

Biologic Ionization *as applied to* Farming and Soil Management

Air
Ion
Energy



Production
&
Health

Soil
Ion
Energy

**Principles
and
Techniques**

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by: **Dr. A. F. Beddoe**

BIOLOGIC IONIZATION
as applied to
FARMING AND
SOIL MANAGEMENT

PRINCIPLES and TECHNIQUES



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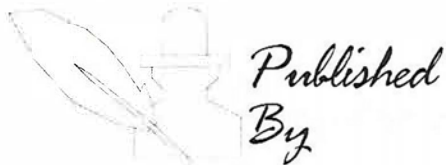
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**Biologic Ionization as applied to Farming and Soil Management,
Principles and Techniques**

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IN MEMORY OF



Dr. Carey A. Reams

My good friend and mentor, admirably called “Doc,” has 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 ‘a’ Holy Spirit so that they could go beyond what he had come to understand. He continually sought to help all he could toward a knowledge of God’s laws of life and health.

ACKNOWLEDGMENTS

Even though this is chronologically the second of two volumes that I have written on the application of Biologic Ionization Principles, it is in reality first in importance because all high level nourishment begins with quality soil. Like all accomplishments, it is a reality because of the help and patience of many others.

I, or any man, cannot take credit for the knowledge within these two volumes. I am but a vehicle sharing with you what I have been enabled to understand. 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.

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

The moment one definitely commits oneself, then providence moves too. All sorts of things occur to help one that would never otherwise have occurred. A whole stream of events issues from the decision, raising in one's favor all manner of unforeseen incidents and meetings and material assistance, which no man could have dreamed would have come his way.

W. H. Murray

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PREFACE

A new way to understand soil chemistry holds the secret for not only rehabilitating deteriorating soils of the world, but also to put back in the stomachs of the world's hungry a richer more nutritious food in greater abundance. Over 50 years have passed since these concepts of soil energy building and management were first set forth. And

yet very few have benefited by what this consultant has found to be a fruitful, healthful, and cost effective way of husbanding almost any soil situation one could encounter.

A spin-off of the technology that brought us the atomic age, Biologic Ionization, as the principles are coined, puts in the hands of the farmer himself the ability to learn, understand, and apply a combination of math and chemistry to soil management. These principles on the surface appear complex, yet when studied and applied are overwhelmingly simple. All that is needed is for each agriculturalist, who is unbiased, to discover for himself what will not only take the gamble out of farming, but will make the world's farmers the best health providers on the face of this planet.

Agriculture has failed the hungry world. Oh yes, they may be filling stomachs, but in the attempt to grow disease free plants the nutritional needs of both animals and humans have been totally neglected. In a four year study that sampled over 4000 plants from farms in midwestern America, it was found that mineral levels in the plants has dropped from between 8% to 68%. While at the same time, the use of N-P-K fertilizers had increased 25% in that same period. Imagine what the effect may be in third world countries, influenced as they are by the western chemical "wisdom."

It is the premise of this consultant that world agriculture is looking in the wrong direction for the solution to their problems. They are not only addressing the wrong issues, but they are directing their attention incorrectly at the right areas. In other words, agriculture has taken a similar route as the field of medicine. Instead of looking at cause and effect relationships, the trend has been a greater and greater emphasis on treating symptoms to kill disease. More chemicals are being developed to encounter more resistant pests. Genes are being engineered to develop new varieties to supposedly withstand the proliferating insects and diseases. New chemical combinations for plant growth regulation and insect destruction are increasing by the month. Plus, there is a disproportionate amount of energy centered around farm machinery and implements to harvest larger acreages in less time.

Russell Baker of the New York Times expressed very well an example of the wrong emphasis in agriculture.

"I see in the papers that science has made a square tomato. The story runs on about the advantages of this deed, such as: square tomatoes are easier to pack than tomato-shaped tomatoes; the new square tomato is tougher than its predecessor and can, therefore, be more easily picked by machinery, and so forth.

In all these raves, there is not a word about the square tomato tasting better than the old tomato.

The purpose of a tomato is to taste like a tomato, and if it doesn't it is not a miracle, but a failure. If its purpose is to be hard, it might as well be a potato. If its purpose

is to be square, it might as well be a cardboard box. And if we don't care whether it tastes like a tomato or not, why is science wasting its time making square tomatoes when it could be making cardboard boxes that look like tomatoes?

Yes, confusion is rampant. Agribusiness thinks that the larger the yield the better the quality. Yet two ancient writers, inspired by the Creator of the universe, once said that "the earth waxes old like a garment and they that dwell therein like wise." But the world has gone on about its business not giving much attention. In fact, another ancient writer, also inspired by the same Creator, said, "MY shepherds have ruined My vineyard. They have trampled down My field. They have made My pleasant field a desolate wilderness. It has been made a desolation. Desolate it mourns before Me. The whole land has been made desolate because no man lays it to heart."

Agricultural students, like their medical student counterparts, are being lead to believe that where there is no chemical there is no answer. In fact, agricultural education relies on the very industry which supplies its products to tell them how to use them. This smacks of a high probability of conflict of interest. What is more, agriculture research in the western world competes for funds many times under the pretense of promoting improvement and betterment of human kind. When on the contrary, self interest and interscholastic competition has biased the vast majority of research methods and subjects as funds are vied for.

William Albrecht, now deceased, former head of the soils department of the University of Missouri, described part of the problem well when he said, "Students today throw themselves down in front of teachers like a pile of boards to be turned into furniture. They don't come to the university to educate themselves." He seemed to be quite aware of the manipulative system of education in agriculture.

The "Organic Movement" also continues to struggle because organic agriculture has only addressed part of the solution to raising healthy food and avoiding the commercial agribusiness fiasco. Yes, raising our food by organic principles has very definite merits, no doubt about it. However, until the Organic Movement seriously addresses more than just clean and non-toxically raised produce the Movement will struggle with disarray. Here is where Dr. Carey Reams and Biologic Ionization principles come in.

Organics, while addressing the methods of raising food non-toxically, fails totally to deal with the nutritional content. Organics presumes that their methods grow food that are superior in nutrition. Unfortunately the facts show otherwise. More often than not it can be shown, with some exceptions of course, that typical commercial raised produce has higher levels of nutrient than organically grown. Try it yourself. Take your refractometer to the super market produce section and compile your own data. Then compare the organically grown. See how often the commercially raised veggies and fruits have a higher sugar content. That means higher levels of nutrition. This is because the organic principles stress clean food more than they know how to stress nutritious food.

But enough for the problems. We are interested in the solutions to the problems. We know that the solutions can only be found in the re-orientation of priorities and an interest in them, priorities that recognize the relationship between human health and the soil, that the soil is the common denominator from which man was created and contin-

PREFACE

ues to obtain his sustenance, priorities that recognize, understand, and use biophysical principles established and maintained by creation. Creation is the process that supplies every bit of electro-molecular-magnetic energy and current that built us, feeds us, and maintains us and our environment.

When it comes to the soil-plant interrelation, the term energy is not being properly understood. Most would equate energy with fertilizers that have been or need to be added to the soil. However this is only a small part of what should be understood by the word energy.

Energy in simple terms was first defined by Einstein. He showed us a clearer understanding of how matter is only a form of energy. Matter (m), he showed, was a complex form of light (E) (electricity and heat). Hence his well known formula $E=mc^2$.

Soil science today has only addressed soil chemistry and that very poorly. Chemistry principles are only a part of a complete understanding. It is soil biophysics that should be addressed. It is soil biophysical principles that open the ability to build and manage soils to their optimum potential.

Within the last few years more and more attention has been focused on the need to have soil testing done on the farm. Hence, the proliferation of the commercial agricultural soil testing facilities across the country. But how useful is the information these labs send their farmer clients? The main stream farmer is not aware of the lack of continuity within this newly commercialized service. This has been born out in recent years by research from the Rodale group. Wanting to evaluate the reliability of soil test information the farmer has available to him, Rodale sent parts of the same soil sample to a large number of labs across the country from east to west. Rodale reported that the results showed that there was almost as many different results as there were labs that they tried. And besides that, the recommendations for the same crops ranged far and wide. For example, nitrogen recommendations ranged from none needed to 250 lbs. per acre. A highly respected midwest farm journal called Acres USA concurs with Rodale's findings by reporting similar results in articles they published as recently as 1983. Little wonder so many farmers are selling their lands to the real estate developers. They cannot apply misinformation and expect to continue their operation.

This is why the farmer has to become schooled in the practical methods of understanding and manipulating his soil-plant situations. By studying the Biologic Ionization principles and learning how to obtain consistent soil information, the individual farmer does not have to rely on a trial and error approach to farming. Nor does he have to fall victim to every salesman who passes by his farm with a "new" and "revolutionary" item to market.

Many agriculturalists would agree with my father when he shared with me his feeling that "farming is a bigger gamble than going to Reno." Yet having come from several generations of farmers in this country and England, I knew what my father meant. That is one of the reasons I ended up in a medical career. If I had known then what I know now, it would have probably put an entirely different twist to the areas and ideas I ended up pursuing.

Remember that it is a gamble when you do not have immediate access to chemical analysis and the resulting understanding of what is shown to be taking place as a

BIOLOGIC IONIZATION IN FARMING AND SOIL MANAGEMENT

result of the test data. For soil test information to begin to be of value to you, there must be on-going testing to monitor and regulate the soils reactions throughout the growing season.

This consultant has been and is committed to teaching the farming world what the Biologic Ionization principles can actually do for those who are interested in using the simplest and most advanced soil chemistry methods today. It is a fact that farmers of the world can have the greatest effect on the world's health, more than all the hospitals and medicines put together. Keep that in mind as you “dig” deeper for truth.



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 life-style viz., 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 the digestion, of food, caused by an interference of liver function. Thus weakening the digestive enzymes 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 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, lose 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 in-

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cludes 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,” *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 bioelement 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 1970's, 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, Johns 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,

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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 have 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 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 as 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 responsible for being the pivotal mineral, around which all others function, to produce 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. Because 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.

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. 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 is more susceptible to spontaneous combustion. When calcium is adequate it takes less nitrogen to produce a crop.

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 calcium is, in our food, for physical health.

CALCIUM AND HUMAN HEALTH

1) Calcium determines the ratio of all other mineral in the molecule. Thus, it is vastly superior to assisting other mineral 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. Then, it brings the most nutrient 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 of ionization process. That is, it produces more with less. Since ionization is necessary to produce voltage, for calcium to enter through

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cell membranes, calcium is the winner in this race.

7) Calcium is the most efficient pH buffer for extracellular fluid. This is crucial in allowing glucose to break down into the four nucleotides (adenine, guanine, cytosine and thymine) 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 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. Then you will have the best high calcium natural supplement when eating high quality food.

The most toxic foods are not the ones contaminated with herbicides and pesticides. Actually, the most toxic foods are those that are grown on calcium deficient soil and passed off, to an ignorant public, as fresh healthy food. This is why the author has seen fit to spend his time in both soil mineral chemistry and human mineral chemistry, to show not only the need for calcium and mineral colloids, but how the farmer and gardener, growing foods on 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 remineralizing 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 then be compared, against the ideal, 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 life-style, in order to manipulate body chemistry back into a better functioning range. And of course the correct calciums form a major part of the supplementation aspect of Biologic Ionization.

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 individ-

ual, to know how he can take responsibility for reversing degenerative effects and improve his or her wellness, through manipulation of the total life-style.

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 life-style 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.



CHAPTER 1

NEW LANGUAGE

The one who developed the basis for this program was an Einsteinian type mathematical genius. Those who know him well will attest to that fact. His mathematical eccentricity was directed into biochemistry and the way it was affected by the electromagnetic properties of elements as they combine to build life as we know it in the plant, animal and human kingdoms.

As a genius, this gentleman was far ahead of his time. As a result he encountered numerous difficulties from other professionals who have not understood him or his concepts. His basic language, not even second to English, was “relative mathematics.” Hence, he has had difficulties translating his mathematical findings into language that could be understood by the average professional. It meant either developing an entire new language, or borrowing terms in common use that would come the closest to describing how he saw nature and natural law working, and often he then re-adapted those terms by some alteration of their customary definition. He chose the latter. This has caused no end of frustration to those, within certain rigid scientific disciplines, whose security and peace of mind rest on what they know and use on a daily basis, and yet, they have not bothered to look at his discoveries to try to understand how and why he was using the terms in his particular way.

Those who are the explorers have discovered that our perception of things is not always true, that adjustments must be made in our thinking, and redefinition of our terms is necessary if further progress is to be made, but these explorers and pioneers, have in the past, often been put to death or imprisoned for challenging the thinking of those who held the “popular belief.” These individuals were very uncomfortable with change and had difficulties conceptualizing. So it has been in this case. Yet, so often, many years and thousands of hours of research later, it has been discovered that they were on the right track. Truly, few are the geniuses of discovery who are honored in their own time.

Behind every progressive spirit, stands a thousand men to guard the past.

For those professionals who are studying this text, please be aware that those who have spent years in defining and redefining the concepts presented here, are familiar with the common way of using the terms and formulas expressed in these pages. And much research has been done and is continuing to be done to set forth terms that have the broadest and most acceptable usage.

However, it is not really our goal to try to define these concepts entirely in acceptable terms, for to do so would destroy the concepts that have opened new vistas of understanding and success in both agriculture and human health. Rather we invite you

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to try not to be offended by terminology that you may think incorrect. We ask that you look at the concepts being presented here, which are greater than the terms being used.

Orville Wright put it this way. *“If we all worked on the assumption that what is accepted as true is true, there would be little hope for advance.”*

The glossary that follows is to present at the outset the way Biologic Ionization has taken certain terms and readapted them for its own use. In this way confusion will be minimized and needless discussion caused by misunderstanding can be avoided to a great degree.

In order to speak a language it is imperative to learn an extensive vocabulary and how to apply it. Study of these principles may present this challenge. Yet, like any foreign tongue, each area of scientific understanding and practice has to have its language set forth and defined.

One writer said, *“A glossary is like the cast of characters listed in the front of a play program: it introduces us to what is about to take place.”* And the glossary will be, in a sense, also biographical because it acquaints the student with how the scientist thinks who is responsible for first setting down these concepts.

So without further qualifications, and without any apologies, every statement that is made from here on in this treatise is made within the context of the concept of **Biological Ionization as it applies to human health**. You are asked to put aside your rote learning and think with us within a new concept for addressing human health. After all, the success that has been made in the conventional way of thinking in the matter of degenerative disease is embarrassingly slight.

Glossary:

Aerobic Glycolysis—The breakdown of carbohydrates, for energy, by enzymes in the presence of oxygen into lactic acid. Healthy cells function this way.

Absolute Units—A system of units based on the smallest possible number of independent units. Specifically, we will be working in units of energy.

Acid—A solution with a resistance range(pH) from 00—7.0.

Albumin—Actually the **cell debris** from dead cells of the body tissue being dumped into urine from blood via kidneys.

Amino Acid Core (AAC)—The center structure of an amino acid which contains the nitrogen. This is where the frequency of the Amino Acid molecule is programmed. This is where the DNA begins.

Anaerobic Glycolysis—The breakdown of carbohydrates, for energy, by enzymes in the absence of oxygen into lactic acid. Degenerative tissue functions in this way.

Anion—The smallest particle of energy discussed in Biologic Ionization. Its energy exists in ratio between its center and outer shell. This ratio of energy can exist in value from 1 unit, called the milhouse (absolute) unit, to as much as 499 milhouse units. The anion has a positive core and a dominant negative electromagnetic field around it moving in a clockwise direction.

Anionic Elements—Calcium, Potassium, Chlorine

Anode—The electrode at which oxidation occurs, the negative pole of a battery.

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In electrolytic cells the anode is considered positive. Oxidation is the process of break down or the loss of anions (electrons).

Avogadro's Law—Equal volumes of different gases at the same temperature and pressure contain the same number of molecules.

Avogadro's Number—Number of molecules in one mole or gram-molecular weight of a substance, 6.022045×10^{23}

Base—A solution with a resistance range (pH) from 7-14

Base-exchange—The term refers to a designated period of time a plant maintains cellular structure. After this time it throws out the old cell and builds a new one in its place.

Brix—A unit of measure used in the refractometer. When the Brix reading is divided by 2 it will be equal to the per cent of crude sucrose in plant tissue. The full reading obtained when measuring urine will be equal to the total carbohydrate plus some salts.

Catalyst—A substance, which by its mere presence, alters the velocity of a reaction, but does not become a product of the final element.

Cation—The next smallest complete energy package next to an anion. Its mil-house (absolute) unit value can be from the smallest of 500 to its maximum of 999. Above 999 it has an unstable ratio which causes it to split and form 1 anion and 1 cation. It could even form several anions. The cation has a negative charge core and a dominant positive charged shell which rotates in a counter clockwise direction.

Cathode—The positive pole of a battery, and the electrode at which reduction occurs. Reduction is a gain of electrons or an increase in base forming radicals in a compound. In electrolytic cells the cathode is considered negative.

Cell—**Alpha Cell**; a full functioning healthy cell. **Delta cell**; is a worn out cell and is functioning very poorly. It functions extremely inefficiently. **Omega Cell**; is a dead cell

Chelate—A molecule with an extra electron riding along. This extra electron works like a claw, which is the meaning of the Greek word chelate. All matter is made up by interlocking of one chelated electron (claw) with another.

Chemical Compound Colloid—A substance that is like a complete solar system. It cannot be taken apart or created by man, but it can be analyzed. It contains upwards of 66 elements. All elements in chemical compound colloids are **non-toxic**. Because of the size and electromagnetic characteristics they are repelled by both positive and negative fields. This is why the colloid particles will stay in suspension in water and follow the water wherever it goes-- in spite of the fact that it will not dissolve. Chemical compound colloids do attract each other and the greater their amount in living substance, the easier it is for more of them to be attracted. They will become a part of any frequency structure because of their complete "solar system" arrangement. This substance is very high in Soft Rock Phosphate.

Chlorophyll—The green coloring matter of leaves and plants, essential to the production of carbohydrates by photosynthesis. More particularly, chlorophyll is a metalloporphyrin molecule that is similar to hemoglobin but a reverse. Where the red blood

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cell has iron the chlorophyll has magnesium and vice versa.

Compound—A union of 2 or more different elements.

Density—Concentration of matter, measured by the mass per unit volume.

Differential—Refers to the difference between ideal chemistry and the test results in the urine and saliva test. The “most likely differential” refers to the part of the test that difference from ideal will be the easiest to change and bring the persons numbers closest to ideal.

Diet—Referring to the food consumed as to type, quantity, and variety.

Electrolyte—A conductor of electricity. It may be either a pure elemental metal or compounds.

Element—Pure substance, and/or the building blocks for all compounds in organic and inorganic matter.

Energy—An electromagnetic force that can be either **Heat, Electricity, or Matter**. Energy is always given off when resistance is encountered. Energy cannot be created or destroyed, but is instead converted from one form to another. As an example, when wood is burned the by-products would be heat, light and electricity, plus the matter that is left called ash, and that which is given off as smoke. The absolute unit of energy measure is the **milhouse unit**.

Enzyme—Special amino acid compounds that promote and become a part of biochemical reactions. They are products of hormones. Vitamins fit into this category.

Ergs—A measure of soil energy release equal to grams/second. Ergs are directly equal to conductivity units on the conductivity meter, micromhos/cm/sec.

Fermat's Principle—The path followed by light (or other waves) passing through any collection of media from one specific point to another is that path for which the time of travel is least. (“the line of least resistance”)

Filler—Refers to material used in commercial fertilizers to bring the total weight to one ton. Also can serve a dual purpose of being a carrier for the fertilizers themselves.

Food Supplement—Concentrated forms of minerals, herbs and vitamins used to improve the digestive efficiency in order to get the nutritional chemistry of the liver and the rest of the body to improve and thereby promote wellness. Also for raising the level of nutrient available from the diet because the foods consumed today are deficient in nutrients.

Free Radicals—A element or molecule containing highly active free bonding electrons (anions) that are capable of breaking other electron bonds to satisfy itself. Free radicals are intermediates in thousands of normal chemical reactions in the body, and the body has ways of keeping them from getting out of hand when healthy. However, if natural ways of keeping free radical reactions confined and localized fail, free radical chain reactions can occur, leading to faulty biochemical functions, abnormal and toxic substances, and disease. A Free Radical is an oxidizing agent. That means that it accepts electrons (anions) thereby becoming reduced. (see Reducing Agents)

Frequency—Refers to periodic motion of electrons about atoms of molecules. Specifically to the time it takes for one revolution or period. The common denominator

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or energy exchange ratio necessary for a living system to continue to function properly.

Fusion—A reaction involving the combining of smaller atomic nuclei into larger ones (anion+anions, or cations+cations, or cations+anions) with the release of energy from mass transformation.

Health—The harmonious function of the body; controlled by reason and judgment which is under the direction of Holy Spirit.

Illness—Refers to a loss of Reserve Energy or to put it another way; the first day more energy is not obtained from food eaten than is used during the days activities. This is the first day Reserve Energy is being lost, so it is the first day that illness begins biochemically.

Inorganic—Refers to elements or compound that do not contain carbon.

Insoluble—When a substance is unable to fit between the molecules of another substance and be held by it. (see Soluble)

Ionizing Agent—Any substance that will give up energy to the plant or cause the substance it is combined with to give up energy to the plant.

Isotope—Elements that have ability to exchange charge dominance from the shell for that of the nucleus. Four isotope elements; Hydrogen, Oxygen, Nitrogen, Helium

Line of Least Resistance—Refers to the path of flow of electricity between two points where there is the smallest amount of interference to the flow. Or the greatest amount of conductance potential. The line of greatest current flow.

Loss of Energy—Refers to the breakdown process where the molecular structure that makes up Amino Acids is coming apart.

Mass—Quantity of matter. Substance that can be handled, touched, and weighed.

Micronage—Refers to the way the anions and cations are stacked together to make the frequency that makes the species.

Milhouse Units—The absolute units used in the Biologic Ionization Principles.

Milli-micronage—Refers to the path of the electron in orbit so that when light strikes it, it gives color, tints and hues.

Milli-milli-micronage—The smallest subdivision within the frequency structure. It dictates identity.

Mineral—Refers to the individual elements in pure state. This term used generally to refer to all the elements, mineral as well as non-mineral.

Mole—Mass numerically equal to the molecular weight.

Nutrition—Refers to how the nutrients that are contained in the food are utilized. A good diet does not always insure good nutrition. Individual body chemistry makes the difference as to whether food is healthful or toxic to a person.

Organic—Refers to any substance that contains carbon in its molecular structure.

Osmosis—(From a traditional chemistry view) The tendency of a fluid to pass through a semipermeable membrane, from a higher concentrated solution into a solu-

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tion of lower concentration, thus equalizing the conditions on either side of the membrane. Used to refer to the movement of the sap of a plant up from the roots toward the leaves. High conductance gives high osmotic pressures and low conductance is the opposite.

Oxidizing Agent—A substance that takes anions (OH^-)(electrons) away from another substance or reaction, causing **reduction** (oxygen levels are reduced therefore acid (protons) and cationic reactions are reduced as well) **of itself** and **oxidation** (oxygen levels are increased thus are acid (protons) and cationic reactions increased as well) **of the substance it took the anions from**. To further define this process, we can say that Oxidizing agents become reduced themselves when they do the oxidizing of other substances or reactions. The result can be described as an decrease in hydrogen pressure and an increase in oxygen pressure in the substance that was oxidized, while there is a decrease in oxygen pressure and an increase in the hydrogen pressure in the Oxidizing Agent itself because it got reduced. It is important to note, that in the context of pH, we are speaking of anions as (OH^-) (hydroxyl ions) and cations as (H^+)(hydrogen ions). This is for the purpose of discussion of pH **only**. Whereas in the context of anion/cation relationships, generally referred to in this text, we are describing individual elements such as Calcium as anionic (a substance with a negative electromagnetic field around its nucleus) or Iron as (a cationic substance with a positive electromagnetic field around its nucleus) as individual anions or cations. Yes, these are individual elements made up of individual anions and cations. The (OH^-), on the other hand, is, in a sense, an ionic compound, but only for the purpose of discussion of pH principles.

Period—The time for one complete revolution or oscillation.

pH—A measure of resistance. A pH of 7 means that there is an equal resistance between anions and cations.

Phosphate—see Chemical Compound Colloid

Photosynthesis—Making sugar in the leaf by using water, carbon dioxide and phosphated mineral in sap, and sending it to the root, where sugar is concentrated, and then sent back via the “stump” to be distributed for building plant tissue or fruit.

Planck’s Constant—A universal constant of nature which relates the energy of a quantum of radiation to the frequency of the oscillator which emitted it. It has the dimensions of action (energy X time). Expressed by $E=h\nu$, where ν is the frequency and h is Planck’s Constant (6.62×10^{-27} Erg-sec)

Point of No Return—Abbreviated PNR. A point in the reserve energy scale below which the body is loosing energy so rapidly it can not be reversed physically.

Polarize—(also Depolarize).

Reducing Agent—A substance that takes cations (H^+)(protons) away from another substance or reaction. (See oxidizing agent for more information.

Redox Potential—The ratio, or relationship, of the line of resistance, between oxygen pressure and hydrogen pressure, within the fluids of the body where chemical-energy reactions take place. It is also an expression of efficiency in energy exchange taking place between cell fluid and blood. The healthier the person the less potential for interference of efficient energy exchange exists between blood and tissue. An absolute example of inefficient energy exchange—resulting in excessive energy loss—is when

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the frequency of the energy being made available to the liver, hence then to the tissue is not on the correct frequency of the individual. The sicker the person the greater the potential for inefficient energy exchange.

Refractometer—A device used to measure the refractive index of plant juices in order to determine the mineral/sugar ratio of the plant cell protoplasm. Also used to measure urine sugars.

Reserve Energy—Refers to the amount of energy left. It is like a savings account. The lower the reserve, the poorer the health, and the weaker the liver.

Resistance—The effect produced when anions and anions or cations and cations or anions and cations of differing milhouse unit value encounter each other. One could say that resistance is a type of friction which causes energy to be given off.

Resistivity—It the measure of resistance to electrical flow in a particular substance. It is the opposite of conductivity.

Resonance—The state of adjustment of a molecular circuit permitting a maximum flow of current (energy) when an electric current of a particular frequency is impressed.

Salts—Refers to 48 different types of salts effecting body intercellular and intracellular fluid conductivity. Salts include chloride, non-chloride and protein salts.

Soluble—When a substance can be taken into a solution so that it will fit between the molecules of that solution and it is not possible for it to be either settled or filtered out.

Solvent--Any substance that will dissolve another substance.

Specific Gravity—The ratio of mass of a body to the mass of an equal volume of water at 4 degrees C or other specified temperature.

Synchronization—To co-ordinate molecular frequency by rearrangement of electrons between molecules, so that electrons of all molecules are traveling at the same speed. It is during the process of synchronization between anions and cations that resistance takes place. When the synchronization point is reached the resistance actually stops.

TDN—Total Daily Nutrient. The amount of plant food available per unit time.

Urea—Refers to the part of the test that reveals the amount of both nitrate nitrogen and ammonia nitrogen in the urine.

Van Allen Belt—A belt of magnetic radiation energy surrounding the earth about 100 miles above its surface. It is this belt that the sun's anions hit to produce the rotation of the earth. Also known as the “magnosphere.”

Zeta Potential—A measure of the net electrical potential (in millivolts) carried by particles in the size range of about 10 Angstroms to 10 microns. If this charge is relatively high (30 to 85 millivolts), colloids will remain separate and discrete. Agglomeration or agglutination sets in at about 15 mv, and is maximum at zero mv.

