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# OCCULT CHEMISTRY RE-EVALUATED

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## PREFACE

This little book is intended as a companion both to *Occult Chemistry* by Annie Besant and C. W. Leadbeater and more particularly, to *Extrasensory Perception of Quarks* by Dr. Stephen M. Phillips published in 1980 by the Theosophical Publishing House in Wheaton, Illinois.

*Occult Chemistry* has been a perpetual challenge to theosophists with a scientific bent, since publication of the earliest investigations in *Lucifer* in 1895. The results of study of the chemical elements and later of compounds by magnifying clairvoyance (micro-psi, as Phillips calls it) conflicted from the start with scientific theories of atomic and molecular structure. As the decades went by and science advanced, the discrepancies failed to diminish but on the contrary grew greater, and faith in the authors' visions was sorely tried. The most fundamental difference, though only one of many, was that the hydrogen atom was seen to contain 18 very much smaller bodies. These seemed to be the ultimate units of physical matter and were called ultimate physical atoms. But science regards the hydrogen atom as containing a nucleus comprising a single proton orbited by a single electron. No particle equal to 1/18th part of a hydrogen atom is recognized by science. A step in this direction was the "quark theory" which proposes that the proton contains three bound quarks. The still yawning gap between 3 and 18 was successfully bridged by the remarkable researches of Dr. Stephen Phillips. Dissatisfied by the shortcomings of quark theory, he proposed a new

theory which suggests that quarks are further subdivided, so that (among other consequences) a proton contains 9 sub-quarks christened omegons. The remaining gap, the factor of *two* between *nine* and *eighteen*, was bridged from the other direction. Although Besant and Leadbeater claimed to see the atoms exactly as they existed, modern physics proclaims that any such close examination must cause perturbation. Its nature was deduced by Dr. Phillips and was found to involve fusion of the nuclei of *two* atoms. A lot of hitherto puzzling information in *Occult Chemistry* is at once clarified by this doubling-up postulate. Thus the final span of the bridge was made by rectifying an innocent error of interpretation by the occultists.

This alone would have been a remarkable achievement, but Dr. Phillips has done far, far more. He has worked out in complete detail, using the very precise rules of theoretical physics, the quark make-up of the dinuclei of all lighter elements up to calcium, and a number of compounds. When these results are compared with the diagrams in *Occult Chemistry* the match is quite remarkably close. So we can claim vindication of *Occult Chemistry*, not just in broad outline but in precise detail. The primary need was to present this work to scientists in the technical language they use and this was duly done in *Extrasensory Perception of Quarks*. However, the abstruse mathematics and physics necessarily included, makes for indigestible reading by the layman, and even by scientists skilled in other disciplines. Accordingly, a simplified version seemed also to be needed. In view of the special interest of theosophists in this work, the present book is written primarily for theosophists, but it is hoped that it may also prove useful to other readers.

## CHAPTER ONE

### HISTORICAL SETTING: OBSERVATIONS

The story of the chemical elements goes back to the first moments of the Big Bang at the creation of the universe, according to widely accepted scientific theories. In the unimaginable heat of that vast fireball the lightest elements were created from primordial matter. For our present purpose, it is sufficient to go back some few hundred years B.C. to the rather uncertain date when Patanjali wrote his *Yoga Sutras*, (1). Book III, Sutra 26, reads as follows in the original Sanskrit:

२६. प्रवृत्त्यालोकन्यासात् सूक्ष्मव्यवहितविप्रकृष्टज्ञानम् ।

Rendering this into English, Taimni (2) gives: "Knowledge of the small, the hidden or the distant by directing the light of superphysical faculty." Jinarajadasa (3) translates it quite differently as: "Making oneself infinitesimally small or as large as the earth." He explains that the "one of the faculties developed by yoga is to make oneself so infinitesimally small as the observer that by comparison to him the atom is large. This is the technique of magnification which is adopted in clairvoyance. The object itself is not magnified, but the observer is diminished."

In the course of their arduous yoga training, under the tutelage of their masters, Annie Besant and C. W. Leadbeater

fully achieved this faculty. In 1895 it was suggested by A. P. Sinnett that they might turn it upon the chemical elements and *Occult Chemistry* was born. The first substance Leadbeater examined was gold. He saw what he took to be individual atoms of gold, but each had an exceedingly complex internal structure; it was composed of literally thousands of much smaller particles, identical or similar, which he took to be the ultimate atoms of the physical plane. These were arranged in complicated repeated patterns within the gold atom and the whole thing was in vigorous motion and vibration in all possible directions. It was obviously far too complex to describe in detail, before first gaining practice with much lighter elements of simpler designs. So they next turned their attention to the gases hydrogen, oxygen and nitrogen, Annie Besant having been invited to join in the investigations.

Since hydrogen is the keystone of the whole exercise, what they saw should be described and analyzed in some detail. Hydrogen presented itself as an ovoid body, within which appeared a pattern of two interlaced triangles. At their corners were smaller spherical objects, six in all. (Fig. 1) To facilitate observation, it was necessary to slow down the vigorous movements of the atom and its components, by an act of will-power. The ovoid "wall of the atom," as it was later described, was sensed to have reality, but its nature puzzled the observers. The "wall" was at different times explained in several mutually contradictory ways, and its nature was never fully resolved; this will be discussed later. The sides and surfaces of the triangles on the other hand, were at once recognized as having no real existence. It is expressly stated that they are *not* lines of force, but merely an impression of pattern made by the arrangement and evident interrelatedness of each triplet of smaller bodies. Each of the 6 spheres, at the corners of the two triangles, again had a "wall" enclosing in each case three smaller bodies, making 18 in all. These were regarded as ultimate physical atoms, not further divisible on the physical plane. This number 18 has assumed critical importance in every attempt to relate *Occult Chemistry* with contemporary science.

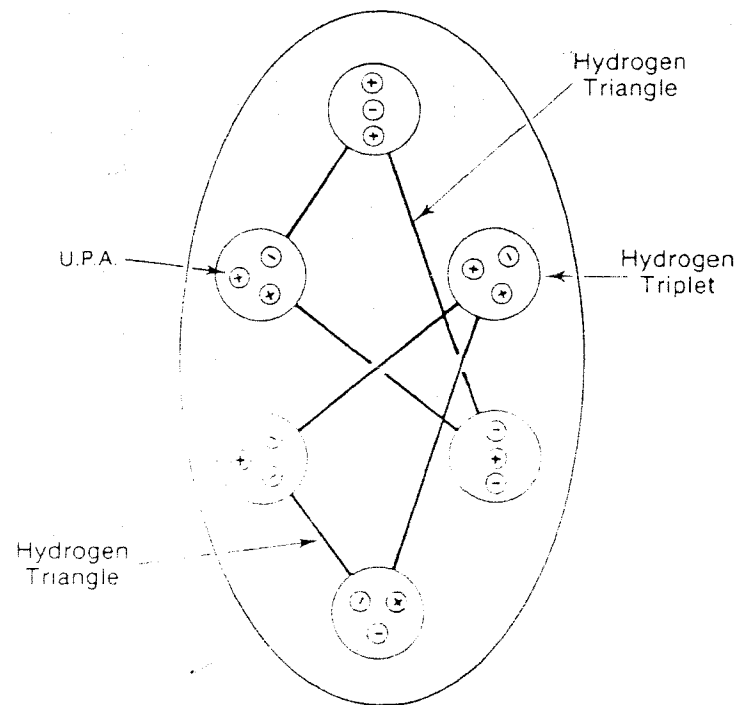


Fig. 1. Hydrogen Triangles

The investigators noted that when they used their occult power, psychokinesis, as we should now call it, they could "pull the atom out of its containing wall," whereupon it flew apart "as if released from great pressure". The bodies so released were the groupings previously noted within the atom though they were sometimes rearranged slightly. These bodies in turn could be further disintegrated stepwise into smaller ones, till eventually they reached the ultimate physical atom. If this too were attacked, it disappeared from the physical plane and its contents were extensively rearranged into astral matter. It was natural to suppose that the previous stages of disintegration took place at the etheric sublevels of the physical plane, so that they resembled at higher levels the transitions between solid, liquid and the gas familiar for dense physical matter and regarded as characterizing the three lowest physical sub-planes. Since the "rule of seven" called for four etheric sub-

planes, and obviously the ultimate physical atom claimed the highest, they allocated the successive disintegration products to the remaining three, Ethers 2, 3, and 4. The validity of these allocations must be called into question later; for the present the designations E1-E4 will be regarded merely as convenient labels.

Thus with hydrogen, at the E4 level the two triangles separate to give two non-identical spheres each with three contained bodies. (It should be noted in passing that there is a slight draftsman's error in the hydrogen diagram in the first and second editions of *Occult Chemistry*, corrected in the third.) (See Fig. 5 in Chapter 7.) At the next stage of disintegration, each sphere loses one contained body to give two non-identical ovoids, each having six ultimate physical atoms; the "lost" triplets are said to pass straight to the E2 level. At this level there are three types of bodies each still containing three ultimate physical atoms. At E1 all are reduced to individual ultimate physical atoms.

It might have been expected at the time that this ultimate unit of physical matter would turn out to be the sort of atom envisaged by the Greeks, a hard indivisible tiny ball of ultimate matter. As seen by the clairvoyants, the reality could not have been more different from such an idea. By contrast, it could be described briefly as ten parallel streams of energy coiled up in intricate closed spirals. (See Fig. 11, Chapter 11.) Such a finding seems much more appropriate in these days when we accept that matter is really just pent-up energy. If one wished to make an abstract illustration of Einstein's famous equation  $E=mc^2$ , then this vision of the ultimate physical atom could not be bettered. Little more will be said about it here; the internal design of the ultimate physical atom is beyond the scope of the present book (though further research is proceeding). *Occult Chemistry* must be consulted for details of its structure. It needs to be mentioned however, that the ultimate physical atom occurs in two types, male and female, each the mirror image of the other.

Oxygen, the next element to be examined, proved to be a remarkably lively and brilliant object. Within an ovoid wall it

has two snake-like spirals, each of five turns. The two spirals revolve rapidly in opposite directions, giving the appearance of a solid cylinder. In passing, it may be noted that the two substances most closely associated with biological life, oxygen and DNA, both exhibit this double-helix formation. On raising to the E4 level, the spirals separate, each into its own ovoid, facilitating counting of the constituent bodies. Each individual "snake" is made up of "beads," 55 in all, each containing two ultimate physical atoms, and five "bright spots," one at each turn of the spiral, containing seven ultimate physical atoms apiece. At the E3 level, the snakes break up into shorter strings containing one bright spot, with six beads on one side and five on the other. At E2 the strings release their component bodies and it is seen that the bright spots on the positive and negative snakes have their seven ultimate physical atoms arranged somewhat differently. The identical beads retain two ultimate physical atoms apiece. At the atomic E1 level individual ultimate physical atoms are released as with hydrogen. In all, 290 ultimate physical atoms were counted in the oxygen atom. If this number is divided by 18, the number of ultimate physical atoms in hydrogen, the quotient is 16.11, which closely approximates the recognized atomic weight of oxygen.

Nitrogen presented itself as a sluggish object with more complex internal arrangements. It need not be described in detail at this stage. The numerous component bodies contained in all 261 ultimate physical atoms; dividing this by 18 gives 14.50, again close to the accepted atomic weight of nitrogen.

The work on *Occult Chemistry* was resumed in 1907 at a house near Dresden, with C. Jinarajadasa now functioning as "general manager" of the team, as he himself expressed it (3). During this stage no less than 56 elements and six isotopes were studied. The investigators found that it was not essential for them to have the elements in a free state. By an exercise of will-power they could sever the chemical bonds in compounds to release their constituent atoms. Thus common salt provided specimens of both sodium and





It will be helpful to get a clear mental picture of the nature of these investigations and of the interpretations open to the observers *at the time*. If this is done consciously, we may come to realize that criticisms levelled at the observers over subsequent years were unfair as well as being unkind. Rather, we should marvel at what *was* achieved. So—picture a fair sized billiard table sprinkled with say, one thousand mustard seeds, not randomly but in patterns. Then imagine the baize of the billiard table teased out and pulled vertically into a sort of balloon-shaped tenuous network. The seeds become correspondingly distributed into three-dimensional patterns of spheres, ovoids, cones, etc., some of these appearing to fall within larger enclosing patterns. Now imagine describing and sketching this entire assembly and counting the seeds within them. This may convey a rough idea of the task, except for considerable over-simplification. Almost certainly the mustard seed is far too large to serve as an analogy for ultimate physical atoms; perhaps the dust-like seed of begonia would be more appropriate. The heavier elements would contain up to 3,000 seeds or more; the interior groupings were not static; they were throbbing with energy, dancing about and gyrating. Although they were slowed down by an effort of will-power they were not stopped completely, so counting must have been a taxing task. In these circumstances, errors in counting were inevitable and this was recognized at the time.

Nowhere in *Occult Chemistry* (4, 5, 6) is any attempt made to express the relative sizes of the atoms and their interior subdivisions. This is because the range of sizes covered too many orders of magnitude (powers of 10); or more simply, if we consider the six spheres in hydrogen as being of unit size, then the whole atom might be thousands or even millions of times larger, and the ultimate physical atoms inside the spheres thousands or millions of times smaller. No subdivided yardstick is available and it would be useless anyhow. One may imagine a metre ruler subdivided into decimetres, centimetres, millimetres, and

with difficulty into tenths of a millimetre. But this covers only four orders of magnitude and the range present in the components of the atoms seen by the clairvoyant observers was almost certainly much greater than this. At each successive stage of disintegration a “higher power of magnification” had to be used, or more accurately, the observer had to make himself smaller in consciousness. Apparently it was not possible to gauge the extent of this change.

We are indebted to Jinarajadasa for an indication of the division of labour between the two clairvoyants. It appears that they would agree to look at a specific element and each would locate it in the specimen provided by Jinarajadasa and observe the external shape and arrangement of component bodies. After comparing notes, they continued with more detailed investigations along separate lines. Leadbeater was represented as the meticulous scientific worker, the one who patiently counted the ultimate physical atoms and noted their arrangement in each contained body and dictated the results to Jinarajadasa, who made the appropriate sketches. Annie Besant found little interest in counting spots, but concentrated upon the disintegration stages and also upon the lines of force playing between the ultimate physical atoms in their small groupings; Annie Besant made her own sketches and it may be mentioned that a few of them are virtually identical with diagrams published in the 1970's by theoretical physicists showing the “lines of force,” or *strings* as they are called, between quarks in small groupings. This correlation will be expounded more fully in chapter 7. Jinarajadasa (3) supports his claim for Leadbeater's inexhaustible patience by the story of his counting of the number of turns in the coiled strands of the whorls in the ultimate physical atom. Each of these ten whorls has 1,680 turns. It seems that Leadbeater attached great significance to this number 1680; rightly so indeed, as it appears from research still in progress (see chapter 11). Anyhow, the claim is that he repeated this incredibly boring and exacting task of counting very many times using

ultimate physical atoms derived from different substances, to make sure they really were identical. In contrast, on his own admission, he was not nearly so conscientious with the chemical elements. When, for example, as in the Dumbbell group, 24 similar funnels were present, he was content to count the contents of 2 or 3 and assumed the rest were identical. Similarly, when a grouping counted in one element reappeared in another, its earlier count was usually accepted. Actually some of these apparent repetitions do sometimes differ subtly. It is not clear whether a particular atom was selected and used throughout a session till the counting was completed, or whether it was released when the investigator needed to rest. If a different atom was used to complete the counting, later on or another day even, then with some elements there would be the risk of picking up a different isotope without noticing its slightly different appearance, and so getting a "hybrid" total count. (See end of chapter 6.) Also there is no indication of any deliberate replication of the entire counting operation, as a check. If this had been done regularly it could hardly have failed to turn up more isotopes than were in fact noticed. Now that it is possible to detect counting errors and often to pinpoint their precise position it is clear that rather many of them did slip through into the published work.

Possibly this chapter should conclude with mention of an observation that the investigators did *not* make, though probably they could have done so in appropriate circumstances. There is no evidence that they ever saw the electron. Probably they never looked in the right places with the appropriate high magnification. At a later date, however, Geoffrey Hodson did see electrons, using an abundant source, namely a cathode-ray tube. They looked somewhat like ultimate physical atoms but much smaller. (see chapter 8).

## CHAPTER TWO

### HISTORICAL SETTING: INTERPRETATIONS

The human mind is filled with curiosity. To observe something is inseparable from the urge to explain it rationally in the light of previous experience. So naturally this is what our investigators tried to do with their astonishing visions of *Occult Chemistry*. Some interpretations have inevitably crept in already in chapter one. They had two main frames of reference available. First the theosophical teachings, supplemented by their own observations, on planes and subplanes. Second, the scientific knowledge of their time. They were quite sure in the first place, that they were seeing the chemical atoms at a dense physical level exactly as they really were. They were wrong, as will be seen, but *at the time* it was a perfectly reasonable assumption. After all, they were doing the objects no violence, just peering at them with their magnifying clairvoyance, and gently restraining their wild gyrations. By contrast, it was the physicists who were exercising violence in their atom-smashing machines, pulling the atoms about in intense electrical and magnetic fields, accelerating them to enormous velocities and hurling them at targets. If there were discrepancies between the findings by the two techniques—and there were—it was the physicists who had done the damage and who courted false results. We may smile at such naivete today but it must be insisted that in those days it was perfectly reasonable.

Concerning the etheric levels, it must be stressed that these sublevels bear no labels and probably show no clearly-marked distinguishing features. Allocation of aggregates to appropriate levels seems to have been made somewhat arbitrarily according to their sizes and on the basis that a stage of disintegration signalled a change of subplane. But at dense physical levels, we know that some degree of disintegration, caused by rising temperature for example, can occur *without* change of state (e.g. from liquid to gas). Even the break-up of the first element examined, hydrogen, gave some curious results; on passing from E4 to E3 most of the material was said to yield E3 particles but some smaller ones went straight to the E2 level. Then again disintegration of the "new element" Adyarium yielded a particle given the name "Ad 6" and allocated to the E3 level. The identical particle arises also from nitrogen, but it is then allocated to the E2 level. It is unlikely that both statements can be correct. These comments are made at this stage to emphasize that there is really nothing sacrosanct or inevitable about these interpretations of the course of disintegrations; later on, arguments will be put forward that would entail extensive reclassification of the observations. At that point we must consider the relationship—if any—between the etheric levels as described in relation to *Occult Chemistry* on the one hand, and in relation to etheric bodies on the other.

The second reference framework was scientific knowledge as it stood around the turn of the century, when this work was done. But first it is necessary to discount some interpretations made by A.P. Sinnett without consulting the investigators. These he inserted (as editor) into the second edition of *Occult Chemistry* as a new chapter one entitled "A Preliminary Survey". The worst error is his identification of the ultimate physical atom as the electron, with the obvious implication (not actually stated) that the chemical atoms must be composed entirely of electrons. Even at the time this would have seemed highly improbable to anyone with a better scientific background; it was never

accepted by the investigators themselves. This is a glaring example of a new scientific discovery being seized upon and claimed falsely as a corroboration of some clairvoyant observations, of which we have had too many in the theosophical writings. This kind of thing has done untold harm. It was the more serious in this instance since it appeared as an integral part of the second edition of *Occult Chemistry*, which is probably the most accessible of the three editions. No orthodox scientist could be expected to take *Occult Chemistry* seriously, with such nonsense in the opening pages. Sinnett is far too confident also, that science must soon come to recognize the validity of the *Occult Chemistry* work. In the event another 60 years were to elapse before what now appears to be true identification began to emerge, namely the recognition of the ultimate physical atom as a quark, or more strictly as the subquark named in 1979 as the omegon. Finally, he wrongly identified the ether of space with the etheric levels of the physical plane. This was shown to be particularly unfortunate when Einstein discarded the ether of space as unnecessary in the light of his relativity theories.

The investigators themselves did surprisingly little to rationalize or speculate upon their findings. They were content, on the whole, just to use their unique abilities to amass data for posterity to work upon. Leadbeater did make the empirical discovery that division of the number of ultimate physical atoms in a chemical atom by 18 (the number in hydrogen) gave an approximation to the atomic weight of that element. He must have realized, however, that some of his occultly-derived numbers differed quite significantly from the chemists' atomic weights. These could be determined quite accurately and were quoted to two decimal places so it was no use suggesting that the chemists were wrong. He might have taken his "rule of 18" more seriously, regarding it as inflexible. It could then have been used to check for counting errors, because the number of ultimate physical atoms in a chemical atom should then always be an even number, and the division by 18 should

always give a whole number. As we now know, since the discovery of isotopes in 1913, this is indeed what he should have done, because he examined single atoms, so they must have been of particular isotopes, usually the most abundant one for the element in question. But this would not have removed the discrepancies, because the atomic weights represent those of mixtures of isotopes. Only the atomic weights of individual isotopes are whole numbers (based on oxygen=16).

However, even after isotopes were discovered, no attempt was made to use this knowledge to recheck earlier work. In *Occult Chemistry* itself no attempt is made to explain the discrepancies. But Leadbeater did give some thought to the matter. In a letter to Annie Besant in April 1908 he wrote: "as to the matter of atomic weight, it occurs to me that that may not always depend entirely on the number of ultimate atoms. May it not conceivably be affected by their arrangement and the direction and rapidity of their motion? I did not know enough of mechanics to be sure about this; but it seems to me that two atoms revolving around a common centre of gravity something like the two balls in the 'governor' of a machine, might exert a pull at right angles to their motion *against* ordinary gravity which would mean a diminution of weight. Besides we did not yet know that positive and negative atoms are exactly equal in weight." (Reference 3, page 83) It now appears that these ideas were wrong and that all departures from whole numbers in the occultly-derived atomic weights (of individual isotopes) are due to errors in counting the ultimate physical atoms of rather many elements.

What the investigators did strive to do was to bring their findings into line with the Periodic Table of the Elements. The Russian chemist Mendeleev had pointed out in 1869 that if the elements were appropriately tabulated in atomic weight order, they fall into groups of families having similar chemical properties. This tabulation showed clearly where gaps had to be left for elements not yet discovered at that time; they have all been found subsequently, so proving the

correctness of this periodic law. However, there are certain irregularities not well displayed by Mendeleev's original table and numerous modified forms of his table were suggested. The occult investigators were not themselves trained scientists, but they did have a friend who was an eminent scientist and also a member of the London Lodge of the Theosophical Society, namely, Sir William Crookes F.R.S. So when he proposed a new form of the Periodic Table, it was natural for them to accept it as a model to which their occult findings should conform. It was a three-dimensional double spiral with a succession of figure-of-eight turns of lemniscates, from which however, a less satisfactory plane projection can be made (see *Occult Chemistry*, 2nd edition p. 28 and 3rd edition, frontispiece and pages 33 and 34). The observed external shapes of the occultists' atoms did in fact agree remarkably well with the Crookes' Periodic Table—almost too well, actually, because this table has since been discredited in part. For example, the two vertical columns of mainly divalent elements nearly all have the occult shapes of a tetrahedron. The internal contents were largely arranged within "funnels" opening onto the faces of the tetrahedron, and these funnels seemed to be associated with the valency of the elements, i.e. the way they combine with other elements to make chemical compounds. *Occult Chemistry* mentions with little comment the disconcerting fact that these elements have four funnels but a valency of two, as if compound formation involved two half-valencies (a situation later illustrated with some carbon compounds). Similarly, trivalent elements in two other columns had six funnels opening onto the six faces of cubes; tetravalent ones had eight funnels opening onto the faces of octahedra.

Too many elements were discovered in the course of the occult investigations. Scientific acceptance of the extremely well-founded theories of atomic structure formulated in later years meant that the number of elements able to exist could be fixed rigidly at 92 (hydrogen to uranium inclusive; admissible transuranic elements have since been

discovered). Each element could be assigned an atomic number which corresponds with the number of protons in the nucleus and also with the total number of electrons in the successive concentric shells surrounding the nucleus. Neutrons are also present in the nucleus and their number differs in chemically identical isotopes of an element. These atomic numbers go up in steps of one. The interpolation of additional elements is positively inadmissible; it would require the existence of fractional parts of both protons and electrons.

The additional elements described in *Occult Chemistry* fall into three groups. The first group consists of some entities observed incidentally while seeking known elements. They can be identified as isotopes so they are admissible because they do not require additional places in the Periodic Table. Adyarium is now identified as the hydrogen isotope deuterium; occultum is either another hydrogen isotope, tritium, or more probably a helium isotope He3; metaneon is a neon isotope and so on. The second group were also seen, unsought, but these cannot be identified with any known or possible isotope, so according to the generally accepted theories of atomic structure they are "impossible elements." Kalon and metakalon are the only examples in this group. The third group have a very curious origin. Even Crookes' lemniscates cannot accommodate all elements smoothly in their double spirals; the three trios of inter-periodic elements protrude from the diagram like little knots or extra loops. For reasons of analogy and symmetry, Jinarajadasa invented a fourth inter-periodic group of three elements named X, Y and Z which fell in the middle of the rare earths. Now these three extra elements arise from sheer imagination and they have no possibility of physical existence. Nevertheless, Leadbeater was persuaded to hunt for them, and obligingly found them. It is a tragedy that Jinarajadasa, who worked so hard on *Occult Chemistry*, should have been responsible for one of the most damaging parts of the book. This is a gratuitous gift to its critics which really does invite total

rejection. As will be seen later, a tolerably satisfactory explanation can now be offered (see end of chapter 6).

The rare earths (lanthanides) are anomalous in another respect. The Crookes' diagram in its original form does provide for the correct number (contrary to what is stated in Reference 8) but they are distributed over all the main valency groups corresponding to the vertical columns of the Table, whereas all the rare earths are trivalent in their main compounds, for reasons that are now understood in relation to the electron shells in these atoms. Nevertheless, occult diagrams correspond in external shape with their positions in the diagram which would normally imply principal valencies varying from 1 to 4. An explanation of sorts is offered in Reference 8 and a rather more satisfactory one is given in Phillips' book. We return to this problem in chapter 9.

In the early days of this work, it was possible to debate whether the occult structures might represent diatomic molecules (in view of the number of funnels in some elements being twice their valency), or the atoms as claimed, or their nuclei. Some favored this last alternative, since very little was then known about the nucleus. But as scientific understanding of the nucleus developed, the orthodox interpretations were seen to become increasingly at variance with the occult diagrams.

It was the observations on compounds however, that presented the greatest difficulty for any reconciliation. According to current scientific theory, the atoms remain almost completely intact on joining into compounds; only the outer-most shell of valency electrons is involved. This understanding of the situation was triumphantly confirmed experimentally by the work of the Braggs, father and son, on X-ray crystallography. The X-ray pictures clearly revealed the nuclei of separate sodium and chlorine atoms, for example, in sodium chloride. But the occult structures were totally different. In sodium chloride both sodium and chlorine atoms were largely disrupted and the total of 48 funnels (24 from each) were completely arranged in a cubic

pattern. Beyond noting that the cubic rearrangement accords nicely with the crystalline form of sodium chloride, but not with the scientific picture of its molecular structure, Leadbeater did not appear to be in any way disconcerted by his scientifically bizarre vision. He made no attempts to account for the discrepancy. In other inorganic compounds similar fusion of the component occult atoms was observed. It was less pronounced in some carbon compounds but these showed other features irreconcilable with chemists' formulations, especially with benzene derivatives. This will be discussed in the next chapter.

## CHAPTER THREE

### REACTIONS TO OCCULT CHEMISTRY

In *Tales of Power* (9) Carlos Castaneda recounts the teaching of his guru, the Mexican Indian sorcerer Don Juan. He says that there are four ways of reacting to an unusual life situation:

1. Disregard it: this is the bigot's way.
2. Accept it at face value: this is the pious man's way.
3. Become obsessed with it because one is unable to disregard or to accept: this is the fool's way.
4. To accept without accepting and to disregard without disregarding: this is the warrior's way.

We have seen all these reactions to *Occult Chemistry*. It has been totally disregarded by the scientific community, though in fairness it must be said that few scientists have even heard of it. However, copies of the third edition were sent to major universities and no reviews were seen in journals such as *Nature* and *Science*. This is not surprising; it is only recently that occult studies have achieved even a small measure of acceptance in Western universities. In any event, a brief study of the book would show that its claims were hopelessly at odds with those of orthodox science so it could safely be disregarded as fantasy. But many theosophists also took this line. They were happy to accept the teachings of H.P. Blavatsky and of those few of her

contemporaries who also claimed direct revelations from their Masters. But when others took the advice they proffered and underwent strenuous yoga training to awaken their own inner powers of perception, so that they could confirm and extend the teachings from their own direct experience, this was regarded as presumptuous and was totally rejected.

Other theosophists, on the contrary, took the second option and accepted these later teachings in their entirety at face value. The authors, Annie Besant, C.W. Leadbeater, Geoffrey Hodson and a few others, were revered leaders who could do no wrong. In one sense this was right; they probably were beyond the stage at which they could do wrong *deliberately*. But, as they said themselves, they had not reached the stage at which they could make no mistakes; they had to be constantly on guard against error and against vitiation of their visions by remaining faults of personality, and sometimes they failed. Discrimination needs to be applied to their writings.

Others again, taking the third option, became obsessed with *Occult Chemistry*. It had to be right, yet it was so obviously wrong by the standards of current science. So it was the scientific theories that had to be wrong. Accordingly, they must be rewritten, however well-founded they were on scientific observations, and we have seen numerous pathetic attempts to do this. Even in the last few years we have felt obliged to decline two such papers for publication, one of which even proposed names for some of the "impossible" elements.

For more than fifty years there has been a Science Group based in London. It has had several successive affiliations, but since 1934 it has been part of the Theosophical Research Centre of the English section of the Theosophical Society. It has always striven to take Don Juan's fourth option, the "warrior's" way of accepting with discrimination, or rejecting tentatively and with regret, while always exercising a measure of suspended judgment, recognizing that scientific theories do change under the compulsion of new

observations; what is inconceivable at one time may later become accepted science.

Perhaps an illustrative digression may be permissible at this point. There has been much discussion among astronomers as to whether our planet Earth is unique in being favourable to biological life as we know it, or whether planets in other systems may enjoy a similar climate. Recent satellite probes have emphatically confirmed that no other planet in our solar system could support animal life. It has been said that the earth is just the right size to retain an atmosphere and at just the right distance from the sun to provide a suitable climate. But Lovelock (10) has shown convincingly that matters are by no means that simple. Since life began on earth the sun's emission of heat and light has changed considerably, and so has the Earth's albedo (controlling the proportions absorbed and reflected). In addition, the composition of the atmosphere has changed dramatically (controlling the proportions transmitted and absorbed). Yet despite these great changes the surface temperature has remained within the very narrow limits at which biological life can persist. Many other factors have also remained favourable, such as the salinity and the neutrality of the oceans and the composition of the atmosphere (including important minor components). Lovelock is driven to postulate intelligent control as an explanation and proposes the concept of Gaia, the Earth Goddess, who behaves like a living organism. Theosophists might reasonably claim that this is one of the functions of the Solar or Planetary Logos, but it has fallen to a non-theosophist to tell us what we ought to have seen for ourselves.

But the concept can be extended. Without Gaia, earth could have become nearly as cold and arid as Mars or nearly as hot and arid as Venus. Conversely however, if the Logoc Life-wave had enveloped Mars or Venus instead, then over millions of years their climates and surface conditions might equally have been brought under control to become favourable to life. So although we can be sure that these



planets are unsuitable now, we cannot be certain that they have always been so, and will always remain so. As required by the theory of Rounds, these planets may after all be able to support biological life when required. Moreover we can now suggest that such a theory is scientifically respectable and thus remove a serious "discrepancy" between Theosophy and science.

Returning to the Science Group in London, it used to have a small Occult Chemistry Subgroup which in 1934 published *The Field of Occult Chemistry*. In 1954 the surviving authors published a second edition (8), revised in the light of the third edition of *Occult Chemistry*. But when it went out of print they declined to write another edition. They had in the meantime discussed the problems with C. Jinarajadasa and had asked him what more they could do. He replied "Nothing: wait until science catches up." So we waited and science *has* caught up, as will be shown in the next chapters. But first it is necessary to note the difficulties that must be faced in any attempt to reconcile *Occult Chemistry* with modern chemistry and physics.

It is worth considering in some detail what confidence can be placed upon clairvoyant observations in general. The visions of spontaneous psychics are notoriously unreliable, though at times they may be strikingly accurate. It would be easy to collect hundreds of examples of verified true visions of events in the present or the past, occurring in places never visited by the psychic and impossible to be known by any ordinary sense including reading or conversation. Similarly there have been prophecies that have come true in exact detail. But for every such instance there are dozens of false visions, most of them unrecorded and forgotten. Some theosophists have been inclined to assume that all clairvoyance is unreliable to a similar degree. But this is grossly unfair. When psychic powers are gained through intense yoga practices under expert guidance, they are available for use at will and not just sporadically in undirected fashion. The observers are trained, moreover, to work not only from the psychic levels (astral and etheric),

but from higher levels of consciousness less subject to illusion. But if any such experiences are to be recorded in words, they must first be formulated in the lower mind, which is inextricably linked to the desire nature in the case of most spontaneous psychics. The higher positive psychic powers cannot normally be acquired till the astro-mental nature is brought under firm control and discipline. Therefore the observer is necessarily aware of the hazards, and of the need to preserve the visions from being colored or ever falsified by the personality through which they must be described. But the observers in question probably went through this training at abnormal speed, to equip them for the work required of them. By their own admission they were not perfect, and it must therefore be expected that some of their visions did become confused by personal preconceptions, wishful thinking, or imagination. Integrity is not at issue. It is the image-creating faculty of the *unconscious* mind that is the subtle mischief, hard to control or even detect, just because it *is* secret and unconscious. Now these distorting factors are most likely to vitiate observations that interest and involve the personality; for example, looking up their own past lives or those of close associates. The *Occult Chemistry* investigations by contrast were at the opposite pole, almost totally impersonal pure science. Usually there was no interest in having the results come out one way rather than another. C. W. L. would perhaps have liked his values for the "occult atomic weights" to have agreed more closely with the chemical determinations (see chapter 8). The unconscious mind is quite clever enough to have arranged this, but there is not the slightest evidence of it in the book. If there had been, it would have been enough to condemn the work out of hand, when the knowledge of isotopes suggested that no such exact relationship was to be expected. In the event, the only member of the team to allow his imagination free rein was Jinarajadasa, by his invention of a supernumery set of interperiodic elements. As will become clear later, the fact that C. W. L. was able to find them, in good faith, is a clear



pointer to our contention that the faculty of magnifying clairvoyance does *not*, as C. W. L. supposed, give access to the dense physical levels, because at such levels these elements have no possibility of existence.

There are other reasons to doubt whether psychic abilities can give direct access to the dense physical world; this applies to both the ordinary and magnifying clairvoyance and to out-of-the-body experiences. Most people with such abilities believe they *can* "see" the physical world, but the more observant have noted subtle differences, and with magnifying clairvoyance there is often an inability to distinguish factors that an optical microscope would reveal (11) (see also Chapter 8). Professor Michael Whiteman (12) who has had a great many out-of-the-body experiences and has had a scientist's training in critical observation, calls the lowest of several levels accessible to him "the duplicate world." Surprisingly in view of their experience, Besant and Leadbeater were among those who believed they *could* see truly at these dense physical levels. However, in previous chapters we have noted pointers to the improbability of the *Occult Chemistry* structures existing at these levels, and even stronger evidence follows in later chapters.

In the 1930s when we were writing *The Field of Occult Chemistry* (first edition) we accepted at face value the investigators' claim to see the atom as it really is. We did point out however, that although the physical eyes were not used, magnifying clairvoyance is a mode of perception akin to vision and at least as subject to errors of observation or illusion as is normal vision. In later discussions, while not doubting that the psychic visions were bona fide and objective, we have inclined to the view that they must be at some superphysical level; possibly they could be at etheric levels, or even in the Archetypal World, presumably at mental levels.

One might expect that the occult and scientific pictures would agree more closely for compounds than for atoms. This is because chemistry is a long-established discipline and knowledge of the structures of compounds has been

worked out and refined over the years, using various relatively gentle techniques that give concordant results. Thus it is not possible to criticize this scientific work on the ground that violence was done to the objects under investigation, as when atoms are subjected to powerful electrical and magnetic fields and accelerated to high velocities. In practice, however, despite some superficial agreements, the occultists' pictures of compounds do not accord at all closely with scientific findings. Science sees almost intact atoms linked only through their outermost electron shells, so that the nuclei remain far apart in compounds. In contrast, the occultists show the contents of the component atoms in relatively close juxtaposition, or actually commingled. The case of sodium chloride already described is extreme, but not isolated. Moreover there seems to be little consistency; consider, for example, sodium, calcium and magnesium in their chlorides and carbohydrates. In the chlorides, sodium is utterly disintegrated and commingled with the similarly disrupted chlorine atom; magnesium is left almost intact. Conversely in the carbonates, calcium (in the same group as magnesium) is disintegrated, while sodium is not changed. The numerous other discrepancies with science need not be laboured.

A more interesting kind of discrepancy occurs, however, with some carbon compounds. In the aliphatic compounds, in which carbon atoms are linked in chains, the occultists' octahedral carbon atom with its 8 half valencies necessitates the carbon-carbon link being composed of 2 half valencies between two octahedra linked edge to edge. This is indeed exactly what is shown, for example, in the diagram for the ethyl alcohol structure. But this dual linkage would surely prevent free rotation about the carbon-carbon bond, and this should lead to two isomeric forms of ethane derivatives such as ethyl alcohol. The case is argued from strict analogy with the unsaturated ethylene compounds in which, in orthodox chemistry, the carbons *are* linked by a double bond, which *does* permit the existence of separable isomers (compounds with the same composition but having slightly different

chemical and physical properties). As we pointed out (8), if such isomers of ethyl alcohol did exist, they would surely have been detected, since thousands of gallons of alcohol are fractionally distilled daily in the manufacture of spirits.

An even more definite example is presented by the disubstituted benzenes. We committed ourselves to a prophecy in the first edition of *The Field of Occult Chemistry* written at the time when we accepted the Besant-Leadbeater claims more literally than we do now. It seems worth quoting part of what we wrote then: "The carbon atoms in the occultists' benzene molecule are divided so that a quarter of each of the six atoms, i.e. the contents of twelve cones, amalgamates into a dodecahedral figure at the centre of the molecule, while the remainders of the carbon atoms arrange themselves at the corners of an octahedron; each corner thus has six carbon cones and at the mouth of each there floats one of the bodies of three ultimate physical atoms from hydrogen."

"Now this curious structure may represent benzene but it cannot represent benzene derivatives. The orthodox hexagonal structure has been deduced as the only structure which explains perfectly the number of isomeric derivatives which have been observed. Thus there are for example three isomeric dihydroxy or dichlor-benzenes, the ortho, meta and para compounds.

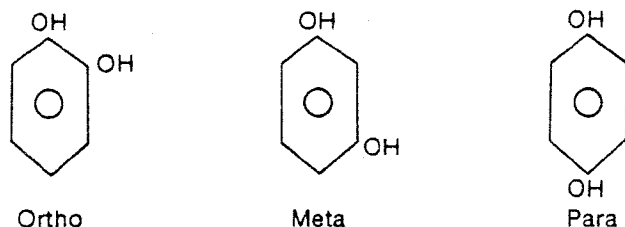


Fig. 2. Disubstituted Benzenes

The octahedral structure would only be expected to provide two such isomeric di-derivatives. One is forced to conclude that if the octahedral structure correctly represents benzene, then its derivatives must have a structure different from that of the parent hydrocarbon."

At the end of the book we presented a list of compounds which seemed the most useful to examine clairvoyantly and the list included the ortho, meta and para dihydroxybenzenes. Some of these substances were indeed examined later and the results appear in the third edition of *Occult Chemistry*. Among the benzene compounds he examined were phenol (mono-hydroxybenzene) and hydroquinone (para-dihydroxybenzene). Of course, our prediction was wrong; the occult structures of these compounds look very like that of benzene with one or two oxygen atoms included. It is a pity the other two isomers of hydroquinone were not examined; it is impossible to conceive how three distinct octahedral molecular structures could exist, for the only alternative positions for the pairs of hydroxyl groups are at adjacent or opposite points of the octahedron.

These arguments strongly reinforce the view that the occultist *does not* see either atoms or molecules as they exist in the everyday world. Arrangements were made recently for two psychics who claimed the ability to "see" chemical elements and compounds in much the same manner as Besant and Leadbeater, to receive samples of the three isomeric dihydroxybenzenes. They were simply asked to examine them and report their findings. Dr. Phillips wrote down what he expected them to find and sealed his notes in an envelope. However, the clairvoyants either declined to attempt this test or found it beyond their abilities; the envelope remains sealed:

When this proposal was under discussion, I said that no conclusive result should be expected. It has been stated repeatedly that Higher Powers will not permit tests of psychic abilities amounting to cast-iron proof (Ref. 3, page 101-4). People must not be compelled to concede unwillingly the reality of the inner worlds; they must become convinced by their own reasoned response to such reports as are available, aided by faith or personal experience. Jinarajadasa has illustrated this in relation to *Occult Chemistry* (Ref. 3, page 102). Masurium was mapped out by Leadbeater in 1932; but later Jinarajadasa

found in the *Occult Chemistry* files that exactly the same design had been drawn for an "unknown element" in 1909. It was forgotten and not published at this time, when priority could have been claimed for its discovery. Exactly the same happened with the element Illinium.

When scientifically controlled trials have been set up—of dowsing, for example (13), or paranormal medical diagnosis (14)—the results have been inconclusive, much to the mystification of the psychics involved who were consulted in advance and agreed that the experimental schemes were reasonable and that they should be able to perform well. It has been suggested (13) that although psychics are permitted to utilize their gifts in a responsible fashion, they are not expected to squander psychic powers just to satisfy scientific curiosity by taking part in artificial tests, especially those set up merely to assess their capabilities or even the existence of the faculty. While this situation persists, bodies like the Society for Psychical Research can be assured of a long future—perpetually reporting inconclusive anecdotes and investigations.

## CHAPTER FOUR

### QUARKS AND THE ULTIMATE PHYSICAL ATOM

To recapitulate, the well-founded scientific notion of a chemical atom is that it consists of a nucleus, into which nearly all the mass of the atom is concentrated, composed generally of positively charged protons and neutral neutrons. The nucleus is minute in relation to the whole atom; the rest of the atom is almost empty, containing only the very small and light electrons circulating in their prescribed orbitals. The lightest element, hydrogen, is simpler than this, having a single proton or hydrogen ion as its nucleus, and one electron. This picture contrasts starkly with the occult diagram depicting 18 ultimate physical atoms in the hydrogen atom, and with no electron in evidence. Many other subatomic particles were discovered or postulated over the years by physicists working with cyclotrons and similar machines and by theoretical physicists working out the mathematical implications of their discoveries. But there was no particle anywhere near  $1/18$ th of the mass of the proton. The first step towards bridging this great gap was the quark theory, formulated first in 1963 by Murray Gell-Mann and independently by George Zweig, and subsequently amplified and extended. The idea that a proton contained 3 quarks was revolutionary since it implied particles with fractional electrical charges. The unit charges of opposite polarity held by the proton and the electron had till then been regarded as

indivisible. For this reason and because individual quarks were not experimentally detected the idea was resisted for a time, but evidence accumulated not only for the initial three kinds of quark but for two others, and the theory became generally accepted.

Priority in publication of the notion that quark theory might somehow be relevant to *Occult Chemistry* must be accorded, we believe, to J. E. Sunly for his brief letter to the Theosophical Journal of the English Section in May 1977 (15). However he did not work out the idea in any detail. Anyhow, in relation to *Occult Chemistry* there were still only 3 of these particles to a proton, not 18, so there remained a factor of 6 still to be explained. This seemingly impossible task was successfully accomplished by Dr. S. M. Phillips, a newcomer to the problem, who was able to take a fresh unbiased look at *Occult Chemistry*. Stephen Phillips is a comparatively young Englishman who learned modern theoretical physics at Cambridge University where he graduated in 1968. He kept right up to date in this field by teaching mathematics and physics and doing research, first in South Africa at the University of Capetown where he gained a M.Sc. degree and an overseas scholarship; then in America at the University of California where he got his Ph.D. degree. In his early family life occult phenomena were taken for granted, and he also became interested in the Indian scriptures. Then, as he tells the story, one day he was browsing in a bookshop in Los Angeles where "by chance" he saw and bought a copy of that rather old theosophical book, Kingsland's *Physics of the Secret Doctrine*, which contained a few of the *Occult Chemistry* diagrams—and he became hooked. With his open-minded outlook he did not feel the unreasoning aversion of most scientists to occult experiences inexplicable within their narrow framework of orthodox science. Then he returned to England, joined the Theosophical Society through the Bournemouth Lodge, where he found a copy of the third edition of *Occult Chemistry*.

The first that we heard about it at the Theosophical

Research Centre was in October 1977 when he sent a thesis to the editor of our journal *Theosophy/Science* for possible discussion. It was a typed script with scores of beautifully drawn diagrams; within a few months it was followed by a Part II and an addendum bringing the total to about 280 pages. Unfortunately no member of the Science Group of the Theosophical Research Centre was a quark expert, nor even any sort of physicist. There were a few chemists, mostly long-retired and too fully occupied with other work to take detailed interest in this astounding new development. Thus it chanced that I was almost the only person able and willing to settle down and study this work and to enter into prolonged correspondence with its author. Fortunately I welcomed the opportunity because I had dedicated myself in my youth to work on *Occult Chemistry* and had suffered some 50 years of frustration before what I soon recognized as the right approach appeared.

We invited Dr. Phillips to speak at a Theosophical Research Centre weekend conference at Camberley in May 1978, and we published this lecture and another paper in our Journal (16, 17). But the main task was to get these discussion documents intended for theosophical scientists completely rewritten as a book that could be presented to orthodox scientists—and to find a publisher. It was agreed that the book should be addressed primarily to specialists in particle physics. All theosophical terminology was eliminated (except in quotations) and also all speculations that could not be adequately supported by scientific evidence. On the other hand, the fundamental principles emerging from this research should be hammered home with evidence from every possible angle, to disarm critics and to present, so far as was possible, an impregnable case for the validity of the clairvoyant observations. The material had to be presented as a book because no journal could accept such a long work; on account of its unusual subject matter and highly specialized appeal, no publisher could be expected to accept the book as a commercial proposition. Fortunately we were able to convince the

Theosophical Publishing House in America of its supreme importance as a piece of theosophical research, and they in turn persuaded the Kern Foundation to make a grant towards the cost of publication. Publication was scheduled for late 1980 under the title *Extrasensory Perception of Quarks* (7).

What, then, was the nature of Phillips' breakthrough? When he first saw the diagram of the hydrogen atom with its interlaced triangles in Kingsland's book, he realized that it must represent not *one* hydrogen atom but some kind of compound nucleus containing *two* protons (See Fig. 1, Chapter 1.) Correspondingly this doubling-up phenomenon must apply to every structure illustrated and described in *Occult Chemistry*, even to compounds and crystals. He remained convinced of this hypothesis and based all his work upon it, though it required a lot of hard thinking before he worked out a mechanism that satisfied him. So, at that stage, theory provided for 3 quarks to each proton and 2 protons to the structure regarded by the occultist-observers as a hydrogen atom, but which is actually a dinucleus, i.e. a total of 6 quarks to this entity.

Meanwhile Phillips' researches into orthodox particle physics were making progress in quite another direction. The currently accepted Weinberg-Salam theory of quarks provided for a total of 4 quarks, whereas 5 had already been discovered, or rather postulated on good evidence, for quarks are not directly observable by any of the numerous detecting devices used by physicists. This unsatisfactory state of affairs involved Phillips in some more hard thinking and abstruse mathematical calculations and led him finally to suggest that quarks were subdivided, each into 3 subquarks which he named omegons. If this theory is accepted, then the number of ultimate particles per proton is tripled to 9, giving 18 to the hydrogen dinucleus as seen by the occultists. Now 18 is the number of ultimate physical atoms they observed in this entity, so the subquark, the omegon, could now be identified with the ultimate physical atom.

Now certain points about this work must be stated and emphasized. It may be claimed with truth that Phillips knew what result he would like to have emerge; the urge to validate *Occult Chemistry* acted as inspiration and spur. *But that is all.* The actual research was perfectly "respectable" orthodox work in theoretical physics. The numbers that emerged finally (3 omegons per quark or 9 omegons per proton; a total of 10 omegons with different "flavours" and 9 "colour shades")—these numbers emerged because they were the *only possible numbers* that could emerge from the mathematical equations. It must not be supposed that there is anything vague or woolly-minded about this rather new science of theoretical physics. It is full of strict rules and constraints and the results that emerge do so honestly as a strict and inevitable consequence of applying these rules skillfully. Let me repeat: this work owes nothing to *Occult Chemistry* save inspiration. It is straight orthodox science which could be and was offered for publication by a scientific journal, and which was duly accepted. The paper "Composite Quarks and Hadron-Lepton Unification" (18) is replicated as an integral part of Phillips' book.

It may be asked whether different original selections might lead to alternative and perhaps equally valid quark theories. In fact several such theories have been proposed, but I am assured by Dr. Phillips that they involve faulty extensions of previous theories. This may seem a shocking state of affairs, but we have been assured quite independently by Prof. H. L. M. Whiteman that many physicists fail to understand fully the implications of some of the more abstruse theories in their field and are apt to deduce quite unwarranted conclusions from them.

The lay reader may well be mystified as to how such a theory comes to be worked out and propounded. In the first place, this theorizing is a progressive affair that proceeds not continuously but in leaps, like the quantum jumps, the proposition of which was such a mighty stimulus to theoretical physics. Intuition is always involved in making

these leaps, though the distinguished scientists responsible for them will not often acknowledge this gift of new insight into the way nature works. So, the intuition impels the scientist to perceive an association not previously considered and to choose one of several fundamental possibilities as his foundation-stone. The omegon theory is founded upon the recent theory of quantum chromodynamics and represents an extension of that theory that enriches understanding of the fundamental particles of matter. But once the inspired choices are made their consequences are discovered by purely logical processes, in this case by the application of rather abstruse mathematics. Having developed his brain-child, what makes the scientist believe that it is "right"? First, it may seem to him that it provides a more illuminating concept of nature's ways than was previously available. In the present instance this aspect of the theory forms part of the title "Hadron-Lepton Unification." In simple words, it provides new conceptual links between hadrons (which interact through the "strong force" acting within atoms) and leptons (which interact through the corresponding "weak force"). Secondly, quantitative consequences may emerge, in this case numbers which can be compared with experimentally determined values. In this instance certain calculated and experimental values agree much more closely when the omegon theory is applied than for the earlier quark theories. Third, a theory may have predictive power. That is to say, its originator nails his colours to the mast by showing that if his theory is right then certain phenomena should be observable by experiment. If this turns out to be so then the theory is "proved" and it is usually accepted and stands until it is perhaps displaced by an even better and more inclusive theory. If the scientist has the appropriate laboratory equipment available he may apply these tests before he publishes his theory. In the present instance the existence of certain new particles is predicted, but these can only be found by the enormously expensive "atom-smashing" machines and they are more likely to turn up in the course of

other work than to be sought by specifically planned experiments.

But the omegon theory is special in an additional manner. It accords with and helps to explain the clairvoyant observations of Besant and Leadbeater on the chemical atoms. Thus the author and those few of us "in the know" have a fourth secret criterion that inspires confidence in the omegon theory. It could not be stated in the scientific paper, but it is the kingpin of Phillips' book. Research that has continued since the main book was written has revealed other correspondences that enhance one's faith in the omegon theory. The family of 10 omegons are shown to correspond with the 10 whorls of the ultimate physical atom which Leadbeater had previously declared to be the representatives in dense matter of the ten Logoi.

It is virtually impossible to simplify the mathematics for lay readers. Anyone who wants simplified accounts of some atomic particles and of quarks in particular should read the section in chapter 3, "Quarks for Everyone" in Phillips' book (pages 19 to 23, "Quark Theory—Old and New"). The chapter continues with a reprint of the paper in *Physics Letters* followed by an expanded presentation of the theory. Here it will merely be stated that the theory proposes a total of 10 omegons, each with a different "flavour"; they also display the 3 "colours" of quarks, subdivided into 3 "colour-shades" of each colour, making 9 colour shades in all. These "qualities" are, of course, not to be taken literally in their everyday sense. For the purposes of this book the picture can be greatly simplified by pointing out that of 5 known quarks only 2 are used in building all the chemical atoms; and of the 10 omegons again only two occur in atoms. All the others appear only as constituents of the two hundred or so particles recognised in experiments with cyclotrons and similar machines, and do not concern us in the present context.

## CHAPTER FIVE

## FRAUD AND HALLUCINATION DISCOUNTED

In the second chapter of his book Phillips introduces the skeptical scientist to the concept of magnifying clairvoyance. Since ESP or Psi are the nonspecific terms more commonly used to cover clairvoyance and other psychic powers, they are adopted and adapted; magnifying clairvoyance becomes micro-psi vision; an atom as seen by the occultist becomes a micro-psi atom (MPA) and a molecule as so seen is a micro-psi molecule (MPM). Because the first reaction of an orthodox scientist is to ascribe such bizarre descriptions to fraud or illusion, these objections are boldly faced in this short chapter and are shown to be untenable. Theosophists should need no convincing, but for completeness this material is included here; it may provide arguments to disarm critics in conversations.

1. Neon (atomic weight 20) and a variant meta-neon (atomic weight 22) were described in *The Theosophist* in 1908, some six years before Soddy introduced the concept of isotopes to science. So in 1908 there was no scientific reason to suspect a second variety of neon and no purpose in fabricating it.

2. The second argument is even more telling and has been mentioned already. Besant and Leadbeater were defending a false hypothesis; namely that the number of ultimate physical atoms seen in an element, divided by 18, should give its atomic weight. In fact, it should give the mass

number of whichever isotope of that element was observed. But they persisted with their original hypothesis long after isotopes were accepted by science. If either conscious or unconscious fraud were involved, they could have made a much better job of securing closer agreement between their "number weights" [(no. of U.P.A. in M.P.A.)/18] and published atomic weights.

3. If their description of molecular structures were indeed fabricated, why should they ascribe scientifically unacceptable structures to many molecules, for example the octahedral structure shown in *Occult Chemistry* for benzene and its derivatives instead of the generally accepted hexagonal structure?

4. Certain spinning and precessing motions of ultimate physical atoms and their groupings such as hydrogen triangles in magnetic or electrical fields were described vividly and unmistakably long before any such motions were even suspected by scientists, let alone being postulated or experimentally observed. Some of the occult descriptions published as early as 1908 imply that ultimate physical atoms behave like magnetic monopoles. But they do not even mention the possibility of their particles having magnetic charges, and the concept of monopoles was not formulated until 1933 by Dirac.

5. These are only some of the more dramatic examples. Many others present "exact correspondence between facts and ideas of contemporary particle physics and micro-psi observations published as long ago as 1895. If the latter are merely fabricated, all these remarkable similarities can only be coincidental—a conclusion which lacks credibility."(7)

So the possibility of fraud cannot be seriously entertained. It has to be accepted that micro-psi vision is a real faculty that does provide observers with images of some kind. The question then has to be asked, are they subjective or objective? Subjective images, arising in the brain of the observer without relation to the external object being examined, are a possibility that must be entertained. This would be in the realm of fantasy and hallucinations, of

interest to psychologists or even psychiatrists, but not to physicists. But similar images were seen by both observers and they were seen over a period of 38 years. Hallucinations are not likely to alter when another person switches on or off an electric or magnetic field, yet this happens repeatedly to certain of the subatomic conglomerations seen by micro-psi vision. It could hardly happen if they were just archetypal (in Jung's sense of emanating from a collective unconscious; we shall suggest later that they may indeed be Archetypes in the theosophical sense of thoughts in the Logoic Mind). Moreover, ultimate physical atoms, for example, behave in response to electric and magnetic fields in a manner that can be understood by modern science in terms of properties like electric charge, spin and electric dipole moments. Yet some of these concepts were unknown even to scientists at the relevant dates, much less to lay persons like Besant and Leadbeater. Thus there seems no escape from the "realist" explanation that micro-psi is a valid means of examining actual small objects. In the words of Dr. Phillips "micro-psi vision is ESP of physical microscopic objects that are present in space-time during the period of their active observation." This statement is carefully framed; it does *not* claim that the object is seen exactly as it was before the examination and as it may be after this is over. This claim was made categorically by the original investigators in all sincerity and innocence. But it cannot be supported today in the light of Heisenberg's Uncertainty Principle. With objects so minute, interaction between observer and observed is unavoidable; the very act of observation perturbs the object presumably even with such a gentle mode of observation as micro-psi vision. This might be arguable, but in practice much greater violence is done to the atoms by an additional action by the observer; this is the use of a special kind of will power to slow down the various motions of the atom. It implies psychokinetic application of physical force to the atom and it is precisely this which totally destabilizes it and leads to the doubling-up phenomenon, outlined in chapter 4. (The Two Hypotheses

Concerning Micro-psi). Its mechanism will be explained in more detail in chapter 9.

Chapter 3 of *Extrasensory Perception of Quarks* is devoted to the theory of quarks and of the subquarks or omegons recently postulated by its author. Insofar as this material can be presented in a simplified non-mathematical manner, it has been done already in the previous chapter of the present book.



## CHAPTER SIX

## TWO FUNDAMENTAL HYPOTHESES

Starting with this chapter, the chapters of Dr. Phillips' book will be considered in turn; our chapter 6 will correspond with his chapter 4 and so on, systematically. The final chapter of this book will attempt to venture beyond the strictly scientific conclusions with some more speculative theosophical implications of this research. It seems impossible to find a completely logical order in which to expound this highly complex work. The conclusions of this chapter have already been foreshadowed in chapter 4, while some material omitted from that chapter for simplicity must now be taken up. Later chapters have also been drawn upon to some degree.

It is first necessary to consider the different *kinds* of ultimate physical atoms (and correspondingly, of omegons) which have been revealed within the chemical elements, and to get to grips with them in more precise and quantitative terms than hitherto. A careful study of *Occult Chemistry* shows that the terms "positive" and "negative" are used in three different ways, and to avoid confusion, it is essential to clarify their meaning in modern scientific terms. Besant and Leadbeater described two kinds of ultimate physical atoms that differ in the directions taken by the ten whorls spiralling around and down the atom and up again through its core in tighter spirals (see fig. 11, chapter 11). Imagining oneself looking down on the slight depression at the top of the

somewhat heart-shaped atom, one kind has the spirals moving round and down in a clockwise direction; the other kind is its mirror image with anti-clockwise spirals. In more scientific language, they differ in "chirality." Besant and Leadbeater called the first kind "male" or "positive" and the second kind "female" or "negative." They differ in another respect; in the male atom "force" seems to well up as if from another dimension, or from the astral plane as Besant and Leadbeater would prefer to say; force correspondingly seems to disappear from the female atom back to the astral plane. In more modern language they might perhaps be described as an "energy source" and "energy sink," or more properly (as will appear) as sources and sinks of magnetic flux. The atom also expands and contracts like a heart and rotates and gyrates vigorously. These characteristics will not concern us further. Also described were lines of force between ultimate physical atoms that are involved in maintaining them in stable groupings. Summarizing, the two types of ultimate physical atoms differ as follows:

positive (+), male, whorls clockwise, "flux source"  
negative (-), female, whorls anti-clockwise, "flux sink"

In *Occult Chemistry* the scientific correlates of the plus and minus signs as applied to ultimate physical atoms are not explained. This is not surprising, for it would have been impossible for the investigators to understand and expound on the exact nature of the "energy flows" that they observed, the proper scientific language not being invented till many decades after this early work. Phillips has no hesitation in equating the plus and minus signs of U.P.A.'s with the signs of *magnetic* charge that they carry; but this is only part of the story, as will become clear.

Phillips identifies the ultimate physical atoms as omegons or sub-quarks. Omegons are in turn identified with those elusive entities previously postulated by physicists but never actually observed, namely magnetic monopoles; that is to say, magnets with only one pole, north *or* south, but *not*

both. Ordinary magnets, of course, have the two poles inseparably linked in a single object. The situation is illustrated in the figure 3.10 of Phillips' book, reproduced here in part as figure 3. Here the small circles represent ultimate physical atoms or omegons with their magnetic polarities indicated by the plus or minus signs. Each of the three larger circles represents a quark containing three omegons, and the entire triangular array corresponds to one of the "hydrogen triangles."

But omegons are dyons; they carry fixed *electrical* charges as well as *magnetic* charges. The omegons in the chemical atoms come in only two "flavours," namely the  $\psi$  and  $\eta$  omegons with positive and negative electrical charges, respectively. Specifically, the  $\psi$  omegon has a charge of  $+5/9$  and the  $\eta$  omegon a charge of  $-4/9$ . This situation is illustrated in Phillips' figure 3.11, reproduced here as figure 4. The small black circles represent  $\psi$  omegons and the small white ones  $\eta$  omegons. On the left-hand diagram the large circles represent specifically two u quarks and one d quark and the entire triangle a proton or hydrogen ion. The right-hand diagram refers to a neutron. To avoid confusion, magnetic charges are omitted from this diagram just as electrical charges are omitted from the previous one. Now it would be all too easy to jump to the conclusion that these diagrams are equivalent, and to equate the (+) U.P.A. with the  $\psi$  omegon and the (-) U.P.A. with the  $\eta$  omegon. But as a general conclusion, this would be wrong. The *electrical* charges are fixed for the omegons; the *magnetic* charges for *either* flavour of omegon can be  $+1$ ,  $+2$ ,  $-1$ , or  $-2$ . Thus either kind of U.P.A. (with a particular magnetic charge) can be either flavour of omegon, and vice versa. Flavour is not indicated by the shape of U.P.A.'s. The obvious identification just mentioned can indeed be made as a special case, and it does so happen with a pair of these diagrams, namely the left hand ones of figure 3 and figure 4. These are obviously equivalent though one of them needs to be rotated through 120 degrees to see this clearly. But there is another variety of hydrogen triangle in the hydrogen

M.P.A., with 4(+) and 5(-) U.P.A.'s (instead of 5(+) and 4(-) U.P.A.'s, and this variety is *not* obviously equivalent to either diagram of figure 4; but it is identical to the right-hand diagram in figure 3 and so can be a proton (as it must be). Nature is seldom simple when regarded in depth—not even with objects so minute as the U.P.A.

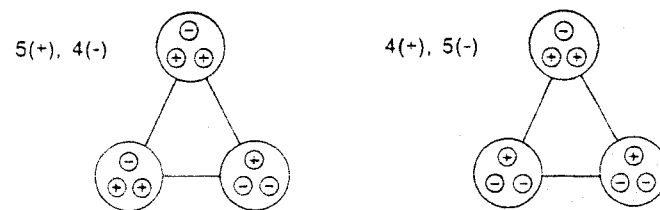


Fig. 3. Hydrogen Triangles

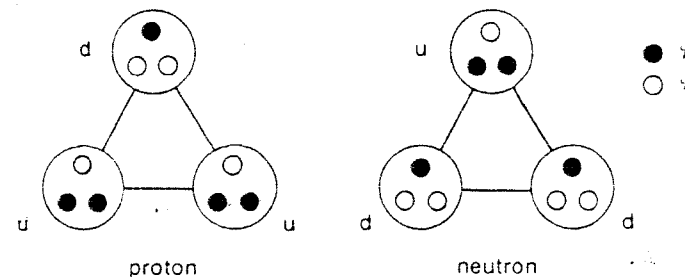


Fig. 4. Proton and Neutron

Recapitulating, it turns out that in this first usage of the terms "positive" and "negative" in *Occult Chemistry*, the signs related to the polarity of magnetic monopoles. These are what U.P.A.'s are. The two kinds could be distinguished by the investigators by noting the clockwise or anti-clockwise sense of the whorls making up the U.P.A.

The second usage of the plus or minus signs in *Occult Chemistry* is entirely different. It is applied to *groups* of U.P.A.'s, usually those resulting from partial disintegration of M.P.A.'s. In some of of these groups the heart-shaped

U.P.A.'s were seen to arrange themselves with their points facing outwards, while others have the points of the hearts facing inwards towards the centre of the group. The former are described as positive groups, the latter with inward turned U.P.A.'s as negative. Again Besant and Leadbeater did not indicate the scientific sense in which they used the signs, nor did they indicate whether or not they recognized that this usage differed from the previous one in relation to male and female U.P.A.'s. Regarding the U.P.A.'s as  $\psi$  or  $\eta$  omegons, these may be drawn as black and white hearts, respectively, as in Phillips' figure 5.10. Given also the facts that electrical charges combine additively, and that groups of U.P.A.'s are neutral, magnetically speaking, it is not too difficult to deduce that the second usage of the plus and minus signs can only refer to net *electrical* charges of the groups (*not* to magnetic charges, as in the first usage). It must be assumed, therefore, that the investigators were able, in some psychic manner which they do not discuss, to distinguish between electrically positive and negative groups of U.P.A.'s.

The third usage of the signs offers no problems. It is the straightforward scientific usage in relation to electro-positive and electro-negative elements and the Encyclopedia Britannica of the day is cited in support. It can be updated in terms of ions. An electro-positive element, for example hydrogen or sodium, is one which readily loses an electron to become a positive ion; an electro-negative element, for example chlorine, is, conversely, one which readily gains an electron to become a negative ion.

This chapter now considers in more detail the two fundamental hypotheses that lie at the heart of Dr. Phillips' research on *Occult Chemistry*. Figure 1 (in chapter 1 reproduced from *Occult Chemistry*) depicts the lightest of elements, hydrogen, as seen by Besant and Leadbeater using magnifying clairvoyance (micro-psi). They were convinced that this diagram represented a single atom of the element. It is called by Phillips a micro-psi atom. (M.P.A.). For hydrogen, the external form is an ovoid that contains two

triangles; they are close together and in fact are interlaced and inseparable. The triangular appearance is due to the play of forces between the three spheres at the corners of each triangle, the ovoid containing six spheres in all. With higher magnification each sphere is seen to contain three smaller particles; these are U.P.A.'s, either male (+) or female (-). Therefore the whole atom contains  $6 \times 3 = 18$  U.P.A.'s. If this diagram is compared with figure 3, it will be seen that the lower hydrogen triangle is identical with the right-hand diagram; each contains 4(+) and 5(-) bodies. Similarly, the upper triangle is almost identical with the left-hand diagram, each containing 5(+) and 4(-) bodies; their only difference is that, in the hydrogen M.P.A., the bodies are arranged linearly inside two of the larger spheres. But the hydrogen diagram represents (+) and (-) U.P.A.'s, while each of the other two represents theoretically possible magnetic charge compositions of the proton, the plus and the minus signs signifying the polarity of the magnetic monopoles. A proton is a hydrogen ion, i.e. a hydrogen atom less its single electron, which in this instance means the hydrogen nucleus. The similarities between the diagrams suggest strongly that a hydrogen triangle is a proton, the triplets of U.P.A.'s in the three spheres are u or d quarks and the U.P.A. is a  $\psi$  or  $\eta$  omegon. So the cross-correspondences are exact—except for the disconcerting circumstance that a hydrogen M.P.A. appears to contain two protons, not one. So what can this entity be? One idea is that it could be a hydrogen *molecule*, since gaseous hydrogen normally exists as diatomic molecules. But this will not do at all. It has been noted that the two hydrogen triangles are so close that they are overlapping; the hydrogen nuclei in the molecule, however, would be separated by about one hundred thousand times the diameter of the hydrogen nucleus. Even if they could both have been seen simultaneously by means of micro-psi vision, they would not have been drawn as figure 1 indicates. It should rather be expected that, on looking at a hydrogen molecule, only one end of it would be seen—but then it would appear as a single triangle. The

diagram of overlapping triangles implies that the protons must be close enough to be within range of their nuclear forces. A di-proton is known, but it is an exceedingly unstable and correspondingly short-lived entity. But the hydrogen M.P.A. was reported to be stable, never separated into its two halves, except on deliberate partial disintegration brought about by raising it onto an etheric subplane (see chapter 7).

So the possibility has been entertained that the M.P.A. exists as a *new* state of physical matter, at present unknown to science, and that it arises from the perturbation of the nuclei actually caused by examination of the atom by micro-psi and/or by the constraints imposed by the investigators in order to slow down the natural vigorous motions of the atoms and the constituents of their nuclei so as to permit detailed examination. The manner in which this inevitable perturbation operates will be considered in more detail in chapters 7, 9, and 11. At this stage these details are best deferred.

Hypothesis 1 is as follows, stated in the author's words:

The ultimate physical atom (U.P.A.) is either a member of the omegon isospin doublet ( $\psi$  &  $\bar{\psi}$ ) belonging to the (10,9) fundamental representation of the unified gauge group  $SU(10) \times SU(9)_c$  for omegons. According to this, the U.P.A. has 9 colour-shade states that form the fundamental representation of  $SU(9)_c$ . It is an  $SU(9)_c$  magnetic monopole, and the (+) and (-) chiral forms differ in their having opposite magnetic polarity.

No element was observed to contain fewer than the 18 U.P.A.'s present in the hydrogen M.P.A. Helium, of atomic weight 4, contains 72 U.P.A.'s, exactly four times the number in hydrogen. Incidentally, helium provides an additional reason for rejecting the idea that an M.P.A. might represent a diatomic molecule; helium is one of the inert gases that do not consist of molecules but exist in the atomic state. Carbon, with atomic weight 12, contains 216

U.P.A.'s, exactly 12 times as many as hydrogen, and this proportionality continues as an approximate rule right through the elements. Thirty-eight out of the total number of 110 M.P.A.'s examined by Besant and Leadbeater had U.P.A. populations that were an exact multiple of 18. For the rest, the proportionality was approximate; still, the rule could be used to confirm the identity of an element being examined—for example, in a mineral specimen containing several elements. Dividing the number of counted U.P.A.'s by 18 gave a number close to its recorded atomic weight. Identification was further checked by means of the external shapes of the M.P.A.'s; these fall into characteristic groups, as noted in chapter 1. Besant and Leadbeater had no way of knowing, during the earlier years of their work on *Occult Chemistry*, that their original form of the "rule of 18" could not possibly be expected to be exact throughout the periodic table of elements. This is because many elements, as they occur in nature, are constant *mixtures* of *isotopes* of the element differing slightly in atomic weight. Thus the recognized atomic weight is a weighted average derived from the fixed, terrestrial abundance of all isotopes of the element and their atomic weights (mass number). Dividing the number of U.P.A.'s counted in the M.P.A. by 18 should therefore give not the atomic weight, but the *mass number* of the particular isotope that happened to be selected for micro-psi observation (usually the most abundant one). However, even rough proportionality implies that, as with hydrogen, the M.P.A. of an element must contain the number of U.P.A.'s or omegons present in *two* atomic nuclei of that element. This leads to hypothesis 2; again quoted in the author's own words:

The M.P.A. of an element is a multi-omegon system that is compounded from the omegons making up the nucleons in *two* nuclei of that element. This is a preliminary, partial statement of a process of M.P.A. formation that will be described in chapter 7. It is a

sufficient statement for the present task of comparing the micro-psi data with the mathematical consequences of hypotheses 1 and 2, which are now stated: according to these hypotheses, since both protons and neutrons contain nine omegons, the number of U.P.A.'s predicted to be in an M.P.A. formed from two nuclides of an element with mass numbers  $A_1$  and  $A_2$  is  $N(A_1, A_2) = 9A_1 + 9A_2 = 9(A_1 + A_2)$ . If the nuclides are identical (as, it will be shown, was commonly the case for the M.P.A.'s that were recorded by Besant and Leadbeater) and have mass number  $A$ , the number of U.P.A.'s is predicted to be  $N(A) = 18A$ ; that is, the population of U.P.A.'s is proportional to the mass number of the nuclide selected for micro-psi observation.

Before the two hypotheses can be tested rigorously by statistical analysis, it is necessary to try to deduce for each element which isotope was actually examined. In many instances the choice to be made is obvious, namely the most abundant isotope. In the relatively few doubtful examples, various criteria guide selection of the most appropriate isotope, leaving only a handful of truly uncertain cases. However this situation could provide those critics who do not wish to accept the significance of occult investigations with an opportunity to pour scorn on the whole research. They could argue (without real justification) that a degree of circularity was involved in the author's argument, in that the relevant isotopes could be deliberately selected to minimize counting errors; this would improve the fit of the "rule of 18" and so vitiate the statistical analysis designed to prove that the fit was indeed within acceptable statistical limits. But this argument is invalidated by the fact that the various criteria determining the isotope most probably selected by the investigators Besant and Leadbeater do not *guarantee* minimal-sized errors. Perhaps the best answer to such a possible argument is to consider separately those elements that have only a single naturally-occurring isotope, so that no alternative choice is possible. A statistical analysis

including only these 23 elements has been made, and it indeed proves the validity of the hypothesis for these elements.

Table 4.1 of Phillips' book, reproduced here as Table 2, lists all the 110 M.P.A.'s given in *Occult Chemistry* with, in each instance, the isotope chosen as the one most probably examined; in a few cases, a hybrid of two isotopes is proposed. In the next column is given the number of predicted omegons ( $N$ ), and in the next, the number of predicted omegons ( $n$ ), namely, 18 times the mass number. In the last column is given the error, the difference between  $N$  and  $n$ . Having regard to the extreme difficulty of the counting operation for the heavier elements, as explained in chapter 1, it must be accepted that the agreement is very creditable. In most instances the error is either zero or a few units, i.e. less than 1%. The larger errors result in part from the counting technique employed. Only with the lightest elements was every U.P.A. counted; for the others, counts were made of the U.P.A.'s present in one group, and this count was then multiplied by the number of groups noted of that kind; the grand total ( $N$ ) was the sum of these products for all the kinds of groups given for the M.P.A. in *Occult Chemistry*. Thus, any counting error in one group was multiplied by the number of such groups present (sometimes quite large). For example, europium shows one of the largest errors of +89 in a total U.P.A. count of 2,843. This M.P.A. belongs to the Tetrahedron Group and has four funnels. Each of these is composed of 12 identical bodies and two groups of nine similar bodies. Miscounting the U.P.A.'s in one of these bodies by just one or two units would make the total error 48 to 96 for bodies of the former kind and 36 or 72 for the latter type. The total error of 89 must also involve miscounting in the central globe. Also, groups assumed to be identical were occasionally in fact slightly different, according to Besant and Leadbeater. In the Phillips book, the closeness of the agreement is illustrated by various graphs and histograms. These and the statistical analysis are not included here.

TABLE 2

COMPARISON OF PREDICTED OMEGON AND COUNTED U.P.A. POPULATIONS  
OF THE M.P.A.'S OF THE ELEMENTS

Element	Nuclide	U.P.A. Number <i>N</i>	Omegon Number <i>n</i>	Error <i>N-n</i>
Hydrogen	H <sup>1</sup>	18	18	0
Deuterium ("Adyarium")	H <sup>2</sup>	36	36	0
Helium ("Occultum")	He <sup>3</sup>	54	54	0
	He <sup>4</sup>	72	72	0
Lithium	Li <sup>7</sup>	127	126	+ 1
Beryllium	Be <sup>9</sup>	164	162	+ 2
Boron	B <sup>11</sup>	200	198	+ 2
Carbon	C <sup>12</sup>	216	216	0
Nitrogen	N <sup>14</sup> + N <sup>15</sup>	261	261	0
Oxygen	O <sup>16</sup>	290	288	+ 2
	O <sup>17</sup>	310	306	+ 4
Fluorine	F <sup>19</sup>	340	342	- 2
Neon	Ne <sup>20</sup>	360	360	0
Neon ("meta")	Ne <sup>22</sup>	402	396	+ 6
Sodium	Na <sup>23</sup>	418	414	+ 4
Magnesium	Mg <sup>24</sup>	432	432	0
Aluminium	Al <sup>27</sup>	486	486	0
Silicon	Si <sup>28</sup>	520	504	+16
Phosphorus	P <sup>31</sup>	558	558	0
Sulphur	S <sup>32</sup>	576	576	0
Chlorine	Cl <sup>35</sup>	639	630	+ 9
	Cl <sup>37</sup>	667	666	+ 1
Argon ("proto")	Ar <sup>36</sup> + Ar <sup>40</sup>	672	684	-12
	Ar <sup>38</sup> + Ar <sup>40</sup>	714	720	- 6
Argon ("meta")	Ar <sup>38</sup> + Ar <sup>40</sup>	756	702	+54
Potassium	K <sup>39</sup>	701	702	- 1
Calcium	Ca <sup>40</sup>	720	720	0
Scandium	Sc <sup>45</sup>	792	810	-18
Titanium	Ti <sup>48</sup>	864	864	0
Vanadium	V <sup>51</sup>	918	918	0
Chromium	Cr <sup>52</sup>	936	936	0
Manganese	Mn <sup>55</sup>	992	990	+ 2
Iron	Fe <sup>56</sup>	1,008	1,008	0
Cobalt	Co <sup>59</sup>	1,036	1,062	-26
Nickel	Ni <sup>60</sup>	1,064	1,080	-16
Copper	Cu <sup>63</sup>	1,139	1,134	+ 5
Zinc	Zn <sup>64</sup> + Zn <sup>66</sup>	1,170	1,170	0
Gallium	Ga <sup>69</sup> + Ga <sup>71</sup>	1,260	1,260	0
Germanium	Ge <sup>72</sup>	1,300	1,296	+ 4
Arsenic	As <sup>75</sup>	1,350	1,350	0
Selenium	Se <sup>78</sup> + Se <sup>80</sup>	1,422	1,422	0
Bromine	Br <sup>79</sup>	1,439	1,422	+17
Krypton	Kr <sup>82</sup>	1,464	1,476	-12
Krypton ("meta")	Kr <sup>84</sup>	1,506	1,512	- 6
Rubidium	Rb <sup>85</sup>	1,530	1,530	0
Strontium	Sr <sup>88</sup>	1,568	1,584	-16
Yttrium	Y <sup>89</sup>	1,606	1,602	+ 4

TABLE 2—Continued

Element	Nuclide	U.P.A. Number <i>N</i>	Omegon Number <i>n</i>	Error <i>N-n</i>
Zirconium	Zr <sup>90</sup>	1,624	1,620	+ 4
Niobium	Nb <sup>93</sup>	1,719	1,674	+45
Molybdenum	Mo <sup>97</sup>	1,746	1,746	0
Technetium	Tc <sup>99</sup>	1,802	1,782	+20
Ruthenium	Ru <sup>102</sup>	1,848	1,836	+12
Rhodium	Rh <sup>103</sup>	1,876	1,854	+22
Palladium	Pd <sup>106</sup>	1,904	1,908	- 4
Silver	Ag <sup>107</sup> + Ag <sup>109</sup>	1,945	1,944	+ 1
Cadmium	Cd <sup>112</sup>	2,016	2,016	0
Indium	In <sup>113</sup> + In <sup>115</sup>	2,052	2,052	0
Tin	Sn <sup>118</sup>	2,124	2,124	0
Antimony	Sb <sup>121</sup>	2,169	2,178	- 9
Tellurium	Te <sup>130</sup> + Te <sup>126</sup>	2,223	2,295	-72
	I <sup>127</sup>	2,287	2,286	+ 1
Xenon	Xe <sup>129</sup>	2,298	2,322	-24
Xenon ("meta")	Xe <sup>130</sup>	2,340	2,340	0
Caesium	Cs <sup>133</sup>	2,376	2,394	-18
Barium	Ba <sup>134</sup>	2,455	2,448	+ 7
Lanthanum	La <sup>139</sup>	2,482	2,502	-20
Cerium	Ce <sup>140</sup>	2,511	2,520	- 9
Praseodymium	Pr <sup>141</sup>	2,527	2,538	-11
Neodymium	Nd <sup>143</sup>	2,575	2,574	+ 1
Promethium ("Illinium")	Pm <sup>147</sup>	2,640	2,646	- 6
Promethium ("meta")	Pm <sup>151</sup>	2,736	2,718	+18
Samarium	Sm <sup>154</sup>	2,794	2,772	+22
Europium	Eu <sup>153</sup>	2,843	2,754	+89
Gadolinium	Gd <sup>160</sup>	2,880	2,880	0
Terbium	Tb <sup>159</sup>	2,916	2,862	+54
Dysprosium	Dy <sup>164</sup>	2,979	2,952	+27
Holmium	Ho <sup>165</sup>	3,004	2,970	+34
Erbium	Er <sup>168</sup>	3,029	3,024	+ 5
Thulium	Tm <sup>169</sup>	3,096	3,042	+54
Ytterbium	Yb <sup>174</sup>	3,131	3,132	- 1
Lutecium	Lu <sup>175</sup>	3,171	3,150	+21
Hafnium	Hf <sup>178</sup>	3,211	3,204	+ 7
Tantalum	Ta <sup>181</sup>	3,279	3,258	+21
Tungsten	W <sup>183</sup>	3,299	3,294	+ 5
Rhenium	Re <sup>187</sup>	3,368	3,366	+ 2
Osmium	Os <sup>190</sup> + Os <sup>192</sup>	3,430	3,438	- 8
Iridium	Ir <sup>192</sup>	3,458	3,474	-16
Platinum ("A")	Pt <sup>194</sup>	3,486	3,492	- 6
Platinum ("B")	Pt <sup>196</sup>	3,514	3,528	-14
Gold	Au <sup>197</sup>	3,546	3,546	0
Mercury ("A")	Hg <sup>199</sup>	3,576	3,582	- 6
Mercury ("B")	Hg <sup>200</sup>	3,600	3,600	0
Thallium	Tl <sup>206</sup>	3,678	3,690	-12
Lead	Pb <sup>207</sup>	3,727	3,726	+ 1
Bismuth	Bi <sup>209</sup>	3,753	3,762	- 9
Polonium	Po <sup>210</sup>	3,789	3,780	+ 9
Astatine ("85")	At <sup>210</sup>	3,798	3,942	+36

TABLE 2—Continued

Element	Nuclide	U.P.A. Number <i>N</i>	Omegon Number <i>n</i>	Error <i>N - n</i>
Emanation	Em <sup>222</sup>	3,990	3,996	- 6
Emanation ("meta")	Em <sup>220</sup>	4,032	3,960	+72
Francium ("87")	Fr <sup>223</sup>	4,006	4,014	- 8
Radium	Ra <sup>226</sup>	4,087	4,068	+19
Actinium	Ac <sup>228</sup>	4,140	4,104	+36
Thorium	Th <sup>232</sup>	4,187	4,176	+11
Protactinium	Pa <sup>231</sup>	4,227	4,212	+15
Uranium	U <sup>238</sup>	4,267	4,284	-17
Hybrid M.P.A.'s				
"X"	Ru <sup>102</sup> + Os <sup>192</sup>	2,646	2,646	0
"Y"	Rh <sup>103</sup> + Ir <sup>191</sup>	2,674	2,664	+10
"Z"	Pd <sup>104</sup> + Pt <sup>194</sup>	2,702	2,718	-16
"Z isotope"	Pd <sup>106</sup> + Pt <sup>194</sup>	2,716	2,700	+16
"Kalon"	Xe <sup>134</sup> + Em <sup>222</sup>	3,054	3,114	-60
"Kalon" ("meta")	Xe <sup>134</sup> + Em <sup>220</sup>	3,096	3,096	0

Striking examples of the multiplication of counting errors are provided by the inert gases. They all have M.P.A.'s of the same form, namely six arms arranged in a starfish formation with no additional groups. The arms appeared to be identical for a particular element, so the U.P.A. content of only one arm was actually counted, and the result was multiplied by 6 to give *N*. Thus errors for the inert gases ought to be either 0 or a multiple of 6, and this is indeed found to be the case.

It is of interest to list the guidelines and constraints that govern selection of the appropriate isotope.

1. The isotope assumed to have been taken for counting should normally be the most abundant isotope. This is because micro-psi examination of atoms is assumed to be random, so that the most common atom is obviously the one most likely to be selected. If this choice conflicts with other criteria, the next most abundant isotope satisfying these criteria is selected.

2. Only stable isotopes are considered, except for naturally occurring radioactive isotopes. Isotopes arising by artificial transmutation or by radiation are ineligible.

3. The selection must be plausible, and demonstrably preferable to all alternatives.

4. The counting error involved (if any) must be credible in relation to the number of each group of U.P.A.'s present and to the symmetry of the M.P.A. This is on account of the method of counting used (as described earlier), whereby the number of U.P.A.'s in a particular group was counted and the result multiplied by the number of such groups present in the M.P.A. For example, any error of, say, three would not be credible for an M.P.A. consisting only of four identical funnels; only errors that are multiples of four would be credible. This fourth criterion may sometimes conflict with the first, necessitating the choice of a less abundant isotope.

A more complex example concerns the transitional elements belonging to the Bars Group of M.P.A.'s, each with fourteen bars containing groups of U.P.A.'s radiating from a point to the eight corners of a cube and to the centres of its six faces. It may reasonably be assumed that the eight corner-pointing bars can differ slightly in composition from the six face-pointing ones. In that event, credible errors will have to satisfy the sum  $\pm 6n \pm 8m$ , where *n* and *m* are zero or small integers.

Rarely, a hybrid between two different isotopes of an element may need to be considered. Within these constraints, the selection should give the lowest obtainable counting error. For a majority of elements, these criteria serve to eliminate ambiguity of choice, but uncertainty persists for a very few elements (such as tellurium) with many stable isotopes.

Finally, it is necessary to offer explanations for four elements "discovered" by Leadbeater for which no place can be found in the modern periodic table. Elements can now be listed in order of their atomic numbers, and they show regular progression of certain features of their x-ray spectrum. It has to be stated categorically that it is impossible to fit additional elements into the list. So these extra elements found by Leadbeater have no possibility of

existence as chemical elements. Yet their M.P.A.'s were described in full detail! Incidentally, this situation provides another argument against the interpretation of the M.P.A. as an atom or atomic nucleus; as pointed out earlier, other evidence compels the conclusion that the M.P.A. is constructed from the contents of *two* nuclei.

The first three of these "impossible" elements, called X, Y, and Z in *Occult Chemistry* comprise a fourth group of triads of transitional elements, adding to the recognized members listed below:

iron	ruthenium	X	osmium
cobalt	rhodium	Y	iridium
nickel	palladium	Z	platinum

The M.P.A.'s of X, Y, and Z have the same external shape as those of the recognized transitional elements, namely the Bars Group described earlier. The U.P.A. counts of X, Y, and Z, are such that they cannot possibly be isotopes of known elements. The solution proposed by Phillips to this problem is that the M.P.A.'s of these "impossible" elements are "inter-element hybrids," formed from nuclei of *two different* transitional elements. The U.P.A. counts are close to the arithmetic means of the numbers of U.P.A.'s in the M.P.A.'s, respectively, of ruthenium and osmium; rhodium and iridium; and palladium and platinum. This suggests, therefore, that the M.P.A.'s of X, Y, and Z (and an isotope of Z) are indeed compounded from appropriate isotopes of these elements, as shown in table 2.

The fourth "impossible element," called Kalon (with an isotope Meta-Kalon) appeared to be a member of the group of inert gases. It can be explained similarly as an inter-element hybrid of appropriate isotopes of xenon and emanation (a product of natural radioactive decay of radium and thorium).

## CHAPTER SEVEN

### THE "STRING MODEL" FORESEEN

In this chapter it is necessary to delve more deeply into properties of quarks (regarding them as fundamental particles) and their arrangement in small groups. Then, since the omegon model denies that quarks *are* fundamental, the patterns of their groups must be transferred to omegons. It will then become clear that these patterns tally with those described by Besant and Leadbeater for ultimate physical atoms, now identified as omegons.

In 1931 Dirac suggested that magnetic monopoles might exist as point-like entities with a single magnetic charge, analogous to electric monopoles, notably the electron. However, diligent searches for magnetic monopoles over the intervening years failed to reveal them as experimentally observable particles. Quarks similarly remained as useful mathematical entities that eluded laboratory discovery. The picture would be simplified somewhat if these elusive concepts could be combined into the idea that quarks *are* magnetic monopoles. But, as explained in the last chapter, they must also carry electrical charges, so that they would be "dyons." The absence of observable, free magnetic monopoles could then be explained by the superstrong electromagnetic coupling that could be shown to exist between dyons. Moreover, the negative experimental evidence for free quarks suggested that the binding forces



between them have the unique property of not weakening as their distance apart increases; therefore they remain permanently trapped inside protons and neutrons. This idea has been elaborated in a series of theories which may be described as the "String Model." The model is based on observations of the behavior of superconductors. These are substances which, at very low temperatures approaching absolute zero, lose their electrical resistance and become almost perfect conductors. When a magnetic field is applied to such a material, the magnetic flux which is normally uniform within a specimen becomes expelled almost completely into its outer skin; this is known as the Meissner effect, being named after its discoverer. In type two superconductors, however, a magnetic field is squeezed into bundles of flux lines of negligible thickness permeating normally-conducting regions of the material and surrounded by the remaining superconducting material. The magnetic flux is trapped in these filaments of flux lines, though it extends a little into the superconducting region. It is hardly feasible to attempt simplification of the mathematical details, but the salient point is the recognition by Nielsen and Olesen in 1973 of parallelism between the mathematics of this phenomenon and what is known as the Higgs model. This led Nambu in 1974 to work out the property of Dirac's magnetic monopoles imbedded in an "Abelian superconducting vacuum," that is, space pervaded by "Higgs field," which takes over the role of superconducting electrons. The important result was that pairs of oppositely charged monopoles were bound together by magnetic flux lines bundled together within 'flux tubes' or 'vortices' in the Higgs field. Single monopoles are end-points of infinitely long vortices of "open strings." Finite vortices or "closed strings" have at their ends a monopole and an anti-monopole (i.e. antimatter) that are joined by flux lines. This would constitute a meson. Since the magnetic energy of a flux tube is found to be proportional to its length, the more the string is stretched the more firmly its terminal particles are bound together, so that they are

virtually inseparable. This is the String Model mechanism for quark confinement. Inside atomic nuclei however, different types of strings exist. There, according to the String Model, quarks are bound together in groups of three as end-points of three strings in a Y-shape configuration.

So far, this chapter has considered quarks in a manner that is recognized by most physicists. Turning now to the Phillips Omegon Model, this envisages the quark in turn to be subdivided into a triplet of omegons, identified as U.P.A.'s. As will be seen, in order to accommodate this new theory, the preceding story needs to be rewritten in important respects. Mesons are still regarded as quark-antiquark pairs but the picture is extended so that there are three omegons at one end, linked by three strings (instead of one) to the three antiomegons at the other end of these strings. Similarly, Y-shaped strings have omegons at their ends and these particles are confined within quarks, which in turn (as in the earlier theory) are themselves confined within protons and neutrons.

As noted earlier, Besant and Leadbeater observed physical matter by micro-psi vision to be built up from just two fundamental particles—the (+) and (-) varieties of U.P.A.'s; their spiral shapes are mirror images of each other. At various "E levels" which they regarded as etheric subplanes, they observed numerous types of clusters of U.P.A.'s. But it is significant that these clusters rarely contained more than nine U.P.A.'s. Correspondingly the Higgs vacuum (space pervaded by the Higgs field) can support only nine magnetic monopoles in a stable system bound by strings, according to the Omegon Model. However, smaller groups of monopoles can exist in other types of vacua that can be suitably defined. Both types of U.P.A. were seen to emit and receive "bright lines" or "streams of light" regarded by the observers as lines of force. As they express it, "Force pours into the heart-shaped depression at the top of the Anu, and issues from the point, and is changed in character by its passage." It should be mentioned that in the third edition of *Occult Chemistry*

Jinarajadasa introduced the Sanskrit word "Anu" (unchanged in the plural) for the U.P.A., but in this book the original term U.P.A. has been retained. Phillips identifies these lines of force as "non-Abelian Nielsen-Olesen vortices carrying quantised flux." The rather curious nature of monopoles and flux quanta permit rationalization of the "change in character" noted above on passage of the force through the U.P.A.'s. These can be properly regarded as monopole sources or sinks of magnetic flux, and the change represents the difference in flux densities of the two strings or vortices joined by the monopole.

Chapter 9 will explain more precisely how the perturbative effects of the slowing down of nuclear motion and of micro-psi observation is believed to induce local phase transitions of the Higgs vacuum to other vacuum states. Finite-sized domains of these new kinds of vacua trap and confine omegons, which then exhibit fewer than nine colour degrees of freedom, the number displayed by omegons in the normal Higgs vacuum. So, omegons (U.P.A.'s) released from nucleons destabilized by these transitions can reassemble in these new vacuum domains into duads, triads, and larger groups, as observed by Besant and Leadbeater.

The reader's mind may boggle (as mine did) at this extraordinary usage of the word "vacuum" in a sense completely different from its ordinary meaning. This is indeed literally an extra-ordinary (i.e. out-of-the-ordinary) usage. Normally, a vacuum is simply a space from which air or any other gas has been removed, more or less completely. The notion of different kinds of vacua in adjacent domains is repugnant. One must realize that when a physicist comes across some new phenomenon he is apt to refer to it by selecting a familiar word, and investing it with a new meaning—just as a poet or a mystic may do. This practice has to be accepted, and the reader whose mind is offended must mentally enclose such words in inverted commas. Thus "vacuum" is used in the same *non-literal* sense as are "flavor" and "color" to describe properties of quarks and

omegons. These properties are even named as "up," "down," "strange" and "charm," and as shades of spectral colors. Theosophists should not complain; for a century they have been abusing words such as "electricity," "magnetism," "sound" and "light" in just this fashion. However, in the present instance it may be possible to form a more helpful mental image by concentrating on other words than vacuum used in connection with the string model, namely "domains," "phase boundaries" and "phase transitions." At 0° C, ice, water and water vapor may co-exist as separate phases (solid, liquid and gas), separated by interfaces or phase boundaries. If the temperature is raised, the ice will slowly melt, and undergo a phase transition into water. Also, immiscible liquid phases can exist between different liquids, like oil and water, but of course no transition is then possible. So the "domains" of "different types of vacuum" separated by "phase boundaries" and sometimes undergoing "phase transitions" from one type to another may perhaps (and still with poetic license) be envisaged as immiscible liquids. In the final chapter a different image will be presented; it will be suggested that some at least of these different phases are just what Besant and Leadbeater said they were, namely different subplanes of the etheric, separated by phase boundaries just like solid, liquid and gaseous phases at the dense physical level.

Ultimate physical atoms are shown in *Occult Chemistry* as linked by one, two, or three "lines of force." It is deduced that linkage by one or three of the strings correlates with magnetic charges of  $\pm 1$  and linkage by two strings with magnetic charges of  $\pm 2$ . Some of the diagrams of duads of U.P.A.'s in *Occult Chemistry* are identical with those depicting mesons according to current string models. Similarly some of the diagrams of U.P.A. triplets (which occur in most M.P.A.'s and are identified as quarks) are identical with diagrams of the Y-shaped configuration of three quarks in a proton found in various string models (prior to the proposed subdivision of quarks into omegons). As Phillips remarks: "it is one of the strongest pieces of

evidence supporting the primary claim made in this book, namely that the theosophists Besant and Leadbeater were able to describe the composite character of quarks and protons through their use of micro-psi vision, a siddhi of yoga."

Some of the triplets of U.P.A.'s as drawn in *Occult Chemistry* have exclusively (+) U.P.A.'s and this is further proof that (+) and (-) U.P.A.'s differ in *magnetic* (and not in electrical) polarity. The Omegon Model predicts that a u quark is made up of two omegons with a positive electric charge and one with a negative electrical charge; conversely a d quark is made up of two negatively and one positively charged omegons. Three positive electrical charges would not apply to either kind of quark occurring in protons but quarks made up of three positive magnetic charges are permissible.

The hydrogen M.P.A. and its disintegration can now be considered again, in greater detail than previously. Figure 5 as seen on reexamination in 1932. The plus and minus signs refer to the male and female U.P.A.'s, respectively, i.e. to their magnetic charges in accordance with the Omegon Model. The U.P.A.'s are drawn heart-shaped and for most of the triplets the net *electrical* charge (according to the Omegon Model interpretation) is indicated by the points of the U.P.A.'s projecting outwards (positive) or inward (negative), as explained in the previous chapter. The interlacing triangles of the hydrogen M.P.A. were shown in figure 1 (chapter 1) and are not given here. The bottom of figure 5 depicts the first stage of disintegration, in which the M.P.A. is said to be raised by an effort of will power to the next etheric subplane E4. The triangles separate and each becomes a spherical body containing the three triplets of U.P.A.'s formerly at the corners of the triangles. Although they differ slightly in their internal arrangements, each of the spherical bodies can be identified as a proton, and all the contained triplets as quarks. A slight clarification must be made however; "proton" in this connotation means one subject to micro-psi observation, not one in its natural state. At the second stage of disintegration (E3 level) each free

proton breaks up into a diquark and a free quark. Then at the third (E2) stage each diquark divides again into two free quarks and at the E4 stage all the quarks divide into free omegons.

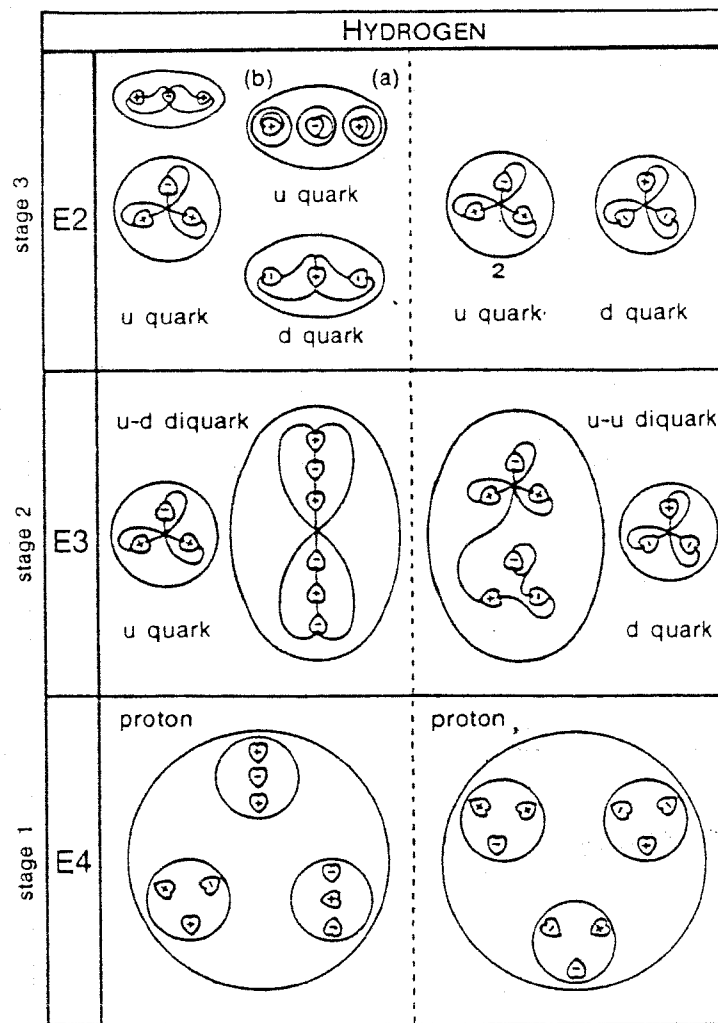


Fig. 4. Hydrogen M.P.A. Disintegration

The proton on the right of figure 5 contains four (+) and five (-) U.P.A.'s. Two triplets have U.P.A.'s pointing outwards, indicating positive groups, even though one triplet has two (+) and one (-) U.P.A.'s and the other has two (-) and one (+) U.P.A. Once again it becomes clear that (+) and (-) are used here in two senses; a positive triplet cannot be with more (+) U.P.A.'s than (-) ones. But if it is accepted that the signs applied to *individual* U.P.A.'s refer to magnetic charges but that, when applied to groups, they refer to electrical charges, the situation becomes clear. More specifically these two positive triplets can be identified as u quarks, which have positive electric charges. The third negative triplet with inward pointing U.P.A.'s is similarly identical as a d quark, which has a negative charge. *This is the correct composition for the proton, according to the quark model.* This particular proton divides at the second stage into a u-u diquark and a free d quark. The proton on the left of figure 5 cannot be analyzed with such certainty, because it contains two linear triplets with U.P.A.'s pointing in ambiguous directions, not clarified at subsequent disintegration stages. However the triplet with a triangular arrangement of outward pointing U.P.A.'s is clearly positive (u quark), and the one bottom right with outer pair of U.P.A.'s pointing inwards must be negative (d quark). The third (top triplet) which becomes the linear triplet marked a at stage 3 must be inferred to be another u quark. Actually diagram (a) is anomalous and seems to depict a triplet accidentally broken up into three separate omegons prior to observation. This proton divides into a u-d diquark and a free u quark at stage 2, unlike the other proton, though of course the total content of two u and one d quarks is the same. At stage 3, level E2 both diquarks split up into free quarks. Some diagrams in *Occult Chemistry* depict triplets (quarks) like those in hydrogen, dividing at the E2 level into a duad and a free U.P.A. It is important to note that (+) triplets always yield a (+) duad and a free U.P.A., and, correspondingly, (-) triplets always yield (-) duads. This implies that a triplet with a net positive electrical charge (u

quark) must contain at least two U.P.A.'s carrying positive electrical charge and that (-) triplets (d quarks) contain at least two U.P.A.'s carrying negative electrical charges. This agrees with the signs of electrical charges carried by omegons in u and d quarks:

$$u: (+ \frac{5}{9} + \frac{5}{9} - \frac{4}{9}) = + \frac{2}{3}$$

$$d: (- \frac{4}{9} - \frac{4}{9} + \frac{5}{9}) = - \frac{1}{3}$$

$$2u + d: (+ \frac{2}{3} + \frac{2}{3} - \frac{1}{3}) = + 1 \quad (\text{the charge of the proton})$$

$$u + 2d: (+ \frac{2}{3} - \frac{1}{3} - \frac{1}{3}) = 0 \quad (\text{the charge of the neutron})$$

Nearly all the groups of U.P.A.'s illustrated in *Occult Chemistry* as resulting from a disintegration of M.P.A.'s are described as having an enclosing "wall" or as being inside a "hole" in space. This is interpreted as follows: The "hole" is a particular variety of Higgs vacuum domain and the encircling "wall" is the phase boundary between it and a circumambient domain of a different variety of vacuum. According to Phillips, "groups with different numbers of U.P.A.'s are embedded in different vacua that co-exist in M.P.A.'s as bag-like objects trapping the omegon magnetic monopoles within them." In accordance with the analogy suggested earlier, they can be envisaged as resembling droplets of, say, oil, petrol, and a dry-cleaning fluid, all suspended in a larger drop of water. These propositions are discussed more fully in chapter 9.

## CHAPTER EIGHT

ACCOUNTS OF SOME MICRO-PSI  
INVESTIGATIONS

This chapter supplements the testimony of Besant and Leadbeater with that of Geoffrey Hodson, another trained psychic with the micro-psi faculty. Geoffrey Hodson did a little work with the Science Group in London, in its earliest days in the 1920's. Then during 1958-59 he carried out a series of investigations in Australia with Dr. D. D. Lyness, aimed at extending the scope of *Occult Chemistry*. However, Hodson never seemed to acquire the supreme facility with the micro-psi faculty that Besant and Leadbeater exhibited. His Australian work was recorded verbatim on tape, which was subsequently transcribed. Recently the material has been transferred to cassettes for replaying on modern cassette recorders; copies can be made available. These verbatim records give to the listener a sense of immediacy that is lacking in highly edited accounts that include the writer's own interpretations of the observations. They convey an arresting impression of the extreme difficulty of the micro-psi technique and the intense concentration that it demands. Also, they convey a vivid sense of the inadequacy of the ability of ordinary words to describe these unique and difficult observations. One can actually hear Hodson groping for words, uttering unfinished sentences, then breaking off to rephrase them in more suitable terms, or to describe a different view of the phenomenon that has just presented itself. That is indeed a

key phrase; one forms the impression that Hodson described whatever he happened to see on looking at the suggested object or experiment. He did not seem to have the same measure of control over the field of view as that perfected by Besant and Leadbeater. But listening to these tapes leaves one in no doubt that he genuinely saw what he described so vividly and dramatically; his sincerity and integrity shine through the words.

Perhaps I may venture to interject a personal experience at this point. I met Geoffrey Hodson a few times, and most memorably when we both happened to be staying at Eastbourne. Together with his wife Sandra, we went in my car up onto the extensive chalk cliffs of Beachy Head, and sat in the car to discuss his work. Among other queries, I sought to gain better understanding of the scope of the micro-psi faculty. As I explained earlier, it is supposed to provide an enormous range of magnifying powers. Supposing then that he looked at some living object, say a leaf: would it be possible to use a power of magnification akin to that of the optical microscope and to observe the plant cells and fibres that this instrument would reveal? Hodson thought for some moments then replied, "I don't know; let's find out." I had certainly not expected any demonstration of the faculty in our rather unsuitable conditions but he immediately opened the car door, plucked a blade of grass and we all remained quiet for several minutes. On this occasion he did not offer a running commentary, but when his observations were completed he returned to normal consciousness and said "No, I don't see these physical aspects of a leaf; my vision goes straight through to the etheric and the astral." I shall comment on the statement in the final chapter of this book.

One of the most interesting parts of the Australian series of observations is that it provides good evidence that Hodson actually "saw" electrons, whereas Besant and Leadbeater did not. A little reflection makes clear that this should not really be at all surprising. Electrons are expected to be minute, even in relation to the quark and omegon

constituents of atomic nuclei. So they would require a magnifying power probably greater even than that needed for detailed examination of the U.P.A. Not only this but electrons are really very sparse in the chemical atoms; these would offer for observation just a few scurrying around at enormous speeds in the vastness of space, relatively speaking. Spotting them would be far more difficult than finding the proverbial needle in a haystack. So there is little hope of observing electrons except from a much more abundant source; this is exactly what Lyness provided for Hodson in the shape of a cathode ray tube. He did, then, see what he assumed to be electrons, as particles similar to U.P.A.'s but much smaller. This alone would hardly be conclusive: the feature that makes it convincing is Hodson's description of the way the particles move in the cathode ray tube. Although the general direction is in a straight line, their actual motion was clearly seen to be in a tight spiral around that line, i.e. a helix. Hodson likens the appearance to a thin wire wound tightly around and around a thicker wire as a continuous spiral. To convey the vivid dynamic quality of the micro-psi images, it seems worth quoting a few extracts from the verbatim record, as Phillips does in his book:

1. "There is a kind of circular motion. Oh, yes, there is, a circular motion along the little bit of the beam which is within my sight. I can't get away from that. It's just as if the pencil of beam continued its steady condition but there is associated with it a distinct thickening and thinning going on and its a wavelike condition."
2. "Oh yes, there's that outside circular movement, helical or spiral movement again."
3. "Yes, again I have to record this circular movement. Round the beam, it's very noticeable. It's very like a series of wavecrests."
4. "It is spiral and it does consist of an enlargement which is moving like an eel around it."
5. "It consists of a flow, a spiral flow along the beam."

6. "Oh, it is so marked, this helical movement, it's almost like a writhing that goes on, quite independent of the pencil which isn't affected by it."

7. "It's very like a series of wave-crests. It consists of particles in a . . . , in a . . . , orbital but not in themselves round, round the pencil."

8. "I can see the brilliantly lighted pencil of rushing particles going along as the central beam, very well. That's there. But I'm focussing, trying to get a clear image of this other axial phenomenon. Radial phenomenon. Oh, yes, it's particles . . . Oh, it is particles . . . going in a circular movement to produce this illusion, as if there were . . . you could say as if you had a wire wound round with another wire wound round it. And this second wire round it consists of rapidly moving, circularly moving particles. But they don't go along with the wire, the big wire. They go on going round and round and round, as if the wire, the main one went through it."

What then is so significant about the vision of spiralling electrons? It is that this is precisely how the electrons ought to move in a cathode ray tube, as originally predicted by Schrödinger, the inventor of wave mechanics. It is true that Schrödinger's paper was published in 1930, long before the Hodson investigations; but it appeared in an obscure German journal. Although this effect is discussed in textbooks on quantum theory, Hodson is not a scientist and it is extremely improbable that he would have known of this early work or would have been able to comprehend its modern mathematical discussion. Lyness, is a medical doctor, specializing in psychiatry, so he also would have no occasion to look it up. Moreover, nobody listening to the record of Hodson's observations and compelled to notice his own very obvious astonishment could imagine that they were anything but a genuine vision of the phenomenon. It should be mentioned that this "Zitterbewegung" effect, as Schrödinger called it, has never been checked by any direct physical experiment, though there is indirect evidence of its

validity. Another interesting point is that the diameter of the helical path can be calculated at  $7.7 \times 10^{-11}$  cms, so this figure indicates the impressive magnifying power accessible to micro-psi observers, far greater than that of any kind of microscope yet devised. This becomes even greater if it is conceded that Hodson actually saw electrons, because high energy scattering experiments set their size as less than  $10^{-15}$  cm. Actually, the claim to have seen electrons raises a problem about the nature of the micro-psi faculty, on account of the enormous speed of electrons. It can be calculated in fact that they travel in a helix at precisely the speed of light, though their effective *measured* speed along the core of the helix is less than this. It seems to me that slowing an electron for observation from the speed of light to zero is an improbable ability. I suggest that a different feature of the psi faculty of highly trained psychics was brought into play, probably unconsciously. This is the ability to "play tricks with time" that has been described in other connections. It is possible to "see" back into the distant past, and speed up or slow down the passage of time as perceived. So the easiest way for such a psychic to examine the electron would probably be to "freeze a frame" (to borrow an expression from films and television), or to run the film at very greatly reduced speed.

Returning from electrons to the U.P.A., there remains to review some interesting observations by Hodson and by Besant and Leadbeater, some of which are significant in relation to scientific understanding of subatomic particles. It was noted earlier that the two chiral forms of the U.P.A. may be said to be each composed of ten parallel strands of "coiled coils," each of which forms a closed loop that twists spirally around and down the surface of the U.P.A., returning to its starting point via a narrower helix at its core. The coiled coil formation of each strand or whorl was found by Leadbeater to consist of 1680 turns or "spirillae." The ten whorls are divided into groups of three and seven; the three major whorls appeared to be thicker and brighter than the others and to carry "currents of different electricity."

Another statement from *Occult Chemistry* is the following:

Force pours into the heart-shaped depression at the top of the Anu, and issues from the point, and is changed in character by its passage; further, force rushes through every spiral and every spirilla, and the changing shades of colour that flash out from the rapidly revolving and vibrating Anu depends on the several activities of the spirals; sometimes one, sometimes another is thrown into more energetic action, and with the change of activity from one spiral to another the colour changes.

This may well be significant in relation to the Omegon Model in which omegons are assigned nine "colour shades" (though no literal interpretation of the word "colour" is intended), and moreover, interact strongly by exchange of "gluons" that changes their "colour." It may also be significant that the number ten is not only the number of whorls but also the number of "flavours" of omegons.

The whole U.P.A. shows three distinctive modes of motion as observed by Besant and Leadbeater. These descriptions were later amplified by Hodson.

The Anu has—as observed so far—three proper motions, i.e., motions of its own, independent of any imposed upon it from outside. It turns incessantly upon its own axis, spinning like a top; it describes a small circle with its axis, as though the axis of the spinning top moved in a small circle; it has a regular pulsation, a contraction and expansion, like the pulsation of the heart.

This observation was first published in 1908 long before it was known that particles like the electron or proton exhibit both spin and spin precession. Hodson's later observation was as follows:

If I look at it, one end of it, yes, the enlarged end. Yes, there it is, it's coming up clearly. Yes, it's the anu. I've got onto one anu. . . It's on its side as it happens, it's made of spirillae. . . and if I go to the large end and look down, I

can... the impression of gyration is clockwise in this particular one. The spinning is immense, the shape isn't maintained all the time. It swells and it goes down, like a centrifugal force makes it swell out, then something else makes it swell in. It's pulsing. It's... it's lighted, very brilliantly lighted... It is pulsing in... like a heart beat but vertically as well as... what's the word, generally, it expands and contracts, that's one pulse, and of course at the same tempo it slightly stretches itself up and down so that there is a change in shape which rather confused me because I happened first of all to get it in an elongated phase of pulse. It looked more like—what—I must be careful—like a carrot.

Interestingly the carrot simile was used later by another micro-psi observer who knew nothing of Hodson's work, in the following words: "The anu appears to be more like a carrot in form than a complete sphere, the 'top end' alone appearing more spherical."

Hodson, on another occasion, was observing U.P.A.'s between the plates of a tuning condenser. When a magnet was brought close, he reported: "Well the vertical, spinning phenomenon remains. Oh, those are—that's very peculiar, the axes are rocking. It's like a top which is wobbling." Then when the magnet was removed, he continued: "There, they are, they... no, they are steady in their spin." This wobbling, spinning-top response to a magnetic field is called spin precession and is exactly the behavior to be expected of a particle with a magnetic dipole moment, which the omegon is predicted to have. U.P.A.'s as omegons should also have electrical dipole moments and evidence of this also was noted by Besant and Leadbeater. An electric current was seen to have slowed down the proper motion of the U.P.A.'s, which arranged themselves in parallel lines such that the depression of one heart-shaped atom received the electrical lines of force passing out from the apex of the next atom in the same line. Alignment of the spin axis of a U.P.A. has an electric dipole moment.

Taken together, and with others that could be cited, these micro-psi observations constitute a remarkable account of the properties of electrons and other subatomic particles; several of the behavior patterns that can now be interpreted in scientific terms were quite unknown to science at the time they were observed.



## CHAPTER NINE

THE ELEMENTS: WHERE PHYSICS AND  
OCCULTISM MEET

After eight chapters the groundwork is complete and at last it is possible to come to the crux of the matter. The two models of the chemical atom—that of the physicist and that of the occultist—can be compared in detail and reconciled. The corresponding chapter occupies nearly half of Phillip's book. Here only a few illustrative examples will be presented.

The micro-psi faculty used by the occultist is an altered state of consciousness and no speculation about its mode of operation is offered. However, what has become clear in the preceding chapters is that it is not a passive faculty providing an image of the thing as it really is (which is what the investigators claimed). On the contrary, there is ample evidence of dynamic interaction between observer and observed; also there are indications that this interaction and its possible distorting effects were recognized. For example, on one occasion Leadbeater reported: "the molecule is spinning. You have to hold it still and then you have to be careful not to spoil its shape. I am always afraid of distorting the things because I must stop their motion in order to give an idea of them." Also Leadbeater used his abilities on occasion to perform apparent chemical changes of one molecule into another by sheer will-power (psychokinesis as it would be called in modern parapsychology) and even to transmute one element into another. In reality, much more

dramatic changes were taking place unrecognized by the observers. The very act of capturing a few atoms for observation and of slowing down their "wild gyrations" caused a profound disturbance. This can now be envisaged and explained in the light of modern quantum physics. There were no such concepts formulated around the turn of the century when the work was done. It seems possible that the deceleration was applied in two stages, the first more or less unconscious and causing the unrecognized doubling-up phenomenon, and the second, more deliberate and delicately controlled, to facilitate observation without spoiling shapes in any observable fashion.

According to the currently accepted model, chemical atoms comprise a nucleus which occupies about  $10^{-15}$  of the volume of the atom and which is correspondingly dense, namely about  $5 \times 10^{12}$  times as dense as uranium. The rest of the volume of the atom is very sparsely populated by negatively charged electrons in prescribed orbits, which make an almost negligible contribution to the mass of the atom, although they determine its chemical properties. The nucleus is assembled exclusively from nucleons of two kinds, the electrically positive proton and the neutral neutron. The protons give the nucleus a net positive charge that is counter-balanced by the appropriate number of electrons to make the whole atom neutral. The nucleons are bound together by strong forces acting locally but hardly beyond the confines of the nucleus. These arise from the residual coupling between the strings that bind quarks together, according to the String Model. In this fairly recently proposed model, nucleons consist of three quarks (of two types) permanently imprisoned within them by very powerful bonds or "strings." According to the still more recent Omegon Model, each quark similarly consists of three omegons (again of two types) also firmly bound by strings.

By contrast, atoms (M.P.A.'s) as seen by micro-psi vision present a very different picture, exhibiting many exotic combinations of quarks. Although a hydrogen triangle has

been identified as a proton, this rarely occurs in the M.P.A.'s of other elements. Instead, a large variety of groups of U.P.A.'s are seen: duads, triads and larger groups, the hydrogen triplet, (identified as a quark) being the most common. The analysis presented in chapter 7 provides a clue to what is happening in the formation of the M.P.A. These exotic multi-quark states cannot exist in the normal Higgs vacuum. They can exist as stable particles only in other vacuum states in which some of the "colour" degrees of freedom of omegons are suppressed. It is therefore suggested as a dynamic basis for hypothesis 2 (chapter 6) that the initial preparation stage prior to actual micro-psi observation, namely, the powerful psychokinetic deceleration of the natural rapid motions of particles inside atomic nuclei, entails an effective reduction of the colour valency of omegons. This renders the nucleons in the atomic nuclei unstable, so that they break up momentarily into quarks and omegons. Accordingly "a nucleus is transformed into an amorphous cloud of free particles in chaotic motion." But now another fact comes into operation. As noted in chapter 7, the forces between omegons are unusual in that they do not weaken with increasing distance. This means that omegons in nearby "clouds" also become eligible to participate in the construction of the M.P.A. In practice, and for a reason that cannot yet be explained, the contents of precisely two nuclei of the element coalesce (Figure 6). Naturally, omegons in other nuclei not brought under psychokinetic control are *not* able to participate because the latter have not been destabilized. It remains surprising that always only two nuclei are involved, especially since much larger numbers need to be brought under control to examine crystals (see next chapter). On the other hand, in many instances the pair involved could have been linked already as a molecule made up of two atoms. Anyhow, along with or in place of the original Higgs vacuum there appears a set of physically different vacuum domains, each enclosing a group of omegons of a number appropriate to its particular type of

domain, that is, to the colour valency of these omegons. Each is separated from neighbouring different domains by a phase boundary, noted by the observers as a kind of "wall." As they remarked in *Occult Chemistry*, "the wall belongs to space, not to the atom," a statement that describes graphically the nature of these interfaces or boundaries between adjacent different vacuum domains, as required by the Omegon Model. As an example, an elliptical group present in the M.P.A. of magnesium contains within itself smaller groups of two, three and seven omegons, respectively, each enclosed within its appropriate vacuum domain, described technically as color SU(2), SU(3) and SU(7) domains of the Higgs vacuum (see upper part of Figure 6).

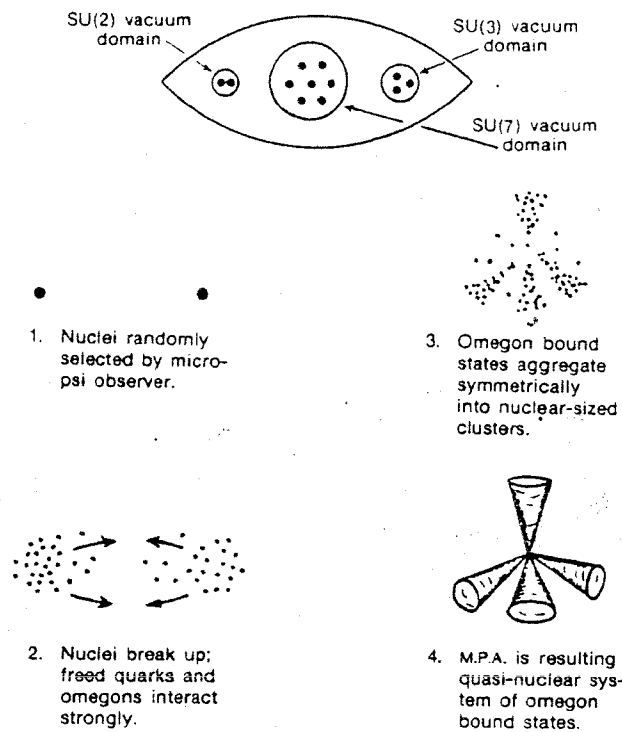


Fig. 6. The "Doubling-up" Process

In the first draft of his book, Phillips offered a different explanation of the pairing phenomenon, based on Heisenberg's Uncertainty Principle. He assured me that although somewhat more speculative (partly because scientists place different interpretations upon the Uncertainty Principle and its implications), it does not conflict with the above interpretation. I have his permission to include the earlier version, which may seem more comprehensible to lay readers.

Suppose the occultist applies his special kind of willpower and clairvoyant faculty to a diatomic molecule. In slowing down its movements he is withdrawing thermal vibrational energy; but it is impossible for him to bring the molecule completely to rest for observation, because even at absolute zero it would still oscillate with "zero-point energy." So he must do something more beyond this. To understand what happens Heisenberg's Uncertainty Principle may be invoked, and the nuclei in the molecule must now be described in quantum mechanical terms, as wave-packets with a range of wavelengths and momenta. The normal relatively sharp localization of the wave-packet arises from interference between these multiple wave-tracks and the uncertainty of their momentum. But when the occultist uses his willpower to lessen the spread of momenta values, then the uncertainty of *momentum* is reduced in accordance with the Uncertainty Principle at the expense of making the *position* of the particle more uncertain. Thus the clairvoyant effectively stretches the wave-packets beyond their normal nuclear size and delocalizes them.

Recall now that any atomic nucleus consists of omegons bound together in groups of nine. This spreading of wave-packets also applies to the constituent omegons, so that as it proceeds it must *release them from their bound state*—something that cannot yet be done even by the most powerful high-energy accelerators! As spreading continues the wave packets of omegons from the original two nuclei overlap more and more, increasing the chance of mutual interaction and formation of bound states. To express it

again in particle terms, the tightly-bound quarks and omegons from the nuclei of the two atoms have been released from this bondage, and have merged into a single chaotic cloud much larger than nuclear size. This is analogous to the plasma state that matter assumes at exceedingly high temperatures, as in the stars or in exploding atom bombs. But the occultist, so it appears, can bring about the state at normal temperatures, on a highly localized scale; accordingly, the term "cold plasma" has been coined to describe this otherwise unknown new state of matter. It persists only momentarily, because the strong forces between omegons come into play again, causing them to recombine and condense into a new stable grouping. Since quarks and omegons from *both* nuclei are dispersed and mingled within this cold plasma, those originally from different nuclei are free to combine into the resulting micropsi atom. This explains why intact protons and neutrons are hardly ever found in these M.P.A.'s. Their sizes can range from nuclear dimensions to something much larger.

This engaging and plausible hypothesis invites speculation about other aspects of the *Occult Chemistry* research. It would appear that Leadbeater had very sensitive control over the "strength" of the special willpower he exerted. This conclusion already emerges from various passages in *Occult Chemistry*, but in the immediate context it relates to the reasonable supposition that the "amount" of willpower required will differ from element to element. This in turn could explain the selectivity that he appeared to exercise when looking for specific elements—a kind of tuning effect resembling the tuning of a radio to a particular transmission. This could also explain why different elements are almost never fused together into hybrid M.P.A.'s. Ordinary M.P.A.'s contain the material from a pair of identical nuclei (on the same wavelength, so to speak), or more rarely of isotopes of the same element. Only exceptionally may nuclei of different elements be hybridized (and then only from the same group), as with the "elements" X, Y, Z and kalon.

The groupings in M.P.A.'s show some analogies with the orthodox Shell Model of nuclei; this envisages atomic nuclei of the elements built up by the gradual filling of shells containing fixed numbers of protons and neutrons; correspondingly, M.P.A.'s of elements belonging to a given group of the periodic table and having the same external shape (see table 1 of chapter 1) show the same kind of regularity. For example, all members of such a class may contain the same central core or globe; thus all the inert gases (except its first member helium) have the same central globe of 120 U.P.A.'s designated the "Ne 120" group after neon, the first element in which it was observed. Similarly the "Ca 160" group of 160 U.P.A.'s occurs in calcium and all succeeding members of the Tetrahedron Group of M.P.A.'s. But similar or identical U.P.A. groupings may occur several times in the M.P.A. of an element and again in those of elements belonging to other classes. Detailed analysis, however, reveals that the omegon contents of such groups are sometimes not quite identical, in the sense that in one element there may be  $A_p$  and  $B_n$  omegons but in another this is reversed to  $A_n$  and  $B_p$  omegons. But also the actual number of omegons in a grouping may be slightly different when what is seemingly the same grouping turns up in another element.

Apart from a few exceptions shown by the lightest elements, the M.P.A.'s all come in seven basic shapes: the Spike, Dumbell, Tetrahedron, Cube, Octahedron, Bars and Star Groups (table 1, chapter 1). Elements with a common valency of either " $N$ " or " $(8-n)$ " appear in the same class,  $N$  being 1, 2, 3 or 4. The monovalent alkali metals and halogens with valencies of two or six belong to the Tetrahedron Group, and those with valencies of three or five are in the Cube Group. Tetravalent elements appear in the Octahedron Group. The Bars Group comprises the three triads of interperiodic elements, and the Star Group consists of the inert gases of zero valency. These regularities were used by the investigators to confirm the identity of an element under examination; also to place in appropriate

gaps in the periodic table of that day certain elements not then known to science. Thus, as early as 1909, they described "Illinium" in the Spike Group and later (1932) recognized it as the missing element "61." This was promethium, first produced artificially in 1947 and believed to exist in nature in infinitesimal amounts. Also in 1932 they reported seeing elements "85" and "87" belonging, respectively, to the Dumbell and Spike Groups. Element "85" is astatine, first produced in 1947, and "87" is francium, which was isolated in 1939. Another M.P.A. in the Spike Group that was first observed in 1909 and again in 1932, and named masurium, turns out to be element "43," now called "technetium" and made artificially in 1937. It is one of the products of spontaneous fission of uranium, so minute amounts must exist in nature.

In chemical compounds, the atoms of elements are recognized as being linked by valency bonds corresponding in number with their position in the periodic table. In M.P.A.'s, valency appears to be displayed to micro-psi vision in terms of the number of funnel-shaped groupings present, for example four funnels for elements in the Tetrahedron Group. But these elements are *divalent*, so each funnel seems to correspond to a valency of one-half only. This anomaly is resolved by hypothesis 2, which requires that two atoms of an element participate in the formation of its M.P.A. Thus two atoms of, for example, the divalent element calcium provide between them four valency bonds, so that the expected relationship between funnels and valency electrons is restored. So far, the electrons in atoms, which were not seen by Besant and Leadbeater, have been largely ignored. But Phillips suggests that they have a shape-determining role to play in the aggregation of omegons from the chaotic cloud momentarily resulting from the breakup of two atomic nuclei, into the ordered structures of M.P.A.'s. More precisely, it is the electrons in the outermost shells and particularly the valency electrons that play this role. Their functioning is most clearly shown in the tetrahedron, cube

and octahedron groups of M.P.A.'s. Thus, tetrahedral M.P.A.'s of divalent elements have available from the two atoms a total of four valency electrons. Electrical or "Coulomb" attraction of these electrons segregates the omegons into four usually identical clusters of omegon bound states, arranged in a manner that minimizes their Coulomb energy. This ensures that the four clusters assume funnel-like shapes pointing from the center towards the four sides of a tetrahedron. Similarly, atoms of trivalent elements on pairing provide six valency electrons between them, which draw the omegons into six funnels pointing towards the faces of a cube. Atoms of tetravalent elements pair up to provide a total of eight electrons, generating 8 funnels pointing toward the faces of an octahedron. In all these groups, the funnels are identical or almost identical and always carry a net positive charge in conformity with their attraction towards the negatively charged valency electrons. If the total net positive charge of the M.P.A. is such that it cannot be divided equally among the funnels, then the excess must be accommodated in the central core noted in some of the diagrams in *Occult Chemistry*. But other M.P.A.'s also have cores without this compulsion, so that of divisibility of charge is not always the reason for the existence of cores. In the Stars Group with no valency electrons, the six pairs of electrons of opposite spins from the outermost set of three orbitals of each atom are believed to determine the aggregation of omegons into the six arms of the starfish assembly. More complex hypotheses which will not be elaborated here, provide for the shapes of the remaining groups—Bars, Spike and Dumbell. The lanthanides or rare earths are trivalent yet their M.P.A.'s are distributed over all the groups except Bars. These too can be reconciled fairly satisfactorily with the corresponding electron orbitals.

At last the stage is reached at which individual elements can be analyzed in detail, so that their orthodox scientific structures can be reconciled with the corresponding M.P.A. structures. In the many diagrams provided in Phillips' book,

the orthodox structure is set out at the top. This specifies the number of protons present (equal to the number of orbiting electrons) and the number of neutrons. This has to be set down *twice*, for the two participating nuclei. These numbers are then all multiplied by three to give the corresponding total numbers of quarks; these are again separated into u and d quarks on the basis that a proton provides two u quarks and one d quark and a neutron one u and two d quarks. Then, starting again from the bottom of the diagram, the numerous groupings of the U.P.A.'s in the M.P.A. are set out, specifying (where ascertainable) which are  $\rho$  omegons and which  $\eta$  omegons. This information is only available in part when the diagram of the M.P.A. or of its disintegration indicates the net electrical charge of a group by the heart-shaped U.P.A.'s pointing inward or outward from the centers of the groups, as explained in chapter 6. Then comes the task of interrelating the two sets of information, deducing the types of the remaining omegons and adjusting some observed U.P.A. groupings when necessary to accommodate counting errors, in accordance with the guidelines discussed in chapter 6. The fact that highly plausible reconciliations have been successfully achieved for the 23 M.P.A.'s so far analyzed, despite all the constraints that are imposed, is testimony to the correctness of the basic hypotheses and the process which they imply.

Hydrogen has been shown several times as an example, so three other elements will be selected to illustrate the procedure of analysis. First, one of the lightest elements, lithium, second magnesium and third, calcium, the most complex of the 23 studied, will be analyzed in detail.

Lithium is the first of the monovalent elements of the Spike Group. The main feature of the M.P.A. is this spike, called "Li 63" containing numerous bodies, described below. At its base is a globe containing four spheres ("Li 4") each enclosing a tetrahedral array of 4 U.P.A.'s. Projecting from this globe (and hiding it completely in the diagram) are 8 elongated hexagons of 6 U.P.A.'s called "Ad 6" because this group was first noted in Adyarium (now identified as

the hydrogen isotope deuterium or heavy hydrogen). Returning to the spike, "Li 63," at each end is a sphere (a) containing 4 smaller spheres of triplets of U.P.A.'s (quarks, but of different types). Between these spheres is an ovoid containing 5 spheres. The central one (d) contains a ring of 6 U.P.A.'s revolving about an axis shown as a row of 3 U.P.A.'s but the counting error of +1 is located in this body; the row of 3 U.P.A.'s should have 2 only. On either side are tetrahedral groupings of 4 pairs of U.P.A.'s with a 9th at the center (c). The letters refer to the disintegration diagram Figure 8.

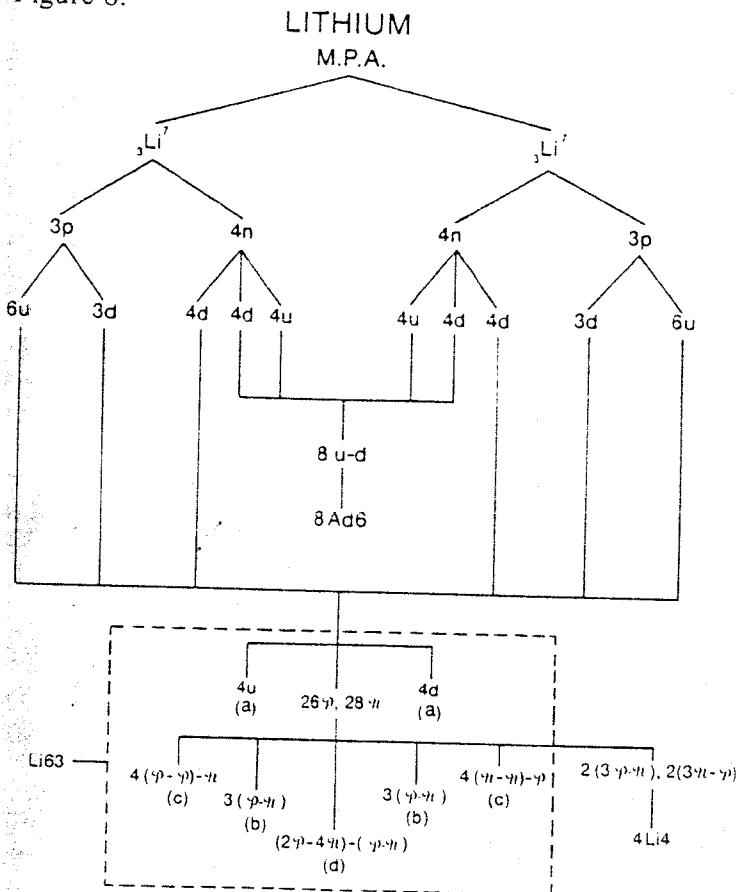


Fig. 7. Lithium Analysis

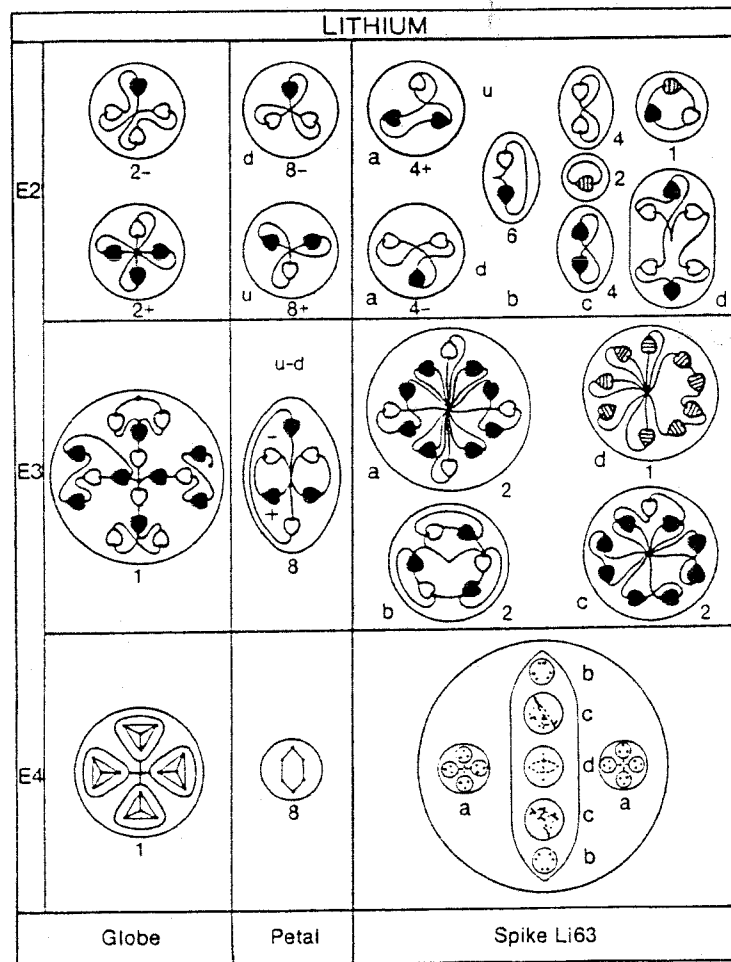


Fig. 8. Lithium Disintegration

The analysis is worked out in Figure 7. A lithium nucleus contains 3 protons and 4 neutrons. These numbers have to be doubled for the two nuclei participating in the M.P.A. The next horizontal row triples these numbers again, to show the number of quarks (42) contained in these 14 nucleons; they comprise 20 u and 22 d quarks. Of these, 8 u

and 8 d quarks in the center of the diagram are shown to be equivalent to the 8 "Ad 6" groups, without needing to divide the quarks into constituent omegons. The remaining 26 quarks are carried down to the lower part of the figure to provide for the spike (within dashed lines) and the globe (at the right). Four u and four d quarks are allocated, without subdivision, to the 2 (a) spheres in the spike. This leaves 18 quarks, now subdivided into 26  $\rho$  and 28  $\eta$  omegons. Of these, 16 are carried outside the dashed lines to provide for the globe, and the rest are shared between the (d) sphere, the 2(c) spheres, and the 2(b) spheres in the manner shown. The allocation of  $\rho$  and  $\eta$  omegons can be followed from the disintegration diagram (figure 8).

Magnesium is being included at the special request of Dr. Phillips, to illustrate new research done since his book went to press. He has made detailed studies of all the diagrams and descriptions in all three editions of *Occult Chemistry* and papers in *The Theosophist*. To his surprise, in 10 instances the diagram for an element in the third edition differs significantly from that in earlier records. A few of these alternatives can be attributed to copying errors but this is not a credible explanation of the others because changes in one part of a M.P.A. are exactly counter-balanced by the changes in the opposite sense in another part. These "edition variations" must be accepted as genuine, which means that some elements must have been reexamined and fresh drawings made, without them being checked closely against earlier ones. The interesting feature is that the pairs of diagrams are *equally valid*; each member of a pair provides the right number of  $\rho$  and  $\eta$  omegons required by the Omegon Model and the proton and neutron content of the two nuclei that give rise to the M.P.A. It looks as if we have here the kind of variant types that are common among plants and animals—all valid interpretations of the Group Design. However, it must not be supposed that this extends to variant forms of any isotope of an element; the variations occur only in the recombination of quarks and omegons in the chaotic cloud or "cold plasma" first

produced by the pairing phenomenon; i.e., the variations apply to the M.P.A., not to the dense physical atom. In any event, magnesium provides an excellent example.

It happens that the magnesium M.P.A. as depicted in the third edition of *Occult Chemistry* and in Phillips' book is constructed on such a simple pattern that no diagram will be necessary. It is made up exclusively of 36 identical "Mg 12" groups, distributed in four funnels with no central globe or other groupings. Each funnel contains three large bodies, each of three "Mg 12's". This in turn contains three small spheres, "N 2" (as in nitrogen); "I 7" (as in iodine), and a hydrogen triplet "H 3". Study of the disintegration diagrams suggests the following breakdown.

$$\text{Mg 12} \left\{ \begin{array}{ll} \text{N 2} & \rho, \eta \\ \text{I 7} & 3\rho, 4\eta \\ \text{H 3} & 2\rho, \eta \end{array} \right.$$

$$6\rho, 6\eta \times 36 = 216\rho, 216\eta$$

The magnesium nucleus contains 12 protons and 12 neutrons; two of these provide 72 u quarks and 72 d quarks, providing in turn 216  $\rho$  omegons and 216  $\eta$  omegons—which tallies with the previous computation.

The first, and second editions however, show the disintegration patterns as more complex. All three bodies in the "Mg 12" occur in equal numbers (18) of (+) and (-) varieties. This is not followed up properly in the text; it implies two varieties of "Mg 12" (at least) and there is no indication of how these are made up from (+) and (-) components, nor how these are arranged in the funnels. But because each funnel has an uneven number of "Mg 12's" (9), it must follow that the funnels cannot be identical, as implied; because there are probably two slightly different pairs. Because of these uncertainties the computation of  $\rho$

and  $n$  omegons must be done separately on the small units. In correspondence, Phillips has identified them as follows:

		<u>x18</u>	
N 2 (-)	$n, n$		36 $n$
N 2 (+)	$p, p$	36 $p$	
I 7 (-)	$d, 4n = p, 6n$	18 $p, 108n$	
I 7 (+)	$u, 4p = 6p, n$	108 $p, 18n$	
H 3 (-)	$d = p, 2n$	18 $p, 36n$	
H 3 (+)	$u = 2p, n$	<u>36<math>p, 18n</math></u>	
		216 $p, 216n$	

This is the same total as for the third edition variant, so both conform with the Omegon Model.

Calcium is the heaviest element to be analyzed in the Phillips' book, though others had been studied and proved equally amenable to analysis. The M.P.A. of the Ca40 isotope contains 720 U.P.A.'s and this was the number counted—a tribute to the care taken over this difficult task. The M.P.A. of this divalent element is in the Tetrahedron Group and has four identical funnels radiating from a complex central globe. This globe, called "Ca 80", has the unusual arrangement of two concentric spheres each divided by radial lines into eight segments. The inner sphere contains a symmetrical pattern of eight "Li 4" groups, i.e. groups of four U.P.A.'s previously noted in the "lithium M.P.A." The outer circle contains eight "Ad 6" groups similarly disposed, i.e. groups of 6 U.P.A.'s in an elongated hexagon first noted in "Adyarium" (deuterium) and again in boron. Each of the four "Ca 160" funnels contains three large spheres. Two of these are called "Ca 45" and the middle one is called "Ca 70." Each "Ca 45" contains five bodies, of 9 U.P.A.'s, previously noted in the M.P.A. of aluminium and called "Al 9"; but there are two types of

these bodies, differing only in the kinds of omegons present. In each funnel one of the "Ca 45" groups contains exclusively one type of "Al 9," the other the alternative type. In the first are nine omegons, derived from a neutron and rearranged into a square pyramidal array of two  $p$  and three  $n$  omegons, as well as two diomegons ( $p-p$  and  $n-n$ ). The other derives from a proton rearranged into the same pair of diomegons but a pyramid of three  $p$  and two  $n$  omegons. The two types of duads show up in the disintegration diagram (Figure 10) with inward- and outward-pointing hearts at the E3 level. The central "Ca 70" sphere in each funnel has seven "Be 10" groups, each consisting of ten U.P.A.'s as found in beryllium; but these again are two types differing only in omegon composition, just as found in beryllium. One has two intact  $u$  quarks plus four  $n$  omegons. These are arranged in the four funnels such that two funnels each have four "Be 10" groups of the first type and three of the second type, and the other two respectively three and four of the two types. All this is confirmed by the disintegration diagram. The reader who is interested to follow the detailed apportionment of quarks and omegons may do so with the help of Figure 9. As Phillips concludes his corresponding chapter 7: "Every detail in the M.P.A. of calcium is accounted for in a way consistent with the results of analysis of other M.P.A.'s."

As it happens, calcium also shows a trifling "edition variation." The "Al 9" group within the "Ca 45" contains a pyramidal array of 5 omegons that breaks up at the E2 level (Figure 10) into two  $p, n$  duads. But in the second edition the products are a  $p, p$  duad and a  $n, n$  duad. Obviously both variants provide the same total of 2 $p$  and 2 $n$  omegons.



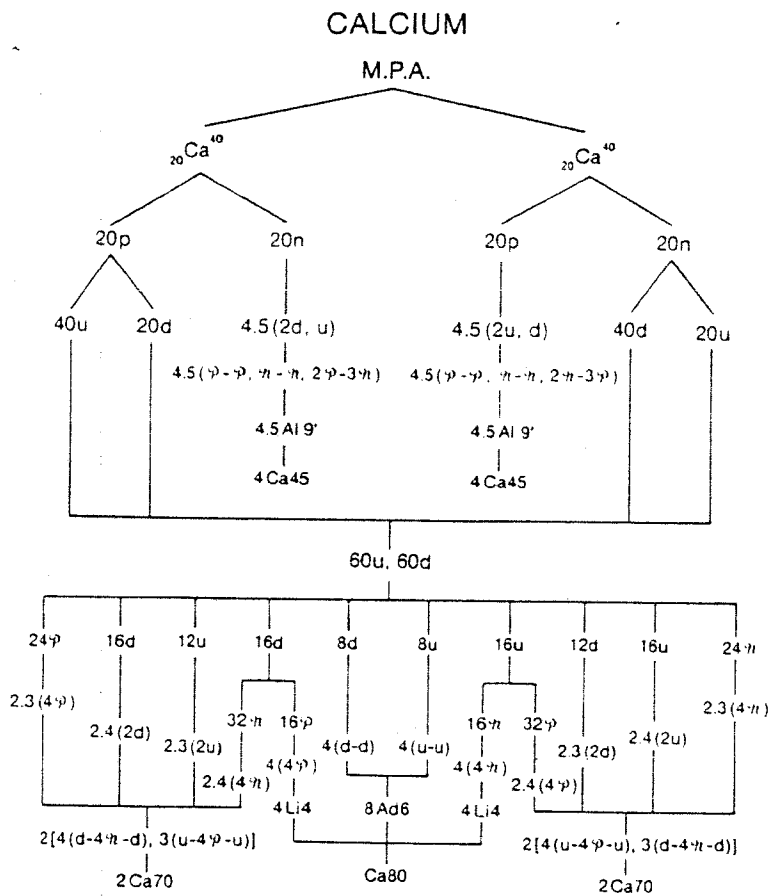


Fig. 7.118

Fig. 9. Calcium Analysis

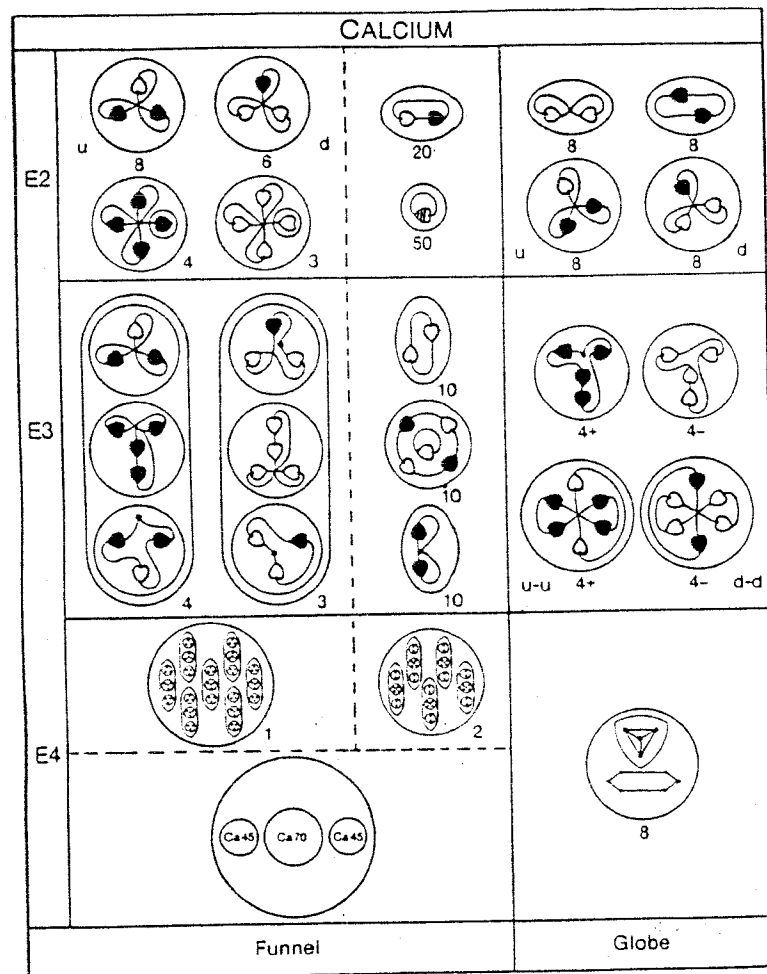


Fig. 10. Calcium Disintegration

## CHAPTER TEN

## COMPOUNDS AND CRYSTALS

Chemical compounds, and the sometimes bizarre micro-psi molecules (M.P.M.) to which they give rise, have already been considered at some length in chapter 3. In fact that chapter mentioned some compounds, such as benzene derivatives, that are not covered in chapter 8 of Phillips' book; this deals with only a few of the compounds and crystals described in *Occult Chemistry*.

Just as atomic nuclei pair off to create the M.P.A. under the perturbative effects of the whole micro-psi process, so do the nuclei of *all* the atoms in *two* molecules of a compound. Thus the initial chaotic cloud is more complex than is the case when isolated atoms are examined, since it now includes the contents of at least four atoms and often more. In water ( $H_2O$ ), for example, there are present the omegon contents of four hydrogen and two oxygen atoms. At the stage of condensation, one of two events may occur. On the one hand, the cloud of particles may sort itself out so that omegons from atomic nuclei of the same kind assemble together into some resemblance of the usual M.P.A. structure; or, on the other hand, it may happen that omegons from all the participating nuclei come together to create a wholly new complex structure unlike any of the corresponding U.P.A.'s. Water behaves in the first fashion, but salt (sodium chloride) forms a new unique structure already described in chapter 2. The fact that both sodium

and chlorine belong to the Dumbell Group may have something to do with this behavior. However, it is now possible to revise slightly the description of the process given earlier. It is not so much that sodium and chlorine M.P.A.'s break up to form the M.P.M. as that their constituent omegons in the chaotic cloud never find each other during reassembly but jumble up together with those of the other element. This is reasonable dynamical behavior in the light of the Omegon Model and the various forces of attraction and repulsion that operate to produce order and form out of the momentary chaos.

The first "molecule" that Phillips discusses is not that of a chemical compound but that of diamond, one of the forms of the element carbon whose crystal has an exceedingly complex structure, according to micro-psi vision. This investigation had an amusing origin. In the course of my voluminous correspondence with him, I reflected that M.P.A.'s had the rearranged contents of two atoms or (more precisely) their nuclei. Similarly in M.P.M.'s the nuclei in two chemical molecules were paired up. I went on to query whether in the few crystals examined by Leadbeater a similar doubling-up would occur on a larger scale, i.e., involving many atoms or molecules. If so, two consequences might follow: first, the doubled-up unit probably would not fit into the same crystal lattice as the single units observed by science (usually by X-ray crystallography). Discrepancies between scientifically determined structures and Leadbeater's micro-psi descriptions might then be explained. Secondly, and incidentally, since many hundreds (or even thousands) of atoms would need to disappear from the crystal due to the doubling-up process initiated by an observation, this must leave a tiny pit in the crystal and might it be large enough to be detected by physical instruments? This can be dismissed at once; even if a crystal so mutilated by micro-psi observation were available, the damage would be too small to be detected.

As I remarked in my letter, the diamond lattice revealed

by X-ray crystallography is quite complex, but the structure described by Leadbeater and illustrated by the color plate in the third edition of *Occult Chemistry* is not only different, but also quite fantastically complicated. This was not intended as a challenge, but Dr. Phillips accepted it as such, and proceeded to work out as a superb exercise in solid geometry exactly how this remarkable structure had to arise in order to be consistent with the doubled-up carbon atoms required by his theory. It was in fact this *tour de force* that finally convinced me that his theory must be basically correct. In his book the account of the investigation occupies ten pages of text including 13 diagrams. It is made, if anything, more convincing because it revealed an error of observation by Leadbeater, or perhaps just a faulty assumption. The structural unit of the micro-psi diamond is basically octahedral, but the octahedron is filled up from small sub-units intricately meshed together and stacked in layers. The sub-units are groups of five octahedral carbon M.P.A.'s, arranged so that four of them fit against the four upper sides of the fifth octahedron. Moreover, the funnels facing each other are intermeshed to some degree in apparent conformity with the relatively high density and extreme hardness of diamond. Leadbeater examined half of the large octahedral unit and reported that the other half was an exact mirror image. But even from geometrical considerations it is unlikely that the base layer would be repeated. Phillips' investigations confirmed this: the middle layer of the octahedron had to be shared by *both* halves. Furthermore, the sub-units could not stack tightly together unless this was so. So 85 units are present, not 110, as Leadbeater stated.

In this correspondence I was really more concerned about the structure of graphite, a different crystal form of the element carbon. Leadbeater had seen the graphite crystal as being made of sheets of carbon atoms in repeating hexagonal arrays, the sheets stacked upon one another. This arrangement resembles that of carbon atoms in benzene, naphthalene and other aromatic hydrocarbons, according to

orthodox chemistry, yet Leadbeater saw benzene as a octahedral structure. Anyhow, I recalled that X-ray crystallography similarly revealed the graphite crystal as stacked sheets of repeating hexagons and I wondered if Leadbeater's observation was the earlier. It turned out that it was made just two years after the X-ray study by Bernal, but it is extremely improbable that Leadbeater, working in India, was aware of this work. I suggested too that the doubling-up phenomenon might reasonably be expected, in this instance, to yield a pattern for the micro-psi version of the graphite crystal that was similar to the normal one established by ordinary scientific methods. Phillips confirmed this expectation by detailed analysis which explained precisely the slight difference between the stacking of successive sheets in the two models.

As mentioned earlier, the M.P.M. of water,  $H_2O$ , contains the M.P.A. of oxygen and the two hydrogen M.P.A.'s virtually intact. The columnar double spiral of oxygen has a pair of hydrogen triangles wrapped around it at each end; that is to say the column goes right through the middle of the interlaced triangles. According to Phillips, "The pairs of protons are trapped, rather than bound together by nuclear forces"; this M.P.M. has to be of nuclear dimensions to account for the way in which it was described to be held together, unlike some M.P.A.'s whose sizes are probably somewhere between nuclear and molecular orders of magnitude.

The hydroxyl ion which exists in metal hydroxides and alcohols has an M.P.M. similar to that of water. The difference is that the hydrogen triangles are separated, and lie at each end of the oxygen column, not around it, being linked, as noted in *Occult Chemistry*, by a force going through the middle of the oxygen snake. This is the attractive nuclear force between protons, which implies that this M.P.M. also must be of nuclear dimension. It was also noted that the hydrogen triangles facing each other at opposite ends of the oxygen snake tilt a little up and down, rotating as the lid of a boiling kettle rotates before finally

settling down. This bizarre observation can now be fully explained. The two spirals of the oxygen snake, rotating in opposite directions about a common axis and being positively and negatively electrically charged, constitute solenoidal electrical currents that create a magnetic field. The hydrogen triangles are protons having magnetic dipole moments and intrinsic spin, so that the magnetic field due to the oxygen snake causes them to perform Larmor precession, the plane of each triangle tilting periodically as it rotates. This micro-psi observation was made in 1919, several years before the spin of the proton was recognized by science.

Ozone,  $O_3$ , represents an interesting case of extreme instability of its M.P.M. Through the usual pairing-up process, it should contain omegons from six oxygen nuclei—that is, three oxygen M.P.A.'s. But such an arrangement is apparently so unstable that it splits in half and the *observed* M.P.M. contains only one and a half oxygen M.P.A.'s, in the form of three single spirals originating from the double spiral oxygen M.P.A.'s. The instability of the original M.P.A. accords with theoretical prediction. Furthermore the theory explains why two *distinct* forms of ozone were observed. The "half M.P.M." is also rather unstable, tending to dissociate into oxygen, as ozone does chemically. The jumbled-up sodium chloride M.P.M. has been described in chapter 3 in relation to the M.P.M.'s of other inorganic salts. The M.P.M.'s of carbon compounds also will not be described further since several have already been considered in some detail in chapter 3. This was in connection with the different numbers of isomers predicted and found on the basis of the orthodox structure of derivatives of benzene principally, and of corresponding M.P.M. structures. It was based on the work published in *The Field of Occult Chemistry* (8). With hindsight it can be seen that this should have led us to the doubling-up hypothesis, developed by Phillips many years later.

## CHAPTER ELEVEN

### THEOSOPHICAL IMPLICATIONS

The Phillips book is written in the manner of a scientific paper; that is to say it is written by a scientist, addressed to other scientists in the kind of language they use. Scientists *are* human; they *do* have feelings like the rest of mankind; but from their style of writing one might be forgiven for having doubts. All this is suppressed in favour of a severely cerebral approach. It would be extremely bad taste to shout: "Eureka! Look what a thrilling discovery I have made; I have uncovered some of Nature's secrets that were hidden!" Instead, the scientist seeks to impress his readers in a stilted scientific style, using the jargon of his field of research, contributing if possible some new terms to it. Faced with the choice between a simple statement and a mathematical formula, the latter will suffice. He will permit himself no speculations that cannot be adequately supported. If the volume of research material demands a book then it may include a preface, written by a fellow scientist who may unbend a little in commending the work. But if the work actually is of significance to non-scientists, it usually needs to be interpreted by science writers to more popular journals like *Science* in America or *New Scientist* in England, and by science correspondents to the newspapers. This is the task that I am attempting here, though with a difference. Since Phillips' book is based on work by eminent theosophists, and is of concern to other theosophists, my

book is addressed primarily to them. This is indicated in the introductory chapters, but in abstracting and simplifying, I have kept strictly to the text and spirit of Phillips' book, merely indicating here and there that more could be said on particular points. Here in the final chapter is the place to do so.

Few physicists believe in anything superphysical. If their researches compel them to describe the nature of subatomic particles in terms quite different from those that are applied to the everyday world, they still insist that they are just describing physical matter more minutely in states beyond the gaseous, though they rarely say this explicitly. For theosophists on the contrary, the world of discourse lies mainly in the superphysical. They regard the physical world as a mere end-product of the long descent of spirit into materiality. Even the lowest, physical plane is held to include ethereal matter not perceptible to the normal five senses. Like the astral, mental and higher planes, the physical is divided into seven subplanes; to the familiar solid, liquid and gaseous sublevels are added four etheric subplanes. When Besant and Leadbeater found they could examine subatomic matter, they automatically assigned it to the etheric levels; so when they found that, by will power, they could break up these groupings of U.P.A.'s in successive stages into smaller groupings and eventually into individual U.P.A.'s, they naturally regarded the stages as corresponding to the etheric subplanes. Phillips very properly sets aside these designations and accepts the code names E4 to E1 simply as labels for the successive stages of disintegration, declining to speculate on their nature.

It might be thought that theosophists have merely to restore to these code names their original meanings as etheric sublevels. But in fact the problem is much more complex than this. The investigating occultists claimed that they saw the chemical atoms exactly as they were in nature. Phillips firmly rejects this claim; calling what they saw "micro-psi atoms," he shows convincingly that they comprise the rearranged quark and omegon contents of *two*

*atomic nuclei* of the appropriate element. Nevertheless the assembly of these entities is shown to proceed precisely in the manner to be expected if the constituent particles obey the recognized laws of physics as applied to subatomic particles. Accordingly, the micro-psi atom must be part of the total physical world; Phillips simply regards it by implication as a hitherto unrecognized state of physical matter, not feeling called upon to explain it further. But what is the theosophist to make of this situation? The M.P.A. state is not solid, liquid or gas, so it is excluded from the three dense physical levels. This conclusion is supported by some evidence that magnifying clairvoyance (micro-psi) does not provide access to dense physical levels but only to etheric (and higher) levels (see chapter 8). But the four etheric levels are already occupied, according to Besant and Leadbeater, by the products of the various stages of disintegration of the M.P.A. So the M.P.A. stands in limbo, within the physical plane of theosophy (i.e., including etheric) but with no vacant subplane to which it can confidently be assigned. Phillips appears to suggest that the micro-psi atoms probably came into existence only when created by the will power of the occultists. But even if they are only temporary entities, they are still real objects obeying physical laws; they are definitely *not* imaginary entities, so they exist, if only briefly, at one of the seven sublevels recognized by theosophists. Actually, Phillips provides no reason for supposing that M.P.A.'s are inherently unstable when attention is withdrawn from them. There seem to be good reasons why M.P.A.'s should *not* break up. If that is so, they should be rare but relatively permanent denizens of the physical world. They might, moreover, arise in other ways we do not know about, and not be so very rare. If they were really common however, one might expect that they would not have escaped detection by scientific instruments. However this may be, it seems these entities must have a place in the recognized theosophical framework. Only one seems possible; they must be accommodated at the E4 level, the state next

beyond the gaseous. This implies that the denizens with which Besant and Leadbeater populated the etheric levels have to be squeezed up a bit to make room. This can be done in two ways: the E4 level can be reserved for M.P.A.'s and M.P.M.'s, in which case all their disintegration products must be accommodated at the E3 and E2 levels; or the M.P.A.'s can be admitted to the E4 level in addition to the complex groupings of the first stage of disintegration. The second alternative seems the more probably; it involves least change in the Besant-Leadbeater scheme. Moreover, it seems unnatural that a subplane should be reserved for what may be extremely uncommon and rare entities—the M.P.A.'s and the M.P.M.'s. Either choice negates an assumption made by the investigating occultists, namely that every stage in the breakdown from M.P.A. to U.P.A. involves a change of subplane; at least one level must now accommodate two stages. This suggestion does not seem outrageous in the light of what is known to happen at dense physical levels. The disintegration steps may be regarded as analogous to phase changes; usually these do also involve change of subplane, as when solid ice melts in the heat to liquid water, and then evaporates into gaseous steam. But in addition, some solids can exist in two or more different forms or phases while remaining solid, and a few liquids can simultaneously exist in more than one phase. Moreover, as noted in chapter I, the allocation of U.P.A. groupings to subplanes in *Occult Chemistry* appears somewhat haphazard; the same grouping may appear at E2 when derived from one element, and at E3 when it arises from another. It was emphasized that these sublevels bear no labels and must be difficult for the occultist to recognize. In short it appears there is no effective barrier to the proposed assignment of the M.P.A. and M.P.M. to the E4 level.

It is a serious shortcoming of *Occult Chemistry* that the authors did not see electrons; nor did they perceive any theoretical role for them in the construction of M.P.A.'s. Phillips made amends by finding another clairvoyant who did see electrons, and who unwittingly proved it by

recording observations of the Zitterbewegung effect. Also in working out how omegons condense out of the "cold plasma" into their intricate patterns he *does* involve electrons in the operation. For Phillips, the electron simply takes its rightful place as a well-established member of the subatomic family. But how does this unrecognized stranger fit into the theosophical hierarchy of particles from E4 to E1, as recognized in *Occult Chemistry*? Bound electrons are there at every level, and presumably they really ought to be shown as tiny dots in the M.P.A. and disintegration diagrams. But loose electrons can only be allocated to the E1 level along with the U.P.A.'s.

The diagrams of "atoms" in *Occult Chemistry* have an aesthetic appeal as geometric figures or as abstract designs. That of radium has indeed been used in this fashion as a cover design for *The American Theosophist*. They have been described as man-made, but only in the sense that Besant and Leadbeater brought them into being by the unconscious fusion of pairs of atomic nuclei. They did not build these objects of beauty; their patterns already existed somewhere, ready to leap into existence under right conditions. Moreover, any attempt to rebuild them in different patterns failed; Leadbeater did try on a few occasions to stick together parts of different atoms, in the hope of creating a new one that he had not yet observed in nature, but if his assembly was wrong, it "refused to stick" and flew apart again. It can be argued that the component particles of these micro-psi atoms become assembled in inevitable response to the various types of forces operating—as described by Phillips—and somewhat in the manner that iron filings sprinkled on a sheet of paper lying on a magnet reveal the surrounding magnetic lines of force by the pattern they assume. The physicist would be inclined to say that there is no argument about it. Yet it seems hardly credible that all these complex patterns exist in potential only, coming into existence only to satisfy the curiosity of a handful of occultists who, having developed micro-psi faculty, turn it upon the chemical elements. Surely they

must play some part in the wider scheme of things? There is an alternative to the notions of materialistic physicists, which may have more appeal for theosophists, and which should eventually prove reconcilable with the physicist's point of view. It is that the atoms seen by occultists are *Archetypes*. Can it be that they arose from "thoughts in the Logoc Mind," densified in stages down to the etheric level, so that they are more fundamental than the chemical atoms we know in the dense physical world? This notion would accord with the "Story of Creation" as told in theosophical literature. But if this is so a problem has to be faced. Why were these ideal archetypal designs for the chemical atoms not merely densified with little change, to serve their purpose in forming the matter of the physical universe? We cannot expect to solve the problem with certainty, but the solution may be somewhat as follows. The physical plane is divided very sharply into its two subdivisions, dense and etheric. The substance of all the planes of nature, right down to the etheric levels is ideoplastic; it can readily be moulded by will power. By contrast, dense physical matter tends to be rigid and immovable, except by relatively great force, stable and inert. In a sense it stands outside the main scheme—"no Principles at all," as H. P. Blavatsky puts it, implying that human unconsciousness does not really extend down into the dense physical levels. The designs of the archetypal atoms expressing the essential qualities of the elements were perhaps too fragile for the dense physical world with a stubborn will of its own, and presumably being at the outermost fringe only of the Logoc Consciousness. Perhaps the dominant quality of inertia that was to become characteristic of the dense physical world could only be overcome, and its matter be brought into being, by contrastingly fierce cosmic energy as in the stars, so potent that the atomic archetypes were split into halves and totally rearranged, into the more robust patterns of the chemical elements known to science. If the violent motions imparted to the physical atoms at their formation are still persisting, and are stilled again by the occultist's will, reversion to the archetypal forms is to be expected.

The dense physical world is indeed so distinctive that it has been argued (11) that it ought perhaps to be regarded as a separate plane of nature, relegating the etheric to the superphysical realms. The author subsequently recanted, however, (19) after being persuaded, largely though not exclusively by Phillips' work, that it was best to accept the etheric subplanes as part of the physical world, because their properties do seem to be best explicable by extensions of physical laws. In this it is of course assumed that the M.P.A. disintegration products really should be allocated to the etheric, as Besant and Leadbeater claimed, even if in some instances the precise sublevel may be in doubt. However, if this is accepted, a rather startling conclusion follows: modern physics must already be familiar with some aspects of the etheric though it does not use the term. Some of the etheric aggregates of U.P.A.'s besides the U.P.A. itself can already be identified with subatomic particles recognized by physicists. It follows that etheric matter can in principle affect sufficiently delicate physical instruments, and that such particles possess mass and other physical properties like electric and magnetic charges and spin that can be measured or computed. These are exciting ideas; not only has physics served to explain *Occult Chemistry*, but the latter may yet have a reciprocal impact on physics. These developments are likely to influence theosophical research also; already they are stimulating the Science Group in London to consider the relation between etheric substance as described in *Occult Chemistry* and etheric bodies.

The idea that the atoms seen by Besant and Leadbeater are Archetypes can be supported by other evidence. They are indeed objects of beauty, but also within their patterns can be discerned features that the Greeks held to be characteristic of beauty in design, and which they sought to embody in their architecture and art. For example, the five Platonic Solids, the only completely regular solid geometrical figures, are all to be found in these archetypal atoms and molecules. Their external shapes follow those of the three simplest Platonic Solids, tetrahedron, cube and

octahedron, for the groups of divalent, trivalent and tetravalent elements respectively. The dodecahedron can be seen in the central body of the molecule of benzene, related aromatic hydrocarbons, and their derivatives. The "Ne 120" unit takes the shape of the five interlaced tetrahedra that delineate the icosahedron; it is present as the central globe of all the inert gases except helium and also in tin and in six of the lanthanides or rare earths. Some people like to increase the number of Platonic Solids to seven, by including the point and the sphere. The U.P.A. itself can illustrate the point, while numerous U.P.A. groupings appear as though enclosed in spherical "walls."

The infinite Fibonacci series and the related Golden Section, favoured by Greek philosophers as representing ideal proportions, can also be discerned in *Occult Chemistry*. The Fibonacci series starts with the numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610. Any Fibonacci number is the sum of the two preceding ones in the series; e.g.,  $13=5+8$ . The series is far from being a mathematical abstraction; Fibonacci numbers turn up in Nature in all sorts of places. For example, the seed head of a sunflower has its seeds arranged in obvious spiral patterns; any seed is at the intersection of two spirals, one clockwise, the other counterclockwise. If the seeds in the two spirals are counted, it will be found that the numbers are never equal, but are always *consecutive* numbers in the Fibonacci series, like 21 and 34, or 55 and 89.

The ratio between successive Fibonacci numbers increases slightly towards a limiting value of 1.618, which defines the Golden Section. It is often represented as the square (of side 1 unit) in the rectangle (of side 1.618 units). It is then seen that the remaining smaller rectangle also divides in the same proportions, because  $1.618/1=1/0.618$ . If the procedure is continued, the diminishing squares trace out a logarithmic curve—which can be seen in Nature in the shell of the Nautilus.

This is not to be found in the Phillips book, but it was in the first draft, to introduce his observations on the plethora

of Fibonacci numbers to be found among the U.P.A. groupings making up the oxygen spiral in its M.P.A. There are 7 in all, namely: 2, 5, 13, 21, 34, 55, 144. In addition oxygen is the *only* element in which the number of omegons in the nucleus is a Fibonacci number, namely 144; this is because 144 is the only one of the lower Fibonacci numbers divisible by 9, the number of omegons in a proton. Further, the atomic number of oxygen is 8, another Fibonacci number.

In the Omegon Theory, the 10 flavours form the corners of two pentagons, the second inside the first, and rotated  $36^\circ$  in respect to it. Alternatively they can be represented as five-pointed stars, the smaller inside the larger. The Golden Section is implicit in these figures; it is the ratio between the side of a pentagon and an arm of the inscribed star.

Not very much has been said about the U.P.A. itself, that incredibly complex, vital and beautiful heart-shaped object which indeed represents the heart of the entire physical world (Figure 11). It is the unit from which the whole of physical creation is built, with its glory of crystals and mountains, plants and animals in enormous variety, and man himself. Its strangely convoluted structure must have deep significance. As Geoffrey Hodson was moved to remark, when he caught sight of one unexpectedly "It gives me the impression of a heart-shaped Divine Presence in space. It is a highly significant Logoic manifestation. It's God at the physical level, or whatever names you may use, but it is the Creator's Self in manifestation, I suggest." Dr. Phillips has been inspired to discover and reveal some part at least, of this mystery.

When Leadbeater examined the U.P.A. in detail, with its ten whorls of coiled coils, he spent a great deal of time and energy upon a most tedious labour of love. He meticulously counted the number of turns or spirillae, and found there were 1680 in each whorl, whether one of the 7 normal ones, or one of the 3 brighter and thicker ones. He must have believed that this number had great significance which would come to light some day, for he even repeated the



counting on additional atoms from different sources. But always the number was the same, 1680 per whorl or 16,800 for the whole U.P.A.

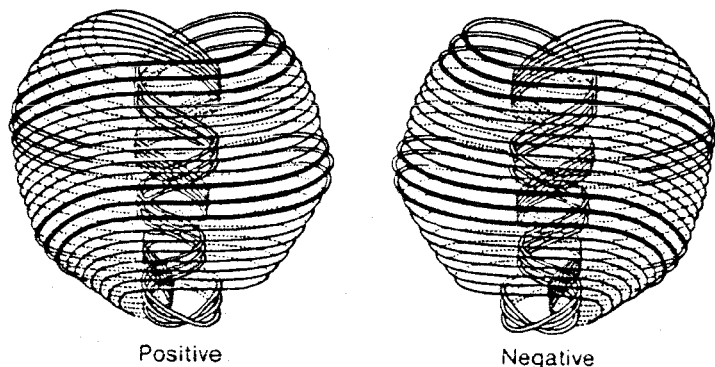


Fig. 11. The Two Chiral Forms of the U.P.A.

Phillips has recently shown, in as yet unpublished research, that these numbers can be derived from his Omegon Theory. Also that, of possible alternatives to that theory, none can give rise to these numbers. Thus their significance is at last revealed at least in part; it may even be claimed that Leadbeater's observations "prove" the Omegon Theory, postulated some 70 years later! the mathematical treatment is too complex to be considered in any meaningful way. It is shown that the number must be computed from the following formula: No. of flavours  $\times$  No. of generation-changing flavour charges + No. of hadronic colours  $\times$  No. of colour-shade charges. Inserting the relevant numbers gives:

$$10 \times 96 + 9 \times 80 = 1680$$

An even more elaborate alternative computation yields the number 16,800 directly, the number of spirillae in the whole atom.

For decades *Occult Chemistry* has been something of a skeleton in a cupboard, a book to keep quiet about when introducing friends to theosophy. Now, as Dr. Phillips

wrote to me, *Occult Chemistry* is a book that theosophists can be proud of. None can now doubt that its authors Annie Besant and Charles Leadbeater were highly competent occultists. Their outstanding psychic powers enabled them to observe many phenomena unknown to the scientists of their time and to report them clearly and unmistakably in simple language. They made a few errors of observation, excusable in so difficult a field; also the inadequate science of their day led them to make equally understandable errors of interpretation. These must be set against the enormous body of accurate reporting now completely validated by modern science, taking into account the advances made during the last decade in elementary particle physics.

In the light of this work, how should we assess the vast amount of psychic investigation by these authors in other fields, such as their detailed accounts of conditions on the astral and mental planes? Also, how should we regard their more startling researches into the history of mankind? It has been suggested in chapter 3 that the abnormally speedy development undertaken by the investigators could not have taken them to the stage at which they would be entirely free from the distorting influences of their personalities. It is to be expected that any inaccuracies so introduced would be least in the highly impersonal *Occult Chemistry* work, and most likely in studies of the past lives of personal friends. However, none of these other investigations can yet be submitted to the kind of skilled independent assessment here reported for the *Occult Chemistry* researches; modern physical research is nowhere near the stage at which this could be done. Of course there have been some confirmations of a rather general nature, but the reports of some other psychics appear to conflict with those of Besant and Leadbeater. The words "appear to conflict" are here used advisedly. *All* investigators of higher planes are in effect trying to describe the indescribable. Only those who have learned by long practice and discipline how to discount personality influences in bringing them through into normal waking consciousness, are really qualified to pass judgment.

Those of us who had any doubt may now be assured that the work of Besant and Leadbeater in *Occult Chemistry* was largely accurate, whereas until recently it seemed the most dubious of their contributions. The rest of their work cannot be expected to be totally correct, but at least our confidence in it should now be greatly increased.

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