



Dictionary of
Alchemy

MARK HAEFFNER

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Acknowledgements

The help I have found in writing this book has been so complex and varied, that it is difficult to give appropriate thanks here.

The Bible of medieval alchemy was *The Emerald Tablet* (*Tabula Smaragdina*), and this work suggests the vital importance of meditation in the alchemical opus. I was introduced to the meditative approach to philosophy by teachers of Tibetan Buddhism, and have gained immense inspiration for my work from talks by Tibetan lamas. Their inspiring faith and courage in their spiritual practice has given me the confidence to tackle world views far from the realm of rationalist science, and to retain a conviction that our modern outlook is merely a relative and impermanent form of conditioning.

My studies commenced with work on John Dee and his Elizabethan library collection, and over a number of years I have been deeply grateful to the staff of the Duke Humphrey Library, and of the Bodleian Library in general. Without their patient help this work could never have arisen. I also owe thanks to the public library in Oxford, and to the staff of the Warburg Library in London, with its invaluable collection of photographs.

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In a work which ranges through Chinese and Indian alchemy, Paracelsian, medieval, Islamic and Hellenistic traditions, it is inevitable that I have relied on a tremendous range of literature, and I apologise in advance if there is any book or source which I have not sufficiently acknowledged. I have made much use of the collected works of C.G. Jung, published by Routledge and Kegan Paul, and I am extremely grateful to Oxford University Press for permission to quote from their edition of the works of Thomas Vaughan, edited by Professor Alan Rudrum (see Bibliography). I have used the Methuen edition of Ben Jonson's marvellous play, *The Alchemist*, and am grateful for permission to quote extracts.

Introduction

The Extent and Scope of the Subject of Alchemy

In offering readers *The Dictionary of Alchemy*, it is not easy to justify or to explain the fascination and the range and diversity of this subject without launching into a fresh volume. The very definition of the word 'alchemy' requires rather extensive discussion, and recent studies of the subject reveal that the old view of alchemists as seekers after the elixir or touchstone for transmuting metals into gold is totally inadequate. In his brilliant study of the primitive roots and structure of alchemical thought, *The Forge and the Crucible: The Origins and Structure of Alchemy*, Mircea Eliade traces alchemical concepts back to primitive mythology, and he discusses traditions of alchemy in Chinese Taoist and Indian Sanskrit sources, and also refers to a Burmese tradition. Professor Joseph Needham devotes several substantial volumes of his *History of Science and Civilization in China* to the study of Chinese Taoist alchemy, with prolific illustrations and quotations. Professor Needham also makes references to Indian alchemy, not only in Sanskrit texts, but also in Tamil works; he also refers to alchemy as existing all over South-east Asia, including Japan, Korea and Vietnam. This opens up exciting new vistas in the study of this subject, and my hope is that my *Dictionary of Alchemy* will encourage a more enthusiastic approach to this much neglected area.

Having regard for the vast scope of my subject, the *Dictionary* offers a series of entries which, it is hoped, will illuminate the meaning of alchemy for the many practitioners and philosophers in various cultures who have regarded this as a 'divine art'. The book includes entries on Indian and Chinese alchemy, and I have tried to make some cross-cultural references in other key entries.

The initial inspiration to compose such a dictionary came from the study of the publications of C.G. Jung on this subject. The Jungian approach is brilliantly illuminating in dealing with the multifarious symbolism and myth which surrounded the *opus alchymicum*, but in his enthusiasm for psychological explanation Jung tended to ignore the historical background. He is also rather dismissive about the

chemical labours of the alchemists, many of whom had well-equipped laboratories. My book seeks to redress this balance by providing a series of entries which deal with the main personalities of the tradition, as well as illustrating the conceptual structure of alchemical thought. Amidst the wealth of quotations and explanations provided by Jung, there is little help in explaining the basic concepts of the origin and nature of metals and minerals, or the fundamental ideas of the elixir and the Philosophers' Stone. My *Dictionary* is designed to provide a representative selection of the main philosophers of the alchemical tradition, including some who are more 'scientific' in their approach, like Georgius Agricola, the father of metallurgy, and others who are more legendary, like Maria Prophetissa.

The scope of this work means that it is designed to be illustrative rather than comprehensive. The time scale covered is daunting, and the focus is upon the origins and evolution of our western tradition. Although Chinese Taoist alchemy was probably much more ancient, the western tradition is traced back to the Egyptians of Hellenistic times. The historical time limits which I have set for the *Dictionary* cover the period from the Hellenistic mother of the tradition, Maria Prophetissa, or Maria the Jewess, chosen because she is the first identifiable historical personality in early alchemy, to the time of Sir Isaac Newton, whom Maynard Keynes described as being 'the last of the Babylonian and Sumerian magi'. There is now extensive published research on Newton's alchemy, and no biographer can ignore the subject. It seemed appropriate to close my historical period with Newton, since he is the last alchemist who could be said to belong to the ancient adept tradition. In his now famous lecture, Keynes claimed that Newton was the last man to hold a truly Renaissance view of the cosmos, a view in which Creation was seen as a kind of treasure hunt of mystic clues and occult hints.

In general, it is fair to say that alchemy was eclipsed during the eighteenth century, but enjoyed a revival during the nineteenth century with the Theosophical movement and with the creation of the Hermetic Society of the Golden Dawn. The overall shape of the alchemical tradition after the time of Newton has been brilliantly sketched in by Christopher McIntosh in his book *The Rosicrucians*, and it would seem unwise and unnecessary to trespass upon his territory. He shows how the great Rosicrucian movement of the seventeenth century continued to exert its influence during the eighteenth and nineteenth centuries, and how its effects still reverberated in the twentieth century, when it was outlawed by the Nazis. There are a number of publications which deal admirably with the Hermetic Society of the Golden Dawn, which was very important

to the intellectual and poetic development of W.B. Yeats. When Yeats joined the society of Hermetic students in 1887, he encountered an old man who practised alchemy, boasting some success in discovering the elixir of life, 'but the first effect of the elixir is that your nails fall out and your hair falls off'. This nineteenth-century adept hoped to drink the elixir when he grew old, but the potion dried up too quickly! (W.B. Yeats, *Selected Criticism and Prose*, p.330)

To extract a clear definition of alchemy from the wealth of material which I have used might be likened to the task of seeking to extract metals from their ores through a laborious process of smelting. The historical sources on alchemy, including its experimental practitioners and its philosophers, are very extensive indeed, and they are not easily accessible. The texts which are available are notorious for the obscurities, the arcane symbolism, and the obsession with secrecy in the art. Most people who are interested in alchemy recognize it as a richly pictorial subject, with its fire-breathing mercurial dragons, its serpents and lions, its unicorns and phoenixes. But there are few people who have sought to initiate themselves into the arcane, mythic texts.

Prior to the plethora of modern research on the subject, writers on alchemy had a fairly easy task. Much work on the western tradition was undertaken by A.E. Waite (a founder member of the Golden Dawn), who composed a number of useful papers discussing the meaning of alchemy and the significance of occult traditions, such as the Cabala, which were so closely associated with alchemy. However, the advance in research on Chinese and Indian alchemy has coincided with a fresh and vigorous investigation of the Paracelsian movement of the sixteenth and seventeenth centuries, and the literature concerned with the subject fills a rather vast bibliography. (Much invaluable material is published in the volumes of the journal *Ambix*, which is devoted to the history of alchemy and early chemistry.) Paracelsian alchemy is now recognized as a key factor in the history of medicine, for Paracelsus, the rebellious Swiss physician, introduced a whole system of alchemical medicine whose impact upon the benighted world of Renaissance medical scholarship was electrifying. Walter Pagel has provided us with a deep insight into the intellectual and spiritual world of Paracelsus himself, and Dr Charles Webster and Professor Allen Debus have done much to reveal the significance of the Paracelsian movement. My *Dictionary* includes entries on the remarkable personality of Theophrastus Paracelsus himself, as upon several of his leading disciples who made original contributions to the alchemical tradition, notably Oswald Croll, Heinrich Khunrath, Petrus Severinus and Jacob Boehme. The

Rosicrucian movement of the seventeenth century was profoundly influenced by Paracelsian alchemy.

In seeking a working definition of alchemy, it seems fair to start with the popular image of alchemy, as the arcane art of transmuting base metals into gold. This image is perhaps best conveyed by an engraving of a picture by Peter Brueghel, which presents the conventional satire of the alchemist amidst the total chaos of his makeshift laboratory, littered with implements and vessels of the art. There is an inset in the top right-hand corner depicting the unfortunate family of the alchemist reduced to seeking alms, after the delusion of this most dangerous art has wrought their undoing. Two literary classics reinforce the image of the charlatan or deluded alchemist, seeking the Stone of the Philosophers, the mysterious elixir or medicine which will heal metals, transmuting them into gold: Chaucer's *Canones Yeomans Tale* in *The Canterbury Tales* conveys the perils of the fourteenth-century craze for alchemy, and Ben Jonson's brilliant play *The Alchemist* shows that popular practitioners of his time were still loyal to the alchemical myths of the Middle Ages. (Serious students of Shakespeare will also realize at once that his drama is full of allusions to the occult, astrological beliefs of his time, inherited directly from medieval magic and science. Although Shakespeare alludes only rarely to alchemy itself, his world view is permeated by all of the influences which made up the tradition.)

The works of Chaucer and Ben Jonson, in portraying the arts of the alchemist as little better than common deception, involving witchcraft and disreputable magical tricks, represent a tradition which is hostile to alchemy. In 1317, Pope John XXII passed an edict condemning alchemy, which began with the words;

Poor themselves, the alchemists promise riches which are not forthcoming; wise also in their own conceit, they fall into the ditch which they themselves have digged.

Cited in E.J. Holmyard, *Alchemy*, p.149

This papal bull had been made necessary because the alchemy of transmuting metals had by this time become a demented craze. There is an excellent portrait of this debased form of popular alchemy in an Elizabethan work on magic, *The Discoverie of Witchcraft*, by Reginald Scot (1586), a work which throws light on the anthropology of magic in the age of Shakespeare. Scot includes alchemy amidst his condemnation of magical trickery and fraud. He mocks the alchemists for their terminology: 'For what plaine man would not beleieve that they are learned and jollie fellowes, that have in

readinesse so many mysticall termes of art: as (for a tast) their subliming, amalgaming, engluting, imbibing . . .'

In popular folklore, the aim and intention of the alchemist was quite simply to discover a means of transmuting base metals into fabled wealth:

Now you must understand that the end and drift of all their worke, is, to atteine unto the composition of the philosophers stone, called Alixer [= Elixir], and to the stone called Titanus, and to Magnatia [Magnesia], which is a water made of the four elements, which the philosophers are sworne neither to discover nor to write of.

Reginald Scot, *The Discoverie of Witchcraft*, Book xiii, Chapter 2

My *Dictionary* offers entries on the concepts of the elixir, the Philosophers' Stone, or the medicine which was supposed to heal defects in corrupt metals. Yet the true meaning of alchemical concepts lies hidden within a complex structure of archetypal images and symbols.

It was this secrecy of the alchemical tradition which led to its condemnation as a spurious occult form of trickery involving forgery of precious metals, and the task of the interpreter is to disentangle the more genuine aspects of alchemy as a spiritual tradition which preserves a fantastic wealth of symbolism and poetic or mystical ideas about the world. The conventional definition, then, relegates the alchemists to the ranks of an extinct species of proto-scientists who dealt in delusion. Medieval scholars were already familiar with attacks upon the validity of the pseudo-scientific theory of transmutation of metals. Reginald Scot cites a well-known passage of the Arab philosopher Avicenna in which he dismisses this theory as delusion: 'Let the dealers in Alcumystrie understand that the verie nature and kind of things cannot be changed, but rather made by art to resemble the same in shew and likenesses; so that they are not the verie things indeed, but seeme so to be in appearance: as castels and towers doo seeme to be built in the clouds.' Such apparitions are nothing else but some 'bright cleere cloud'.

It seems right to start then by admitting the strength of the case against alchemy before seeking to justify the value of studying it. The symbolism and poetry of the tradition have attracted tremendous attention from Jungians since the publication of C.G. Jung's *Psychology and Alchemy* in 1944. But many other studies now throw light upon the cultural significance of the subject. Our understanding of the primitive roots of alchemical thought and philosophy has been enhanced by Mircea Eliade in his fascinating study, *The Forge and the*

Crucible. His view is that alchemy may be traced into the mists of prehistory, where primitive, animistic theories of the birth of metals within the womb of the Earth gave rise to notions of transmutation:

In our view one of the principle sources of alchemy is to be sought in those conceptions dealing with the Earth-Mother, with ores and metals, and, above all, with the experience of primitive man engaged in mining, fusion and smithcraft. The 'conquest of matter' began very early, perhaps in the palaeolithic age, that is as soon as man had succeeded in making tools from silex and using fire to change the states of matter.

The Forge and the Crucible, p.142

Alchemy emerges from Eliade's study as an adept tradition which preserves some very primitive, mythological notions of the nature of mines, minerals and metals, and it is impossible to understand the later philosophy of the alchemists without appreciating its roots in prehistoric magical conceptions of nature. Myths and theories about the origin of metals and minerals, about their gestation in the dark depths of the earth, created the basis for later alchemical theories. In this way mineral substances shared in the sacredness attached to Mother Earth. Very early on we are confronted with the notion that ores 'grow' in the belly of the earth 'after the manner of embryos'.

Eliade shows that as a result of this theory smiths and metal-workers were always regarded as carrying out a sacred task. It was believed that metallurgy involved bringing metals to birth from their embryonic form within the womb of Mother Earth, then universally regarded as a goddess. He argues that the smelter, the smith and the alchemist share a common involvement in a task which is both magical and religious, for all three groups are concerned with the pursuit of the 'transformation of matter, its perfection and transmutation'. From earliest times, the crafts and skills of smelting and working metals were sacred, and religious initiation was vital. It thus becomes easier to view the alchemist as natural successor to this primeval work. Alchemists always guarded the sacredness and secrecy of their mystic opus with the greatest strictness. They called themselves 'philosophers' and traced the origins of their tradition back to the great age of Moses and Hermes Trismegistus, even to Adam and Eve.

Some idea of the ancient dignity attributed to the art is given by Edward Kelley in the sixteenth century:

All sages agree that knowledge of this art was first imparted to Adam by the Holy Spirit, and He prophesied, both before and after the Fall, that the world must be renewed, or, rather, purged with water.

Kelley was employed by Dr John Dee (1527 – 1608) and both men were supposed to have actually discovered a red powder which would transmute metals.

Few writers on the subject have really understood the complexity of true alchemical philosophy. Many who believed in the scientific theory of the transmutation of metals were imbued with the mystical philosophy of nature, which sees man as a microcosm, a small world with an inner heaven corresponding to the greater world, the macrocosm. Men like Dee and Kelley sought understanding of nature from divine sources, by séances in which they spoke with angels, and they regarded the true wisdom of alchemy as a prophetic tradition. Thus the philosophical alchemist might seek gold, but he must always live a life of prayer and meditation, using the texts of the ancient wise men to inspire his study of the natural world, the wonders of divine Creation.

My own researches into early alchemical ideas and beliefs about the natural world, especially its mineral and metallic realms, has been inspired by a faith in the value of what I might call pre-Newtonian philosophies or world views. Many academic studies focus simply upon the objective historical significance of occult traditions, and alchemy may be characterized as a Hermetic tradition. However, it is today becoming increasingly clear that the ruthless exploitation of our mechanistic scientific world view has had devastating consequences for the whole of the natural world around us. Although modern science, with its atomistic and molecular conceptions, seems to speak the truth about the phenomenal world, it certainly does not speak the whole truth, and it yields a very paradoxical vision: most scientists with whom I discuss alchemy are quick to point out the profound mystery of the 'wave particle duality' of matter. The Schrödinger wave mechanics which formed the backbone of quantum physics after the 1920s hardly portrays matter as very solid and tangible. In fact Fritjof Capra in his widely read book *The Tao of Physics*, argues that modern science has emerged with a view of the world which is rather mystical.

Of the major traditions of alchemy, the Chinese Taoist tradition is at least as significant as that of the West, and Taoism provided fertile ground for the flourishing of alchemical notions and symbolism. Although Taoist alchemy is almost certainly far more ancient, there seems no evidence of direct contact or influence from China in Hellenistic alchemy. However, there are remarkable parallels between East and West, and I believe that in both traditions there is a similar atmosphere of veneration and respect for the forces of nature, which

belongs to the magical world view.

Egypt, where western alchemy seems to originate, was the legendary home of the prophet Hermes Trismegistus, who was a source of much inspiration to study magic during the Renaissance, and alchemy is often designated as the Hermetic tradition. The great Florentine Platonist Marsilio Ficino was asked by his patron Cosimo dei Medici to translate the Greek texts of the Hermetic tradition, before embarking on Plato's works. This is an indication of the profound veneration for Egypt as the supposed home of theological and magical wisdom, and the excitement of Renaissance scholars was fired by their belief that natural magic and Christian theology could be easily reconciled in the context of the supposedly ancient philosophy of Hermes. The myth of the extreme antiquity of Hermetic works helped the case for alchemy, as did the passion for Christian interpretation of the Cabala during the Renaissance - the Cabala and alchemy have always been strangely close mystic companions, though their exact relationship is a secret preserved by initiates throughout the ages.

Thus the alchemy of the Renaissance generated powerful interest, as adepts realized its potential as both a scientific, experimental tradition and a mystic wisdom tradition in which there was a confluence of gnostic ideas about man and nature. In writing his works on alchemy, Jung was inspired by the idea that alchemy was essentially gnostic, and there has been much recent interest in the nebulous relations of Gnosticism with Hermeticism as religious influences in the West. What are we to make of this whole complex area of study? There is certainly a danger that the whole area of alchemy, gnostic and Hermetic wisdom will disintegrate into impossibly obscure backwaters. However, there remain many people who draw comfort from more ancient and lasting views of the world, reacting with some horror at the materialism of our foolish and destructive technological culture.

Craft traditions in Hellenistic Egypt are generally considered to be the source of alchemy as almost a mystery religion in itself. Most scholars of the subject are rather perfunctory about this problem of origins, dating alchemy back to the dyeing and metallurgical crafts of Egypt in the time of Alexander the Great. However, in my view the emphasis upon craft traditions is not entirely helpful, and it is the mystical and magical nature of alchemy which constantly needs emphasis in our age which is so condescending and hostile towards such beliefs. One of the oldest surviving alchemical texts is a work entitled *Phusika kai mustika*, generally wrongly translated as 'physical and mystical things'. The title in fact refers to the 'things of nature'

(Greek *phusis* means 'nature') and to 'initiatory things' (*mustes* actually means an initiate of the ancient Greek mysteries of Orpheus or Demeter). It thus becomes clear that the true alchemist, the philosopher *par excellence*, seeks a mystical insight into the divine secrets of nature through a rigorous course of study involving both practical chemistry and religious meditation. Thousands of practitioners failed to understand the secrecy of the adept tradition, and they ended up on the rocks!

Modern studies have illuminated the way in which alchemy flourished in many different cultures, being nourished by many and varied magico-religious systems. It is no longer worthwhile to study alchemy as an isolated and eccentric pursuit of medieval gold-makers. The tradition might best be likened to a river which winds its way through history, flowing through a bewildering variety of landscapes.

Hellenistic alchemy was involved with magical initiations, with magicians like the Persian Ostanes, and fell increasingly under the influence of Gnosticism. The two founders of the Hellenistic tradition are Maria Prophetissa, who was supposed in legend to be Miriam, sister of Moses, and Zosimos of Panopolis (third century AD). Maria was called 'the Jewess', and throughout its history in the West, alchemy has had strong associations with the profound mystical system of the Cabala. Since she is also called a 'prophetess', we may presume that she was a mystical religious teacher as well as an alchemist. Zosimos quotes her with reverence in his accounts of laboratory equipment, showing the familiar confusing synthesis of mystical and chemical interests. Jung has provided a classic account of Zosimos' famous disturbing visions, which may be shamanistic, and we know that he was a member of the Poimandres sect of the gnostics. He calls alchemists the 'sons of the golden head', and there can be no doubt that a fully established adept tradition, mystical as well as experimental, existed in his time.

Our own western tradition stems directly from the Arabs, who diligently translated a range of texts from Hellenistic sources. The word 'alchemy', frequently rendered as *alchymia* in Latin, is derived from Arabic *al kimiya*, which refers not only to the art of alchemy, but also to the substance which renders transmutation possible. The word *elixir* is also Arabic, referring both to the 'medicine of metals', and to the elixir of life. (These concepts are more fully explained under their relevant entries.) Islamic alchemy was both strongly practical, as evidenced by the chemistry of Rhazes, and imbued with mystical numerology of the Pythagoreans, as we see in the case of Jabir ibn Hayyan. Jabir was certainly a mystic, his school of alchemy being closely involved with Sufi and Shi'ite Islamic mysticism. Alchemy

spread throughout the Islamic world before flowing into medieval Christendom, causing great perplexity and confusion. The texts of Arabic alchemists have as yet been little investigated, however, and all we know is that there was a strong Hermetic element in Islamic science, which awaits further research.

Medieval Christian alchemy presents us with a rich variety of material. There are few texts which are really helpful in explaining the philosophy which lies at the roots of the tradition, although a Bible of medieval alchemy was *The Emerald Tablet*, found also in Arabic versions. Medieval adepts throughout Christendom were often hopelessly confused, and writers like Thomas Norton (*see* his *Ordinall of Alchemy*) attest the universal popularity of alchemy amongst artisans, merchants, noblemen and churchmen of every rank. Major texts were attributed to Plato or Aristotle or Thomas Aquinas as alchemists battled for respectability against dangerous charges of heresy or witchcraft. Alchemy became increasingly part of a subculture, associated with magic and astrology. A revealing text in this context is *The Secret of Secrets*, which was edited by the famous philosopher Roger Bacon, who was also a keen alchemist. This purports to contain advice on the subject of kingship from the philosopher Aristotle to his pupil Alexander the Great. The work provides a mixture of astrology, alchemy, and even phrenology, in a typically medieval synthesis. The wealth of symbolism in the art guided alchemists into the stormy waters of the unconscious psyche, as we may see in the strange and disturbed poems of George Ripley, who was Canon of Bridlington Priory in Yorkshire. There was certainly an esoteric teaching of alchemy, an oral tradition of interpreting the texts which seems to have been strongly millennialist, concerning the material nature of the world, the Creation and the Last Judgement (*see Petrus Bonus*).

To provide anything like a full account of the rich world of medieval Hermetic occultism would be impossible within a brief scope, and I hope that some entries in my *Dictionary* may suggest how vital this area of study is, and also how little explored.

Moving from the medieval world to the Renaissance upheaval which affected every area of science and philosophy, we find that 'natural magic' then became far more acceptable. The liberating atmosphere of this period had a tremendous impact upon alchemy, which could now be interpreted in the light of a new world view, which regarded Hermes as an ancient Egyptian prophet, perhaps of the time of Moses – many alchemical texts were attributed to Hermes from the outset of the tradition. Men like John Dee indulged their fascination with cabalist numerology, to produce a form of esoteric alchemy

which greatly influenced the rise of the Rosicrucian movement: Dee's *Monas hieroglyphica* (Antwerp, 1564) seems to have created virtually a new alchemical movement. The combined effects of the works of Pico della Mirandola, of Ficino and of Henry Cornelius Agrippa von Nettesheim was to create a truly revolutionary tradition of suppressed wisdom and gnostic enlightenment. Frances Yates has argued that Copernicus and other great Renaissance scientists were deeply influenced by religious Hermetism, and there can be no doubt that alchemy still inspired many deeply religious men to a philosophical study of nature.

The greatest of the reforming Renaissance alchemical philosophers was Theophrastus Paracelsus, who rose to fame as a physician. His voluminous works were edited and published mainly after his death and they inspired a movement of medical alchemy. Recent scholarship on the Paracelsian movement has shown the extent of the 'Paracelsian revolution' in medicine and occult theories of the world. Above all, Paracelsian philosophy involved a view of man as the microcosm, the lesser world, with inner heavens within his psychic constitution. Health and sickness were governed by these inner heavens. Thus man could never be viewed in isolation from the universe, nor could the universe ever be considered as an abstract system, divorced from human experience and human values. It is easy to argue that the havoc wrought by modern scientific technology arises partly from the loss of this dignified world view, in which man and nature are inseparable spiritually. Modern physics has only reluctantly accepted that the observer in experimental science is crucial. In general environmentalists argue that the mechanistic world view created by Descartes drove a wedge between man and nature, leading to the rejection of the ancient tradition of Hermetic wisdom, with its spiritual philosophy (*see especially Carolyn Merchant, The Death of Nature, Wildwood House, 1982*). The Paracelsian revolution offered new hope to those who languished amidst the impractical abstractions of Aristotelian logic and philosophy:

When the *Mysterium Magnum* in its essence and divinity was full of the highest eternity, *separatio* started at the beginning of all Creation. And when this took place, every creature was created in its majesty, power and free will. And so it will remain until the end, until the great harvest when all things will bear fruit, and will be ready for gathering. For the harvest is the end of all growth And just as the *Mysterium Magnum* is the wonderful beginning, so the harvest is the wonderful end of all things.

Surveying the wisdom of ancient philosophies, one begins to feel that

if modern cosmologists dropped all of their discourse on the subject of Black Holes, and spoke merely of the 'Great Mystery' of Creation, the public might be less deceived as to the explanatory powers of modern cosmic concepts. In the sixteenth century, Paracelsus drew upon the oral tradition of alchemical speculation to formulate an overall alchemical interpretation of Genesis, of the Creation of the world and of man, through a Trinity of alchemical principles - salt, sulphur and mercury - which are envisaged not as material elements, but as spiritual animating principles. With him, we take leave of the deluded world of the medieval dabbler in Arabic transmutation theory. His writings bring to birth a new tradition which respects the deep, divine mystery of Creation in man and nature, yet which provides a chemical basis for future theories. Man is a microcosm, a complete world in himself: 'For the sun and the moon and the planets, as well as stars and the whole chaos, are in man.' Disease and healing can only be understood in terms of this deep mystery.

The Paracelsians of the sixteenth and seventeenth centuries are an interesting group, and constitute a major category in my *Dictionary*. They include Oswald Croll, Petrus Severinus of Denmark, the Frenchman Duchesne, the German Heinrich Khunrath and the Englishmen Robert Fludd and John Dee. No alchemist or chemist worth his salt could ignore Paracelsus during this period, and even Robert Boyle makes respectful reference to him. Overall, the Paracelsian view of man as the 'lesser world', whose psyche mirrors the vastness of the starry cosmos, influenced poets, philosophers, mystics and theologians. Jacob Boehme inaugurated a tradition of spiritualized alchemy, free of laboratory work, which was immensely influential in seventeenth-century mysticism, and the poet Thomas Traherne in his devotional *Centuries* shows the depth of spiritual inspiration from Paracelsus:

You'll never enjoy the world aright, till the sea itself floweth in your veins,
till you are clothed with the heavens and crowned with the stars.

Alchemical influence permeates the metaphysical poetry of the seventeenth century, and there are many allusions to the art in Donne. His poem 'A Nocturnall upon St Lucies Day, Being the shortest day', is a fine example of the spiritualizing of alchemical ideas:

Study me then, you who shall lovers bee,
At the next world, that is at the next Spring,
For I am every dead thing
In whom love wrought new Alchimie.

The depth of archetypal mythology of death and rebirth, which the alchemists experienced in the course of their labours in the laboratory, has been shown in the twentieth century by Jung. His argument that adepts were involved in a sort of 'participation mystique', in which the archetypal psyche projected dream-like visions into the world of nature, is confirmed in many texts. There was a popular Middle English poetry of alchemy, which drew upon the myths of 'greene lyons', dragons, serpents, toads and the whole alchemical menagerie (*see* **Beasts and Birds; Dragon; Thomas Norton; George Ripley**).

The cultural impact of alchemy has scarcely been conceded by historians of literature and society; however, a service to this cause has been done by Frances Yates and by Christopher McIntosh in his book *The Rosicrucians*. But as poetry and mysticism were inspired by alchemy, so experimental science also owes its debt to this strange tradition. These areas of interest interweave in the complex Rosicrucian movement. It should never be forgotten that alchemy was experimental in a sense which is deeper than our external meaning: experiment for the alchemist demanded the whole man - *ars totum requirit hominem*. The depth of emotional and religious energy involved, and the interweaving of science and piety, is revealed in a passage from Thomas Vaughan, a passionate Rosicrucian, who was the brother of the metaphysical poet Henry Vaughan:

On the same Day my deare wife sickened, being a Friday, and at the same time of the day, namely in the Evening, my gracious God did put into my head the Secret of extracting Oyle of Halcali, which I had once, accidentally found at the Pinner in Wakefield, in the dayes of my most deare wife. But it was againe taken from me by a wonderful judgement of God, for I could never remember how I did it, but made a hundred Attempts in vain. And now my glorious God (whose name be prayesed for ever) hath brought it againe into my mind, and on the same day my deare wife sickened; and on the Saturday following, which was the day she dyed on, I extracted it by the former practice.

Thus amidst the deepest sorrow and grief, 'God was pleased to conferre upon mee, the greatest Joy I can ever have in this world, after her Death'. The simplest secrets of chemistry were for the alchemist often seen as miracles, as divine revelations of the deepest truths of Creation. Here we are far from the world of the charlatan, the gold-seeking alchemist, the man who indulged only in what Vaughan calls the 'torture of metals'.

The best overall summary and account of the aims of the true adept,

as opposed to the dabbler in alchemical chemistry, is that given by Jung in a recorded interview with Mircea Eliade:

The alchemical operations were real, only this reality was not physical but psychological. Alchemy represents the projection of a drama both cosmic and spiritual in laboratory terms. The *opus magnum* had two aims: the rescue of the human soul and the salvation of the cosmos. What the alchemists called 'matter' was in reality [the unconscious self]. The 'soul of the world', the *anima mundi*, which was identified with the spirit *mercurius*, was imprisoned in matter. It is for this reason that the alchemists believed in the truth of 'matter', because 'matter' was actually their own psychic life. But it was a question of freeing this 'matter', of saving it - in a word, of finding the philosophers' stone, the *corpus glorificationis*.

William McGuire and R.F.C. Hull (eds), *C.G. Jung Speaking*, interview with Mircea Eliade, pp.221 - 2

In the modern quest for the true nature of matter, physicists have emerged with a vision of reality which is ever more paradoxical and strange, and it would seem far too soon to pronounce any modern judgement on ancient views of the spiritual nature of matter. Probably the strongest case for a spiritual interpretation of the cosmos is that of Pierre Teilhard de Chardin. Another interesting recent account of modern ideas is provided by David Bohm, himself a brilliant physicist, in *Wholeness and the Implicate Order*.

Chief exponents of the Hermetic tradition in England in the sixteenth and seventeenth centuries were John Dee and the Rosicrucians Thomas Vaughan and Robert Fludd. John Dee is a representative figure of this movement, in which mathematical, experimental science was closely entwined with cabalist and magical speculation. Dee's synthesis of the Renaissance tradition of cabalist alchemy is to be found in his fabulously obscure book, *Monas hieroglyphica*. This work, according to the researches of Frances Yates, was of immense importance in encouraging the Rosicrucian alchemical movement (see F.A. Yates, *The Rosicrucian Enlightenment*). Dr Yates does not include alchemy in her study of the Hermetic tradition, but she does recognize it in her survey of the Rosicrucians:

Another element in the Renaissance Hermetic tradition was the revival of alchemy. Alchemy was always called a Hermetic science; many of the early alchemical treatises were attributed to 'Hermes Trismegistus', including the famous *Emerald Tablet*, the bible of the alchemists, which gives the Hermetic philosophy of nature in a mysteriously compact form. Though we connect alchemy with the specific aim of making gold, it was

concerned with the scientific problem of the transmutation of substances as a whole and this included, for the pious alchemist, spiritual and moral transformation.

'Thrice Great Hermes' was generally regarded as an ancient Egyptian prophet, of the time of Moses, and a body of magical and philosophical writings was attributed to him. These writings were very popular in Hellenistic times, and also influenced the Islamic world view, but it was not until the Renaissance that the *Corpus Hermeticum* reached the West. Containing as it did a whole range of treatises which presented an astrological form of nature mysticism, it provided a fresh view of the Creation. The texts were enthusiastically received, and works like the *Asclepius* exerted a tremendous influence on the Renaissance of the Cabala and natural magic during the sixteenth century. Alchemists during this period tended to study such texts of occult philosophy closely, for they sought a new magical world view.

In wrestling with the deep problems of interpreting the alchemical tradition, I have found the most profound insight in the works of Thomas Vaughan, who provided eloquent English translations of the Rosicrucian manifestos. In his work, alchemy rises to the dignity of a fully elaborated philosophy of Creation. He embraced wholeheartedly the magical philosophy of the Renaissance which involved a new Hermetic interpretation of the Genesis myth. Here is his account of the Hermetic vision of Creation:

Trismegistus in his Vision of the Creation, did first see a pleasing gladsome Light, but interminated. Afterwards appeared a horrible sad Darknesse, and this moved downwards, descending from the Eye of the Light, as if a Cloud should come from the Sunne. This darknesse (saith he) was condens'd into a certaine water, but not without a mournfull inexpressible voyce or Sound, as the vapours of the Elements are resolved by Thunder. After this (saith that great philosopher), the holy word came out of the Light, and did get upon the water, and out of the water he made all Things.

Thomas Vaughan was a dedicated experimenter, a practitioner of alchemy, and we see here how he uses the Hermetic philosophy of Creation to supplement the Genesis view, which as a Christian he wholeheartedly embraced. Like so many of the more serious, more learned alchemists, Vaughan rejects the idea of the art as a means of transmuting metals, of gaining wealth and power. Rather he makes clear that for him alchemy involves penetrating the magical secrets of nature, as divine Creation. He makes this explicit in *Euphrates* (1655):



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the changes they would undergo. There was an abundance of legends about the mystic elixir of life: for instance the Yellow Emperor is supposed to have risen into the sky to join the Immortals (*Hsien*) after taking the divine elixir. It was believed that gold and cinnabar could enter the blood and breath circulatory system, thus conferring immortality. Ko Hung tells us that by taking reverted cinnabar, we will cause vermilion birds and phoenixes to hover above us. Myth and symbolism, dreams and visions combine in Chinese alchemy, as they do in the western tradition, to create a fresh, animated vision of man and nature.

Alchemy of the Chinese type was practised throughout Asia and Japan, though no adequate study of it yet exists. It is well known, however, that Indo-Tibetan alchemy was involved with yoga and magic. The ability to transmute metals was one of the *siddhis* or magical powers associated with high attainment in yogic practice. As in China itself, strict yogic exercises and practices, involving breath control, were part of the quest for the mystic elixir of longevity or immortality. In the course of studying and practising Tibetan Buddhist meditation, I have often heard mention of an esoteric tradition of Tibetan alchemy deriving from Sanskrit origins. Tibetans use the image of transmutation of metals as a metaphor for the meditative life, which seeks to transmute the iron elements of life, death and the constantly flowing rebirth or karmic process into the gold or purity of enlightenment. It is also well known to Tibetan scholars, that the mining of gold was strictly regulated by the Dalai Lamas: it was believed that removal of gold from the earth would actually weaken its structure. There are stories of men who have found huge gold nuggets, only to be instructed by the Dalai Lama to bury them again! A highly respected teacher of Tibetan language and grammar has told me that this was indeed the view of traditional Tibet. Here we see how original alchemy is rooted in an ecological view of the world, a religious attitude of the deepest respect for nature, of fear that to exploit the resources of Mother Earth will bring ruin to mankind.

In publishing this collection of entries on alchemists and their philosophy, my own hope is that they may contribute to a more imaginative vision of man and nature, and that the future will bring an account of the cosmos which is more harmonious and integrated. Modern culture has inevitably fragmented thousands of specialist disciplines in a way which would never have been imaginable in the age prior to Newton. Alchemy gives us the opportunity to reassess our contemporary world view in the light of more ancient wisdom. It would be foolish to pronounce the ancient mystical gnostic and

Hermetic traditions dead. The Jungian account of alchemy has brought the subject to life, suggesting that the dream world of the unconscious mind is profoundly alchemical in its character. My own contribution is to seek to provide a reference work which will guide the reader into the labyrinth of pre-Newtonian science and philosophy of nature. The view of alchemists was deeply religious in its genuine expression, and there are many modern thinkers who lament the fierce attempts to establish the tyranny of scientific materialism - Teilhard de Chardin has led the way in 'spiritualizing' our concept of the material world, and many others have followed. In the light of this modern movement to see through the more superficial interpretations of science, a study of alchemical mystical philosophy may prove profoundly helpful and enlightening.

A

Abraham Eleazar

Abraham the Jew; uncertain dates

All that is known of this shadowy figure comes from **Nicholas Flamel** (1330 - 1417) who was inspired to take up the alchemical quest when he purchased Abraham's mysterious book for two florins, engraved on leaves of bark. On the first page gilded letters read: 'Abraham the Jew, Prince, Priest, Levite, Astrologer and Philosopher, to the Jewish People, Dispersed Through God's Wrath into Gaul, Greetings.' In the text Abraham advocates **transmutation** to help pay taxes to the Roman Emperor, an early call to **alchemy**. This shows the importance of Judaic alchemy in the craze of Flamel's time, with the **Cabala** as a major influence. Flamel was puzzled by the letters of Abraham's text, which were neither Greek nor Latin: perhaps they were Hebrew or Syriac.

An illustrated sixteenth-century **manuscript** supposedly written by Abraham, *Livre des figures hieroglyphiques* (Book of Hieroglyphics), is now in the Bibliothèque Nationale, Paris, while a book published in Leipzig in 1760, *Uraltes chymisches Werk* (Ancient Chemical Work), also purports to be Abraham's work, although it shows clear Paracelsian influence (see **Paracelsus**).

See Titus Burckhardt, *Alchemy*, chapter 14.

Acid and Alkali

The concept of this basic chemical antithesis emerges clearly in the seventeenth century with the work of **van Helmont** and **Robert Boyle**. Early alchemists worked with lists of *aquae* (waters) (see **Aqua**), and a familiar acid was *aqua fortis* or nitric acid, whose preparation is described in **Geber**, *De inventione veritatis* (On the discovery of the truth) (fourteenth century). Holmyard traces preparation of nitric acid back to the tenth-century Jabirian corpus (see **Jabir ibn Hayyan**). During the thirteenth century, it was

prepared by distilling nitrate with alum and ferrous sulphate. Alum and nitrate were also known to Ko Hung in fourth-century China (*see Chinese Alchemy*), but no nitrate reagents were known in the early medieval West. Sulphuric acid from 'oil of vitriol' was familiar in the sixteenth century, however, and was popular with the Paracelsian iatrochemists. Hydrochloric acid was known from 1640.

Acids were very important for purifying, separating and cleaning **metals**, and **myth** portrayed them as *devouring* metals. Nitric acid was used to separate silver from **gold**, dissolving the former and not the latter, while sulphuric acid was known from pseudo-Geber, prepared from vitriol, as dissolving all metals except gold. Precipitation of silver from nitric acid solution baffled and fascinated alchemists, especially van Helmont. **Newton** wrote a tract, *De natura acidorum* (On the nature of acids), in which he uses his theory of particles, and experiments with nitric acid deeply impressed him: he dissolved many metals and obtained precipitates from solution. *Aqua regia* was famous as the only 'water' or acid which would dissolve gold: this was prepared by adding sal ammoniac to nitric acid. In the mixture of hydrochloric and nitric acid, gold dissolves to a soluble chloride, silver to an insoluble one, thus *aqua regia* was ideal for separating gold from silver.

'Alkali' belongs to the class of scientific words derived from Arabic: *al-qaliy* denotes calcined ashes of the plants 'salsola' and 'salicornia'; *qualay* = to fry, or to roast. 'Alcalay' was originally a saline substance from calcined ashes of marine plants, soda-ash. **Chaucer** lists together 'sal tartre, alcalay, and salt preparat', **Ripley** in *Compound of Alchemy* lists 'Sal Alkaly, Sal Alembroke, Sal Attinckan', and Ben Jonson gives 'Alkaly' in company with 'sal tartre', arsenic and vitriol as regular alchemical substances. The English Paracelsian surgeon John Woodall explains that **Paracelsus** 'termeth every vegetable salt Alkaly'.

See C. Singer, E.J. Holmyard, A.R. Hall and T.I. Williams, A History of Technology.

Adam and Eve

The **myth** of **Creation** as told in Genesis naturally became the focus for alchemical speculation, but alchemists also drew upon traditions such as the **Cabala** or the **Hermetic texts**. Adam and Eve are important in the alchemical mythology of William Blake, and his well-known painting 'Eve and the Serpent' shows a very alchemical serpent. It is vital to realize that the Hermetic alchemical tradition

flows through literature into modern times.

Edward Kelley tells us that secrets of the art were actually imparted to Adam by the Holy Spirit, 'and He prophesied both before and after the Fall, that the world must be renewed, or, rather, purged with water'. Adam is the primordial man, the **microcosm** or lesser world, living at first in perfect **harmony** with **nature** and with his own nature. Dame Frances Yates explains in *Giordano Bruno and the Hermetic Tradition* that Adam in the Hermetic tradition is more than human, belonging to the class of 'star demons', the seven Governors who rule the Cosmos. The Fall is interpreted as Adam's exercise of free will in involving himself with nature in the bodily, elemental world, yet still preserving his spiritual nature.

Zosimos, belonging to the gnostic tradition of **Hellenistic alchemy**, also refers to this esoteric Adam, giving a meaning to each letter of his name, and Jung explains that the cabalist figure of Adam Cadmon was identified with the 'son of the philosophers', the 'man of light' imprisoned in man's mortal body. Thus Adam is prominent both in gnostic religious **alchemy**, where he is equivalent to *Anthropos* and in the Hebrew Cabala, where he symbolizes man's contradictory physical-spiritual nature.

The Cabalist Adam

Alchemy is so intertwined with the Hebrew Cabala in its speculative form that the theology of Adam becomes vital to understanding the esoteric tradition of alchemy, which is chiefly concerned with the **redemption** of the Adamic nature of man. Already, Zosimos (third century AD) shows the baffling syncretism in alchemy. He equates Adam with Thoth **Hermes**, as giver of names to worldly things, says that the Chaldean and Hebrew word *Adam* means 'blood red earth', and reads into the letters of the name secret meanings in thoroughly cabalist **spirit**: A = ascent, D = descent, A = North, M = meridian, South, fire burning in fourth region. Zosimos says that only the Hebrews and Hermetic texts hold this doctrine about 'the Man of Light and his guide the Son of God'. (See Jung, *Psychology and Alchemy*, p.350.)

The esoteric doctrine of Adam Cadmon is vital to the Cabala, and came to influence Renaissance **Neoplatonism** and the whole Paracelsian world view. The God of the ten Sefiroth, or emanations, is directly identified in his purest spiritual form, for man prior to the Fall is nothing other than a pure, untainted being. When cabalist **numerology** (the technique called *Gematria*) is used on his name, he is found to possess the very name of God in his creative manifestation in the world. The cabalist doctrine of Adam as **microcosm** clearly



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of **Mercury** (see **Hermaphrodite**; **Mercury**). But to the earthly elements is added the soul, or **quintessence** which is the principle of redemption, or of what Jung calls 'individuation'.

A dramatic illustration in a fourteenth-century Italian **manuscript** shows Adam as Prime Matter, or 'Adamic Earth', pierced by a mercurial arrow. The Philosopher's Tree sprouts from his genitals; the moon looks on, a symbol of **nigredo**. The corresponding picture of Eve shows her with the tree rising from her head: Jung interprets this as the contrast between the *anima* function in the man, and the *animus* in female psychology. (This picture is reproduced in Jung, *Collected Works*, Vol. 12, and in Stanislas Klossowski de Rola, *The Secret Art of Alchemy*. It comes from the *Miscellanea d'alchimia* (Miscellaneous Alchemy) manuscript in the Lorenzo Medici Library, Florence.)

For Adam and Eve as primal pair, see **Conjunctio**, or mystic marriage. For Zosimos and the alchemical concept of Adam see Jung, *Psychology and Alchemy*.

Agricola, Georgius

Latin for Georg Baur; metallurgist and mining technologist; born Glachau, Saxony, 24 March 1494, died 1555

This great scientist is the father of European metallurgy and his work *De re metallica* (On Metallurgy) is a source of abundant information on mining, **metals** and minerals.

Agricola studied at Leipzig, graduating BA, then became a classics teacher at the town school of Zwickau, becoming Principal in 1520. He lectured at Leipzig University from 1522, then went to Bologna to study **medicine**; he also studied in Venice and Padua, and seems to have gained his MD in Italy. In 1526 he settled in Joachimstal, a mining district of Bohemia, as town physician, and studied mineralogy. He became town physician of Chemnitz in 1533, and Burgomeister in 1546, dying there in 1555. He obtained strong patronage and tax exemption from Duke Maurice, Elector of Saxony.

German mining handbooks like the *Bergbuechlein* (Little Book on Mining in the Mountains) were predecessors of his works, which are listed here.

Publications:

Bermannus sive de re metallica (1530) (Bermannus) (octavo, Froben Press, Basle). This is a dialogue between a miner and two Italian doctors concerning miners and minerals. Its glossary of German



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Agrippa, Henry Cornelius 1486–1535; native of Cologne

Dame Frances Yates says of Agrippa: 'His *De occulta philosophia* [Occult Philosophy] is now seen as the indispensable handbook of Renaissance Magic and Cabala, combining the natural magic of Ficino with the Cabalist magic of Pico', and it was a key work for disseminating Renaissance **Neoplatonism**. He dismissed alchemists as 'either physicians or soap-boilers', but his study of occult philosophy was vital to men like **John Dee** who sought a synthesis of natural **magic** and scientific philosophy.

Agrippa studied with Abbot **Trithemius** of Sponheim from 1509 to 1510, and in 1510 visited England, meeting humanist scholars. He met Erasmus, and studied in Italy and France. Although his 'occult philosophy' was cited in witchcraft trials, he was a respected humanist philosopher: a revival of Hebrew studies was linked with the growth of learned magic of the **Cabala**. In 1526 his work 'On the vanity of sciences', *De vanitate scientiarum*, was likened to Erasmus' *Praise of Folly* as an indictment of all learning, both academic and occult.

His *Occulta philosophia* of 1533 presents the Hermetic vision of the universe, in which there are three worlds, the lowest world of the **elements** being manipulated by natural magic. Book Two concerns astral magic, involving mathematics. Book Three concerns **angel magic**, used by philosophers like Dee to contact divine intelligences in order to discover deeper secrets of the universe. Hebrew letters with numerical values are vital to transcending popular magic and, according to Agrippa, the 'Name of Jesus is now all-powerful, containing all the powers of the Tetragrammaton'. This, then, was the world of the Renaissance Hermetic magi.

See also **Magic**; Frances Yates, *The Occult Philosophy in the Elizabethan Age*.

Aion/Aeon

This word appears in Herakleitos (floruit 500 BC), who calls the aion a child at play. The Stoics, who evolved the doctrine of the cosmic year, defined the aion as the period between the **Creation** of the world from fire and its destruction. This concept must be a key to early **alchemy**, for the **uroboros**, the serpent devouring itself, is the main emblem of Hellenistic adepts, with its inscription 'All is One'. The great serpent was called *Agathos Daimon*, (Good Spirit) and in Orphic cosmology this is the symbol for Helios, the Sun, which also



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become interested in possible magical or physical transmutation of **metals**, but **gold** seems to function more as a magical ingredient of elixirs of life. Dr Mahdihassan argues that the earliest alchemical traditions of China and India were essentially concerned with juices or potions of immortality. Chinese alchemy is probably the earliest form, dating from the third century BC or even earlier, and involving both transmutation theory and elixir **magic**. Everywhere there is confusion and apparent contradiction in the aims of adepts. Alchemy always has a strong element of magic and of mysticism, the experimental, physical aspect seeming more of an introduction to mystic, magical secrets of transformation of **spirit** than a form of experiment.

Above all, alchemy should be regarded as a popular tradition, giving an outlet for heretical modes of religious and magical thought amongst a whole range of people: the texts all bear witness to involvement of priests, from highest prelates to humblest friars. The wealth of alchemical literature, still untapped, includes thousands of popular poems in many languages.

Recent research on alchemy has uncovered the vitality of the Paracelsian tradition of medical alchemy, comprising a scientific revolution in **medicine** and pharmacy (*see Paracelsus*). Men like **Oswald Croll** and **Andreas Libavius** evolved a form of chemistry which was immensely indebted to alchemy, and **Robert Boyle** and **Joan Battista van Helmont** show similar ambivalence. Alchemy and **astrology** were thriving in the late seventeenth century, contemporary with the founding of the Royal Society, and we now know that **Newton** was a remarkable Hermetic adept. **Elias Ashmole**, founding member of the Royal Society, combined deep faith in alchemy with devotion to astrology both as a means of practical divination and as a world view.

Alchemy involves a world view, with most adepts believing that the elemental world is bathed in influences from stars and planets. Man is interpreted as microcosm, and the great secret of the elixir or Philosophers' Stone is often said to be within man himself, the treasure of spiritual realization. Whereas the link between chemistry and alchemy was dissolved during the eighteenth century, this spiritual, mystical aspect of the tradition persisted to exert strong influence on poets like William Blake and W.B. Yeats. The 'modern' tradition of alchemy is beyond the scope of this survey, but there are many who still believe in a form of alchemical philosophy.

The following quotation conveys the dignity and nobility of the medieval alchemical philosophy:



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The alkahest myth is alive in the scientific *Metallographia* (History of Metals, 1671) of John Webster, where it is discussed along with mercury and **aurum potabile**. Also, **Philalethes** was credited with a tract 'The Secret of the Immortal Liquor called Alkahest'.

Alpha and Omega

Christ declares himself to be alpha and omega, the first and the last, in the book of Revelations, which has provided vast scope for esoteric prophetic interpretation. There are many signs that **alchemy** was also a prophetic tradition, linked in with apocalyptic and Joachimite traditions (*see Prophecy*). **Arnald of Villanova** and John Rupescissa both followed **Joachim of Fiore** in searching for prophetic meaning in the Scriptures, while Jung has shown that the *Lapis-Christus* parallel in alchemy is everywhere apparent, and the **Stone of transmutation** was a symbol of the redemptive power of Christ, the alpha and omega.

An interesting passage confirming the apocalyptic aspect of esoteric alchemy is found in the final Theorem, Number 24, of **John Dee's Monas Hieroglyphica** (Hieroglyphic Monad) (1564).

For the interpretation of Christ as first and last man, *see Adam*.

Aludel

This is a pear-shaped **vessel**, aludel being an Arabic word for the Latin *sublimatorium* described by **Geber** and others. It is the vessel of chemical sublimation (*sublimatio = elevatio, conversio, nobilitatio, perfectio*). In a work of Robertus Vallensis (*De veritate et antiquitate artis* in Lazarus Zetzner's compilation *Theatrum Chemicum*, 1602), there is an allusion to the pure Word of God being burnt to earth in the aludel, and processed seven times: this is typical of the mystical allusion always present in the true esoteric tradition.

Andrae, Johann Valentin 1586 – 1654; native of Württemberg

The Rosicrucian manifestos appeared in 1614 and 1615, and the next year *The Chemical Wedding of Christian Rosencreutz* [*Chymische Hochzeit Christiani Rosencreutz*] was published in German. Its author was not named, but was certainly Andrae. He was a citizen of



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more brittle than glass. Biringuccio says that alchemists claim that a **tincture** of antimony can turn silver permanently into gold, but he is sceptical.

In 1598 the Paracelsian physician Dr Alexander von Suchten published *De secretis antimonii* (On the secrets of antimony), but more famous was **Basil Valentine's** *Triumphal Chariot of Antimony*: he tells us that antimony purges gold, but also the human body, and a tiny portion fed to swine improves their appetite. He provides a full recipe for creating the 'Star Regulus', a crystalline star formation of antimony which profoundly stirred **Newton's** imagination, but he denies that this really contains the **Stone** as many alchemists had thought. Betty Jo Dobbs explains the apparent miracle:

The crystals of antimony are long and slender and sometimes arrange themselves in patterns on a sort of stem and so resemble the fronds of ferns. If certain very special conditions prevail in the purification and cooling of the metal, the crystalline 'branches' may appear to be arranged around a central point and so take on the appearance of a star.

Antimony is a classic example of the mythification of matter: Basil Valentine, though having denied that the star is the stone, says mysteriously that it may be 'carried through the fire with a stone serpent', until it consumes itself and merges with the serpent - this is the passage that attracted Newton. According to Basil, a wonderful curing **elixir** may be drawn from this, and magnetic properties were regarded as significant by Newton. Oh wonderful alchemical imagination!

Antimony is mined in Italy and Germany, being used in bell-making, glass mirrors and pewter; there are a number of mines near Siena. Surgeons used it for abscesses and ulcers.

See John Stillman, *The Story of Alchemy and Early Chemistry*; B.J. Dobbs, *The Foundations of Newton's Alchemy*.

Apparatus

The endless symbolism of the alchemical opus uses a variety of mysterious implements and **vessels** - **pelican** or **alembic**, to name just two examples. Chaucer enumerates the best-known items in the Canones Yeomans tale:

Sondry vessels maad of erthe and glas,
Our urinales and our descensories,



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As the water of ablution, the dew falls from heaven, purifies the body, and makes it ready to receive the soul; in other words, it brings about the *albedo*, the white state of innocence, which like the moon and a bride awaits the bridegroom.

Jung, *Mysterium Conjunctionis*, p.132

Mercury is the *aqua permanens*, the permanent water, to which Jung constantly refers in his writings.

Jung includes a long discussion of the 'Red Sea' as a symbol in alchemy (op. cit., p.199ff):

The Red Sea is a water of death for those that are 'unconscious', but for those that are 'conscious' it is a baptismal water of rebirth and transcendence.

The Red Sea is an ideal symbol or arcane name for the elixir or the **tincture** of transformation. Sea water, being *aqua pontica*, or *aqua permanens* (see **Mercury**), is regarded as the baptismal water, which purifies and cleanses, preparing the stage of *albedo* or whitening. Jung quotes *Gloria mundi* (The Glory of the World):

The mystery of everything is life, which is water; for water dissolves the body into spirit and summons a spirit from the dead.

Transmutation is achieved sometimes by a powder of projection, but more often there are the mysterious allusions to the **medicine** of metals, to the panacea or **elixir**, which is identified with the universal spirit Mercurius.

Aqua permanens, identified with Mercurius, is a mystic water. *Gloria mundi* describes *aqua permanens* as bitter, undrinkable:

A water of bitter taste, that preservest the elements! O nature of propinquity that dissolvest nature! O best of natures, which overcomest nature herself! . . .Thou art crowned with light and art born . . .and the quintessence ariseth from thee.

See also **Spirit**.

Arcanum

This word is strongly magical, the Tarot pack consisting of *arcana*: it means 'magical secrets'. **Paracelsus** uses the word in his philosophy of alchemical **medicine**. In contrast with our bodily being, *arcana* are immortal and eternal, 'they have the power of transmuting, altering



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Harmony and Symmetry in Hermetic Philosophy.

The standard biography of Ashmole, with an edition of letters and documents is C.H. Josten's *Elias Ashmole*.

Astra, Astral Body

Astrology was the province of what **John Dee** (1527 - 1608) called the 'vulgar Astrologien' (although he himself cast many horoscopes for the high and mighty), while doctrines of inner stars (*astra*) or an astral body belong to esoteric **alchemy**, expounded in many of **Paracelsus'** works. This postulates that man was created from heaven and earth, that he is part of the divine **Creation**, and that he has inner stars, a heaven within, because of his microcosmic nature (*see Microcosm-Macrocosm*). The sun, moon, all the planets and indeed primal chaos itself are actually within man, thus giving him a truly astral body or nature. The Greater World (macrocosm) was the maternal womb from which man was born, and he is thus composed of the four **elements**, but he possesses both an animal life and a sidereal (astral) life. The sidereal or astral body is composed of fire and air, which animate and move the animal body.

Such Paracelsian notions were not typical of early alchemists, although most had some form of doctrine of the spiritual man, bound within this mortal cave or prison.

See also Adam, who is the archetypal symbol for the astral or microcosmic man.

Astrology

Astrology is one of the cornerstone concepts of **alchemy**: Dee calls alchemy 'astronomia inferior', and every aspect of the opus was governed by astrology, for the stars are the measure of time and the opus is a microcosmic process.

The basic tenets of astrological thought were to some extent implicit in the Greek philosophy of **Aristotle** and Plato. Plato's *Timaeus* depicts man as **microcosm** and the heavens were considered immortal, unchanging, while Aristotle created the world view which ruled medieval science: immutable celestial spheres were the abode of angelic intelligences while the world of the **elements**, contained within the sphere of the moon, was subject to corruption and change.

Astrology swept through Hellenistic culture, gaining increasing notoriety under the Roman Empire. However, its deeper origins lay in



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Avicenna, Ibn Sina

Arabic philosopher and physician; AD 980–1037

Avicenna is best known as 'Prince of Physicians' and he rose to highest prominence both as administrator and as philosopher-physician. His contributions to philosophy and **medicine** were immense, including his famous *Canon* which became the Bible of medical students through medieval and Renaissance times. Its mainly Galenist synthesis of classical medicine was reviled, however, by the revolutionary **Paracelsus** who felt that **alchemy** and astral philosophy were the basis for medicine, for understanding and treating the body and soul of man.

Avicenna's great contribution to alchemy was his *Kitab al-Shifa*, or 'Book of the Remedy', a study of minerals, chemistry and geology. It deals with the congealing and hardening of stones, the cause of mountains arising, the four kinds of minerals, and so forth. Following the great **Jabir ibn Hayyan**, he accepts completely the **mercury-sulphur theory of the generation of metals**, arguing that solid silver may be created by the virtue of white **sulphur** with the addition of **mercury**, and a super-pure, fiery and subtle sulphur combined with mercury may solidify into **gold** - this was the basis of the medieval 'vulgar alchemist's' theory of physical **transmutation of metals**. However, Avicenna is emphatic that this is a geological and not an alchemical theory. E.J. Holmyard shows that in the *Kitab al-Shifa* Avicenna launches a powerful critique of transmutatory alchemy: he states unequivocally that alchemists are only able to produce imitations - for instance applying a white **tincture** to a red metal produces fake silver, but the 'true metallic species' does not change. Using the Aristotelian distinction between 'accidental' properties, i.e. appearance and real nature, he argues that alchemist's gold or silver may fool the expert, but they are only imitations.

A deeper study of Avicenna's philosophy shows a deep Pythagorean and Neoplatonist mystical strain (see **Neoplatonism**). He believes in a hierarchical universe, in the great Chain of Being, a cosmos (see **Creation**) created by God whose influence is mediated through the hierarchies of angels.

See Nasr, *Islamic Cosmological Doctrines*; E.J. Holmyard, *Alchemy*.

Azoth

This is one of the arcane names for the **mercury** of the philosophers, as the universal **spirit** of the world. In a text attributed to **Artephius**,



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and key to the sciences'. Bacon's theory of optics obeys geometric laws and he presents an Arabic theory of astrological influence: **John Dee** seems to have derived his special theory of astral influences from Bacon, Grosseteste and Alkindi. Theology remains as *regina scientiarum* (queen of the sciences).

In general, medieval scholastic science and theology was hostile to **alchemy**, which was relegated to the areas of popular superstition and heresy. However, Bacon strongly espoused the causes of alchemy and of 'Natural Magic'. In this respect, he gave powerful support to the Elizabethan alchemist John Dee, who composed a treatise defending Bacon against charges of using demonic **magic**: Dee affirmed that Bacon used only natural, Christian magic. The magical reputation of Bacon was embodied in the Elizabethan play by Robert Greene entitled *Friar Bacon and Friar Bungay*, and in the legends of a speaking brazen head, a plan to surround England with a wall of brass, the idea of giant burning mirrors to destroy enemy fleets, and even the invention of the telescope and the submarine.

In 1267 Bacon looked back on 20 years of study which had cost him 2,000 libra for instruments and 'secret books'. As an alchemist, he is difficult to assess, for his supposed alchemical works are probably spurious. However he definitely saw alchemy as a pillar of **medicine**, vital for separating helpful from harmful ingredients in medicines, and in this he anticipates the medical revolution of **Paracelsus** in the sixteenth century. He listed ignorance of alchemy in preparing medicines as one of the cardinal errors made by physicians of his day (see his *De erroribus medicorum* (Medical Errors)). In his *Opus tertium* (Third Work), he shows his awareness of the distinction between 'speculative' and 'practical' alchemy. The speculative he explains as dealing with the generation of things from **elements** and humours – this includes geology: gems, marble, **metals**, **salts** and pigments.

Bacon is impressive amongst medieval scholars as being a highly-disciplined scholastic philosopher, who was nevertheless keenly interested in magic and experimental science, which were closely related at this time. He was most deeply influenced by the *Secretum secretorum* (see **The Secret of Secrets**), a work which enjoyed tremendous popularity in the Middle Ages, with its occult and Hermetic elements. Most of his own works, however, were not published until the sixteenth and seventeenth centuries.

Publications:

De mirabili potestate artis et naturae (On the miraculous power of art and nature) (1542). This book was a contribution to the Renaissance tradition of Natural Magic and Hermeticism.



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Theophilus, the monk writing on **colour** in the twelfth century, casts further light on mining lore in a fascinating passage quoted by John Stillman:

In manufacture of Spanish gold, 'ashes of basilisk' are used with red copper, blood and vinegar. The story goes that two cocks mate and lay eggs. Toads are used to incubate the eggs. Male chickens are hatched which, within 7 days, grow serpent tails. The basilisk is buried, reduced to ash and the blood of a red-haired man is added.

John Stillman, *The Story of Alchemy and Early Chemistry*, pp.228 - 9

This may be a clue to the growth of alchemical **myth**. Theophilus is generally sensible, down-to-earth; what he has heard is an account of a metallurgical process, told in the kind of mythic language beloved of alchemists. The blood of the red-haired man might be **cinnabar**.

Baths, *Bain-Marie*

The alchemical warming bath still called *Bain-Marie* in France, Latin *Balneum Mariae*, takes its name from the ancient authority **Maria Prophetissa** who wrote much on chemical **apparatus**. The bath is normally kept warm by a simmering kettle or cauldron with gentle heat, being ideal for maintaining constant modest heat. It is extremely common in accounts of alchemical experiments, where bathing and cleaning are often equated with baptism, with purification following the dark, wretched state of **nigredo**, or with calcination. Washing and cleaning of calcined metal brings the *albedo*, the stage of whitening (see **Processes; Stages**).

Alchemical baths are imbued with mythic images: one harmonious picture in the *Rosarium* shows the immersion of **King and Queen**, representing **Sol and Luna**, in a hexagonal bath with a dove hovering over them as they hold outstretched twigs. There are many similar pictures of Sol and Luna naked in the bath. Usually the alchemical couple sit sedately in the bath, surrounded by mythic **beasts**. They are the same royal couple of the **conjunctio**, brother and sister, **mercury-sulphur**. A well-known picture in the *Splendor solis* (The Sun's Splendour) **manuscript** shows a bearded Christ-like figure seated in the bath with a white, radiant dove perched upon his head, symbol of the whitening *albedo*. The alchemist is using a pair of bellows to stoke the fire beneath the bath and the background shows a splendid classic arched colonnade.

There are many similar illustrations with Sol and Luna in the bath:



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Warrior. These are ubiquitous in alchemy, as are snakes and magic tortoises. The symbolism of longevity is of most interest to Taoists, with cranes and tortoises given pride of place. The lavishly-plumed birds of Chinese art, commonly equated with the phoenix, do not die and rise from the ashes as in western tradition. Other Chinese birds are the Red Bird of the South, with plumes like a peacock (*zhu niao*), and the *feng huang*, which is paired with the dragon.

Bernard of Trevisa

Bernardus Trenvisanus; *floruit c.1380*

Bernard came from Trier (Treves) on the Mosel, and is dated to the later fourteenth century. He lived at the time of the flourishing alchemical craze to which **Chaucer** bears witness in his *Canones Yeomans Tale*; he is also contemporary with **Flamel**. He is most interesting for his lively correspondence with Thomas of Bologna, astrologer and physician to King Charles V of France. Thomas was respected as an astrologer, but found his reputation tarnished by the failure of **aurum potable medicines**, concocted of **mercury** with **gold**. In reply to a letter from Thomas, Bernard presents his own views on the **mercury-sulphur theory of metals**, arguing that mercury alone is the essential constituent of gold. He explains the concept of mercury as **hermaphrodite**, combining in itself the masculine and feminine characteristics of mercury and **sulphur**. The philosophers' mercury contains all four **elements**, the air and fire of sulphur with the earth and water normally associated with mercury.

Bernard's alchemical autobiography, *De chemico miraculo* (On the alchemical miracle), is often cited, being printed in the *Theatrum Chemicum*. It describes the birth of the Philosophers' **Stone** with the sun and moon (**Sol and Luna**) as its parents. Bernard also discusses production of the **elixir** from purest mercury, and likens the philosophers' mercury to their **egg** which symbolizes **unity** (see **Numerology**).

The only firm date in his life is that of the letter to Thomas of Bologna: St Denis' Day, 1385.

He shows strong animosity towards Arabs, as he expended 400 crowns on experiments from **Rhazes** and 2,000 crowns on **Geber**. By the age of 38 he had spent 6,000 crowns fruitlessly But at the age of 62 he still travelled to the island of Rhodes to continue his experiments.



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C

Cabala

Also 'Kabbalah' or 'Qabbalah'

From the Hebrew *cabal* (or *qabbal* = received tradition), the Cabala evolved through medieval and Renaissance times into a complex magical, mystical philosophy whose influence was incalculable. The Cabala became virtually a world view, with a governing influence on Renaissance Natural **Magic**. It first emerges as a system of biblical exegesis in Spain in the eighth century AD and spread rapidly throughout Europe. There are two main texts: the *Zohar* (Book of Splendour) and the *Sefer Yetzirah* (Book of Creation). The latter probably dates from after the third century AD, being the subject of an Arabic commentary of the tenth century by which time it was familiar. The *Zohar* was composed in Spain by Moses ben Shem-Tob (1250-1305). As with the **Hermetic texts**, these works were credited to ancient sages.

Gershom Scholem explains the system as a highly developed form of mysticism, but in magical folklore tradition it lost much of its dignity, being equated with popular magic or necromancy, using diagrams and geometrical figures. The *Book of Creation* expounds a mystical world view, the basic doctrine concerning the 10 *Sefiroth* – emanations of God. They are the names or properties of God, the number 10 being perfection in Pythagorean **numerology** (10 = 1+2+3+4). Whereas in Plato's *Timaeus* the universe is created by a demiurge, a craftsman, Cabalists believed that the Creator En Soph entrusted this sacred task to the 10 emanations, the male and female Sefiroth. The 'World of Formation' is recognizable as similar to the hierarchies of angels in Christian cosmology: the Cabalists posit 10 groups of angels, ruling planets and **elements**.

The Cabala uses three main techniques, originally applied to the Scriptures: *Notarikon* involves the abbreviation of Hebrew words; *Temurah* uses anagrams; *Gematria* is applied to the intricate numerology, so popular with Renaissance Hermetic philosophers. These techniques are cited in the Prefatory Letter to **John Dee's**



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staff, the winged caduceus, and **Nicolas Flamel's** *Book of Hieroglyphs* contains this as an alchemical symbol. Around this staff are entwined the two serpents, symbolizing the *conjunctio*, the mystical marriage of the opposing principles **mercury-sulphur**. There is the legend that Mercury found two serpents fighting and, striking them, allowed them to coil around his **magic** wand, thus investing him with the divine power of the chthonic serpent. Thus the symbol represents dynamic equilibrium of opposites. The idea of mercury and sulphur poisoning one another is also vital to the death-resurrection symbolism of **alchemy** (see **Dragon**; **Mortification**; **Redemption**).

Charnock, Thomas

Elizabethan alchemical poet; c. 1524–81

This fascinating personality was an 'unlettered Scholar' alchemist, a contemporary if not a friend of Dr **John Dee**, who corresponded with William Blomfield. These adepts kept alive the medieval tradition of English alchemical poetry inherited from **Thomas Norton** and **George Ripley**.

Charnock's life has been documented by Sherwood Taylor, who published his fascinating hymn to the alchemical **dragon** in *Ambix*. Like **Chaucer's** *Canones Yeoman*, Charnock worked as laboratory assistant, probably to one James Sauler, who handed on the secret of the Philosophers' **Stone** on his death in 1554, but in the following year, on New Year's Day, a fire destroyed his laboratory along with the secret.

He then had instruction from the erstwhile prior of Bath Abbey; **Ashmole** tells of the discovery in the ruined Abbey of 'a Glasse found in a Wall full of Red Tincture', a liquid dye strong enough to redden the dung heap upon which it was cast (but which encouraged the growth of corn). In 1557 'a gentleman that ought me great malice,/caused me to be pressed to goe to serve at Callys', that is, he was forced to serve in Queen Mary's army in defence of Calais. In his fury, he took a hatchet to his whole laboratory.

He married Agnes Norden of Bristol in 1562, and moving near Bridgewater, Somerset, established a new laboratory, much to the distress of his neighbours. He composed an alchemical book dedicated to Lord Burleigh, who was a cautious (if not generous) believer in alchemy, and a friend to **Edward Kelley**. He died in April 1581, leaving a daughter.

Charnock's versified autobiography gives us the social history of the



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'tinctures' of disease in nature as a curse to man. But man's inner microcosmic nature is pure, invisible, being tainted only by its carnal involvement.

Publications:

Basilica chemica continens philosophicam propria laborum experientia confirmatam descriptionem et usum remediorum chymicorum . . . e lumine gratiae et naturae (Frankfurt, 1609).

The title page of this important work is obviously cabalist, suggesting as it does the threefold relation of cabalist theology, astronomical magic and medical alchemy. It shows the antithesis of the light of nature and the light of grace or revelation, derived from Paracelsus. There was an influential English edition of 1657: *Philosophy Reformed and Improved in Four Profound Tractates: The first discovering the Great and Deep Mysteries of Nature by that Learned Chymist and Physitian, O. Croll, the other three discovering the wonderful Mysteries of the Creation, by Paracelsus, being his Philosophy to the Athenians*, trans: H. Pinnell, London. It includes a complete English version of Croll's 'Admonitory Preface', explaining his Paracelsian views. (Pinnell was chaplain to the New Model Army until c.1648.)

See P.O. Hannaway, *The Chemists and the Word*; Walter Pagel, *Joan Battista van Helmont*.

Culpeper, Nicholas

English astrologer, physician and herbalist; 1616–54

Culpeper is best known as a herbalist, but he made a much broader contribution to pharmacy. He was apprenticed to an apothecary in St Helen's parish, Bishopsgate and in 1640 set up shop in Red Lion Street, Spitalfields. He belongs to the seventeenth-century renaissance of **astrology** and Dr Webster, in his *Great Instauration*, points out that Culpeper was an important popularizer of Paracelsian **medicine**.

One of his most important works was a valuable translation of the *Pharmacopoeia* of London, published as *A Physical Directory* (London, 1649). This had been produced on the centenary of its founding by the Royal College of Physicians, enemies of **alchemy** who nevertheless included many chemical remedies in their *Pharmacopoeia*. Culpeper drew Parliamentary praise but Royalist anger by popularizing medicine, and his edition attacks the monopoly of the Royal College which had persecuted men like Simon



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Dee, John

Tudor mathematician, cosmographer and cabalist alchemist; 1527–1608

Dr John Dee was the outstanding scientific personality of the Tudor age, with a European-wide reputation for expertise as a mathematician and cosmographer, but his deep fascination for **astrology**, **alchemy** and **angel magic** caused accusations of witchcraft and sorcery in a superstitious age. He amassed a vast library of some 3,000 books on all subjects, especially scientific, philosophical and magical. A whole section was devoted to Paracelsian works and Dee was a forerunner of the Paracelsian movement (*see* **Paracelsus**). He was a devoted alchemist, and one wing of his house at Mortlake on Thames was used as laboratory.

Dee graduated from St John's College, Cambridge (BA 1546; MA 1547), then studied cartography and cosmography with Gerard Mercator and Gemma Frisius who had founded a map-making school at Louvain in the Netherlands. He delivered lectures on Euclid in Paris, expounding a Pythagorean philosophy, probably already cabalist (*see* **Cabala**). During the 1550s he taught cosmography in England, whilst expanding his studies of alchemy and astrology. The fruit of these studies was the first of his original works to be published, the *Propaideumata aphoristica* of 1558, a series of aphorisms on his theory of the universe, including alchemy. He held that the stars and planets diffused both unseen and visible rays of influence, thus providing a physical theory of astrology based on a concept of radiation which sounds surprisingly modern.

Like Simon Forman and others, Dee held an astrological practice, retrieving lost objects and so forth. In a letter of 1574 to Lord Burleigh about finding lost treasure and mines he explains a magical theory of sympathy and antipathy.

His main alchemical work was the *Monas hieroglyphica* (Hieroglyphic monad), published in Antwerp in 1564 by Willem Silvius, beautifully printed with diagrams illustrating its 24 Theorems. This work seems to have been a key influence upon the **Rosicrucian** movement.

Of his other works, his *Mathematicall Praeface to Euclid* (1570) provided an imaginative survey of the uses of mathematics in every imaginable discipline, including **medicine**, where he shows a 'Cross of Graduation' for assessing the strengths of remedies. At this time the Paracelsians were introducing alchemical methods into medicine.

During the 1550s and again in the 1570s John Dee was involved with Tudor exploration, both in the regions of the far North-east, towards



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See B.J. Dobbs, *The Foundations of Newton's Alchemy*; E.J. Holmyard, *Alchemy*.

Distillation

This is perhaps the most important of alchemical **processes** and much **apparatus** was designed for the purpose. Hellenistic alchemical texts display *ambix* (see **Alembic**), *kerotakis* and *tribikos*, all famous as distillation apparatus. The heating of **cinnabar** to produce **mercury** in vapour form was known from earliest times both in China (see **Chinese Alchemy**) and the West, and it inspired much alchemical **myth**. It is possible that the alchemists' endless obsession with white and red **elixirs** resulted from the vermilion colour of magical cinnabar, and the white, silvery colour of mercury (see **Colours**; **Conjunctio**).

An important breakthrough in the history of **alchemy** and chemistry was the discovery of the **distillation** of alcohol, already known at the medical school of Salerno in the eleventh century, and of great importance to **Arnald of Villanova** and John of Rupescissa in the early fourteenth century. It was called *aqua vitae* (water of life), *aqua vini* (water of wine), *aqua ardens* (burning water), and there were mysterious explanations of this pure liquid as an elixir or universal **quintessence**.

Alchemical symbolism shows that distillation was a mystic process by which the more gross material **elements**, earth and water, became rarified and purer, nearer to the divine spiritual quintessence.

Renaissance distillation was brought to a fine art by best-selling textbooks like the work of Jerome Brunschweig (first edition, Strasburg, 1500) translated into English as *The Vertuose Boke of Distyllacyon* by Lawrence Andrews. This was the first English textbook of chemistry and **medicine**, anticipating the Paracelsian movement. Another landmark in medical pharmacy was *The Treasure of Euonymus* by Conrad Gesner (translated into English in 1559).

Dorn, Gerard

Flemish Paracelsian; born in Belgium, floruit Basle and Frankfurt 1560–80s

The dates of Gerard Dorn's life are unknown, but he started publishing books from 1565. Marie-Louise von Franz, a convinced Jungian, has provided a study of Dorn's highly original alchemical writings. She comments:



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course of the opus, from the **nigredo** stage of death and putrefaction, through to the red (*rubedo*) stage to the mastery (*magisterium*) of the Stone itself.

The process of mortifying the mercury (*see* **Mortification**), or slaying the dragon, is vital, and it is suggested that only the most famous adepts have really succeeded:

My great grawnfather was killyd by Ramunde Lulli, knyght of Spayne.
My grawnfather by Sir George Ripley, Chanone of England Sartayne.

Every aspect of the opus is included in the myth or allegory. The slaying of the dragon is vital for attaining the **elixir** which is the means of transmutation, as well as the elixir of life. The dragon generously forgives his killer, admitting that in life he was 'but strong poyson' (an allusion to the poisonous quality of mercury).

It is easy to discern the projection of unconscious archetypes: the process of spiritual suffering, of death and resurrection, required to achieve mastery (*see* **Redemption**):

Dying in mine owne blood
For now I doe excell all other worldeley good
And a new name is given me of those that be wise
For now I am named Elixer of great price
Which if you will make prouffe, put to me my Sister Mercury
And I will conjoyne her into Sylver in the twinkling of an eye.

Having passed through the stages of dying, of putrefaction and of poison, the elixir is born to be united with the feminine mercury (*see* **Conjunctio**, the mystic marriage of opposites in alchemy).

See F. Sherwood Taylor, *Alchemy*, for these quotations from Thomas Charnock.

Dreams and Visions

Although it obviously has a chemical-experimental aspect, the esoteric kernel of the alchemical tradition involves dreams and visions. The Jungian interpretation (*see* **Jungian Theory of Alchemy**) rejects the chemical explanation entirely, and in his book *Psychology and Alchemy* (1944) Jung used alchemical symbolism to illustrate a series of dreams representing the individuation process of psychic maturation. He emphasizes the **mandala** symbolism of dreams, a symbolism we also find in **alchemy**, where balance and **harmony**, concepts of mystical **unity**, of quaternity and



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F

Fermentation

Metaphors of vegetation are common in **alchemy** and the maturation of **metals** is seen as a process of growth or incubation within the womb of the earth. Fermentation is often a key process in the opus and **Morienus** describes the two opposing principles **Sol and Luna** (sun and moon) as ferments, that is, as the seeds (*semina*) of metals. Perhaps the image originates in the early processes of dyeing, which used vegetable ferments to produce dyes or **tinctures**. The ferment helps in preparing the **elixir** or 'medicine of metals', which then tinctures or **colours** the metals. A ferment of **gold** or **sulphur** is vital to produce the red elixir, while silver or **mercury** is vital for the white elixir. Sometimes the red elixir is equated with the **quintessence** of gold: it is the elixir of life and the spiritual ferment which serves both to transmute metals and to preserve man's bodily health:

'The Philosophers' Stone was often pictured as a 'ferment' which could insinuate itself between the particles of imperfect metals, thereby attracting to itself all the particles of its own nature: thus the red stone, or golden ferment, would yield gold, and the white stone, or silver ferment, would yield silver.

John Read, *Prelude to Chemistry*, p.140

Fire

See Elements.

Flamel, Nicholas

born 1330, died 22 March 1417

Perhaps the most famous of the medieval alchemists, Flamel and his wife Pernelle's immense wealth encouraged the fourteenth-century



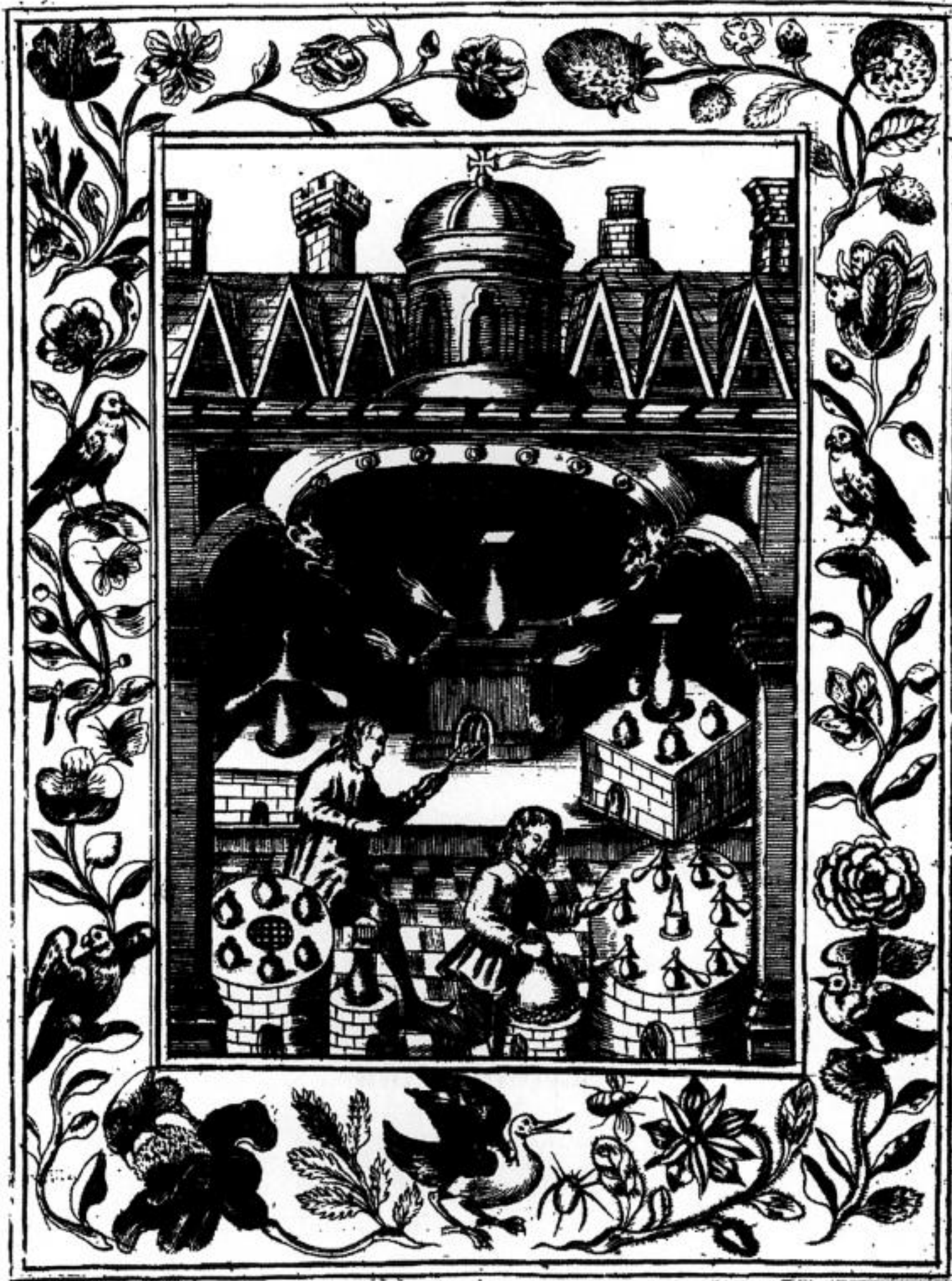
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This picture, from Ashmole's Theatrum chemicum Britannicum, shows a busy laboratory, with furnaces heating a variety of vessels, including distillation apparatus.

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RR. W. 29 (9) p.102.*



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G

Geber

'Geber' is only a name, the Latin for Jabir. The **manuscripts** attributed to Geber during the Middle Ages were immensely influential in encouraging medieval practical **alchemy** (*alchimia practica*, as opposed to *alchimia speculativa*, philosophical or speculative alchemy), and medieval alchemists believed these texts were by the famous Islamic alchemical philosopher **Jabir ibn Hayyan**. Scholars now agree that this is not the case, hence Geber and Jabir are given separate entries here. In fact the texts are medieval and of quite uncertain authorship.

Of the texts, the *Summa perfectionis* (Summit of Perfection) was most famous, and *Investigatio perfectionis* (Investigation of Perfection), *Inventio veritatis* (Discovery of Truth), a book on **furnaces** and a testament were also believed to be Geber's. E.J. Holmyard does not consider them part of the Islamic Jabirian corpus, as 'we look in vain in them for any references to the characteristically Jabirian ideas of "balance" and alphabetic Numerology'. He cites practicality and concise expression as their main features.

The Geber manuscripts belong to the class of texts which present an exoteric tradition of practical experimental alchemy, which wrestles with the problem of the possibility of actual, physical **transmutation of metals**. There is an exposition of the classic doctrine of the generation of metals from **mercury** and **sulphur** (*see Mercury-Sulphur Theory of the Generation of Metals*). Exoteric alchemy propounds a theory of perfecting metals by use of the healing **elixir** or **stone**. There are white and red elixirs: white for silver and red for **gold**. The stone is identified with the elixir, which depends upon the universal principles of mercury and sulphur.

Gnosticism

Gnosticism, the most debated of terms in comparative religious studies, is vital to understanding early **alchemy**, as Jung has



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The Grail, like the stone or mystic **elixir** of alchemy, is a mystery which passeth all understanding, having associations with the garden of perfection and purity (see **Adam and Eve** for the significance of the Paradise Garden in alchemy). It is the transforming vessel of the soul. *Lapsit exillis* may in fact mean *lapis elixir*.

It is also worth noting that a whole cycle of alchemical legends concerns the sickness and death of the alchemical **King** (see also **Sol and Luna**). The Grail legend centres upon the sickness of the ailing Fisher King who must be redeemed by a knight who asks the right question (see **Redemption**). The themes of medieval alchemy find their echoes in the **myth**, legend, allegory and religious doctrine of the age, and it is a mistake to seek to isolate alchemy from its cultural context.

See Emma Jung, *The Grail Legend*, 1971 edition, p.148-9.



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seventeenth-century chemistry. Betty Jo Dobbs draws attention to a collection of Hartlib's letters which concern experiments, **aurum potable** ('potable gold'), and the mystic **alkahest** or universal solvent, and give an account of Digby's laboratory in Gresham College.

The following publication gives insight into Hartlibian alchemy:

Chymical, Medicinal and Chyrurgical Addresses: Made to Samuel Hartlib, Esquire, viz:

- 1) *Whether the Vrim and Thummin were given in the mount, or perfected by Art.*
- 2) *Sir George Ripley's Epistle to King Edward unfolded.*
- 3) *Gabriel Plat's Caveat for Alchymists.*
- 4) *A conference concerning the Philosophers Stone.*
- 5) *An Invitation for a free and generous Communication for Secrets and Receipts in Physick.*
- 6) *Whether or no each Several Disease hath a Particular Remedy? and other tracts* (London, 1655).

See Betty Jo Dobbs, *Foundations*; Charles Webster, *The Great Instauration*; also **Philaethes**; **Thomas Vaughan**.

Hellenistic Alchemy

The Hellenistic tradition of **alchemy** is probably the least accessible of all. Alchemy arose, apparently, in Hellenistic Egypt, perhaps around the time of Alexander the Great, and this opens the question of whether eastern influences inspired it. The Babylonians may have had a tradition of metallurgical initiation, if not alchemy, and a eighth-century BC Assyrian tablet has instructions for purification rites for building and using a **furnace**. An obscure reference to embryos may indicate a theory of organic, embryonic growth in the development of minerals and **metals**, while a Chinese story of the first century BC suggests that alchemy was used to produce **gold**, which was then used for drinking **vessels**, and to prolong life (see **Elixirs**).

Hellenistic alchemy represents a confusion between the mystical, religious aspect of the quests and the exoteric aim of **transmutation** of base metals. Whereas the Chinese and Indian alchemical traditions both stress the aim of health and longevity through using elixirs, Hellenistic alchemy shows a fascination with tingeing and dyeing metals. The Emperor Diocletian issued a decree (c.290 AD) condemning *chemeia* as a gold-forging art, and commanding the



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Ashmole also preserves a beautiful poem about a herb of great importance to alchemists:

Her ys an Erbe men calls Lunayrie,
 I-blesset mowte hys maker bee.
 Asterion he ys I-callet alle so,
 And other namys many and mo;
 He is an Erbe of grete myght,
 Of Sol the Sunn he taketh hys lyght . . .

The symbolism of **Sol and Luna** extends throughout **nature**, for the heavens imprint their influence in the animal, vegetable and mineral worlds. The marvellous herb Lunary is a panacea, an **elixir**:

The Rote is black, the Stalke is red;
 The wyche schall ther never be dede . . .
 Hys Flower shynith, fayre and cler,
 In alle the Worlde thaye have non pere . . .
 With many a vertu both fayre and cler,
 As ther ben dayes in alle the yere,
 Fro fallyng Ewel and alle Sekeneys,
 From Sorowe he brengyth man to Bles.

The 'fallyng Ewel' is the falling sickness, or epilepsy. Gerard's Elizabethan herbal credits the *Liunaria* or Moone wort with powers to heal wounds, and he refers to the superstitions of witches and alchemists. John Read also cites a fascinating mention in *Bloomefields Blossoms*: 'The Moone that is called the lesser Lunary, Wife unto Phoebus, shining by night, To others gives her Garments through her herb Lunary.'

Concepts of the organic growth of metals and minerals are vital to alchemy (*see also Tree*). S. Mahdihassan argues that the whole idea of the alchemical **hermaphrodite** arises from the **creation** of a 'herbo-metallic complex'. Metals were often calcined with herbs and great magical significance was attached to the idea of fusing or uniting metallic and herbal 'souls'.

The **medicine** of medieval and Renaissance times was dependent upon herbal remedies, derived via the tradition of Dioscorides. Medieval herbals are full of magical lore, with pictures of the *Mandragora* and other mythic plants.

Hermaphrodite

Also called Androgyny, composed of Greek words for man and woman, and *Rebis* from Latin meaning 'double thing'



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nature, nature conquers nature, nature dominates nature.' In the West there is this same ambivalence in the quest involving death and suffering that leads to resurrection and **redemption** or liberation. Western alchemy is much concerned with the 'seeds of the metals', and with the germination and fermentation of the elixir of **metals**, and throughout the tradition there is much vegetative metaphor.

Alchemical texts have been attributed to 'Nagarjuna', identified with the great Buddhist Madhyamaka philosopher of that name who was often credited with astonishing longevity and with having performed alchemical feats to help struggling Buddhist communities. The best-known of these texts is the *Rasaratnakara*, a compilation which refers to 'killing Mercury' and to the mercury-phallus offering to Shiva. These texts are now thought to be the work of a later Nagarjuna, but alchemy seems to have spread throughout the East at the time of the conversion of South-east Asia to Buddhism: it seems that Tibetan alchemy is more Indian than Chinese. Recent research shows that alchemy spread over vast areas, through Persia and Islam, from India through Tibet, then into Burma, Korea and Japan.

It was once argued that Indian alchemy arose through Islamic influence, but Indian elixir traditions extend back over millennia. Professor Needham draws attention to substantial Tamil literature on alchemy and magic, which he considers independent of Sanskrit influence, though subject to influence from Chinese trade. Dr Mahdihassan argues that the concept of a metallic elixir or **Stone** of the Philosophers arises through the introduction of a herbal ferment into metallic processes. Thus an elixir acquires vegetable as well as mineral soul, a living, growing magical spirit as well as inert, lifeless body or matter. The union of vegetable ferment and metal or mineral solution is used by Dr Mahdihassan to explain the **hermaphrodite** figure. Western alchemists are always obsessed with the death of the body, and the reuniting of body and soul or spirit.

Mircea Eliade establishes the yoga-alchemy connection, reinforcing Professor Needham's work on the Chinese yogic *Nei Tan* tradition of preparing elixirs of life by alchemical means. He argues that the alchemical goal of **transmutation** is amongst the *siddhas*, or magical accomplishments which come with advanced yogic or Tantric practices. Hatha yoga and Tantra operate with the concept of the **astral body**, and this alchemy is as much transmutation of man, the **microcosm**, as it is chemical **magic**. Eliade finds the death-resurrection motif in Tantra and Indian alchemy - 'killing Mercury'. There is also the dualism of body and soul (*purusha* = spirit; *prakrti* = substance, body, nature), corresponding to the dualism of Shiva-Shakti, who represent an archetype of the **conjunctio** motif, the



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Glastonbury Abbey by Kelley himself. The find included books, glasses and **apparatus** (see similar story about **Charnock**). Dee and Kelley were rumoured to have achieved actual **transmutation** using their powder or elixir and **Arthur Dee**, John's eldest son, remembered playing quoits with transmuted pewter plates at Trebon Castle.

When Dee returned to England in 1589, Kelley remained in Bohemia, then returned to Prague. In 1591 he was created a 'Golden Knight' by Rudolf II and his **gold**-making pretensions were taken seriously. The great Lord Burleigh was credulous enough to send agents to urge Kelley to return to England; two letters from Burleigh dated May 1591 show generous respect for Kelley's 'Royal Profession' (i.e. alchemy), and beg his return. It is certain that Burleigh believed in the secret of transmutation, for there is extant a letter to Sir Edward Dyer (a friend of Dee's), dated May 1591, in which he asks for some of Kelley's mystic powder to be sent in a 'secret box' to convince Queen Elizabeth I of the reality of transmutation.

But Kelley's secrets and pretensions destroyed him. He was imprisoned for two years and tortured, then killed whilst trying to escape from the custody of the Emperor.

Kelley's alchemical treatise was printed in Hamburg and Amsterdam in 1676, as *Tractatus duo de lapide philosophorum* (Two tracts on the Philosophers' Stone). The work is interesting and succinct, with the conventional imagery of the opus.

Khunrath, Heinrich born Leipzig 1560, died 1605

Khunrath is one of the most influential alchemists of the period of Paracelsian spiritual and medical alchemical influence - the time of **Boehme** and **Oswald Croll**, and of **Libavius**. His *Amphitheatre of Eternal Wisdom* blends perfectly into the spirit of **Rosicrucian** philosophy, strongly cabalist in tone. He obtained his MD at Basle in 1588 and became a satellite of the court of Emperor Rudolf II, where alchemists congregated. **John Dee** notes a meeting with him in 1598. His *Confessio* gives his religious faith in **alchemy**: he believed in divine revelation through the 'Book of Nature' (a Paracelsian metaphor), and draws the analogy of Christ with the Philosophers' **Stone**, because of its redemptive quality.

Khunrath's *Amphitheatrum* (The Amphitheatre of Eternal Wisdom) consists of a series of 365 meditations to cover each day of the year and he gives alchemical interpretations of biblical texts, using



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philosophy. Libavius attacked Catholics, above all the Jesuits, whilst espousing a rather conservative, Aristotelian standpoint. *Defensio . . . alchymicae transmutatoriae* (1604), an attack on the French physician Nicolas Guibert for denying the truth of **transmutation of metals into gold**. Libavius supported the fact that the Philosophers' **Stone** was actually known to the alchemists. *Alchymia triumphans* (1607), being 926 pages. In this work Libavius enters the highly confused battles of his day involving Paracelsians, Hermetists and Galenists.

He also published many other works, including attacks upon the **Rosicrucians**. His works in general are an attempt to assert common sense and science, while at the same time defending the idea of alchemical transmutation. Although he seemed sometimes to be attacking the Paracelsians, his works were tremendously valuable in furthering the case of Paracelsian alchemical medicine.

Lull, Ramon

born Majorca, c. 1235, died North Africa, 1316

As with so many ancient and medieval names, the name of the great 'doctor illuminatus' Ramon Lull was used to confer authority on alchemical texts. Lull was one of the most influential philosophers of his time, and famous 'Lullian method' inspired a new philosophical movement. Although the alchemical texts attributed to Lull or Lully are spurious, there can be no doubting that alchemists used Lull's method in explaining their art.

Our understanding of Lull's ideas has been immensely enriched by the writings of Frances Yates, especially her book *The Theatre of Memory*, and she refers to a vast 'Lullian literature written by his followers'.

A contemporary of Aquinas and **Albertus Magnus**, Lull lived at a time when the craze for **alchemy** derived from Islamic sources was at its height, being especially popular in monasteries and amongst even very high authorities in the Church. He was born around 1235 in Majorca, and, lacking formal scholastic education, is said to have distinguished himself as a poet and troubadour. He soon rose to favour at the court of King James I of Aragon and tutored the royal family.

Lull underwent a conversion to the role of missionary amongst the infidels after experiencing a vision on Mount Randa in Majorca, dated to 1272. He studied Arabic in Majorca, intending to use this in his



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writings of Stephanus of Alexandria in the sixth century we see gnostic ideas of numerology. The source and origin of such speculation is the philosophy of Pythagoras, and the Pythagoreans founded a mystical cult which attributed all kinds of symbolic functions to numbers. Their belief was that the entire cosmos, in a sense, consists of numbers, or even is constructed from numbers, numbers being a sort of **Prime Matter**.

The whole problem of medieval philosophy, as derived from both Hellenistic and Islamic sources, was to account for the mystery of **Creation** as the process of birth of the cosmos from the Creator, the ineffable, mystical unity of God (*see* **Harmony**; **Hellenistic Alchemy**; **Islamic Alchemy**). God creates the universe in six days and rests on the seventh, and the numerology of seven is everywhere in alchemy and Hermetic or cabalist mysticism and **magic**.

In most **myths** of Creation, the primal act is to create a duality, a pair of opposites, and Jung's vast researches in *Mysterium Conjunctionis* are devoted to deciphering the problem of the opposites which derive from unity. **The Emerald Tablet**, the ancient **Hermetic text**, suggests a concept of Creation in which meditation on unity produces all things, and the parents of all things are the primal opposites **Sol and Luna**. The dual opposites in alchemy, then, are sun and moon or Sol and Luna, **mercury** and **sulphur**, which are the father and the mother of **metals** (*see* **Mercury-Sulphur Theory of the Generation of Metals**). In Christian alchemy, the Trinity or 'Ternary' was increasingly important. The **Stone** of the Philosophers is in its nature a Trinity composed of body, soul and **spirit**, as well as being animal, vegetable and mineral.

With the advent of the Paracelsians and the Renaissance *magia naturalis*, the universe is increasingly conceived as founded upon the Trinity: in natural magic there is the trinity of the terrestrial, celestial and supra-celestial worlds, within which the magus seeks to operate. Dr **John Dee** tells us that the quaternary of the four **elements** actually rests on the ternary or trinity (*see* **Monas Hieroglyphica**). **Paracelsus** worked out the theory of **Tria Principia**, the three cosmic principles which are named as **salt**, sulphur and mercury. This triad does not displace the four elements, rather it provides the mystic structure of the cosmos. **Joachim of Fiore** divides the prophetic structure of history into a trinity of 'status' or **stages**: the Old Testament is the status of the Father, the New Testament epoch is the age of the Son, and an eagerly awaited millennarian, spiritual realization of human history is the monastic age of the spirit.

Numerology reaches its zenith in sixteenth-century alchemy, where John Dee's famous *Monas hieroglyphica* (1564) is a sophisticated



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only the enigmatic inscription, which became the motto of **Hellenistic alchemy**: 'One nature rejoices in another nature, one nature conquers another nature, one nature rules another nature.'



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searching in 'The Book of Nature' for new medical remedies from chemical, metallic and mineral sources. His leading apostles included **Oswald Croll**, **Gerard Dorn**, **Joseph Duchesne** (Quercetanus), **John Dee**, **Heinrich Khunrath**, Adam von Bodenstein, Alexander Suchten, Michael Toxites and **Leonhardt Thurneysser zum Thurn**. These men collected, edited and published his works, which appeared in central Europe during the 1560s and 1570s.

In 1571 **Petrus Severinus**, physician to the Danish king, published his *Idea of Philosophical Medicine*, an important defence of Paracelsus. This work urged the physician to sell books and possessions and to plunge into 'The Book of Nature', studying animal, vegetable and mineral cures, and building **furnaces**, rather than frequenting libraries. This sums up the vigorous new aims of this powerful scientific and spiritual movement.

Physicians like Thomas Erastus, however, sought to reinstate the authority of the classical Galenist tradition against this dangerous radical innovation in medicine. In 1572-3 Erastus published *Disputations on the New Medicine of Paracelsus*, a savage attack on Paracelsus and all his works which sought to demolish Paracelsian medicine, attacking its cures as dangerous and toxic, and its theories as erroneous, especially the doctrine of the three principles (see **Tria Prima**). In spite of this, however, the Paracelsian movement continued its advance.

Paracelsians, English

England was rather slow to produce budding Paracelsian physicians, but after a sluggish start in the reign of Elizabeth, Paracelsian medicine gained ground during the seventeenth century.

In 1559 Conradt Gesner, the Swiss naturalist and physician, provided a book on pharmacy translated into English as *Treasure of Euonymus*, a work with many chemical or mineral cures, then in 1585 R. Bostocke published *Difference between the auncient Phisicke . . . and the latter Phisicke*. Little is known of Bostocke, but he provides a vigorous defence of the Paracelsian doctrines of the microcosm and the three principles.

John Hester was another Elizabethan Paracelsian, an apothecary by trade. He translated a work of Dr Leonardo Fioravanti, called *A Ioyfull Jewell* (1579). Dr Thomas Moffett defended chemical medicines in a work of 1584 and was involved with a project for a Pharmacopoeia, under the auspices of the Royal College of Physicians. George Baker, Master of the Company of Barber-Surgeons, lent his authority to the new chemical medicine, and a distinguished surgeon, John Woodall,



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Q

Quintessence

This is one of those all too universally applicable alchemical concepts which covers a multitude of sins.

It is common in eastern and in early western philosophy to equate **spirit** with breath: in Greek *pneuma* has this significance, as does the idea of *prana* in Sanskrit, which combines the idea of physical breath with that of spiritual energy. Early Greek speculation identified *pneuma* with spirit, and this tended to be regarded as a fifth **element**, which is the root meaning of 'quintessence', or fifth essence. The signs are that the Greek texts edited by Berthelot, relating to early **Hellenistic alchemy**, are based on a theory of using the spirit or *pneuma*, identified with rising vapours, as a **tincture**, to tinge **metals** by penetrating them: clearly the best **colour** dye must penetrate the substance, and only a strong spirit or essence can achieve this. **Distillation** separates and frees the spirit-vapour from the body, and this spirit must be reunited with another body, on which it can work as an active spiritual principle. The quintessence extracted by the alchemist from **nature** is regarded as equivalent to that incorruptible quintessence of the which the stars are made, as eternal luminaries.

A **manuscript** in the British Library gives a good idea of the whole concept of quintessence. Its title: 'The Book of Quinte Essence or the Fifth Being; that is to say, Man's Heaven. A tretise in englisch brevely drawne out of the book of quintis essenciis in latin that hermys the prophete and kyng of Egipt, after the flood of Noe, fadir of philosophris, hadde by revelacioun of an aungil of god to him sende'. This shows the classic need to foist texts upon ancient prophets: here **Hermes Trismegistus** is classed with biblical prophets. The text concerns the **elixir** of life, which, it soon emerges, is actually distilled alcohol. Distillation was constantly interpreted as separation of a spirit from the body. When the distillation of alcohol was discovered in the fourteenth century, this was given various names: *aqua ardens*, or burning water, 'the soul in the spirit of wine', and *aqua vitae*, water of life, as well as *quinte essence*.



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Rhazes

Abu Bakr Muhammad ibn Zakariyya al-Razi, 'The Man from Ray'; famous Persian physician; born 866, died 925 AD

Known to the West as Rhazes, this Arabic physician practised **medicine** and lectured at Ray and at the hospital in Baghdad. He was a celebrated doctor in the Hippocratic tradition, and he praised men like Hippocrates and Euclid as men of science, in contrast to religious leaders who deceive their people. Religious fanaticism, he believed, leads to wars.

His **alchemy** lacks the imagery and mysticism of the Jabirian school, but there are 21 books on alchemy ascribed to him. His *Kitab Sirr al Asrar* (Book of the Secret of Secrets) deals with **apparatus** as well as chemicals, which are classified as animal, vegetable and mineral. His work on **salts** and alums, *De salibus et alumibus*, was famous in the Middle Ages, including chapters on **elixirs** or medicines of **transmutation** of **metals**. Minerals are arranged as **spirits** and bodies, vitriols, boraces and salts. Rhazes expounds a doctrine of spirits: two are combustible and volatile, namely salammoniac and **mercury**. **Sulphur**, arsenic, realgar and orpimentare divided according to these four spirits. Stones and metals are classified as 'bodies'. 'Vitriols' include ferrous sulphate and alum. Apparatus includes beakers, flasks, phials, basins, glass crystallizing dishes, jugs, casseroles, pots with lids, and porous cooking jars. For heating, the physician recommends candle lamps, **athanors**, smelting **furnaces** and bellows. His tools include hammers, ladles, shears, tongs, forceps, moulds and crucibles.

Like **Avicenna** and **Jabir**, al-Razi was a philosopher of eminence. He criticized **Aristotle's** idea of space, affirming a concept of absolute space and absolute matter which existed before the **Creation**. He was an atomist, believing in indivisible particles of matter. Like so many Islamic philosophers, he held gnostic doctrines about the fall of the soul into the body: gnosis is achieved through the intellect which is the Creator's gift to awaken the slumbering spirit. *The Dictionary of Scientific Biography* tells us that hostile tradition accused him of ruining wealth through alchemy, destroying the body through his medicine and corrupting the soul by defaming the prophets (Vol. XI, pp.323-6).

See also R. Steele, 'Practical Chemistry in the Twelfth Century: *Rasis de aluminibus et salibus*', *Isis*, 1929.



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S

Salt

Like the other mysteries in **alchemy**, salt may at first seem familiar to modern science, but it soon emerges as a more mercurial substance. Salt was given prominence by the Paracelsians (*see* **Paracelsus**), who base the universe upon the **Tria Prima**, the trinity of mystic principles underlying all matter: salt, **sulphur**, **mercury**. **Paracelsus** expounds the theory of a natural **balsam**, which he conceives as a salty preservative which shields the body from corruption, decay and old age. Thus salt is easily interpreted as a magical preservative **elixir**.

In his *Mysterium Conjunctionis*, which provides us with a light in the labyrinth of alchemical symbolism, Jung cites **Gerard Dorn**, who makes salt analogous to the inner, invisible sun in man which provides the light of **nature**. Jung relates the symbolism of salt to that of salt water, with its baptismal quality, and to the 'Red Sea' which figures prominently in alchemical **myth**. For him, salt belongs to the lunar symbolism of the unconscious. In the *Tria Prima*, sulphur appears as masculine and solar, salt as feminine and lunar, and mercury is ambivalent and **hermaphrodite**: salt thus appears not as a substance, but as a cosmic principle in alchemy. Jung cites the *Turba Philosophorum* (The Crowd of Philosophers), one of the most popular medieval alchemical works, as identifying salt-water with *aqua permanens* (*see* **aqua**), and Mercurius is sometimes derived from salt. He also quotes **Arnald of Villanova**: 'Whoever possesses the salt that can be melted, and the oil that cannot be burned, may praise God'; and the *Rosarium*, which states that the 'whole secret lies in the prepared common salt'.

Salt is also often identified with ash, and with the earth-**dragon**, the self-devouring **uroboros**, while the salt of **metals** is the *Lapis*, the **Stone** itself. Salt may be dissolved, then coagulated in crystalline form, bringing to mind the alchemists' motto 'Dissolve and Coagulate'. **Khunrath** calls salt the 'physical centre of the earth' (Jung, *op. cit.*, p.190). Salt may appear as ash at the **nigredo stage**,



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although inhabiting a mortal body, subject to all manner of disease or injury, there is in man also a spark, a spirit of immortal life. This is reflected in the alchemical opus on the level of chemical experiment in liberating the active spirit from passive matter. The active spirit is then reunited with matter. In other words, the adept releases the life-giving, energizing essence, and uses this to transform or redeem matter (*see* **Redemption**). Such a philosophy is in fact prehistoric, and is expressed in **Chinese alchemy** the concepts of yin and yang. Yang, as the active, masculine principle, is especially strong in certain substances, such as **cinnabar** or **gold**, and such yang substances may therefore be used to prolong and enhance the vital principle in man. **Elixirs** are supposed to be especially rich in yang.

Here is what the Paracelsian alchemist **Thomas Thymme** says about the problem of body-soul-spirit continuum:

The philosophers have called that the Body which, according the naturall power, may be fixed and, with continuall perseverance, can constantly abide the tryall of fire. And they have called that soule, which according to her naturall power hath no stedfastness or perseverance to abyde the trial of fire. Also they have called that Spirit which, being subtiled, dissolved, or moulten with fire, according to the naturall power thereof, hath ability to *resoule* the body with the soule into vapour or of retayning the soule with the body to the fiery triall, if it vapour not.

*A Light in Darkness, which illuminateth . . .
the Monas Hieroglyphica, ed. S.K. Heninger*

The spirit, then, is higher than body and soul and without the spirit 'the soule tarieth not with the Body, neither is it separated from the Body, because it is the Bond of them both'. This helps to explain the mythology and symbolism of **mercury**, for this mystic principle is in fact 'Body, Soule and Spirit, in divers respects'.

We always have to bear in mind here the Jungian concept of projection. The adept is projecting into matter his own psychic preoccupations, fears, anxiety, longing for health, purity of spirit and redemption from a world which is rendered a prison by the rule of death and disease.

Spirit and Soul

The entire alchemical quest is based upon the duality of spirit and matter, and there are some signs of shamanistic origins to the art, with men like **Ostanes** and **Zosimos**. Shamanism rests on the idea of freeing the soul, either to ascend the world **tree**, or to embark on journeys of the soul. Alchemy, eastern or western, is deeply



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set out in the Book of Genesis. The alchemical opus is a **microcosm** of the majestic process of God's Creation, which involved the initial separation of the four **elements**. In all alchemical illustrations the **myths** of death and rebirth are repeated over and over again.

The Tree of Stages and Processes

The progress of the opus is often shown in the form of a philosophical **tree**.

One example of this, which adorns Jung's *Psychology and Alchemy*, is the illustration from Samuel Norton's *Catholicon physicorum* (1630, Frankfurt) which appears on p.390. At the root of this tree, the **Prime Matter** of the opus is **antimony**, or Lead of the Philosophers. The stages listed are:

- 1) *matrimonium corporale* (= **conjunctio**, bodily marriage)
- 2) *solutio*
- 3) *calcinatio*: *calcinatio* naturally causes blackening of **metals**, *nigredo*
- 4) *hylatio*: this is the concept of reducing metals to their Prime Matter, *hyle* being the Greek word for prime matter
- 5) *separatio*: here the tree branches or separates between body (*corpus*) and soul (*anima*).

After this branching or separation of soul from body, the alchemist ascends to the final celestial and mystical stages:

- 6) *matrimonium coeleste*: this is the celestial mystic marriage (*see* **Conjunctio**) of body and soul, which are reunited after their previous separation.
- 7) As Jung points out, the *conjunctio* is regularly followed by death of the offspring, the Son of the Philosophers. Hence we have a putrefaction stage. This precedes the summit of the tree, where is the *Lapis* or Stone itself, the mystic goal of the entire opus.

From the variety of diagrammatic illustrations which we find in alchemical **manuscripts** it is very clear that the stages or **processes** are jumbled in endless variations. There is no single, standard path to the summit.

Another illustration of an alchemical tree from Samuel Norton, *Mercurius redivivus* (1630), shows 12 stages reaching the goal of the opus in the form of the philosophical tree (*see* Jung, *Psychology and Alchemy*, p.229). At the root of the tree the Prime Matter is given as *Mercurius: Argentum vivum* - in other words mercury alone is the basic matter for making the elixir.



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And certainly he to whom the whole course of Nature lies open, rejoiceth not so much that he can make Gold and Silver, or the Divells to become Subject to him, as that he sees the Heavens open, the Angells of God Ascending and Descending, and that his own Name is fairely written in the Book of Life.

Besides this philosophical Stone, Ashmole describes a 'Vegetable Stone', by which 'may be known perfectly the Nature of Man, Beasts, Foules, Fishes, together with all kinds of Trees, Plants, Flowers, &c, and how to produce and make them Grow, Flourish and bare Fruit'. This Stone is a sort of union, a *conjunctio* of opposites, having a solar and lunar part, being both masculine and feminine (*see Hermaphrodite*).

Besides this 'Vegetable Stone' for transforming growth, there are magical Stones in which Ashmole had the keenest interest, for it was he who collected many of John Dee's papers. The 'magical or prospective Stone' is an all-seeing Stone, enabling the scryer to seek out the location of a person anywhere in the world, no matter how secretive or concealed they may be. This Stone is able to make 'strict Inquisition' into hiding places like chambers, closets, or even the very caverns of the earth. Another interesting property is to enable man to know languages and to understand animals or birds. Ashmole must surely have the Dee-Kelley séances in mind when he speaks of conveying a spirit into the Stone, assuming an image which may observe heavenly or stellar influences and thus becomes an oracle. This, however, Ashmole assures us, is in no sense necromancy. Thus the Philosophers' Stone links some of the variegated activities of many alchemists: for men like Dee, spiritualist angelic scrying was part of the alchemical quest for magical wisdom.

There is much evidence that the Stone is regarded as synonymous with the medicine or the elixir of the philosophers, as a transmuting agent. The Paracelsian **Gerard Dorn**, for example, regards the Stone as an 'incorrupt medicament', to be found only in Heaven. He exclaims in an inspired moment: 'Transmute yourselves from dead stones into living philosophical stones.'

For Jung, however, the Stone represents the ultimate union of opposites, being the symbol of the inner unity and balance of the matured self: 'The stone is the projection of the unified self' (*Aion*, p.170).

Of the all the deep mysteries of the alchemical opus, its final goal, the *Lapis* or Stone is the strangest. Here all concepts turn to paradox: in Ben Jonson's play *The Alchemist* we hear that this is the 'stone that is not a stone'. John Read remarks: 'To most of its seekers . . . the



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imparting redness, and a White Tincture, capable of imparting whiteness. We also know that the mingling of tinctures with hard stone-like bodies is out of the question unless the latter be first softened and converted into the fluid state.

As regards the White Tincture, we see that Mercury whitens while in addition to its whitening power we see that it clings to metals and penetrates into them. For example, when Copper is made into thin plates and Mercury is vigorously rubbed on it for some time, after digestion with Mercury in Vinegar and other medicines, whiteness will soon penetrate to such an extent into the interior of the Copper that both its interior and its exterior, its visible and its inward part, will become as white as Silver. One can thus imagine that, if it were to undergo still further treatment with Mercury, the effect and action of the latter would be even greater.

Mercury flees from fire, not being damaged by combustion, because of its volatility (fugitive Mercury!). If treated with fused substances, it will remain in them with its natural whiteness unaffected.

We get a good idea here how **mercury** becomes revered as the penetrating spirit or tincture.

The author is, however, aware that he is creating a colouring or dyeing agent, not transmuting the metal itself:

Having done this, we obtain a tincturing and penetrating virtue, a Tincture indeed of unsurpassed power and penetration, so much so that its colour differs in no respect from that of pure Silver, nay more, its colour is deeper and its whiteness more vivid.

Having dealt with the white tincture, which tinges metals to silver, he then passes to the red tincture, which is the same as the red elixir or *magisterium*, usually regarded as the tincture of gold (*see also Colours*):

We do not find any natural substance which imparts a red colour; we actually find that all things which penetrate into Silver and other metals and impart a colour to them, have a tendency to turn them black. In the case of Sulphur, when a small quantity of it is passed over Silver, we see that it turns yellow; but if it remains in contact with the Silver, the Silver is blackened.

These quotations give unique insight into the alchemical arts of dyeing metals. Avicenna appears to have denied the reality of actual transmutation of one metal into another, rather he admitted only that the species, the appearance, might be transformed by dyes and tinctures.



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U

Unity

True it is without a lye, certaine and most true, by the affinity of Unity. That which is superiour is like to that which is inferiour, and that which is inferiour is like that which is superiour, because all Numbers consist of Unites, for the working of many miracles of one thing. Do not all things flow from Unitie through the goodness of the One? Nothing that is varying, and in discord can be ioyned to Unity, but the like by simplicity, adaptacion, and fitness of one, it may bring forth fruite; what else springeth from Unity, but the Ternary itself. The Unarie is simple, the Binarie is compound, and the Ternary is reducible to the simplicity of Unitie. His father is the Sun, his Mother is the Moone. The Wind carrieth the seede in his Wombe, the Earth is the Nourse. Thou shalt separate the Earth from the Fire, the thick from the thin, and the Ternary being now brought to itself with witt, it assendeth upward with great seetenes, and retorneth againe to Earth and adorned with virtue and greate beauty, and so it receiveth superiour and inferiour force, and it shalbe from henceforth potent and orient in the brightnes of Unitie, to produce all apt number, and all obscurity shall flee away. Thus Hermes.

This passage comes from **Thomas Thymme**, friend of **John Dee**, whose *Monas Hieroglyphica* he is commenting upon in his *A light in darkness, which illumineth for all the Monas Hieroglyphica of the famous and profound Dr. John Dee*. It is an eloquent Elizabethan paraphrase of *The Emerald Tablet*, the Hermetic *Tabula Smaragdina*, revered by Islamic and Christian alchemists alike as a manifesto of the mystic doctrine of **Creation** from divine unity and perfection.

Thomas Vaughan in *Anima magica abscondita*:

The first principle is One in One, and One from One. It is a pure, white Virgin, and next to that which is most pure and simple. This is the first created Unity. By this all things were made, not actually but Mediatly, and without this, Nothing can be made either Artificial or Natural. This is the *Uxor Dei et Stellarum* [wife of God and the stars]. By mediation of this, there is a descent from One into Four, and an ascent from Three by Four to the invisible, supernatural *Monas*. The diameter line in the circle



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crystalline formation of the *Star Regulus* of antimony.

The Preface to the *Triumph wagen* contains a typical Paracelsian salvo against the ignorance of doctors and apothecaries. Antimony, a highly poisonous metal, is declared to be one of the seven wonders of the world, whose toxicity may be removed by alchemy. It should be noted that the Indian system of **medicine**, *ayurveda*, makes use of poisonous substances, which are combined, purified and treated to work as effective medicines. In the Preface, antimony is allowed to speak for itself, and declares itself to contain all the Paracelsian **Tria Prima**, the three principles of salt, **sulphur** and **mercury** which underlie the universe.

Publications:

Von dem grossen Stein der Uralten (Of the Great Stone of the Ancients) (1599).

De Microcosmo von der grossen Heimlichkeit der Welt (On the Microcosm of the Great Secret of the World) (1602).

Von dem natürlichen und übernatürlichen Dingen. Auch von der ersten Tinctur, Wurtzel und Geister der Metallen und Mineralien. (Of Natural and Supernatural Things. Also concerning the First Tincture, Root and Spirits of Metals and Minerals) (1603). This work was published in English in 1671: *Of Natural and Supernatural Things*).

De occulta philosophia, oder von der heimlichen Wundergeburt der sieben Planeten und Metallen (Occult Philosophy, or the Secret Generation of the Seven Planets and Metals) (1603).

Letztes Testament (Last Testament) (subtitled 'Opening of Heavenly and Earthly Secrets') (1626).

Basil Valentine, Friar of the Order of St Benedict: His Last Will and Testament. The Last Will and Testament of Basil Valentine, Monke of the Order of St Bennet. Which being alone, He hid under a Table of Marble, being the High Altar of the Cathedral Church in the Imperial City of Erfurt (1657).

Vaughan, Thomas

**Brother of the metaphysical poet Henry Vaughan;
1621–65**

Thomas was the twin brother of the metaphysical poet Henry Vaughan, both being born 'at Newton in the parish of St Briget's in the yeare 1621'. He entered Jesus College, Oxford, in 1638, and remained at Oxford for the next decade, despite the unsettling



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Philaethes, in the seventeenth century, says that mercury is not only a two-edged sword, guarding the way to the **Tree** of Life, but is also 'our true, hidden vessel, the Philosophic Garden, wherein our sun rises and sets'.

W

Water

See **Elements**.

Wei Po Yang

Chinese alchemist; floruit 120–40 AD

The two fathers of **Chinese alchemy** are Wei Po Yang and Ko Hung, both of whom are remarkable personalities, imbued with Taoist natural philosophy. It is said that Wei was summoned to the imperial court in 121 AD, but he wisely refused the invitation, preferring the reputation of hermit and holy man. His famous work, dated 142 AD, was the *Ts'an T'ung Ch'i*, in which he tells us that he leads a quiet life in a remote valley, with no interest in the acquisitive values of his society. The text is the oldest Chinese work devoted fully to **alchemy**, and is written in the form of a commentary on the *I Ching*. It is evident that it is a work of **elixir** alchemy, being an account of the preparation of the mystic pill of immortality.

A famous story is told of Wei Po Yang and his white dog. In the company of three disciples, Wei went into the mountains to try out his pills, his elixir of life. He decided to perform an unkind animal experiment, and gave the dog a pill. The animal expired, and the disciples at once lost faith. In spite of this, Wei felt it would be an impossible humiliation to return without trying his own **medicine** – but having taken one of his pills, he too fell down apparently dead. One loyal disciple followed suit, but the other two returned to arrange a funeral. In the meantime, Wei revived from the apparently lethal dose, and gave medicine to his dog and disciple, whereupon the three became immortals, achieving the state of the *Hsien*.

See Tenney L. Davis, 'An Ancient Chinese Treatise on Alchemy, entitled *Ts'an T'ung Ch'i*, written by Wei Po Yang about 142 AD', *Isis*, 1932.

Winthrop, John Junior

New England alchemist and book collector; 1606–76

John Winthrop Junior was the first Governor of Connecticut, and the



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who relies upon spirits and favourable planetary conjunctions.

In his *Alchemical Studies*, Jung provides an extensive account of the symbolism of the 'Visions' of Zosimos. These have a shamanistic quality, as the adept in a vision seems to be torn to pieces witnessing a strange priestly sacrifice. The themes of torture, death and rebirth here assert themselves, as throughout the tradition, and leave us in no doubt of connections with the ancient Mithraic and gnostic mysteries, revelations and rites.

In a long passage quoted by Jung, Zosimos also attests the importance of male and female principles in the universe, as active and receptive, sounding much like the Taoist alchemists of Chinese tradition (see **Chinese alchemy**).

See also illuminating material cited by Jack Lindsay, *The Origins of Alchemy in Greco-Roman Egypt*; Jung, *Collected Works*, Vol.13, pp.59-65.

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