

Edited by Adam McLean

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Editorial

We are all familiar with the beautiful image of the Earth seen from space - the globe with its deep blue seas, brown-green continental masses wrapped around with wispy vortices and streamers of cloud. Seen from this lofty perspective our planet is like an alchemist's retort or flask, alternately warmed by the sun's rays and cooled by the darkness of space.

The solid crust of the Earth (which is itself alive with plate-tectonic movements over a time scale of millions of years) bears a thin etheric layer of life, the plant and animal kingdoms, and an atmospheric aura that extends over 80 miles into space, becoming more and more tenuous with altitude. This atmospheric aura is composed of many layers: the Troposphere or layer we live within; above that, the Stratosphere, the Mesosphere and Ionosphere (above 60 miles where it is so thin that the atmospheric pressure is only one millionth of its value at sea level).

Around 15 to 30 miles up, at the base of the Stratosphere, is the so-called Ozone layer, a subtle blanket composed of a special type of molecule of oxygen. Although this Ozone layer has been known for many years, ever since the sampling of the upper atmosphere by balloons and rockets, only in recent years has its vital importance become recognised. For the molecules of ozone in this layer absorb the ultraviolet component of the sun's rays, effectively

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shielding all living things from being exposed to high levels of this damaging radiation. (Ultraviolet light is so injurious to organisms it is used to sterilise laboratory and surgical equipment.)

In the past two years a large hole (greater in area than that of North America) has been detected in the ozone layer over the South Pole and another has recently been noted at the North Pole. The ozone layer is normally thinnest at the equator and thickest at the poles, so the existence of these holes is extremely worrying.

Early commentators on this phenomenon suggested that even if these holes grew and the ozone layer over the whole of the Earth became depleted, then the increased ultraviolet exposure would only result in a few extra cases of human skin cancer. However, more informed studies now indicate that real irreversible damage could be done to the environment and the sensitive balance of the food chain itself could be disrupted. For example, the plankton, the micro-organisms living in the surface layers of the world's oceans, which form the basis of the oceanic food chain, are unable to thrive in high levels of ultraviolet light. It is also known that agricultural crops are adversely affected by increased levels of this UV radiation.

The main cause of the depletion of ozone in the upper atmosphere is the release of chlorofluorocarbons (used as a propellant in aerosol cans, for example) into the atmosphere. These compounds do not occur naturally but must be created by the chemical industry (it requires a substantial input of energy to create the chlorine and fluorine-to-carbon bonds in these molecules). At ground level these are harmless inert substances (which is partly why they were used in aerosol

cans) but in the special conditions of the high tenuous atmosphere, 20 miles up, they catalyse and encourage reactions which break down ozone molecules.

The mechanism that the Earth has evolved for replacing ozone is very slow, and as hundreds of millions of tons of chlorofluorocarbons have been released to date and each year a whole industry thrives on continuing to produce these substances, the chemicals win hands down against the subtle ozone layer. This layer is a so very tenuous and subtle envelope of the Earth, that if we imagine taking the ozone layer and bringing it to sea level at normal atmospheric pressure, it would be a mere 1/8th of an inch thick.

Regrettably, though the problem has been identified, governments and industrialists refuse to tackle the continuing production of these ozone poisons that have created the first tear in the ozone blanket. (Even though adequate substitutes can be found for chlorofluorocarbons, only North America and a handful of environmentally aware nations have so far banned their use in aerosols.

These people lack the vision of the alchemists who can look on the Earth planet as a retort, a flask set in space, enlivened by the warmth of the sun. The alchemists knew that to complete their work, and nourish the living process in their flask, they must keep their vessel hermetically sealed. They constantly checked the security of the walls of their flask. Like the glass walls of the alchemist's retort the ozone layer is only 1/8th of an inch thick (in terms of normal atmospheric pressure), and already holes have been made at the poles.

The flask of the Earth is now unsealed, and we remain ignorant of what may come from this.

Alan McLean

News and Information

Myself and the Hermetic Research Trust are now installed in 6 Canonbury Place. As I had to divert much of my time and energy over the past month or so into the move, the routine chores of bookbinding, making up book orders, as well as the production of this issue of the Journal were inevitably disrupted and delayed. Over the next month or two things should gradually get back to normal. Most of the essential work, building bookcases and storage spaces and setting up the equipment has been completed, though much remains to be done in reorganising my workplace to the new surroundings. The building itself will require substantial restoration, though thankfully I am not directly involved in this, however, it will probably mean that its opening as a functioning conference centre will not take place till later this year. In the meantime my work will continue as before. I would be delighted to meet some of the Journal subscribers from the London area, however, do telephone me first at 01 226 0774. In the longer term I hope to find from among the Journal subscribers a group of people who might be able to help me in my work, even an afternoon a month helping collate the pages of a book, or typing out articles, or making up parcels on a regular basis would be of great assistance.

Intensive Weekend on Practical Alchemy

From Friday April 1st to Monday April 4th 1988, an intensive weekend on practical alchemy will be held in Kentish Town, London. The course will be led by Jack Glass, formerly a student of Frater Albertus, who has considerable experience of practical alchemical work. During the weekend he will demonstrate the preparation of the Herbal Stone, the Oil of Egg, and will show methods for preparing the Tincture of Antimony.

I am informed that there are only a few places left on this course, so I would advise anyone wishing to attend to contact the organiser John Fitzpatrick of the Martinist Digest on 01 346 3193 as soon as possible. The cost is £40. A number of subscribers to the Journal have signed up for this weekend, and I am hoping to be able to find time to attend. There are few opportunities for instruction in practical alchemical laboratory work, so anyone wishing to know more about this area should consider attending. I hope to have a full report in a future issue of the Journal.

The Poetry of Alchemy

Mark Haeffner ©

On the 4th of January 1594, Simon Forman records that 'I dremed howe I was in a place wher too men were readinge in a booke of the philosophers stone, and I sett in talke with them and toke the boke to expound it unto them. And that daie being between ten and eleven of the cloke, cam a strange man that dwelt at the gren dragon at holborn conduit and brought me this bocke and another lyttle bocke of notes of Astronomy to sell and I bought them'.

Simon Forman was a contemporary of Shakespeare and he belongs to the world of the small time Elizabethan alchemist, who dreamt of producing the philosopher's stone, of actual physical transmutation of metals, or of the elixir of life and health, the mystic panacea of all ailments. Forman was no scientist, no intellectual: he was harried and harassed by the Royal College of Physicians for illicit practice of medicine and when interrogated by this powerful medical monopoly, he was found wanting even in the elements of astrology, which was the basis for his medical practice. In assessing the alchemical tradition it is necessary to strike a balance between some of the great men who figure in the alchemical tradition, men like Newton, Van Helmont or Paracelsus, and the smaller practitioners like Thomas Charnock, Edward Kelly or Arthur Dee (the remarkable son of Dr John Dee), or Simon Forman.

Alchemy has increasingly been rescued from the twilight world of modern scholarship, as it has emerged that alchemists exerted a tremendous influence on science and society, especially upon the evolution of medicine. Forman belongs to a class of astrologer-chemists, most of whom may be classed with the

Paracelsian movement of the 16th century. They followed the more or less popularised writings of Theophrastus Paracelsus, arguing that the old classical Galenist medicine was hopelessly impractical and scholastic, and that the 'new medicine' must build upon foundations of astrology and alchemy. The Paracelsians were a vigorous and vituperative movement, and a number of court physicians in Europe espoused the cause: men like Peter Severinus, Royal physician to the King of Denmark. But the movement also attracted charlatans and quacks with a penchant for gold-making alchemy, and there were fierce attacks upon their reliability in medicine.

Modern scholarship recognises the Paracelsian movement as a vital aspect of the scientific revolution of the 16th century, and Paracelsus himself is no longer to be dismissed as a hopeless occultist or 'bombastic' opponent of academic medicine. In general it has become necessary to recognise the occult and Hermetic influences upon the genuinely scientific notions and investigations of the 16th and 17th centuries. It is no longer possible to drive a wedge between the occult superstition of alchemical and astrological traditions and the rationalism and empiricism of what we recognise as science. Thus we are now confronted with the supreme paradox of Newton's alchemical and chronological studies. A man like the Elizabethan Dr John Dee provides a classic illustration of the problem of dividing science from superstition. Dee was a formidable mathematical scholar with a vast scientific library of some 3,000 books, yet he delved deeply into the worlds of astrology, natural magic, alchemy and angel magic.

In seeking to find a viable interpretation of the alchemical tradition we need to recognise a complex tangle of problems. It is easy to see that alchemy animated the studies of Dr Carl Gustav Jung during the latter part of his life, and Jungian alchemical scholarship has made a stalwart contribution to resurrecting the subject from the shadows, but we need also to add a note of caution in accepting hook, line and sinker, the Jungian view. Jung tends to reject out of hand the experimental aspect of the tradition, but we know that Newton spent many hours labouring at the furnace. There were many notable alchemical laboratories: Thomas Norton of Bristol had a fine laboratory in the 15th century; John Dee and Heinrich Khunrath had laboratories in the 16th century. Maria Prophetissa, whose date is impossible to determine, stands at the outset of the Hellenistic tradition and she provided expert guidance on constructing alchemical apparatus. Thus the practical, experimental aspect of alchemy must be recognised.

The other side which Jungians tend to neglect is the popular

alchemy represented by men like Simon Forman and Thomas Charnock, both Elizabethan adepts. Popular alchemists exhibit a marvellous confusion of motivation and character. Jung tends to dismiss the gold-making pretensions of alchemists, yet there can be no doubt at all that from its earliest inception, the western alchemical tradition encouraged the belief that base metals could indeed be transmuted into gold – Chinese, Indian and oriental alchemy were concerned less with metallic transmutation, and more with the creation of elixirs of life and physical vitality and these traditions are strongly linked with spiritual and physiological yoga. Hellenistic alchemists were preoccupied with tinctures and elixirs for transmuting metals, and Islamic alchemists gave tremendous impetus to belief in transmutation with their Sulphur–Mercury theory of the generation of metals. Prestigious philosophers like Dr John Dee encouraged greedy noblemen to patronise their research and legends like that of Nicholas Flamel and his wife, the 14th century alchemists supposed to have achieved transmutation, never died.

Popular alchemy thrived on a bewildering concoction of half-baked scientific theory, mixed with myths, dreams, visions and images from the rich symbolic repertoire of the ancient adepts. Thus it becomes very difficult to distinguish a genuine, gnostic, mystical tradition of religious alchemy from the popular world of the charlatan, the gold-making adept and dupe. The vitality of the tradition was continuously enhanced by popular poetry of the type which Thomas Charnock produced. The poem on the 'Huntyng of the Grene Lyon' by the Vicar of Maldon, who remains anonymous, is a classic example [See Betty Jo Dobbs, *The Foundations of Newton's Alchemy*, Cambridge University Press, 1975.] :

This Lyon maketh the Sun sith soone
To be joined to hys Sister the Moone:
By way of wedding a wonderous thing,
Thys Lyon should cause hem to begett a King:
And tis as strange that thys Kyngs food,
Can be nothing but thys Lyons Blood
And tis as true that thys is none other,
Than ys it the Kings Father and Mother.

The imagery of the poem is the time-honoured myth of the alchemical tradition whose roots lie in the confused syncretistic cult religions of the Hellenistic Egyptians. The mystic marriage, the 'conjunctio' of Sun and Moon, of Sol and Luna, brother and sister, is portrayed in countless alchemical illustrations from medieval

manuscripts, or from lavish printed books of alchemical emblems, popular during the early 17th century. The King is Sol, the Sun god, being the classic symbol for Gold, the Lord of all metals, symbol of eternity and radiance: one text popular in the Middle Ages bears the title *Splendor Solis*.

Hunting the full meaning of the 'grene Lyon' poem would involve us in a long exploration of alchemical symbolism, or of the type undertaken in Jung's great volume the *Mysterium Coniunctionis* (Vol. 14, Collected Works). The influence of the genre of popular alchemical poems upon English literature may well have been underestimated by scholars. Elias Ashmole collected a rich volume of such poetry in his carefully prepared work, *Theatrum Chemicum Britannicum* (1652). Long before this work appeared, English poetry began to show alchemical influences. Unlike Ben Jonson, Shakespeare has little to say about alchemy in his plays, but consider this sonnet, with its deep alchemical allusion to distillation :

Sonnet V:

For never-resting time leads summer on
To hideous winter, and confounds him there;
Sap check'd with frost, and lusty leaves quite gone,
Beauty o'ersnow'd and bareness everywhere:
Then, were not summer's distillation left,
A liquid prisoner pent in walls of glass,
Beauty's effect with beauty were bereft,
Nor it, nor no resemblance what it was:

But flowers distill'd, though they were with winter meet,
Lesse but their show; their substance still lives sweet.

The concept is marvellously subtle, of the distillate of summer's beauty, preserved in a prison of glass. The theme of the relentless march of the seasons, from summer to winter, reminds us of the endless ramifications of the themes of death and resurrection in alchemy, which Jung has so lavishly explored and documented. There is also much use of the imagery of gardens and flowers in alchemy: especially the white and the red rose. The famous alchemical treatise attributed to Arnald of Villanova was called the 'Rose-garden of the Philosophers' (*Rosarium Philosophorum*).

There were a number of important and popular treatises dedicated to the subject of distillation of medicines, notably that of Jerome of Brunswick and the famous 'Treasury of Euonymus' by the great Swiss

naturalist Conrad Gessner of Zurich. These works contributed to the English Paracelsian movement of the later 16th century, which encouraged tremendous popular interest in alchemical methods and materials in pharmacy and medicine.

There is in fact a good case for arguing that this remarkable sonnet was directly inspired by alchemical verses, perhaps by those of the Tudor adept Thomas Charnock, whose long epic verses upon the subject of the alchemical dragon may well have been known to Shakespeare. From its earliest inception, the alchemical tradition was concerned with the strange elusive phenomenon of mercury, the liquid metal which is so volatile under a mild heat. As a metal, mercury was normally obtained from its sulphide ore cinnabar, by roasting and distillation. In the alchemical tradition, Mercury became the centre of a whole network of myth-images and the serpent, dragon or ouroboros of the Hellenistic alchemists represents none other than mercury, as universal principle and symbol of all-pervading unity in the cosmos. It seems more than likely that Shakespeare was in fact thinking of these lines from Charnock's fascinating hymn to the alchemical dragon :

Souldiers in armour bright
Should not have kylled me in fyeelde of fighte,
Mr Charnock neither for all his philosophie
Iff by pryson and famyne he had not famysshed me.

'Salomon the wyse' used a tomb of brass as a prison, but the dragon was 'shut upp in a dungeon of glasse' by the alchemist. The dragon languishing in his prison, dies in his own blood, to be resurrected as the 'Elixir of great price'. Explicit allusions to alchemy are not easy to find in the Sonnets but the general theme of the march of time, of youth, beauty, death and regeneration are classic alchemical themes.

Where Shakespeare's explicit allusions to alchemy are surprisingly sparse, John Donne makes much play on alchemical imagery. He provides us with a richer mine of alchemical allusions, and his verse shows how the mythology of the adepts has percolated into the poetic imagination. *Loves Alchymie* suggests the sceptical, satirical view of the alchemist's fruitless labours at the furnace, in quest of the ultimate delusion. Love is a mine, and there are those who claim to have found 'where his centrique happiness doth lie'. But for Donne this remains but a 'hidden mysterie' :

Oh, 'tis imposture all:
And as no chymique yet th' Elixar got,
But glorifies his pregnant pot,
If by the way to him befall
Some odiferous thing, or med'cinall,
So, lovers dreame a rich and long delight,
But get a winter-seeming summers night.

Here again we get the seasonal imagery which is so overpowering in Shakespeare's reflections on time, youth and death in the sonnets. One is reminded of the alchemical story of Albertus Magnus, who is said to have made a garden bloom in the depths of winter. The alchemical opus went through stages of decay and dying; the success of the opus was symbolised by flowers, trees blossoming forth.

Deeper intimations of the real meaning of the esoteric alchemical philosophy which was in vogue at this time, are to be found in 'A Nocturnall upon S. Lucies day, Being the shortest day'. We have to bear in mind that the sun symbolises gold, the Lord of metals as also of the planets, being radiant and incorruptible. The sinking of the Sun's radiance involves a redemption of the dark, corrupt materiality of the elemental world :

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.
For his art did expresse
A quintessence even from nothingnesse,
From dull privations, and leane emptiness;
He ruin'd mee, and I am re-begot
Of absence, darknesse death; things which are not.

Jung has provided abundant evidence that, although many adepts were charlatans, the deeper message of alchemy was one of spiritual redemption and rebirth. The Philosophers' Stone was equated with the figure of Christ the Redeemer and Saviour of the world, and the esoteric teaching of alchemy concerned divine revelation and prophecy of the Last Judgement. Jung quotes a long passage from Petrus Bonus of Ferrara, whose *Pretiosa Margarita Novella* (New Pearl of Great Price) was a very popular alchemical work of the medieval period. Bonus was aware of this esoteric teaching about the end of the world, interpreted in alchemical terms.

Thus poetry leads us into the rich world of alchemical symbolism and mythic gnosis. Poetic minds like that of John Donne could hardly neglect such a prominent tradition, with its deep symbolism and imagery. One of the best writers on metaphysical alchemy was Thomas Vaughan, who was himself a poet and the twin brother of the metaphysical poet Henry Vaughan. It seems not unreasonable to suggest that an alchemical message underlies the Sonnets of Shakespeare with their preoccupation with time and redemption. Certainly Shakespeare's rather eclipsed contemporary Ben Jonson was well versed in the ancient alchemical tradition, for his magnificent play *The Alchemist* is rich in really authentic alchemical language and lore.

My most grateful thanks are due to John and Barbara Wanklyn for their kind help and generous encouragement and to Mrs Willmott of Abingdon for her generosity with books - J.M. Haeffner.

Kabbalistic Cosmology and its parallels in the 'Big-Bang' of Modern Physics

Adam McLean ©

In earlier articles I have tried to point out the links between hermetic and alchemical ideas and the developing current of thought in modern physics and cosmology. In this present piece I would like to pursue the strange parallels between the late 16th century reformation of kabbalistic cosmology that arose through the insights of Isaac Luria, and the recent reformulation of the 'big-bang' into the so-called 'inflationary model' of cosmic creation. Although the formulation of these two cosmologies was separated by some 400 years, we can recognise that they addressed the same problem, that of the emanation of the cosmos out of nothing.

Before Luria the main stream of kabbalistic ideas arose from the centres in Spain. From the Gerona school emerged the main statement of ideas on the sephiroth, while Moses de Leon put together the Zoharatic writings. This stream of mystical cosmology arose out of intuitive perceptions, and the writings of this period tend to be obscure and clouded in allusion rather than being deeply argued philosophical works. They derived their authority by appealing to interpretation of hidden wisdom in the canonical books of the Jewish tradition, the Pentateuch and Torah, rather than consistent argument. Thus, during this period it was assumed that the sephiroth and the layers, strata or worlds that made up the cosmos, emanated in some way directly from the Ein-Sof – the limitless being of the deity. There were, however, certain philosophical and theological contradictions in this simplistic emanation that were glossed over by the earlier kabbalists until Luria faced up to these problems, restructured the cosmology and resolved many of these paradoxes.

Similarly, the earliest formulation of the 'big-bang' theory (first

named in this way by astronomer Fred Hoyle in 1950) which pictured the universe as emerging or emanating from a single cosmic event, was flawed. If one followed its mathematical descriptions fully through to their conclusions it described states of affairs that did not correspond to reality. In particular it could not adequately account for the uniformity of the cosmos, the formation of galaxies, or the fact that the universe seems to be composed of matter rather than anti-matter. Cosmologists, however, clung to this model out of conviction, pushing its paradoxes to the back of their minds, and hoping that its problems would eventually be sorted out. Much of these contradictions were resolved by the 'inflationary scenario' devised by Alan Guth in 1979.

I am not here suggesting that Luria foresaw the problems of twentieth century physics, or that cosmologists and fundamental physicists are secretly adept in obscure areas of kabbalah, however, it seems that the Lurianic kabbalists and the modern-day researchers of Creation were approaching the same cosmological problem, though using different sets of ideas. What these parallels do reveal is the way in which the human mind formulates and pictures an event as vast and awesome as the creation of the cosmos. The simplistic archetype of the cosmos emerging from a single source or event, in a straightforward way, does not satisfy the patterning of our minds and both these cosmologies found ways of introducing a 'falling into matter' which harmoniously touches some archetype within our being.

Let us look at both of these cosmic pictures, beginning with the kabbalistic cosmology of Isaac Luria.

Lurianic Cosmology

Luria's cosmos is not an abstract static one, but the world for him emanated out of a dynamic interplay of archetypal forces. In this way he departs from the cold rigidity of the earlier kabbalistic schemes. Our present world has arisen out of three great dramatic cosmic events—the Simsum, or contraction of God, the Shebirah, or breaking of the vessels, and the Tikkun, the reconstruction or rectification.

Before the Simsum, the various powers of the Ein-Sof or Infinite God, were harmoniously balanced and could not be separated from one another. These aspects were the opposing forces of Compassion (Rahamim) and Stern Judgement (Din), bound together in light. At the beginning of existence, the Ein-Sof withdrew into itself, creating an empty space (the Tehiru or vacuum), within which the forces of

Din began to take on an independent life. This deeper concealment, or contraction of the Ein-Sof, thus resulted in a purging of the harsh dross which contained all elements of potential evil from the being of God. The empty space thus contained the forces of Din and a remnant, the Reshimu, or impression of the the Divine Light.

At this point the Ein-Sof emanated a ray, the kab ha-middah or "cosmic measure", which is represented in the first letter of the Tetragrammaton, Yod. This ray penetrated the tehiru and worked to organise the opposing forces that now filled this space, and brought into manifestation the Primordial Man, the Adam Kadmon. This is the first and highest of the Partzufim or Archetypal Persons that appear in Luria's scheme. At this point the four Worlds (Atziluth, Beriah, Yetzirah and Assiah) had yet to be emanated, thus Adam Kadmon essentially lives in a fifth and higher spiritual realm of existence. However, this fifth world contained four levels, which were described by the four expansions of the Tetragrammaton (AB=72, SG=63, MH=45 and BG=52), which appear often in kabbalistic numerology.

Initially Adam Kadmon did not have the form of a man, but appears as a set of ten concentric circles, the outer circle remaining in close contact with the Ein-Sof. These ten Sephiroth eventually reorganised themselves into the linear form of the human body. From the head and eyes of this Primordial figure bright light poured forth. This light was gathered and held by the vessels (Kelim) of the Sephiroth. These vessels, the primitive ten Sephiroth, could only receive God, they could not in any sense resemble the giving, creating power of the Ein-Sof. In this sense the vessels were incomplete and could not hold the light.

The vessels of the upper three Sephiroth Kether, Hokmah and Binah at first performed well in the task of holding the light, but when the light poured down through the lower vessels, from Hesed through Yesod, these six lower vessels shattered and were dispersed into the chaotic void of the tehiru. This was the Shebirat-ha-kelim, "the breaking of the vessels". The original vessels were in what is now the world of Atziluth, but when the light from above penetrated the Sephira Malkuth, this shattered into 288 sparks which failed to return to the primordial source but instead fell through the worlds, and became attached and trapped in the broken fragments of the vessels which formed the kelipoth, the "shells" or "husks". These husks became the evil forces of the Sitra Ahra, the "other" or "under" world, preventing the return of the sparks of divine light to its source. Thus the light or energy of creation "fell into matter".

The next stage in the cosmic process, and the one in which we are ourselves living, is that of the Tikkun, the period in which processes of restoration and repair must be undertaken. The primary medium for this restoration is the light that continued to emanate from the eyes of Adam Kadmon. This light now became refashioned into a series of emanations known as the Partzufim or Archetypal Persons which restore order to the chaos of the Shebirah.

The Sefhira Kether is reshaped into the Arikh Anpin, the "long-face" or Greater Countenance of the Ein-Sof, also named Attik Kaddisha (or Attik Anpin), "The Holy Ancient One". Hokmah and Binah form the two archetypal figures, the Partzufim Abba ("Father") and Imma ("Mother"), respectively. A fourth Partzuf is formed from the six lower Sephiroth, from Hesed to Yesod, and is known as Zeir Anpin ("the Lesser Countenance or face of the Divine"). A final Partzuf is formed round Malkuth, the Nukba de-Zeir ("the female companion to Zeir"), also known as Rachel-Leah.

Abba and Imma remain in a constant state of union (like the Shakti and Shakta in Hindu cosmology), and from this union is born Zeir. Similarly Zeir Anpin and the Rachel-Leah Partzuf, are joined in an eternal state of married union.

In Luria's scheme the Biblical Adam had the task of reintegrating the divine sparks as his being contained all of the various worlds, his body being a perfect microcosm of Adam Kadmon. Adam should have separated the divine sparks from the husks and restored them to the light of the divine. Adam of course failed in his cosmic task, and this responsibility has now been passed on to all humanity. It is the task of humanity to find the sparks of the spirit buried in the husks of the material world and and raise these sparks to their divine source. How this is achieved through spiritual exercises is a major part of Luria's Kabbalistic practice, but it takes us beyond the scope of this article.

Luria thus images creation as an exile of the sparks of light, and a parallel is drawn with the diaspora of the Jewish people. The Partzufim Abba and Imma in the world of Atziluth are the source of Israel Sabha, "The Ancient Primordial Israel", that exists on a spiritual level.

The core problem of the pre-Lurianic emanationist cosmology was that if God the Ein-Sof was perfect and limitless in his being, then what emanated from Him had to be itself perfect, and in a sense such an emanation was merely God revealing Himself rather than an act of

creating a universe from which he could stand outside and apart. One of the central ideas of Judaism was that God stood outside and apart from the created world, a 'hidden God'. If God directly emanated the universe then clearly He was in the Universe and bounded by the universe. In order that something non-divine and finite should come about, it was necessary that there was a radical break in the process of emanation, a dilug or Kefitzah ("leap" or "jump"). Thus to address this philosophical problem there arose the Lurianic doctrine of the Simsum, the withdrawal, concentration, or concealment of the Ein-Sof. Luria even describes a state of being before the act of creation, in which the Ein-Sof manifested to Himself the Ein-Sof Or (the "light of the Ein-Sof"). There is a parallel here with the earliest state of the cosmos that can be envisaged by modern cosmology, which we will look at later. At the beginning of creation the Ein-Sof withdrew into Himself through the Simsum, thus creating an empty space, a vacuum or void (called the chalal or tehiru). Next, the ray (the kav) from the Ein-Sof Or beamed into this primaeval vacuum and so proceeded the emanations as described above. Effectively, this distances God from the Creation even before anything has come into manifestation, it allows for a cosmos created ex nihilo, literally "out of nothing". We will see that the central idea of modern cosmology is the emergence of the universe out of the vacuum state.

The Inflationary Universe

Present day cosmologists picture the universe beginning around 15 billion years ago in the "big-bang". The energies involved in this explosion of space-time, matter and energy out of nothing were enormous, however, in the past two decades particle accelerators have allowed scientists to explore some of these energy densities in their laboratories (corresponding to the state of the universe after one thousand billionth of a second), so the theories that have emerged about the big-bang are to some extent supported by experimental evidence and not merely upon speculation.

The universe emerged out of this point event and the space it occupied rapidly expanded until it filled up the vast tracts of space explored by astronomers. When we try to picture epochs close to the big-bang, all the energy and matter of the universe must therefore have been packed into a much smaller space, and therefore the universe had a much denser energy level. The earlier we go back in time, closer to the event of creation - to 1 second after the big-bang, to 10^{-3} or one thousandth of a second, to 10^{-9} a billionth of a second,

and so on - the smaller a volume of space it occupies, and consequently the higher its temperature and energy density. The simplest of big-bang models thus assumed that at the instant of creation the universe had infinite density and temperature. The idea was that the universe emerged out of a naked space-time singularity, a kind of knot in space-time, like a black hole in reverse. This model of an explosive expansion from a point of nothingness (which had infinite density), raised more questions than it answered. In particular it proved difficult to see how the various physical constants and relationships between different particles had adopted the values they have. For example, the ratio of matter to photons of light (the so-called baryon number), or the relative strengths of the four fundamental forces of nature - gravity, electromagnetism, weak interactions, and strong nuclear force. If the value of some of these constants had differed by a fractional amount the universe would have taken a radically different course. On the macro scale, stars and planets would not have come into being, while on the smaller scale even the long-chained carbon based molecules that are the building blocks of living cells could not have come about unless the physical constants which constrain the nature of chemical bonding had adopted the values they have. Some philosophers and theologians saw the possibility of evoking the hand of God acting to adjust these various values to create the particular special conditions that gave rise to the universe we know today.

This period of theorising about the big-bang in the 60's and 70's is to some extent akin to the earlier kabbalistic cosmology, in which God had to play an active formative role in structuring the chain of events. Further there was the problem of what was before the big-bang singularity, and what caused it to happen. God could again be called upon for assistance.

Isaac Luria had realised that if God played a formative role in the structuring of the cosmos then the cosmos would be a direct manifestation of Him. God would not have been able to separate Himself from his creation, and therefore our created world would in fact be part of God's body.

In a similar way present day cosmologists did not feel inwardly happy with creation theories in which some factor, outside the equations and mechanics of creation, set the critical values of the constants of nature that determined the shape and form of our universe as we know it.

In 1979 Allan Guth, an American physicist, devised a theory which seems to have solved many of the problems inherent in the simplistic big-bang theory. He looked at a very early stage in the development of the universe from about 10^{-32} to 10^{-43} of a second after the initial creation. [10^{-36} for example, is a billion billion billion billionth of a second.] At around 10^{-43} , the 'Planck' moment when the strength of the gravitational force comes to equal that of the other fundamental forces, quantum gravitational events dominated the emerging universe, its minute bubble of space-time being subject to quantum fluctuations. The universe could indeed be described at that early epoch as a quantum fluctuation in the vacuum. The energy that the universe contained was bound up in special fields of force, (the Higgs fields named after the physicist who first described them) which were essentially unstable.

Above a temperature of 10^{27}°C which occurred during this early period of the universe, the Higgs fields were in equilibrium, however, once the environment fell below this they could release their energy through a process known as "spontaneous symmetry breaking". While the symmetry conditions are maintained the Higgs fields can hold considerable amounts of energy, without this energy having a mass. Only when the symmetry is broken does the energy bound up in the Higgs fields attain a mass. This breaking of the unified symmetry between the four fundamental forces results in the separation of gravity from the other forces and consequently the emergence of particles of matter.

In the inflationary model the Higgs fields are able to remain in equilibrium for an extended period in a special state known as the "false vacuum", a quantum vacuum state which can be described mathematically. During this period the false vacuum exerts an expansive force, a negative pressure, on the universe, which impels the cosmos to expand exponentially. In each minute fraction of time, 10^{-34} of a second, the diameter of the universe doubled, and this continued until the universe had expanded by a factor of 10^{50} times its original size. This extreme exponential stretching of the fabric of space, faster than the speed of light, stored up masses of energy in the Higgs fields. After this period of inflation the Higgs fields can no longer remain in equilibrium and they spontaneously break their symmetries and release the energies trapped within them, filling the rapidly expanding universe with an intense dense fire of particles and photons.

We can see a parallel here between the Higgs fields and the vessels (Kelim) of the sephiroth, which were unable to hold the light energy

that poured through them. The matter in the universe arose out of the breaking of the symmetries of the Higgs fields, which Lurianic kaballah parallels with the Shebirah, or "breaking of the vessels", and the falling down through the worlds of the husks or shells (Kelipoth).

In the inflationary model, the Higgs fields have energy pumped into them from the intense gravitational curvature of spacetime while they exist in a false vacuum state. When the universe eventually falls into a true vacuum state, its light energies and particles of matter come into being. The theory can account for the creation of the universe as a quantum fluctuation in this false vacuum of sufficient energy to allow the inflation process to get under way. Thus it provides a creation ex nihilo.

The inflationary model also resolves various problems with the naive big-bang from an singularity of infinite density and pressure; especially the problem of the large scale uniformity of the universe, the fixing of the parameters of the constants of nature, the existence of obscure particles called magnetic monopoles and other difficult and paradoxical aspects of the earlier theory.

As I indicated above, the inflationary model allows speculation about even earlier periods in the life of the universe before the inflationary period, in which the universe was a bubble of spacetime emerging out of quantum fluctuations in the false vacuum state. One speculation which has received some credence recently is that the universe began as a quantum fluctuation in an eleventh dimensional space. This resulted in four of the dimensions expanding (these being the three dimensions of space and one of time), while the other seven became wrapped up into a seventh dimensional sphere of extremely small size. These seven dimensions remain hidden from our universe on the macro scale which only knows the four outer space-time dimensions, though they do participate in the inner structure of particles of matter.

This idea is strangely paralleled in the Lurianic doctrine of the Ein-Sof contracting into itself and forming a tehiru or vacuum while its Ein-Sof Or expands outwards. The Simsum of the kabbalists and the folding up of seven of the eleven dimensions of spacetime are obviously related. Both of these cosmologies place this contraction before the formation of the false vacuum out of which the matter and electromagnetic or light energies of the universe was later to emerge.

In a strange way the physicists of today have come to retrace the philosophical and theosophical steps taken by kabbalists 400 years ago.

A ROSICRUCIAN EMBLEM

Interpreted by Adam McLean ◉

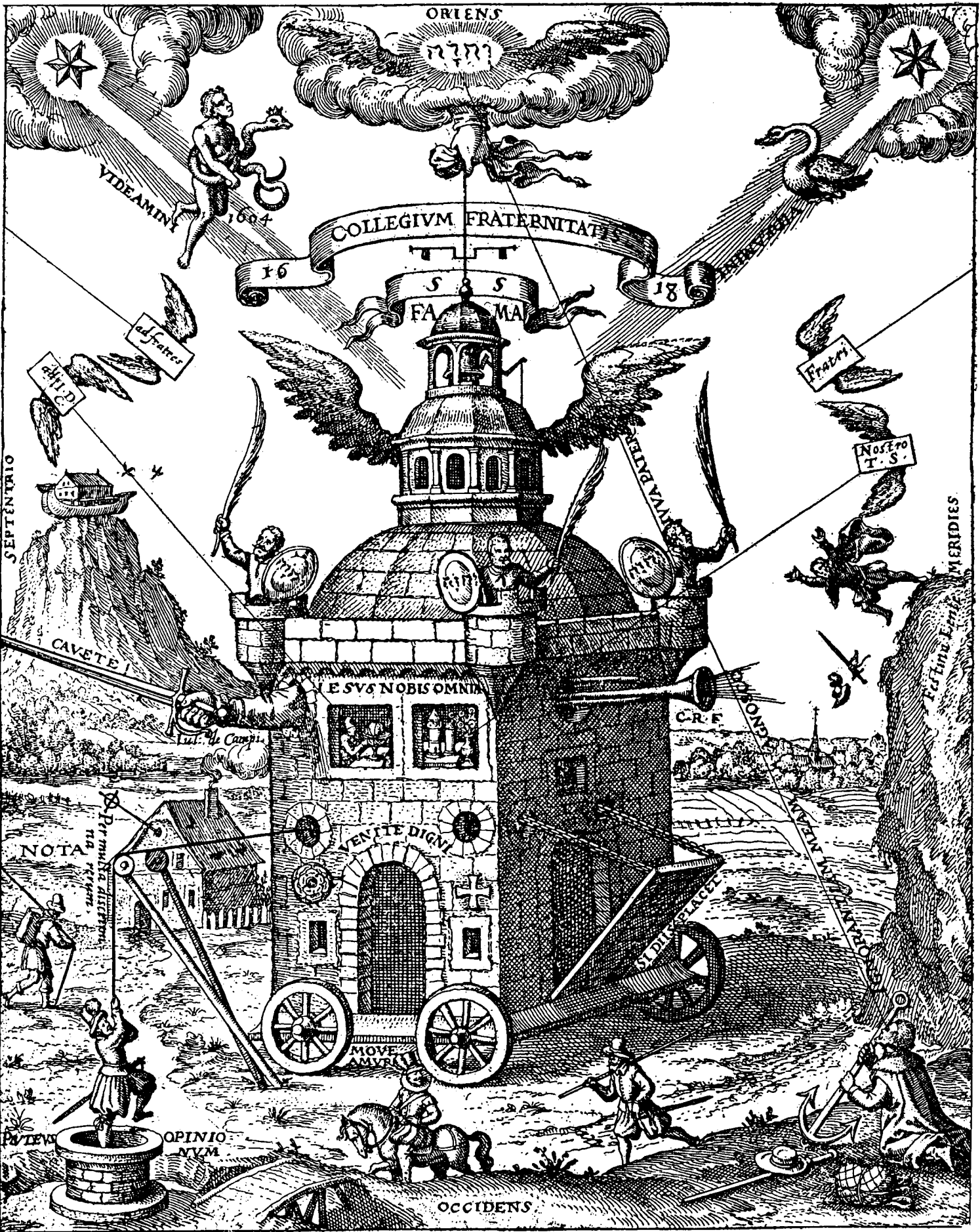
This important Rosicrucian engraving was contained in *Speculum Sopicum Rhodo-Stauroticum* (the Mirror of Wisdom of the Rosy Cross) published in 1618. This publication by the pseudonymous Theophilus Schweighardt ('Lover of the Divine and keeper of a stony silence'), amplified and extended the points raised in the *Fama* and *Confessio* concerning the existence of the Rosicrucians. The plate contains references to the *Fama*, the *Confessio* and the Chymical Wedding.

The '*Speculum Sopicum*' attempts to outline a more mystical and 'inner' view of the Rosicrucians. Schweighardt says that the College of the Rosy Cross is in no place and yet is everywhere, that all people have seen it but not recognised it, and that it is to be truly discovered only by those of pure heart and of upright life who have meditated deeply upon the mysteries of the spirit. Schweighardt thus laid the basis for a more interior view of Rosicrucianism. For him Rosicrucianism was not so much about material buildings, colleges of the brethren, or secret assemblies of Adepts, but rather was within ourselves. Each of us potentially was a brother of the Rosy Cross. The engraving beautifully illustrates this point.

Here is depicted the College of the Brotherhood, the '*Sancti Spiritus*' of the *Fama*, as a strange wheeled castle. This moving Temple of the Rosy Cross, is thus everywhere and nowhere, for it is truly within us as an interior castle, a spiritual centre in our souls. The castle is foursquare with a dome set about by four turrets, within which stand guardian figures with shields bearing the four lettered name of God יהוה and a feather quill. By the shield and the pen they protect this interior castle from outer attack. Over the entrance door of the castle stands 'admittance to the worthy' and on the left jamb is a four petalled rose while on the right an equal armed cross. The drawbridge is lowered 'only if it seems good to the Gods'. In the central room of the castle we see a man contemplating a globe (paralleling an incident from Day Three of the Chymical Wedding) while on the table beside him are alchemical furnaces and a vase of roses.

The College is supported by the hand of God emerging from the divine radiance above, and the upper story of the building is winged reflecting its spiritual power. The wings framing JHVH above, echo the closing words of the *Fama*, 'Under the shadow of thy wings, Jehovah'.

Out of a window on the left a hand emerges brandishing a sword proclaiming 'be on guard!' and refers to Julianus De Campis, an apologist for the Rose Cross mentioned in Schweighardt's text. From a window on the right a trumpet sounds



ORIENS

1777

COLLEGIUM FRATERNITATIS

S S

FA MA

DE SVS NOBIS OMNIBUS

MENTE DIGNI

MOVE AMVRIT

OCCIDENS

YDEAMINE 1604

16

18

adfrater

Frater

Nostro T.S.

SEPTENTRIO

MERIDIES

CAVETE

NOTA

Per multa distans...

OPINIO NUM

PIEVS

C.R.F

MDCCCXXII

COND

MDCCCXXII

with the letters C.R.F. ('Frater Christian Rosenkreutz'). This is probably a reference to the opening scene in the Chymical Wedding when Christian Rosenkreutz receives his invitation to the wedding of the King and Queen from an angelic messenger with a trumpet. From another window, a rope supported by two pulleys, draws a man out of a 'well of opinion and rumour'. This again reflects the scene in the first day of the Chymical Wedding when Rosenkreutz dreams of being raised in a similar way out of a deep dungeon.

At the lower centre two figures, a knight or gentleman on horse with a footman, pass by this Collegium Fraternitatis without paying it any attention, their eyes looking elsewhere, for it is invisible to those who do not search within themselves for it. The figure on the right is successful for he 'acknowledges his ignorance' and armed with the anchor of hope, in an attitude of reverence, his eyes turned to the spiritual, is able to glimpse the presence of this inner castle. Above him, a figure is seen falling from a high hill. This person has tried to rush into things and come to a tragic end, for one must 'hasten slowly' and allow oneself time to develop inwardly if one is to gain access to the inner college. To the left, on another high mountain, we see the Ark of Noah. A parallel is thus drawn here, between the Ark which contained the seeds of all life during the Great Flood and the College of the Rosicrucians which is seen as bearing the seeds of spiritual development and growth during a time of great outer darkness and spiritual decay. Just as Noah sent forth from the Ark the two birds to test if the flood was over (as depicted here), so the Rosy Cross sends forth its messengers to the outer world. Two letters are seen flying like birds from the central windows of the castle. That on the right 'our T.S.' (Theophilus Schweighardt) while that on the left is 'Julianus De Campis'. Above in the sky are seen the two new stars in the constellations of Serpens and Cygnus (the Swan). Two novae appeared in these constellations in 1604, and were associated by Rosicrucian commentators with the symbolic opening of the tomb of Christian Rosenkreutz in that same year.

The fixed house just to the left of the moving college of the Rosicrucians has a 'Latin' cross obliquely inclined from its upper window, and the word 'Nota' beside it. We can speculate that this cross of suffering and crucifixion, this 'long-armed' cross, was seen by the Rosicrucians as spiritually in decline as a symbol, and should be replaced by the equal armed cross with the fivefold rose upon it as the new symbol of the hoped for 'inner Reformation'. This new Rosicrucianism rises above the bleak and outward picture of the suffering the sins of this world presented by medieval christianity and orthodox Protestantism, and embraces instead a new view of delight in life and the exploration of the potential of the spiritual in matter, the uniting of the Rose with the Cross, the Feminine with the Masculine, the Spirit with the material.

This fascinating emblem neatly sums up the Rosicrucian Mystery and shows us that the Temple of the Rosy Cross must be sought within ourselves. The temple is not buried in some outlandish castle in Germany, but lives within us all. That is why the essence of Rosicrucianism still remains alive. It is founded upon the ground of our souls and thus is eternally present and potential within us all.

Shaping the Cubic Stone : Masonic Symbolism in Lambert de Lintot's Engraving

R.A. Gilbert ©

In the last issue of *The Hermetic Journal* Adam McLean gave a detailed description of the hermetic symbolism contained within a masonic engraving of 1789. His analysis clearly demonstrated that traditional symbolism was at that time the common property of both hermeticists and Freemasons; but certain symbols are apparently unique to Freemasonry (and were certainly seen as such by the engraver), while others are both more significant and more appropriate in a masonic context. It thus seems desirable to offer a description of the chart and an explanation of some, at least, of its symbols in purely masonic terms.

Peter Lambert de Lintot (1726–1798), the designer and engraver of the plate, was a French mason who had settled in England at some time prior to 1766 – in which year he was working a curious Rite known as *Le Collège Metropolitain D'Ecosse d'Hérédome des Septs et Derniers Degrés*, otherwise the Rite of Seven Degrees, in addition to his involvement with Craft Masonry. The Higher Degrees, which proliferated during the Eighteenth Century, were, and are, quite distinct from the three Craft Degrees and were largely developed to give expression in dramatic form to a variety of allegories of man's spiritual quest. Some of them employed complex emblematic drawings similar to the Tracing Boards of Craft Masonry and De Lintot – who held an inordinately high opinion both of his own artistic ability and of his fitness to convey spiritual truths in symbolic form – incorporated

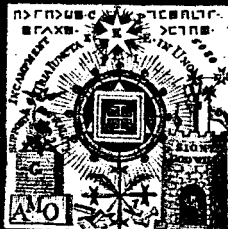
CHAPTER AND GRAND LODGE
OF ENGLAND

CHAPITRE ET GRANDE LOGE
D'ANGLETERRE



NO KADH
NO HRDM

NO HRDM
NO K T P S



NO RARCH
NO SYMBOL

NO K T P S
NO RARCH



THIS IS TO CERTIFY THAT THE NAME OF...
IS WRITTEN IN THE CURICAL STONE...
M F N I S I C L A V S D E F E S T

many of their designs in the series of elaborate engravings that he produced in the 1780's. All of these are historically interesting, but for its sheer wealth of symbolism the 'Cubical Stone' of 1789 is the most outstanding.

Whether or not De Lintot designed the engraving specifically for members of his Rite of Seven Degrees is not clear – the designs do not conform to the symbolic structure of the Rite – but from the inscriptions around the outer frame it does seem to have been intended to serve as a membership certificate for one of the Rites or Degrees with which he was associated.

Above and below the rectangular frame are parallel inscriptions in English and French, that at the base reading 'This is to certify that the name of ... is written in the Cubical Stone K'. In addition to these words there are others written in cipher, the key to which is found in the vertical bands of the rectangular frame, marked on each side by an engraving of a key. (The apparent key, in the upper corners of the frame, is merely a blind that does not fit the text. It should be noted, however, that there are three distinct keys for different parts of the text.) When the inscriptions are deciphered, that on the rectangular frame is found to consist of the Words and Passwords of the three Craft Degrees and of an Installed Master, while that on the base reads as follows: 'And will give him a white stone and a new name which no man knoweth it. I make a pillar and write the name of the city and write my new name. Divinity support Morality'. Around the oval frame the inscription, in English, reads: 'Who teaches us to write and speak, to speak in fair and soft terms, to distinguish truth from fals[e]hood, To reckon or count all manners of numbers, the mensuration of lines, superficies, solids &c, the proportions, Harmony and discords of sounds &c. The motions of luminaries, planets &c. and how to measure their magnitudes and determine the distance of the Infin[i]te, IEHOVAH, EMANUEL [The names are in cipher]. By the seven science[s] of the 7 Degrees of the Cubical Stone. Whatever is Right'. Outside both frames are three Latin inscriptions, two of which are found on the breast jewel of the Holy Royal Arch (which is not a separate degree, but the completion of the degree of Master Mason): 'Nil Nisi Clavis Deest' (Nothing is wanting but the Key) at the base, and 'Talia si jungere possis sit tibi scire satis' (If thou canst undertand what follows thou knowest enough) at the sides. As we shall see, other words from the Royal Arch jewel also appear on the chart.

Within the oval are eight squares containing emblematic designs: one representing the uncut 'Brute Stone', another the 'Cubical Stone',

and the remaining six the unfolded faces of a cube. Around them is an abbreviated motto which should be read from the base, thus: 'No Symbols - No Royal Arch; No Royal Arch - No Knight Templars; No Knight Templars - No Heredom; No Heredom - No Kadosch'. In other words, each degree, is built upon that below it and all the higher degrees are dependent upon the symbolic, or Craft degrees.

The symbolism of the Craft Degrees, which is shown on the 'Brute Stone' square, is drawn from the working tools of the building crafts, so that the emblem of Order out of Chaos is not inappropriate. At the base of the square are seen the two pillars, Jachin and Boaz, that stood at the entrance to King Solomon's Temple and that are represented in every Craft Lodge. Between and around them are five of the Working Tools: the Twenty-four Inch Gauge represents "the twenty-four hours of the day, part to be spent in prayer to Almighty God; part in labour and refreshment; and part in serving a friend or Brother in time of need"; the 'Common Gavel', or Maul, represents "the force of conscience, which should keep down all vain and unbecoming thoughts which might obtrude during any of the aforementioned periods"; while the Square, Level and Plumb-rule teach respectively Morality, Equality, and "Justness and uprightness of life and actions". All of these tend to the improvement of the 'Natural Man' who is symbolised by the Rough Ashlar - the 'Brute Stone' itself. The pickaxe and cord belong to the Royal Arch, where they appear in the traditional legend of that Order.

The 'Cubical Stone' square on the right-hand side is the Perfect Ashlar, the finished stone that represents the upright man possessed of a social conscience; educated and wise - as indicated by Minerva, goddess of wisdom, who is portrayed as 'Mother of all Masons'. The symbols of the Square, for Morality, and the Plumb-line, for uprightness, are accompanied by the Compasses - reminding us of the Justice of God and the limits of good and evil that He has laid down. The Upright Man is also aware of Immortality, for the cipher letters at the base of the square spell out 'Death is Life'.

The remaining squares illustrate a series of Higher Degrees and are not so much symbolic as illustrative of the traditional legends of those degrees. At the top, the first square is the Tracing Board of the degree of Knights of the East and West (now the 17° of the Ancient and Accepted Rite). Its symbolism is apocalyptic, drawn from the Book of Revelation (1:12-16): the figure is the Son of Man, with seven stars in his right hand and 'a sharp two-edged sword' in his mouth; the seven pillars behind Him (one is obscured by the figure) are the seven

golden candlesticks that symbolise the Seven Churches of Asia, while the letters in the angles of the heptagon, B, D, S, H, P, F, G, stand for Beauty, Divinity, Strength, Honour, Power, Fidelity, and Glory. Below the figure are Cipher characters which read 'Only One God' and above him are the words 'Cultor Dei' (Worshipper of God), which appear also on the Royal Arch jewel.

Of the next three squares that on the left shows the birth of Light out of darkness, symbolised by the interlaced triangles of the hexagram which represents the Macrocosm and which, incidentally, form the central part of the Royal Arch jewel. The central square of these three is composed largely of designs relating to the degree of Rose-Croix of Heredom, which is the 18th and central degree of the Ancient and Accepted Rite and which corresponds to the Third Degree of De Lintot's Rite. The Rose, the Bible, the three Crosses and the four Swords are all utilised in the 18th degree ritual. At the upper edge of the square is a cipher inscription which reads 'GOLGOTHA - EMANUEL, ALPHA - OMEGA', reinforcing the Christian content of the symbolism. Below this lettering the twelve points can be seen as representing the banners of the twelve tribes of Israel, while the Cross of Jerusalem at the centre provides a link with the Templars.

And it is the Knights Templar who are represented in the right-hand square. At the base the inscription is a contraction of 'Royal Order of Heredom, Knights Templar of Palestine', while at the top the foundation of the Templar Order is commemorated by the words 'Baldwin II King 5122' (i.e. Baldwin II, King of Jerusalem permitted the Order to be founded in Anno Mundi 5122 - A.D. 1118). In the centre of the square the destruction of the Order is represented by the burning of Jacques de Molay in 1314, although the date is wrongly given as 11 March - an error made elsewhere by De Lintot. (In fact Jacques de Molay was martyred on 18 March).

The central square below this, between the 'Brute Stone' and the 'Cubical Stone', illustrates the degree of Knights of the Ninth Arch, or Royal Arch of Enoch. This is now the 13° of the Ancient and Accepted Rite and corresponds, more or less, to De Lintot's 4th Degree. Its legend concerned the search for and discovery of the true Name of God in vaults beneath the Temple. The alleged connection with Old Kilwinning (Mother Kilwinning Lodge is the oldest Scottish masonic lodge) is utterly spurious, and there is also no connection between this degree and the Royal Arch, although the words 'Invenimus - We have found' are engraved on the Royal Arch jewel.

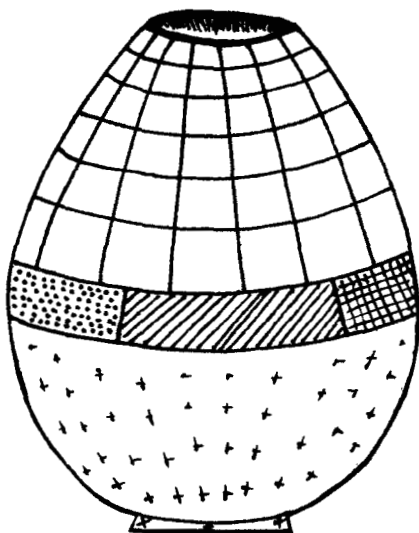
The last square combines the the legend of the degree of Noachite or Prussian Knight (the 21° of the Ancient and Accepted Rite) with the symbolism of the 30° of Knight Kadosch, or 'Ne Plus Ultra' (Nothing further). In the Noachite degree the Tower of Babel is substituted for the Temple and Solomon is replaced by Noah, whose descendant Peleg (or Phaleg) appears as the architect of Babel. The Menatzchim were the overseers of the building work, but as the cipher lettering defies translation the overall significance of the square is not clear, linked as it is with the Knight Kadosch symbols. These appear on the right-hand side in the form of a ladder of seven steps surmounted by a double-headed eagle. The ladder in freemasonry is usually taken to be Jacob's ladder, showing the link between heaven and earth and offering hope of immortality; its seven steps represent Temperance, Fortitude, Prudence, Justice, Faith, Hope and Charity – which virtues are admirably supplemented by Truth, Equality and Freedom as engraved on the Tower. In the Kadosch degree, however, the seven steps represent both moral virtues and the seven sciences: Grammar, Rhetoric, Mathematics, Physiology, Chemistry, Harmony and Astronomy – which appear, with some variation, on the inscription in the oval frame.

A seven-runged ladder also had a place in the Mysteries of Mithras, where it symbolised the ascent of the Soul. There is thus, perhaps, greater significance than at first appears in De Lintot's use of a scene from a Mithraic ceremony in the lower corners outside the central oval. George Oliver, who briefly described the chart in his book *Revelations of a Square* (1845), stated that "in the lower spandrels are vestiges of the spurious Freemasonry" – but De Lintot was nothing if not an innovator and he may well have intended to illustrate the parallels between paganism and Revealed Religion. Whatever his real intention, and whether our viewpoint is Masonic or Hermetic, his eclectic use of symbolism has given us an engraving that is extraordinarily rich in its imagery.

Symbolism of the Black Hole Egg

Matter-Energy Mandala

George Burnett-Stuart ©



In the course of my search for an understanding of that strange concoction of intellectual and physical operations which we call Physics, I found myself making an egg-shaped vessel out of clay. This is what the Egg, once formed, seemed to say to me...

Description

The egg is an earthenware pot, divided into two halves, upper and lower. The lower part is unglazed clay, the upper glazed in blue. Around the middle, there are four insets, of wood, glass, metal and

mother-of-pearl. On the upper part, lines have been incised in a square grid-pattern. There is a small circular opening in the top of the egg. All one can see inside is black emptiness.

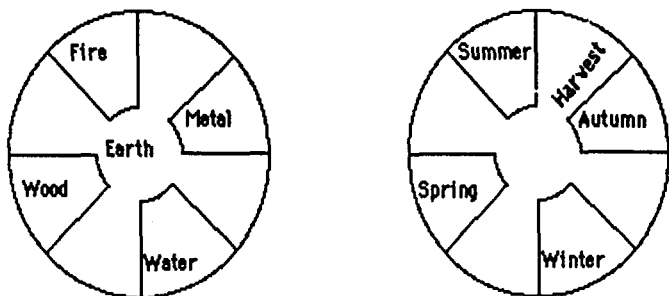
Ancient Symbolism

The egg encircled by a serpent is an ancient symbol of the cosmos. The egg suggests the hidden potentialities of the world, the serpent, the idea of obstructions (to be overcome) and natural limits (which no-one, not even a hero, may overstep). Here the serpent has been transformed into a belt, an equatorial zone, of four elements. The hero has fought with the dragon, and chopped him into four quarters, with magical powers. The four elements signify natural limits, rather than obstructions.

The zone is a boundary, dividing the upper half of the egg from the lower. Another consequence of the slaying of the dragon: a more definite distinction between what is above and what is below, between the heavenly and earthly powers. But the distinction is compromised by the hole in the top, which leads one back down from the very summit of heaven into the dark recesses of the earth.

The Chinese Elements

The four elements of the egg are Wood, Fire, Metal and Water. The red glass stands for fire, the mother-of-pearl for water. If we include the material of the base, Earth, then we have the five elements of the ancient Chinese system. Sometimes, they are arranged in a diagram like this:



They correspond, among many other things, to the seasons of the year—with earth standing for the mysterious moments of transition between the seasons, as well as the hub of the wheel. Think of the changing qualities of the seasons, with each one leading into the next

in that cycle so deeply ingrained in our (temperate zone) psyche. The spring—the sap rises, wood changes from dead to alive. Summer—the fiery hot sun beats down, baking the earth. Autumn—out of the furnace, an ingot of metal, its coolness presaging the rigours of winter. Winter—a tranquil pool of dark, apparently lifeless water.

Arching over the elements, heaven: blue of the sky, grid-lines of mathematical purity and order: the opposing principle to earth—if you like, the sixth element. [Note: equating heaven with air, and missing out wood and metal, we get the four elements of Western tradition.]

Matter

The story of matter began when man became a worker of matter: of wood, glass, metal, a moulder of clay and a user of water. At first, this activity was of the earth, animal-like, a bird building its nest. *Matter* was born only when the activity was impregnated by an idea. Matter was the issue of a marriage of heaven and earth.

This was the idea: underlying all the changes of the earth, whether effected by man or nature, there is a stuff, called Matter, which changes in form but not in essence. The quest of matter is the quest of that which is *unchanged in change*.

The idea was brought into sharper focus by another idea: the *Atom*. Even without knowing anything for certain about what atoms are really like, one can get into the habit of interpreting everything that happens in terms of rearrangements of unchangeable atoms—a beautifully simple image of what the difference between the form and the essence of matter might be! For example, this was how the Roman poet Lucretius saw the world: one can tell from his long poem *On the Nature of Things*, how he was enraptured by the idea of Matter and the Atom.

Among all the different forms of matter, many people (in the West) came to agree that there were four main types which really *were* different (the four elements); other forms were combinations of these, in various proportions.

Energy

During the Middle Ages, people began to use wind and water-power to work their machines. Like Matter, centuries previously, the idea of *Energy* (which is Power, in the abstract,

mechanical sense, multiplied by time) began to form. For example, people began to speculate about perpetual motion machines—was there a way of getting something (in the way of power) out of nature for nothing?

Alchemists, meanwhile, inspired by the spectacular transformations of metallurgy, and by the continually growing store of other exciting chemical experiences, explored further the inner nature of matter, giving free rein to their imaginations. Whatever one may think of their flights of fancy, they effected a complete transformation of the idea of Matter. To the Greeks, the prototype of matter was wood: passive stuff, ready to be shaped and reshaped by outside powers. To the alchemists, matter was far from passive, it was imbued with its own, remarkable "powers".

How delighted they would have been with the most vivid and (to us) familiar example of the powers of matter: the generation of electricity (the most spiritual of physical substances!) out of matter in the chemical cell, or "battery" of cells. Unfortunately, the original electrochemical cell (consisting, simply, of a layer of cardboard, soaked in salty water, sandwiched between copper and zinc) came long after the alchemical era, not until nearly 1800.

At any rate, the alchemists realised that the stuff of the world cannot be regarded as inert, like the bricks which a house is made of. If it is bricks, they are *living* bricks—but their life is a secret life, hidden away from the eyes of the ignorant. Great efforts of the imagination, and a kind of "obedience to nature" which had to be carefully cultivated, would surely be needed to persuade the powers of matter to manifest themselves.

Physics

The quest of the inner nature of matter (and the ultimate goal, the nature of the atom) became bound up with the discovery of the powers latent in matter, and the investigation of energy, the various forms it can take, and the transformations between them. Around 1850 Energy became the equal partner of Matter: enough was known about the different forms of energy to be able to *measure* them and compare them. The outcome: the total *quantity* of energy after a transformation was found to be always the same as it was before. Energy, like matter, is stuff: it is another entity which is constant in the midst of change.

Matter and Energy are the two halves of the egg. Matter is the lower, more earthy half—it is earth, spiritualised by the idea of the Atom, constant in change. Energy is higher, more spiritual: no-one can say what energy is, they can only measure it—they can only catch it in their mathematical nets. Yet it is tied down to earth; often, it can only be released with difficulty.

Around the middle of the egg are the *Four Elements*—the four fields of manifestation of energy, or four divisions of the powers of matter.

Wood: mechanical powers: force and motion, stress and strain, momentum, kinetic energy.

Fire: optical powers: light, colour, interference.

Metal: electrical powers: electric charges and currents, magnetism, waves in the electromagnetic aether.

Water: thermal powers: temperature, heat capacity and flow, the transformations between ice, water and steam, the direction of chemical reactions in time.

Like the seasons of the year, each of these departments has its own distinctive qualities and feelings. According to which hat he puts on, the physicist takes up a particular "stance" towards nature. This is illustrated by the different kinds of equipment which he uses in each guise, for instance: batteries and coils of wire in electromagnetism; special crystals and prisms in optics; springs and fly-wheels for mechanics; thermometers, pressure vessels and refrigerating machinery for thermodynamics.

Another illustration: the different concepts of *time* which are typical of the elements. Linear, astronomical time, ticking away to eternity, for mechanics; in optics, no time! (effects of the finite speed of light are considered in the next section); exceedingly fast oscillations are typical of electromagnetic time, expanding a second of ordinary time into millions of tiny time intervals (secret of the computer's success); as for thermodynamics, time is a one-way street, it is water running down to the lowest place, and staying there.

It would be going too far to suggest that there is a natural circulatory movement from one element to the next in the circle, as there is from one season to the next. But there is no lack of subtle relationships, a kind of network of implications between them. No-one who follows his nose in physics can linger too long within one element before being propelled on to the next.

Around the egg's middle the elements are most separate, most distinct. In historical time this corresponds to the moment around 1850, when each of the separate departments was well understood (or just on the point of being so)—the noon-tide of *Classical Physics*. But anyone who studies physics can reach this point, and if they like, linger there, savouring its qualities.

Modern Physics

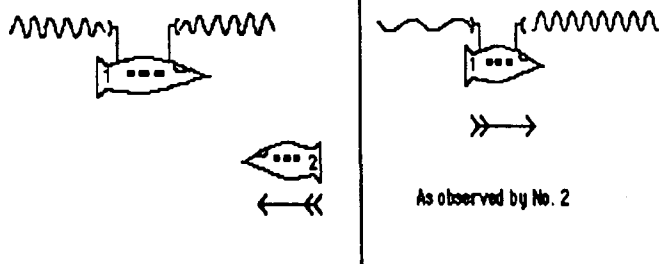
But even as they do so they will feel a wind blowing—the powerful spirit of *oneness* driving them on. Can the four elements really be so separate? After all, the different energies can be transformed into each other, through the medium of matter. In the heart of matter must be the place where all the powers are drawn together, the arcane source of the elements...the Philosophers' Stone of physics: the Atom.

The atom is the base of the egg, drawing the four downwards into conjunction. Or: the four elements sprout upwards out of the earth of the atom.

In history, the period of conjunction extended from about 1850 until 1926, when a workable theory emerged of how the four elements relate to the atom. Since then, the atom has begun to bloom—the most spectacular sign of this, the light-machine called Laser. (Note: we are not here talking about the atomic nucleus and nuclear transformations, that is a story for another day.)

But working at the same time as the downward pull of the atom is a second force, also working towards unity. This is: the pull of the *Black Hole*. The motto of this drawing-upwards is not "one source of the four elements" but rather "four elements in one vessel". The various forms of energy have to coexist in one space and one time.

It was precisely the difficulties of fitting together the Mechanical and Electromagnetic energies, which provided the material for Einstein to work with. Others had struggled with the problem of joining Wood and Metal. But Einstein was the one who solved it, the true alchemist, by using Fire as an intermediary. He cracked the nut by reasoning with the speed of light, and out of the ashes of space and time gave us: *Spacetime*.



This is the sort of thing that goes on in spacetime: suppose a rocket-ship emits two equal pulses of electromagnetic radiation, one in a forward direction and the other backwards. Each of the pulses carries a certain amount of momentum, but being equal and opposite they have no net effect on the motion of the rocket. Now imagine that a second rocket is coming towards the first. From the point of view of No. 2, the two pulses emitted by No. 1 are not equal after all. The forward one is of higher frequency (the Doppler effect, which also applies to the tone of an approaching motor-bike), and carries more energy and momentum than the backwards one. This ought to exert a braking force on No. 1 (i.e. to take forward momentum away from it). Yet the emissions have no effect on the velocity of No. 1 (both observers must agree about this). Since momentum equals mass times velocity, the only way out of the paradox is to concede that the rocket must have lost a bit of *mass*. When calculated, the mass loss is E/c^2 , where E is the energy of the two pulses combined, and c is the speed of light.

This is the origin of Einstein's famous equation. Clearly, it has a bearing on the symbolism of the egg, whose top half is energy and bottom half matter. In the arena of spacetime they are unified by their shared property of mass. Already we can feel that spacetime is the right stuff for the vessel which can contain the elements, but there is more work to be done to contract the stuff into a finite form. The agent for this is ready to hand. It is one of the ancient facts of physics: *Gravitation*.

Gravity

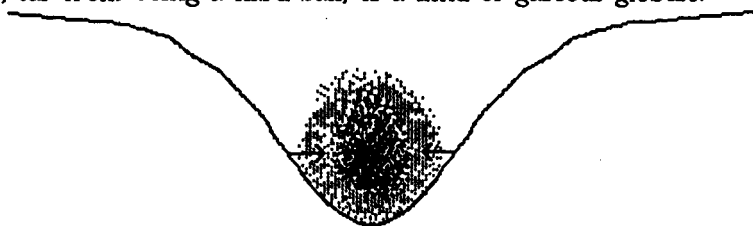
Every body on earth is attracted to the centre of the earth. Newton enlarged the scope of gravity by insisting that the earth is attracted reciprocally by the body, as are any two pieces of matter in the universe. Moreover, the mutual attraction is stronger, the less the distance between them.

One can picture this attraction as follows. Imagine two balls placed on a rubber sheet, stretched horizontally.

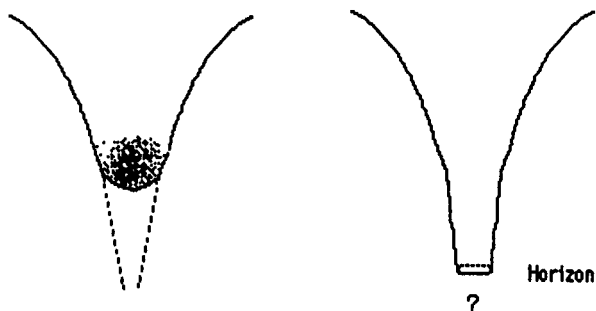


Each ball creates a depression, which the other ball tends to fall into. They have to be held apart. For instance, one could place a matchstick between them. The closer they are together, the steeper the sides of the depression, and the harder the (shorter) matchstick has to press to keep them apart.

Now think of a star, and the effect of its own gravity on itself. A star, far from being a hard ball, is a kind of gaseous globule.



The sides of the depression in the sheet (or *gravitational field* as it is called) press in on the star, and instead of matchsticks it has only its own internal pressure to keep it up and fully extended. When the star is old, the source of its pressure gives up, and gravity forces it to contract.



Note an important feature: as the star slips down ever deeper into the field, the shape and size of the depression outside the star stay the same. The overall scale of the depression is a measure of the star's mass (including energy as well as matter, of course).

Eventually, if the star is an unlucky one, the contraction passes a certain critical point. This is when the star sinks down so low that even a light beam, such as the beam of a torch pointed straight upwards from the surface of the star, is unable to climb up out of the pit. In other words, it cannot escape the gravitational field of the star. Neither light, nor anything else, can find its way to the outside world, and from this point on the fate of the star is veiled from our eyes. Instead of a star, we have: a black hole.

There is a spherical surface, called the *horizon* which marks the limit of visibility. If a body should fall down into the hole, it is gone from the world at the point when it crosses the horizon. A heavy body, however, makes an imprint in the gravitational field, and this is not lost when the body falls in: the imprint coalesces with the hole itself, and what we get is a slightly bigger hole. The hole can get bigger, but never smaller (to be precise: the surface area of the horizon can never decrease).

There is much that can be said about the behaviour of black holes. A star that spins on its axis (as one would expect every star to do) will give rise to a spinning, whirling black hole. One can turn matter into energy by lowering it on a string (which works a dynamo) into a black hole... and so on. But from the egg point-of-view, one phenomenon in particular stands out.

The Fourth Element

What is a black hole made of? It is an imprint in the gravitational field, nothing more nor less, and gravity is the shape, the feel (from inside) of spacetime. Spacetime is already a conjunction of Wood, Fire and Metal. But what of Water, the element of heat?

One can make a black hole bigger, but not smaller. This is *like* something else. Imagine a container of water, thermally insulated (like a thermos flask), with a paddle-wheel immersed in the water, that one can turn from the outside.

What happens if one puts energy into the system by turning the handle? The motion churns up the water, and the energy ends up as an increase in the heat content of the water, and its temperature goes up. The heat content of the water can be made larger, but never smaller.

No thermal insulation is perfect, however. If the container were to

be placed in a very cold enclosure, at a temperature close to absolute zero, heat would inevitably leak out of the water, into the enclosure.

What would happen if a black hole was placed in such a cold enclosure?

The astonishing answer is that *heat* would come out of it. This would be in the form of very very infra-red radiation (in the longwave radio spectrum, in fact). And very very slowly, the black hole would shrink in size.

Now heat is the last thing one would expect to get out of a black hole, because one normally pictures heat as the random motion of atoms in a body. And a black hole, unlike other bodies in the universe, isn't made of atoms. They went down the plughole with the star. Yet by some miracle, the Water element is resurrected.

If a giant squeezed the planet Earth right down so far that it became a black hole, the horizon would be no more than 3/4 of an inch across. In this little nut, velvety black, one could indeed see the whole world, for it would encompass all the four elements.

Inside the Egg

Inside the egg, all is black. If we follow the symbolism of the egg rigorously, then, as we look down inside the lower bowl of the egg, we are looking at matter from the inside. But we see nothing.

Inside a black hole, the matter of the star, or whatever it was that turned into the hole, is squeezed into an inconceivably small space. Conditions so extreme would only occur in one other place: the birth of the universe itself, the origin of energy and matter. But what happens at the centre of the hole is hidden from us by the horizon. Once again, we see nothing (even if we had a black hole to play with in our backyard, which we don't).

One's first reaction: how frustrating! the secret of the universe, so near and yet so far! But perhaps the secret is that there *is* no secret. Perhaps the secret is simply that there is a limit to the significance of the concept Matter. One should look into the egg and remember that matter is an idea, an abstraction: a particular way of looking at the changes of the earth. A seeking out of that which doesn't change in the midst of change, remember? Fair enough, noble even, to seek it out, but having found it, let us not cling to it.

Reviews and Book Notices

Guthrie, K.S. THE PYTHAGOREAN SOURCEBOOK AND LIBRARY, 361p. Paper £11.50, Hb. £20.00. Phanes Press (distributed in the UK by Element Books, Longmead, Shaftesbury, Dorset SP7 8LP).

At last, Phanes Press have produced the kind of Pythagorean book that anyone who has looked into the subject must have felt the need for. The book contains four ancient biographies of Pythagoras, as well as over 40 Pythagorean writings. Most of these come from the revival of the tradition known as Neopythagoreanism (1st Cent. BC onwards), for the early school has left little in the way of extant literature. David Fideler of Phanes has done some painstaking editorial work, supplying the book with a carefully organised and well-researched introduction, plus abundant appendices, indexes and bibliographies. This book deserves to establish itself as the standard sourcework on Pythagoreanism. Definitely recommended.

– Stephen Ronan

Mead, G.R.S. THE COMPLETE ECHOES FROM THE GNOSIS, edited by Stephen Ronan. All eleven volumes of the original series together with a Concordance to the Chaldean Oracles. Chthonios Books, 6 Waldegrave Road, London SE19 2AJ. HB. £19.50

George Robert Stow Mead (1863–1933) was a unique combination of scholarly researcher and mystical explorer. His outstanding qualities in both fields have made him – even yet, so many years after his death – the foremost expounder of the spiritual meaning of the ‘Inner Traditions’ of Late Antiquity. Mead wrote three major works exploring these traditions. The first two are *Thrice-Greatest Hermes*, which dealt with the Hermetic literature, and *Fragments of a Faith Forgotten* which did the same for Gnosticism.

The third is the present book *The Complete Echoes from the Gnosis*. It is here presented as an integrated work, containing all eleven volumes of the original series. Each volume translates and interprets a particular stream – either Pagan or Christian – of ancient mysteriosophy or mystery-teaching.

The Christian works are *The Hymn of the Robe of Glory*, *The Hymn of Jesus*, *The Gnostic Crucifixion* and *The Wedding-Song of Wisdom*. The Pagan ones are *The Gnosis of the Mind*, *The Hymns of Hermes*, *The Vision of Aridaeus*, *The Mysteries of Mithra*, *the Mithraic Ritual*

and *The Chaldean Oracles I and II* *The Chaldean Oracles* have been provided with a concordance, compiled especially for this edition in order to facilitate research into this important but little-known branch of ancient spirituality.

Those who would enter the spiritual fire of Gnosis, Christian and Pagan, which the orthodox Church fought so hard to suppress, could find no better guide than Mead and no finer introduction than *The Complete Echoes from the Gnosis*.

– from publisher's publicity material

Scholem, Gershom *Origins of the Kabbalah* edited by R.I. Zwi Werblowski, translated by Allan Arkush. Jewish Publication Society and Princeton University Press. (Available in UK through Chthonios Books £29.50). HB 487pp.

This is first publication in English of one the most important books of the great Kabbalistic scholar, Gershom Scholem. Here he deals with the early flowering of the Kabbalah in 12th/13th century Europe, the period immediately before the writing of the Zohar. Scholem devotes some 150 pages to an analysis of the *Bahir*, one of the oldest literary documents of the Kabbalah (1130–1170). Although the *Bahir* seems at first reading, rather jumbled together and devoid of structure, Scholem is able to identify various motifs and elements that have been woven into this rather chaotic text. He shows some of the structural elements buried in the confused strata of this work, and especially notes the Gnostic and Neoplatonic elements and influences. In the next section, Scholem looks in detail at the first Kabbalists in Provence – Abraham ben Isaac of Narbonne, Abraham ben David (the Rabad), and Isaac the Blind. Isaac the Blind is often credited with formulating the doctrine of the En-Sof and the Sephiroth, and Scholem examines the birth of these concepts in Isaac's writings. The final section of the book examines the Kabbalistic Centre in Gerona in Spain, which functioned between 1210 and 1260. The major figure was Moses ben Nahman (Nachmanides) but there were at least twelve kabbalists in this circle of which we still have knowledge today. Scholem's research is impeccable, and as with his other books provides much useful information both into the history, and on ways in which philosophies and spiritual traditions outside Judaism influenced the emerging Kabbalistic tradition during these early times in Europe. This book will be an essential sourcebook for serious students of the Kabbalah.