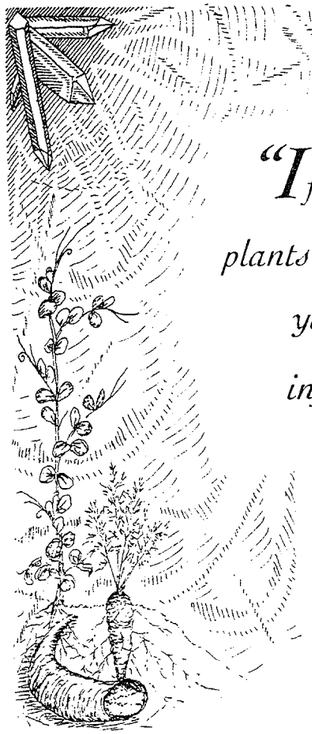
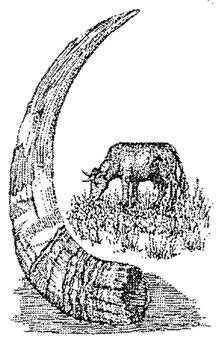


"If you apply this (BD #501, Horn silica) as a fine spray on the plants themselves — especially on vegetables and things like that — you will soon notice how its effect complements and supports the influence coming from the other side, from the soil, as a result of the cow horn manure."

— Rudolf Steiner, *Spiritual Foundations for the Renewal of Agriculture,*
Bio-Dynamic Farming and Gardening Association
translated by C. E. Creeger and
M. Gardner, 1993, p.74.

SO THAT THE EARTH MAY BE HEALED

The Josephine Porter Institute
for
Applied Bio-Dynamics, Inc.
P.O. Box 133, Woolwine, VA 24185-0133



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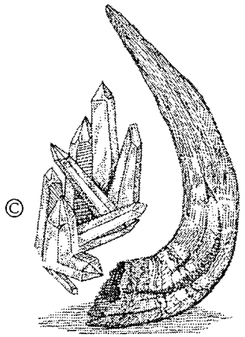


SUMMER 1995 | *A Quarterly Publication of the Josephine Porter Institute • Woolwine, Virginia* | ISSUE Nº 12

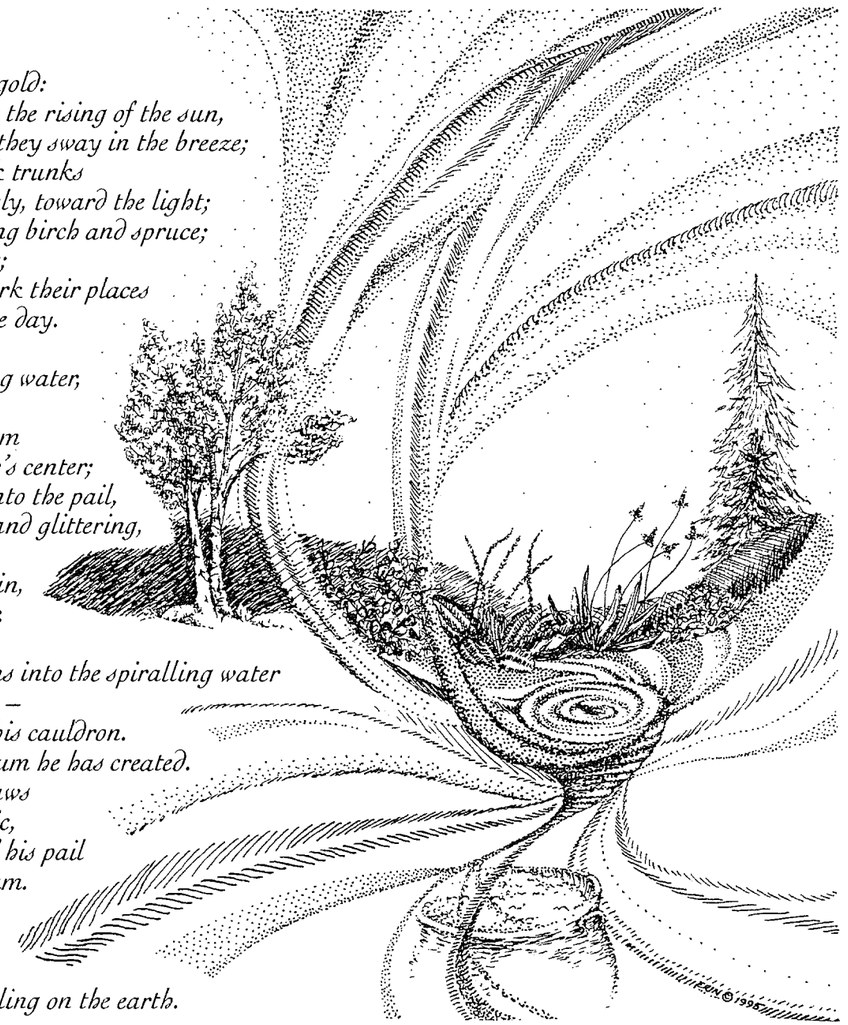
Dawn: June 24th

St. John's sky blossoms gold:
The plantains anticipate the rising of the sun,
like a chorus of serpents they sway in the breeze;
sugar peas lift their weak trunks
lunging blindly, intuitively, toward the light;
the clatter of antler among birch and spruce;
the scrape of hoof on clay;
little birds call out to mark their places
and in doing so herald the day.

He carries a pail of spring water,
cool and living,
up the hill from the stream
and sets it at the meadow's center;
sprinkles a fine powder into the pail,
which descends, languid and glittering,
through the water,
or tentatively rides its skin,
and then he begins to stir.

First he draws the heavens into the spiralling water
turns – a bubbling chaos –
then coils the earth into his cauldron.
He stands upon the fulcrum he has created.
Again and again he seesaws
the telluric and the cosmic,
which jump in and out of his pail
until enticed to equilibrium.

He spreads a mist and it
embraces the meadow,
an infinity of suns sparkling on the earth.



— by Michael Martin
(A biodynamic gardener in Ferndale, Michigan)

Letter Received

Dear Hugh,

The Spring 1995 issue of *Applied Biodynamics* arrived a couple of days ago. Congratulations to you – and Candace Coffin – for maintaining such a fine publication! My subscription renewal is enclosed.

I also want to take this opportunity to make a couple of comments. It is gratifying to see you quoting the new edition of the Agriculture Course and listing out the translators each time, but frankly I would rather see you use the space to write out the proper title of the new edition. Although the cover does indeed say "Agriculture,", the true title is what appears on the title page, i.e., *Spiritual Foundations for the Renewal of Agriculture*. Old habits always die hard, but using this title would give newcomers a lot better idea of what to expect and would also serve to distinguish the new edition from the old one.

Back in the Winter 1993 issue of *Applied Biodynamics* you wrote a long article on sequential spraying. I find the idea quite intriguing, but I found the "explanations" offered for some of the failures a little disturbing. To do an honest analysis of the phenomenon one would need to examine the successes as well as the failures during eclipses, nodes, occultations, retrogrades, etc. I was sorry this point was not mentioned. Also, there is a potential implication that I have not seen anyone mention. If BD sprays can affect the weather over a large area, what does this imply for spraying experiments where treated vs. control plots are used.? What distance is adequate between such plots? Is it different for different sprays or different spraying techniques? It would seem important to bring these questions up for discussion and/or experimentation.

Sincerely yours,
Malcolm Gardner

We greatly appreciated your comments regarding the proper title of the 1993 edition as being Spiritual Foundations for the Renewal of Agriculture *and we will act on it accordingly. We will also be addressing your thoughtful questions about research in our upcoming issues. – Ed.*

Yellow Paper

With a keen eye for the obvious, you surely have noticed that this issue is on yellow paper. The change came about because we were no longer able to obtain the color we were using in recycled paper unless we were willing to purchase directly from the paper mill, which meant the kind of quantities for which we neither have the space nor the money. Our supplier was able to locate this yellow recycled paper and we purchased what was left so as to avoid the same problem for the next few issues. We will look toward a more consistent source of recycled paper for the future. By the by, we think this new color enhances the artwork and printing. Happy reading to you!

Applied BIODYNAMICS©

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The subscription price of $35/yr. helps subsidize JPI research and development.
Editor: Candace Coffin *Artwork by:* Erin

Biodynamic Preparations Legend

BD #500– Horn Manure
BD #501– Horn Silica

BD #502 – Yarrow	}	
BD #503 – Chamomile	}	
BD #504 – Stinging Nettle	}	COMPOST
BD #505 – Oak Bark	}	
BD #506 – Dandelion	}	
BD #507 – Valerian	}	

BD #508 – Horsetail
(Equisetum arvense)

PREPS

MISSION

The Josephine Porter Institute for Applied Bio-Dynamics, Inc., was founded to produce quality biodynamic agricultural preparations based on the spiritual scientific research of Rudolf Steiner.

It serves as a living memorial to Josephine Porter, a biodynamic pioneer for this work in America.

The mission of JPI also includes education and research in biodynamic agriculture.

JPI undertakes these tasks so that the Earth may be healed.

Dear Reader,

We enter the summer season and celebrate St. John's Day. It is a time of the longest day when the outbreath of the Earth occurs. Although it may appear as if the Earth is awake, with all the growth taking place, the Earth is asleep. Just as when we are asleep the majority of the growth and healing processes take place, so it is with the Earth. Thus, the lush growth, flowering and fruiting can serve as a reminder that in fact the Earth is asleep and to raise our awareness as to the question,"What can we do to enhance the growth and healing processes?"

Rudolf Steiner gave us the guidelines for answering this question in the lectures he presented in 1924 on agriculture. One of our major roles as biodynamic practitioners is to become active observers so that we can apply these very guidelines and heal the Earth.

In this issue you will read about the Horn silica preparation, BD #501, and the importance of its use in bringing a healthy balance to plant growth. The poem on the cover of this issue reflects a biodynamic practitioner's experience with stirring and spraying Horn silica. An article on the use of amethyst as a spray introduces one person's observational skills and his response to a garden situation. And, a report on the Introductory Biodynamic Workshop which took place at the Josephine Porter Institute on April 29th, offers a picture of how biodynamics was introduced to thirty-one participants. How fortunate we are to be able to enhance our quarterly with the fine artwork created by Erin.

The staff of the Josephine Porter Institute has grown and an interview with the new Assistant Director, Chris Stearn, provides a profile of how and why Chris came into biodynamics. It is an exciting time at the Josephine Porter Institute. As described in the article "Reflections on the Past and Prospects for the Future at JPI", Issue #11 of Applied Biodynamics, along with staff changes, we look towards growth in the areas of education and research, by continuing to broaden our connection with the greater biodynamic community. One of the ways we do this is through the comments, questions, and observations you share with us.

May this summer season offer each of you an opportunity to enhance the growth and healing processes for the Earth.

Sincerely,
Candace Coffin, *Editor*

STEARN *(continued from page 12)*

and the answer is most definitely! This difference was seen in the plant response. For example, Peter Blazer's (Switzerland) BD #500 and BD #501 produced significantly better results than other samples of BD #500 and BD #501. What we found was a marked increase in root surface area, root length, and root hairs using the biodynamic preparations versus the controls.

Another interesting aspect regarding this research was that we were able to isolate a very specific organism from the Horn silica. It was almost a pure culture of a nitrogen fixing organism called Azotobacter. It is relatively unique to find any organism that can live on silica. Yet we were able to identify this particular organism and the powdered silica was supporting a high population of it.

At this time you had procured your Ph.D., you were more convinced than ever about biodynamics . . . where did you go from here?

I worked for the University of Illinois, the International Agricultural Department. My work was with soybeans and the Rhizobium organisms that form nodules on the soybean and fixes nitrogen. We were transferring production technology to third world countries. I was in Puerto Rico working with Central and South American countries, and then in Taiwan at the Asian Vegetable Research and Development Center (AVDRC), transferring production technology to Asian countries. One of my responsibilities at AVDRC was to reintroduce composting as a method of fertilization in Taiwanese agriculture. It became apparent that no one wanted to turn compost in a tropical environment because it was too hot and it was too much work. Thus, what came out of this whole research project was the development of permanent composting beds which was written up in the *Biodynamic Journal* No. 167. The use of the biodynamic preparations in that type of climate created a too rapid breakdown of the raw materials, so we adapted the process and stopped chopping the raw materials. This retarded the breakdown process.

This project was instrumental then in introducing third world countries to more sustainable and healthy agricultural processes?

Yes, but at the same time I realized most farmers were on the chemical fertilizer, herbicides, and pesticides bandwagon. Directions for the use of these chemical sprays were in English and few of the users could read it. Thus, both in the Central and South American countries, as well as Asian countries, I saw chemicals used at 700 times the recommended rate. Farmers were often spraying herbicides in the morning and then sending the same sprayed produce to market in the afternoon. They couldn't read the warnings! I found myself in a dilemma, a life or death decision making process.

If I stayed in the University system I would have to propagate the chemical technology which was, in my view, a death process. Biodynamics was a life process, so a decision to go back to The Pfeiffer Foundation full time was an easy decision for me because it was a path of life, of truth, for myself and for the Earth.

There were several contracts pending at The Pfeiffer Foundation which, unfortunately, never came through. Consequently, after 1 ½ years, for economic reasons, I had to leave. It was at this time that Weleda, a company which produces all natural body care products and anthroposophic medicines, hired me and I eventually became Production Manager.

It was at Weleda that my real education in biodynamics began, because we were looking at the true nature of plants. We looked at stalks, at roots, etc. It was a totally different way to look at a plant. In most agricultural situations people are interested in production: how many fruits to each plant, bushels per acre, etc. Looking at medicinal plants I saw a whole other side to plant growth. I started going back to our food production plants, and saw a whole different character in them. There was a different way of knowing plants, a way that called for looking at the roots, the gesture, the leaves, etc. That's what I mean about my real education regarding biodynamics. I got to know plants in a whole different way.

What exciting work, to be Production Manager at Weleda and to look at the form of plants. Why did you leave Weleda and take the position of Assistant Director at the Josephine Porter Institute?

I had visited Hugh Courtney for several years during my vacations and was aware of the wonderful work taking place at JPI. The more I interacted with Hugh, the more I came to realize that JPI was one place where things were happening in biodynamics. At JPI there was a creative, practical application of the biodynamic principles taking place which was difficult to find anywhere else. I really appreciated what Hugh was doing and the research that he was getting into was more practically oriented and consequently having a greater impact on what was happening in biodynamics.

At the same time that JPI had grown to the point where an Assistant Director was needed, Weleda was putting a lot of emphasis on marketing rather than continuing to develop or expand their gardens. I felt a need and the commitment to become more deeply involved in the biodynamic movement in America. I couldn't think of a better place to do that than at JPI and fortunately, for me, the Board of Directors of JPI offered me the position of Assistant Director.

What might be the most important attribute that you are bringing to biodynamics?

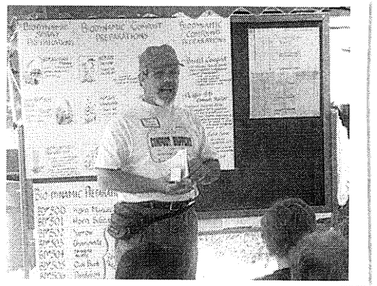
A sense of humor. And, also, a focus on the extreme importance of JPI developing a research program that can show the effectiveness of the biodynamic preparations. I am committed to looking at the conversion of chemically farmed soil to biodynamically alive soil, and what kind of process is necessary for that to happen. At the same time we need feedback from JPI supporters, the biodynamic farmers and gardeners, on what questions need to be answered.

I think there are a lot of assumptions that have been made in biodynamics and we need to look at them with more of a scientific eye. Steiner talked about doing research and was quite specific as to the methodology, for example in *Science and Anthroposophy*. We need to find methods that will show the farming community as well as the scientific community that there is a real basis for biodynamics.

Interview with Chris Stearn

by Candace Coffin

Chris Stearn is the new Assistant Director at JPI. How he learned about biodynamics and ended up here at JPI is an interesting story and so we share it with you here.



Chris' high school summers were spent working on dairy farms in upstate New York. This work entailed milking,haying, fixing machinery, chopping wood, and various handyman chores. He entered a pre-veterinarian program in college and after graduating with a degree in biology, he decided to take a break from academia. Wanting to see the world, Chris entered the Navy. He became a pilot, and had the opportunity to fly all over the world. After 8½ years in the Navy, he went back to college for a degree in agronomy, and, while making application to graduate school, Chris once again found employment "working on a farm for 8 months prior to entering Ohio State."

When did you first learn about biodyanimcs?

It was in 1973. I was just getting ready to go back to college to work on a degree in agronomy and I read about a biodynamic conference that was going to be held in Spring Valley, New York. I attended and found it extremely interesting. It was a mixture of European/American cultural flavors. A laid back atmosphere, it was totally non-mainstream and it was very sleepy. Most of the people were very old. I think two thirds of the way through the conference most of the people in the audience, old time supporters, were asleep. I attended the following year's conference too and this one was very different. A lot of bib overalls and beards; people running around with cameras and lots of camping on the lawn, and people sleeping in the gymnasium.

You had an "extremely interesting" experience in 1973 and then your second brush with biodynamics was in 1974 when you attended the second conference?

No. After the 1973 conference I applied for a job at The Pfeiffer Foundation. I had talked with Margrit Selke about working there the following summer since I had just started at Ohio State. Margrit Selke advised me to apply later, I did the following Spring, and I got the job. I had just received my degree in agronomy, and thought that I could easily take this concept of biodynamics and work with it.

You thought biodynamics would be easy?

Yes, and I discovered that it wasn't as easy as I expected. There were a lot of new concepts, like etheric and astral forces, that I knew nothing about, and I very quickly got lost. I couldn't fully comprehend what Rudolf Steiner was talking about regarding the spiritual renewal of agriculture.

When I attempted to learn more about these concepts I discovered that other people were not very helpful. Biodynamics was still a relatively closed circle and people were reluctant to share information. However, I finally found someone who, with a whisper, was willing to answer my main question which was "What is the difference between organic and biodynamic?" I was told that the difference was the biodynamic preparations.

At your summer job at the Pfeiffer Foundation what did you do and where did you go from there?

I worked with Margrit Selke making the Pfeiffer Compost Starter and Field Spray. I learned how to do circular chromatography and interacted with Erica Sabarth who was Dr. Pfeiffer's assistant for many years. She was able to share with me many insights into a lot of the research projects that were undertaken by both herself and Dr. Pfeiffer. These insights were not in the articles that appeared in the *Biodynamic Journal*.

What were you learning about biodyanmics?

I learned that biodynamics is a very different approach to agriculture. In biodynamics one looks at the Earth as a living organism, and the farm as an individuality. I found this and many other concepts alive and challenging. On an intuitive level, at that time, biodynamics seemed to be the best way to approach agriculture. I thought this new way of thinking about agriculture was very important. Many questions came to mind and I began reading *Agriculture* (trans. Adams). I also interacted with the older people who had been involved with biodynamics for a long time. All of this set the stage for my decision to go back to Ohio State and make a proposal there to do my Masters work with two of the biodynamic preparations, BD #500, Horn Manure, and BD #501, Horn silica.

So you left the Pfeiffer Foundation and returned to school?

Yes, and my advisor thought that I was nuts after reading my proposal. I had chosen BD #500 and BD #501 because of their being polar opposites yet interdependently related to each other. He asked me, "How can you believe in such stuff?" After two hours of attempting to convince him that this is what I wanted to do he was willing to take me on. However, he said that one of us would change our convictions and that he certainly didn't expect it to be him.

So who changed?

After I finished my Ph.D. I reminded him about what he had said about one of us changing. He tried to squirm out of it by saying that both of us had changed, and he was right. I was more committed to biodynamics than ever and my advisor had changed because he realized there was merit in alternative agriculture. Actually, he has acquired quite a reputation because of his willingness to consider alternative methods. He has sincerely thanked me for that several times.

Was the research you did for your Ph.D. positive or negative regarding biodynamics?

Part of my research was to ascertain whether there were differences between preparations produced by different people,

Stearn *(continued on page 13)*

BD #501 – The Horn Silica Preparation

by Hugh J. Courtney

Of all the biodynamic preparations, Steiner has less to say about the actual preparation horn silica, BD #501, than any other with the exception of valerian, BD #507. Is this because he placed substantially less value on this particular preparation? From the history of its use, or perhaps one should more properly say, its lack of use, by many of the biodynamic practitioners especially here in America, it would definitely seem to be of far less value than almost any other preparation.

Besides his relatively sparse words on the subject of what is now known as BD #501, Steiner presents us with a description of the materials to be used in making the horn silica preparation that to a very large extent has been ignored for virtually the entire 70 plus years of the biodynamic movement in the world.

Let us take a good hard look at exactly what Steiner has to say about the horn silica, not only in the primary description in *Lecture 4* of the lecture course, *Spiritual Foundations for the Renewal of Agriculture,* but elsewhere throughout that course. I will also refer to the appendixes and anecdotal material from the personal conversations, held with Dr. Steiner, which make reference to this preparation, as reported and published with this lecture course in the 1993 edition. In addition, I will to refer to some of Steiner's other works in order to detail further insights to be gained from his spiritual scientific research.

Having just finished his description of the "spiritual manure" now known as BD #500, Steiner would have us follow up its use with another step:

> "Once again take cow horns, but this time, instead of stuffing them with manure, fill them with quartz that has been ground to a powder and mixed with water to the consistency of a very thin dough. Instead of quartz, you could also use orthoclase, feldspar. And now, instead of leaving the cow horn in the ground through the winter, let it stay underground all summer, and then take it out in late autumn. Save the contents until the next spring and then take what was exposed to the summer life of the Earth and treat it just as you did the manure."[1]

While Steiner still has a bit more to say about the horn silica preparation in this lecture, I would like to pause here to examine more carefully what it is that he has just told his Koberwitz audience up to this point about "BD #501". Although his first reference to a silica containing mineral rock source is very clearly to quartz, he also says "you could also use orthoclase, feldspar". To my knowledge, this is the statement that those in the biodynamic movement in the world have basically ignored for the entire history of the movement. In order to provide a proper basis for my contention that we must assign a great deal more importance to this seemingly offhand comment of Steiner's, I would like to examine and provide commentary on a few of the definitions that are detailed in the accompanying sidebar.

Although Steiner gives us so relatively few words about the horn silica per se, he does have a good deal to say about silica

BD #501 *(continued on page 4)*

Definitions

Silica
A white or colorless crystalline compound, SiO_2, occurring abundantly as quartz, sand, flint, agate, and many other minerals and used to manufacture a wide variety of materials, especially glass and concrete.[2]

Silicon *(Symbol – Si)*
A nonmetallic element occurring extensively in the earth's crust in silica and silicates, having both an amorphous and a crystalline allotrope and used doped or in combination with other materials in glass, semi conducting devices, concrete, brick, refractories, pottery and silicones. Atomic number 14; atomic weight 28.086, melting point 14100C; boiling point 2,3550C; specific gravity 2.33; valence 4.[3]

Quartz
1. A very hard mineral composed of silica, SiO_2, found worldwide in many different types of rocks, including sandstone and granite. Varieties of quartz include agate, chalcedony, chert, flint, opal and rock crystal.[4]

2. One of the commonest minerals, silicon dioxide, SiO_2 having many varieties which differ in color luster, etc., occurring in crystals (rock crystal, amethyst, citrine, etc.) or massive (agate, bloodstone, chalcedony, jasper, etc.), an important constituent of many rocks. It is piezoelectric and is cut into wafers used to control the frequencies of radio transmitters.[5]

Orthoclase
A variety of feldspar, essentially potassium aluminum silicate, $KAlSi_2O_8$, characterized by a monoclinic crystalline structure and found in igneous or granitic rock. Also called potash feldspar.[6]

Feldspar *(feldspar is a variant)*
Any of a group of abundant rock-forming minerals occurring principally in igneous, plutonic, and some metamorphic rocks, and consisting of silicates of aluminum with potassium, sodium, calcium, and rarely, barium. About 60 percent of the earth's outer crust is composed of feldspar.[7]

Clay
1. a. A fine-grained, firm earthy material that is plastic when wet and hardens when heated, consisting primarily of hydrated silicates of aluminum and widely used in making bricks, tiles and pottery.

1.b. A hardening or non-hardening material having a consistency similar to clay and used for modeling.

2. *Geology* – A sedimentary material with grains smaller than 0.002 millimeters in diameter.

3. Moist, sticky earth, mud.

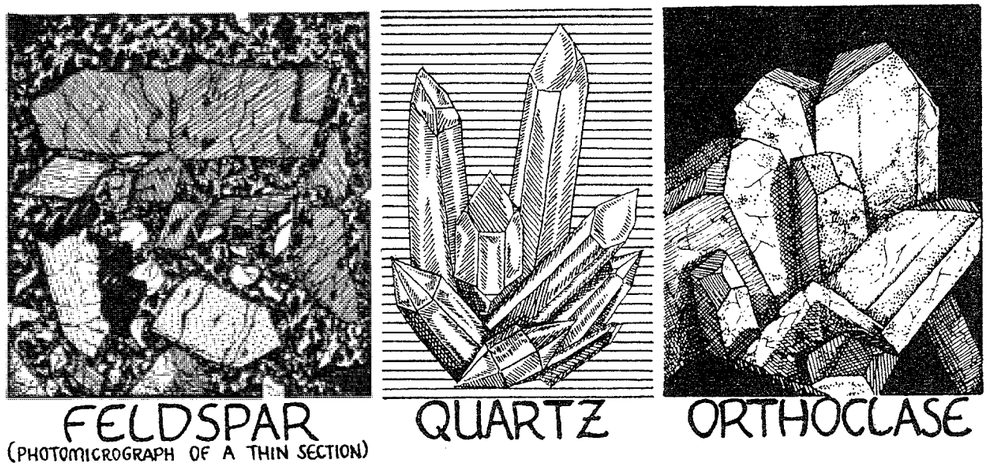
4. The human body as opposed to the spirit.[8]

Lime
1. The oxide of calcium, CaO, a white caustic solid prepared by calcining limestone, etc. used in making mortar and cement. When treated with water it produces calcium hydroxide, $Ca(OH)_2$, or slaked lime.

2. Any calcium compounds for improving crops on lime deficient soils.[9]

BD #501 *(continued from page 3)*

itself, describing in one place that it is "by means of the silica-containing sand that the life-ether and chemical-ether — as we can call them — first enter into the soil and then take effect as they stream back upward."[10] In the very first lecture of the course, he tells us that "Plant life as we know it today can thrive only when these two forces — the forces of substances like lime and like silica — are in equilibrium and are working properly together."[11] The substance which helps establish this equilibrium and ensures that the lime and the silica (two very disparate materials in Steiner's description of their nature) are indeed working together properly, is none other than clay which "mediates between them. Clay is closer to silica, but it still mediates towards lime."[12]



When we look at the accompanying definitions, we can readily see that clay, composed of hydrated silicates of aluminum is indeed closer to silica, SiO_2. Orthoclase with its potassium, K, and especially a feldspar containing calcium, would have a much more direct relationship to lime and "related substances such as potash and sodium"[13] than would a pure quartz crystal containing only SiO_2. (Within the periodic table of elements, calcium [lime] is strongly related to magnesium, potassium, sodium and perhaps also barium among others. When soils are tested more than superficially, the so called cation exchange capacity calculated at a ratio of 70% calcium, 10% magnesium, 18% potassium and 2% sodium is generally regarded as the ideal.)

For years however, the general biodynamic practice has been to use only quartz rock crystal in the making of the biodynamic preparation #501, horn silica. Indeed, such a biodynamic authority as Lily Kolisko in the monumental work, *Agriculture of Tomorrow,*[14] by referring only to rock crystal as the source material of BD #501 would seem to imply that one need not consider any other possibility. Alex Podolinsky, who is so well known for the tremendous accomplishments made by biodynamic agriculture in Australia would choose only the finest gem quality quartz crystal.[15] One can imagine that those biodynamic farms where soils were mainly heavy clay or containing a significant clay component might well have obtained impressive results while using a BD #501 made from pure quartz rock crystal. If such soils were predominant amongst the early biodynamic farms, it may just be that the tone was set for all subsequent production of BD #501. I would like to suggest, however, that soils which contained a mostly sandy component could well have gained greater benefit from a form of BD #501 which had a stronger relationship to the lime end of the limestone/silica polarity. In other words, I would contend that sandy soils should be using horn silica, BD #501, made from orthoclase or feldspar with their constituents of calcium or related elements. In accordance with this view, we intend to have available for use in 1996 a feldspar form of BD #501 for those biodynamic practitioners with sandy soils who might wish to put into actual practice this concept (admittedly only a theoretical construct at this point).

It is most heartening to be publishing in this issue of *Applied Biodynamics* the article by Dennis Klocek with whom I shared the preceding "theoretical construct" when he visited the Josephine Porter Institute last year. Dennis, with imagination and insight, took this theory to a destination well beyond the boundaries I originally conceived. By his knowledge of geology and his knowledge of plants, he tailored a form of BD #501 to a particular situation and to a particular crop in a way that will become much more the normal practice in biodynamic agriculture in years to come.

I would like to think that we will begin to practice this kind of "imaginative biodynamics" much more widely in the future. Not that I would wish to encourage unbridled and unthinking experimentation along these lines merely for the sake of experimentation itself. We should, indeed, approach any new forms of the preparations, including BD #501, only by thorough research and study of both the plant and the mineral kingdoms.

BD #501 *(continued on page 5)*

WORKSHOP *(continued from page 10)*

After all their hard work and participation, one of the last tasks was to fill out an evaluation. A drawing then took place. The winner was given the choice of several books.

The evaluations indicated that participants found the program of the day helpful and were eager to learn more. Many of them left with books, Valerian plants, and preparations.

The staff, after clean up, celebrated what they felt to be a successful day. The enthusiastic energy of the participants raised the spirits of the staff and an imagination of possible future workshops arose. You will be kept abreast of these workshops as they come into being.

Rick Walker exhibiting some of his biodynamic produce.

Participants to the **Introductory Biodynamic Workshop** *received a packet regarding information pertaining to the biodynamic preparations, such as storage, stirring, spraying, etc. They also received a sheet containing a list of the most commonly asked questions about biodynamics with answers. We thought you might enjoy reading the questions and answers too.*

What kind of container must I use for stirring? The most important thing here is applying the biodynamic preparations. If all you have is a plastic bucket, then by all means use it. The ideal container, however, is probably a clay crock. Alternative stirring containers would be large glass jars, stainless steel buckets, wooden barrels, food grade plastic (i.e. pickle or peanut butter containers), and other plastic containers (i.e. joint compound buckets). No container that has held harsh or toxic chemicals should be used.

I only have a small backyard garden. Must I use a whole unit which treats an entire acre? Biodynamics is predicated on the freedom of the individual user and you are welcome to divide a unit into whatever small portions you wish. However, the preparations should be seen as forces, or carriers of forces, and while no research has been done on the questions precisely, we at JPI view the unit size as the minimum amount needed to create a proper force field. We therefore suggest that for initial application in particular, that the entire unit be used to treat your garden area no matter how small.

How often must I spray Barrel Compost? If you lack biodynamic compost to use during the growing season, you should consider applying Barrel Compost every 30-60 days. If you do have biodynamic compost available, a Spring and a Fall application of Barrel Compost, in conjunction with BD #500 (Horn manure), would be very helpful. Barrel Compost is also useful in treating plants under stress and in other similar situations.

How soon may I use my compost after putting the preparations in it? This question has to be answered in accordance with the crop to which you are applying the compost. Tomatoes are a very heavy feeder, and they like relatively young, freshly made compost, whereas carrots want compost that is very well aged, up to a year old. Three week old compost has been applied to tomatoes with good success. Cabbages and other crops want something in between, such as 6 weeks to 6 months old compost. General biodynamic practices regard compost as being 'ready' in 6-8 months. The biodynamic compost made in the Fall is applied to the garden areas in the Spring, whereas compost made in the Spring is applied in the Fall.

Is it really necessary to spray BD #501? *It seems that the time to do this is just when things are busiest in the garden.* Yes, it is really necessary to spray BD #501. One does not really get the full effect of the biodynamic preparations unless BD #501 is used. The cosmic effects which lead to truly healthy and healthful plants are most stimulated by BD #501 (Horn silica).

How important is it to use the planting calendar and how strictly must I follow it? The planting calendar should be regarded as a guide and one should not so strictly adhere to it that the necessary gardening work does not get done. Probably the most important thing is to observe the so called "black out periods." In dealing with a particular plant organ, such as leaf or root, the greatest impact on that organ takes place when the appropriate calendar indications are there. So, if necessity requires planting under a different indication, one can cultivate and spray the preparations under the "right" indication and correct the initial short coming. In the long run, the human being, as gardener, must be the authority that overrules the cosmos indications of the planting calendar.

Regarding storage, how long do I have when I receive the preparations before I must use them? Once you receive the preparations they need to be used within a three week period or so. If you are unable to use them within this time frame then they need to be stored according to storage guidelines.

Can I use chlorinated tap water? If you have to use tap water, let the water sit for 24 hours to allow the chlorine in the water to come out.

What's the difference between organic and biodynamic? The major differences between organic and biodynamic are:

1. With biodynamics the Earth is considered a living organism.
2. Use of the biodynamic preparations as forces, not as substance.
3. Use of the calendar for rhythmic planting, harvesting, etc.
4. Man's integral role in the farm/garden organism.

Can I stir Barrel Compost and BD #500 preparations together? It's generally preferred that these be stirred separately. This is especially true the first time that the soil is being treated with the preparations. Thereafter, because the energies or forces are already working, one may choose to stir them together if time is not available to stir them separately.

What is the difference between using the Pfeiffer Compost Starter and the BD Compost Preparations? Dr. E.E. Pfeiffer developed the BD Compost Starter, a highly sophisticated version of a biodynamic compound preparation, to get the biodynamic preparations into the soil. The BD Compost Starter seems to best serve the needs of people who have a small amount of organic matter to compost and it is appropriate for the beginner in biodynamics who knows little about the method and wants to get started without worrying about "Am I doing it right?" (See *Applied Biodynamics,* Issue #6, Winter 1993, p. 10 "Dr. Pfeiffer's BD Compost Starter and BD Field Spray" for a more detailed answer.)

Introductory Biodynamic Workshop a Success

by Erin Coffin

The first *Introductory Biodynamic Workshop*, designed by the staff of the Josephine Porter Institute, was held on April 29th, 1995. The purpose of the day was to provide the participants with an introduction to the biodynamic preparations and to give them hands on experience using each preparation so that they might leave the workshop with the confidence to use them on their own.

Thirty attendees plus nine staff and volunteers spent the beautiful sunny day on an upper pasture of the Josephine Porter Institute. Three colorful tents provided shade for the conference, a book table, and the refreshments. Registration along with beverages and sweet breads started the gathering. A welcoming which included an introduction of staff and participants, and an overview of the day, led into a presentation on working with the biodynamic preparations. Four groups were then formed and the actual work with the preparations began.

Individuals in the group learned how to create a vortex and were given the opportunity to stir each of the following preparations for their allotted time.

Preparation #	Name	Amount of Stirring Time
BD #500	Horn manure	1 hour
BD #501	Horn silica	1 hour
BD #508	Equisetum arvense	20 minutes
BC	Barrel Compost	20 minutes

After the stir, each group experienced the preparations with an exercise that took them to the gardens to spray Barrel Compost and Horn manure. Participants first sprayed Barrel Compost on a section of a garden bed, raked that section, and then raked a section of the garden bed that had not been sprayed so that they might experience the preparation. This procedure was repeated twice. *(Note: Maria Thun recommends that these preparations be applied in this manner of spraying and raking.)* This was repeated with BD #500, Horn manure, on the same section of garden beds, for a total of three times also. Some of the comments that group facilitators heard were that the beds sprayed with the preparations felt 'silky', 'smoother', in contrast to the unsprayed beds.

In a section of pasture, BD #508, Equisetum arvense, was sprayed in large drops and BD #501, Horn silica, was sprayed in a fine mist. This concluded the morning session and we then came together from groups to form a circle for a meal blessing.

Soup, bread and cookies provided a wonderful lunch even on a warm, intensely sunny day. The picnic atmosphere of the afternoon offered a comfortable setting for social interaction and browsing at the book table.

A regathering in the conference tent for a presentation on the BD Compost Preparations preceded the afternoon group work with the BD #502-507 preparations. Group participants began by stirring BD #507-Valerian, for 20 minutes. At the compost piles, which were already built, attendees applied the biodynamic compost preparations. A hole for each of the preparations, following a pattern, was made by inserting a pole halfway into the center of the compost pile. Each preparation, except for BD #507-Valerian, was taken, one at a time, and inserted into a handful of compost, squeezed into a ball, and shot down into its designated hole. Thus, BD #502-Yarrow, BD #503-Chamomile, BD #504-Stinging nettle, BD #505-Oak bark, and BD #506-Dandelion, were each inserted in this way. Then a cupful of BD #507-Valerian, was poured into its designated hole and the remainder of the stirred Valerian was sprayed over the entire compost pile.

Some sunburned, tired participants were relieved to be in the shade of the conference tent for the afternoon talks. These included a brief presentation of the Pfeiffer BD Compost Starter and Pfeiffer BD Field Spray, a testimonial by Rick Walker on his personal experience with biodynamics, a question and answer period, an evaluation, and the closing.

The vegetables and flowers that Rick Walker brought for show and tell seemed an appropriate display for participants to gain immediate visual results of the biodynamic preparations. There were many comments indicating that Rick's personal stories enhanced already convinced individuals. One of Rick's stories described how his customers found him at the Farmers' Market by the brightness and radiance of his vegetables. They observed that the keeping quality of his vegetables was greater, and found the taste outstanding. The radishes which he shared during the workshop were given rave reviews . . ." Great taste!", "Huge radishes!", "These aren't turnips?", "How did you get them so red?" (BD #501!), "No bitterness."

Participants spray and rake.

WORKSHOP *(continued on page 11)*

BD #501 *(continued from page 4)*

In my own efforts through the years to "think into" the mystery of BD #501, I have focused on two other aspects of the question. Neither of these aspects are from a direct presentation by Steiner in the lectures of the Agriculture course itself. Rather they come from the question and answer sessions in the one case, and in the other case, from the anecdotal material appended to the course. The stimulus for the first point of focus comes near the end of the second discussion where the following question and answer exchange takes place:

"How should we grind the quartz or silica? With a small mill, or with a mortar and pestle?

It's best to do it in a mortar to begin with, and you will need an *iron pestle.* Grind it to a very fine mealy consistency. *If you use quartz,* you will first need to grind it as far as possible with the mortar and pestle, and then grind it some more on a glass surface. It has to be a very fine powder, which is very difficult to achieve with quartz."[16]

I have italicized what I regard as two key portions of Steiner's response to this particular question so as to direct your attention to them more adequately. The emphasis on the phrase: "If you use quartz" is to underscore my contention that the alternate choices of orthoclase and feldspar were definitely within Steiner's frame of reference by his use of the word "If." It is quite possible that the nature of the rest of his answer may have been responsible for the subsequent focus by the biodynamic movement on the use of quartz rock crystal as the choice for making BD# 501.

The emphasis on the words "iron pestle," however is what has directed my experimentation along one particular avenue for possible source material for making an "experimental" BD #501.

I was struck from my very first reading of this statement by Steiner's choice of the word iron as the material for the pestle.

This became even more interesting when I actually attempted to use an iron pestle for grinding quartz rock crystals. The most remarkable thing about this effort was that I was actually abrading a quantity of iron particles from the pestle virtually equal to the quantity of quartz powder I was creating in the process. From reading elsewhere in Steiner's works (in places I can not specifically identify for this article), I was well aware of the importance Steiner placed upon iron, particularly regarding the relationship of iron to the Archangel Micha-el. Is it possible that one should deliberately incorporate iron within a horn silica preparation? This possibility came even more strongly to my attention when I realized that the famous "Fairy Stones" of Patrick County, Virginia, a rock crystal known as staurolite, were composed of ferrous aluminum silicate. Prompted by this recognition, I made, several years ago a small batch of this "Fairy Stone" BD #501. Unfortunately, there has been almost no possibility of conducting the kind of experiments this material seems to warrant, so it is at most, merely a hope for future experimentation.

STAUROLITE

My other effort at "thinking into" the horn silica mystery was prompted by the report given by Ehrenfried Pfeiffer in the section entitled Further Indications by Dr. Steiner Relating to Agriculture as follows:

"For the silica preparation"501," Dr. Steiner said it would even suffice to mingle and knead up a piece of quartz of the size of a bean with soil from the land which is afterwards to be sprinkled, and put this mixture into the horn. This would already contain sufficient silica-radiation if a little of it was dissolved and stirred."[17]

I particularly chose to take the quote from the Adams translation for two reasons:

1. At the time concerned, this was the only translation in print.
2. The new translation on p.253 uses wording as follows: *"fill the horn with a bean-sized piece of [powdered] quartz"*, and it seems overwhelmingly evident that quartz that has been "powdered", and the wording "bean-sized" are mutually exclusive terms. Steiner is referring to a piece of quartz, not powdered quartz.

When I first began the preparations work in 1984, I was deeply concerned at the extremely modest amount of BD #501 being ordered in comparison to the BD #500, horn manure and the compost preparation sets, BD #502-507. In particular, I wondered if I was not making the BD #501 properly or whether I was not using the best source of quartz. At one point, I expressed my concern to Dr. Mary Lee Plumb-Mentjes and she shared the problem with her husband Conrad Mentjes. It seems that Conrad is a highly accomplished "rock hound" and felt that a particular source of quartz crystals might be ideal for making the BD #501. This particular source he referred to as "rectorite", although as it turned out, rectorite is an almost rubbery clay matrix into which the quartz crystals themselves were embedded. The crystals themselves were extremely small, even microscopic in size, and of extremely fine form. They were needle-like in shape with a very high percentage of them being double-terminated — altogether, a most remarkable material. Given the association with the clay matrix of "rectorite" and the previously cited indication of the "bean-sized" quartz reported by Pfeiffer, I chose to make a version of BD #501 from this quartz sand material without grinding the material at all, since so much of it was already microscopic in size. The result was what has sometimes been labeled #501(c) or "rectorite" crystal sand #501. It is this material that we used in our initial sequential spraying efforts (*Applied Biodynamics*, Issue #6), with impressive results.

This is also the material I used when I obtained the first observable results from a use of BD #501 which were dramatic enough to be unescapable. Those results were observed after a spraying of four 100 ft. rows of potato plants that had a substantial infestation of the Colorado potato beetle and larvae. The following morning, after the spraying, all beetles and larvae were dead. It still remains my personal choice as the

BD #501 *(continued on page 6)*

form of BD #501 for application here in Woolwine. I should add that the crystal sand has a markedly reddish color, an indication of a high iron content. One still has to conduct some trials and experiments with this form of horn silica in order to take it beyond the point of personal preference.

I should mention that my concern about the efficacy of the BD #501 I was making was unfounded. It seems that a great many people ordered BD #501 one year and not the next, because they never got around to using it. They were simply "too busy in the garden and there just wasn't enough time". One certainly can not observe the effects of a preparation, however subtle those effects may be, if one is, in fact, not even using the preparation.

My main hope in writing this article is to stimulate the biodynamic practitioner to a greater understanding of the many possibilities available in our use of BD #501, so that it will become more widely used and that it will be much more regarded as a necessary part of one's biodynamic practice rather than something that gets done only "if there's time".

Let us examine the "necessary" aspect of using BD #501 first of all, by turning once again to Steiner's initial description, where having told his audience to treat the horn silica just as the horn manure had been treated, he then goes on to tell us about the differences in dealing with this preparation. Steiner states:

> "In this case, however, you will need much smaller quantities; you can take a portion the size of a pea, or maybe no bigger than a pinhead, and stir it into a whole bucket of water. This too needs to be stirred for an hour. If you apply this as a fine spray on the plants themselves — especially on vegetables and things like that — you will soon notice how its effect complements and supports the influence coming from the other side, from the soil, as a result of the cow-horn manure."[18]

Two particular phrases in the preceding quote stand out in my mind: the "fine spray" used for the BD #501 and the fact that "its effect complements and supports" the BD #500. Earlier, Steiner has expressed the need for the BD #500 to really unite with the soil. In calling for a "fine spray", is he not also describing a process that will really unite the horn silica with the air or the atmosphere around the plant? Through the stirred moisture carrying these two preparations, one in the soil and one in the air, an entirely new growing zone has been created for the plant in that all important "diaphragm"[19] area Steiner refers to in Lecture 2: To concentrate ones' biodynamic effort only in the area below the 'diaphragm' with a use of BD #500 only or with BD #500 plus the compost preparations, BD #502-507, will lead to a plant that is only partially expressing its full biodynamic potential.

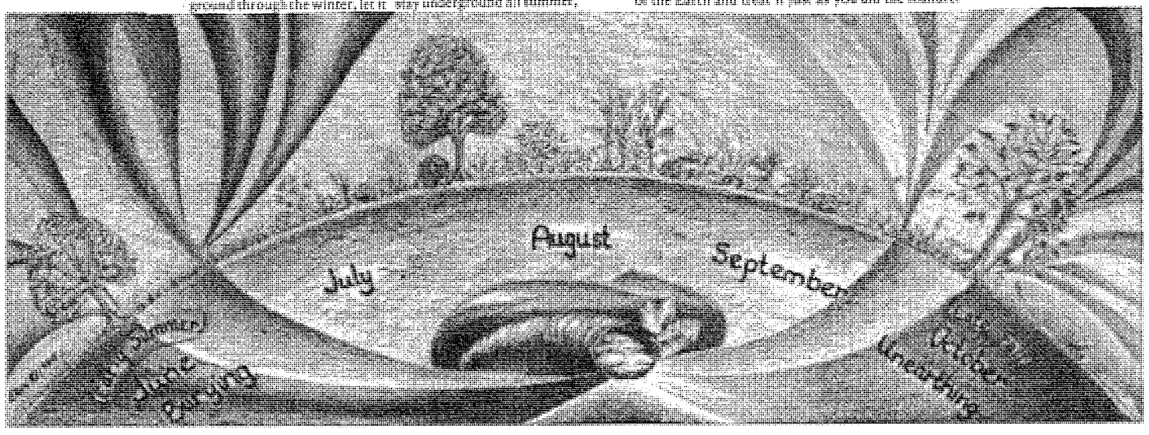
The BD #501 is, indeed, required to support and complement the BD #500. Precisely how these two preparations manage to be complementary is a question that calls for much study and we will hope to share additional thoughts on this subject at some time in a future issue of *Applied Biodynamics*.

It is very often the case, that a person will finally get around to using BD #501 and because no dramatic and unmistakable differences can be observed in the plants, an assumption is made that it was a waste of time to use it. This is perhaps because we have not looked closely enough at the plants being affected by the silica.

In speaking of curative treatment with siliceous substances in human medicine, Steiner speaks of the "peripheral operation" of the silica and its "formative activity", plus "its tendency to harmonise deformations", which he further identifies as "deformations which remain in the physiological realm."[1] If the physical plant is strengthened in its *form*, this may not be so obvious, since a tomato plant, for instance, still maintains its same general appearance after a spraying with BD #501 as it had beforehand. Closer observation, however, will reveal a crisper, more sharply defined plant that takes on a more crystalline appearance. If we have not observed any "deformations" in the plant because they have not yet assumed a noticeable manifestation, we will not be likely to observe that the plant takes on a more "harmonious" appearance.

BD #501 *(continued on page 7)*

And now, instead of leaving the cow horn in the ground through the winter, let it stay underground all summer, and then take it out in late autumn. Save the contents until the next spring and then take what was exposed to the summer life of the Earth and treat it just as you did the manure."[1]



The amethyst was chosen because of its cool shadowy violet color. It is a gemstone in the silicate family which has an interesting chemical profile that suggested that it would be a good spray for plants, especially cabbages. The chemical/mineral constituents of amethyst are: 1. silica; 2. lime; and 3. soda. The metals are: 1. iron peroxide; and 2. manganese. Silica is present in the biodynamic preparation BD #501 as the carrier of light forces into the plant. In like manner, amethyst is a silicate. It differs from rock crystal in having a calcium radiation in its chemistry. This calcium radiation is a primary need of cabbages in order to support their large leaf formation gesture. In amethyst, the silica is united to calcium. The amethyst also has iron peroxide in its structure. Iron, especially in the form of a peroxide, has an especially strong relationship to the element oxygen or 'life' in Rudolf Steiner's alchemy found in the *Agriculture Course*.

Currently, there are a number of peroxide 'cures' and soil treatments for plants and animals in the 'fringe' literature. The basic idea behind using peroxide as a soil drench or animal food is to increase the ability of oxygen to become available to organisms in order to improve their respiration. In the amethyst this extra oxygen is wedded to iron, the breathing metal.

Plants like cabbages, which make heavy demands on calcium in the soil, often also make equally heavy potassium demands for mid-ribs of leaves and strong root-stem development. Soda or sodium acts in such a way that it helps to change potassium from an insoluble form to a soluble form in the soil. As a mineral catalyst then, amethyst is a silicate with a calcium/potassium gesture in its chemistry. The metals iron peroxide and manganese both show an affinity for enhancing life or vitality, one of the old uses for amethyst jewelry.

The manganese which is the actual source of the deep violet hue of the gem has the added property of being particularly suited for relating the sulfuric and the oxidizing forces in metallurgy. According to Walther Kloos in *The Living Earth*, manganese in nature is always found in combination with oxygen and represents a gesture among metals which indicates support for the vegetative process.

By contrast, metals which have an affinity for sulfur show affinities for the general (peripheral) life forces of flower/fruit and seed. This again puts the amethyst into close relationship to the life gesture of the cabbage which is to produce leaf after vegetative leaf before it rises on its stalk into flowering.

By simply comparing the growth gesture between quartz crystal and amethyst, this contrast can be observed.

The quartz breaks out into open stamen-like shafts of light as it grows, indicative of a strong seed/light force. By contrast the amethyst is most often found in geodes pointing inward towards a center. Its crystals, while they show beautiful points, rarely grow into discrete shafts but instead cluster together in planes of points without shooting into space. This is an analog for the ideal cabbage gesture, a holding of form in one plane before shooting up vertically.

From this it can be seen why the amethyst appeared to be a good cabbage spray.

The experiment sought to retain and possibly amplify these qualities in the grinding process used to render the substance into gem flour. Three nice amethyst points were pulverized and ground between glass plates and then worked in a mortar and pestle for one hour. A very fine, colorless meal resulted. One tablespoon of this was saved and to this, as a dilutant, 10 tablespoons of orthoclase feldspar were added. The orthoclase is a potassium silicate with traces of calcium. This was used to enhance the potash/calcium action of the spray. This was triturated in a mortar and pestle for one hour. *(Triturate: to rub, crush, or grind into a very fine powder; pulverize.)*

One tablespoon of this was taken and 10 tablespoons of flint were added as a dilutant and one more hour of trituration brought the amethyst to a 3x potentization.

This meal was put into a cow horn and buried for the summer. Before burial, some of the 3x flour was taken to spray on the cabbage crop. This amethyst spray was applied on leaf days after 20 minutes stirring in rainwater.

Due to the extreme dryness, the seedling cabbages were often sprayed in the evening. In the morning strong dew would always be present in the cabbage patch. The cabbages were mulched heavily and watered by drip system under the mulch. They were side-dressed with a liquid ferment of alfalfa/kelp/and rotted cabbages which had stabilized completely before application to the soil around the plants.

The cabbages grew steadily through a very hot (high 90s/low 100s) summer without missing a beat. They produced enormous heads by September 1. The savoy heads were sweet, crisp and well filled out. The only blemish was that in some of them the sun had scalded some leaves when the head was forming and those ended up in the cabbage. An overhead shade cloth would have corrected this flaw. The sweetness and perfection of growth belied their hot arid growing period. When they were cut open, the open savoy spaces were filled with shining beads of water, even though no water had touched the leaves or heads during the whole growing period except for dew-fall.

Amethyst sprayings were alternated with Barrel Compost in the spraying cycles. Ferments were applied during the waxing phases of the moon until head formation was well under way.

No doubt, clay loam with a good heart, heavy mulching and drip irrigation were positive factors in the growth of the cabbages. However, the extreme climatic conditions which they endured prompted very experienced local gardeners to label the idea 'doubtful'. However, the size, sweetness and perfection of a bed full of savoy salad cabbages in early October in our part of California pointed to some unusual gardening techniques.

Next spring the first 'horn amethyst' will be used on an over-wintering savoy crop which is now sleeping in the rain. And, next summer, horn amethyst will once again be called upon to produce positive results from a doubtful experiment.