

# **Born Out Of The Sun**

A discovery of the  
unifying infinitesimal  
particle and its  
relationship to the  
organization and  
behavior of all matter

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## **Dedication**

This book is dedicated with love and great appreciation to my wife Nellie for her devotion and assistance during the many years of our marriage.

# Table Of Contents

Chapter 1	
What About Creation.....	7
Chapter 2	
Preliminaries to Discovery .....	13
Chapter 3	
Simplifying the Discovery Process .....	19
Chapter 4	
The “Why” of Theories .....	25
Chapter 5	
Birth of the Planets .....	29
Chapter 6	
A Hidden Sister Planet?.....	35
Chapter 7	
Life in the Universe .....	41
Chapter 8	
How Life Began .....	47
Chapter 9	
The Ultimate Consolidating Force .....	51
Chapter 10	
Why Magnetism Works .....	55
Chapter 11	
Electricity Explained .....	61
Chapter 12	
How Electromagnetic Waves Work .....	67
Chapter 13	
Reasons for Radioactivity .....	73

Chapter 14	
Wonderful Water .....	79
Chapter 15	
A Picture of Photosynthesis.....	85
Chapter 16	
Maintaining Cycles.....	91
Chapter 17	
Bizarre Black Holes.....	97
Chapter 18	
Shedding Light on Dark Matter .....	101
Chapter 19	
Connections Among Solar Phenomena .....	105
Chapter 20	
The Blueprint of Life.....	111
Chapter 21	
Why Mutations Occur .....	117
Chapter 22	
What Causes Cancer.....	123
Chapter 23	
Achieving Longer Life .....	129
Chapter 24	
Perhaps Achieving Immortality .....	135
Chapter 25	
The Prime Mover-- Our Parent Sun.....	141

# Preface

We humans have always been an intensely curious lot. Even before recorded history, there is compelling evidence suggesting that our species yearned to understand...to know more. Down through the centuries, people have been driven by an insatiable need to explain the universe within the context of logic and rationality.

Over the years, scientific investigation and reason have played a major role in demystifying many enigmas. Humans have taken delight in discovering the answers to a host of natural phenomena...in realizing that nature predictably obeys what we recognize as the fundamental laws of physics.

But as reliable and insightful as these precepts are, they fall short in many instances. For example, the Law of Gravity, as formulated by Isaac Newton, allows us to calculate the strength of gravitational force fields exerted by stars. We can even quantify the force itself. But the Law does not tell us why gravity exists in the first place. It does

not tell us why stars attract other objects.

There are many such examples which demonstrate not the inaccuracy, but rather the inadequacy, of scientific theories...For example, why do the stars emit light and other forms of electromagnetic radiation? To be sure, laws of thermodynamics and nuclear chemistry may correctly tell us how much energy and under what conditions energy will be released, but they do not tell why this release occurs.

What can explain the power of electricity? Principles of electricity and magnetism provide a means for quantifying this wonder, but they don't address the fundamental question... why does it exist in the first place?

Then, of course, there is the most fundamental question of all... why is there a universe... why is there something rather than nothing? Many philosophers, scientists and cosmologists have pondered this riddle, to no avail. Once again, while laws of physics permit measurement and all manner of quantifying, they still fail to explain "why."

This book, *Born Out of the Sun*, will shed some light on the “why.” It does not disparage the findings of science, nor in any way discredits the contributions of dedicated scientists. It only puts forth an explanation for why the universe behaves as it does. Rather than being overly concerned with cold, calculated measurements, it bases conclusions on qualitative observations and deductive reasoning to arrive at a concept that exemplifies the ultimate in simplicity. In essence, the theory expressed in the book maintains that much of the “why” of the universe may be explained by acknowledging the existence of a single all-encompassing, unifying piece of matter...the infinitesimal particle.

The existence of the infinitesimal particle is based on the following premises:

1. All matter and energy that now exists in the universe has always existed and always will exist. There is a constant recycling, as energy is changed into matter and matter is changed back into energy...a perpetual evolving and dissolving of matter and energy.

The alternative to this view is to believe that all of the universe was created out of nothingness. If this notion is accepted, one must then ask, "Who or what created God and from what was He created"? Whatever the answer, perhaps God should be perceived as the source of ultimate intelligence, encompassing the entire universe. Those who tune their minds to Him have access to this intelligence.

2. Our solar system is a microcosm of the universe. Scattered throughout the galaxies are countless other suns, each with numerous orbiting planets. To understand the sun and its entourage of planets, comets and asteroids is to understand the whole universe; therefore our solar system will be used as the defining model for purposes of discussion in this book.

This book will reveal the nature of the infinitesimal particle as the paramount unifying force in the universe. Generated by thermonuclear reactions deep within the sun, infinitesimal particles stream toward the planets at the speed of light, engulfing them in an unimaginably powerful force... a force so potent

that it is able to bind particles of the atoms together, organizing their internal structure and imparting to them recognizable properties.

True enough the sun gave birth to the planets, but more than that, the sun gave birth to the single most ubiquitous, all encompassing force of all... the infinitesimal particle. It too was born out of the sun.



## Chapter 1

# What About Creation

In the beginning God created the heavens and the earth...darkness was all about and God said, “Let there be light... And the evening and morning... were the first day.”

The Bible’s account of creation as stated in the book of Genesis is concise and direct. Without equivocation, it affirms that God spoke the universe into existence. But this simple and terse explanation has not been enough for many. Down through the ages, scientists, philosophers and, yes, even theologians, have sought more information. They have longed to know more...to understand how such a grandiose and complex universe came to be. Where did the sun and the planets come from? How does the sun give off energy? And the most profound question of all...why does the universe even exist at all?

Progress has been slow in answering these questions. Nature yields her secrets all too grudgingly, and only

to those who persevere. We are far from having answered all her riddles. Many mysteries await solution and there are an abundance of theories to be explored. And so the curious build on knowledge of the past in hopes of acquiring greater understanding in the present as we plunge relentlessly forward into the unknown future.

Thankfully, though, much is already known, and it is on this foundation of knowledge that many theories are based. Let's first take a look at some of what has been learned about our solar system and then see how the theory of the infinitesimal particle is consistent with these facts.

What do we know of the sun's history? Scientists believe that it was formed some 4.5 billion years ago when massive clouds of dust, gas and debris came together. These were materials which, in the past, had belonged to and had made up the material of another star...one which burned brilliantly for billions of years, and then, after running out of fuel, blew itself to bits. Hence, it is often said that the sun is a second- or perhaps third-generation

star.

As the formation of our sun continued, more and more dust and gas collected around a central core of material. Pressure and heat steadily mounted, at some point becoming so intense that hydrogen molecules began fusing into helium, with the release of enormous amounts of energy. The “fires” of nuclear fusion had been lit.

The details of nuclear fusion are well known. Careful measurements have shown that when hydrogen atoms combine to form helium atoms, some mass is lost. In other words, the resulting helium atoms weigh less than the hydrogen atoms from which they came. This “missing mass” is converted into energy according to Einstein’s famous equation  $E = MC^2$ . Since fusion is the reaction which releases energy in a hydrogen bomb, the sun can be likened to a continuously exploding H-bomb.

The fusion reactions occur deep within the sun’s core, where the pressures are sufficient to keep the process going. Slowly the released energy, riding on convective gaseous

currents, winds its way from the core to the sun's surface where it is released as electromagnetic radiation... primarily heat and light.

Though an average size star, the sun, by earthly standards, is enormous. It's diameter is over 100 times that of the earth, and its total mass is several millions times as great as our planet's. Every second the sun converts about six million tons of hydrogen to helium to produce the energy which lights the solar system and gives life to our world. But the fusion process within the sun does more than produce and release energy. Its inconceivable temperatures and pressures cause the release of infinitesimal particles as well. These pervasive entities, set free as the hydrogen atoms unite, permeate the interior of the structure of the atoms within the sun itself, binding particle to particle and creating an array of substances we call the elements... carbon, oxygen, iron, etc., each created by the binding force of the infinitesimal particles. As the infinitesimal particles continue to stream outward from the sun in all directions, they engulf

the entire solar system, bathing the planets, satellites and asteroids with energy, penetrating every atom of every object within reach. The influence of infinitesimal particles is profound, indeed. They exert their force on all the solar system, giving birth to a host of natural phenomena...gravity, electricity, nuclear reactions, etc.

The planets owe their very existence to the sun. They were created out of this magnificent glowing body as it shrank from a giant body to its present size. They continue to exist only because the sun furnishes two key ingredients...solar energy and the infinitesimal particle. Solar energy maintains a certain level of activity, and the infinitesimal particle oversees and moderates the laws of physics, shaping the solar system as we know it. The solar system arose because of the interaction of matter with the infinitesimal particle. And the sun's control of the solar system continues to be mediated through its influence.



## Chapter 2

# **Preliminaries to Discovery**

From the earliest beginnings humans have yearned to understand their immediate world as well as the universe. Cavemen, no doubt, looked at the ground beneath their feet and questioned what the earth was made of. They observed an abundance and diversity of life around them and asked how living things were different from other objects...they gazed upward and wondered why the sun shines...what causes the stars, moon and planets to move?

Thousands of years later sophisticated philosophers and scholars would ask more subtle and abstract questions about the nature of the universe, of life, and of matter, itself...and how it all got started. Aristotle was such an individual. Born in Macedonia in 384 BC, this Greek philosopher-scientist ranks with Plato and Socrates as one of the most famous wise men of antiquity. With a keenly observant and inquisitive mind, he delved into

areas of physics, art, metaphysics, meteorology, astronomy, biology, ethics, religion, psychology, and philosophy. We know this to be true because his lecture notes covering these topics have been recovered and studied extensively. Also in this collection are found essays on logic, called organon, or instrument, a reference to the fact that following them would reveal the way to acquire positive knowledge.

Aristotle believed that the world was made of individual substances and particles and that each entity possessed, within its being, a preordained pattern for development, a set of instructions which was responsible for organizing the makeup of the material. This was particularly evident, he thought, in living organisms. What else could explain how tiny seeds of plants and immature animals could grow into adult forms, and, in time, reproduce their own kind. Rudimentary as that information was, it was essentially correct, for we now know that it is the DNA in cell which organizes such development.

Chemistry for Aristotle was rather

simple. He thought that particles of matter were organized in such a way as to produce only four kinds of material in and around the earth. Arranged in order of decreasing "heaviness" or "specific gravity," they were earth, water, air and fire. He also postulated a fifth classification of matter, the ether, found only in the heavens. Although limited, he planted the seeds of modern-day chemistry. We now have classified over 100 distinct elements. Here we find that organization of the nucleus of the atom of each element is the key to its identity.

In the realm of psychology, Aristotle concentrated on the "soul," which he defined as a "kind of functioning of a body organized so that it can support vital functions." He held that ethical behavior and mental prowess of human beings were achieved by the proper organizational relationship of one's body to one's soul.

Aristotle's classification of matter led him to an explanation for why the earth, other planets, sun, moon and stars occupied specific areas of the sky and why they seemed to be assigned

to fixed definite patterns of movement in the cosmos. He thought that heavier matter fell in a straight line down toward earth, coming to a halt. Fire, lighter, moved upward to assume its rightful place in the sky to stop eventually at the sun. But the ether was different. It moved endlessly in a circle around the earth, carrying the sun, moon and the stars with it. Thus, in Aristotle's view, the entire universe revolved around the earth. This geocentric theory held for centuries until, in the 16th century, Copernicus showed that the sun was actually the center of the solar system.

It was obvious to Aristotle that matter existed and behaved as it did because its particles had been organized in a precise manner. But, because he was operating on the incorrect premise that the earth, and not the sun, was at the heart of the solar system, he was not able to say just what the nature or what the source of that organizing influence was. Had he known that the sun was the center, he might have concluded that the sun, itself, was, indeed, the source...that, by continu-

ously releasing unifying infinitesimal particles, protons, neutrons, electrons, quarks, and dozens of other subatomic particles are woven into atoms of specific elements and that the elements are organized and combined into compounds. These, in turn, unite to form all the materials of the universe, including those substances which make up our own bodies.

What if that basic principle (the sun as the source of unifying particles) had been recognized and accepted in 300 BC? What if scientists and engineers of that day had built upon this knowledge then? Might not computers, television, automobiles, airplanes, modern medicine and all the wonders of our technological age been developed hundreds of years ago. If so, it makes one wonder what our lives would be like today. How much further advanced would we be?

Understanding the implications of an ordered universe has made many of our inventions and advances possible. Understanding that the infinitesimal particle, the ultimate unifying force of the solar system, is responsible for it

all provides an explanation for “why” things are the way they are. We and everything that exist are truly born out of the sun.

## Chapter 3

# **Simplifying the Discovery Process**

In the early part of the 20th century, a young patent clerk named Albert Einstein introduced a set of entirely unprecedented, unparalleled and unconventional concepts to the world... so bizarre as to be beyond the scope of common human experience. Such notions as time flowing at different rates for different observers, so that a person travelling at near light speed would age more slowly than a person at rest, or the idea that matter becomes infinitely massive as it approaches the speed of light, all seemed to fly in the face of rationality. He expressed his mind-boggling ideas in a treatise called *The Theory of Relativity*, and it profoundly changed forever the way humans look at the universe.

Arguably, Einstein's ideas were perhaps the most compelling and insightful revelations ever. As important as these contributions were, Einstein himself realized that his work was not

complete. He continued to work on other puzzles of the cosmos, specifically the search for the Grand Unified Theory...a mathematical concept that would in one equation, or concept, describe all the nuclear forces of the atom, the force of electromagnetism, and the force of gravity. He never solved that riddle because in 1955 death cut short his efforts.

Without a doubt, Albert Einstein was one of the most brilliant individuals to have ever lived, but despite his genius, did he overlook something quite obvious? Did he become so consumed with mathematical computations...so buried and mired in esoteric theory...that he failed to “see the forest for the trees.” Did he disregard the possibility that there might be a simple explanation for how the universe was assembled and for its behavior? If so, it is easy to understand how he may have been seduced by abstract equations, blinding him to a more modest and uncomplicated interpretation. This is not to disparage Einstein’s work in the least. The logic of his computations have been confirmed time and

time again by mathematicians and scientists around the world. And in the years since his revelations, many of those strange, “contrary-to-common-sense” pronouncements have been proved in the laboratory. But perhaps there might have been a more elementary explanation for it all. In thinking of Einstein’s work, consider the story of the person who searched the world over for diamonds, employing all manner of geologic expertise and sophisticated mining equipment, only to ultimately find the largest diamond in the world just under the surface of the soil right in his own backyard.

Let’s suppose that given his enormous intuitive powers and his dedication to search out the truth, Einstein eventually might have looked more closely in “his own backyard”...more specifically that he might have looked within the solar system and particularly at the sun itself. Had he done so, he might have come to understand that perhaps a single, simple, basic fundamental energy source, the unifying infinitesimal particle, held the key...that this basic particle might have been the

answer to it all: the explanation for how and why the universe works as it does; why the fundamental forces of gravity, electromagnetism, and the weak and strong nuclear forces all exist; why some elements are radioactive and why they decay; why certain subatomic particles combine to form elements; and why elements unite to form compounds, some having the property of life. Had he been afforded more time before his death, he might have even concluded that the infinitesimal particle alone was responsible for organizing and weaving together rudimentary pieces of matter to form the universe as we know it and that it was this particle which is responsible for imparting to all matter the varied properties it exhibits. He might have even concluded that this particle satisfied the requirements for being the grand unifying factor he had for so long sought to identify.

Certainly we can only conjecture about what might have been. Would Einstein have discovered and accepted the idea of an infinitesimal unifying particle? We can't know for sure, but

one thing is certain, scientific information, theories, models and explanations are constantly being modified... revised. Consider, for example, what happened in the case of Newton's laws. For centuries, these laws were considered the ultimate reality...the way things really were. Then Einstein published his theories and Newton's laws were seen as being valid only under a limited set of conditions.

Could it be that, in the same way, today's rather complicated and incomplete explanation of the universe will have to be modified to take into account a simpler view...one that sees the infinitesimal particle as the ultimate creative force in the universe? At least, consideration of an alternative explanation will hopefully help to relax the constraints that science sometimes imposes on itself...constraints which discourage unconventional, creative thinking. We should remember, after all, that it is freewheeling, unbridled thought that has brought us this far.



## Chapter 4

# The “Why” of Theories

Legend has it that young Isaac Newton discovered the Law of Gravity after being struck on the head by a falling apple. Whether this incident actually jarred the renowned genius into an analytical mood and stimulated him to formulate the mathematics of gravity or not, the story nonetheless makes for an amusing anecdote. In any event, it is probably more accurate to describe Newton’s contribution to this area of science as a derivation rather than a discovery, for he arrived at his conclusions only after much careful thought and many tedious calculations.

Indeed, Newton’s work helped the world better understand how gravity works. In his treatise, he showed that the gravitational force exerted between two objects is proportional to the product of their masses and inversely proportional to the square of the distance between them. In other words, the more massive the objects are, the more strongly they pull at one another and the further apart they are, the weaker

that pull is.

Some three centuries later, another intellectual giant, Albert Einstein, shed more light on the behavior of gravity in his General Theory of Relativity. Among other things he said that the force experienced by an accelerating body was indistinguishable from the force exerted by gravity on stationary masses, the so-called "Equivalency Principle."

While the contributions of both Newton and Einstein added significantly to man's understanding of the way gravity behaved, neither answered the age-old question...Why? Why does gravity exist in the first place? What is the source of this mysterious force which seems to emanate from all masses in the universe?

The unifying infinitesimal particle could be the key to understanding the gravity conundrum. Let's assume this is so. These tiniest of all particles, born out of the thermonuclear fires of the sun's interior, stream out through space, permeating every object within reach. They travel through the infrastructure of each atom, knitting and weaving together matter to produce all the elements and compounds we

know today. But even as the particles make their way through the atoms themselves, they inevitably exert a tug on the material. We might visualize the infinitesimal particles as lines of force which, as they organize and unify matter, are, all the while, pulling on the subatomic particles, imparting to the mass through which they pass a force we call gravity. Or we might visualize the infinitesimal particles as strings being snugly threaded by a needle through a sheet of paper. The more strings that are pulled through, the more powerful is the force exerted upon the sheet of paper. In a similar fashion, the more infinitesimal particles that pass through matter, the greater is the force they impart to the material. Understandably larger and more massive the objects are intercepted by a greater number of infinitesimal particles, so the force imparted to them is considerable. That explains why more massive objects have a greater gravitational force associated with them.

Newton's notion that the force of gravity decreases as the distance between the masses increases may be easily explained using the infinitesimal

particle model. It is reasonable to assume that the infinitesimal particles scatter out, that is, become less concentrated as they travel outward from the sun. This, of course, means that, as the distance between the sun and an object increases, fewer particles will be available to permeate the mass. Consequently, as the distance between the sun and matter increases, less force will be imparted to these more distant masses, i.e. the force of gravity will decrease with the distance.

As to why the earth has such a powerful force of gravity, consider what effects its great mass and its rotation might have on the number of infinitesimal particles impacting the planet. The more massive the body, the greater the number of particles impacting. The magnitude of the imparted gravitational force is determined by the number of infinitesimal particles striking the earth. In essence, then, the infinitesimal particles constitute gravity itself. They are the very reason gravity has always existed and always will. They are the “why” behind Newton’s and Einstein’s theories.

## Chapter 5

# **Birth of the Planets**

That the planets arose out of the sun has been a widely accepted tenet of astronomy for several centuries. On this primary point, there is presently almost unanimous agreement...among respected scientists and cosmologists as well. But when these scholars are asked how such events occurred, that is, how the sun actually gave birth to its retinue of planets, the answers are often varied and a bit vague. The prevailing theory holds that in its early history the sun was a rapidly rotating ball of hot gases. This spinning motion, in turn, generated a centrifugal force which flung bits and pieces of the glowing mass out into the void of space. As time passed, this radiant, gaseous mass lost heat energy, cooling from the outside in. Eventually the temperatures dropped to a point sufficient to allow for the condensation of gas into solid chunks of matter. Let's first reaffirm that present-day astron-

omers believe that the planets were born out of the sun. The supporting evidence found on our own planet is overwhelming. Temperatures at the earth's core are, even today, very nearly the same as those of the surface of the sun. We know that layers of the earth nearer the surface are progressively colder. Those near the center are conversely progressively hotter. If the earth did cool from the outside in, we would logically expect a rather smooth temperature gradient. And indeed that's exactly what we find. Because the earth's core has not had a chance to lose its primordial heat, it still retains its original "birth temperature." But it's just a matter of time. Eventually equilibrium will be reached and the temperature of all layers will be the same...Until then, deeper and deeper layers of the earth will continue to seethe and produce volcanic eruptions in an attempt to eliminate the heat imparted to it by the sun.

But this concept stops short of explaining some other curious events... for instance, why the planets orbit at

varying distances from the sun while traveling through space at about the same relative speed. In other words, how did the planets come by the angular momentum that causes them to continue circling the sun millennium after millennium.

Now consider this theory which takes the current notion of planet formation a step further. Suppose the sun in its very early history was so large that its outer limits stretched to what we now know as the orbit of the last planet, Pluto. The fires of thermonuclear reactions occurring deep within the young sun resulted in the production of innumerable infinitesimal particles. These exceedingly small pieces of matter and energy, moving at the speed of light, wove together subatomic particles, protons, neutrons and electrons, creating atoms that make up the elements we now find in the planets. Over time large masses of protoplanets were formed within the sun's mass. Gradually, as the sun's mass was consumed, its physical size began to diminish. It shrank, and, as

it did so, the planets were released... deposited, as it were, one at a time... at points corresponding to the sun's ever-decreasing circumference. Thus, the first planet to be born, Pluto, was released, or born, when the sun was its biggest. It is also the planet which has had the longest to cool. Not surprisingly, scientists believe that Pluto's core has now most likely lost all its heat. It has had time to reach equilibrium.

Perhaps several million years later, the sun had decreased in size so that it extended only to the orbit of Neptune. At this point in time and space, the sun delivered the second planet, Neptune. This process of receding and accompanying release, or birth, of the planets continued...Uranus, Saturn, Jupiter, Mars, Earth, Venus...until the last "child of the sun," Mercury, was eventually born. After Mercury's birth, the sun continued to contract, reaching its present size. Even today this whole process is ongoing. The sun continues to contract, while, at the same time, producing infinitesimal particles, which create the elements that go into

the formation of planets. Probably the sun will in time give birth to yet another offspring. Observed sunspots are evidence of the infinitesimal unifying particle's continued interaction with matter in the formation of planets.

Once again two basic pieces of evidence substantiate this theory of planet formation by the sun. First, the inner temperatures of the planets do decrease with their distance from the sun. That, in itself, is persuasive evidence that the planets arose from the sun in the sequential manner just described. Second, the planets exhibit circular momentum. Let's look at this by answering two questions: What accounts for the motion of the planets around the sun, and what initially propelled them into a circular orbit? Surely the sun itself must have been responsible for imparting this circular momentum to all the planets. What else could have accomplished such a feat? But how did it do it? Well, our sun is a rotating body. Even today we see evidence that the sun turns on its axis, taking several hours to make

one revolution. It is logical to assume that the sun has always rotated; and, if that's true, then it is fairly easy to understand how the planets could have been given a circular momentum by the spinning sun as it receded away from them.

In summary, the planets were created within the sun by the unifying infinitesimal particle's interaction with matter. The shrinking sun released planets at varying distances along the way and in doing so imparted an angular momentum, which to this day continues to hurl them around their glowing parent at the solar system's center.

## Chapter 6

# **A Hidden Sister Planet?**

The solar system...on the cosmologic scale, it occupies an insignificant and tiny portion of the universe...is hardly distinguishable from the trillions of other stars and their orbiting retinue of matter scattered throughout the macrocosm. But for inhabitants of planet earth, the solar system might as well be the “center of the whole universe,” for it is home.

Over the last several centuries, we humans have learned a great deal about our little corner of the cosmos. With probes that have recently skimmed the upper reaches of some planets and with spacecraft that have made unmanned landings on others, we have come to know our celestial neighbors quite well. Using a telescope orbiting high above our atmosphere, we have snapped crystal-clear pictures of comets, asteroids, and the sun as well as planets.

Indeed, we have acquired much knowledge about our solar system over the years. But is that information really

complete? Do we know all there is to know, or is it possible that we might have missed something...something so significant that its discovery would rival the confirmation of extraterrestrial life?

Let us speculate on such a possibility. Suppose there was a tenth planet, one which orbited the sun...not a planet out beyond distant Pluto, but rather one which occupied an orbit approximately 93,000,000 miles from the sun...the same distance as the earth!

Let's assume that much of the time, this planet's position is exactly opposite the earth, that is, directly behind the sun. During these times, this tenth planet would be completely hidden from our view. But, because Planet 10 is slightly closer to the sun than is the earth, it would orbit a bit faster, and therefore ever-so-slowly gain on the earth as each planet made its annual trip around the sun. Eventually, the heretofore hidden planet would emerge from behind the sun and in time overtake the earth, approaching to within 100,000-150,000 miles of our planet.

What leads to such speculation? Consider that a planet the size of the

earth...and one in a solar orbit slightly smaller than that of the earth's, would "lap," that is, approach our planet roughly every 11,000 to 12,000 years. Coincidentally, that interval matches quite closely the intervals between documented catastrophes on earth... the ice age, clusters of earthquakes and volcanic eruptions and magnetic pole reversals. Are these mere coincidences or could these profound changes have been caused by the gravitational pull of this tenth planet during its close encounter with earth. Might this planet regularly, every 12,000 years or so, come close enough to the earth to cause these periodic perturbations... the changing of the earth's axis of rotation leading to weather changes; the reversal of its magnetic poles, leading to earthquakes; etc.?

For a planet to overtake the earth once every 12,000 years, calculations using classic Newtonian physics show that it would have to be only 5,100 miles closer to the sun than is the earth. This conclusion is based on the following equation: the distance between this planet and the sun in as-

tronomical units equals the cube root of one astronomical unit minus one twelve thousandth squared. An astronomical unit is the average distance from the sun to the earth, 93,000,000 miles. A planet coming close to the earth would cause enormous terrestrial upheavals.

So perhaps more than simple coincidence is at work here...perhaps there is a definite connection, a good possibility that Planet 10 exists, and that it adversely affects earth at 12,000-year intervals. Since we would have to wait several centuries before the tenth planet emerges from behind the sun, how could we find out if it does exist? The answer, we could place a space probe in orbit around the planet Mercury to sneak a peek. This mystery planet, if it exists, would be plainly visible at certain times during the Mercurial year.

One other point. If the planet does exist, it is most likely that any visitors from another world would have come from this planet rather than from planets in other solar systems. Why? Any civilization sufficiently advanced to master space travel would understand that all solar systems are basically

alike. That is, they would know that all stars emit unifying infinitesimal particles which weave together the matter of all solar systems everywhere in the universe. They would surely realize that there could be no benefit or reason to travel thousands of light years to some distant solar system, when because of the universality of the infinitesimal particle, all solar systems are quite alike. No doubt, they would reason: "There is nothing new to be learned from such a major investment. We'll only confirm what we already know...that the infinitesimal particle is the key to the structure of the universe. Why not just visit a nearby neighbor to learn as much as possible about their world?"

No one should hastily dismiss the idea of a tenth planet opposite the earth. The history of science is replete with discoveries which confirmed what some had earlier thought were ludicrous. The true scientist keeps an open mind and is willing to consider the evidence for any and all ideas.



## Chapter 7

# Life in the Universe

For centuries people have speculated about the existence of life elsewhere in the universe. Indeed...it's one of the most intriguing questions of all time. We seem to have an innate desire to know for sure if in fact "we are all alone" in this vastness called the cosmos.

For several decades now, astronomers have searched the skies using optical telescopes in hopes of seeing some sign of extraterrestrial life. And they've used giant radiotelescopes, hoping to hear faint transmissions from distant alien beings. So far, though, efforts have produced little evidence of the certain existence of any other life forms. However, investigators have discovered something quite profound...signs that perhaps some form of bacteria-like life did exist on the planet Mars at one time in its early history. The evidence comes in the form of what some think are Martian fossil remains of primitive cells...cells

which bear stunning similarities to the bacteria found on the earth today. How were scientists able to examine Martian fossils? The specimens arrived on the earth inside meteorites, chunks of rock that scientists think once made up part of the Martian soil. Presumably, these fossil-laden Martian rocks were blasted away from the planet's surface by collisions between the planet and asteroids eons ago. Eventually some of the debris was captured by the earth's gravity, which pulled them to the surface.

These findings are compelling evidence that the "Red Planet" was once home to life forms. But bacteria only? Perhaps Martian bacteria were just the beginning... and these primitive single cells slowly evolved progressively into more complex creatures. Evolutionists tell us that is what happened here on earth. Why couldn't it have happened on Mars as well? As on the earth, life on Mars could have begun as simple single cells. Eventually these primitive single-celled structures developed colonies, groups of cells living together as a unit. Over time, individual cells

in the group changed so as to be able to perform specialized functions for the colony. Thus the first multicellular creatures came to be. As the millennia passed the life forms became more complex. Surely, if this scenario of life's unfolding can be accepted as having occurred on Earth, it can be assumed to have happened on Mars as well, especially in view of the recent finding on earth of fossils from Mars.

Let's assume for the moment that life on Mars did evolve in a manner similar to the process that brought life to earth. What then happened to all the higher Martian life forms? Could it be that they were all destroyed in some catastrophic incident? If so, what sort of catastrophe could have caused such a mass extinction? Several apocalyptic scenarios come to mind, but perhaps it is most reasonable to assume that their planet was hit by a large asteroid, a collision so horrendous that millions of pieces of rock were hurled from the stricken planet into space. Such an impact would explain the existence of the debris which now orbit the sun between Mars and Jupiter, the so-called

asteroid belt.

Is that the way early Martians met their fate; or did they disappear from their planet because, being able to detect the impending doom and having the technological expertise to leave, they escaped their planet for a safer world...or, failing that, sent out life forms to evolve? Perhaps it was the latter. Let's assume this is so. What could have happened? Possibly ancient Martians had reached a level of sophistication more advanced than that of present-day humans. They could have used this knowledge to establish a presence on other worlds, most notably the Earth. It is not too far beyond imagination to think that perhaps life on the earth originated from a Martian disaster...that intelligent ancient Martians seeded the earth with a variety of life forms..that we are the progeny, the descendants, of a Martian civilization.

Perhaps we should take a lesson from these supposed Martian ancestors. In the event the earth in the future should become incompatible with life, or should we be faced with an unavoidable and imminent disaster,

perhaps we could do as the ancient Martians possibly did...set up shop on another planet. The most likely alternative is the planet Venus. To be sure, it is an inhospitable place at present. It's nearness to the sun, along with the cloud of carbon dioxide, makes it incapable of supporting most forms of life as we know them. But according to the principles of the "born out of the sun" theory, our parent star is slowly receding, and so, at some point, it will be far enough away from Venus to produce moderate temperatures. And, even if Venus doesn't cool enough for humans to exist there, we might well consider sending forms of life which we do know can exist at such temperature extremes, certain sulfur-metabolizing bacteria, for example. Perhaps also we could even modify it's environment to become suitable for life by somehow reducing the level of carbon dioxide by extraneous means. At the very least we would be giving life another opportunity to continue onward...just as ancient Martians might have done.



## Chapter 8

# How Life Began

Whether life began on Mars or elsewhere and subsequently relocated to the earth or not, most scientists do agree on several basic concepts relative to the creation of living organisms. First, most believe that life arose from the humblest of beginnings, initially no more than a collection of atoms representing the elements carbon, hydrogen, oxygen, nitrogen and phosphorus. Second, they agree that atoms making up living entities are no different from the atoms which constitute nonliving matter. Third, given that atoms in living and nonliving materials are, indeed, identical, most would say that it is the order in which the atoms are assembled in living organisms which makes them “alive.”

Current scientific theories suggest that in the beginning the above elements, adrift in the vastness of the primordial sea, in some way were prompted to seek each other out... that they were eventually successful in

doing this. Once sufficient quantities of carbon, hydrogen, nitrogen, oxygen and phosphorus had accumulated in the same general vicinity, the atoms yielded to some type of mutual attraction and combined to form the first basic building blocks of life...proteins and nucleic acids. Thus, inanimate atoms organized themselves to create the first chemicals capable of reproducing their own kind...chemicals that would be the precursors to all life forms as we know them today.

But as credible, satisfying and compelling as these concepts are, they fail to identify the driving force behind it all. They fall short in explaining the “why” and the “how.” The theories do not address or even speculate on the nature of the force...the source of energy which obviously caused the atoms to congregate, or pool, together? The theories do not explain what kind of impetus must have driven the atoms together and, perhaps most important, the theories do not say what force or entity orchestrated the organization of these atoms to form the specific life-generating molecules we know to-

day as DNA, RNA and various proteins.

Previous chapters of this book have theorized that infinitesimal particles, created by thermonuclear reactions deep within the sun, were responsible for assembling subatomic particles into the elements. The infinitesimal particle served as both the “loom” and the “thread” that wove protons, neutrons, quarks, mesons and electrons into all the atoms we know today.

That same bit of matter and energy, the unifying infinitesimal particle is proposed as having played an identical role in the creation of life. This tiniest of all particles, so ubiquitous, so pervasive, and so imbued with solar energy, functioned in the beginning as the sole organizing force in the creation of life.

Empowered with the energy of the sun, innumerable infinitesimal particles accomplished what some might call a miracle on young Earth (or young Mars). They permeated every atom, supplying each one with an innate force that caused elements to attract each other. These smallest of particles imparted an energy which initiated very specific reactions, reac-

tions which resulted in the formation of life-generating molecules. Just as the infinitesimal particle in an earlier time organized the atoms, they put molecules of life together as well. And therein lies the key. The infinitesimal particle had the organizational power and ability to weave atoms together to form the molecules crucial to the evolution of life.

For some time we have known that a specific series of events, an orderly sequence of occurrences, led to the creation of life. But until now no explanation for the causes of these phenomena has ever been offered. The “why” and “how” behind the creation of life has been conspicuously absent. However, with the postulation of the infinitesimal particle and its role as an organizer, those unresolved questions may be answered.

Just as this most basic particle of matter, the infinitesimal particle, was born out of the sun, so, too, was its own creation, life itself. Once again we see that in our solar system all matter, all energy and all life come from our parent star, the sun.

## Chapter 9

# **The Ultimate Consolidating Force**

Democritus was the first to state it. He was probably one of the first to think it...the notion that all matter is comprised of very small particles. Democritus even went further, saying that these particles constituted the very building blocks of matter itself. So fundamental, he said, were these particles that splitting them into smaller, simpler pieces would be a physical impossibility. He, therefore, dubbed the particles "atoms," which is Greek for "indivisible."

Today, of course, we know that the atom can be split, although doing so changes its original identity. For instance, when the uranium atom is split, it may divide into two other elements, barium and krypton. The original uranium atom no longer exists. In essence, then, Democritus' concept of the atom is still correct. Only now we have to add that an atom cannot be split without changing its character.

Since the time of Democritus we have learned much about matter, elements and the atom itself. A giant leap forward was taken in the mid-1800's when a Russian scientist, Mendeleev, organized the elements into a chart, called the Periodic Table of the Elements. Although modified from the first prototype, the present-day Periodic Table lists all the elements in the known universe, even those which are made by humans.

Ask chemistry students how the table is organized and they will tell you that the elements are arranged according to increasing atomic numbers...that is, according to how many protons are contained in the nucleus of each atom. Furthermore, they will tell you that it is the number of protons which determines what each element is. For example, the first element is hydrogen...its atomic number is one because it has only one proton in its nucleus. Add another proton to the nucleus and the hydrogen turns into the second element, helium. Add one more and the third element, lithium, is created...the fourth is beryllium;

the fifth, boron; and so on. It is quite astonishing to realize that the protons in all atoms are exactly the same. The protons in gold are identical to the protons in iron. But, because one atom has 79 protons and the other has 26, the first one is gold and the second is iron. Chemists know that there are other particles in the nuclei as well, most notably neutrons, but it is the proton which makes the element what it is.

Such are the principles of basic chemistry...well known, understood and accepted. But still the picture is somewhat incomplete. Chemistry 101 and even advanced esoteric theories fail to address one fundamental question: What causes the nuclei of the atoms to form in such a manner? Why do protons and neutrons unite to produce the 108 or so known elements? And what holds the nuclei of all atoms together?

Once more we turn to the infinitesimal particle. Invading the subatomic world of matter's infrastructure, they weave proton to proton, neutron to proton, and neutron to neutron. They

are the ultimate consolidating force. The final result is the synthesis of an entire array of elements....hydrogen, helium, oxygen, iron, etc. Eventually every atom of every element is produced. We may say that all the elements found on the earth and, indeed, anywhere in the solar system were first produced by the action of infinitesimal particles acting upon subatomic particles.

We can credit infinitesimal particles with yet another accomplishment. As these particles stream through space, infiltrating the nuclei of all matter on the earth and other planets, they continuously exert the same unifying force which created the atoms in the first place. This time, however, that force works to cement the nuclei of all atoms together...to maintain the structural integrity of the elements.

The unifying infinitesimal particle...born out of the sun, creator of the elements and glue for the universe...is the ultimate consolidating force.

## Chapter 10

# Why Magnetism Works

Scientists at some of the world's most prestigious research institutions are prying into the mysteries of magnetism. They harness the force of the magnet to carry out experiments in fusion, hoping in the process to tap into the power of the atom's nucleus. Using a magnetic field and extremely low temperatures, scientists levitate objects in so-called superconductivity experiments.

The average individual has first-hand experience with magnets as well. They are routinely used in hundreds of devices...electric motors, tape recorders, computers, generators, and even in the simple doorbell.

Magnetism has been around forever and humans have known about it for centuries. Today any elementary school student knows that certain magnets attract certain kinds of metals.

Yet despite all the sophisticated research...despite its common use

and familiarity...despite all its ancient history, the root cause of the phenomenon we call magnetism remains elusive. Even great scientists of the past, such as Henry and Oersted, could only describe its behavior. They could not explain why a magnet should attract particular metals. For anyone to say only that "it just does" without offering a credible explanation, and to imply that such a terse explanation should suffice, seems to be intellectually limited.

In the absence of any reasonable explanation for the source of magnetic forces, even from the experts, let's put forth a rationalization. Perhaps the force of magnetism can be accounted for by the interaction of the metal with infinitesimal particles. As theorized previously, these particles knit matter together, forming elements and compounds; but in certain metals, something quite extraordinary occurs. Why? The kinds of metals known to be "magnetic" are composed of atoms whose electrons are arranged in a special way that makes them vulnerable to rearrangement. The infinitesimal

particles exert an influence on the atoms of these metals, causing them to become aligned in a very precise and orderly fashion. The result is that positive ends of atoms in the affected metal become oriented toward one end of the metal while negative ends are oriented toward the other. Thus, the “north” and “south” poles of a magnet are created by the infinitesimal particle. This kind of alignment of atoms creates the magnet’s “lines of force” seen when one sprinkles powdered iron over a paper-covered magnet. It’s as if the forces are rushing out one end of the magnet in one direction and out the other end in the opposite direction. That this is indeed the case can easily be demonstrated by placing the like ends of two magnets together which repels each other. The repelling action results from the two outgoing forces meeting head-on. Conversely, when the unlike ends of a magnet are placed together, a strong force of mutual attraction is observed. This phenomenon is the result of lines of force entering the end of one magnet and leaving the end of the second, creating a kind of

“push-pull” effect.

The fact that atoms of certain materials can be aligned to produce miniature magnets with positive and negative ends has not gone unnoticed by inventors and engineers. One direct application of this characteristic has resulted in the creation of the office copying machine. In a typical photocopying machine, a plate covered with a light-sensitive material is exposed to an image of a document to be copied. The coating on the plate is termed light-sensitive because, when struck by photons of light, its atoms take on a charge. Each atom in effect becomes, with the help of the infinitesimal particle and light, a miniature electromagnet. Next a powdered substance, called a toner, is sprinkled over the partially charged plate. As it happens, the powder carries an opposite charge, so it adheres to places on the plate that were charged by the light from the copied image. The result is an electrostatic copy of the document being copied. Next, a blank piece of paper, with a charge opposite to that of the powder, is brought into contact

with the plate. The opposite charge on the paper attracts the powder from the plate causing the image of the original document to be transferred from the plate to the paper. In this way, a copy of the original is produced on a blank sheet of paper. The whole process is dependent on the fact that atoms can and do act as miniature electromagnets.

It should be stressed, however, that it is the infinitesimal particle which initiates both the phenomena of magnetism and electrostatic attraction. Without this ubiquitous entity, neither could exist. The infinitesimal particle is the force responsible for the prerequisite aligning of the atoms. So once again we see how it plays a role in all of nature's most mystifying phenomena.



## Chapter 11

# Electricity Explained

“Love makes the world go round” so the saying goes, but it’s energy that keeps it humming. Our technological society is energy hungry, dependent on the many varied forms of that intangible “something” that every school child learns to define as the “ability to do work”. And work for us energy certainly does, coming in many forms and performing a variety of tasks. For example, mechanical energy powers our automobiles, trains and planes; heat energy warms our homes and offices; and electrical energy lights our world and runs a myriad of electronic devices from toasters to computers. But where does all this energy come from? Heat and mechanical energy are most commonly produced through combustion of a fuel, burning. We’re taught that electrical energy comes through the use of generators or batteries. All true enough. But regardless of which intermediary -- wood, oil, batteries, etc. -- are used to release forms of energy,

it is important to recognize that the ultimate source is the sun.

Let us now focus on electricity in an effort to understand how the sun's energy, mediated by the infinitesimal particle, manifests itself, and, indeed, makes possible the generation of electric power. For decades now, scientists have known that when a conductor is moved in a magnetic field, a current is induced in the conductor itself. It matters not whether the conductor or the magnet is moving...only that there be relative movement between the two. When that occurs, so-called lines of magnetic force are cut, and somehow that causes electrons to begin flowing. And, it is the flow of electrons that constitutes an electric current.

But scientists cannot say why or how such relative movement between a magnetic field and a conductor causes electrons to flow. The explanation often put forth is that the mechanical energy, used to move the magnet or the conductor, is converted to electrical energy within the device itself. But such a statement does not answer the real question. It does not provide a

reason for -- that is, a cause and effect relationship between, -- movement of the components and electron flow. Nor does it even hint at the true ultimate source of energy, the sun. To just suggest that simple energy conversion is the answer is not enough.

In keeping with the notion that all energy originates from our sun, let's consider that the electrical energy produced from a generator is the direct result of intervention between the infinitesimal particle and matter. We have seen in the chapter on magnetism how, in the process of structuring the subatomic world, this particle aligns atoms of specific materials. As it happens, the materials and components of generators are arranged such that when relative movement occurs, the infinitesimal particle imparts to the electrons sufficient energy to propel them down the conductor. The movement or turning of the conductor or magnet is only incidental in that it allows the infinitesimal particle to more effectively impart energy to the electrons and cause them to move.

Infinitesimal particles continuously

strike and permeate the atoms of the conductor, positioning them so that their positive ends always point in one direction while their negative ends point in the other. This alignment of atoms, together with the special architecture of the generating device, allows the infinitesimal particle to serve as a constant supply of energy from the sun. Where else but the sun could electrical energy, defined here as moving electrons, come from? It goes without saying that any material contains only a finite number of electrons... a limited amount of energy. If the sun did not constantly replenish that supply, the material would eventually be depleted of electrons, and electric generation would cease.

One might draw an analogy between the generation of electricity and milking a cow. Milk may be in the cow's udder, but it can only be extracted by the proper milking motion. Uncoordinated squeezing will not work. Likewise electrons, present in a conductor, can be made to move only by the appropriate initiating force, in this case the infinitesimal particle. Simple, purposeless

motion, such as the movement of a conductor across lines of magnetic force would not “milk” electrons from the conductor.

So once again we can reaffirm the sun as the source of all energy on the earth. Once again we see that the sun’s energy is mediated and distributed by the infinitesimal particle, and in this particular instance we see how the particle plays an important role in the phenomenon of electrical generation ...further confirmation that everything in the solar system, even earth-made electricity, is born out of the sun.



## Chapter 12

# **How Electromagnetic Waves Work**

It's been said that we now live in the golden age of communications. Our voices are carried over cables and through the air at the speed of light... to our neighbor down the street...or to a friend across the ocean. Digital data, faxes and encrypted messages stream through the air constantly. In every city, large and small, radio and TV stations broadcast entertainment and information to an audience of millions. Using satellites, the media transmits images and sounds simultaneously to billions of people around the world. Radar signals, beamed out of planes, police cars and air traffic control centers, are bounced back to a receiver, revealing information about their targets. Indeed, our environment is awash with a multitude of electromagnetic signals, all carrying information from sender to receiver. At any given moment, literally thousands of individual signals pass through our body.

For this revolution in communications, we must thank inquisitive, ever-persistent scientists such as Maxwell, Edison, Faraday and Marconi, just to name a few. They and others uncovered some of nature's most astonishing secrets. These curious and dedicated minds ferreted out the principles of electricity and electromagnetic radiation, used by others later to create the marvels we enjoy today.

Like most other disciplines, knowledge of these phenomena, broadly termed electronics, grows day-by-day, and technical information on the subject fills many textbooks. To review even a small fraction of this material is beyond the scope of this book and would not serve the purpose of the present discussion. The immediate goal in this section, as it has been in previous chapters of this book, is to enlighten the reader on the importance of the infinitesimal particle, and, in this particular instance, the critical role it plays in the transmission of electromagnetic waves.

To gain an appreciation for this notion, it is necessary, however, to review

briefly some basics of electromagnetic theory. First, we should know that electromagnetic radiation is a form of energy, which travels outward from its source into space at 186,000 miles per second. Electromagnetic radiation includes such forms of energy as radio, TV, radar, micro, light, infrared, ultra-violet, x-ray, and gamma-ray waves. Basically they are all the same. The difference is in their frequency, that is, how many times per second the waves vibrate. Radio waves vibrate fairly slowly and x-rays and gamma-rays vibrate or oscillate more rapidly. The frequency of a radio station's signal, or transmission, is the same as its location on the dial. For instance, a dial position of 102.1, means that the signal vibrates at 102,100,000 times each second.

All these forms of energy are perfectly capable of moving through the emptiness of space. They need no medium. All these forms of electromagnetic energy have both a wave and a particle nature. For instance, light travels in waves, but, carried on these waves, are little packets or particles of

energy, called photons.

To generate an electromagnetic wave and to cause it to leap out into space, very precise conditions must exist. Electrical parameters in the transmitter -- such as impedances, reactances, voltages, etc. -- must be adjusted to produce what is called a "tuned," or "resonant," circuit. Such a circuit allows the electrons to race back and forth, their acceleration producing waves of a specific frequency. One may control the frequency of these waves by changing the values of the parameters mentioned above.

All this is well and good...basic electronics. But one crucial piece of the puzzle is missing. No where in all the research...no where in all the literature... is there an explanation for why the electrons should behave in such a way so as to produce these wave/particle forms of energy. The unifying infinitesimal particle, is again proposed as the parent of this kind of phenomena. As stated in previous chapters, this entity permeates all matter, organizing subatomic particles into atoms, atoms into elements

and elements into compounds. In organizing the materials which make up a transmitter, the infinitesimal particles align the atoms so that the poles (positive and negative ends) all point in specific directions. During this same process, the infinitesimal particle transfers some of its energy to the electrons in the circuit of the transmitter. Now, imbued with energy, these electrons navigate through the circuitry, travelling between aligned atoms, exciting them and causing them to generate electromagnetic waves... waves which carry packets of energy out into space.

Were it not for the action of infinitesimal unifying particle's "priming of the transmitter's pump," as it were, by aligning the atoms and supplying energy to the electrons, electromagnetic waves could never be generated.

Just as these smallest of all particles fill all the universe with their presence, so, too, do the waves/particles which they help create. In this sense, we may say that electromagnetic waves are yet another part of our world that is born out of the sun.



## Chapter 13

# Reasons for Radioactivity

A huge mushroom-shaped cloud rises thousands of feet into the air...A narrowly focused beam of radiation penetrates the cancerous tumor of a patient, destroying the growth...A nuclear power plant silhouettes the horizon, producing electrical power for a city of over a million citizens.

Now more than a half century into the nuclear age, most people recognize how pervasive this technology has been in their lives. Most understand that, depending on how it's used, nuclear energy can be the vehicle for awesome destruction, or it can be the promise of hope for the ill and a source of power for an energy-hungry civilization.

But let's not address the ethical considerations of this new force here nor discuss the pros and cons of nuclear power. The purpose here is to show that a cause and effect relationship exists between the process of nuclear decay, the basic phenomenon that

produces radiation, and the unifying infinitesimal particle.

To understand this correlation we must first be aware of a few basics. First, nuclear energy is so-named because the nucleus is the part of the atom from which energy originates. What's the nucleus? It's the body which makes up the very dense central core of every atom. It's the mass around which the electrons revolve, and is, itself, made of perhaps several dozens particles...things such as quarks, mesons, baryons, protons and neutrons. But it is the proton, specifically the number of protons in the nucleus, which gives an atom its identity. For instance, an atom which has 8 protons in its nucleus is the element oxygen...one with 10 is neon...one with 79 is gold, and so on. In all, there are well over 100 distinctive elements, each with its own unique number of protons. The neutrons contribute additional mass and to some degree influence the stability of the nucleus. Atoms which are stable have nuclei that appear to hold together quite well. The components of their nuclei

are “packed” so that they, for the most part, remain as intact structures.

As it turns out, stability is one of the key factors which determines whether a nucleus of a particular atom releases energy and particles or whether it doesn't. If the atom is unstable, pieces of matter and energy are likely to come flying out, and we say the element is radioactive. We say the element is capable of releasing radiation. The release of radiation, in fact, is the result of the decay of the nucleus into other materials. As the unstable nucleus casts off material and energy, it is transformed into other elements. For example, uranium ultimately decays into lead. However, most atoms are not inherently unstable, do not decay and hence do not give off radiation.

What is the nature of this radiation, this energy which comes bounding out of the nuclei of certain unstable nuclei? Basically, there are three types of radiation energy...alpha, beta and gamma. Alpha radiation is in reality a stream of particles. Each alpha particle is composed of two protons paired with two neutrons. Beta radiation is a stream

of particles too, but, in this case, the particles are electrons or electron-like fragments. Gamma radiation is energy in the form of a wave, much like light or x-rays, except that a gamma wave's frequency (rate of vibration) is much higher than almost anything else. So, in summary, nuclei of certain atoms are unstable, and that instability leads to decay, a process in which the nuclei release energy and particles. The released energy and particles we call radiation, and the material releasing the radiation is said to be radioactive.

But what is the connection between the infinitesimal particle and radioactivity? As stated previously, these particles are the ultimate organizing agent in the universe. They have the ability to weave together the tiniest subatomic particles into elements and compounds. In most cases this organizing and assembling process produces atoms that are balanced and stable...not radioactive. But in other cases, organization is somewhat different. In such instances all the pieces do not quite fit together exactly. Perhaps there is too much material

for the amount of space. In any event, as a result atoms of such elements as uranium, plutonium, and cesium expel extraneous bits of matter and energy. But why is it that they release material and energy continuously? Recall that infinitesimal particles from the sun bombard all matter constantly. We may conclude therefore that all matter is constantly being arranged and organized. But in the case of radioactive elements, that organization produces a degree of instability...and that results in radioactivity.

The thermonuclear reactions of the sun give rise to the infinitesimal particle which by instilling constant instability in certain materials in turn gives rise to radioactive decay.



## Chapter 14

# Wonderful Water

Water...one of the simplest, yet one of the most important compounds on the earth. Without water, life as we know it could not exist. It is the biochemical sea in which the cells of all creatures are bathed. In playing out its role as the universal solvent, it dissolves a myriad of substances... ions, minerals, nutrients, hormones, vitamins, gases, enzymes and a host of other materials...certainly a necessary process for the continuation of the “living state.” Water, of course, is also necessary for photosynthesis, the process by which plants make food and release oxygen. And water is essential for plant growth and reproduction.

Water is critical to our ecosystem as well. Covering about 70% of our planet, water, along with the atmosphere, helps to moderate our climate. Were it not for the oceans and the atmosphere, temperatures extremes on earth would be similar to those on the moon, ranging from extremely hot to extremely

cold. Were it not for water vapor in the air, all life forms would quickly lose moisture and die.

Because water has the ability to dissolve many substances quite well, it has been used by man as a cleansing agent for thousands of years. And when chemicals such as detergents are used with water, its dissolving powers are greatly enhanced.

Granted, we know much about the importance of water, but how are we to explain the unique characteristics and the behavior of this most remarkable substance? What, for instance, accounts for its ability to dissolve biological compounds in a living organism? Does it possibly have help from some outside source? Just what do we know about the nature of water? Well, as any elementary school student will say, the formula for water is  $H_2O$ , meaning that every molecule of water is made of two atoms of hydrogen combined with one atom of oxygen. Chemists might say that, because the two hydrogens are joined to the oxygen atom at an angle of 105 degrees, charges around the molecule become

unevenly distributed. Thus the water molecule becomes polar...that is, one end takes on a positive charge while the opposite end takes on a negative charge. Now when a water molecule encounters another particle which also has positive and negative ends, they are attracted to each other. The positive end of the water molecule tug and pull at the negatively charged end of the other particle. At the same time, the negative end of the water molecule tug and pull at the positively charged end of the other particle. This action is said to account in part for water's ability to dissolve substances such as salt, which is, in fact, made of positively and negatively charged ions. The water molecules literally tend to pull the salt particles apart. Within biological systems, water is constantly dissolving materials in the cell in just this way so that particles can be assimilated by the organism.

So we see that water's unique capabilities may be attributed to its singular structure. All well and good, but it is here that conventional science reaches an impasse. Beyond this point

it offers no explanations...no theories to explain the next logical question. "Why is water structured the way it is?"

The unifying infinitesimal particle holds the key to this riddle. Let's see what it is. As discussed previously, these infinitesimal particles are the ultimate organizing agents. In an on-going process, they knit subatomic particles of matter together to produce all the matter in our solar system. We shouldn't be surprised, then, that these particles would have the same organizing effect on both the water molecule and on the substances which water so efficiently dissolves. These particles are responsible for organizing the hydrogens and oxygens of the water molecule into their distinctive configuration, the bond angle of 105 degrees...an arrangement that confers upon water its unique ability to act as a ubiquitous biological medium and as the universal material solvent. In a similar manner, the infinitesimal particle organizes the molecules of materials being dissolved, making them more amenable to attack by the water

molecule, a process which further facilitates the dissolving process.

In organizing the water molecule and the substances which it dissolves, the infinitesimal particle plays a crucial role in shaping life on this planet, for without water this would be an entirely different and lifeless world.



## Chapter 15

# A Picture of Photosynthesis

Photosynthesis. The word means “to put together with, or by, light” and, as any high school biology student knows, it’s the process by which plants make their own food. Using the sun’s energy and the chlorophyll molecule as a catalyst, plants, also known as autotrophs, convert raw products, carbon dioxide and water, into carbohydrates and the by-product oxygen. Although the total photosynthetic process is complex in that it consists of numerous chemical reactions, the entire operation can be summarized in the following overall equation:  $6\text{CO}_2 + 6\text{H}_2\text{O}$  yields  $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$ . Translated, this equation tells us that six molecules of carbon dioxide will combine with six molecules of water to produce one molecule of glucose and six molecules of oxygen. Biologists have broken the reactions down into two main phases, one requiring light and one not requiring light, the so-called “light” and “dark” reactions.

Let's take a look at each one. In the light reaction, two very important events take place. First, the energy of light is trapped by the chlorophyll molecule and a few other pigments. Incidentally, plants look green because chlorophyll absorbs most all the colors of the spectrum except green. It cannot use this color so it reflects it back. In any event, the energy of the light is stored in special molecules called adenosine triphosphate, or ATP. This energy will be used later, as we shall see. The second important event of the light reaction involves the splitting of water into hydrogen ions ( $H^+$ ) and oxygen. The oxygen is released into the atmosphere as a by-product, and the hydrogen ions are held in reserve for later use. Up to this point, carbon dioxide has not been introduced nor has any glucose been produced. Both must await the beginning of the dark reaction before making their appearance. During this dark reaction phase of photosynthesis, the plants combine carbon dioxide from the atmosphere with the hydrogen. This reaction requires energy, and that energy is

supplied by the ATP molecules which were produced during the light reaction. Recall that the hydrogen ions were also produced during the light reaction. Thus, it can be said that the light reaction is a prelude to the dark reaction. Certainly the dark reaction could not proceed without the energy and the hydrogen ions which the light reaction so ably furnishes.

Most plants have the ability to convert glucose to other nutrients such as fats and proteins. Some of these products are then used directly by the plant or are stored, often to be used later as a food source by animals.

Animals, in a process called respiration, reverse the photosynthetic process. After ingesting plants or an animal which ate plants, they combine oxygen with glucose to produce energy and to release carbon dioxide. In this way, plants and animals are dependent on one another, and the processes of photosynthesis and respiration are complementary.

What has this to do with the unifying infinitesimal particle? Well, consider the prerequisites for photosynthesis to

occur. The chlorophyll molecule must be present. Other pigments, such as carotene, are necessary as well. Numerous enzymes have to be available to catalyze each of the many individual reactions in both the light and dark phases. For enzymes to bring about certain reactions, molecules of the substance undergoing reaction and the enzyme itself have to physically match. That is, they must have shapes that allow one to fit in or on the other, much like a key fits into a specific lock.

All these preconditions to photosynthesis hinge on one key process... organization. For instance, the molecules of chlorophyll and the other pigments must be assembled very precisely. The enzymes and the substrate molecules on which they work must be put together so as to have the exact shape necessary for the "lock and key" reactions to occur. The carbon dioxide molecules have to be positioned so that can be attached to the hydrogens to make the final product, glucose. And what is responsible for this gargantuan organizational effort? Infinitesimal particles. They are directly responsible

for the fact that photosynthesis occurs at all. For, not only do they organize basic subatomic bits and pieces into atoms, they also arrange the components of photosynthesis...the raw products, the enzymes, the substrates, etc., into forms and shapes which enable them to function as reactants in the process.



## Chapter 16

# Maintaining Cycles

Nature is rhythmic. Cyclic phenomena abound almost everywhere. Scientists know, for instance, that many substances in our biosphere are routed in a circuitous never-ending path. Consider the so-called carbon cycle. This very common element is shuttled around in a closed loop and is never actually consumed...its total quantity within the system is never diminished. In tracing carbon's route we may begin at any point. Let's start with it as part of the gaseous carbon dioxide molecule in our atmosphere. Plants absorb this gas and, along with water and sunlight, manufacture food. The carbon atoms, once a part of the carbon dioxide molecule, are now incorporated into plant food and plant tissue. When animals ingest the plant as a food source, the carbon atoms are taken into the animal's system. The carbon-containing food is metabolized by the animal to release energy, and, as a by-product of that reaction, car-

bon dioxide is produced and set free. And so the same carbon atoms are returned to the atmosphere to begin the cycle once again.

A similar sequence of events occurs in the so-called hydrologic cycle. Liquid water in rivers, lakes, streams and oceans is evaporated, that is, changed into a vapor by the sun's heat. The water vapor rises into the atmosphere, where it is eventually cooled to its condensation point, and it falls back to the earth as precipitation. Then the process is repeated all over again. It's a continuous, ongoing process. The nearly constant levels of the world's oceans reminds us of the fact that water is being constantly replenished, even as it is being removed by the evaporative process. There appears to be an endless supply of water.

What has any of this to do with the subject of this book, you might well ask? A curious and interesting analogy exists between the examples just cited and the nature of the unifying infinitesimal particle. Just as the cycling of water from the liquid to the gaseous state is continuous and constant...just

as the movement of carbon from the gaseous carbon dioxide molecule into plant material and then back to carbon dioxide is never ending...so, too, is the bombardment of everything in the solar system by infinitesimal particles. The supply from the thermonuclear reactions of the sun is continuous. The fact that these reactions in the sun constantly produce massive numbers of infinitesimal particles is a critical concept in understanding the role that they play in organizing the matter in the solar system.

In previous chapters we have discussed how this tiniest of all particles permeates all matter in the solar system...how, by weaving together subatomic bits and pieces, it structures atoms into elements and elements into compounds. We have seen how it aligns atoms in certain materials, causing these substances, in turn, to behave like magnets, allowing for the production of electricity and electromagnetic radiations; how it acts as the progenitor of the gravitational force; how it influences the organization of organic materials into molecules that

eventually evolved into living cells and ultimately into complex life forms. The infinitesimal particle is responsible for other phenomena as well, which will be covered in later chapters.

It is the constant, never-ending supply of these particles from the sun that keeps the atoms in the solar system organized. Without these tiny particles there would be total chaos. Without them, matter could not exist in any organized fashion, and, since all natural phenomena depend on specific atomic structuring, none of these described phenomena could exist either. Imagine, without the infinitesimal particle, there could be no elements, no compounds, no gravity, no magnetism, no life! A constant supply of these unifying particles is absolutely essential to the continuation of the universe as we have come to know it. The sun will presumably continue to shine and release infinitesimal particles as long as its hydrogen fuel lasts. In a few billion years, however, that fuel will be exhausted, and the reactions will cease. The infinitesimal particles will no longer be produced to

stream toward the earth to work their organizing “magic.” But we should not despair; the sun itself will be recycled, reborn out of its own ashes. At some time in the far distant future, a second or third generation sun will shine and once again produce infinitesimal particles that will knit together a new solar system.



## Chapter 17

# **Bizarre Black Holes**

Black holes...What are they like? How do we know they exist? How do they form and how do they relate to the infinitesimal particle? Let's take a look.

Perhaps nothing rivals a black hole for being strange, weird, even bizarre. Black holes are thought to be locations in the universe where matter is so dense, so concentrated, that it produces a gravitational field strong enough to keep even light from escaping. That's why black holes appear... well...black. We might think of a black hole as a gigantic whirlpool, sucking in any and all nearby matter.

The brilliant English physicist Stephen Hawking has proposed an interesting concept of a black hole. He thinks of them as "worm holes" leading to another place in another time. According to his view, a person entering a black hole, assuming they survived, would exit the other side in an entirely different universe either in the future or in the past.

If we can't see black holes, how do we even know they exist? Astronomers feel confident that they are out there because of the way x-rays from stars near certain areas are affected. Also, the Hubble telescope has detected extremely hot gases in a galaxy some 50 million light years away which are being accelerated by some unimaginably strong force...a force that perhaps only a black hole could muster.

Scientists think black holes begin to form as a star runs out of fuel. When that happens, upward pressure from the star's core decreases to almost nothing; and the star then collapses in on itself, under its own weight as it were, compressing its matter into extremely dense material. Depending on its size, a dying star may become a white dwarf if it's about the size of our sun or less, a neutron star. The matter making up a neutron star is so dense that one cubic inch of it would weigh several million tons if it were placed on the earth. But if the core mass of the dying star is more than 1.7 times that of our sun, the mass will shrink to become a black hole. Some astronomers believe black holes populate the

centers of most of the galaxies in the universe, including our own, the Milky Way.

If it is true that black holes act as the universe's supreme sinkholes, engulfing all matter with wild abandon, then isn't it logical to assume that the infinitesimal particle falls "victim" to that insatiable appetite as well? Consider for a moment the role of this great unifier and a possible scenario for its association with black holes. The infinitesimal particle, created by the sun, travels out into space, permeating all matter in the solar system. In doing so, it organizes and structures the atoms and the universe as a whole. But after fulfilling its role as the ultimate organizing agent, after passing through the substance of matter, itself, what is to be its fate? Where does it go? What does it become? Since the process of infinitesimal particle production is a continuous, perpetual process, ad infinitum, it seems reasonable that there must be some provision for its recycling. Perhaps the black hole is the beginning of that process, a "recycling collection center" for the infinitesimal particle. Could it be that

infinitesimal particles are collected by black holes, which, funnels them out from the other side into space where they may ultimately become part of the energy production of another yet unborn star? Or maybe the particle is funneled from the black hole back to existing stars in a never-ending loop, only to spewed out into space by the star once again. In either case, the black hole may function as a recycling agent for infinitesimal particles, making possible a continuous, never-ending supply.

Whether black holes are conduits to other universes and to other dimensions of time as Stephen Hawking suggests or are simply infinitely dense points of matter called singularities, the infinitesimal particle surely must in some way interact with them.

The unifying infinitesimal particle is the one single entity that imposes continuity on the material universe by organizing its disparate parts into a whole. Isn't it logical then that the same particle might be responsible for connecting the past with the future through a recycling process deep within black holes?

## Chapter 18

# **Shedding Light on Dark Matter**

Since 1933, physicists and astronomers have known that about 90 percent of the universe is “missing.” Not in the conventional sense, of course. The material is out there somewhere in some form or another. It’s just that we can’t see it. Why? Because, as strange as it may seem, this matter doesn’t give off any visible light at all. So astronomers have called this invisible stuff “dark matter,” but it’s probably more accurate to say that the light from it, not the matter itself, is the thing that’s missing.

If we can’t see dark matter, how do we even know it exists? Indications that there is such a thing comes from indirect observations...by inference. That is, some unseen force or thing, presumably dark matter, seems to be causing certain masses that we can see to behave in ways that are entirely unexpected. For instance, billions of stars exist in groups called galaxies. The

stars in the group are held together by mutual gravitational attraction. Each star pulls at other stars in the group so that the association remains intact. But the galaxies are spinning, and that motion creates centrifugal forces which tend to sling the stars out and away from each other. Scientists know that if the galaxy rotates too fast, this centrifugal force will become greater than the cohesive force of gravity and fling most of the member stars away from the group.

Surprisingly they have found that some galaxies are spinning just that fast, rapidly enough to cause the entire galaxy to fly apart...to disintegrate. But oddly that doesn't happen. The galaxy holds together. By all rights, the stars should fly apart because at such high speeds of rotation the centrifugal force is much stronger than the gravity which is trying to keep them together. Something else must be augmenting the gravitational effects of the stars... some extra constraint that prevents the centrifugal force from winning the battle and setting the stars free to travel a tangential path toward the far reaches of the universe. That extra

cohesive force of gravity is generated, scientists think, by dark matter.

What exactly is dark matter? Well, there are several theories. Some say dark matter takes the form of extremely large bodies, primarily black holes and red dwarfs, objects with masses thousands or millions of times that of our sun. These objects are made of ordinary matter, howbeit very dense, and exist as a halo surrounding the galaxies. Hence they are named MACHOS, for massive astrophysical compact halo objects. Others say dark matter takes the form of extremely small subatomic particles, each one thousands of times less massive than the electron. These particles have been dubbed WIMPS for weakly interacting massive particles.

The two camps can't seem to settle on a description for dark matter, but on one point there is almost universal agreement...there is some type of invisible material out there, and it accounts for perhaps as much as 90 percent of the matter thought to exist. Although dark matter cannot be seen, the infinitesimal particle must be involved in its formation since it organizes all matter

The scientific community's acknowledgment of dark matter lends credibility to the theory for the existence of the unifying infinitesimal particle.

Dark matter could very well result from these particles from their parent stars. When they are finally exhausted, the matter from which they are derived becomes disorganized, fragmenting into extremely small subatomic particles, which occupy space: this is the dark matter.

The reality of the existence of dark matter has a direct bearing on the beginning and on the fate of the universe. Since the unifying infinitesimal particle has always existed, since it is the agent which has organized all matter, and since it is recycled, it follows that the universe, too, has always existed... that it had no beginning as such. It is much easier to accept this view than the alternative one...that everything that is the universe came into being from absolutely nothing.

Likewise, it follows that the universe will have no end, owing to the indestructibility of the infinitesimal particle which forever continues its work.

## Chapter 19

# Connections Among Solar Phenomena

The sky shimmers with multicolored curtains of light, undulating like waves of wheat blown by a gentle breeze. Colors shift from red to green to violet, and the display lasts for several hours. This phenomena, occurring in the northern latitudes, is known as the aurora borealis. In the southern regions, it's called the aurora australis. Simultaneous with these light shows are interruptions in worldwide electromagnetic communications. Radio, television and other modes of transmission are garbled or stopped altogether. In some extreme cases, components at electric power stations fail, resulting in widespread outages for thousands of people. Is it mere coincidence that the auroras and problems with wireless communications and power failures happen at the same time, or is there a connection... a common thread?

In point of fact, there is a connection. Scientists have determined that

both the aurora phenomena and problems with electronics have the same origin, the same cause...the sun.

The sun is a giant glowing ball of hot gases, and, for the most part, predictable and peaceful. However, scientists detected several years ago that the sun engages in a bit of unruly behavior occasionally. They noticed that disturbances, eventually identified as gigantic magnetic storms, raged at regular intervals on the sun's surface. During these outbursts, streamers of fiery glowing gases, known as flares and prominences, arch upward from the sun's exterior, extending out into space several hundred thousand miles. These solar storms also manifest themselves as dark spots on the sun's surface. The sunspots are darker because they are bit cooler than the surrounding areas and so radiate slightly less energy.

But solar storms are more than an interesting curiosity. As it turns out, the sun, especially during storms, belches out enormous quantities of a kind of "debris," material which has an important effect on earthly events.

Actually this solar debris is composed of high energy particles astronomers call the solar wind. Wave after wave of particles arrive at the earth within a few minutes of leaving the sun and immediately interact with the earth's magnetic field. The end result is that the energy from these particles excites electrons of the molecules that make up the gases in our upper atmosphere. When these electrons become excited, they get promoted to higher orbits. But they don't stay there long. In an instant the electrons fall back to a lower orbit, and when they do, they emit photons of light. That's what causes the magnificent light shows of the auroras.

But how is the sun and the release of particles tied to disruption in communications? Well, some of the high-energy particles from the sun don't stop with merely boosting electrons of molecules in our atmosphere to higher orbits. In some cases, the particles completely strip the electrons away from the molecules. That's called "ionization," a process that changes dramatically the electrophysical properties of gases in the upper at-

mosphere. When gas layers become ionized in this manner, that is, when they lose electrons, they take on an electrical charge. That, in turn, may cause some specific communications frequencies to be absorbed. Others may be reflected at improper angles, so that they are not received where they were supposed to be. Still other frequencies may be allowed to pass right through the ionized layer out into space.

Problems with power transmission occur because the intense magnetic fields, generated by the influx of solar particles, cause an overload in power distribution centers. The powerful surges blow transformers and fuses, and power to consumers is interrupted.

Scientists accept the fact that particles from the sun rearrange the electronic structure of gas molecules in our upper atmosphere to produce the auroras. They also accept the fact that these solar particles interact in some fashion with the earth's magnetic field. But why do these things happen? The answer may be found in

the action of the primary organizing entity of the universe, the unifying infinitesimal particle. It is created in the sun's thermonuclear reactions and spewed into space, just as the scientist claim particles of the solar wind are. Infinitesimal particles permeate all matter, organizing atomic and molecular structure. So it is logical to suspect these particles as the rearranger, the reorganizer, of electrons in gas molecules of the upper atmosphere? What's more, if the infinitesimal particles can align atoms in a magnet and a conductor, making the production of electricity possible, they could also reorganize the molecules in components of power stations so that disruptions occur.

The existence of particles from the sun and their well-accepted role in producing various phenomena on earth suggest strongly that the infinitesimal particle is involved. Indeed, the particles which scientists call collectively the "solar wind," must be infinitesimal particles.

If the solar wind is composed of infinitesimal particles, then what are

the sunspots? Given that everything comes from the sun and that the sun is constantly forming new planets within its mass, it is logical to assume that sunspots are actually new planets or asteroids in the midst of creation. At some future date, these newly created heavenly bodies will leave their solar womb to orbit their solar parent as it continues to recede. Like we were, they, too, will have been born out of the sun.

## Chapter 20

# **The Blueprint of Life**

From the tiniest single-celled creature to humans, life on this planet exhibits an amazing degree of diversity. Whether animal, plant, fungus, bacterium, or protist, living beings come in a variety of shapes, sizes, colors and occupy almost every kind of environmental niche on the earth. But, examine the individual units of life, the cells themselves up close, and you will see many common traits all across the spectrum. For example, under a microscope most cells, regardless of type, appear to possess similar structures. They are enclosed in either a cell membrane or cell wall; most have nuclei containing chromosomes; and many have specialized cell organelles. At an even more basic biochemical level, all living things contain the hereditary material DNA. This substance has been called the blueprint of life, and with good reason, for it incorporates the code for making an organism into what it is. All creatures big and small,

complex and simple, become what they are because their cells follow instructions in the DNA molecule.

Scientists have learned a great deal about how this information molecule operates as the genetic code of life. They know, for instance, that the molecule itself is a double alpha-helix, a structure somewhat similar to two spiral staircases twisted around themselves. They know that when it goes to work directing the cell, the DNA molecule first unwinds to resemble a ladder, then splits apart. They have even deciphered the code. The “rungs” on the ladder tell the cell which specific amino acids to place into a chain and at what exact location in order to make a certain protein. The type of protein manufactured by the cell determines characteristics of the organism.

Not only does the DNA “tell” the cells how to operate and what each should grow into, it also instructs cells of future generations what to become. Gregory Mendel was the first to shed light on how this hereditary information is passed along from parent to offspring. Even without the knowledge

of the DNA molecule, he found a statistical relationship that demonstrated passage. Since Mendel's contribution, a great deal has been learned about this branch of biology we call genetics.

But for all the knowledge and information that has come about in the last two to three centuries, scientists have still not been able to elucidate why certain elements of the DNA molecules come together in the way they do...They have not been able to explain what's behind that specific juxtapositioning of the DNA's component parts to produce what it does. They have not been able to explain why, within the same organism, some cells turn into brain cells and others into blood, muscle or bone. Some "thing" or some force must be at work organizing the molecules, arranging them in precisely the correct sequence and position so that they are able to dictate the proper instruction to the cells. Something has to serve as the driving force. Something has to be responsible for causing the DNA in cells of the human liver, for example, to continue functioning as they do. Something has to organize the

DNA of an oak tree so that its instructions say to the cells, "Produce a green leaf here, bark here, or woody tissue there." Something has to be responsible for organizing the genetic material so that its message "says" to the cells of newly conceived offspring..."develop traits similar to those of your parents."

That "something" is the ubiquitous unifying infinitesimal particle. As proposed in previous chapters, this tiny piece of matter is the ultimate universal organizer. As it passes continuously through atoms, it provides the energy for specific structural design to the pieces...the protons, neutrons and electrons. Just as it organizes material to create all the elements and compounds, in a similar fashion it also organizes the genetic material of living cells, aligning the DNA in such a way as to permit it to function as the information molecule of life. In addition, the infinitesimal particle structures all DNA's accessory molecules, the messenger and transfer RNA's, in such a way as to allow them to transcribe and translate the genetic code, thus permitting the reading and using of

information to make whatever protein is needed for a particular cell of a particular organism.

Science has so far been unable to explain the “why” behind many natural phenomena. The behavior of DNA and its role in genetics is but one more example. The theory of the infinitesimal particle provides an explanation. Because they are responsible for the functioning of the genetic code and because the characteristics of all life forms are dictated by this code, we may say that life is the way it is...indeed we are what we are...because of the existence of this ultimate piece of matter. Once again, reason to believe that everything is born out of the sun.



## Chapter 21

# Why Mutations Occur

“Flesh-eating bacteria force doctors to amputate man’s leg.” “Epidemiologists see problems ahead as drug-resistant bacteria increase.” Headlines such as these have been appearing all too frequently in recent years. The stories beneath the headlines warn of an ominous trend wherein bacteria “learn” how to thwart drug therapy. The essence of the stories are that with medical science’s defense arsenal rendered ineffective, disease-causing bacteria are likely to become uncontrollable, causing disease everywhere on the planet in unprecedented proportions.

How does such a thing happen? How do efficacious medications become useless over time. How do the bacteria “learn” how to circumvent the drugs’ effect...to dodge the bullet? Well, needless to say, bacteria are incapable of learning in the traditional sense of the word. What they do have going for them though, according to cur-

rently accepted theory, is the process of natural selection...the engine that drives evolution. It works something like this. In any population, random spontaneous mutations or changes occur in a small percentage of a group. The change actually involves an alteration in the DNA code, the hereditary molecule within the individual's genes. Those organisms with changed DNA may manifest a variation in a particular trait...a change that makes them stand out from their unmutated neighbors. In the case of bacteria, the mutation may unfortunately take the form of a resistance to drugs. Let's say, for example, that initially 99.5% of a particular strain of bacteria are susceptible to a certain type of antibiotic. The other 0.5% are not affected by the drug at all. They are resistant. When that drug is administered to a patient infected with this bacteria, all the susceptible ones are killed. Only the resistant 0.5% remain. But, since this small minority now has no competition, it can and does thrive, growing in time to become the majority strain. With each application of an antibiotic,

more and more competing bacteria are eliminated, and the chances for drug-resistant bacteria becoming dominant are increased. That's why the medical profession warns against the indiscriminate use of antibiotics.

One might well ask what are the attributes of the DNA molecule which enables it to store coded information and to have that information translated into the actual physical traits of the organism. The answer is organization. Biochemists have determined that the DNA molecule is assembled in a very precise order. In fact, it is the precise order of units called nucleotides, which spell out the type and sequence of amino acids to be used in making cell protein. And, further, the type of cell protein made by the cell determines many of a cell's own traits. Following that line of reasoning then, we may deduce that mutations in an organism are the direct result of changes in the organization of its DNA code.

Now we come to the heart of the issue. In the case at hand, infinitesimal particles passing through the atoms making up DNA impart to this complex

molecule a certain ordered symmetry, a precise arrangement which confers the power of information storage and gene expression.

If the infinitesimal particle organizes the DNA molecule so that it is able to function properly as the hereditary messenger, is the particle also responsible for deviations in the way DNA functions? That is, is it ever the case that the infinitesimal particle organizes the DNA code in such a way as to produce mutations? Perhaps it does, but only under certain circumstances, such as when antibiotic drugs or other foreign chemicals are introduced. These chemicals change the ambient conditions in which the particle functions, perturbing the specific interplay between the unifying particles and their target substrate molecules, the DNA. As a result the infinitesimal particle organizes the atoms of the DNA molecule in a slightly different configuration than before, causing it to spell out a variant message, one that changes the characteristics of the organism. Thus a mutation arises.

Understanding and applying this

concept would have far-reaching implications. If we knew how various substances could change the way in which the infinitesimal particle organized matter, we could tailor-make complex molecules at will. For example, introducing a particular chemical into a cell might induce the infinitesimal particle to produce, say, an anticancer drug. It is not even too farfetched to say that if the right compound is discovered, the infinitesimal particle might be coaxed into organizing molecules into a new form of life. But let us not take too much credit for such an eventual achievement. Let us never forget where the infinitesimal particles originates, the sun. So even life created by humans would still be born out of the sun.



## Chapter 22

# What Causes Cancer

Cancer...Four out of ten people will at some point in their life have it in some form or another. It kills millions each year, striking without regard to age, sex, race or status. What is the nature of this enigmatic human malady, the cure for which has largely baffled medical science for decades? Simply put, cancer is a disease wherein normal body cells become mutated, deviant, atypical. Growing at a phenomenal rate, they crowd out and eventually kill surrounding normal healthy cells. Something goes terribly awry in the cell's protein-making process. And, that, scientists think, has its origins in the DNA molecule. For some reason, cells affected by cancer cease turning out the normal products that the body needs, things such as hormones, liver enzymes, or blood cells and begin making substances associated with and used by malignant cells. But why? What diverts the actions of normal cells? What transforms ordinary

well-behaved cells in potentially every organ in the body into out-of-control monsters, bent on the destruction of neighboring cells. That is perhaps the health question of the century. Researchers have partial answers and have established some meaningful links. For example, they know that certain chemicals, so-called carcinogens, as well as radiation, increase the chances for cancer development. Chemical agents, such as pesticides and some hydrocarbons have been found to cause tumors or leukemia. Victims of radiation poisoning, such as those in Japan at the time of the dropping of the atomic bomb, as well as their descendants, have shown a higher incidence of cancer compared to the general population. Even the sun's radiation has been shown to increase the rate of skin cancer. Investigators know that, to some degree, cancer has a genetic component...that those whose family members have had cancer are more likely to get it themselves. They even suspect that some virus may be implicated in some cancers. Armed with this knowledge, workers have

created drugs and designed radiation-treatment protocols which have been quite effective in destroying cancerous tumors in some cases and retarding the growth in others. Still, after years of research and billions of dollars, we still do not know how to prevent many cancers or completely cure them.

Let's look at the unifying infinitesimal particle in relation to this scourge. If infinitesimal particles are to assemble bits and pieces of matter properly, they must have free, unencumbered passage. If that normal passage is altered, the particle cannot complete its assigned mission, that of putting molecules together so that in the case of biochemicals appropriate functioning of the cell is achieved. So theoretically cancer results from alterations in how infinitesimal particles pass through some of the more critical portions of the cell.

Now the question naturally arises: What would alter the infinitesimal particles' usual passage to the cell's innermost structure? The answer? Alien materials... foreign chemicals... carcinogens. Could it be that simple?

Could recognized carcinogens, such as DDT, gases and tars in cigarette smoke, benzene, and other compounds cause cancer by affecting the passage of the infinitesimal particle...by keeping it from its usual activity in the cell? This is a reasonable scenario. By physically altering the infinitesimal particle path...these carcinogens successfully inhibit its work, thwarting its purpose. Lack of appropriate chemical organization causes the cell components to assume different, even aberrant, properties. This, in turn, leads to the abnormal condition we call cancer.

Consider the implications of this concept. Properly organized cellular chemicals is the key to the healthy functioning of living cells. And the infinitesimal particle is the key to the creating well-organized, functioning chemicals. It follows then if we could learn how to manipulate the infinitesimal particle so that it would always be able to organize as it was "intended" to do, that is, if we could manipulate the infinitesimal particle so that it would no longer be affected by interfering molecules such as carcinogens, we

could possibly prevent cancer.

In fact, it would appear that manipulating the infinitesimal particles' organizational potential would be the key to solving many problems associated with other diseases as well. For example, we could develop more effective antibiotics if somehow we knew just how to maximize the particles' ability to organize antibiotic molecules. At present these drugs are only partially effective, perhaps because the infinitesimal particle is not able to properly complete its job. It encounters interference somewhere along the way.

These are revolutionary ideas to be sure. But let us not close our eyes to the possibilities.



## Chapter 23

# **Achieving Longer Life**

To live forever...to cheat the grim reaper. Humans have no doubt dreamed of immortality since the dawn of time. Our longing for an eternal existence is evident in the doctrines of most major world religions. Followers are taught that death is not the end of it all...that, for those who meet certain religious standards, life, or at least a kind of consciousness, transcends the physical body. Their soul will live forever.

The promise of a spiritual immortality, however, has not deterred many others from seeking a physical one. Only a few centuries ago, the explorer Ponce de Leon searched for “the fountain of youth” in Florida. A drink from its magical waters was supposed to confer on the imbiber a condition of agelessness...of perpetual youth.

Most recently, groups of researchers have been experimenting with cryogenics, freezing. The premise is that extremely low temperatures will stop the

cellular and biochemical deterioration which normally comes very soon after death. By freezing a body, or in some cases just a head, only minutes after death prior to the onset of biological breakdown, the individual's cells may be placed in a state of suspended animation and kept there indefinitely. In this condition the cells are presumably neither alive nor dead. The hope is that such individuals can be successfully revived at some time in the distant future, after scientists have found a cure for the diseases which "did them in." We'll look at another aspect of achieving immortality in the next chapter. Now let's concentrate on how to live longer.

Many scientist believe the key to lengthening our lifespan five- to tenfold is in understanding what happens at the biochemical level, in the body's cells. These scientists say it is critical that we be able to correlate specific reactions in the cell with the changes in tissues we call aging. Several of these reactions associated with the aging process have already been identified.

One particularly harmful one

involves the creation of so-called free-radical oxidants. Current theory says these by-products of metabolism are superactive... so much so that they react with almost every kind of molecule in the cells to produce unwanted compounds. The upshot is that cell infrastructure is altered, a condition that can lead to a breakdown of membranes. Thus wrinkling or sagging of the skin may result. Free radicals cruising the cells may also interfere with the cells' ability to copy its own genetic material during cell division. Occasionally mistakes or misinformation may be passed from one cell to another. When that occurs tumors or other abnormal growths may be produced. Some believe these marauding radical villains are mopped up by vitamins such as E and C, vitamin precursors such as beta carotene, and elements such as selenium and zinc. Therefore some nutritionists recommend these as dietary supplements.

In keeping with the principles of the unifying infinitesimal particle, there is a rather simple explanation for what happens in the aging process. We think

these free-radicals cause aging by simply interfering with and preventing the infinitesimal particle from accomplishing its primary purpose...that of properly organizing the biochemical makeup of the cell. These agents, it would seem, alter usual activity in the cells, thus making it difficult for the infinitesimal particle to properly organize the atoms and compounds of the cell. Without correct organization the cell is doomed to deterioration, aging and a premature demise.

Many environmentalists and biologists believe that pollutants and contaminants, when introduced into the body through drinking water, ingesting food, or breathing, react with constituents of the cell...to cause a breakdown of cell structure. So, in effect, contaminants in the environment bring about the destruction of tissue (aging) very much like free-radicals do.

But once again perhaps the molecules of the contaminants merely alter the infinitesimal particle's ability to properly organize the cells. And if cells are not chemically organized in a way consistent with life, they will surely age

and eventually die.

We can assist the infinitesimal particle in its task of organization by avoiding environmental contaminants in as much as possible. Keeping our cells free of these blocking agents will permit the infinitesimal particle unencumbered passage through the components of our cells. The proper organizing ability of the infinitesimal particle has the potential for giving us a longer lease on life.



## Chapter 24

# Perhaps Achieving Immortality

The successful cloning of other mammals has the entire world speculating on the possibility of cloning human beings, and deeply concerned over the ethical and social dilemmas such a practice would inevitably bring.

Cloning involves extracting genetic material, the chromosomes, from the cell of an animal and placing them in an egg, or ovum, from which the original nuclear material has been previously removed. This transfer “fools” the egg into “thinking” that it’s been fertilized by a sperm, and so it begins to divide, eventually developing into a new and whole individual. Because the genetic material comes from but a single parent, the offspring is an identical copy of it.

This feature, the ability to make exact copies of an organism, has led some to view cloning as a way to achieve some semblance of immortality. But so far cloning only duplicates

the physical body of the donor...not the mind, not the self, not the consciousness. Although the clone would seem to be an reincarnation of the donor, the clone presumably would assume its own consciousness and sense of self, quite separate from those of its single donor parent. The parent would, in the usual way, simply grow old and eventually die. This is not true immortality.

But what if the donor individual's consciousness...mind, spirit, identity, and sense of self...could be transferred to the clone along with physical traits? The original person could then live yet another lifetime in the body of the new clone. In 80-90 years, when the life span of that clone was over, the process need simply be repeated, and then continued ad infinitum. That's true immortality.

If transferring the essence of one individual to another seems unrealistic, consider that what we are really transferring here is information in the form of memories, consciousness, experiences, personality traits, etc. That process, information transfer, is a constant occurrence between

computers. Programs, information and data, stored in the form of bytes, are shifted routinely from the hard drive of one computer to another, and stored in its memory. In such computer-to-computer transfer, the data must be sent sequentially, that is, they must be transmitted in a specific order. Otherwise they will be received as nonsensical, incomprehensible messages at the other end.

In a similar manner it should be possible to transfer information from one biological computer to another... from brain-to-brain. And, just as organization is the key to transferring information between computers, so it is here as well, only more so. Organizing and transferring the data of computer programs requires only a rudimentary level of organization at best. But transferring thoughts and consciousness to another mind, hinges on being able to organize precisely the data which specifies one's consciousness, personality and being. To do that, to organize data, which represents the very essence of a human mind and spirit requires a quantum

leap...an unprecedented assimilation and structuring of information. The only force...the only entity...capable of such a gargantuan task is the unifying infinitesimal particle.

If the infinitesimal unifying particle has the power to organize tiny atoms of matter, the enormous galaxies throughout the universe, and the life-spawning biochemicals of our own cells, surely it has the power to organize personality data for the process of consciousness transfer. We must look to this particle if we are ever to achieve person-to-person mind and consciousness transfer and its attendant immortality. The catch? We simply have to find a way to harness and use the particle's organizing powers. What would that take? First we must be willing to acknowledge the possibility that the infinitesimal particle exists. Then, we must design experimental protocols to learn more about the particle's specific characteristics. For example, just how does it weave together every single particle to produce the matter in the universe around us? How does it align atoms to produce magnetic and elec-

trical effects? How does it structure molecules of self-replicating complexes such as DNA?

Acquiring this basic knowledge... understanding the very nature of the infinitesimal particle...may eventually enable humans to use it in conjunction with computers to transfer consciousness from mind to mind...as they now transfer mundane data from computer to computer.

In a sense, we've been transferring information to our offspring for centuries. It's called education. By instilling values and knowledge into children, parents have attempted to immortalize at least a part of their being for the benefit of future generations. But taking cloning to this new level will certainly give new meaning to what we call family values and heritage.

We have seen throughout this book how this unique infinitesimal particle, born out of the sun, has given organization to the universe as we now know it. Now we see how it also has the potential to give birth to true immortality of the spirit and mind.



## Chapter 25

# **The Prime Mover-- Our Parent Sun**

Every elementary science student is taught that all energy on the earth originates from the sun. For instance, the heat and light released by a burning piece of firewood is in reality energy captured by the tree from the sun when the tree was alive. The energy which keeps us alive and moving comes, of course, from the food we eat...food which is energy-rich from having once absorbed the sun's rays as it grew in the fields. There are many such familiar examples of resources whose energy can be traced to the sun: petroleum and other fossil fuels, hydroelectric, geothermal, wind, and even nuclear.

Throughout, this book stresses the belief that the sun is more than simply an ultimate energy source. The sun is the reason for the existence of everything and every phenomenon known to science: electricity, magnetism, gravity, chemical reactions and bonding,

the assimilation of compounds into the molecules of life, the aurora borealis, the mechanics of the genetic code, the workings of antibiotics, dark matter, relativity, and photosynthesis...just to name a few.

The sun is the progenitor of everything on the earth and in our solar system, the parent of every entity and every event. This is quite the logical role for the sun to play. Consider: Since the days of Copernicus, humans have realized that the sun occupied a commanding position in the heavens. Situated at the center of the solar system, the sun governs the motion of at least nine planets, numerous moons, comets and asteroids. It seems reasonable that since the sun dominates the motion of a retinue of heavenly bodies...and since it is the undisputed and sole source of energy for the entire solar system...it also could also be responsible for the occurrence and the existence of all other things as well. What other source...what other explanation could there be? There is no other body in the solar system capable of such feats save the sun.

This book has postulated all along that the sun's work is mediated, indeed, carried out, by something called infinitesimal particles. These tiniest bits of matter are produced continuously by the thermonuclear reactions deep inside the core of the sun. The particles escape the sun's surface and travel through space at the speed of light. They permeate all matter in the solar system, and, in so doing, organize subatomic structures into atoms and compounds. It is this organization of matter...the manner in which the unifying infinitesimal particle weaves materials together...that produces the solar system as we know it. As any chemist will tell you, the wide variety of substances in the world is a result of the almost infinite number of ways in which atoms and molecules may be combined with one another...the way they are organized. Since the infinitesimal particle is the ultimate organizer, it is no exaggeration to say that it is directly responsible for the characteristics and properties of all the matter in the solar system.

That is this basis for the recurrent

theme and title of this book, Born Out of the Sun. Indeed, the solar system exists in its present form, and natural phenomena occur as they do, precisely because of the sun's organizing influence via the infinitesimal particle. It is for these reasons that we refer to the sun as the "Prime Mover," the first cause. It is the one and only parent of everything in our solar system...the reason for "things" being the way they are.

Looking out beyond our solar system, we observe millions, even billions, of other suns. Spectrographic analysis and other tests have led astronomers to believe that these stars produce energy in much the same way our own sun does, by thermonuclear reactions. We also have recent evidence to suggest that there are likely planets orbiting these stars as well. If such is true, wouldn't it be logical to conclude that other star systems are simply copies of our own at various stages of creation and dissolution? If other suns spew forth infinitesimal particles into their own systems, wouldn't they have organized their systems as the sun has

ours? Wouldn't all solar systems then be similar to our own, different only in their individual stages of development? If that be the case, we should expect to find the same kinds of materials there as on the earth. We should discover the same natural events occurring there. And we should find forms of life on their planets which are very much like our own.

If solar systems throughout the universe are basically similar then why bother exploring them? The similarities of solar systems, coupled with the fact that the closest star system is over four light-years from the earth, makes interstellar travel a most impractical and non-profitable venture. It would make more sense to learn everything we can about our own solar system.

Deductive reasoning and observation strongly suggest the existence of the infinitesimal particle from the sun as the primary organizer of everything in our solar system, including our own bodies. We are totally dependent on the sun. We are its offspring. We are all born out of the sun.

