atmospheric contamination is *ipso facto* excluded... contamination seems to be

thoroughly excluded in all the experiments."

Two hypotheses remained to explain the origin of the He and Ne: permeation through the walls of the tubes, and previous occlusion from them. Since positive results were obtained with electrodeless tubes, the electrodes can be eliminated as a source. In addition, when Al and other metals were melted *in vacuo*, no gases were occluded, but did so when the metals were bombarded; no He pre-existed in the metals. When Al was dissolved in KOH solution, no He or Ne was liberated. Melting the glass tubes *in vacuo* yielded no He or Ne. Two specimens of old glass (one Egyptian, approximately 1500 years old; another, Kien-lung Chinese) were examined; neither yielded He or Ne.

The authors closed their report with this note:

"We have endeavored to put the facts of the case as fully as possible, without reference to any preconceived theory. It is not our view that our experiments rigidly exclude all the possibilities which have been mentioned; but it is evident that the trend of the results is toward conclusions which, if they turn out to be true, would be of very obvious importance."

The issue then lay dormant for several years, but research was resumed after World War One. In 1926, Prof. Fritz Paneth and Dr. K. Peters determined that palladium had effected the transmutation of hydrogen to helium in their experiments. Paneth and Peters absorbed H in colloidal Pd (sponge, black, or palladinised charcoal) for 12 hours, after which time they detected the main spectral lines of He. No He production was observed with Pd preparations that had not absorbed hydrogen. Preparations of Pd stored at room temperature should therefore produce He; this was found to be the case. After the He had been removed, the sample was stored again, then examined; more helium was obtained. The experiment was repeated three times with the same results. (17-20)

The authors excluded all the possible sources of error in their experiments, such as the ingress of atmospheric He, absorption in glass or electrodes, preferential absorption of He by Pd, and the possibility of He being formed as a product of radioactive disintegration of Pd. No trace was detected of any energy liberated during the transformation, either as heat or radiation.

It would seem worthwhile and desirable to replicate these experiments with modern equipment and techniques.

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Part II

Modern Arcana

Chapter 7

Transmutations of Mercury

- (1) H. Nagaoka, *et al.*
 - (2) F. Tausend
 - (3) R. Caro & Kamala-Jnana
 - (4) References
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- (1) Hantaro Nagaoka ~ Adolf Miethe ~ Hans Stammreich



Prof. Hantaro Nagaoka

In March 1924, Prof. Hantaro Nagaoka, *et al.* (Tokyo Imperial University), described their studies on satellites of the spectral lines of isotopes of mercury and bismuth, in which they detected gold. In May 1925, they reported some of the technical details: Nagaoka and his co-workers discharged about 15×10^4 volts/cm for 4 hours between tungsten and mercury terminals under a dielectric layer of paraffin oil. They used the Purple of Cassius test to detect gold in the viscous residue of C, Hg, etc. The black mass was purified *in vacuo*, then by combustion with oxygen and extraction with HCl to yield Au, either in aqua regia solution or as ruby-red spots in the glassware. Microscopic films of Au were found on occasion. (19, 22)

Nagaoka stated that when a discharge was passed through drops of Hg falling between iron electrodes, the formation of silver and other elements was observed. Another run of the Hg lamp for more than 200 hours at 226 volts produced a milligram of gold, plus some platinum. He noted that it was essential to distill the mercury repeatedly below 200°C to ensure success of the experiment.

Considerations of the satellites of the spectral lines of Hg led Nagaoka to the conclusion that a proton is "slightly detached" from the nucleus of Hg, and it can be removed:

"If the above assumption as to the Hg nucleus is valid, we can perhaps realize the dream of alchemists by striking out a hydrogen-proton from the nucleus by α -rays, or by some other powerful methods of disruption [to produce Au from Hg]." (21, 26)

At about the same time, Professor Adolf Miethe of the Photochemical Department at the Berlin Technical High School found that the mercury vapor lamps used as a source for ultra-violet rays ceased to work after a time because of a sooty deposit that formed in the quartz tubes. Miethe tested these deposits and detected gold. Subsequently, Dr. Miethe and Dr. Hans Stammreich were issued German Patent Specification #233,715 (8 May 1924) for "Improvements in or Relating to the Extraction of Precious Metals":

"An electric arc is formed between mercury poles, in the same way as is done in mercury quartz lamps. With sufficient difference in potential, gold is then produced in the mercury. It is advisable to condense again the evaporated mercury. The quantity of gold produced depends, all other conditions being equal, on the quantity of current and also, among others, on the vapor pressure of the mercury or on the difference of potential in the arc. The difference of potential in the arc must therefore be sufficiently great. If it drops to excessively small amounts, the efficiency will be greatly reduced. If the difference of potential is increased, the quantity of gold formed will be considerably increased, beginning with a certain difference of potential." (12)

In July of 1924, Drs. Miethe and Stammreich announced that they had changed mercury into gold in a high-tension mercury vapor lamp. The experiment produced \$1 of gold at a cost of \$60,000, equivalent to over \$2 million (gold then sold for \$330/lb). Miethe used a potential of 170 volts applied for 20-200 hours. The lamp consumed 400-2,000 watts. A minimum potential difference is necessary. The yield of gold was minute: 0.1-0.01 mg. The mercury and the electrodes were analyzed and determined to be free of gold before the experiments. Miethe was not able to attempt to prove the production of alpha or beta rays, hydrogen or helium. (22)

O. Honigschmid and E. Zintl determined the atomic weight of Miethe's mercuric Au, using potentiometric titration of auric salt with TiCl_2 . It was found to be 197.26, which is heavier than ordinary Au (197.2). They emphasized the need for a mass spectrographic analysis. (10)

Frederick Soddy suggested that such a change might be effected by attaching an electron to the mercury nucleus:

"Consider the collision of high-speed electrons with mercury atoms. A small proportion of these electrons must be directed upon the nucleus. If they possess sufficient energy to penetrate the external levels of electrons in the mercury atom, they must reach the positively charged nucleus and be captured by it. Since the loss of an electron (as a β -ray) by the nucleus of an element results in the atomic number of the element in question being increased by one, the gain of an electron by an atomic nucleus must result in the diminution of the atomic number by one. This is quite general. In the case of an isotope of mercury of atomic number 80, the product will be an isotope of gold of atomic number 79. Upon existing knowledge it is simply a question of (1) the potential sufficient to drive the electron through the outer levels of electrons surrounding the mercury nucleus until it comes within the sphere of attraction of the powerfully charged nucleus; (2) whether the exceedingly small fraction of direct collisions with the nucleus that is to be anticipated will be sufficient to enable the gold produced to be detected.

"As regards the first, it may be expected that the repulsion of the external shell of mercury electrons will diminish rather than prevent altogether the chance of the radiant electron reaching the nucleus; for once the shell is penetrated, the resultant force on the radiant electron must be on the average an attraction... The chemical detection of the gold produced would probably be the more formidable experimental difficulty." (30)

A.S. Russell offered this opinion:

"The experiments on the transformation of Hg into Au suggest the possibility of the transformation of a nucleus into that of the element next below it by the absorption of one electron when both nuclei are stable. This occurs most obviously as an isobare. The possibility of the existence of two isobares of odd mass-number, Tl 205 and Au 199, among non-radioactive elements may be inferred from experimental work... Aston has shown the existence of the Hg isotope 199... This type of transformation may occur in the two pairs of elements Pb and Tl, Hg and Au... The masses of the Tl and Au produced are 205 and 199 respectively".

Aston advanced strong arguments against the probability of the alleged Hg-Au transmutation. Conceivably it could be effected by the addition of an electron to the nucleus of Hg, or by removing a proton from it, but the chance of an electron hitting a nucleus is extremely remote, and its weight would not make a significant contribution. Theoretically, a Hg isotope of atomic weight 197 could absorb an electron and produce common Au, but none of the six Hg isotopes (198, 199, 201, 202, 204, 209) identified by Aston have that weight. According to Aston, the removal of a proton from the nucleus by Miethe's method is untenable:

"The forces employed are ludicrously inadequate." (1, 22)

The process can be shown as:

$\text{Hg} - a - q = \text{Au}$

At. wt. 201 - 4 = 197

80 - 2 + 1 = 79 , or:

Hg - 4H - 3q = Au

At. wt. 201 - 4 = 197

80 - 4 + 3 = 79

In December 1924, the journal *Scientific American* announced that it would arrange for a comprehensive and exact test of the Miethe experiment. It was conducted at New York University by Prof. H.H. Sheldon and Roger Estey. They used a quartz lamp that contained no gold, and pure tungsten wires were sealed into the quartz to provide electrical contacts. The mercury was tested for purity. Three runs were made lasting from 30-50 hours each, at about 170 volts/13 amperes. The mercury was removed and tested:

"In no instance was any trace of gold detected... According to Prof. Miethe's reports, taken in connection with the theoretical interpretation of Prof. Soddy, this experiment should have produced a substantial quantity of gold; at least ten times as much as could easily have been detected by the analytical methods used. The negative result of the three experiments established, therefore, a strong probability that the transmutation announced by Prof. Miethe could not be confirmed. "(27)

The researchers procured from the manufacturers in Germany a replica of the lamp used by Miethe, and repeated the exact technique described by him. The final run lasted 172 hours, at 165-174 volts/12 amps, depending upon the temperature of the lamp:

"After the run the most careful analytical tests failed to show any trace whatsoever of the precious metal. It is necessary to conclude, therefore, that the experiment described by Prof. Miethe does not always result in the transmutation of mercury atoms into gold atoms. The experiments recorded by Prof. Miethe and our on experiments, conducted as far as humanly possible in exactly the method described by Prof. Miethe, are entirely discordant with each other.

"It would be improper to assert on the basis of these results alone, that Prof. Miethe's experiments have been proved to be definitely wrong. All that is proper to say is that a careful, competent, and long continued effort to confirm the German results has resulted in an entire failure to do so."

The *Scientific American* offered a suggestion:

"One very vital possibility of mistake in experiments of this character lies in the accidental presence of a small impurity of gold in the mercury employed... It is at least possible that such was the case... Perhaps it will be discovered that some minor and unnoticed detail in the arrangements or in the conduct of the experiment was really responsible for a successful transmutation in Prof. Miethe's case... We must confess, however, that we do not believe that this will prove to be the case. On the basis of all the evidence now available, including the experiments of Dr. Sheldon and Mr. Estey... it is our belief that a transmutation of mercury atoms into gold atoms does not occur and will not occur under the conditions which have been described by Prof. Miethe.

"It is to be freely admitted, of course, that a transmutation of mercury atoms into gold atoms is a theoretical possibility. The internal structures of the two atoms are similar. The removal of one unit of positive electric charge from the nucleus of a mercury atom, or the insertion of one additional electron into this atomic nucleus would result, it is believed, in the conversion of the mercury atom into an atom indistinguishable from the ordinary atoms of gold. Quite aside from the failure to confirm the results of Prof. Miethe, it remains entirely possible that one of these changes of atomic structure can be accomplished by some physical or chemical method yet to be discovered...

"Gold can be extracted from mercury, but mercury cannot be transmuted into gold."

Sheldon and Estey also commented:

"The suggested explanation of a change of the number of electrons in the nucleus changing mercury to gold seems good in theory, but incredible in fact, for the potential drop per mean free path of a Hg molecule is only about 0.1 volt in these arcs." (28)

Scientific American published another report of "More Mercuric Gold from Germany" in April 1926, announcing that a 10,000-fold increase in yield had been obtained in the production of mercuric-gold process. In his first experiments, Miethe found 1 part Au per 100 million parts Hg. The Siemens Works in Berlin bombarded Hg with electrons in extremely high vacuum, and obtained 100 mg Au from 1 kg of Hg. (27)

Siemens & Halske Akt.-Ges. registered their German Patent Specification (#243,670) in June 1925 for "Treating Mercury" with spark discharges, cathode rays, and canal rays. The difference of potential could be between 100-150,000 volts; capacitance was adjustable. Paraffin, ether, or carbon tetrachloride were used as dielectrics. (29)

Other researchers were not so optimistic. Erich Tiede, *et al.*, reported "The transmutation of Hg into Au is considered theoretically possible but all experiments carried out under strict control of the original Hg proved to be failures. When the Hg, which was purified according to Miethe and Stammreich, was distilled in an all-glass apparatus similar to the one used by Bronsted and von Hevesey to separate the isotopes of Hg, it showed still up to 10⁻⁹% Au. Optical detection is not sufficiently accurate, so they considered it necessary to melt the Au granule, which still held Hg, and weigh it on a microbalance. (32)

Milan Garrett (Clarendon Lab, Oxford) published completely negative results of his repeated attempts to reproduce the Hg-Au transmutation experiment by several methods. Garrett also attempted to prepare indium from tin, and scandium from titanium by X-ray bombardment, also without success. (5)

Erich Tiede, *et al.*, reported the negative results of their experiments:

"Mercury distilled according to Miethé still had 0.3 mg Au per kg Hg. After two high-vacuum distillations, no more Au could be detected. With this preparation the experiments of Miethé were repeated in several forms; no resultant Au formation was observed in any case."

E. Duhme and A. Lotz confirmed this negative finding. Duhme and Lotz also conducted numerous experiments with the initial cooperation of Miethé and Stammreich. They used very large arcs carrying 10 kw at 40 kv/800 A/cm² through Hg vapor. Gold was found in some instances, such as when a sufficiently powerful current was passed between electrodes dipped in mercury, but those experiments were rejected because there had been too much contact with foreign metals. They found that Au will escape detection if certain impurities are present, producing an inhomogenous distribution of Au that becomes detectable only after the arc treatment has coagulated it. (3, 4, 31)

Prof. Fritz Haber, *et al.*, made careful attempts to repeat the work of Nagaoka and Miethé. Mercury in which no Au could be detected was subjected to six different treatments, but no Au was formed. In some cases, Au was found, but only in amounts smaller than what could have come from the materials, or from contamination. Nor could the yield be increased at will. The applied treatments were made with liquid and solid dielectrics with high-tension discharges, arcs in low, normal and high pressures, and high-vacuum electron bombardments.

The extraordinary sensitivity of their detection methods was exemplified by the instance of a co-worker who suddenly found traces of gold in some material he was analyzing. No one else could detect Au in the other samples. It was found that the chemist habitually removed his gold frame eyeglasses before making an observation; on this occasion, he had removed the glasses and then picked up a strip of ultra-pure lead to perform an analysis. Another incident occurred when a lab worker was melting some Au; soon afterwards, another worker in the next room found Au in material which previously had none in it. The authors proved "merely that no method has yet been published whereby analytically detectable amounts of Au can be formed in Hg." (8)

Scientific American (April 1926) reported on a recent meeting of the German Chemical Society, at which positive results were announced:

"Prof. Haber, who previously cherished the greatest doubt as to the accuracy of the experiments, congratulated Prof. Miethé and related... that he himself could confirm the results by repetition of the experiment."

Haber apparently made the comment before he had completed his analyses of the electrodes, etc, and determined them to be the source of the Au.

Most of the criticism of Miethé, Stammreich, and Nagaoka's experimental work focused on the questionable purity of the mercury they used. Their Hg had been purified by distillation and by dissolving it in nitric acid (1:4) and fusing the residue with borax (0.1 gr). The resulting bead of Au, if any, was examined under the microscope. Usually they distilled the Hg twice, but in some cases as many as 15 times. Other researchers showed that no matter how carefully or often Hg was distilled, Au could be detected.

Miethé and Stammreich showed that the formation of Au from Hg depends on the application of intermittent electrical discharges. No gold forms when Hg is exposed to direct current. They also described a Hg-turbine which allowed 2,000 breaks/minute with a potential of 110 volts; the current varied from 1-12 amps. The experiments showed a linear proportionality between the yield of Au and the product of wattage and time. The average yield of gold was 0.0004 mg/amp/hour. The production of Au was facilitated by high-pressure. When the discharge was passed between Hg poles in a paraffin dielectric, the gold was found dispersed along the line of discharge, but not in the Hg poles. (15)

Alois Gaschler attempted to reverse the Miethé-Nagaoka experiment by treating gold with high-speed hydrogen nuclei. He assumed that one of them might penetrate deeply into the electron shells of Au, be held by the innermost shells as a "paranucleus", and form a "Tiefenverbindung". After 30 hours bombardment, the spectrum of the tube began to show Hg lines that steadily increased in intensity. Gaschler postulated that Hg is a gold hydrogen compound, similar to Manley's "Hg-Helide". (6, 7, 13)

The scientific community gave a fair and thorough review of the claims of Miethé, Stammreich and Nagaoka, who also skillfully managed the criticism. The entire issue, however, was never definitively resolved. These experiments ought to be repeated with modern equipment and analytical techniques.

The "conventional" transmutation of Hg by fast neutrons (Li + D) was first accomplished by R. Sherr, *et al.*, at Harvard University in 1941; three short-lived radioactive isotopes were formed.

(2) Franz Tausend

The German alchemist Franz Tausend began to produce gold from mercury in the 1920s under the auspices of General Ludendorff. His work was based on a circular table of 180 elements arranged according to a system of harmonic frequencies and atomic weights.

The ingredients of Tausend's formula are known to be: (Part 1) --- PbCl₂ (111 gr), KOH (60 gr) and (Part 2) --- K (76 gr), Na (55 gr) amalgamated with Hg (131 and 365 gr) melted under paraffin. Reaction of Part 1 (17.4 gr) with Part 2 (5.4 gr) yielded 5.4 gr Au.

Tausend also employed other reagents, but it is not known how or why they were used: ammonium carbonate, lime, potassium nitrate, soda, borax, sulfuric acid, and potassium cyanide, oxalic acid, uranyl nitrate, aluminum chloride, potassium arsenide, lead sulfate, tin oxide, silica, and asbestos.

The following process was described in the rare book, "Das Goldmacher Franz Tausend": 25.2 gr KOH were melted in a ceramic crucible. A pointed piece of ("male") quartz was used to stir the KOH. After 5 minutes, 1.45 gr Fe²O³ (ferric oxide) were added and mixed until completely dissolved. Then 3.15 gr of silica was added and heating continued until dissolution was complete. The mass was removed from the fire and allowed to cool. After 90 minutes, the crucible was heated to redness. When cooled, the mass had a metallic-mirror surface. When cut in cross-section, a lump of gold was found, weighing 1.9 grams.

(3) Roger Caro & Kamala-Jnana

The French alchemical school of the Temple of Ajunta published a few small hermetic texts (*Pleiade Alchimique, Concordances Alchimiques*, etc) in the 1960s. *The Complete Great Work Photographed* includes 40 photographs of the Ars Magna as it was performed by Kamala-Jnana and Roger Caro.

The method is described in classical alchemical language, but most of the materials and methods are clearly described. Mercury was used to produce a species of Philosophers' Stone. The process can be described in chemical terms as follows: Prepare (1) b-meta-cinnabarite (a-cinnabarite will not produce the same results, in my experience), (2) a concentrated solution of a mixture of lime and potash and (3) sulfureted potash (potassium polysulfide). Saturate the cinnabarite with the lime-potash mixture solution, then dry it. Repeat several times until albedo appears. Then saturate with a concentrated solution of potassium polysulfide, and strip the solvent (methyl or ethyl alcohol also can be used). Repeat this step until white needles appear (the Dragon's Teeth). The color changes from yellow to orange to red. The Stone is multiplied by grinding it to powder and repeating (7x) the wash with lime-potash. At this point, the Stone emits lights --- probably from the calcium sulfide byproduct of the reaction mixture. Further elaboration and transmutation of lead to gold can be accomplished according to the skill of the Artist.

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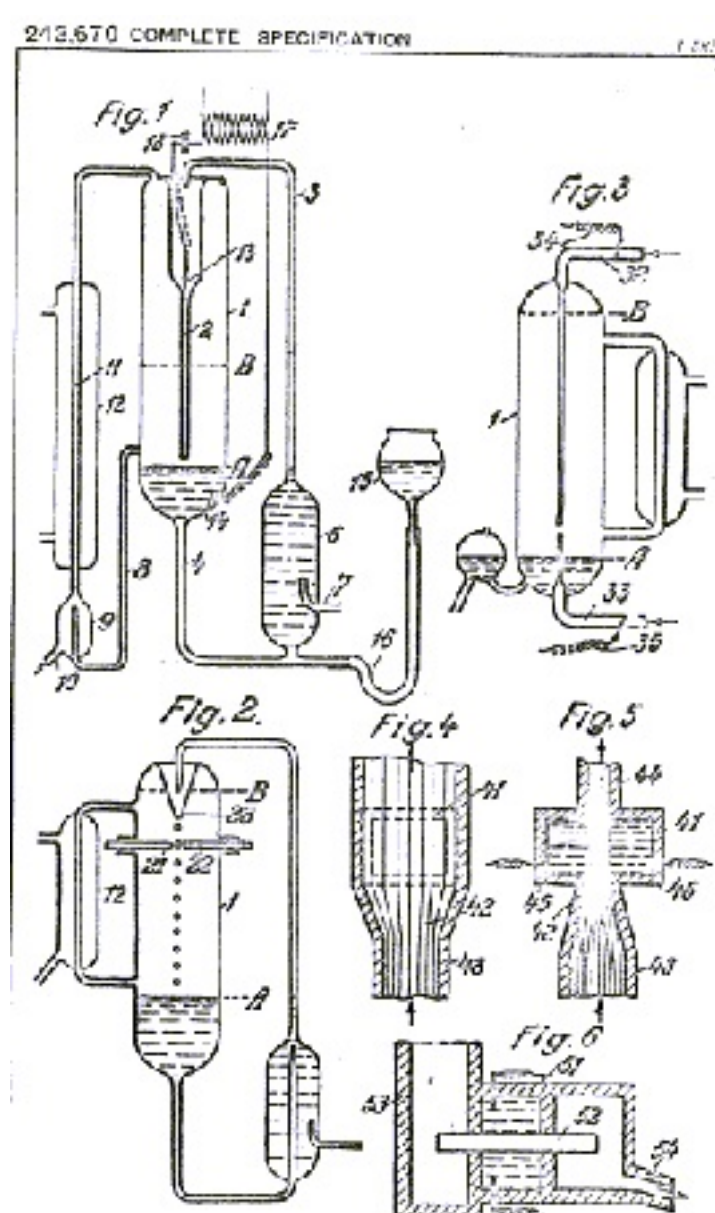
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Part II

Modern Arcana

Chapter 8

Biological Transmutations

- (1) Early Experimenters
- (2) L. Kervran
- (3) Other Modern Experimenters
- (4) References

(1) Early Experimenters

Long before the discovery of "cold fusion" by Pons and Fleischman, other scientists had variously found phenomenal evidence of non-radioactive, low-energy transmutation of light elements in plant, animals and minerals. These reactions have come to be known as "biological transmutations" or "nuclido-biological reactions". This class of nuclear reactions is of great importance to the progress of human knowledge in the fields of physics, cosmology, biology, geology, ecology, medicine, nutrition and agriculture. The exact mechanisms of biological

transmutations remain unknown, though a few theories have been proposed to explain them. Biological transmutations exist and cannot be denied; they are the very core of living nature, which could not function without them.

The study of biological transmutation can be said to have begun in the 17th century with the famous experiment by von Helmont, who grew a willow tree in a clay vase with 200 pounds of soil. After 5 years, he dried the soil and found that its weight had decreased by only 2 ounces: "Water alone had, therefore, been sufficient to produce 160 pounds of wood, bark and roots" (plus fallen leaves which he did not weigh). Presumably, there were some minerals in the water he fed to the tree. Nowadays we know that plants form carbohydrates from atmospheric carbon dioxide, but their mineral content is derived from soil, not air. It may be possible, however, that the ORMEs (Orbitally Rearranged Monoatomic Elements), discovered by David Hudson in the 1980s, exist in the atmosphere and are utilized by plants.

In 1799, the French chemist Vauquelin became intrigued by the quantity of lime which hens excrete every day. He isolated a hen and fed it a pound of oats that was analyzed for lime (CaO). Vauquelin analyzed the eggs and feces and found five times more Ca was excreted than was consumed. He concluded that lime had been created, but could not figure out how it happened.

In 1822, the English physiologist Prout studied the increase of calcium carbonate inside incubating chicken eggs, and was able to show that it was not contributed by the shell.

In 1831, Choubard germinated watercress seeds in clean glass vessels and showed that the sprouts contained minerals which did not previously exist in the seeds.

In 1844, Vogel also found evidence of biological transmutation. J.J. Berzelius reported the experiment in his *Treatise on Mineral, Plant and Animal Chemistry* (1849):

"He sprouted seeds of cress... in crushed glass deprived of sulfate or of any other sulfurous compound; he watered them with distilled water, covered them with a glass cloche and analyzed the air of the room, so as to determine the sulfur... A few months later, the adult plants with ripe seeds, were dried and burnt with a mixture of potassium nitrate and potassium carbonate; the result was that a quantity of sulfuric acid double that which was contained in the seeds was produced. These experiments demonstrate that either sulfur is not a simple element or that the source which produced the sulfur has remained unknown, despite all the care which had been taken to discover it..." (1)

Circa 1850, Lauwes and Gilbert observed an inexplicable variation in the amount of magnesium in the ashes of plants.

From 1875-1883, von Herzelee conducted 500 analyses that verified an increase in weight in the ashes of plants grown without soil in a controlled medium. He concluded that, "Plants are capable of effecting the transmutation of elements". His publications so outraged the scientific community of the time, that they were removed from libraries. His writings were lost for more than 50 years until a collection was found in Berlin by Dr. Hauscka, who subsequently published von Herzelee's findings.

M. Baranger (Ecole Polytechnique, Paris) became intrigued with Von Herzelee's experiments, but he thought that the number of trials had been too limited and the precautions against error were insufficient. Baranger decided to repeat the experiments with all possible precautions and a very large number of cases that would allow a statistical study. His research project lasted four years and involved thousands of analyses. Baranger verified the content of P, K, and Ca of vetch seeds before and after germination in twice-distilled water to which pure calcium chloride was/was not added. Hundreds of lots of 7-10 grams each were selected, weighed to 1/100th milligram, and graded, then germinated in a controlled environment. Baranger found a significant decrease in P in the Ca-series of tests. Non-germinated seeds and seeds germinated in the distilled water showed no significant change in their levels of K. Those seeds treated with CaCl₂ showed a 10% increase in their K content.

None of the specialists who examined Baranger's work were able to find any experimental errors. Baranger concluded:

"These results, obtained by taking all possible precautions, confirm the general conclusions proposed by V. Herzelee and lead one to think that under certain conditions the plants are capable of forming elements which did not exist before in the external environment.

"[The practical consequences] cannot be underestimated... Certain plants would bring to the soil some elements useful for the growth of other plants; this would lead us especially to define and revise the current notions on fallows, rotations, mixed crop, fertilizers and the manuring of infertile soils. Nothing prevents us from thinking that certain plants are capable of producing rare elements of industrial importance....

"In the sub-atomic field, the plant supplies us with an example of transformation which we are not capable of performing in the laboratory without bringing into action particles of high-energy... It seems that the theoretical consequences in the field of sub-atomic physics are not negligible."

In 1946, Henri Spindler, (Director of the Laboratoire Maritime de Dinard) investigated the origin of iodine in seaweed, and found that the algae *Laminaria* manufactured iodine out of water which contained none of the element. (16)

Prof. Perrault (Paris University) found that the hormone aldosterone provoked a transmutation of Na to K, which could be fatal to a patient; heart failure occurs when blood plasma K reaches approximately 350 mg/liter.

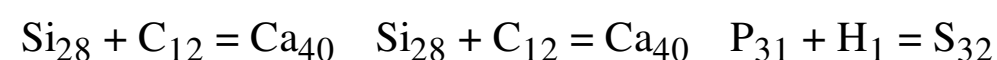
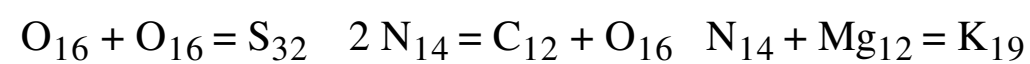
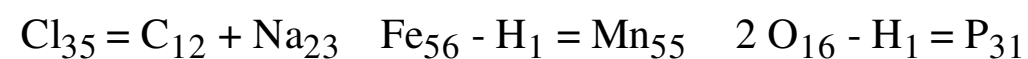
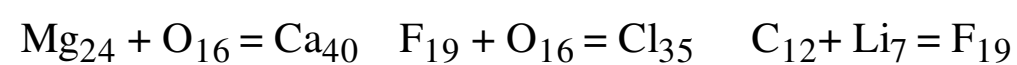
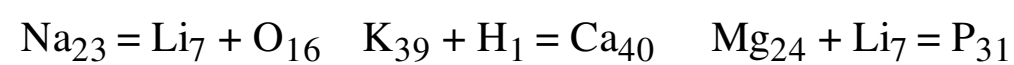
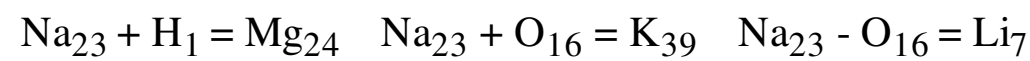
In 1959, Dr. Julien (Univ. of Besancon) proved that if tenches are put in water containing 14% NaCl, their production of KCl increases 36% within 4 hours. (5)

(2) Louis Kervran

Louis Kervran (Univ. of Paris) was the most avid researcher of biological transmutation, and his work in the field earned him a nomination for the Nobel Prize. Kervran elucidated several of these nuclear reactions and verified them:

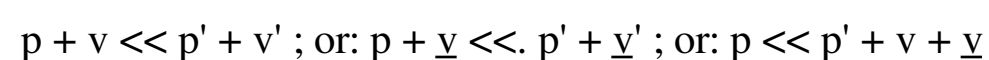
The vital phenomenon is not of a chemical order... The nucleus of the atom in light elements is quite different from what nuclear physics regards as the average type, the latter having value only for the heavy elements... Nature moves particles from one nucleus to another --- particles such as hydrogen and oxygen nuclei and, in some cases, the nuclei of carbon and lithium. There is thus a transmutation... Biological transmutation is a phenomenon completely different from the atomic fissions or fusions of physics... it reveals a property of matter not seen prior to this work. (4, 7-13)

Kervran found that in nuclide-biological reactions, oxygen is always in the form of O, never O₂; reactions with nitrogen occur only with N₂, insofar as is known. The following reactions (shown in simplistic form) have been observed:



Costa de Beauregard (Research Director, Centre Nationale de la Recherche Scientifique, Paris) learned of Kervran's work in 1962 and began to correspond and meet with him. He offered the following observations and explanation for the processes:

"All transmutations proposed by Kervran have two traits in common: (1) The initial and final nuclei differ by the addition or subtraction of a piece of matter, e.g., a proton (a hydrogen nucleus...), an alpha particle (a helium nucleus), a nucleus of oxygen or one of its isotopes, or perhaps some other familiar nuclei; (2) There is an energy excess or deficit in the order of 0.01 atomic mass units (a.m.u.)... or 20 electron masses, or 10 MeV, or 1.6×10^{-12} joules. The mass equivalent of this energy gap is of course needed in order to have the Lavoisier principle safe... This energy gap is very much larger than those occurring in chemical reactions. For example, if ... hens are indeed transmuting potassium into calcium (which is an exo-energetic reaction), the power they are radiating is so huge that it would, if in the luminous (electromagnetic) form, set everything on fire all around! [In energetic terms, such flux would be equal to 10^{15} MeV/cm²/second, or 160 watts/cm²] Can we then imagine some sort of quasi-occult form into which the 'Kervran power gap' may be radiated (or from which it may be absorbed in the case of endo-energetic reactions)? No reasonable answer was available until... a bold theoretical assumption, due to Weinberg in 1967, turned out as experimentally true. Due to this 'neutral current hypothesis' we are allowed to write such nuclear reactions as:



where p denotes a proton, ν a neutrino, and $\bar{\nu}$ the anti-neutrino. We even have two sorts of neutrinos to play with: the electronic and the muonic one.

"With this we can in principle handle the proton type of Kervran's reactions (and also the other one in analogous fashion. One of the two protons in the reaction would be a quasi-free one, that is, one with only the trivial, chemical binding. The other one would be bound inside the nucleus. Of course we then have the problem of getting the proton, with its electric charge, through the potential barrier of the nucleus, by the so-called 'tunnel effect' (a typical effect of wave mechanics). But this is part of a problem already mentioned: Life playing the information game, the field being the nucleus, and the rules being those of the wavelike probability calculus... If the Kervran hen does radiate the power gap in the form of neutrinos and/or anti-neutrino, this will be done in the quietest fashion, and go on completely unnoticed.

"Can we also handle in this way the endo-energetic reactions? Fortunately Nature provides us with an appropriate supply, because there are quite a few neutrinos and anti-neutrinos flying around us as part of the so-called cosmic rays. By another chance the upper limit of the energy per cosmic particle is so high that the 0.01 a.m.u. Kervran needs are very easily available.

"Finally, like the proton or the α -particle, the neutrino or anti-neutrino is something abundantly available... which makes it convenient for use by Life.

"On the other hand, the extremely 'weak interaction' of the neutrino with other particles, which we have just found so convenient for avoiding the adverse effects of the Kervran power gap, now... faces us with great hostility. For how are we to reconcile this with the hypothesis that the hen is a furious neutrino source...? How can we simultaneously explain that the poultry keeper, and indeed the hen itself, do not feel the neutrino Niagara and that the source of it is inside the egg factory of the hen?

"This is the very Gordian knot of the information game problem, the nuclear physics analogon, if you like, of the so-called catalysis problem of ordinary biochemistry. The only tentative answer that I can think of, one I deem quite acceptable in principle, is that what looks like a flat self-contradiction in the physical realm of 'blind statistical prediction', retarded waves and causality, is no more a contradiction at all if we assume that Life is playing with finality, advanced waves, and 'blind statistical retrodiction'... Life knows how to... induce probability decreasing processes." (2)

Kervran commented on that opinion in an unpublished manuscript:

"For Costa de Beauregard, the apparent discordance with the postulate of the equivalence between mass and energy can be replaced by the postulate of emission-absorption of an occult mass bound to a particle of complete spin; it is thus that the neutrino with a 1/2 spin was invented... you would need a particle of complete spin with normally very weak interactions with matter, but 'catalyzed' biologically; it would not displease me, within this perspective, to try the classic 'graviton' with spins 2 or 0, or a non-classical neo-graviton with spins 2, 1, and 0...

"Simply put, if an occult particle is emitted or absorbed in Kervran-type reactions, the conservation of angular momentum would require

that it have a complete spin."

In letters to de Beaugregard (20 January and 17 October 1873), Kervran noted:

"This particle seems to have a mass of 0.011 a.m.u. or 1.8×10^{-26} gram in reactions with $\pm H^+$...

"I had not been speaking of energy, for here it was a question of an equivalence, not an identity... I prefer to hold to the notion, as measured at the mass spectrometer, of a difference of masses, for the problem of energy, in my reactions, can be written only in a very simplistic way by application to Einstein's law. There is certainly something else here, and therein lies the whole problem."

De Beaugregard later noted:

"In the terrestrial atmosphere there exists a particle in abundance with a rest mass m , and a maupertusien mass (or kinetic mass)... which is more than sufficient to assure the Kervran balances: the mu meson of cosmic rays...

"It is quite admissible to conceive of it as absorbed, then, re-emitted during the course of a nuclear transition of the Kervran type which, moreover, implies a 'virtual neutrino' (emitted, then reabsorbed)."

He also offered the logical possibility of a reaction with ${}^1N + {}^1H + \nu = {}^pN + \nu'$. In a letter of 31 December 1973, de Beaugregard wrote:

"There is a second important problem to solve. To get the H to fuse with the N there is an enormous barrier of repulsing electric potential to pass through. Evidently this is by the tunnel effect. The theory which I am working up ... thus unites aspects of the theory of beta disintegration... and the theory of alpha disintegration... Like you, I believe that the configuration of an atomic or molecular electron cloud has a real word to say on the subject."

In his response (7 January 1974), Kervran attributed the transmutations in plants in part to the power of enzymes:

"In a Petri dish 9 cm. in diameter I started germinating 50 oat seeds. The culture continued for 6 weeks or 3.6 million seconds give or take a few ten thousands of seconds... The area of 'cosmic interaction' was 63 cm^3 ... During this time on this surface 3.9 mg of K were transmuted into Ca; this must be $\sim 6 \times 10^{19}$ atoms of K transmuted in 3.6×10^6 seconds or 1.8×10^{13} atoms per second or 2.6×10^{11} per $\text{cm}^2/\text{second}$. The proportion of K transmuted was $\sim 46\%$ in 6 weeks. This integration of results for the phenomenon is not constant: it is imperceptible during the first days when one witnesses the synthesis of enzymes which will provoke the transmutations; even at the end of a week the effect is hardly to be noticed. It develops rapidly during the 2nd and 3rd weeks, then slows down during the 4th week... The phenomenon seems to be asymptotic and at the end of the 6th week transmutation progresses only very slowly.. Which demonstrates yet once again that the action of the ambient is insufficient, that there is an energy regulated by the metabolism of the germination and growth which is at the origin of these transmutations... Obviously this calculation was one for a macro-section and not for the effective section... Moreover, there is in biology an important phenomenon which must not be overlooked: some molecules assemble in helix shapes (DNA and RNA for example). There are also some oriented assemblages which polarize light, most often to the left. These oriented constructions have an oriented electromagnetic field, and a molecule such as DNA can be compared to a solenoid in which charged particles (μ^- for example) are somehow partly channeled in the interior, and thus concentrated..."

De Beaugregard made a suggestion:

"The microorganisms responsible for the phenomenon would find in the natural radiation a sufficient store of neutrinos of 10 MeV and more than they need... A diminution of this alimentation would consist of an equal numerical flux of neutrinos of very low energy to be put in the free interstices of the natural distribution. It is a problem of the symmetric information... in which (in thermodynamic terms) the difference between the 'heat' gained from the hot source (high energy neutrinos) and that given to the cold source (low energy neutrinos) is converted not into work, but into internal energy, or into the rest mass of the machine, which is not cyclical... Analogous comments apply to the case... implying an absorption of a pair, neutrino and anti-neutrino, of an average energy of 5 MeV... [The reactions] avail themselves of an abundant hot source like a geyser (the neutrinos of average energy of the cosmic radiation within the atmosphere) and of an immense cold source like an ocean, 'Fermi's lake' of very low energy neutrinos."

Kervran also proposed a revolutionary theory about the genesis of coal and oil:

"Coal comes from schists, fabricated *in situ*, by high compression that produced the reactions: $Si = C + O$. If O could not escape, and was compressed as well, one would have $O + O = S$, from which one gets sulfurous coals. If there was no deformation, the coal remains mixed with argil to produce ampelite."

The presence of carbon in metamorphic and silicate rocks, formed long before there was any vegetation on Earth, is a clear demonstration:

"Graphite cannot be of vegetal origin, in which case another origin must be found for it, and I propose the silicium of these Archaean rocks. As for diamonds... here, too, one observes the presence of silicates, thus of silicon... In this way one can explain why all coal deposits contain silicon (up to 20%, or even 40%, and more) which form 'ashes'. The great amounts of silicon might be an indication that the transmutation from Si to $C + O$ was imperfect, incomplete."

Kervran claimed that petroleum was not formed from flesh or plants, but from the reaction $Mg = C + C$ at great depth. If water is present, the hydrogen combines with carbon, and the oxygen forms sulfur ($O + O = S$), giving sulfurous oil. The Mg can come from a pocket of saline water when $Na + H = Mg$. Otherwise, Mg also can come from Ca or from adjacent layers of dolomitic rock. Oil deposits in the Sahara have been found in pre-Carboniferous rocks (Devonian and Cambrian-Ordovician) and in dolomite. Usually there is no communication between layers of petroleum deposits of different composition that are widely separated by hundreds of meters of impermeable rock. Kervran concluded:

"The whole problem of prospection should be thought out all over again."

(3) Other Modern Experiments

In 1965, H. Komaki (Prof. of applied microbiology, Mukogawa Univ., Japan), published the results of his research, and suggested the probable occurrence of a nuclear reaction in the cells of *Aspergillus niger*, *Penicillium chrys.*, *Saccromyces cerv.*, and *Torula utilis* grown in potassium-deficient medium. His experiments revealed that P can be formed through the pathway: N + O in some two dozen strains of microorganisms cultured in P-deficient medium. (14)

In 1971, the Laboratory of the French Society of Agriculture sprouted rye seeds under controlled conditions, with these results:

Total Input in Seeds & Water | Output | Difference

Mg :13.34 mg3.20-10.14 (-335%)

K:7.3616.67+9.31(+133%)

In 1971, J.E. Zundel studied the utilization of Ca by germinating grains and observed 54-616% augmentation of Ca. In another experiment, he grew 150 grains of oats in a controlled environment for 6 weeks. 1243 sprouts were analyzed by atomic absorption spectrophotometry for Mg and Ca. Potassium was analyzed by flame emission. The K was deficient by 0.033%, the Ca was 0.032% in excess, and Mg was 0.007% deficient. The variation of Mg was not significant, but the decrease in K equaled the increase of Ca. The increase in Ca was far greater than the margin of experimental error. (17)

In February 1977, Prof. J.A. Jungerman (Univ. of California, Davis) reported the results of an experiment with 4 growths of oat seedlings under carefully controlled conditions. Random samples of germinated seeds were analyzed by atomic absorption and X-ray fluorescence for Ca and K. He found no evidence of transmutation.

In 1978, Carolyn E. Damon (U.S. Customs Tech. Service Div.) ran tests for biological transmutation with *Aspergillus terreus* and *Rhizopus nigricans*, with negative results.

In 1978, Solomon Goldfein (U.S. Army Material Tech. Lab, Ft. Belvoir) studied the biological transmutation of $^{39}\text{K} + ^1\text{H} \rightarrow ^{40}\text{Ca}$. His analysis of thousands of references led him to conclude that the most promising approach to testing the theory of biological transmutation would involve an organic molecule with a central metal atom: the chelate Magnesium Adenosine Triphosphate (Mg-ATP). Goldfein postulated a conformational structure of a stack of Mg-ATP molecules forming a helical chain. The Mg-ATP chelate produces oscillating electrical currents that act as a micromini-cyclotron that accelerates hydrogen ions to relativistic speeds with sufficient potential to transmute an element to the next higher number. (3)

Dr Hisaloki Komaki (The Biological and Agricultural Research Institute, Japan) worked with Dr Louis Kervran to develop "An approach to the probable mechanism of the non-radioactive biological cold fusion..." In 1996, Komaki reported the results of a recent experiment in which he determined the amounts of K, Mg, Fe and Ca in strains of *Aspergillus niger* IFO 4066, *Penicillium chrysogenum* IFO 4689, *Saccaromyas carevisae* IFO 0308, and *Torulopsis* IFO0396, cultured in normal media and in media deficient in those elements. The results showed that the molds apparently performed biological transmutations to produce useful quantities of the missing elements.

In 1999, Panos T. Pappas published an article suggesting that biological transmutation occurs as a form of cold fusion in the cellular membrane sodium-potassium pump (SPP). According to Pappas, the ions are not pumped back and forth through the membrane, but instead transmute back and forth between Na and K. (15)

Research into the phenomenon of biological transmutation continues in obscurity, practically unknown to most scientists. Yet inevitably, the subject will become established as a fertile field of research yielding harvests of valuable practical knowledge.

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Figure II. 8. 1
Atoms According to Kervran

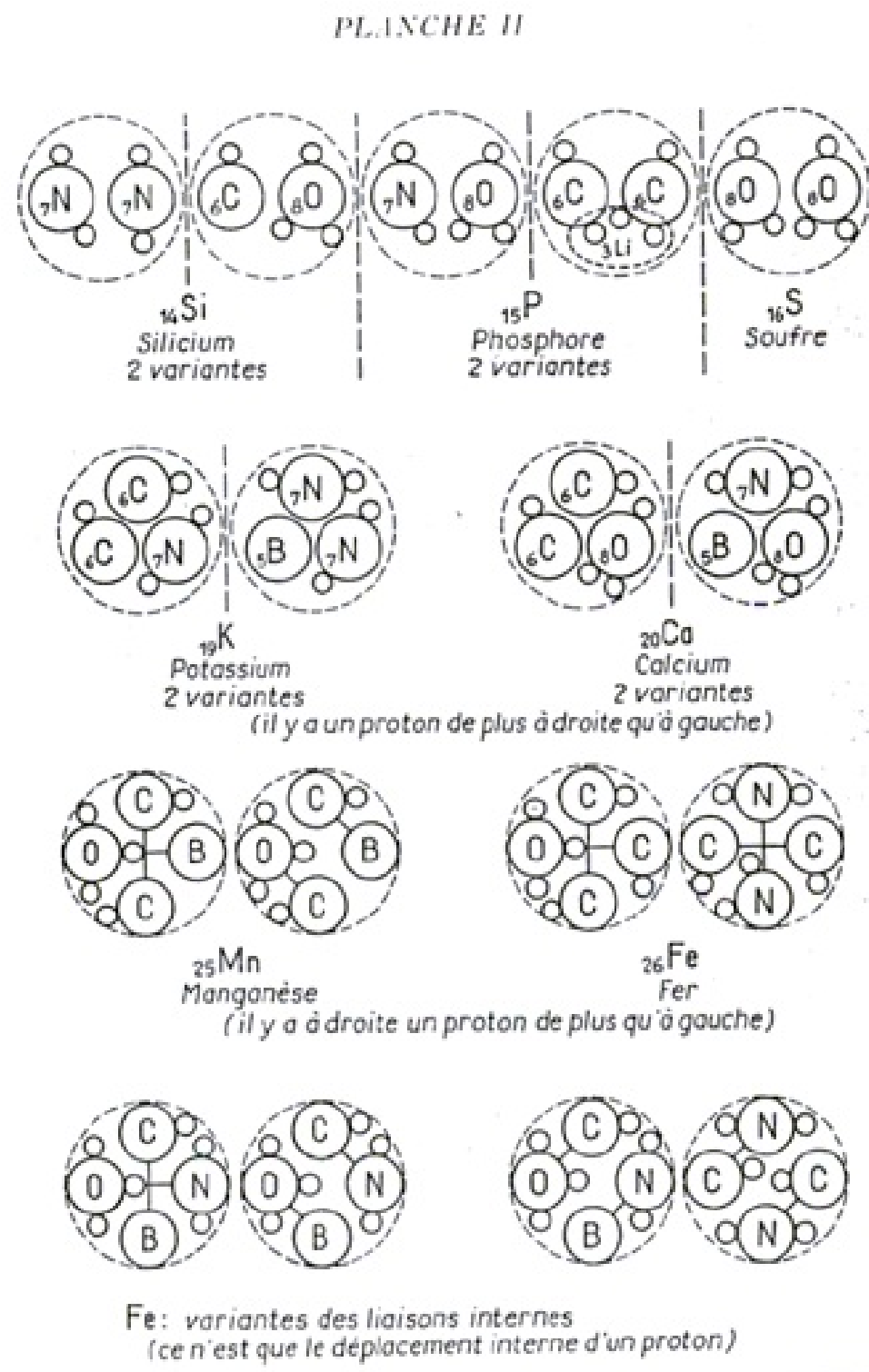


Figure II. 8. 2
Atoms According to L. Kervran

PLANCHE IV

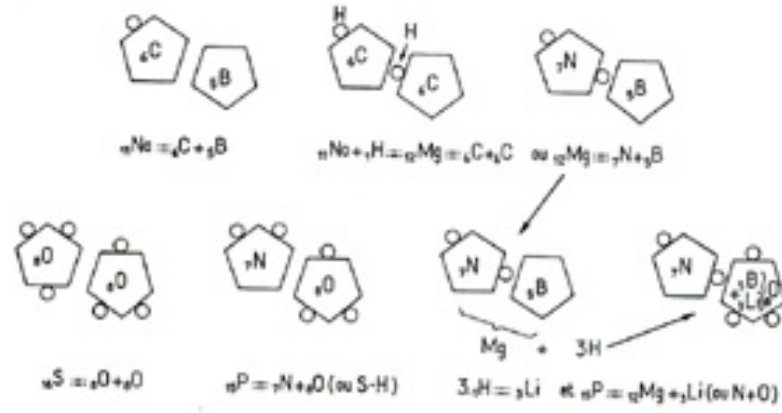


PLANCHE V

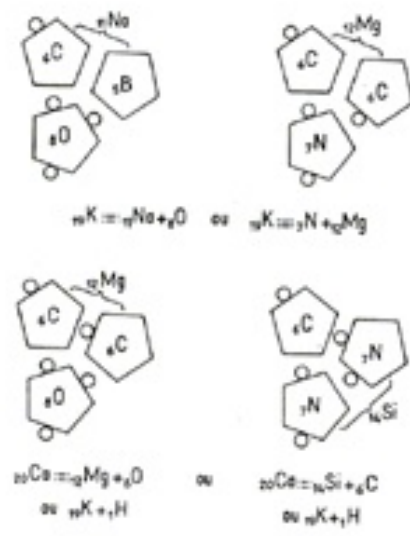
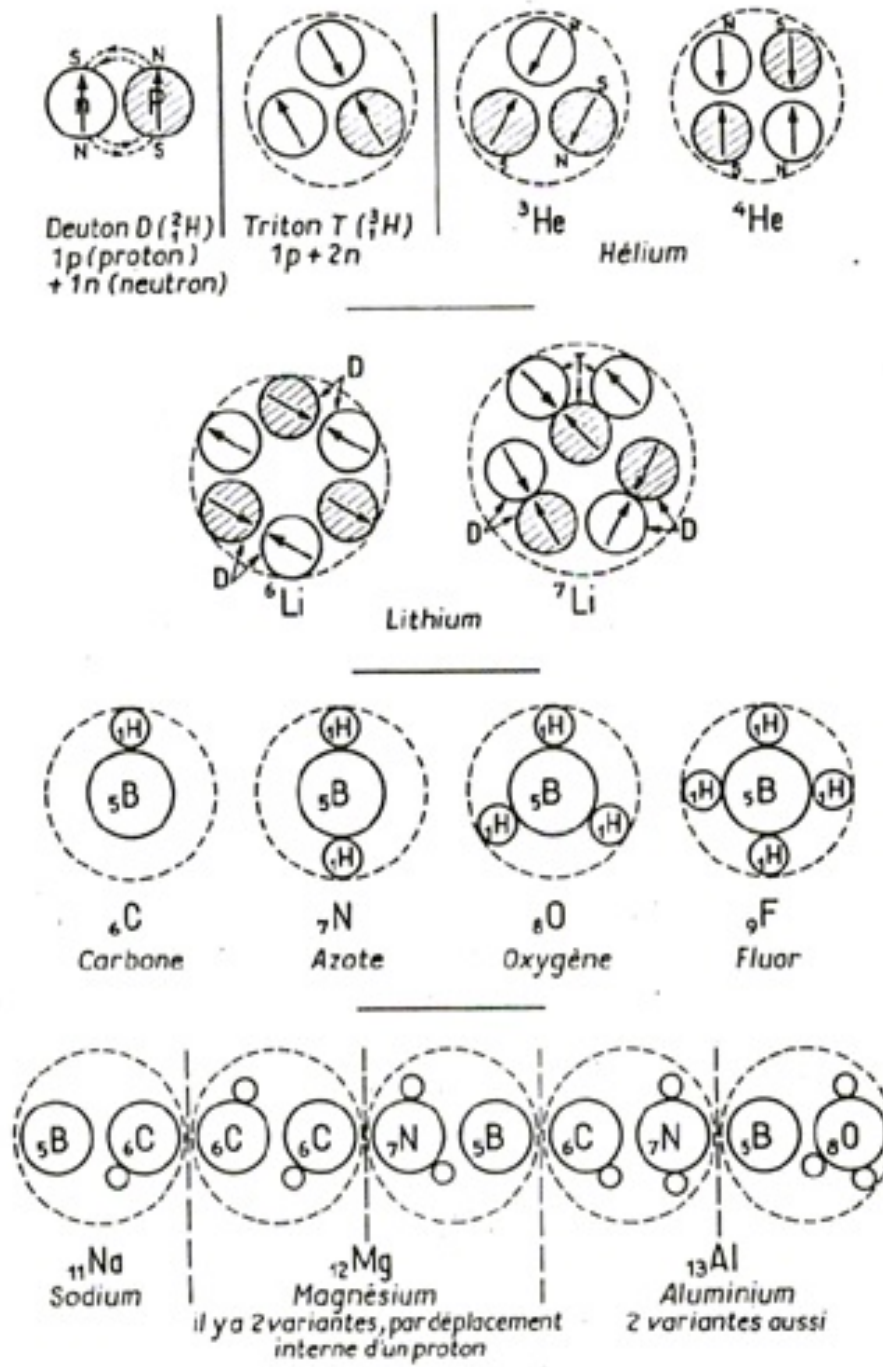


Figure II. 8. 3
Atoms According to L. Kervran



Part II

Modern Arcana

Chapter 9

Cold Fusion

- (1) Cold Fusion Transmutations
 - (2) Nuclear Waste Remediation
 - (3) References
-

(1) Cold Fusion Transmutations

Soon after the phenomena of Cold Fusion (CF, discovered by B. Stanley Pons and Martin Fleischman in 1989) became widely replicated, researchers began to announce the anomalous production of elements, beginning with helium and tritium and continuing into the heavy atoms. By 1995 about 120 papers had reported the production of tritium in experiments with palladium. For example, several papers on Low-Energy Transmutation (LET) were presented at a conference held at Texas A & M University on June 19, 1995, as described below:

Dr. Thomas Passell (Electric Power Research Institute, Palo Alto CA) gave an "Overview of the EPRI Program in Deuterided Metals" in which he noted:

"After completion of the experiment, the three 6 mm diameter by 60 mm Pd cathodes were found to be mildly radioactive. Upon analysis it was found that all three cathodes contained about 100 billion atoms of Ag, Pd, Rh, and (in one cathode) Ru isotopes having ratios unlike ratios that could have been obtained from bombardment by high energy deuteron or proton beams..." (6, 7)

Dr. T. Ohmori (Hokkaido Univ.) announced "Iron formation in gold and palladium cathodes", with the formation of Fe being a function of the excess heat produced. The ratio of Fe₅₇ to Fe₅₄ was much larger than is natural.

Dr. John Dash (Portland State Univ.) made a "Microanalysis of Pd cathodes after electrolysis in aqueous acids" and found silver and cadmium in the active areas, plus concentrations of gold in spikes that protruded from the Pd electrodes. Cr, Fe and Ca were found in experiments with a Ti cathode.

Dr Robert Bush (Cal Poly) reported the "Electrolytically stimulated cold nuclear synthesis of strontium from rubidium" by proton capture that he accomplished with Prof. Robert Eagleton. The natural abundance ratio of Sr₈₆ to Sr₈₈ was changed by a factor of almost 22 times. (4)

Dr Reiko Notoya (Catalyst Research Center, Hokkaido) described her light-water experiments in which some of the K in the electrolyte was converted to Ca, and Na₂₃ became Na₂₄.

T. Mizuno, *et al.*, confirmed that reaction products with mass number ranging from 39 to 81, 104 to 136, and 177 to 208 were produced by one month of high amperage electrolysis (0.2 to 0.6 A/cm²) with Pd cathodes in a heavy water solution at high pressure and high temperature. Isotopic distributions differed radically from the natural order. For example, the copper found in the cathode was 100% Cu⁶³; no Cu⁶⁵ was detected. Natural isotopic distribution varies by less than 0.001% for copper (70% Cu⁶³, and 30% Cu⁶⁵). In general, heavy isotopes increased compared to the natural ratio, and light isotopes decreased in comparison. The phenomenon is highly reproducible; different isotope distributions are obtained, depending amperage. Even all impurities were accumulated in the cathode, the amount would be 10 to 100 times smaller than the total amount detected by Mizuno, *et al.* The shifts in the isotopic distribution cannot be explained away:

"It must be concluded that some novel reactions occurred, resulting in the reactants which were found abundant in the electrolyte and electrode material. We assume that the cathode palladium was the starting point for these reactions, but is possible that impurities and other cell components such as Li, D₂O, Pd, Pt, K, Na, Ca, B, C, Ag and Fe may have provided the starting material for the nuclear reactions..."

In another report on their research, Mizuno, *et al.*, wrote:

"It was confirmed by several analytical methods that reaction products with mass numbers ranging from 6 to 220 are deposited on palladium cathodes subjected to electrolysis in a heavy water solution at high pressure, high temperature, and high current density for one month. These masses were composed of many elements ranging from hydrogen to lead. Isotopic distributions for the produced elements (Pt, Cr, Fe, Cu, Ze, Br, Xe, Pd, Cd, Hf, Pt, Ir, Hg, O, C, Ca, Na, Mg and Al) were radically different from the natural ones." (13, 14)

T. Mizuno *et al.* also observed the "Formation of ¹⁹⁷Pt radioisotopes in solid state electrolyte treated by high temperature electrolysis in D₂ gas":

"A proton conductor, a solid state electrolyte made from oxide of strontium, cerium, niobium, and yttrium, was charged in a hot D₂ atmosphere. Anomalous radioisotopes were detected in all samples charged with an alternating current with voltages ranging from 5 V to 45 V, at temperatures ranging from 400 to 700° C. No radioisotopes were observed in samples charged in a hot H₂ atmosphere."

In 1996, T. Clayton, D. Jackson, and D. Tuggle of Los Alamos National Laboratory announced "Tritium production from a low voltage deuterium discharge on Palladium and other metals":

"Over the past year we have been able to demonstrate that a plasma loading method produces an exciting and unexpected amount of tritium from small palladium wires. In contrast to electrochemical hydrogen or deuterium loading of palladium, this method yields a reproducible tritium generation rate when various electrical and physical conditions are met. Small diameter wires (100-250 microns) have been used with gas pressures above 200 torr at voltages and currents of about 2000 V at 3-5 A. By carefully controlling the sputtering rate of the wire, runs have been extended to hundreds of hours allowing a significant amount (>10's nCi) of tritium to accumulate... Tritium generation rates for deuterium-palladium foreground runs are up to 25 times larger than hydrogen-palladium control experiments using materials from the same batch..."

"We have found that the tritium output depends on the temperature, pressure and current applied to the cells. Yet, the tritium yield is most

sensitive to the purity and metallurgical condition of palladium used in the experiments... CO₂ additions had a remarkable effect on the production of tritium... The effect seems to be related to an enhancement of the hydriding of the palladium..." (5)

At the 3rd Russian Conference on Cold Fusion and Nuclear Transmutation in October 1995, Dr. Yuri N. Bazhutov announced the surprising discovery of C₁₄ in the water used in the vortex cavitation machine (YUSMAR) invented by Dr. Yuri S. Potapov (Kishinev, Moldova)

In 1997, A. Yoshiraki and Y-C. Zhang reported these results of their long experiments:

"In a series of studies, a significantly large amount of helium(⁴He/D₂ ~ (1~0.2) x 10⁻² and ⁴He/³He >> 4, D₂: "fuel" helium: "ash") was clearly detected with a quadrupole mass spectrometer (QMS) as the deuterium nuclear reaction product ("ash") released from the highly deuterated palladium host-solid (Pd-black distributed 0.02 ~ 0.06 [m]: average 0.04 [m]) that had produced large amounts of excess energy (200-500 [MJ/cm³]) through long periods such as 5000 hours...

"A deuterium nuclear reaction was continuously generated inside a highly deuterated solid by showing both the excess energy and corresponding amount of helium as the reaction product generated simultaneously..."

George Miley and James Patterson found evidence of nuclear transmutations in thin-film nickel coatings in their electrolytic experiments:

"Experiments using 1-mm plastic and glass microspheres coated with single and multilayers of thin films of various metals such as palladium and nickel, used in a packed bed electrolytic cell (Patterson Power Cell) configuration, typically employing Pd and heavy or light water with various electrolytes such as Na₂CO₃ and LiOH), have apparently produced a variety of nuclear reaction products... Following a two week electrolytic run, the Ni film was found to contain Fe, Ag, Cu, Mg, and Cr, in concentrations exceeding 2 atom % each, plus a number of additional trace elements. These elements were at the most, only present in the initial film and the electrolyte plus other accessible cell components in much smaller amounts. That fact, combined with other data, such as deviations from natural isotope abundances, seemingly eliminate the alternate explanation of impurities concentrating in the film." (12)

R. Kopacek and J. Dash experimented with Pd and Ti cathodes in their cold fusion heavy water electrolysis cell and produced heat (1.2 watts) and transmutations which produced S, K, Ca, V, Cr, Fe, Ni, and Zn. (10)

Ohmori, T., *et al*, found anomalies in the "Isotopic distributions of heavy metal elements produced during the light water electrolysis on gold electrodes" in 0.5 M light water solutions of sodium sulfate and sodium carbonate for 3-4 weeks at 300 mA/cm³. The isotopic distributions deviated from their natural abundance. (16)

Some Cold Fusion Patents

John Dash: USP Appln. # 2005/0276366 --- Low Temperature Nuclear Fusion.

Heinrich Hora & George Miley: USP Application # 2003/202623 --- Method and Arrangement for Nuclear Reactions at Low Temperatures.

John Kelly: German Patent # 4,123,995 --- Cold Nuclear Fusion Generation.

Heinrich Hora: German Patent # 4,027,784 --- Cold Fusion Device for Energy Generation - with Metal Layers Forming Interfaces.

Heinrich Hora: German Patent # 4,009,604 --- Cold Fusion Energy Generating Source for Nuclear Reaction Control.

Heinrich Hora & George Miley: German Patent # 3,910,806 --- Method and Arrangement for Nuclear Reactions at Low Temperatures.

George Miley: USP Application # 2003/230481 --- Flake-Resistant Multilayer Thin-Film Electrodes and Electrolytic Cells Incorporating Same.

George Miley: US Patent Application # 2003/159922 --- Electrical Cells, Components and Methods.

James Patterson & George Miley: WO # 9919881 --- Low Temperature Electrolytic Nuclear Transmutation.

James Patterson & George Miley: WO # 9803699 --- Nuclear Transmuted Elements Having Unnatural Isotopic Distributions by Electrolysis & Method of Production.

James Patterson & George Miley: WO # 9740211 --- Electrolytic Cell & Method for Producing Excess Heat & for Transmutation by Electrolysis.

Heinrich Hora, et al.: USP # 4,027,784 --- Cold Fusion Device for Energy Generation - with Metal Layers Forming Interfaces.

Heinrich Hora & George Miley: German Patent # 3,910,806 --- Method and Arrangement for Nuclear Reactions at Low Temperatures.

Reiko Notoya: Japan Patent # 6,317,686 --- Low Temperature Nuclear Fusion Method.

Reiko Notoya: Japan Patent # 10039096 --- Production of Positron Emission Isotope.

Reiko Notoya: Japan Patent # 9,197,077 --- Electrode for Cold Nuclear Fusion & Method for Manufacturing Radioactive & Nonradioactive Element...

Reiko Notoya: Japan Patent # 6,317,686 --- Low Temperature Nuclear Fusion Method.

Reiko Notoya & Masyuki Kobayashi: Japan Patent # 2,094,364 --- Electrode for Oxygen Electrode Reaction & Manufacture Thereof.

Reiko Notoya & Tatsumi Nagayama: USP # 4,917,972 --- Electrode for Use in Oxygen Electrode Reaction.

Reiko Notoya: Japan Patent # 7,174,878 --- Negative Electrode for Ordinary Temperature Nuclear Fusion Chain Reaction.

(2) Nuclear Waste Remediation

The disposition of nuclear waste is one of the most serious technical challenges facing humanity. Long-term storage is not acceptable, yet it is all that we can do with the mess at this time. Meanwhile, many physicists are developing methods to render nuclear waste inactive by various forms of transmutation.

The rapid transmutation of radioactive elements to stable daughter elements can be accomplished in several ways. The first such method was proposed by Dr. Radha Roy (Physics Dept, Arizona State Univ.) in 1979. He used a linear accelerator to generate x-rays that knocked nuclei from the target elements (Cesium-137 and Strontium-90), resulting in short-lived isotopes. His work received notice in the *New York Times* in 1982 (April 6 & 13). Only 20 year later, the Los Alamos National Laboratory is developing a project for "Accelerator Transmutation

of Waste". A prototype plant will be constructed within five years. Two US Patents have been granted for the transmutation of nuclear waste with thermal neutron flux: #5,160,696 and #4,721,596 to Charles Bowman and Richard Marriott, *et al.*, respectively.

Scientists at Europe's CERN facility also are experimenting with 'sub-critical' nuclear reactions (they cease when not being triggered by a linear accelerator) that curtail radioactivity. The proposed European system has been named "Energy Amplifier" by Carlo Rubbia, the Nobel Prize winning physicist who designed it. The CERN website offers this explanation for their efforts:

Intense linear accelerators would allow transmutation of long-lived nuclear waste which rapidly decays to become harmless or alternatively provide the beam which drives the Energy Amplifier, a failsafe form of nuclear reactor using relatively innocuous thorium as its fuel.

The CERN Energy Amplifier would work by inserting tubes of radioactive isotopes into a block of lead. Protons fired into the lead by a linear accelerator would generate high-energy neutrons that would fission the target waste. When the neutrons pass through the resonant energy levels of the target isotopes, they trigger transmutation reactions. The molten lead also would serve to cool the system by its passage through a heat exchanger, and the waste heat could be used to generate electricity. The corrosive lead will be bubbled with oxygen to allow the formation of a protective coat of oxide on the reactor walls. The system has been criticized as too complex, and to date the researchers have only performed simulations and conducted a few experiments on isolated aspects of the system. For example, the CERN scientists have transmuted Technetium-99 in a lead block.

The Americans and Europeans refuse to cooperate on the project; each group claims the other has copied their ideas. Fortunately, there are several other, simpler ways to solve the problem.

In the early 1990s, physicist Kenneth Shoulders received five US Patents for his High Density Charge Cluster (HDCC), "a relatively discrete, self-contained, negatively charged, high density state of matter... [a bundle of electrons that] appears to be produced by the application of a high electrical field between a cathode and an anode" (i.e., 2-10 kv at the tip of a sharply pointed electrode). It can also be described as "a spherical monopole oscillator". Shoulders has given it the name "Electrum Validum" (EV), meaning "strong electron", from the Greek "elektron" (electronic charge) and the Latin "valere" (to be strong, having power to unite). EVs have been credited with accomplishing the aforementioned cold fusion transmutations. **(19)**

Shoulders also invented a method of Plasma-Injected Transmutation for the remediation of nuclear waste by EVs. They apparently function as a collective accelerator with sufficient energy to inject a large group of nuclei into a target and promote nuclear cluster reactions. The composition of EVs allows for the inclusion of some 10^5 nuclides. Ions can be added to EVs until the net charge becomes positive. Such EVs are called NEVs (Nuclide-EVs). Shoulders states:

"The NEV acts as an ultra-massive, negative ion with high charge-to-mass ratio. This provides the function of a simple nuclear accelerator. Such nuclear reactions are fundamentally an event involving large numbers and not one of widely isolated events working at an atomic level."

NEVs can be produced by mechanical energy that is stored in and released from a brittle metal lattice by fracto-emission of electrons. In the case of acoustic/aqueous systems, they are generated by charge separation in a collapsing bubble. Analysis of palladium foils after they were struck by NEVs has revealed increased quantities of Mg, Ca, Si, Ga and Au. Locally produced fracto-emission induced by NEV strikes contribute a considerable amount of energy to the reactions and can initiate a "wildfire" propagation of energy which either triggers or fuels the events. These events occur within a few tenths of a picosecond. The first step is a loading process that renders the material brittle. Then a very rapid fracture generates a NEV, compression-loaded with available nucleons (i.e., 100,000 deuterons in an electrolytic cold fusion cell). The NEV is accelerated into the parent material by the applied voltage which, though it is only in the kilovolt range, has a velocity equivalent to megavolts due to the mechanism of the acceleration in the fracture. Shoulders offers an *ad hoc* explanation of these results as being "due largely to a *nuclear cluster reaction* having an unknown form of coherence." Ken Shoulders has demonstrated the complete elimination of radioactivity in high-level nuclear material. **(14, 20)**

Other researchers (Rod Neal, Stan Gleeson, "The Cincinatti Group", William Barker, etc.) also applied for patents on similar applications. The Neal-Gleeson Process has been shown to stabilize naturally radioactive solutions of thorium and uranium compounds up to 70% within a few hours in an electrochemical reactor. Thorium can be fissioned into mercury and neon. Valve metals (whose oxides emit electron) can be excited to produce galvano-luminescence in aqueous solution. When the charge gradient exceeds a critical threshold (i.e., 1 million volts), sparks are produced in the form of charge clusters that are believed to be the active mechanism in this method of transmutation.

In their reports of the experimental results, Neal and Gleeson, *et al.*, noted:

"Because there is a close agreement between the reduction in thorium and the reduction of radioactivity of the thorium daughter products, it is assumed that the Neal-Gleeson Process has about the same capability to change both thorium nuclei and the nuclei of the daughter products into other elements which are not radioactive..."

"A process which can cause the higher atomic number elements to be split into smaller elements appears to be a desirable method by which certain radioactive elements can be handled. It is highly desirable to be able to select process-control parameters so that only stable daughter nuclei of the parent elements are produced. In this way, the radioactivity of today's highly radioactive slurries can be ameliorated."

Hal Fox and Atul Bhadkamkar reviewed the technology and concluded:

"Sparking at the electrode is necessary but not sufficient for the production of nuclear events. Apparently a charge can produce an observed spark but fails to have sufficient energy to promote a nuclear reaction... The charge cluster must carry piggyback positive charges and must achieve a critical energy level to promote nuclear reactions.

"The molarity (and the resulting conductivity of the electrolyte) may be an important operational parameter. The charge cluster must be able to persist for some short time period and energetically impact a nucleus in the electrolyte to be able to produce a nuclear reaction... The potential gradient between the electrodes must be kept at some critical value for nuclear reactions to be favored. A lower field gradient (higher conductivity) in the electrolyte may lead only to Joule heating and not to the desired level of nuclear reactions.

"Experimental evidence suggests that the hydrogen and oxygen nuclei are involved in the sometimes multiple or sequential nuclear impacts that result in the nuclear reactions..." (3, 21)

The Australian inventor Yull Brown developed a novel method of electrolyzing water to produce a compressed (up to 100 psi) stoichiometric mixture of hydrogen and oxygen ions (popularly known as "Brown's gas") that is burned in a 2:1 ration. Since the early 1980s, long before cold fusion was discovered, Yull Brown claimed to be able to transmute radioactive material into inert forms by fusing it in the flame produced by his form of hyfuel. His 1977 patent mentions that, "The invention also relates to *atomic* welding..." (US Patents #4,014,777; see also # 4,081,656).

Yull Brown's first successful experiment with Co₆₀ radionuclides reduced the activity by about 50% in 10 minutes. The process was replicated by the Baotou Nuclear Institute (China) in 1991.

In a demonstration witnessed by US Congressman Berkeley Bedell, the radioactivity of Americium was quickly reduced by 2500% with Brown's Gas torch. The Geiger counter reading registered 16,000 curies/minute before, and less than 100 curies/minute afterwards. Congressman Bedell said:

"It has been my good pleasure to witness experiments done by Prof. Yull Brown in which it appeared to me that he significantly reduced the radioactivity in several nuclear materials. Under the circumstances, I believe it is very important for our federal government to completely investigate Dr. Yull Brown's accomplishments in this area."

If the US government is completely investigating Brown's Gas, it is doing so secretly.

In August 1992, Yull Brown made another demonstration before several members of the Department of Energy and Hon. Dan Haley at the request of Congressman Bedell. The geiger counter reading from Co₆₀ was reduced to 0.04% of the original level.

Another demonstration was conducted for a group of Japanese nuclear scientists, at which time Co₆₀ was reduced from 24,000 mR/hr to 12,000 mR/hr with one brief treatment. (2, 8, 17)

Dr. Paul Brown (Nuclear Solutions, Aurora CO) has developed a novel method to remediate nuclear waste by photonuclear reaction with gamma rays. The technology utilizes principles of physics --- giant dipole resonance --- that have been overlooked in their possible application in treatment of nuclear waste. Brown states:

"Photonuclear reactions induced by gamma ray absorption by the nucleus, do not suffer the shortcomings of neutron reactions. Simply stated, the process is gamma irradiation with energies greater than the binding energy of the neutron to the nucleus. That is, a gamma photon of an energy equal to or greater than the binding energy which comes close to the nucleus is absorbed through giant dipole resonance resulting in the emission of a neutron. This well-known nuclear reaction has dramatic application to waste remediation..."

"The neutrons produced by the processing may in turn be used for neutron transmutation by the processes... For many fission products the neutron capture cross sections in a thermal spectrum can give substantial transmutation rates..."

Brown has proposed another application of giant dipole resonance in a theoretical "Photon Reactor" that would produce power by burning nuclear waste:

"A linear accelerator, preferably of the monochromatic type, accelerates electrons which are directed onto a high Z target such as tungsten to generate gamma rays about 9 MeV, which are directed onto the fuel material such as U-238 which results in the... reaction, thus releasing about 200 MeV. A reactor built according to this principle requiring an accelerator driven by 1 MeV will develop about 20 MW of power. The reaction is not self-sustaining and stops when the beam is turned off. This accelerator driven reactor may be used to burn up spent fuel from fission reactors, if simply operated at 10 MeV. The photo-fission results in typical spent fuel waste products such as Cs¹³⁷ and Sr⁹⁰, which undergo photodisintegration... resulting in short-lived or stable products. Chemical separation of the spent fuel isotopes is not necessary..."

Gerardo International, Inc. is developing an Accelerated Decay Energy Converter (ADEC). The system utilizes stimulated radioactive decay to extract electrical energy directly from the atom:

"ADEC does not change the mechanism of spontaneous radioactive decay; it changes the probability of which atoms will undergo decay and when the decay will occur. As atoms exhibit no statistical memory, the event of a neighboring atom's spontaneous decay in no way influence the likelihood or unlikelihood of decay of a selected atom. As the extraction of power from the nuclear is accelerated, the material's natural emissive lifetime will be exhausted in direct relation."

Ronald Brighton (Clustron Sciences) has presented theoretical and experimental evidence for the validity of his own "Nucleon Cluster Model" (NCM), which predicts that a relatively low-energy photon can promote a nuclear reaction under certain specific conditions. Brighton analyzed the periodicities and systematics of atomic numbers and masses and deduced that all b-stable nuclides are composed of deuterons (NP clusters), tritons (NPN), and He₃(PNP) nuclei.

Brighton's patent application includes a method of remediating nuclear waste by the induction of fission in the radioactive isotopes. The imposition of an external magnetic field that is in resonance with the magnetic moment of a particular nucleon cluster (NP, NPN, PNP) can excite the select cluster (without disturbing other clusters in the target) to burst from the nucleus and perform a transmutation to daughter products of smaller mass and greater stability.

A catalytic process for transmutative remediation of nuclear waste was invented by Jack Keller in 1993.

Roberto Monti (Burns Development Ltd.) announced a method of transmutation to neutralize radioactive material at a congress on low-energy transmutation (ICCF-5 in Monaco) in 1996. He utilized ignition methods such as those developed by Joe Champion. When applied to radioactive materials, the radioactivity was greatly reduced after the ignition.

In their analysis of the "energy gain and nuclear transmutation by low energy *p*- or *d*-reactions in metal lattices", Heinrich Hora, George Miley, and J. Kelly offered hope for the "programmed transmutation of added nuclides, especially long-lived nuclear waste and plutonium":

"One can actively incorporate nuclides into the surface area of the active metals or nearby. These additional nuclides can then be subject to low-energy nuclear transmutation..."

"One application of the mentioned transmutation is the long-lived nuclear waste from nuclear fission reactors... It is an important aim to make plutonium fully extinct by nuclear transmutation into chemically different nuclei... These kinds of nuclear transmutations are indeed possible by using ion beams... of more than 10 MeV per nucleon or spallation processes with up to 10 GeV protons. In view of the very expensive accelerators needed for this purpose, and [because] the ion currents are very small, there is no economic possibility in sight from this method. The invention described in this (Clean Energy Technology) patent [for] the low-energy transmutation by protons provides a low cost method for converting the long-lived waste nuclides and plutonium into harmless non-radioactive elements." (9)

Beginning in 1958, Russian geophysicist Dr. Georgiy S. Rabzi developed methods of transmutation that combined geo-electric and artificial fields and temperature control to direct transmutation in solids and liquids. For example, a 99.5% Pb was treated at 650° C to yield up to 3% Ag, plus Cd and Ge (15 March 1994). No radioactivity was observed in any of the experiments. At the ICCF-5 meeting, Dr Rabzi claimed that his "natural cold fission" is a safe method with which to stabilize nuclear waste.

Numerous reports in the literature of physics describe deviations (from 0.1 to 5%) from the standard constant decay rates of natural radioactivity, some by extra-nuclear influences (including the human mind). Physicists Elizabeth Rauscher, Glen Rein, and associates have investigated the interactions of Co₆₀ with non-Hertzian energies such as the scalar fields generated by the "Smith Coil" (a Caduceus-wound coil invented by Canadian engineer Wilbur B. Smith in the 1960s). When energized (3 mA/5 W), The non-inductive Smith Coil (8.2 ohms) reduced the background radiation by 97% (from 0.5 mR/hr to 0.0015 mR/hr). Yet when applied to Co₆₀, the radioactivity increased from 150 to 250 mR/hr! (11, 18)

Other possibilities may exist for the transmutation of nuclear waste. For example, it is reasonable to hope that the legendary Philosophers' Stone is capable of performing this feat, but the Stone remains a gift of God, who determines when and to whom it is bestowed (despite the objections of conventional physicists). A few exotic human technologies are immediately available for research and development, such as the radionic transmutations demonstrated by the amazing DeLaWarr Camera. Tom Beardon and others have recommended the use of scalar interferometry to extract energy from the nucleus in a gentle manner, or by outright dematerialization.

The radioactivity of elements also can be increased by relatively simple means. The German Dr. Alois Gaschler applied for a British patent in 1925 (Specification 239,509) for the enrichment of uranium:

"This invention relates to a process of and means for transforming elementary atoms particularly of uranium and thorium with a view to hasten their spontaneous disintegration and to increase their radioactivity, and the invention consists in subjecting small quantities of the metal in a vaporizing chamber to very high pressure and temperature and in subjecting the vaporized metal vapour to the electrostatic or electrolytic effect of strong, preferably direct electric currents.

"Successful experiments have been made with an electric energy of about 100 kilowatt-seconds per gramme of uranium or thorium. The electric current can be used for the heating of the metal as well as for the electric splitting up of the atoms.

"In order to generate a very high pressure during the heating of the metal and to obviate heat and light radiation as far as possible, a thin filament of metal, weighing about 1 gramme, is placed in a duct in a massive block of quartz or granite or other refractory mineral insulating substance. The two ends of the filament are extended through the block and clamped between two thick metal plates which at the same time act as closures for the duct. Terminals are provided on the metal plate for connection to the electric circuit. The duration of the individual electric shocks is generally about 1-2 seconds. After the conclusion of the process, the evaporated metal is recovered mechanically or chemically and will be found to be much more radioactive than the original substance.

"The more the separated metal vapour comes into contact with the pole surfaces and the higher the electric pressure, the greater is the transformation effect. It is advisable, therefore, to employ a heating circuit of low voltage and high amperage, and a separate electrolyzing circuit of relatively low amperage and high voltage. For this purpose a pair of electrodes having a large surface is arranged in the vaporizing chamber and connected to the high-pressure circuit which, in order to produce a high resistance, includes a Crooke's or Geissler tube.

"When artificial metals are to be produced on a large scale, the use of a filament is not practicable as it requires too frequent replacement. It is therefore better to supply metallic vapour through a valve into the space containing the electric arc and to withdraw it therefrom in the same way."

Dr. Gaschler gave more details of his process in an article published in the journal *Nature*:

"The behavior of uranium and thorium and their salts in the electric arc and in the glow discharge has been examined. In no case could there be observed an alteration in the radioactivity or in the chemical activity. A perceptible transmutation effect was, however, unexpectedly found when strong rushes of momentary high-tension currents were sent through a narrow fused quartz tube provided with tungsten electrodes and containing mercury and uranium oxide. The tube was fixed vertically in a stand, so that the mercury filled the lower part of the tube and one tungsten electrode was completely covered by it. On the surface of the mercury was a relatively thin coating of uranium oxide which had been carefully freed from radioactive by-products, especially from uranium-X, before it was introduced into the quartz tube. The sparking distance between the tungsten electrode and the mercury-uranium oxide electrode was about 15 cm. The intensity of the electric discharge varied between 0.3 and 0.4 amps.

"Under the influence of repeated electric discharges during about 30 hours, relatively strong and increasing radioactivity [b and l rays] showed itself. The b and l ray activity varied between 1.4 and 20 times the radioactivity of an equally large amount of uranium oxide in equilibrium with its decay products, and increased proportionally to the energy applied and to the time.

"One obtains an even greater proportion of uranium X if one makes the electric discharges pass within a thick-sided quartz or porcelain vessel between a tungsten point and mercury covered with a thin coat of vaseline and uranium oxide. This coating possesses such a high electric resistance that, even when applying the highest tensions which can be obtained, one is obliged to diminish greatly the sparking distance in order to obtain a discharge. This proceeding offers the advantage that the energy is concentrated into a very small space. Consequently one can show, after half an hour's work, the production of relatively large quantities of uranium X.

"The production of uranium X considerably in excess of that produced by spontaneous decay is to be explained only by the fact that, under the influence of the electric force, an acceleration of the radioactive transmutation of uranium takes place." (23)

In the 1950s, Thomas H. Moray developed a method for enriching uranium by high-energy bombardment. He proceeded by treating the ore (in a chemical solution) with x-rays (up to 24 MeV). The average ore contained 0.23% uranium oxide. After irradiation, the ore yielded from 7-75% uranium oxide! In 1953, Moray proposed that the Atomic Energy Commission investigate the "aging" of atomic ores by a "breeding type reaction with high-energy particles or x-rays in the presence of a proper environment." The AEC declined to grant a contract.

Fortunately, the technologies invented by Gaschler and Moray are dormant. Meanwhile, it is imperative that we develop every possible pathway to the deactivation of nuclear waste and weapons.

Nuclear Waste Remediation/Transmutation Patents

Paul M. Brown: USP Application # 2002169351--- Remediation of Radioactive Waste by Stimulated Radioactive Decay.

Ronald Brightsen, et al.: WO Patent # 9,403,906 --- Methods for Manufacturing & Producing Products.

John Dash: WO 03/098640 --- Processing Radioactive Materials with Hydrogen Isotope Nuclei

Heinrich Hora: German Patent # 19803629 --- Transmutation of Isotopes with Long Half Life.

Reiko Notoya: Japan Patent # 9,197,077 --- Electrode for Cold Nuclear Fusion.

William Barker: US Patent # 5,076,971 --- Method for Enhancing Alpha Decay in Radioactive Materials.

V.S. Buttsev, et al.: Russian Patent # 2,169,405 --- Method for Transmutation of Long-Living Radioactive Isotopes into Short-Living or Stable Ones.

Sidney Soloway: US Patent Appln. # 2002186805 --- Accelerated Radioactivity Reduction.

Vladimirovich, Kinderevich, et al.: US Patent Appln. 20040238366 --- Method & System for Acceleration of Activity Decrease and Radioactive Material Deactivation.

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Part II

Modern Arcana

Chapter 10

Esoterica

- (1) **Franz Bardon: QBL & Magic**
 - (2) **John Keely**
 - (3) **Abiogenesis & Astrochemistry: Littlefield & Crosse**
 - (4) **Prophecy**
 - (5) **References**
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Alchemy has taken several novel forms in modern times. Some researchers are pioneering the arcana of physical alchemy in cold fusion and biological transmutation, nuclear waste remediation, etc. Others continue to rediscover traditional methods and philosophy, and to transmit revelation. There is considerable overlapping of domains, such as acoustic manipulation of force fields (Quabalah, John Keely's discoveries and inventions, cymatics, acoustic refrigeration, sonochemistry, sonoluminescence, &c), Astrochemistry (Aether, phlogiston, gur, Wilhelm Reich's orgone, orene &c), Astrobiology (Reich's bions, Andrew Crosse's abiogenesis of acari, homeopathy, spagyry, &c), and Magnetism (Nuclear magnetic resonance, para- & dia-magnetism, &c). Alchemy also figures in future history, according to Michel Nostradamus and other prophets.

1. QBL & Magic

Quabalah and Alchemy are concomitant and even inseparable in some regards. The *Aesch Mezareph* ("Purifying Fire") is the classic text in this field. *The Jewish Alchemists* by Raphael Patai is the definitive review of the genre. **(11)**

Franz Bardon ~

Practical quabalah (causality engineering) comprises the combination of specific colors, frequencies, elements (fire, air, water, earth & akasa; O, N, H, Si, C) and geometries to produce specific effects in akasa and in the mental, astral and physical worlds. This form of quabalah (based on the *Sephir Zohar*, Short Version) is taught by the great Hermetic adept Franz Bardon in his *Key to the True Quabalah*, excerpted here:

C [Tone: D... Color: Vermilion... Element: Fire/Air... #: 3... Organ: Stomach]

Material: "By the "C" oscillation, the quabbalist learns to enliven the whole of the matter and to equip it with mental as well as with astral virtues, powers, etc. By this letter, he also learns to impregnate quabballistically any material form at will. Furthermore, the true **quabballistic alchemy** is also influenced by this letter oscillation. By the term "quabballistic alchemy" the "modification of matter by the word" is to be understood, which is equivalent to giving it another quality."

OE [Tone: D# ~ Color: Orange ~ Element: Akasa/Earth ~ Organ: Gonads]

Akasa: "In the akasa principle, the "OE" oscillation, evokes the most profound cognition which can only be brought about by **love divine**,

apart from the knowledge that is called the **quabbalistic quintessence**. By the help of this oscillation, the quabbalist gets to know all the possibilities of **transformation of the spirit**, all the systems and ways serving this end, and all knowledge concerning transformation in all other fields. He is informed about everything that, deriving from the act of creation, had to pass through all the modes of transformation to be reunited. The quabbalist must attain all the faculties that are offered by the "OE" oscillation in the akasa principle, must make use of all the possibilities, in order to get convinced that they cannot be described by words, but must be experienced, lived through.

"I have mentioned the letters "AE" and "OE" as the last ones in this series of exercises, because by the help of their oscillations one is able to comprehend, from the akasa principle, the crown of all wisdom in the micro- and macrocosms, from the act of creation to the present state of evolution, and even to the final development.

Mental: "Evoked in the mental kingdom, the "OE" oscillation will secure the perfect mastery of **quabbalistic alchemy**. By this, one understands the transformation of ideas, virtues, etc., by the quabbalistically pronounced word, which is a very great and comprehensive field.

Astral: "In the astral kingdom, the "OE" oscillation develops the faculty of perfect **astral projection** and the mastery of all occult and magical phenomena that have reference to **transformation**, so that the quabbalist may, for instance, assume any desired form in the astral body without being recognized by other beings and with only Divine Providence seeing through him. Apart from this, the quabbalist is able to transform any astral oscillation into the oscillation he wants and to do the same with any element.

Material: "When mastered in the physical body, the "OE" oscillation will lead to perfect knowledge of **quabbalistic alchemy** in the material world. The quabbalist is taught the true preparation and charging of the philosopher's stone in the physical sense. As he can influence, at will, any oscillation -- atomic oscillation, electronic oscillation -- by quabbalah, and as he is able to transform it into the oscillation desired by him, he naturally also perfectly masters the laws of transmutation. Therefore, he is able to transform any metal into gold, any stone into a precious stone, etc., if he wishes to do so. By the help of this oscillation the quabbalist will be furnished with many other faculties of which he cannot even dream now and which non-initiates would regard as absolutely impossible.

A - OE ~ "This twofold key imparts the faculty of solving any problem of quabbalistic alchemy with effortless ease. The formula magician uses this formula for his students who have difficulties in delving into the problems of quabbalistic alchemy. If one is in doubt about a formula, particularly when experimenting on alchemistic transformation based on quabbalah, concerning the change of a power or ability, etc., or if there are difficulties in applying a formula, then one should resort to this formula, for it will evoke the desired faculty.

B - OE ~ "Using this formula, the formula magician projects the electromagnetic fluid in the form of light and warmth, in order to be able to evoke any phenomena of astral projection. By this twofold key, he is also able to enliven any kind of medicine and to make it bring on better results. Since this formula also contains the secret of forming the mental matrix for the production of the philosopher's stone, the formula magician will be given the faculty of enlivening any material object to his own liking.

C - H ~ "Through this twofold key, the formula magician may obtain mercy from Divine Providence and influence his own or somebody else's fate at will. If embodied into food and drink, the "C-H" formula will bring on the realization of all wishes. If clear water is influenced by this formula after 4 drops of quinta essentia universalis --- alchemistic universal tincture --- were given into it, the person who drinks this impregnated water will be given the donation of having any material wish fulfilled that he or she may utter in connection with this formula. At the same time, a rejuvenation, a prolongation of life and perfect health may be obtained by embodying the "C-H" formula into the *quinta essentia*, i.e., by enlivening the same. Alchemists who do not know all this, usually fail in preparing the *quinta essentia*, since they are not able to enliven the same mentally. The universal tincture has not only to be charged materially, but it must also be charged and influenced with the analogous connections in an astral and mental manner, apart from other irradiations connected to the quadripolar magnet.

C - OE ~ "In the mental body, the "C-OE" formula reveals the secrets of alchemy in all its phases, and makes one see the true connections to the universal law. In the astral body, it arouses the faculty of permanent astral projection, no matter whether the projection of universal light, fluids, elements or any other phenomena of transformation is in question. In the material world, this formula, if embodied in food and drink, turns every formula magician into a perfect alchemist who is equipped with all relevant knowledge, abilities, etc. This formula is particularly important for those formula magicians who want to become perfect alchemists one day." (1)

The Angelic Stone, the ultimate degree of the Philosophers' Stone, is the quabbalistic formula revealed by the Grace of God in "Alchemia", the frontispiece to this book.

Franz Bardon also published *The Practice of Magical Evocation*, in which he introduced several genii who are concerned with alchemy in the Earth zone and other planetary spheres. These spirits can provide invaluable assistance to the magician-chemist who contacts them in the correct manner. Any error in this regard can trap the magus-chemist in a Faustian bargain, which is completely unnecessary and avoidable:

Andimo ~ "Since he is well acquainted with alchemy he may also assist, theoretically and practically, the magician in this respect. My own experience makes me point out to every magician that Andimo may easily tempt him to project physically, either directly by himself or by the help of one of his subjects, a burning stone, the so-called "living sulfur". If, in such a case, the magician, during the projection of the stone, takes the stone into his hand, he will get badly burned by it. Andimo likes to place such stones before the magician's feet or before the magic circle. You must leave this stone untouched and order Andimo to take it away. If the magician touches the burning sulfur transmuted by Andimo from the principle of the earth (i.e., transmuted by the principles of Alchemy), with the sign of Andimo's seal, which he earlier drew on a piece of parchment, the seal will catch fire and the sulfur stone at once turns into the true alchemical projection powder of a red color, the so-called "red lion". This powder then is quite safe and may be gathered up with a glass spoon and stored away in a well shut-up glass. This kind of projection powder usually has a projection capacity of 1:10,000 and is the philosopher's stone in its purest form. However, the magician may then be tempted to use this powder for making gold or prolonging his own life. If the magician is misled by such temptations he would conclude, by such alchemical operations, a formal pact with the said being. The magician is therefore warned in advance not to do such a rashness and never to practice alchemy in such a manner. Not even in case he assumes that he is mature and experienced enough in everything that has to do with the science of magic, for he might, nevertheless, be misled to take an ill-considered step. When dealing personally with Andimo I had the opportunity of convincing myself of these facts, but I ordered Andimo to take the powder back to his kingdom. At that moment it disappeared at once, with a hissing sound.

Armiel ~ "Knows about all alchemical processes. He can teach the magician the secrets of the transmutations of metals; that is, he can, for instance, inform him how the philosopher's stone is to be made in a dry process and what preparations are necessary for this..."

Malacha ~ "Can give good advice in respect of alchemy, i.e., he can procure the prima materia for the preparation of the Great Elixir in a dry process..."

Yromus (12° Aries) ~ "From Yromus the alchemist learns to prepare various herbs and roots in a spagiric and alchemical manner, and how to make these especially dynamic by the application of an electromagnetic fluid and a special kind of volting..."

Nablum (1° Cancer) ~ "Will be well pleased to inform the magician, by inspiration and intuition, on the various degrees of warmth ~ temperature ~ in respect of alchemic or spagiric methods... Nablum is an expert in alchemic and spagiric operations, and the magician can profit much in this respect by his inspirations.

Tmako (12° Cancer) ~ "Initiates the magician into the secrets of transmutation of powers, effects, and the like, in the zone girdling the earth and into the secrets of plants, minerals and metals in our physical world. This intelligence may be called a guardian of true alchemy.

Corocona (20° Leo) ~ "Makes the magician acquainted with the preparation of alchemistic substances made of metals. The magician is taught by this intelligence how to produce the true alchemic gold tincture, and how to use it for diverse diseases. He is also instructed by Corocona in measuring out dosages of alchemical medicines.

Kirek (9° Virgo) ~ "Is known as an excellent initiator into alchemical magic..."

Buriuh (10° Virgo) ~ "Is an excellent initiator into alchemical secrets and entrusts the magician with methods by which he can achieve diverse faculties and powers by the application of appropriate alchemical means..."

Eralier (11° Scorpio) ~ "Will convince the magician that the making of the philosopher's stone is no allegory and no symbolic-esoteric speculation. The magician learns from this head the preparation of the philosopher's stone in its most diverse grades for the most various purposes. Furthermore, he will be told the methods of transmuting metals, especially by dry procedure. The person to some extent informed on alchemy will already perceive what is meant by this. The preparation and realization of the philosopher's stone rests on many methods. Eralier can entrust the magician with these..."

It should be noted that the forementioned entities can be contacted by evocation or invocation with Hermetic magical means, or the spirit's name can be used in a quabbalistic manner to educe the same information and effects without karma. Franz Bardon teaches methods by which magical authority can be attained in his book *Initiation Into Hermetics*. (2, 3)

2. John Keely

Late in the 19th century, John E.W. Keely published *40 Laws of Harmony*, which served as the foundation for the Sympathetic Vibratory Physics he discovered and developed. The following representation was cribbed from Dale Pond's website, www.spvriil.com :

(1) *Law of Matter and Force* ~ "Coextensive and coeternal with space and duration, there exists an infinite and unchangeable quantity of atomoles, the base of all matter; these are in a state of constant vibratory motion, infinite in extent, unchangeable in quantity, the initial of all forms of energy."

(2) *Law of Corporeal Vibrations* ~ "All coherent aggregates when isolated from like bodies, or when immersed or confined in media composed of matter in a different state, vibrate at a given ascertainable pitch."

(3) *Law of Corporeal Oscillations* ~ "All coherent aggregates not isolated from like bodies, oscillate at a period-frequency varying with the tensions that augment and diminish the state of equilibrium."

(4) *Law of Harmonic Vibrations* ~ "All coherent aggregates are perpetually vibrating at a period-frequency corresponding to some harmonic ratio of the fundamental pitch of the vibrating body; this pitch is a multiple of the pitch of the atomole."

(5) *Law of Transmissive Vibratic Energy* ~ "All oscillating and vibrating coherent aggregates create, in the media in which they are immersed, outwardly propagated concentric waves of alternate condensation and rarefaction, having a period-frequency identical with the pitch of the aggregate."

Scholium: All forms of transmissive energy can be focussed, reflected, refracted, diffracted, transformed, and diminished in intensity inversely as the square of the distance from the originating source."

(6) *Law of Sympathetic Oscillation* ~ "Coherent aggregates immersed in a medium pulsating at their natural pitch simultaneously oscillate with the same frequency, whether the pitch of the medium be a unison, or any harmonic of the fundamental pitch of the creative aggregate."

(7) *Law of Attraction* ~ "Juxtaposed coherent aggregates vibrating in unison, or harmonic ration, are mutually attracted."

(8) *Law of Repulsion* ~ "Juxtaposed coherent aggregates vibrating in discord are mutually repelled."

(9) *Law of Cycles* ~ "Coherent aggregates harmonically united constitute centers of vibration bearing relation to the fundamental pitch not multiples of the harmonic pitch, and the production of secondary unions between themselves generate pitches that are discords, either in their unisons, or overtones with the original pitch; from harmony is generated discord, the inevitable cause of perpetual transformation."

(10) *Law of Harmonic Pitch* ~ "Any aggregate in a state of vibration develops in addition to its fundamental pitch a series of vibration in

symmetrical sub-multiple portions of itself, bearing ratios of one, two, three, or more times its fundamental pitch."

(11) *Law of Force* ~ "Energy manifests itself in three forms: Creative, the vibrating aggregate; Transmissive, being the propagation of isochronous waves through the media in which it is immersed; Attractive, being its action upon other aggregates capable of vibrating in unisons or harmony."

(12) *Law of Oscillating Atomic Substances* ~ "Coherent atomic substances are capable of oscillating at a pitch varying directly as the density, and inversely as the linear dimensions from one period of frequency per unit of time to the 21st octave above, producing the creative force of Sonity, whose transmissive force (Sound) is propagated through the media of solids, liquids, and gases, and whose static effect (Sonism) produces attractions and repulsions between sympathetically vibrating bodies according to the Law of Harmonic Attraction and Repulsion."

(13) *Law of Sono-Thermity* ~ "Internal vibrations of atomic substances and atomic molecules are capable of vibrating at a period-frequency directly as their density, inversely as their linear dimensions, directly as the coefficient of their tension from the 21st to the 42nd octaves, producing the creative force (Sono-thermity), whose transmissive force (Sono-therm) is propagated in solid, liquid, gaseous, and ultra-gaseous media, statically producing adhesions and molecular unions, or disintegration, according to the Law of Harmonic Attraction and Repulsion."

(14) *Law of Oscillating Atoms* ~ "All atoms when in a state of tension are capable of oscillating at a pitch inversely as the cube of their atomic weights, and directly as their tension from 42 to 63 octaves per second, producing the creative force (Thermism), whose transmissive force (Rad-energy) propagated in solid, liquid, and gaseous ether, produces the static effects (Cohesion and Chemism) on other atoms of association, or dissociation, according to the Law of Harmonic Attraction and Repulsion."

Scholium: Dark radiant heat begins at absolute zero temperature, and extends through light, chemical rays, actinic rays, and infra-violet rays, up to the dissociation of all molecules to the 63rd octave."

(15) *Law of Vibrating Atomolic Substances* ~ "Atoms are capable of vibrating within themselves at a pitch inversely as the Dyne (the local coefficient of Gravity), and as the atomic volume, directly as the atomic weight, producing the creative force (Electricity), whose transmissive force is propagated through atomolic solids, liquids, and gases, producing induction and the static effect of magnetism upon other atoms of attraction or repulsion, according to the Law of Harmonic Attraction and Repulsion."

Scholium: The phenomenon of Dynamic Electricity through a metallic conductor and of induction are identical. In a metallic conductor, the transmission is from atom to atom, through homologous interstices, filled with ether, presenting small areas in close proximity. In crystalline structures, heat, which expands the atoms, by twisting them produces striae, increases the resistance, etc. Between parallel wires and through air the induction takes place from large areas through a rarefied medium composed of a mixture of substances, whose atoms are separated by waves of repulsion of various pitches, discordant to electric vibrations; the said atoms sympathetically absorb the vibrations and dissipate from themselves, as centers, concentric waves of electric energy which produces heat and gravism."

(16) *Law of Oscillating Atomoles* ~ "Atomoles oscillating at a uniform pitch (determined by their uniform size and weight) produce the creative force Atomolity, whose transmissive form, Gravism, is propagated through more rarefied media, producing the static effect upon all other atomoles, denominated Gravity."

(17) *Law of Transformation of Forces* ~ "All forces are different forms of Universal Energy unlike in their period- frequency, merging into each other by imperceptible increments; each form representing the compass of 21 octaves. Each form or pitch may be transformed into an equivalent quantity of another pitch above or below it in the scale of 105 octaves. The transformation can occur only through its static effect, developing vibrations of harmonic pitches above or below their fundamental vibration, or developing with juxtaposed aggregates, resultant and difference, or third order, as the case may be."

Scholium: A table of the intervals and harmonics of the normal harmonic scale will indicate the ratios in which the transformation of forces will occur."

(18) *Law of Atomic Pitch* ~ "Atoms have each a different and definite pitch, at which they naturally vibrate."

Scholium: Atomic pitch is determined directly from its simple spectrum."

Scholium: Atomic pitch is determined by computations from its associate spectrum with all other atoms, as in known spectra."

Scholium: Atomic pitches are more important working data than atomic weights; tables of atomic pitches must be precise."

(19) *Law of Variation of Atomic Pitch by Rad-Energy* ~ "The higher harmonics and overtones of projected rad-energy are of a pitch sufficiently high to cause the atom to expand; by causing the atomoles to vibrate systematically the same influence will cause the atom to contract, and thus by changing the volume, atomic pitch is varied."

(20) *Law of Variation of Atomic Pitch by Electricity and Magnetism* ~ "Electricity and Magnetism produce internal vibrations in the atom, which are followed by proportional changes in volume and, therefore, pitch."

(21) *Law of Variation of Atomic Pitch by Temperature* ~ "Atoms in chemical combination oscillate with increasing amplitude directly as the temperature, and simultaneously absorb overtones of higher harmonics, producing expansion of volume and diminution of pitch."

Rule: The gradual approach of the temperature of harmonic combination can be observed by mutually comparing superimposed spectra; chemical combination commences when the fundamental lines of each spectrum bear harmonic ratios by linear measurement."

(22) *Law of Pitch of Atomic Oscillation* ~ "Atoms not isolated and in a state of tension between forces that oppose and increase the equilibrium oscillate bodily at a pitch that is a resultant of the atomic weight, atomic volume, and tension."

(23) *Law of Variation of Pitch of Atomic Oscillation by Pressure* ~ "The frequency of atomic oscillation increases and diminishes inversely

as the square of the pressure."

(24) *Law of Variation of Atomic Oscillation by Temperature* ~ "The force of cohesion diminishes inversely as the square of the distance the atoms are apart, and the force of the chemical affinity diminishes in the same ratio. Heat increases the amplitude of the oscillations in a direct ratio to the temperature of the natural scale.

Scholium: New thermometers and accurate thermometric tables, on the natural base, wherein doubling the temperature doubles the pitch of the transmissive energy, are required. Such a table of temperature will bear natural relations to atomic weights, pitches, specific heats, chemical affinities, fusions, solubilities, etc., and will disclose new laws. One table for each must be constructed."

(25) *Law of Variation of Atomic Oscillation by Electricity* ~ "The electric current destroys cohesion and chemical tension directly as square of current in amperes, inversely as the resistance in ohms, inversely as the chemical equivalent, and conversely as the coefficient of the difference between the freezing and volatilizing temperature of mass acted upon."

(26) *Law of Variation of Atomic Oscillation by Sono-Thermism* ~ "Diminishes the tensions directly as the quantity of heat developed, and in antithetical proportion to the harmonics absolved."

(27) *Law of Chemical Affinity* ~ "Atoms whose atomic pitches are in either unison, harmonic or concordant ratios, unite to form molecules.

Corollary: When two atoms are indifferent, they may be made to unite by varying the pitch of either, or both.

Scholium: This necessitates the construction of tables, representing variation of atomic pitches by temperature, pressure, etc.

Scholium: Tables of all harmonics and concords, and harmonics founded upon a normal harmonic scale, are equally essential.

Scholium: Optical instruments may be made to measure pitches of energy."

(28) *Law of Chemical Dissociation* ~ "If the pitch of either atom, in a molecule, be raised or lowered; or, if they both be unequally raised or lowered in pitch until the mutual ratio be that of a discord; or, if the oscillation amplitude be augmented by heat until the atoms are with the concentric waves of attraction, - the atoms will separate."

(29) *Law of Chemical Transposition* ~ "New molecules must be harmonics of the fundamental pitch."

(30) *Law of Chemical Substitution* ~ "(too complex for brief statement)"

(31) *Law of Catalysis* ~ "The presence of harmonics and discords."

(32) *Law of Molecular Synthesis and Combination (Organic)* ~ "The molecular pitch must be a derived harmony of the radicals.

Scholium: Reconstruction of electric units to represent pitches and amplitudes."

(33) *Law of Chemical Morphology* ~ "The angle of crystallization is determined by the relation between the molecular pitch of the crystallizing substance to the variation- density of the liquid depositing it."

(34) *Law of Atomic Dissociation* ~ "Overtones of high rad-energy pitches produce separation of the atomoles and recombinations among the atomolic molecules of the atoms."

(35) *Law of Atomolic Synthesis of Chemical Elements* ~ "Harmonic pitches of atomolity produce association of etheric-atomolic particles to form atoms; the kind of atom is determinable by the pitches employed."

(36) *Law of Heat* ~ "Atoms under the tension of chemical combination oscillate with an amplitude directly as the temperature, inversely as the pressure, and as the square of the specific heat. Diminishing the pitch of oscillation inversely as the square of the distance of the atoms apart, and simultaneously increasing the vibrating pitch of the atom by absorption of overtones and higher harmonics."

(37) *Law of Electro-Chemical Equivalentents* ~ "An atom vibrates sympathetically under the influence of electric energy, such undertones of which are absorbed as are a harmonic or harmony of the electric pitch; the amount of energy absorbed being directly as the arithmetical ratio of the undertone of the fundamental electric pitch.

Scholium: A table of electro-chemical equivalentents on the normal basis will indicate the electrical conditions and amount of chemical change."

(38) *Law of Cohesion* ~ "The cohesion between atoms diminishes directly as the square root of the pressure and temperature, and as the square of electric intensity."

(39) *Law of Refractive Indices* ~ "A table of the refractive indices of substances indicates their molecular pitch; and in connection with crystalline form the phase of molecular oscillation."

(40) *Law of Electric Conductivity* ~ "Electric energy is transmitted through homogeneous bodies with a completeness in direct proportion as the atoms are more or less perfect harmonics of the electric pitch, but not at all through substances whose atoms are discordant to the electric pitch; also through molecular substances, when their resultant notes are harmonics of the electric pitch, - the transmissions being inversely as the temperature, directly as the density diminished in proportion to the amount of crystallization, and inversely as the cube of the dyne, also directly as the reciprocal of the local magnetic intensity." (12)

The phenomena of Cymatics, the wave phenomena, vibrational effects, and harmonic oscillations revealed by the Chaldni plate, etc., was researched by Hans Jenny in the 1960s. He demonstrated the basic unified triadic phenomenon of vibrational, kinetic and dynamic effects in

acoustic interactions with matter. The triadic phenomenon occurs in many other fields (biology, mineralogy, astronomy, atomic physics, etc) and is a skeleton key that unlocks many gates of knowledge. Certainly it aids in understanding and practicing quabbalistic transmutation, and pertains to the work of John Keely and Dr Stephen Emmens. For example: the sacred word "Om" forms the Sri Yantra geometry when spoken into a Chaldni plate or Tonoscope! (6)

It should be noted that Franz Tausend, who made gold from mercury for the Nazis, developed a circular periodic table of the elements with Pythagorean musical correlations, based on his understanding of atoms.

Sacred geometry is another rewarding area of study for alchemists. The phi ratio (5/8, 0.618, &c) enables the alchemist to impregnate and enliven matter with cosmic energies in a simple manner. For example, a model of the Great Pyramid (incorporating phi in its base angle of 51° 51') will exert phenomenal effects on substances placed within it (i.e., mummification, sharpening dull razor blades, enhanced germination of seeds, &c).

3. Abiogenesis & Astrochemistry

Charles Littlefield ~ At the beginning of the 20th century, Dr Charles W. Littlefield experimented with the effects of mental concentration (visualization and prayer) on the crystallization of tissue salt solutions. He was able to produce many microscopic images of life forms, alphabets, structures, etc, some of which he published in his book *Man, Minerals and Masters*. Dr Littlefield conducted long series of experiments with vitalized mineral salts. The vitalizations were accomplished by repeated evaporations. Littlefield offered these guidelines for experimentation:

"The number of evaporations necessary to effect this [radiate structure] with each salt, is generally one evaporation for each tenth part of the molecular weight or fraction thereof as shown by the following table:

Salt:	Molecular weight:	Number of Evaporations:
Na-Chloride	58.37	6
Si-Oxide	60.22	7
K-Chloride	74.2	8
Ca-Fluoride	78	8
Ca-Sulfate	135.73	14
K-Phosphate	174	18
K-Sulfate	174	18
Mg-Phosphate	246	25
Fe-Phosphate	301.36	31
Ca-Phosphate	309.33	31
Na-Sulfate	321.42	33
Na-Phosphate	357.32	36

"Another interesting and important fact with this process of vitalization is, those salts that are otherwise insoluble in water are by the evaporation of water rendered soluble. This is a most valuable discovery from the standpoint of treating disease, as all the mineral salts must be dissolved in the blood before they are available to the tissue cells as food.

"I began my experiments by attempting mind control of one or more of these salts dissolved in distilled water. First, a drop of the mineral solution was put on the glass slide of my microscope, then placed in a temperature nearly that of the human body. As the water dried away, I would repeat the [unspecified Biblical] verse referred to above, the mystic three times.

"While doing this I would image, or mentally picture, the form of some fowl or animal as the victim of the bleeding. Finally, I succeeded in making the crystals of common table salt, which is the most abundant salt in the blood, group themselves in the form of a chicken.

"Long before I succeeded, there built up from the mineral solutions a great variety of microscopic organisms in the shape of octupi, fish, and reptiles. I do not know why.

"Continued experiments demonstrated that forms of different kinds could be *predetermined* by the proportion, number, and kind of salts used. Thus I discovered that *mineral composition* is the law of living forms... These laws may be stated as follows:

"1. A mental image is the beginning of every created thing. With whatever functions, faculties or qualities this image may be endowed by the mind creating it, the same will be expressed by the creature.

"2. This mental image has the power to group the twelve mineral salts normally found in organic nature, in the exact proportion necessary to build the form, and all the tissues and organs necessary to express all the functions, faculties and qualities which the mind image may be endowed. Hence *composition* becomes the *law* of form and function.

"3. Evaporation of water, a process universal on sea and land, generates *a subtle magnetism* which is the vital force of plants and animals. This force saturates the mineral salts of organic nature making them susceptible to mental control, so that any picture that the mind accepts as true in principle may be fixed in them...

"Procure twelve one-ounce bottles with fresh, clean corks. Label each bottle with the name of the salt it is to contain. Into each bottle put about 10 grains of one of the salts and fill with pure distilled water. Shake frequently. Not all the salts are equally soluble, some in large amounts and others only slightly.

From time to time remove a drop of any one of the solutions with a clean toothpick to the glass slide of the microscope. Heat the slide carefully until the water is evaporated. Then examine the crystal formed from the salt. Do this with each of the twelve salts until you become

familiar with their forms and differences. Then combine one or more of the solutions in a clean bottle. Place a drop of this on the glass slide, then evaporate and examine. It will be seen by these experiments that the slightest difference in the amounts of each solution will make the widest possible difference in the resulting crystals...

"In my own experiments I use sulfate of potash and sulfate of soda, one part of the potash to ten parts of the soda. When this combination forms crystals like the letters C, D, or O, then the solution of these salts is susceptible to mental mastery by my mind...

"In the formation of mantras any statement or description of any scene may be chosen. Three of the words selected from it must agree in number, or four of them may be of two different numbers. For example: "Veda (5) Yoga (2) Pyramid (5) Wisdom (2)" as given by the masters to indicate the system of philosophy they taught, two of which correspond to the same number. Or the mantra may be formed by a combination of numbers and letters, as the one for Mount Zion: "144,000 (9) Symbolize (9) Your (7) Church (7)" ..."

Dr Littlefield also claimed to have produced microbial flora with simple experiments that anyone could test. *Scientific American* magazine (30 September 1905) offered the following instructions and description of the operation:

"The supplies... comprise a large but shallow glass vessel, having a capacity of one quart, several smaller dishes, a bell jar sufficiently large to inclose those receptacles, and finally, a good high-powered microscope. The chemicals used are sodium chloride, alcohol, ammonia, and distilled water. In the larger vessel 2 ounces of the salt are dissolved in 6 ounces of the water, and when this is done 6 ounces of 90% pure alcohol is added.

"A portion of the solution thus formed is poured out of the larger into the smaller dishes, when 2 ounces of aqua ammonia is stirred in with a clean glass rod, and the bell jar is then placed over them. A chemical reaction is set up and in the course of a few minutes bubbles of hydrogen will begin to form on the surface of the fluid, and a closer observation will show these little spheres to be gyrating with high velocity. In the course of half an hour the bubbles will cease to form; the liquid is then ready for the crucial test. With the microscope at hand and previously focused so that a globule of the unstable solution may be quickly observed, a very small portion is transferred from the dish to the glass slide... On examination the detached particles of matter are seen moving through the medium from the center to the circumference with extreme rapidity, and continued investigation indicates other changes the liquid is undergoing. Crystals begin to appear, and those first formed are the characteristic transparent cubes of sodium chloride, and hence these are incapable of further development. After these, other crystals follow, and some assume a hexagonal form on the surface of the saturated solution, and it is from these that the growth of the elementary organisms is said to take place...

"The growth of this supposed rudimentary vital element next follows in sequence, and as it metamorphosed from the hexagonal crystal into a free, smooth, disk-shaped cell, we are informed that it bears a close resemblance to a red-blood corpuscle. The cellular disk now gradually expands in a direction at right angles to its surfaces and an ovoid form results from which pseudopodia or temporary extensions protrude similar to the amoeba...

Dr Littlefield went so far as to claim that he had produced a microscopic insect formerly unknown to entomology:

"It resembled a common house-fly, having two antennae protruding from its head, while from its body grew six attenuated legs, the two nearest its head being of the comparative form and length of a grasshopper, while its transparent wings were covered with light hair. This new insect is the outcome of thousands of experiments, and it has no counterpart in the textbooks dealing with that branch of zoology."

The obvious criticism is that Dr Littlefield failed to conduct his experiments with sterile equipment. **(8, 13)**

Andrew Crosse ~ In 1837, Andrew Crosse reported to the London Electrical Society concerning the accidental spontaneous generation of life forms while he was attempting to produce artificial crystals with the influence of a voltaic cell. He produced acari insects repeatedly in many carefully controlled experiments under a wide variety of conditions utterly inimical to life as we know it. The experimental details are repeated here in extended quotation to facilitate your own experiments:

"In the course of my endeavors to form artificial minerals by a long continued electric action on fluids holding in solution such substances as were necessary to my purpose, I had recourse to every variety of contrivance which I could think of, so that, on the one hand, I might be enabled to keep up a never-failing electrical current of greater or less intensity or quantity, or both, as the case seemed to require... Amongst other contrivances, I constructed a wooden frame, of about two feet in height, consisting of four legs proceeding from a shelf at the bottom; supporting another at the top, and containing a third in the middle. Each of these shelves was about 7 inches square. The upper one was pierced with an aperture, in which was fixed a funnel of Wedgwood ware, within which rested a quart basin on a circular piece of mahogany placed within the funnel. When this basin was filled with a fluid, a strip of flannel wetted with the same, was suspended over the edge of the basin and inside the funnel which, acting as a siphon, conveyed the fluid out of the basin, through the funnel, in successive drops. The middle shelf of the frame was likewise pierced with an aperture, in which was fixed a smaller funnel of glass, which supported a piece of somewhat porous red oxide of iron from Vesuvius, immediately under the dropping of the upper funnel. The stone was kept constantly electrified by means of two platina wires on either side of it, connected with the poles of a voltaic battery of 19 pairs of 5-inch zinc and copper single plates, in 2 porcelain troughs, the cells of which were filled at first with water and 1/300 of hydrochloric acid, but afterward with water alone... The lower shelf merely supported a wide mouth bottle, to receive the drops as they fell from the second funnel... It was by mere chance that I selected this volcanic substance, choosing it from its partial porosity; nor do I believe that it has the slightest effect in the production of the insects to be described. The fluid with which I filled the basin was made as follows.

"To a portion of the silicate of potassa... I added some boiling water to dilute it, and then slowly added hydrochloric acid to supersaturation... My object in subjecting this fluid to a long-continued action, through the intervention of a porous stone, was to form, if possible, crystals of silica to one of the poles of the battery, but I failed in accomplishing this by those means. On the 14th day from the commencement of the experiment, I observed, through a lens, a few small whitish excrescences or nipples projecting from about the middle of the electrified stone, and nearly under the dropping of the fluid above. On the 18th day, these projections enlarged, and 7 or 8 filaments, each of them longer than the excrescence from which it grew, made their appearance on each of the nipples. On the 22nd day, these appearances were more elevated and distinct, and on the 26th day, each figure assumed the form of a perfect insect, standing erect on a few bristles which formed its tail. Till this period I had no notion that these appearances were any other than an incipient mineral formation; but it was not until

the 28th day, when I plainly perceived these little creatures move their legs, that I felt any surprise, and I must own that when this took place, I was not a little astonished. I endeavored to detach, with the point of a needle, one or two of them from its position on the stone, but they immediately died, and I was obliged to wait patiently for a few days longer, when they separated themselves from the stone, and moved about at pleasure, although they had been for some time after their birth apparently averse to motion. In the course of a few weeks, about a hundred of them made their appearance on the stone. I observed that at first each of them fixed itself for a considerable time in one spot, appearing, as far as I could judge, to feed itself by suction; but when a ray of light from the sun was directed upon it, it seemed disturbed, and removed itself to the shaded part of the stone. Out of about a hundred insects, not above 5 or 6 were born on the south side of the stone. I examined some of them with the microscope, and observed that the smaller ones appeared to have only 6 legs, but the larger ones 8... It seems that they are of the genus *Acarus*, but of a species not hitherto observed...

"I have never ventured an opinion as to the cause of their birth, and for a very good reason --- I was unable to form one.."

Crosse repeated his experiments with more carefully controlled conditions and obtained similar results. Other experiments utilized copper nitrate and sulfate, iron and zinc sulfates, hydrochloric acid, and arsenic; the acari appeared in every cell but those containing arsenic and potassium carbonate. In one of the simplest experiments that produced acari, Crosse proceeded thus:

"A bent wire, 1/5th of an inch in diameter, in the form of an inverted siphon, was plunged some inches into [a concentrated solution of silicate of potassa] and connected with the positive pole, whilst a small coil of fine silver wire joined it with the negative.

"After some months' electrical action, gelatinous silica enveloped both wires, but in much greater quantity at the positive pole; and in about 8 months from the commencement of the experiment, on examining these 2 wires very minutely... I plainly perceived one of these incipient insects upon the gelatinous silica on the silver wire, and about half an inch below the surface of the fluid, when replaced in its original position. In the course of time, more insects made their appearance, till, at last, I counted at once 3 on the negative and 12 on the positive wire. Some of them were formed on the naked part of the wires, that is, on that part which was partially bare of gelatinous silica: but they were mostly embedded more or less in the silica, with 8 or 10 filaments projecting from each beyond the silica... I must not omit to state, that the room... was kept almost completely darkened...

"I have not observed a formation of an insect, except on a moist and electrified surface, or under an electrified fluid... These insects do not appear to have originated from others similar to themselves, as they are formed in all cases with access of moisture, and in some cases 2 inches below the surface of the fluid in which they are born; and if a full-grown and perfect insect be let fall into any fluid, it is infallibly drowned. I believe they live for many weeks: occasionally I have found them dead in groups, apparently from want of food...

"I have obtained the insects on a bare platina wire plunged into fluo-silicic acid, *one inch below* the surface of the fluid at the negative pole of a small battery of 2-inch plates in cells filled with water. This is somewhat a singular fluid for these insects to breed in, who seem to have a flinty taste, although they are by no means confined to siliceous fluids...

"I have closely examined the progress of these insects. Their first appearance consists in a very minute whitish hemisphere, formed upon the surface of the electrified body, sometimes at the positive end, and sometimes at the negative, and occasionally between the two, or in the middle of the electrified current; and sometimes upon all. In a few days this speck enlarges and elongates vertically, and shoots out filaments of a whitish wavy appearance, and easily seen through a lens of very low power.

"Then commences the first appearance of animal life. If a fine point be made to approach these filaments, they immediately shrink up and collapse like zoophytes upon moss, but expand again some time after the removal of the point. Some days afterwards these filaments become legs and bristles, and a perfect acarus is the result, which finally detaches itself from its birthplace, and if under a fluid, climb up the electrified wire and escapes from the vessel... If one of them be afterwards thrown into the fluid in which he was produced, he is immediately drowned... I have never before heard of acari having been produced under a fluid, or of their ova throwing out filaments; nor have I ever observed any ova previous to or during electricization, except that the speck which throws out the filaments be an ovum; but when a number of these insects, in a perfect state, congregate, ova are produced."

The abiogenesis of acari discovered by Andrew Crosse was investigated carefully by Weeks; he took every precaution to ensure the sterility of the equipment and reagents in a series of electrified experiments conducted with unelectrified controls. Acari eventually and invariably appeared, in numbers depending approximately on the percentage of carbon in the mother liquor. Weeks reported his results to the Electrical Society. (5)

In 1837, Michael Faraday stated in a paper read to the Royal Institution, that he too had encountered manifestations of similar insects in the course of some of his own electrical experiments. He was uncertain, however, whether their appearance was due to revivification of dormant ova, or formation *in vitro*.

In the 1940s, Dr Wilhelm Reich announced his discovery of the Orgone life force and the technology to utilize it. One of the areas he investigated involved the abiogenesis of "Bions". Reich also managed to crystallize the atmospheric orgone in vacuum tube orgone accumulators. He named this form "Orene". A polluted form of orgone called DOR (Deadly Orgone) was found to be associated with radioactivity. It can be rectified with geometry, etc. The discovery of orgone gives new credence to the old alchemical concept of Phlogiston, and it serves as a basis for some astral technologies.

Decades later, the Canadian Dr Gustaf Naessans also discovered novel life forms reminiscent of Reich's bions, and implicated them in the pathology of cancer. Naessans developed a revolutionary cure (lymphatic injections of "camphorminium chloride") based on his discoveries.

The concept of an aether was defined by Larousse as "an imponderable fluid, filling space and forming the source of light, heat, electricity, etc." The aether was a cornerstone of many physics theories until Einstein prevailed with his Theory of Relativity. Modern quantum mechanics and other post-relativistic physics theories, however, require an aether or something just like it.

Professor D. Mendeleeff, developer of the periodic table of atomic elements, published a fascinating booklet in 1904: "An Attempt towards a Chemical Conception of the Ether". Mendeleeff explained the ether as follows:

"The ether may be said to be a gas, like helium or argon, incapable of chemical combination... This point lies at the basis of our investigation into the chemical nature of ether, and includes the following two fundamental propositions: (1) that the ether is the lightest (in this respect ultimate) gas, and is endowed with a high penetrating power, which signifies that its particles have, relatively to other gases, small weight and extremely high velocity, and (2) that ether is a simple body (element) incapable of entering into combination or reaction with other elements or compounds, although capable of penetrating their substance, just as helium, argon, and their analogues are soluble in water and other liquids.

"When in 1869 I first showed the periodic dependence of the properties of the elements upon their atomic weights, no element incapable of forming definite compounds was known, nor was the existence of such an element even suspected. Therefore the periodic system was arranged by me in groups, series, and periods, starting in group I. and series I., with hydrogen as the lightest and least dense of all the elements. Guided by this system, I was able to predict both the existence of several elements and also their physical and chemical properties in a free and combined state. These elements, gallium, scandium, and germanium, were subsequently discovered by Lecoq de Boisbraudan, Nilson, and Winkler respectively. I made these predictions by following what is known in mathematics as a method of interpolation, that is, by finding intermediate points by means of two extreme points whose relative position is known. The fact of my predictions having proved true confirmed the periodic system of the elements, which may now be considered as an absolute law. So long as the law remained unconfirmed, it was not possible to extrapolate (i.e. to determine points beyond the limits of the known) by its means, but now such a method may be followed, and I have ventured to do so in the following remarks on the ether, as an element lighter than hydrogen. My reason for doing this was determined by two considerations. In the first place, I think I have not many years for delay; and in the second place, in recent years there has been much talk about the division of atoms into more minute electrons, and it seems to me that such ideas are not so much metaphysical as metachemical, proceeding from the absence of any definite notions upon the chemism of ether, and it is my desire to replace such vague ideas by a more real notion of the chemical nature of the ether... Those phenomena in which a division of atoms is recognized would be better understood as a separation or emission of the generally recognized and all-permeating ether. In a word, it seems to me that the time has arrived to speak of the chemical nature of the ether, all the more so since, so far as I know, no one has spoken at all definitely on this subject. When I applied the periodic law to the analogues of boron, aluminum and silicon, I was 33 years younger than now, and I was perfectly confident that sooner or later my prediction would be fulfilled. Now I see less clearly and my confidence is not so great. Then I risked nothing, now I do. This required some courage, which I acquired when I saw the phenomena of radioactivity. I then saw that I must not delay, that perhaps my imperfect thoughts might lead some one to a surer path than that which was opened to my enfeebled vision...

"If the ratio of the atomic weights be Xe: Kr 1.56:1; Kr: Ar = 2.15: 1; and Ar: He = 9.5: 1, we find that the atomic weight of $x = 0.17$. This must be considered the maximum possible value. Most probably the atomic weight of x is far less...

"Its mass is $50.129 \cdot 10^{18}$ or nearly $65 \cdot 10^{29}$, and its radius nearly $698 \cdot 10^6$ or $26 \cdot 10^8$ Hence the velocity required will be nearly $\frac{2.65 \times 10^{20}}{26 \times 10^8} = 2,240,000$ meters per second, or 2,240 kilometers per second...

"The atomic weight of x as the lightest elementary gas, permeating space and performing the part of the ether, must be within the limits of 0.000,000,96 and 0.000,000,000,053, if that of H - 1.

"I think it is impossible, under the present conditions of our scientific knowledge, to admit the latter value... I consider the majority of phenomena are sufficiently explained by the fact that *the particles and atoms of the lightest element x capable of moving freely everywhere throughout the universe have an atomic weight nearly one millionth that of hydrogen, and travel with a velocity of about 2,250 kilometers per second.*" (9)

Mendeleeff's Ether might have been discovered by Charles Brush (d. 1929), who claimed to have discovered "Etherion: A New Gas", which he reported to the American Association for the Advancement of Science in August 1898:

"The purpose of this purely preliminary paper is to announce the discovery of a new gas, presumably elementary, and possessed of some extraordinary properties. It is a constituent of the atmosphere, and is occluded by many substances. Its chief characteristic thus far ascertained is enormous heat conductivity at low pressure...

"I had observed that glass apparatus, when highly exhausted and heated, involved gas for an indefinite length of time, rapidly at first, then slower, but never stopped until the temperature was reduced. On cooling, rapid re-absorption always took place, but was never complete; indicating that two or more gases had been evolved by heating, one of which was not absorbed on cooling. In other words, the absorption was selective...

"I tested the conductivity of the residual air from time to time as the preliminary exhaustion progressed. When the exhaustion approached a good vacuum, an astounding phenomenon developed. At 36-millionths pressure, the residual gas conducted heat twice as well as air, and nearly as well as hydrogen, at 3.8-millionths it conducted 7 times as rapidly as hydrogen, at 1.6-millionths 14 times, and at 0.96 of one millionth 20 times as rapidly...

"Believing that the new gas is very much lighter than air or hydrogen, and may therefore be separated from the atmosphere by successive diffusions, I have spent several months in experiments with this end in view...

"The best results have been obtained with porous porcelain having its superficial pores nearly closed by suitable treatment. A tube of this type, closed at one end, was connected with the apparatus, and the whole kept exhausted to a pressure of 1.3 mm. About 19 cc of gas was diffused per hour... As both phosphorus pentoxide and soda-lime absorb the new gas, they cannot be used for dessication..." (4)

4. Prophecy

Prophecy is the memory of future histories, echoing across time and space. The future is revealed to us through dreams, drugs, religious epiphany, magical rituals and the mantic arts. Prophecy has exerted a powerful influence on the course of history. Alchemy has been the subject of several predictions that await possible fulfillment in proximal futures.

Paracelsus ~ The great adept Theophrastus von Hohenheim, or Paracelsus, was a prolific writer; his publications revolutionized medicine in Europe. He made major contributions to Western mysticism, including a small book of 32 prophecies called *Prognosticatio eximii doctoris Theophrasti Paracelsi* (ca. 1530). Though the predictions were written in symbolic terms, several of them have been satisfied by history. Several others can be interpreted easily and offer a clear view of the apparent future he saw. **(10)**

Paracelsus associated the 4th Monarchy (the millennial new age) with the rediscovery of the alchemical Philosophers' Stone by the Grand Monarch, as suggested by the following section of a longer prophecy:

"The people of the earth shall then be in commotion, and no ties of brotherhood, marriage, or friendship will be respected.
The lion will join himself to the fishes.
And the crown will be subject to the fine hat.
Then will the rue-wreath be soiled with milk.
And the pelican shall be devoured by his young.
But the phoenix shall be consumed in the fire, and when the dew moistens the ashes he will revive again according to his nature.
But he will become a noble phoenix, and will press hard upon the toad, and he will take to the lion and give him a choice.
The lion will select the best and no more.
Upon the other wild horse this phoenix will place a bridle and will ride it with spurs but without a saddle.
Then a new generation of beasts with various strange heads shall be born. They will have many mouths and stomachs, but only one natural draught.
The most profligate will maintain his magnificence, and his angels will be clothed in blood. They will be intent upon one work alone.
A pair of horses will appear and in all places the wail of the fugitives will be heard.
The dragon of sleep will cause the eagle to become weary of all magnificence.
The fountain of life will commence to flow.
And a white eagle will be changed into black.
Milk and blood will decrease, and the animal tree will begin to grow.
An old lion will be bound and a young lion will become free. He will please all those animals which the old had vexed.
He will do even more, for he will change his mane and hair into silk.
The bear will lay snares, and the ox-head will seek to gore him.
The griffin will fly over him but will not harm him.
Then shall the pearl, so long lost, be found by one of humble estate, and will be set, as a jewel, in gold.
It will be given to the prince of all beasts, that is, to the right lion.
He will hang it around his neck, and wear it with honor.
He will resist the bear and the wolf, and rend them asunder; so that the beast of the forest shall be safe.
Then will the old art flourish and no heed will be given to the new.
Then will the New World begin, and the white and black shall disappear.
All vain glory will be ended, and the plumes of the bird of the East shall be burned by the sun of the south.
How then will it be with thee, oh thou lion and earthly one who art painted and bound with gold?
All thy doing shall be changed, and the seven heads shall become one head. Out of this one, a head shall be born that shall be armed with a horn.
This horn shall bruise all that which has so long brought sorrow to Iffinos.
And the great city shall be the head of the less and shall become free from servitude.
Europe shall be the head, Asia the crown, but Africa shall be the jewel."

This prophecy is difficult to interpret, but some of the symbols are obvious: the phoenix is the alchemist king, who will be graced with the Philosophers' Stone, "the pearl, so long lost." The toad is France: that animal was the glyph from which the present fleur-de-lys was derived. The bear is Russia, the lion is England, and the griffin might the USA. The ox represents the Muslims.

In Chapter 8 of his treatise *De Minerabilis*, Paracelsus predicted the advent of Elias Artista (Elias the Artist), Master of Alchemy. Elsewhere in the literature of Hermetic science, Elias Artista is referred to as "a symbol of the ripeness of the age! He is the great day to come when all secrets shall be brought to light, and things now rooting in the dark earth shall be brought to light, and things now rooting in the dark earth shall come forth to full growth and flower and bear a treasure, which is for the healing of nations... a symbolic representation, the collective breath of generous vindications. Spirit of Liberty, of science and love which must regenerate the world!"

Paracelsus, Glauber, Thomas Norton, Alexander Seton and other alchemists wrote of Elias as if he were an individual. Paracelsus wrote: "What is small and humble, God has revealed, but the more important is still in the dark and shall likely remain so until the arrival of Elias Artista... One shall come after me whose splendor is not yet in this life, and who shall reveal much." According to Glauber, "This Elias Artista shall restore the true spagyric medicine of the old Egyptian Philosophy which was lost over a thousand years. He shall bring it with him and show it to the world."

Thomas Norton ~ The 15th century master alchemist Thomas Norton transmitted a poetic prophecy about Elias Artista in his *Ordinal of Alchemy*:

"Arise by Surname when the change of Coin was had,
Made some men sorry, and some men glad:
And as to much people that change,
Seemed a thing new and strange;
So that season befell a wonderous thing,
Touching this Science without leaving.
That three masters of this Science all
Lay in one Bed nigh to Leadenhall,
Which has Elixirs perfect White and Red,

A wonder such Three to rest in one Bed,
 And that within the space of days Ten,
 While hard it is to find one in Millions of Men.
 Of the Dukedom of Lorraine one I understand
 Was born, that other nigh in the middle of England,
 Under a Crosse, in the end of Shires three,
 The third was borne; the youngest of them is he.
 Which by his Nativity is by Clerks found,
 That he should honor all English ground;
 A Man might walk all the World about,
 And fail such Three Master to find out;
 Two be fleeting, the Youngest shall abide,
 And do much good in this Land at a Tide.
 But sin of Princes shall let or delay
 The Grace that he should do on a day.
 The eldest Master changed of him a song,
 And said that he should suffer much wrong
 Of them which were to him greatly beholden.
 And many things more this Master told,
 Which since that time hath truly befall,
 And some of them hereafter shall,
 Whereof one is truly (said he)
 After Troubles great Joy shall be
 In every quarter of this Land,
 Which all good Men shall understand:
 The younger asked when that should be,
 The old Man said when men shall see
 The Holy Cross honored both day and night,
 In the Land of God in the Land of Light;
 Which may be done in right good season,
 But long delayed it is without reason:
 When that begins note well this thing,
 That Science shall draw towards the King;
 And many more Graces ye may be told;
 Grace on that King shall descend,
 When he old Manners shall amend:
 He shall make full secret search,
 For this Science with dulcet speech;
 And among the Solitary,
 He shall have tidings certainly.
 So sought King Kalid of many men,
 Which helped Kalid at his need,
 His virtues caused him to speed."

The eminent British occultist Arthur E. Waite reprinted the prophecy in interpretive prose form in *The Hermetic Museum*:

"This knowledge would often have been the glory of England's kings, if their hopes had been firmly placed upon God. One who shall have obtained his honors by means of this Art, will mend old manners, and change them for the better. When he comes, he will reform the kingdom, and by his goodness and virtue he will set an everlasting example to rulers. In his time the common people will rejoice, and render praise to God in mutual neighborly love. O King, who are to accomplish all this, pray to God the King, and implore His aid in the matter. So the glory of thy mind will be crowned with the glory of a golden age, which shall not then be hoped for as future."

Michel Nostradamus ~ The 16th century prophet Michel de Notredame (Nostradamus) is considered to be one of the greatest prophets of future history. The following quatrains contain alchemical themes that may inspire aspiring adepts, and certainly confuse them:

"The divine word will give to the substance,
 Including heaven, earth, gold occulted in the mystic milk:
 Body, soul, spirit having all power,
 As much under its feet as the Heavenly see." (C.3.2)

"When Venus will be covered by the Sun,
 Under the splendor will be a hidden form:
 Mercury will have exposed them to the fire,
 Through warlike noise it will be insulted." (C.4.28)

"The Sun hidden eclipsed by Mercury
 Will be placed only second in the sky:
 Of Vulcan Hermes will be made into food,
 The Sun will be seen pure, glowing red and golden." (C.4.29)

"Eleven more times the Moon the Sun will not want,
 All raised and lowered by degree:

And put so low that one will stitch little gold:
Such that after famine plague, the secret uncovered"(C.4-30)

"So much silver of Diana and Mercury,
The images will be found in the lake:
The sculptor looking for new clay,
He and his followers will be steeped in gold.'(C.9.12)(7)

Finally, in the closing passages of the Biblical Revelation of John, we are promised that, "To he who overcomes, I will give a White Stone, and in it a New Name written, that is known only to he whom it is revealed." This suggests that the Christian survivors of the Tribulation will receive the Philosophers' Stone in its physical and angelic forms. Amen.

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-
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Name Index

Part I ~ Ars Magna

Allen, P.: Ch. 2, *A Christian Rosenkreutz Anthology*
Anonymous: Ch. 1, *The Secret Fire of the Philosophers* ~ Ch. 1, *Light Out of Chaos* ~ Ch. 1, *Tractatus de Lapide* ~ Ch. 1, *Arcana Divina* ~ Ch. 2, *Rosarium Philosophorum* ~ Ch. 2, *Allegory of Merlin* ~ Ch. 2, *On the Philosophers' Stone* ~ Ch. 2, *Untitled* ~ Ch. 3, *Turba Philosophorum* ~ Ch. 3, *Hydropyrographum Hermeticum* ~ Ch. 3, *A Magnificent & Select Tract on Philosophical Water* ~ Ch. 3, *Book of the Science of Bkrtnth* ~ Ch. 2, 3, *Rosarium Philosophorum* ~ Ch. 2,3, *On the Philosophers' Stone* ~ Ch. 3, *Crowning of Nature*
Arsenic: Ch. 3
Bacon, R.: Ch. 3, *Mirror of Alchemy* ~ Ch. 3, *The Root of the World*
Bacstrom, S.: Ch. 2, *Work of Pontanus, According to Mr. F.* ~ Ch. 3, *Lapis de tribus*
Berthelot, M.: Ch. 3, *Collection des Anciens Alchimistes Grecs*
Besant, A.: Ch. 3, *Occult Chemistry*
Beuther, D.: Ch. 2, 3, *Universal & Detailed Account*
Bloomfield, W.: Ch. 3, *Bloomfield's Bloosoms*
Bohemia, K.: Ch. 1, *Arcana Divina*
Bonus, P.: Ch. 1, 2, 3, *New Pearl of Great Price*
Coudert, A.: Ch. 3, *Alchemy ~ The Philosophers' Stone*
Councill, R.: Ch. 3, *Apologia Alchemiae*
Cremer, J.: Ch. 3, *The Testament of Cremer*
Crosland, M.: Ch. 3, *Historical Studies in the Language of Chemistry*
Cyliani: Ch. 1, 2, 3, *Hermes Unveiled*
Dee, J.: Ch. 3, *Rosicrucian Secrets*
Della Porta, G.: Ch. 3, *Hermetic Treatise*

Dry (Short) Path: Ch. 2
 Duchesnes, J. (Quercetanus): Ch. 3, *Treatise on Metallic Medicine*
 Eleazar, A.: Ch. 2, *Book of Abraham the Jew* ~ Ch. 3, *Aesch Mezareph*
 Espagnet, J.: Ch. 3, *Arcanum, or the Grand Secret of Hermetics*
 Fictuld, H.: Ch. 3, *Aureum Vellus*
 Figulus, B.: Ch. 2, 3, *A Golden and Blessed Casket of Nature's Marvels*
 Fulcanelli: Ch. 2, 3, *The Mystery of the Cathedrals* ~ Ch. 1, 2, 3, *The Dwellings of the Philosophers*
 Geber: Ch. 1, 3, *Of the Sum of Perfection* ~ Ch. 3, *Of the Invention of Verity*
 Grashof, J.: Ch. 1, 2, 3, *Greater & Lesser Edifyer*
 Grassot, L.: Ch. 1, *Light Out of Chaos*
 Grummet, C.: Ch. 2, 3, *Sanguis Naturae*
 Helvetius, J.: Ch. 2, *Golden Calf*
 Helmont, J.B.v. ~ Ch. 3, *Arca Arcani Artificiosissimi Apertae*
 Hermes: Ch. 3, *Tractatus Aureus de Lapidus Physici Secreto*
 Hitchcock, E.: Ch. 3, *Alchemy & the Alchemists*
 Hollandus, J. I.: Ch. 1, 2, 3, *De Lapide Philosophorum* ~ Ch. 2, *Vegetable Work* ~ Ch. 3, *A Work of Saturn* ~ Ch. 1, 3, *Opuscula Alchymica*
 ~ Ch. 3, *The Cabala*
 Ingalese, R.: Ch. 1, 3, *They Made the Philosophers' Stone*
 Jnana, K.: Ch. 2, *Dictionary of Hermetic Philosophy*
 Jollivet-Castelot, F.: Ch. 3, *Chemical Manufacture of Gold*
 Jung, C.: Ch. 3, *Mysterium Coniunctionis*
 Juran, J.: Ch. 1, 3, *Hyle & Coahyl*
 Kirchweger, A.: Ch. 3, *Golden Chain of Homer*
 Leadbeater, C.: Ch. 3, *Occult Chemistry*
 LeFebre, N.: Ch. 2, *Secret of Secrets*
 Libavius, F.: Ch. 3, *Commentariosum Alchemiaem*
 Lintaut, H.: Ch. 1, *Friend of the Dawn*
 Lover of Philalethes (Eugenius): Ch. 2, *A Short Enquiry Concerning the Hermetic Art*
 Lully, R.: Ch. 3, *Apertorium* ~ Ch. 3, *Testamentum* ~ Ch. 2, *Letter or Epitome to King Rupert*
 Magnus, A.: Ch. 3, *Compound of Compounds* ~ Ch. 3, *Libellus de Alchimia*
 Mirandola, P. d.: Ch. 3, *On Gold*
 Mookerjee, B.: Ch. 3, *Rasa-Jala-Nidhi*
 Morienus: Ch. 3, *A Testament of Alchemy*
 Muller, J.: Ch. 2, *Hyle and Coahyl*
 Myriam Prophetessa: Ch. 2, *Her Conversation with Aros*
 Needham, J.: Ch. 3, *The Theoretical Foundation of Elixir Alchemy*
 Nollius, H.: Ch. 3, *Chemist's Key*
 Nowell, E.: Ch. 3, *Certain Chemical Works with True Practice*
 Olympiodorus of Alexandria: Ch. 3
 Ostanes ~ Ch. 3 *The Book of Ostanes*
 Paracelsus, T.: Ch. 1, *Tincture of the Philosophers* ~ Ch. 1, *Concerning the Spirits of the Planets* ~ Ch. 1, *Fifth Book of Archidoxies* ~ Ch. 2, *Philosophical Canons* ~ Ch. 3, *Aurora of the Philosophers* ~ Ch. 3, *Revelation of Hermes* ~ Ch. 3, *Economy of Minerals*
 Patei, R.: Ch. 3, *Jewish Alchemists*
 Pearce the Black Monk: Ch. 3, *Upon the Elixir*
 Pernety, A.: Ch. 3, *Treatise on the Great Art* ~ Ch. 3, *Dictionnaire Mytho-Hermetique*
 Philalethes, Eir.: Ch. 1, 2, 3, *An Open Entrance to the Closed Palace of the King* ~ Ch. 3, *Preparation of the Sophic Mercury* ~ Ch. 2, 3, *Ripley Revived* ~ Ch. 3, *A Short Manuduction of the Celestial Ruby*.
 Philosophers' Stone: Ch. 1
 Ray, P.: Ch. 3, *History of Chemistry in Ancient & Medieval India*
 Rhasis: Ch. 3, *The Lights of Lights*
 Ripley, G.: Ch. 3, *Epistle unto Edward IV* ~ Ch. 2, 3, *Medulla Alchimiae*
 Robins, H.: *Alchemia* (Frontispiece)
 Rosenroth, C. v.: Ch. 3, *Kabala Denudata*
 Rulandus, M.: Ch. 2, 3, *A Lexicon of Alchemy*
 Saltzal, S.: Ch. 2, 3, *Fountain of Philosophical Salts*
 Schroeder, W. v.: Ch. 3, *Instructions Regarding the Art of Transmutation*
 Sendivogius, M.: Ch. 1, *Epistles to the Rosicrucian Society*
 Short / Dry Path: Ch. 2
 St Didier, L. de (A. Toussaint): Ch. 3, *Hermetic Triumph*
 Theophrastus: Ch. 2, *Sacred Art*
 Toussaint, A.: Ch. 3, *Hermetic Triumph*
 Trevisan, B. de: Ch. 3, *Verbum Dismissum*
 Urbigeris: Ch. 3, *Aphorisma Urbigeris*
 Valentine, B.: Ch. 3, *Triumphal Chariot of Antimony*
 Vaughan, T.: Ch. 3, *Aqua Vitae: Non Vitis*
 Villa Nova, A. de: Ch. 3, *Lucidary* ~ 3, *Rosarium*
 Waite, A.E.: Ch. 3, *Paracelsian Lexicon*
 Webster, J.: Ch. 3, *Metallographia: Or, An History of Metals*
 Zosimos: Ch. 3, *On the Evaporation of the Divine Water*

Part II ~ Modern Transmutations

Aston: Ch. 7
Baranger, M. : Ch. 8
Bardon, F. : Ch. 10
Bazhutov, Y. : Ch. 9
Beauregard, C. de: Ch. 8
Berzelius : Ch. 8
Bhadakamkar, A. : Ch. 9
Boismenu, E. de: Ch. 3
Brightson, R. : Ch. 9
Brown, S. : Ch. 3
Brown, Y. : Ch. 9
Bush, R. : Ch. 9
Caro, R. : Ch. 7
Champion, J. : Ch. 2
Choubard : Ch. 8
Clayton, T. : Ch. 9
Collie, N. : Ch. 6
Conrad, A. : Ch. 2
Crookes, W. : Ch. 1
Crosse, A. : Ch. 10
Damon, C. : Ch. 8
Dash, J. : Ch. 9
Davie, A. : Ch. 5
Dolph, T. : Ch. 2
Duhme, E. : Ch. 7
Dunikovski : Ch. 2
Emmens, S. : Ch. 1
Estey, R. : Ch. 7
Fox, H. : Ch. 9
Garrett, M. : Ch. 7
Gaschler, A. : Ch. 7, 9
Gilbert: Ch. 8
Gleeson: Ch. 9
Goldfein, S. : Ch. 8
Haber, F. : Ch. 7
Hannay, J. : Ch. 3
Harlow, G. : Ch. 1
Helmont, v. : Ch. 8
Herzeele, v.: Ch. 8
Hitchcock, E. : Ch. 3
Honigschmidt, O. : Ch. 7
Hooper, W. : Ch. 2
Hora, H.: Ch. 9
Horton, F. : Ch. 5
Hudson, D. : Ch. 2
Hunter, R. : Ch. 1
Irion, C. : Ch. 4
Jackson, D. : Ch. 9
Jones, K. : Ch. 2
Jovitschitsch, M. : Ch. 3
Julien, D. : Ch. 8
Jungermann, J. : Ch. 8
Kamala-Jnana: Ch. 7
Karssen, A. : Ch. 5
Keely, J. : Ch. 10
Keller, J. : Ch. 9
Kelly, J. : Ch. 9
Kervran, L. : Ch. 8
Klobasa, A. : Ch. 2
Komaki, H. : Ch. 8
Kopacek, R. : Ch. 9
Kushi, M. : Ch. 3
Lauwes: Ch. 8
Lea, C. : Ch. 1
Littlefield, C. : Ch. 10
Lotz, A. : Ch. 7
Melchanov, A. : Ch. 2
Masson, I. : Ch. 6
Mendeleeff, D. : Ch. 10
Miethe, A. : Ch. 7
Miley, G. : Ch. 9

Mizuno, T. : Ch. 9
Monti, R. : Ch. 9
Moray, T. : Ch. 2
Naessans, G. : Ch. 10
Nagaoka, H. : Ch. 7
Neel: Ch. 2
Norton, T. : Ch. 10
Nostradamus, M. : Ch. 10
Notoya, R. : Ch. 9
Ohmori, T. : Ch. 9
Ohsawa, G. : Ch. 3
ORMEs: Ch. 2
Outon, L. : Ch. 1
Paneth, F. : Ch. 6
Passell, T. : Ch. 9
Patterson, H. : Ch. 6
Patterson, J. : Ch. 9
Perrault, Prof. : Ch. 8
Peters, K. : Ch. 6
Prout : Ch. 8
Rabzi, G. : Ch. 9
Ramsay, W. : Ch. 6
Rauscher, E. : Ch. 9
Reich, W. : Ch. 10
Rein, G. : Ch. 9
Roy, R. : Ch. 9
Russell, A. : Ch. 7
Sheldon, H. : Ch. 7
Shoulder, K. : Ch. 9
Siemens & Halske: Ch. 7
Silver, allotropic : Ch. 1
Skinner, C. : Ch. 5
Smits, A. : Ch. 5
Soddy, F. : Ch. 7
Spindler, H. : Ch. 8
Stammreich, A. : Ch. 7
Tausend, F : Ch. 7
Thomson, J. : Ch. 6
Tiede, E. : Ch. 5
Tiffereau, T. : Ch. 1
Tuggle, D. : Ch. 9
Vauquelin : Ch. 8
Vogel : Ch. 8
Waite, A. : Ch. 1
Wendt, G. : Ch. 4
Yoshiraki, A. : Ch. 9
Zintl, E. : Ch. 7
Zundel, J. : Ch. 8.

Subject Index

Abiogenesis: Part II., Ch. 10
Acari: II., Part Ch. 10
"Alchemia": Frontispiece
Angels: II, Part Ch. 10
Arsenic: Part I, Ch. 3
Astrochemistry: Part II, Ch. 10
Biological Transmutation: Part II, Ch. 8
Cold Fusion: Part II, Ch. 9
Cymatics: Part II, Ch. 10
Electrotherapy Apparatus: Part II, Ch. 2
Elixir: Part I, Ch. 1
Ether: Part II, Ch. 10
Etherion: Part II, Ch. 10
Gold: Part II, Ch. 1
Helium: Part II, Ch. 4, Part II, Ch. 6, Part II, Ch. 9
Lead: Part II, Ch. 5
Magic: Part II, Ch. 10
Magnetic Undulator: Part II, Ch. 2
Mercury: Part II, Ch. 5

Neon: Part II, Ch. 6
Nuclear Waste: Part II, Ch. 9
Ores, Transmutation of: Part II, Ch. 2
Orgone: Part II, Ch. 10
ORMEs: Part II, Ch. 2
Philosophers' Stone: Part I, Ch. 1-3
Phlogiston: Part II, Ch. 10
Prophecy: Part II, Ch. 10
Quabbalah: Part II, Ch. 10
Radioactive waste: Part II, Ch. 9
Silver: Part II, Ch. 1
Thallium: Part II, Ch. 5
Tungsten: Part II, Ch. 4
Via Sicca Brevis: Part I, Ch. 2
Z-Rays: Part II, Ch. 2
