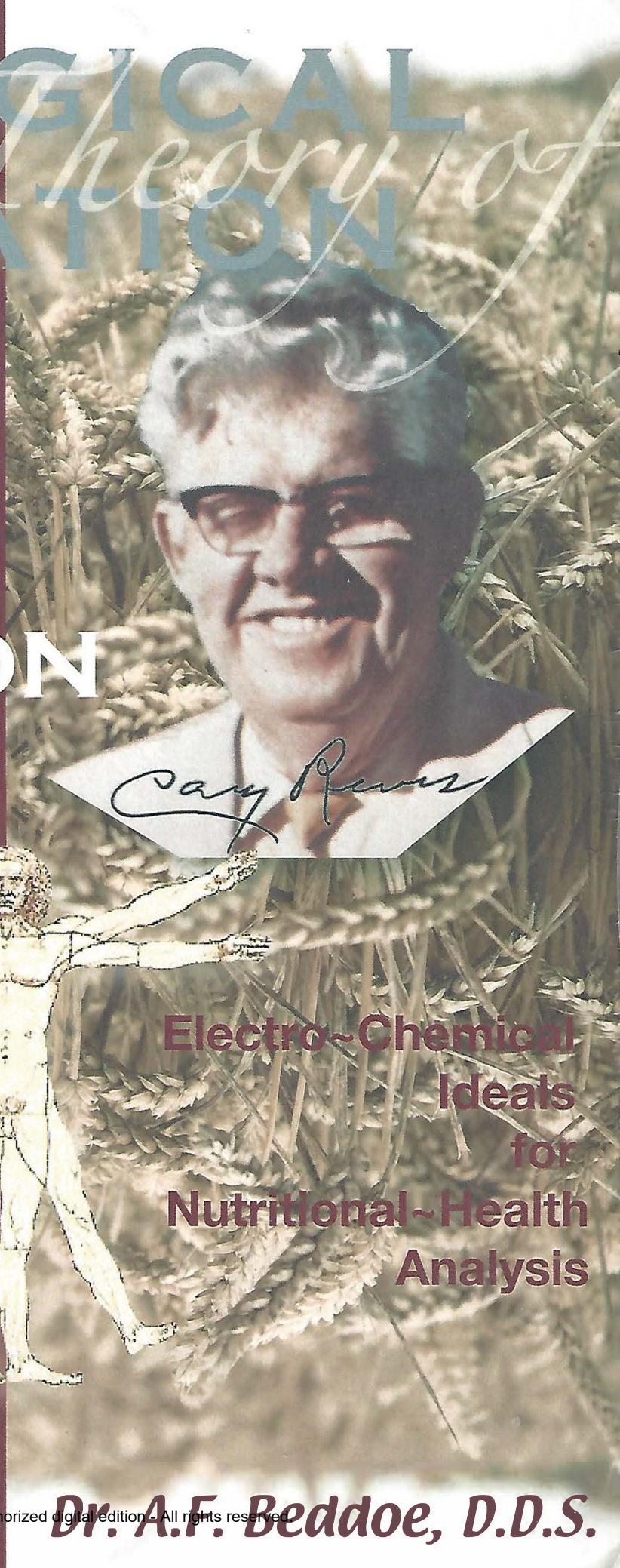
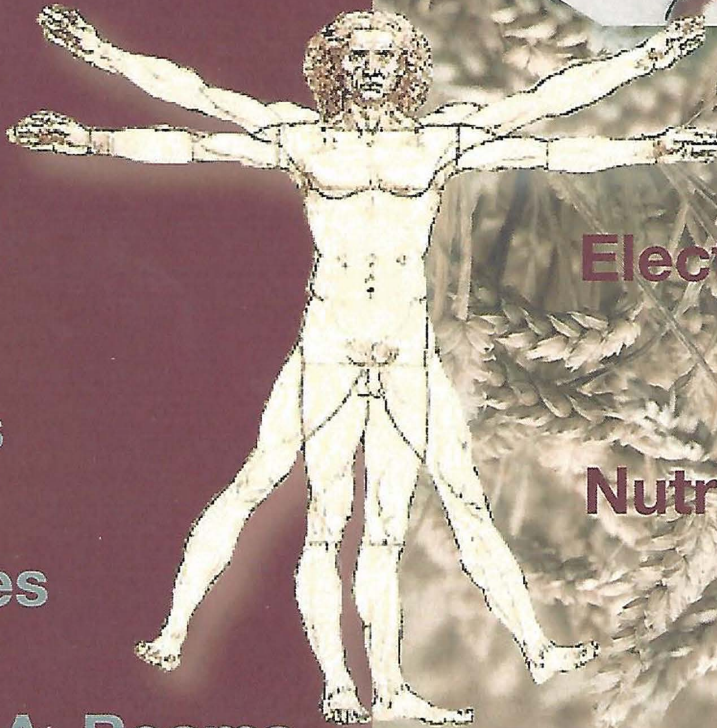


# BIOLOGICAL IONIZATION

## AS APPLIED TO HUMAN NUTRITION



*Carey Reams*



Principles  
&  
Techniques  
of  
Dr. Carey A. Reams

Electro~Chemical  
Ideals  
for  
Nutritional~Health  
Analysis



# *theory of* **Biological Ionization as applied to Human Nutrition**

## **Principles and Techniques**

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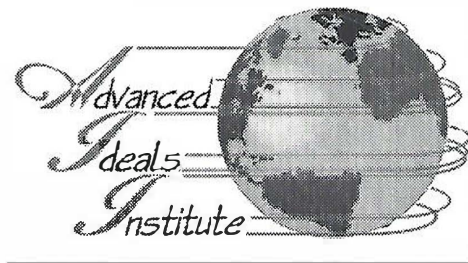
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*We have this  
truth, because  
he listened to  
the Still  
Small Voice.*

## ...AND IN APPRECIATION

No words can describe the appreciation felt toward my family, interested friends, determined students and striving patients. Unknowingly to most of them, they have all had varying parts to play in the development of this volume because of interest, concerns, questions and problems.

I want it especially to be known that:

My good friend and mentor, admirably called "Doc," helped me discover how to reason from cause to effect while opening new areas of understanding of our Creation. He never "spoon-fed" those who came seeking to know what God has revealed. He wanted them to learn to think for themselves under the guidance of the Holy Spirit so that they could go beyond what he had come to understand. He continually sought to help all he could toward knowledge of God's laws of life and health.

My partner in life's journey Jeanne. She has left "no stone unturned" in the editing of the volume. She is the ideal companion, for our interests both parallel, compliment and enhance. I love you, Jeanne!

And to many faithful students, which have contributed a tremendous amount toward helping perfect the explanations within these pages, I extend many, many thanks.



*Dedicated to our loving children:*

*Ernest Eugene Beddoe*

*Andrew Gregory Beddoe*

*Annie Kight*

*Susan Jean Kight*

## GOALS OF THIS TEXT

- 1) To understand what health is and what it means.
- 2) To understand how to evaluate levels of body chemistry via the use of the urine and saliva.
- 3) To properly conduct the tests on the urine and saliva.
- 4) To know how to interpret the information contained in the test results.
- 5) To use the test results to tailor counseling recommendations in the diet and lifestyle plan for your family, yourself, and/or clients if a health professional.
- 6) To dispel misunderstandings about body chemistry.
- 7) To understand the proper relationship of the mental and spiritual aspects of health in body chemistry manipulation.

**You will notice that a “wide margin” has been provided  
for your convenience in note taking.**



# METAMORPHOSIS

by Jeanne Kight Beddoe

*I have passed from death unto life*

*Because I love God.*

*I transited from blindness to vision*

*Because I yearned for sight*

*I moved from darkness to light*

*Because I dared to believe*

***I metamorphosed from disease to health***

***Because I found my true identity.***

*I changed from fright to calmness,*

*From anxiety to trust,*

*From frustration to fulfillment.*

*I evolved from my littleness*

*To God's Greatness,*

*From isolation to inclusiveness,*

*From separateness to unity.*

*I graduated from error to truth,*

*From outer to inner.*

*I exchanged illusion for reality,*

*Hearsay for personal experience,*

*Theory for proof.*

*I have passed from death unto life*

*Because I found God.*

*I have passed from death unto life*

*Because I know that God is good*

*And God is all.*

—Osie Gabriel

Years ago I came across a book for children that, to me, really seemed to be written for ages 1-99. The book was titled, *Hope For The Flowers*, by Trina Paulus. It was a story about a caterpillar seeking meaning in life, while striving for success. He climbed the ladder (caterpillar pillar) to success only to realize, that after he had arrived at the *top*, he was not fulfilled. He had experienced *success* but not of a lasting kind. The book was well-written, well-illustrated and it taught, in its few short pages, a simple but profound lesson. The story continued on and revealed what the caterpillar did after the great disappointment of *success!* It's still in print and you may want to get a copy to find out how it ultimately ended for the caterpillar. It is analogous to our own lives, as humans, here on planet earth. In the event that you don't get to read the end of that story, I would like to draw another analogy, similar to the one already mentioned, and share the *end* of that story in these next words.

Have you ever peeled a grapefruit with a potato peeler? If so, most likely, your purpose was to get through the skin, then the pith and on to the fruit itself. Having eaten grapefruits, in the past, you knew what the fruit itself was like and looked forward to that tasty interior. Nevertheless, you had to peel it first and in some cases you found that it had *many* layers. Some people have liked the white pithy part (rich in quinine and bioflavonoids —good for malaria) and may have eaten it. Some people may have done, as an uncle of mine, and have eaten the skin and all. He had done this with oranges. That sounded bitter, didn't it? Maybe you have *never* eaten a grapefruit before, but somehow you *knew* that you would need to get past the outer layers, in order to enjoy what was inside. Maybe you had only eaten some of the pith, but not too much, since it got very bitter after awhile. Perhaps you have had some of these experiences with a grapefruit? What does a grapefruit have to do with you, or for that matter, what does a grapefruit have to do with Biological Ionization? *There is a connection.* The connection lies in the analogy of the grapefruit (enshrouded in layers of piths and skins) and the mind (enshrouded with errors in thought) inhibiting truth from revealing in our lives, and thus preventing an experience of *abundant health*. Let's take a look at that *connection*.

There is a place in our mind (heart) where all answers and truth lie. To get to that place requires us to shed (peel) away the layers of error, false beliefs and disappointments (bitter skins) of past experiences and notions. At first, that which meets the eye (the skin) may look inviting, but after a few samplings we grow tired of the *lack of fulfillment* (bitterness) and desire to search (peel) deeper. We continue on through the layers (flavors and textures) of experiences, grow tired of them and seek more depth (the actual fruit inside). We are craving the best! We somehow *know* that it is there! We somehow know that when we find it we will recognize it and be fulfilled. When we discover it, we realize that it (truth—the actual fruit) has always been there! It doesn't need to be manufactured and it never left! It is waiting to be discovered! In fact, it is waiting to be *re-discovered*. A part of us *always* knows it is there. That part of us compels us to search (peel). It is a process of elimination (allowing), not formation (doing), to discover the truth (actual fruit) that is always there. It is a process of *being* not *doing!* We are human *beings!* We continue to find out what it isn't—through elimination, in order to get to what it is! The truth of our *being* never left; it was hidden by the layers of false beliefs and notions (skins and piths). Then, if we are human *beings* and not human *doings*, how can we shed (peel) the errors in our thinking? How can we experience “wholeness”—health of body, mind, spirit? Should we focus on the problem (peeling) or concentrate on the solution (re-discovering)? I think we know the



## Biologic Ionization As Applied To Human Nutrition

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answer to this question. We can focus on the solution and thus experience the truth (re-discovery).

Have you ever heard about the man who looked at an elephant through a microscope and never found out it was an elephant?! Can we get so tunnel-visioned that we don't see the forest for the trees? How can we begin to see the "big picture," so to speak? How can we eliminate (peel) the errors in our thinking? *It will begin with our desire and willingness to be open to a change of mind (thought). In fact, the key to re-discovering truth is directly proportional to our willingness and desire to change our minds.* If, at this moment, we resist that idea of changing our minds, because it sounds too frightening, then we must ask ourselves this question: "How is my current mode of thoughts (piths and skins) working in my life? Is it supporting my purpose?" Our openness to accept the fact that our current state of comprehension and understanding is not final, let alone adequate, will compel us to shed (peel) our way to truth (re-discovery) —and more importantly, it will do so without us having to work at it (peel with a knife). The shedding (peeling) is accomplished when we make the decision to be open (put down the knife) and focus on the solution. We can focus on the solution by accepting that it is there already. Only you and your thoughts (that aren't working) stand in the way of you and your thoughts (that do work), which will allow truth (re-discovery) to be revealed. The revelation of truth is infinite. The more truth we experience; the more will be revealed. If we stop with the false (the skin) we are consigned to that level of error (bitterness). *When truth reveals—health, abundant health will follow!*

There is an interesting sequence that we usually find will occur in the steps on our *journey to health* on this planet. The sequence, in this, is that the experiencing of the outcomes, of our various false beliefs, usually motivates us to seek the *causes* of our dissatisfaction. This in turn teaches us that for every cause there is an effect to contend with, good or not-so good. *Whatever effect we experience, it is equal to the cause that created it and we create that cause by our thoughts, good or not so good.* These outcomes were set in motion by our thoughts and actions. We can then know that we create our own realities. As we begin to realize the part we play in what we are experiencing in our lives, we can choose to learn from these events, change our mode of operation and begin to see the veils, clouds, and doubts (skins and piths) disintegrate. We will begin to enjoy clarity (*abundant health*) as we allow the focus of our vision to change. We begin to realize that one of the reasons we have been stuck (dis-eased), with the bitterness of life (the skin), instead of the sweetness (fruit inside), is because we are so willing to let others think for us. We let others think for us as we adopt their beliefs, systems of function, schools of thought, opinions and treatments (Biological Ionization *is not* a treatment —*it is a description* of our physical expression). Yes, we look for our answers in all the externals (skin and pith) and avoid the truth (fruit) within our hearts. We find we are motivated by fear of the truth (the fruit) and we stay stuck in the errors (piths and skins) of familiarity. We are separated from our "wholeness"— *health of body, mind and spirit.*

Let us look again, at what motivates us, as we make decisions. There are two motivating factors that we use at all times, to determine our decisions, with a resultant cause and effect sequence. Love and fear are the two motivators. You may think that there are countless motivators beyond these two, but in truth they can all be reduced to these two. *When we are motivated by love, we are experiencing "wholeness" of body, mind and spirit. When we are motivated by fear, we are experiencing separation (from truth) with resultant loss of "wholeness"—*

*dis-ease of body mind and spirit.* Let me give you a couple of examples to clarify these two methods of function.

“I **will not** drive in a car, on a busy freeway, in a heavy rainstorm to visit my sick friend, as I may get killed!”

(Motivated by fear-especially the fear of death)

“I **will** drive in a car on a busy freeway in a heavy rainstorm to go visit my sick friend.”

(Motivated by love)

“I **will** drive in a car on a busy freeway in a heavy rainstorm to go visit my sick friend, even though I’m scared to death!”

(Motivated by love and fear)

The last example is, essentially, motivated by both love and fear and carries with it a “less than the best” cause and effect relationship. This person *does* what needs to be done but *is not at peace*. The person in the second example does what he/she wants without the use of fear tactics to disturb their peace of mind. They simply do it and know that it is what they need to do. They are not attached to the outcome, good or bad. They don’t muddy their thinking with thoughts of fear of an accident anymore than they muddy their thinking with thoughts of possible rejection, from their friend when they get there because the friend might be having a bad day. If you visit your friend, because you know that is exactly what you are to do, in love, then perfect love will cast out all fear. Don’t be surprised if it also casts out a negative reception from your friend, if that’s the case, as well. There are times, of course, when you are not to visit that sick friend. How can you know if you are, or are not, to visit, despite how they feel about it? The same principle applies here. If you focus on the truth (the fruit inside) you will know whether or not you are to visit your friend. *You see, the answer to your question is there, you just need to access it.* Access the truth and the rest will take care of itself. *Access the truth and you will operate from “wholeness.”* **When you are whole you are well.** It is important to remember that you *are* guided and that you *do* know. All you need to do is to “stay out of the way” (lay down the peeler) and focus on the answer (fruit inside). That way you can *stop doing* and *start being*. Start being aware. One day years ago, I was struggling to find an answer to a perplexing problem. I had written down all of my options, on a piece of paper and had listed them in, what I thought was the proper order of priority. I showed this list to a friend for their opinion. They took the paper and wrote a zero above my numbered items of 1-10. Beside the zero my friend wrote one word—**listen!** Yes, if we listen, the answer is there revealing itself to us ever so softly *way before we made our list.* We can decide, *now*, to quiet our minds. One author said the definition of iniquity was “in-quiety”—lack of quiet. We have a hard time listening if we are not quiet.

There is an interesting parallel in the physical expression (*physical health*) of our being and the mental and spiritual expression. If we get cut, while peeling a grapefruit, our physical wound will start healing *from within* first. It heals from the inside out. If we get “cut” (confused), while shedding (peeling) our minds of false beliefs and notions, our healing here will begin *from within*, as well. The confusion will disappear as soon as we shed (eliminate) the error (false belief) and begin to function in the truth—“*truth lies within*”—*therein lies the healing.* What is interesting here is that—*therein lies the healing*—“*physically, mentally, and spiritually*”. Physician heal thyself! A statement most of us are aware of. Truth is knowledge. Knowledge is superior to intellectual understanding. *When we operate in truth*



## Biologic Ionization As Applied To Human Nutrition

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*(physically, mentally, and spiritually), our life is in harmony and we experience complete health.* The less truth there is then the more we are pulled, this way and that, by externals, be they people, places or things (*dis-eases*), and the less harmony we experience in all areas of our lives. We can only serve one master. Either we will serve truth or we will serve error. Either we will be “whole” (well) or we will be separated from our “wholeness.” What seems like a problem “*out there*” is really a problem “*in here,*” in the operating of our mind, in our own being. What we have sought for so hard, *externally*, in all avenues of life, is really *always* available, *internally*, in our minds (hearts). The greater the error (the thicker the skin) the further we are from “wholeness”—*health*. Even our own skin sheds dead cells (errors) each day in order to maintain life. It is necessary to shed the errors (false beliefs and notions). Truth (“wholeness”) will *never* change only our *perception* of it can change. When we visualize ourselves as “whole” (*healthy*) then we are just that. Our goal can be to apply these principles, the ones we have been considering here, and the ones in this book and thereby experience “wholeness”—*health. Abundant health of body, mind and spirit.*

The book you are about to read is about Biological Ionization principles as applied to human health and nutrition. It is a guide for you, on your journey, to abundant health. As with all guides, once you have reached your destination they are no longer needed. Once we become *totally* dependent, on our *internal* truth (“wholeness”—health), we are no longer subject to *externals* of any kind. It is this ultimate experience of truth (“wholeness”—health) that we all seek for so passionately (knowingly or unknowingly). *It is there for us!* We have been given much light, *in guidance*, from many sources. May you be blessed by this book (source of guidance) on your journey. In its pages you will become acquainted with information that, if applied correctly, can lead you to the experience of abundant health. Much of what you will read is concerning the *physical* nature of the elements and how the proper use of them can establish vibrancy in your life. It is to be remembered, that there is no such thing as *abundant physical health* and *lack of awareness spiritually*. The mind *links* the physical to the spiritual. Our discussion of the mind and our thoughts, so far, gives you the perspective from which this book was written. Truth has its own *frequency*, (Chapter 2) just as does the human body. *The frequency of the body is the result of the cause and effect relationships of, what we put into our bodies, how we think, as well as the exposures to our environment etc.* The frequency of truth is a *state of being*, that can be incorporated into our *physical* body, *via our mind*. The *frequency of truth* combined with an understanding of the physical nature of the elements, and their use, work together to create abundant health—life itself—the best line of resistance (Chapter 5, pg 36).

*Our thoughts and emotions combine to form vibrations—frequencies—our “line of resistance”.* *Our thoughts, mingled with either love or fear, will create our experiences that will then manifest in our lives physically, mentally, and spiritually, either as health or dis-ease.* Fear must be overcome by replacing all such thoughts, with loving thoughts, or the fear will be fulfilled. To begin with fear was mingled, with our thought, and created the very thing which we now fear. We can create or dissipate that reality. *We can create or dissipate all realities of love and fear.* Remember, *energy is never destroyed*, it is just converted from one form to another. It will behoove us *to convert* all thoughts (realities) of fear (energy in motion) into those of love (also energy in motion). *Our emotions give action to our thoughts and that action will then be directed by love or fear (the two emotions—motivators) of our thinking.* Not only do we create a vibration, with the thoughts we “send out,” but we reap



what they sow as well. There is always a cause and effect relationship, that we cannot avoid, in nature's principles. *We are the creators of our thoughts and by these same thoughts do we judge ourselves into successes or failures—illness or health.*

We can make the attainment of health a spiritual experience revealing a continuous uplift! When we recognize the value of staying “in-tune” with the truth (*wholeness*) of our being, we can then begin to understand that each time we separate ourselves, from this state of being, we depart from the source of life (*health*); we then experience *dis-ease* and harmony disappears. We experience *wobbles* in our circuitry (Chapter 7, pg. 86). The wobbles will manifest in our physical, mental and spiritual being. Rebellion against truth has created the dis-eases and sorrows in lives on this planet. We can choose to *re-create* that scenario into one of love and experience “wholeness”—(health) *now!* Energy is energy—how we use it, abuse it, misuse it or correctly utilize it is up to us! Remember, the same energy that is in the atom bomb, capable of massive destruction, can be harnessed and used to furnish light and heat for mankind. The difference was in the intention behind the use of the energy, which directed its course of action. Energy for our bodies is received from the food we eat, the air we breathe and the spirit of our thoughts. We are vessels in which the energy flows. The flow is directed by our thoughts (mind). Let us be fully aware of our thoughts. They can support us or undermine us. It is up to us!

We can lose the efficiency of the use of energy through the eating of poor quality food, destructive habits and separation from truth (health)—God! “How can we break these habits?”

*How shall I a habit Break?*

*As you did that habit make.*

*As you gathered, you must lose;*

*As you yielded, now refuse.*

*Thread by thread the strands we twist,*

*Till they bind us, neck and wrist.*

*Thread by thread the patient hand,*

*Must untwine, ere, free we stand.*

*As we builded, stone by stone,*

*Till the wall is overthrown.*

—John Boyle O'Reilly (1913)

The question to ask of ourselves is this. “What do I want?” “Do I want abundant health in all aspects of my being?” Remember, sometimes it is easier to be sick. If we give up our need to be sick we may also have to give up the sympathies of others, the fact that others will do things for us that we should be doing for ourselves and of course, by removing the limitations the illness has placed on us, more will be required of us, *now that we are able.* Sometimes our fear of these things will keep us stuck and not really wanting to be well. This fear can be buried in our thinking so that we are not consciously aware of it. Most likely this is the case. There are not many, if any, people who are consciously choosing to be ill. To be



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well requires a personal responsibility to our *state of being*. It requires a willingness to be open to truth and change. It is worth it, but only we can choose it for ourselves. We often identify so strongly with our physical body that the only thing, in our lives, we don't identify with the physical body, *is death itself!* We then become motivated by the *fear of death* more than any other thing. *We must begin to realize that we are not our bodies. Our bodies are mere vessels for God to express through.*

*Our physical body is an expression of our spirit.*  
***Biological Ionization is an expression of our physical body.***

Webster defines *Metamorphosis*, "as the emerging of the butterfly from a caterpillar." (remember.)...

**"What the caterpillar calls the end of the world, the master calls a butterfly!"**





# CALCIUM IS “AUGUST” TO HEALTH

Health, for too long, has been defined as the absence of disease. This ambiguous and confusing definition is an outgrowth of medical thinking based on the treatment and relief of symptoms. Since symptoms mean disease in medical thinking, the absence of symptoms has been deceptively deduced to mean health. This is about as reasonable as assuming that because water looks sparkling clear, it is pure.

During the study and use, of the Biologic Ionization Concepts, it will become very clear that health cannot be defined in light of disease, or necessarily in the absence of symptoms. On the contrary, disease (better expressed as sub-health) will be demonstrated in the light of perfect or ideal health defined by the parameters of Biologic Ionization, as it reflects the chemistry of the **lifestyle** ( what one eats, breathes, drinks, thinks and does.) There is little concern for a named condition or set of symptoms that a person may have been told they have. Naming the symptoms never relieves the cause. The cause has to be located and dealt with.

As you will learn, through the Biologic Ionization principles, all manifestations or symptoms of disease have two basic common denominators. The **first** is from a mental standpoint. Over 80% of all illness begins within the mind. Hate, bitterness, anxiety, fear, greed, strife, lust, depression and guilt all interfere with the brain's electrical communication and proper stimulation of the vital organs, especially the liver.

The liver, as you will learn, is the primary organ through which all the rest of the body's organs and tissues are maintained, either for better or worse. The liver needs the right amount and type of water, oxygen and calcium, as well as the right electrical stimulus from the brain. If the brain's function is interfered with, by anxiety, hate, bitterness, frustration, turmoil, etc., then the liver sympathetically responds in such a way as to prevent proper uptake and utilization of water, oxygen and calcium in food energy. This usually means an upset in digestion, caused by an interference of liver function. Thus the digestive enzymes are weakened so that even good diets and foods turn to poor nutrition and toxicity. Just as Proverbs 17:1 says, *“Better a dry morsel and quietness... than feasting with strife.”* The weaker the digestive enzymes and the longer their function is impaired, the greater the mineral deficiency will become. The greater the mineral deficiency from food, the more the body will erode away the *vital force* or *reserve energy*. This will eventually exhibit itself in an increasing number of symptoms as the “vital force” or reserve energy is depleted.

The second denominator, of sub-health, will be the loss of mineral energy— starting with calcium. Calcium, being required by weight and volume more than any other mineral in biologic life, has the greatest effect on liver function when it is lacking in the foods we



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eat. In fact, **calcium deficient food is toxic food**—it is as simple as that. In other words, calcium deficient food, as you will see, acts as the greatest physical cause of degenerative disease problems.

Because the liver is the key organ upon which all other organs and tissues are dependent for their building and maintenance material, any lack the liver experiences will automatically affect other organs and tissues to varying degrees. Calcium plays the key role in liver function, along with proper water and oxygen. Together these three work as the basis for the liver's well-being. When the liver is fed proper mineral energy, then the rest of the body will be able to maintain proper health. You might say then, as calcium goes so goes the liver's health, and then, so goes the body's health.

This can be illustrated from well known medical data. Most "adults are losing up to 1.5% of their total bone mass a year." This is a loss of reserve energy as the body tries to keep its mineral needs supplied, from day to day. This loss, if it progresses for a long enough time, will be seen in symptoms related to thin, porous, and brittle bones, loss of physical height with aging and resulting in changes in the electro-magnetic pattern. This effects the body's ability to resist disease. In fact, some data indicates that women, after menopause, are losing upwards of 15% a year of bone mass and 80% of that is calcium.

*In the light of present knowledge, it can be seen that disease starts primarily at the atomic level when the proper release and utilization of energy are interfered with and proper control of biological activities is disturbed by malpositioned molecules.*

—Walker, R., "Energy, Matter and Life," Basal Facts, Vol. 4, No. 3

### CALCIUM—YOUR PHYSICAL LIFE DEPENDS ON IT!

Over one hundred years ago it was discovered that the calcium, in human blood serum, played a significant part in maintaining the contractility of heart muscle. This finding was the important beginning from which most research on biological effects of calcium originated. By the time the year 1950 rolled around, there were about fifty publications per year having to do with the biological effects of calcium. As of 1990, the number of articles being published about the biological importance of calcium in the human body, numbered over 7000 per year.

Here is a small sampling:

A common trigger precipitates biological events as diverse as the contraction of a muscle and the secretion of a hormone. The trigger is a minute flux of calcium ions.

To control cellular process effectively, calcium itself must be regulated.

Knowledge of these intricacies [elaborate system of proteins that interact with the calcium ion regulating intracellular messages] may lead to greater clinical control over intracellular calcium, a possibility that has broad implications for the treatment of disease.—Carafoli, Ernesto and Penniston, John, "**The Calcium Signal**," *Scientific American*, November 1987.

Proliferation of cells in vivo [in the living system] is regulated by polypeptide growth factors. Binding of growth factors to their specific cell-surface receptors initiates a cascade of biochemical events in the cell, which ultimately leads to deoxyribonucleic acid (DNA) synthesis and cell division.

The immediate consequence of receptor activation includes a sustained increase in cytoplasmic pH and a transient rise in cytoplasmic free calcium ions. The *platelet derived growth factor induced calcium ion signal* is due to a calcium ion release from intracellular stores whereas the *epidermal growth factor* seems to activate a *voltage independent calcium channel* in the plasma membrane. These results suggest that rise in calcium ions is indispensable for cell proliferation.—Moolenaar, W. H., Defize, L. K., Delaat, S. W., “**Calcium in the Action of Growth Factors,**”<sup>†</sup> *Calcium and the Cell*, 1986, Wiley.

The connection between the electrical activity of the cell and the release of neurotransmitters is not direct; an essential intermediary is the calcium ion.—Linas, Rodolfo, “**Calcium in Synaptic Transmission,**” *Scientific American*, October 1982

Calcium has been recognized as a major regulatory ion in all living organisms.

Considering the wide variety of calcium-binding proteins, in the cell, the potential targets of calcium-related disorders are enormous.

General interest in calcium-binding proteins is still in the logarithmic phase with daily discoveries of these proteins.—Thompson, Marvin P., *Calcium Binding Proteins*, CRC Press 1988., “**History of Calcium-Binding Proteins.**”

The regulation of mitosis and cell division is one of the fundamental questions of cell biology. Calcium has been implicated as a regulatory factor in both.—Cheung, Wai Yui, *Calcium and Cell Function*, Volume VII, Academic Press Inc. 1987.

*Please note:* This next quote comes from a book, that is a compilation, which represents some of the best scientific publications of academically recognized scientists. This book deserves particular note because world class scientists are concluding that there is a link between calcium deficiency and cancer.

Calcium must certainly be the major bio-element of the times. Only a generation ago the calcium ion was known to physiologists and biochemists as a component of bone mineral and as a blood plasma constituent required in heart function and blood coagulation, but little more. But, in the 1970s, a crescendo of calcium ion research developed. Today we know dozens, if not hundreds, of different cellular and extracellular processes that are regulated by the changes in cytosolic or extracellular calcium ions. Indeed, the calcium ion is emerging as a most important and ubiquitous intracellular messenger. (Excerpt from Forward by Albert L. Lehninger, Professor of Medical Science, John Hopkins University.)

As we have seen, calcium is central to the ordered progression of replicating cells through their growth-division cycle. Neoplastic epithelia and mesenchymally derived cells can initiate DNA syntheses and proliferate normally in a low calcium medium, which does not support the proliferation of their normal counterparts.



Besides needing calcium ions, normal cells must adequately spread out on a solid substrate before they are able to initiate DNA syntheses. Calcium is specifically required for spreading. Lowering the extracellular calcium and preventing spreading both block the initiation of DNA synthesis, without stopping on-going DNA synthesis. The elimination of extracellular calcium requirement for proliferation of viruses can be mimicked by exposing proliferatively inactive calcium-deprived normal cells to calcium-independent-nucleotides protein kinases located in the plasma membrane. Thus, addition of such subunits to the medium of normal cells cause them to behave like neoplastic cells by initiating DNA syntheses in calcium deficient medium. It is clear that the proliferative calcium independence in vitro is a universal property of neoplastic cells, the understanding of which may be the key to understanding cancer. (see page 158)—*The Role of Calcium in Biological Systems*, Volume I, CRC Press Inc. 1985.

A number of important metabolic processes are influenced by small changes in extracellular ionized calcium concentration. These include: (a) the excitability of nerve function and neural transmission; (b) the secretion by cells of proteins and hormones, and other mediators such as neurotransmitters; (c) the coupling of cell excitation with cell response (for example, contraction in the case of muscle cells and secretion in the case of secretory cells); (d) cell proliferation; (e) blood coagulation, by acting as a cofactor for the essential enzymes involved in the clotting cascade; (f) maintenance of the stability and permeability of cell members; (g) modulation of enzyme activity, in particular those enzymes involved in glycogenolysis (the splitting up of glycogen, the chief carbohydrate storage material in man), gluconeogenesis (the formation of carbohydrates from protein and fats), and protein kinases (enzymes that catalyze energy transfer from ATP to proteins) which are calcium dependent; and (h) the mineralization of newly formed bone— Mundy, Gregory R., “**Calcium Homeostasis: Hypercalcemia and Hypocalcemia**,” University of Texas. (Professor and Head, Division of Endocrinology and Metabolism).

One of the astonishing developments in biological research is the recent widespread interest in the role played by calcium in cellular metabolism.

Intracellular calcium regulation will be of interest to researchers and graduate students in the areas of biochemistry, biophysics, cell rheology and nutrition—Bronner, Felix, “**Intracellular Calcium Regulation**,” Wiley, 1990.

Low cancer areas were far more frequent in the sun belt. What was the significance of sunlight with regard to cancer rates? Sunlight reacts with cholesterol inside and on the surface of the skin to create vitamin-D. Vitamin-D helps the body absorb calcium and plays a major role in the body's ability to use the calcium that is available—Garland, Dr. Cedric and Garland, Dr. Frank, “*The Calcium Connection*,” Foreside, Simon and Shuster Inc. 1989.



Yet, with the large volume of information on the importance of calcium in human health, little is being published to show that our soils, acting through our food, hold the key for supplying the most primary element in physical health—calcium.

Within the last sixty years the only voices in agriculture that were pointing to the vital need for calcium in the soil for human health were men like Dr. Charles Northern, Dr. Carey Reams, Dr. William Albrecht and Dr. V. A. Tiedjens. Of these four, Dr. Charles Northern, was a unique combination, a medical doctor and an agriculturist.

In Dr. Charles Northern's work was found the combination of medicine and agriculture, that Dr. Tiedjens believed was essential if human health was to be properly understood and handled.

*I am of the opinion that if our medical profession had a better understanding of plants and soils, many of our complex problems would respond to simple treatment.—Dr. V.A. Tiedjens*

Dr. Northern was light years ahead of his time over sixty years ago. He worked many years in the field of agriculture after retiring from his medical specialty dealing with digestive disorders. Like most pioneers of science, he was ridiculed for what he believed. He was a man of action and the results he obtained were outstanding. However, the results would not have happened without Dr. Carey Reams' unique and practical mathematical genius in agricultural and health research, that Northern employed. It was Dr. Reams who first brought to light how essential calcium is to the biologic systems of soil, plants and humans. From that point to this, the relation of soil calcium and mineral colloids to human health has been uniquely emphasized by Dr. Carey Reams through his Biologic Ionization principles. Until his death in 1985, Reams was basically a lone prophet pointing to the reason why human degeneration and disease is linked directly to the soil—**the lack of calcium and mineral colloids.**

This text exists because there are no ideas more important to remember than those of Dr. Carey Reams. This book lifts the banner, first unfurled by Drs. Northern and Reams, that points to the true reason for the rampant epidemic of degeneration called "normal health" caused by food deficient in calcium and mineral colloid. Food being consumed today has less than half its proper calcium content. No wonder degenerative disease is an epidemic with no end in sight.

First, to make sure that the reader understands how absolutely necessary calcium is to physical life and health, let's take a look at how calcium functions in the soil. Its function is absolutely vital to high quality food and physical health.

## CALCIUM AND SOIL HEALTH

- 1) Calcium is the most important element in soil health. It is the pivotal mineral, around which all others function, producing growth energy for plant life and health. The poorer the available calcium reserve the more irregular the energy delivery. Calcium is required by weight and volume more than any other element. Since more energy is required for root, stem and leaf growth than fruit and seed growth, calcium is the key factor, because it is the only element to supply it properly. Some have said that calcium is to soil what grease is to a bearing.



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- 2) Calcium is key in proper soil structure. Calcium, in conjunction with carbon and water, creates a carbon dioxide bubbling reaction that opens the soil structure for oxygen. Lime rock is primarily composed of calcium. After lime (ground lime rock) applications, the farmer will observe four important reactions: a) requirement of less energy to cultivate, b) soil is softer and more penetrable to greater depths, c) improved drainage and therefore increased oxygenation, d) increased yields.
- 3) Calcium feeds soil bacteria. Instead of being dormant, bacteria will come to life and start participating as key factors in soil building and energy release. Bacterial action builds biologic carbons (organic protoplasmic compounds) that become active storage and release sites of energy no matter what the pH. Thus, the better the available calcium the better the bacterial activity and production of biologic carbons, therefore, the less important soil pH becomes.
- 4) Calcium is the major mineral that determines soil reserve energy. The amount of available calcium determines the amount of available energy.
- 5) Calcium is the major contributor to both structural and chemical reactions, in the soil and plant, just as in the human or animal. It is the major buffering agent in intracellular reactions as well as effecting cell permeability to mineral energy. Calcium's presence, along the cell walls, thickens and strengthens to make more resistance to disease and insects. It is also the major cementing medium between cells.
- 6) Calcium stabilizes proteins. Too little calcium allows nitrogen to pull in excess water. When low calcium plant tissue dehydrates it has a higher ratio of nitrogen to calcium; therefore, it will become unstable and may spontaneously combust. When calcium is adequate it takes less nitrogen to produce a crop because the nitrogen that is being taken in is used to its highest capacity rather than some of it being wasted.
- 7) Calcium is vital to the proper making of plant sugars. Without calcium there will be improper buffering of plant acids, thus the taste can be dramatically affected by the presence or lack of acids according to calcium availability.

Now let's consider how important the calcium in our food is for physical health.

### **CALCIUM AND HUMAN HEALTH**

- 1) Calcium determines the ratio of all other minerals in the molecule. Thus, it is vastly superior to assisting other minerals into the cell. It has the ability to bind to several different elements at once, enabling it to bind and bunch up long proteins, an ability necessary to regulate entry of ions into the cell. Thus, it brings the most nutrient (or other material) into the cell.
- 2) Calcium is also responsible for the density, color and function of the cell. When mineral ratios become improper, because of calcium changes, the corresponding color of a given tissue changes along with an alteration in the function of that tissue.
- 3) Calcium, as the major mineral in biologic life, can bond more efficiently with protein and water, at the same time, than any other major mineral.
- 4) Calcium is the most flexible, chemically, in biologic systems. As an ion, calcium can move faster than magnesium and therefore is more mobile in the system.
- 5) Calcium binds to the central atom of biologically important coordination compounds, known as ligands, ten thousand times faster and ten thousand times stronger than magnesium.



- 6) Calcium requires the least energy to move within the cell. That is, it produces more with less because it allows more mineral energy to be moved in to the cell with the smallest expenditure of energy.
- 7) Calcium is the most efficient pH buffer for extra and intra cellular fluid. This is crucial in allowing glucose to be utilized in the formation of the four nucleotides (adenosine triphosphate, guanosine triphosphate, cytidine triphosphate, and thymidine triphosphate) the basic building blocks of DNA.
- 8) Calcium is, overall, the best tranquilizer that nature ever supplied.
- 9) Calcium releases the mineral energy of your food during digestion. **The less calcium in your food the less overall mineral energy you get out of your food.** Example: A cow eating alfalfa hay with a 16 Brix level of sugar (the Brix level represents the percentage of sugar dissolved in a solution) requires only 10-12 pounds of grain to give 100 pounds of milk; while a cow eating alfalfa hay with a 7 Brix level of sugar requires at least 30 pounds of grain to give 100 pounds of milk. This is because an animal or human consuming food that lacks proper mineral sugars will require as much as 40% more protein in the diet.

Calcium is one of the most difficult minerals for the body to digest in a free (inorganic) state. That is why it is most important to let nature digest it—as it was designed to— from the soil through the plant. Properly grown, high quality food is the most ideal calcium supplement.

The most toxic foods are not the ones contaminated with herbicides and pesticides. Actually, **the most toxic foods are those that are grown in calcium deficient soil and passed off, to an ignorant public, as fresh healthy food.** This is why I have spent my time in both soil mineral chemistry and human mineral chemistry. I have been able to show not only the need for calcium and mineral colloids, but how the farmer and gardener growing foods in soils rich in calcium and other minerals will have a greater health benefit than all of the medical personnel and health institutions put together. The Biologic Ionization Program is the only program that defines and addresses the comprehensive mineral energy needs for both agricultural and human health.

From a human physical standpoint the individual programs, developed, are a result of the Biologic Ionization analysis that you will learn in this text. The concept is essentially one of re-mineralizing the body through the function of the liver. The program is based on a scientifically devised mathematical expression. The expression is a formula that is actually an illustration, in numbers, of the interactions and interrelations of mineral electromagnetics within the human body. Because all human chemistry has an ideal range of interaction that can be expressed in math ratios, test results can be compared against the ideal in order to establish what is taking place and what has to be changed in the system's mineral ratios, to effect a change in the body's chemistry toward and into the ideal range. It is the comparison of the actual test results, against the ideal, that gives a "picture," numerically expressed, of where, what and why present body symptoms are manifesting. Likewise, the math gives information as to what is necessary, in the lifestyle, in order to manipulate body chemistry back into a better functioning range. And, of course, the proper calcium supplementation is a major aspect of Biologic Ionization.



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Cause and effect are what is dealt with. No attempt is made to label symptoms, for prescription purposes, because it is felt that all degeneration is a form and pattern of mineral energy loss—**starting with calcium.**

Therefore, all recommendations are just that, recommendations for the individual, to know how he can take responsibility for reversing degenerative effects and improve his or her wellness, through manipulation of the total lifestyle.

The program does not address the “disease” itself or treatment of it. It is basically irrelevant that the individual has been told he has a certain disorder. Rather, what is relevant is what the tests indicate need to be done to alter the body chemistry into a better, more efficient range of operation. Then, if the person chooses to follow the recommendations, and follows them faithfully, completely and persistently, the chemistry can be affected in such a way that the body, in the majority of situations, can be brought back into a more acceptable functioning range.

Biologic Ionization Analysis sets up a mathematical “picture” of the magnetic effects of mineral energy loss. Biologic Ionization, therefore, is not a program for diagnosis of disease. Rather, it is an analytical evaluation of the basic causal patterns of electromagnetic biochemistry. This means that a person’s symptomatic patterns can be predicted, and the resulting mathematical formula can be used as a tool to know what changes in lifestyle need to be made, in order to reverse the degenerative process that is a result of body chemistry problems.

Keep in mind that this study seeks to get the student to think in concepts, from the very beginning, in order to establish a proper mental framework for hanging all the rest of the information on, that will come along—now and in the future. Thinking in concepts seems to be difficult for some, in the beginning, but let it be said that persistence and repetition are the basics of learning. Many, who are now using these principles successfully for their families, had difficulty, in the beginning of their studies, but the persistence paid off.